DOCKET SECTION

OFFICIAL TRANSCRIPT OF PROCEEDINGS BEFORE THE POSTAL RATE COMMISSION

In the Matter of:	)	
	)	
REQUEST OF THE	)	
UNITED STATES POSTAL SERVICE	)	
FOR A RECOMMENDED DECISION	)	Docket No. R2005-1
ON CHANGES IN RATES OF	)	
POSTAGE AND FEES FOR	)	
POSTAL SERVICES	)	

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POSTAL RATE COMMISSION

In the Matter of:	)	
	)	
REQUEST OF THE UNITED	)	
STATES POSTAL SERVICE	)	
FOR A RECOMMENDED DECISION	)	Docket No. R2005-1
ON CHANGES IN RATES OF	)	
POSTAGE AND FEES FOR	)	
POSTAL SERVICES	)	

Room 300
Postal Rate Commission
1333 H Street, N.W.
Washington, D.C.

Volume 6
Thursday, July 7, 2005

The above-entitled matter came on for hearing pursuant to notice, at 9:33 a.m.

BEFORE:

HON. GEORGE A. OMAS, CHAIRMAN
HON. TONY HAMMOND, VICE-CHAIRMAN
HON. RUTH Y. GOLDWAY, COMMISSIONER
HON. DANA B. COVINGTON, COMMISSIONER
HON. DAWN A. TISDALE, COMMISSIONER

APPEARANCES:

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C O N T E N T S

WITNESSES APPEARING:
MICHAEL W. MILLER
THOMAS W. HARAHUSH
DENNIS P. STEVENS
MICHAEL D. BRADLEY
JEFFREY W. LEWIS

WITNESSES:	DIRECT	CROSS	REDIRECT	RECROSS	VOIR DIRE
Thomas W. Harahush					
By Mr. Hollies	1820	--	--	--	--
By Mr. Morgan	--	1850	--	--	--
Dennis P. Stevens					
By Mr. Koetting	1864	--	--	--	--
By Mr. McLaughlin	--	1982	--	--	--
By Ms. Dreifuss	--	1987	--	--	--
By Mr. Olson	--	2027	--	--	--
Michael D. Bradley					
By Mr. Koetting	2042	--	--	--	--
By Mr. Costich	--	2271			
Jeffrey W. Lewis					
By Mr. Koetting	2325	--	2445	--	--
By Mr. Costich	--	2396	--	--	--
By Mr. Olson	--	2401	--	--	--

DOCUMENTS TRANSCRIBED INTO THE RECORD	PAGE
Written cross-examination and certificates of authority of Michael W. Miller, USPS-T-19	1796
Answer of Michael W. Miller to Presiding Officer's Information Request, POIR 4, Question 5	1817
Corrected designated written cross-examination of Thomas W. Harahush, USPS-T-5	1823
Corrected designated written cross-examination of Dennis P. Stevens, USPS-T-15	1869
Answers of Dennis P. Stevens to Presiding Officer's Information Request, POIR 9, Questions 4 and 10	1979

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Designated written cross-examination of Michael D. Bradley, USPS-T-14	2046
Response of Michael D. Bradley to Presiding Officer's Information Request, POIR 8, Question 3	2251
Designated written cross-examination of Jeffrey W. Lewis, USPS-T-30	2329
Response of Jeffrey W. Lewis to Presiding Officer's Information Request, POIR 6, Questions 4(a)-(b)	2395

E X H I B I T S

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Corrected direct testimony of Dennis P. Stevens on behalf of the United States Postal Service, USPS-T-15	1864	1866

E X H I B I T S

EXHIBITS AND/OR TESTIMONY	IDENTIFIED	RECEIVED
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Answers of Dennis P. Stevens to Presiding Officer's Information Request, POIR 9, Questions 4 and 10	1978	1978
Interrogatory responses of Dennis P. Stevens, Advo/ USPS-T-16-2 through 5	1982	1982
Direct testimony of Michael D. Bradley on behalf of the United States Postal Service, USPS-T-14	2042	2044
Designated written cross-examination of Michael D. Bradley, USPS-T-14	2042	2044
Response of Michael D. Bradley to Presiding Officer's Information Request, POIR 8, Question 3	2250	2250
Direct testimony of Jeffrey W. Lewis on behalf of the United States Postal Service, USPS-T-30	2327	2327
Designated written cross-examination of Jeffrey W. Lewis, USPS-T-30	2327	2327
Response of Jeffrey W. Lewis to Presiding Officer's Information Request, POIR 6, Questions 4(a)-(b)	2394	2394

1 P R O C E E D I N G S

2 (9:33 a.m.)

3 CHAIRMAN OMAS: Good morning. Today we
4 continue hearings to receive the testimony of Postal
5 Service witnesses in support of Docket No. R2005-1, a
6 request for rates and fee changes.
7 I have two procedural matters to raise.
8 Because of the length of these hearings, I will allow
9 more than the normal time for the participants to
10 review the transcripts and propose corrections.
11 Transcript corrections for this first set of hearings
12 may be filed on or before July 18.
13 Also, there has been a certain number of
14 discovery requests filed after the date of the
15 designation of written cross-examination, and the
16 Postal Service witnesses have agreed to provide
17 materials for the record. I will allow designations
18 of such answers for the incorporation into the
19 evidentiary record on or before July 19.
20 Does anyone else have a procedural matter to
21 discuss before we begin?
22 (No response.)
23 CHAIRMAN OMAS: Five witnesses are scheduled
24 to appear today. They are Witnesses Miller, Harahush,
25 Stevens, Bradley and Lewis.

1 Participants have agreed to forego oral
2 cross-examination of Witness Miller on his testimony
3 identified as T-19.
4 Mr. Weidner, do you have copies of the
5 testimony and the designated written cross-examination
6 with appropriate certificates of authenticity so that
7 we can enter the material into evidence?
8 MR. HOLLIES: Mr. Chairman, this is Kenneth
9 Hollies on behalf of the Postal Service.
10 CHAIRMAN OMAS: Yes. You're playing musical
11 chairs with me on this case.
12 MR. HOLLIES: Well, we'll probably keep that
13 game up for a while.
14 CHAIRMAN OMAS: Okay. Good.
15 MR. HOLLIES: Mr. Weidner is not present
16 today. Inasmuch as there were no questions and there
17 are outstanding interrogatories to be worked upon, the
18 more efficient approach was for him to continue that
19 work.
20 I do have the materials you've just
21 described, that is a declaration by Witness Miller
22 regarding the authenticity both of his testimony and
23 his interrogatory responses, that they are all current
24 and that they are complete.
25 The Postal Service accordingly would move

1 that both the testimony and the interrogatory
2 responses be included in the evidentiary record with
3 only the latter, the interrogatory responses, also
4 transcribed into the transcript.
5 CHAIRMAN OMAS: Thank you, Mr. Hollies.
6 Is there any objection?
7 (No response.)
8 CHAIRMAN OMAS: Hearing none, the testimony
9 of written cross-examination of Witness Miller is
10 received into evidence. Following our normal
11 practice, I will direct the reporter to transcribe the
12 written cross-examination and to include the
13 certificates of authenticity in today's transcript.
14 The testimony will not be transcribed.
15 (The document referred to was
16 marked for identification as
17 Exhibit No. USPS-T-19 and was
18 received in evidence.)
19 //
20 //
21 //
22 //
23 //
24 //
25 //

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, DC 20268-0001

Request of the United States Postal Service for a Recommended Decision on Changes in Rates of Postage and Fees for Postal Services

Docket No. R2005-1

DESIGNATION OF WRITTEN CROSS-EXAMINATION
OF UNITED STATES POSTAL SERVICE
WITNESS MICHAEL W. MILLER
(USPS-T-19)

Party	Interrogatories
Time Warner Inc.	TW/USPS-T19-1-6
Valpak Direct Marketing Systems, Inc. and Valpak Dealers' Association Inc.	VP/USPS-T28-5, 6a-e, g, 7a-bi, bii, biii, biv redirected to T19

Respectfully submitted,

Steven W. Williams
Secretary

INTERROGATORY RESPONSES OF
UNITED STATES POSTAL SERVICE
WITNESS MICHAEL W. MILLER (T-19)
DESIGNATED AS WRITTEN CROSS-EXAMINATION

Interrogatory	Designating Parties
TW/USPS-T19-1	TW
TW/USPS-T19-2	TW
TW/USPS-T19-3	TW
TW/USPS-T19-4	TW
TW/USPS-T19-5	TW
TW/USPS-T19-6	TW
VP/USPS-T28-5 redirected to T19	Valpak
VP/USPS-T28-6a redirected to T19	Valpak
VP/USPS-T28-6b redirected to T19	Valpak
VP/USPS-T28-6c redirected to T19	Valpak
VP/USPS-T28-6d redirected to T19	Valpak
VP/USPS-T28-6e redirected to T19	Valpak
VP/USPS-T28-6g redirected to T19	Valpak
VP/USPS-T28-7a redirected to T19	Valpak
VP/USPS-T28-7bi redirected to T19	Valpak
VP/USPS-T28-7bii redirected to T19	Valpak
VP/USPS-T28-7biii redirected to T19	Valpak
VP/USPS-T28-7biv redirected to T19	Valpak

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

TW/USPS-T19-1. Please refer to the Periodicals flats model described in your testimony and included in library reference LR-K-43. The version with PRC costing is in LR-K-102. Please respond to parts a-e below and explain any disagreement.

a. Please confirm that the model estimates unit mail processing costs for Outside County Periodicals flats by rate category, as shown in Table 1 of your testimony.

b. Please confirm that your model does not address any delivery related costs.

c. Please confirm that your estimates of unit mail processing costs by rate category are adjusted so that their volume weighted average over all rate categories will equal the projected average mail processing unit cost for Outside County Periodicals flats in the test year.

d. Please confirm that the transformation from your modeled costs to CRA adjusted unit costs for each rate category is carried out in Excel spreadsheet PERIODICALS FLATS.xls in cells A29:G48 on worksheet 'CRA ADJ UNIT COSTS', and in the case of the presort adjusted costs that you develop for the automation categories, in cells A5:G24 on worksheet "PRESORT LEVELS HELD CONSTANT".

e. Please confirm that you proceed from modeled to fully CRA adjusted unit costs with the following steps:

(1) The modeled unit costs are multiplied by a CRA proportional adjustment factor which is calculated as the ratio between (a) the sum of test year Outside County flats CRA unit costs at the modeled mail processing cost pools and (2) the volume weighted average of the modeled unit costs over all rate categories;

(2) CRA test year unit costs at certain cost pools that you deem worksharing related but have not modeled are added to your unit cost estimate for each rate category;

(3) CRA test year unit costs at certain cost pools that you deem to be not worksharing related and have not modeled are added to your unit cost estimate for each rate category.

RESPONSE:

It should be noted that the Periodicals Outside County mail processing unit cost estimates by rate category do not support rate design nor are they relied upon to calculate final adjustments.

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

(a) It is confirmed that the Postal Service version of the total mail processing unit cost estimates for the Outside Country Periodicals rate categories is contained in USPS-T-19, Table 1.

(b) Confirmed.

(c) Confirmed.

(d) Confirmed.

(e)(1) Confirmed.

(e)(2) Confirmed.

(e)(3) Confirmed.

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

TW/USPS-T19-2. Please explain any disagreement when responding to the following.

a. Please confirm that in the table on worksheet "CRA Flats" in Excel spreadsheet PERIODICALS FLATS.xls, the cost pools you consider worksharing related but have not included in your model are those with a nonzero entry in Column J.

b. Please confirm that the cost pool named '1FLATPRP', or Flats Preparation, is one of the pools that you have not modeled but defined as worksharing related.

c. Please confirm that the Flats Preparation cost pool is also identified with MODS number 035, and that it consists of manually breaking bundles of flats that will be processed on flats sorting machines or manual flats cases, removing strapping and banding material, separating, facing and loading flats into mail transport equipment that will be sent to flat sorting machines or manual flat cases and securing the flats mail carts before they are sent to the flats distribution operations.

d. Please confirm that the flats preparation work comes after the sorting of bundles, which you do model, and before the sorting of pieces, which you also do model.

e. Please confirm that the projected test year CRA unit cost for Outside County Periodicals in the flats preparation cost pool is 0.81 cents and that you add this cost, along with the unit costs at other worksharing related but not modeled pools, to your modeled unit costs for each rate category. Please confirm also that the corresponding amount under PRC costing is 0.85 cents.

RESPONSE:

It should be noted that the Periodicals Outside County mail processing unit cost estimates by rate category do not support rate design nor are they relied upon to calculate final adjustments.

(a) Confirmed.

(b) Confirmed.

(c) It is confirmed that the costs for operation 035 are mapped to the "1FLATPRP" cost pool and that the tasks described in your question are generally performed in that operation.

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

(d) In general, this can be confirmed. However, there are also other points at which mail is prepped into Flat Mail Carts (FMCs). For example, broken bundles that are culled from the Small Parcel and Bundle Sorter (SPBS) feeding mechanisms are, on occasion, prepped directly into FMCs in an area next to that machine, even though those employees may not be clocked into operation 035.

(e) Confirmed.

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

TW/USPS-T19-3.

a. In today's mail processing facilities, will flats in mailer prepared non-carrier route bundles normally be routed to an 035 type flats preparation operation before being piece sorted? Please explain any negative answer and describe the circumstances under which flats in non-carrier route bundles will not undergo this type of operation.

b. In today's mail processing facilities, will flats in carrier route bundles be routed to an 035 type flats preparation operation before the bundles are sent to the carriers? Please explain any affirmative answer.

c. Please confirm that your methodology for transforming modeled unit costs to estimates of total unit mail processing costs effectively attributes exactly the same amount of flats preparation (035) costs to carrier route presorted flats as to other flats. Explain any disagreement.

RESPONSE:

It should be noted that the Periodicals Outside County mail processing unit cost estimates by rate category do not support rate design nor are they relied upon to calculate final adjustments.

(a) As stated in the response to TW/USPS-T19-2(d), this is generally true. However, that "035 type flats preparation operation" may take place in a different area and the employees may not actually be clocked into operation 035. In addition to the SPBS example cited in the response to TW/USPS-T19-2(d), I have seen loose flats being prepped into Flats Mail Carts (FMCs) at Bulk Mailer Centers (BMCs). That prepped mail was then transported to the nearest Processing and Distribution Center (P&DC). I am not aware of any studies that have involved an analysis of FMC preparation costs.

(b) In general, carrier route bundles should not be prepped into FMCs at the plant. Instead, those bundles should be dispatched directly to the appropriate Delivery Unit, where they would be open and prepped.

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

(c) I think a better way to describe the models is to state that FMC preparation costs are not included in the mail flow model. Therefore, any mail preparation cost distinctions that might exist between rate categories are not reflected in the results.

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

TW/USPS-T19-4. Please confirm, or if not confirmed explain any disagreement with each of the following.

a. Based on the Outside County billing determinants that you are using, 47.494 % of Outside County flats are presorted by mailers to carrier route, while the remaining 52.506 % are not presorted to carrier route.

b. If the costs attributed to Outside County in the flats preparation (035) cost pool, rather than being distributed equally over all Outside County flats, were distributed only to the non-carrier route flats, then the flats preparation cost for each non-carrier route flat would be 1.535 cents, instead of 0.81 cents.

RESPONSE:

It should be noted that the Periodicals Outside County mail processing unit cost estimates by rate category do not support rate design nor are they relied upon to calculate final adjustments.

(a) Confirmed.

(b) The following calculation can be confirmed for the Postal Service version of the Outside County Periodicals cost model (USPS-LR-K-43):

$$\frac{(0.806 \text{ cents / piece}) * (8{,}266{,}904{,}286 \text{ pieces})}{(8{,}266{,}904{,}286 \text{ pieces} - 3{,}926{,}284{,}943 \text{ pieces})} = 1.535 \text{ cents per piece}$$

This modification, however, only addresses mail processing costs. This change would have to be offset by the inclusion of any in-office delivery cost differences that may exist between carrier route presort mail and non-carrier route presort mail. As stated in the response to TW/USPS-T19-1(b), delivery cost estimates have not been included in the model. At least some of the "035 type" tasks described in USPS-T19-2(c) would have to be performed by clerks or carriers in the delivery unit. I am not aware of any studies that were conducted to evaluate the cost differences between opening / prepping non carrier route bundles in plants and opening / prepping carrier route bundles in delivery units.

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

TW/USPS-T19-5. Please confirm that if instead of distributing the costs of the flats preparation pool equally over all rate categories, you had distributed them only to the non-carrier route rate categories, which are the rate categories that normally use this pool, then the costs would be as shown in the last two columns of the attached table TW/USPS-T19-5. For comparison, the costs from Table 1 in your testimony are shown in the first two columns. Please explain any disagreement.

Table TW/USPS-T19-5: Alternative Estimates of Outside County Periodicals Presort Related Mail Processing Costs (cents per piece)

Rate Category	From Table 1 in USPS-T-19		Modified By Attributing Flats Preparation Costs to Non-Carrier Route Flats Only	
	Actual	Presort Adjusted	Actual	Presort Adjusted
Nonautomation Basic	23.837	23.837	24.567	24.567
Nonautomation 3-digit	17.663	17.663	18.392	18.392
Nonautomation 5-digit	13.233	13.233	13.962	13.962
Carrier Route	8.669	8.669	7.863	7.863
Automation Basic	24.785	22.442	25.514	23.171
Automation 3-digit	19.080	16.965	19.809	17.694
Automation 5-digit	12.593	12.687	13.322	13.416

RESPONSE:

It should be noted that the Periodicals Outside County mail processing unit cost estimates by rate category do not support rate design nor are they relied upon to calculate final adjustments.

It can be confirmed that the calculations are correct. However, as stated in the response to TW/USPS-T19-4(b):

> "This modification, however, only addresses mail processing costs. This change would have to be offset by the inclusion of any in-office delivery cost differences that may exist between carrier route presort mail and non-carrier route presort mail. As stated in the response to TW/USPS-T21-1(b), delivery cost estimates have not been included in the model. At least some of the "035 type" tasks described in USPS-T19-2(c) would have to be performed by clerks or carriers in the delivery unit. I am not aware of

any studies that were conducted to evaluate the cost differences between opening / prepping non carrier route bundles in plants and opening / prepping carrier route bundles in delivery units."

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

TW/USPS-T19-6. Please refer to the attached table TW/USPS-T19-6, which is similar to table TW/USPS-T19-5 except that it refers to PRC costing. Please confirm that if instead of distributing the (PRC) costs of the flats preparation pool equally over all rate categories, you had distributed them only to the non-carrier route rate categories, which are the rate categories that normally use this pool, then the costs would be as shown in the last two columns of the table. For comparison, the costs from Table 2 in your testimony are shown in the first two columns. Please explain any disagreement.

Table TW/USPS-T19-6: Alternative Estimates of Outside County Periodicals Presort Related Mail Processing Costs (cents per piece - PRC Costing)

Rate Category	From Table 2 in USPS-T-19		Modified By Attributing Flats Preparation Costs to Non-Carrier Route Flats Only	
	Actual	Presort Adjusted	Actual	Presort Adjusted
Nonautomation Basic	28.070	28.070	28.840	28.840
Nonautomation 3-digit	20.183	20.183	20.953	20.953
Nonautomation 5-digit	14.438	14.438	15.208	15.208
Carrier Route	9.131	9.131	8.279	8.279
Automation Basic	28.715	26.289	29.485	27.060
Automation 3-digit	21.647	19.345	22.417	20.115
Automation 5-digit	13.763	13.878	14.534	14.648

RESPONSE:

It should be noted that the Periodicals Outside County mail processing unit cost estimates by rate category do not support rate design nor are they relied upon to calculate final adjustments.

It can be confirmed that the calculations are correct. However, as stated in the response to TW/USPS-T19-4(b):

> "This modification, however, only addresses mail processing costs. This change would have to be offset by the inclusion of any in-office delivery cost differences that may exist between carrier route presort mail and non-carrier route presort mail. As stated in the response to TW/USPS-T21-1(b), delivery cost estimates have not been included in the model. At least

RESPONSE OF POSTAL SERVICE WITNESS MILLER
TO INTERROGATORY OF TIME WARNER INC.

some of the "035 type" tasks described in USPS-T19-2(c) would have to be performed by clerks or carriers in the delivery unit. I am not aware of any studies that were conducted to evaluate the cost differences between opening / prepping non carrier route bundles in plants and opening / prepping carrier route bundles in delivery units."

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO INTERROGATORY OF VALPAK DIRECT MARKETING SYSTEMS, INC., AND VALPAK DEALERS' ASSOCIATION, INC., REDIRECTED FROM WITNESS TAUFIQUE

VP/USPS-T28-5.

a. Please refer to VP/USPS-T28-3. For the 19.729-cent mail processing cost for Standard Regular Basic presort flats, referenced therein, please confirm that the source is the "CRA ADJ UNIT COSTS" sheet of the file STANDARD.XLS in library reference USPS-LR-J-61 of Docket No. R2001-1, and that it is the sum of (i) a "Non Worksharing Unit Cost" of 4.003 cents and (ii) a "Worksharing Related Unit Cost" of 15.726 cents. If you do not confirm, please provide the appropriate figure and give the source.

b. Please confirm that the updated figure for the 19.729-cent mail processing cost for Standard Regular Basic presort flats, referenced in preceding part a, is 26.468 cents, **34.2 percent higher than the current cost**, and is found on the first sheet in file STANDARD FLATS PRC.xls of library reference USPS-LR-K-102. If you do not confirm, please provide the appropriate figure and give the source.

RESPONSE:

The cost estimates discussed in VP/USPS-T28-3 were from my Docket No. R2001-1 testimony (USPS-T-24). Those estimates were used to support rate design and final adjustments as discussed in Section I of USPS-T-24. In contrast, the estimates provided in the instant proceeding only support final adjustments as discussed in the purpose of my testimony (USPS-T-19, Section I).

(a) Confirmed.

(b) Not confirmed. The Test Year 2003 19.729-cent cost estimate for Standard Mail nonautomation basic flats was calculated in Docket No. R2001-1, USPS-LR-J-61, page 69, and was developed using the Postal Service's volume variability cost methodology. In the instant proceeding, the Test Year 2006 cost estimate for Standard Mail nonautomation flats (using the Postal Service's cost methodology) is 23.148 cents and

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO INTERROGATORY OF VALPAK DIRECT MARKETING SYSTEMS, INC., AND VALPAK DEALERS' ASSOCIATION, INC., REDIRECTED FROM WITNESS TAUFIQUE

can be found in USPS-LR-K-43, page 69. This figure represents a 17.3-percent increase over the estimate developed in Docket No. R2001-1.

The PRC version of the cost estimates for Docket No. R2001-1 and Docket No. R2005-1 are 22.370 cents (USPS-LR-J-85, page 69) and 26.468 cents (USPS-LR-K-102, page 69), respectively. Using these figures, the increase is 18.3 percent.

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO INTERROGATORY OF VALPAK DIRECT MARKETING SYSTEMS, INC., AND VALPAK DEALERS' ASSOCIATION, INC., REDIRECTED FROM WITNESS TAUFIQUE

VP/USPS-T28-6. Regarding the 4.003-cent non-worksharing unit cost of processing Standard Regular Basic presort flats in VP/USPS-T28-5, part b.

a. Please describe the nature of what the cost measures.

b. Please explain why the 4.003-cent cost is not related to worksharing.

c. Assume that the rate for basic, non-prebarcoded, minimum-per-piece flats, which is currently 34.4 cents, were to be reduced and resulted in a volume increase in line with the appropriate elasticity. Please state whether you would expect the cost of each additional unit of volume to reflect any part of this 4.003 cents, and explain why you come to the conclusion you do.

d. Please explain whether the 4.003-cent cost figure is designed to be a marginal cost. If it is not, please explain the nature of the costing concept which it embodies.

e. Please explain what worksharing the 4.003 cent figure is not sensitive to, describing the specific nature of the work that may (or may not) be shared.

*****

g. Please explain whether mailing a flat, as opposed to an identically prepared and entered letter, causes the Postal Service to do work that could have been done by the mailer.

RESPONSE:

The cost estimates discussed in this interrogatory were from my Docket No. R2001-1 testimony (USPS-T-24). Those estimates were used to support rate design and final adjustments as discussed in Section I of USPS-T-24. In contrast, the estimates provided in the instant proceeding only support final adjustments as discussed in the purpose of my testimony (USPS-T-19, Section I).

In Docket No. R2001-1, the cost pool classifications were discussed in USPS-T-24, Section III.B.1. It should be noted that the cost pool classifications do not have the impact on the flats cost estimates that they do on the cost estimates developed in other studies. For example, First-Class Mail presort letters have an established cost

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO INTERROGATORY OF VALPAK DIRECT MARKETING SYSTEMS, INC., AND VALPAK DEALERS' ASSOCIATION, INC., REDIRECTED FROM WITNESS TAUFIQUE

benchmark, Bulk Metered Mail (BMM) letters, to which the rate category cost estimates are compared during the development of the worksharing related savings. The specific cost pool classifications for First-Class Mail presort letters can affect the savings results.

In contrast, the flats cost studies only include total mail processing unit cost estimates by rate category. In previous cases, those total cost estimates were relied upon by the pricing witnesses during rate design. Worksharing related savings estimates have not historically been calculated for flats rate categories. Even if the non-worksharing related fixed cost pools were all reclassified as worksharing related fixed, the total mail processing unit cost estimates by rate category would not change.

(a) The Docket No. R2001-1 Standard Mail Regular flats cost pools can be found in USPS-LR-J-61, page 71. The cost methodology used to develop those cost pools and the operations which were mapped to those cost pools can be found in USPS-LR-J-55. Descriptive information can also be found in USPS-LR-J-1.

(b) The costs mapped to those cost pools represented operations that were determined not to be influenced by the presorting and prebarcoding of flat-shaped mail, which was the focus of the cost models.

(c) I am unable to provide a response to this question, because in my view the situation is much more complicated than this question suggests. A price change could influence other factors, such as mail characteristics, which would also affect costs. In addition, wage rates generally increase over time, while flats technology enhancements would result in cost decreases over time. Finally, I have not conducted any analyses that

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO INTERROGATORY OF VALPAK DIRECT MARKETING SYSTEMS, INC., AND VALPAK DEALERS' ASSOCIATION, INC., REDIRECTED FROM WITNESS TAUFIQUE

attempt to determine how prices and subsequent volume changes affect unit costs over time.

(d) The cost data found in Docket No. R2001-1, USPS-LR-J-61, were designed to estimate marginal costs, in the sense that the productivity data used in the analysis represented marginal productivity figures that were adjusted using Postal Service volume variability factors. The mail processing unit costs by shape were also developed using volume variability data.

(e) The purpose of the cost models was to isolate the effects of mailer presorting and prebarcoding efforts. Other worksharing activities, such as dropshipping, were covered by other postal witnesses.

(g) I am unable to provide a response to this question. I imagine that whether any particular mailer chooses to engage, or not engage, in any particular "work that could [be] done by the mailer" is influenced by a variety of factors concerning mailer operations, of which I am not an expert.

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO INTERROGATORY OF VALPAK DIRECT MARKETING SYSTEMS, INC., AND VALPAK DEALERS' ASSOCIATION, INC., REDIRECTED FROM WITNESS TAUFIQUE

VP/USPS-T28-7

a. For the 15.726-cent worksharing-related unit cost referenced in VP/USPS-T28-5, part a, please confirm that, according to library reference USPS-LR-J-61 in Docket No. R2001-1, it is equal to a model unit cost of 15.329 cents times a Cost and Revenue Analysis ("CRA") adjustment factor of 1.023 plus a worksharing related fixed cost of 0.047 cents. If you do not confirm, please provide the appropriate figure and give the source.

b. For the model unit cost of 15.329 cents referenced in preceding part a, please provide a narrative description of the nature of this cost and answer the following questions.

(i) Is this 15.726-cent worksharing-related unit cost an estimate of a marginal cost? If not, please explain the costing concept that guides this estimate.

(ii) Is this 15.726-cent worksharing-related unit cost constrained or limited in any way? If yes, please explain each constraint and the reason for it.

(iii) If the associated rate for basic, non-prebarcoded, minimum-per-piece flats, which is now 34.4 cents, were to be reduced and the volume were to increase in line with the elasticity, please explain whether you would expect the 15.726-cent figure to increase on a per-additional-unit basis.

(iv) Is this 15.726-cent worksharing-related unit cost specifically designed or estimated to relate to any particular concept of worksharing? If so, please specify the piece of work that may or may not be shared.

RESPONSE:

The cost estimates discussed in this interrogatory were from my Docket No. R2001-1 testimony (USPS-T-24). Those estimates were used to support rate design and final adjustments as discussed in Section I of USPS-T-24. In contrast, the estimates provided in the instant proceeding only support final adjustments as discussed in the purpose of my testimony (USPS-T-19, Section I).

(a) Confirmed.

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO INTERROGATORY OF VALPAK DIRECT MARKETING SYSTEMS, INC., AND VALPAK DEALERS' ASSOCIATION, INC., REDIRECTED FROM WITNESS TAUFIQUE

(b) The cost models found in Docket No. R2001-1, USPS-LR-J-61, estimated piece distribution and bundle distribution costs, which were then tied to CRA mail processing unit costs by shape, as described in USPS-T-24/R2001-1. The cost spreadsheets and mail flow spreadsheets depicted the operations that were modeled.

(i) The cost data found in Docket No. R2001-1, USPS-LR-J-61, were designed to estimate marginal costs, in the sense that the productivity data used in the analysis represented marginal productivity figures that were adjusted using Postal Service volume variability factors. The mail processing unit costs by shape were also developed using volume variability data.

(ii) I do not understand this question.

(iii) Please see my response to VP/USPS-T28-6(c).

(iv) The flats cost models found in Docket No. R2001-1 represented total mail processing unit cost estimates by rate category, which were developed to isolate the impact related to mailer presorting and/or prebarcoding efforts. The pricing witnesses subsequently relied on the total mail processing unit cost estimates during rate design.

1 CHAIRMAN OMAS: At this point I'm going to
2 add an answer Witness Miller provided to the Presiding
3 Officer's Information Request. It is POIR 4, Question
4 5.
5 I am now handing the reporter two copies of
6 the answer and direct that it be admitted into
7 evidence and transcribed.
8 (The document referred to was
9 marked for identification as
10 Exhibit No. POIR 4, Question
11 5, and was received in
12 evidence.)
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RESPONSE OF POSTAL SERVICE WITNESS MILLER TO
POIR NO. 4, QUESTION 5

5. In USPS-T-25 [sic] witness Miller states that Fiscal Year 2003 Productivity Information Management System (PIMS) productivities are used in the models for Parcel Post. These productivities were updated from the ones used in R2001-1 to reflect the fact that Singulation Scan Induction Units (SSIU) had been added to the secondary Parcel Sorting Machine operations in 19 of the 21 BMCs. USPST-25 [sic] at 3. For the Primary NMO Sort operation, the productivity (units/hr) used in developing the model cost for Inter-BMC, Intra-BMC, and DBMC nonmachinable parcels decreased by 31 percent, from 100 in R2001-1 to 68.6 in R2005-1. USPS-LR-J-86 at 9 and USPS-LR-K-103 at 10. This decrease in productivity is a significant factor in the increase in model costs for Inter-BMC, Intra-BMC, and DBMC NMOs between R2001-1 and R2005-1. The increases in model unit costs are 34 percent, 35 percent, and 24 percent respectively.

(a) Please discuss how the introduction of SSIUs results in a decrease in productivity for nonmachinable parcels.

(b) Witness Miller states that BMCs were converted to MODS in GFY 2004, and that this conversion was completed by the end of GFY 2004. USPS-T-25 at 4. Please provide the MODS productivities for Primary Parcel Sorting, Secondary Parcel Sorting, Sack Sorting, and NMO distribution operations for FY 2005, quarters 1 and 2.

RESPONSE:

Before the Productivity Information Management System (PIMS) was retired in GFY 2004, I had been monitoring the data for the time period AP 1 FY 2001 through AP 13 FY 2003. At that point, the Postal Service converted to monthly reporting. Simultaneously, the Bulk Mail Centers (BMC) converted to the Management Operating Data System (MODS), as described in USPS-T-20 at 4.

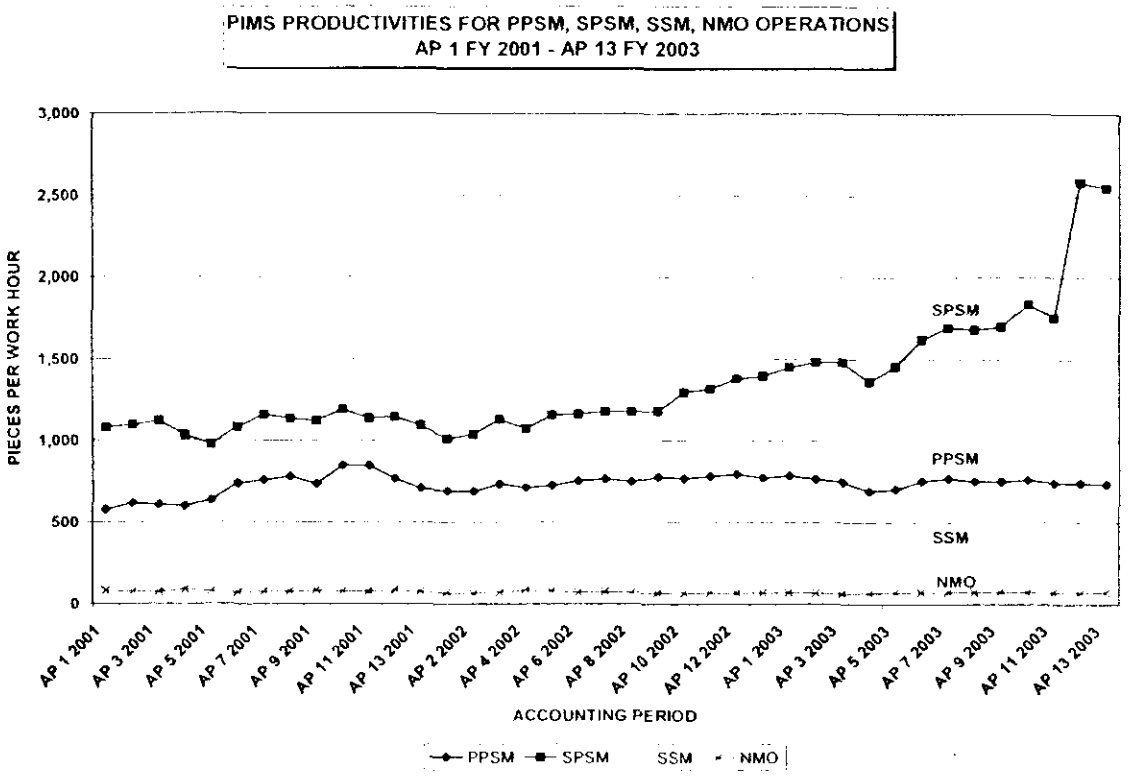
The Docket No. R2001-1 Non Machinable Outsides (NMO) productivity relied upon by witness Eggleston (USPS-T-25) was 100 pieces per hour. That figure represented an aggregate Productivity Information Reporting System (PIRS) NMO productivity for the FY 1995 through FY 2000 time frame. The PIRS system was eventually modified and renamed PIMS. In the instant proceeding, the Postal Service has provided an updated FY 2003 PIMS figure, which in the PRC version of the Parcels Cost Models is 69 pieces per hour (USPS-LR-K-103 at page 3).

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO
POIR NO. 4, QUESTION 5

The chart below shows the PIMS productivity trends for the Primary Parcel Sorting Machine (PPSM), Secondary Parcel Sorting Machine (SPSM), Sack Sorting Machine (SSM), and Non Machinable Outsides (NMO) operations for the time period described above. The NMO productivity was consistently less than 100 pieces per hour during that time period. Based on this information, the 100 pieces per hour figure relied upon by witness Eggleston may have been overstated. Overall, the PPSM, SSM, and NMO productivity trends were relatively flat during that time period. The one productivity trend that changed appreciably was the SPSM trend, which is not surprising given that 19 of the 21 BMCs were retrofitted with the Singulation Scan Induction Unit (SSIU).

It should also be noted that the data contained within USPS-LR-K-46 and USPS-LR-K-103 indicate that the average cubic feet per NMO parcel has increased over time. This data can be found in cells E43:E45 on page 7 of both library references. In Docket No. R2000-1, the BY 1998 average cubic feet per NMO parcel was 1.992 cubic feet. In Docket No. R2001-1, the BY 2000 average cubic feet per NMO parcel was 2.244 cubic feet. This figure represented a 12.66 percent increase over that from BY 1998. In the instant proceeding, the BY 2004 average cubic feet per NMO parcel is 2.777 cubic feet. This figure represents a 23.78 percent increase over the BY 2000 figure. Given that BMC NMO operations are primarily manual operations, it is possible that the increase in the average cubic feet per NMO parcel over time has had an impact on the overall NMO productivity.

RESPONSE OF POSTAL SERVICE WITNESS MILLER TO
POIR NO. 4, QUESTION 5



(a) The SSIU deployments had no impact on the NMO operation productivity. The SSIU deployments only affected the SPSM productivity.

(b) The requested MODS productivities for FY 2005 Quarters 1 and 2 are shown below. It is my understanding that these figures are not directly comparable to the productivity figures derived under PIMS. The cost models have historically relied upon productivity data expressed using the PIMS format.

Description	Operation No(s).	FY 2005 Qtr 1	FY 2005 Qtr 2
PPSM	105	411 pcs / hr	430 pcs / hr
SPSM	101	336 pcs / hr	368 pcs / hr
SSM	238, 239	165 pcs / hr	189 pcs / hr
NMO	100, 200, 325, 625	58 pcs / hr	60 pcs / hr

1 CHAIRMAN OMAS: Okay. Are we straight now?
2 Mr. Hollies, would you please identify the
3 next Postal Service witness so I may swear him in,
4 please?
5 MR. HOLLIES: The Postal Service calls Tom
6 Harahush.
7 Whereupon,
8 THOMAS HARAHUSH
9 having been duly sworn, was called as a
10 witness and was examined and testified as follows:
11 CHAIRMAN OMAS: Thank you.
12 (The document referred to was
13 marked for identification as
14 Exhibit No. USPS-T-5.)
15 DIRECT EXAMINATION
16 BY MR. HOLLIES:
17 Q Mr. Harahush, we've provided you this
18 morning two copies of a document styled USPS-T-5 and
19 labeled as Direct Testimony of Thomas W. Harahush on
20 Behalf of United States Postal Service. Are you
21 familiar with this document?
22 A Yes.
23 Q Was it prepared by you or under your
24 direction?
25 A Yes.

1 Q And is this your testimony in this docket?
2 A Yes.
3 Q And were you to testify orally today would
4 it be the same?
5 A Yes.
6 MR. HOLLIES: With that, Mr. Chairman, the
7 Postal Service moves for inclusion of Mr. Harahush's
8 testimony in the evidentiary record of this
9 proceeding.
10 CHAIRMAN OMAS: Is there any objection?
11 (No response.)
12 CHAIRMAN OMAS: Hearing none, I will direct
13 counsel to provide the reporter with two copies of the
14 corrected direct testimony of Thomas W. Harahush. The
15 testimony is received into evidence. However, as is
16 our practice, it will not be transcribed.
17 (The document referred to,
18 previously identified as
19 Exhibit No. USPS-T-5, was
20 received in evidence.)
21 CHAIRMAN OMAS: Mr. Harahush, have you had
22 the opportunity to examine the packet of designated
23 written cross-examination?
24 THE WITNESS: Yes.
25 CHAIRMAN OMAS: If those questions contained

1 in that packet were posed to you orally today, would
2 they be the same as those provided in writing?
3 THE WITNESS: I have a change to make on
4 Advo/USPS-T-5-3. Presently the first sentence reads,
5 "Assuming that 'in bulk' means a large quantity of
6 mail, yes." Then the next sentence starts.
7 I'd like to change that to be, "I will
8 assume that 'in bulk' means a large quantity of mail."
9 Then the next sentence starts, "Yes...", and then
10 everything else is the same after that.
11 CHAIRMAN OMAS: Are there any additional
12 corrections?
13 THE WITNESS: No.
14 CHAIRMAN OMAS: Counsel, would you please
15 provide two copies of the corrected designated written
16 cross-examination of Witness Harahush to the reporter?
17 That material is received into evidence and is to be
18 transcribed into the record.
19 (The document referred to,
20 previously identified as
21 Exhibit No. USPS-T-5, was
22 received in evidence.)
23 //
24 //
25 //

BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, DC 20268-0001

Request of the United States Postal Service for a Recommended Decision on Changes in Rates of Postage and Fees for Postal Services

Docket No. R2005-1

DESIGNATION OF WRITTEN CROSS-EXAMINATION
OF UNITED STATES POSTAL SERVICE
WITNESS THOMAS W. HARAHUSH
(USPS-T-5)

Party	Interrogatories
Advo, Inc.	ADVO/USPS-T5-3
Office of the Consumer Advocate	OCA/USPS-T5-1 OCA/USPS-T10-4b redirected to T5
Valpak Direct Marketing Systems, Inc. and Valpak Dealers' Association Inc.	VP/USPS-T14-8 redirected to T5

Respectfully submitted,

Steven W. Williams
Secretary

INTERROGATORY RESPONSES OF
UNITED STATES POSTAL SERVICE
WITNESS THOMAS W. HARAHUSH (T-5)
DESIGNATED AS WRITTEN CROSS-EXAMINATION

Interrogatory	Designating Parties
ADVO/USPS-T5-3	Advo
OCA/USPS-T5-1	OCA
OCA/USPS-T10-4b redirected to T5	OCA
VP/USPS-T14-8 redirected to T5	Valpak

RESPONSE OF POSTAL SERVICE WITNESS THOMAS W. HARAHUSH TO INTERROGATORY OF ADVO, INC.

ADVO/USPS-T5-3. Does the CCS identify the number of pieces, shape, and classifications of mail delivered in bulk by city carriers?

RESPONSE:

Assuming that "in bulk" means a large quantity of mail, yes. If the mail is on a sampled stop on a sampled city carrier route, the city carrier data collector would identify the number of pieces, shape and classification. The city carrier cost system, CCCS, samples only letter routes. Exclusion of certain city carrier routes from sample selection is detailed in USPS-LR-K-11/R2005-1, Creating the Sample Frame.

RESPONSE OF POSTAL SERVICE WITNESS THOMAS W. HARAHUSH TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

OCA/USPS-T5-1. For each quarter or other postal reporting period in FY 2000 through 2005, please provide city-carrier-delivered volumes by class and subclass of mail. Please cite your sources and provide copies of all source documents.

RESPONSE:

The attached Excel file contains city-carrier-delivered volumes by class and subclass of mail and by shape from FY 2000 through FY 2004. Data for FY2005 are not provided. Data for each quarter are included in separate worksheets labeled in the format Qqyy.

Please note the following when using the attached files. In Fiscal Year 2002, ECRWSS was separated from the ECR total and placed in separate lines. In Fiscal Year 2003, standard regular and nonprofit were combined. In Fiscal Year 2003, library rate was combined with media mail.

The sources of the attached data are the Lotus Keys Files, which are documented in the Quarterly Volume Estimates and Distribution Keys section of USPS-LR-K-11. The Lotus Keys Files give the estimated total for each mail shape/subclass combination. The layout for the files is shown in Layout 8 of the same library reference.

Q100	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	2290157	551067	52910	2450588	5344722
First Class Presorted	5465195	110883	3502	1178674	6758254
First Class Single Piece Post Card	432975	0	0	0	432975
First Class Presorted Cards	362124	0	0	0	362124
Total First Class	8550452	661950	56412	3629261	12898075
Priority Mail	6878	58488	85706	3633	154705
Express Mail	637	4954	865	0	6456
Mailgram	2985	0	0	0	2985
Periodicals	126287	1321910	11094	15473	1474764
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Standard A Regular ECR	2489512	3594996	4852	0	6089360
Standard A Regular Presorted	4283076	2026632	84172	0	6393880
Total Standard A Regular	6772589	5621628	89024	0	12483241
	0	0	0	0	0
Standard A Nonprofit ECR	173685	148624	0	0	322309
Standard A Nonprofit Presorted	1512494	263636	6345	0	1782475
Total Standard A Nonprofit	1686179	412260	6345	0	2104784
Total Standard A	8458768	6033888	95369	0	14588025
	0	0	0	0	0
Standard B Parcel Post	368	891	45979	0	47238
Standard B Bound Printed Matter	619	27395	31505	61	59580
Standard B Special Standard	250	3884	12920	0	17054
Standard B Library	184	883	1556	0	2623
Total Standard B	1423	33055	91960	61	126499
Penalty - USPS	47830	1260	114	3762	52966
Penalty - Free	2099	1266	2580	545	6490

Q200	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	2708005	577491	58369	3296219	6640084
First Class Presorted	5509535	92515	2074	1344756	6948880
First Class Single Piece Post Card	397218	0	0	0	397218
First Class Presorted Cards	333211	0	0	0	333211
Total First Class	8947970	670005	60443	4640975	14319393
Priority Mail	6858	62960	106797	1810	178425
Express Mail	818	7064	811	0	8693
Mailgram	3227	0	0	0	3227
Periodicals	123978	1304077	12924	12713	1453692
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Standard A Regular ECR	2050440	2870886	4937	0	4926263
Standard A Regular Presorted	3856481	1622948	84512	0	5563941
Total Standard A Regular	5906921	4493834	89450	0	10490205
	0	0	0	0	0
Standard A Nonprofit ECR	147865	132056	286	0	280207
Standard A Nonprofit Presorted	1265941	238099	4602	0	1508642
Total Standard A Nonprofit	1413807	370155	4888	0	1788850
Total Standard A	7320728	4863989	94338	0	12279055
	0	0	0	0	0
Standard B Parcel Post	449	938	44002	0	45389
Standard B Bound Printed Matter	241	23749	32941	0	56931
Standard B Special Standard	570	4233	13252	0	18055
Standard B Library	362	596	1436	0	2394
Total Standard B	1622	29516	91631	0	122769
Penalty - USPS	29048	1794	180	5699	36721
Penalty - Free	2503	617	2717	784	6621

Q300	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	2027961	509108	53707	2687940	5278716
First Class Presorted	1998209	120429	6520	4766588	6891746
First Class Single Piece Post Card	277263	0	0	173129	450392
First Class Presorted Cards	162210	0	0	198925	361135
Total First Class	4465644	629538	60228	7826583	12981993
Priority Mail	5648	59690	79775	2613	147726
Express Mail	960	7422	543	867	9792
Mailgram	1035	0	0	1710	2745
Periodicals	117890	1311127	10612	17466	1457095
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Standard A Regular ECR	1821067	3140819	9131	328927	5299944
Standard A Regular Presorted	1787703	1819234	94461	2547622	6249020
Total Standard A Regular	3608770	4960053	103592	2876550	11548965
	0	0	0	0	0
Standard A Nonprofit ECR	124872	154089	328	29326	308615
Standard A Nonprofit Presorted	566238	228377	5145	714239	1513999
Total Standard A Nonprofit	691107	382467	5474	743564	1822612
Total Standard A	4299878	5342520	109067	3620114	13371579
	0	0	0	0	0
Standard B Parcel Post	129	1010	39932	0	41071
Standard B Bound Printed Matter	349	23455	32709	0	56513
Standard B Special Standard	259	4473	13387	323	18442
Standard B Library	0	1003	1853	0	2856
Total Standard B	738	29940	87882	323	118883
Penalty - USPS	40982	1391	130	5149	47652
Penalty - Free	1624	1101	3384	517	6626

Q400	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	2520855	615727	64614	3326950	6528146
First Class Presorted	2346402	117547	3120	6148610	8615679
First Class Single Piece Post Card	289074	0	0	207527	496601
First Class Presorted Cards	175377	0	0	241431	416808
Total First Class	5331707	733274	67734	9924518	16057233
Priority Mail	8274	65446	104311	2015	180046
Express Mail	506	6921	863	425	8715
Mailgram	1274	0	0	2238	3512
Periodicals	144651	1640978	9925	22816	1818370
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Standard A Regular ECR	2161274	3712619	16140	383362	6273395
Standard A Regular Presorted	2036791	2117640	126753	3371327	7652511
Total Standard A Regular	4198064	5830257	142892	3754691	13925904
	0	0	0	0	0
Standard A Nonprofit ECR	115364	164555	1753	30098	311770
Standard A Nonprofit Presorted	641363	328507	6067	875857	1851794
Total Standard A Nonprofit	756727	493061	7819	905956	2163563
Total Standard A	4954791	6323319	150712	4660646	16089468
	0	0	0	0	0
Standard B Parcel Post	501	1036	45413	188	47138
Standard B Bound Printed Matter	889	43820	47128	251	92088
Standard B Special Standard	568	3813	16432	125	20938
Standard B Library	125	626	2761	63	3575
Total Standard B	2082	49295	111733	626	163736
Penalty - USPS	21507	564	313	4411	26795
Penalty - Free	1830	1845	3724	1441	8840

Q101	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	1800325	496474	53927	2680550	5031276
First Class Presorted	1716979	116148	2665	5041881	6877673
First Class Single Piece Post Card	250867	0	0	191523	442390
First Class Presorted Cards	141540	0	0	220727	362267
Total First Class	3909711	612622	56592	8134680	12713605
Priority Mail	5601	49616	85034	2108	142359
Express Mail	805	6990	919	62	8776
Mailgram	821	0	0	1178	1999
Periodicals	103563	1348935	8853	18265	1479616
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Standard A Regular ECR	1817534	3792278	9717	342880	5962409
Standard A Regular Presorted	1751070	2245257	98659	3217066	7312052
Total Standard A Regular	3568604	6037534	108377	3559947	13274462
	0	0	0	0	0
Standard A Nonprofit ECR	220112	313445	1116	46509	581182
Standard A Nonprofit Presorted	616863	300685	9908	1107990	2035446
Total Standard A Nonprofit	836976	614130	11024	1154499	2616629
Total Standard A	4405580	6651665	119401	4714445	15891091
	0	0	0	0	0
Standard B Parcel Post	248	558	43261	62	44129
Standard B Bound Printed Matter	568	35722	38228	62	74580
Standard B Special Standard	253	3341	13447	0	17041
Standard B Library	0	774	1760	62	2596
Total Standard B	1069	40395	96697	186	138347
Penalty - USPS	11238	2131	397	4244	18010
Penalty - Free	1884	1146	2743	496	6269

Q201	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	2162356	502919	63934	3554113	6283322
First Class Presorted	1773031	119606	4716	5354807	7252160
First Class Single Piece Post Card	211310	0	0	173539	384849
First Class Presorted Cards	143556	0	0	213336	356892
Total First Class	4290254	622524	68650	9295796	14277224
Priority Mail	4054	40972	99614	2678	147318
Express Mail	672	4198	855	183	5908
Mailgram	678	0	0	1479	2157
Periodicals	107016	1298503	10542	18047	1434108
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Standard A Regular ECR	1350912	2909071	10102	268151	4538236
Standard A Regular Presorted	1460846	1666366	90156	2740068	5957436
Total Standard A Regular	2811757	4575438	100260	3008219	10495674
	0	0	0	0	0
Standard A Nonprofit ECR	98689	142835	183	31835	273542
Standard A Nonprofit Presorted	474317	247769	5036	804001	1531123
Total Standard A Nonprofit	573005	390605	5219	835836	1804665
Total Standard A	3384763	4966044	105479	3844056	12300342
	0	0	0	0	0
Standard B Parcel Post	312	801	49386	0	50499
Standard B Bound Printed Matter	373	22992	37003	61	60429
Standard B Special Standard	122	3029	13287	61	16499
Standard B Library	61	549	2786	61	3457
Total Standard B	868	27372	102463	183	130886
Penalty - USPS	6340	894	122	3527	10883
Penalty - Free	1656	1616	3670	427	7369

Q301	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	1810398	543925	62229	2847734	5264286
First Class Presorted	1679046	132304	2532	5220576	7034458
First Class Single Piece Post Card	221012	0	0	191927	412939
First Class Presorted Cards	131865	0	0	208602	340467
Total First Class	3842323	676230	64761	8468838	13052152
Priority Mail	5555	53450	77770	2416	139191
Express Mail	322	5229	793	386	6730
Mailgram	873	0	0	2263	3136
Periodicals	100643	1441012	9901	17583	1569139
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Standard A Regular ECR	1424617	3015690	10534	366619	4817460
Standard A Regular Presorted	1585138	1915700	94157	3269619	6864614
Total Standard A Regular	3009754	4931390	104691	3636238	11682073
	0	0	0	0	0
Standard A Nonprofit ECR	114875	161240	193	30062	306370
Standard A Nonprofit Presorted	538670	251915	5192	896792	1692569
Total Standard A Nonprofit	653545	413156	5385	926854	1998940
Total Standard A	3663300	5344546	110075	4563092	13681013
	0	0	0	0	0
Standard B Parcel Post	132	571	39949	0	40652
Standard B Bound Printed Matter	775	25291	32884	0	58950
Standard B Special Standard	68	2840	15602	0	18510
Standard B Library	64	664	1712	64	2504
Total Standard B	1040	29368	90146	64	120618
Penalty - USPS	24845	1856	451	7067	34219
Penalty - Free	1625	967	3970	129	6691

Q401	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	2031496	592063	80987	3535249	6239795
First Class Presorted	1976852	136940	3538	6939011	9056341
First Class Single Piece Post Card	274670	0	0	238870	513540
First Class Presorted Cards	154860	0	0	305549	460409
Total First Class	4437876	729003	84525	11018680	16270084
Priority Mail	6732	55638	92322	2052	156744
Express Mail	1434	8114	1232	457	11237
Mailgram	1148	0	0	2057	3205
Periodicals	107436	1650062	9520	22075	1789093
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Standard A Regular ECR	1763314	3741013	12153	372728	5889208
Standard A Regular Presorted	1744498	1969851	129856	4121477	7965682
Total Standard A Regular	3507810	5710863	142010	4494205	13854888
	0	0	0	0	0
Standard A Nonprofit ECR	132084	212319	842	34702	379947
Standard A Nonprofit Presorted	511913	314643	7880	979187	1813623
Total Standard A Nonprofit	643998	526961	8722	1013889	2193570
Total Standard A	4151809	6237823	150731	5508096	16048459
	0	0	0	0	0
Standard B Parcel Post	374	2020	47334	0	49728
Standard B Bound Printed Matter	436	38614	43115	0	82165
Standard B Special Standard	187	3637	16518	62	20404
Standard B Library	0	1065	618	0	1683
Total Standard B	998	45336	107586	62	153982
Penalty - USPS	12781	1117	275	8068	22241
Penalty - Free	1559	2264	3900	693	8416

Q102	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	1475904	445243	55987	2656698	4633832
First Class Presorted	1614780	112217	2657	5508227	7237881
First Class Single Piece Post Card	226958	0	0	204229	431187
First Class Presorted Cards	154741	0	0	242367	397108
Total First Class	3472385	557460	58645	8611519	12700009
Priority Mail	4746	38887	67707	1717	113057
Express Mail	570	5810	1012	0	7392
Mailgram	519	0	0	1229	1748
Periodicals	87864	1305792	9173	16657	1419486
	0	0	0	0	0
Standard A Regular ECR Saturation	965711	1252010	432	113322	2331475
Standard A Nonprofit ECR Saturation	30858	46331	0	2843	80032
Standard A Regular ECR W/O Saturation	456953	2541472	15725	223839	3237989
Standard A Regular Presorted	1464833	1958762	92908	3400512	6917015
Total Standard A Regular	2887498	5752244	109064	3737672	12486478
	0	0	0	0	0
Standard A Nonprofit ECR W/O Saturation	42853	113856	525	28401	185635
Standard A Nonprofit Presorted	489463	282026	10483	1048940	1830912
Total Standard A Nonprofit	563173	442213	11008	1080185	2096579
Total Standard A	3450672	6194458	120071	4817858	14583059
	0	0	0	0	0
Standard B Parcel Post	62	711	45645	62	46480
Standard B Bound Printed Matter	534	23869	32273	123	56799
Standard B Special Standard	95	3284	15525	62	18966
Standard B Library	0	834	1233	62	2129
Total Standard B	689	28698	94675	308	124370
Penalty - USPS	39214	737	123	3710	43784
Penalty - Free	1062	1460	3048	308	5878

Q202	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	1771843	452917	65329	3579569	5869658
First Class Presorted	1575465	110117	2545	5673000	7361127
First Class Single Piece Post Card	193734	0	0	182850	376584
First Class Presorted Cards	134101	0	0	242962	377063
Total First Class	3675144	563035	67874	9678381	13984434
Priority Mail	3908	40157	90792	2047	136904
Express Mail	662	6049	1230	301	8242
Mailgram	575	0	0	2168	2743
Periodicals	75792	1245279	7654	15120	1343845
	0	0	0	0	0
Standard A Regular ECR Saturation	900171	1125933	2769	90707	2119580
Standard A Nonprofit ECR Saturation	38088	64118	0	7105	109311
Standard A Regular ECR W/O Saturation	436590	1828367	19733	180259	2464949
Standard A Regular Presorted	1253103	1525498	88651	3007840	5875092
Total Standard A Regular	2589863	4479797	111155	3278806	10459621
	0	0	0	0	0
Standard A Nonprofit ECR W/O Saturation	37908	90322	60	17255	145545
Standard A Nonprofit Presorted	428057	250364	7237	853255	1538913
Total Standard A Nonprofit	504054	404804	7297	877614	1793769
Total Standard A	3093916	4884603	118452	4156421	12253392
	0	0	0	0	0
Standard B Parcel Post	120	422	50432	60	51034
Standard B Bound Printed Matter	662	20470	36515	60	57707
Standard B Special Standard	120	2556	15994	0	18670
Standard B Library	0	662	1231	0	1893
Total Standard B	903	24111	104172	120	129306
Penalty - USPS	13404	285	353	4446	18488
Penalty - Free	1766	1062	1605	120	4553

Q302	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	1488101	497502	56155	2884551	4926309
First Class Presorted	1440720	120752	3545	5546393	7111410
First Class Single Piece Post Card	203988	0	0	208534	412522
First Class Presorted Cards	125883	0	0	227559	353442
Total First Class	3258690	618254	59700	8867038	12803682
Priority Mail	4251	45936	70496	1849	122532
Express Mail	454	4821	909	195	6379
Mailgram	714	0	0	2010	2724
Periodicals	79039	1361078	6417	15885	1462419
	0	0	0	0	0
Standard A Regular ECR Saturation	969275	1156789	325	121457	2247846
Standard A Nonprofit ECR Saturation	42821	48218	0	1297	92336
Standard A Regular ECR W/O Saturation	509233	1852420	9886	203567	2575106
Standard A Regular Presorted	1298479	1673635	96893	3329326	6398333
Total Standard A Regular	2776987	4682844	107103	3654351	11221285
	0	0	0	0	0
Standard A Nonprofit ECR W/O Saturation	56080	106184	195	22942	185401
Standard A Nonprofit Presorted	441441	240691	7300	911796	1601228
Total Standard A Nonprofit	540342	395094	7494	936035	1878965
Total Standard A	3317328	5077938	114598	4590385	13100249
	0	0	0	0	0
Standard B Parcel Post	260	518	40153	0	40931
Standard B Bound Printed Matter	324	18150	27542	0	46016
Standard B Special Standard	130	2939	17699	0	20768
Standard B Library	0	262	1374	0	1636
Total Standard B	713	21868	86769	0	109350
Penalty - USPS	24440	480	0	7431	32351
Penalty - Free	1947	912	3359	845	7063

Q402	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	1734396	545028	72015	3414508	5765947
First Class Presorted	1774851	143837	4203	7070521	8993412
First Class Single Piece Post Card	237199	0	0	252998	490197
First Class Presorted Cards	163484	0	0	321360	484844
Total First Class	3909930	688866	76217	11059388	15734401
Priority Mail	4548	47978	83487	1562	137575
Express Mail	567	6300	835	124	7826
Mailgram	748	0	0	1996	2744
Periodicals	97280	1607200	7431	14906	1726817
	0	0	0	0	0
Standard A Regular ECR Saturation	1267004	1470180	991	174542	2912717
Standard A Nonprofit ECR Saturation	73050	74687	0	12258	159995
Standard A Regular ECR W/O Saturation	512743	2280129	11441	267121	3071434
Standard A Regular Presorted	1690423	1951010	130373	4382453	8154259
Total Standard A Regular	3470169	5701319	142805	4824117	14138410
	0	0	0	0	0
Standard A Nonprofit ECR W/O Saturation	46004	140609	253	28749	215615
Standard A Nonprofit Presorted	484537	302974	7598	1037320	1832429
Total Standard A Nonprofit	603592	518270	7851	1078326	2208039
Total Standard A	4073761	6219589	150655	5902443	16346448
	0	0	0	0	0
Standard B Parcel Post	186	522	52277	62	53047
Standard B Bound Printed Matter	654	31310	41649	0	73613
Standard B Special Standard	62	3289	18144	62	21557
Standard B Library	124	310	3405	0	3839
Total Standard B	1025	35430	115475	124	152054
Penalty - USPS	11349	850	248	5456	17903
Penalty - Free	1373	1852	8826	315	12366

Q103	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	1296944	440804	56162	2677600	4471510
First Class Presorted	1308364	120556	3565	5648994	7081479
First Class Single Piece Post Card	198802	0	0	227510	426312
First Class Presorted Cards	113743	0	0	249561	363304
Total First Class	2917852	561359	59728	8803665	12342604
Priority Mail	3963	32518	61787	918	99186
Express Mail	489	6320	943	0	7752
Mailgram	550	0	0	1490	2040
Periodicals	62546	1279878	6707	13285	1362416
	0	0	0	0	0
Standard ECR Saturation	915479	1172713	5343	259739	2353274
	0	0	0	0	0
Standard ECR W/O Saturation	487183	2744181	7766	312424	3551554
Standard Presort	1873746	2256385	103466	5141364	9374961
Total Standard Mail	3276409	6173280	116574	5713527	15279790
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Total Standard Mail	3276409	6173280	116574	5713527	15279790
	0	0	0	0	0
Package Services Parcel Post	191	244	47433	0	47868
Package Services Bound Printed Matter	551	24428	32744	68	57791
Package Services Media and Library	61	3930	17146	61	21198
	0	0	0	0	0
Total Package Services	803	28604	97324	129	126860
USPS	5872	479	184	6290	12825
Free	1483	1239	2953	313	5988

Q203	Tot Oth Ltrs	Tot Flats	Tot Parcl	Tot DPS	Tot Rate
	0	0	0	0	0
First Class Single Piece	1450712	384762	55924	3345877	5237275
First Class Presorted	1360903	119551	3121	5434465	6918040
First Class Single Piece Post Card	174195	0	0	187166	361361
First Class Presorted Cards	114860	0	0	234657	349517
Total First Class	3100668	504313	59046	9202165	12866192
Priority Mail	3086	29808	70992	1058	104944
Express Mail	386	2890	325	180	3781
Mailgram	540	0	0	1405	1945
Periodicals	49471	1192997	7166	8493	1258127
	0	0	0	0	0
Standard ECR Saturation	982528	1167857	69	186501	2336955
	0	0	0	0	0
Standard ECR W/O Saturation	308272	1924154	14380	198573	2445379
Standard Presort	1545800	1697980	108700	4242350	7594830
Total Standard Mail	2836599	4789990	123150	4627423	12377162
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
	0	0	0	0	0
Total Standard Mail	2836599	4789990	123150	4627423	12377162
	0	0	0	0	0
Package Services Parcel Post	120	797	53050	0	53967
Package Services Bound Printed Matter	180	26821	42300	0	69301
Package Services Media and Library	0	3464	20616	0	24080
	0	0	0	0	0
Total Package Services	300	31080	115967	0	147347
USPS	18856	677	504	5808	25845
Free	899	1834	2765	240	5738

Q303	Tot Oth Ltrs	Tot Flats	Tot DPS	Tot Sm Prcl	Tot Lg Prcl	Tot Rate
	0	0	0			0
First Class Single Piece	1259061	432565	2911329	43165	20270	4666390
First Class Presorted	1263630	105673	5663567	1668	6123	7040661
First Class Single Piece Post Card	170170	0	215164	0	0	385334
First Class Presorted Cards	92396	0	242741	0	0	335137
Total First Class	2785256	538238	9032801	44832	26394	12427521
Priority Mail	1985	34367	342	18537	42575	97806
Express Mail	0	2528	0	64	503	3095
Mailgram	1152	0	1046	0	0	2198
Periodicals	65923	1281916	14196	2240	2386	1366661
	0	0	0	0	0	0
Standard ECR Saturation	787586	1123668	235044	701	712	2147711
	0	0	0	0	0	0
Standard ECR W/O Saturation	355212	2060360	244460	11160	3332	2674524
Standard Presort	1643404	1991536	4767385	89355	28022	8519702
Total Standard Mail	2786201	5175562	5246889	101216	32067	13341935
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
Total Standard Mail	2786201	5175562	5246889	101216	32067	13341935
	0	0	0	0	0	0
Package Services Parcel Post	0	382	0	8515	31589	40486
Package Services Bound Printed Matter	64	26416	0	7778	17988	52246
Package Services Media and Library	64	4556	0	9923	9436	23979
	0	0	0	0	0	0
Total Package Services	127	31356	0	26216	59014	116713
USPS	19333	1133	10246	183	318	31213
Free	1367	701	640	2874	328	5910

Q403	Tot Oth Ltrs	Tot Flats	Tot DPS	Tot Sm Prcl	Tot Lg Prcl	Tot Rate
	0	0	0			0
First Class Single Piece	1479138	483185	3393973	54428	19072	5429796
First Class Presorted	1460343	132606	7108858	3130	9813	8714750
First Class Single Piece Post Card	196046	0	255921	0	0	451967
First Class Presorted Cards	110593	0	338712	0	0	449305
Total First Class	3246121	615791	11097462	57559	28883	15045816
Priority Mail	1719	36713	390	22511	43311	104644
Express Mail	0	2039	0	366	633	3038
Mailgram	183	0	127	0	0	310
Periodicals	69973	1493375	12191	2453	5075	1583067
	0	0	0	0	0	0
Standard ECR Saturation	1198209	1537836	320591	183	1775	3058594
	0	0	0	0	0	0
Standard ECR W/O Saturation	398108	2281600	299196	17802	4409	3001115
Standard Presort	1831146	2183011	5939485	110540	40871	10105053
Total Standard Mail	3427462	6002447	6559271	128523	47056	16164759
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
Total Standard Mail	3427462	6002447	6559271	128523	47056	16164759
	0	0	0	0	0	0
Package Services Parcel Post	0	609	0	11735	38611	50955
Package Services Bound Printed Matter	0	33913	0	14231	24993	73137
Package Services Media and Library	183	3605	0	12390	10817	26995
	0	0	0	0	0	0
Total Package Services	183	38127	0	38356	74421	151087
USPS	15254	1046	11429	0	0	27729
Free	1771	2024	1185	2435	548	7963

Q104	Tot Oth Ltrs	Tot Flats	Tot DPS	Tot Sm Prcl	Tot Lg Prcl	Tot Rate
	0	0	0			0
First Class Single Piece	1469547	427252	3644277	45589	13118	5599783
First Class Presorted	1241935	118350	6106990	2872	61	7470208
First Class Single Piece Post Card	163373	0	248095	0	0	411468
First Class Presorted Cards	104882	0	309196	0	0	414078
Total First Class	2979736	545601	10308557	48460	13178	13895532
Priority Mail	2562	31867	789	20409	45818	101445
Express Mail	121	2886	0	570	571	4148
Mailgram	365	0	855	0	0	1220
Periodicals	50853	1248284	12732	3353	2331	1317553
	0	0	0	0	0	0
Standard ECR Saturation	960537	1415338	336858	1153	0	2713886
	0	0	0	0	0	0
Standard ECR W/O Saturation	388024	2625220	321661	20069	729	3355703
Standard Presort	1607064	2082788	5821982	99801	19108	9630743
Total Standard Mail	2955625	6123345	6480502	121025	19837	15700334
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
Total Standard Mail	2955625	6123345	6480502	121025	19837	15700334
	0	0	0	0	0	0
Package Services Parcel Post	0	492	0	13492	42963	56947
Package Services Bound Printed Matter	152	22026	0	12499	20691	55368
Package Services Media and Library	0	4663	0	9300	9827	23790
	0	0	0	0	0	0
Total Package Services	152	27181	0	35292	73479	136104
USPS	23620	6157	8470	182	61	38490
Free	862	1353	304	2409	303	5231

Q204	Tot Oth Ltrs	Tot Flats	Tot DPS	Tot Sm Prcl	Tot Lg Prcl	Tot Rate
	0	0	0			0
First Class Single Piece	1211199	435126	3039569	48497	16841	4751232
First Class Presorted	1143194	121093	6323148	3618	120	7591173
First Class Single Piece Post Card	155219	0	239067	0	0	394286
First Class Presorted Cards	99468	0	299320	0	0	398788
Total First Class	2609081	556219	9901104	52115	16962	13135481
Priority Mail	3957	34291	2136	17684	39637	97705
Express Mail	194	3863	0	836	302	5195
Mailgram	506	0	820	0	0	1326
Periodicals	54283	1281399	12096	2885	2404	1353067
	0	0	0	0	0	0
Standard ECR Saturation	865671	1243418	318504	550	0	2428143
	0	0	0	0	0	0
Standard ECR W/O Saturation	329276	2272115	287736	12515	429	2902071
Standard Presort	1506030	2012263	5916397	90247	19198	9544135
Total Standard Mail	2700977	5527797	6522637	103313	19627	14874351
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
Total Standard Mail	2700977	5527797	6522637	103313	19627	14874351
	0	0	0	0	0	0
Package Services Parcel Post	0	482	0	9664	28348	38494
Package Services Bound Printed Matter	864	30322	0	12706	22926	66818
Package Services Media and Library	204	3942	0	9318	10179	23643
	0	0	0	0	0	0
Total Package Services	1068	34747	0	31688	61451	128954
USPS	18303	1160	8454	0	482	28399
Free	1564	1214	791	3767	302	7638

Q304	Tot Oth Ltrs	Tot Flats	Tot DPS	Tot Sm Prcl	Tot Lg Prcl	Tot Rate
	0	0	0			0
First Class Single Piece	1208174	453252	2966096	42148	13723	4683393
First Class Presorted	1132562	110842	6205454	1619	0	7450477
First Class Single Piece Post Card	172946	0	269361	0	0	442307
First Class Presorted Cards	87636	0	287032	0	0	374668
Total First Class	2601319	564094	9727941	43768	13723	12950845
Priority Mail	2637	35909	1561	17474	41365	98946
Express Mail	140	4802	0	380	820	6142
Mailgram	189	0	1258	0	0	1447
Periodicals	49271	1311199	11197	3491	1120	1376278
	0	0	0	0	0	0
Standard ECR Saturation	897081	1330646	389523	652	0	2617902
	0	0	0	0	0	0
Standard ECR W/O Saturation	344922	2012128	347929	10150	63	2715192
Standard Presort	1478155	1955374	6124564	89230	22428	9669751
Total Standard Mail	2720157	5298146	6862016	100033	22491	15002843
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
Total Standard Mail	2720157	5298146	6862016	100033	22491	15002843
	0	0	0	0	0	0
Package Services Parcel Post	0	657	0	10367	34649	45673
Package Services Bound Printed Matter	126	22693	0	10396	20340	53555
Package Services Media and Library	126	3248	0	8143	9479	20996
	0	0	0	0	0	0
Total Package Services	252	26597	0	28906	64467	120222
USPS	46927	1449	8729	189	315	57609
Free	1198	1202	633	3151	629	6813

Q404	Tot Oth Ltrs	Tot Flats	Tot DPS	Tot Sm Prcl	Tot Lg Prcl	Tot Rate
	0	0	0			0
First Class Single Piece	1171282	385413	2854903	43481	14204	4469283
First Class Presorted	1118896	120179	6083441	2268	561	7325345
First Class Single Piece Post Card	145912	0	237601	0	0	383513
First Class Presorted Cards	90898	0	305155	0	0	396053
Total First Class	2526987	505591	9481099	45748	14765	12574190
Priority Mail	3270	37750	749	16802	35186	93757
Express Mail	127	3911	0	146	376	4560
Mailgram	0	0	186	0	0	186
Periodicals	44970	1220462	9631	4021	2080	1281164
	0	0	0	0	0	0
Standard ECR Saturation	973620	1326148	402398	62	0	2702228
	0	0	0	0	0	0
Standard ECR W/O Saturation	343111	2182097	291679	12733	810	2830430
Standard Presort	1453385	1961813	5944563	97729	20840	9478330
Total Standard Mail	2770115	5470057	6638640	110526	21651	15010989
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
	0	0	0	0	0	0
Total Standard Mail	2770115	5470057	6638640	110526	21651	15010989
	0	0	0	0	0	0
Package Services Parcel Post	0	208	0	8690	27270	36168
Package Services Bound Printed Matter	0	37385	0	13990	18385	69760
Package Services Media and Library	62	4983	0	10402	9309	24756
	0	0	0	0	0	0
Total Package Services	62	42576	0	33083	54964	130685
USPS	18189	2438	12509	146	125	33407
Free	1230	1193	563	1559	1949	6494

RESPONSE OF POSTAL SERVICE WITNESS THOMAS W. HARAHUSH TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE, REDIRECTED FROM WITNESS LILLIAN WATERBURY

OCA/USPS-T10-4. Please refer to USPS-LR-K-5, file "ExA_BY04.CRpt.xls," and the table accompanying OCA/USPS-T10-1, above.

* * * * *

b. For cost segments C/S 7, City Delivery Carriers – Street Activity, and C/S 10, Rural Carriers, please identify and explain all changes in the Carrier Cost System statistical sampling system between FY 2000 and FY 2004 that affected the estimation of costs for Registered Mail. Describe the effect of those changes on the cost estimates for the referenced cost segments.

RESPONSE:

b. There were no changes in the Carrier Cost System statistical sampling system between FY 2000 and FY 2004 that affected the estimation of costs for Registered Mail.

RESPONSE OF POSTAL SERVICE WITNESS THOMAS W. HARAHUSH TO INTERROGATORY OF VALPAK DIRECT MARKETING SYSTEMS, INC., REDIRECTED FROM WITNESS MICHAEL D. BRADLEY

VP/USPS-T14-8. At pages 58-59 of your testimony, you state that "the Carrier Cost System measures delivery-point sequenced mail separately and an estimate of the amount of ECR Saturation mail that is DPS can be directly obtained" (p. 58, l. 24 through p. 59, l. 2). Please explain how, given some measured or counted volume of delivery point sequenced ("DPS") letters, you can directly obtain the volume of ECR Saturation letters contained in that DPS volume.

RESPONSE:

Section 3.2.1.6 of USPS-LR-K-21, Handbook F-65, Data Collection User's Guide for Cost Systems, TL-2, explains what DPS mail is. Section 3.2.1.6 refers the data collector to sections 3.6 and 3.7 for instructions on how to key class and subclass of a sampled mailpiece. With respect to counting DPS mail as a separate shape, please refer to the first file in USPS-LR-J-34, SP Letter 1 for FY 2000, which was filed in Docket No. R2001-1.

Estimation of volume for all rate categories of mail is explained in USPS-LR-K-11, the statistical and computer documentation for the city carrier cost system. Specifically, DPS letters are referred to in Layouts 6 (the "Z" file) and 8 (the "Lotus" file).

1 CHAIRMAN OMAS: Is there any additional
2 written cross-examination for this witness?
3 (No response.)
4 CHAIRMAN OMAS: This now brings us to oral
5 cross-examination. Two participants initially
6 requested oral cross-examination, the Office of
7 Consumer Advocate and Val-Pak Direct Marketing
8 Systems, Inc. and Val-Pak Dealers Association, Inc.
9 Are there any other parties who wish to
10 cross-examine this witness?
11 (No response.)
12 CHAIRMAN OMAS: There being none, Ms.
13 Dreifuss, you may begin.
14 MS. DREIFUSS: Thank you, Mr. Chairman. I'm
15 Shelley Dreifuss for the OCA.
16 We do not have any prepared questions for
17 you today, Mr. Harahush, but we may want to follow up
18 on questions of Val-Pak. Thank you.
19 CHAIRMAN OMAS: Thank you, Ms. Dreifuss.
20 Mr. Olson?
21 MR. MORGAN: Mr. Chairman, Jeremiah Morgan
22 for Val-Pak Direct Marketing Systems and Val-Pak
23 Dealers Association.
24 CHAIRMAN OMAS: Bring the mike a little
25 closer.

1 MR. MORGAN: Is that better?
2 CHAIRMAN OMAS: That's better.
3 MR. MORGAN: Okay. Great.
4 CROSS-EXAMINATION
5 BY MR. MORGAN:
6 Q Good morning, Mr. Harahush.
7 A Good morning.
8 Q My questions this morning will relate only
9 to the city carrier costing system and not to any
10 other data systems.
11 Would you please turn in your response to
12 Val-Pak-T-14-8 to the question to Witness Bradley
13 which was redirected to you?
14 A Yes.
15 Q Okay. That question asked about measuring
16 the volume of DPS letters and also about estimating
17 the volume of ECR saturation letters that are DPS.
18 A Yes.
19 Q Your response refers to a series of library
20 references, one of them from Docket No. R2001-1 and
21 the rest in this case.
22 A Yes.
23 Q One of the library references to which you
24 referred is K-21 --
25 A Yes.

1 Q -- which consists of Handbook S-65.
2 A Yes.
3 Q We found on page 3-47 a statement saying
4 that the number of separate standard ECR saturation
5 mailings delivered to the route on the test day must
6 be recorded.
7 A That's correct.
8 Q When you refer to saturation mailings do you
9 mean all ECR saturation mailings, whether they are
10 letters or flats or parcels?
11 A Let me go to 3-47.
12 Q Okay.
13 A Okay. What we're talking about in 3-47 is a
14 count of saturation mailings by rate category, either
15 periodicals, Standard A or Standard B, this being
16 written before all the changes.
17 Yes, the number of saturation mailings that
18 occurred during the test is counted.
19 Q Regardless of the shape?
20 A That's correct.
21 Q Okay. Does it include these saturation
22 mailings irrespective of whether they are DPS, cased
23 or taken to the street separately as a third bundle?
24 A If it's a saturation mailing, we count it.
25 Q If it's DPS, how can you tell that the

1 carrier has a saturation mailing?

2 A The data collector goes through -- has to go

3 through -- every sampled stop and look and count the

4 mail for every sampled stop. The data collector would

5 notice that there's ECR WSS at every stop.

6 Q So it doesn't lose its identity just because

7 it's DPS? It's still counted? It doesn't lose its

8 identity?

9 A No, no, no. If it's a saturation mailing

10 it's counted in this section here.

11 Q Okay. Does it make any distinction between

12 saturation mailings that are addressed and those that

13 are unaddressed, perhaps with DALs?

14 A There is no distinction made. It's totally

15 done by those presently three rate categories.

16 Q Can you tell me the difference between the

17 number of saturation mailings delivered to the route

18 on the test date and the number of saturation mailings

19 actually delivered on the route on the test day? The

20 instruction on page 3-47 says delivered to.

21 A Let's see. I'm looking on 3-47. I'm having

22 a little bit of a difficulty finding where you're -- I

23 see. "However, you must also record the number of

24 saturations delivered to the route on the test day."

25 And what's your question?

1 Q Is there a difference between delivered to
2 the route and actually delivered on the route?
3 A Essentially, no. Now, I want to qualify
4 that by saying that the city carrier cost counts only
5 mail that is delivered on that particular day, okay,
6 so if we want to talk about what do we count at each
7 sampled stop it's what is actually being carried out
8 the door by the carrier that day.
9 Q I see. Suppose a station manager looks at
10 the volume of mail for the route on a test day and
11 decides it's too large or there are too many third
12 bundles for a given route. Suppose he decides to
13 delay one of the saturation mailings for the day.
14 A The data collector is instructed to always
15 ask the carrier what's going out, you know, what he or
16 she is taking out that day. That's what determines
17 what the data collector will count at the sampled
18 stops.
19 Q So if it's not delivered, if it's being held
20 back for that day, it's not counted?
21 A That's correct.
22 Q Okay. The decision to delay a saturation
23 mailing one day, can you tell me when that decision is
24 made?
25 A I believe that's outside of my testimony.

1 That's an operations type of question.

2 Q What is available from the data which you

3 have collected on saturation? What data is available

4 about saturation mailings from the data you have

5 collected?

6 A Okay. The data that I supplied as part of

7 my city carrier documentation explains the types of

8 data that's out there. Let me just go to that, and

9 it'll make things a lot easier.

10 Q Okay.

11 A One of the things that we submitted was

12 ALDRAN LOTUS City Saturation FY 2004, which is a data

13 file. I'm reading from the Readme Word document

14 that's on my CD.

15 If you look in the city carrier

16 documentation you'll see that that particular file,

17 which is Layout 8, that shows that that particular

18 file contains volume estimates for fiscal year 2004

19 for various rate categories by shape. Saturation --

20 ECR WSS or saturation -- mail is one of those rate

21 categories, so you would have estimated volumes for

22 ECR WSS for all shape categories on that file.

23 Additionally, if you look to my answer to

24 OCA-T-5-1 and 2 that contains quarterly data. That

25 was data that we supplied to the OCA. That contains

1 quarterly data, which has those same rate categories
2 by shape.
3 Q Does the fact that the number of saturation
4 mailings as recorded mean that you could develop a
5 statistical picture of the various kinds of routes?
6 For the various kinds of routes I should say.
7 A When you say a statistical picture, I'm not
8 quite sure I know what you're getting at.
9 Q By statistical picture I mean for the
10 various routes could you see how many have zero
11 saturation mailings on a typical day or one saturation
12 mailing on a typical day and so forth?
13 A That data isn't in any of the files that we
14 produce. The data are there in the raw data files,
15 but the number of saturation mailings data, we don't
16 provide any estimates from that, from that raw data.
17 Q But from that raw data you'd be able to
18 figure that out?
19 A One could. One could go that approach.
20 Q Okay. For example, could you say among
21 park and loop routes a certain proportion of the
22 routes have more than one saturation mailing on a
23 typical day?
24 A The data can be sliced and diced in numerous
25 ways. That is one way that the data could be sliced

1 and diced.

2 Q Okay. When we look at data on saturation

3 mailing can we tell how many were of letters and flats

4 and parcels?

5 A Not on the saturation mailings. Not on the

6 number of saturation mailings, no.

7 Q So can you get this information by day of

8 the week so that you could say that 90 percent of the

9 routes have a saturation mailing on Friday, but only

10 20 have a saturation mailing on Monday, just as an

11 example?

12 A One could do that. However, you're slicing

13 the data very thin. You're slicing it by route type.

14 You're slicing it by day of the week. Is it possible?

15 Yes. Would I want to do it? No.

16 Q And you wouldn't want to do it because?

17 What do you mean by too thin?

18 A You know, the city carrier system is

19 essentially a system which produces volumes which

20 allows us to compute keys, our keys for the cost

21 people. That's what everything is geared to.

22 As you pointed out, we do collect the number

23 of saturation mailings on each test. We're not out to

24 get volumes by day of week or anything by day of week.

25 I've supplied the CDs for our estimates that we have.

1 When you start slicing things down thinner and thinner
2 there are potential pitfalls with doing that.
3 Q Thank you. Can you tell from the data the
4 number of saturation mailings that are taken to the
5 street as third bundles?
6 A No, I can't.
7 Q On page 3-9 of the same handbook we found a
8 sentence which says, "If the mailing consists of a
9 detached label with a product sample, count the two
10 pieces as one saturation mailing."
11 A That's correct.
12 Q We can't find it, but does the same sentence
13 apply if the label goes with a flat?
14 A Yes.
15 Q So you count both pieces as one saturation
16 mailing, but the individual pieces separately?
17 A Yes. Those particular answers were covered
18 in depth in the last rate case.
19 Q Okay. Can you explain what it means to
20 record the pieces separately?
21 A That is, say we have a DAL and a flat.
22 There will be one listing. The data collector will
23 have a separate listing for the DAL, that is the
24 letter piece if I can use that, and there will be one
25 listing for the saturation flat.

1 Q So the numbers for the flats go into flats,
2 and the numbers for the DALs --
3 A That's correct. That's correct.
4 Q Okay.
5 A Every piece of mail is counted.
6 Q You said the DALs are counted as letters?
7 A That's correct.
8 Q Okay.
9 A Well, I'll qualify that. To the minor,
10 extremely minor, possibility that if a carrier were to
11 case a DAL, if he had a letter and flat case and if he
12 were to put that DAL in a flat slot, then we would
13 have to count it as a flat because that's where he put
14 it.
15 That's I'm sure an extremely rare item, so
16 basically the answer to your question is yes, the DAL
17 would be counted as a letter.
18 Q Typically?
19 A Yes.
20 Q The original question, T-14-8, asked about
21 the volume of mail that is DPS'd.
22 A Yes.
23 Q Which we understand would have to be letters
24 by definition.
25 A Yes.

1 Q When a saturation mailing of letters is
2 DPS'd and arrives at a carrier station mixed in with
3 other letters, does the CCS system collect any data at
4 all on these DPS saturation letters that are different
5 from the data collected on all the other letters?
6 A Okay. Let me go back. You said something
7 about the DPS letters are mixed in with the other
8 letters. I wanted to make sure I understood what you
9 meant by that.
10 Q Well, the DPS saturation letters are mixed
11 in with all the other DPS letters.
12 A The DPS saturation letters would be in DPS
13 trays. All the other letters would be cased.
14 Q Okay.
15 A What we have is, you know, we count all our
16 mail by what we say shape -- DPS letters, other
17 letters, which is all letters not DPS letters, and
18 then flats, small parcels and large parcels.
19 If a letter is in the DPS tray it's a DPS
20 letter. If it's not in the DPS tray, that is if it's
21 being cased, it's an other letter.
22 Q My question is if there's saturation letters
23 that are DPS'd in those saturation letters, and we're
24 just talking about the saturation.
25 A Okay.

1 Q We're talking about the DPS letters at this
2 point.
3 A Okay.
4 Q If there are saturation letters in there, is
5 there any other data collected from those that is
6 different than the data collected on all the other
7 letters?
8 A No. No. Our data collectors collect class,
9 subclass, rate, shape. They're done.
10 Q I understand. When the CCS system collects
11 data on letters that are DPS'd can we tell what
12 portion of those letters are DALs?
13 A No, we can't.
14 Q Suppose the DALs for a saturation mailing
15 are DPS'd. When the data collectors are told to count
16 the pieces as one saturation mailing but record the
17 pieces separately, does this situation cause any
18 problem?
19 A No. If we have a DAL and a host piece, as
20 you call it, data collectors know that, you know, a
21 DAL is a requirement for a host piece, so they know
22 that there's only going to be -- you know, that's only
23 one saturation.
24 As you've seen in our instructions since I
25 know you went through them very well, we explain that

1 very clearly. You count each piece separately, but
2 you count the saturation mailing only once.
3 Q I see. Finally, could the data available
4 tell us how many times a DAL is DPS'd and then the
5 carrier later decides to case the flat to every
6 delivery point?
7 A Okay. There were two questions there. The
8 first part was the number of times the DPS was a DAL?
9 No, we don't know.
10 Q It's really one question.
11 A Okay.
12 Q If the DAL is DPS'd --
13 A Okay.
14 Q -- can you tell how many times that the flat
15 or the host piece I think you called it is cased for
16 the delivery point?
17 A No. We have nothing on casing.
18 MR. MORGAN: Okay. Thank you. No further
19 questions. Thank you, Mr. Harahush.
20 CHAIRMAN OMAS: Thank you.
21 Are there any additional questions of this
22 witness?
23 (No response.)
24 CHAIRMAN OMAS: Are there any questions from
25 the bench? Okay. Commissioner Goldway?

1 COMMISSIONER GOLDWAY: When the letter
2 carriers are presented with additional bundles and
3 they can only manage three, but there may be a fourth
4 with a saturation mailing, what's the system to decide
5 whether to postpone it for a day, whether to make a
6 second trip?
7 Is that something that's automatic? Is
8 there discretion from the supervisor involved in
9 determining how to handle that bundle? What are the
10 costs involved? Are they measured at all for
11 decisions about handling those supplementary bundles?
12 THE WITNESS: That's way out of my league.
13 The system is we count what goes out. We count the
14 mail that's delivered that day.
15 With respect to what decisions are made to
16 what goes out that day, I don't know.
17 COMMISSIONER GOLDWAY: It seems to me in
18 listening to the discussion that there are some costs
19 involved, and I'm wondering where they're captured.
20 Do you have any idea what other witness might be able
21 to answer this question?
22 THE WITNESS: No, I don't.
23 CHAIRMAN OMAS: Mr. Hollies, do you have any
24 idea?
25 COMMISSIONER GOLDWAY: Mr. Hollies, do you

1 have any idea?

2 MR. HOLLIES: Yes. If you have an

3 operational question of that type, Witness Lewis would

4 be the layperson to ask.

5 COMMISSIONER GOLDWAY: Okay. Thank you.

6 COMMISSIONER GOLDWAY: Thank you.

7 Are there any additional questions from the

8 bench?

9 (No response.)

10 CHAIRMAN OMAS: Mr. Hollies, would you like

11 some time with your witness?

12 MR. HOLLIES: I would like a couple of

13 minutes, please.

14 CHAIRMAN OMAS: Okay. Why don't we take

15 five minutes. Thank you.

16 (Whereupon, a short recess was taken.)

17 CHAIRMAN OMAS: Mr. Hollies?

18 MR. HOLLIES: The Postal Service has no

19 redirect.

20 CHAIRMAN OMAS: Thank you.

21 Mr. Harahush, that completes your testimony

22 here today. We thank you for your contribution to the

23 record, and you are now excused.

24 (Witness excused.)

25 CHAIRMAN OMAS: Who is next? Mr. Koetting,

1 would you please identify your next witness so I can
2 swear him in?
3 MR. KOETTING: Thank you, Mr. Chairman. The
4 Postal Service calls as its next witness Dennis
5 Stevens.
6 CHAIRMAN OMAS: Mr. Stevens, would you raise
7 your right hand?
8 Whereupon,
9 DENNIS P. STEVENS
10 having been duly sworn, was called as a
11 witness and was examined and testified as follows:
12 CHAIRMAN OMAS: Please be seated.
13 Mr. Koetting?
14 (The document referred to was
15 marked for identification as
16 Exhibit No. USPS-T-15.)
17 DIRECT EXAMINATION
18 BY MR. KOETTING:
19 Q Mr. Stevens, could you please state your
20 full name and title for the record?
21 A Dennis Paul Stevens, Central Economist,
22 United States Postal Service.
23 Q Mr. Stevens, I just handed you a document
24 entitled Testimony of Dennis P. Stevens on Behalf of
25 the United States Postal Service, which has been

1 designated as USPS-T-15. Are you familiar with that
2 document?
3 A Yes, I am.
4 Q Was it prepared by you or under your
5 supervision?
6 A Yes, it was.
7 Q If you were to testify orally today, would
8 this be your testimony?
9 A Yes, it is.
10 Q And there are Category 2 library references
11 associated with your testimony?
12 A Yes, there are.
13 Q Could you please identify those for the
14 record?
15 A USPS-LR-K-78, USPS-LR-K-79, USPS-LR-K-80,
16 USPS-LR-K-133.
17 Q And it's your intention to sponsor those
18 library references in evidence as well?
19 A That's correct.
20 MR. KOETTING: Mr. Chairman, with that the
21 Postal Service would request that the testimony of
22 Dennis P. Stevens on behalf of the United States
23 Postal, USPS-T-15, and the associated Category 2
24 library references be entered into evidence in this
25 proceeding.

1 CHAIRMAN OMAS: Is there any objection?
2 (No response.)
3 CHAIRMAN OMAS: Hearing none, I will direct
4 counsel to provide the reporter with two copies of the
5 corrected direct testimony of Dennis Stevens. That
6 testimony is received into evidence. However, as is
7 our practice it will not be transcribed.
8 (The document referred to,
9 previously identified as
10 Exhibit No. USPS-T-15, was
11 received in evidence.)
12 CHAIRMAN OMAS: Mr. Stevens, have you had an
13 opportunity to examine the packet of designated
14 written cross-examination?
15 THE WITNESS: Yes, I have.
16 CHAIRMAN OMAS: If the questions contained
17 in that packet were asked to you orally today, would
18 they be the same as those you provided in writing?
19 THE WITNESS: Yes, with one minor
20 correction. The response to Advo/USPS-T-15-3, in the
21 fourth line it reads, "If the carrier has previously
22 scanned a stop section," and that should read
23 "previously scanned a lot section."
24 CHAIRMAN OMAS: Are there any additional
25 corrections?

1 THE WITNESS: No.

2 CHAIRMAN OMAS: Counsel, would you please

3 provide two copies of the corrected designated written

4 cross-examination of Witness Stevens to the reporter?

5 That material will be received into evidence and is to

6 be transcribed into the record.

7 (The document referred to,

8 previously identified as

9 Exhibit No. USPS-T-15, was

10 received in evidence.)

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BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, DC 20268-0001

Request of the United States Postal Service for a Recommended Decision on Changes in Rates of Postage and Fees for Postal Services

Docket No. R2005-1

DESIGNATION OF WRITTEN CROSS-EXAMINATION
OF UNITED STATES POSTAL SERVICE
WITNESS DENNIS P. STEVENS
(USPS-T-15)

Party	Interrogatories
Advo, Inc.	ADVO/USPS-T15-1-10 OCA/USPS-T15-3-4, 8, 11, 17-20 PRC/USPS-POIR No.5- Q1, POIR No.6- Q4c - d, POIR No.8- Q2a - b, 10 redirected to T15 VP/USPS-T14-11, 14b redirected to T15
Newspaper Association of America	ADVO/USPS-T15-1, 5, 9 OCA/USPS-T15-3, 11, 18, 20 VP/USPS-T14-11, 14b redirected to T15
Office of the Consumer Advocate	ADVO/USPS-T15-1-10 OCA/USPS-T15-1d-e, 2a, 3-4, 6-20 OCA/USPS-T14-1a.ii-b.i redirected to T15 PRC/USPS-POIR No.5- Q1, POIR No.6- Q4c-d redirected to T15 VP/USPS-T14-11, 14b redirected to T15

Party	Interrogatories
Valpak Direct Marketing Systems, Inc. and Valpak Dealers' Association Inc.	VP/USPS-T14-11, 14b redirected to T15

Respectfully
submitted,

Steven W. Williams
Secretary

INTERROGATORY RESPONSES OF
UNITED STATES POSTAL SERVICE
WITNESS DENNIS P. STEVENS (T-15)
DESIGNATED AS WRITTEN CROSS-EXAMINATION

Interrogatory	Designating Parties
ADVO/USPS-T15-1	Advo, NAA, OCA
ADVO/USPS-T15-2	Advo, OCA
ADVO/USPS-T15-3	Advo, OCA
ADVO/USPS-T15-4	Advo, OCA
ADVO/USPS-T15-5	Advo, NAA, OCA
ADVO/USPS-T15-6	Advo, OCA
ADVO/USPS-T15-7	Advo, OCA
ADVO/USPS-T15-8	Advo, OCA
ADVO/USPS-T15-9	Advo, NAA, OCA
ADVO/USPS-T15-10	Advo, OCA
OCA/USPS-T15-1d	OCA
OCA/USPS-T15-1e	OCA
OCA/USPS-T15-2a	OCA
OCA/USPS-T15-3	Advo, NAA, OCA
OCA/USPS-T15-4	Advo, OCA
OCA/USPS-T15-6	OCA
OCA/USPS-T15-7	OCA
OCA/USPS-T15-8	Advo, OCA
OCA/USPS-T15-9	OCA
OCA/USPS-T15-10	OCA
OCA/USPS-T15-11	Advo, NAA, OCA
OCA/USPS-T15-12	OCA
OCA/USPS-T15-13	OCA
OCA/USPS-T15-14	OCA
OCA/USPS-T15-15	OCA
OCA/USPS-T15-16	OCA
OCA/USPS-T15-17	Advo, OCA
OCA/USPS-T15-18	Advo, NAA, OCA
OCA/USPS-T15-19	Advo, OCA
OCA/USPS-T15-20	Advo, NAA, OCA
OCA/USPS-T14-1a.ii redirected to T15	OCA
OCA/USPS-T14-1b.i redirected to T15	OCA

Interrogatory	Designating Parties
PRC/USPS-POIR No.5- Q1 redirected to T15	Advo, OCA
PRC/USPS-POIR No.6- Q4c redirected to T15	Advo, OCA
PRC/USPS-POIR No.6- Q4d redirected to T15	Advo, OCA
PRC/USPS-POIR No.8- Q10 redirected to T15	Advo
PRC/USPS-POIR No.8- Q2a redirected to T15	Advo
PRC/USPS-POIR No.8- Q2b redirected to T15	Advo
VP/USPS-T14-11 redirected to T15	Advo, NAA, OCA, Valpak
VP/USPS-T14-14b redirected to T15	Advo, NAA, OCA, Valpak

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
TO INTERROGATORY OF ADVO INC.

ADVO/USPS-T15-1. Please refer to LR-K-79. MDCD.SCAN6. Explain the distinctions, if any, in the following and how they were used to track individual sampled times to the specific cost pools in COSTPOOL2.FINAL and MDCD.CPSUM.FINAL.

(a) Between TRAVEL and TOFROM.

(b) Between off-clock and off-street.

(c) Between DELIVERY DDTRAVEL and DDTRAVEL DELIVERY.

(d) Between DELIVERY NETWORK and NETWORK DELIVERY

ADVO/USPS-T15-1 response:

a. Please see USPS-LR-K-133. The elapsed time between two scans is allocated to TRAVEL if the first scan is Clock to Street and the second scan is a start activity scan or start section scan, or conversely, the first scan is an end activity scan or end section scan and the next scan is Clock to Office. In these cases, the carrier has failed to scan either the Leave Office or Arrive Office scan, so the transition from PREP to TO/FROM or from TO/FROM to PREP is not clear. CPFinal.sas, which produces MDCD.CPSUM.FINAL, reallocates TRAVEL time to PREP and TO/FROM based on the proportion of time in each pool. COSTPOOL2.xls does not have this reallocation. Please note that this time is minimal.

b. Off-clock is time due to lunch and emergency. Off-street is time due to breaks and other administrative time. The main distinction is whether the carrier is off the clock (and therefore not getting paid) during this time, or

whether the carrier is still on the clock during the time but not engaged in delivery tasks.

c – d. Please see USPS-LR-K-133.

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
TO INTERROGATORY OF ADVO INC.

ADVO/USPS-T15-2. Referring again to MDCD.SCAN6, please explain why the following four scans are considered Prep and how one can determine that the carrier was clocked onto Street prior to the "administrative" interruption:

63 – 18 Clock off Lunch – Clock to Street
100 – 18 Clock off Break – Clock to Street
117 – 18 Clock off Emergency – Clock to Street
124 - 18 Clock off Other – Clock to Street.

ADVO/USPS-T15-2 response:

Please refer to USPS-LR-K-133. The time between these two scan pairs is considered PREP because the carrier has not yet scanned Clock to Street, indicating that the carrier is still in the office. Any office time is included in PREP.

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
TO INTERROGATORY OF ADVO INC.

ADVO/USPS-T15-3. Referring again to MDCD.SCAN6, please explain the following scan times, whether there were actually some scans of this nature, and, if they were used, how they were used to track individual sampled times to specific cost pools in COSTPOOL2.FINAL and MDCD.CPSUM.FINAL.

25 – 56 Leave Office – Arrive Office (NA)
49 – 18 Clock Off Street – Clock to Street (NONSTRT)
63 – 32 Clock off Lunch – Clock to Lunch (SPLIT)
100 – 70 Clock off Break – Clock to Break (SPLIT)
117 – 87 Clock off Emergency – Clock to Emergency (SPLIT)
124 – 94 Clock off Other – Clock to Other (SPLIT)

ADVO/USPS-T15-3 response:

Please refer to USPS-LR-K-133. The carrier is allowed to scan administrative activities (i.e. lunch, break, emergency, other) at any time. The time between any *End Admin – Start Admin* scan is assigned to delivery time if the carrier has previously scanned ~~Start~~ Ro-E section, indicating that the carrier is delivering in a route section. If the carrier is on the street but not in a route section then the time in between administrative scans is assigned to Network travel time. However, if the carrier is on the street but has not yet arrived at the first activity or route section, then the time is assigned to travel TOFROM route. If the carrier is in the office then the time is assigned to PREP.

The carrier was instructed to clock off street and then clock to street if *she/he is pivoting to another route. The time is assigned to Non-Street.*

When a carrier scans Leave Office and Arrive Office it is not possible to tell what the carrier did on the street. Therefore this time is assigned to the 'NA' error pool.

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TO INTERROGATORY OF ADVO INC.

The table below shows the numbers of each scan pair, out of a total of 1,276,063 scan pairs used in the analysis.

Scan Pair		Frequency
25-56	Leave Office - Arrive Office	271
49-18	Clock Off Street - Clock to Street	528
63-32	Clock Off Lunch - Clock to Lunch	70
100-70	Clock Off Break - Clock to Break	359
117-87	Clock Off Emergency - Clock to Emergency	11
124-94	Clock Off Other - Clock to Other	404

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
TO INTERROGATORY OF ADVO INC.

ADVO/USPS-T15-4. Referring again to MDCD.SCAN6, please use some examples to explain how the cost pool assignments were made for:

- Splits
- Delivery Section NA
- Delivery Network and Network Delivery
- DDTravel Delivery

ADVO/USPS-T15-4 response:

Please refer to USPS-LR-K-133.

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
TO INTERROGATORY OF ADVO INC.

ADVO/USPS-T15-5. On page 3 of your testimony, you state that 9.7% of the scanned time came from "invalid or error scans."

(a) How much time (in hours and minutes) and how many scans does this figure represent?

(b) What was the proportion of scan pairs that was deemed invalid or erroneous?

(c) Please identify the top ten types of invalid scans along with the number of times they occurred and the amount of time they represent.

(d) Has the USPS determined how to avoid so many invalid or error scans for future data collections? If so, please explain.

(e) Does the USPS have plans to conduct a new CCSTS in the future?

ADVO/USPS-T15-5 response:

a. 9.7% is calculated as the ratio of the total weighted invalid scan time over the sum of this invalid scan time and the total weighted valid scan time. The total weighted invalid scan time, expressed in hours and minutes, equals 922.640 hours and 25 minutes. The equivalent, unweighted invalid scan time equals 19.873 hours and 47 minutes.

b. The proportion of scan pairs deemed invalid equals 6.9% of the grand total count of recorded scan pairs.

c. Please see the following table that lists the top ten invalid scan pairs.

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TO INTERROGATORY OF ADVO INC.

1st Barcode	1st Barcode Name	2nd Barcode	2nd Barcode Name	Frequency	WEIGHTED ELAPSED TIME (Seconds)	CUMULATIVE WEIGHTED ELAPSED TIME (Seconds)	PERCENT OF TOTAL "INVALID-SEQUENCE" WEIGHTED ELAPSED TIME	CUMULATIVE PERCENT OF TOTAL "INVALID-SEQUENCE" WEIGHTED ELAPSED TIME
353	START PARCEL DELIVERY	353	START PARCEL DELIVERY	4,083	182,906,876	182,906,876	5.51%	5.51%
179	FINISH LOOP/FOOT SECTION	179	FINISH LOOP/FOOT SECTION	2,783	137,355,499	320,262,375	4.14%	9.64%
148	BEGIN LOOP/FOOT SECTION	148	BEGIN LOOP/FOOT SECTION	1,797	73,343,637	393,606,012	2.21%	11.85%
177	END PARCEL DELIVERY	186	FINISH MOUNTED - CURBLINE SECTION	1,002	52,244,933	445,850,945	1.57%	13.42%
49	CLOCK OFF STREET	56	ARRIVE OFFICE	2,275	49,506,707	495,357,652	1.49%	14.91%
353	START PARCEL DELIVERY	360	START ACCOUNTABLE DELIVERY	2,583	49,485,485	544,843,137	1.49%	16.40%
25	LEAVE OFFICE	56	ARRIVE OFFICE	271	48,206,322	593,049,459	1.45%	17.85%
25	LEAVE OFFICE	18	CLOCK TO STREET	2,261	45,138,006	638,187,465	1.36%	19.21%
148	BEGIN LOOP/FOOT SECTION	209	BEGIN CENTRAL/APARTMENT SECTION	895	44,973,389	683,160,854	1.35%	20.57%
148	BEGIN LOOP/FOOT SECTION	261	BEGIN MOUNTED - DISMOUNT SECTION	514	42,067,470	725,228,324	1.27%	21.83%

d. The USPS has concluded that the invalid scan rate is *de minimus* given the huge volume of data collected, the number of potential scans, and the factors that contribute to the incidence of invalid scans. Invalid scans are a composite of many different types of error, including but not limited to: the obvious operator error where the carrier chooses the wrong scan pair; error from scanner malfunctions or glitches (where data are lost); error emanating from carrier attempts to scan the correct barcode but misses and scans an inappropriate barcode unknowingly; and carrier error where the carrier attempts to scan the correct barcode but inadvertently, but knowingly, scans a wrong barcode. Although there are procedures where a carrier can

override a wrong barcode and enter manually the correct code, we did not allow this procedure for the study because of the problem of misassigning the additional time to the wrong time pool. The carrier was to immediately scan the correct barcode and continue with the survey. In all of these examples, the invalid sequence would be isolated and only affect that portion of time for the carrier with the rest of the carrier's scans for the day unaffected and valid for the study.

e The decision to conduct a new study and its long-term implications are predicated on the PRC's response to the 2002 study.

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TO INTERROGATORY OF ADVO INC.

ADVO/USPS-T15-6. Please refer to MCDCWEIGHTS.MASKZIPS.DATA in LR-K-78. In combination with page 2 of the text of LR-K-79, it appears that, for the 167 sampled zips, there are:

- 28 zip codes with less than eleven city letter routes
- 131 zip codes with more than ten but less than sixty-one (city) letter routes
- 8 zip codes with more than sixty (city) letter routes.

(a) Please confirm that these are the correct figures for the data used to develop MDCD.CPSUM.FINAL.XLS. If this is not correct, please provide the correct information.

(b) Were all routes and route-day data collected used to develop the MDCD.CPSUM.FINAL.XLS result (other than "invalid or error" scan times)? If not, please explain why.

(c) Please provide the crosswalk between the MASKZIP code identifiers found in LR-K-79 and the unique zip identifiers used by witness Bradley in LR-K-81.

ADVO/USPS-T15-6 response:

(a) Confirmed.

(b) All route-day data collected were used to compute the street-time percentages in rows 61 – 74 of MDCD.CPSUM.FINAL.XLS, with the exception of route-day data from records that reported no delivery mode for the route.

(c) Please see OCA/USPS-T15-4.

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TO INTERROGATORY OF ADVO INC.

ADVO/USPS-T15-7. If not already provided, please provide any other final CCSTS instruction manuals or guides or other hard-copy materials that were used by trainers, postmasters/supervisors, and/or carriers to determine how to collect the scan or volume data.

ADVO/USPS-T15-7 response:

All written instruction material have already been provided.

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TO INTERROGATORY OF ADVO INC.

ADVO/USPS-T15-8. For all final data files given to witness Bradley, please confirm the following or if not able to confirm, please explain:

(a) All time and volume data for all city letter routes (including city phantom routes) in each zip were included for each sampled day.

(b) Zip volume data for each day included only volume carried out to the street by city carriers that day and included volume in bulk/direct deliveries.

(c) Only the time and volume data for sampled city letter routes were included.

ADVO/USPS-T15-8 response:

a Not Confirmed. The goal of the study was to include all city letter routes in each ZIP code for each sampled day. In practice, the goal of including all the routes for all the sampled days was not reached. The reasons are many and not limited to: regular carriers on leave (annual or sick) replaced by carriers who had not been trained for the study; a route inspection; scanner malfunction; etc.

b Not confirmed. ZIP volume data for each day was limited to the volume delivered that day, but that data *did not include* any bulk mail delivery volume.

c. Confirmed.

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ADVO/USPS-T15-9. With respect to LR-K-79, please confirm the following. If you cannot confirm, please explain why not, and provide the correct information.

(a) The number of zip-route-day observations in COSTPOOL2.FINAL.XLS is the same as were used to develop MDCD.CPSUM.FINAL.DATA.XLS.

(b) The masked zip codes in MDCD.WEIGHTS.MASKZIPS.DATA match those in COSTPOOL2.FINAL.XLS, and the weights in the former can be applied to the activity times (of the matched zip codes) in the latter file to provide population estimates of such times by delivery mode.

(c) The population estimates developed from (b) above will match those in MDCD.CPSUM.FINAL.XLS.

Response:

a. Not confirmed. MDCD.CPSUM.FINAL.DATA.XLS is based upon a slightly different algorithm than COSTPOOL2.FINAL.XLS for correcting missing or obviously erroneous route numbers (e.g. a route number that does not exist in the corresponding ZIP Code). This led to a small difference in the number of route-days. Consequently, 36,290 route-day records were aggregated over all the route days to produce MDCD.CPSUM.FINAL.DATA.XLS, while 36,655 route-days are in COSTPOOL2.FINAL.XLS.

b. Confirmed.

c. Not confirmed. Because of the change in the number of route-days, the time pools based upon COSTPOOL2.FINAL.XLS are slightly different than those based upon MDCD.CPSUM.FINAL.DATA.XLS. Below I present the time pools based upon MDCD.CPSUM.FINAL.DATA.XLS, the time pools based upon COSTPOOL2.FINAL.XLS, and the difference. As you can

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see, the differences are very small, always less than three-tenths of one percent and typically less than one one-hundredths of a percent.

Estimates Based upon MDCD.CPSUM.FINAL.DATA.XLS

[illegible]	CURB	DISMOUNT	FOOT	OTHER	PARK & LOOP	ALL MODES
[illegible]						
[illegible]						
[illegible]	0.011848	0.013189	0.019066	0.000648	0.290285	0.335036
[illegible]	0.097164	0.017622	0.000087	0.001013	0.029312	0.145198
[illegible]	0.011000	0.031594	0.000283	0.000982	0.012727	0.056585
[illegible]	0.000159	0.001689	0.000006	0.000002	0.000447	0.002303
[illegible]	0.006767	0.018663	0.011768	0.000896	0.028318	0.066411
[illegible]	0.020645	0.031587	0.000349	0.000998	0.063455	0.117035
[illegible]	0.019123	0.014826	0.006576	0.000581	0.049918	0.091024
[illegible]	0.027690	0.014166	0.013544	0.000922	0.057443	0.113764
[illegible]	0.000284	0.000481	0.004284	0.000051	0.008463	0.013564
[illegible]	0.000495	0.000206	0.000047	0.000101	0.001574	0.002423
[illegible]	0.000034	0.000034	0.000002	0.000006	0.000154	0.000230
[illegible]	0.014313	0.010127	0.002169	0.000526	0.024136	0.051270
[illegible]	0.000601	0.000720	0.000151	0.000032	0.003651	0.005156
[illegible]	0.210123	0.154903	0.058332	0.006757	0.569884	1.000000

Estimates Based Upon COSTPOOL2 FINAL XLS

[illegible]	CURB	DISMOUNT	FOOT	OTHER	PARK & LOOP	ALL MODES
[illegible]						
[illegible]						
[illegible]	0.012006	0.013497	0.019230	0.000661	0.288043	0.333437
[illegible]	0.095792	0.017647	0.000088	0.001027	0.029299	0.143852
[illegible]	0.010987	0.031829	0.000287	0.000998	0.012592	0.056693
[illegible]	0.000162	0.001734	0.000020	0.000002	0.000570	0.002487
[illegible]	0.006739	0.018981	0.011904	0.000921	0.028836	0.067381
[illegible]	0.020629	0.032012	0.000341	0.001014	0.063616	0.117612
[illegible]	0.019921	0.015044	0.006648	0.000595	0.050070	0.091276
[illegible]	[illegible]	0.014347	0.013625	0.000937	0.056753	0.112179
[illegible]	[illegible]	0.000545	0.004335	0.000052	0.008555	0.013707
[illegible]	0.000453	0.000179	0.000048	0.000044	0.001440	0.002164
[illegible]	0.000037	0.000023	0.000002	0.000006	0.000156	0.000225
[illegible]	0.013947	0.010026	0.002203	0.000525	0.024847	0.051541
[illegible]	0.000618	0.000934	0.000222	0.000036	0.005436	0.007445
[illegible]	[illegible]	0.156796	0.058952	0.006819	0.570214	1.000000

Difference in the Two Estimates

[illegible]	CURB	DISMOUNT	FOOT	OTHER	PARK & LOOP	ALL MODES
[illegible]						
[illegible]						
[illegible]	[illegible]	[illegible]	0.000164	0.000014	-0.002242	-0.001598
[illegible]	[illegible]	[illegible]	0.000001	0.000014	-0.000013	-0.001346
[illegible]	[illegible]	[illegible]	0.000004	0.000016	-0.000135	0.000108
[illegible]	[illegible]	[illegible]	0.000014	0.000000	0.000122	0.000184
[illegible]	[illegible]	[illegible]	0.000136	0.000025	0.000518	0.000970
[illegible]	[illegible]	[illegible]	-0.000008	0.000017	0.000161	0.000577
[illegible]	[illegible]	[illegible]	0.000073	0.000014	0.000151	0.000252
[illegible]	[illegible]	[illegible]	0.000081	0.000015	0.000690	-0.001585
[illegible]	[illegible]	[illegible]	0.000050	0.000001	0.000092	0.000143
[illegible]	[illegible]	[illegible]	0.000001	-0.000057	0.000134	-0.000260
[illegible]	[illegible]	[illegible]	0.000000	0.000000	0.000002	-0.000005
[illegible]	[illegible]	[illegible]	0.000034	-0.000002	0.000712	0.000271
[illegible]	[illegible]	[illegible]	0.000071	0.000004	0.001785	0.002290
[illegible]	[illegible]	[illegible]	0.000620	0.000061	0.000330	0.000000

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO INTERROGATORIES OF ADVO INC.

ADVO/USPS-T15-10. Please confirm that the observations from witness Bradley's TIMEPOOLMDATA.PRN file (LR-K-81) are the same observations found in COSTPOOL2.FINAL.XLS, with the exception that the zip code identifiers have changed. If you cannot confirm, please explain why not.

Response:

Confirmed.

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TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

OCA/USPS-T15-1. Please refer to your testimony at page 24, lines 8-9. You state, "Bulk delivery data were not used in the final analysis."

d. Please provide all bulk delivery data in electronic form by encoded (as in file AL161ZIPS.PRN of LR-K-80) ZIP by route. If file PA159.PRN of LR-K-80 is complete and properly encoded to match AL161ZIPS.PRN, please so state.

e. Please provide the number of bulk deliveries in electronic form by encoded ZIP.

Response:

d. Please see 4.a. and pages 2 and 3 of USPS-LR-K-80, which, as explained in response to your question 4 of this set, is being revised today.

e. Please see d.

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TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

OCA/USPS-T15-2. Please refer to LR-K-78, Excel file "volume entry 2002."

a. This file contains 35 Tabs labeled "CARRIER FORM" through "CARRIER FORM (35)." Are there any differences between these 35 Tabs? If so, please describe them.

Response:

a. No.

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OCA/USPS-T15-3. Please refer to your testimony at page 24, line 18. You state, "The volume data from the survey were collected at the HQ Help Desk. There the data were scrutinized for possible errors, omissions, and completeness. Questions were referred back to the local Study Coordinators who had their own copies as well as records of Delivery required volume reporting instruments at their disposal."

a Please provide a detailed description of procedures followed and tasks performed by the HQ Help Desk.
b Please provide copies of all instructions and training manuals provided to the HQ Help Desk.
c Please provide a detailed description of procedures followed and tasks performed by the Study Coordinators.
d Please provide copies of all instructions and training manuals provided to the Study Coordinators.
e Please provide a list and detailed description of "volume reporting instruments at their disposal."

Response:

a The HQ Help Desk was comprised of study coordinators that were versed in the training materials that are provided in USPS-LR-K-78. Their job was to provide administrative support to the coordinators in the field and to validate that data collection forms sent in the from the survey had all the necessary labeling needed for data entry. This support included providing additional forms and information as to how the data were to be assimilated and mailed. If a question was asked by a study coordinator in the field to the nature of the data collection, the coordinator was provided a site from the training manual. If further insight was needed, the caller was forwarded to me for clarification. No formal log was kept of this activity.

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Moreover, they did not interact at all with any of the carriers performing the survey.

b. Please see my response to a.

c. Please see my response to a.

d. Pease see my response to a.

e. As detailed in USPS-LR-K-80 on pages 1 and 2, most local offices' mail volumes were reported and retained in DOIS or DSIS. For the smaller offices other local mail volume reporting and recording systems were available to validate workloads reported during the survey.

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OCA/USPS-T15-4. Please refer to USPS LR-K-80 and the associated data files. The file AL161ZIPS.PRN was opened by importing the data into Excel. The first few lines of the file are reproduced below.

957	5/25/2002	11	0	0	1010	73	0
957	5/25/2002	23	0	0	1040	159	0
957	5/25/2002	28	0	0	1024	260	0
957	5/25/2002	29	0	0	885	112	0
957	5/25/2002	38	0	0	896	133	0

On page 2 of USPS LR-K-80 you present a table extract from the AL161ZIPS.PRN File. One of the headings is titled "Masked Zip Code".

a. The first column of the file above, containing the ZIP Codes, has no entries similar to the entries in the column titled "Masked Zip Code" on page 2 of the library reference. To be specific, the "Masked Zip Code" entries are expressed with decimal points; there do not appear to be corresponding entries in AL161ZIPS.PRN, a few of whose lines are printed above. Please explain this discrepancy in detail in order that there is no problem in identifying routes. ZIP Codes, etc. on a consistent basis.

b In the case of PA159.PRN there seems to be an analogous situation detailed in part a., above. Please provide information similar to that requested in a.

c. Do the ZIP Codes in PA159.PRN match those of AL161ZIPS.PRN?

d None of the ZIP Codes—either those presented above in the table nor the ZIP Codes on page 2 of USPS LR-K-80 appear to match with the ZIP Codes in Dr. Bradley's databases TIMEPOOL MDATA.PRN, LFVOLUME MDATA.PRN, PAVOLUME MDATA.PRN, and DENSITY MDATA.PRN. Please explain how the ZIP Codes are matched or how the various ZIP Codes are related to Dr. Bradley's computations.

Response:

a and b. The data in AL161ZIPS.PRN and PA159.PRN are correct except for the use of erroneous Zip identifiers in the Zip code columns (column 1). New versions of Al161ZIPS.PRN and PA159.PRN that do have the correct Zip identifiers are being filed in a revised USPS-LR-K-80.

c. Yes.

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d. The encryption in LR-K-80 covers the Zip Codes in the CCSTS database. Dr. Bradley makes use of a broader set of Zip Codes, the ones from the Census data base he uses to capture geographical data. Because of these additional Zip Codes, Dr. Bradley had to employ a more extensive encryption process than was required for LR-K-80. That is why the two sets of encryptions do not match. However, there is a one-to-one mapping between the two sets of encrypted Zip Codes. A hard copy concordance of the two sets of encrypted Zip Codes is attached to this interrogatory response, and an Excel version is attached electronically.

Attachment to Response, OCA/USPS-T15-4d

Masked Zip Used on the LR-K-79 and LR-K-80 Scan-Time and Volume Files	Masked Zip Used on the LR-K-81 Scan-Time and Volume Files
1321.00	2222220
1094.1	6915709
1283.25	8265880
994.64	823126
932.78	4224807
900.51	3841890
1014.15	1352856
1377.00	7761044
1106.16	6566657
1108.48	9216792
977.69	2418845
1032.56	7889371
949.71	7366497
1158.21	5079251
1055.71	8365476
1107.4	5119230
956.1	1660939
1399.00	6222079
1063.72	8937811
1016.15	7253903
1155.58	1797270
991.12	7408660
1124.81	6123091
1217.68	2523329
1143.11	4017880
1094.61	2516318
1108.94	1109097
1113.44	3170247
1208.6	8027588
1127.21	9785658
916.27	8693266
1031.94	8885626
1113.12	2381912
1125.12	8807513
1157.32	8573006
1136.84	2946128
946.86	6641989
975.43	8935185
1028.07	680989
1004.37	7875349
1118.17	4220169
1099.29	2330822
1040.37	4700671
1017.34	3522403

Masked Zip Used on the LR-K-79 and LR-K-80 Scan-Time and Volume Files	Masked Zip Used on the LR-K-81 Scan-Time and Volume Files
1148.45	3637100
996.9	9600952
1093.41	8971623
1140.45	6135928
1134.97	4741966
1159.84	3275234
1240.7	1830982
1109.45	5050753
978.1	7033018
1127.96	4416772
1063.05	4889538
975.44	2669128
833.3	5813957
1306.00	6714985
1096.44	6260501
1134.41	1891225
1096.58	6617639
1122.11	1376260
1179.79	4717812
1114	2774051
1316.00	7944004
1150.73	2071680
761.84	6608572
1111.87	5875249
1109.25	5561832
1023.98	7795307
1122.26	5872302
1132.47	1629153
944.37	8155849
950.67	7131259
995.59	478581
989.1	1226213
1098.31	265172
909.31	3117064
914.77	1495397
1078.42	540658
922.5	207119
1006.64	1618591
1019.05	9797599
994.01	9272079
1243.68	3029022
1045.39	5627955
1016.26	6131949
1076.37	2644577

1350.00	1111110
1033.13	5056157
1053.01	4088800
1302.00	2556848
993.57	4033945
1029.59	3610207
1030.27	6146537
958.72	8755088
999.29	206351
1010.21	527528
1154.51	3931949
1107.59	4690965
1091.36	1432093
1336.30	5967956
1133.32	7109598
1016.24	6833631
1147.32	2432303
1042.38	9719666
1091.46	3347202
1077.27	2634763
1186.18	7211264
1103.09	4193105
1062.08	7064632
1098.24	1631973
1072.26	8090573
1366.00	5006634
1124.93	8586719
1067.66	8768579
1348.00	6151787
1066.76	6019538
1229.85	8939761
1100.9	4286657
1047.36	3541130
934.5	5161981
1143.87	2490591
1032.15	3023743
1135.87	3341404
1308.00	9231238
1151.5	8767371
1090.85	3711526
1207.31	3109561
948.66	4826943
1124.53	6395033
1211.98	5386728
1100.36	2958650
1061.98	8407116
1010.97	3461089
1024.34	5335517

1123	723582
1125.39	5656871
1014.06	7701991
1112.82	4282180
1191.69	2409668
917.83	4228438
1357.00	1635436
968.05	5917898
972.47	5268704
871.65	502885
1056.69	9404528
1047.8	5692981
1032.12	7606474
1105.56	264816
975.17	275455
1106.88	6980401
1095.13	7595552
1288.00	6103170
1012.96	8131706
985.46	8925917
1104.59	9900515
958.64	3975672
1038.85	5887042
1325.00	3333330
1102.14	5621617
1224.06	4938880
1135.37	9680073
1038.07	3078259

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
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OCA/USPS-T15-6. Please refer to the SAS program CPFINAL in USPS LR-K-79.

a. Please provide the program LOG.

b. Please explain the use/meaning of the computer code TOD = INPUT (CTIME, TIME8.); this code is two lines above the comment "Generate Scan Pairs".

c. The Library Reference does not appear to have a file DATACOLL, a database referenced in the SAS program CPFINAL. Please provide the file and a listing of headings and the definition of the headings. In the event that the requested file is presented under a similar or other name in USPS LR-K-79, please explain the file in detail.

d. The Library Reference does not appear to have a file POOLS, a database referenced in the SAS program CPFINAL. Please provide the file and a listing of headings and the definition of the headings. In the event that the requested file is presented under a similar or other name in USPS LR-K-79, please explain the file in detail.

e. The Library Reference does not appear to have a file WEIGHTS. Please provide the file and a listing of headings and the definition of the headings. In the event that the requested file is presented under a similar or other name in USPS LR-K-79, please explain the file in detail.

f. The program references a file denoted as "Weights". Is this the Weights file in the Library Reference?

Response:

a. The program LOG for CPFINAL is as follows:

```
NOTE: The initialization phase used 0.07 CPU seconds and 7440K.
1          DATA MDCD;
2          INFILE DATACOLL;
3          INPUT
4           @1 DATE MMDDYY8.
5           @10 RTEZIP 7.2
6           @18 SCANZIP 7.2
7           @28 ROUTENO $2.
8           @30 EMP $4.
9           @34 CTIME $8.
10          @42 ONFRAME 1.
11          @43 DELMODE $1.
12          @44 BARCODE 3.
13          @47 BCURB  5.
14          @52 BNDCBU 5.
15          @57 BCENT  5.
16          @62 BOTHR  5.
17          @67 RCURB  5.
18          @72 RNDCBU 5.
19          @77 RCENT  5.
20          @82 ROTHR  5.
```

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

```
21        @87 ROUTE $8.;
22        TOD=INPUT(CTIME,TIME8.);
23        IF DELMODE = ' ' THEN DELMODE = 'X';
24        ******************************************************;
25        ****  GENERATE SCAN PAIRS                          ***;
26        ******************************************************;
27
28        *THIS GROUP OF CODE NUMBERS EACH OBSERVATION IN
29         A DATE/ZIP/ROUTE/EMP SEQUENTIALLY;

NOTE: The infile DATACOLL is:
   Dsname=H30005.MDCD.ARCHIVE.SUBSET.V4MASK.DATA,
   Unit=3390,Volume=T0ABL6,Disp=SHR,Blksize=3500,
   Lrecl=100,Recfm=FB

NOTE: 1317755 records were read from the infile DATACOLL.
NOTE: The data set WORK.MDCD has 1317755 observations and 19 variables.
NOTE: The DATA statement used 33.83 CPU seconds and 8526K.

30        PROC SORT DATA=MDCD; BY DATE SCANZIP ROUTE EMP TOD;
31        /*
32        DATA MDCD; SET MDCD; BY DATE SCANZIP ROUTE EMP;
33        RETAIN COUNTER;
34        IF FIRST.EMP THEN COUNTER=1.
35        ELSE COUNTER+1;
36        :
37        */
38        ******************************************************;
39        **** LOOK AT SCAN PAIRS AND DETERMINE IF VALID/INVALID ****;
40        **** SAVE PRIOR TWO RECORD VARS FOR LATER USE        ****;
41        ******************************************************;

NOTE: 136 cylinders dynamically allocated on SYSDA for each of 3 sort work data sets.
NOTE: There were 1317755 observations read from the data set WORK.MDCD.
NOTE: The data set WORK.MDCD has 1317755 observations and 19 variables.
NOTE: The PROCEDURE SORT used 5.93 CPU seconds and 8636K.

42        DATA M; SET MDCD; BY DATE SCANZIP ROUTE EMP;
43        INFORMAT PTOD ETOD TIME8.
44        IF FIRST.EMP THEN DO;
45           PZIP=.;
46           PROUTE =" ";
47           PEMP= " ";
48           PDATE = .;
49           PTOD  = .;
50           PBARCODE = .;
51        END;
52        ETOD  = TOD-PTOD ;
53        ZIP1 = PZIP;
54        ROUTE1 = PROUTE.
55        EMP1 = PEMP;
56        DATE1 = PDATE.
57        BARCODE1 = PBARCODE.
```

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

```
58        PZIP = SCANZIP;
59        PROUTE = ROUTE;
60        PEMP = EMP;
61        PDATE = DATE;
62        PTOD  = TOD ;
63        PBARCODE = BARCODE;
64        RETAIN PZIP PROUTE PDATE PTOD PEMP PBARCODE;
65
66        IF ETOD = . THEN DELETE;
67        TIMEDAY=PUT(TOD,TIME.);
68        PTIME=PUT(PTOD,TIME.);

NOTE: Missing values were generated as a result of performing an operation on missing values.
    Each place is given by: (Number of times) at (Line):(Column).
    41692 at 52:16
NOTE: There were 1317755 observations read from the data set WORK.MDCD.
NOTE: The data set WORK.M has 1276063 observations and 33 variables.
NOTE: The DATA statement used 22.38 CPU seconds and 8778K.

69        PROC DATASETS;
                                  -----Directory-----

                    Libref:              WORK
                    Engine:              BASE
                    Physical Name:       SYS05061.T140630.RA000.H30005E.R0A16186
                    Unit:                DISK
                    Volume:              S1W050
                    Disposition:         NEW
                    Device:              3390
                    Blocksize:           27648
                    Blocks per Track:    2
                    Total Library Blocks:  21000
                    Total Used Blocks:     16905
                    Total Free Blocks:     4095
                    Highest Used Block:    16905
                    Highest Formatted Block: 16906
                    Members:             3
69        !         DELETE MDCD;
70
71        ********************************************************;
72        *** FIRST GO THROUGH SCANS AND FIX DUPLICATE          ***;
73        *** BARCODE NUMBER PROBLEM FOR COLLECTION BARCODES    ***;
74        *** PROBLEM WAS DUE TO INCORRECT BARCODES IN EARLY    ***;
75        *** VERSION OF TRAINING BOOKLET                       ***;
76        ********************************************************;

NOTE: Deleting WORK.MDCD (memtype=DATA).

77       DATA M; SET M;
78       RETAIN GENCOLL EXPCOLL CNTGEN CNTEXP GENEND EXPEND 0;
79         IF BARCODE1=322 AND BARCODE=353 THEN BARCODE=391;
80         IF BARCODE1=339 AND BARCODE=360 THEN BARCODE=407;
```

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

```
81      IF BARCODE1=360 AND LAG1(BARCODE)=407 THEN BARCODE1=407;
82      IF BARCODE1=353 AND LAG1(BARCODE)=391 THEN BARCODE1=391;
83      IF BARCODE1=322 AND
84          (BARCODE=70 OR BARCODE=87 OR BARCODE=32 OR
85           BARCODE=94) THEN GENCOLL=1;
86           ELSE GENCOLL=0;
87      IF BARCODE1=339 AND
88           (BARCODE=70 OR BARCODE=87 OR BARCODE=32 OR
89           BARCODE=94) THEN EXPCOLL=1;
90           ELSE EXPCOLL=0;
91      IF GENCOLL=1 AND
92           (BARCODE=100 OR BARCODE=117 OR BARCODE=124
93            OR BARCODE=63) THEN GENCOLL=1;
94            ELSE GENCOLL=0;
95      IF EXPCOLL=1 AND
96           (BARCODE=100 OR BARCODE=117 OR BARCODE=124
97            OR BARCODE=63) THEN EXPCOLL=1;
98            ELSE EXPCOLL=0;
99      IF GENCOLL=1 AND BARCODE=353 AND
100           (BARCODE1=100 OR BARCODE1=117 OR BARCODE1=124
101            OR BARCODE1=63) THEN DO;
102            BARCODE=391;
103            GENCOLL=0;
104            END;
105     IF EXPCOLL=1 AND BARCODE=360 AND
106           (BARCODE1=100 OR BARCODE1=117 OR BARCODE1=124
107            OR BARCODE1=63) THEN DO;
108            BARCODE=407;
109            EXPCOLL=0;
110            END;
111     DROP GENCOLL EXPCOLL;
112         /*NOT A LUNCH/BREAK/EMG OR AN END COLLECTION - NOT
113          ALLOWED AFTER START COLLECTION*/
114          * END FIX DUPLICATE BARCODES;
115     ***********************************************************;
116     ***   MERGE IN COST POOL DEFINITIONS                    ***;
117     ***     NEED TO CHOOSE FROM ALTERNATE DEFINITION        ***;
118     ***     FOR CERTAIN SCANS BASED ON WHETHER INSIDE       ***;
119     ***     OR OUTSIDE A ROUTE SECTION                      ***;
120     ***     OR OTHER CONDITIONS                             ***;
121     ***********************************************************;
```

NOTE: There were 1276063 observations read from the data set WORK.M.
NOTE: The data set WORK.M has 1276063 observations and 37 variables.
NOTE: The DATA statement used 4.59 CPU seconds and 9176K.

```
122     DATA POOLS; INFILE POOLS;
123     INPUT BARCODE1 BARCODE  CP $;
```

NOTE: The infile POOLS is:
Dsname=H30005.MDCD.SCAN6.TEXT,
Unit=3390,Volume=T0AAA7,Disp=SHR,Blksize=6233,
Lrecl=256,Recfm=VB

```
NOTE: 532 records were read from the infile POOLS.
    The minimum record length was 10.
    The maximum record length was 25.
NOTE: The data set WORK.POOLS has 532 observations and 3 variables.
NOTE: The DATA statement used 0.02 CPU seconds and 9176K.

124         PROC SORT DATA=M; BY BARCODE1 BARCODE;

NOTE: 247 cylinders dynamically allocated on SYSDA for each of 3 sort work data sets.
NOTE: There were 1276063 observations read from the data set WORK.M.
NOTE: The data set WORK.M has 1276063 observations and 37 variables.
NOTE: The PROCEDURE SORT used 8.07 CPU seconds and 9176K.

125         PROC SORT DATA=POOLS; BY BARCODE1 BARCODE;

NOTE: There were 532 observations read from the data set WORK.POOLS.
NOTE: The data set WORK.POOLS has 532 observations and 3 variables.
NOTE: The PROCEDURE SORT used 0.00 CPU seconds and 9176K.

126         DATA MPOOL; MERGE M (IN=MM) POOLS; BY BARCODE1 BARCODE;
127           IF MM=1;

NOTE: There were 1276063 observations read from the data set WORK.M.
NOTE: There were 532 observations read from the data set WORK.POOLS.
NOTE: The data set WORK.MPOOL has 1276063 observations and 38 variables.
NOTE: The DATA statement used 8.53 CPU seconds and 9304K.

128         PROC DATASETS;
                                  -----Directory-----

                    Libref:              WORK
                    Engine:              BASE
                    Physical Name:       SYS05061.T140630.RA000.H30005E.R0A16186
                    Unit:                DISK
                    Volume:              S1W050
                    Disposition:         NEW
                    Device:              3390
                    Blocksize:           27648
                    Blocks per Track:    2
                    Total Library Blocks: 42000
                    Total Used Blocks:   24204
                    Total Free Blocks:   17796
                    Highest Used Block:  24204
                    Highest Formatted Block: 24204
                    Members:             4

128 '               DELETE M;

NOTE: Deleting WORK.M (memtype=DATA).
NOTE: The PROCEDURE DATASETS used 0.01 CPU seconds and 9304K.
```

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS
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```
129     PROC SORT DATA=MPOOL; BY DATE RTEZIP ROUTE EMP TOD;
130     ***********************************************************;
131     ***     SET FLAGS FOR DETERMINING COST POOL          ***;
132     ***     WHEN ALTERNATE ASSIGNMENTS POSSIBLE          ***;
133     *** INSIDE ROUTE SECTION:                            ***;
134     *** ENDS AT END SECTION OR ANY OTHER START SECTION   ***;
135     *** SECTIONS:      START      END                    ***;
136     *** FOOT (P&L)     148        179                    ***;
137     *** CURBLINE       155        186                    ***;
138     *** CENTRAL        209        230                    ***;
139     *** DISMOUNT       261        292                    ***;
140     *** VIM            216        247                    ***;
141     *** NDCBU          193        223                    ***;
142     *** IN AN ACTIVITY:                                  ***;
143     *** ENDS AT AN END ACTIVITY OR ANY NON-ADMIN SCAN    ***;
144     *** ACTIVITY       START      END                    ***;
145     *** RELAY          315        346                    ***;
146     *** GENERAL COLLECTION 322    391                    ***;
147     *** EXPRESS COLLECTION 339    407                    ***;
148     *** PARCEL DELIVERY   353     377                    ***;
149     *** ACCOUNTABLE DEL   360     384                    ***;
150     *** OTHER FLAGS:                                     ***;
151     *** LEAVE OFFICE      25                             ***;
152     *** AT DEV PARK PT    254       285                  ***;
153     ***********************************************************;
```

NOTE 255 cylinders dynamically allocated on SYSDA for each of 3 sort work data sets.
NOTE There were 1276063 observations read from the data set WORK.MPOOL.
NOTE: The data set WORK.MPOOL has 1276063 observations and 38 variables.
NOTE: *The PROCEDURE SORT used 8.68 CPU seconds and 9304K.*

```
154     DATA MPOOL; SET MPOOL; BY DATE RTEZIP ROUTE EMP;
155     RETAIN FOOT CURB CENT MOUNT VIM NDCBU
156         RELAY GENCOLL EXPCOLL PARC ACCT DEVPKPT
157         LEAVEOFC 0;
158     POOL = CP;
159     IF POOL= '      ' THEN POOL='NA';
160     ELSE IF POOL=' ' THEN POOL='NA';
161     ***********************************************************;
162     *SOME COST POOL ASSIGNMENTS ARE CONDITIONAL BASED ON INSIDE ;
163     *OUTSIDE ROUTE SECTION OR OTHER CONDITIONS.  FIRST SET FLAGS;
164     *TO KNOW WHAT ROUTE SECTION/ACTIVITY IS CURRENT            ;
165     ***********************************************************;
166
167       IF FIRST.EMP THEN DO;
168         FOOT=0; CURB=0; CENT=0; MOUNT=0; VIM=0; NDCBU=0;
169         RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
170         LEAVEOFC=0; DEVPKPT=0;
171         END;
172
173       *START ROUTE SECTION;
174       IF BARCODE1= 148 THEN DO;  *FOOT/LOOP SECTION START;
175           FOOT=1; CURB=0; CENT=0; MOUNT=0; VIM=0; NDCBU=0;
```

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```
            RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
            END;
        IF BARCODE1= 155 THEN DO;  *MOUNTED-CURBLINE;
            FOOT=0; CURB=1; CENT=0; MOUNT=0; VIM=0; NDCBU=0;
            RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
            END;
        IF BARCODE1= 193 THEN DO;  *NDCBU;
            FOOT=0; CURB=0; CENT=0; MOUNT=0; VIM=0; NDCBU=1;
            RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
            END;
        IF BARCODE1= 209 THEN DO;  *CENTRAL;
            FOOT=0; CURB=0; CENT=1; MOUNT=0; VIM=0; NDCBU=0;
            RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
            END;
        IF BARCODE1= 216 THEN DO;  *VIM;
            FOOT=0; CURB=0; CENT=0; MOUNT=0; VIM=1; NDCBU=0;
            RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
            END;
        IF BARCODE1= 261 THEN DO;  *DISMOUNT;
            FOOT=0; CURB=0; CENT=0; MOUNT=1; VIM=0; NDCBU=0;
            RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
            END;

        *START ACTIVITY;
        IF BARCODE1=315 THEN RELAY=1;
        IF BARCODE1=322 THEN GENCOLL=1;
        IF BARCODE1=339 THEN EXPCOLL=1;
        IF BARCODE1=353 THEN PARC=1;
        IF BARCODE1=360 THEN ACCT=1;
        IF BARCODE1=25 THEN LEAVEOFC=1;

        *ARRIVE AND LEAVE DEVIATION PARK POINT;
        IF BARCODE1=254 THEN DEVPKPT=1;  *ARRIVAL AT DEV PK PT;
        IF BARCODE1=285 THEN DEVPKPT=2;  *LEAVE DEV PK PT;

        *FINISH ROUTE SECTION - ALL ACTIVITIES END TOO;
        IF BARCODE1= 179 OR BARCODE1=186 OR BARCODE1=223 OR
           BARCODE1=230 OR BARCODE1=247 OR BARCODE1=292 THEN DO;
           *FINISH SECTION;
           FOOT=0; CURB=0; CENT=0; MOUNT=0; VIM=0; NDCBU=0;
           RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
           DEVPKPT=0; LEAVEOFC=0;
           END;

        *END ACTIVITY   END IF REACH END ACTIVITY SCAN OR ANY
         NON-ADMIN SCAN;
        IF RELAY=1 THEN DO;
          IF BARCODE1=315 THEN RELAY=1;
          ELSE IF  BARCODE1=346 THEN RELAY=0;
          ELSE IF BARCODE1= 32 THEN RELAY=1;
          ELSE IF BARCODE1= 63 THEN RELAY=1;
          ELSE IF BARCODE1= 70 THEN RELAY=1;
          ELSE IF BARCODE1= 87 THEN RELAY=1;
```

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```
229          ELSE IF BARCODE1= 94 THEN RELAY=1;
230          ELSE IF BARCODE1= 100 THEN RELAY=1;
231          ELSE IF BARCODE1= 117 THEN RELAY=1;
232          ELSE IF BARCODE1= 124 THEN RELAY=1;
233          ELSE RELAY=0;
234          END;
235        IF GENCOLL=1 THEN DO;
236          IF BARCODE1=322 THEN GENCOLL=1;
237          ELSE IF  BARCODE1=391 THEN GENCOLL=0;
238          ELSE IF BARCODE1= 32 THEN GENCOLL=1;
239          ELSE IF BARCODE1= 63 THEN GENCOLL=1;
240          ELSE IF BARCODE1= 100 THEN GENCOLL=1;
241          ELSE IF BARCODE1= 117 THEN GENCOLL=1;
242          ELSE IF BARCODE1= 124 THEN GENCOLL=1;
243          ELSE IF BARCODE1= 94 THEN GENCOLL=1;
244          ELSE IF BARCODE1= 87 THEN GENCOLL=1;
245          ELSE IF BARCODE1= 70 THEN GENCOLL=1;
246          ELSE GENCOLL=0;
247          END;
248        IF EXPCOLL=1 THEN DO;
249          IF BARCODE1=339 THEN EXPCOLL=1;
250          ELSE IF BARCODE1=407 THEN EXPCOLL=0;
251          ELSE IF BARCODE1= 32 THEN EXPCOLL=1;
252          ELSE IF BARCODE1= 63 THEN EXPCOLL=1;
253          ELSE IF BARCODE1=100 THEN EXPCOLL=1;
254          ELSE IF BARCODE1=117 THEN EXPCOLL=1;
255          ELSE IF BARCODE1=124 THEN EXPCOLL=1;
256          ELSE IF BARCODE1= 94 THEN EXPCOLL=1;
257          ELSE IF BARCODE1= 87 THEN EXPCOLL=1;
258          ELSE IF BARCODE1= 70 THEN EXPCOLL=1;
259          ELSE EXPCOLL=0;
260          END;
261        IF PARC=1 THEN DO;
262          IF BARCODE1=353 THEN PARC=1;
263          ELSE IF  BARCODE1=377 THEN PARC=0;
264          ELSE IF BARCODE1= 32 THEN PARC=1;
265          ELSE IF BARCODE1= 63 THEN PARC=1;
266          ELSE IF BARCODE1= 100 THEN PARC=1;
267          ELSE IF BARCODE1= 117 THEN PARC=1;
268          ELSE IF BARCODE1= 124 THEN PARC=1;
269          ELSE IF BARCODE1= 94 THEN PARC=1;
270          ELSE IF BARCODE1= 70 THEN PARC=1;
271          ELSE IF BARCODE1= 87 THEN PARC=1;
272          ELSE PARC=0;
273          END;
274        IF ACCT=1 THEN DO;
275          IF BARCODE1=360 THEN ACCT=1;
276          ELSE IF BARCODE1=384 THEN ACCT=0;
277          ELSE IF BARCODE1= 32 THEN ACCT=1;
278          ELSE IF BARCODE1= 63 THEN ACCT=1;
279          ELSE IF BARCODE1= 70 THEN ACCT=1;
280          ELSE IF BARCODE1= 100 THEN ACCT=1;
281          ELSE IF BARCODE1= 117 THEN ACCT=1;
```

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```
282          ELSE IF BARCODE1= 124 THEN ACCT=1;
283          ELSE IF BARCODE1= 94 THEN ACCT=1;
284          ELSE IF BARCODE1= 87 THEN ACCT=1;
285          ELSE ACCT=0;
286          END;
287        *END LEAVE OFFICE AS SOON AS REACH ANY NON-ADMIN SCAN
288         AFTER LEAVING OFFICE;
289        IF LEAVEOFC=1 THEN DO;
290          IF BARCODE1=25 THEN LEAVEOFC=1;
291          ELSE IF BARCODE1= 70 THEN LEAVEOFC=1;
292          ELSE IF BARCODE1= 32 THEN LEAVEOFC=1;
293          ELSE IF BARCODE1= 63 THEN LEAVEOFC=1;
294          ELSE IF BARCODE1= 100 THEN LEAVEOFC=1;
295          ELSE IF BARCODE1= 117 THEN LEAVEOFC=1;
296          ELSE IF BARCODE1= 124 THEN LEAVEOFC=1;
297          ELSE IF BARCODE1= 94 THEN LEAVEOFC=1;
298          ELSE IF BARCODE1= 87 THEN LEAVEOFC=1;
299          ELSE LEAVEOFC=0;
300          END;
301        *END DEVIATION PARK POINT AS SOON AS REACH ANY NON-ADMIN
302         SCAN AFTER A DEVIATION PARK POINT SCAN;
303        IF DEVPKPT=1 OR DEVPKPT=2 THEN DO;
304          IF BARCODE1= 70 THEN DEVPKPT=DEVPKPT;
305          ELSE IF BARCODE1= 32 THEN DEVPKPT=DEVPKPT;
306          ELSE IF BARCODE1= 63 THEN DEVPKPT=DEVPKPT;
307          ELSE IF BARCODE1= 100 THEN DEVPKPT=DEVPKPT;
308          ELSE IF BARCODE1= 117 THEN DEVPKPT=DEVPKPT;
309          ELSE IF BARCODE1= 124 THEN DEVPKPT=DEVPKPT;
310          ELSE IF BARCODE1= 94 THEN DEVPKPT=DEVPKPT;
311          ELSE IF BARCODE1= 87 THEN DEVPKPT=DEVPKPT;
312          ELSE DEVPKPT=0;
313          END;
314      ************************************************************;
315      ***  FLAGS ALL SET  NOW GO THROUGH SCAN PAIRS AND      ***;
316      ***  ASSIGN COST POOLS BASED ON FLAGS IF NEEDED        ***;
317      ************************************************************;
318
319        *END ADMIN START ANOTHER ADMIN;
320        IF (BARCODE1=63 AND BARCODE=32) OR
321          (BARCODE1=63 AND BARCODE=70) OR
322          (BARCODE1=63 AND BARCODE=87) OR
323          (BARCODE1=63 AND BARCODE=94) OR
324          (BARCODE1=100 AND BARCODE=32) OR
325          (BARCODE1=100 AND BARCODE=70) OR
326          (BARCODE1=100 AND BARCODE=87) OR
327          (BARCODE1=100 AND BARCODE=94) OR
328          (BARCODE1=117 AND BARCODE=32) OR
329          (BARCODE1=117 AND BARCODE=70) OR
330          (BARCODE1=117 AND BARCODE=87) OR
331          (BARCODE1=117 AND BARCODE=94) OR
332          (BARCODE1=124 AND BARCODE=32) OR
333          (BARCODE1=124 AND BARCODE=70) OR
334          (BARCODE1=124 AND BARCODE=87) OR
```

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```
335          (BARCODE1=124 AND BARCODE=94) THEN DO;
336          IF RELAY=1 THEN       POOL= 'RELAY';
337          ELSE IF GENCOLL=1 THEN POOL= 'GENCOLL';
338          ELSE IF EXPCOLL=1 THEN POOL= 'EXPCOLL';
339          ELSE IF PARC=1 THEN    POOL= 'PARCEL' ;
340          ELSE IF ACCT=1 THEN    POOL= 'ACCOUNT' ;
341          ELSE IF FOOT=1 THEN    POOL= 'LOOPFOOT' ;
342          ELSE IF CURB=1 THEN    POOL= 'CURBLINE' ;
343          ELSE IF CENT=1 THEN    POOL= 'CENTRAL' ;
344          ELSE IF MOUNT=1 THEN   POOL= 'DISMOUNT' ;
345          ELSE IF VIM=1 THEN     POOL= 'VIM' ;
346          ELSE IF NDCBU=1 THEN   POOL= 'NDCBU' ;
347          ELSE IF (FOOT=0 AND CURB=0 AND CENT=0 AND
348             MOUNT=0 AND VIM=0 AND NDCBU=0 AND
349             LEAVEOFC=0) THEN  POOL= 'NETWORK' ;
350          ELSE IF (FOOT=0 AND CURB=0 AND CENT=0 AND
351             MOUNT=0 AND VIM=0 AND NDCBU=0 AND
352             LEAVEOFC=1) THEN  POOL= 'TOFROM' ;
353          ELSE IF DEVPKPT=2 THEN POOL= 'DDTRAVEL' ;
354          ELSE IF DEVPKPT=1 THEN POOL= 'PARCACCT' ;
355          ELSE POOL= 'NA' ;
356          END;
357
358        /*END ADMIN - START SECTION*/
359        IF (BARCODE1=63 AND BARCODE=148) OR
360          (BARCODE1=63 AND BARCODE=155) OR
361          (BARCODE1=63 AND BARCODE=193) OR
362          (BARCODE1=63 AND BARCODE=209) OR
363          (BARCODE1=63 AND BARCODE=216) OR
364          (BARCODE1=63 AND BARCODE=261) OR
365          (BARCODE1=100 AND BARCODE=148) OR
366          (BARCODE1=100 AND BARCODE=155) OR
367          (BARCODE1=100 AND BARCODE=193) OR
368          (BARCODE1=100 AND BARCODE=209) OR
369          (BARCODE1=100 AND BARCODE=216) OR
370          (BARCODE1=100 AND BARCODE=261) OR
371          (BARCODE1=117 AND BARCODE=148) OR
372          (BARCODE1=117 AND BARCODE=155) OR
373          (BARCODE1=117 AND BARCODE=193) OR
374          (BARCODE1=117 AND BARCODE=209) OR
375          (BARCODE1=117 AND BARCODE=216) OR
376          (BARCODE1=117 AND BARCODE=261) OR
377          (BARCODE1=124 AND BARCODE=148) OR
378          (BARCODE1=124 AND BARCODE=155) OR
379          (BARCODE1=124 AND BARCODE=193) OR
380          (BARCODE1=124 AND BARCODE=209) OR
381          (BARCODE1=124 AND BARCODE=216) OR
382          (BARCODE1=124 AND BARCODE=261) THEN DO;
383           IF LEAVEOFC=1 THEN POOL =  'TOFROM'   ;
384           ELSE IF DEVPKPT=2 THEN POOL =  'DDTRAVEL' ;
385           ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
386                 VIM=0 AND NDCBU=0 AND FOOT=0) THEN
387                POOL= 'NETWORK' ;
```

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```
388          ELSE POOL =  'NA' ;
389          END;
390
391        *END ADMIN - ARRIVE DEVIATION PARK POINT;
392        IF (BARCODE1=63 AND BARCODE=254) OR
393          (BARCODE1=100 AND BARCODE=254) OR
394          (BARCODE1=117 AND BARCODE=254) OR
395          (BARCODE1=124 AND BARCODE=254) THEN DO;
396          IF FOOT=1 THEN POOL = 'LOOPFOOT' ;
397          ELSE IF CURB=1 THEN POOL =  'CURBLINE' ;
398          ELSE IF CENT=1 THEN POOL =  'CENTRAL' ;
399          ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT' ;
400          ELSE IF VIM=1 THEN POOL =  'VIM' ;
401          ELSE IF NDCBU=1 THEN POOL = 'NDCBU' ;
402          ELSE IF LEAVEOFC=1 THEN POOL =  'TOFROM' ;
403          ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
404                VIM=0 AND NDCBU=0 AND FOOT=0) OR
405                DEVPKPT=2 THEN
406               POOL='DDTRAVEL';
407          ELSE IF RELAY=1 OR PARC=1 OR ACCT=1 OR
408               GENCOLL=1 OR EXPCOLL=1
409               THEN POOL = 'NA';
410          ELSE POOL='DDTRAVEL';
411          END.
412
413        *END ADMIN - START RELAY, GEN COLL, EXP COLL;
414        IF (BARCODE1=63 AND BARCODE=315) OR
415          (BARCODE1=63 AND BARCODE=322) OR
416          (BARCODE1=63 AND BARCODE=339) OR
417          (BARCODE1=100 AND BARCODE=315) OR
418          (BARCODE1=100 AND BARCODE=322) OR
419          (BARCODE1=100 AND BARCODE=339) OR
420          (BARCODE1=117 AND BARCODE=315) OR
421          (BARCODE1=117 AND BARCODE=322) OR
422          (BARCODE1=117 AND BARCODE=339) OR
423          (BARCODE1=124 AND BARCODE=315) OR
424          (BARCODE1=124 AND BARCODE=322) OR
425          (BARCODE1=124 AND BARCODE=339) THEN DO;
426          IF FOOT=1 THEN POOL ='LOOPFOOT';
427          ELSE IF CURB=1 THEN POOL = 'CURBLINE';
428          ELSE IF CENT=1 THEN POOL = 'CENTRAL';
429          ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT';
430          ELSE IF VIM=1 THEN POOL = 'VIM';
431          ELSE IF NDCBU=1 THEN POOL = 'NDCBU';
432          ELSE IF LEAVEOFC=1 THEN POOL = 'TOFROM';
433          ELSE IF DEVPKPT=2 THEN POOL= 'DDTRAVEL';
434          ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
435                VIM=0 AND NDCBU=0 AND FOOT=0 AND
436                RELAY=0 AND GENCOLL=0 AND EXPCOLL=0
437                AND PARC=0 AND ACCT=0) THEN
438                POOL='NETWORK';
439          ELSE    POOL='NA';
440          END;
```

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```
*END ADMIN - START PARCEL OR ACCT DELIVERY;
IF (BARCODE1=63 AND BARCODE=353) OR
  (BARCODE1=100 AND BARCODE=353) OR
  (BARCODE1=117 AND BARCODE=353) OR
  (BARCODE1=124 AND BARCODE=353) THEN DO;
  IF DEVPKPT=1 THEN POOL = 'PARCEL';
  ELSE IF FOOT=1 THEN POOL = 'LOOPFOOT';
  ELSE IF CURB=1 THEN POOL = 'CURBLINE';
  ELSE IF CENT=1 THEN POOL = 'CENTRAL';
  ELSE IF MOUNT=1 THEN POOL ='DISMOUNT';
  ELSE IF VIM=1 THEN POOL =  'VIM';
  ELSE IF NDCBU=1 THEN POOL ='NDCBU';
  ELSE IF LEAVEOFC=1 THEN POOL = 'TOFROM';
  ELSE IF DEVPKPT=2 THEN POOL= 'DDTRAVEL';
  ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
        VIM=0 AND NDCBU=0 AND FOOT=0 AND
        RELAY=0 AND GENCOLL=0 AND EXPCOLL=0
        AND PARC=0 AND ACCT=0) THEN
        POOL='NETWORK';
  ELSE POOL='NA';
  END;

IF (BARCODE1=63 AND BARCODE=360) OR
  (BARCODE1=100 AND BARCODE=360) OR
  (BARCODE1=117 AND BARCODE=360) OR
  (BARCODE1=124 AND BARCODE=360) THEN DO;
  IF DEVPKPT=1 THEN POOL = 'ACCOUNT';
  ELSE IF FOOT=1 THEN POOL = 'LOOPFOOT';
  ELSE IF CURB=1 THEN POOL = 'CURBLINE';
  ELSE IF CENT=1 THEN POOL = 'CENTRAL';
  ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT';
  ELSE IF VIM=1 THEN POOL = 'VIM';
  ELSE IF NDCBU=1 THEN POOL = 'NDCBU';
  ELSE IF LEAVEOFC=1 THEN POOL = 'TOFROM';
  ELSE IF DEVPKPT=2 THEN POOL= 'DDTRAVEL';
  ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
        VIM=0 AND NDCBU=0 AND FOOT=0 AND
        RELAY=0 AND GENCOLL=0 AND EXPCOLL=0
        AND PARC=0 AND ACCT=0) THEN
        POOL='NETWORK';
  ELSE POOL='NA';
  END;

*END ADMIN - END SECTION;
IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
   BARCODE1=124) AND BARCODE=179 THEN DO;
   IF FOOT=1 THEN POOL = 'LOOPFOOT';
   ELSE POOL='NA';
   END;
IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
   BARCODE1=124) AND BARCODE=186 THEN DO;
   IF CURB=1 THEN POOL = 'CURBLINE';
```

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```
494          ELSE POOL='NA';
495          END;
496
497        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
498          BARCODE1=124) AND BARCODE=223 THEN DO;
499          IF NDCBU=1 THEN POOL = 'NDCBU';
500          ELSE POOL='NA';
501          END;
502
503        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
504          BARCODE1=124) AND BARCODE=230 THEN DO;
505          IF CENT=1 THEN POOL = 'CENTRAL';
506          ELSE POOL='NA';
507          END;
508
509        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
510          BARCODE1=124) AND BARCODE=247 THEN DO;
511          IF VIM=1 THEN POOL = 'VIM';
512          ELSE POOL='NA';
513          END;
514
515        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
516          BARCODE1=124) AND BARCODE=292 THEN DO;
517          IF MOUNT=1 THEN POOL = 'DISMOUNT';
518          ELSE POOL='NA';
519          END;
520
521        *END ADMIN - LEAVE DEVIATION PARK POINT;
522        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
523          BARCODE1=124) AND BARCODE=285 THEN DO;
524          IF DEVPKPT = 1 AND PARC=1 THEN DO;
525            POOL='PARCEL';
526            END;
527          ELSE IF DEVPKPT=1 AND ACCT=1 THEN DO;
528            POOL='ACCOUNT';
529            END;
530          ELSE POOL='NA';
531          END;
532
533        *END ADMIN - END ACTIVITY;
534        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
535          BARCODE1=124) AND BARCODE=346 THEN DO;
536          IF RELAY=1 THEN POOL='RELAY';
537          END;
538
539        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
540          BARCODE1=124) AND BARCODE=377 THEN DO;
541          IF PARC=1 THEN POOL='PARCEL';
542          END;
543
544        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
545          BARCODE1=124) AND BARCODE=384 THEN DO;
546          IF ACCT=1 THEN POOL='ACCOUNT';
```

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```
547          END;
548
549        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
550          BARCODE1=124) AND BARCODE=391 THEN DO;
551          IF GENCOLL=1 THEN POOL='GENCOLL';
552          END;
553
554        IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
555          BARCODE1=124) AND BARCODE=407 THEN DO;
556          IF EXPCOLL=1 THEN POOL='EXPCOLL';
557          END;
558
559        *LEAVE DEVIATION PARK PT - START ADMIN;
560        IF BARCODE1=285 AND (BARCODE=32 OR BARCODE=70 OR
561          BARCODE=87 OR BARCODE=94) THEN DO;
562          IF FOOT=1 THEN POOL = 'LOOPFOOT';
563          ELSE IF CURB=1 THEN POOL = 'CURBLINE';
564          ELSE IF CENT=1 THEN POOL = 'CENTRAL';
565          ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT';
566          ELSE IF VIM=1 THEN POOL = 'VIM';
567          ELSE IF NDCBU=1 THEN POOL = 'NDCBU';
568          ELSE POOL = 'DDTRAVEL';
569          END;
570
571        *END ACTIVITY - START ADMIN;
572        IF (BARCODE1=346 OR BARCODE1=377 OR BARCODE1=384 OR
573          BARCODE1=391 OR BARCODE1=407) AND
574          (BARCODE=32 OR BARCODE=70 OR BARCODE=87 OR
575          BARCODE=94) THEN DO;
576          IF FOOT=1 THEN POOL = 'LOOPFOOT';
577          ELSE IF CURB=1 THEN POOL = 'CURBLINE';
578          ELSE IF CENT=1 THEN POOL = 'CENTRAL';
579          ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT';
580          ELSE IF VIM=1 THEN POOL = 'VIM';
581          ELSE IF NDCBU=1 THEN POOL = 'NDCBU';
582          ELSE POOL = 'NETWORK';
583          END;
584
585        *END SECTION WHILE NOT IN SECTION IS ILLEGAL;
586        IF BARCODE = 179 AND FOOT=0 THEN POOL = 'NA';
587        IF BARCODE = 186 AND CURB=0 THEN POOL = 'NA';
588        IF BARCODE = 223 AND NDCBU=0 THEN POOL = 'NA';
589        IF BARCODE = 247 AND VIM=0 THEN   POOL = 'NA';
590        IF BARCODE = 292 AND MOUNT=0 THEN POOL = 'NA';
591        IF BARCODE = 230 AND CENT=0  THEN POOL = 'NA';
592
593        *START SECTION WHILE IN A SECTION IS ILLEGAL;
594        IF BARCODE=148 OR BARCODE=155 OR BARCODE=193 OR
595          BARCODE=209 OR BARCODE=216 OR BARCODE=261 THEN DO;
596          IF FOOT=1 OR CURB=1 OR NDCBU=1 OR
597          VIM=1 OR NDCBU=1 OR CENT=1 THEN POOL='NA';
598          END;
599
```

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```
*END ACTIVITY /START ACTIVITY;
IF (BARCODE1=346 OR BARCODE1=377 OR BARCODE1=384 OR
  BARCODE1=391 OR BARCODE1=407 ) AND
 (BARCODE=315 OR BARCODE=322 OR
  BARCODE=339 OR BARCODE=353 OR BARCODE=360) THEN DO;
     IF FOOT=1 THEN POOL='LOOPFOOT';
     ELSE IF CURB=1 THEN POOL='CURBLINE';
     ELSE IF CENT=1 THEN POOL='CENTRAL';
     ELSE IF MOUNT=1 THEN POOL='DISMOUNT';
     ELSE IF VIM=1 THEN POOL='VIM';
     ELSE IF NDCBU=1 THEN POOL='NDCBU';
     ELSE POOL='NETWORK';
     END;

*LEAVE DEVIATION PARK PK - START ACTIVITY;
IF  BARCODE1=285 AND
 (BARCODE=254 OR BARCODE=315 OR BARCODE=322 OR
  BARCODE=339 OR BARCODE=353 OR BARCODE=360) THEN DO;
     IF FOOT=1 THEN POOL='LOOPFOOT';
     ELSE IF CURB=1 THEN POOL='CURBLINE';
     ELSE IF CENT=1 THEN POOL='CENTRAL';
     ELSE IF MOUNT=1 THEN POOL='DISMOUNT';
     ELSE IF VIM=1 THEN POOL='VIM';
     ELSE IF NDCBU=1 THEN POOL='NDCBU';
     ELSE POOL = 'DDTRAVEL';
     END;

*END ACTIVITY - ARRIVE DEVIATION PARK POINT;
 IF (BARCODE1=346 OR BARCODE1=377 OR BARCODE1=384 OR
    BARCODE1=391 OR BARCODE1=407) AND
    BARCODE=254 THEN DO;
     IF FOOT=1 THEN POOL='LOOPFOOT';
     ELSE IF CURB=1 THEN POOL='CURBLINE';
     ELSE IF CENT=1 THEN POOL='CENTRAL';
     ELSE IF MOUNT=1 THEN POOL='DISMOUNT';
     ELSE IF VIM=1 THEN POOL='VIM';
     ELSE IF NDCBU=1 THEN POOL='NDCBU';
     ELSE POOL = 'DDTRAVEL';
     END.

* THESE TWO SCAN PAIRS ARE SET LEGAL;
IF BARCODE1=353 AND BARCODE=384 THEN POOL='PARCACCT';
IF BARCODE1=360 AND BARCODE=377 THEN POOL='PARCACCT';
*;
IF POOL='N/A    ' THEN POOL='NA';
*;
*****************************************************;
***  SUMMARIZE COST POOL TOTALS BY ROUTE/DAY        ***;
*****************************************************;
```

NOTE: There were 1276063 observations read from the data set WORK.MPOOL.
NOTE: The data set WORK.MPOOL has 1276063 observations and 52 variables.
NOTE: The DATA statement used 10.97 CPU seconds and 9560K.

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```
649        DATA MPOOL; SET MPOOL;
650        DROP FOOT CURB CENT MOUNT VIM NDCBU DEVPKPT LEAVEOFC
651           PARC ACCT RELAY GENCOLL EXPCOLL;
652           OUTPUT;

NOTE: There were 1276063 observations read from the data set WORK.MPOOL.
NOTE: The data set WORK.MPOOL has 1276063 observations and 39 variables.
NOTE: The DATA statement used 3.84 CPU seconds and 9560K.

653        PROC SORT DATA=MPOOL; BY DATE RTEZIP ROUTENO POOL;
654        ;
655        /*FIRST SUM UP THE COST POOL TIME FOR EACH ROUTE DAY*/

NOTE: 263 cylinders dynamically allocated on SYSDA for each of 3 sort work data sets.
NOTE: There were 1276063 observations read from the data set WORK.MPOOL.
NOTE: The data set WORK.MPOOL has 1276063 observations and 39 variables.
NOTE: The PROCEDURE SORT used 7.92 CPU seconds and 9560K.

656        PROC MEANS DATA=MPOOL NOPRINT;
657        BY DATE RTEZIP ROUTENO POOL;
658        VAR ETOD;
659        OUTPUT OUT=MOUT SUM=;
660        ;
661        /*ALSO SUM UP THE NUMBER OF DELIVERIES FOR EACH ROUTE DAY
662         AND THE TOTAL TIME*/

NOTE: There were 1276063 observations read from the data set WORK.MPOOL.
NOTE: The data set WORK.MOUT has 313571 observations and 7 variables.
NOTE: The PROCEDURE MEANS used 6.50 CPU seconds and 9903K.

663        PROC MEANS DATA=MPOOL NOPRINT;
664        BY DATE RTEZIP ROUTENO;
665        ID BCURB BNDCBU BCENT BOTHR RCURB RNDCBU RCENT ROTHR DELMODE;
666        VAR ETOD;
667        OUTPUT OUT=TOTT SUM=TOTTIME;
668        *;
669        /*THIS NEXT SECTION GENERATES ONE RECORD FOR EACH ROUTE DAY,
670         WITH THE TOTAL TIME IN EACH COST POOL, AS WELL AS TOTAL
671         ROUTE DAY TIME AND ROUTE DELIVERIES*/

NOTE: There were 1276063 observations read from the data set WORK.MPOOL.
NOTE: The data set WORK.TOTT has 36290 observations and 15 variables.
NOTE: The PROCEDURE MEANS used 5.84 CPU seconds and 9903K.

672        DATA LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
673           NONSTRT PREP TOFROM NETWORK DDTRAVEL TRAVEL
674           RELAY GENCOLL EXPCOLL
675           PARCEL ACCOUNT PARCACCT OFFCLOCK NA ERROR;
676           SET MOUT;
677        IF     POOL='NETWORK' THEN OUTPUT NETWORK;
678        ELSE IF POOL='DDTRAVEL' THEN OUTPUT DDTRAVEL;
679        ELSE IF POOL='LOOPFOOT' THEN OUTPUT LOOPFOOT;
```

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```
680        ELSE IF POOL='CURBLINE' THEN OUTPUT CURBLINE;
681        ELSE IF POOL='NDCBU' THEN OUTPUT NDCBU;
682        ELSE IF POOL='VIM' THEN OUTPUT VIM;
683        ELSE IF POOL='CENTRAL' THEN OUTPUT CENTRAL;
684        ELSE IF POOL='DISMOUNT' THEN OUTPUT DISMOUNT;
685        ELSE IF POOL='NONSTRT' THEN OUTPUT NONSTRT;
686        ELSE IF POOL='PREP' THEN OUTPUT PREP;
687        ELSE IF POOL='OFFCLOCK' THEN OUTPUT OFFCLOCK;
688        ELSE IF POOL='TOFROM' THEN OUTPUT TOFROM;
689        ELSE IF POOL='RELAY' THEN OUTPUT RELAY;
690        ELSE IF POOL='GENCOLL' THEN OUTPUT GENCOLL;
691        ELSE IF POOL='EXPCOLL' THEN OUTPUT EXPCOLL;
692        ELSE IF POOL='PARCEL' THEN OUTPUT PARCEL;
693        ELSE IF POOL='ACCOUNT' THEN OUTPUT ACCOUNT;
694        ELSE IF POOL='TRAVEL' THEN OUTPUT TRAVEL;
695        ELSE IF POOL='PARCACCT' THEN OUTPUT PARCACCT;
696        ELSE IF POOL='NA' THEN OUTPUT NA;
697        ELSE OUTPUT ERROR;

NOTE: There were 313571 observations read from the data set WORK.MOUT.
NOTE: The data set WORK.LOOPFOOT has 22276 observations and 7 variables.
NOTE: The data set WORK.CURBLINE has 14291 observations and 7 variables.
NOTE: The data set WORK.NDCBU has 10323 observations and 7 variables.
NOTE: The data set WORK.VIM has 397 observations and 7 variables.
NOTE: The data set WORK.CENTRAL has 11775 observations and 7 variables.
NOTE: The data set WORK.DISMOUNT has 17003 observations and 7 variables.
NOTE: The data set WORK.NONSTRT has 22764 observations and 7 variables.
NOTE: The data set WORK.PREP has 29369 observations and 7 variables.
NOTE: The data set WORK.TOFROM has 30749 observations and 7 variables.
NOTE: The data set WORK.NETWORK has 30514 observations and 7 variables.
NOTE: The data set WORK.DDTRAVEL has 4492 observations and 7 variables.
NOTE: The data set WORK.TRAVEL has 10678 observations and 7 variables.
NOTE: The data set WORK.RELAY has 3167 observations and 7 variables.
NOTE: The data set WORK.GENCOLL has 2091 observations and 7 variables.
NOTE: The data set WORK.EXPCOLL has 350 observations and 7 variables.
NOTE: The data set WORK.PARCEL has 25788 observations and 7 variables.
NOTE: The data set WORK.ACCOUNT has 22314 observations and 7 variables.
NOTE: The data set WORK.PARCACCT has 4359 observations and 7 variables.
NOTE: The data set WORK.OFFCLOCK has 24714 observations and 7 variables.
NOTE: The data set WORK.NA has 26157 observations and 7 variables.
NOTE: The data set WORK.ERROR has 0 observations and 7 variables.
NOTE: The DATA statement used 0.69 CPU seconds and 11567K.

698        PROC PRINT DATA=ERROR (OBS=25);
699        TITLE 'SCANS WITH NO COST POOL ASSIGMENT';
700        *;

NOTE: No observations in data set WORK.ERROR.
NOTE: The PROCEDURE PRINT used 0.00 CPU seconds and 11650K.

701        DATA NETWORK; SET NETWORK; NETWORK=ETOD; DROP ETOD;

NOTE: There were 30514 observations read from the data set WORK.NETWORK.
```

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```
NOTE: The data set WORK.NETWORK has 30514 observations and 7 variables.
NOTE: The DATA statement used 0.06 CPU seconds and 11650K.

702         DATA DDTRAVEL; SET DDTRAVEL; DDTRAVEL=ETOD; DROP ETOD;

NOTE: There were 4492 observations read from the data set WORK.DDTRAVEL.
NOTE: The data set WORK.DDTRAVEL has 4492 observations and 7 variables.
NOTE: The DATA statement used 0.01 CPU seconds and 11650K.

703         DATA LOOPFOOT; SET LOOPFOOT; LOOPFOOT=ETOD; DROP ETOD;

NOTE: There were 22276 observations read from the data set WORK.LOOPFOOT.
NOTE: The data set WORK.LOOPFOOT has 22276 observations and 7 variables.
NOTE: The DATA statement used 0.04 CPU seconds and 11650K.

704         DATA CURBLINE; SET CURBLINE; CURBLINE=ETOD; DROP ETOD;

NOTE: There were 14291 observations read from the data set WORK.CURBLINE.
NOTE: The data set WORK.CURBLINE has 14291 observations and 7 variables.
NOTE: The DATA statement used 0.03 CPU seconds and 11650K.

705         DATA NDCBU; SET NDCBU; NDCBU=ETOD; DROP ETOD;

NOTE: There were 10323 observations read from the data set WORK.NDCBU.
NOTE: The data set WORK.NDCBU has 10323 observations and 7 variables.
NOTE: The DATA statement used 0.02 CPU seconds and 11650K.

706         DATA VIM; SET VIM; VIM=ETOD; DROP ETOD;

NOTE: There were 397 observations read from the data set WORK.VIM.
NOTE: The data set WORK.VIM has 397 observations and 7 variables.
NOTE: The DATA statement used 0.01 CPU seconds and 11650K.

707         DATA CENTRAL; SET CENTRAL; CENTRAL=ETOD; DROP ETOD;

NOTE: There were 11775 observations read from the data set WORK.CENTRAL.
NOTE: The data set WORK.CENTRAL has 11775 observations and 7 variables.
NOTE: The DATA statement used 0.03 CPU seconds and 11650K.

708         DATA DISMOUNT; SET DISMOUNT; DISMOUNT=ETOD; DROP ETOD;

NOTE: There were 17003 observations read from the data set WORK.DISMOUNT.
NOTE: The data set WORK.DISMOUNT has 17003 observations and 7 variables.
NOTE: The DATA statement used 0.03 CPU seconds and 11650K.

709         DATA NONSTRT; SET NONSTRT; NONSTRT=ETOD; DROP ETOD;

NOTE: There were 22764 observations read from the data set WORK.NONSTRT.
NOTE: The data set WORK.NONSTRT has 22764 observations and 7 variables.
NOTE: The DATA statement used 0.04 CPU seconds and 11650K.

710         DATA PREP; SET PREP; PREP=ETOD; DROP ETOD;
```

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```
NOTE: There were 29369 observations read from the data set WORK.PREP.
NOTE: The data set WORK.PREP has 29369 observations and 7 variables.
NOTE: The DATA statement used 0.05 CPU seconds and 11650K.

711        DATA OFFCLOCK; SET OFFCLOCK; OFFCLOCK=ETOD; DROP ETOD;

NOTE: There were 24714 observations read from the data set WORK.OFFCLOCK.
NOTE: The data set WORK.OFFCLOCK has 24714 observations and 7 variables.
NOTE: The DATA statement used 0.05 CPU seconds and 11650K.

712        DATA TOFROM; SET TOFROM; TOFROM=ETOD; DROP ETOD;

NOTE: There were 30749 observations read from the data set WORK.TOFROM.
NOTE: The data set WORK.TOFROM has 30749 observations and 7 variables.
NOTE: The DATA statement used 0.06 CPU seconds and 11650K.

713        DATA RELAY; SET RELAY; RELAY=ETOD; DROP ETOD;

NOTE: There were 3167 observations read from the data set WORK.RELAY.
NOTE: The data set WORK.RELAY has 3167 observations and 7 variables.
NOTE: The DATA statement used 0.01 CPU seconds and 11650K.

714        DATA GENCOLL; SET GENCOLL; GENCOLL=ETOD; DROP ETOD;

NOTE: There were 2091 observations read from the data set WORK.GENCOLL.
NOTE: The data set WORK.GENCOLL has 2091 observations and 7 variables.
NOTE: The DATA statement used 0.01 CPU seconds and 11650K.

715        DATA EXPCOLL; SET EXPCOLL; EXPCOLL=ETOD; DROP ETOD;

NOTE: There were 350 observations read from the data set WORK.EXPCOLL.
NOTE: The data set WORK.EXPCOLL has 350 observations and 7 variables.
NOTE: The DATA statement used 0.01 CPU seconds and 11650K.

716        DATA PARCEL; SET PARCEL; PARCEL=ETOD; DROP ETOD;

NOTE: There were 25788 observations read from the data set WORK.PARCEL.
NOTE: The data set WORK.PARCEL has 25788 observations and 7 variables.
NOTE: The DATA statement used 0.05 CPU seconds and 11650K.

717        DATA ACCOUNT; SET ACCOUNT; ACCOUNT=ETOD; DROP ETOD;

NOTE: There were 22314 observations read from the data set WORK.ACCOUNT.
NOTE: The data set WORK.ACCOUNT has 22314 observations and 7 variables.
NOTE: The DATA statement used 0.04 CPU seconds and 11650K.

718        DATA PARCACCT; SET PARCACCT; PARCACCT=ETOD; DROP ETOD;

NOTE: There were 4359 observations read from the data set WORK.PARCACCT.
NOTE: The data set WORK.PARCACCT has 4359 observations and 7 variables.
NOTE: The DATA statement used 0.01 CPU seconds and 11650K.

719        DATA TRAVEL; SET TRAVEL; TRAVEL=ETOD; DROP ETOD;
```

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```
NOTE: There were 10678 observations read from the data set WORK.TRAVEL.
NOTE: The data set WORK.TRAVEL has 10678 observations and 7 variables.
NOTE: The DATA statement used 0.02 CPU seconds and 11650K.

720        DATA NA; SET NA; NA=ETOD; DROP ETOD;

NOTE: There were 26157 observations read from the data set WORK.NA.
NOTE: The data set WORK.NA has 26157 observations and 7 variables.

NOTE: The DATA statement used 0.05 CPU seconds and 11650K.

721        PROC SORT DATA=NETWORK; BY DATE RTEZIP ROUTENO;

NOTE: There were 30514 observations read from the data set WORK.NETWORK.
NOTE: The data set WORK.NETWORK has 30514 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.10 CPU seconds and 12418K.

722        PROC SORT DATA=LOOPFOOT; BY DATE RTEZIP ROUTENO;

NOTE: There were 22276 observations read from the data set WORK.LOOPFOOT.
NOTE: The data set WORK.LOOPFOOT has 22276 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.07 CPU seconds and 12418K.

723        PROC SORT DATA=DDTRAVEL; BY DATE RTEZIP ROUTENO;

NOTE: There were 4492 observations read from the data set WORK.DDTRAVEL.
NOTE: The data set WORK.DDTRAVEL has 4492 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.02 CPU seconds and 12418K.

724        PROC SORT DATA=CURBLINE; BY DATE RTEZIP ROUTENO;

NOTE: There were 14291 observations read from the data set WORK.CURBLINE.
NOTE: The data set WORK.CURBLINE has 14291 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.05 CPU seconds and 12418K.

725        PROC SORT DATA=NDCBU; BY DATE RTEZIP ROUTENO;

NOTE: There were 10323 observations read from the data set WORK.NDCBU.
NOTE: The data set WORK.NDCBU has 10323 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.04 CPU seconds and 12418K.

726        PROC SORT DATA=VIM; BY DATE RTEZIP ROUTENO;

NOTE: There were 397 observations read from the data set WORK.VIM.
NOTE: The data set WORK.VIM has 397 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.00 CPU seconds and 12418K.

727        PROC SORT DATA=CENTRAL; BY DATE RTEZIP ROUTENO;

NOTE: There were 11775 observations read from the data set WORK.CENTRAL.
NOTE: The data set WORK.CENTRAL has 11775 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.04 CPU seconds and 12418K.
```

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```
728        PROC SORT DATA=DISMOUNT; BY DATE RTEZIP ROUTENO;

NOTE: There were 17003 observations read from the data set WORK.DISMOUNT.
NOTE: The data set WORK.DISMOUNT has 17003 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.05 CPU seconds and 12418K.

729        PROC SORT DATA=NONSTRT; BY DATE RTEZIP ROUTENO;

NOTE: There were 22764 observations read from the data set WORK.NONSTRT.
NOTE: The data set WORK.NONSTRT has 22764 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.07 CPU seconds and 12418K.

730        PROC SORT DATA=PREP; BY DATE RTEZIP ROUTENO;

NOTE: There were 29369 observations read from the data set WORK.PREP.
NOTE: The data set WORK.PREP has 29369 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.09 CPU seconds and 12418K.

731        PROC SORT DATA=OFFCLOCK; BY DATE RTEZIP ROUTENO;

NOTE: There were 24714 observations read from the data set WORK.OFFCLOCK.
NOTE: The data set WORK.OFFCLOCK has 24714 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.08 CPU seconds and 12418K.

732        PROC SORT DATA=TOFROM; BY DATE RTEZIP ROUTENO;

NOTE: There were 30749 observations read from the data set WORK.TOFROM.
NOTE: The data set WORK.TOFROM has 30749 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.10 CPU seconds and 12418K.

733        PROC SORT DATA=RELAY; BY DATE RTEZIP ROUTENO;

NOTE: There were 3167 observations read from the data set WORK.RELAY.
NOTE: The data set WORK.RELAY has 3167 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.01 CPU seconds and 12418K.

734        PROC SORT DATA=GENCOLL; BY DATE RTEZIP ROUTENO;

NOTE: There were 2091 observations read from the data set WORK.GENCOLL.
NOTE: The data set WORK.GENCOLL has 2091 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.01 CPU seconds and 12418K.

735        PROC SORT DATA=EXPCOLL; BY DATE RTEZIP ROUTENO;

NOTE: There were 350 observations read from the data set WORK.EXPCOLL.
NOTE: The data set WORK.EXPCOLL has 350 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.00 CPU seconds and 12418K.

736        PROC SORT DATA=PARCEL; BY DATE RTEZIP ROUTENO;

NOTE: There were 25788 observations read from the data set WORK.PARCEL.
NOTE: The data set WORK.PARCEL has 25788 observations and 7 variables.
```

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```
NOTE: The PROCEDURE SORT used 0.09 CPU seconds and 12418K.

737        PROC SORT DATA=ACCOUNT; BY DATE RTEZIP ROUTENO;

NOTE: There were 22314 observations read from the data set WORK.ACCOUNT.
NOTE: The data set WORK.ACCOUNT has 22314 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.07 CPU seconds and 12418K.

738        PROC SORT DATA=PARCACCT; BY DATE RTEZIP ROUTENO;

NOTE: There were 4359 observations read from the data set WORK.PARCACCT.
NOTE: The data set WORK.PARCACCT has 4359 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.02 CPU seconds and 12418K.

739        PROC SORT DATA=TRAVEL; BY DATE RTEZIP ROUTENO;

NOTE: There were 10678 observations read from the data set WORK.TRAVEL.
NOTE: The data set WORK.TRAVEL has 10678 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.04 CPU seconds and 12418K.

740        PROC SORT DATA=NA; BY DATE RTEZIP ROUTENO;

NOTE: There were 26157 observations read from the data set WORK.NA.
NOTE: The data set WORK.NA has 26157 observations and 7 variables.
NOTE: The PROCEDURE SORT used 0.08 CPU seconds and 12418K.

741        PROC SORT DATA=TOTT; BY DATE RTEZIP ROUTENO;
742        /*MERGE IN COST POOL TOTALS SO ONE RECORD PER ROUTE DAY*/

NOTE: There were 36290 observations read from the data set WORK.TOTT.
NOTE: The data set WORK.TOTT has 36290 observations and 15 variables.
NOTE: The PROCEDURE SORT used 0.14 CPU seconds and 12418K

743        DATA ALL; MERGE TOTT
744           NETWORK LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
745           NONSTRT PREP OFFCLOCK TOFROM RELAY GENCOLL EXPCOLL
746           PARCEL ACCOUNT PARCACCT TRAVEL DDTRAVEL NA;
747           BY DATE RTEZIP ROUTENO;
748        IF NETWORK=. THEN NETWORK=0;
749        IF LOOPFOOT=. THEN LOOPFOOT=0;
750        IF DDTRAVEL=. THEN DDTRAVEL=0;
751        IF CURBLINE=. THEN CURBLINE=0;
752        IF NDCBU=. THEN NDCBU=0;
753        IF VIM=. THEN VIM=0;
754        IF CENTRAL=. THEN CENTRAL=0;
755        IF DISMOUNT=. THEN DISMOUNT=0;
756        IF NONSTRT=. THEN NONSTRT=0;
757        IF PREP=. THEN PREP=0;
758        IF OFFCLOCK=. THEN OFFCLOCK=0;
759        IF TOFROM=. THEN TOFROM=0;
760        IF RELAY=. THEN RELAY=0;
761        IF GENCOLL=. THEN GENCOLL=0;
762        IF EXPCOLL=. THEN EXPCOLL=0;
```

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```
763      IF PARCEL=. THEN PARCEL=0;
764      IF ACCOUNT=. THEN ACCOUNT=0;
765      IF PARCACCT=. THEN PARCACCT=0;
766      IF TRAVEL=. THEN TRAVEL=0;
767      IF NA=. THEN NA=0;
768      IF (PREP + TOFROM) GT 0 THEN DO;
769        PREPN=PREP+(TRAVEL*PREP/(PREP+TOFROM));
770        TOFROMN=TOFROM+(TRAVEL*TOFROM/(PREP+TOFROM));
771        END;
772      ELSE IF (PREP + TOFROM)=0 AND TRAVEL GT 0 THEN
773        TOFROMN = TRAVEL;
774      TOFROM=TOFROMN;
775      PREP=PREPN;
776      PARCACCT=PARCACCT+PARCEL+ACCOUNT;
777      ************************************************************;
778      ***WRITE OUT ROUTE DAY FILE                              ***;
779      ************************************************************;
```

```
NOTE: There were 36290 observations read from the data set WORK.TOTT.
NOTE: There were 30514 observations read from the data set WORK.NETWORK.
NOTE: There were 22276 observations read from the data set WORK.LOOPFOOT.
NOTE: There were 14291 observations read from the data set WORK.CURBLINE.
NOTE: There were 10323 observations read from the data set WORK.NDCBU.
NOTE: There were 397 observations read from the data set WORK.VIM.
NOTE: There were 11775 observations read from the data set WORK.CENTRAL.
NOTE: There were 17003 observations read from the data set WORK.DISMOUNT.
NOTE: There were 22764 observations read from the data set WORK.NONSTRT.
NOTE: There were 29369 observations read from the data set WORK.PREP.
NOTE: There were 24714 observations read from the data set WORK.OFFCLOCK.
NOTE: There were 30749 observations read from the data set WORK.TOFROM.
NOTE: There were 3167 observations read from the data set WORK.RELAY.
NOTE: There were 2091 observations read from the data set WORK.GENCOLL.
NOTE: There were 350 observations read from the data set WORK.EXPCOLL.
NOTE: There were 25788 observations read from the data set WORK.PARCEL.
NOTE: There were 22314 observations read from the data set WORK.ACCOUNT.
NOTE: There were 4359 observations read from the data set WORK.PARCACCT.
NOTE: There were 10678 observations read from the data set WORK.TRAVEL.
NOTE: There were 4492 observations read from the data set WORK.DDTRAVEL.
NOTE: There were 26157 observations read from the data set WORK.NA.
NOTE: The data set WORK.ALL has 36290 observations and 38 variables.
NOTE: The DATA statement used 2.41 CPU seconds and 13442K.
```

```
780      DATA _NULL_; SET ALL;
781      FILE OUT2;
782      PUT RTEZIP DATE MMDDYY8. ROUTENO DELMODE
783        BCURB BNDCBU BCENT BOTHR RCURB RNDCBU RCENT ROTHR
784         LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
785         NONSTRT PREP TOFROM NETWORK DDTRAVEL
786         RELAY GENCOLL EXPCOLL
787         PARCACCT OFFCLOCK NA TOTTIME;
788      ************************************************************;
789      **** THE ABOVE OUTPUT FILE GOES TO M. BRADLEY TO MATCH WITH ***;
790      **** VOLUMES FOR VARIABILITY ANALYSIS                      ***;
```

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```
791        ************************************************************;
792        **** THE FOLLOWING CODE GENERATES THE COST POOL PROPORTIONS ***;
793        **** TO USE IN THE CRA SPREADSHEETS                        ***;
794        ************************************************************;
795        /*THIS NEXT SECTION MULTIPLIES THE COST POOL TOTALS BY THE
796          SAMPLE WEIGHTS*/

NOTE: The file OUT2 is:
   Dsname=H30005.MDCD.COSTPOOL.FINAL.DATA,
   Unit=3390,Volume=T0AAC7,Disp=NEW,Blksize=6000,
   Lrecl=300,Recfm=FB

NOTE: 36290 records were written to the file OUT2.
NOTE: There were 36290 observations read from the data set WORK.ALL.
NOTE: The DATA statement used 2.74 CPU seconds and 13474K.

797        DATA WEIGHTS; INFILE WEIGHTS;
798        INPUT  RTEZIP  WGT;

NOTE: The infile WEIGHTS is:
   Dsname=H30005.MDCD.WEIGHTS.MASKZIPS.DATA,
   Unit=3390,Volume=T0AA72,Disp=SHR,Blksize=6000,
   Lrecl=30,Recfm=FB

NOTE: 167 records were read from the infile WEIGHTS.
NOTE: The data set WORK.WEIGHTS has 167 observations and 2 variables.
NOTE: The DATA statement used 0.01 CPU seconds and 13474K.

799        PROC SORT DATA=WEIGHTS; BY RTEZIP;

NOTE: There were 167 observations read from the data set WORK.WEIGHTS.
NOTE: The data set WORK.WEIGHTS has 167 observations and 2 variables.
NOTE: The PROCEDURE SORT used 0.00 CPU seconds and 13474K.

800        PROC SORT DATA=ALL; BY RTEZIP;

NOTE: There were 36290 observations read from the data set WORK.ALL.
NOTE: The data set WORK.ALL has 36290 observations and 38 variables.
NOTE: The PROCEDURE SORT used 0.24 CPU seconds and 13474K.

801        DATA WALL; MERGE ALL (IN=A) WEIGHTS; BY RTEZIP;
802        IF A=1;
803        IF WGT=. THEN DELETE;
804        LOOPFOOT=LOOPFOOT*WGT;
805        CURBLINE=CURBLINE*WGT;
806        NDCBU=NDCBU*WGT;
807        VIM=VIM*WGT;
808        CENTRAL=CENTRAL*WGT;
809        DISMOUNT=DISMOUNT*WGT;
810        NONSTRT=NONSTRT*WGT;
811        PREP=PREP*WGT;
812        TOFROM=TOFROM*WGT;
813        NETWORK=NETWORK*WGT;
```

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```
814        DDTRAVEL=DDTRAVEL*WGT;
815        RELAY=RELAY*WGT;
816        GENCOLL=GENCOLL*WGT;
817        EXPCOLL=EXPCOLL*WGT;
818        PARCEL=PARCEL*WGT;
819        ACCOUNT=ACCOUNT*WGT;
820        TRAVEL=TRAVEL*WGT;
821        PARCACCT=PARCACCT*WGT;
822        OFFCLOCK=OFFCLOCK*WGT;
823        NA=NA*WGT;
824        TOTTIME=TOTTIME*WGT;
825        /*APPORTION 'TRAVEL' TIME THAT COULD BE EITHER PREP OR TO/FROM
826         TIME TO PREP AND TO/FROM BASED ON THEIR PROPORTIONS IN THE
827         ROUTE DAY*/
828        IF (PREP + TOFROM) GT 0 THEN DO;
829           PREPN=PREP+(TRAVEL*PREP/(PREP+TOFROM));
830           TOFROMN=TOFROM+(TRAVEL*TOFROM/(PREP+TOFROM));
831           END;
832        ELSE IF (PREP + TOFROM)=0 AND TRAVEL GT 0 THEN
833           TOFROMN = TRAVEL;
834        TOFROM=TOFROMN;
835        PREP=PREPN;
836        PARCACCT=PARCACCT+PARCEL+ACCOUNT;
```

NOTE: *Missing values were generated as a result of performing an operation on missing values.*
Each place is given by: (Number of times) at (Line):(Column).
4512 at 811:13 1151 at 812:17 4512 at 828:13 4512 at 832:18
NOTE: There were 36290 observations read from the data set WORK.ALL.
NOTE: There were 167 observations read from the data set WORK.WEIGHTS.
NOTE: The data set WORK.WALL has 36290 observations and 39 variables.
NOTE: The DATA statement used 0.29 CPU seconds and 13474K.

```
837        PROC SORT DATA=WALL; BY DELMODE;
838        .
839        ************************************************************;
840        ***DO FINAL SUMMARY OF COST POOL TIMES BY DELIVERY MODE      ***;
841        ***READ INPUT INTO A SPREADSHEET AND CALCULATE PROPORTIONS OF***;
842        ***TOTAL TIME FOR ALL DELIVERY MODES                        ***;
843        ************************************************************;
```

NOTE: There were 36290 observations read from the data set WORK.WALL.
NOTE: The data set WORK.WALL has 36290 observations and 39 variables.
NOTE: *The PROCEDURE SORT used 0.24 CPU seconds and 13474K.*

```
844        PROC MEANS DATA=WALL NOPRINT;
845        BY DELMODE;
846        VAR
847           LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
848           PREP TOFROM NETWORK
849           RELAY GENCOLL EXPCOLL
850           PARCACCT DDTRAVEL NONSTRT OFFCLOCK NA TOTTIME;
851        OUTPUT OUT=WOUT SUM=;
```

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```
NOTE: There were 36290 observations read from the data set WORK.WALL.
NOTE: The data set WORK.WOUT has 6 observations and 21 variables.
NOTE: The PROCEDURE MEANS used 0.24 CPU seconds and 13474K.

852        DATA _NULL_; SET WOUT;
853        FILE OUT1;
854        PUT DELMODE
855           LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
856           PREP TOFROM NETWORK
857           RELAY GENCOLL EXPCOLL
858           PARCACCT DDTRAVEL NONSTRT OFFCLOCK NA TOTTIME;

NOTE: The file OUT1 is:
    Dsname=H30005.MDCD.CPSUM.FINAL.DATA,
    Unit=3390,Volume=T0AA57,Disp=NEW,Blksize=6000,
    Lrecl=300,Recfm=FB

NOTE: 6 records were written to the file OUT1.
NOTE: There were 6 observations read from the data set WORK.WOUT.
NOTE: The DATA statement used 0.02 CPU seconds and 13474K.
```

b. The line in the CPFINAL.SAS

TOD=INPUT(CTIME, TIME8.)

takes the string variable CTIME (read in the prior INPUT statement) and converts it into the SAS internal representation for time. This allows SAS to perform math calculations on the TOD variable, including a calculation of the elapsed time between scans.

c - f. *Please see the program LOG listed in the response to 6a above.*

DATACOLL, POOLS, and WEIGHTS are not files. They are identifiers used to connect the SAS input statements to the datasets that these statements refer to. Thus, the statement "infile DATACOLL" at line 2 of the program LOG identifies

the input dataset that the statements in lines 3–21 of the LOG refer to. Moreover, the statements following line 29 of the LOG identify this input dataset as being MDCD.ARCHIVE.SUBSET.V4MASK.DATA. In the same manner, the statement "INFILE POOLS" at line 122 refers to the input dataset MDCD.SCAN6.TEXT, and the statement "INFILE WEIGHTS" at line 797 refers to the input dataset MDCD.WEIGHTS.MASKZIPS.DATA.

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OCA/USPS-T15-7. Please refer to your testimony at page 3, lines 12-14. You indicate that invalid or error scan pairs accounted for 9.7% loss of time from the total of all scan sequences.

a. Your testimony seems to indicate that for the volume of mail analyzed you are unable to account for 9.7% of the time. Is this correct? If not, please explain in detail.

b. Assuming that you are unable to account for 9.7% of the time to deliver the mail on the routes studied, have you performed or are you aware of any analysis of the impact of this lack of information on the volume variability calculations? If so, please provide such analysis. If not, why not?

Response:

a. This is not correct. The proposed methodology for calculating volume variable city carrier street time costs accounts for all carrier time. Recall that the methodology proceeds in four steps. First, the total accrued street time is determined. Second, time pool proportions are applied against total accrued street time to form cost pools. Third, variabilities are applied to the cost pools to find volume variable costs. Fourth, a distribution key is used to distribute volume variable costs to classes and subclasses. The 9.7% error rate applies to the database that was used to form the proportions. Your question implies that the 9.7% was not used in forming the proportions. The 9.7% error rate actually represents time (from invalid scan sequences) that cannot be assigned to a time pool using the algorithm determined prior to the data collection and is set aside. It was anticipated that the incidence of invalid scan sequences would be relatively small with minimum impact on the conclusions derived from the

valid sequences. We feel strongly that the low 9.7% error rate supports our contention. By setting the 9.7% aside, we infer that the distribution of the invalid sequences are congruent to the valid sequences; therefore, the proportions used to create the cost pools with or without the invalid scans are the same. The final calculated proportions add up to 100%. All street time is accounted for.

b. No such analysis has been performed nor is it needed. The variabilities are estimated for only two of the time pools, regular delivery time and parcel/accountable delivery time. Both variabilities are based upon econometric equations which are estimated on a sample of the data. The sample is sufficiently large to permit reliable estimation of both equations as indicated by their goodness of fit statistics.

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OCA/USPS-T15-8. The purpose of this interrogatory is to clarify the delineation of ZIP Codes and column headings. These questions relate to databases in USPS LR-K-78, USPS LR-K-79, USPS LR-K-80, and USPS LR-K-81.

a. Please refer to USPS LR-K-81. There are four databases in the library reference: Timepool MDATA, PA Volume MDATA, LFVolume MDATA, and Density MDATA. Did witness Bradley obtain this data from any of your work? If the answer is yes, please identify the originating and destination databases. If your answer is no, please explain in detail.

b. Please refer to the four databases in USPS LR-K-81, the databases used by witness Bradley in his analysis. Please trace the ZIP Codes between any of your databases and the databases used by witness Bradley. For example, the ZIP Codes for AI161ZIPS.PRN and PA159.PRN do not seem to dovetail with any of the ZIP Codes used in USPS LR-K-81. Please explain.

c. In the case of USPS LR-K-79, do the values in the variable "Mask" in MDCD.WEIGHTS.MASKZIPS.DATA correspond to ZIP Codes in any databases in USPS LR-K-80 or USPS LR-K-81? Please explain in detail, providing a mapping of ZIP Codes to all other databases referenced in the introduction to this interrogatory.

d Column B of COSTPOOL2.FINAL.xls appears to provide ZIP Codes. Please provide a mapping of the ZIP Codes onto other databases mentioned in the heading to this interrogatory.

e In USPS LR-K-79, for the database MDCD.ARCHIVE.SUBSET.V4MASK, please provide a mapping of the ZIP Codes to other databases referenced in the heading to this interrogatory.

f. In USPS LR-K-79, for the database MDCD.ARCHIVE.SUBSET.V4MASK, please provide column headings for the variables.

g. In USPS LR-K-79, for the database MDCD.SCAN6, please provide column headings.

Response:

a. Yes. Witness Bradley uses COSTPOOL2.FINAL.XLS to generate

Timepool MDATA: PA159.PRN to generate PA Volume MDATA; and

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AL161ZIPS.PRN to generate LFVolume MDATA. Density MDATA does not rely on any data that I produce, rather on census data.

b. Please refer to the response to OCA/USPS-T15-4.

c. Please refer to the response to OCA/USPS-T15-4.

d. Please refer to the response to OCA/USPS-T15-4.

e. Please refer to the response to OCA/USPS-T15-4.

f. Please refer to the following excerpt from CPFINAL.SAS from USPS LR-K-79 for the column headers.

```
      DATA MDATA;            DESCRIPTION
INFILE DATA1 LRL;
INPUT
  1 DATE MMDDYY8.    Date for scan
  [illegible] ZIPDIF [illegible]    ZIP for route
  [illegible] SCANZIP [illegible]    Scanned ZIP
  [illegible] ROUTEN [illegible]    Route number
  [illegible] EMP [illegible]    Employee code
  [illegible] TIME [illegible]    Time of scan
  [illegible] INFRAME [illegible]    Whether the route is on the city carrier frame
  [illegible] DELMITE [illegible]    Delivery mode for route
  [illegible] BARCODE [illegible]    Barcode
  [illegible] BTYPE [illegible]    Possible business curbline deliveries
  [illegible] BNDCBU [illegible]    Possible business NDCBU deliveries
  [illegible] BCENT [illegible]    Possible business centralized deliveries
  [illegible] BOTHR [illegible]    Possible business other deliveries
  [illegible] RTYPE [illegible]    Possible residential curbline deliveries
  [illegible] RNDCBU [illegible]    Possible residential NDCBU deliveries
  [illegible] RCENT [illegible]    Possible residential centralized deliveries
  [illegible] ROTHR [illegible]    Possible residential other deliveries
  [illegible] ROUTE [illegible];    Full route number
```

g. Column 1 – barcode 1 number identifier; Column 2 – barcode 2 number identifier; column 3 – assigned time pool.

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TO INTERROGATORIES OF OFFICE OF THE CONSUMER ADVOCATE.

OCA/USPS-T15-9. On page 2 of "City Carrier Street Time Survey—Time Pool Datasets," USPS LR-K-79, you reference the file ACTIVITY.DEFINITIONS.DOC. There does not appear to be such a named file. Please provide the file or indicate where it may be found.

Response:

ACTIVITY.DEFINITIONS.DOC is the Appendix in USPS-LR-K-79, starting at

page 7.

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OCA/USPS-T15-10. Is it correct that the Postal Service has provided encrypted ZIP code information for the city carrier delivery study? If so, please provide the actual ZIP codes that correspond with the encrypted ZIP codes. OCA has no objection to having this key furnished under protective conditions.

RESPONSE:

Correct. A crosswalk between encoded ZIP Codes and actual ZIP Codes has been filed as USPS-LR-K-136, and access to that library reference is governed by the protective conditions established pursuant to Presiding Officer's Ruling No. R2005-1/20 (June 8, 2005).

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OCA/USPS-T15-11. Please refer to CostPool2.final, found in Library Reference K-79. Columns D through K are labeled possible deliveries.

a. Please confirm that the possible deliveries are delivery points (i.e., *mutually exclusive locations for the receipt of mail which, however, may be* contiguous). If you do not confirm, please explain.

b. Are there any other possible deliveries that are not accounted for in a route--that is, any possible deliveries that are not included in the current data set? If your answer is affirmative, please explain and provide the data.

c. Is it correct that if one sums for a specific day all of the possible delivery points as referenced in (a) and (b) for all routes in a ZIP Code, then one has all of the possible delivery points in the ZIP Code for that specific date? If your answer is not affirmative, please explain in detail.

d. Is it correct that all of the ZIP Codes for which witness Bradley performs an analysis are represented in the CostPool2.final database? If your answer is negative, please explain in detail.

e. Is it correct that the possible deliveries for each of witness Bradley's ZIP Codes can be found using the procedure outlined in (b)? Please explain.

Response:

a. Confirmed.

b. The possible deliveries in this data set are drawn from the Postal Service's Address Management System and are the official measure of possible deliveries for each route. While the AMS is regularly updated and believed to be accurate, there could be deliveries that are no longer active and not known to the carrier, as well as new possible deliveries that have not yet been recorded in the database. This number is thought to be quite small, however.

c. Not confirmed. See b.

d. Yes.

e. Part b does not outline a procedure. The possible deliveries used by Witness Bradley for each Zip Code are the sum of the possible deliveries

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for the routes within that Zip Code. These can be found in COSTPOOL2.FINAL. XLS. *The sums of columns D through K are the* possible deliveries for the route.

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OCA/USPS-T15-12. Please refer to CostPool2.final, found in Library Reference K-79.

a. Please confirm that columns N through R represent actual deliveries of mail in terms of numbers of pieces of mail, excluding parcels and accountables. If you do not confirm, please explain in detail.

b. Is it correct that if one sums for a specific day all of the actual deliveries of pieces of mail for all routes in a ZIP Code, excluding parcels and accountables, then one has all of the actual deliveries of mail in the ZIP Code for that specific date? If you do not confirm, please explain in detail.

Response:

a. Not Confirmed. Columns N through R are the total time spent delivering mail within curbline, NDCBU, VIM, Central and Dismount route sections.

b. No, see the response to a. The numbers of deliveries actually receiving mail are not recorded in Costpool2.Final.xls. The sum of columns D through K is the total of the possible deliveries for the route. Moreover, actual deliveries could include deliveries by carriers not included on the specific day because of lack of training, route inspections, etc.

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OCA/USPS-T15-13. Please refer to page 1 of "City Carrier Street Time Survey—Time Pool Datasets" in USPS LR-K-79. The file "MDCD.Archive.subset.v4mask.data" reports data for over 1.3 million records. Some of the variables have been discussed, defined, and/or implicitly or explicitly referenced in various USPS filed documents. For purposes of clarity, please define each of the variables listed below, from RTEZIP through ROUTE.

```
filename datacoll 'c:\bradley2005\lrk79\MDCD.Archive.subset.v4mask.data';

DATA MDCD;
  INFILE DATACOLL;
  INPUT
   @1 DATE [illegible]
   @10 RTEZIP 7.2
   @18 SCANZIP 7.2
   @28 ROUTENO [illegible]
   @30 EMP [illegible]
   @34 CTIME [illegible]
   @42 ONFRAME 1.
   @43 DELMODE [illegible]
   @44 BARCODE 3.
   @47 BCURB 5.
   @52 BNDCBU 5.
   @57 BCENT 5.
   @62 BOTHR 5.
   @67 RCURB 5.
   @72 RNDCBU 5.
   @77 RCENT 5.
   @82 ROTHR 5.
   @87 ROUTE [illegible] ;
```

Response:

Please see OCA/USPS T-15 8f.

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OCA/USPS-T15-14. Please refer to page 1 of "City Carrier Street Time Survey—Time Pool Datasets" in USPS LR-K-79. You list the file "Barcode.Scans.xls".

a. Is this file read into the program as the file "pools"? If your answer is negative, please explain in detail, including a statement of where, if anywhere, the files "Barcode.Scans.xls" enters the program. If the file is not used in the program, please explain the use of the file.

b. There appear to be three variables in the file "pools". Is this the entry of Scan6.text? Please explain as appropriate.

Response:

a. Not confirmed. The three variables in the file "pools" are read in from Scan6.text. Barcode.Scans.xls is provided for information purposes, as it contains the definitions for the barcodes shown in Scan6.text.

b. See a.

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OCA/USPS-T15-15. Please refer to page 2 of "City Carrier Street Time Survey—Time Pool Datasets" in USPS LR-K-79. You list the file "ACTIVITY.DEFINITIONS.DOC". Please state the location of the file; *i.e.*, where can it be found? If the file has not been provided, then please provide it.

Response:

Please see OCA/USPS-T15-9.

RESPONSE OF POSTAL SERVICE WITNESS DENNIS P. STEVENS TO INTERROGATORIES OF THE OFFICE OF THE CONSUMER ADVOCATE.

OCA/USPS-T15-16. Please refer to page 5 of "City Carrier Street Time Survey—Time Pool Datasets" in USPS LR-K-79. You discuss COSTPOOL2.FINAL.XLS. Are the ZIP Codes in this file correct and consistent with the corrected ZIP Codes in other Postal Service filings? Please explain.

RESPONSE:

Please see OCA/USPS-T15-4.

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OCA/USPS-T15-17. Please refer to your response to OCA/USPS-T15-8(f). You indicated that RTEZIP was denoted "ZIP for route" and SCANZIP was denoted "Scanned ZIP." Please explain exactly what the terms mean. That is, what is the difference between the two terms and what are their definitions? Assuming that a route covers part of one ZIP Code, are they always equal?

Response:

RTEZIP was labeled "ZIP for route" and represents the actual ZIP Code that was surveyed in the study. While "SCANZIP" represents the ZIP Code that was stored in the scanner. The ZIP stored in the scanner could be the ZIP Code where the mail is being delivered or the post office management ZIP, which is usually the ZIP code assigned to the broader finance number. Also, if a delivery unit has more than one ZIP Code carrier unit collocated at the site, only one ZIP is stored as the default in the scanner. That ZIP may or may not be the ZIP that was surveyed. For the purposes of the study, only RTEZIP is relevant.

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO INTERROGATORIES OF THE OCA

OCA/USPS-T15-18. Please refer to your answer to ADVO/USPS-T15-8(a). Did you examine whether on any specific day any city routes normally sampled were not included in the routes sampled for the specific day due to higher than normal delivery volumes.

a. If your answer is affirmative, please discuss in detail.

b. If your answer is negative, please explain why this analysis was not performed and provide information on the volume for the specific days for routes omitted from the sample.

Response:

No. First, I am not sure what you mean by "normal" delivery volumes. Mail volumes fluctuate within day (for example, Mondays vary) and across days (Monday through Saturday). Despite this fact, most carriers work fixed schedules. Mail volume fluctuation is in that sense "normal" and the post offices manage it by scheduling their carriers accordingly. On most days, it is anticipated that some number of carriers may have workloads that cannot be delivered in the carriers' workday, and some number of carriers may have workloads that do not consume the entirety of the carriers' workday. In those instances postal managers shift mail to create full workdays. Our focus was the ZIP not the carrier's workday. In the scenario described, the actual work hours for the ZIP may not change despite the shifting of workload between carriers.

a. N/A.

b. The analysis that was performed was at the ZIP level. The data collection was done by route, not carrier, and an attempt was made to do every route every day consistent with my response to ADVO/USPS-T15-8. Consequently, high volume days as well as low volume days were included in the survey. That variation is tracked in the study and can be discerned from the volume data. However, I did not try to classify a

work load level as being "normal". Nor, did I try to impute data where no data were recorded.

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OCA/USPS-T15-19. Please refer to your answer to ADVO/USPS-T15-6(b). Please indicate why no delivery mode has been assigned to the referenced routes.

Response:

No delivery mode was assigned when we could not ascertain a delivery mode for the referenced route from the CCS frame. In most instances, this was because the referenced route was not listed on the frame at all. In some cases, the referenced route was on the frame, but no delivery mode information was included.

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OCA/USPS-T15-20. Please refer to your response to ADVO/USPS-T15-5(d). Please provide any data, studies, memoranda, or position papers not already provided that substantiate your statement, "The USPS has concluded that the invalid scan rate is de minimis . . . ." Please also provide citations to the statistical, sampling, economic, survey, and/or other professional literature as appropriate and available.

Response:

The current PRC methodology relies on the testimony of Witness Hume, USPS-7 in R-87 In his Exhibit. USPS-7B, on page 14, he provides his distribution of STST components. He listed total tallies at 7,103 with "Missed" tallies of 551 or 7.75 percent of the total. Note, in my understanding of the 1986 study, a typical carrier was beeped 3 times and recorded his or her activity on a card. The data from the card was communicated to a technician during a debriefing at the end of the day. Further, my understanding of "missed" tallies is that they were tallies resulting from instances where the carrier did not receive the beep or did not note his or her activity when the beep occurred, or could not when prompted during the debriefing remember the activity that he or she was engaged in at the time of the beep. The 7.75 percent number is after a debriefing, where attempts were made to recover information so that the "missing" tallies could be converted to valid activities. The appropriate comparison with the 7.75 percent from our CCSTS, as stated in ADVO/USPS T-15-5c, is 6.9 percent, which is the proportion of scan pairs deemed invalid of the grand total count of recorded scan pairs rather than the 9.7 percent, which is calculated as the ratio of the total weighted invalid scan time over the sum of this invalid scan time and the total weighted valid scan time. Our number of 6.9 percent compares favorably with the status quo, especially considering the larger number of scans, no debriefing to fix or change recorded invalid sequences, and no corrections of known errors. Remember that, in the CCSTS, no

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO INTERROGATORIES OF THE OCA

provision was given the carriers to correct known scanning errors. whether intentional or accidental, after the fact, Intentional errors are ones that the carriers scanned and then realized that another barcode should have been scanned. Accidental would be instances where the carriers accidentally scanned a wrong barcode while attempting to scan the correct barcode. The carriers were told to ignore the erroneous scan and to continue with the correct scan. All of these factors led me to my characterization of the invalid scan rate as *de minimis*.

As to the second part of your question, because of the size and complexity of the study, I do not feel that any one cite will be appropriate to answer all of the issues involved.

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TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE
REDIRECTED FROM WITNESS BRADLEY

OCA/USPS-T14-1. Please refer to the testimony of witness Jeffery W. Lewis (USPS-T-30).

a. At page 3, lines 13-16, witness Lewis states that "adding bundles results in carriers retrieving mail from more sources when delivering mail on the street. For example, carriers must check and withdraw mail from the bundle of DPS letters, from the bundle of cased mail, and from each of the additional bundles taken directly to the street."

* * * * *

ii. Please confirm that Library Reference K-80 contains a dataset--AL161ZIPS.PRN–with 40,668 Zip-date-route records of volumes for delivery-point-sequenced (DPS) letters, non-DPS (i.e., cased) automation letters, non-DPS (i.e., cased) non-automation (i.e., "other") letters, cased flats, and sequenced mail volumes.

b. At page 4, lines 2-5, witness Lewis states that there has been "an increase in curbline, cluster box (CBU), and centralized deliveries and virtually [no] growth of door delivery. Over time, as these modes of delivery have grown as a percentage of total deliveries, this change has fueled an increase in carrier street productivity."

i. Please confirm that DOIS maintains number of possible delivery points by type for each route. (*See* LR-K-80 at 1.) If you do not confirm, please explain.

OCA/USPS-T14-1a.ii. **Response**

Confirmed.

OCA/USPS-T14-1b.i. **Response**

In LR-K-80 at 1, type refers to delivery mode. See T14-1b.ii. DOIS maintains delivery points by delivery mode.

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO
POIR NO. 5, QUESTION 1

1. Library Reference LR-K-79 contains a SAS program (CPFINAL.sas), and input files ' that consist of an Excel data file (MDCD.WEIGHTS.MASKZIPS.DATA. data.xls), a text file (MDCD.scan6.txt) and a data file (Mdcd.archive.subset.v4mask.data). The SAS program has been written for mainframe SAS, and cannot be executed using a PC-SAS platform. Initial attempts by Commission staff to convert the mainframe version of SAS, while executable, did not replicate witness Stevens' results. Please provide the above-listed input files and SAS program in a PC-SAS executable format, along with the accompanying SAS log.

RESPONSE:

The PC-SAS version of CPFINAL.sas is filed as USPS-LR-K-132. Note that you will need to open the input data file MDCD.WEIGHTS.MASKZIPS.DATA.xls in Excel before running the program. This program produces the identical outputs. The log file is included below.

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: Copyright (c) 1999-2001 by SAS Institute Inc., Cary, NC, USA.
NOTE: SAS (r) Proprietary Software Release 8.2 (TS2M0)
      Licensed to US POSTAL SERVICE, Site 0038843016.
NOTE: This session is executing on the WIN_PRO  platform.


NOTE: SAS initialization used:
      real time           5.92 seconds
      cpu time            1.80 seconds

1     Filename DATACLLL 'C:\Documents and Settings\nkay\My
      Documents\POSTAL on
      Nkay\SASfiles\LR-79\MDCD.ARCHIVE.SUBSET.V4MASK.DATA';
2     Filename POOLS 'C:\Documents and Settings\nkay\My Documents\POSTAL
      on
3     Nkay\SASfiles\LR-79\MDCD.SCAN6.txt';
4     Filename WEIGHTS dde 'excel|maskwgt!R2C1:R168C2';
5     Filename CUTI 'C:\Documents and Settings\nkay\My Documents\POSTAL
      on
6     Nkay\SASfiles\LR-79\cpfinal.DAT';

7         DATA POOLS; INFILE POOLS truncover;
          INPUT BARCODE1 BARCODE  CP $;
8


NOTE:  The infile POOLS is:

       File Name=C:\Documents and Settings\nkay\My Documents\POSTAL on
       Nkay\SASfiles\LR-79\MDCD.SCAN6.txt,
       RECFM=V,LRECL=256

NOTE: 832 records were read from the infile POOLS.
      The minimum record length was 10.
      The maximum record length was 25.
NOTE: The data set WORK.POOLS has 832 observations and 3 variables.
NOTE: DATA statement used:
      real time           0.16 seconds
      cpu time            0.14 seconds


         DATA WEIGHTS; INFILE WEIGHTS truncover;
9        INPUT  PTRCODE  WGT;

NOTE:  The infile WEIGHTS is:
       DDE Session,
       R2C1:R168C2 maskwgt!R2C1:R168C2,RECFM=V,
       LRECL=32767

NOTE: 167 records were read from the infile WEIGHTS.
      The minimum record length was 10.
      The maximum record length was 16.
NOTE: The data set WORK.WEIGHTS has 167 observations and 2 variables.
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: DATA statement used:
      real time           0.04 seconds
      cpu time            0.03 seconds


11      Proc print data=weights;
12
13

NOTE: There were 167 observations read from the data set WORK.WEIGHTS.
NOTE: PROCEDURE PRINT used:
      real time           0.44 seconds
      cpu time            0.14 seconds


14      DATA MDCD;
15      INFILE DATACOLL truncover;
16      INPUT
17       @1 DATE MMDDYY8.
18       @10 RTEZIP 7.2
19       @18 SCANZIP 7.2
20       @28 ROUTENO $2.
21       @30 EMP $4.
22       @34 CTIME $6.
23       @42 ONFRAME 1.
24       @43 DELMODE $1.
25       @44 BARCODE 5.
26       @47 BCURB  5.
27       @52 BNDCBU 5.
28       @57 BCENT  5.
29       @62 BOTHR  5.
30       @67 RCURB  5.
31       @72 RNDCBU 5.
32       @77 RCENT  5.
33       @82 ROTHR  5.
34       @87 ROUTE $8.;
35      TCP=INPUT(CTIME,TIME8. );
36      IF DELMODE = ' ' THEN DELMODE  'X';
37      ****************************************************;
38      ****   GENERATE SCAN PAIRS                         ***;
39      ****************************************************;
40
41       *THIS GROUP OF CODE NUMBERS EACH OBSERVATION IN
42        A DATE/ZIP/ROUTE/EMP SEQUENTIALLY;

NOTE: The infile DATACOLL is:

      File Name=C:\Documents and Settings\nkay\My Documents\POSTAL on
      Nkay\SASfiles\LR-79\MDCD.ARCHIVE.SUBSET.V4MASK.DATA,
      RECFM=V,LRECL=,86

NOTE: 1317755 records were read from the infile DATACOLL.
      The minimum record length was 86.
      The maximum record length was 94.
NOTE: The data set WORK.MDCD has 1317755 observations and 19 variables.
NOTE: DATA statement used:
      real time           26.86 seconds
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
      cpu time              13.39 seconds


43        PROC SORT DATA=MDCD; BY DATE SCANZIP ROUTE EMP TOD;
44
45        ************************************************************;
46        **** LOOK AT SCAN PAIRS AND DETERMINE IF VALID/INVALID ****;
47        **** SAVE PRIOR TWO RECORD VARS FOR LATER USE          ****;
48        ************************************************************;

NOTE: There were 1317755 observations read from the data set WORK.MDCD.
NOTE: The data set WORK.MDCD has 1317755 observations and 19 variables.
NOTE: PROCEDURE SORT used:
      real time             1:00.83
      cpu time              8.45 seconds


49        DATA M; SET MDCD; BY DATE SCANZIP ROUTE EMP;
          INFORMAT PTOD ETOD TIME8.;
50        IF FIRST.EMP THEN DO;
51             PZIP=.;
52             PROUTE =" ";
53             PEMP= " ";
54             PDATE = .;
55             PTOD  = .;
56             PBARCODE = .;
57        END;
58        ETOD  = TOD-PTOD ;
59        ZIP1 = PZIP;
60        ROUTE1 = PROUTE;
61        EMP1 = PEMP;
62        DATE1 = PDATE;
63        BARCODE1 = PBARCODE;
64        PZIP = SCANZIP;
65        PROUTE   ROUTE;
66        PEMP = EMP;
67        PDATE = DATE;
68        PTOD  = TOD ;
69        PBARCODE = BARCODE;
70        RETAIN PZIP PROUTE PDATE PTOD PEMP PBARCODE;
71
72        IF ETOD = . THEN DELETE;
73        TIMEDAY=PUT TOD,TIME.);
74        PTIME=PUT(PTOD,TIME.);

NOTE: Missing values were generated as a result of performing an
      operation on missing values.
      Each place is given by: (Number of times) at (Line):(Column).
      41881 at 59:16
NOTE: There were 1317755 observations read from the data set WORK.MDCD.
NOTE: The data set WORK.M has 1276063 observations and 33 variables.
NOTE: DATA statement used:
      real time             41.88 seconds
      cpu time              3.49 seconds


75        PROC DATASETS;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
                                        -----Directory-----

            Libref:         WORK
            Engine:         V8
            Physical Name:  C:\DOCUME~1\nkay\LOCALS~1\Temp\SAS Temporary
Files\_TD236
            File Name:      C:\DOCUME~1\nkay\LOCALS~1\Temp\SAS Temporary
Files\_TD236


                        #  Name     Memtype   File Size  Last Modified

*****************************************************************
                        1  M        DATA      290391040
24MAY2005:15:07:21
                        2  MDCD     DATA      179921920
24MAY2005:15:06:40
                        3  POOLS    DATA          17408
24MAY2005:15:05:13
                        4  WEIGHTS  DATA           5120
24MAY2005:15:05:14
NOTE:                     DELETE MDCD;
NOTE:
NOTE:      ************************************************************;
NOTE:      *** FIRST GO THROUGH SCANS AND FIX DUPLICATE            ***;
NOTE:      *** BARCODE NUMBER PROBLEM FOR COLLECTION BARCODES      ***;
NOTE:      *** PROBLEM WAS DUE TO INCORRECT BARCODES IN EARLY      ***;
NOTE:      *** VERSION OF TRAINING BY KLET                         ***;
NOTE:      ************************************************************;

NOTE: The data set WORK.MDCD (memtype= DATA ).
NOTE: PROCEDURE DATASETS used:
      real time           1.26 seconds
      cpu time            0.06 seconds


NOTE:   DATA M; SET M;
NOTE:   RETAIN GENCOLL EXPCOLL CNTGEN CNTEXP GENEND EXPEND 0;
NOTE:     IF BARCODE1=391 AND BARCODE=87 THEN BARCODE=391;
NOTE:     IF BARCODE1=407 AND BARCODE=87 THEN BARCODE=407;
NOTE:     IF BARCODE1=407 AND LAST BARCODE =407 THEN BARCODE1=407;
NOTE:     IF BARCODE1=391 AND LAST BARCODE =391 THEN BARCODE1=391;
NOTE:     IF BARCODE1=391 AND
NOTE:            BARCODE=70 OR BARCODE=87 OR BARCODE=32 OR
NOTE:            BARCODE=94) THEN GENCOLL=1;
NOTE:            ELSE GENCOLL=0;
NOTE:     IF BARCODE1=407 AND
NOTE:             BARCODE=70 OR BARCODE=87 OR BARCODE=32 OR
NOTE:            BARCODE=94) THEN EXPCOLL=1;
NOTE:            ELSE EXPCOLL=0;
NOTE:     IF GENCOLL=1 AND
NOTE:             BARCODE=100 OR BARCODE=117 OR BARCODE=124
NOTE:             OR BARCODE=64) THEN GENCOLL=1;
NOTE:             ELSE GENCOLL=0;
NOTE:     IF EXPCOLL=1 AND
NOTE:             BARCODE=100 OR BARCODE=117 OR BARCODE=124
NOTE:             OR BARCODE=64) THEN EXPCOLL=1;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
105             ELSE EXPCOLL=0;
106     IF GENCOLL=1 AND BARCODE=353 AND
107             (BARCODE1=100 OR BARCODE1=117 OR BARCODE1=124
108             OR BARCODE1=63) THEN DO;
109             BARCODE=391;
110             GENCOLL=0;
111             END;
112     IF EXPCOLL=1 AND BARCODE=360 AND
113             (BARCODE1=100 OR BARCODE1=117 OR BARCODE1=124
114             OR BARCODE1=63) THEN DO;
115             BARCODE=407;
116             EXPCOLL=0;
117             END;
118     DROP GENCOLL EXPCOLL;
119          /*NOT A LUNCH/BREAK/EMG OR AN END COLLECTION - NOT
120           ALLOWED AFTER START COLLECTION*/
121           * END FIX DUPLICATE BARCODES;
122      ************************************************************;
123      ***    MERGE IN COST POOL DEFINITIONS                    ***;
124      ***      NEED TO CHOOSE FROM ALTERNATE DEFINITION        ***;
125      ***      FOR CERTAIN SCANS BASED ON WHETHER INSIDE       ***;
126      ***      OR OUTSIDE A ROUTE SECTION                      ***;
127      ***      OR OTHER CONDITIONS                             ***;
128      ************************************************************;
129
```

```
NOTE: There were 1276063 observations read from the data set WORK.M.
NOTE: The data set WORK.M has 1276063 observations and 37 variables.
NOTE: DATA statement used:
      real time           50.21 seconds
      cpu time            5.02 seconds


130        PROC SORT DATA=M; BY BARCODE1 BARCODE;

NOTE: There were 1276063 observations read from the data set WORK.M.
NOTE: The data set WORK.M has 1276063 observations and 37 variables.
NOTE: PROCEDURE SORT used:
      real time           6:11.68
      cpu time            13.48 seconds


131        PROC SORT DATA=POOLS; BY BARCODE1 BARCODE;

NOTE: There were 542 observations read from the data set WORK.POOLS.
NOTE: The data set WORK.POOLS has 542 observations and 3 variables.
NOTE: PROCEDURE SORT used:
      real time           0.11 seconds
      cpu time            0.01 seconds


132        DATA MERGE; MERGE M  IN=MM POOLS; BY BARCODE1 BARCODE;
133          IF MM=1;

NOTE: There were 1276063 observations read from the data set WORK.M.
NOTE: There were 542 observations read from the data set WORK.POOLS.
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: The data set WORK.MPOOL has 1276063 observations and 38
variables.
NOTE: DATA statement used:
      real time           1:04.70
      cpu time            7.20 seconds


134       PROC DATASETS;
                                          -----Directory-----

            Libref:         WORK
            Engine:         V8
            Physical Name:  C:\DOCUME~1\nkay\LOCALS~1\Temp\SAS Temporary
Files _TD6:6
            File Name:      C:\DOCUME~1\nkay\LOCALS~1\Temp\SAS Temporary
Files _TD6:6


                        #  Name      Memtype   File Size  Last Modified

-----------------------------------------------------------------------
                        1  M         DATA      331875328
JANUARY 08,15:14:16
                        2  MPOOL     DATA      342754304
JANUARY 08,15:16:1
                        3  POOLS     DATA          17408
JANUARY 08,15:14:16
                        4  WEIGHTS   DATA           5120
JANUARY 08,15:16:1
144                       DELETE M;

NOTE: Deleting WORK.M (memtype=DATA)
NOTE: PROCEDURE DATASETS used:
      real time           1.44 seconds
      cpu time            0.06 seconds


145       PROC SORT DATA=MPOOL; BY DATE RTEZIP ROUTE EMP TOD;
146      ************************************************************;
147      ***        SET FLAGS FOR DETERMINING COST POOL           ***;
148      ***        WHEN ALTERNATE ASSIGNMENTS POSSIBLE            ***;
149      ***    INSIDE ROUTE SECTION:                              ***;
150      ***    ENDS AT END SECTION OR ANY OTHER START SECTION     ***;
151      ***    SECTIONS:          START          END              ***;
152      ***    FLAT (P&L)          140           179              ***;
153      ***    PIPELINE            180           186              ***;
154      ***    CENTRAL             [illegible]   230              ***;
155      ***    DISMOUNT            231           292              ***;
156      ***    VIM                 [illegible]   247              ***;
157      ***    MECHY               [illegible]   223              ***;
158      ***    IN AN ACTIVITY                                     ***;
159      ***    ENDS AT AN END ACTIVITY OR ANY NON-ADMIN SCAN      ***;
160      ***    ACTIVITY           START          END              ***;
161      ***    RELAY               315           346              ***;
162      ***    GENERAL COLLECTION  322           391              ***;
163      ***    EXPRESS COLLECTION  339           407              ***;
164      ***    PARCEL DELIVERY     353           377              ***;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
155      ***   ACCOUNTABLE DEL    360          384                ***;
156      ***   OTHER FLAGS:                                       ***;
157      ***   LEAVE OFFICE        25                              ***;
158      ***   AT DEV PARK PT     254          285                ***;
159      ************************************************************;

NOTE: There were 1276063 observations read from the data set
WORK.MPOOL.
NOTE: The data set WORK.MPOOL has 1276063 observations and 38
variables.
NOTE: PROCEDURE SORT used:
      real time           9:42.38
      cpu time            22.73 seconds


1        DATA MPOOL; SET MPOOL; BY DATE RTEZIP ROUTE EMP;
2        RETAIN FOOT CURB CENT MOUNT VIM NDCBU
3                RELAY GENCOLL EXPCOLL PARC ACCT DEVPKPT
4                LEAVEOFC 0;
5        POOL = NA;
6        IF POOL=' '          ' THEN POOL='NA';
7        ELSE IF POOL=' ' THEN POOL='NA';
8        ************************************************************;
9        *SOME POST POOL ASSIGNMENTS ARE CONDITIONAL BASED ON INSIDE ;
10       *OUTSIDE ROUTE SECTION OR OTHER CONDITIONS.  FIRST SET FLAGS;
11       *TO KNOW WHAT ROUTE SECTION/ACTIVITY IS CURRENT             ;
12       ************************************************************;
13
14             IF FIRST.EMP THEN DO;
15                FOOT=0; CURB=0; CENT=0; MOUNT=0; VIM=0; NDCBU=0;
16                RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
17                LEAVEOFC=0; DEVPKPT=0;
18                END;
19
20             *START ROUTE SECTION;
21             IF RARTIDE1= 148 THEN DO;  *FOOT/LOOP SECTION START;
22                     FOOT=1; CURB=0; CENT=0; MOUNT=0; VIM=0; NDCBU=0;
23                     RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
24                     END;
25             IF RARTIDE1= 150 THEN DO;  *MOUNTED-CURBLINE;
26                     FOOT=0; CURB=1; CENT=0; MOUNT=0; VIM=0; NDCBU=0;
27                     RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
28                     END;
29             IF RARTIDE1= 193 THEN DO;  *NDCBU;
30                     FOOT=0; CURB=0; CENT=0; MOUNT=0; VIM=0; NDCBU=1;
31                     RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
32                     END;
33             IF RARTIDE1= 203 THEN DO;  *CENTRAL;
34                     FOOT=0; CURB=0; CENT=1; MOUNT=0; VIM=0; NDCBU=0;
35                     RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
36                     END;
37             IF RARTIDE1= 216 THEN DO;  *VIM;
38                     FOOT=0; CURB=0; CENT=0; MOUNT=0; VIM=1; NDCBU=0;
39                     RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
40                     END;
41             IF RARTIDE1= 261 THEN DO;  *DISMOUNT;
42                     FOOT=0; CURB=0; CENT=0; MOUNT=1; VIM=0; NDCBU=0;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
                RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
                END;

        *START ACTIVITY;
        IF BARCODE1=315 THEN RELAY=1;
        IF BARCODE1=322 THEN GENCOLL=1;
        IF BARCODE1=339 THEN EXPCOLL=1;
        IF BARCODE1=353 THEN PARC=1;
        IF BARCODE1=360 THEN ACCT=1;
        IF BARCODE1=25 THEN LEAVEOFC=1;

        *ARRIVE AND LEAVE DEVIATION PARK POINT;
        IF BARCODE1=254 THEN DEVPKPT=1;  *ARRIVAL AT DEV PK PT;
        IF BARCODE1=285 THEN DEVPKPT=2;  *LEAVE DEV PK PT;

        *FINISH ROUTE SECTION - ALL ACTIVITIES END TOO;
        IF BARCODE1= 179 OR BARCODE1=186 OR BARCODE1=223 OR
             BARCODE1=230 OR BARCODE1=247 OR BARCODE1=292 THEN DO;
             *FINISH SECTION;
             FCCT=0; CURB=0; CENT=0; MOUNT=0; VIM=0; NDCBU=0;
             RELAY=0; GENCOLL=0; EXPCOLL=0; PARC=0; ACCT=0;
             DEVPKPT=0; LEAVEOFC=0;
             END;

        *END ACTIVITY   END IF REACH END ACTIVITY SCAN OR ANY
         NON-ADMIN SCAN;
        IF RELAY=1 THEN DO;
           IF BARCODE1=315 THEN RELAY=1;
           ELSE IF  BARCODE1=446 THEN RELAY=0;
           ELSE IF BARCODE1= [illegible] THEN RELAY=1;
           ELSE IF BARCODE1= [illegible] THEN RELAY=1;
           ELSE IF BARCODE1= [illegible] THEN RELAY=1;
           ELSE IF BARCODE1= [illegible] THEN RELAY=1;
           ELSE IF BARCODE1= [illegible] THEN RELAY=1;
           ELSE IF BARCODE1= [illegible] THEN RELAY=1;
           ELSE IF BARCODE1= [illegible] THEN RELAY=1;
           ELSE IF BARCODE1= 184 THEN RELAY=1;
           ELSE RELAY=0;
           END;
        IF GENCOLL=1 THEN DO;
           IF BARCODE1=322 THEN GENCOLL=1;
           ELSE IF  BARCODE1=[illegible] THEN GENCOLL=0;
           ELSE IF BARCODE1= [illegible] THEN GENCOLL=1;
           ELSE IF BARCODE1= [illegible] THEN GENCOLL=1;
           ELSE IF BARCODE1= [illegible] THEN GENCOLL=1;
           ELSE IF BARCODE1= [illegible] THEN GENCOLL=1;
           ELSE IF BARCODE1= [illegible] THEN GENCOLL=1;
           ELSE IF BARCODE1= [illegible] THEN GENCOLL=1;
           ELSE IF BARCODE1= [illegible] THEN GENCOLL=1;
           ELSE IF BARCODE1= [illegible] THEN GENCOLL=1;
           ELSE GENCOLL=0;
           END;
        IF EXPCOLL=1 THEN DO;
           IF BARCODE1=[illegible] THEN EXPCOLL=1;
           ELSE IF BARCODE1=407 THEN EXPCOLL=0;
           ELSE IF BARCODE1= 32 THEN EXPCOLL=1;
           ELSE IF BARCODE1= 63 THEN EXPCOLL=1;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
            ELSE IF BARCODE1=100 THEN EXPCOLL=1;
            ELSE IF BARCODE1=117 THEN EXPCOLL=1;
            ELSE IF BARCODE1=124 THEN EXPCOLL=1;
            ELSE IF BARCODE1= 94 THEN EXPCOLL=1;
            ELSE IF BARCODE1= 87 THEN EXPCOLL=1;
            ELSE IF BARCODE1= 70 THEN EXPCOLL=1;
            ELSE EXPCOLL=0;
            END;
         IF PARC=1 THEN DO;
            IF BARCODE1=353 THEN PARC=1;
            ELSE IF  BARCODE1=377 THEN PARC=0;
            ELSE IF BARCODE1= 32 THEN PARC=1;
            ELSE IF BARCODE1= 63 THEN PARC=1;
            ELSE IF BARCODE1= 100 THEN PARC=1;
            ELSE IF BARCODE1= 117 THEN PARC=1;
            ELSE IF BARCODE1= 124 THEN PARC=1;
            ELSE IF BARCODE1= 94 THEN PARC=1;
            ELSE IF BARCODE1= 70 THEN PARC=1;
            ELSE IF BARCODE1= 87 THEN PARC=1;
            ELSE PARC=0;
            END;
         IF ACCT=1 THEN DO;
            IF BARCODE1=360 THEN ACCT=1;
            ELSE IF BARCODE1=384 THEN ACCT=0;
            ELSE IF BARCODE1= 32 THEN ACCT=1;
            ELSE IF BARCODE1= 63 THEN ACCT=1;
            ELSE IF BARCODE1= 70 THEN ACCT=1;
            ELSE IF BARCODE1= 100 THEN ACCT=1;
            ELSE IF BARCODE1= 117 THEN ACCT=1;
            ELSE IF BARCODE1= 124 THEN ACCT=1;
            ELSE IF BARCODE1= 94 THEN ACCT=1;
            ELSE IF BARCODE1= 87 THEN ACCT=1;
            ELSE ACCT=0;
            END;
         *END LEAVE OFFICE AS SOON AS REACH ANY NON-ADMIN SCAN
          AFTER LEAVING OFFICE;
         IF LEAVEOFC=1 THEN DO;
            IF BARCODE1=25 THEN LEAVEOFC=1;
            ELSE IF BARCODE1= 70 THEN LEAVEOFC=1;
            ELSE IF BARCODE1= 32 THEN LEAVEOFC=1;
            ELSE IF BARCODE1= 63 THEN LEAVEOFC=1;
            ELSE IF BARCODE1= 100 THEN LEAVEOFC=1;
            ELSE IF BARCODE1= 117 THEN LEAVEOFC=1;
            ELSE IF BARCODE1= 124 THEN LEAVEOFC=1;
            ELSE IF BARCODE1= 94 THEN LEAVEOFC=1;
            ELSE IF BARCODE1= 87 THEN LEAVEOFC=1;
            ELSE LEAVEOFC=0;
            END;
         *END DEVIATION PARK POINT AS SOON AS REACH ANY NON-ADMIN
          SCAN AFTER A DEVIATION PARK POINT SCAN;
         IF DEVPKPT=1 OR DEVPKPT=2 THEN DO;
            IF BARCODE1= 70 THEN DEVPKPT=DEVPKPT;
            ELSE IF BARCODE1= 32 THEN DEVPKPT=DEVPKPT;
            ELSE IF BARCODE1= 63 THEN DEVPKPT=DEVPKPT;
            ELSE IF BARCODE1= 100 THEN DEVPKPT=DEVPKPT;
            ELSE IF BARCODE1= 117 THEN DEVPKPT=DEVPKPT;
            ELSE IF BARCODE1= 124 THEN DEVPKPT=DEVPKPT;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
316             ELSE IF BARCODE1= 94 THEN DEVPKPT=DEVPKPT;
317             ELSE IF BARCODE1= 87 THEN DEVPKPT=DEVPKPT;
318             ELSE DEVPKPT=0;
319             END;
320
*************************************************************;
321        ***   FLAGS ALL SET   NOW GO THROUGH SCAN PAIRS AND
***;
322        ***   ASSIGN COST POOLS BASED ON FLAGS IF NEEDED
***;
323
*************************************************************;
324
325           *END ADMIN START ANOTHER ADMIN;
326           IF  BARCODE1=63 AND BARCODE=32) OR
327               BARCODE1=63 AND BARCODE=70) OR
328               BARCODE1=63 AND BARCODE=87) OR
329               BARCODE1=63 AND BARCODE=94) OR
330               BARCODE1=100 AND BARCODE=32) OR
331               BARCODE1=100 AND BARCODE=70) OR
332               BARCODE1=100 AND BARCODE=87) OR
333               BARCODE1=100 AND BARCODE=94) OR
334               BARCODE1=117 AND BARCODE=32) OR
335               BARCODE1=117 AND BARCODE=70) OR
336               BARCODE1=117 AND BARCODE=87) OR
337               BARCODE1=117 AND BARCODE=94) OR
338               BARCODE1=124 AND BARCODE=32) OR
339               BARCODE1=124 AND BARCODE=70) OR
340               BARCODE1=124 AND BARCODE=87) OR
341               BARCODE1=124 AND BARCODE=94) THEN DO;
342             IF RELAY=1 THEN          POOL= 'RELAY';
343             ELSE IF GENCOLL=1 THEN POOL= 'GENCOLL';
344             ELSE IF EXPCOLL=1 THEN POOL= 'EXPCOLL';
345             ELSE IF PARC=1 THEN     POOL= 'PARCEL' ;
346             ELSE IF ACCT=1 THEN     POOL= 'ACCOUNT' ;
347             ELSE IF FOOT=1 THEN     POOL= 'LOOPFOOT' ;
348             ELSE IF CURB=1 THEN     POOL= 'CURBLINE' ;
349             ELSE IF CENT=1 THEN     POOL= 'CENTRAL' ;
350             ELSE IF MOUNT=1 THEN    POOL= 'DISMOUNT' ;
351             ELSE IF VIM=1 THEN      POOL= 'VIM' ;
352             ELSE IF NDCBU=1 THEN    POOL= 'NDCBU' ;
353             ELSE IF FOOT=0 AND CURB=0 AND CENT=0 AND
354                  MOUNT=0 AND VIM=0 AND NDCBU=0 AND
355                  LEAVEOFF=1 THEN  POOL= 'NETWORK' ;
356             ELSE IF FOOT=0 AND CURB=0 AND CENT=0 AND
357                  MOUNT=0 AND VIM=0 AND NDCBU=0 AND
358                  LEAVEOFF=1 THEN  POOL= 'TOFROM' ;
359             ELSE IF DEVPKPT=1 THEN POOL= 'DDTRAVEL' ;
360             ELSE IF DEVPKPT=0 THEN POOL= 'PARCACCT' ;
361             ELSE POOL= 'NA' ;
362             END;
363
364           *END ADMIN - START SECTION*/
365           IF  BARCODE1=63 AND BARCODE=148) OR
366               BARCODE1=63 AND BARCODE=155) OR
367               BARCODE1=63 AND BARCODE=193) OR
368               BARCODE1=63 AND BARCODE=209) OR
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
369            (BARCODE1=63 AND BARCODE=216) OR
370            (BARCODE1=63 AND BARCODE=261) OR
371            (BARCODE1=100 AND BARCODE=148) OR
372            (BARCODE1=100 AND BARCODE=155) OR
373            (BARCODE1=100 AND BARCODE=193) OR
374            (BARCODE1=100 AND BARCODE=209) OR
375            (BARCODE1=100 AND BARCODE=216) OR
376            (BARCODE1=100 AND BARCODE=261) OR
377            (BARCODE1=117 AND BARCODE=148) OR
378            (BARCODE1=117 AND BARCODE=155) OR
379            (BARCODE1=117 AND BARCODE=193) OR
380            (BARCODE1=117 AND BARCODE=209) OR
381            (BARCODE1=117 AND BARCODE=216) OR
382            (BARCODE1=117 AND BARCODE=261) OR
383            (BARCODE1=124 AND BARCODE=148) OR
384            (BARCODE1=124 AND BARCODE=155) OR
385            (BARCODE1=124 AND BARCODE=193) OR
386            (BARCODE1=124 AND BARCODE=209) OR
387            (BARCODE1=124 AND BARCODE=216) OR
388            (BARCODE1=124 AND BARCODE=261) THEN DO;
389             IF LEAVEOFC=1 THEN POOL =   'TOFROM'     ;
390             ELSE IF DEVPKPT=2 THEN POOL =   'DDTRAVEL' ;
391             ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
392                      VIM=0 AND NDCBU=0 AND FOOT=0) THEN
393                     POOL= 'NETWORK' ;
394             ELSE POOL =   'NA' ;
395             END;
396
397          *END ADMIN - ARRIVE DEVIATION PARK POINT;
398          IF (BARCODE1=63 AND BARCODE=254) OR
399            (BARCODE1=100 AND BARCODE=254) OR
400            (BARCODE1=117 AND BARCODE=254) OR
401            (BARCODE1=124 AND BARCODE=254) THEN DO;
402             IF FOOT=1 THEN POOL = 'LOOPFOOT' ;
403             ELSE IF CURB=1 THEN POOL =  'CURBLINE' ;
404             ELSE IF CENT=1 THEN POOL =  'CENTRAL' ;
405             ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT' ;
406             ELSE IF VIM=1 THEN POOL =  'VIM' ;
407             ELSE IF NDCBU=1 THEN POOL = 'NDCBU' ;
408             ELSE IF LEAVEOFC=1 THEN POOL =  'TOFROM' ;
409             ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
410                      VIM=0 AND NDCBU=0 AND FOOT=0) OR
411                      DEVPKPT=2 THEN
412                     POOL='DDTRAVEL';
413             ELSE IF RELAY=1 OR PARC=1 OR ACCT=1 OR
414                     GENCOLL=1 OR EXPCOLL=1
415                     THEN POOL = 'NA';
416             ELSE POOL='DDTRAVEL';
417             END;
418
419           *END ADMIN - START RELAY, GEN COLL, EXP COLL;
420           IF (BARCODE1=63 AND BARCODE=315) OR
421             (BARCODE1=63 AND BARCODE=322) OR
422             (BARCODE1=63 AND BARCODE=339) OR
423             (BARCODE1=100 AND BARCODE=315) OR
424             (BARCODE1=100 AND BARCODE=322) OR
425             (BARCODE1=100 AND BARCODE=339) OR
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
            (BARCODE1=117 AND BARCODE=315) OR
            (BARCODE1=117 AND BARCODE=322) OR
            (BARCODE1=117 AND BARCODE=339) OR
            (BARCODE1=124 AND BARCODE=315) OR
            (BARCODE1=124 AND BARCODE=322) OR
            (BARCODE1=124 AND BARCODE=339) THEN DO;
            IF FOOT=1 THEN POOL ='LOOPFOOT';
            ELSE IF CURB=1 THEN POOL = 'CURBLINE';
            ELSE IF CENT=1 THEN POOL = 'CENTRAL';
            ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT';
            ELSE IF VIM=1 THEN POOL = 'VIM';
            ELSE IF NDCBU=1 THEN POOL = 'NDCBU';
            ELSE IF LEAVEOFC=1 THEN POOL = 'TOFROM';
            ELSE IF DEVPKPT=2 THEN POOL= 'DDTRAVEL';
            ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
                     VIM=0 AND NDCBU=0 AND FOOT=0 AND
                     RELAY=0 AND GENCOLL=0 AND EXPCOLL=0
                     AND PARC=0 AND ACCT=0) THEN
                     POOL='NETWORK';
            ELSE     POOL='NA';
            END;

         *END ADMIN - START PARCEL OR ACCT DELIVERY;
          IF (BARCODE1=63 AND BARCODE=353) OR
            (BARCODE1=100 AND BARCODE=353) OR
            (BARCODE1=117 AND BARCODE=353) OR
            (BARCODE1=124 AND BARCODE=353) THEN DO;
            IF DEVPKPT=1 THEN POOL = 'PARCEL';
            ELSE IF FOOT=1 THEN POOL = 'LOOPFOOT';
            ELSE IF CURB=1 THEN POOL = 'CURBLINE';
            ELSE IF CENT=1 THEN POOL = 'CENTRAL';
            ELSE IF MOUNT=1 THEN POOL ='DISMOUNT';
            ELSE IF VIM=1 THEN POOL =  'VIM';
            ELSE IF NDCBU=1 THEN POOL ='NDCBU';
            ELSE IF LEAVEOFC=1 THEN POOL = 'TOFROM';
            ELSE IF DEVPKPT=2 THEN POOL= 'DDTRAVEL';
            ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
                     VIM=0 AND NDCBU=0 AND FOOT=0 AND
                     RELAY=0 AND GENCOLL=0 AND EXPCOLL=0
                     AND PARC=0 AND ACCT=0) THEN
                     POOL='NETWORK';
            ELSE POOL='NA';
            END;

          IF (BARCODE1=63 AND BARCODE=360) OR
            (BARCODE1=100 AND BARCODE=360) OR
            (BARCODE1=117 AND BARCODE=360) OR
            (BARCODE1=124 AND BARCODE=360) THEN DO;
            IF DEVPKPT=1 THEN POOL = 'ACCOUNT';
            ELSE IF FOOT=1 THEN POOL = 'LOOPFOOT';
            ELSE IF CURB=1 THEN POOL = 'CURBLINE';
            ELSE IF CENT=1 THEN POOL = 'CENTRAL';
            ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT';
            ELSE IF VIM=1 THEN POOL = 'VIM';
            ELSE IF NDCBU=1 THEN POOL = 'NDCBU';
            ELSE IF LEAVEOFC=1 THEN POOL = 'TOFROM';
            ELSE IF DEVPKPT=2 THEN POOL= 'DDTRAVEL';
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
483            ELSE IF (CURB=0 AND CENT=0 AND MOUNT=0 AND
484                     VIM=0 AND NDCBU=0 AND FOOT=0 AND
485                     RELAY=0 AND GENCOLL=0 AND EXPCOLL=0
486                     AND PARC=0 AND ACCT=0) THEN
487                     POOL='NETWORK';
488            ELSE POOL='NA';
489            END;
490
491         *END ADMIN - END SECTION;
492         IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
493             BARCODE1=124) AND BARCODE=179 THEN DO;
494             IF FOOT=1 THEN POOL = 'LOOPFOOT';
495             ELSE POOL='NA';
496             END;
497         IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
498             BARCODE1=124) AND BARCODE=186 THEN DO;
499             IF CURB=1 THEN POOL = 'CURBLINE';
500             ELSE POOL='NA';
501             END;
502
503         IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
504             BARCODE1=124) AND BARCODE=223 THEN DO;
505             IF NDCBU=1 THEN POOL = 'NDCBU';
506             ELSE POOL='NA';
507             END;
508
509         IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
510             BARCODE1=124) AND BARCODE=230 THEN DO;
511             IF CENT=1 THEN POOL = 'CENTRAL';
512             ELSE POOL='NA';
513             END;
514
515         IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
516             BARCODE1=124) AND BARCODE=247 THEN DO;
517             IF VIM=1 THEN POOL = 'VIM';
518             ELSE POOL='NA';
519             END;
520
521         IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
522             BARCODE1=124) AND BARCODE=292 THEN DO;
523             IF MOUNT=1 THEN POOL = 'DISMOUNT';
524             ELSE POOL='NA';
525             END;
526
527         *END ADMIN - LEAVE DEVIATION PARK POINT;
528         IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
529             BARCODE1=124) AND BARCODE=285 THEN DO;
530             IF DEVPKPT = 1 AND PARC=1 THEN DO;
531                POOL='PARCEL';
532                END;
533             ELSE IF DEVPKPT=1 AND ACCT=1 THEN DO;
534                POOL='ACCOUNT';
535                END;
536             ELSE POOL='NA';
537             END;
538
539         *END ADMIN - END ACTIVITY;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
540          IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
541              BARCODE1=124) AND BARCODE=346 THEN DO;
542              IF RELAY=1 THEN POOL='RELAY';
543              END;
544
545          IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
546              BARCODE1=124) AND BARCODE=377 THEN DO;
547              IF PARC=1 THEN POOL='PARCEL';
548              END;
549
550          IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
551              BARCODE1=124) AND BARCODE=384 THEN DO;
552              IF ACCT=1 THEN POOL='ACCOUNT';
553              END;
554
555          IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
556              BARCODE1=124) AND BARCODE=391 THEN DO;
557              IF GENCOLL=1 THEN POOL='GENCOLL';
558              END;
559
560          IF (BARCODE1=63 OR BARCODE1=100 OR BARCODE1=117 OR
561              BARCODE1=124) AND BARCODE=407 THEN DO;
562              IF EXPCOLL=1 THEN POOL='EXPCOLL';
563              END;
564
565          *LEAVE DEVIATION PARK PT - START ADMIN;
566          IF BARCODE1=285 AND (BARCODE=32 OR BARCODE=70 OR
567             BARCODE=87 OR BARCODE=94) THEN DO;
568             IF FOOT=1 THEN POOL = 'LOOPFOOT';
569             ELSE IF CURB=1 THEN POOL = 'CURBLINE';
570             ELSE IF CENT=1 THEN POOL = 'CENTRAL';
571             ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT';
572             ELSE IF VIM=1 THEN POOL = 'VIM';
573             ELSE IF NDCBU=1 THEN POOL = 'NDCBU';
574             ELSE POOL = 'DDTRAVEL';
575             END;
576
577           *END ACTIVITY - START ADMIN;
578           IF (BARCODE1=346 OR BARCODE1=377 OR BARCODE1=384 OR
579               BARCODE1=391 OR BARCODE1=407) AND
580              (BARCODE=32 OR BARCODE=70 OR BARCODE=87 OR
581               BARCODE=94) THEN DO;
582             IF FOOT=1 THEN POOL = 'LOOPFOOT';
583             ELSE IF CURB=1 THEN POOL = 'CURBLINE';
584             ELSE IF CENT=1 THEN POOL = 'CENTRAL';
585             ELSE IF MOUNT=1 THEN POOL = 'DISMOUNT';
586             ELSE IF VIM=1 THEN POOL = 'VIM';
587             ELSE IF NDCBU=1 THEN POOL = 'NDCBU';
588             ELSE POOL = 'NETWORK';
589             END;
590
591          *END SECTION WHILE NOT IN SECTION IS ILLEGAL;
592          IF BARCODE = 179 AND FOOT=0 THEN POOL = 'NA';
593          IF BARCODE = 186 AND CURB=0 THEN POOL = 'NA';
594          IF BARCODE = 223 AND NDCBU=0 THEN POOL = 'NA';
595          IF BARCODE = 247 AND VIM=0 THEN   POOL = 'NA';
596          IF BARCODE = 292 AND MOUNT=0 THEN POOL = 'NA';
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
597          IF BARCODE = 230 AND CENT=0  THEN POOL = 'NA';
598
599         *START SECTION WHILE IN A SECTION IS ILLEGAL;
600        IF BARCODE=148 OR BARCODE=155 OR BARCODE=193 OR
601           BARCODE=209 OR BARCODE=216 OR BARCODE=261 THEN DO;
602            IF FOOT=1 OR CURB=1 OR NDCBU=1 OR
603            VIM=1 OR NDCBU=1 OR CENT=1 THEN POOL='NA';
604            END;
605
606         *END ACTIVITY /START ACTIVITY;
607        IF (BARCODE1=346 OR BARCODE1=377 OR BARCODE1=384 OR
608            BARCODE1=391 OR BARCODE1=407 ) AND
609           (BARCODE=315 OR BARCODE=322 OR
610            BARCODE=339 OR BARCODE=353 OR BARCODE=360) THEN DO;
611                 IF FOOT=1 THEN POOL='LOOPFOOT';
612                 ELSE IF CURB=1 THEN POOL='CURBLINE';
613                 ELSE IF CENT=1 THEN POOL='CENTRAL';
614                 ELSE IF MOUNT=1 THEN POOL='DISMOUNT';
615                 ELSE IF VIM=1 THEN POOL='VIM';
616                 ELSE IF NDCBU=1 THEN POOL='NDCBU';
617                 ELSE POOL='NETWORK';
618                 END;
619
620         *LEAVE DEVIATION PARK PK - START ACTIVITY;
621         IF  BARCODE1=285 AND
622           (BARCODE=254 OR BARCODE=315 OR BARCODE=322 OR
623            BARCODE=339 OR BARCODE=353 OR BARCODE=360) THEN DO;
624                 IF FOOT=1 THEN POOL='LOOPFOOT';
625                 ELSE IF CURB=1 THEN POOL='CURBLINE';
626                 ELSE IF CENT=1 THEN POOL='CENTRAL';
627                 ELSE IF MOUNT=1 THEN POOL='DISMOUNT';
628                 ELSE IF VIM=1 THEN POOL='VIM';
629                 ELSE IF NDCBU=1 THEN POOL='NDCBU';
630                 ELSE POOL = 'DDTRAVEL';
631                 END;
632
633         *END ACTIVITY - ARRIVE DEVIATION PARK POINT;
634           IF (BARCODE1=346 OR BARCODE1=377 OR BARCODE1=384 OR
635               BARCODE1=391 OR BARCODE1=407) AND
636               BARCODE=254 THEN DO;
637                 IF FOOT=1 THEN POOL='LOOPFOOT';
638                 ELSE IF CURB=1 THEN POOL='CURBLINE';
639                 ELSE IF CENT=1 THEN POOL='CENTRAL';
640                 ELSE IF MOUNT=1 THEN POOL='DISMOUNT';
641                 ELSE IF VIM=1 THEN POOL='VIM';
642                 ELSE IF NDCBU=1 THEN POOL='NDCBU';
643                 ELSE POOL = 'DDTRAVEL';
644                 END;
645
646     * THESE TWO SCAN PAIRS ARE SET LEGAL;
647     IF BARCODE1=353 AND BARCODE=384 THEN POOL='PARCACCT';
648     IF BARCODE1=360 AND BARCODE=377 THEN POOL='PARCACCT';
649     *;
650     IF POOL='N/A      ' THEN POOL='NA';
651     *;
652     ********************************************************;
653     ***  SUMMARIZE COST POOL TOTALS BY ROUTE/DAY          ***;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
654     ******************************************************;

NOTE: There were 1276063 observations read from the data set
WORK.MPOOL.
NOTE: The data set WORK.MPOOL has 1276063 observations and 52
variables.
NOTE: DATA statement used:
      real time           1:27.87
      cpu time            10.97 seconds


655     DATA MPOOL; SET MPOOL;
656     DROP FOOT CURB CENT MOUNT VIM NDCBU DEVPKPT LEAVEOFC
657          PARC ACCT RELAY GENCOLL EXPCOLL;
658          OUTPUT;

NOTE: There were 1276063 observations read from the data set
WORK.MPOOL.
NOTE: The data set WORK.MPOOL has 1276063 observations and 39
variables.
NOTE: DATA statement used:
      real time           2:11.98
      cpu time            6.45 seconds


659     PROC SORT DATA=MPOOL; BY DATE RTEZIP ROUTENO POOL;
660     ;
661     /*FIRST SUM UP THE COST POOL TIME FOR EACH ROUTE DAY*/

NOTE: There were 1276063 observations read from the data set
WORK.MPOOL.
NOTE: The data set WORK.MPOOL has 1276063 observations and 39
variables.
NOTE: PROCEDURE SORT used:
      real time           5:18.25
      cpu time            21.67 seconds


662     PROC MEANS DATA=MPOOL NOPRINT;
663     BY DATE RTEZIP ROUTENO POOL;
664     VAR ETOD;
665     OUTPUT OUT=MOUT SUM=;
666     ;
667     /*ALSO SUM UP THE NUMBER OF DELIVERIES FOR EACH ROUTE DAY
668       AND THE TOTAL TIME*/

NOTE: There were 1276063 observations read from the data set
WORK.MPOOL.
NOTE: The data set WORK.MOUT has 313571 observations and 7 variables.
NOTE: PROCEDURE MEANS used:
      real time           6.23 seconds
      cpu time            2.18 seconds


669     PROC MEANS DATA=MPOOL NOPRINT;
670     BY DATE RTEZIP ROUTENO;
671     ID BCURB BNDCBU BCENT BOTHR RCURB RNDCBU RCENT ROTHR DELMODE;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
672     VAR ETOD;
673     OUTPUT OUT=TOTT SUM=TOTTIME;
674     *;
675     /*THIS NEXT SECTION GENERATES ONE RECORD FOR EACH ROUTE DAY,
676       WITH THE TOTAL TIME IN EACH COST POOL, AS WELL AS TOTAL
677       ROUTE DAY TIME AND ROUTE DELIVERIES*/

NOTE: There were 1276063 observations read from the data set
WORK.MPOOL.
NOTE: The data set WORK.TOTT has 36290 observations and 15 variables.
NOTE: PROCEDURE MEANS used:
      real time           1.97 seconds
      cpu time            1.81 seconds


678     DATA LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
679          NONSTRT PREP TOFROM NETWORK DDTRAVEL TRAVEL
680          RELAY GENCOLL EXPCOLL
681          PARCEL ACCOUNT PARCACCT OFFCLOCK NA ERROR;
682          SET MOUT;
683     IF      POOL='NETWORK' THEN OUTPUT NETWORK;
684     ELSE IF POOL='DDTRAVEL' THEN OUTPUT DDTRAVEL;
685     ELSE IF POOL='LOOPFOOT' THEN OUTPUT LOOPFOOT;
686     ELSE IF POOL='CURBLINE' THEN OUTPUT CURBLINE;
687     ELSE IF POOL='NDCBU' THEN OUTPUT NDCBU;
688     ELSE IF POOL='VIM' THEN OUTPUT VIM;
689     ELSE IF POOL='CENTRAL' THEN OUTPUT CENTRAL;
690     ELSE IF POOL='DISMOUNT' THEN OUTPUT DISMOUNT;
691     ELSE IF POOL='NONSTRT' THEN OUTPUT NONSTRT;
692     ELSE IF POOL='PREP' THEN OUTPUT PREP;
693     ELSE IF POOL='OFFCLOCK' THEN OUTPUT OFFCLOCK;
694     ELSE IF POOL='TOFROM' THEN OUTPUT TOFROM;
695     ELSE IF POOL='RELAY' THEN OUTPUT RELAY;
696     ELSE IF POOL='GENCOLL' THEN OUTPUT GENCOLL;
697     ELSE IF POOL='EXPCOLL' THEN OUTPUT EXPCOLL;
698     ELSE IF POOL='PARCEL' THEN OUTPUT PARCEL;
699     ELSE IF POOL='ACCOUNT' THEN OUTPUT ACCOUNT;
700     ELSE IF POOL='TRAVEL' THEN OUTPUT TRAVEL;
701     ELSE IF POOL='PARCACCT' THEN OUTPUT PARCACCT;
702     ELSE IF POOL='NA' THEN OUTPUT NA;
703     ELSE OUTPUT ERROR;

NOTE: There were 313571 observations read from the data set WORK.MOUT.
NOTE: The data set WORK.LOOPFOOT has 22276 observations and 7
variables.
NOTE: The data set WORK.CURBLINE has 14291 observations and 7
variables.
NOTE: The data set WORK.NDCBU has 10323 observations and 7 variables.
NOTE: The data set WORK.VIM has 397 observations and 7 variables.
NOTE: The data set WORK.CENTRAL has 11775 observations and 7 variables.
NOTE: The data set WORK.DISMOUNT has 17003 observations and 7
variables.
NOTE: The data set WORK.NONSTRT has 22764 observations and 7 variables.
NOTE: The data set WORK.PREP has 29369 observations and 7 variables.
NOTE: The data set WORK.TOFROM has 30749 observations and 7 variables.
NOTE: The data set WORK.NETWORK has 30514 observations and 7 variables.
NOTE: The data set WORK.DDTRAVEL has 4492 observations and 7 variables.
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: The data set WORK.TRAVEL has 10678 observations and 7 variables.
NOTE: The data set WORK.RELAY has 3167 observations and 7 variables.
NOTE: The data set WORK.GENCOLL has 2091 observations and 7 variables.
NOTE: The data set WORK.EXPCOLL has 350 observations and 7 variables.
NOTE: The data set WORK.PARCEL has 25788 observations and 7 variables.
NOTE: The data set WORK.ACCOUNT has 22314 observations and 7 variables.
NOTE: The data set WORK.PARCACCT has 4359 observations and 7 variables.
NOTE: The data set WORK.OFFCLOCK has 24714 observations and 7
variables.
NOTE: The data set WORK.NA has 26157 observations and 7 variables.
NOTE: The data set WORK.ERROR has 0 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.66 seconds
      cpu time            0.39 seconds


704     PROC PRINT DATA=ERROR (OBS=25);
705     TITLE 'SCANS WITH NO COST POOL ASSIGMENT';
706     *;

NOTE: No observations in data set WORK.ERROR.
NOTE: PROCEDURE PRINT used:
      real time           0.05 seconds
      cpu time            0.01 seconds


707     DATA NETWORK; SET NETWORK; NETWORK=ETOD; DROP ETOD;

NOTE: There were 30514 observations read from the data set
WORK.NETWORK.
NOTE: The data set WORK.NETWORK has 30514 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds


708     DATA DDTRAVEL; SET DDTRAVEL; DDTRAVEL=ETOD; DROP ETOD;

NOTE: There were 4492 observations read from the data set
WORK.DDTRAVEL.
NOTE: The data set WORK.DDTRAVEL has 4492 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.02 seconds
      cpu time            0.02 seconds


709     DATA LOOPFOOT; SET LOOPFOOT; LOOPFOOT=ETOD; DROP ETOD;

NOTE: There were 22276 observations read from the data set
WORK.LOOPFOOT.
NOTE: The data set WORK.LOOPFOOT has 22276 observations and 7
variables.
NOTE: DATA statement used:
      real time           0.02 seconds
      cpu time            0.02 seconds
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
710     DATA CURBLINE; SET CURBLINE; CURBLINE=ETOD; DROP ETOD;

NOTE: There were 14291 observations read from the data set
WORK.CURBLINE.
NOTE: The data set WORK.CURBLINE has 14291 observations and 7
variables.
NOTE: DATA statement used:
      real time           0.02 seconds
      cpu time            0.02 seconds


711     DATA NDCBU; SET NDCBU; NDCBU=ETOD; DROP ETOD;

NOTE: There were 10323 observations read from the data set WORK.NDCBU.
NOTE: The data set WORK.NDCBU has 10323 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.02 seconds
      cpu time            0.02 seconds


712     DATA VIM; SET VIM; VIM=ETOD; DROP ETOD;

NOTE: There were 397 observations read from the data set WORK.VIM.
NOTE: The data set WORK.VIM has 397 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.01 seconds
      cpu time            0.01 seconds


713     DATA CENTRAL; SET CENTRAL; CENTRAL=ETOD; DROP ETOD;

NOTE: There were 11775 observations read from the data set
WORK.CENTRAL.
NOTE: The data set WORK.CENTRAL has 11775 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.02 seconds
      cpu time            0.02 seconds


714     DATA DISMOUNT; SET DISMOUNT; DISMOUNT=ETOD; DROP ETOD;

NOTE: There were 17003 observations read from the data set
WORK.DISMOUNT.
NOTE: The data set WORK.DISMOUNT has 17003 observations and 7
variables.
NOTE: DATA statement used:
      real time           0.02 seconds
      cpu time            0.02 seconds


715     DATA NONSTRT; SET NONSTRT; NONSTRT=ETOD; DROP ETOD;

NOTE: There were 22764 observations read from the data set
WORK.NONSTRT.
NOTE: The data set WORK.NONSTRT has 22764 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.02 seconds
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
      cpu time            0.02 seconds


716     DATA PREP; SET PREP; PREP=ETOD; DROP ETOD;

NOTE: There were 29369 observations read from the data set WORK.PREP.
NOTE: The data set WORK.PREP has 29369 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds


717     DATA OFFCLOCK; SET OFFCLOCK; OFFCLOCK=ETOD; DROP ETOD;

NOTE: There were 24714 observations read from the data set
WORK.OFFCLOCK.
NOTE: The data set WORK.OFFCLOCK has 24714 observations and 7
variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds


718     DATA TOFROM; SET TOFROM; TOFROM=ETOD; DROP ETOD;

NOTE: There were 30749 observations read from the data set WORK.TOFROM.
NOTE: The data set WORK.TOFROM has 30749 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds


719     DATA RELAY; SET RELAY; RELAY=ETOD; DROP ETOD;

NOTE: There were 3167 observations read from the data set WORK.RELAY.
NOTE: The data set WORK.RELAY has 3167 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.02 seconds
      cpu time            0.02 seconds


720     DATA GENCOLL; SET GENCOLL; GENCOLL=ETOD; DROP ETOD;

NOTE: There were 2091 observations read from the data set WORK.GENCOLL.
NOTE: The data set WORK.GENCOLL has 2091 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.02 seconds
      cpu time            0.02 seconds


721     DATA EXPCOLL; SET EXPCOLL; EXPCOLL=ETOD; DROP ETOD;

NOTE: There were 350 observations read from the data set WORK.EXPCOLL.
NOTE: The data set WORK.EXPCOLL has 350 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.01 seconds
      cpu time            0.01 seconds
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
722     DATA PARCEL; SET PARCEL; PARCEL=ETOD; DROP ETOD;

NOTE: There were 25788 observations read from the data set WORK.PARCEL.
NOTE: The data set WORK.PARCEL has 25788 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.51 seconds
      cpu time            0.02 seconds


723     DATA ACCOUNT; SET ACCOUNT; ACCOUNT=ETOD; DROP ETOD;

NOTE: There were 22314 observations read from the data set
WORK.ACCOUNT.
NOTE: The data set WORK.ACCOUNT has 22314 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds


724     DATA PARCACCT; SET PARCACCT; PARCACCT=ETOD; DROP ETOD;

NOTE: There were 4359 observations read from the data set
WORK.PARCACCT.
NOTE: The data set WORK.PARCACCT has 4359 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.11 seconds
      cpu time            0.03 seconds


725     DATA TRAVEL; SET TRAVEL; TRAVEL=ETOD; DROP ETOD;

NOTE: There were 10678 observations read from the data set WORK.TRAVEL.
NOTE: The data set WORK.TRAVEL has 10678 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.05 seconds
      cpu time            0.05 seconds


726     DATA NA; SET NA; NA=ETOD; DROP ETOD;

NOTE: There were 26157 observations read from the data set WORK.NA.
NOTE: The data set WORK.NA has 26157 observations and 7 variables.
NOTE: DATA statement used:
      real time           0.34 seconds
      cpu time            0.06 seconds


727     PROC SORT DATA=NETWORK; BY DATE RTEZIP ROUTENO;

NOTE: There were 30514 observations read from the data set
WORK.NETWORK.
NOTE: The data set WORK.NETWORK has 30514 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.33 seconds
      cpu time            0.14 seconds
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
728     PROC SORT DATA=LOOPFOOT; BY DATE RTEZIP ROUTENO;

NOTE: There were 22276 observations read from the data set
WORK.LOOPFOOT.
NOTE: The data set WORK.LOOPFOOT has 22276 observations and 7
variables.
NOTE: PROCEDURE SORT used:
      real time           0.09 seconds
      cpu time            0.09 seconds


729     PROC SORT DATA=DDTRAVEL; BY DATE RTEZIP ROUTENO;

NOTE: There were 4492 observations read from the data set
WORK.DDTRAVEL.
NOTE: The data set WORK.DDTRAVEL has 4492 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.02 seconds
      cpu time            0.02 seconds


730     PROC SORT DATA=CURBLINE; BY DATE RTEZIP ROUTENO;

NOTE: There were 14291 observations read from the data set
WORK.CURBLINE.
NOTE: The data set WORK.CURBLINE has 14291 observations and 7
variables.
NOTE: PROCEDURE SORT used:
      real time           0.03 seconds
      cpu time            0.03 seconds


731     PROC SORT DATA=NDCBU; BY DATE RTEZIP ROUTENO;

NOTE: There were 10323 observations read from the data set WORK.NDCBU.
NOTE: The data set WORK.NDCBU has 10323 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.03 seconds
      cpu time            0.03 seconds


732     PROC SORT DATA=VIM; BY DATE RTEZIP ROUTENO;

NOTE: There were 397 observations read from the data set WORK.VIM.
NOTE: The data set WORK.VIM has 397 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.01 seconds
      cpu time            0.01 seconds


733     PROC SORT DATA=CENTRAL; BY DATE RTEZIP ROUTENO;

NOTE: There were 11775 observations read from the data set
WORK.CENTRAL.
NOTE: The data set WORK.CENTRAL has 11775 observations and 7 variables.
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: PROCEDURE SORT used:
      real time           0.02 seconds
      cpu time            0.02 seconds


734     PROC SORT DATA=DISMOUNT; BY DATE RTEZIP ROUTENO;

NOTE: There were 17003 observations read from the data set
WORK.DISMOUNT.
NOTE: The data set WORK.DISMOUNT has 17003 observations and 7
variables.
NOTE: PROCEDURE SORT used:
      real time           0.12 seconds
      cpu time            0.03 seconds


735     PROC SORT DATA=NONSTRT; BY DATE RTEZIP ROUTENO;

NOTE: There were 22764 observations read from the data set
WORK.NONSTRT.
NOTE: The data set WORK.NONSTRT has 22764 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.24 seconds
      cpu time            0.04 seconds


736     PROC SORT DATA=PREP; BY DATE RTEZIP ROUTENO;

NOTE: There were 29369 observations read from the data set WORK.PREP.
NOTE: The data set WORK.PREP has 29369 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.17 seconds
      cpu time            0.06 seconds


737     PROC SORT DATA=OFFCLOCK; BY DATE RTEZIP ROUTENO;

NOTE: There were 24714 observations read from the data set
WORK.OFFCLOCK.
NOTE: The data set WORK.OFFCLOCK has 24714 observations and 7
variables.
NOTE: PROCEDURE SORT used:
      real time           0.06 seconds
      cpu time            0.06 seconds


738     PROC SORT DATA=TOFROM; BY DATE RTEZIP ROUTENO;

NOTE: There were 30749 observations read from the data set WORK.TOFROM.
NOTE: The data set WORK.TOFROM has 30749 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.30 seconds
      cpu time            0.13 seconds


739     PROC SORT DATA=RELAY; BY DATE RTEZIP ROUTENO;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: There were 3167 observations read from the data set WORK.RELAY.
NOTE: The data set WORK.RELAY has 3167 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.03 seconds
      cpu time            0.03 seconds


740     PROC SORT DATA=GENCOLL; BY DATE RTEZIP ROUTENO;

NOTE: There were 2091 observations read from the data set WORK.GENCOLL.
NOTE: The data set WORK.GENCOLL has 2091 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.04 seconds
      cpu time            0.04 seconds


741     PROC SORT DATA=EXPCOLL; BY DATE RTEZIP ROUTENO;

NOTE: There were 350 observations read from the data set WORK.EXPCOLL.
NOTE: The data set WORK.EXPCOLL has 350 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.03 seconds
      cpu time            0.03 seconds


742     PROC SORT DATA=PARCEL; BY DATE RTEZIP ROUTENO;

NOTE: There were 25788 observations read from the data set WORK.PARCEL.
NOTE: The data set WORK.PARCEL has 25788 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.31 seconds
      cpu time            0.17 seconds


743     PROC SORT DATA=ACCOUNT; BY DATE RTEZIP ROUTENO;

NOTE: There were 22314 observations read from the data set
WORK.ACCOUNT.
NOTE: The data set WORK.ACCOUNT has 22314 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.08 seconds
      cpu time            0.08 seconds


744     PROC SORT DATA=PARCACCT; BY DATE RTEZIP ROUTENO;

NOTE: There were 4359 observations read from the data set
WORK.PARCACCT.
NOTE: The data set WORK.PARCACCT has 4359 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.02 seconds
      cpu time            0.02 seconds


745     PROC SORT DATA=TRAVEL; BY DATE RTEZIP ROUTENO;

NOTE: There were 10678 observations read from the data set WORK.TRAVEL.
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: The data set WORK.TRAVEL has 10678 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.03 seconds
      cpu time            0.03 seconds


746     PROC SORT DATA=NA; BY DATE RTEZIP ROUTENO;

NOTE: There were 26157 observations read from the data set WORK.NA.
NOTE: The data set WORK.NA has 26157 observations and 7 variables.
NOTE: PROCEDURE SORT used:
      real time           0.06 seconds
      cpu time            0.05 seconds


747     PROC SORT DATA=TOTT; BY DATE RTEZIP ROUTENO;
748     /*MERGE IN COST POOL TOTALS SO ONE RECORD PER ROUTE DAY*/

NOTE: There were 36290 observations read from the data set WORK.TOTT.
NOTE: The data set WORK.TOTT has 36290 observations and 15 variables.
NOTE: PROCEDURE SORT used:
      real time           0.25 seconds
      cpu time            0.09 seconds


749     DATA ALL; MERGE TOTT
750          NETWORK LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
751          NONSTRT PREP OFFCLOCK TOFROM RELAY GENCOLL EXPCOLL
752          PARCEL ACCOUNT PARCACCT TRAVEL DDTRAVEL NA;
753          BY DATE RTEZIP ROUTENO;
754     IF NETWORK=. THEN NETWORK=0;
755     IF LOOPFOOT=. THEN LOOPFOOT=0;
756     IF DDTRAVEL=. THEN DDTRAVEL=0;
757     IF CURBLINE=. THEN CURBLINE=0;
758     IF NDCBU=. THEN NDCBU=0;
759     IF VIM=. THEN VIM=0;
760     IF CENTRAL=. THEN CENTRAL=0;
761     IF DISMOUNT=. THEN DISMOUNT=0;
762     IF NONSTRT=. THEN NONSTRT=0;
763     IF PREP=. THEN PREP=0;
764     IF OFFCLOCK=. THEN OFFCLOCK=0;
765     IF TOFROM=. THEN TOFROM=0;
766     IF RELAY=. THEN RELAY=0;
767     IF GENCOLL=. THEN GENCOLL=0;
768     IF EXPCOLL=. THEN EXPCOLL=0;
769     IF PARCEL=. THEN PARCEL=0;
770     IF ACCOUNT=. THEN ACCOUNT=0;
771     IF PARCACCT=. THEN PARCACCT=0;
772     IF TRAVEL=. THEN TRAVEL=0;
773     IF NA=. THEN NA=0;
774     IF (PREP + TOFROM) GT 0 THEN DO;
775         PREPN=PREP+(TRAVEL*PREP/(PREP+TOFROM));
776         TOFROMN=TOFROM+(TRAVEL*TOFROM/(PREP+TOFROM));
777         END;
778     ELSE IF (PREP + TOFROM)=0 AND TRAVEL GT 0 THEN
779         TOFROMN = TRAVEL;
780     TOFROM=TOFROMN;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
781      PREP=PREPN;
782      PARCACCT=PARCACCT+PARCEL+ACCOUNT;
783
*************************************************************;
784      /*THIS NEXT SECTION MULTIPLIES THE COST POOL TOTALS BY THE
785        SAMPLE WEIGHTS*/
786

NOTE: There were 36290 observations read from the data set WORK.TOTT.
NOTE: There were 30514 observations read from the data set
WORK.NETWORK.
NOTE: There were 22276 observations read from the data set
WORK.LOOPFOOT.
NOTE: There were 14291 observations read from the data set
WORK.CURBLINE.
NOTE: There were 10323 observations read from the data set WORK.NDCBU.
NOTE: There were 397 observations read from the data set WORK.VIM.
NOTE: There were 11775 observations read from the data set
WORK.CENTRAL.
NOTE: There were 17003 observations read from the data set
WORK.DISMOUNT.
NOTE: There were 22764 observations read from the data set
WORK.NONSTRT.
NOTE: There were 29369 observations read from the data set WORK.PREP.
NOTE: There were 24714 observations read from the data set
WORK.OFFCLOCK.
NOTE: There were 30749 observations read from the data set WORK.TOFROM.
NOTE: There were 3167 observations read from the data set WORK.RELAY.
NOTE: There were 2091 observations read from the data set WORK.GENCOLL.
NOTE: There were 350 observations read from the data set WORK.EXPCOLL.
NOTE: There were 25788 observations read from the data set WORK.PARCEL.
NOTE: There were 22314 observations read from the data set
WORK.ACCOUNT.
NOTE: There were 4359 observations read from the data set
WORK.PARCACCT.
NOTE: There were 10678 observations read from the data set WORK.TRAVEL.
NOTE: There were 4492 observations read from the data set
WORK.DDTRAVEL.
NOTE: There were 26157 observations read from the data set WORK.NA.
NOTE: The data set WORK.ALL has 36290 observations and 38 variables.
NOTE: DATA statement used:
      real time           2.97 seconds
      cpu time            0.94 seconds


787      PROC SORT DATA=WEIGHTS; BY RTEZIP;

NOTE: There were 167 observations read from the data set WORK.WEIGHTS.
NOTE: The data set WORK.WEIGHTS has 167 observations and 2 variables.
NOTE: PROCEDURE SORT used:
      real time           0.14 seconds
      cpu time            0.02 seconds


788      PROC SORT DATA=ALL; BY RTEZIP;

NOTE: There were 36290 observations read from the data set WORK.ALL.
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: The data set WORK.ALL has 36290 observations and 38 variables.
NOTE: PROCEDURE SORT used:
      real time           1.48 seconds
      cpu time            0.30 seconds


789      DATA WALL; MERGE ALL (IN=A) WEIGHTS; BY RTEZIP;
790      IF A=1;
791      IF WGT=. THEN DELETE;
792      LOOPFOOT=LOOPFOOT*WGT;
793      CURBLINE=CURBLINE*WGT;
794      NDCBU=NDCBU*WGT;
795      VIM=VIM*WGT;
796      CENTRAL=CENTRAL*WGT;
797      DISMOUNT=DISMOUNT*WGT;
798      NONSTRT=NONSTRT*WGT;
799      PREP=PREP*WGT;
800      TOFROM=TOFROM*WGT;
801      NETWORK=NETWORK*WGT;
802      DDTRAVEL=DDTRAVEL*WGT;
803      RELAY=RELAY*WGT;
804      GENCOLL=GENCOLL*WGT;
805      EXPCOLL=EXPCOLL*WGT;
806      PARCEL=PARCEL*WGT;
807      ACCOUNT=ACCOUNT*WGT;
808      TRAVEL=TRAVEL*WGT;
809      PARCACCT=PARCACCT*WGT;
810      OFFCLOCK=OFFCLOCK*WGT;
811      NA=NA*WGT;
812      TOTTIME=TOTTIME*WGT;
813

NOTE: Missing values were generated as a result of performing an
operation on missing values.
      Each place is given by: (Number of times) at (Line):(Column).
      4512 at 799:13   1151 at 800:17
NOTE: There were 36290 observations read from the data set WORK.ALL.
NOTE: There were 167 observations read from the data set WORK.WEIGHTS.
NOTE: The data set WORK.WALL has 36290 observations and 39 variables.
NOTE: DATA statement used:
      real time           0.23 seconds
      cpu time            0.20 seconds


814      PROC SORT DATA=WALL; BY DELMODE;
815      ;
816
*****************************************************************;
817      ***DO FINAL SUMMARY OF COST POOL TIMES BY DELIVERY MODE
***;
818      ***READ INPUT INTO A SPREADSHEET AND CALCULATE PROPORTIONS
OF***;
819      ***TOTAL TIME FOR ALL DELIVERY MODES
***;
820
*****************************************************************;
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS TO POIR NO. 5, QUESTION 1

```
NOTE: There were 36290 observations read from the data set WORK.WALL.
NOTE: The data set WORK.WALL has 36290 observations and 39 variables.
NOTE: PROCEDURE SORT used:
      real time           1.57 seconds
      cpu time            0.26 seconds


821     PROC MEANS DATA=WALL NOPRINT;
822     BY DELMODE;
823     VAR
824          LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
825          PREP TOFROM NETWORK
826          RELAY GENCOLL EXPCOLL
827          PARCACCT DDTRAVEL NONSTRT OFFCLOCK NA TOTTIME;
828     OUTPUT OUT=WOUT SUM=;

NOTE: There were 36290 observations read from the data set WORK.WALL.
NOTE: The data set WORK.WOUT has 6 observations and 21 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.16 seconds
      cpu time            0.16 seconds


829     DATA _NULL_; SET WOUT;
830     FILE OUT1;
831     PUT DELMODE
832          LOOPFOOT CURBLINE NDCBU VIM CENTRAL DISMOUNT
833          PREP TOFROM NETWORK
834          RELAY GENCOLL EXPCOLL
835          PARCACCT DDTRAVEL NONSTRT OFFCLOCK NA TOTTIME;
836  Run;

NOTE: The file OUT1 is:

      File Name=C:\Documents and Settings\nkay\My Documents\POSTAL on
      Nkay\SASfiles\LR-79\cpfinal.DAT,
      RECFM=V,LRECL=256

NOTE: 6 records were written to the file OUT1.
      The minimum record length was 232.
      The maximum record length was 235.
NOTE: There were 6 observations read from the data set WORK.WOUT.
NOTE: DATA statement used:
      real time           0.25 seconds
      cpu time            0.01 seconds
```

RESPONSE OF POSTAL SERVICE WITNESS STEVENS
TO POIR NO. 6, QUESTION 4(c)-(d)

4. This question addresses the practice of day-to-day adjustments in routes, which involve pivoting or off-loading volume to other carriers with under time.

(c) Did any such pivoting route adjustments occur on any of the routes that were chosen to participate in the City Carrier Street Time Study?

(d) If so, how many route days were affected? Please describe the steps taken, if any, to maintain the route integrity of scanned time and reported volumes by carriers delivering mail on such routes.

RESPONSE:

(c) Yes. Route pivots are a normal daily occurrence in city carrier delivery.

(d) Route pivots were not tracked separately in the City Carrier Street Time Study. Workload volumes were collected by routes. Barcode scan pairs were analyzed by routes to ensure that workload volumes matched times captured by the barcodes. Please see USPS LR-K-78, page E-6. General rules 1 and 2 relate to capturing route data such that the data can be matched with mail volumes. First, the route number had to be programmed into the carrier's scanner. Scanning *Clock to Street* would begin the time sequences that would be assigned to the programmed route. *Clock off Street/End Tour* would complete the time sequences that would be assigned to the programmed route. If the carrier had to pivot to another route, he or she would first scan *Clock off Street/End Tour*, then change the route number in the scanner to the new route and then scan *Clock to Street* to start the time sequences that would be assigned to the new route. The process would be repeated for all pivots for the day.

RESPONSE OF POSTAL SERVICE WITNESS STEVENS
TO POIR NO. 8, QUESTION 2(a)-(b)

2. a. For the response to question 1, please explain the various reasons for attrition of the maximum number of possible ZIP/route/day observations to the number of recorded observations. For example, were observations not recorded because the carrier was not sufficiently trained to make the desired scans? Were observations not recorded because scanned route identifiers were different from those assigned to a given ZIP? Are there other reasons that fewer than the maximum number of possible observations were recorded?

b. Of the various reasons listed in response to "a.", indicate to the extent feasible the relative frequency at which they occurred?

RESPONSE:

a. The spreadsheet attached to the response to Question 1 shows that the primary reason for attrition is a lack of reported scan data. After the data were collected, the Postal Service recognized this pattern of attrition and contacted the Zip Codes for which the reported number of routes scanned per day was regularly less than the expected number of routes scanned per day. The following table shows a tabulation of the results. It is difficult to attach a specific frequency to each of the causes to, but the table shows the reasons that the field units reported for not supplying all of the requested data.

Responses as to why less than maximum route scan data was reported each day	**Number of Responses**
Employees and management were instructed of the correct procedures. There should be no problem	7
We had no way to verify scans made by the carriers.	5
Route(s) was covered by a substitute/pivots.	12
Route had a split.	7
The carrier probably didn't understand the procedures.	3
Corporate database (frame) is incorrect.	2
Unexplained/did not know.	5
Problem with the scanners.	1
Problem with the download/cradles.	3

RESPONSE OF POSTAL SERVICE WITNESS STEVENS
TO POIR NO. 8, QUESTION 2(a)-(b)

Carriers were properly instructed and were performing the scans each day. There should be no problem	4
No daily feedback from HQ on status or scans. Unable to explain	7
Route inspections were performed during this time.	7
All routes show scans from my office.	2
Scanner might have been set up incorrectly by the user.	5
Carrier refused to participate in the study.	1
Count sheets were completed daily for each route and turned in at the end of each week.	2
All routes should show scans. Unaware of any problems.	19
Several carriers were on FMLA, A/L, S/L(long term).	2
Carrier errors.	5
We did not have proper route identifier bar code scans.	1
Mandated to leave 3 to 4 routes open due to low mail volume.	1
Bar scans did not work on the first day, replacements received 3-4 days later.	1
Inadequate training by the supervisor.	1
Carriers were not in compliance.	2

b. Attrition occurred essentially because of two reasons, missing time scan data and missing parcel/accountable volume data. As the spreadsheet provided in response to POIR #8 Question 1 shows, virtually all route days were matched with provided letter/flat volume data. The average daily percentage or reported routes for the time scan data set is 9.7 percent less than the maximum routes reported. The average daily percentage for the parcel/accountable volume data set is 3.3 percent less than the maximum routes reported. When these two attrition rates are combined, this leads to an average daily percentage attrition of 12.9 percent. Decomposing the average daily attrition into its parts suggests that 75 percent of the attrition comes from missing time data route days and 25 percent of the attrition comes from missing parcel/accountable route days. The combined attrition rate is also close to the average daily percentage attrition for

the analysis data set, suggesting that most of the attrition in the analysis data set comes from missing data, not elimination of observed data points.

RESPONSE OF POSTAL SERVICE WITNESS STEVENS
TO POIR NO. 8, QUESTION 10

10. Attachment 3 of witness Stevens' testimony (USPS-T-15) indicates that over 9 percent of total scan time was invalid. Please discuss any attempts made to assess the effects of omitted, invalid, or out of sequence scans on carrier street time variability.

RESPONSE:

The Postal Service first considered whether the invalid scans constituted a specific pattern. Please refer to ADVO/USPS T15 –5, where the 10 most common invalid sequences are presented. Given the large variation in the invalid sequences, it was concluded that no pattern existed. Secondly, the Postal Service investigated whether there was a pattern to the ZIPs at which the invalid sequences occurred. This investigation revealed no systemic patterns. The Postal Service then considered using the information (the fist and second scans) in the invalid scans to allocate the scans to existing time pools and its effect on the analysis. The effort was determined to be extremely burdensome with minimum effect on the final time pools given the diverse distribution of invalid scan pairs; consequently it was not attempted.

Response of Postal Service Witness Dennis P. Stevens
To Interrogatories Posed by VALPAK
Redirected from Witness Michael D. Bradley

VP/USPS-T14-11.

Please identify the precise point at which city carrier in-office activities end and at which your City Carrier Street Time Study ("CCSTS") begins to track carrier time with respect to handling of third bundles. For example, is any of the time spent by a carrier in transporting mail to and loading a vehicle measured by the CCSTS, or is this considered inoffice time?

Response:

Street activities for the CCSTS commence with a *Leave Office* scan; simultaneously, in-office activities cease. For your example, the time is considered in-office time - assuming that the time spent transporting mail to and loading a vehicle occurs *at the office* prior to the *Leave Office* scan.

Response of Postal Service Witness Dennis P. Stevens
To Interrogatories Posed by VALPAK
Redirected from Witness Michael D. Bradley

VP/USPS-T14-14.
In order to determine the unit volume variable city carrier street cost for each rate category of sequenced mail, it is necessary to divide the costs apportioned to each rate category by the respective volumes of "Sequenced Mail" in each rate category. Your testimony at page 18, line 16, to page 19, line 14, discusses the measurement of volume only briefly and generally.

b. Sequenced Saturation ECR flats either may be stand-alone pieces, such as addressed catalogs, or may consist of two pieces — namely, a separate unaddressed piece and an addressed DAL, both of which must be retrieved in order to complete delivery. When surveyed carriers counted the volume of Sequenced Mail in your study, did they include both DALs and the accompanying flat in their mail count? If not, please explain why not, since DALs were counted separately in the previous methodology, which you discuss elsewhere in your testimony.

Response:

b. Yes. All delivered mail was recorded. All DAL mail that was cased was included in the cased letter/flat count. Any DAL mail that was not cased was included in the total for the sequenced count. Thus, where the DAL is not cased the sequenced mail count includes both the count for the host and the DAL piece.

1 CHAIRMAN OMAS: At this point I'm going to
2 add answers Witness Stevens provided to a Presiding
3 Officer's Information Request. They are POIR 9,
4 Questions 4 and 10.
5 In addition, the answer to POIR 5, Question
6 1, identifies Library Reference USPS-LR-K-132 as
7 containing the requested material.
8 Witness Stevens, would your answers to these
9 questions be the same as you previously provided in
10 writing?
11 THE WITNESS: Yes, they would be.
12 CHAIRMAN OMAS: And do you sponsor K-132?
13 THE WITNESS: Yes, I do.
14 CHAIRMAN OMAS: I am handing two copies of
15 the answers and direct that it be admitted into
16 evidence and transcribed.
17 (The document referred to was
18 marked for identification as
19 Exhibit No. POIR 9, Questions
20 4 and 10, and was received in
21 evidence.)
22 //
23 //
24 //
25 //

RESPONSE OF POSTAL SERVICE WITNESS STEVENS
TO POIR NO. 9, QUESTION 4

4. Please refer to the file "scan_rules.xls" in LR-K-133.

a. Please confirm that allocation to time pools of 238 of the 530 listed scan pairs depends on information, or decision rules, separate from the information provided by the scan pair itself. For example, the allocation of the scan pair "Clock Off Other – Start Account Delivery" depends on whether the pair follows a "Leave Office" scan, an "Arrive Deviation Park Point" scan, an "End Section" scan, or an "Activity" scan.

b. What percent of total scan pairs were subjected to such decision rules?

c. Please provide the total amount of time associated with the scan pairs mentioned in b, immediately above.

RESPONSE:

a. Confirmed.

b. The time pool assignments for 18.7% of scan pairs were determined using decision rules.

c. The total time associated with the scan pairs in subpart b is 54,428 hours.

Note that this time is not weighted.

RESPONSE OF POSTAL SERVICE WITNESS STEVENS
TO POIR NO. 9, QUESTION 5

5. Please refer to the file "scan_rules.xls" in LR-K-133.

a. What percent of scan pairs subjected to a decision rule discussed in question 4, above, involve administrative activities such as other, break, emergency other, or lunch that were allocated to the category "Delivery?"
b. Please provide the total amount of time associated with the scan pairs described in subpart a.
c. What percent of scan pairs subjected to a decision rule described in subpart a involve administrative activities such as other, break, emergency other, or lunch that were allocated to the category "Activity?"
d. Please provide the total amount of time associated with the scan pairs described in subpart c, immediately above.
e. What percent of scan pairs discussed in number 4 above were allocated to the category "Delivery?"
f. Please provide the total amount of time associated with the scan pairs described in subpart e, immediately above.
g. What percent of scan pairs discussed in number 4 above were allocated to the category "Activity?"
h. Please provide the total amount of time associated with the scan pairs described in subpart g, immediately above.

RESPONSE:

a. 14.7% of scan pairs subjected to decision rules were associated with administrative activities and were assigned to Delivery time pools. Delivery time pools include Loop/Foot, Curbline, Dismount, NDCBU, VIM, and Centralized.

b. The total time for the scan pairs in subpart a. is 14,728 hours.

c. 0.1% of scan pairs subjected to decision rules was associated with administrative activities and was assigned to time pools for CCSTS defined carrier activities. Activities include general collections, express collections, relays, parcel delivery, and accountable delivery.

d. The total time for scan pairs in subpart c. is 59 hours.

RESPONSE OF POSTAL SERVICE WITNESS STEVENS
TO POIR NO. 9, QUESTION 5

e. 55.0% of scan pairs subjected to decision rules were assigned to Delivery time pools. The 55.0% includes the scan pairs in subpart a.

f. The total time for scan pairs in subpart e. is 35,300 hours.

g. 0.1% of scan pairs subjected to decision rules was assigned to time pools for carrier activities. This includes the scan pairs in subpart c.

h. The total time for scan pairs in subpart g. is 59 hours.

1 CHAIRMAN OMAS: Is there any additional
2 cross-examination? Yes?
3 Mr. McLaughlin, would you please identify
4 yourself?
5 MR. MCLAUGHLIN: Mr. Chairman, Tom
6 McLaughlin for Advo. I would like to show the witness
7 copies of his responses to Advo/USPS-T-16-2 through 5,
8 which were redirected from John Kelley. We received
9 them just yesterday.
10 CROSS-EXAMINATION
11 BY MR. MCLAUGHLIN:
12 Q Mr. Stevens, would your answers to those
13 questions be the same today if you were asked orally?
14 A Yes, they would be.
15 MR. MCLAUGHLIN: Mr. Chairman, I have two
16 copies of the interrogatory responses, and I would ask
17 that they be transcribed into the record.
18 CHAIRMAN OMAS: Without objection. So
19 ordered.
20 (The document referred to was
21 marked for identification as
22 Exhibit No. Advo/USPS-T-16-2
23 through 5, and was received
24 in evidence.)
25 //

Response of Postal Service Witness Dennis P. Stevens
To Interrogatories Posed by ADVO, INC
Redirected from Witness JOHN KELLEY

ADVO/USPS-T16-2. There are 164 zips in the OCA-t15.4.d Concordance data but 167 in MDCD.Weights.Maskzips.Data. Also, in response to OCA/USPS-T16-2, witness Kelley states that, of the 167 zip codes in the final sample, two were excluded from USPS-LR-K-79 and K-81 scan-time files and from K-80 and K-81 volume files. A third zip was included in LR K-79 scan-time file and used in MDCD.CPSUM.FINAL.XLS but was excluded from K-81 scan-time file and K-80 and K-81 volume files. Please confirm that the two masked zips that were excluded from MDCD.CPSUM.FINAL.xls calculations and from the data given to Dr. Bradley are 2018.7 in stratum 3 and 2017.5 in stratum 1. If this is incorrect, please provide the masked zip numbers and their strata.

ADVO/USPS-T16-2 Response:

Confirmed.

Response of Postal Service Witness Dennis P. Stevens
To Interrogatories Posed by ADVO, INC
Redirected from Witness JOHN KELLEY

ADVO/USPS-T16-3. Please confirm the following understanding or make the necessary corrections:
(a) 167 zips were sampled and are included in MDCD.Weights.Maskzips.Data.
(b) 165 zips were used to create MDCD.CPSUM.FINAL.xls.
(c) 164 zips are included in the LR USPS K-81 Scan-Time Files
(d) 145 zips are included in witness Bradley's LF regression data set

ADVO/USPS-T16-3 Response:

A. Confirmed

B. Confirmed

C. Not Confirmed. There are actually 165 zips on the LR-K-81 scan-time file, not 164. The additional zip is on the LR-K-81 scan-time file, but is excluded from the LR-K-81 volume files. The attached revised version of OCA-t15.4.d Concordance (Revised OCA.t15.4.d.Concordance.xls) lists this additional zip in row 42.

D. Confirmed

Response of Postal Service Witness Dennis P. Stevens
To Interrogatories Posed by ADVO, INC
Redirected from Witness JOHN KELLEY

ADVO/USPS-T16-4. Using the OCA-t15.4.d Concordance data sheet, please add the total number of city letter routes by route delivery mode (as used in MODE for the timepool data given to witness Bradley), in each zip.

ADVO/USPS-T16-4 Response:

Please see columns E and F in the spreadsheet attached to my response to

ADVO/USPS-T16-3. Note that Delivery Mode "X" signifies that the delivery mode is

missing.

Response of Postal Service Witness Dennis P. Stevens
To Interrogatories Posed by ADVO, INC
Redirected from Witness JOHN KELLEY

ADVO/USPS-T16-5. Please provide the number of routes by route delivery mode (as used in MODE for the timepool data given to witness Bradley), in each of the three zip strata.

ADVO/USPS-T16-5 Response:

Please see columns C and D, and H to J, in "Revised OCA.t15.4.d.Concordance.xls",

attached to my response to Advo/USPS-T16-3.

1 CHAIRMAN OMAS: This brings us to oral
2 cross-examination. Two parties have requested oral
3 cross-examination, the Office of Consumer Advocate,
4 Val-Pak Direct Marketing Systems, Inc. and Val-Pak
5 Dealers Association, Inc.
6 Are there any other parties who wish to
7 cross-examine this witness?
8 (No response.)
9 CHAIRMAN OMAS: There being none, Ms.
10 Dreifuss?
11 MS. DREIFUSS: Thank you, Mr. Chairman.
12 CROSS-EXAMINATION
13 BY MS. DREIFUSS:
14 Q Good morning, Mr. Stevens.
15 A Good morning.
16 Q I'd like to start by talking about your
17 background. It's an impressive one. On page 1 of
18 your testimony you have an autobiographical sketch. I
19 think it says there that you joined the Postal Service
20 in 1983. Is that right?
21 A That's correct.
22 Q So you have 22 years of experience with the
23 Postal Service?
24 A That's correct.
25 Q You worked in mail processing operations as

1 a supervisor it says here.

2 A That's correct.

3 Q About how many years was that?

4 A 1984 to 1988. About four to five years, I

5 believe.

6 Q Okay.

7 A Yes.

8 Q And then you say a little further down that

9 you're thoroughly versed in all aspects of Postal

10 costing, concentrating in the last several years on

11 the delivery function. Is that right?

12 A That's correct.

13 Q When you say that you have been

14 concentrating in the last several years on the

15 delivery function, in what way were you concentrating

16 on that?

17 A In terms of trying to improve the costing

18 methodologies.

19 Q Were you part of a team that decided to

20 design and launch a city carrier street time survey?

21 A Yes.

22 Q So you were one of the initial team members?

23 A That's correct.

24 Q Who were the members of that team?

25 A Several folks from the Postal Service, as

1 well as some contractors.

2 Q You don't need to give me the names, but

3 what positions would the people in the Postal Service

4 have held?

5 A Management costing attribution. Management

6 costing attribution, several other economists and

7 statisticians from the Postal Service.

8 Q And what outside consultants were brought

9 in?

10 A Also I should mention there were operational

11 people too that had operational expertise as well.

12 The outside consultants were also economists

13 and statisticians.

14 Q Right. Was there more than one firm that

15 was brought in on a consulting basis?

16 A Are you talking about specifically this

17 study?

18 Q Yes. I'm talking about this study, the city

19 carrier street time survey.

20 A There probably was only one firm.

21 Q What firm was that?

22 A Foster Associates.

23 Q What did Foster Associates do to facilitate

24 the design and launching of this study?

25 A They provided support in the programming and

1 the data collection, as well as helped in the analysis
2 of the data as we received it.
3 Q When did the team begin its work to bring
4 about a city carrier street time survey?
5 A This has been going on six or seven years.
6 Our initial thoughts started probably in the late
7 1990s.
8 Q But the Postal Service didn't present a
9 study like this in Docket No. R2000-1, did they?
10 A No. This was the preliminary thoughts about
11 how to improve the cost savings.
12 Q Right.
13 A To get to particularly this study, it
14 started in earnest I'm thinking in 2000-2001.
15 Q And what would you say was the purpose of
16 the study? If you were going to give me a general
17 description of the study's purpose, what is it?
18 A Well, the main goal and thrust of the study
19 was primarily this was street time. The city carrier
20 street time since 1986 has pretty much been a black
21 box, and we really hadn't done anything since then.
22 The goal was to try to figure out what
23 carriers were doing on the street and attribute those
24 activities to Postal products.
25 Q So you view this as an attribution study?

1 A Partially, yes.
2 Q What was the other part?
3 A Variability, a sense of trying to determine
4 the effects on how or what kinds of costs would change
5 or be modified based on changes in volumes.
6 Q Okay. So that was the volume variability
7 part of it?
8 A Yes.
9 Q You wanted to see how a city carrier's time
10 would change when volumes would change?
11 A That was part of it, yes.
12 Q And was it important that you determine how
13 a carrier's time changed depending on the class of
14 mail that was being delivered on the route?
15 A We looked at cost drivers as they were. We
16 tried to decide what were the cost drivers for the
17 carrier rather than how we actually priced them out.
18 The study ends up looking at what the
19 carrier handles and how the carrier handles it. The
20 carrier generally is not concerned with the product
21 class, but more so by shape of how he delivers it.
22 Q So you considered shape to be a more
23 important cost driver than class? That's what the
24 team decided?
25 A Well, it may be related, but the team

1 decided to look at operations, see how the carriers
2 actually delivered the mail and try to figure out how
3 to measure that, measure those activities, and then
4 try to tie those back to the classes that actually
5 were carried.
6 It's not that they were separate entities.
7 They were kind of linked up, a cost link together.
8 Q What were the dates that this study actually
9 took place?
10 A In May of 2002. May to June. I don't have
11 the exact dates.
12 Q For how many delivery days were data
13 collected?
14 A Our goal was to collect 12 days at each of
15 the sample sites.
16 Q And were you able to achieve that goal?
17 A No, not completely primarily because of
18 certain situations that happened at certain sites --
19 route evaluations or things like that or particular
20 problems. Some places only gave us one week of data.
21 Some places gave us less than 12.
22 Q Was there a holiday during that period?
23 A I think so.
24 Q Do you remember what the holiday was?
25 A It's usually Memorial Day around there. I

1 can't remember for sure though. It seems there was a
2 holiday during that period. I'd have to go back and
3 look.
4 Q Assuming Memorial Day fell within that time
5 period, did that actually result in only 11 delivery
6 days being measured as opposed to 12?
7 A That's probably correct, yes.
8 Q Can you tell me? There are four main
9 witnesses in this case that have a role to play --
10 A Yes.
11 Q -- in presenting the city carrier street
12 time survey results and using those results. You're
13 one of them. There's Witness Lewis, Witness Kelley
14 and Witness Bradley.
15 Were all of you part of the original team
16 that began to organize in 2000-2001 to present this
17 survey?
18 A No. Witness Lewis joined us later. He
19 replaced another operations person, who was our
20 primary contact.
21 Q So you, Witness Kelley and Witness Bradley
22 were all part of the team in the 2000-2001
23 timeframe --
24 A That's correct.
25 Q -- that formed to organize this study?

1 A That's correct.

2 Q How was the decision made to collect data

3 for a two-week period as opposed to some other length

4 of time?

5 A Part of it had to do with trying to get

6 information over obviously more than one day. Part of

7 it was cost factors in terms of how big a sampling and

8 those kinds of issues, and probably those kind of

9 questions may be best answered by Witness Kelley.

10 In general, the goal was to try to get a

11 good sense of variation in day-to-day and week-to-week

12 and so we opted for two weeks.

13 Q I see. So you felt you were able to observe

14 day-to-day variations over an 11 day period?

15 A Yes.

16 Q And week-to-week variations because there

17 were two different weeks involved?

18 A Yes.

19 Q Were you able to observe month-to-month

20 variations?

21 A No.

22 Q Were you able to observe year-to-year

23 variations?

24 A No.

25 Q Were you able to observe seasonal effects in

1 the delivery of mail?

2 A I'm not sure about that. You may want to

3 pose that question to Witness Bradley in terms of

4 whether there were seasonal implications of those

5 data.

6 Q You don't take a position on that?

7 A That's correct.

8 Q I can ask you this because you're aware of

9 when the study was performed, right?

10 A Yes.

11 Q It was performed for 11 days at the end of

12 May and beginning of June, correct?

13 A That's accurate, yes.

14 Q And it was performed in 2002?

15 A That's correct.

16 Q It was not ever repeated at a later time in

17 2002, was it?

18 A No.

19 Q It was never repeated in any subsequent year

20 to May and June of 2002, was it?

21 A Not in its entirety, no.

22 Q It was partially performed at a later time?

23 Is that what you're saying?

24 A No. What I'm saying is that the CCSTS study

25 as it is, it had two parts to it. The first part was

1 the data that occurred in I think it was November of
2 2001, which was the fall of the year. We had the
3 information there, and then we had the full study that
4 we did in May. That's correct.
5 Q Was that full study ever performed following
6 the last data collection day in June of 2002? Was the
7 study ever repeated in any later years?
8 A We have started preliminary information on
9 something else, another study, but that is not part of
10 this study.
11 Q Please describe what you're doing now on a
12 preliminary basis.
13 A We have collected data, raw data from some
14 scans. It's sitting on a shelf. We haven't had time
15 to work with it.
16 Q I'm sorry. You said you collected some raw
17 data from scans?
18 A Yes. Some would be from scans, yes.
19 Q This is a city carrier route?
20 A That's correct.
21 Q How many routes have you collected data for?
22 A I don't know.
23 Q Ballpark guess?
24 A I really don't know offhand. I could give
25 you the information later, but offhand I don't know.

1 Q How many zip codes?
2 A Offhand I don't know. I can give you the
3 information later, but I don't have the information
4 currently.
5 Q When did you start this preliminary effort?
6 A It started preliminarily in early 2004, the
7 data collection in 2004, the scanning in 2004. That
8 was it. We haven't done anything with the data.
9 Q When you said you had scans from that period
10 of time, were the scans very much like the kind of
11 scanning that's described in your testimony?
12 A The process is similar. The scans or some
13 of the scans are similar, but it was a totally
14 different study.
15 Q What was the purpose of the study?
16 MR. KOETTING: Mr. Chairman, at this point
17 the Postal Service is going to object to the relevance
18 of this question. The OCA is inquiring about a study
19 that isn't being proffered by the Postal Service and
20 has no bearing with the study that's being offered by
21 Witnesses Stevens, Bradley and Kelley.
22 MS. DREIFUSS: Mr. Chairman, I don't think
23 that's the test that the Commission applies on the
24 relevance of evidence. It's whether the evidence is
25 relevant to the attribution of city carrier costs to

1 the class of mail.

2 It sounds like this preliminary study is

3 highly relevant for that purpose. It may not be

4 something the Postal Service chose to present, but it

5 is clearly relevant. I would ask that I be allowed to

6 continue to ask more questions about this preliminary

7 study.

8 CHAIRMAN OMAS: We'll allow it.

9 BY MS. DREIFUSS:

10 Q What's the purpose of the 2004 study?

11 A It's basically to look again at carrier

12 costs in terms of the street time and their

13 activities.

14 Q Are you trying to determine the volume

15 variability of city carrier costs in this preliminary

16 study?

17 A Yes.

18 Q And you're trying to determine how to

19 attribute city carrier costs by means of this study?

20 A Yes.

21 Q You were saying a moment ago you were

22 performing scans. Are you using DOIS for this study?

23 A No. We didn't use DOIS for the last study.

24 Q You didn't use DOIS for the last study?

25 A No.

1 Q Okay. If you could turn to page 23 of your
2 testimony? You have a section there. It's Section B,
3 DOIS Data.
4 A Uh-huh.
5 Q You say you didn't use DOIS data in the
6 carrier street time survey, so I'm wondering why you
7 have a section in your testimony that's labeled DOIS
8 Data?
9 A Well, what we asked the local sites to do
10 was to provide us volumes. The volumes that they
11 provided us are volumes that they also provide DOIS
12 and other systems within their organizations.
13 To make clear what we were asking for were
14 things, because several of the sites or a third of the
15 sites did not use DOIS or other forms. We simply
16 asked them to provide us mail counts using the best
17 counts they had available.
18 Q So you're saying --
19 A I'm saying that some folks may have used
20 DOIS to provide us numbers. We asked them to give us
21 the best counts that they could give us.
22 Q So to the best of your knowledge, DOIS data,
23 that is data entered into the DOIS system, were used
24 in this study, wasn't it?
25 A Volume data entered into the mainframe

1 systems were used in the study. Yes.

2 Q What is the source of volume data for the

3 preliminary study that was undertaken in 2004?

4 A Similarly, the same response. We asked them

5 to provide us the best volume data that they had

6 locally.

7 Q And that may be data that was entered into

8 DOIS, right?

9 A Yes. The supervisor is responsible for

10 counting the mail volumes at the local sites. We

11 asked them to also provide us that information. That

12 information may have been the same as entered into

13 DOIS or may not have been. I'm not sure.

14 Clearly for things like parcels and

15 accountables, we had to make explicitly clear the

16 definition of those type items that were used that

17 were not in DOIS or any other system.

18 Q Could you turn to your testimony at page 3,

19 please? I'm going to ask you about the last paragraph

20 of that testimony.

21 A Yes.

22 Q In the second sentence of the last paragraph

23 on page 3 you say, "Study coordinators, in conjunction

24 with delivery supervisors, provided operationally

25 mandated daily mail counts from USPS mainframe

1 databases and from local counts at the delivery
2 units."
3 What are the USPS mainframe databases that
4 you're talking about there?
5 A I'm not sure because it varies from site to
6 site. What we asked them to do was whatever way they
7 counted and tabulated their volumes locally to provide
8 that to us.
9 In general, these sites also are required,
10 it's my understanding, to send volumes to various
11 databases or reporting systems. As a means to explain
12 to them the type of information and the quality of
13 information that we wanted, we used that language.
14 Q So part of the information that's in the
15 city carrier street time survey comes from USPS
16 mainframe databases. Is that correct?
17 A It comes from the supervisor who inputs
18 information also into those same databases.
19 Q How did you receive the information? Did
20 you go directly into the mainframe databases to obtain
21 the information?
22 A No. They sent us outputs. Sometimes the
23 outputs were DOIS outputs because for those
24 supervisors that information was exactly the same.
25 Q I see. So supervisors would have input data

1 into DOIS, and then for purposes of your study they
2 would have generated output from DOIS to provide to
3 you? Is that correct?
4 A An output printout. That's correct, yes.
5 Q Now, further down in that paragraph you say
6 that 137 zip codes out of 161 recorded the volumes on
7 DOIS and DSIS reports. Is that correct?
8 A That's correct.
9 Q As we're talking about DOIS and DSIS, it
10 occurs to me that there may be many people in the room
11 who don't know what that stands for. Just to
12 illuminate the discussion for others, what does DOIS
13 stand for?
14 A I think it's delivery operation information
15 systems.
16 Q And what does DSIS stand for?
17 A I think it's delivery support information
18 systems. Witness Lewis could help you better with
19 those.
20 Q Okay. Do you know whether there's still any
21 offices on the DSIS system, as opposed to the DOIS
22 system?
23 A I think not, but Witness Lewis should be
24 able to help you with that.
25 Q Do you know if DOIS contains information

1 from time and attendance reports?
2 A I'm told that. Again, I'm not an expert at
3 all about DOIS.
4 Q What volume information in terms of piece
5 counts or pieces per foot counts did you need from
6 delivery unit supervisors in conducting the study?
7 A Those inputs are in my testimony and are
8 clearly labeled, all the various forms. Business
9 letters, flats, sequenced mail, parcels and
10 accountables.
11 Q You wanted a separate count of DPS letters,
12 I believe. Is that correct?
13 A That's correct.
14 Q And you wanted a separate count of non-DPS
15 letters? Is that correct?
16 A That's correct.
17 Q You wanted counts of flats? Is that
18 correct?
19 A That's correct.
20 Q Do the flat counts come from end-of-run
21 reports, EOR reports, in some cases?
22 A Possibly.
23 Q If they don't come from an end-of-run
24 reports then were they manual counts by supervisors?
25 A The only ones that we were absolutely

1 certain were manual counts were the case letters and
2 case flats.
3 Q Okay. So case letters and case flats were
4 counted manually?
5 A Yes.
6 Q And there were also counts of parcels? Is
7 that correct?
8 A Our defined parcels, yes.
9 Q I'm sorry? I didn't catch that.
10 A Yes. Parcels as we defined them for the
11 study.
12 Q You qualified your answer. What do you mean
13 by as you defined them for the study?
14 A In the testimony we define parcels as those
15 pieces that could not fit in the mailbox or the mail
16 receptacle.
17 Q What was your term for a package, packaged-
18 shaped piece, that could fit into a mailbox?
19 A SPR. SPR.
20 Q That's a type of parcel, isn't it?
21 A Small.
22 Q A small parcel?
23 A Yes.
24 Q So you distinguished between small parcels
25 and large parcels? Is that correct?

1 A Based on what I just said, yes.
2 Q And the supervisors gave you those counts of
3 small parcels and large parcels?
4 A The carriers gave us counts on parcels
5 because they're the only ones who could determine
6 whether the pieces could actually fit in the mailbox
7 or not.
8 Q Do you know if parcels are among the
9 operationally mandated daily mail counts?
10 A No. My answer is I don't know whether
11 they're part of the mandated counts or not. I think
12 there's a space in DOIS for it, and I think sometimes
13 they count them and sometimes they don't. Again, the
14 parcels as we defined them for the study are not a
15 mandated count.
16 Q Do you know if you got any parcel piece
17 information from the operationally mandated count?
18 A No. We got none from those. The parcel
19 counts, as far as I understand, were the forms that
20 were filled out by the carriers. Those were the only
21 numbers we used for the study.
22 Q Do you know if accountable mail is part of
23 the operationally mandated daily mail count?
24 A No. I'm not aware of that.
25 Q You don't know one way or the other?

1 A Right.

2 Q You did have counts of accountables though,

3 didn't you, in your study?

4 A Yes, because we were concerned about that.

5 We were questioning that. We asked them to have the

6 carriers specifically count the accountables that they

7 delivered that day. Yes.

8 Q How were accountables defined?

9 A We defined accountables as those mail pieces

10 that required a signature or customer contact.

11 Q Where would an item with delivery

12 confirmation have fallen in under that definition?

13 Would it have been something that would be considered

14 an accountable or not considered an accountable?

15 A If the piece could be scanned and placed in

16 the customer's mailbox without customer contact and

17 did not require a customer signature for some other

18 purpose then it would not be considered an

19 accountable.

20 Q Were Express Mail pieces considered

21 accountables?

22 A Yes.

23 Q Did the supervisors or carriers provide the

24 counts for accountables?

25 A The carriers, under the supervision of the

1 supervisors, provided those counts on a daily basis.
2 That was a carrier mandated responsibility to count
3 the accountables and parcels and place them on the
4 route sheet for that day.
5 Q Did they distinguish among insured mail or
6 signature confirmation or certified mail or Express
7 Mail?
8 A No.
9 Q Did you collect information on saturation --
10 I've often called it saturation bundles in the past,
11 but I believe they may be called saturation sets. Do
12 you know what the correct terminology is for that?
13 A We counted what we called sequenced mail,
14 which I guess is similar kinds of things, but the only
15 information we had that the supervisors would provide
16 us was the piece count in any sequenced mail on a
17 route on a given day.
18 Q So the supervisors provided to you the
19 number of sequenced pieces that had to be delivered on
20 the delivery day observed?
21 A Yes. By route, yes.
22 Q By route. Did those counts distinguish
23 between letters and flats?
24 A No.
25 Q Was there any indication of the number of

1 bundles that were involved?

2 A No.

3 Q Or the number of sets?

4 A No.

5 Q Based on your experience, your 22 years of

6 experience and your concentration on delivery costs,

7 do you know whether cased letters and flats are

8 normally organized by delivery point into a small

9 packet?

10 In other words, are cased letters combined

11 with cased flats to be brought out onto the street by

12 the carrier and then delivered in that way?

13 A I'm not sure about that. That's sort of

14 outside my expertise of operations questions.

15 Q You wouldn't know whether there are any

16 rules against putting a rubberband around a grouping

17 of mail for a particular delivery point, would you?

18 A I don't know anything about any of the rules

19 and things they use, no.

20 Q We spoke earlier about the dates during

21 which the survey was conducted was the end of May and

22 the beginning of June. Based on your 22 years of

23 experience, and let me start with your experience as a

24 supervisor, that volumes tend to vary, and perhaps

25 I'll give you an example.

1 Around the Christmas season, for example,
2 there might be more packages delivered by carriers --
3 often these are gift items -- than you would tend to
4 see at the end of May or beginning of June. Do you
5 recall that situation?
6 A I guess generally that's probably true.
7 Q In your experience as a supervisor of mail
8 processing do you recall that there seems to be a
9 heavy flow of catalogs in the beginning of the fall
10 mailing season around September and October? Does
11 that sound familiar to you?
12 A I know that generally, but I don't know how
13 it affects operations.
14 Q To the extent that there is seasonality in
15 the shapes of mail the Postal Service has to deliver
16 and the total volumes that the Postal Service has to
17 deliver over the course of a year, that seasonality is
18 not reflected in this study, is it?
19 A No. That was not my goal. I think the
20 seasonality I guess comes out of the CCS in terms of
21 distribution fees. That question may be best directed
22 to the CCS operations.
23 Q Actually I want to ask you though about the
24 purpose of this study and how it relates to the
25 question I just posed.

1 You told me at the beginning of the cross-
2 examination that the purpose of this study was to be
3 able to determine how to attribute cost to shapes of
4 mail, how to assess the volume variability of mail in
5 the city carrier operations.
6 Now, if there's any seasonality involved in
7 that this study would not capture it, would it?
8 MR. KOETTING: I believe that question was
9 already asked and answered earlier.
10 MS. DREIFUSS: Well, I have to apologize
11 because I don't remember the answer. I don't see any
12 harm in having the witness answer the question at this
13 time.
14 MR. KOETTING: The question was asked and
15 answered.
16 MS. DREIFUSS: Well, I'm going to have to
17 ask that the transcriptionist go back so I will know
18 what the answer was because I don't recall it.
19 Would you mind going back to the beginning
20 of my cross-examination and look for the question and
21 answer, unless Attorney Koetting will concede this
22 point because I have other questions along these
23 lines.
24 MR. KOETTING: The question was asked and
25 answered.

1 CHAIRMAN OMAS: Proceed.

2 BY MS. DREIFUSS:

3 Q Do you know if I asked you that question

4 before?

5 A Yes. I think I answered it, and I also said

6 the seasonality implications may be best addressed by

7 Witness Bradley.

8 Q I understand that, but I want to ask you

9 because you were part of the original team.

10 A Yes.

11 MR. KOETTING: The question was asked and

12 answered. Now it's been asked and answered twice.

13 CHAIRMAN OMAS: Proceed, Ms. Dreifuss.

14 BY MS. DREIFUSS:

15 Q If there is seasonality in the data -- well,

16 let me ask you something else, which I did not ask

17 earlier.

18 There's a witness in this case, Witness

19 Bernstein, who provides information to Witness Thress

20 in this case concerning mail volume trends and key

21 variables affecting mail volumes. Are either of these

22 witnesses familiar to you?

23 A No.

24 Q You've never heard of them?

25 A I've heard of them.

1 Q Would you accept, subject to check, that
2 both of them are witnesses in this proceeding?
3 A Yes.
4 Q And will you accept, subject to check, that
5 Witness Bernstein in the Purpose section of his
6 testimony says that he is going to explain mail volume
7 trends and key variables affecting mail volume that he
8 provides to Witness Thress? Would you accept that
9 subject to check?
10 A Yes.
11 Q Would you accept, subject to check, that
12 Witness Bernstein says that seasonable variations have
13 an impact on the following: First class single piece
14 letters? Would you accept that?
15 A Subject to check?
16 Q Yes.
17 MR. KOETTING: I'm not sure what the purpose
18 is of having counsel read Witness Bernstein's
19 testimony. It speaks for itself. The witness doesn't
20 need to accept it or doesn't need to accept it. It's
21 there.
22 MS. DREIFUSS: This is a predicate for
23 another question.
24 MR. KOETTING: Then just read the testimony
25 and ask the question.

1 BY MS. DREIFUSS:

2 Q Will you accept, subject to check, that

3 Witness Bernstein cites seasonal variations as having

4 an impact on volumes of first class work shared

5 letters?

6 A Yes.

7 Q Priority Mail?

8 A Yes.

9 Q Express Mail?

10 A Yes.

11 Q Periodicals?

12 A Yes.

13 Q Standard regular?

14 A Yes.

15 Q Standard ECR?

16 A Yes.

17 Q Standard nonprofit ECR?

18 A Yes.

19 Q In fact, with respect to standard nonprofit

20 ECR Witness Bernstein says that there is an election

21 year trend that he was concerned about for the year

22 2004. Would you accept that subject to check?

23 A Yes.

24 MR. KOETTING: Could you provide citations

25 so that we can check the subject testimony?

1 MS. DREIFUSS: Yes, I will. Would you like
2 me to go back to the beginning of my list and give you
3 a page citation?
4 MR. KOETTING: That would be helpful.
5 MS. DREIFUSS: Okay. First class single
6 piece letters, page 41; first class work shared
7 letters, page 56; Priority Mail, page 73; Express
8 Mail, page 81; periodicals, pages 97, 104 and 114
9 across the various subclasses; standard regular, page
10 139; standard ECR, page 146, standard nonprofit ECR,
11 pages 157 through 158.
12 BY MS. DREIFUSS:
13 Q Now back to standard nonprofit ECR. If
14 there is an election year trend to delivery of
15 standard nonprofit ECR volume and if Witness Bernstein
16 was concerned about that for the year 2004, am I
17 correct that a city carrier street time survey
18 performed in 2002 would not have captured that
19 seasonality? Is that correct?
20 A I'm not sure about that answer. One of the
21 goals of the study that I did not mention that I
22 should have mentioned, which is the number one goal,
23 was to update the 1986 study. In the 1986 study,
24 similarly our methodologies deal with it in terms of
25 the variation, but the variation is handled with the

1 CCS distribution key.

2 The goals of the study was not to answer

3 every conceivable question that could be asked about

4 carrier operations. It was basically designed to

5 update the 1986 information and have it fit into an

6 existing costing methodology.

7 MS. DREIFUSS: With all due respect to

8 counsel, if the witness is going to give me the same

9 answer he's given several times before I'm going to

10 need to follow up with the same question I asked

11 before.

12 This witness said that CCS will take care of

13 the seasonality question, so that puts me in a

14 position where I'm going to need to ask you again

15 about the possible effects of seasonality on the

16 measurement of volume variability.

17 BY MS. DREIFUSS:

18 Q If there is seasonality in the measurement

19 of volume variability, a study performed in two weeks

20 at the end of May and the beginning of June will not

21 capture it. Is that correct?

22 A My testimony is not on the volume

23 variability. That's Witness Bradley.

24 CHAIRMAN OMAS: Ms. Dreifuss, would you

25 please be a little more cautious about repetitive

1 questions, please?

2 MS. DREIFUSS: Yes, sir.

3 BY MS. DREIFUSS:

4 Q I might as well complete my list from

5 Witness Bernstein. Would you accept, subject to

6 check, that Witness Bernstein cites seasonal

7 variations as having an impact on volumes of parcel

8 post, page 171 of his testimony?

9 A Yes.

10 Q Registered mail, page 208?

11 A Yes.

12 Q Insured mail, page 213?

13 A Yes.

14 Q Certified mail, page 217?

15 A Yes.

16 Q Signature confirmation, page 245?

17 A Yes.

18 Q Will you accept, subject to check, that at

19 pages 38 and 39 of Witness Thress' testimony he

20 focuses on 22 seasonal variables? Will you accept

21 that subject to check?

22 A Yes.

23 Q He gives a great deal of emphasis to certain

24 times of the year. Let me read you some of those 22

25 seasonal variables from the list I see on page 38.

1 He isolates the period December 11 through
2 12. Will you accept that subject to check?
3 A Yes.
4 Q And the period December 13 through 15?
5 Would you accept that subject to check?
6 A Yes.
7 Q And the period December 16 through 17?
8 Would you accept that subject to check?
9 A Yes.
10 Q He continues in two-day increments and then
11 goes to December 24. That apparently has particular
12 seasonal variations. Will you accept that subject to
13 check?
14 A Yes.
15 Q And also the period December 25 through the
16 31st? Will you accept that subject to check?
17 A Yes.
18 Q Now, you conducted a study at the end of May
19 and June of 2002. Is that correct?
20 A That's correct.
21 Q You did not conduct this study at any time
22 in December, did you?
23 A In December? No.
24 Q Let me read you some of the other seasonal
25 variables he's got here. September 1 through 15 and

1 September 16 through 30. Again, this is all from page
2 38. Those are seasonal variables.
3 Did you conduct your study during either of
4 these two-week periods in September?
5 A No.
6 Q He cites October as being a seasonal
7 variable. Did you conduct your study in October?
8 A No.
9 Q He cites November 1 through December 10 as
10 being a seasonal variable. Did you conduct your study
11 during that period of time?
12 A I'm hesitating. I did do a beta test during
13 the fall of the year. I'm not sure if it was October/
14 November, but in general, no.
15 Q I'll skip December. I've already gone over
16 that. He cites January 2 through February 28 and 29
17 as a seasonal variable. Did you conduct your study
18 during that period of time?
19 A No.
20 Q He also cites March 1 through March 31. Did
21 you conduct your study during that period of time?
22 A No. We only conducted the study during the
23 periods of time I've already quoted.
24 Q So you didn't conduct the study during the
25 period April 1 through 15, another seasonal variable?

1 Is that correct?

2 A That's correct.

3 Q I'll end this up by saying July 1 through

4 August 31 is another seasonal variable. You didn't

5 conduct your study during that period of time either,

6 did you?

7 CHAIRMAN OMAS: Ms. Dreifuss, could you tell

8 me where you're going with this line of questioning,

9 please?

10 MS. DREIFUSS: Yes, Mr. Chairman. I'm

11 trying to show that the study is completely inadequate

12 to the purposes that the Commission needs to apply it;

13 that a study performed for a very, very brief period

14 of time during a single year during a two-week period

15 that does not capture any seasonal variation, that

16 does not carry any variations that might occur over a

17 rate cycle, is completely inconsistent with the

18 Commission's prior holdings on the kind of study it

19 needed and wanted the Postal Service to present.

20 CHAIRMAN OMAS: Continue.

21 MS. DREIFUSS: Thank you. Mr. Chairman, you

22 very conveniently and happily have led me to actually

23 going to prior Commission statements.

24 BY MS. DREIFUSS:

25 Q In Docket R1997-1 in paragraph 3035 the

1 Commission stated that an eight-week time span is too
2 short to capture effects that are volume variable over
3 the time span of a postal rate cycle. Will you accept
4 that subject to check?
5 A Yes.
6 MR. KOETTING: Could you give us the context
7 in which that statement was made?
8 MS. DREIFUSS: Yes. This is a criticism and
9 ultimately a rejection of Witness Bradley's study of
10 the volume variability of mail processing costs in
11 Docket R1997-1.
12 BY MS. DREIFUSS:
13 Q The Commission further stated, "The
14 Commission's understanding of the time period that is
15 appropriate for volume variable cost analyses is that
16 the volume variability of costs should reflect the
17 length of time that the Commission's recommended rates
18 would be expected to be in effect." Do you accept
19 that subject to check?
20 MR. KOETTING: Mr. Chairman, I'm going to
21 object here. Again, the Commission's statements speak
22 for themselves. The witness does not need to accept
23 them subject to check. They don't need to become
24 evidence.
25 Counsel can make whatever arguments she

1 wishes to on brief with this material, but it's not
2 necessary for the cross-examination of this witness
3 for her to sit here and read Commission statements and
4 then ask him to accept subject to check something he
5 doesn't even have in front of him.
6 CHAIRMAN OMAS: I totally agree with
7 counsel.
8 Ms. Dreifuss, those statements speak for
9 themselves, and there's no purpose in reading
10 witnesses' testimony. Please proceed.
11 BY MS. DREIFUSS:
12 Q Mr. Stevens, did you collect data for the
13 city carrier street time survey that spanned an entire
14 rate cycle?
15 A No.
16 Q Did you conduct a study that provided panel
17 data on city carrier street time costs to the
18 Commission?
19 A No.
20 Q I want to ask you about the collection
21 activity for which you collected data. What kinds of
22 collection activities were studied?
23 A Mail collections you're talking about?
24 Q Yes. Mail collection activities.
25 A The only collection activities that were

1 studied were the collection activities done by
2 carriers as they were on their routes.
3 We captured collections as part of delivery
4 times when carriers retrieved mail from a delivery box
5 at the same time they put in mail. That was included
6 in what we call delivery time, so it was like
7 collected while delivered.
8 Secondly, we captured situations where city
9 carriers would actually pool mail from city collection
10 boxes, mail collection boxes.
11 Q What kind of information did you collect on
12 the retrieval of mail from individual mailboxes?
13 A We didn't capture anything separately from
14 that except the pieces that were brought in.
15 Q So do you have any time data for that
16 activity?
17 A Not as a separate activity, no.
18 Q You didn't have the carriers scan that point
19 at which they were going to retrieve a piece of mail
20 from an individual mailbox?
21 A No.
22 Q Did you have any piece counts of those
23 pieces that were collected from individual mailboxes?
24 A Yes, we do.
25 Q Who provided those piece counts?

1 A The carriers.

2 Q Do you know if Witness Bradley used that

3 information in performing his econometric analysis?

4 A I think he used some of the information.

5 You'd have to talk to Witness Bradley about how he

6 used the data.

7 Q Now, in terms of mail retrieved from mail

8 collection boxes --

9 A Yes?

10 Q -- what kind of data did you collect on

11 that?

12 A We started with the idea that carriers were

13 collecting a significant part -- there's a significant

14 activity, a daily activity or at least some regular

15 activity pulling mail from the mailboxes, so we asked

16 them to scan that.

17 We found some information from it. It was

18 so sparse and scarce we kind of went with the idea

19 that we had before the study that most of that

20 activity is no longer done by city carriers pulling

21 mail from mailboxes. The data was so scarce and

22 sparse there's nothing anywhere -- in the study

23 anywhere.

24 Q All right. So even though he collected the

25 data, to the best of your knowledge --

1 A It wasn't used.

2 Q -- Witness Bradley didn't use it?

3 A Yes.

4 Q In March 2004 the Postal Service started a
5 new service called carrier pickup. Are you familiar
6 with that service at all? Have you ever heard of it?

7 A I've heard of it, yes. That's correct.

8 MR. KOETTING: I'm not sure what this has to
9 do with this witness' testimony, which is the study
10 which, as we've determined, concluded in June 2002. I
11 object on the ground of relevancy.

12 MS. DREIFUSS: I believe it's relevant, Mr.
13 Chairman, because I'm going to try to demonstrate to
14 the Commission that there's a significant new carrier
15 selection activity that is the picking up of Express
16 Mail and Priority Mail and in some cases parcel post
17 from individual recipients that would not be
18 represented in this study. I think I'll only need
19 another question or two to establish that.

20 CHAIRMAN OMAS: Well, I think we know that.
21 Proceed.

22 BY MS. DREIFUSS:

23 Q Have you ever heard of carrier pickup?

24 A Yes.

25 Q Are you generally familiar with it?

1 A Somewhat.

2 Q Do you know that it generally involves

3 picking up Express Mail and Priority Mail packages?

4 A I'm not familiar with the types of mail or

5 products they actually pick up.

6 Q Well, would you accept, subject to check,

7 and if you want to check I'm looking at the March 2004

8 issue of *Mailers Companion* that I obtained from the

9 Postal Service's website, usps.com.

10 Would you accept, subject to check, that

11 carrier pickup is for the purpose of picking up

12 Express Mail and Priority Mail packages primarily?

13 A You got that statement from where?

14 Q I see a description of this service in this

15 is a Postal Service publication called *Mailers*

16 *Companion*, and the issue is 2004. I can show you what

17 I printed from the internet if you care to look at it.

18 A That's not my understanding of what carrier

19 pickup is.

20 MS. DREIFUSS: May I approach the witness?

21 CHAIRMAN OMAS: Yes.

22 THE WITNESS: I read it, and the first

23 sentence I see is, "Carrier pickup allows customers to

24 notify their local post office on line when they have

25 packages to pick up regardless of class."

1 My understanding of this is that it's just a
2 continuation of the same process that's always been
3 there where carriers will pick up mail from customers.
4 CHAIRMAN OMAS: Ms. Dreifuss, I think the
5 witness is not familiar with this. Would you just
6 please continue?
7 MS. DREIFUSS: Yes, sir. At a later time
8 OCA will establish what carrier pickup is.
9 BY MS. DREIFUSS:
10 Q To the extent that there is a new service
11 begun in March 2004 or thereabouts, the study that you
12 performed in the May/June timeframe of 2002 would not
13 reflect those activities. Is that correct?
14 A My understanding is it's not a new service.
15 I mean, our carriers have always picked up mail. The
16 new portion as I understand it is a simple way of
17 letting the carrier know beforehand that he has to
18 pick up some mail.
19 Q That simple way that you mentioned, was that
20 simple way in place in May and June of 2002?
21 A I would assume so. If the customer wanted
22 to leave something for the carrier he would leave it
23 in the mailbox or would leave a note in the box for
24 pickup.
25 Q If the service had a different character in

1 2004 than it did in 2002 then am I correct that a 2002
2 study would not reflect anything that was different
3 about carrier pickup that was implemented in the year
4 2004?
5 A If there was a difference in carrier
6 behavior in terms of their activities that would be
7 correct.
8 MS. DREIFUSS: I have no further questions,
9 Mr. Chairman.
10 CHAIRMAN OMAS: Thank you, Ms. Dreifuss.
11 Mr. Olson?
12 I think what we should do before Mr. Olson
13 begins is why don't we take our midmorning break for
14 about 10 minutes and then come back at 11:25? Thank
15 you.
16 (Whereupon, a short recess was taken.)
17 CHAIRMAN OMAS: Mr. Olson?
18 MR. OLSON: Thank you, Mr. Chairman.
19 CROSS-EXAMINATION
20 BY MR. OLSON:
21 Q Mr. Stevens, William Olson representing Val-
22 Pak Direct Marketing Systems and Val-Pak Dealers
23 Association.
24 We asked in an interrogatory to Witness
25 Bradley that got redirected to you, two of them

1 actually, but the one I want to ask you to look at is
2 T-14-14. Do you have that?
3 A Yes, I have it.
4 Q Okay. The question dealt with costing for
5 the treatment of flats in the category of sequenced
6 mail in Witness Bradley's testimony.
7 Is it safe to say that if I ask you a
8 question about what sequenced mail means and ask
9 Witness Bradley a question about what sequenced mail
10 means in his testimony that we're going to come to the
11 same term and the same meaning?
12 A I hope so.
13 Q Okay. Well, since we had asked the question
14 of him and you answered it, I guess it was because you
15 were the data collection expert on the 2002 city
16 carrier street time survey?
17 A That's correct.
18 Q Okay. I know I asked about flats, but let
19 me just briefly supplement that with a question about
20 letters.
21 We asked you about how certain pieces were
22 recorded in your data collection, and you said that
23 all delivered mail was recorded. That is correct?
24 A That's correct.
25 Q Now what I want to ask you is what falls in

1 the category of sequenced mail and what is outside the
2 category of sequenced mail? I think the easiest way
3 is to ask a number of specific questions.
4 Let me first start with if you have letters
5 which are DPS'd to the plant and they come to the
6 carrier as part of the DPS letter mail stream, those
7 are counted as letters, correct?
8 A As DPS letters.
9 Q Okay. If DALs are DPS'd to the plant and
10 are included in that mail street, those are also
11 counted as letters, correct?
12 A That's correct. They'll be included in the
13 DPS count.
14 Q On the other hand of course a flat cannot be
15 DPS'd so that wouldn't apply here, but if you had a
16 letter and the letter was cased by the carrier that
17 would be counted as a letter in the system, correct?
18 A Yes, as a cased letter.
19 Q And if it were a DAL and the DAL were cased,
20 that would be treated as a letter?
21 A As a cased letter.
22 Q And if it were a flat and it were cased by
23 the carrier it would be considered a cased flat I take
24 it?
25 A That's correct.

1 Q Okay. Now for third bundles of letters that
2 are taken directly to the street those would be
3 considered sequenced mail, would they?
4 A Yes.
5 Q And if they're counted as sequenced mail by
6 definition they're not going to be double counted as
7 letters, correct?
8 A That's correct.
9 Q Okay. And if you have DALs which are not
10 DPS'd or not cased, they're simply taken as a bundle
11 to the street along with the host piece, the count of
12 those DALs, is that included in sequenced mail?
13 A Could you repeat the question? I'm sorry.
14 I think I got you, but I'm not sure.
15 Q I'm sorry. It probably was confusing. If
16 you have DALs and they're not DPS'd, they're not
17 cased, but they're simply a stack of line of travel
18 DALs that the carrier takes directly to the street
19 along with the host piece, those DALs are counted as
20 pieces of sequenced mail, correct?
21 A That's correct.
22 Q Okay. And then if the carrier takes the
23 host piece, the flat or parcel perhaps, with a DAL and
24 he takes that as a third bundle to the street that
25 also would be counted as a piece of sequenced mail,

1 correct?

2 A That's correct.

3 Q Okay. Within sequenced mail do you divide

4 between letters and flats?

5 A No.

6 Q Okay. I guess this is obvious, but I'll ask

7 it anyway. Do you divide between DALs and non-DAL

8 letters? If you don't divide between letters and

9 flats, I guess that's obvious.

10 A No.

11 Q So your sequenced mail number is all pieces

12 taken directly to the street by a carrier whether

13 they're third bundles, letters or DALs or flats?

14 A That's correct.

15 Q Okay. Where a detached address label is

16 cased and the saturation flat is also cased and the

17 mail is undelivered, I take it none of that would be

18 sequenced mail?

19 A That's correct.

20 Q Neither the DAL that's cased nor the flat

21 that's cased because they're cased, correct?

22 A That's correct. They'll be counted as part

23 of that workload. Yes.

24 Q So if you had a mailing of 500 DALs and 500

25 flats that went with those DALs, wraps or flats or

1 covers or whatever we care to call them, and the DALs
2 are either DPS'd or cased and the flats are taken to
3 the street, then the sequenced mail goes up by 500,
4 right, not by 1,000?
5 A That's correct. The DAL count that's DPS'd
6 would be subsumed in the DPS count, and the only count
7 we would have in the sequence would be the 500 pieces
8 that went out. It's a separate workload.
9 MR. OLSON: I thank you for your absolutely
10 clear testimony. I'm very grateful. It was perfect.
11 Thank you.
12 CHAIRMAN OMAS: Thank you, Mr. Olson.
13 MR. OLSON: I should have said I have no
14 further questions.
15 CHAIRMAN OMAS: Thank you.
16 Is there anyone else who wishes to cross-
17 examine this witness?
18 (No response.)
19 CHAIRMAN OMAS: Are there any questions from
20 the bench?
21 COMMISSIONER GOLDWAY: I have some.
22 CHAIRMAN OMAS: Mrs. Goldway?
23 COMMISSIONER GOLDWAY: You were on the team
24 that planned the structure of this study as Ms.
25 Dreifuss inquired of you earlier. We have heard from

1 Ms. Dreifuss and we all know that there are great
2 variations in the volume and the class mix of mail
3 over a period of a year.
4 When you were planning this study, why did
5 you choose the last week in May and the first week in
6 June? What was your thinking in determining that
7 period of time?
8 THE WITNESS: To the degree that the volumes
9 were typical, whatever that means, of either spikes up
10 or down, to the degree that we could get the time and
11 operational buy in to support this process, to the
12 degree that carriers would not be overburdened by the
13 process.
14 We took all those factors in consideration
15 in trying to come up with a timeframe that would give
16 us the best picture of the Postal Service.
17 COMMISSIONER GOLDWAY: So the volume was
18 certainly not heavy during that period of time. The
19 weather was good. You felt that the people you were
20 working with in the field would be more cooperative at
21 that particular time.
22 THE WITNESS: I think the word I would use
23 is typical. It's more normal. There's nothing going
24 on that was out of the way that would cause potential
25 concerns or difficulties.

1 That was a concern to get the buy in because
2 it was not just the managers. We had to get the 3,500
3 carriers to buy in as well.
4 COMMISSIONER GOLDWAY: I have this other
5 question. You said that you were counting parcels as
6 those items that could not fit in a mailbox?
7 THE WITNESS: Yes.
8 COMMISSIONER GOLDWAY: It seems to me in
9 apartment buildings and in many multiple mailbox areas
10 the mailboxes are so small that most flats can't fit
11 in those mailboxes.
12 THE WITNESS: That's possibly true.
13 COMMISSIONER GOLDWAY: How are those counted
14 in your study?
15 THE WITNESS: Our definition is very clear.
16 Any piece that could not fit into the mailbox that
17 would cause additional time for the carriers. The
18 carriers would then have to access the door, and so we
19 wanted to count anything that was separate from this
20 normal, routine delivery activity. That was why we
21 defined it as we did.
22 COMMISSIONER GOLDWAY: So in that sense some
23 flats were being called parcels and flats were perhaps
24 undercounted as part of the normal delivery because --
25 THE WITNESS: Nothing was counted twice.

1 COMMISSIONER GOLDWAY: I know it was not
2 counted twice. It wasn't counted twice, but it wasn't
3 counted as a flat. It was counted as a parcel because
4 it was delivered separately from the mailbox.
5 Therefore, the costs associated with flats
6 were shifted into parcels because the definition was
7 different? I'm confused about how you can be
8 consistent on measuring the cost.
9 THE WITNESS: Okay. Again, I think part of
10 the confusion is trying to transfer our workload
11 ledgers to actual categories of mail.
12 The goal of the study was to measure
13 workload as the carriers performed their duties so
14 letters and flats and small parcels and sequenced mail
15 were separate things that the carriers would do.
16 One clear thing they also did was they had
17 items that would not fit in the box. These items
18 would cause additional time, additional access, so we
19 wanted to make sure that we captured those. If
20 there's anything that's different from the 1986 study
21 that we needed it was those accesses.
22 To the degree that they would therefore then
23 cause a change in what the flat fee was --
24 COMMISSIONER GOLDWAY: Well, it seems to me
25 if you called them parcels so that the workload is

1 allocated to parcels, but in fact they're flats --
2 THE WITNESS: But we get our distribution
3 key from a different source. We don't get the
4 distribution key from the fact that we call them
5 parcels. Actually, the CCS calls them parcels.
6 COMMISSIONER GOLDWAY: So you called them
7 parcels, but then when you figured what the workload
8 was to handle them you called them flats?
9 THE WITNESS: No. Let's drop the word
10 parcels and make it clearer.
11 Let's say packages are any pieces of mail
12 that would not fit in the mailbox. We wanted them to
13 capture those and count those as a separate, distinct
14 workload. They would enter that number, whatever that
15 number was, on their daily route sheets. Those
16 issues, those pieces, then have a separate and
17 distinct distribution key.
18 COMMISSIONER GOLDWAY: But some of those are
19 flats and some of those are parcels?
20 THE WITNESS: Yes. Partially, yes.
21 COMMISSIONER GOLDWAY: So then how do we get
22 back to tracing the workload of flats if some of those
23 flats are called something else?
24 THE WITNESS: No. No.
25 COMMISSIONER GOLDWAY: Maybe I'm dense about

1 this. I must be. Maybe what we can do is get for me
2 something in writing that explains that --
3 THE WITNESS: Yes. I could write it up a
4 little bit more clearer.
5 COMMISSIONER GOLDWAY: -- more clearly for
6 me.
7 THE WITNESS: Yes. Yes. The link in how we
8 tie it back. Yes.
9 COMMISSIONER GOLDWAY: Yes. Okay. I'd
10 appreciate that.
11 THE WITNESS: Okay.
12 CHAIRMAN OMAS: Excuse me for interrupting,
13 but I think what you're saying is that the key, when
14 they went back, if it was a flat that didn't fit in it
15 was keyed as a flat in the study. Is that not
16 correct?
17 THE WITNESS: Flats that were delivered --
18 flats in the study. Flats that were treated as
19 parcels were counted as parcels in the study and were
20 not counted in flats at all.
21 COMMISSIONER GOLDWAY: Yes. Well, that's
22 what's confusing to me. So I appreciate what you
23 write up, and then I will consider more in the study.
24 THE WITNESS: Okay. Thank you.
25 COMMISSIONER GOLDWAY: Then I guess I would

1 ask whether you were aware of any of the Postal Rate
2 Commission's concerns about, in the mail-processing
3 studies done before, our concerns about a length of
4 time for a study and what we viewed as a proper length
5 of time for any study when you were composing the
6 outline of your study.
7 THE WITNESS: Yes. We're aware of those
8 concerns, but, again, my first responsibility was to
9 try to take the '86 study as it was and to update it
10 to current standards. So what I did in terms of this
11 data collection was to deal with just that part of the
12 '86, like STS and LTV, and combined those aspects to
13 the other and used the same framework in terms of the
14 seasonalities.
15 We considered and understand that there
16 could be some -- issues, and those things will be
17 addressed by Witness Reilly. The one thing about the
18 data system that we tried to put in place was that if
19 it works, and the Commission accepts it, it becomes a
20 framework whereby you could get better long-term data
21 if you wanted to.
22 COMMISSIONER GOLDWAY: Thank you.
23 THE WITNESS: Yes.
24 COMMISSIONER TISDALE: I have a couple of
25 questions.

1 CHAIRMAN OMAS: Excuse me. Commissioner
2 Tisdale.
3 COMMISSIONER TISDALE: Mr. Stevens, when
4 letter carrier routes, city routes, are being
5 inspected for adjustment, how many weeks of
6 information are considered?
7 THE WITNESS: I'm not familiar at all with
8 the -- evaluation procedures. I think Mr. Lewis could
9 possibly answer those for you. My understanding of
10 what they do is they go out on one day, and they do a
11 reading. That's all I know about it. They count the
12 mail for that day for some period.
13 COMMISSIONER TISDALE: Okay. Did I hear you
14 right when you said that the time that was picked for
15 this study was a time when you didn't expect the mail
16 to peak or the mail volumes to peak?
17 THE WITNESS: What I tried to say was that,
18 you know, there are peaks and valleys throughout the
19 course of the whole year in between Christmas, and you
20 know about mail volumes in general. Our goal is to
21 try to find something that was a typical period that
22 didn't have any -- what most people call a "spike"
23 like tax day or things like that or a lull like during
24 July during the holidays. So we try to find a typical
25 period. That's why we ended up in after the April-May

1 period.

2 COMMISSIONER TISDALE: Would that mail

3 typically peak around the end of the month and the

4 first of the month?

5 THE WITNESS: Do you mean on the first and

6 the fifteenth, that kind of thing?

7 COMMISSIONER TISDALE: Well, around the end

8 of the month and the first of the month. You took two

9 weeks, one week at the end of the month and one at the

10 first of another month.

11 THE WITNESS: Yes.

12 COMMISSIONER TISDALE: Aren't those weeks

13 typically weeks when mail volume is up?

14 THE WITNESS: Right. Yeah. To some degree,

15 we wanted a two-week period. I don't hear much about

16 mail volumes and peaking and stuff. Just from my own

17 perspective is that, you know, mail and bills tend to

18 come out the first and the fifteenth, so our goal in a

19 two-week period was to try to capture the peaking

20 period at the middle of the month and the end of the

21 month.

22 COMMISSIONER TISDALE: Then you wanted to

23 capture the peak. Is that what you're saying?

24 THE WITNESS: To the degree that mail varies

25 from day to day within a month, it tends to vary

1 between over a 15-day cycle, a 14-day cycle, a two-
2 week cycle, and so that was our goal, yes.
3 COMMISSIONER TISDALE: Okay.
4 CHAIRMAN OMAS: Are there any additional
5 questions?
6 (No response.)
7 CHAIRMAN OMAS: There being none, Mr.
8 Koetting, would you like some time with your witness?
9 MR. KOETTING: Just a minute or two.
10 CHAIRMAN OMAS: Fine.
11 (Discussion off the record.)
12 CHAIRMAN OMAS: Mr. Koetting?
13 MR. KOETTING: The Postal Service has no
14 redirect, Mr. Chairman.
15 CHAIRMAN OMAS: Thank you.
16 Mr. Stevens, that completes your testimony
17 here today. We thank you very much for your
18 contribution to the record, and you are now excused.
19 THE WITNESS: Thank you, sir.
20 (The witness was excused.)
21 CHAIRMAN OMAS: Mr. Koetting, would you
22 please identify your witness so that I may swear him
23 in?
24 MR. KOETTING: Thank you, Mr. Chairman. The
25 Postal Service calls as its next witness Professor

1 Mike Bradley.

2 Whereupon,

3 MICHAEL DAVID BRADLEY

4 having been duly sworn, was called as a

5 witness and was examined and testified as follows:

6 CHAIRMAN OMAS: Please be seated.

7 Mr. Koetting?

8 (The document referred to was

9 marked for identification as

10 Exhibit No. USPS-T-14.)

11 DIRECT EXAMINATION

12 BY MR. KOETTING:

13 Q Could you please state your full name and

14 position for the record?

15 A I'm Michael David Bradley, and I'm a

16 professor of economics at George Washington

17 University.

18 Q Professor Bradley, I've just handed you a

19 document entitled "Testimony of Michael D. Bradley on

20 behalf of the United States Postal Service," which has

21 been designated as USPS-T-14. Are you familiar with

22 this document?

23 A I am.

24 Q Was it prepared by you or under your

25 supervision?

1 A It was.

2 Q If you were to testify orally today, would

3 this be your testimony?

4 A It would.

5 Q Are there any Category 2 library references

6 associated with this testimony?

7 A Yes.

8 Q Could you identify those, please?

9 A Library Reference K81.

10 Q And is it your intention to sponsor USPS-LR-

11 K81 as part of your testimony?

12 A Yes.

13 MR. KOETTING: Mr. Chairman, with that, the

14 Postal Service would request that the direct testimony

15 of Michael D. Bradley on behalf of the United States

16 Postal Service, labeled as USPS-T-14, and the

17 associated library reference be admitted into evidence

18 into this proceeding.

19 CHAIRMAN OMAS: Is there any objection?

20 (No response.)

21 CHAIRMAN OMAS: Hearing none, I will direct

22 counsel to provide the reporter with two copies of the

23 corrected direct testimony of Michael D. Bradley.

24 That testimony is received into evidence. However, as

25 is our practice, it will not be transcribed.

(The document referred to, previously identified as Exhibit No. USPS-T-14 was received in evidence.)

CHAIRMAN OMAS: Mr. Bradley, have you had an opportunity to examine the packet of designated written cross-examination that was made available to you this morning?

THE WITNESS: Yes, sir.

CHAIRMAN OMAS: If those questions contained in that packet were posed to you today, would your answers be the same as those you've submitted in writing?

THE WITNESS: Yes, sir.

CHAIRMAN OMAS: Are there any additions or corrections that you would like to make to those answers?

THE WITNESS: I would just like to make a note for the record. In the packet I was originally handed, OCA Question 30, to me, was not the revised version, and I substituted in the previously filed, revised version so the packets are correct.

CHAIRMAN OMAS: Counsel, would you please provide two copies of the corrected designated written cross-examination of Witness Bradley to the reporter?

1 That material is received into evidence and is to be
2 transcribed into the record.
3 (The documents referred to,
4 previously identified as
5 Exhibit No. ADVO/USPS-T-14-1-
6 6, 12, 16-17, were received
7 in evidence.)
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BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, DC 20268-0001

Request of the United States Postal Service for a Recommended Decision on Changes in Rates of Postage and Fees for Postal Services

Docket No. R2005-1

DESIGNATION OF WRITTEN CROSS-EXAMINATION
OF UNITED STATES POSTAL SERVICE
WITNESS MICHAEL D. BRADLEY
(USPS-T-14)

Party	Interrogatories
Advo, Inc.	ADVO/USPS-T14-1-6, 12, 16-17 OCA/USPS-T14-2-4, 8-12, 16, 19, 24-25, 27- PRC/USPS-POIR No.6- Q5 - 6, POIR No.8- Q1, 2c-f redirected to T14 VP/USPS-T14-1, 2a-b, 3, 7a, c, 9-10
Newspaper Association of America	ADVO/USPS-T14-4, 6, 9-10, 12, 19, 22 NAA/USPS-T14-1, 3 OCA/USPS-T14-7, 9, 12, 16, 19, 26, 30 OCA/USPS-T15-1a-c, f redirected to T14 VP/USPS-T14-2a-b, 6, 9-10
Office of the Consumer Advocate	ADVO/USPS-T14-19 OCA/USPS-T14-5-6, 19, 32 OCA/USPS-T15-1a-c, f redirected to T14 PRC/USPS-POIR No.6- Q6 redirected to T14 VP/USPS-T14-1, 5, 9-10

Party	Interrogatories
Valpak Direct Marketing Systems, Inc. and Valpak Dealers' Association Inc	VP/USPS-T14-1, 2b, 3-6, 7a, c, 9-10, 12

Respectfully
submitted,

Steven W. Williams
Secretary

INTERROGATORY RESPONSES OF
UNITED STATES POSTAL SERVICE
WITNESS MICHAEL D. BRADLEY (T-14)
DESIGNATED AS WRITTEN CROSS-EXAMINATION

Interrogatory	Designating Parties
ADVO/USPS-T14-1	Advo
ADVO/USPS-T14-2	Advo
ADVO/USPS-T14-3	Advo
ADVO/USPS-T14-4	Advo, NAA
ADVO/USPS-T14-5	Advo
ADVO/USPS-T14-6	Advo, NAA
ADVO/USPS-T14-9	NAA
ADVO/USPS-T14-10	NAA
ADVO/USPS-T14-12	Advo, NAA
ADVO/USPS-T14-16	Advo
ADVO/USPS-T14-17	Advo
ADVO/USPS-T14-19	NAA, OCA
ADVO/USPS-T14-22	NAA
NAA/USPS-T14-1	NAA
NAA/USPS-T14-3	NAA
OCA/USPS-T14-2	Advo
OCA/USPS-T14-3	Advo
OCA/USPS-T14-4	Advo
OCA/USPS-T14-5	OCA
OCA/USPS-T14-6	OCA
OCA/USPS-T14-7	NAA
OCA/USPS-T14-8	Advo
OCA/USPS-T14-9	Advo, NAA
OCA/USPS-T14-10	Advo
OCA/USPS-T14-11	Advo
OCA/USPS-T14-12	Advo, NAA
OCA/USPS-T14-16	Advo, NAA
OCA/USPS-T14-19	Advo, NAA, OCA
OCA/USPS-T14-24	Advo
OCA/USPS-T14-25	Advo
OCA/USPS-T14-26	NAA
OCA/USPS-T14-27	Advo

Interrogatory	Designating Parties
OCA/USPS-T14-28	Advo
OCA/USPS-T14-29	Advo
OCA/USPS-T14-30	Advo, NAA
OCA/USPS-T14-31	Advo
OCA/USPS-T14-32	Advo, OCA
OCA/USPS-T14-33	Advo
OCA/USPS-T14-34	Advo
OCA/USPS-T14-35	Advo
OCA/USPS-T14-36	Advo
OCA/USPS-T14-37	Advo
OCA/USPS-T15-1a redirected to T14	NAA, OCA
OCA/USPS-T15-1b redirected to T14	NAA, OCA
OCA/USPS-T15-1c redirected to T14	NAA, OCA
OCA/USPS-T15-1f redirected to T14	NAA, OCA
PRC/USPS-POIR No.6- Q5 redirected to T14	Advo
PRC/USPS-POIR No.6- Q6 redirected to T14	Advo, OCA
PRC/USPS-POIR No.8- Q1 redirected to T14	Advo
PRC/USPS-POIR No.8- Q2c redirected to T14	Advo
PRC/USPS-POIR No.8- Q2d redirected to T14	Advo
PRC/USPS-POIR No.8- Q2e redirected to T14	Advo
PRC/USPS-POIR No.8- Q2f redirected to T14	Advo
VP/USPS-T14-1	Advo, OCA, Valpak
VP/USPS-T14-2a	Advo, NAA
VP/USPS-T14-2b	Advo, NAA, Valpak
VP/USPS-T14-3	Advo, Valpak
VP/USPS-T14-4	Valpak
VP/USPS-T14-5	OCA, Valpak
VP/USPS-T14-6	NAA, Valpak
VP/USPS-T14-7a	Advo, Valpak
VP/USPS-T14-7c	Advo, Valpak
VP/USPS-T14-9	Advo, NAA, OCA, Valpak
VP/USPS-T14-10	Advo, NAA, OCA, Valpak
VP/USPS-T14-12	Valpak

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ADVO-USPS-T14-1. Please provide the following four LR USPS-K-81 input files in EXCEL readable format, indicated by an XLS extension for each file. Please also ensure that the column headers state the variable names.

(a) Timepool Mdata.prn
(b) LFVolume Mdata.prn
(c) Pavolume Mdata.prn
(d) Density Mdata.prn.

ADVO-USPS-T14-1. Response:

The four requested files, in Excel format as indicated by an XLS extension, including column headers that state the variable names are provided in the attached file, Carrier Data Excel.Zip. They are entitled: Timepool Mdata.prn.xls, LFVolume Mdata.prn.xls, Pavolume Mdata.prn.xls, and Density Mdata.prn.xls

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ADVO-USPS-T14-2. Please provide a copy, downloadable in Word, Word Perfect, or PDF, of the SAS log for your program "Estimating Delivery Equations" described in LR K-81.

ADVO-USPS-T14-2. Response

The requested log is provided below:

```
1793  ******************************;
1794  *** Read in Time Data ********;
1795  ******************************;
1796  DATA time1; infile timedat;
1797  input  date 6 zip rt $  bud bed bnd bcd mud med mnd mcd mode 5
1798         lfst lbdt lcdt lmdt ledt lmdt lst drt tttt ltt bdtt trvlt
1799         rut gct ect cdt idt bddt bct hat;
1800
1801
1802
1803  ******************************************************************;
1804  *** This section of the program converts alphabetic route numbers***;
1805  *** and constructs a unique Zip-Route ID for each route**************;
1806  ******************************************************************;
1807

NOTE: The infile TIMEDAT is:

      File Name=c:\Timepool Mask.prn,
      RECFM=V,LRECL=256

NOTE: 36655 records were read from the infile TIMEDAT.
      The minimum record length was 76.
      The maximum record length was 133.
NOTE: The data set WORK.TIME1 has 36655 observations and 32 variables.
NOTE: DATA statement used:
      real time           0.50 seconds
      cpu time            0.34 seconds


1808  Data time2; set time1;
1809  if rt = 'XX' then rt=99.9;
1810  if rt = '0A' or rt = '0B' or rt = '0D' or rt = '0E' or rt = '0W'
1811  or rt = '1A'  or rt = '4A'  or rt = '4B'  or rt = 'A7'  or rt = 'C2'
1812  or rt = 'C3'  or rt = 'CA'  or rt = 'CK'  or rt = 'CT'  or rt = 'CV'
1813  or rt = 'ES'  or rt = 'EV'  or rt = 'F1'  or rt = 'G5'  or rt = 'HK'
1814  or rt = 'IT'  or rt = 'L1'  or rt = 'L3'  or rt = 'L7'  or rt = 'MD'
1815  or rt = 'MF'  or rt = 'O1'  or rt = 'O2'  or rt = 'O5'  or rt = 'O7'
1816  or rt = 'OL'  or rt = 'P1'  or rt = 'P2'  or rt = 'RE'  or rt = 'UX'
1817  or rt = 'VY'  or rt = 'W8'  then nrt=11.1;
1818  else nrt=rt;
1819  rtind=nrt*100;
1820  ziprt=zip+rtind;
1821
1822
1823
```

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```
1824  ******************************************************************** ;
1825  *** This section of the program eliminates              ************** ;
1826  *** any duplicate Zip-route, day observations in the time data*******;
1827  ******************************************************************;

NOTE: Numeric values have been converted to character
      values at the places given by: (Line):(Column).
      1809:22
NOTE: Character values have been converted to numeric
      values at the places given by: (Line):(Column).
      1818:10
NOTE: There were 36655 observations read from the data set WORK.TIME1.
NOTE: The data set WORK.TIME2 has 36655 observations and 35 variables.
NOTE: DATA statement used:
      real time           1.10 seconds
      cpu time            1.11 seconds


1828  proc sort; by zipnt date;

NOTE: There were 36655 observations read from the data set WORK.TIME2.
NOTE: The data set WORK.TIME2 has 36655 observations and 35 variables.
NOTE: PROCEDURE SORT used:
      real time           5.17 seconds
      cpu time            1.18 seconds


1829  proc means noprint; by zipnt date; id zip mode;
1830  var   bud bed bnd bod hud hed hnd hod
1831         lfdt cudt ncdt vmdt cedt dmdt nst prt ttft ntt dttt trvlt
1832         rlt gct ect pdt adt padt oct nat;;
1833  output out=time3 mean=bud bed bnd bod hud hed hnd hod
1834         lfdt cudt ncdt vmdt cedt dmdt nst prt ttft ntt dttt trvlt
1835         rlt gct ect pdt adt padt oct nat  n=sobs;
1836
1837
1838  ******************************;
1839  ** Read in LF Volume Data *******;
1840  ******************************;

NOTE: There were 36655 observations read from the data set WORK.TIME2.
NOTE: The data set WORK.TIME3 has 36647 observations and 35 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.78 seconds
      cpu time            0.62 seconds


1841  DATA lfvol1; infile lfvol;
1842  input  zip  date $ rteno  dpsl cal cnl cf seq ;
1843
1844
1845
1846  ******************************************************************** ;
1847  *** This section of the program converts alphabetic route numbers*** ;
1848  *** and constructs a unique Zip-Route ID for each route**************;
1849  ******************************************************************;
1850

NOTE: The infile LFVOL is:

      File Name=c:\LFVolume Mask.prn,
      RECFM=V,LRECL=256
```

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```
NOTE: 40668 records were read from the infile LFVOL.
      The minimum record length was 27.
      The maximum record length was 42.
NOTE: The data set WORK.LFVOL1 has 40668 observations and 3 variables.
NOTE: DATA statement used:
      real time           0.27 seconds
      cpu time            0.14 seconds


1851  data lfvol2; set lfvol1;
1852  zipcat=cat;
1853  rteno=left(rteno);
1854  rtlng=length(rteno);
1855  ziprt=zip||rtlng;
1856
1857  ************************************************************** ;
1858  *** This section of the program eliminates any duplicate************ ;
1859  ***  zip-route. da. observations in the LF volume data        *******;
1860  **************************************************************;
1861
1862

NOTE  There were 40668 observations read from the data set WORK.LFVOL1.
NOTE  The data set WORK.LFVOL2 has 40668 observations and 12 variables.
NOTE  DATA statement used:
      real time           0.06 seconds
      cpu time            0.06 seconds


1863  proc sort; by ziprt date;

NOTE: There were 40668 observations read from the data set WORK.LFVOL2.
NOTE: The data set WORK.LFVOL2 has 40668 observations and 12 variables.
NOTE: PROCEDURE SORT used:
      real time           0.15 seconds
      cpu time            0.15 seconds


1864  proc means noprint; by ziprt date; id zip;
1865  var dpsl cl cf seq ;
1866  output out=lfvol3  mean=dpsl cl cf seq n=vobs;
1867
1868
1869  ****************************;
1870  ** Read in PA Volume Data *******;
1871  ****************************;

NOTE: There were 40668 observations read from the data set WORK.LFVOL2.
NOTE: The data set WORK.LFVOL3 has 40653 observations and 10 variables.
NOTE: PROCEDURE MEANS used:
      real time           1.34 seconds
      cpu time            0.32 seconds


1872  DATA pavol1; infile pavol;
1873  input  zip rteno $ date $ pcl spns act blk slf sll mlf mll sff sfl mff mfl
1873'  exp ori othp;
1874
1875  ************************************************************** ;
1876  *** This section of the program converts alphabetic route numbers*** ;
1877  *** and constructs a unique Zip-Route ID for each route**************;
```

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```
1878  ******************************************************************;
1879

NOTE: The infile PAVOL is:

      File Name=c:\PAvolume\Mask.prn,
      RECFM=V,LRECL=256

NOTE: 47531 records were read from the infile PAVOL.
      The minimum record length was 47.
      The maximum record length was 65.
NOTE: The data set WORK.PAVOL1 has 47531 observations and 18 variables.
NOTE: DATA statement used:
      real time           1.29 seconds
      cpu time            1.21 seconds


 88.  data pavol2; set pavol1;
1881  if ortend = 'XX' then ortend=99.9; else
1882  ortend=ortend;
1883  if ortend=    then ortend=11.1;
1884  ztlnd=ortend/100.
1885  ************************************************;
1886  ** Convert the collection mail volume from ********;
1887  ** feet and inches into piecess            *******;
1888  ************************************************;
1889  ziprt=zip-rtlnd;
1891  slf1=slf**2;
1891  mlf1=mlf**2;
1892  sff1=sff**2;
1893  mff1=mff**2;
1894  sl=slf1-sl1;
1895  ml=mlf1-ml1;
1896  sf=sff1-sf1;
1897  mf=mff1-mf1;
1898  sl=19*sl;
1899  sf=10*sf;
1900  ml=19*ml;
1901  mf=10*mf;
1902
1903  ***************************************************************** ;
1904  *** This section of the program eliminates any duplicate************ ;
1905  ***  Zip-route, day observations in the PA Volume data        *******;
1906  ******************************************************************;

NOTE: Character values have been converted to numeric
      values at the places given by: (Line):(Column).
      1882:10   1883:11
NOTE: There were 47531 observations read from the data set WORK.PAVOL1.
NOTE: The data set WORK.PAVOL2 has 47531 observations and 29 variables.
NOTE: DATA statement used:
      real time           0.12 seconds
      cpu time            0.12 seconds


1907  proc sort; by ziprt date;

NOTE: There were 47531 observations read from the data set WORK.PAVOL2.
NOTE: The data set WORK.PAVOL2 has 47531 observations and 29 variables.
NOTE: PROCEDURE SORT used:
      real time           2.89 seconds
      cpu time            0.18 seconds
```

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```
1908  proc means noprint; by zipnt date1  id zip;
1909  var pcl spns act plk sl nl sf nf exp pri ptno;
1910  output out=pavol2 mean=pcl spns act plk sl nl sf nf exp pri ptno;
1911
1912
1913  ******************************;
1914  ** Read in Density Data *******;
1915  ******************************;

NOTE: There were 47531 observations read from the data set WORK.PAVOL2.
NOTE: The data set WORK.PAVOL2 has 47531 observations and 16 variables.
NOTE: PROCEDURE MEANS used:
      real time           1.32 seconds
      cpu time            1.33 seconds


1916  DATA dense1; infile dense;
1917  input  zip  pcs  units land water;
1918

NOTE: The infile DENSE is:

      File Name=c:\density\Mask.prn,
      RECFM=V,LRECL=256

NOTE: 31913 records were read from the infile DENSE.
      The minimum record length was 14.
      The maximum record length was 33.
NOTE: The data set WORK.DENSE1 has 31913 observations and 5 variables.
NOTE: DATA statement used:
      real time           0.09 seconds
      cpu time            0.09 seconds


1919  proc sort data=dense1; by zip;
1920

NOTE: There were 31913 observations read from the data set WORK.DENSE1.
NOTE: The data set WORK.DENSE1 has 31913 observations and 5 variables.
NOTE: PROCEDURE SORT used:
      real time           0.09 seconds
      cpu time            0.09 seconds


1921  data dense1; set dense1;
1922  if units= 0 then delete;
1923  if land=0 then delete;
1924
1925
1926  ***********************************;
1927  *Combine Volume & Time Data ********;
1928  ***********************************;

NOTE: There were 31913 observations read from the data set WORK.DENSE1.
NOTE: The data set WORK.DENSE1 has 31827 observations and 5 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds
```

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```
1929  proc sort data=time3;  by zipnt date;

NOTE: There were 36647 observations read from the data set WORK.TIME3.
NOTE: The data set WORK.TIME3 has 36647 observations and 35 variables.
NOTE: PROCEDURE SORT used:
      real time           0.33 seconds
      cpu time            0.18 seconds


1931  proc sort data=pavol3; by zipnt date;

NOTE: There were 47531 observations read from the data set WORK.PAVOL3.
NOTE: The data set WORK.PAVOL3 has 47531 observations and 16 variables.
NOTE: PROCEDURE SORT used:
      real time           1.46 seconds
      cpu time            1.14 seconds


1932  proc sort data=lfvol3; by zipnt date;

NOTE: There were 40653 observations read from the data set WORK.LFVOL3.
NOTE: The data set WORK.LFVOL3 has 40653 observations and 10 variables.
NOTE: PROCEDURE SORT used:
      real time           0.12 seconds
      cpu time            0.10 seconds


1932  data comb; merge pavol3(in=p) lfvol3(in=v) time3(in=s); by zipnt date;
1933  if p=1 and v=1 and s=1 then source= all ;
1934

NOTE: There were 47531 observations read from the data set WORK.PAVOL3.
NOTE: There were 40653 observations read from the data set WORK.LFVOL3.
NOTE: There were 36647 observations read from the data set WORK.TIME3.
NOTE: The data set WORK.COMB has 53907 observations and 52 variables.
NOTE: DATA statement used:
      real time           1.43 seconds
      cpu time            0.28 seconds


1935  data all3; set comb;
1936  if source='all ';
1937

NOTE: There were 53907 observations read from the data set WORK.COMB.
NOTE: The data set WORK.ALL3 has 31255 observations and 52 variables.
NOTE: DATA statement used:
      real time           0.11 seconds
      cpu time            0.10 seconds


1938  proc sort data=all3; by zip;
1939
1940
1941  *@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@;
1942  *This Section of the Program Estimates the Regular Delivery Equation ;
1943  *@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@;
1944
1945
1946  ***********************************************;
1947  *Combine Volume, Time, and Density Data ********;
1948  ***********************************************;
```

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```
1949

NOTE: There were 31255 observations read from the data set WORK.ALL3.
NOTE: The data set WORK.ALL3 has 31255 observations and 52 variables.
NOTE: PROCEDURE SORT used:
      real time           1.59 seconds
      cpu time            0.20 seconds


1950  data allchk; merge all3  in=m) dense1  in=d); by zip;
1951  if m=1 and d=1 then source =  mat ;
1952

NOTE  There were 31255 observations read from the data set WORK.ALL3.
NOTE: There were 31827 observations read from the data set WORK.DENSE1.
NOTE: The data set WORK.ALLCHK has 62932 observations and 56 variables.
NOTE: DATA statement used:
      real time           2.21 seconds
      cpu time            0.24 seconds


1953  data allsee; set allchk;
1954  if source= mat ;
1955

NOTE: There were 62932 observations read from the data set WORK.ALLCHK.
NOTE: The data set WORK.ALLSEE has 31041 observations and 56 variables.
NOTE: DATA statement used:
      real time           0.12 seconds
      cpu time            0.12 seconds


1956  data all; set allsee;
1957
1958  ***************************************************;
1959  ** Eliminate any negative volumes ****************;
1960  ** Create the shape volumes   *******************;
1961  ***************************************************;
1962

NOTE: There were 31041 observations read from the data set WORK.ALLSEE.
NOTE: The data set WORK.ALL has 31041 observations and 56 variables.
NOTE: DATA statement used:
      real time           1.07 seconds
      cpu time            0.10 seconds


1963  data all; set all;
1964  if cl < 0 then cl = .;
1965  if cf < 0 then cf = .;
1966  if dpsl < 0 then dpsl=.;
1967  if seq<0 then seq=.;
1968  if sprs<0 then sprs=.;
1969  if delt < 0 then delt=.;
1970  if dp < 0 then dep=.;
1971  if cv < 0 then cv = .;
1972  delt=lfdt+cudt+ncdt+vmdt+cedt+dmdt .
1973  dp= oud+bed+bnd+bod+rud+red+rnd+rod;
1974  let=cl+dpsl;
1975  spr=sprs;
1976  cv=sl+ml+sf+mf+exp+pri+oth;
1977
```

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```
1978

NOTE: Missing values were generated as a result of performing an operation on
      missing values.
      Each place is given by: (Number of times) at (Line):(Column).
      15 at 1974:7
NOTE: There were 31041 observations read from the data set WORK.ALL.
NOTE: The data set WORK.ALL has 31041 observations and 62 variables.
NOTE: DATA statement used:
      real time           0.15 seconds
      cpu time            0.12 seconds


1979  proc sort; by zip date;
1980
1981
1982  ************************************************;
1983  ** Elinate Zip Codes with data problems    ********;
1984  ************************************************;

NOTE: There were 31041 observations read from the data set WORK.ALL.
NOTE: The data set WORK.ALL has 31041 observations and 62 variables.
NOTE: PROCEDURE SORT used:
      real time           2.68 seconds
      cpu time            0.28 seconds


1985  data all; set all;
1986  if zip eq 1660939 then delete;
1987  if zip eq 8365476 then delete;
1988  if zip eq 3341404 then delete;
1989  if zip eq 8885626 then delete;
1990  if zip eq 3333330 then delete;
1991  if zip eq 6617639 then delete;
1992  if zip eq 7408660 and date eq '05/18/02' then delete;
1993
1994
1995  ************************************************;
1996  ** Create Zip Code - Day Data Set for Estimation****;
1997  ************************************************;

NOTE: There were 31041 observations read from the data set WORK.ALL.
NOTE: The data set WORK.ALL has 30087 observations and 62 variables.
NOTE: DATA statement used:
      real time           1.28 seconds
      cpu time            0.09 seconds


1998  proc means noprint; by zip date;
1999  var delt let cf seq spr cv blk dp units water land;
2000  output out=poolr sum = delt let cf seq spr scv blk dp units water land
2001                   mean = adelt alet acf aseq aspr acv ablk adp aunits awater
2001   aland n=nrts;
2002
2003
2004
2005  ************************************************;
2006  **Construct Higher Order Terms                 **;
2007  ************************************************;
2008

NOTE: There were 30087 observations read from the data set WORK.ALL.
```

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```
NOTE: The data set WORK.POOLR has 1545 observations and 27 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.07 seconds
      cpu time            0.07 seconds


2009  data poolr; set poolr;
2010  cv=scv;
2011  let2=let**2;
2012  cf2=cf**2;
2013  seq2=seq**2;
2014  spr2=spr**2;
2015  cv2=cv**2;
2016  dp2 = dp**2;
2017  dl2=dl**2;
2018
2019  lf=let*cf;
2020  lse=let*seq;
2021  lcv=let*cv;
2022  lspr=let*spr;
2023  ldp=let*dp;
2024  fse=cf*seq;
2025  fcv=cf*cv;
2026  fspr=cf*spr;
2027  fdp=cf*dp;
2028  scv=seq*cv;
2029  sspr=seq*spr;
2030  sdp=seq*dp;
2031  cspr=cv*spr;
2032  cdp=cv*dp;
2033  spdp=spr*dp;
2034  sqm=land;
2035
2036  dens=dp/sqm;
2037  dens2=dens**2;
2038  ldns=let*dens;
2039  fdns=cf*dens;
2040  sdns=seq*dens;
2041  cdns=cv*dens;
2042  spdns=spr*dens;
2043  dpdns=dp*dens;
2044
2045

NOTE: There were 1545 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.POOLR has 1545 observations and 58 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds


2046  proc means;
2047  var delt let cf seq cv spr dp dens;
2048  output out=regmean mean=mdelt mlet mcf mseq mcv mspr mdp mdens;
2049
2050
2051  ***************************************************;
2052  **Estimate the Pooled Regular Delivery Model     **;
2053  **Full Quadratic Specification                   **;
2054  ***************************************************;
2055
```

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```
NOTE: There were 1545 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.REGMEAN has 1 observations and 10 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.03 seconds
      cpu time            0.03 seconds


proc reg data=poolr outest=coef1;
model delt= let let2 cf cf2 seq seq2 cv cv2 spr spr2 dp dp2 dens dens2
              lf lse lcv lspr ldp fse fcv fspr fdp scv sspr sdp cspr cdp
cdp
              lons tons sons cons spdns dpdns vif tol acov ;



*****************************************************
**Estimate the Pooled Regular Delivery Model     **
**Restricted Quadratic Specification             **
*****************************************************


WARNING: The variable _NAME_ or _TYPE_ exists in a data set that is not
         TYPE=CORR, COV, SSCP, etc.
NOTE: 1545 observations read.
NOTE: 1545 observations used in computations.
NOTE: There were 1545 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.COEF1 has 1 observations and 41 variables.
NOTE: PROCEDURE REG used:
      real time           1.00 seconds
      cpu time            0.13 seconds


proc reg data =poolr outest=coef2;

model delt= let let2 cf cf2 seq seq2 cv cv2 spr spr2 dp dp2 dens dens2/vif
 tol acov;


*******************************************************;
**Calculate Variabilities for Regular Delivery Model    **;
**Full Quadratic Specification                          **;
*******************************************************;

WARNING: The variable _NAME_ or _TYPE_ exists in a data set that is not
         TYPE=CORR, COV, SSCP, etc.
NOTE: 1545 observations read.
NOTE: 1545 observations used in computations.
NOTE: There were 1545 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.COEF2 has 1 observations and 20 variables.
NOTE: PROCEDURE REG used:
      real time           0.14 seconds
      cpu time            0.06 seconds


proc print data=coef1;

NOTE: There were 1 observations read from the data set WORK.COEF1.
NOTE: PROCEDURE PRINT used:
      real time           0.04 seconds
```

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```
      cpu time            0.03 seconds

2081  data elascal1; merge coef1 regmean (drop=_TYPE_ );
2082  pdelt=intercept+let*mlet+let2*mlet*mlet+cf*mcf+cf2*mcf*mcf+seq*mseq+seq2*m
2082  seq*mseq
2082       +spr*mspr+spr2*mspr*mspr+cv*mcv+cv2*mcv*mcv+dp*mdp+dp2*mdp*mdp+dens*m
2083  dens+dens2*mdens*mdens
2084       +lf*mlet*mcf+lse*mlet*mseq+lcv*mlet*mcv+lspr*mlet*mspr+ldp*mlet*mdp
2085       +fse*mcf*mseq+fcv*mcf*mcv+fspr*mcf*mspr+fdp*mcf*mdp
2086       +scv*mseq*mcv+sspr*mseq*mspr+sdp*mseq*mdp+cspr*mcv*mspr+cdp*mcv*mdp+s
2086  pdp*mspr*mdp
2087       +ldns*mlet*mdens+fdns*mcf*mdens+sdns*mseq*mdens+cdns*mcv*mdens+spdns*
2087  mspr*mdens+dpdns*mdp*mdens
2088
2089
2091  elasl= let*mlet +2*let2*mlet*mlet
2092  +lf*mlet*mcf+lse*mlet*mseq+lcv*mlet*mcv+lspr*mlet*mspr
2093                                        +ldp*mlet*mdp+ldns*mlet*mdens)/ pdelt;
2092
2093  elasf= cf*mcf   +2*cf2*mcf*mcf
2093  +lf*mlet*mcf+fse*mcf*mseq+fcv*mcf*mcv+fspr*mcf*mspr
2094                                        +fdp*mcf*mdp+fdns*mcf*mdens)/ pdelt;
2095
2096  elass= seq*mseq +2*seq2*mseq*mseq
2096  +lse*mlet*mseq+fse*mcf*mseq+scv*mseq*mcv+sspr*mseq*mspr
2097                                        +sdp*mseq*mdp+sdns*mseq*mdens)/pdelt;
2098
2099  elasc=(cv*mcv   +2*cv2*mcv*mcv
2099  +lcv*mlet*mcv+fcv*mcf*mcv+scv*mseq*mcv+cspr*mcv*mspr
2100                                        +cdp*mcv*mdp+cdns*mcv*mdens)/pdelt;
2101
2102  elasp=(spr*mspr +2*spr2*mspr*mspr
2102  +lspr*mlet*mspr+fspr*mcf*mspr+sspr*mseq*mspr+cspr*mcv*mspr
2103                                        +spdp*mspr*mdp+spdns*mspr*mdens)/pdelt
2103  ;
2104
2105  elasd=(dp*mdp   +2*dp2*mdp*mdp
2105  +ldp*mlet*mdp+fdp*mcf*mdp+sdp*mseq*mdp+cdp*mcv*mdp+spdp*mspr*mdp
2106                                        +dpdns*mdp*mdens )/pdelt;
2107
2108  elasdns=(dens*mdens +2*dens2*mdens*mdens
2108  +ldns*mlet*mdens+fdns*mcf*mdens+sdns*mseq*mdens+cdns*mcv*mdens+spdns*mspr*
2108  mdens
2109                                        +dpdns*mdp*mdens )/pdelt;
2110
2111

NOTE: There were 1 observations read from the data set WORK.COEF1.
NOTE: There were 1 observations read from the data set WORK.REGMEAN.
NOTE: The data set WORK.ELASCAL1 has 1 observations and 58 variables.
NOTE: DATA statement used:
      real time           0.04 seconds
      cpu time            0.03 seconds


2112  proc print data=elascal1;
2113  var mdelt pdelt elasl elasf elass elasc elasp elasd elasdns ;
2114
2115
2116
2117
```

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```
2'18  ******************************************************;
2'19  **Calculate Variabilities for Regular Delivery Model    **;
2'20  **Restricted Quadratic Specification                    **;
2'21  ******************************************************;
2'22

NOTE: There were 1 observations read from the data set WORK.ELASCAL1.
NOTE: PROCEDURE PRINT used:
      real time           0.01 seconds
      cpu time            0.01 seconds


2'23  proc print data=coef2;

NOTE: There were 1 observations read from the data set WORK.COEF2.
NOTE: PROCEDURE PRINT used:
      real time           0.01 seconds
      cpu time            0.01 seconds


2'24  data elascal2; merge coef2 regmean; drop=_TYPE_ ;
2'25  pdelt=intercept+let*mlet+let2*mlet*mlet+cf*mcf+cf2*mcf*mcf+seq*mseq+seq2*m
2'25  seq*mseq
2'26       +spr*mspr+spr2*mspr*mspr+cv*mcv+cv2*mcv*mcv+dp*mdp+dp2*mdp*mdp+dens*m
2'26  dens+dens2*mdens*mdens
2'27
2'28
2'29  elasl=(let*mlet +2*let2*mlet*mlet) pdelt;
2'30  elasf=(cf*mcf   +2*cf2*mcf*mcf)/pdelt;
2'31  elass=(seq*mseq +2*seq2*mseq*mseq) pdelt;
2'32  elasc=(cv*mcv   +2*cv2*mcv*mcv)/pdelt;
2'33  elasp=(spr*mspr +2*spr2*mspr*mspr)/pdelt;
2'34  elasd=(dp*mdp   +2*dp2*mdp*mdp)/pdelt;
2'35  elasdns=(dens*mdens   +2*dens2*mdens*mdens)/pdelt;
2'36
2'37
2'38

NOTE: There were 1 observations read from the data set WORK.COEF2.
NOTE: There were 1 observations read from the data set WORK.REGMEAN.
NOTE: The data set WORK.ELASCAL2 has 1 observations and 37 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds


2'39  proc print data=elascal2;
2'40  var mdelt pdelt elasl elasf elass elasc elasp elasd elasdns;
2'41
2'42
2'43
2'44
2'45  *@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@;
2'46  *This Section of the Program Estimates the P/A Delivery Equation ;
2'47  *@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@;
2'48
2'49
2'50  ******************************************************;
2'51  **Eliminate Observations Without Time or Volume        **;
2'52  ******************************************************;
2'53
```

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```
NOTE: There were 1 observations read from the data set WORK.ELASCAL2.
NOTE: PROCEDURE PRINT used:
      real time           0.06 seconds
      cpu time            0.01 seconds


2154  data allpa; set all3;
2155  padelt=pdt+adt+padt+datt;
2156  dp= pud+ped+pnd+pod+nud+ned+nnd+nod;
2157  vol=pcl+act;
2158  if padelt=0 and vol>0 then delete;
2159  if padelt>0 and vol=0 then delete;
2160

NOTE: There were 31255 observations read from the data set WORK.ALL3.
NOTE: The data set WORK.ALLPA has 26072 observations and 55 variables.
NOTE: DATA statement used:
      real time           0.09 seconds
      cpu time            0.09 seconds


2161  proc sort; by zip date;
2162
2163  ****************************************************;
2164  ** Create Zip Code - Day Data Set for Estimation****;
2165  ****************************************************;

NOTE: There were 26072 observations read from the data set WORK.ALLPA.
NOTE: The data set WORK.ALLPA has 26072 observations and 55 variables.
NOTE: PROCEDURE SORT used:
      real time           1.81 seconds
      cpu time            0.21 seconds


2166  proc means noprint; by zip date;
2167  var padelt pcl act dp;
2168  output out=poolr sum = padelt pcl act dp mean = apadelt apcl aact adp;
2169
2170  ********************************************************;
2171  **Eliminate Zip Codes with No Parcels, No Accountables or **
2172  ** No Parcel/Accountable Delivery Time                  **;
2173  ********************************************************;
2174

NOTE: There were 26072 observations read from the data set WORK.ALLPA.
NOTE: The data set WORK.POOLR has 1629 observations and 12 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.06 seconds
      cpu time            0.06 seconds


2175  data poolr; set poolr;
2176  if padelt=0 then delete;
2177  if pcl=0 then delete;
2178  if act=0 then delete;
2179  if dp =0 then delete;
2180
2181  ************************************************;
2182  **Construct Higher Order Terms                 **;
2183  ************************************************;

NOTE: There were 1629 observations read from the data set WORK.POOLR.
```

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```
NOTE: The data set WORK.POOLR has 1535 observations and 12 variables.
NOTE: DATA statement used:
      real time           0.01 seconds
      cpu time            0.01 seconds


2184  data poolz; set poolr;
2185  dp2 = dp**2;
2186  pcl2=pcl**2;
2187  act2=act**2;
2188  pact=pcl*act;
2189  padp=pcl*dp;
2190  acdp=act*dp;
2191
2192
2193
NOTE  There were 1535 observations read from the data set WORK.POOLR.
NOTE  The data set WORK.POOLZ has 1535 observations and 18 variables.
NOTE  DATA statement used:
      real time           0.03 seconds
      cpu time            0.02 seconds


2194  proc means;
2195  var  padelt pcl act dp;
2196  output out=pregmean mean=mpadelt mpcl mact mdp;
2197
2198
2199  ****************************************;
2200  **Estimate the Pooled PA Delivery Model**;
2201  ****************************************;
2202

NOTE: There were 1535 observations read from the data set WORK.POOLZ.
NOTE: The data set WORK.PREGMEAN has 1 observations and 6 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.03 seconds
      cpu time            0.03 seconds


2203  proc reg  data=poolz outest=coefp1;
2204  model padelt= pcl pcl2 act act2 dp dp2 pact padp acdp/vif tol acov ;
2205
WARNING: The variable _NAME_ or _TYPE_ exists in a data set that is not
         TYPE=CORR, COV, SSCP, etc.
NOTE: 1535 observations read.
NOTE: 1535 observations used in computations.
NOTE: There were 1535 observations read from the data set WORK.POOLZ.
NOTE: The data set WORK.COEFP1 has 1 observations and 15 variables.
NOTE: PROCEDURE REG used:
      real time           0.04 seconds
      cpu time            0.04 seconds


2206  proc print data=coefp1;
2207
2208  ******************************************************;
2209  **Calculate Variabilities for P A Delivery Model      **;
2210  **Full Quadratic Specification                        **;
2211  ******************************************************;
2212
```

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```
NOTE: There were 1 observations read from the data set WORK.COEFP1.
NOTE: PROCEDURE PRINT used:
      real time           0.01 seconds
      cpu time            0.01 seconds


2213  data elasp1; merge coefp1 pregmean (drop=_TYPE_);
2214  ppadelt=intercept+pcl*mpcl+pcl2*mpcl*mpcl+act*mact+act2*mact*mact+dp*mdp+d
2214  p2*mdp*mdp
2215                    +pact*mpcl*mact+padp*mpcl*mdp+acdp*mact*mdp ;
2216
2217  elasp=(pcl*mpcl +2*pcl2*mpcl*mpcl+pact*mpcl*mact+padp*mpcl*mdp)/ppadelt;
2218  elasa= act*mact +2*act2*mact*mact+pact*mpcl*mact+acdp*mact*mdp)/ppadelt;
2219  elasd= dp*mdp   +2*dp2*mdp*mdp   +padp*mpcl*mdp+acdp*mact*mdp) ppadelt;
2220
2221


NOTE: There were 1 observations read from the data set WORK.COEFP1.
NOTE: There were 1 observations read from the data set WORK.PREGMEAN.
NOTE: The data set WORK.ELASP1 has 1 observations and 24 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds

2222  proc print data=elasp1;
2223  var  ppadelt ppadelt elasp elasa elasd;
2224
2225
2226
2227  run;

NOTE: There were 1 observations read from the data set WORK.ELASP1.
NOTE: PROCEDURE PRINT used:
      real time           0.07 seconds
      cpu time            0.01 seconds
```

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ADVO/USPS-T14-3. On page 33 of your testimony, you state: "Because of the large cross-sectional variation in the data, it is likely that econometric estimates for the delivery equations suffer from heteroskedasticity."

(a) Do you mean that cross-sectional data normally exhibit characteristics that cause error variances to change in size with variations in one or more of the independent variables? Please explain fully.

(b) Did you conduct any diagnostic tests to detect heteroskedasticity in your recommended and alternative models? If so, please provide results from these tests. If not, please explain why these tests were not conducted.

(c) Please confirm that use of ordinary least squares when heteroskedasticity is present leads to unbiased but inefficient parameter estimates. If not, please explain fully.

ADVO/USPS-T14-3. Response:

a. I was not suggesting that it is normal for the error variances in a cross sectional regression to be heteroskedastic, but rather that presence of heteroskedasticity is a common problem in cross-sectional regressions.

b. No. Because I intended to correct for heteroskedasticity using White's HCSE approach, I did not first test for its presence. Note that the HCSE approach does not alter the point estimates, so it is not imprudent to go ahead and perform the correction and then check the results.

c. Confirmed.

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ADVO/USPS-T14-4. On page 52 of your testimony, you state that the "actual form of heteroskedasticity is unknown".

(a) Please provide and explain in general terms alternatives to ordinary least squares that correct for heteroskedastic data, when the actual form of heteroskedasticity is known, and what form of heteroskedasticity each corrects.

(b) When the actual form of heteroskedasticity is unknown, as you state, is it accepted econometric procedure to infer possible causes, apply the corresponding corrective procedure and then test for heteroskedasticity ex-post to determine whether the initial inference was correct?

(c) Please note that on page 52 you also describe certain assumptions leading to a weighted least squares procedure. Please confirm that if the standard error of city carrier street time cost is suspected to be correlated with zip-code area size, then it would be appropriate to run a weighted least squares regression using the inverse of area square mileage as the weighting factor. If you cannot confirm, please explain why.

(d) If you do confirm in (c) above, then is it appropriate to determine whether or not the transformed error term (through the weighted least squares procedure) is now homoskedastic through appropriate diagnostic testing? Please explain fully.

(e) Are there circumstances when the heteroskedasticity form can be known a-priori and the appropriate corrective procedure applied without further diagnostic testing? If so what are these circumstances? Please explain fully.

ADVO/USPS-T14-4 Response:

a. If the actual form of the heteroskedasticity is known, then generalized least squares (GLS) can be used to estimate the equation. Recall that under homoskedastic errors, the error structure is given by $\sigma^2\mathbf{I}$, where $\mathbf{I}$ is an identity matrix. When the form of heteroskedasticity is known, then the error structure is given by $\sigma^2\mathbf{\Omega}$, where $\mathbf{\Omega}$ is a matrix which embodies the specification of the error

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variance. Because Ω is known, the model can be estimated using the GLS estimator:[1]

$$\tilde{\beta} = \left[X'\Omega^{-1}X\right]^{-1} X'\Omega^{-1}y.$$

b When the form of the heteroskedasticity is unknown, one of two approaches can be followed. First, one could apply feasible generalized least squares (FGLS) in which consistent estimates of elements Ω are first obtained and then the GLS estimator presented above is used with an estimated Ω in place of the actual one:

$$\tilde{\tilde{\beta}} = \left[X'\hat{\Omega}^{-1}X\right]^{-1} X'\hat{\Omega}^{-1}y$$

Second, White's estimator can be used to estimate a heteroskedasticity robust variance/covariance matrix:[2]

> It may well be that the form of heteroscedasticity is unknown. White (1980) has shown that it is still possible to obtain an appropriate estimator for the variance of the least squares estimator, even if the heteroscedasticity is related to the variables in **X**.

---

[1] Please note that weighted least squares is one form of GLS.

[2] See, Greene, William H., Econometric Analysis, Macmillian Publishing Co., NY, 1993, at 391.

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White's estimator provides a consistent estimator of the variance/covariance matrix for the regression and permits calculation of consistent estimates of standard errors. This yields unbiased statistical inferences about the parameters:[3]

> This is an extremely important and useful result. It implies that without actually specifying the type of heteroscedasticity, we can still make appropriate inferences based on the results of least squares. This is especially useful if we are unsure of the precise nature of the heteroscedasticity (which is probably most of the time).

c. Not confirmed. A weighted least squares approach is appropriate when the form of the heteroskedasticity is known. This requires additional knowledge or a stronger assumption than just the fact that the standard error of the regression is correlated with an auxiliary variable. One needs to specify the skedasticity function before estimation of the model. That is, the nature of the relationship between the standard error and the auxiliary variable must be specified. In addition, when the nature of the heteroskedasticity is not known, White's estimator provides an approach that permits estimation of a heteroskedastic consistent covariance matrix. This approach is thus widely used.

d. Part c was not confirmed. Generally, the error variances are not tested after correction.

---

3 Id.

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e. If the analyst has extra-sample information about the nature of the heteroskedasticity, then that information can be used to specify the variance covariance matrix for GLS estimator.

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ADVO/USPS-T14-5. Please assume a simple zip-code delivery cost model stated in functional form for N number of zip-codes as:

$C_i = f(V_i, PD_i, A_i) + e_i,$

where: $i = 1, 2, \ldots, N$ and,

C_i = zip-code i delivery cost.
V_i = zip-code i volume.
PD_i = the number of zip-code i possible deliveries.
A_i = the zip-code i total area in square miles.

Further the function is assumed to be homogenous to the first degree so that:

$C_i{}^*k = f(V_i{}^*k, PD_i{}^*k, A_i{}^*k) + e_i{}^*k.$

(a) Please confirm that such a model would predict positive marginal cost effects with respect to the three workload variables independently. If you cannot confirm, please explain why not.

(b) Please confirm that in such a model, if values for the three explanatory variables were twice as high in one zip-code compared to another, the model would predict total delivery costs that were also twice as high in the former zip-code compared to the latter. If not, please explain why not.

(c) Please confirm that such a model would predict a volume variability less than one. If not, please explain why not.

(d) Please comment on the general characterization of delivery costs that are assumed to behave as described by the model. Please explain fully under what conditions such a behavioral structure might be expected. Alternately, might one expect systematic deviations from model predictions as zip-code square miles increase and all other variables grow in the same proportion? If so, please explain fully.

ADVO/USPS-T14-5 Response:

Please note that the question is silent relative to defining the variable e_i. However, the logic of parts a. through c. depends upon the value of e_i being equal to zero. I believe

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that you meant e_i to be a regression error term with an expected value of zero. Thus, I will treat e_i as having a value of zero in parts a through c.

a. Not confirmed by contradiction. Consider the following function (note I suppress the subscript for notational convenience):

$C = V^{0.4} PD^{0.8} A^{-1.2}$.

First, check the homogeneity of the function:

$\lambda^k C = (\lambda V)^{0.4} (\lambda PD)^{0.8} (\lambda A)^{-1.2}$

so:

$\lambda^k C = \lambda^{0.4} \lambda^{0.8} \lambda^{-1.2} V^{0.4} PD^{0.8} A^{-1.2}$

or:

$\lambda^k C = \lambda^{(0.4+0.8-1.2)} (V^{0.4} PD^{0.8} A^{-1.2})$.

so:

$\lambda^k C = \lambda C$. Thus, k =1 and the function is homogenous of degree one. Now, calculate the marginal cost of A:

$$MC_A = \frac{\partial C}{\partial A} = -1.2 V^{0.4} PD^{0.8} A^{-1.2} < 0.$$

b. Confirmed

c. Not confirmed by contradiction. Consider the function:

$C = V^{1.2} PD^{0.8} A^{-1.0}$.

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This function is homogenous of degree one but has a volume variability greater than one. Please note that if one first restricts all parameters to be greater than zero in this function, then the assumption of first degree homogeneity ensures that the coefficient on "V" (the volume variability) is less than one.

d. As I did not create the model, it is difficult for me to infer the underlying behavioral assumptions used to generate it. If one is assuming the delivery costs are generated by a function that is homogeneous of degree one in the three specified variables, then one is starting from the *a priori* belief that delivery is "replicable" in the sense that if all three variables are doubled then the cost of delivery is doubled. In response to the second part of the question, if the assumed model is correct, then one would not expect systematic deviations from model predictions as zip-code square miles increase and all other variables grow in the same proportion.

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ADVO/USPS-T14-6. Please provide correlation matrices for all regression results presented in your testimony, *including all alternative models you present but do not* recommend for development of volume variable costs.

ADVO/USPS-T14-6 Response:

Below are the correlation matrixes for the three models I present in my testimony, the full quadratic regular delivery equation, the restricted quadratic regular delivery equation, and the parcel/accountable equation. I did not produce correlation matrices for the alternative models estimated along the research path as they do not produce additional information that is required for model evaluation.

Correlation Matrix for the Full Quadratic Regular Delivery Equation

Correlation of Estimates

Variable	Intercept	let	let2	cf	cf2
Intercept	1.0000	0.0705	0.0201	-0.0245	0.0530
let	0.0705	1.0000	0.1043	-0.5443	0.1953
let2	0.0201	0.1043	1.0000	-0.0631	0.1675
cf	-0.0245	-0.5443	-0.0631	1.0000	-0.4728
cf2	0.0530	0.1953	0.1675	-0.4728	1.0000
seq	-0.0806	-0.0473	-0.0188	0.0266	-0.0031
seq2	0.0085	0.0131	-0.0203	0.0336	-0.0478
cv	-0.2685	-0.0430	0.0831	-0.1562	0.1216
cv2	-0.0096	0.0078	-0.0177	0.0423	-0.1477
spr	-0.0564	-0.2914	-0.0475	-0.0838	-0.0393
spr2	0.0609	0.0192	0.2203	-0.0723	0.0606
dp	-0.4470	-0.4616	-0.0857	0.0287	0.0324
dp2	0.1540	0.2891	0.2479	-0.1166	0.0597
dens	-0.3754	-0.0956	0.0542	-0.1177	-0.0122
dens2	0.2421	0.0757	-0.0481	0.1494	-0.0100
lf	-0.0133	-0.1942	-0.6692	0.1496	-0.4747
lse	0.0017	-0.2645	0.0676	0.1345	0.0218
lcv	-0.0401	-0.2709	-0.0006	0.1404	0.0655
lspr	-0.0288	-0.0889	-0.5304	0.0528	0.0023
ldp	-0.0257	-0.4425	-0.5161	0.2206	-0.0290
fse	0.0061	0.1659	-0.0319	-0.2844	0.0638
fcv	-0.0250	0.1191	-0.0648	-0.1731	-0.1474
fspr	-0.0249	0.1222	0.3939	-0.0631	-0.0370
fdp	0.0075	0.2306	0.3219	-0.2667	-0.1189
scv	0.0094	-0.0198	-0.0487	0.0160	-0.0441
sspr	0.0195	0.1110	0.0690	-0.0451	0.0169
sdp	0.0230	0.1129	-0.0444	0.0056	-0.0073
cspr	0.0250	0.1091	0.0051	-0.0209	-0.0466
cdp	0.2493	0.1822	0.0092	0.0453	0.0307

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spdp	0.0251	0.1298	0.0628	0.1081	-0.0059
ldns	-0.0567	-0.2820	-0.4345	0.1865	-0.1530
fdns	-0.0061	0.1877	0.1863	-0.4408	0.2231
sdns	0.1229	0.0313	-0.0140	0.0072	-0.0236
cdns	0.2505	0.0478	-0.0773	0.1321	-0.0431
spdns	0.0651	0.0976	0.1360	0.0570	0.0907
dpdns	0.1530	0.0727	0.1022	0.0938	-0.0438

Correlation of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	-0.0806	0.0085	-0.2685	-0.0096	-0.0564
let	-0.0473	0.0131	-0.0430	0.0078	-0.2914
let2	-0.0188	-0.0203	0.0831	-0.0177	-0.0475
cf	0.0266	0.0336	-0.1562	0.0423	-0.0838
cf2	-0.0037	-0.0478	0.1216	-0.1477	-0.0393
seq	1.0000	-0.3217	-0.1307	0.0137	0.0339
seq2	-0.3217	1.0000	0.0421	0.1870	0.0629
cv	-0.1307	0.0421	1.0000	-0.2858	-0.0234
cv2	0.0137	0.1870	-0.2858	1.0000	0.0813
spr	0.0339	0.0629	-0.0234	0.0813	1.0000
spr2	0.0144	-0.0530	0.0610	-0.0999	0.0904
dp	-0.0977	-0.0434	-0.0062	0.0482	-0.2847
dp2	0.0182	-0.0029	0.0297	-0.0065	0.1684
dens	0.0951	0.0208	0.2236	0.0629	0.1686
dens2	-0.0444	-0.0201	-0.1299	-0.0480	-0.1424
lf	0.0193	-0.0008	-0.0723	-0.0156	0.0856
lse	0.0268	-0.0049	-0.0368	-0.0453	0.0840
lcv	-0.0020	0.0750	0.0386	0.0956	0.0593
lspr	-0.0088	0.0026	-0.0675	0.0483	0.0524
ldp	0.0579	0.0067	-0.0160	-0.0497	0.1292
fse	-0.0083	0.0273	0.0713	0.0396	-0.0388
fcv	-0.0407	-0.0522	-0.1689	0.2680	-0.0145
fspr	-0.0349	0.0196	0.0151	0.0237	-0.2026
fdp	0.0137	-0.0036	0.1084	0.0464	0.1661
scv	-0.1431	-0.2946	-0.1987	-0.3949	-0.0142
sspr	-0.0165	-0.2583	0.0371	0.0650	-0.2576
sdp	-0.3304	0.1176	0.1425	0.0798	0.0871
cspr	-0.0392	-0.1692	-0.0748	-0.3418	-0.2460
cdp	0.1743	0.0369	-0.4363	-0.0859	0.0369
spdp	-0.0131	0.0206	0.0116	0.0322	-0.5071
ldns	-0.0513	0.0027	0.1351	0.1060	0.0602
fdns	-0.0147	0.0185	-0.0074	0.0079	0.0510
sdns	-0.4597	0.0967	0.0506	-0.0804	-0.0062
cdns	0.1022	-0.1271	-0.7863	-0.1945	-0.0307
spdns	0.0471	-0.0282	-0.0294	-0.1024	-0.3615
dpdns	0.0004	-0.0046	-0.1289	-0.0647	0.0908

Correlation of Estimates

Variable	spr2	dp	dp2	dens	dens2
Intercept	0.0609	-0.4470	0.1540	-0.3754	0.2421
let	0.0192	-0.4616	0.2891	-0.0956	0.0757
let2	0.2203	-0.0857	0.2479	0.0542	-0.0481
cf	-0.0723	0.0287	-0.1166	-0.1177	0.1494
cf2	0.0606	0.0324	0.0597	-0.0122	-0.0100
seq	0.0144	-0.0977	0.0182	0.0951	-0.0444
seq2	-0.0530	-0.0434	-0.0029	0.0208	-0.0201
cv	0.0610	-0.0062	0.0297	0.2236	-0.1299
cv2	-0.0999	0.0482	-0.0065	0.0629	-0.0480
spr	0.0904	-0.2847	0.1684	0.1686	-0.1424
spr2	1.0000	-0.1062	0.1673	-0.0637	0.0774
dp	-0.1062	1.0000	-0.5012	-0.0062	0.0046

Response of Postal Service Witness Michael D. Bradley
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dp2	0.1673	-0.5012	1.0000	0.0239	0.0444
dens	-0.0637	-0.0062	0.0239	1.0000	-0.8708
dens2	0.0774	0.0046	0.0444	-0.8708	1.0000
lf	-0.0819	0.0688	-0.0576	-0.0100	0.0202
lse	-0.0400	0.1185	0.1018	-0.0049	0.0031
lcv	-0.0032	0.1464	-0.0358	0.0699	-0.0536
lspr	-0.4633	0.0741	0.1899	-0.0228	0.0271
ldp	0.0761	0.2359	-0.6524	-0.0138	-0.0012
fse	0.0117	0.0530	-0.0526	0.0382	-0.0462
fcv	-0.0274	0.1134	-0.0683	0.0083	-0.0349
fspr	-0.0110	0.0777	0.0425	0.0053	-0.0195
fdp	0.0702	-0.1978	0.0867	0.1012	-0.0801
scv	-0.0446	0.1423	-0.0946	-0.0758	0.0616
sspr	0.1629	0.0621	0.0491	-0.0284	0.0342
sdp	-0.0431	-0.1574	-0.1024	0.0136	-0.0319
cspr	-0.1660	0.1018	-0.0733	-0.0809	0.0711
cdp	0.1168	-0.3260	0.1315	-0.1690	0.1019
spdp	-0.4138	0.1097	-0.4622	0.0069	-0.0452
ldns	-0.2466	0.1346	0.1366	0.0038	0.0499
fdns	0.0733	0.0380	0.0534	0.0330	-0.1523
sdns	-0.0396	-0.0241	0.0699	-0.2984	0.2077
cdns	-0.0088	0.0073	-0.0619	-0.3839	0.2548
spdns	0.2928	0.0911	0.1063	-0.2565	0.2807
dpdns	-0.0465	0.2010	-0.3823	-0.1245	-0.0308

Correlation of Estimates

Variable	lf	lse	lcv	lspr	ldp
Intercept	-0.0133	0.0017	-0.0401	-0.0288	-0.0257
let	-0.1942	-0.2645	-0.2709	-0.0889	-0.4425
let2	-0.6692	0.0676	-0.0006	-0.5304	-0.5161
cf	0.1496	0.1345	0.1404	0.0528	0.2206
cf2	-0.4747	0.0218	0.0655	0.0023	-0.0290
seq	0.0193	0.0268	-0.0020	-0.0088	0.0579
seq2	-0.0008	-0.0049	0.0750	0.0026	0.0067
cv	-0.0728	-0.0368	0.0386	-0.0675	-0.0160
cv2	-0.0156	-0.0453	0.0956	0.0483	-0.0497
spr	0.0856	0.0840	0.0593	0.0524	0.1292
spr2	-0.0819	-0.0400	-0.0032	-0.4633	0.0761
dp	0.0688	0.1185	0.1464	0.0741	0.2359
dp2	-0.0576	0.1018	-0.0358	0.1899	-0.6524
dens	-0.0100	-0.0049	0.0699	-0.0228	-0.0138
dens2	0.0202	0.0031	-0.0536	0.0271	-0.0012
lf	1.0000	-0.0010	-0.2360	0.2108	0.1956
lse	-0.0010	1.0000	-0.0889	0.1471	-0.1635
lcv	-0.2360	-0.0889	1.0000	0.0779	0.0620
lspr	0.2108	0.1471	0.0779	1.0000	-0.1552
ldp	0.1956	-0.1635	0.0620	-0.1552	1.0000
fse	0.0001	-0.5237	0.0726	-0.0783	0.0545
fcv	0.1021	0.0437	-0.5419	-0.0078	0.0301
fspr	-0.4000	-0.1062	0.0393	-0.4926	0.0611
fdp	-0.4075	0.0423	0.1338	0.1328	-0.4501
scv	0.0764	0.0325	-0.1494	-0.0219	0.0713
sspr	-0.0646	-0.3318	-0.0106	-0.0626	-0.0153
sdp	-0.0048	-0.4734	0.0881	-0.0416	0.0574
cspr	0.1335	0.0350	-0.5589	-0.0401	-0.0118
cdp	0.1311	0.0859	-0.4459	-0.0242	-0.0627
spdp	0.0823	-0.0348	-0.0559	-0.2682	-0.0424
ldns	0.3717	0.2336	-0.0306	0.5631	-0.0962
fdns	-0.2293	-0.1163	0.0393	-0.2466	0.0392
sdns	-0.0009	0.0137	0.0055	0.0347	-0.0429
cdns	0.0919	0.0539	-0.1216	0.0282	0.0530
spdns	-0.1529	-0.0439	-0.0030	-0.1061	-0.0220
dpdns	-0.0389	-0.0764	-0.0668	-0.2278	0.1192

Response of Postal Service Witness Michael D. Bradley
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Correlation of Estimates

Variable	fse	fcv	fspr	fdp	scv
Intercept	0.0061	-0.0250	-0.0249	0.0075	0.0094
let	0.1659	0.1191	0.1222	0.2306	-0.0198
let2	-0.0319	-0.0648	0.0939	0.0219	-0.0487
cf	-0.2844	-0.1731	-0.0631	-0.2667	0.0160
cf2	0.0638	-0.1474	-0.0370	-0.1189	-0.0441
seq	-0.0083	-0.0407	-0.0349	0.0137	-0.1431
seq2	0.0273	-0.0522	0.0196	-0.0036	-0.2946
cv	0.0713	-0.1689	0.0151	0.1084	-0.1987
cv2	0.0396	0.2680	0.0237	0.0464	-0.3949
spr	-0.0388	-0.0145	0.2026	0.1661	-0.0142
spr2	[illegible]	0.0214	-0.0110	0.0702	-0.0446
dp	0.0531	0.1134	0.0777	-0.1973	0.1423
dp2	-0.0526	-0.0683	0.0425	0.0867	-0.0946
dens	0.0382	0.0083	0.0053	0.1012	-0.0758
dens2	-0.0462	-0.0349	-0.0135	-0.0801	0.0616
lf	0.0001	0.1021	-0.4000	-0.4075	0.0764
lse	0.0237	0.0437	-0.1062	0.0423	0.0325
lcv	0.0726	0.5419	0.0393	0.1338	-0.1494
lspr	-0.0733	-0.0073	-0.4926	0.1328	-0.0219
ldp	0.0545	0.0301	0.0611	-0.4501	0.0713
fse	1.0000	-0.0691	0.0946	-0.0548	-0.0777
fcv	-0.0691	1.0000	-0.0124	-0.0533	0.1863
fspr	0.0946	-0.0124	1.0000	-0.2030	-0.0555
fdp	-0.0548	-0.0533	-0.2030	1.0000	-0.0148
scv	-0.0777	0.1863	-0.0555	-0.0148	1.0000
sspr	0.0931	-0.0103	0.0013	0.0105	-0.1450
sdp	0.0860	0.0008	0.0156	-0.0078	-0.0913
cspr	-0.0592	0.2363	0.0397	-0.0987	0.4719
cdp	-0.0386	-0.1430	-0.0244	-0.1655	-0.2257
spdp	0.0317	0.0552	-0.0730	-0.1697	0.0515
ldns	-0.1288	0.0959	-0.4002	0.0151	0.0140
fdns	0.1638	0.1091	0.3400	-0.1244	-0.0552
sdns	0.0960	0.0012	-0.0055	0.0005	0.1508
cdns	-0.0889	0.0389	-0.0383	-0.1337	0.3603
spdns	-0.0169	-0.0837	0.1374	-0.0213	0.0048
dpdns	-0.0004	-0.0865	-0.0073	0.0514	-0.0303

Correlation of Estimates

Variable	sspr	sdp	cspr	cdp	spdp
Intercept	0.0195	0.0230	0.0250	0.2493	0.0251
let	0.1110	0.1129	0.1091	0.1822	0.1298
let2	0.0690	-0.0444	0.0051	0.0092	0.0628
cf	-0.0451	0.0056	-0.0209	0.0453	0.1081
cf2	0.0169	-0.0073	-0.0466	0.0307	-0.0059
seq	-0.0165	-0.3304	-0.0392	0.1743	-0.0131
seq2	-0.2583	0.1176	-0.1692	0.0369	0.0206
cv	0.0371	0.1425	-0.0748	-0.4363	0.0116
cv2	0.0650	0.0798	-0.3418	-0.0859	0.0322
spr	-0.2576	0.0871	-0.2460	0.0369	-0.5071
spr2	0.1629	-0.0431	-0.1660	0.1168	-0.4138
dp	0.0621	-0.1574	0.1018	-0.3260	0.1097
dp2	0.0491	-0.1024	-0.0733	0.1315	-0.4622
dens	-0.0284	0.0136	-0.0809	-0.1690	0.0069
dens2	0.0342	-0.0319	0.0711	0.1019	-0.0452
lf	-0.0646	-0.0048	0.1335	0.1311	0.0823
lse	-0.3318	-0.4734	0.0350	0.0859	-0.0348

Response of Postal Service Witness Michael D. Bradley
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lcv	-0.0106	0.0881	-0.5589	-0.4459	-0.0559
lspr	-0.0626	-0.0416	-0.0401	-0.0242	-0.2682
ldp	-0.0153	0.0574	-0.0118	-0.0627	-0.0424
fse	0.0931	0.0860	-0.0592	-0.0386	0.0317
fcv	-0.0123	0.0008	0.2363	-0.1430	0.0552
fspr	0.1013	0.0156	0.0397	-0.0244	-0.0730
fdp	0.0125	-0.0073	-0.0987	-0.1655	-0.1697
scv	-0.1460	-0.0913	0.4719	-0.2257	0.0515
sspr	1.0000	-0.2995	-0.0588	0.0427	-0.0863
sdp	-0.2995	1.0000	-0.0557	-0.1787	0.0560
cspr	-0.0588	-0.0557	1.0000	-0.0470	0.1516
cdp	0.0427	-0.1787	-0.0470	1.0000	-0.0926
spdp	-0.0863	0.0560	0.1516	-0.0926	1.0000
lans	-0.1080	-0.0428	0.0385	-0.1858	-0.0614
fans	0.0394	-0.0096	-0.0896	-0.0070	-0.0416
sans	0.0077	-0.0509	0.0469	-0.0778	0.0205
cans	-0.0528	-0.1645	0.2419	0.4365	-0.0024
spans	0.1363	-0.0480	0.0698	0.0849	-0.1790
dpans	0.0488	0.1495	-0.0128	0.2342	0.2711

Correlation of Estimates

Variable	lans	fans	sans	cans	spans
Intercept	-0.0567	0.0061	0.1029	0.2505	0.0651
let	-0.2821	0.1877	0.0313	0.0473	0.0976
let2	-0.4345	0.1863	-0.0140	-0.0773	0.1360
lf	0.1865	-0.4408	0.0072	0.1321	0.0570
lf2	-0.1530	0.2231	-0.0236	-0.0431	0.0907
lsq	-0.0513	-0.0147	-0.4597	0.1022	0.0471
lsq2	0.0027	0.0185	0.0967	-0.1271	-0.0282
lcv	0.1351	-0.0074	0.0506	-0.7863	-0.0294
lcv2	0.1060	0.0079	-0.0804	-0.1945	-0.1024
lspr	0.0602	0.0510	-0.0062	-0.0307	-0.3615
lspr2	-0.2466	0.0733	-0.0396	-0.0088	0.2928
ldp	0.1346	0.0380	-0.0241	0.0073	0.0911
ldp2	0.1366	0.0534	0.0699	-0.0619	0.1063
dens	0.0038	0.0330	-0.2984	-0.3839	-0.2565
dens2	0.0499	-0.1523	0.2077	0.2548	0.2807
lf	0.3717	-0.2293	-0.0009	0.0919	-0.1529
lse	0.2336	-0.1163	0.0137	0.0539	-0.0439
lcv	-0.0306	0.0393	0.0055	-0.1216	-0.0030
lspr	0.5631	-0.2466	0.0347	0.0282	-0.1061
ldp	-0.0962	0.0392	-0.0429	0.0530	-0.0220
fse	-0.1288	0.1638	0.0960	-0.0889	-0.0169
fcv	0.0959	0.1091	0.0012	0.0389	-0.0837
fspr	-0.4002	0.3400	-0.0055	-0.0383	0.1374
fdp	0.0151	-0.1244	0.0005	-0.1337	-0.0213
scv	0.0140	-0.0552	0.1508	0.3603	0.0048
sspr	-0.1080	0.0394	0.0077	-0.0528	0.1363
sdp	-0.0428	-0.0096	-0.0509	-0.1645	-0.0480
cspr	0.0385	-0.0896	0.0469	0.2419	0.0698
cdp	-0.1858	-0.0070	-0.0778	0.4365	0.0849
spdp	-0.0614	-0.0416	0.0205	-0.0024	-0.1790
lans	1.0000	-0.5016	0.0771	-0.2204	-0.0977
fans	-0.5016	1.0000	0.0913	0.0034	-0.1780
sans	0.0771	0.0913	1.0000	0.0234	-0.1888
cans	-0.2204	0.0034	0.0234	1.0000	0.0699
spans	-0.0977	-0.1780	-0.1888	0.0699	1.0000
dpans	-0.4817	-0.0977	-0.0056	0.2266	-0.4063

Correlation of Estimates

Variable	dpans

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Intercept	0.1530
let	0.0727
let2	0.1022
cf	0.0938
cf2	-0.0438
seq	0.0004
seq2	-0.0046
cv	-0.1289
cv2	-0.0647
spr	0.0908
spr2	-0.0465
dp	-0.2910
dp2	-0.3828
dens	-0.1245
dens2	-0.0308
lf	-0.0389
lse	-0.0764
lcv	-0.0668
lspr	-0.0278
ldp	0.1102
fse	-0.0004
fcv	-0.0865
fspr	-0.0078
fdp	0.0514
scv	-0.0303
sspr	-0.0488
sdp	0.1495
cspr	-0.0128
cdp	0.2342
spdp	0.2711
lans	-0.4817
fans	-0.0977
sans	-0.0056
cans	0.2266
spans	-0.4063
dpans	1.0000

Correlation Matrix for the Restricted Quadratic Regular Delivery Equation

Correlation of Estimates

Variable	Intercept	let	let2	cf	cf2
Intercept	1.0000	0.0292	-0.0156	-0.0871	0.0831
let	0.0292	1.0000	-0.8837	-0.5070	0.3750
let2	-0.0156	-0.8837	1.0000	0.4486	-0.4140
cf	-0.0871	-0.5070	0.4486	1.0000	-0.9105
cf2	0.0831	0.3750	-0.4140	-0.9105	1.0000
seq	-0.0076	-0.0201	0.0055	-0.0831	0.0865
seq2	0.0338	0.0152	-0.0041	0.0318	-0.0311
cv	-0.0625	-0.0326	0.0006	-0.1159	0.0909
cv2	0.0548	0.0033	0.0214	0.1215	-0.0966
spr	-0.0230	-0.2176	0.2240	-0.0227	0.0192
spr2	0.0047	0.2215	-0.3199	0.0206	-0.0465
dp	-0.5369	-0.4550	0.3977	-0.0525	0.0975
dp2	0.5477	0.3142	-0.3491	0.0829	-0.1197
dens	-0.2548	-0.1112	0.0750	-0.0714	0.0994
dens2	0.1708	0.1034	-0.0777	0.0470	-0.0652

Correlation of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	-0.0076	0.0338	-0.0625	0.0548	-0.0230

Response of Postal Service Witness Michael D. Bradley
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act	-0.0207	0.0152	-0.0326	0.0033	-0.2176
act2	0.0055	-0.0047	0.0006	0.0214	0.2240
pd	-0.0837	0.0318	-0.1159	0.1215	-0.0227
pd2	0.0865	-0.0311	0.0909	-0.0966	0.0192
sed	1.0000	-0.8336	0.0339	-0.0590	-0.0247
sed2	-0.8336	1.0000	-0.0781	0.0834	-0.0037
sv	0.0339	-0.0781	1.0000	-0.8648	-0.1891
sv2	-0.0590	0.0834	-0.8648	1.0000	0.1362
sbr	-0.0247	-0.0037	-0.1891	0.1362	1.0000
sbr2	0.0553	-0.0222	0.1801	-0.1546	-0.8303
sb	-0.0734	0.0631	-0.0497	0.0595	-0.2045
sb2	0.0650	-0.0709	0.0856	-0.0775	0.0833
dens	-0.0065	0.0210	0.0774	-0.1035	0.0764
dens2	0.0333	-0.0328	-0.0305	0.0550	-0.0561

Correlation of Estimates

Variable	sbr2	sb	sb2	dens	dens2
Intercept	0.0047	-0.5369	0.5477	-0.2548	0.1708
act	0.2215	-0.4550	0.3142	-0.1112	0.1034
act2	-0.3199	0.3977	0.3497	0.0750	-0.0777
pd	0.0236	-0.0525	0.0829	-0.0714	0.0470
pd2	-0.0465	0.0975	-0.1197	0.0994	-0.0652
sed	0.0553	-0.0734	0.0650	-0.0065	0.0333
sed2	-0.0222	0.0631	-0.0709	0.0210	-0.0328
sv	0.1801	-0.0497	0.0856	0.0774	-0.0305
sv2	-0.1546	0.0595	-0.0775	-0.1035	0.0550
sbr	-0.8303	-0.2045	0.0833	0.0764	-0.0561
sbr2	1.0000	0.1206	-0.0687	-0.0133	0.0211
sb	0.1206	1.0000	-0.8932	0.0361	-0.0167
sb2	-0.0687	-0.8932	1.0000	-0.0704	0.0238
dens	-0.0133	0.0361	-0.0704	1.0000	-0.9208
dens2	0.0211	-0.0167	0.0238	-0.9208	1.0000

Correlation Matrix for the Parcel/Accountable Model

Correlation of Estimates

Variable	Intercept	pcl	pcl2	act	act2
Intercept	1.0000	-0.0616	0.0586	-0.1534	0.0286
pcl	-0.0616	1.0000	-0.4975	-0.2042	0.0820
pcl2	0.0586	-0.4975	1.0000	0.1834	-0.2117
act	-0.1534	-0.2042	0.1834	1.0000	-0.6879
act2	0.0286	0.0820	-0.2117	-0.6879	1.0000
dp	-0.6211	-0.4205	0.1232	-0.3081	0.2934
dp2	0.2867	0.3764	-0.3796	0.1589	0.1356
pact	-0.0757	-0.0679	-0.5768	-0.2066	0.2943
padp	0.1329	-0.6483	0.4871	0.2842	-0.1714
acdp	0.1703	0.2120	0.2874	-0.2533	-0.3437

Correlation of Estimates

Variable	dp	dp2	pact	padp	acdp
Intercept	-0.6211	0.2867	-0.0757	0.1329	0.1703
pcl	-0.4205	0.3764	-0.0679	-0.6483	0.2120
pcl2	0.1232	-0.3796	-0.5768	0.4871	0.2874

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by ADVO

act	-0.3081	0.1589	-0.2066	0.2842	-0.2533
act2	0.2934	0.1356	0.2943	-0.1714	-0.3437
dp	1.0000	-0.6142	0.2484	0.0704	-0.1422
dp2	-0.6142	1.0000	0.3516	-0.4952	-0.5117
pact	0.2484	0.3516	1.0000	-0.5251	-0.5912
padp	0.0704	-0.4952	-0.5251	1.0000	0.0841
acdp	-0.1422	-0.5117	-0.5912	0.0841	1.0000

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by ADVO

ADVO/USPS-T14-9. On page 55 of your testimony, referring to your translog model, you state:

> Because the data were mean centered before estimation of the equation, the volume variability is just the first-order coefficient on the aggregate volume term.

(a) Please explain fully why you mean centered the data before estimating the translog model. Please explain fully when it is appropriate to perform regressions on the original (non-mean centered) data.

(b) In the above statement, do you mean that the volume variability should be based on the first order coefficient on the aggregate volume term only if the data are mean centered? If so, why? When is it appropriate to include the second order coefficient for the volume variability calculation when data are mean centered? Please explain fully.

(c) Please explain fully circumstances when only the first order coefficient and, separately, both the first and second order coefficients should be part of the marginal cost calculation when data are not mean centered.

(d) Please demonstrate the marginal cost calculation for your aggregate volume variable from your translog model with: a) only the first order coefficient included, and b) both the first and second order coefficients included.

ADVO/USPS-T14-9 Response:

a. Mean centering translog equations is standard practice both in both academic economic studies and Postal Rate Commission proceedings. Mean centering does not change the estimated variability but greatly simplifies its calculation. This point was made by the Commission in Docket No. R2000-1:[4]

> [3270] The Commission has reviewed this issue carefully, partly because mean-centering has been used by the Commission in the past. Postal Service witness

[4] See, PRC Op., Docket No. R2000-1, Vol. 1, at 176.

> Greene specifically states, at Tr .46E/22078, that mean-centering would give different coefficients but that the elasticities would be the same. UPS witness Neels states that mean-centering is a "computational convenience" and "shouldn't change the result." *Id.* at 21925. Short of calculating the elasticity with an erroneous formula, there does not appear to be support for the Periodicals Mailers' position.
>
> [3271] The Commission does not accept that there are difficulties with the use of mean-centered data. Using mean-centered data is a common practice. It involves dividing each point in the data by a constant, which happens to be the mean of the data set. If mean-centering changed the elasticity, then one would get different volume-variable costs by measuring the costs in cents instead of dollars, an obviously absurd implication.

b. Yes. If the data are not mean centered, then higher order terms enter the calculation of the variability. When the data are mean centered, one does not need to use the higher order term in calculating the variability. To clarify, consider a simple translog in one variable. Suppose that the equation is estimated both with and without mean centering:

Without mean centering:

$$\ln y = \delta_0 + \delta_1 \ln x + \delta_2 (\ln x)^2$$

With mean centering:

$$\ln y = \beta_0 + \beta_1 \ln\left(\frac{x}{\bar{x}}\right) + \beta_2 \left(\ln\left(\frac{x}{\bar{x}}\right)\right)^2$$

The variability is calculated by finding $\partial \ln y / \partial \ln x$ at the mean level of x:

Without mean centering:

$$\frac{\partial \ln y}{\partial \ln x} = \delta_1 + 2\delta_2 (\ln \bar{x})$$

With mean centering:

$$\frac{\partial \ln y}{\partial \ln x} = \beta_1 + 2\beta_2 \ln\left(\frac{\bar{x}}{\bar{x}}\right) = \beta_1.$$

c. A similar set of mathematics as was used to answer part b. governs the calculation of marginal cost.

d. The marginal cost is calculated by finding $\partial y / \partial x$. Below I demonstrate the calculation of marginal cost for the mean centered and non-mean centered translogs. This shows how one uses the first and second order terms.

Without mean centering:

$$\frac{\partial y}{\partial x} = e^{\delta 0}\left[e^{\delta 2 (\ln \bar{x})^2} \delta_1 \bar{x}^{\delta 1 - 1} + e^{\delta 1 \ln \bar{x}} e^{\delta 2 (\ln \bar{x})^2} \frac{2\delta_2}{\bar{x}} \ln(\bar{x})\right]$$

With mean centering:

$$\frac{\partial y}{\partial x} = e^{\beta 0} \frac{\beta_1}{\bar{x}}.$$

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by ADVO

ADVO/USPS-T14-10. From a conceptual or specification view point, are you aware of any advantages to using a translog specification instead of the quadratic models you recommend to generate variability estimates? Or is the preference established only after generation of the statistical properties of particular models? Please explain fully.

ADVO/USPS-T14-10. Response:

Both the translog and the quadratic specifications are flexible functional forms and are typically used when there is no extra-sample information to help specify the functional form. Note that the translog is quadratic in logarithms of the variables as opposed to the levels of the variables. This means the translog and quadratic are not nested and direct statistical testing of the two functional forms is not available. Thus, the choice between the two functional forms is not generally made on a comparison of statistical properties. The choice may be based upon previous work for the industry or activity being modeled, extra-sample information about technology, or characteristic of the data set (as is the case here). Both functions are widely used in empirical studies as neither imposes restrictions on returns to scale prior to the estimation. A particular advantage of the quadratic is that it can be estimated when the right-hand-side variables take on zero values.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by ADVO

ADVO/USPS-T14-12. Please refer to page 47 of your testimony where you describe and report results for your alternative volume model.

(a) Explain fully why you did not use the alternative letters definition in your restricted quadratic specification.

(b) Wouldn't recognition of the DPS-cased letters marginal cost difference as confirmed by the model provide a more accurate distribution of total volume variable costs by shape and technology employed? Please explain fully.

ADVO/USPS-T14-12 Response:

a. I did. The results of using the alternative letters definition in the restricted quadratic specification is provided on page 48 of my testimony.

b. The selection of the model used to calculate volume variable costs is a decision along several dimensions. In the past, delivery models had been estimated with letters, flats, and parcels as separate variable to reflect the differential cost causing attributes of each of those shapes. However as things change in the methods of delivery, this specification may be reviewed. For example, in the current analysis, I extended this shape vector to include sequenced mail as a separate cost pools and to split large and small parcels into different cost pools. The specification of the letter cost pools for the regular delivery cost model is more difficult, as it is my understanding that in 2002, when the data were collected, a mix of delivery technologies was being used. The is more impact from delivery point sequencing today than there was in 2002 and the Postal Service was in the transition to a single case for letters and flats. Thus, the choice is not clear cut and I estimated both the traditional model and a model

with separate cased letters and DPS letters. On balance, I recommended the model with the combined letters shape vector because it more closely aligns with what has been done in the past, reflects the mix of technologies in place when the data were collected, and provides intuitive results for all of the shape vectors.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by ADVO

ADVO/USPS-T14-16. Please refer to your response to ADVO/USPS-T14-4 (c) where you claim that a "weighted least squares approach is appropriate when the form of the heteroskedasticity is known" and your statement on page 52 of your testimony:

> "If one assumes that the variance of the regression increases with cross-sectional unit size then one way to attempt to control for this is to divide each unit by a measure of size, thus potentially reducing the disparity in variances."

Please confirm that one measure of cross-sectional unit size in the data used for your regressions is zip-code square miles. If you cannot confirm please explain fully.

ADVO/USPS-T14-16 Response:

Partially confirmed. Cross-sectional unit size generally relates to the level of output. Zip Code square miles is a measure of geographic size, not necessarily the level of output. This is not to say that the Zip Code square miles is not related to output, in the sense that the mail must be delivered over the given geographic area.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by ADVO

ADVO/USPS-T14-17. Please refer to your response to ADVO/USPS-T14-5 (a) where you present the following city carrier delivery cost function:

$$C = V^{.04} PD^{0.8} A^{-.2}$$

and calculate its marginal cost as:

$$MC_A = -1.2V^{.4} PD^{.8} A^{-1.2} < 0.$$

(a) Please confirm that the marginal cost with respect to A from your example is actually given by:

$$MC_A = -.2V^{.4} PD^{.8} A^{-1.2} < 0.$$

(b) Please explain how negative delivery-related marginal costs with respect to A (zip code total area) is possible.

(c) Please explain how negative marginal costs with respect to area size is consistent with carrier out-of-office delivery costing principles and theory.

(d) Referring to your restricted quadratic formulation (page 38, Table 5) please provide the zip-code marginal cost estimate with respect to zip-code square land mileage at the mean values for all variables using that model and provide the calculation of that estimate.

(e) Referring to your translog model (page 56, Table 18), please provide individual estimates and sums of elasticities (variabilities) for your aggregate volume variable, possible deliveries and total area at their mean values using that model.

ADVO/USPS-T14-17 Response:

a. Confirmed

b. Please recall the original question asked for confirmation of a mathematical property of homogenous functions (that homogeneity ensures positive marginal costs). My answer simply provided a mathematical function that demonstrated that homogeneity, by itself, does not ensure positive marginal cost for all variables. I did not pose the mathematical function as a "carrier delivery cost function" and did not endow it with operational meaning. A

negative marginal cost would occur if, for some reason, the cost of delivery falls as the geographic area to be covered increases.

c. I'm not sure what constitutes "carrier out of office delivery costing principles and theory," but I would generally agree that one expects total delivery time to rise as the geographic area covered by delivery increases. In this sense, I would suggest that a negative marginal cost for geographic area is "counter intuitive."

d. The model does not include a separate geographic area variable. Zip Code land area is included only as part of the density variable. The model is thus not intended to calculate a marginal cost for Zip Code land area.

e. Below I present the requested elasticities. Please note that the translog model includes density, not area square miles. Thus, the provided elasticity is for density, not area square miles.

Variable	**Elasticity**
Volume	0.340
Delivery Points	0.702
Density	-0.095

The question also asked for the sum of these three numbers. I get a sum of 0.947.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by ADVO

ADVO/USPS-T14-19. With respect to your use of the panel data, did you consider testing for a random effects model? If you did, please describe fully why you rejected such an approach. If you did not, please describe why such an approach would or would not have been appropriate for your research agenda.

ADVO/USPS-T14-19 Response:

My recommendation of the pooled model results over the fixed effects model results was based upon operational and intuitive considerations, not pure econometric ones. The fixed effects variabilities and marginal times were quite low relative to previous results and seemed to be low relative to operational interpretations. An important reason for this result may be the fact that the fixed effects model focuses on the "within" unit variation as opposed to the "across" unit variation. Given that the time dimension is short, in calendar time, there may be a limited response in delivery time to volume changes and that is being captured by the fixed effects model. Based upon this reason for preferring the pooled model results over the fixed model results, as opposed to pure econometric ones, I did not further pursue the fixed effects model and did not test for fixed vs. random effects.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by ADVO

ADVO/USPS-T14-22. Please provide your interpretation of the positive coefficient on the squared density term in your recommended restricted quadratic regular delivery model.

ADVO/USPS-T14-22 Response:

The first order coefficient on the density term is negative, indicating that as the density of the delivery points increases, the time associated with delivering a given volume of mail decreases. The positive second order term means that the rate of decline in delivery time is reduced as density increases. In other words, as density gets higher and higher, there is little additional cost saving from further increases in density.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by NAA

NAA/USPS-T14-1: What were the beginning and ending dates for the two week period studied in the CCSTS?

NAA/USPS-T14-1 Response:

The scheduled period for the CCSTS started with Saturday May 18, 2002 and ended Friday May 31, 2002. Please note that a small number of Zip Codes could not perform the study during the scheduled period for administrative reasons and completed it during a subsequent 2 week period in June 2002.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by NAA

NAA/USPS-T14-3: Please refer to page 33, lines 4 to 8 of your testimony. Please elaborate on why you believe that the estimated variabilities from the pooled model" seem to comport better with operational understanding of carrier activities."

NAA/USPS-T14-3 Response:

There are two reasons that I think the variabilities from the pooled model comport better with operational understanding of carrier activities. First, the combined variabilities (across all "shapes") from the pooled model is 41.1%. From the fixed effects model the combined variability is just 20.1%. This latter figure is substantially below previous estimates for similar activities. This can be seen by examining the variability for the regular delivery, parcel accountable delivery and network travel time cost pools. These cost pools cover approximately the same activities as the load time, access time and route time variabilities in the Commission's methodology. The average variability from the Commission's methodology for these activities is about 30%. The corresponding variability from the pooled model is 36.6%. On the other hand the corresponding variability from the fixed effect model is just over 20%. Second, the implied marginal times for delivering mail from the pooled model would appear to comport better with operational reality. For example, the marginal time for delivering an additional letter is 1.39 seconds from the pooled model but only 0.19 seconds from the fixed effects model. In discussions with Postal Service experts on delivery

operations, I found that they were generally comfortable with the marginal times from the pooled model.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-2. Please refer to your testimony at page 25, lines 4-8. You state that you are "trying to model the response in the city carrier delivery network in two areas: (1) how does regular delivery time respond to a sustained change in the volume of letters, flats, sequence mail, collection mail and small parcels? and (2) how does parcel/accountable delivery time respond to a sustained change in the volume of large parcels and accountables?"

a. Please define "sustained" as you use the term here.

b. Is it accurate to say that you wish to estimate the elasticity of regular delivery time with respect to a "sustained" change in volume? If not, why not?

c. Please explain how the elasticity you wish to estimate differs from witness Bozzo's short-run elasticity of labor supply with respect to volume.

OCA/USPS-T14-2 Response.

a. *To keep in existence, maintain. Alternatively, to lengthen or extend in duration or space.*

b. I think an accurate way to state it is as follows: I am modeling the response in delivery time to a sustained change in the volume of letters, flats, sequence mail, collection mail and small parcels. I do so because I wish to estimate variability consistent with the Commission's view of the appropriate variability:[1]

> Witness Bradley's operational definition given in his response to P.O. Information Request No. 4 is consistent with the Commission's view of the correct time period for postal cost studies. "One should attempt to base prices on the marginal costs that will actually be incurred by the firm to serve a sustained increase in volume over the time period during which the prices will be in effect." Tr. 11/5417-18.

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1 See. PRC Op., Docket No. R87-1, Vol. 1, at 79-80.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

c. I don't know that it does.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-3. Please refer to your testimony at page 27, lines 5-6, where you state that "a geographical variable will be included as the density of delivery, the number of deliveries per square mile."

a. Would "number of deliveries per route mile" (aggregated to ZIP Code level) constitute a suitable geographical variable (where "route miles" is the total distance traveled during the "regular" delivery function)? If not, why not?

b. Would "number of deliveries per route mile" (aggregated to ZIP Code level) constitute a more natural geographical variable than number of deliveries per square mile? If not, why not?

c. Does "route miles" as defined in a., above, exist for the routes in your datasets? Can such data be generated? If so, please provide it. If not, why not?

d. Does data similar to "route miles" as defined in a., above, (e.g., total length of all block faces on a route) exist for the routes in your datasets? Can such data be generated? If so, please provide it. If not, why not?

e. Did you examine models of delivery time that included possible deliveries per route mile (aggregated to ZIP Code level) as an explanatory variable? If so please describe your efforts and results. If not, why not?

f. In developing your "square miles" measure, did you delete any of the following?
   i. bodies of water,
   ii. roadless areas,
   iii. uninhabited areas,
   iv. areas not served by city delivery carriers (e.g., served by rural carriers).

   If not, why not?

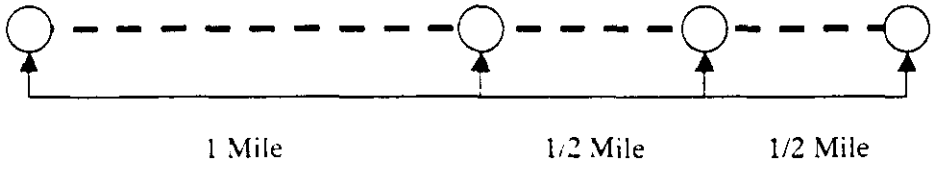
g. Did you examine models of delivery time that included possible deliveries per square mile net of areas listed in f., above, as an explanatory variable? If so please describe your efforts and results. If not, why not?

h. If one used a route-level geographical variable such as number of possible deliveries per route mile (aggregated to ZIP Code level), would that reduce possible problems resulting from including areas listed in f., above? If not, why not?

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-3 Response:

a. I think not. There are both measurement and conceptual drawbacks to using number of deliveries per route mile as a density variable. My understanding is the Postal Service delivery network generally assigns delivery responsibilities to delivery units on the basis of Zip Codes. The delivery unit is responsible to delivering the mail to the deliveries within the geographical area defined by the Zip Code. Thus, the measure of density that best reflects the network responsibility would be the geographical area of the Zip Code. In addition, the number of deliveries per route mile might be a function of volume. Consider, for example a Zip Code with only four stops and one route:



The route has 4 stops and 2 miles. It thus has an average of 2 stops per mile. Now suppose that because of volume increases, the four stops must be served by two routes. The first two stops are served by one route and the last two stops are served by the other route. The first route would have 2 deliveries per route mile while the second route would have 2 deliveries per route mile or an average

of 4 deliveries per mile. Despite the fact that the geographic network has not changed, the geographic measure, deliveries per route mile has changed.

This example also illustrates the measurement problem. In the case where there are two routes, there is an open question how the deliveries per route mile should be calculated for the Zip Code. For example, should the average deliveries per mile be the average across routes? (The average of 2 deliveries per mile and 4 deliveries per mile yields 3 deliveries per mile). Or should the deliveries and routes miles be added before the average is taken? (A total of 4 deliveries divided by a total of 1.5 route miles for an average of 2 2/3 deliveries per mile).

b. No. Please see my answer to a.

c. No. "Route miles" as defined in a. above were not collected in the City Carrier Street Time Study so such a variable cannot be constructed.

d. No. Route miles were not collected in the City Carrier Street Time Study so such a variable cannot be constructed.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

e. No. Please see my answers to a. – d. above.

f. Yes. I excluded bodies of water. I did not have data on roadless areas. uninhabited areas or areas not served by city delivery carriers

g. Yes. Please see pages 34 to 39 of USPS-T-14 for estimation of an econometric model that excludes bodies of water.

h. I don't know that there are possible problems with the items listed above. However, as explained in answer a. above, there are some potentially serious drawbacks from including deliveries per route mile aggregated to Zip Code level.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-4. Please refer to your testimony, page 38, Table 5.

a. Please confirm that your restricted quadratic model includes delivery points and delivery points per square mile (plus their squares) as explanatory variables. If you do not confirm, please explain.

b. Please explain the need and desirability of including four (4) functions of delivery points as explanatory variables in an econometric model.

c. Did you examine models of delivery time that included volume (letters, flats, etc.) per delivery point (plus their squares) as the only explanatory variables? If so please describe your efforts and results. If not, why not?

d. Would you agree that an increase in the distance between delivery points (ceteris paribus) would cause an increase in the time to complete a route? If not, why not?

e. If one could use the mean and variance (or mean squared) of distance between delivery points as explanatory variables, would there be any reason to include delivery points as a variable in a model of delivery time? If so, please explain.

f. Would you agree that if all delivery points on a route were concentrated at a single stop (e.g., at one NDCBU), then adding one delivery point to that route would cause almost no increase in delivery time? If not, why not?

g. Would you agree that if a new delivery point appeared in a ZIP Code that was five (5) miles from any other existing delivery point within that ZIP Code, serving that new delivery point would cause a significant increase in delivery time. If not, why not?

h. Did you examine models of delivery time that included functions of the distance between delivery points as explanatory variables? If so please describe your efforts and results. If not, why not?

OCA/USPS-T14-4. Response:

a. Confirm. Delivery points and density, as measured by delivery points per square

mile are both explanatory variables in the econometric equation. In a quadratic form all explanatory variables are entered into the equation with a first order term and a second order term.

b. The econometric equation is a quadratic functional form. In a quadratic functional form there are both linear and quadratic terms for the included variables. Delivery points and density are each included variables so both are included with linear and quadratic terms. While obviously related, they measure different things. The advantage of a quadratic functional form is that is allows for a nonlinear response in delivery time to the included variables. Previous research has shown that delivery time is likely to have a nonlinear response to the included variables.

c. No. If the explanatory variables are in terms of volumes per delivery then the dependent variable is logically expressed in terms of delivery time per delivery. One of the goals of the analysis is to estimate the system wide response of delivery time to volume changes. Focusing the estimation on the delivery time per delivery would not facilitate a system wide analysis. I would also note that such a specification would include twenty (20) "functions" of delivery points as explanatory variables.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

d. In the postal network distance between delivery points is fixed by their location and is not increased or decreased. Moreover it is not possible to increase th distance between delivery points while holding everything else (specifically route length and the number of delivery points) constant. However, suppose one has two otherwise identical routes, (i.e. same volume, same distribution of volume per stop, same number of delivery points, etc) except that the delivery points are further apart on one of the routes and that route is therefore longer. The time to traverse the route would be greater on the route with delivery points farther apart. This would increase the total, but not volume variable, time on that route as compared to the first route.

e. Yes. The number of delivery points is included in the equation for reasons other than the geographic distance to be covered traversing the route. First, for a given volume of mail, the number of delivery points affects coverage. For a given volume of mail, the lower the number the delivery points the higher the coverage (the more stops that are receiving mail). Thus increases in volume are unlikely to create additional time accessing the delivery points. Second, for a given amount of volume the number of delivery points affects the number of pieces of mail received at each delivery. Variations in the amount of volume per

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

delivery would affect the amount of time required to load mail into the receptacles. Note that the number of deliver points is included in the Commission's MDR and BAM load time regressions.

f. Partially agree. The additional time would depend upon how much additional mail was being delivered to the new delivery. If the new delivery was not receiving any mail then the additional time would be very small indeed.

g. No. In the scenario you describe, the new delivery point would likely be its own route section. Thus there would be a substantial addition of network travel time, but very little additional delivery time.

h. No. I estimated models that included the number of delivery points per square mile rather than the inverse, the square miles per delivery point.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-5. Please refer to your testimony at page 40, lines 7-8, where you state that the elasticities in your Table 6 "do not reflect the relative marginal delivery times for each shape." (Original emphasis.) Please provide a table in the form of your Table 6 showing marginal delivery times for each shape. Please show all calculations.

OCA/USPS-T14-5 Response:

Marginal Times for Regular Delivery
All Times are in Seconds

Shape	Full Quadratic Variability	Restricted Quadratic Variability
Letters	1.535	1.393
Flats	2.259	1.359
Sequenced	0.455	0.824
Collection	2.216	3.995
Small Parcels	-12.289	9.557

The calculations are shown in the SAS code below. This code can be easily added to the program Estimating Delivery Equations.SAS which is provided in LR-K-81.

Calculations for the full quadratic model:

```
data mtall; merge coefl regmean (drop=_TYPE_);

mtl=(let*mlet +2*let2*mlet*mlet
lf*mlet*mcf+lse*mlet*mseq+lcv*mlet*mcv+lspr*mlet*mspr
+ldp*mlet*mdp+ldns*mlet*mdens)/mlet;
mtf=(cf*mcf +2*cf2*mcf*mcf
+lf*mlet*mcf+fse*mcf*mseq+fcv*mcf*mcv+fspr*mcf*mspr
+fdp*mcf*mdp+fdns*mcf*mdens)/mcf;
mts=(seq*mseq +2*seq2*mseq*mseq
+lse*mlet*mseq+fse*mcf*mseq+scv*mseq*mcv+sspr*mseq*mspr
```

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```
+sdp*mseq*mdp+sdns*mseq*mdens)/mseq;
mtc=(cv*mcv +2*cv2*mcv*mcv
+lcv*mlet*mcv+fcv*mcf*mcv+scv*mseq*mcv+cspr*mcv*mspr
+cdp*mcv*mdp+cdns*mcv*mdens)/mcv;
mtp=(spr*mspr +2*spr2*mspr*mspr
+lspr*mlet*mspr+fspr*mcf*mspr+sspr*mseq*mspr+cspr*mcv*mspr
+spdp*mspr*mdp+spdns*mspr*mdens)/mspr;

proc print data=mtal1;
var mtl mtf mts mtc mtp ;
```

Calculations for the restricted quadratic model:

```
data mtal2; merge coef2 regmean (drop=_TYPE_);

mtl=(let*mlet +2*let2*mlet*mlet)/mlet;
mtf=(cf*mcf   +2*cf2*mcf*mcf)/mcf;
mts=(seq*mseq +2*seq2*mseq*mseq)/mseq;
mtc=(cv*mcv   +2*cv2*mcv*mcv)/mcv;
mtp=(spr*mspr +2*spr2*mspr*mspr)/mspr;

proc print data=mtal2;
var mtl mtf mts mtc mtp ;
```

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-6. Please refer to your testimony at page 43, Table 9. Please provide a table in the form of your Table 9 showing marginal delivery times for each "shape." Please show all calculations.

Marginal Times for Parcel/Accountable Delivery
All Times are in Seconds

Shape	Variability
Large Parcels	37.796
Accountables	80.564

The calculations are shown in the SAS code below. This code can be easily added to the program Estimating Delivery Equations.SAS which is provided in LR-K-81.

Calculations for the Parcel Accountable Model:

```
data mtpal; merge coefpl pregmean (drop=_TYPE_);
mtp=(pcl*mpcl +2*pcl2*mpcl*mpcl+pact*mpcl*mact+padp*mpcl*mdp)/mpcl;
mta=(act*mact +2*act2*mact*mact+pact*mpcl*mact+acdp*mact*mdp)/mact;

proc print data=mtpal;
var   mtp mta ;
```

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-7. The following interrogatory refers to your testimony at page 63, Table 19, "Estimating the Effects of the Proposed Methodology."

a. The following refers to the "Established Methodology" data, both columns titled "Percentage of Cost" and "Variability."
   (i) Please show the derivation of each percentage listed for: (1) Load Time, (2) Access Time, (3) Route Time, and (4) Total.
   (ii) For each derived value provided in part a(i) of this interrogatory, cite all source documents, and provide copies of those documents not previously submitted in this docket.

b. The following refers to the "Proposed Methodology" data, both columns titled "Percentage of Cost" and "Variability."
   (i) Please show the derivation of each percentage listed for: (1) Regular Delivery, (2) P/A Delivery, (3) Network Travel, and (4) Total.
   (ii) For each derived value provided in part b(i) of this interrogatory, cite all source documents, and provide copies of those documents not previously submitted in this docket.

OCA/USPS-T14-7 Response:

a. (i) and (ii)

1. Load Time

25.3% = $2,495,604,000 /$9,876,084,000, where $2,495,604,000 is total accrued letter-route load-time cost, and $9,876,084,000 is total accrued letter-route street-time cost.

69.5% = ($1,584,612,000 + $150,153,000)/ $2,495,604,000, where $1,584,612,000 is total letter-route elemental load-time cost, and $150,153,000 is total letter-route single-subclass-stop, coverage-related load-time cost.

Sources (All references are to the PRC-Version BY04 CS06&7.xls included in USPS-LR-K-93):

$2,495,604,000: Sheet '7.0.4.1', cell L26

$9,876,084,000: Sheet '7.0.4.1', cell L16

$1,584,612,000: Sheet '7.0.4.2', cell G27

$150,153,000: Sheet '7.0.4.2', cell G30.

2 Access Time:

27.7% = $2,737,842,000 /$9,876,084,000, where $2,737,842,000 is total accrued letter-route access-time cost.

21.0% = $574,034,000/ $2,737,842,000, where $574,034,000 is total volume-variable letter-route access cost.

Sources (All references are to the PRC-Version BY04 CS06&7.xls):

$2,737,842,000: Sheet '7.0.4.1', cell L62

$574,034,000: Sheet '7.0.3', cell V61

3. Route Time:

29.8% = $2,944,778,000 /$9,876,084,000, where $2,944,778,000 is total accrued letter-route route-time cost.

4.7% = $139,541,000/ $2,944,778,000, where $139,541,000 is total volume-variable letter-route route-time cost.

Sources (All references are to the PRC-Version BY04 CS06&7.xls):

$2,944,778,000: Sheet '7.0.4.2', cell G39

$139,541,000: Sheet '7.0.3', cell W61.

4 Total:

82.8% = ($2,495,604,000+$2,737,842,000+$2,944,778,000) / $9,876,084,000,

Response of Postal Service Witness Michael D. Bradley
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29.9% = ($1,584,612,000 +

$150,153,000+$574,034,000+$139,541,000) /

($2,495,604,000+$2,737,842,000+$2,944,778,000).

Source: All variables are documented in parts 1, 2 and 3 above.

b. (i) & (ii):

1. Regular Delivery:

72.3% = Sum of the regular delivery percentages across all delivery sections and delivery modes. Those values are presented below:

1.185%	1.319%	1.907%	0.065%	29.029%
9.716%	1.762%	0.009%	0.101%	2.931%
1.100%	3.159%	0.028%	0.098%	1.273%
0.016%	0.169%	0.001%	0.000%	0.045%
0.677%	1.866%	1.177%	0.090%	2.832%
2.065%	3.159%	0.035%	0.100%	6.346%

Source: USPS-LR-K-79, MDCD.CPSUM.FINAL.XLS, Cells C61 to G66.

41.1% = Sum of the estimated variabilities across shapes:

Source USPS-T-14 at 39, line 14.

2. PA/Delivery:

5.6% = Sum of Parcel/Accountable Time and Deviation Delivery Time across all delivery modes. Those values are presented below:

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1.431%	1.013%	0.217%	0.053%	2.414%
0.060%	0.072%	0.015%	0.003%	0.365%

Source: USPS-LR-K-79, MDCD.CPSUM.FINAL.XLS, Cells C72 to G73.

53.5% = Sum of large parcel and accountable variabilities.

Source USPS-T-14 at 43, line 6.

3. Network Travel:

11.4% = Sum of Network Travel Time across all delivery modes:

2.769%	1.417%	1.354%	0.092%	5.744%

Source: USPS-LR-K-79, MDCD.CPSUM.FINAL.XLS, Cells C68 to G68.

0% = Variability of Network Travel Time

Source USPS-T-14 at 23, line 3.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-8. Please refer to the testimony of witness Lewis (USPS-T-30), page 23, lines 13-15 (emphasis added), where he states that some "reasons [other than the *eight-hour rule*] to consider route adjustments include significant changes in *cased* volume or possible deliveries (PDs), building construction or demolition, and changes in authorized line of travel."

a. Given that witness Lewis does not mention DPSed volume as a cause of route adjustments, why do you include DPSed volume in your model?

b. Please explain how the route adjustment process is related to your concept of a "sustained" change in volume (USPS-T-14, page 25, lines 4-8).

c. Witness Lewis describes two types of route adjustment: a "Minor Adjustment Process, and, a Mail Count and Route Inspection Procedure." (USPS-T-30, page 23, line 19.) Does your model account for both adjustment processes? If so, please explain. If not, why not?

OCA/USPS-T14-8 Response

a. I think your confusion comes from looking at only part of what Witness Lewis says and a misreading of the term "other." Consider the full paragraph from which the above partial sentence is taken. Review of the full paragraph shows that Witness Lewis did not intend to exclude changes in DPS volume as a possible source of a route evaluation:[1]

> Under Postal Service policy, city carrier routes must provide as near to eight hours of work as possible. Routes that consistently use overtime or auxiliary assistance, routes that consistently curtail mail or consistently must start early in order to meet scheduled leaving times, and routes that consistently are either early or late in leaving or returning to the office are candidates for adjustment. Other reasons to consider route adjustments include significant changes in cased volume or possible deliveries (PDs), building construction or demolition, and changes in authorized lines of travel.

The sentence that starts "Routes that . . ." clearly contemplates the adjustment of a route due to a mismatch of volume and the eight hour day. It discusses both routes that

have too much mail for an eight hour day and routes that have too little mail. DPS volume is a substantial portion of the volume delivered on a route and thus is clearly included in this discussion. Next, Witness Lewis discusses reasons other than a mismatch in total street workload that could lead to a route evaluation. Here he mentions, *inter alia*, changes in cased volume. He has informed me that he did so because changes in cased volume influence both street time and office time. Moreover many times changes in cased volume are not independent of changes in DPS volume. For example, a route that has no change in total volume but a sharp decline in cased volume would simultaneously experience an increase in DPS volume.

As to why I include DPS volume in the regular delivery equation, note that the equation is estimating the response in delivery time to changes in delivered and collected volume. DPS volume is an important component to delivered and collected volume and it would be a mistake to omit it.

b. When there is a sustained change in volume for a route that causes the required hours to deviate from the eight hour day on a regular basis, a route evaluation will be done. Route evaluations can take place in response to either a sustained increase or decrease in volume.

c. Yes. Witness Lewis informs me that a Minor Adjustment Process can be performed without the collection of additional data, but a Mail Count and Route Inspection

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See. USPS-T-30 at 23

Response of Postal Service Witness Michael D. Bradley
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Procedure requires additional information, as described in his testimony. Both are used in response to sustained changes in volume and both are thus accounted for in the regular delivery equation.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-9. Please refer to your testimony at page 27, lines 3-4, where you state, "The delivery network will be modeled by the delivery points in the Zip Code . . . ." Given that "Network Travel" is a separate cost pool, why is it necessary to further account for network effects in your regular delivery time model? What, exactly, are the network effects you are attempting to control for?

OCA/USPS-T14-9. *Response:*

First, please see page 21 of my testimony in which network travel time is defined as the time it takes to drive from one route section to another or one delivery activity (e.g. collection box) to another. Thus, it does not include the time it takes to drive between delivery points within route sections. Second, please refer to my answer to OCA/USPS-T-14-e where I explain the other roles that delivery points have in the regular delivery time model:

> The number of delivery points is included in the equation for reasons other than the geographic distance to be covered traversing the route. First, for a given volume of mail, the number of delivery points affects coverage. For a given volume of mail, the lower the number the delivery points the higher the coverage (the more stops that are receiving mail). Thus increases in volume are unlikely to create additional time accessing the delivery points. Second, for a given amount of volume the number of delivery points affects the number of pieces of mail received at each delivery. Variations in the amount of volume per delivery would affect the amount of time required to load mail into the receptacles. Note that the number of deliver points is included in the Commission's MDR and BAM load time regressions.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-10. Please refer to your testimony (USPS-T-14), page 26, line 14, where you refer to "a sustained change in volume."

a. Would you agree that daily volume on a route exhibits volatility? (*See, e.g.*, LR-K-80 at 2.) If not, why not?

b. Would you agree that daily volume volatility can cause deviations from an eight-hour day for some routes? If not, why not?

c. Would you agree that daily volume volatility can cause deviations from "daily authorized carrier hours" (USPS-T-30, page 22, line 19) for some ZIP Codes? If not, why not?

d. Would you agree that the short-run technique (*i.e.*, short of route adjustment) for dealing with workload in excess of "daily authorized carrier hours" is overtime? If not, why not?

e. Would you agree that your focus on "sustained" volume changes requires ignoring daily volume volatility at the route and ZIP Code levels? If not, why not?

f. Would you agree that short-run (*i.e.*, constrained) elasticity of cost with respect to volume is greater than long-run (*i.e.*, unconstrained) elasticity of cost with respect to volume? If not, why not?

OCA/USPS-T14-10 Response:

a. No. The term volatility connotes wild and explained movements. It is my understanding that while daily volume may exhibit significant variation, that variation is generally predictable and thus expected. Within a delivery unit, the Postal Service knows which days are its heavy days and which days are its light days.

b. Partially agree. It is possible for day-to-day variations to cause deviations from the eight hour day. However, day-to-day variations are generally predictable and delivery unit managers have a variety of strategies for dealing with these variations. Day-to-day variations thus included in scheduling route hours in order to prevent any carrier's day from exceeding eight hours. A delivery unit manager's strategies include things like scheduling substitutes to assist on heavy days, curtailing some mail on heavy days, providing assistance in office time on heavy days, and performing ancillary office work and route maintenance work on light days. In addition, it is important to recognize

that delivery is managed at the Zip Code level, not the route level. This provides the delivery unit manager more flexibility in scheduling time to deliver volumes.

c. Generally disagree. While it is certainly possible for daily volume variations to cause deviations from "daily authorized carrier hours" for a Zip Code, it is my understanding that they generally do not. That is because daily volume variations are generally predictable and are scheduled for in advance. In other words, daily authorized carrier hours are not necessarily the same for all days for a Zip Code, and reactions to daily volume variations are included in setting daily authorized carrier hours.

d. No. As mentioned in my answer to part b. above, it is my understanding that delivery unit supervisors have a variety of strategies for dealing with day-to-day variations in volume.

e. No. A sustained increase in volume means an increase or decrease in volume that is sustained through time. A sustained change in volume does not invalidate or remove the day-to-day variations in mail volume and they are thus included in the determination of the number of hours required to deliver the mail.

f. No. The short run elasticity could be smaller than the long run elasticity. For example, in the situation of short run excess capacity, the short run elasticity could be zero.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-11. Please refer to your testimony at pages 44-56. Please provide the SAS runs underlying the results you present. Please provide any SAS runs related to volume variability of city carrier costs that you performed but did not discuss in your testimony.

OCA/USPS-T14-11 Response:

Please see the attached pages, which contain the SAS runs for the alternative regressions presented in USPS-T-14. To facilitate review, the SAS runs are presented in the attachment in the same order and with the same titles as in USPS-T-14, pages 44 through 56.

ATTACHMENT TO OCA/USPS-T14-11

SAS RUNS FOR ALTERNATIVE REGRESSIONS

This attachment contains all of the SAS runs for the results of alternative regressions presented in USPS-T-14. To facilitate review, the SAS runs are presented in this attachment in the same order and with the same titles as in USPS-T-14, pages 44 through 56.

Section Titles:

G.1 FIXED EFFECTS ESTIMATION

G.2 ROUTE LEVEL ANALYSIS

G.3 ALTERNATIVE VOLUME DEFINTION

G.4 INVESTIGATING DAY OF WEEK EFFECTS

G.5 CROSS SECTIONAL RESULTS

G.6 WEIGHTED REGRESSIONS

G.7 INCLUDING PROBLEMATIC ZIP CODES

G.8 ESTIMATING A TRANSLOG SPECIFICATION

G.1 FIXED EFFECTS ESTIMATION

Regular Delivery Equation

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	1545	222595.34	155029.70	2711.00	843493.00
let	1545	36007.95	26665.41	425.0000000	212665.00
cf	1545	11799.20	9984.98	103.0000000	61573.00
seq	1545	3528.40	6333.08	0	67595.00
cv	1545	4969.46	6975.64	0	88201.00
spr	1545	373.2679612	326.3759862	0	3470.00
dp	1545	9462.31	5817.34	196.0000000	34378.00
dens	1545	71.4975563	105.9993942	0.4480750	738.8297872

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	1545	-7.53497E-14	29718.36	-170550.27	163297.70
let	1545	-1.22443E-13	11370.66	-66481.09	76320.55
cf	1545	-1.03606E-13	4320.36	-34373.82	28399.18
seq	1545	-4.59162E-14	4964.19	-24180.10	46141.82
cv	1545	7.06145E-15	3805.46	-39855.25	74418.20
spr	1545	8.094209E-16	158.6211349	-656.5454545	1392.45
dp	1545	-1.11847E-14	851.9260274	-7263.09	4348.91

The REG Procedure
Model: MODEL1
Dependent Variable: delt

NOTE: No intercept in model. R-Square is redefined.

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	6.937735E11	49555252620	113.25	<.0001
Error	1531	6.699133E11	437565816		
Uncorrected Total	1545	1.363687E12			

Root MSE	20918	R-Square	0.5087
Dependent Mean	-7.535E-14	Adj R-Sq	0.5043
Coeff Var	-2.77613E19		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
let	1	0.57336	0.05692	10.07	<.0001
let2	1	-0.00000333	0.00000154	-2.16	0.0311
cf	1	0.44715	0.13735	3.26	0.0012
cf2	1	0.00001559	0.00000992	1.57	0.1165
seq	1	0.91782	0.11847	7.75	<.0001
seq2	1	8.995061E-7	0.00000692	0.13	0.8966
cv	1	0.93329	0.16651	5.60	<.0001
cv2	1	-0.00000529	0.00000376	-1.41	0.1600
spr	1	5.77055	4.31602	1.34	0.1814
spr2	1	-0.00162	0.00724	-0.22	0.8228
dp	1	18.26906	0.69683	26.22	<.0001
dp2	1	-0.00009286	0.00025489	-0.36	0.7157
dens	1	-216.26935	76.79560	-2.82	0.0049
dens2	1	-0.84124	0.80020	-1.05	0.2933

Obs	mdelt	pdelt	elasl	elasf	elass
1	222595.34	178472.96	0.053946	0.043198	0.014649

Obs	elasc	elasp	elasd	elasdns
1	0.019663	.007646899	0.70189	-0.10810

P/A Delivery Equation

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
padelt	1535	1.564212E-13	6144.94	-31206.75	33900.25
pcl	1535	-7.40631E-17	71.3129559	-344.5000000	1657.50
act	1535	2.777366E-17	29.5597773	-263.3333333	259.6666667
dp	1535	-5.45104E-14	1075.72	-4712.64	4319.55

Based upon Final PA Volume

The REG Procedure
Model: MODEL1
Dependent Variable: padelt

NOTE: No intercept in model. R-Square is redefined.

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F

Model	9	23087498818	2565277646	112.37	<.0001
Error	1526	34836712092	22828776		
Uncorrected Total	1535	57924210910			

Root MSE	4777.94683	R-Square	0.3986
Dependent Mean	1.56421E-13	Adj R-Sq	0.3950
Coeff Var	3.054538E18		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
pc1	1	39.50034	2.43971	16.19	<.0001
pc12	1	-0.02275	0.00292	-7.79	<.0001
act	1	56.37803	4.62966	12.18	<.0001
act2	1	-0.05334	0.03385	-1.58	0.1153
dp	1	1.12407	0.12514	8.98	<.0001
dp2	1	-0.00013045	0.00005893	-2.21	0.0270
pact	1	-0.05804	0.06651	-0.87	0.3830
padp	1	0.00262	0.00190	1.38	0.1691
acdp	1	0.00641	0.00383	1.67	0.0944

Based upon Final PA Volume

Obs	mpadelt	elasp	elasa	elasd
1	18352.66	0.39266	0.29906	-0.11956

G.2 ROUTE LEVEL ANALYSIS

The SAS System

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	30087	11430.51	5752.40	0	46900.00
let	30072	1849.97	802.3158687	0	61458.00
cf	30068	606.2846880	344.8149012	0	5755.00
seq	30067	181.3076463	341.6963021	0	7634.00
cv	30087	255.1869896	1177.90	0	83079.00
spr	30087	19.1677136	15.6490670	0	258.0000000
ip	30087	485.9000897	197.3878991	0	1930.00
dens	30087	75.8398800	121.4086120	0	1751.52

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	61690060926	4406432923	141.95	<.0001
Error	30020	9.318618E11	31041364		
Corrected Total	30034	9.935518E11			

Root MSE	5571.47774	R-Square	0.0621
Dependent Mean	11431	Adj R-Sq	0.0617
Coeff Var	48.74020		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
Intercept	1	7025.43308	182.63801	38.47	<.0001	.
let	1	0.20112	0.05564	3.62	0.0003	0.51846
let2	1	-0.00000353	0.00000182	-1.94	0.0522	0.63265
cf	1	-0.66055	0.22481	-2.94	0.0033	0.17195
cf2	1	-0.00001685	0.00011012	-0.15	0.8784	0.18554
seq	1	1.18805	0.14234	8.35	<.0001	0.43723
seq2	1	-0.00032418	0.00006641	-4.88	<.0001	0.44502
cv	1	0.10904	0.06262	1.74	0.0816	0.18966
cv2	1	-0.00000199	0.00000112	-1.78	0.0747	0.19004
spr	1	31.09357	3.98969	7.79	<.0001	0.26502

Parameter Estimates

Variable	DF	Variance Inflation
Intercept	1	0
let	1	1.92877
let2	1	1.58066
cf	1	5.81568
cf2	1	5.38980
seq	1	2.28711
seq2	1	2.24707
cv	1	5.27258
cv2	1	5.26200
spr	1	3.77335

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
spr2	1	-0.27703	0.04728	-5.86	<.0001	0.27925
dp	1	14.34833	0.55646	25.79	<.0001	0.08561
dp2	1	-0.00893	0.00048169	-18.53	<.0001	0.08610
dens	1	-10.81287	0.50413	-21.45	<.0001	0.27550
dens2	1	0.00695	0.00055698	12.49	<.0001	0.28500

Parameter Estimates

Variable	DF	Variance Inflation
spr2	1	3.58101
dp	1	11.68112
dp2	1	11.61481
dens	1	3.62974
dens2	1	3.50881

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	Intercept	let	let2	cf	cf2
Intercept	45019.15102	-2.681577672	0.0000440355	-14.08829524	0.0058938216
let	-2.681577672	0.0031157706	-4.979485E-8	-0.003604687	8.4920134E-7
let2	0.0000440355	-4.979485E-8	1.121869E-12	5.8761242E-8	-1.44069E-11
cf	-14.08829524	-0.003604687	5.8761242E-8	0.0609431415	-0.000028076

cf2	0.0058938216	8.4920134E-7	-1.44069E-11	-0.000028076	1.574644E-8
seq	0.0974899232	-0.000474912	7.8257531E-9	-0.000474813	-1.254216E-7
seq2	0.0009620789	7.4652458E-8	-1.27275E-12	3.0193184E-7	-4.23934E-11
cv	-0.706558022	-0.000096265	1.5977565E-9	-0.000447125	1.3618084E-7
cv2	0.0000107602	9.444831E-10	-1.62891E-14	7.692406E-9	-2.1388E-12
spr	-158.3659835	-0.022191595	3.4448274E-7	-0.14490204	0.0000807917
spr2	2.4974919616	-0.000041301	5.502075E-10	0.0020461332	-1.285807E-6
dp	-122.0033271	-0.0004253	-3.853039E-9	-0.011219978	6.2207722E-6
dp2	0.1041310331	-9.201946E-7	2.688921E-11	0.0000139074	-5.916697E-9
dens	-15.05092485	-0.001277282	1.0117075E-8	0.004937281	-1.728769E-6
dens2	0.0071330588	7.1354911E-7	-1.75511E-11	5.5771876E-8	-5.33485E-10

Consistent Covariance of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	0.0974899232	0.0009620789	-0.706558022	0.0000107602	-158.3659835
let	-0.000474912	7.4652458E-8	-0.000096265	9.444831E-10	-0.022191595
let2	7.8257531E-9	-1.27275E-12	1.5977565E-9	-1.62891E-14	3.4448274E-7
cf	-0.000474813	3.0193184E-7	-0.000447125	7.692406E-9	-0.14490204
cf2	-1.254216E-7	-4.23934E-11	1.3618084E-7	-2.1388E-12	0.0000807917
seq	0.0197471854	-6.300195E-6	-0.000174462	1.7924254E-9	-0.001209504
seq2	-6.300195E-6	3.9173812E-9	6.8735057E-8	-8.42958E-13	2.0123584E-6
cv	-0.000174462	6.8735057E-8	0.0039719615	-5.986826E-8	-0.006003851
cv2	1.7924254E-9	-8.42958E-13	-5.986826E-8	1.030089E-12	1.1877111E-7
spr	-0.001209504	2.0123584E-6	-0.006003851	1.1877111E-7	36.119438847
spr2	0.0001646371	-8.736019E-8	0.0000852099	-1.863588E-9	-0.488651899
dp	-0.00359608	-3.778459E-6	-0.000240925	4.077923E-9	-0.533743023
dp2	6.4040077E-7	4.0746315E-9	8.1553064E-7	-1.29878E-11	0.0002862133
dens	0.0019010524	-3.733907E-8	0.0016195355	-2.595768E-8	0.3489693248
dens2	1.9341999E-6	-1.077247E-9	-1.044287E-6	1.809225E-11	-0.000178978

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
Intercept	2.4974919616	-122.0033271	0.1041310331	-15.05092485	0.0071330588
let	-0.000041301	-0.0004253	-9.201946E-7	-0.001277282	7.1354911E-7
let2	5.502075E-10	-3.853039E-9	2.688921E-11	1.0117075E-8	-1.75511E-11
cf	0.0020461332	-0.011219978	0.0000139074	0.004937281	5.5771876E-8

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
cf2	-1.285807E-6	6.2207722E-6	-5.916697E-9	-1.728769E-6	-5.33485E-10
seq	0.0001646371	-0.00359608	6.4040077E-7	0.0019010524	1.9341999E-6
seq2	-8.736019E-8	-3.778459E-6	4.0746315E-9	-3.733907E-8	-1.077247E-9
cv	0.0000852099	-0.000240925	8.1553064E-7	0.0016195355	-1.044287E-6
cv2	-1.863588E-9	4.077923E-9	-1.29878E-11	-2.595768E-8	1.809225E-11
spr	-0.488651899	-0.533743023	0.0002862133	0.3489693248	-0.000178978
spr2	0.0076185587	0.0061463228	-3.622697E-6	-0.003895673	2.0564778E-6

dp	0.0061463228	0.5501624526	-0.000487214	-0.004985182	0.0000286733
dp2	-3.622697E-6	-0.000487214	4.6009303E-7	-0.000011057	-2.246908E-8
dens	-0.003895673	-0.004985182	-0.000011057	0.2777826686	-0.000290041
dens2	2.0564778E-6	0.0000286733	-2.246908E-8	-0.000290041	4.2674206E-7

The SAS System

Obs	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	let	let2
1	MODEL1	PARMS	delt	5571.48	7025.43	0.20112	-.000003534

Obs	cf	cf2	seq	seq2	cv	cv2
1	-0.66055	-.000016846	1.18805	-.000324175	0.10904	-.000001991

Obs	spr	spr2	dp	dp2	dens	dens2	delt
1	31.0936	-0.27703	14.3483	-.008925279	-10.8129	.006954435	-1

The SAS System

Obs	mdelt	pdelt	elasl	elasf	elass
1	11430.51	11886.42	0.029267	-0.034734	0.016329

Obs	elasc	elasp	elasd	elasdns
1	.002319218	0.033015	0.23198	-0.062260

G.3 ALTERNATIVE VOLUME DEFINTION

The SAS System

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	1545	222595.34	155029.70	2711.00	843493.00
dps	1545	23849.67	18134.25	0	153979.00
let	1545	12168.30	12909.47	114.0000000	178079.00
cf	1545	11799.20	9984.98	103.0000000	61573.00
seq	1545	3528.40	6333.08	0	67595.00
cv	1545	4969.46	6975.64	0	88201.00
spr	1545	373.2679612	326.3759862	0	3470.00
dp	1545	9462.31	5817.34	196.0000000	34378.00
dens	1545	71.4975563	105.9993942	0.4480750	738.8297872

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	3.080572E13	1.925357E12	466.75	<.0001
Error	1528	6.303097E12	4125063555		
Corrected Total	1544	3.710882E13			

Root MSE	64227	R-Square	0.8301
Dependent Mean	222595	Adj R-Sq	0.8284
Coeff Var	28.85355		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	822.92840	5121.47795	0.16	0.8724
dps	1	1.85882	0.35516	5.23	<.0001
dps2	1	0.00000161	0.00000311	0.52	0.6051
let	1	1.68644	0.36251	4.65	<.0001
let2	1	-0.00001741	0.00000304	-5.73	<.0001
cf	1	0.66799	0.62909	1.06	0.2885
cf2	1	0.00002458	0.00001238	1.99	0.0472
seq	1	0.93469	0.50004	1.87	0.0618
seq2	1	-0.00002418	0.00001526	-1.58	0.1134
cv	1	4.38168	0.49594	8.84	<.0001

cv2	1	-0.00005459	0.00000852	-6.41	<.0001
spr	1	5.38954	14.17448	0.38	0.7038
spr2	1	-0.00453	0.00690	-0.66	0.5117
dp	1	14.16676	1.30880	10.82	<.0001
dp2	1	0.00004807	0.00004419	1.09	0.2768
dens	1	-239.74922	42.34563	-5.66	<.0001
dens2	1	0.22398	0.07888	2.84	0.0046

The SAS System

Obs	mdelt	pdelt	elasdps	elasl	elasf
1	222595.34	223110.58	0.20691	0.068873	0.066005

Obs	elass	elasc	elasp	elasd	elasdns
1	0.012083	0.085511	.003358331	0.63941	-0.066566

G.4 INVESTIGATING DAY OF WEEK EFFECTS

The SAS System

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	1545	222595.34	155029.70	2711.00	843493.00
let	1545	36007.95	26665.41	425.0000000	212665.00
cf	1545	11799.20	9984.98	103.0000000	61573.00
seq	1545	3528.40	6333.08	0	67595.00
cv	1545	4969.46	6975.64	0	88201.00
spr	1545	373.2679612	326.3759862	0	3470.00
cp	1545	9462.31	5817.34	196.0000000	34378.00
dens	1545	71.4975563	105.9993942	0.4480750	738.8297872
dm	1545	0.0970874	0.2961726	0	1.0000000
dt	1545	0.1818770	0.3858680	0	1.0000000
dw	1545	0.1812298	0.3853332	0	1.0000000
dr	1545	0.1818770	0.3858680	0	1.0000000
df	1545	0.1812298	0.3853332	0	1.0000000
ds	1545	0.1760518	0.3809875	0	1.0000000
du	1545	0	0	0	0

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	19	3.042129E13	1.60112E12	365.11	<.0001
Error	1525	6.687531E12	4385266081		
Corrected Total	1544	3.710882E13			

Root MSE	66221	R-Square	0.8198
Dependent Mean	222595	Adj R-Sq	0.8175
Coeff Var	29.74965		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-23772	7335.54442	-3.24	0.0012
dt	1	9195.73844	6813.90879	1.35	0.1774
dw	1	21979	7040.00509	3.12	0.0018
dr	1	18118	6890.87863	2.63	0.0086
df	1	11786	6815.41039	1.73	0.0840
ds	1	13084	6900.62105	1.90	0.0581

let	1	1.64326	0.30001	5.48	<.0001
let2	1	-0.00000105	0.00000172	-0.61	0.5413
cf	1	0.52372	0.67769	0.77	0.4398
cf2	1	0.00002865	0.00001333	2.15	0.0318
seq	1	0.76477	0.53139	1.44	0.1503
seq2	1	-0.00001683	0.00001599	-1.05	0.2927
cv	1	4.47949	0.51991	8.62	<.0001
cv2	1	-0.00005394	0.00000887	-6.08	<.0001
spr	1	12.46586	14.65014	0.85	0.3950
spr2	1	0.00028154	0.00717	0.04	0.9687
dp	1	18.40600	1.21452	15.15	<.0001
dp2	1	-0.00015729	0.00003708	-4.24	<.0001
dens	1	-313.43676	42.71911	-7.34	<.0001
dens2	1	0.34910	0.08009	4.36	<.0001

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	Intercept	dt	dw	dr	df
Intercept	44490015.376	-29622558.44	-31676119.46	-30616584.05	-29716787.79
dt	-29622558.44	47526951.009	31861124.237	29393629.652	29073765.751
dw	-31676119.46	31861124.237	49628189.573	31095408.304	29832975.789
dr	-30616584.05	29393629.652	31095408.304	46118874.539	29834894.331
df	-29716787.79	29073765.751	29832975.789	29834894.331	43624624.378
ds	-31326142.53	29097780.455	30564814.757	30289255.006	29536960.641
let	-458.8925464	171.38449313	598.04810285	518.30037389	312.00237673
let2	0.0034872709	-0.001470284	-0.003165363	-0.002729828	-0.001817123
cf	84.412598037	-104.9860258	-313.4617346	-338.5602204	-114.6812246
cf2	-0.002281255	0.0034669724	0.0037730943	0.0043119845	0.002820558
seq	636.35892689	-1232.046952	-1250.320413	-386.9190571	-260.9539214
seq2	-0.010771893	0.0244102096	0.0234691958	0.0078141541	0.0021955802
cv	-654.2085575	108.06674585	71.832624835	94.262124222	168.52612207
cv2	0.0082631146	0.0002717581	-0.000514811	-0.001916615	-0.002430184
spr	1451.0711154	8085.9342062	10453.028684	17568.441331	11766.064874
spr2	-9.438014549	2.5959281886	0.1407507591	-0.231231295	1.3690654063
dp	-2696.348799	-579.157759	-1511.922682	-1877.67345	-1208.795123
dp2	0.1470761581	0.0124430481	0.0261164831	0.0291731021	0.0127455292
dens	38523.346408	1557.6087738	-22341.5516	-15247.01439	-12490.75887
dens2	-71.93289013	-5.55478047	34.09110927	23.403555972	20.585539438

Consistent Covariance of Estimates

Variable	ds	let	let2	cf	cf2
Intercept	-31326142.53	-458.8925464	0.0034872709	84.412598037	-0.002281255
dt	29097780.455	171.38449313	-0.001470284	-104.9860258	0.0034669724
dw	30564814.757	598.04810285	-0.003165363	-313.4617346	0.0037730943
dr	30289255.006	518.30037389	-0.002729828	-338.5602204	0.0043119845
df	29536960.641	312.00237673	-0.001817123	-114.6812246	0.002820558
ds	46379724.986	446.09856502	-0.002278255	-381.0391843	0.0078231176
let	446.09856502	0.1103002484	-5.570976E-7	-0.111419522	1.3611217E-6
let2	-0.002278255	-5.570976E-7	4.009649E-12	5.482088E-7	-9.87976E-12

cf	-381.0391843	-0.111419522	5.482088E-7	0.592687802	-0.00001116
cf2	0.0078231176	1.3611217E-6	-9.87976E-12	-0.00001116	2.744343E-10
seq	-333.1880915	-0.016622141	1.1449758E-7	-0.046091644	6.6782092E-7
seq2	0.0060241225	1.5433729E-7	-1.01489E-12	5.7232132E-7	-7.52511E-12
cv	611.78301385	-0.014266871	-3.027499E-8	-0.094886361	2.0105556E-6
cv2	-0.009407622	1.0118705E-7	8.196964E-13	1.4665905E-6	-2.8322E-11
spr	6389.8564077	-0.327185197	4.3770263E-6	-0.456655505	-2.57037E-6
spr2	1.5717913432	0.0002820157	-4.564897E-9	0.000054867	-1.52921E-10
dp	-1166.606556	-0.192803369	7.0903199E-7	-0.13946863	5.0120958E-6
dp2	0.0110142165	2.9518692E-6	-1.36999E-11	6.6733046E-6	-2.10354E-10
dens	-26772.02715	-2.004214308	0.0000104236	-0.060859016	0.000063738

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	ds	let	let2	cf	cf2
dens2	46.0183728358	0.00326668	-1.856734E-8	-0.001491719	-5.420385E-8

Consistent Covariance of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	636.35892689	-0.010771893	-654.2085575	0.0082631146	1451.0711154
dt	-1232.046952	0.0244102096	108.06674585	0.0002717581	8085.9342062
dw	-1250.320413	0.0234691958	71.832624835	-0.000514811	10453.028684
dr	-386.9190571	0.0078141541	94.262124222	-0.001916615	17568.441331
df	-260.9539214	0.0021955802	168.52612207	-0.002430184	11766.064874
ds	-333.1880915	0.0060241225	611.78301385	-0.009407622	6389.8564077
let	-0.016622141	1.5433729E-7	-0.014266871	1.0118705E-7	-0.327185197
let2	1.1449758E-7	-1.01489E-12	-3.027499E-8	8.196964E-13	4.3770263E-6
cf	-0.046091644	5.7232132E-7	-0.094886361	1.4665905E-6	-0.456655505
cf2	6.6782092E-7	-7.52511E-12	2.0105556E-6	-2.8322E-11	-2.57037E-6
seq	0.341488229	-6.275896E-6	0.0008616958	-1.864465E-7	0.2440752426
seq2	-6.275896E-6	1.729785E-10	-7.344471E-7	1.388425E-11	-0.000012544
cv	0.0008616958	-7.344471E-7	0.4267065018	-6.873503E-6	-2.041628807
cv2	-1.864465E-7	1.388425E-11	-6.873503E-6	1.39806E-10	0.0000242438
spr	0.2440752426	-0.000012544	-2.041628807	0.0000242438	221.76901063
spr2	0.0000741623	-7.9841E-11	0.0010652471	-1.658905E-8	-0.073386099
dp	-0.031156005	1.594634E-6	0.1191121388	-4.319942E-7	-8.874312325
dp2	3.3785108E-7	-4.67558E-11	-1.723555E-6	-7.13069E-12	0.0002218291
dens	0.0664985322	0.0000201287	-6.213749975	0.0000473773	12.262914009
dens2	0.0010460494	-4.955856E-8	0.0128302496	-1.24914E-7	-0.036162351

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
Intercept	-9.438014549	-2696.348799	0.1470761581	38523.346408	-71.93289013
dt	2.5959281886	-579.157759	0.0124430481	1557.6087738	-5.55478047
dw	0.1407507591	-1511.922682	0.0261164831	-22341.5516	34.09110927
dr	-0.231231295	-1877.67345	0.0291731021	-15247.01439	23.403555972
df	1.3690654063	-1208.795123	0.0127455292	-12490.75887	20.585539438

ds	1.5717913432	-1166.606556	0.0110142165	-26772.02715	46.018378358
let	0.0002820157	-0.192803369	2.9518692E-6	-2.004214308	0.00326668
let2	-4.564897E-9	7.0903199E-7	-1.36999E-11	0.0000104236	-1.856734E-8
cf	0.000054867	-0.13946863	6.6733046E-6	-0.060859016	-0.001491719
cf2	-1.52921E-10	5.0120958E-6	-2.10354E-10	0.000063738	-5.420385E-8
seq	0.0000741623	-0.031156005	3.3785108E-7	0.0664985322	0.0010460494
seq2	-7.9841E-11	1.594634E-6	-4.67558E-11	0.0000201287	-4.955856E-8
cv	0.0010652471	0.1191121388	-1.723555E-6	-6.213749975	0.0128302496

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
cv2	-1.658905E-8	-4.319942E-7	-7.13069E-12	0.0000473773	-1.24914E-7
spr	-0.073386099	-8.874312325	0.0002218291	12.262914009	-0.036162351
spr2	0.0000456053	0.0034201943	-1.243202E-7	-0.002395529	0.0000287418
dp	0.0034201943	2.2207674979	-0.000075254	-6.724763832	0.0144399826
dp2	-1.243202E-7	-0.000075254	3.3460635E-9	0.0002546372	-7.095242E-7
dens	-0.002395529	-6.724763832	0.0002546372	1365.946289	-2.329203999
dens2	0.0000287418	0.0144399826	-7.095242E-7	-2.329203999	0.0044489895

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	16	3.040365E13	1.900228E12	433.03	<.0001
Error	1528	6.705164E12	4388196250		
Corrected Total	1544	3.710892E13			

Root MSE	66243	R-Square	0.8193
Dependent Mean	222595	Adj R-Sq	0.8174
Coeff Var	29.75959		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-13994	5250.81800	-2.67	0.0078
dw	1	12090	4679.16769	2.58	0.0099
dr	1	8280.25943	4565.18409	1.81	0.0699
let	1	1.58538	0.29851	5.31	<.0001
let2	1	-9.24551E-7	0.00000172	-0.54	0.5910
cf	1	0.50984	0.67645	0.75	0.4511

cf2	1	0.00002961	0.00001331	2.22	0.0263
seq	1	0.78758	0.52168	1.51	0.1313
seq2	1	-0.00001707	0.00001586	-1.08	0.2821
cv	1	4.40176	0.51343	8.57	<.0001
cv2	1	-0.00005298	0.00000881	-6.01	<.0001
spr	1	11.56313	14.60855	0.79	0.4288
spr2	1	0.00013452	0.00716	0.02	0.9850
dp	1	18.69678	1.20423	15.53	<.0001
dp2	1	-0.00016130	0.00003703	-4.36	<.0001
dens	1	-312.25056	42.72535	-7.31	<.0001
dens2	1	0.34637	0.08011	4.32	<.0001

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	15	3.038922E13	2.025948E12	460.99	<.0001
Error	1529	6.7196E12	4394767964		
Corrected Total	1544	3.710882E13			

Root MSE	66293	R-Square	0.8189
Dependent Mean	222595	Adj R-Sq	0.8171
Coeff Var	29.78187		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-12187	5159.26314	-2.36	0.0183
dw	1	10034	4543.24596	2.21	0.0273
let	1	1.51862	0.29645	5.12	<.0001
let2	1	-7.21195E-7	0.00000172	-0.42	0.6747
cf	1	0.59369	0.67537	0.88	0.3795
cf2	1	0.00002884	0.00001332	2.17	0.0305
seq	1	0.75545	0.52177	1.45	0.1479
seq2	1	-0.00001660	0.00001587	-1.05	0.2959
cv	1	4.46035	0.51280	8.70	<.0001
cv2	1	-0.00005362	0.00000881	-6.09	<.0001
spr	1	10.19395	14.59995	0.70	0.4851
spr2	1	0.00043996	0.00717	0.06	0.9511
dp	1	18.88045	1.20086	15.72	<.0001
dp2	1	-0.00016330	0.00003704	-4.41	<.0001
dens	1	-311.03626	42.75208	-7.28	<.0001
dens2	1	0.34414	0.08016	4.29	<.0001

The SAS System

Obs	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	dw	let	let2

1	MODEL1	PARMS	delt	66293.05	-12186.51	10034.42	1.51862	-.000000721

Obs	cf	cf2	seq	seq2	cv	cv2	spr
1	0.59369	.000028840	0.75545	-.000016596	4.46035	-.000053623	10.1940

Obs	spr2	dp	dp2	dens	dens2	delt
1	.000439958	18.8805	-.000163299	-311.036	0.34414	-1

The SAS System

Obs	mdelt	pdelt	elasl	elasf	elass
1	222595.34	221252.40	0.23870	0.067956	0.010180

Obs	elasc	elasp	elasd	elasdns
1	0.088211	0.017752	0.67530	-0.084609

G.5 CROSS SECTIONAL RESULTS

Regular Delivery Equation

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	145	2371791.76	1667778.20	90074.00	8541728.00
let	145	383670.94	265551.35	11526.00	1600952.00
cf	145	125722.54	98073.21	3191.00	521439.00
seq	145	37595.70	42462.75	0	241801.00
cv	145	52950.42	63726.66	0	464763.75
spr	145	3977.23	3117.41	4.0000000	22853.00
sp	145	100822.59	63409.91	4208.00	375359.00
dens	145	72.1448977	106.1522279	0.4480750	664.2940039

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	3.404136E14	2.431526E13	52.58	<.0001
Error	130	6.012006E13	4.62462E11		
Corrected Total	144	4.005337E14			

Root MSE	680046	R-Square	0.8499
Dependent Mean	2371792	Adj R-Sq	0.8337
Coeff Var	28.67223		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-87861	171390	-0.51	0.6091
let	1	1.53064	2.18334	0.70	0.4845
let2	1	6.668108E-7	0.00000144	0.46	0.6436
cf	1	-0.88190	3.77571	-0.23	0.8157
cf2	1	0.00000601	0.00000694	0.87	0.3881
seq	1	0.04399	4.28515	0.01	0.9918
seq2	1	-0.00000298	0.00002029	-0.15	0.8834
cv	1	5.12614	2.32002	2.21	0.0289
cv2	1	-0.00000822	0.00000620	-1.33	0.1871
spr	1	44.74898	72.80243	0.61	0.5399

spr2	1	-0.00236	0.00457	-0.52	0.6065
dp	1	18.32772	4.93714	3.71	0.0003
dp2	1	-0.00002325	0.00001305	-1.78	0.0771
dens	1	-2892.43763	1554.53606	-1.86	0.0651
dens2	1	3.09602	2.90520	1.07	0.2885

Obs	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	let	let2
1	MODEL1	PARMS	delt	680045.61	-87861.47	1.53064	.000000667

Obs	cf	cf2	seq	seq2	cv	cv2	spr
1	-0.88190	.000006012	0.043991	-.000002982	5.12614	-.000008224	44.7490

Obs	spr2	dp	dp2	dens	dens2	delt
1	-.002357497	18.3277	-.000023253	-2892.44	3.09602	-1

Obs	mdelt	pdelt	elasl	elasf	elass
1	2371791.76	2424411.30	0.32320	0.032660	-.002794806

Obs	elasc	elasp	elasd	elasdns
1	0.092937	0.042647	0.56720	-0.072779

P/A Delivery Equation

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
padelt	153	188065.97	149478.51	2472.00	871565.00
pcl	153	1415.98	1236.99	0	6977.00
act	153	597.7320261	503.8615752	16.0000000	3424.00
dp	153	84082.01	55252.70	0	324403.00

The REG Procedure
Model: MODEL1
Dependent Variable: padelt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	2.71922E12	3.021355E11	63.81	<.0001
Error	143	6.770416E11	4734556328		
Corrected Total	152	3.396261E12			

Root MSE	68808	R-Square	0.8007
Dependent Mean	188066	Adj R-Sq	0.7881
Coeff Var	36.58722		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	-327.01572	15807	-0.02	0.9835
pcl	1	38.60311	15.13971	2.55	0.0118
pcl2	1	-0.00419	0.00431	-0.97	0.3319
act	1	-2.59871	45.42319	-0.06	0.9545
act2	1	0.00389	0.01731	0.22	0.8224
ap	1	1.55006	0.43307	3.58	0.0005
ap2	1	-0.00000909	0.00000214	-4.25	<.0001
pact	1	-0.01291	0.01763	-0.73	0.4652
padp	1	0.00023167	0.00016407	1.41	0.1601
actp	1	0.00125	0.00039428	3.18	0.0018

Based upon Final PA Volume

Obs	mpadelt	ppadelt	elasp	elasa	elasd
1	188065.97	191456.17	0.28472	0.27818	0.48239

G.6 WEIGHTED REGRESSIONS

Weighted By Number of Routes

The SAS System

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	1545	222595.34	155029.70	2711.00	843493.00
let	1545	36007.95	26665.41	425.0000000	212665.00
cf	1545	11799.20	9984.98	103.0000000	61573.00
seq	1545	3528.40	6333.08	0	67595.00
cv	1545	4969.46	6975.64	0	88201.00
spr	1545	373.2679612	326.3759862	0	3470.00
dp	1545	9462.31	5817.34	196.0000000	34378.00
dens	1545	71.4975563	105.9993942	0.4480750	738.8297872

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Weight: nrts

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	8.147596E14	5.819712E13	439.94	<.0001
Error	1530	2.023959E14	1.322849E11		
Corrected Total	1544	1.017156E15			

Root MSE	363710	R-Square	0.8010
Dependent Mean	316375	Adj R-Sq	0.7992
Coeff Var	114.96158		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
Intercept	1	-51327	9632.04576	-5.33	<.0001	.
let	1	1.82735	0.30815	5.93	<.0001	0.04289
let2	1	-0.00000299	0.00000154	-1.94	0.0528	0.06130
cf	1	0.68365	0.72985	0.94	0.3491	0.05612
cf2	1	0.00002268	0.00001277	1.78	0.0759	0.06665
seq	1	0.71817	0.56998	1.26	0.2079	0.24555
seq2	1	-0.00003153	0.00001697	-1.86	0.0634	0.25654
cv	1	5.31057	0.54607	9.72	<.0001	0.26189
cv2	1	-0.00006617	0.00000959	-6.90	<.0001	0.29155

Parameter Estimates

Variable	DF	Variance Inflation
Intercept	1	0
let	1	23.31765
let2	1	16.31378
cf	1	17.81788
cf2	1	15.00405
seq	1	4.07245
seq2	1	3.89807
cv	1	3.81842
cv2	1	3.42990

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
spr	1	10.56930	14.78974	0.71	0.4749	0.11567

spr2	1	0.00036777	0.00593	0.06	0.9506	0.14434
dp	1	25.54617	1.48445	17.21	<.0001	0.04846
dp2	1	-0.00032167	0.00004104	-7.84	<.0001	0.05961
dens	1	-519.25519	61.74301	-8.41	<.0001	0.10735
dens2	1	0.56942	0.12525	4.55	<.0001	0.11446

Parameter Estimates

Variable	DF	Variance Inflation
spr	1	8.64559
spr2	1	6.92802
dp	1	20.63613
dp2	1	16.77453
dens	1	9.31517
dens2	1	8.73632

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	Intercept	let	let2	cf	cf2
Intercept	90913136.328	221.05652488	0.0013362916	-2336.66476	0.0445871556
let	221.05652488	0.1495252705	-6.204948E-7	-0.194422627	2.4855198E-6
let2	0.0013362916	-6.204948E-7	3.397018E-12	8.558171E-7	-1.41491E-11
cf	-2336.66476	-0.194422627	8.558171E-7	1.0473680175	-0.000018366
cf2	0.0445871556	2.4855198E-6	-1.41491E-11	-0.000018366	3.882062E-10
seq	445.27970593	-0.004386718	8.2516056E-8	-0.136175637	2.3012811E-6
seq2	0.0070974444	-4.894217E-8	2.577926E-13	1.9672186E-6	-3.24467E-11
cv	-1633.188527	-0.073701706	1.8750564E-7	-0.033937249	1.4064785E-6
cv2	0.0216271038	7.8502615E-7	-1.69536E-12	9.3425868E-7	-2.54112E-11
spr	-3807.542764	0.3483333129	-6.063457E-7	-0.475626647	-8.16852E-6
spr2	-8.376192813	-0.000099059	-1.406747E-9	-0.000023092	3.6394145E-9
dp	-13514.06589	-0.282910677	7.4950939E-7	0.0256475632	1.1181307E-6
dp2	0.4400279126	3.9026916E-6	-6.88841E-12	2.4452179E-6	-9.76583E-11
dens	51558.38191	-3.842315434	0.0000113388	-5.101456527	0.0002135294
dens2	-100.8524164	0.0048952909	-1.748931E-8	0.0078029365	-2.802439E-7

Consistent Covariance of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	445.27970593	0.0070974444	-1633.188527	0.0216271038	-3807.542764
let	-0.004386718	-4.894217E-8	-0.073701706	7.8502615E-7	0.3483333129
let2	8.2516056E-8	2.577926E-13	1.8750564E-7	-1.69536E-12	-6.063457E-7
cf	-0.136175637	1.9672186E-6	-0.033937249	9.3425868E-7	-0.475626647
cf2	2.3012811E-6	-3.24467E-11	1.4064785E-6	-2.54112E-11	-8.16852E-6
seq	0.6156326621	-0.000011613	-0.030956498	3.3512718E-8	0.8144710974
seq2	-0.000011613	3.422467E-10	-7.305067E-7	1.663961E-11	-0.000026135
cv	-0.030956498	-7.305067E-7	0.7421656455	-0.000010396	-4.092138246
cv2	3.3512718E-8	1.663961E-11	-0.000010396	1.945307E-10	0.0000438119
spr	0.8144710974	-0.000026135	-4.092138246	0.0000438119	280.22055685

spr2	0.0000324757	-2.94669E-10	0.0016811442	-2.06192E-8	-0.072222673
dp	-0.197264584	2.4736436E-6	0.3278723998	-3.514821E-6	-9.935839151
dp2	4.6296408E-6	-5.67244E-11	-5.231684E-6	5.353487E-11	0.0001758526
dens	2.5662637493	-0.000028168	-8.187930872	0.0000818252	133.80647702
dens2	0.0004545133	-3.680621E-8	0.0222617536	-2.533685E-7	-0.233715523

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
Intercept	-8.376192813	-13514.06589	0.4400279126	51558.38191	-100.8524164
let	-0.000099059	-0.282910677	3.9026916E-6	-3.842315434	0.0048952909
let2	-1.406747E-9	7.4950939E-7	-6.88841E-12	0.0000113388	-1.748931E-8
cf	-0.000023092	0.0256475632	2.4452179E-6	-5.101456527	0.0078029365

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
cf2	3.6394145E-9	1.1181307E-6	-9.76583E-11	0.0002135294	-2.802439E-7
seq	0.0000324757	-0.197264584	4.6296408E-6	2.5662637493	0.0004545133
seq2	-2.94669E-10	2.4736436E-6	-5.67244E-11	-0.000028168	-3.680621E-8
cv	0.0016811442	0.3278723998	-5.231684E-6	-8.187930872	0.0222617536
cv2	-2.06192E-8	-3.514821E-6	5.353487E-11	0.0000818252	-2.533685E-7
spr	-0.072222673	-9.935839151	0.0001758526	133.80647702	-0.233715523
spr2	0.0000307483	0.0040263829	-1.191288E-7	-0.00054377	0.0000493751
dp	0.0040263829	3.9401282022	-0.000112839	-16.20217207	0.0286101306
dp2	-1.191288E-7	-0.000112839	4.0563328E-9	0.0002063823	-7.369453E-7
dens	-0.00054377	-16.20217207	0.0002063823	4100.7158518	-6.816228572
dens2	0.0000493751	0.0286101306	-7.369453E-7	-6.816228572	0.012693614

Obs	mdelt	pdelt	elasl	elasf	elass
1	222595.34	231369.43	0.25085	0.062154	.007559102

Obs	elasc	elasp	elasd	elasdns
1	0.099937	0.017494	0.79580	-0.13530

The SAS System

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
ffffff

ffffff

Dependent Variable: padelt

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
acdp	1	0.01174	0.00125	9.38	<.0001	0.02972

Parameter Estimates

Variable	DF	Variance Inflation
acdp	1	33.65180

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: padelt

Consistent Covariance of Estimates

Variable	Intercept	pcl	pcl2	act	act2
Intercept	1405024.8534	1905.086506	-0.083647221	-2842.487875	2.7577445567
pcl	1905.086506	53.969825956	-0.020316708	-37.26140808	-0.030415998
pcl2	-0.083647221	-0.020316708	0.0000163268	0.0247351584	-0.00006533
act	-2842.487875	-37.26140808	0.0247351584	253.83744311	-0.360325571
act2	2.7577445567	-0.030415998	-0.00006533	-0.360325571	0.0021149182
dp	-283.4949986	-1.008261311	0.0001669851	-0.589800138	0.0028197425
dp2	0.0052299206	0.0000144137	-1.600833E-8	1.0220345E-6	2.1103759E-7
pact	-20.85801014	-0.029054456	-0.000137665	-0.284654014	0.0015148884
padp	0.1804148396	-0.001857195	1.3452597E-6	0.0037720523	-4.136525E-6
acdp	0.411419059	0.0060557	1.441621E-6	-0.005103068	-0.000068399

Consistent Covariance of Estimates

Variable	dp	dp2	pact	padp	acdp
Intercept	-283.4949986	0.0052299206	-20.85801014	0.1804148396	0.411419059
pcl	-1.008261311	0.0000144137	-0.029054456	-0.001857195	0.0060557
pcl2	0.0001669851	-1.600833E-8	-0.000137665	1.3452597E-6	1.441621E-6
act	-0.589800138	1.0220345E-6	-0.284654014	0.0037720523	-0.005103068
act2	0.0028197425	2.1103759E-7	0.0015148884	-4.136525E-6	-0.000068399
dp	0.0788944173	-1.296842E-6	0.0070459053	-0.000035639	-0.000168069
dp2	-1.296842E-6	9.227244E-11	1.8264162E-7	-9.32837E-10	-1.093066E-8
pact	0.0070459053	1.8264162E-7	0.0031261351	-0.000018764	-0.000070323
padp	-0.000035639	-9.32837E-10	-0.000018764	2.7915853E-7	-2.562767E-8
acdp	-0.000168069	-1.093066E-8	-0.000070323	-2.562767E-8	4.2774833E-6

The SAS System

Obs	mpadelt	ppadelt	elasp	elasa	elasd
1	18352.66	19855.86	0.22267	0.27976	0.58445

Weighted By One over Number of Routes

The SAS System

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	1545	222595.34	155029.70	2711.00	843493.00
let	1545	36007.95	26665.41	425.0000000	212665.00
cf	1545	11799.20	9984.98	103.0000000	61573.00
seq	1545	3528.40	6333.08	0	67595.00
cv	1545	4969.46	6975.64	0	88201.00
spr	1545	373.2679612	326.3759862	0	3470.00
cp	1545	9462.31	5817.34	196.0000000	34378.00
dens	1545	71.4975563	105.9993942	0.4480750	738.8297872

The SAS System
The REG Procedure
Model: MODEL1
Dependent Variable: delt

Weight: invrts

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	1.894116E12	1.35294E11	760.98	<.0001
Error	1530	2.720192E11	177790325		
Corrected Total	1544	2.166135E12			

Root MSE	13334	R-Square	0.8744
Dependent Mean	111911	Adj R-Sq	0.8733
Coeff Var	11.91467		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
Intercept	1	817.41348	1929.34114	0.42	0.6719	.
let	1	1.00383	0.27157	3.70	0.0002	0.03861
let2	1	0.00000277	0.00000201	1.38	0.1693	0.08760
cf	1	1.84472	0.62043	2.97	0.0030	0.05617
cf2	1	0.00000450	0.00001447	0.31	0.7558	0.09826
seq	1	0.69746	0.45646	1.53	0.1267	0.28832
seq2	1	-0.00000461	0.00001527	-0.30	0.7628	0.32478
cv	1	3.46807	0.45883	7.56	<.0001	0.16766
cv2	1	-0.00004236	0.00000814	-5.21	<.0001	0.19623

Parameter Estimates

Variance

Variable	DF	Inflation
Intercept	1	0
let	1	25.89840
let2	1	11.41594
cf	1	17.80202
cf2	1	10.17691
seq	1	3.46838
seq2	1	3.07902
cv	1	5.96442
cv2	1	5.09608

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
spr	1	4.75835	14.24127	0.33	0.7383	0.10160
spr2	1	0.00218	0.00902	0.24	0.8092	0.17386
dp	1	16.00755	0.99101	16.15	<.0001	0.04913
dp2	1	-0.00008899	0.00003644	-2.44	0.0147	0.09723
dens	1	-160.28539	28.29634	-5.66	<.0001	0.11641
dens2	1	0.17395	0.04681	3.72	0.0002	0.12134

Parameter Estimates

Variable	DF	Variance Inflation
spr	1	9.84230
spr2	1	5.75169
dp	1	20.35553
dp2	1	10.28438
dens	1	8.59021
dens2	1	8.24122

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	Intercept	let	let2	cf	cf2
Intercept	1948700.6845	23.257231385	0.0000540611	60.00018954	-0.002378883
let	23.257231385	0.0745129174	-4.960512E-7	-0.066278688	1.0052548E-6
let2	0.0000540611	-4.960512E-7	4.972484E-12	4.0726222E-7	-1.01147E-11
cf	60.00018954	-0.066278688	4.0726222E-7	0.3618584834	-7.577516E-6
cf2	-0.002378883	1.0052548E-6	-1.01147E-11	-7.577516E-6	2.218297E-10
seq	-1.361221583	-0.012272058	5.6890998E-8	-0.02256539	2.0327398E-7
seq2	-0.000644802	1.5486858E-7	-1.12883E-12	3.3519759E-7	-1.72559E-12

cv	-5.28639755	-0.00553286	-2.030697E-8	-0.057043747	8.4485275E-7
cv2	-0.000058512	4.3482692E-8	5.221703E-13	9.3207674E-7	-1.21877E-11
spr	2285.6439068	-0.80374337	8.1259705E-6	-0.7985461	3.2593639E-6
spr2	-1.71711977	0.0004932555	-7.432252E-9	0.0003351623	-3.573865E-9
dp	-885.2567284	-0.129933276	7.3321709E-7	-0.120652382	4.5063994E-6
dp2	0.0431413269	3.1331021E-6	-2.53781E-11	5.7126422E-6	-2.00219E-10
dens	-1655.160477	-1.151070973	8.2738074E-6	-0.433951086	0.0000392667
dens2	-0.014465721	0.0014258369	-1.029876E-8	-0.000730375	-2.580671E-8

Consistent Covariance of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	-1.361221583	-0.000644802	-5.28639755	-0.000058512	2285.6439068
let	-0.012272058	1.5486858E-7	-0.00553286	4.3482692E-8	-0.80374337
let2	5.6890998E-8	-1.12883E-12	-2.030697E-8	5.221703E-13	8.1259705E-6
cf	-0.02256539	3.3519759E-7	-0.057043747	9.3207674E-7	-0.7985461
cf2	2.0327398E-7	-1.72559E-12	8.4485275E-7	-1.21877E-11	3.2593639E-6
seq	0.1769429757	-3.463836E-6	0.0082758252	-1.365024E-7	0.3103037814
seq2	-3.463836E-6	1.139797E-10	-5.831113E-7	1.01172E-11	-0.000012332
cv	0.0082758252	-5.831113E-7	0.2539985493	-4.782437E-6	-0.751657569
cv2	-1.365024E-7	1.01172E-11	-4.782437E-6	1.051442E-10	0.0000108587
spr	0.3103037814	-0.000012332	-0.751657569	0.0000108587	183.75304454
spr2	-0.000014421	2.8975255E-9	0.0006238045	-1.271315E-8	-0.083038303
dp	-0.008743978	1.1419957E-6	-0.024288579	1.1736439E-6	-4.065859861
dp2	5.9357501E-7	-5.6246E-11	2.2453481E-6	-5.74039E-11	0.0001011586
dens	-0.328543895	0.0000147679	-1.073916634	-0.000010541	-14.14947596
dens2	0.0009580678	-2.817836E-8	0.0021068345	3.6668404E-9	0.0400546342

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
Intercept	-1.71711977	-885.2567284	0.0431413269	-1655.160477	-0.014465721
let	0.0004932555	-0.129933276	3.1331021E-6	-1.151070973	0.0014258369
let2	-7.432252E-9	7.3321709E-7	-2.53781E-11	8.2738074E-6	-1.029876E-8
cf	0.0003351623	-0.120652382	5.7126422E-6	-0.433951086	-0.000730375

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
cf2	-3.573865E-9	4.5063994E-6	-2.00219E-10	0.0000392667	-2.580671E-8
seq	-0.000014421	-0.008743978	5.9357501E-7	-0.328543895	0.0009580678
seq2	2.8975255E-9	1.1419957E-6	-5.6246E-11	0.0000147679	-2.817836E-8
cv	0.0006238045	-0.024288579	2.2453481E-6	-1.073916634	0.0021068345
cv2	-1.271315E-8	1.1736439E-6	-5.74039E-11	-0.000010541	3.6668404E-9
spr	-0.083038303	-4.065859861	0.0001011586	-14.14947596	0.0400546342
spr2	0.0000697948	0.0016638912	-7.643362E-8	0.0066947052	-0.000014725
dp	0.0016638912	1.1749672396	-0.000046561	-0.283346572	0.0020853351
dp2	-7.643362E-8	-0.000046561	2.524907E-9	0.0000549471	-1.839273E-7
dens	0.0066947052	-0.283346572	0.0000549471	585.83507752	-0.853289319

dens2	-0.000014725	0.0020853351	-1.839273E-7	-0.853289319	0.001407572

The SAS System

Obs	mdelt	pdelt	elasl	elasf	elass
1	222595.34	216243.20	0.20034	0.10645	0.010850

Obs	elasc	elasp	elasd	elasdns
1	0.070023	0.011023	0.62677	-0.044772

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
padelt	1535	18352.66	15071.74	83.0000000	101197.00
pcl	1535	140.9718241	133.8627136	1.0000000	2044.00
act	1535	58.1087948	54.7023166	1.0000000	545.0000000
dp	1535	8179.28	5128.74	196.0000000	32926.00

The REG Procedure
Model: MODEL1
Dependent Variable: padelt

Weight: invnrts

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	15600014162	1733334907	525.61	<.0001
Error	1525	5029120271	3297784		
Corrected Total	1534	20629134433			

Root MSE	1815.98012	R-Square	0.7562
Dependent Mean	9464.55838	Adj R-Sq	0.7548
Coeff Var	19.18716		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
Intercept	1	-305.88135	256.83812	-1.19	0.2339	.
pcl	1	32.40792	4.51940	7.17	<.0001	0.09830
pcl2	1	-0.00738	0.00363	-2.04	0.0420	0.24445
act	1	41.65193	10.58337	3.94	<.0001	0.09776

act2	1	-0.00952	0.03063	-0.31	0.7561	0.18249
dp	1	1.29187	0.11011	11.73	<.0001	0.08877
dp2	1	-0.00006105	0.00000792	-7.71	<.0001	0.05721
pact	1	-0.18123	0.04579	-3.96	<.0001	0.06507
padp	1	0.00231	0.00042856	5.40	<.0001	0.05977

Parameter Estimates

Variable	DF	Variance Inflation
Intercept	1	0
pcl	1	10.17257
pcl2	1	4.09078
act	1	10.22918
act2	1	5.47988
dp	1	11.26497
dp2	1	17.48056
pact	1	15.36870
padp	1	16.73006

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: padelt

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
acdp	1	0.00756	0.00109	6.94	<.0001	0.05987

Parameter Estimates

Variable	DF	Variance Inflation
acdp	1	16.70206

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: padelt

Consistent Covariance of Estimates

Variable	Intercept	pcl	pcl2	act	act2
Intercept	28344.158816	-123.3469307	0.0618093477	267.93746088	-0.889853094
pcl	-123.3469307	15.927476307	-0.004881215	-8.669178525	0.016505863
pcl2	0.0618093477	-0.004881215	8.5241401E-6	0.005112203	-0.000012289
act	267.93746088	-8.669178525	0.005112203	86.662902296	-0.203010282
act2	-0.889853094	0.016505863	-0.000012289	-0.203010282	0.0006606155
dp	-7.716806833	-0.129950827	0.0000105241	-0.452279872	0.0012377193
dp2	0.0000671652	8.0190698E-6	-1.007734E-8	0.0000119293	-1.035746E-8
pact	-0.69994628	-0.002845754	-0.000112376	-0.058766624	0.0001427558

padp	0.0159839154	-0.000981265	7.4564115E-7	0.0009517131	-1.410714E-6
acdp	0.0185010631	0.0006574911	1.6534666E-6	-0.00208822	-3.010127E-6

Consistent Covariance of Estimates

Variable	dp	dp2	pact	padp	acdp
Intercept	-7.716806833	0.0000671652	-0.69994628	0.0159839154	0.0185010631
pcl	-0.129950827	8.0190698E-6	-0.002845754	-0.000981265	0.0006574911
pcl2	0.0000105241	-1.007734E-8	-0.000112376	7.4564115E-7	1.6534666E-6
act	-0.452279872	0.0000119293	-0.058766624	0.0009517131	-0.00208822
act2	0.0012377193	-1.035746E-8	0.0001427558	-1.410714E-6	-3.010127E-6
cp	0.0081942113	-2.330095E-7	0.0007608569	1.1610836E-6	-0.00001137
cp2	-2.330095E-7	4.403486E-11	1.5537574E-7	-1.583157E-9	-4.928754E-9
pact	0.0007608569	1.5537574E-7	0.0020555293	-0.000010495	-0.000032056
padp	1.1610836E-6	-1.583157E-9	-0.000010495	1.6830265E-7	6.3891287E-8
acdp	-0.00001137	-4.928754E-9	-0.000032056	6.3891287E-8	1.2999005E-6

Obs	mpadelt	ppadelt	elasp	elasa	elasd
1	13352.66	17763.17	0.30723	0.25142	0.48748

G.7 INCLUDING PROBLEMATIC ZIP CODES

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	1601	221249.00	153560.01	2711.00	843493.00
let	1601	36079.07	26569.67	425.0000000	212665.00
cf	1601	11747.40	9997.23	0	61573.00
seq	1601	3480.16	6281.46	0	67595.00
cv	1601	4902.73	6876.70	0	88201.00
spr	1601	372.3566521	327.3385894	0	3470.00
cp	1601	9404.99	5776.75	196.0000000	34378.00
dens	1601	71.5481039	104.9997864	0.4480750	738.8297872

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	14	3.078521E13	2.198943E12	502.24	<.0001
Error	1586	6.943875E12	4378231142		
Corrected Total	1600	3.772908E13			

Root MSE	66168	R-Square	0.8160
Dependent Mean	221249	Adj R-Sq	0.8143
Coeff Var	29.90667		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
Intercept	1	-8770.09565	5031.34990	-1.74	0.0815	.
let	1	1.51849	0.28190	5.39	<.0001	0.04878
let2	1	-0.00000107	0.00000167	-0.64	0.5229	0.07804
cf	1	1.00343	0.65279	1.54	0.1245	0.06425
cf2	1	0.00002144	0.00001300	1.65	0.0991	0.08432
seq	1	0.93434	0.50528	1.85	0.0646	0.27164
seq2	1	-0.00002058	0.00001559	-1.32	0.1869	0.28695
cv	1	4.41881	0.50789	8.70	<.0001	0.22433
cv2	1	-0.00005327	0.00000875	-6.09	<.0001	0.24647
spr	1	9.35840	14.36455	0.65	0.5148	0.12377

Parameter Estimates

Variance

Variable	DF	Inflation
Intercept	1	0
let	1	20.50178
let2	1	12.81375
cf	1	15.56434
cf2	1	11.85893
seq	1	3.68139
seq2	1	3.48492
cv	1	4.45776
cv2	1	4.05729
spr	1	8.07979

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
spr2	1	0.00266	0.00710	0.38	0.7076	0.16430
dp	1	17.82556	1.16340	15.32	<.0001	0.06058
dp2	1	-0.00013412	0.00003645	-3.68	0.0002	0.08448
dens	1	-274.20289	41.91134	-6.54	<.0001	0.14130
dens2	1	0.28487	0.07896	3.61	0.0003	0.14631

Parameter Estimates

Variable	DF	Variance Inflation
spr2	1	6.08653
dp	1	16.50616
dp2	1	11.83767
dens	1	7.07719
dens2	1	6.83474

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	Intercept	let	let2	cf	cf2
Intercept	16533942.466	-119.9864627	0.0015592936	-85.00219458	0.000161251
let	-119.9864627	0.0910643654	-4.751519E-7	-0.092810787	1.1699807E-6
let2	0.0015592936	-4.751519E-7	3.692042E-12	4.7143725E-7	-9.37489E-12
cf	-85.00219458	-0.092810787	4.7143725E-7	0.5561128553	-0.000010807
cf2	0.000161251	1.1699807E-6	-9.37489E-12	-0.000010807	2.757969E-10
seq	48.479275361	-0.007403917	6.0469983E-8	-0.051461066	6.8369329E-7
seq2	-0.000286219	-2.881107E-8	1.252787E-13	7.1717227E-7	-8.55709E-12
cv	-400.018605	-0.008010875	-6.818117E-8	-0.10043825	2.1564793E-6

cv2	0.0049138837	4.8610604E-8	1.182755E-12	1.5236083E-6	-2.99194E-11
spr	12724.037977	-0.517970796	5.2051669E-6	-0.527200767	-1.379515E-6
spr2	-9.0702092	0.000288691	-4.618887E-9	0.0001184923	-1.503639E-9
dp	-3965.994163	-0.141802541	4.9979125E-7	-0.162484943	5.4181847E-6
dp2	0.172957521	2.2389724E-6	-1.10126E-11	7.1777202E-6	-2.24688E-10
dens	20576.914456	-2.257041447	0.0000115719	-0.130827288	0.0000638846
dens2	-43.35263372	0.0037081579	-2.065791E-8	-0.0015503	-5.031417E-8

Consistent Covariance of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	48.479275361	-0.000286219	-400.018605	0.0049138837	12724.037977
let	-0.007403917	-2.981107E-8	-0.008010875	4.8610604E-8	-0.517970796
let2	6.0469983E-8	1.252787E-13	-6.818117E-8	1.182755E-12	5.2051669E-6
cf	-0.051461066	7.1717227E-7	-0.10043825	1.5236083E-6	-0.527200767
cf2	6.8369329E-7	-8.55709E-12	2.1564793E-6	-2.99194E-11	-1.379515E-6
seq	0.2843858266	-5.24183E-6	-0.015133464	6.440135E-8	0.3459801552
seq2	-5.24183E-6	1.565645E-10	-4.665678E-7	9.478083E-12	-0.000012746
cv	-0.015133464	-4.665678E-7	0.4107824024	-6.553474E-6	-1.830768905
cv2	6.440135E-8	9.478083E-12	-6.553474E-6	1.321949E-10	0.0000214029
spr	0.3459801552	-0.000012746	-1.830768905	0.0000214029	209.71254883
spr2	0.0000774471	-1.48912E-10	0.0009909871	-1.490926E-8	-0.070382344
dp	-0.039532433	1.8066131E-6	0.0936775829	-2.855699E-7	-8.124106785
dp2	5.9483224E-7	-5.94104E-11	-1.142428E-6	-1.17899E-11	0.0002166978
dens	0.3941628652	0.0000140786	-5.272113741	0.0000388392	10.558372466
dens2	0.0003502962	-3.576086E-8	0.0111729102	-1.078483E-7	-0.033587577

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
Intercept	-9.0702092	-3965.994163	0.172957521	20576.914456	-43.35263372
let	0.000288691	-0.141802541	2.2389724E-6	-2.257041447	0.0037081579
let2	-4.618887E-9	4.9979125E-7	-1.10126E-11	0.0000115719	-2.065791E-8
cf	0.0001184923	-0.162484943	7.1777202E-6	-0.130827288	-0.0015503

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
cf2	-1.503639E-9	5.4181847E-6	-2.24688E-10	0.0000638846	-5.031417E-8
seq	0.0000774471	-0.039532433	5.9483224E-7	0.3941628652	0.0003502962
seq2	-1.48912E-10	1.8066131E-6	-5.94104E-11	0.0000140786	-3.576086E-8
cv	0.0009909871	0.0936775829	-1.142428E-6	-5.272113741	0.0111729102
cv2	-1.490926E-8	-2.855699E-7	-1.17899E-11	0.0000388392	-1.078483E-7
spr	-0.070382344	-8.124106785	0.0002166978	10.558372466	-0.033587577
spr2	0.000044234	0.0034160956	-1.288091E-7	-0.00194443	0.0000287163
dp	0.0034160956	2.0966041738	-0.000076364	-5.355045098	0.0127081705
dp2	-1.288091E-7	-0.000076364	3.5277777E-9	0.0002281858	-6.929238E-7
dens	-0.00194443	-5.355045098	0.0002281858	1326.4089853	-2.284207725
dens2	0.0000287163	0.0127081705	-6.929238E-7	-2.284207725	0.0044341051

Obs	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	let	let2
1	MODEL1	PARMS	delt	66168.20	-8770.10	1.51849	-.000001067

Obs	cf	cf2	seq	seq2	cv	cv2	spr
1	1.00343	.000021442	0.93434	-.000020582	4.41881	-.000053274	9.35840

Obs	spr2	dp	dp2	dens	dens2	delt
1	.002663898	17.8256	-.000134125	-274.203	0.28487	-1

Obs	mdelt	pdelt	elasl	elasf	elass
1	221249.00	223870.11	0.23231	0.079090	0.012298

Obs	elasc	elasp	elasd	elasdns
1	0.085331	0.018865	0.64288	-0.074606

G.8 ESTIMATING A TRANSLOG SPECIFICATION

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
vol	1545	56678.28	39546.92	704.0000000	264745.00
dp	1545	9462.31	5817.34	196.0000000	34378.00
dens	1545	71.4975563	105.9993942	0.4480750	738.8297872

The REG Procedure
Model: MODEL1
Dependent Variable: lndelt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	1023.91481	113.76831	1074.15	<.0001
Error	1535	162.57860	0.10591		
Corrected Total	1544	1186.49340			

Root MSE	0.32544	R-Square	0.8630
Dependent Mean	12.02080	Adj R-Sq	0.8622
Coeff Var	2.70735		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	12.23374	0.01221	1002.28	<.0001
lnvol	1	0.33995	0.02447	13.89	<.0001
lnvol2	1	0.04288	0.02942	1.46	0.1452
lndp	1	0.70197	0.02596	27.04	<.0001
lndp2	1	0.08851	0.03849	2.30	0.0216
lndens	1	-0.09530	0.00994	-9.59	<.0001
lndens2	1	-0.01653	0.00331	-4.99	<.0001
voldp	1	-0.07538	0.06016	-1.25	0.2104
voldens	1	-0.02891	0.01615	-1.79	0.0738
dpdens	1	-0.00701	0.01711	-0.41	0.6822

Response of Postal Service Witness Michael D. Bradley
To OCA Interrogatories

OCA/USPS-T14-12. Please refer to your testimony, page 16, line 15 to page 17, line 11. You indicate that a typical mail route may have two to four sections, each of which has a dominant delivery technology. You further state in your testimony, page 20, lines 7-11, "Note that it was not feasible to measure volumes by individual route section but only by route. As a result, separate econometric models cannot be estimated for each of the different delivery technologies and only a single delivery time variability can be derived." In responding to OCA/USPS-T14-1(b)iii, you indicate that "only a single delivery mode [is] defined for each route in a Zip Code and this does not change."

a. For every route, consisting of possibly two to four sections, is it correct that each section will have the same dominant delivery technology? If your answer is negative, please discuss in detail.

b. Your testimony and interrogatory response appear contradictory. Could you please explain the matter further.

OCA/USPS-T14-12 Response:

a. No. For example, the first section on a route may be a curbline section which is then followed by an NDCBU section.

b. I don't think that there is a contradiction. Perhaps you thought there was a contradiction because you were unaware that the Postal Service will classify a route with a single "mode" even though the route may contain different delivery technologies. It is my understanding that this happens routinely. It is also my understanding that "mode" is only a guide to the nature of delivery on the route and not a guarantee that the route technology is completely homogenous.

Response of Postal Service Witness Michael D. Bradley
To OCA Interrogatories

OCA/USPS-T14-16. Please refer to your testimony, page 31, lines 2-3, identifying the time period over which data were collected. How do you know that the data collected over the two week time period were representative of carrier data on a yearly basis?

OCA/USPS-T14-16 Response:

The end of May/beginning of June time period was selected because it is characterized by neither seasonal volume peaks nor seasonal volume troughs. In that sense it is thought to be representative. For my econometric analysis, the key issue is the *matching* of the delivery time data with the delivered volume. This was accomplished by simultaneously collecting the times and volumes across of cross section of Zip Codes.

Response of Postal Service Witness Michael D. Bradley
To OCA Interrogatories

OCA/USPS-T14-19. Please refer to your testimony, page 20, lines 14-16, where you state:

> *There is some fixed route time involved in traversing the route sections and this is included in the time pool. Its fixity will work into the estimated variability.*

a. Please further clarify the meaning of each sentence.
b. Does the first sentence mean that transit time between two separate sections of a route was not scanned out?
c. As a result of the activity associated with the second sentence, will volume variability be lower than would otherwise be the case?

OCA/USPS-T14-19 Response:

a. The sentence is intended to suggest that as the carrier works the delivery section, there will be some time that is spent traversing the *section* that is not related to volume. If you are familiar with the established approach to city carrier street time, this time is called "route time" in that approach.

b. No. This sentence is intended to discuss time within delivery sections and does not refer to the time spent traveling between sections. The time traveling between route sections was scanned and is included in the Network Travel Time pool.

c. Whether this time is included in the regular delivery time cost pool, as is done in the proposed new methodology, or treated as its own cost pool (with near zero variability) as in the established methodology, should not affect the variability of city carrier street time. I believe that it is difficult to accurately measure the

amount of this "route time" to form its own time pool, so the proposed new approach should improve the accuracy of the Postal Service's street time analysis. For a comparison of the variabilities under the two methods please see Table 19 of my testimony. It is reproduced below for convenience:

Table 19
Estimating the Effects of the Proposed Methodology

Established Methodology

	Percentage of Cost	Variability
Load Time	25.3%	69.5%
Access Time	27.7%	21.0%
Route Time	29.8%	4.7%
Total	**82.8%**	**29.9%**

Proposed Methodology

	Percentage of Cost	Variability
Regular Delivery	72.3%	41.1%
P/A Delivery	5.6%	53.5%
Network Travel	11.4%	0.0%
Total	**89.3%**	**36.6%**

Response of Postal Service Witness Michael D. Bradley
To OCA Interrogatories

OCA/USPS-T14-24. Please refer to your response to OCA/USPS-T14-5. Please review the computer code for the calculations for the full quadratic model. Please also note the computer code below, which is identical to the computer code you presented except for one change, the addition of a "+" sign, which has been highlighted in 18 point type. Please confirm that this modification is correct.

```
data mtal1; merge coef1 regmean (drop=_TYPE_);

mtl=(let*mlet +2*let2*mlet*mlet +
lf*mlet*mcf+lse*mlet*mseq+lcv*mlet*mcv+lspr*mlet*mspr
+ldp*mlet*mdp+ldns*mlet*mdens)/mlet;
mtf=(cf*mcf +2*cf2*mcf*mcf
+lf*mlet*mcf+fse*mcf*mseq+fcv*mcf*mcv+fspr*mcf*mspr
+fdp*mcf*mdp+fdns*mcf*mdens)/mcf;
mts=(seq*mseq +2*seq2*mseq*mseq
+lse*mlet*mseq+fse*mcf*mseq+scv*mseq*mcv+sspr*mseq*mspr
+sdp*mseq*mdp+sdns*mseq*mdens)/mseq;
mtc=(cv*mcv +2*cv2*mcv*mcv  +lcv*mlet*mcv+fcv*mcf*mcv+scv*mseq*mcv+cspr*mcv*mspr
+cdp*mcv*mdp+cdns*mcv*mdens)/mcv;
mtp=(spr*mspr +2*spr2*mspr*mspr
+lspr*mlet*mspr+fspr*mcf*mspr+sspr*mseq*mspr+cspr*mcv*mspr
+spdp*mspr*mdp+spdns*mspr*mdens)/mspr;

proc print data=mtal1;
var mtl mtf mts mtc mtp ;
```

OCA/USPS-T14-24 Response:

Confirmed. Please note in calculating the estimated marginal times presented in my response to OCA/USPS-T15-5, the "+" sign was included where you indicate it should be. It was inadvertently dropped from the code in preparing the interrogatory response.

Response of Postal Service Witness Michael D. Bradley
To OCA Interrogatories

OCA/USPS-T14-25. Please refer to Library Reference USPS-LR-K-81. The three databases TIMEPOOL MDATA.PRN, LFVOLUME MDATA.PRN, AND PAVOLUME MDATA.PRN each have a variable denoted as "ZIP".

a. Please confirm that the numbering is consistent between databases, i.e., that ZIP 2222220 is the identical ZIP Code between databases.

b. The ZIP Codes in Density appear to be different in some cases from those in the three previously mentioned databases. Please confirm that the ZIP Codes in Density are consistent with the ZIP Codes in the other three databases.

c. The ZIP Codes in PA159.PRN and AL161ZIPS.PRN do not immediately appear to be consistent with the databases TIMEPOOL MDATA.PRN, LFVOLUME MDATA.PRN, AND PAVOLUME MDATA.PRN. Please explain how the ZIP Codes are related. If the ZIP Codes are not related, please explain the use of PA159.PRN and AL161ZIPS.PRN.

Response:

a. Confirmed.

b. Confirmed. Please note that the Zip Codes in the density file include all Zip Codes included in the Census dataset. This means that the density file will include many more Zip Codes than the other files (which are limited to the Zip Codes included in the study).

c. Please see the response to OCA/USPS-T15-4d.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by the OCA

OCA/USPS-T14-26. Please refer to your testimony USPS-T-14. One of the variables you use is the number of delivery points.

a. Is the number of the delivery points the potential number of delivery points? If your answer is affirmative, please furnish the number of actual delivery points by route day. If these data are not available, please explain.

b. If your answer is that the delivery points are the number of actual delivery points, please furnish the number of potential delivery points by route day. If these data are not available, please explain.

OCA/USPS-T14-26 Response:

a. The number of delivery points in the econometric regressions is possible or potential delivery points. Actual delivery points are defined as those possible delivery points which receive mail on a given day. It is very time consuming for city carriers to record which of their possible deliveries are actual deliveries, so during the CCSTS, data on actual deliveries were not collected.

b. Please see my answer to a.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by the OCA

OCA/USPS-T14-27. In your testimony, USPS-T-14, you present two versions of a quadratic function as well as consideration of the translog function. A variety of other flexible functions are available in the literature--*e.g.*, Fourier Flexible Function, Generalized Leontief--as well as the nonflexible Cobb Douglas function.

a. Did you consider these or any other alternative functional forms? Please explain your answer, indicating your reasons.

b. If or as you considered alternative functional forms, would you have used any test statistics as an aid in choosing your functional form? Please explain.

OCA/USPS-T14-27 Response:

a. I considered just the quadratic and translog functional forms presented in my testimony. I presented the reasons behind this choice on page 28 of my testimony, the two functional forms investigated are flexible and they have been successfully used in previous Postal Rate Commission and academic analyses of carrier street time:

> If there is technological or other knowledge about the underlying cost generation process, this can be used to guide functional form selection. If not, there are advantages to selecting a flexible functional form in attempting to measure the responsiveness of cost to volume changes. Finally, one can review previous work to identify functional form selections for similar modeling efforts.
>
> In the area of city carrier delivery, previous work has shown the quadratic functional form to be useful. It was specified by both the Postal Service and the Commission in estimating models for load time and access time. These two components make up the overwhelming majority of volume variable delivery time, so the application of a quadratic form would be appropriate for delivery time.
>
> The quadratic functional form also has the advantage of being a flexible functional form in the sense that it plays no restrictions on the first and second order derivatives. Thus it is agnostic, *a priori*, about the absence or presence

> of scale or network economies that lead to variabilities being less that one hundred percent. The primary alternative flexible functional form is the translog.[1] (Footnote in original)

b. The specifics would depend upon the functional forms being investigated, but there could be situations in which test statistics could be of aid in selecting a functional form.

---

[1] For an example of a translog model estimated for delivery, see Cazals, Catherine, Florens, Jean-Pierre, and Soteri, Soterios, "Delivery Costs for Postal Services in the UK: Some Results on Scale Economies with Panel Data," in Regulatory and Economic Challenges in the Postal and Delivery Sector, Michael Crew and Paul Kleindorfer (eds.), Kluwer, 2005. Cazals, Florens, and Soterios include aggregate volume, delivery points and the geographical area covered by delivery in their equation. Interestingly, they find an overall elasticity of delivery cost with respect to volume of 41.8 percent. The sum of the shape variabilities from the quadratic model estimated below is quite close to this result, at a value of 41.1 percent.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-28. This question references the Timepool data set and the SAS program "Estimating the Delivery Equations". The SAS program is found in USPS-LR-K-81 – Econometric Analysis of City Carrier Street Time. A small number of observations have non-numeric route ids (please see lines 23-32 of the "Attachment to Interrogatory OCA/USPS-T14-28"). Please explain why the route ids are non-numeric and the significance of the designation.

(a) Why are the routes recoded as 11.1?
(b) Do the recoded routes ever match any data in the volume data sets? If so, please provide information on which data items match.

OCA/USPS-T14-28 Response

In a small number of instances, the carrier recorded a non-numeric route id. There is no particular significance to the designation.

a. The routes were recoded to change the alphanumeric character to a numeric character. This allowed tracing their data path along with the other observations.

b. No.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-29. This question references the Timepool data set. How was the delivery mode variable assigned a value (C,D,F,O,P,X) for a route if the route used more than one delivery method?

OCA/USPS-T14-29 Response:

Delivery mode was not assigned a value within the study. Delivery mode was taken from the designation of the route within the Postal Service's Address Management System.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-30. In the Letters/Flats volume data there are 686 observations for Sundays or Memorial Day. Please explain why these observations are included. In addition, approximately 650 observations appear to have inconsistently coded dates (i.e. 4-Jun rather than 06/04/02).

(a) Is it correct that these observations were dropped in your analysis?
(b) Can these observations be used in the analysis if the date codes are corrected? Please explain in detail.

OCA/USPS-T14-30 Response

a. Yes.

b. The fact that there are 686 observations for Sundays or Memorial Day does not mean volume data were recorded for all these route days. The overwhelming majority of these observations come from of Zip Codes sending in zero volumes for the day. Of the 686 observations, only 79 observations have positive values for volume. As it turns out, these observations are from just 3 Zip Codes across just two days, Memorial Day and June 2. Please note that no scan times were recorded for those days, so these observations were not included in the regression analysis.

There are 662 observations that have apparently mis-coded dates (i.e. 4-Jun or 06/04/200 instead of 06/04/2002.) These observations come from three Zip Codes. If one were to assume that the dates were otherwise correct, these could be recovered. Doing so increases the analysis data set for the regular delivery equation from 1,545 Zip Code day observations to 1,557 (an increase of 12). If

the regular delivery model is estimated on the 1,557, it produces the following variabilities:

Variabilities for Regular Delivery

Shape	Based upon 1,557 Obs. Variability
Letters	22.27%
Flats	7.10%
Sequenced	1.29%
Collection	8.79%
Small Parcels	1.57%

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-31. In the Parcels/Accountables volume data there are 9639 observations for Sundays and holidays. Most, but not all, data values are zero.
(a) What is the purpose/cause of origination of these observations?
(b) Can/should the observations be dropped from the analysis?

OCA/USPS-T14-31 Response:

a. The letter/flat data collection effort followed the established Postal Service protocol which designated collecting volume data for only business days (6 days or during holiday weeks, 5 days). This protocol does not include collecting parcel and accountable data and that data was collected by hand form. All these data were keypunched (double entry). The parcel/accountable forms include spaces for Sundays so the parcel/accountable data were recorded as zeros for the Sunday spaces and thus entered for all seven days. As your question points out only 82 of the 9,639 observations have positive values for parcels or accountables.

b. There were no scan times collected for Sundays and holidays, so these observations were not and could not be included in the analysis.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

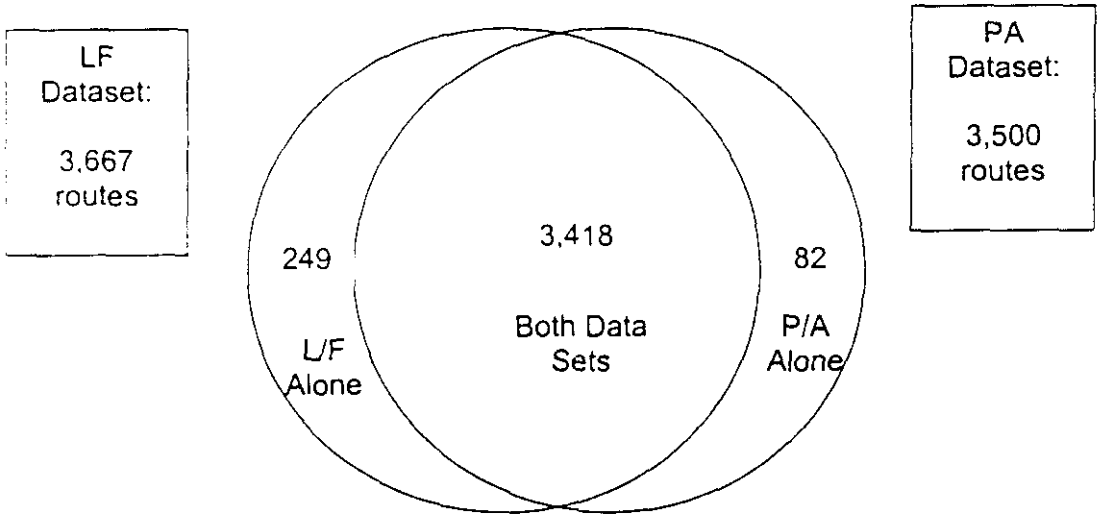
OCA/USPS-T14-32. There appears to be inconsistency in the route codes between the Letters/Flats and Parcels/Accountables data sets. Approximately 6,000 out of 42,000 route/date observations only appear in one of the output data sets. For example, ZIP 275455 has 43 routes in common, 2 routes that are unique in the PA data set and 17 that are unique in the LF data set. What are the reasons for the discrepancies? Please explain in detail.

OCA/USPS-T14-32 Response:

I think the main reason for mismatch is problems on the date, instead of problems with the route number. As you point out in OCA/USPS-T14-31, there are 9,639 observations on the parcel/accountable data set for Sundays and Holidays. Almost none of these observations show up on the letter/flat volume data set leading to a large number of route days showing up on only the parcel/accountable data set.

To further investigate the route vs. date issue, consider the results of merging the data sets on route number alone. There are 3,667 unique route numbers in the letter/flat data set and 3,500 on the parcel/accountable data set. The reason fewer routes show up on the parcel accountable data set is because this submission required hand counting the volume, completing paper forms, and successfully getting those paper forms back to Postal Service Headquarters. It is reasonable to believe that this reduced the number of routes that successfully supplied the data. (Also, Zip Codes are familiar with counting parcels and accountables, on a day-to-day basis, like they are for letters and flats.) Merging the data sets on route number provides 3,418 common route numbers, 82 which are unique to the parcel/accountable data set and 249 which are

unique to the letter flat data set. The following Venn diagram illustrates the merge on route number alone:



This pattern is also illustrated by the Zip Code that you cite in the question, although the problem is worse, in proportion, for that particular Zip Code. Specifically, the Zip Code did not report parcel/ accountable data for certain routes. The following table shows that there is a concordance between the route numbers, but there are 17 instances in which the Zip Code simply failed to report its parcel/accountable data. This most likely occurred for the reasons discussed above. The two routes for which only parcel/accountable data were provide are different from the other routes and could, for example, represent a misreporting of some special purpose routes.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

Please also note that just 7 Zip codes account for two thirds of the instances in which there was no parcel/accountable data reported. Also, just 3 Zip Codes account for 60 percent of the times no letter/flat data were reported for a route.

Reporting Pattern for Volume Data Across Routes
ZIP Code 275455

Route Number	LF Data	PA Data	Route Number	LF Data	PA Data
1	Yes	No	34	Yes	Yes
2	Yes	Yes	35	Yes	Yes
3	Yes	Yes	36	Yes	Yes
4	Yes	Yes	37	Yes	No
5	Yes	No	38	Yes	Yes
6	Yes	Yes	39	Yes	Yes
7	Yes	Yes	40	Yes	No
8	Yes	Yes	41	Yes	Yes
9	Yes	Yes	42	Yes	Yes
10	Yes	No	43	Yes	Yes
11	Yes	Yes	44	Yes	Yes
12	Yes	Yes	45	Yes	Yes
13	Yes	Yes	46	Yes	Yes
14	Yes	Yes	47	Yes	Yes
15	Yes	Yes	48	Yes	Yes
16	Yes	Yes	49	Yes	No
17	Yes	Yes	50	Yes	Yes
18	Yes	Yes	51	Yes	Yes
19	Yes	Yes	52	Yes	No
20	Yes	Yes	53	Yes	Yes
21	Yes	Yes	54	Yes	No
22	Yes	No	55	Yes	Yes
23	Yes	No	56	Yes	Yes
24	Yes	Yes	57	Yes	No
26	Yes	No	58	Yes	No
27	Yes	Yes	59	Yes	Yes
28	Yes	No	60	Yes	No
29	Yes	Yes	61	Yes	Yes
30	Yes	Yes	62	Yes	No
32	Yes	Yes	75	No	Yes
33	Yes	No	99	No	Yes

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-33. In the parcels delivery equation, an observation is only kept if the number of large parcels (PCL) and accountables (ACT) are both >0. (Please refer to lines 389, 390 in "Attachment to Interrogatory OCA/USPS-T14-28"). Why don't you use observations where only one of these is positive?

OCA/USPS-T14-33 Response:

I decided to eliminate the observations in this way because I felt it unusual for an entire Zip Code to receive no parcels on a given day. I made a similar assumption about accountables. This means the logic of the program required dropping a Zip Code day observation if large parcels or accountables were zero for that day. As the question points out, an alternative approach would be to specify the logic of the program to drop an observation only if large parcels and accountables were zero for that day. This alternative approach yields more Zip Day observations (and increase of 77 over the 1,535) variabilities and slightly lower variabilities for parcels (28.5% vs. 26.4%). The accountable variability stays about the same (25.0% vs. 25.8%).

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-34. When the Letters/Flats and Parcels/Accountables volume data sets are merged, only the ZIP/route/date observations that are present in both volume data sets are kept. Since no data from the Letters/Flats volume data set is used to estimate the "parcel delivery" equations, why are these data points eliminated when estimating the parcel delivery equation? Please explain in detail why this occurs.

OCA/USPS-T14-34 Response

In pursuing this research, I first created the analysis data set by combining the time data set and the two volume data sets. This analysis data set included Zip Code days for which we had received matching data from all three of the data collection efforts. Subsequent to creation of the analysis data set, I began the estimation analysis and it proceeded on the complete data set. As the question points out, an alternative approach would have been to go back on create a separate parcel/accountable data set. However, because the primary reason for mismatch is misalignment between the time data set and the volume data set, this would have produced only a small number of additional work days and would likely not have a material impact on the estimated variabilities.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-35. In constructing the data to estimate the equation for parcels, route/date observations with (time=0 and volume>0) or (time>0 and volume=0) were deleted before aggregation to the ZIP code level. (Lines 370, 371 in "Attachment to Interrogatory OCA/USPS-T14-28").

(a) Was a similar requirement placed on the data used in the regular delivery equation? If so, please explain and identify the SAS code.

(b) If not, please identify how many route/date observations were included where delt=0 and volume>0 or where delt>0 and volume=0.

OCA/USPS-T14-35 Response.

a No.

b. There were 1,845 observations in which delt=0 and volume >0 and 50 observations in which delt >0 and volume =0.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-36. There is a group of ZIP codes (1660939, 8365476, 3341404,8885626, 3333330, 6617639) that is dropped because of data problems. Please explain for each ZIP Code what the problems were and why the ZIP Codes were dropped.

OCA/USPS-T14-36 Response:

These Zip Codes were dropped because of concern that for certain days a number of the route numbers on the time data set were either missing or inconsistent with standard route number designations. To evaluate the concern, the equation was estimated with them omitted. However, please note that the equation was also estimated with these Zip Codes included. Those results are presented on page 54 of my testimony. As I state there:

> This table shows that omitting the potentially problematic Zip Codes had little impact on the estimated variabilities. There are sufficient data without their inclusion to successfully estimate the equations and their omission does not cause material movements in the estimated variabilities. Thus, because of potential data problems, the preferred approach is to drop them from the regression analysis.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by OCA

OCA/USPS-T14-37. In the SAS program "Estimating the Delivery Equation.sas" provided in LR-K-81 a variable "pdelt" is constructed on lines 294 and 337 and then used in the calculation of the volume elasticities. The formula for pdelt has a term "spr2*mspr". The SAS log file provided in response to ADVO-USPS-T14-2 instead contains the term "spr2*mspr*mspr" in this formula.

(a) Please state whether the formula in the program or the log file is correct.

(b) Which formula was used to construct the elasticity estimates reported in the output file "Estimating the Delivery Equation.lst" provided in LR-K-81? If the incorrect formula was used, please provide corrected output.

RESPONSE:

a. Please see my response to Question 4 of Presiding Officers Information Request #6.

b.

Variabilities for Regular Delivery

Shape	Corrected Variability	Original USPS-T14 Variability
Letters	22.27%	22.28%
Flats	7.12%	7.12%
Sequenced	1.29%	1.29%
Collection	8.81%	8.82%
Small Parcels	1.58%	1.58%

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by the OCA
Redirected from Witness Dennis P. Stevens

OCA/USPS-T15-1. Please refer to your testimony at page 24, lines 8-9. You state, "Bulk delivery data were not used in the final analysis."

a. Who made the decision not to use bulk delivery data?
b. What were the reasons for not using the data?
c. How was the time for bulk deliveries treated in witness Bradley's analyses?
f. Please provide, in electronic form, any and all econometric computer programs and output that utilized the bulk delivery data.

Response:

a. I made the decision to not use the bulk delivery variable in the econometric regression.

[illegible] the delivery of a [illegible] a sack containing [illegible] different individual pieces. For example, a bulk delivery may take place in the course of regular delivery within a delivery section when a carrier makes a [illegible]

there are very few bulk deliveries. Only 15% of the route days included in the regression data set had any bulk deliveries and only 5% had more than two (out of an average of 485 delivery points).

I decided not to include the bulk deliveries variable in the econometric equation for the following four reasons. First, the bulk deliveries variable is not a volume variable; instead it is a measurement of the number of bulk deliveries that took place in a Zip Code. As such, it cannot be directly used to estimate a volume variability. Second, as mentioned above, bulk deliveries turn out to be a very low

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by the OCA
Redirected from Witness Dennis P. Stevens

frequency event. The existence of a bulk delivery leads to a *de minimis* addition to the Zip Code's regular delivery time. Third, there is no measure for the number of pieces delivered in a bulk delivery. This reason is related to the first reason and reinforces the decision not to include the variable. Specifically, the inability to directly measure a volume variability could be mitigated if the volumes within bulk deliveries were available. Then, one could estimate or construct the elasticity of the number of bulk deliveries with respect to the volume being delivered. However, because the volumes within bulk deliveries are not available, this method of approximation is not possible. Fourth, there is no distribution key for bulk deliveries. An assumption would have to be made on how to distribute the costs to classes and subclasses. When viewed together, [illegible] indicate that the [illegible] measuring the volume variable cost of street time delivery and omitting them would not cause a problem for the estimation.

c. The time associated with bulk deliveries would be included in the regular delivery time.

f. As mentioned above, the bulk deliveries were not used in the econometric equations. The bulk delivery variable is already included in the program, ESTIMATING DELIVERY EQUATIONS.SAS which is provided in Library Reference LR-K-81.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 6, QUESTION 5

5. Refer to USPS-T-14. Please confirm that the SAS code in the file entitled "Estimating Delivery Equations, found in LR-K-81, should have included the variable "mspr" in the location shown below where it is underlined, bolded and enlarged.

(a) data elascal1; merge coef1 regmean (drop=_TYPE_);
pdelt=intercept+let*mlet+let2*mlet*mlet+cf*mcf+cf2*mcf*mcf+seq*mseq+seq2*mseq*mseq+spr*mspr+spr2*mspr*<u>mspr</u>+cv*mcv+cv2*mcv*mcv+dp*mdp+dp2*mdp*mdp+dens*mdens+dens2*mdens*mdens+lf*mlet*mcf+lse*mlet*mseq+lcv*mlet*mcv+lspr*mlet*mspr+ldp*mlet*mdp+fse*mcf*mseq+fcv*mcf*mcv+fspr*mcf*mspr+fdp*mcf*mdp+scv*mseq*mcv+sspr*mseq*mspr+sdp*mseq*mdp+cspr*mcv*mspr+cdp*mcv*mdp+spdp*mspr*mdp+ldns*mlet*mdens+fdns*mcf*mdens+sdns*mseq*mdens+cdns*mcv*mdens+spdns*mspr*mdens+dpdns*mdp*mdens;

(b) data elascal2; merge coef2 regmean
(drop=_TYPE_);pdelt=intercept+let*mlet+let2*mlet*mlet+cf*mcf+cf2*mcf*mcf+seq*mseq+seq2*mseq*mseq+spr*mspr+spr2*mspr*<u>mspr</u>+cv*mcv+cv2*mcv*mcv+dp*mdp+dp2*mdp*mdp+dens*mdens+dens2*mdens*mdens;

If confirmed, please provide a corrected SAS program, output, and log.

RESPONSE:

Confirmed. For comparison purposes the original recommended variabilities and the variabilities resulting from this correction are presented below. Electronic versions of the SAS program, log and listing are attached to this response.

Variabilities for Regular Delivery

Shape	Corrected Variability	Original USPS-T14 Variability
Letters	22.27%	22.28%
Flats	7.12%	7.12%
Sequenced	1.29%	1.29%
Collection	8.81%	8.82%
Small Parcels	1.58%	1.58%

ATTACHMENT TO RESPONSE, POIR NO. 6, ITEM 5

SAS PROGRAM:

```
options linesize=80;
options nocenter;
options nodate;
options nonumber;
filename timedat 'c: Timepool Mask.prn';
filename lfvol 'c: LFVolume Mask.prn';
filename pavol 'c: PAvolume Mask.prn';
filename dense 'c: density Mask.prn';

*****************************;
*** Read in Time Data ********;
*****************************;
DATA time1; infile timedat;
Input  date $ zip rt $  bud bed bnd bod rud red rnd rod mode $
       lfdt cudt ncdt vmdt cedt dmdt nst prt ttft ntt ddtt trvlt
       rlt gct ect pdt adt padt oct nat;

******************************************************************* ;
*** This section of the program converts alphabetic route numbers*** ;
***   and constructs a unique Zip-Route ID for each route**************;
*****************************************************************;

Data time2; set time1;
if rt = 'XX' then rt=99.9;
if rt = 'DA' or rt = 'DB' or rt = 'DD' or rt = 'DE' or rt = 'DW'
or rt = '4A'  or rt = '4A'  or rt = '4B'  or rt = 'AT'  or rt = 'C2'
or rt = 'C3'  or rt = 'CA'  or rt = 'CK'  or rt = 'CT'  or rt = 'CV'
or rt = 'ES'  or rt = 'EV'  or rt = 'F1'  or rt = 'G5'  or rt = 'HK'
or rt = 'IT'  or rt = 'L1'  or rt = 'L3'  or rt = 'L7'  or rt = 'MD'
or rt = 'MF'  or rt = 'O1'  or rt = 'O2'  or rt = 'O5'  or rt = 'O7'
or rt = 'OL'  or rt = 'P1'  or rt = 'P2'  or rt = 'RE'  or rt = 'UX'
or rt = 'VY'  or rt = 'W8'  then nrt=11.1;
else nrt=rt;
rtind=nrt/100;
ziprt=zip+rtind;

******************************************************************* ;
*** This section of the program eliminates              ************** ;
***   any duplicate Zip-route, day observations in the time data*******;
*****************************************************************;
proc sort; by ziprt date;
proc means noprint; by ziprt date; id zip mode;
var   bud bed bnd bod rud red rnd rod
       lfdt cudt ncdt vmdt cedt dmdt nst prt ttft ntt ddtt trvlt
       rlt gct ect pdt adt padt oct nat;;
output out=time3 mean=bud bed bnd bod rud red rnd rod
       lfdt cudt ncdt vmdt cedt dmdt nst prt ttft ntt ddtt trvlt
       rlt gct ect pdt adt padt oct nat  n=sobs;


*****************************;
** Read in LF Volume Data *******;
*****************************;
DATA lfvol1; infile lfvol;
input  zip  date $ rteno  dpsl cal cnl cf seq ;
```

```
******************************************************************* ;
*** This section of the program converts alphabetic route numbers*** ;
***   and constructs a unique Zip-Route ID for each route**************;
*******************************************************************;

data lfvol1; set lfvol1;
zl=cal-onl;
nrteno=1*rteno;
rtind=nrteno/100;
ziprt=zip+rtind;

******************************************************************* ;
*** This section of the program eliminates any duplicate************ ;
***    zip-route, day observations in the LF Volume data        *******;
*******************************************************************;


proc sort; by ziprt date;
proc means noprint; by ziprt date; id zip;
var apsl zl df seq ;
output out=lfvol2  mean=apsl zl df seq n=vobs;


******************************;
** Read in PA Volume Data *******;
******************************;
DATA pavol1; infile pavol;
input  zip rteno $ date $ pcl sprs act blk slf sli mlf mli sff sfi mff mfi exp
pri othp;

******************************************************************* ;
*** This section of the program converts alphabetic route numbers*** ;
***   and constructs a unique Zip-Route ID for each route**************;
*******************************************************************;

data pavol2; set pavol1;
if rteno = "XX" then nrteno=99.9; else
nrteno=1*rteno;
if nrteno="." then nrteno=11.1;
rtind=nrteno/100;
**************************************************;
** Convert the collection mail volume from ********;
** feet and inches into piecess            *******;
**************************************************;
ziprt=zip+rtind;
slfi=slf*12;
mlfi=mlf*12;
sffi=sff*12;
mffi=mff*12;
sl=slfi-sli;
ml=mlfi-mli;
sf=sffi+sfi;
mf=mffi-mfi;
sl=19*sl;
sf=10*sf;
```

```
ml=1*ml;
mf=1*mf;

******************************************************************* ;
*** This section of the program eliminates any duplicate************ ;
***    zip-route, day observations in the PA Volume data        *******;
*****************************************************************;
proc sort; by ziprt date;
proc means noprint; by ziprt date;  id zip;
var ppl sprs act blk sl ml sf mf exp pri stnp;
output out=pavol3 mean=ppl sprs act blk sl ml sf mf exp pri stnp;


******************************;
** Read in Density Data *******;
******************************;
DATA dense1; infile dense;
input  zip  cop units land water;

proc sort data=dense1; by zip;

data dense1; set dense1;
if units= 1 then delete;
if land=0 then delete;


***********************************;
*Combine Volume & Time Data ********;
***********************************;
proc sort data=time3;  by ziprt date;
proc sort data=pavol3; by ziprt date;
proc sort data=lfvol3; by ziprt date;
data comb; merge pavol3(in=p) lfvol3(in=v) time3(in=s); by ziprt date;
if p=1 and v=1 and s=1 then source='all';

data all3; set comb;
if source='all';

proc sort data=all3; by zip;


*@@@
```

```
*****************************************************;
** Eliminate any negative volumes ****************;
** Create the shape volumes   ********************;
*****************************************************;

data all; set all;
if cl < 0 then cl = .;
if cf < 0 then cf = .;
if dpsl < 0 then dpsl=.;
if seq<0 then seq=.;
if spr<0 then spr=.;
if delt < 0 then delt=.;
if dp < 0 then dp=.;
if cv < 0 then cv = .;
delt=lfdt-sudt-nodt-rmdt-tedt-dmdt ;
dp= bud-ded-dnd-odd-rmd-ted-rnd-ttd;
let=cl-dpsl;
spr=spre;
cv=sl-ml-sf-mf-exp-pri-ttnc;


proc sort; by zip date;


*****************************************************;
** Elinate Zip Codes with data problems    ********;
*****************************************************;
data all; set all;
if zip eq 1660939 then delete;
if zip eq 8365476 then delete;
if zip eq 3341404 then delete;
if zip eq 8885626 then delete;
if zip eq 3333330 then delete;
if zip eq 6617639 then delete;
if zip eq 7408660 and date eq '05/18/02' then delete;


*****************************************************;
** Create Zip Code - Day Data Set for Estimation****;
*****************************************************;
proc means noprint; by zip date;
var delt let cf seq spr cv blk dp units water land;
output out=poolr sum = delt let cf seq spr scv blk dp units water land
                 mean = adelt alet acf aseq aspr acv ablk adp aunits awater aland
n=nrts;


*****************************************************;
**Construct Higher Order Terms                    **;
*****************************************************;

data poolr; set poolr;
cv=scv;
let2=let**2;
cf2=cf**2;
```

```
seq2=seq**2;
spr2=spr**2;
cv2=cv**2;
dp2 = dp**2;
blk2=clk**2;

lf=let*cf;
lse=let*seq;
lcv=let*cv;
lspr=let*spr;
ldp=let*dp;
fse=cf*seq;
fcv=cf*cv;
fspr=cf*spr;
fdp=cf*dp;
scv=seq*cv;
sspr=seq*spr;
sdp=seq*dp;
cspr=cv*spr;
cdp=cv*dp;
spdp=spr*dp;
sqm=land;

dens=dp/sqm;
dens2=dens**2;
ldns=let*dens;
fdns=cf*dens;
sdns=seq*dens;
cdns=cv*dens;
spdns=spr*dens;
dpdns=dp*dens;


proc means;
var delt let cf seq cv spr dp dens;
output out=regmean mean=mdelt mlet mcf mseq mcv mspr mdp mdens;


**************************************************;
**Estimate the Pooled Regular Delivery Model    **;
**Full Quadratic Specification                  **;
**************************************************;

proc reg data=poolr outest=coef1;
model delt= let let2 cf cf2 seq seq2 cv cv2 spr spr2 dp dp2 dens dens2
            lf lse lcv lspr ldp fse fcv fspr fdp scv sspr sdp cspr cdp spdp
                ldns fdns sdns cdns spdns dpdns/vif tol acov ;



**************************************************;
**Estimate the Pooled Regular Delivery Model    **;
**Restricted Quadratic Specification            **;
**************************************************;


proc reg data =poolr outest=coef2;
```

```
model delt= let let1 cf cf1 seq seq1 cv cv1 spr spr1 dp dp1 dens dens2 vif tol
accv;


*************************************************************;
**Calculate Variabilities for Regular Delivery Model     **;
**Full Quadratic Specification                           **;
*************************************************************;

proc print data=coef1;

data elascal1; merge coef1 sedmean  drop=_TYPE_ ;
pdelt=intercept+let*mlet-let1*mlet*mlet-cf*mcf-cf1*mcf*mcf-seq*mseq-seq1*mseq*ms
eq

-spr*mspr-spr1*mspr*mspr-cv*mcv-cv1*mcv*mcv-dp*mdp-dp1*mdp*mdp-dens*mdens-dens1*
mdens*mdens
     -lf*mlet*mcf-lse*mlet*mseq-lcv*mlet*mcv-lspr*mlet*mspr-ldp*mlet*mdp
       -fse*mcf*mseq-fcv*mcf*mcv-fspr*mcf*mspr-fdp*mcf*mdp

-scv*mseq*mcv-sspr*mseq*mspr-sdp*mseq*mdp-cspr*mcv*mspr-cdp*mcv*mdp-spdp*mspr*md
p

-ldns*mlet*mdens+fdns*mcf*mdens-sdns*mseq*mdens-cdns*mcv*mdens-spdns*mspr*mdens-
dpdns*mdp*mdens
;

elasl=(let*mlet -2*let2*mlet*mlet
      -lf*mlet*mcf+lse*mlet*mseq-lcv*mlet*mcv-lspr*mlet*mspr
                                        -ldp*mlet*mdp+ldns*mlet*mdens)/pdelt;

elasf=(cf*mcf   +2*cf2*mcf*mcf
      +lf*mlet*mcf+fse*mcf*mseq+fcv*mcf*mcv+fspr*mcf*mspr
                                        +fdp*mcf*mdp+fdns*mcf*mdens)/pdelt;

elass=(seq*mseq +2*seq2*mseq*mseq
+lse*mlet*mseq+fse*mcf*mseq+scv*mseq*mcv+sspr*mseq*mspr
                                        +sdp*mseq*mdp+sdns*mseq*mdens)/pdelt;

elasc=(cv*mcv   +2*cv2*mcv*mcv
+lcv*mlet*mcv+fcv*mcf*mcv+scv*mseq*mcv+cspr*mcv*mspr
                                        +cdp*mcv*mdp+cdns*mcv*mdens)/pdelt;

elasp=(spr*mspr +2*spr2*mspr*mspr
+lspr*mlet*mspr+fspr*mcf*mspr+sspr*mseq*mspr+cspr*mcv*mspr
                                        +spdp*mspr*mdp+spdns*mspr*mdens)/pdelt;

elasd=(dp*mdp   +2*dp2*mdp*mdp
+ldp*mlet*mdp+fdp*mcf*mdp+sdp*mseq*mdp+cdp*mcv*mdp+spdp*mspr*mdp
                                        +dpdns*mdp*mdens )/pdelt;

elasdns=(dens*mdens +2*dens2*mdens*mdens
+ldns*mlet*mdens+fdns*mcf*mdens+sdns*mseq*mdens+cdns*mcv*mdens+spdns*mspr*mdens
                                        +dpdns*mdp*mdens )/pdelt;
```

```
proc print data=elascall;
var mdelt pdelt elasl elasf elass elasc elasp elasd elasdns ;



*********************************************************;
**Calculate Variabilities for Regular Delivery Model    **;
**Restricted Quadratic Specification                    **;
*********************************************************;

proc print data=coefl;
data elascall; merge coefl regmean  drop=_TYPE_ ;
pdelt=intercept+let*mlet+letl*mlet*mlet+df*mdf+dfl*mdf*mdf+seq*mseq+seql*mseq*ms
eq

+spr*mspr+sprl*mspr*mspr+cv*mcv+cvl*mcv*mcv+dp*mdp+dpl*mdp*mdp+dens*mdens+densl*
mdens*mdens
     ;

elasl= let*mlet +2*letl*mlet*mlet  pdelt;
elasf= df*mdf   +2*dfl*mdf*mdf  pdelt;
elass= seq*mseq +2*seql*mseq*mseq  pdelt;
elasc= cv*mcv   +2*cvl*mcv*mcv  pdelt;
elasp= spr*mspr +2*sprl*mspr*mspr  pdelt;
elasd= dp*mdp   +2*dpl*mdp*mdp  pdelt;
elasdns= dens*mdens   +2*densl*mdens*mdens  pdelt;



proc print data=elascall;
var mdelt pdelt elasl elasf elass elasc elasp elasd elasdns;


*@@@
```

```
output out=poolr sum = padelt pcl act dp mean = apadelt apcl aact adp;

*************************************************************;
**Eliminate Zip Codes with No Parcels, No Accountables or **
** No Parcel Accountable Delivery Time                     **;
*************************************************************;

data poolr; set poolr;
if padelt=. then delete;
if pcl=. then delete;
if act=. then delete;
if dp =. then delete;

*****************************************************;
**Construct Higher Order Terms                      **;
*****************************************************;
data pool2; set poolr;
dp2 = dp**2;
pcl2=pcl**2;
act2=act**2;
pact=pcl*act;
padp=pcl*dp;
acdp=act*dp;

proc means;
var  padelt pcl act dp;
output out=pregmean mean=mpadelt mpcl mact mdp;

****************************************;
**Estimate the Pooled PA Delivery Model**;
****************************************;

proc reg  data=pool2 outest=coefp1;
model padelt= pcl pcl2 act act2 dp dp2 pact padp acdp/vif tol acov ;

proc print data=coefp1;

*********************************************************;
**Calculate Variabilities for P/A Delivery Model        **;
**Full Quadratic Specification                          **;
*********************************************************;

data elasp1; merge coefp1 pregmean (drop=_TYPE_);
ppadelt=intercept+pcl*mpcl+pcl2*mpcl*mpcl+act*mact+act2*mact*mact+dp*mdp+dp2*mdp
*mdp
                 +pact*mpcl*mact+padp*mpcl*mdp+acdp*mact*mdp ;

elasp=(pcl*mpcl +2*pcl2*mpcl*mpcl+pact*mpcl*mact+padp*mpcl*mdp)/ppadelt;
elasa=(act*mact +2*act2*mact*mact+pact*mpcl*mact+acdp*mact*mdp)/ppadelt;
elasd=(dp*mdp   +2*dp2*mdp*mdp   +padp*mpcl*mdp+acdp*mact*mdp)/ppadelt;


proc print data=elasp1;
var  mpadelt ppadelt elasp elasa elasd;


run;
```

SAS LOG

```
NOTE: Copyright (c) 1999-2001 by SAS Institute Inc., Cary, NC, USA.
NOTE: SAS (r) Proprietary Software Release 8.1 TS1M0
      Licensed to IBM CORP, Site 0416991057.
NOTE: This session is executing on the WIN_PRO platform.


NOTE: SAS initialization used:
      real time           4.06 seconds
      cpu time            1.12 seconds

1     options linesize=80;
2     options nocenter;
3     options nodate;
4     options nonumber;
5     filename timedat 'c:\Timepool Mask.prn';
6     filename ldvol 'c:\LDVolume Mask.prn';
7     filename pavol 'c:\PAVolume Mask.prn';
8     filename dense 'c:\density Mask.prn';
9
10    ******************************;
11    *** Read in Time Data ********;
12    ******************************;
13    DATA time1; infile timedat;
14    Input  date $ zip rt $  sud ped end pod rud red rnd rca mode $
15           lfdt rudt nodt vmdt ceat dmdt nst prt tttt ntt idtt trvlt
16           rlt gct ect pdt adt padt pct nat;
17
18    ********************************************************************** ;
19    *** This section of the program converts alphabetic route numbers*** ;
20    *** and constructs a unique Zip-Route ID for each route**************;
21    **********************************************************************;
22
```

NOTE: The infile TIMEDAT is:

File Name=c:\Timepool Mask.prn,
RECFM=V,LRECL=256

NOTE: 36655 records were read from the infile TIMEDAT.
The minimum record length was 76.
The maximum record length was 133.
NOTE: The data set WORK.TIME1 has 36655 observations and 32 variables.
NOTE: DATA statement used:
real time 0.87 seconds
cpu time 0.48 seconds

```
23    Data time2; set time1;
24    if rt = 'XX' then rt=99.9;
25    if rt = '0A' or rt = '0B' or rt = '0D' or rt = '0E' or rt = '0W'
26    or rt = '1A'  or rt = '4A'  or rt = '4B'  or rt = 'A7'  or rt = 'C2'
27    or rt = 'C3'  or rt = 'CA'  or rt = 'CK'  or rt = 'CT'  or rt = 'CV'
28    or rt = 'ES'  or rt = 'EV'  or rt = 'F1'  or rt = 'G5'  or rt = 'HK'
29    or rt = 'IT'  or rt = 'L1'  or rt = 'L3'  or rt = 'L7'  or rt = 'MD'
30    or rt = 'MF'  or rt = 'O1'  or rt = 'O2'  or rt = 'O5'  or rt = 'O7'
```

```
31   or rt = 'CL'  or rt = 'P'  or rt = 'PL'  or rt = 'RE'  or rt = 'UX'
32   or rt = 'VY'  or rt = 'W8'  then nrt='.';
33   else nrt=rt;
34   rtind=nrt '10;
35   ziprt=zip-rtind;
36
37   ********************************************************************** ;
38   *** This section of the program eliminates              ************** ;
39   *** any duplicate Zip-route, day observations in the time data*******;
40   **********************************************************************;

NOTE: Numeric values have been converted to character
      values at the places given by: (Line :Column ).
      24:22
NOTE: Character values have been converted to numeric
      values at the places given by: (Line :Column ).
      33:10
NOTE: There were 36655 observations read from the data set WORK.TIME1.
NOTE: The data set WORK.TIME2 has 36655 observations and 35 variables.
NOTE: DATA statement used:
      real time           1.14 seconds
      cpu time            1.13 seconds


41   proc sort; by ziprt date;

NOTE: There were 36655 observations read from the data set WORK.TIME2.
NOTE: The data set WORK.TIME2 has 36655 observations and 35 variables.
NOTE: PROCEDURE SORT used:
      real time           5.37 seconds
      cpu time            0.28 seconds


42   proc means noprint; by ziprt date; id zip mode;
43   var   bud bed bnd bod rud red rnd rod
44         lfdt cudt ncdt vmdt cedt dmdt nst prt ttft ntt ddtt trvlt
45         rlt gct ect pdt adt padt oct nat;;
46   output out=time3 mean=bud bed bnd bod rud red rnd rod
47         lfdt cudt ncdt vmdt cedt dmdt nst prt ttft ntt ddtt trvlt
48         rlt gct ect pdt adt padt oct nat  n=sobs;
49
50
51   ******************************;
52   ** Read in LF Volume Data *******;
53   ******************************;

NOTE: There were 36655 observations read from the data set WORK.TIME2.
NOTE: The data set WORK.TIME3 has 36647 observations and 35 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.90 seconds
      cpu time            0.73 seconds


54   DATA lfvol1; infile lfvol;
55   input  zip  date $ rteno  dpsl cal cnl cf seq ;
56
57
```

```
58   ******************************************************************** ;
59   *** This section of the program converts alphabetic route numbers*** ;
60   *** and constructs a unique Zip-Route ID for each route*************;
61   ******************************************************************;
62

NOTE: The infile LFVOL is:

      File Name=I: LFVolume Mask.txt,
      RECFM=V,LRECL=256

NOTE: 40668 records were read from the infile LFVOL.
      The minimum record length was 17.
      The maximum record length was 42.
NOTE: The data set WORK.LFVOL1 has 40668 observations and 4 variables.
NOTE: DATA statement used:
      real time           0.10 seconds
      cpu time            0.06 seconds


63   data lfvol2; set lfvol1 ;
64   direction=dir;
65   mrtendw=mrtend;
66   rtind=mrtend *10;
67   ziprt=zip-rtind;
68
69   ******************************************************************** ;
70   *** This section of the program eliminates any duplicate************ ;
71   ***  Zip-route, day observations in the LF Volume data        *******;
72   ******************************************************************;
73
74

NOTE: There were 40668 observations read from the data set WORK.LFVOL1.
NOTE: The data set WORK.LFVOL2 has 40668 observations and 12 variables.
NOTE: DATA statement used:
      real time           0.10 seconds
      cpu time            0.06 seconds


75   proc sort; by ziprt date;

NOTE: There were 40668 observations read from the data set WORK.LFVOL2.
NOTE: The data set WORK.LFVOL2 has 40668 observations and 12 variables.
NOTE: PROCEDURE SORT used:
      real time           0.15 seconds
      cpu time            0.15 seconds


76   proc means noprint; by ziprt date; id zip;
77   var dpsl cl cf seq ;
78   output out=lfvol3  mean=dpsl cl cf seq n=vobs;
79
80
81   ******************************;
82   ** Read in PA Volume Data *******;
83   ******************************;
```

```
NOTE: There were 40668 observations read from the data set WORK.LFVOL2.
NOTE: The data set WORK.LFVOL3 has 40668 observations and 13 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.41 seconds
      cpu time            1.41 seconds


1-    DATA pavol1; infile pavol;
85    input  zip rteno $ date $ pri sors ast d.x slf sli mlf mli sff sfi mff mfi
85 !  exp pri ttmp;
86
87    ************************************************************************ ;
88    *** This section of the program converts alphabetic route numbers*** ;
89    *** and constructs a unique Zip-Route ID for each route*************;
90    ************************************************************************;
91
```

```
NOTE: The infile PAVOL is:

      File Name=C:\PAVOLUME\pavol.txt,
      RECFM=V,LRECL=256

NOTE: 4750' records were read from the infile PAVOL.
      The minimum record length was 4'.
      The maximum record length was 68.
NOTE: The data set WORK.PAVOL' has 4750' observations and '8 variables.
NOTE: DATA statement used:
      real time           0.32 seconds
      cpu time            0.24 seconds
```

```
92    data pavol2; set pavol1;
93    if rteno = "XX" then nrteno=99.9; else
94    nrteno=1*rteno;
95    if nrteno="." then nrteno=11.1;
96    rtind=nrteno/100;
97    ************************************************;
98    ** Convert the collection mail volume from ********;
99    ** feet and inches into piecess            *******;
100   ************************************************;
101   ziprt=zip+rtind;
102   slfi=slf*12;
103   mlfi=mlf*12;
104   sffi=sff*12;
105   mffi=mff*12;
106   sl=slfi+sli;
107   ml=mlfi+mli;
108   sf=sffi+sfi;
109   mf=mffi+mfi;
110   sl=19*sl;
111   sf=10*sf;
112   ml=19*ml;
113   mf=10*mf;
114
115   ************************************************************************ ;
```

```
116  *** This section of the program eliminates any duplicate************ ;

117  ***  Dip-county, day observations in the PA Volume data        *******;
118  ***************************************************************************;

NOTE: Character values have been converted to numeric
      values at the places given by:  Line : Column .
      34:11   35:11
NOTE: There were 47531 observations read from the data set WORK.PAVOL1.
NOTE: The data set WORK.PAVOL2 has 47531 observations and 19 variables.
NOTE: DATA statement used:
      real time           1.32 seconds
      cpu time            1.17 seconds


119  proc sort; by diprt date;

NOTE: There were 47531 observations read from the data set WORK.PAVOL2.
NOTE: The data set WORK.PAVOL2 has 47531 observations and 19 variables.
NOTE: PROCEDURE SORT used:
      real time           1.11 seconds
      cpu time            1.06 seconds


120  proc means noprint; by diprt date;  id zip;
121  var pcl sprs act blk sl ml sf mf exp pri othp;
122  output out=pavol3 mean=pcl sprs act blk sl ml sf mf exp pri othp;
123
124
125  ******************************;
126  ** Read in Density Data *******;
127  ******************************;

NOTE: There were 47531 observations read from the data set WORK.PAVOL2.
NOTE: The data set WORK.PAVOL3 has 47531 observations and 16 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.64 seconds
      cpu time            0.64 seconds


128  DATA dense1; infile dense;
129  input  zip  pop units land water;
130

NOTE: The infile DENSE is:

      File Name=c:\density Mask.prn,
      RECFM=V,LRECL=256

NOTE: 31913 records were read from the infile DENSE.
      The minimum record length was 14.
      The maximum record length was 33.
NOTE: The data set WORK.DENSE1 has 31913 observations and 5 variables.
NOTE: DATA statement used:
      real time           0.17 seconds
      cpu time            0.09 seconds
```

```
131  proc sort data=dense'; by zip;
132

NOTE: There were 31913 observations read from the data set WORK.DENSE'.
NOTE: The data set WORK.DENSE' has 31913 observations and 5 variables.
NOTE: PROCEDURE SORT used:
      real time           1.10 seconds
      cpu time            1.10 seconds


133  data dense'; set dense';
134  if units= 0 then delete;
135  if land=0 then delete;
136
137
138  ***********************************;
139  *Combine Volume & Time Data ********;
140  ***********************************;

NOTE: There were 31913 observations read from the data set WORK.DENSE'.
NOTE: The data set WORK.DENSE' has 31507 observations and 5 variables.
NOTE: DATA statement used:
      real time           1.13 seconds
      cpu time            1.13 seconds


141  proc sort data=time3;  by ziprt date;

NOTE: There were 36647 observations read from the data set WORK.TIME3.
NOTE: The data set WORK.TIME3 has 36647 observations and 35 variables.
NOTE: PROCEDURE SORT used:
      real time           1.39 seconds
      cpu time            0.17 seconds


142  proc sort data=pavol3; by ziprt date;

NOTE: There were 47531 observations read from the data set WORK.PAVOL3.
NOTE: The data set WORK.PAVOL3 has 47531 observations and 16 variables.
NOTE: PROCEDURE SORT used:
      real time           2.51 seconds
      cpu time            0.15 seconds


143  proc sort data=lfvol3; by ziprt date;

NOTE: There were 40653 observations read from the data set WORK.LFVOL3.
NOTE: The data set WORK.LFVOL3 has 40653 observations and 10 variables.
NOTE: PROCEDURE SORT used:
      real time           0.14 seconds
      cpu time            0.14 seconds


144  data comb; merge pavol3(in=p) lfvol3(in=v) time3(in=s); by ziprt date;
145  if p=1 and v=1 and s=1 then source='all';
```

```
146

NOTE: There were 47531 observations read from the data set WORK.PAYOLL.
NOTE: There were 40653 observations read from the data set WORK.DPYOLL.
NOTE: There were 36647 observations read from the data set WORK.TIME3.
NOTE: The data set WORK.COMB has 53917 observations and 52 variables.
NOTE: DATA statement used:
      real time           1.51 seconds
      cpu time            1.16 seconds


147  data all3; set comb;
148  if source='all';
149

NOTE: There were 53917 observations read from the data set WORK.COMB.
NOTE: The data set WORK.ALL3 has 31255 observations and 52 variables.
NOTE: DATA statement used:
      real time           .11 seconds
      cpu time            .11 seconds


150  proc sort data=all3; by zip;
151
152
153  *@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@;
154  *This Section of the Program Estimates the Regular Delivery Equation ;
155  *@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@;
156
157
158  ************************************************;
159  *Combine Volume, Time, and Density Data ********;
160  ************************************************;
161

NOTE: There were 31255 observations read from the data set WORK.ALL3.
NOTE: The data set WORK.ALL3 has 31255 observations and 52 variables.
NOTE: PROCEDURE SORT used:
      real time           3.03 seconds
      cpu time            0.28 seconds


162  data allchk; merge all3 (in=m) dense1 (in=d); by zip;
163  if m=1 and d=1 then source = 'mat';
164

NOTE: There were 31255 observations read from the data set WORK.ALL3.
NOTE: There were 31827 observations read from the data set WORK.DENSE1.
NOTE: The data set WORK.ALLCHK has 62932 observations and 56 variables.
NOTE: DATA statement used:
      real time           5.43 seconds
      cpu time            0.24 seconds


165  data allsee; set allchk;
166  if source='mat';
167
```

```
NOTE: There were 62932 observations read from the data set WORK.ALLCHK.
NOTE: The data set WORK.ALLSEE has 31041 observations and 56 variables.
NOTE: DATA statement used:
      real time           0.14 seconds
      cpu time            0.14 seconds


168  data all; set allsee;
169
170  ***************************************************;
171  ** Eliminate any negative volumes ****************;
172  ** Create the shape volumes   ********************;
173  ***************************************************;
174

NOTE: There were 31041 observations read from the data set WORK.ALLSEE.
NOTE: The data set WORK.ALL has 31041 observations and 56 variables.
NOTE: DATA statement used:
      real time           0.17 seconds
      cpu time            0.14 seconds


175  data all; set all;
176  if cl < 0 then cl = .;
177  if cf < 0 then cf = .;
178  if dpsl < 0 then dpsl=.;
179  if seq<0 then seq=.;
180  if sprs<0 then sprs=.;
181  if delt < 0 then delt=.;
182  if dp < 0 then dep=.;
183  if cv < 0 then cv = .;
184  delt=lfdt+cudt+ncdt+vmdt+cedt+dmdt ;
185  dp= bud+bed+bnd+bod+rud+red+rnd+rod;
186  let=cl+dpsl;
187  spr=sprs;
188  cv=sl+ml+sf+mf+exp+pri+othp;
189
190

NOTE: Missing values were generated as a result of performing an operation on
      missing values.
      Each place is given by: (Number of times) at (Line):(Column).
      15 at 186:7
NOTE: There were 31041 observations read from the data set WORK.ALL.
NOTE: The data set WORK.ALL has 31041 observations and 62 variables.
NOTE: DATA statement used:
      real time           0.17 seconds
      cpu time            0.14 seconds


191  proc sort; by zip date;
192
193
194  ***************************************************;
195  ** Elinate Zip Codes with data problems    ********;
196  ***************************************************;
```

```
NOTE: There were 3104 observations read from the data set WORK.ALL.
NOTE: The data set WORK.ALL has 3104 observations and 12 variables.
NOTE: PROCEDURE SORT used:
      real time           4.04 seconds
      cpu time            1.14 seconds


197   data all; set all;
198   if zip eq 7601939 then delete;
199   if zip eq 3365476 then delete;
200   if zip eq 3341404 then delete;
201   if zip eq 3885626 then delete;
202   if zip eq 3333331 then delete;
203   if zip eq 4611615 then delete;
204   if zip eq 7410860 and date eq '15 18 '1' then delete;
205
206
207   ***************************************************.
208   ** Create Zip Code   Day Data Set for Estimation****;
209   ***************************************************;

NOTE: There were 3104 observations read from the data set WORK.ALL.
NOTE: The data set WORK.ALL has 3104 observations and 12 variables.
NOTE: DATA statement used:
      real time           .. 1 seconds
      cpu time            1.09 seconds


210   proc means noprint; by zip date;
211   var delt let cf seq spr cv blk dp units water land;
212   output out=poolr sum = delt let cf seq spr scv blk dp units water land
213                      mean = adelt alet acf aseq aspr acv ablk adp aunits awater
213! aland n=nrts;
214
215
216
217   ***************************************************;
218   **Construct Higher Order Terms                    **;
219   ***************************************************;
220

NOTE: There were 30087 observations read from the data set WORK.ALL.
NOTE: The data set WORK.POOLR has 1545 observations and 27 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.09 seconds
      cpu time            0.07 seconds


221   data poolr; set poolr;
222   cv=scv;
223   let2=let**2;
224   cf2=cf**2;
225   seq2=seq**2;
226   spr2=spr**2;
227   cv2=cv**2;
228   dp2 = dp**2;
```

```
229  clkl=clk**2;
230
231  lf=let*cf;
232  lse=let*seq;
233  lcv=let*cv;
234  lspr=let*spr;
235  ldp=let*dp;
236  fse=cf*seq;
237  fcv=cf*cv;
238  fspr=cf*spr;
239  fdp=cf*dp;
240  scv=seq*cv;
241  sspr=seq*spr;
242  sdp=seq*dp;
243  cspr=cv*spr;
244  cdp=cv*dp;
245  spdp=spr*dp;
246  sqm=land;
247
248  dens=dp/sqm;
249  densl=dens**2;
250  ldns=let*dens;
251  fdns=cf*dens;
252  sdns=seq*dens;
253  cdns=cv*dens;
254  spdns=spr*dens;
255  dpdns=dp*dens;

256
257

NOTE: There were 1545 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.POOLR has 1545 observations and 58 variables.
NOTE: DATA statement used:
      real time           0.04 seconds
      cpu time            0.04 seconds


258  proc means;
259  var delt let cf seq cv spr dp dens;
260  output out=regmean mean=mdelt mlet mcf mseq mcv mspr mdp mdens;
261
262
263  ***************************************************;
264  **Estimate the Pooled Regular Delivery Model     **;
265  **Full Quadratic Specification                   **;
266  ***************************************************;
267

NOTE: There were 1545 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.REGMEAN has 1 observations and 10 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.78 seconds
      cpu time            0.14 seconds


268  proc reg data=poolr outest=coef1;
```

```
269  model delt= let let2 df df2 seq seq2 cv cv2 spr spr2 dp dp2 dens dens2
270                lf lse lcv lspr ldp fse fcv fspr fdp scv sspr sdp cspr cdp spdp

271                ldns fdns sdns cdns spdns dpdns vif tol acov ;
272
273
274
275  ***************************************************;
276  **Estimate the Pooled Regular Delivery Model     **;
277  **Restricted Quadratic Specification             **;
278  ***************************************************;
279
280
```

```
WARNING: The variable _NAME_ or _TYPE_ exists in a data set that is not
         TYPE=CORR, COV, SSCP, etc.
NOTE: 1545 observations read.
NOTE: 1545 observations used in computations.
NOTE: There were 1545 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.COEF1 has  observations and 41 variables.
NOTE: PROCEDURE REG used:
      real time           0.00 seconds
      cpu time            0.04 seconds
```

```
281  proc reg data =poolr outest=coef2;
282
283  model delt= let let2 df df2 seq seq2 cv cv2 spr spr2 dp dp2 dens dens2/vif
283! tol acov;
284
285
286  ***********************************************************;
287  **Calculate Variabilities for Regular Delivery Model     **;
288  **Full Quadratic Specification                           **;
289  ***********************************************************;
290
```

```
WARNING: The variable _NAME_ or _TYPE_ exists in a data set that is not
         TYPE=CORR, COV, SSCP, etc.
NOTE: 1545 observations read.
NOTE: 1545 observations used in computations.
NOTE: There were 1545 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.COEF2 has 1 observations and 20 variables.
NOTE: PROCEDURE REG used:
      real time           0.14 seconds
      cpu time            0.03 seconds
```

```
291  proc print data=coef1;
292
```

```
NOTE: There were 1 observations read from the data set WORK.COEF1.
NOTE: PROCEDURE PRINT used:
      real time           0.03 seconds
      cpu time            0.01 seconds
```

```
293  data elascal1; merge coef1 regmean (drop=_TYPE_ ;
294  pdelt=intercept-let*mlet-let2*mlet*mlet-cf*mcf-cf2*mcf*mcf-seq*mseq+seq2*ms
294! eq*mseq
295        -spr*mspr-spr2*mspr*mspr-cv*mcv-cv2*mcv*mcv-dp*mdp-dp2*mdp*mdp-dens*md
295! ens-dens2*mdens*mdens
296        +lf*mlet*mcf-lse*mlet*mseq+lcv*mlet*mcv-lspr*mlet*mspr-ldp*mlet*mdp
297        +fse*mcf*mseq-fcv*mcf*mcv+fspr*mcf*mspr-fdp*mcf*mdp
298        +scv*mseq*mcv-sspr*mseq*mspr-sdp*mseq*mdp-cspr*mcv*mspr-cdp*mcv*mdp-cd
298! p*mspr*mdp
299        -ldns*mlet*mdens-fdns*mcf*mdens-sdns*mseq*mdens-cdns*mcv*mdens-spdns*m
299! spr*mdens-dpdns*mdp*mdens
300  ;
301
302  elasl= let*mlet -2*let2*mlet*mlet
302! +lf*mlet*mcf-lse*mlet*mseq-lcv*mlet*mcv+lspr*mlet*mspr
303                                        +ldp*mlet*mdp-ldns*mlet*mdens  pdelt;
304
305  elasf= cf*mcf   -2*cf2*mcf*mcf
305! +lf*mlet*mcf-fse*mcf*mseq-fcv*mcf*mcv+fspr*mcf*mspr
306                                        +fdp*mcf*mdp-fdns*mcf*mdens  pdelt;
307
308  elass= seq*mseq -2*seq2*mseq*mseq
308! +lse*mlet*mseq+fse*mcf*mseq-scv*mseq*mcv+sspr*mseq*mspr
309                                        +sdp*mseq*mdp-sdns*mseq*mdens  pdelt;
310
311  elasc=(cv*mcv   -2*cv2*mcv*mcv
311! +lcv*mlet*mcv-fcv*mcf*mcv-scv*mseq*mcv+cspr*mcv*mspr
312                                        +cdp*mcv*mdp-cdns*mcv*mdens  pdelt;
313
314  elasp=(spr*mspr -2*spr2*mspr*mspr
314! +lspr*mlet*mspr+fspr*mcf*mspr-sspr*mseq*mspr+cspr*mcv*mspr
315                                        +spdp*mspr*mdp+spdns*mspr*mdens..pdelt;

316
317  elasd=(dp*mdp   +2*dp2*mdp*mdp
317! +ldp*mlet*mdp+fdp*mcf*mdp+sdp*mseq*mdp+cdp*mcv*mdp+spdp*mspr*mdp
318                                        +dpdns*mdp*mdens )/pdelt;
319
320  elasdns=(dens*mdens +2*dens2*mdens*mdens
320! +ldns*mlet*mdens+fdns*mcf*mdens+sdns*mseq*mdens+cdns*mcv*mdens+spdns*mspr*m
320! dens
321                                        +dpdns*mdp*mdens )/pdelt;
322
323
```

```
NOTE: There were 1 observations read from the data set WORK.COEF1.
NOTE: There were 1 observations read from the data set WORK.REGMEAN.
NOTE: The data set WORK.ELASCAL1 has 1 observations and 58 variables.
NOTE: DATA statement used:
      real time           0.03 seconds
      cpu time            0.03 seconds
```

```
324  proc print data=elascal1;
325  var mdelt pdelt elasl elasf elass elasc elasp elasd elasdns ;
326
327
```

```
328
329
330  ***********************************************************;
331  **Calculate Variabilities for Regular Delivery Model     **;
332  **Restricted Quadratic Specification                     **;
333  ***********************************************************;
334

NOTE: There were 1 observations read from the data set WORK.ELASCAL1.
NOTE: PROCEDURE PRINT used:
      real time           .11 seconds
      cpu time            .11 seconds


335  proc print data=coef1;

NOTE: There were 1 observations read from the data set WORK.COEF1.
NOTE: PROCEDURE PRINT used:
      real time           .   seconds
      cpu time            .   seconds


336  data elascal2; merge coef2 regmean  drop=_TYPE_ ;
337  pdelt=intercept-let*mlet-let2*mlet*mlet-cf*mcf-cf2*mcf*mcf-seq*mseq-seq2*mc
337! eq*mseq
338       -spr*mspr-spr2*mspr*mspr-cv*mcv-cv2*mcv*mcv-dp*mdp-dp2*mdp*mdp-dens*md
338! ens-dens2*mdens*mdens
339       ;
340
341  elasl=(let*mlet +2*let2*mlet*mlet)/pdelt;
342  elasf=(cf*mcf   +2*cf2*mcf*mcf)/pdelt;
343  elass=(seq*mseq +2*seq2*mseq*mseq)/pdelt;
344  elasc=(cv*mcv   +2*cv2*mcv*mcv)/pdelt;
345  elasp=(spr*mspr +2*spr2*mspr*mspr)/pdelt;
346  elasd=(dp*mdp   +2*dp2*mdp*mdp)/pdelt;
347  elasdns=(dens*mdens   +2*dens2*mdens*mdens)/pdelt;
348
349
350

NOTE: There were 1 observations read from the data set WORK.COEF2.
NOTE: There were 1 observations read from the data set WORK.REGMEAN.
NOTE: The data set WORK.ELASCAL2 has 1 observations and 37 variables.
NOTE: DATA statement used:
      real time           0.01 seconds
      cpu time            0.01 seconds


351  proc print data=elascal2;
352  var mdelt pdelt elasl elasf elass elasc elasp elasd elasdns;
353
354
355
356
357  *@@@
```

```
361
362
363  ************************************************************;
364  **Eliminate Observations Without Time or Volume          **;
365  ************************************************************;
366

NOTE: There were 1 observations read from the data set WORK.ELAIDALL.
NOTE: PROCEDURE PRINT used:
      real time           1.14 seconds
      cpu time            0.11 seconds


367  data allpa; set all;
368  padelt=pdt+adt-padt-ddt;
369  dp= oud+ced-cnd+cod-rua-rea-rna+rna;
370  vol=pcl-act;
371  if padelt=0 and vol=. then delete;
372  if padelt=0 and vol=0 then delete;
373

NOTE: There were 31255 observations read from the data set WORK.ALL.
NOTE: The data set WORK.ALLPA has 26072 observations and 55 variables.
NOTE: DATA statement used:
      real time           1.19 seconds
      cpu time            0.19 seconds


374  proc sort; by zip date;
375
376  ****************************************************;
377  ** Create Zip Code - Day Data Set for Estimation****;
378  ****************************************************;

NOTE: There were 26072 observations read from the data set WORK.ALLPA.
NOTE: The data set WORK.ALLPA has 26072 observations and 55 variables.
NOTE: PROCEDURE SORT used:
      real time           2.10 seconds
      cpu time            0.21 seconds


379  proc means noprint; by zip date;
380  var padelt pcl act dp;
381  output out=poolr sum = padelt pcl act dp mean = apadelt apcl aact adp;
382
383  ************************************************************;
384  **Eliminate Zip Codes with No Parcels, No Accountables or **
385  ** No Parcel/Accountable Delivery Time                    **;
386  ************************************************************;
387

NOTE: There were 26072 observations read from the data set WORK.ALLPA.
NOTE: The data set WORK.POOLR has 1629 observations and 12 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.54 seconds
      cpu time            0.07 seconds
```

```
387  data poolr; set poolr;
388  if padelt=0 then delete;
389  if pcl=1 then delete;
390  if act=1 then delete;
391  if dp =1 then delete;
392
393  ***************************************************;
394  **Construct Higher Order Terms                    **;
395  ***************************************************;
```

```
NOTE: There were 1609 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.POOLR has 1535 observations and 12 variables.
NOTE: DATA statement used:
      real time           0.13 seconds
      cpu time            .13 seconds
```

```
396  data poolz; set poolr;
397  dp2 = dp**2;
398  pcl2=pcl**2;
399  act2=act**2;
400  pact=pcl*act;
401  padp=pcl*dp;
402  acdp=act*dp;
403
404
405
```

```
NOTE: There were 1535 observations read from the data set WORK.POOLR.
NOTE: The data set WORK.POOLZ has 1535 observations and 18 variables.
NOTE: DATA statement used:
      real time           0.01 seconds
      cpu time            0.01 seconds
```

```
406  proc means;
407  var  padelt pcl act dp;
408  output out=pregmean mean=mpadelt mpcl mact mdp;
409
410
411  ****************************************;
412  **Estimate the Pooled PA Delivery Model**;
413  ****************************************;
414
```

```
NOTE: There were 1535 observations read from the data set WORK.POOLZ.
NOTE: The data set WORK.PREGMEAN has 1 observations and 6 variables.
NOTE: PROCEDURE MEANS used:
      real time           0.01 seconds
      cpu time            0.01 seconds
```

```
415  proc reg  data=poolz outest=coefp1;
416  model padelt= pcl pcl2 act act2 dp dp2 pact padp acdp/vif tol acov ;
417
```

```
WARNING: The variable _NAME_ or _TYPE_ exists in a data set that is not
         TYPE=CORR, COV, SSCP, etc.
NOTE: 1635 observations read.
NOTE: 1635 observations used in computations.
NOTE: There were 1635 observations read from the data set WORK.POOLD.
NOTE: The data set WORK.COEFP1 has 1 observations and 18 variables.
NOTE: PROCEDURE REG used:
      real time           .14 seconds
      cpu time            .14 seconds


418  proc print data=coefp1;
419
420  ******************************************************************;
421  **Calculate Variabilities for P A Delivery Model                 **;
422  **Full Quadratic Specification                                   **;
423  ******************************************************************;
424

NOTE: There were 1 observations read from the data set WORK.COEFP1.
NOTE: PROCEDURE PRINT used:
      real time           .   seconds
      cpu time            .   seconds


425  data elasp1; merge coefp1 pregmean  drop=_TYPE_ ;
426  ppadelt=intercept-pcl*mpcl-pcl2*mpcl*mpcl-act*mact-act2*mact*mact-dp*mdp-dp
426! 2*mdp*mdp
427                    -pact*mpcl*mact-padp*mpcl*mdp-acdp*mact*mdp ;
428
429  elasp=(pcl*mpcl +2*pcl2*mpcl*mpcl+pact*mpcl*mact+padp*mpcl*mdp)/ppadelt;
430  elasa=(act*mact +2*act2*mact*mact+pact*mpcl*mact+acdp*mact*mdp)/ppadelt;
431  elasd=(dp*mdp   +2*dp2*mdp*mdp   +padp*mpcl*mdp+acdp*mact*mdp)/ppadelt;
432
433

NOTE: There were 1 observations read from the data set WORK.COEFP1.
NOTE: There were 1 observations read from the data set WORK.PREGMEAN.
NOTE: The data set WORK.ELASP1 has 1 observations and 24 variables.
NOTE: DATA statement used:
      real time           0.01 seconds
      cpu time            0.01 seconds


434  proc print data=elasp1;
435  var  mpadelt ppadelt elasp elasa elasd;
436
437
438
439  run;

NOTE: There were 1 observations read from the data set WORK.ELASP1.
NOTE: PROCEDURE PRINT used:
      real time           0.00 seconds
      cpu time            0.00 seconds
```

SAS LISTING

The SAS System

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
delt	1545	222595.34	55023.71	2711.00	543493.00
let	1545	36107.35	20865.17	425.0000000	212685.00
cf	1545	11799.00	8464.86	115.0000000	61371.00
seq	1545	3523.41	4002.18	1	37595.00
cv	1545	4969.46	4975.54	1	36201.00
cpr	1545	370.2674412	111.3753442	1	1471.00
xp	1545	9461.31	3517.34	196.0000000	34173.00
dens	1545	11.4275563	5.2441942	1.4483751	136.8327371

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	35	3.161705E13	9.033442E11	248.22	<.0001
Error	1509	5.491768E12	3639342384		
Corrected Total	1544	3.710882E13			

Root MSE	60327	R-Square	0.8520
Dependent Mean	222595	Adj R-Sq	0.8486
Coeff Var	27.10163		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
Intercept	1	-13416	5170.03967	-2.59	0.0096	.
let	1	1.65973	0.37902	4.38	<.0001	0.02308
let2	1	0.00000332	0.00000419	0.79	0.4278	0.01054
cf	1	1.77838	0.81842	2.17	0.0299	0.03530
cf2	1	-0.00007339	0.00001958	-3.75	0.0002	0.03192
seq	1	1.19988	0.87984	1.36	0.1729	0.07592
seq2	1	0.00003010	0.00001639	1.84	0.0664	0.21725
cv	1	2.89920	1.09084	2.66	0.0079	0.04071

cv2	1	0.00001721	0.00001026	1.68	0.0937	0.14322
spr	1	-19.39074	22.45873	-0.85	0.3940	0.04101

Parameter Estimates

Variable	DF	Variance Inflation
Intercept	1	0
let	1	43.33661
let2	1	34.64567
df	1	28.33147
df2	1	31.33313
seq	1	13.17236
seq2	1	4.50235
cv	1	24.56471
cv2	1	6.77161
spr	1	24.16377

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
spr2	1	-0.03286	0.01342	-2.45	0.0145	0.03906
dp	1	17.92620	1.36341	13.15	<.0001	0.03747
dp2	1	-0.00055680	0.00008397	-6.63	<.0001	0.01336
dens	1	-22.49610	57.91776	-0.39	0.6978	0.06254
dens2	1	0.13666	0.08543	1.60	0.1099	0.10429
lf	1	-0.00003992	0.00001428	-2.80	0.0052	0.01020
lse	1	0.00002413	0.00001870	1.29	0.1972	0.04486
lcv	1	4.387093E-7	0.00002167	0.02	0.9839	0.02739
lspr	1	-0.00053443	0.00039696	-1.35	0.1784	0.01035
ldp	1	0.00003417	0.00003103	1.10	0.2709	0.00604
fse	1	-0.00004598	0.00003638	-1.26	0.2064	0.10545
fcv	1	0.00016363	0.00003920	4.17	<.0001	0.07364
fspr	1	0.00115	0.00083926	1.37	0.1717	0.02260
fdp	1	0.00036350	0.00006068	5.99	<.0001	0.01497
scv	1	-0.00039998	0.00005278	-7.58	<.0001	0.12614
sspr	1	0.00204	0.00128	1.60	0.1109	0.07965
sdp	1	-0.00004283	0.00006871	-0.62	0.5331	0.05234
cspr	1	-0.00334	0.00087407	-3.82	0.0001	0.09718
cdp	1	0.00005436	0.00008930	0.61	0.5428	0.03241
spdp	1	0.00707	0.00200	3.54	0.0004	0.01084
ldns	1	-0.00146	0.00122	-1.20	0.2321	0.04969
fdns	1	-0.01216	0.00332	-3.67	0.0003	0.08876
sdns	1	0.00488	0.00488	1.00	0.3180	0.36673
cdns	1	-0.00918	0.00373	-2.46	0.0139	0.13030
spdns	1	-0.27399	0.10434	-2.63	0.0087	0.10092
dpdns	1	0.00847	0.00453	1.87	0.0615	0.04905

Parameter Estimates

Variable	DF	Variance Inflation
spr2	1	23.60413
dp	1	28.68884
dp2	1	74.35165
dens	1	15.39103
dens2	1	3.33862
lf	1	38.14595
lse	1	22.29307
lcv	1	36.63674
lspr	1	36.61249
ldp	1	165.55372
fse	1	3.48315

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Parameter Estimates

Variable	DF	Variance Inflation
fcv	1	13.57371
fspr	1	44.25224
fdp	1	66.30544
scv	1	7.92763
sspr	1	12.55432
sdp	1	19.10572
cspr	1	10.29057
cdp	1	30.85853
spdp	1	92.26812
ldns	1	20.12307
fdns	1	11.26671
sdns	1	2.72678
cdns	1	7.67486
spdns	1	9.90907
dpdns	1	20.38741

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	Intercept	let	let2	cf	cf2
Intercept	12078313.908	-268.078506	-0.000703507	-17.61988476	0.0020465008
let	-268.078506	0.2551319892	6.2840511E-7	-0.255181102	1.6628809E-6
let2	-0.000703507	6.2840511E-7	2.848118E-11	-2.104808E-7	1.400181E-11
cf	-17.61988476	-0.255181102	-2.104808E-7	0.8225748138	-8.44726E-6
cf2	0.0020465008	1.6628809E-6	1.400181E-11	-8.44726E-6	5.942056E-10
seq	-533.7097405	0.0415578458	-5.394829E-7	-0.039712221	1.2063097E-6

seq2	-0.008921686	8.5851902E-7	-3.17681E-12	5.2005062E-7	-3.30546E-11
cv	-845.5649586	0.0018419884	-5.616691E-7	-0.1486875	1.0469485E-6
cv2	-0.008689722	7.8271218E-7	3.397225E-12	-1.827134E-7	-4.27446E-11
spr	-7681.790926	-3.172725127	5.7230558E-7	0.0457697148	-7.80995E-6
spr2	-1.808936839	0.0000824864	2.0843161E-6	-0.000369808	7.1622531E-6
dp	-868.3147145	-0.4193216879	-1.589999E-6	0.0846623944	9.1173611E-7
dp2	-0.031738624	0.0000247754	2.0283572E-11	-0.0000124615	2.3645572E-11
dens	-46956.71314	-0.1844318003	0.0011191526	-0.0884398877	0.0000138616
dens2	33.43324133	0.0140914075	-0.0110645E-3	0.0007431265	-5.3266161E-6
lf	0.0024836436	-0.0160224E-6	-7.4817E-11	1.8888618E-6	-1.4011268E-11
lse	0.0220214845	-5.0713485E-6	1.8895554E-11	4.8000357E-6	3.3617142E-11
lcv	-0.0030436641	-5.5018603E-6	-1.2649161E-11	6.7488858E-6	4.4973355E-11
lspr	-0.0298262206	-0.0000027161	-1.2833014E-9	-0.0000113886	2.3156686E-7
ldp	0.0216633321	-0.0000112846	-1.4121213E-11	0.0000113912	5.2639445E-11
fse	0.0046131273	0.0836574E-6	-1.178112E-11	-5.1188856E-6	-4.7113136E-11
fcv	-0.0043143171	5.2173825E-6	2.7214214E-11	-0.0111111145	-1.3033E-11
fspr	-0.1026248525	0.0000170261	1.8841013E-9	5.4886325E-6	-4.1444189E-11
fdp	-0.0022631837	0.0000111134	1.879179E-11	-0.0000122363	-4.3671412E-11
scv	0.0387531142	-4.7883145E-6	-1.8812417E-11	1.3861168E-7	-4.5811E-11
sspr	0.0710374666	0.0000182112	7.9721185E-9	-0.0000184471	-4.1681E-11
sdp	-0.0456676728	3.4028116E-6	-1.8612172E-11	-7.7881188E-6	1.3718E-11
cspr	0.4017424247	0.0000181143	-9.8848112E-11	-0.0000185251	-4.5134E-11
cdp	0.0713432126	0.0000112344	7.8424142E-11	0.0000112E-11	2.7122116E-11
spdp	0.5261891177	0.0000149462	-1.8625112E-11	0.0000131724	-3.3671412E-11
ldns	-0.0576333996	-0.0000118653	-3.5171612E-9	0.0000124626	-3.5856172E-9
fdns	-0.0663421171	0.0000272548	6.5285129E-10	-0.0000126216	2.2438625E-9
sdns	1.3943704375	0.0000438105	1.4468623E-9	0.0000161135	-3.3321112E-9
cdns	3.7450733814	-0.0000038824	9.8516112E-10	0.0004864929	5.0293757E-9
spdns	79.637536465	-0.0021208213	-5.8417159E-8	-0.0019208035	1.1198473E-7
dpdns	1.2145777758	0.0002360301	7.0538309E-9	0.0006744778	-3.4111131E-9

Consistent Covariance of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	-533.7097405	-0.008921686	-845.5649586	-0.008689722	-7681.790926
let	0.0415578458	8.5851902E-7	0.0018419884	7.8271218E-7	-3.172725127
let2	-5.394829E-7	-3.17681E-12	-5.616691E-7	3.397225E-12	5.7230558E-7

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	seq	seq2	cv	cv2	spr
cf	-0.0397122221	5.2005062E-7	-0.1486875	-1.827134E-7	0.0457697148
cf2	1.2063097E-6	-3.30546E-11	1.0469485E-6	-4.27446E-11	-7.80995E-6
seq	0.8506351179	-7.524892E-7	0.1273942783	5.1657613E-7	-2.574756272
seq2	-7.524892E-7	3.048242E-10	2.4617789E-6	7.873217E-11	0.0000824864
cv	0.1273942783	2.4617789E-6	1.3521311385	-2.004243E-6	-3.890217543
cv2	5.1657613E-7	7.873217E-11	-2.004243E-6	1.821645E-10	0.0000738995
spr	-2.574756272	0.0000824864	-3.890217543	0.0000738995	742.36706937
spr2	-0.000369808	-1.122231E-8	-0.000163509	-1.032989E-8	0.1249848029
dp	-0.205025727	-4.865035E-6	-0.045357529	-1.987182E-6	-12.25540998

dp2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dens	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dens2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lf	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lse	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lcv	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lspr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ldp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dse	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dcv	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dspr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ddp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
scv	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
sspr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
sdp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
sspr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ssp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spap	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
sans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spans	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dpdns	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
Intercept	-1.808936839	-863.3147148	-0.031038624	-46956.71314	33.40004933
let	0.0001227996	-0.4189169978	0.000021756	-2.134431803	0.0040904375
let2	2.2848181E-8	-1.589999E-6	2.225872E-10	0.0000391505	-2.112645E-8
cf	-0.000368773	0.0848629344	-0.000012425	-0.088439877	0.0037431262
cf2	7.0625897E-8	9.1079601E-7	2.864572E-10	0.0000135636	-8.33661E-8
seq	-0.000369808	-0.205025727	7.3503735E-6	0.2977885499	0.0022836003

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
seq2	-1.122231E-8	-4.865035E-6	2.364069E-10	-8.912808E-6	4.8017463E-8
cv	-0.000163509	-0.045357529	-7.899414E-6	0.663279735	0.0015272866
cv2	-1.032989E-8	-1.987182E-6	1.74424E-10	0.0000918912	-1.145634E-7
spr	0.1249848029	-12.25540998	0.0005954981	197.64139165	-0.153720822
spr2	0.000221133	-0.004316924	4.3361432E-7	0.0481590945	0.0000216902
dp	-0.004316924	2.1478491078	-0.000085956	-1.278377964	-0.005662602
dp2	4.3361432E-7	-0.000085956	1.2927905E-8	0.000251331	3.8914507E-7
dens	0.0481590945	-1.278377964	0.000251331	1995.257589	-2.596894917
dens2	0.0000216902	-0.005662602	3.8914507E-7	-2.596894917	0.0042995568
lf	-4.74314E-8	4.38323E-6	-3.1046E-10	-0.00007824	3.4782653E-8
lse	-1.797658E-8	0.0000110368	1.738268E-10	0.0000299411	-1.298678E-7
lcv	3.032691E-8	6.4003237E-6	-1.77065E-10	0.0001784136	-1.758114E-7

lspr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ldp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
fse	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
fcv	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
fspr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
fdp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
scv	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
sspr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
sdp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cspr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cdp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spdp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ldns	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
fdns	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
sdns	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cdns	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spdns	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cpdns	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Consistent Covariance of Estimates

Variable	lf	lse	lcv	lspr	ldp
Intercept	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lat	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lat2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cf	1.388668718E-6	4.6000357E-6	6.7499668E-6	[illegible]	[illegible]
cf2	[illegible]	3.361814E-11	4.4973885E-12	2.3158896E-10	6.069945E-12
seq	1.3893847E-6	-5.652697E-6	-4.30452E-6	7.3035949E-6	1.8783292E-6
seq2	-7.98153E-12	-6.14919E-11	6.3946103E-11	2.4936846E-10	-2.63899E-11
cv	1.505732E-7	-7.484902E-6	1.1652493E-6	0.0000231964	4.2945468E-6
cv2	-8.17914E-12	-3.47461E-11	-5.80046E-12	1.533928E-10	-7.99205E-11

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	lf	lse	lcv	lspr	ldp
spr	-0.000015365	0.0000894148	0.0001887389	0.0004640313	0.0001040594
spr2	-4.74314E-8	-1.797658E-8	3.032691E-8	-2.495928E-6	-1.875093E-8
dp	4.38323E-6	0.0000110368	6.4003237E-6	0.0000917794	0.0000223749
dp2	-3.1046E-10	1.738268E-10	-1.77065E-10	8.7236284E-9	-3.815258E-9
dens	-0.00007824	0.0000299411	0.0001784136	-0.001774785	-0.000140709
dens2	3.4782653E-8	-1.298678E-7	-1.758114E-7	9.6571651E-7	-8.014584E-9
lf	3.223621E-10	-3.31619E-11	-6.93606E-11	2.517581E-9	1.800346E-10
lse	-3.31619E-11	7.581996E-10	8.334533E-11	2.2871311E-9	-1.49614E-10
lcv	-6.93606E-11	8.334533E-11	1.0160356E-9	2.8780162E-9	1.628904E-10
lspr	2.517581E-9	2.2871311E-9	2.8780162E-9	2.0663066E-7	-3.708667E-9
ldp	1.800346E-10	-1.49614E-10	1.628904E-10	-3.708667E-9	2.299621E-9
fse	1.902174E-11	-5.20523E-10	1.270102E-10	-1.586582E-9	1.390193E-10
fcv	-4.12603E-11	-5.10979E-11	-1.26295E-9	-5.841108E-9	2.909591E-11
fspr	-9.681043E-9	-1.518187E-9	-5.06941E-9	-2.795078E-7	4.8793986E-9
fdp	-5.57469E-10	9.774192E-11	3.738626E-10	7.9863167E-9	-2.149448E-9

scv	1.36839E-10	1.295783E-10	-4.25544E-10	-3.1514E-9	6.875641E-10
sspr	-5.36889E-10	-1.490303E-8	-7.564292E-9	-9.861517E-8	-3.68971E-9
sdp	-3.14337E-11	-1.134054E-9	2.427166E-10	-1.79131E-9	1.14865E-10
cspr	2.102175E-9	-1.481660E-9	-2.161167E-8	-8.274383E-8	4.302110E-9
cdp	1.436238E-10	3.839733E-10	-1.42943E-9	-2.22564E-8	-1.312952E-9
spdp	3.429867E-9	-5.790340E-9	-1.435107E-8	-2.728102E-7	-1.665262E-9
ldns	1.296593E-8	6.6145165E-9	-9.124469E-9	3.927243E-7	-6.313344E-9
fdns	-8.648436E-9	-6.034731E-9	-2.111466E-9	-2.291943E-7	1.647399E-8
sdns	-3.522215E-9	1.6645534E-8	6.473563E-9	2.677036E-8	-1.604102E-8
cdns	1.352438E-9	2.511537E-8	-8.944152E-9	-9.356902E-9	-1.251729E-9
spdns	3.102866E-8	-2.193626E-7	-1.471103E-8	1.835709E-6	3.442697E-7
dpdns	-2.203745E-8	-8.730304E-9	1.455316E-8	-8.307411E-7	7.704737E-9

Consistent Covariance of Estimates

Variable	cse	fcv	fspr	fdp	scv
Intercept	1.104613127-	-1.[illegible]+21	-1.[illegible]E-8	-1.[illegible]E-7	1.[illegible]E-8
lsr	3.182634E-8	3.127362E-9	1.[illegible]E-8	1.[illegible]E-8	-4.798843E-6
lsr2	-1.076122E-11	1.721301E-11	1.454321E-9	1.[illegible]E-11	-3.362147E-11
df	-8.109855E-6	-1.[illegible]E-8	5.480692E-6	-1.[illegible]E-8	3.386[illegible]E-7
df2	-4.761[illegible]E-11	-1.631E-11	-4.044439E-9	-4.667322E-11	-8.561[illegible]E-11
seq	-3.[illegible]E-7	-4.[illegible]E-7	-1.[illegible]E-7	-5.245162E-8	-1.[illegible]E-8
seq2	2.423779E-11	-1.441[illegible]E-11	7.115844E-11	5.412471E-11	-6.147[illegible]E-11
cv	6.189545E-7	-5.4[illegible]E-6	-1.[illegible]E-8	3.[illegible]E-8	-1.[illegible]E-8
cv2	1.859201E-11	1.348954E-11	1.156913E-9	6.964069E-11	-3.5739E-11
spr	-3.107757E-6	-0.0002[illegible]755	-1.004125021	0.0004000245	-0.000176447
spr2	-1.746057E-8	-8.918346E-8	-1.283634E-6	1.1016409E-7	-7.863712E-8
dp	-4.6264E-7	8.6681136E-6	-0.000022347	-0.000029146	0.0000256566

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	fse	fcv	fspr	fdp	scv
dp2	-2.73402E-10	-8.9741E-10	1.1725621E-8	1.198817E-9	-2.487773E-9
dens	0.0000860905	-0.000037469	-0.00250701	0.0004808008	-0.00003813
dens2	-8.363663E-8	-1.693284E-7	3.4304442E-6	-1.751855E-7	-1.888056E-7
lf	1.902174E-11	-4.12603E-11	-9.681043E-9	-5.57469E-10	1.36839E-10
lse	-5.20523E-10	-5.10979E-11	-1.518187E-9	9.774192E-11	1.295783E-10
lcv	1.270102E-10	-1.26295E-9	-5.06941E-9	3.738626E-10	-4.25544E-10
lspr	-1.586582E-9	-5.841108E-9	-2.795078E-7	7.9863167E-9	-3.1514E-9
ldp	1.390193E-10	2.909591E-11	4.8793986E-9	-2.149448E-9	6.875641E-10
fse	1.7122983E-9	-1.69394E-10	4.0652779E-9	-1.36443E-10	1.240084E-11
fcv	-1.69394E-10	3.1320603E-9	1.5817239E-8	-1.68974E-10	1.0542739E-9
fspr	4.0652779E-9	1.5817239E-8	1.3851661E-6	-2.444607E-8	-6.143355E-9
fdp	-1.36443E-10	-1.68974E-10	-2.444607E-8	7.7997809E-9	-2.59028E-10
scv	1.240084E-11	1.0542739E-9	-6.143355E-9	-2.59028E-10	4.1382021E-9
sspr	8.4864524E-9	3.429143E-10	6.0578376E-8	7.924108E-10	-9.27253E-10
sdp	2.654769E-10	2.308864E-10	3.0903264E-9	1.987584E-10	-3.21506E-10
cspr	-3.831006E-9	3.5829572E-8	1.6311311E-7	-1.195435E-8	4.681203E-8
cdp	-2.12364E-10	-8.54065E-10	6.3820536E-9	-1.784648E-9	-2.219566E-9
spdp	3.4228349E-9	2.7611208E-8	-4.860055E-7	-3.669801E-8	3.5081666E-8

ldns	-9.285568E-9	1.124644E-8	-6.356359E-7	4.229997E-9	2.261788E-9
fdns	1.7848103E-8	1.6736748E-8	1.2362355E-6	-8.259844E-8	-1.317442E-9
sdns	7.0921023E-9	-1.320626E-9	-3.83744E-8	7.2296185E-9	1.2571163E-8
cdns	-6.619574E-9	-8.379142E-9	-4.867994E-8	-4.688266E-8	1.1186771E-7
spdns	1.111259E-9	-6.727790E-7	3.0000201796	-1.189224E-6	-1.7345E-7
dpdns	6.436176E-9	-9.478889E-9	1.4532965E-7	6.451854E-8	2.2962234E-8

Consistent Covariance of Estimates

Variable	sspr	sdp	cspr	cdp	spdp
Intercept	3.0703746861	-1.2456776718	1.4217742437	3.0718432326	1.5231881177
lse	3.0001821212	8.9306116E-8	1.1111813145	3.0000133664	1.1111642221
lse2	7.3741385E-10	-2.86027E-11	-8.4886[illegible]E-11	7.3420104E-11	-3.4[illegible]E-
cf	-3.0000036431	-7.7881155E-6	1.1111[illegible]5151	3.1112172E-6	1.1111[illegible]4704
cf2	-4.836603E-11	1.2713854E-11	-4.5[illegible]345E-11	2.7722265E-11	-1.3[illegible]3E-8
sez	3.1001892889	-1.1111[illegible]3512	1.1111[illegible]1216	3.1111[illegible]3145	1.1111[illegible]1[illegible]
sez2	-1.0344384E-8	1.3145[illegible]E-10	-7.8886E-8	1.1[illegible]167E-11	-3.3[illegible]73E-8
cv	1.0000103694	1.0000223662	-1.1111[illegible]184	-1.1111[illegible]5582	1.1111[illegible]2[illegible]
cv2	-1.1647333E-8	1.3624[illegible]E-11	-7.1[illegible]738E-8	2.865771E-11	-3.3681[illegible]4E-8
spr	-1.0126853466	1.0110231517	-1.1111[illegible]3126	1.1111[illegible]7431	-1.1142431[illegible]
spr2	4.5017816E-6	3.8823112E-8	-1.7224[illegible]E-6	2.633947E-7	-1.1111[illegible]3514
dp	-1.0001122268	-1.1111[illegible]1636	1.1111[illegible]1246	-1.1111[illegible]5426	1.1111[illegible]8[illegible]8
dp2	8.3648777E-8	-7.8[illegible]336E-11	-1.3224333E-8	4.6253365E-8	-1.3691[illegible]E-7
dens	-0.0007581198	0.0000233397	-1.1111[illegible]1132	-0.0007[illegible]367	1.1111[illegible]3673
dens2	4.9405391E-6	-1.4723E-7	1.6261605E-6	1.2213526E-6	-1.1111[illegible]365[illegible]

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	sspr	sdp	cspr	cdp	spdp
lf	-5.36889E-10	-3.14337E-11	2.0321715E-9	1.436288E-10	9.4398676E-9
lse	-1.490303E-8	-1.184054E-9	-1.481862E-9	3.839783E-10	-5.790842E-9
lcv	-7.584292E-9	2.437166E-10	-2.461167E-8	-1.429431E-9	-1.635007E-8
lspr	-9.861517E-8	-1.781916E-9	-8.974883E-8	-2.22584E-9	-2.728102E-7
ldp	-3.689718E-9	1.148651E-10	4.3001006E-9	-1.312952E-9	-1.660262E-9
fse	8.4864524E-9	2.654769E-10	-3.831006E-9	-2.12364E-10	3.4228349E-9
fcv	3.429143E-10	2.308864E-10	3.5829572E-8	-8.54065E-10	2.7611208E-8
fspr	6.0578376E-8	3.0903264E-9	1.6311311E-7	6.3820536E-9	-4.860055E-7
fdp	7.924108E-10	1.987584E-10	-1.195435E-8	-1.784648E-9	-3.669801E-8
scv	-9.27253E-10	-3.21506E-10	4.681203E-8	-2.219566E-9	3.5081666E-8
sspr	2.2486542E-6	-3.440448E-8	1.7756189E-7	2.8771792E-8	4.7514032E-8
sdp	-3.440448E-8	7.0825747E-9	-6.309809E-9	-3.09584E-9	-2.681328E-9
cspr	1.7756189E-7	-6.309809E-9	1.2679683E-6	-1.049805E-8	9.8574151E-7
cdp	2.8771792E-8	-3.09584E-9	-1.049805E-8	1.3765565E-8	-3.102622E-8
spdp	4.7514032E-8	-2.681328E-9	9.8574151E-7	-3.102622E-8	6.9217888E-6
ldns	-3.2742E-7	-6.83803E-9	2.2144331E-7	-2.318243E-8	1.1328865E-7
fdns	7.5994066E-9	4.6923142E-9	-2.389223E-8	2.044544E-8	-1.441478E-7
sdns	-2.291356E-7	-3.367613E-8	-1.75919E-7	8.4057709E-9	-3.752917E-7
cdns	1.2653987E-7	-8.680376E-8	1.2610246E-6	1.8669457E-7	3.2582389E-7
spdns	0.0000142796	-7.308035E-7	6.9401201E-6	5.2033893E-8	-0.00003818

dpdns	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Consistent Covariance of Estimates

Variable	ldns	fdns	sdns	cdns	spdns
Intercept	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lel	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lel2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ef	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ef2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
seq	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
seq2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cv	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cv2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spr2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dp2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dens	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dens2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lf	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lse	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
lcv	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The SAS System

The REG Procedure

Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	ldns	fdns	sdns	cdns	spdns
lspr	3.9271248E-7	-2.291943E-7	2.6770866E-8	-9.356902E-8	1.8957098E-6
ldp	-6.313344E-9	1.647899E-8	-1.604102E-8	-1.251729E-9	8.4436977E-7
fse	-9.285568E-9	1.7848103E-8	7.092123E-9	-6.619574E-9	1.1112591E-9
fcv	1.124644E-8	1.6736748E-8	-1.320626E-8	-8.379142E-9	-5.727092E-7
fspr	-6.856359E-7	1.2362355E-6	-2.83744E-8	-4.867994E-8	0.0000230798
fdp	4.2299971E-9	-8.259844E-8	7.2296085E-9	-4.688266E-8	-1.189224E-6
scv	2.061788E-9	-1.91744E-8	1.0570063E-8	1.0086731E-7	-1.78451E-7
sspr	-3.2742E-7	7.5994066E-9	-2.291356E-7	1.2653987E-7	0.0000142796
sdp	-6.83803E-9	4.6923142E-9	-3.867613E-8	-8.680376E-8	-7.808035E-7
cspr	2.2144331E-7	-2.389223E-8	-1.75919E-7	1.2610246E-6	6.9401201E-6
cdp	-2.318243E-8	2.044544E-8	8.4057709E-9	1.8669457E-7	5.2033893E-8
spdp	1.1328865E-7	-1.441478E-7	-3.752917E-7	3.2582389E-7	-0.00003818
ldns	2.1081478E-6	-1.83888E-6	-1.7029E-7	-1.637631E-6	8.5822862E-6
fdns	-1.83888E-6	0.0000142311	7.1349823E-7	-5.405158E-9	-0.000035434
sdns	-1.7029E-7	7.1349823E-7	0.0000225248	1.1955257E-6	-0.000127712
cdns	-1.637631E-6	-5.405158E-9	1.1955257E-6	0.000015322	-0.00003586
spdns	8.5822862E-6	-0.000035434	-0.000127712	-0.00003586	0.0132334035
dpdns	-4.206114E-6	-3.749394E-6	1.424002E-6	4.9468463E-6	-0.00031853

Consistent Covariance of Estimates

Variable	dpdns

Intercept	[illegible]
let	[illegible]
let2	[illegible]
df	[illegible]
df2	[illegible]
seq	[illegible]
seq2	[illegible]
cv	[illegible]
cv2	[illegible]
spr	[illegible]
spr2	[illegible]
dp	[illegible]
dp2	[illegible]
dens	[illegible]
dens2	[illegible]
lf	[illegible]
lse	[illegible]
lcv	[illegible]
lspr	[illegible]
ldp	[illegible]
fse	[illegible]

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	dpdns
fcv	-9.478888E-9
fspr	1.4532965E-7
fdp	6.4518354E-8
scv	2.2962288E-8
sspr	2.41958E-7
sdp	7.5551363E-8
cspr	-3.851232E-7
cdp	4.414323E-8
spdp	2.2860528E-6
ldns	-4.206114E-6
fdns	-3.749394E-6
sdns	1.424002E-6
cdns	4.9468463E-6
spdns	-0.00031853
dpdns	0.0000262714

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F

Model	14	3.036778E12	2.169127E12	492.32	<.0001
Error	1831	8.741138E12	4408907466		
Corrected Total	1845	3.711882E13			

Root MSE	66377	R-Square	0.8181
Dependent Mean	122595	Adj R-Sq	0.8167
Coeff Var	54.15163		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
Intercept	1	[illegible]	[illegible]	[illegible]	[illegible]	.
let	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
let2	1	-[illegible]E-7	[illegible]	[illegible]	[illegible]	[illegible]
cf	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cf2	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
seq	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
seq2	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cv	1	4.83[illegible]	[illegible]	3.36	[illegible]	[illegible]
cv2	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spr	1	3.79141	[illegible]	[illegible]	0.5473	[illegible]

Parameter Estimates

Variable	DF	Variance Inflation
Intercept	1	0
let	1	21.44755
let2	1	13.09305
cf	1	15.89282
cf2	1	11.98392
seq	1	3.69412
seq2	1	3.50059
cv	1	4.47381
cv2	1	4.07473
spr	1	7.96211

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
spr2	1	0.00102	0.00717	0.14	0.8864	0.16561
dp	1	19.04347	1.20011	15.87	<.0001	0.05855
dp2	1	-0.00016488	0.00003708	-4.45	<.0001	0.08296
dens	1	-308.62263	42.79224	-7.21	<.0001	0.13869

dens2	1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Parameter Estimates

Variable	DF	Variance Inflation
spr2	1	[illegible]
dp	1	[illegible]
dp2	1	[illegible]
dens	1	[illegible]
dens2	1	[illegible]

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: [illegible]

Consistent Covariance of Estimates

Variable	Intercept	let	let2	cf	cf2
Intercept	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
let	-68.03440099	[illegible]	-6.367384E-7	[illegible]	[illegible]
let2	0.0014998273	-6.367384E-7	[illegible]	5.5432137E-7	[illegible]
cf	-139.3550202	[illegible]	5.5432137E-7	[illegible]	[illegible]
cf2	0.0014605842	[illegible]	[illegible]	[illegible]	[illegible]
seq	53.675253049	-0.011131315	7.7331498E-8	-0.051718938	7.1040391E-7
seq2	0.0000847896	4.5200577E-8	-2.41022E-13	6.952099E-7	-8.6186E-12
cv	-435.2403052	-0.015669792	-3.252462E-8	-0.094888999	2.0151819E-6
cv2	0.0053163349	1.2904255E-7	8.187841E-13	1.4743395E-6	-2.85678E-11
spr	11269.655581	-0.528210803	5.3272017E-6	-0.345092587	-4.026129E-6
spr2	-8.587265425	0.0003218845	-4.841591E-9	0.0000372816	3.590638E-10
dp	-3881.218984	-0.166480706	5.8086953E-7	-0.156112691	5.2360585E-6
dp2	0.1639140471	2.5250735E-6	-1.10129E-11	6.9291813E-6	-2.14424E-10
dens	24473.953787	-1.853563497	0.0000105264	0.0250687553	0.0000611655
dens2	-49.43618832	0.0029805132	-1.860321E-8	-0.001598233	-4.961243E-8

Consistent Covariance of Estimates

Variable	seq	seq2	cv	cv2	spr
Intercept	53.675253049	0.0000847896	-435.2403052	0.0053163349	11269.655581
let	-0.011131315	4.5200577E-8	-0.015669792	1.2904255E-7	-0.528210803
let2	7.7331498E-8	-2.41022E-13	-3.252462E-8	8.187841E-13	5.3272017E-6
cf	-0.051718938	6.952099E-7	-0.094888999	1.4743395E-6	-0.345092587
cf2	7.1040391E-7	-8.6186E-12	2.0151819E-6	-2.85678E-11	-4.026129E-6
seq	0.294549754	-5.422337E-6	-0.008219162	-1.9918E-8	0.3200938793
seq2	-5.422337E-6	1.617841E-10	-5.825048E-7	1.089141E-11	-0.000012979
cv	-0.008219162	-5.825048E-7	0.4131946512	-6.564718E-6	-1.963677855
cv2	-1.9918E-8	1.089141E-11	-6.564718E-6	1.316775E-10	0.0000230309
spr	0.3200938793	-0.000012979	-1.963677855	0.0000230309	217.3780817
spr2	0.0000664828	-5.44825E-12	0.0009985939	-1.517079E-8	-0.071398183
dp	-0.033957316	1.5795816E-6	0.1259092225	-6.588734E-7	-8.235705735
dp2	7.2058754E-7	-5.40675E-11	-1.625962E-6	-5.8245E-12	0.0002109705
dens	0.0920951459	0.0000204641	-6.06587577	0.0000477618	15.188566953

dens2	[illegible]	-4.649186E-8	[illegible]	[illegible]	[illegible]

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
Intercept	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
let	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
let2	-4.84159E-9	[illegible]	[illegible]	[illegible]	[illegible]
cf	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: delt

Consistent Covariance of Estimates

Variable	spr2	dp	dp2	dens	dens2
cf2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
seq	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
seq2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cv	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
cv2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spr	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
spr2	0.0000441175	0.0033228266	-1.231223E-7	-0.003173098	0.0000294772
dp	0.0033228266	0.1340485365	-0.000073954	-7.645617446	0.0161221981
dp2	-1.231223E-7	-0.000073954	3.3224663E-9	0.0002604167	-7.234997E-7
dens	-0.003173098	-7.645617446	0.0002604167	1382.9919352	-2.363682329
dens2	0.0000294772	0.0161221981	-7.234997E-7	-2.363682329	0.0045382061

The SAS System

Obs	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	let	let2	cf
1	MODEL1	PARMS	delt	60326.96	-13415.80	1.65973	.000003322	1.77838

Obs	cf2	seq	seq2	cv	cv2	spr	spr2	dp
1	-.00007339	1.19988	.000030105	2.89920	.000017209	-19.9927	-0.032858	17.9262

Obs	dp2	dens	dens2	lf	lse	lcv	lspr
1	-.000556802	-22.4961	0.13666	-.000039915	.000024128	.000000439	-.000534428

Obs	ldp	fse	fcv	fspr	fdp	scv
1	.000034169	-.000045984	.000163629	.001147476	.000363502	-.000399978

Obs	sspr	sdp	cspr	cdp	spdp	ldns
1	.002039419	-.000042834	-.003342055	.000054356	.007074430	-.001461189

Obs	fdns	sdns	cdns	spdns	dpdns	delt
1	-0.012161	.004877152	-.009175071	-0.27399	.008473182	-1

The SAS System

Obs	mdelt	pdelt	elasl	elasf	elass
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Obs	elasc	elasp	elasd	elasdns
1	[illegible]	[illegible]	[illegible]	[illegible]

The SAS System

Obs	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	let	[illegible]
1	MODEL1	PARMS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Obs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Obs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

The SAS System

Obs	mdelt	pdelt	elasl	elasf	elass
1	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Obs	elasc	elasp	elasd	elasdns
1	0.088135	0.015836	0.66888	-0.082530

The SAS System

The MEANS Procedure

Variable	N	Mean	Std Dev	Minimum	Maximum
padelt	1535	18352.66	15071.74	83.0000000	101197.00
pcl	1535	140.9718241	133.8627136	1.0000000	2044.00
act	1535	58.1087948	54.7023166	1.0000000	545.0000000
dp	1535	8179.28	5128.74	196.0000000	32926.00

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: padelt

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	9	2.465968E11	27399646675	410.20	<.0001
Error	1525	1.018624E11	66795037		
Corrected Total	1534	3.484593E11			

Root MSE	[illegible]	R-Square	[illegible]
Dependent Mean	[illegible]	Adj R-Sq	[illegible]
Coeff Var	[illegible]		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Tolerance
Intercept	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	.
pcl	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pcl2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
act	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
act2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
dp2	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
pact	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
padp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
acdp	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Parameter Estimates

Variable	DF	Variance Inflation
Intercept	[illegible]	[illegible]
pcl	[illegible]	[illegible]
pcl2	[illegible]	[illegible]
act	[illegible]	[illegible]
act2	[illegible]	[illegible]
dp	[illegible]	[illegible]
dp2	[illegible]	[illegible]
pact	[illegible]	[illegible]
padp	[illegible]	[illegible]
acdp	[illegible]	[illegible]

The SAS System

The REG Procedure
Model: MODEL1
Dependent Variable: padelt

Consistent Covariance of Estimates

Variable	Intercept	pcl	pcl2	act	act2
Intercept	176503.55468	39.583780979	0.0707848448	-169.9211793	-0.759265825
pcl	39.583780979	24.136847455	-0.00880578	-13.82880816	0.0106353533
pcl2	0.0707848448	-0.00880578	0.0000103958	0.0131598775	-0.000041743
act	-169.9211793	-13.82880816	0.0131598775	120.17512042	-0.24807765
act2	-0.759265825	0.0106353533	-0.000041743	-0.24807765	0.001091878
dp	-41.47932731	-0.268889971	0.0000155238	-0.544026496	0.0018027002
dp2	0.000409275	8.6858076E-6	-1.117251E-8	1.3495964E-6	6.9927963E-8
pact	-3.944198719	0.0051311056	-0.000120381	-0.180165303	0.0007111912
padp	0.0560525032	-0.001221058	8.9937459E-7	0.0018302959	-3.003302E-6
acdp	0.097955243	0.0015001905	1.8028364E-6	-0.00054502	-0.00002678

Consistent Covariance of Estimates

Variable	dp	dp2	pact	padp	acdp
Intercept	-41.4733[illegible]	0.0004[illegible]	-0.9441[illegible]	0.0560[illegible]	0.197[illegible]
pol	-0.2638899[illegible]	3.6356076E-6	0.0051[illegible]	-0.0[illegible]	[illegible]
pol2	0.0000155239	-1.[illegible]E-3	-0.0001[illegible]	3.9937453E-7	1.8028364E-6
act	-0.844026496	1.3485964E-6	-0.1[illegible]	0.0018[illegible]	-0.0[illegible]
act2	0.0013027[illegible]	6.9927963E-3	0.0007[illegible]	-3.0[illegible]E-6	-0.0[illegible]
dp	0.0194303353	-0.649335E-7	0.0003[illegible]	-0.0001[illegible]	-0.0[illegible]
dp2	-0.649335E-7	4.6133[illegible]6E-[illegible]	1.4728475E-7	-1.401031E-9	-6.391626E-9
pact	0.0003[illegible]	1.4728475E-7	0.0022[illegible]	-0.0001[illegible]	-0.0[illegible]
padp	-0.0000[illegible]	-1.401[illegible]E-9	-0.0001[illegible]	2.0021[illegible]E-7	4.9[illegible]E-8
acdp	-0.0000[illegible]	-6.391626E-9	-0.[illegible]	4.9[illegible]E-8	2.1[illegible]E-6

The SAS System

Obs	_MODEL_	_TYPE_	_DEPVAR_	_RMSE_	Intercept	pol	pol2	act
1	MODEL1	PARMS	padelt	[illegible]	-[illegible]	33.5714	-.0[illegible]	15.[illegible]

Obs	act2	dp	dp2	pact	padp	acdp	ppadelt
1	-.0041[illegible]	1.54561	-.0001[illegible]	-0.17276	.0017[illegible]	.0[illegible]	-1

The SAS System

Obs	mpadelt	ppadelt	elasp	elasa	elasd
1	18352.66	18727.24	0.28451	0.24998	0.51162

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 6, QUESTION 6

6. The response to Interrogatory OCA/USPS-T14-5 provides values and SAS code for the marginal delivery time for each shape for the "regular full and restricted quadratic delivery models." The response to interrogatory ADVO/USPS-T14-2, also provides a copy of the SAS Log for the program "Estimating Delivery Equations." Please provide the values of the marginal and average delivery times for each shape (including large parcels and accountables) for each of the alternate models requested in Interrogatory OCA/USPS-T14-11 and discussed in Section G of witness Bradley's testimony in USPS-T-14. Also, provide the SAS Logs showing the calculations of the reported marginal and average costs. For the Translog specification, please provide the values of the aggregate marginal delivery time and the SAS Log of those calculations. Please elaborate on the significance of marginal cost estimates for these models, especially in the cases where a negative marginal cost is calculated.

RESPONSE:

The regular delivery time and parcel/accountable delivery time equations are multi-product functions reflecting the fact that city carrier delivery involves the simultaneous delivery of several classes of mail. In a multi-product firm, the concept of an individual product's average cost is not defined. Similarly, in a multi-product time function the concept of an individual products average time is not defined. For example, the natural approach to calculating an average time would be to find the volume variable time for an individual class or subclass and divide by its volume. However, substitution of the definition of volume variable cost shows that this ratio produces marginal cost, not average cost:

$$\frac{VVC_i}{V_i} = \frac{C\varepsilon_i}{V_i} = \frac{C_i \frac{\partial C}{\partial V_i}\frac{V_i}{C}}{V_i} = \frac{\partial C}{\partial V_i}.$$

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 6, QUESTION 6

Consequently, it is not possible to provide the requested average times. The marginal times are well defined, however and are provided in the following table. For purposes of comparison, I also include the marginal times for the recommended models provided in the responses to OCA/USPS-T14-5 and OCA/USPS-T14-6.

Marginal Times Alternative Regular Delivery Time Specifications

	Letters	Flats	Sequenced	Collection	Small Parcels	DPS
Recommended Model	1.39	1.36	0.82	4.00	9.56	
Fixed Effects	0.27	0.65	0.74	0.71	3.66	
Route Level	0.19	-0.68	1.07	0.11	20.47	
Alternative Volume	1.26	1.25	0.76	3.84	2.01	1.935616
Including DOW Effects	1.47	1.27	0.64	3.93	10.52	
Cross Section	2.04	0.63	-0.18	4.26	26.00	
Weighted: # of Routes	1.61	1.22	0.50	4.65	10.84	
Weighted:1/ # of Routes	1.20	1.95	0.66	3.05	6.39	
Including Prob. Zips	1.44	1.51	0.79	3.90	11.34	
Translog (Agg. Volume)	1.23					

Marginal Times Alternative P/A Delivery Time Specifications

	Large Parcel	Accountables
Recommended Model	37.80	80.56
Fixed Effects	51.12	94.45
Cross Section	38.50	89.10
Weighted: # of Routes	31.36	95.59
Weighted:1/ # of Routes	38.71	76.86

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 6, QUESTION 6

Please note that the forming the response to the information request required calculating over 50 marginal times from 13 different econometric regressions. Consequently, it was far more efficient to calculate the marginal times in Excel that in SAS. The formula used to calculate the marginal time is embodied in the attached Excel program but is presented here for clarity:

$$MT_{ij} = \varepsilon_{ij} \frac{T_{ij}(\overline{V}, \overline{X})}{\overline{V}ij} = \frac{\partial T_{ij}}{\partial V_{ij}}$$

Where MT_{ij} is the mean time for product "i" in specification "j," ε_{ij} is the variability for product "i" in specification "j," $\overline{V}ij$ is the average volume for product "i" in specification "j," and $T_{ij}(\overline{V}, \overline{X})$ is the delivery time for specification j evaluated at the mean values for volumes and non-volume variables (X). Please also note that in the case of the mean centered translog, $T_{ij}(\overline{V}, \overline{X}) = e^{\beta_0}$, where β_0 is the estimated intercept from the translog equation.

A review of the marginal times from the various specifications reveals that they support the proposed approach to measuring street time variabilities, in general, and specifically help justify the selection of the recommended variabilities. First, the existence of negative marginal costs in the route level analysis and the cross-sectional analysis helps emphasize that these econometric approaches are not appropriate for the estimation of street time variabilities on the CCSTS data set.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 6, QUESTION 6

The cross sectional approach dramatically reduces the data available to estimate the equation and may therefore exacerbate the multicollinearity problem inherent in the delivery volume data. The route level analysis not only has a negative marginal cost (which does not make intuitive sense) but also very low marginal times. This most likely reflects the fact that a route level analysis does not capture the full response of carrier street time to changes in volume. A comparison of the marginal times from the recommend model with the remaining specifications (save the translog which has only aggregate volume and will be discussed below) shows that the marginal times from the recommended model are bounded by the other marginal times. In addition, despite the fact that different specifications and econometric approaches were taken, the overall results are quite robust. For example, calculating the average for the marginal times across the alternative approaches (after first eliminating the approaches that produced negative marginal times) produces values that are close, although a little lower, than marginal times from the recommended model. For letters, the average alternative marginal time is 1.21 seconds as compared with 1.39 seconds for the recommended model. For flats the two marginal times are 1.31 and 1.36, respectively. The average alternative marginal time for sequenced mail is 0.68 seconds relative to the marginal time from the recommended model of 0.82 seconds. Finally, the average alternative marginal times for collected mail and small parcels are 3.34 seconds and 7.46 seconds, respectively, which compare with marginal times from the recommended model of 4.0 seconds and 9.53 seconds.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 6, QUESTION 6

The translog model has only a single aggregate volume term with an associated marginal time of 1.23 seconds. Because this volume measure is an aggregate of all shapes, it is difficult to provide an intuitive interpretation, but given that letters and flats dominate the volume vector, it is reassuring that the calculated marginal time is close to the letter and flat marginal times.

The results for the parcel/accountable delivery equation mirror those for the regular delivery equation in the sense that the recommended delivery time is in the middle of the distribution of marginal times across all specifications and that the averages marginal times from other specifications parallel the marginal times from the recommended model.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 1

1. Please provide an Excel version of the SAS file that contains the set of ZIP Codes that were ultimately used by witness Bradley to estimate his regular delivery variability model.

   a. Please list the ZIP codes contained in this file.

   b. Using those ZIP Codes, please fill in the table below.

ZIP	Maximum # Routes	Minimum # Routes Observed	Daily Percent of Max Routes Observed (Averaged)	Total Days Observed	Days < Than Max Obs	Minimum # Routes Used	Daily Percent of Max Routes Used (Averaged)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

For each ZIP:

Column 1 should show the encrypted ZIP Code.

Column 2 should show the maximum possible number of routes that could have been observed on any day within the sample period.

Column 3 should show the minimum number of routes for which observations were recorded on any day within the sample period.

Column 4 should show the daily routes for which observations were recorded as a percentage of maximum possible routes averaged over all of the days in the sample period, for which some data were recorded.

Column 5 should show the number of days for which observations were recorded.

Column 6 should show the number of observed days on which less than the maximum possible number of routes were observed.

Column 7 should show the minimum number of routes for which observations were actually used for modeling purposes, recorded on each day within the sample period.

Column 8 should show the daily routes actually used for modeling purposes as a percent of maximum possible routes averaged over all of the days in the sample period.

RESPONSE:

The data set, in Excel format is attached as

"POIR.8.Q.1.Regression.Data.Set.xls".

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 1

a. The requested listing is provided below:

206351	2946128	5050753	7253903
207119	2958650	5056157	7366497
264816	3023743	5079251	7408660
265172	3029022	5119230	7595552
275455	3078259	5161981	7606474
478581	3109561	5268704	7701991
502885	3117064	5335517	7795307
527528	3170247	5386728	7875349
540658	3275234	5561832	7889371
680989	3347202	5621617	8027588
723582	3461089	5627955	8090573
823126	3522403	5656871	8131706
1109097	3541130	5692981	8155849
1226213	3610207	5813957	8265880
1352856	3637100	5872302	8407116
1376260	3711526	5875249	8573006
1432093	3841890	5887042	8586719
1495397	3931949	5917898	8693266
1618591	3975672	6019538	8755088
1629153	4017880	6123091	8767371
1631973	4033945	6131949	8768579
1797270	4088800	6135928	8807513
1830982	4193105	6146537	8925917
1891225	4220169	6260501	8935185
2071680	4224807	6395033	8937811
2330822	4228438	6566657	8939761
2381912	4282180	6608572	8971623
2409668	4286657	6641989	9216792
2418845	4416772	6833631	9272079
2432303	4690965	6915709	9404528
2490591	4700671	6980401	9600952
2516318	4717812	7033018	9680073
2523329	4741966	7064632	9719666
2634763	4826943	7109598	9785658
2644577	4889538	7131259	9797599
2669128	4938880	7211264	9900515
2774051			

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 1

b. The requested file is attached as "POIR.8.Q.1b.Table.xls". Please note that to assist the Commission in its evaluation of the data, the table has been augmented to provide additional information. First, please note that three separate data sets were collected and constructed in the CCSTS: a time data set, a letter/flat volume data set and a parcel/accountable data set. Thus, the attached file provides the requested "Minimum # of Routes Observed" for each of the three data sets. This is useful information because it illustrates that the primary source of attrition was in the time data, not in the volume data. (This is highlighted in the table presented below which includes the average values across all Zip Codes).

Similarly, the requested "Daily Percent of Max Routes Observed (Averaged)" is also provided separately for each of the three data sets, as are the requested "Total Days Observed," and "Days < Max Obs." Finally, review of the requested data revealed that there were instances of "Days < Max Obs." which conveyed different amounts of information. For example, suppose that a Zip Code has 25 routes. If there were missing data for 20 routes that would be a day with less than maximum observations. However, if there were missing data for just 1 route, that too would be a day with less than maximum observations. It seems reasonable that these two circumstances differ in the implications for missing data. Thus, in addition to the requested column, I also provided a column entitled "Days with 90% of Max Obs." This column provides information

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 1

on the number of days in which less than 90% of the maximum routes provided data.

Average Values Across All Zip Codes

Daily Percent of Max Routes Observed (Avg) Time Data Set	Daily Percent of Max Routes Observed (Avg) L/F Data Set	Daily Percent of Max Routes Observed (Avg) P/A Data Set	Daily Percent of Max Routes Used
89.7%	99.7%	96.1%	87.1%

In reviewing the numbers in the table, please note the following issues. First, the values in the column entitled "Maximum Number of Routes" came from the Postal Service AMS "frame" which identifies the number of letter routes in each Zip Code. For a small number of Zip Codes, the minimum number of reported routes from any of the three data sets exceeded the number of routes reported on the frame. Those Zip Codes are listed below.

Zip	Amount by Which Minimum Number of Routes on Any Data Set Exceeded the Frame # of Routes
8937811	12
2958650	7
6395033	2
207119	1
1631973	1
2381912	1
3347202	1
5050753	1
6146537	1
7253903	1
7408660	1
7595552	1
9797599	1

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 1

In all but two cases, the discrepancies were small and suggest that either a route could have been added in the Zip Code or data on a non-letter route was reported. For the Zip Codes in which there were materially more routes reported in the data then on the frame, a review of the reported data shows that very high numbers of routes were reported for only one of the three data sets, and the other two data sets reported numbers of routes at or slightly below the frame. Also, the excess routes in the "outlier" data set had very high route numbers compared the remaining reported routes. This suggests that these reported routes were not regular letter routes. For all cases, the percentage of daily max routes observed was capped at 100 percent so as not to overstate the average value calculated for column 4.

Next, please note that the total number of days reporting data in column 5 excludes Sundays and holidays reported (virtually all of which reported zero volumes) for the volume data sets to avoid over-representing the amount of data received.

Finally, a comparison of column 7, the minimum routes used (in the regression analysis data set creation) with the minimum routes reported on any day for any of the three data sets shows that for almost all of the Zip Codes, the number of days used was less than or equal to the minimum routes reported on any day for any of the three data sets. However for seven Zip Codes the minimum number of days used in the regression exceeded the minimum routes reported on any

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 1

day for any of the three data sets. Investigation of the data for those Zip Codes shows that this occurred for two reasons. First, for four of the Zip Codes, extra days (with relatively few routes) were reported on one of the three data sets. These extra days had no corresponding data on the other data sets, so no matches could be made between time and volume and these days could not be used in creating the regression data set. For example, Zip Codes 9272079 and 275455 reported 17 days of parcel/accountable data while reporting only 11 days of time and letter/flat data. The other reason (for the three remaining Zip Codes) that the minimum number of days used in the regression exceeded the minimum routes reported on any day for any of the three data sets was that the day on which the minimum occurred for one of the three data sets was not used in the regression. For example, because of matching problems, Zip Code 2432303 had only 9 useable Zip Days rather than 11. Thus, the day with the lowest reporting routes on the time data set was not used in the regression data base.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 2(c)-(f)

2. c. Please explain the various reasons for attrition of the number of recorded ZIP/route/day observations to the number of observations used for modeling. Were recorded observations not used for modeling purposes because they were judged improbable, e.g., had time recorded without associated volume, or volume recorded without associated time? Were recorded observations not used for modeling purposes because they were judged to be outliers (unreasonably small or large)? Are there other reasons that not all recorded observations were used?

d. Of the various reasons listed in response to "c.", indicate to the extent feasible the relative frequency at which they occurred?

e. If ZIP/route/day observations were not used because a route identifier scanned was inconsistent with the route identifiers in the DOIS database, please explain the various ways in which such a mismatch could occur.

f. For the various reasons listed in response to "e.", indicate to the extent feasible the relative frequency at which they occurred?

RESPONSE:

c. *The attrition in forming the analysis data base was due to mismatches* between the route days reported for the letter/flat data and the route days reported for the other two data sets. This mismatch is another way reflecting the attrition between possible route days and recorded route days. If a route day has recorded letter and flat volumes but no time data, then this will show up as a "mismatch" in producing the analysis data set. Analysis of the mismatches shows that relatively few mismatches occurred because a route number occurred in one data set but not another. More common was the outcome that routes did not provide complete data for all days for either the scan data or the parcel/accountable data.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 2(c)-(f)

d. If one takes the letter/flat route days as the set of maximum observable observations, the attrition of route days in constructing the analysis data set came about because either route days on the time data set were missing, route days on the parcel/accountable data set were missing or both. Approximately 60 percent of those mismatches were for missing time data, about 24 percent of the mismatches were because of missing parcel/accountable and in about 16 percent of the mismatches both time data and parcel/accountable data were missing. Allocating the 16 percent joint attrition back to the time data set and parcel/accountable data set in proportion to their own attritions, yields 71 percent of the attrition due to missing time data and 29 percent of the attrition due to missing parcel/accountable data.

e. This mismatch would occur because a route number was not recorded in the scan data set, because an alphanumeric route number was recorded on the scanner or because the recorded route number did not match those in the letter/flat data set (which approximates the route numbers in DOIS). In this last set, the recorded route number was often greater than the number of letter routes in the Zip Code either indicating an error in entering the route number or that it was a special purpose route.

f. Of the route numbers on the time data set that did not match the letter/flat data set, approximately 26 percent had no recorded route number, approximately 9 percent had an alphanumeric route number and 65 percent had an otherwise non-matching route number.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-1.
Your testimony at page 54 (ll. 7-8) states that the number of Zip Codes used to estimate the regression is 1,545. Your testimony at page 17 (ll. 3-11) identifies types of sections found on a typical city carrier route.

a. For the 1,545 Zip Codes included in your final sample, please indicate the number of each type of section (as defined on p. 17 of your testimony) included in the sample.

b. For all city carrier routes, please provide the total number of each type of section, compare the sections in the sample frame with this universe, and discuss the extent to which the sample frame is representative of the universe of city carrier routes with respect to section coverage.

c. Please discuss why it would or would not be appropriate to treat the sample as a random stratified sample of section types, and to weight the sample results so as to provide a more accurate representation of the universe of section types.

VP/USPS-T14-1 Response:

First, I need to present a slight clarification. The number 1,545 refers to the number of observations in the estimation data set. As explained on page 31 of my testimony, the estimation data set was based upon Zip Code days. Thus, there are 1,545 Zip Code days used to estimate the regression, not 1,545 Zip Codes.

a. My estimation data set includes the time associated with each type of route section over the course of the route day, not number of sections. Thus, I can provide, by type, the number of routes-day observations with at least one route section of that type. This information is provided in the following table.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

Type of Route Section	Proportion of Route Days Having At Least One Section of this Type
Loop/Foot	61.8%
Curbline	39.6%
NDCBU	28.2%
VIM	0.9%
Central	32.8%
Dismount	46.7%

Please note that the percentages do not add to 100 percent because an individual route can have route sections of multiple types.

b. This information is not available. The Postal Service does not collect or possess information on the number of route sections. In the CCSTS, route sections were identified by the individual carrier.

c. Because there is no frame for route sections, I believe it would not be possible to calculate accurate weights as discussed in your question.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-2.

The responses to VP/USPS-T30-1-3 state that in FY 2004 the Postal Service had the following number of city carrier routes:

	Number of Routes	Percent
Foot	11,454	7.0%
Park & Loop	87,793	53.7
Curbline	38,686	23.7
Dismount	25,418	15.6
Subtotal	163,351	100.0%
Other	2,267	
TOTAL	165,618	

a. Please provide the total number of city carrier routes included in the sample of 1,545 Zip Code areas, broken down by the type of route, as shown above.

b. Please compare the distribution of the routes in the sample frame with the universe of city carrier routes, and discuss the extent to which the routes in the sample frame are representative of the universe of city carrier routes.

c. Please discuss why it would or would not be appropriate to treat the sample as a random stratified sample of route types, and to weight the sample results so as to provide a more accurate representation of the universe of route types.

VP/USPS-T14-2. Response

a.

	Number of Routes	Percent
Foot	237	7.1%
P&L	1904	57.3%
Curbline	670	20.2%
Dismount	510	15.4%
Subtotal	3321	100.0%
Other	40	
Total	3361	

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

b. Given that the sample was selected by Zip Code, and not by route, there would appear to be a strong correspondence between the sample distribution for 2002 and the frame distribution for 2004.

c. Redirected to Witness Kelly.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-3.
Please refer to your testimony at page 36, where you discuss the Tolerance factor, the Variance Inflation Factors ("VIF") measure, and multicollinearity, as well as Table 4, which shows tolerances and VIF for the full quadratic model. Subsequently, at page 38 (ll. 3-4), you state that if "cross products can be omitted without doing violence to the estimated variabilities, the precision of the estimation can be greatly increased."

a. Please define what you would regard as a "great increase" in precision, as you use that phrase here, as well as in the context of the full quadratic model and the restricted quadratic model that results after elimination of the cross products.

b. Please provide a table, similar to Table 4, showing the tolerance and VIF for the restricted quadratic model, the results of which are shown in Table 5 (p. 38).

VP/USPS-T14-3 Response:

a. In the cited section of my testimony, I was discussing the problem of multicollinearity in estimating the regular delivery equation. Multicollinearity leads to coefficients with inflated standard errors and coefficients with the wrong sign. The increase in precision I was referring to was the characteristic of reducing the standard errors of the estimated coefficients and estimating coefficients with the correct signs. Both of these outcomes occurred from the elimination of the cross product terms.

b. Please notes that the tolerances and VIFs for the restricted quadratic model are provided on pages 24 and 25 of LR-K-81. I reproduce them below for convenience.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

Tolerances and VIF for the Restricted
Quadratic Model

Variable	Tolerance	VIF
Letters	0.0466	21.4
Letters^2	0.0764	13.1
Flats	0.0629	15.9
Flats^2	0.0835	12.0
Sequenced	0.2707	3.7
Sequenced^2	0.2857	3.5
Collection	0.2235	4.5
Collection^2	0.2454	4.1
Small Parcels	0.1256	8.0
Small Parcels^2	0.1656	6.0
Delivery Points	0.0586	17.1
Delivery Points^2	0.0830	12.1
Density	0.1387	7.2
Desiity^2	0.1431	7.0

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-4.

Please refer to Table 6 at page 39 of your testimony. Please explain whether the variabilities shown in each column of that table reflect any of the quadratic or cross product coefficients shown in Table 3 (p. 35) and Table 5 (p. 38).

VP/USPS-T14-4 Response:

Yes, the higher order terms are reflected in the calculated variabilities. The formula for calculating the variability is given on page 39 of my testimony. To see how this formula involves quadratic and cross product terms, let's apply it to a simple two-variable quadratic model:

$$y = \beta_0 + \beta_1 x + \beta_2 x^2 + \beta_3 z + \beta_4 z^2 + \beta_5 xz$$

For this equation, the variability formula is given by:

$$\lambda_{y,x} = \frac{\partial y}{\partial x}\frac{\bar{x}}{y(\bar{x},\bar{z})} = \frac{(\beta_1 + 2\beta_2 \bar{x} + \beta_5 \bar{z})\bar{x}}{y(\bar{x},\bar{z})}.$$

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-5.

Please refer to your testimony from page 40, line 16 through page 41, line 15.

a. Would you agree that the total marginal time for Products A and B is 600 seconds? That is, 400 seconds for Product A, computed as 5 (seconds) times 80, and 200 seconds for Product B, computes as 10 (seconds) times 20? If you do not agree with this computation of total marginal time, please show how you would compute it.

b. Please explain the source of the total time of 800 seconds referred to at page 40, line 17, and explain why the total time of 800 seconds differs from the total marginal time of 600 seconds.

c. Please explain why you use 800 seconds in the equation at line 1 on page 41, instead of the total marginal time of 600 seconds.

VP/USPS-T14-5. Response:

a. Agreed.

b. The 800 seconds is the sum of the total marginal time (or, by its more familiar name, the volume variable time) of 600 seconds and the institutional time of 200 seconds. In general, the total time is equal to volume variable time (600 seconds) plus institutional time (200 seconds).

c. *I use 800 seconds because that is the total delivery time associated with* delivering the two products in the hypothetical. The total time is the correct value to be entered into the variability formula.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-6.
Please refer to your testimony at page 44 (ll. 14-21), where you state that "[t]he variabilities derived from the fixed estimation are presented in Table 10... The regular delivery variabilities imply that a doubling of all volumes delivered on city routes would cause only [a] 7 percent increase in delivery time." Please explain how, using the estimated variabilities shown in Table 10, a doubling of volume "would cause only [a] 7 percent increase in delivery time," and show the deviation.

VP/USPS-T14-6 Response:

In preparing the reference paragraph, I had the following equation in mind:

$$\%\Delta DT = \sum_{i=1}^{n} \lambda_i \%\Delta V_i$$

in which DT stands for delivery time, the λ_i are the variabilities for the individual product volumes and the V_i are the individual product volumes. To calculate the 7% value, I applied this general formula to the fixed effects regular delivery variabilities presented in Table 10:

$$\%\Delta DT = 0.0539*(0.5)+.0432*(0.5)+0.147*(0.5)+.0197*(.5)+0.076*(0.5)$$

$$\%\Delta DT = 0.1391*(0.5)$$

$$\%\Delta DT = 0.07$$

This calculation demonstrates that the 7% value was predicated upon a 50 percent increase in all volumes. Clearly, when I wrote the paragraph I mistakenly typed "a doubling of" when I meant "a 50 percent increase in." I apologize for the typographical error. The last part of your question asks me to show a deviation, but I cannot determine what deviation you are requesting.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-7.
Section I.A of your testimony, at pages 1-2, criticizes the datedness of the data underlying the established model, and concludes by stating that "more recent data would be preferable" (p. 2, l. 21). Then, at page 59 (ll. 11-14), Step 2 of your procedure for estimating the amount of cased ECR Saturation mail relies on data from a study by witness Shipe presented in Docket No. R90-1.

a. Would you agree that witness Shipe's data upon which you rely are about as dated as other data that underlie the established model? If you do not agree, please explain.

b. Would you agree that carrier casing productivities may have changed with widespread adoption of vertical flats cases by city carriers? If not, please explain why not.

c. Would you agree that more recent data for manual casing productivity by city carriers would be preferable? If not, please explain.

VP/USPS-T14-7 Response

a. Partially agreed. It is my understanding that the part of Witness Shipe's testimony that deals with carrier casing productivities was based upon a controlled test in which individuals cased mail in a specific environment as opposed to data taken from actual operations. Consequently, Witness Shipe's data reflect the environment in which the test was performed as opposed to the operations being used at the time the test was taken.

b. Redirected to Witness Lewis.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

c. Agreed, but difficulties associated with the vintage of the data are mitigated by the fact that data used by Witness Shipe were from a controlled test that was designed to replicate an environment that uses vertical flats cases.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-9.
Please refer to your testimony (USPS-T-14) where you state at page 58 (ll. 2-3): **Sequenced Mail** is ECR Saturation mail that is delivered by the mailer to the **delivery unit** already prepared, by the mailer, in walk sequence. [Emphasis added.]

a. Did you intend that the term "delivery unit," as used in this sentence, be limited to Destination Delivery Units ("DDUs")? If not, please explain.

b. Please define the term "Sequenced Mail" as you use it at this point of your testimony. In particular, please explain whether your definition of "Sequenced Mail" includes ECR Saturation mail that is entered at DDUs, as well as upstream of DDUs — *e.g.*, at SCFs and BMCs, or even entered locally at some originating facility. If your definition excludes ECR Saturation mail that is entered upstream of delivery units, please explain why.

c. Please refer to the response of witness Lewis to VP/USPS-T30-24 and the response of the Postal Service to VP/USPS-T30-28 (redirected from witness Lewis) and indicate whether "Sequenced Mail," as used in your study of city carrier costs, included any items (other than Saturation mail) that may be taken to the street without prior in-office casing; *e.g.*, High Density ECR mail, or unaddressed periodicals, Standard Mail flats, or Bound Printed Matter accompanied by detached address labels ("DALs").

d. Please indicate whether "Sequenced Mail," as used in your study of city carrier costs, included only addressed Saturation mail, or whether it also included Saturation mail with a simplified address.

e. Please indicate whether "Sequenced Mail," as used in your study of city carrier costs, also included any ECR High Density mail.

RESPONSE:

a. In the CCSTS, the delivery unit is the physical location where the carriers prepare the mail for delivery on the street. The designation "Destination Delivery Unit" was not relevant for the study and thus played no role. The Zip Codes and their associated delivery units were selected following appropriate statistical practice. Please see the testimony of witness Kelley, USPS-T-16, for a discussion of the selection of the Zip Codes.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

b. Sequenced mail includes mailer prepared full coverage mailings, either letters or flats, which do not require casing. The mail counts taken at the delivery unit make no assumption about where the mail was entered.

c. Please recall that there are two steps to the calculation of volume variable costs for a city carrier street time cost pool: determination of the variability for the cost pool and then distribution of the costs to classes and subclasses. In the first part of the CCSTS, the determination of the variability of sequenced mail cost pool, the definition of sequenced mail is given by my answer to part b. above. Sequenced mail is mail that includes full coverage mailings, either letters or flats, which do not require casing without regard to class and subclass. In the second part of the cost attribution method the volume variable costs are attributed to products. Currently the CCS does not have a measure distribution key for sequenced mail. Thus, in forming the distribution key, it was assumed that all sequenced mail is ECR mail.

d. The CCSTS attributes cost to class and subclass of mail. Thus, its finest level of detail is ECR. I am informed that the term "simplified address" is a designation relevant only to rural routes and would not be applicable to a study of city carriers.

e. In the CCSTS costs are distributed to class and subclass, so sequenced mail costs are distributed to ECR. In calculating the amount of ECR that occurs in the Sequenced cost pool as opposed to the letter and flat cost pools, it was assumed that all sequenced letter and flat mail was ECR saturation. Sequenced parcels were just assumed to be ECR, so they could include ECR High Density.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-10.

a. Why do you separately treat "Sequenced Mail" in its own cost pool? (*See* USPS-T-14, pp. 58-59.) Is it because delivered "third bundles" have different city carrier street time cost characteristics than delivery-point sequenced ("DPS'd") or cased letters and cased flats?

b. If your answer to the second question in part a is affirmative, please explain whether "Sequenced Mail" in your study included all items that can be (or were) taken directly to the street without prior in-office casing.

Response:

a. As explained in the response to VP/USPS-T14-9, the attribution of city carrier street time costs to classes and subclasses is done in two steps. This two-step approach is known as the "volume variability-distribution key" approach, signifying that in the first step the volume variability is determined, and in the second step a distribution key is used to distribute the volume variable costs to classes and subclasses. In the determination of the volume variability, a cost driver is typically used.[1] In the CCSTS the cost driver is delivered mail by workload measure or, loosely speaking, by "shape." In Postal Service delivery operations, workload is measured separately for letters, flats, parcels, accountables, collection mail, and sequenced mail. Volumes for each of these categories thus become the cost drivers for the CCSTS. As to why sequenced mail is treated as a separate cost driver, there are two reasons. First, the cost of

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[1] For a complete discussion of the volume variability/distribution key approach and the use of cost drivers please see Appendix H to the 'Summary Description of USPS Development of Costs By Segments and Components," filed as Library LR-K-1.

handling sequenced mail on the street may be different from the cost of handling other types of mail on the street. This may because the nature of fingering and loading sequenced mail is different or because sequence mail has a different propensity to cause accesses. Second, Postal Service operations personnel do not distinguish between letters and flats when measuring sequenced mail. Thus it is not possible to remap sequenced mail into the letters and flats at the Zip Code level.

b. No. It is my understanding that sequenced mail includes only mailer prepared full coverage mailings that are not cased.

Response of Postal Service Witness Michael D. Bradley
To Interrogatories Posed by Valpak

VP/USPS-T14-12.

a. Did you use the volume variability developed in your recommended regression equation to compute the volume variable cost of "Sequenced Mail" for Base Year 2004?

b. If so, please indicate where in your testimony, or in library references sponsored by you, this calculation can be found.

c. If not, please indicate which witness made this computation, where in the testimony of that witness (or library references sponsored by that witness) the computation of volume variable cost of "Sequenced Mail" for Base Year 2004 can be found, and what that cost is.

Response:

a No.

b Not applicable.

c Witness Meehan. I am informed that the "Sequenced Mail" computation is performed in the B workpapers of Witness Meehan, USPS-T9. I have been told that the library reference is LR-K-5, workbook CS06&7.xls, worksheets 7.0.4.2, cells D20-I20, 7.0.6.5, column F; 7.0.6.6 column F, 7.0.6.7, column F; 7.0.6.8 column F; and 7.0.6.9, column F. I was also told that the inputs that produce these numbers can be found in I-FORMS.xls, worksheet I-CS 6&7 FACTORS NEW, cell C32. Finally, I am informed that the FY 2004 cost is $92.456 million.

1 CHAIRMAN OMAS: At this point, I'm going to
2 add answers Witness Bradley provided to a presiding
3 officer's information request. They are POIR 9,
4 Questions 7, 8, 9, 10, 11, 12, 13, and 14. In
5 addition, the answers to POIR No. 8, Question 3,
6 identifies programs POIR.8.ZIP as containing requested
7 material, and the answer to POIR No. 9, Question 7,
8 identifies programs containing the file, POIR.9.ZIP.
9 Witness Bradley, would your answers to these
10 questions be the same as what you've previously
11 provided in writing, and do you sponsor POIR.8.Q.3,
12 Program.ZIP and POIR.9.ZIP?
13 THE WITNESS: Yes, sir. Well done.
14 CHAIRMAN OMAS: I'm handing two copies of
15 your answers and direct that they be admitted into
16 evidence and transcribed.
17 (The documents referred to
18 were marked for
19 identification as Exhibit
20 Nos. POIR No. 9 Questions 7
21 through 14, POIR No. 8
22 Question 3, were received in
23 evidence.)
24 //
25 //

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 8, QUESTION 3

3. Please provide the PC version of the SAS programs used for each of the models and calculations referred to in sections F and G of USPS-T-14.

RESPONSE:

The programs are provided in the attached file entitled

"POIR 8.Q.3.Programs.Zip."

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 7

7. Please refer to LR-K-81. Please confirm that a least-squares regression fit to a sample with improbably large outliers will be disproportionately influenced by those observations. Please provide the results of a suitable test for outliers for the full quadratic and restricted quadratic models performed with the sample data, along with documentation of these tests.

RESPONSE:

It is possible for one or a few observations to have a disproportionate influence in a least squares regression. This is particularly a problem in cross sectional data sets with few observations. However, as the size of the data set increases, the relative influence of one data point tends to fall.

A suitable test for outliers is the DFFIT statistic. It is computed as the difference between the predicted value for the ith observation and the predicted value from a model estimated with the ith observation removed, scaled by the standard error. (See, Green, William H., Econometric Analysis, Macmillan Publishing Co., New York, 1993 at 288.) An absolute value of the DFFIT statistic in excess of 2.0 is indication of a potential influential observation that deserves further scrutiny. The results of calculating the DFFIT statistics are presented below.[1] There were 3 observations that had a DFFIT greater than 2 for the full quadratic model, no observations that had a DFFIT greater than 2 for the restricted

[1] The SAS program, listing and log for calculating the DFFIT statistics are attached to this response as "Estimating Delivery Equations.Calculating DFFIT.sas", "Estimating Delivery Equations.Calculating DFFIT.lst" and "Estimating Delivery Equations.Calculating DFFIT.log"

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 7

quadratic and one observation that had a DFFIT greater than 2 for the parcel/accountable model.

Regular Delivery - Full Quadratic

Zip	Date	DFFIT
1797270	5/28/2002	-2.76983
3023743	6/11/2002	2.5813
2330822	5/28/2002	-2.27993

Regular Delivery - Restricted Quadratic

Zip	Date	DFFIT
1797270	5/28/2002	-1.45701
3023743	6/11/2002	1.58346

P/A Delivery -Full Quadratic

Zip	Date	DFFIT
8131706	5/20/2002	2.99465

The econometric models were re-estimated with the potentially influence observations removed. Despite the fact that no observations had a DFFIT greater than 2.0, the restricted quadratic was re-estimated with the two observations with the largest DFFIT statistics removed.[2] The results suggest that the potential outliers are not having a disproportionate impact on the results; the

[2] The SAS program, listing and log for re-estimating the equations with potential influential observations removed are attached to this response as "Estimating Delivery Equations.Poss Influential Obs Removed.sas", "Estimating Delivery Equations.Poss Influential Obs Removed.lst" and "Estimating Delivery Equations.Poss Influential Obs Removed.log"

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 7

estimated variabilities are similar with the potentially influential observations removed.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 8

8. Please refer to LR-K-81. Please confirm that the t-values and other tests for significance witness Bradley has relied upon depend upon the assumption that the equation errors are approximately normal. Please provide the results of a suitable test for normality of residuals for the full and restricted quadratic models, along with documentation of these tests.

RESPONSE:

The variance/covariance matrix for the OLS estimator is given by:

$V(b) = (X'X)^{-1}X'V(y)X(X'X)^{-1}$, where $V(y)=\sigma^2 I$.

As suggested by the question, the error variance is typically assumed to be normal and constant so that:

$V(b) = \sigma_\varepsilon^2 (X'X)^{-1}$

This variance is the basis for the t-tests mentioned in the question. However, when these assumptions are violated, an alternative is to estimate robust standard errors, based upon the heteroskedasticity consistent covariance matrix. The variance underlying the robust standard errors is given by:

$V(b) = (X'X)^{-1}X'\Phi X(X'X)^{-1}$,

where $\Phi = diag\left[e_i^2\right]$, and the e_i are the OLS residuals. This is the approach that I took in calculating t-statistics for the full and restricted quadratic models presented in my testimony.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 8

A standard test for the normality of the residuals is the Jacque-Bera statistic, given by:

$$JB = \frac{N-k}{6}\left(\omega^2 + \frac{(\kappa-3)^2}{4}\right)$$

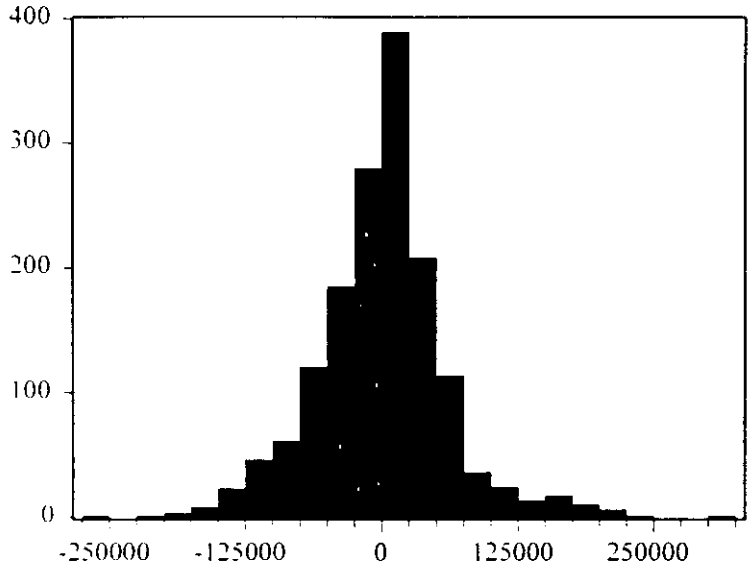
ω is a measure of skewness and κ is a measure of kurtosis. The Jacque-Bera statistic is calculated below for both models:

	Full Quadratic	Restricted Quadratic
N	1545	1545
k	36	15
[illegible]	0.268279	0.259572
[illegible]	5.082959	5.484132
JB	290.90	410.58

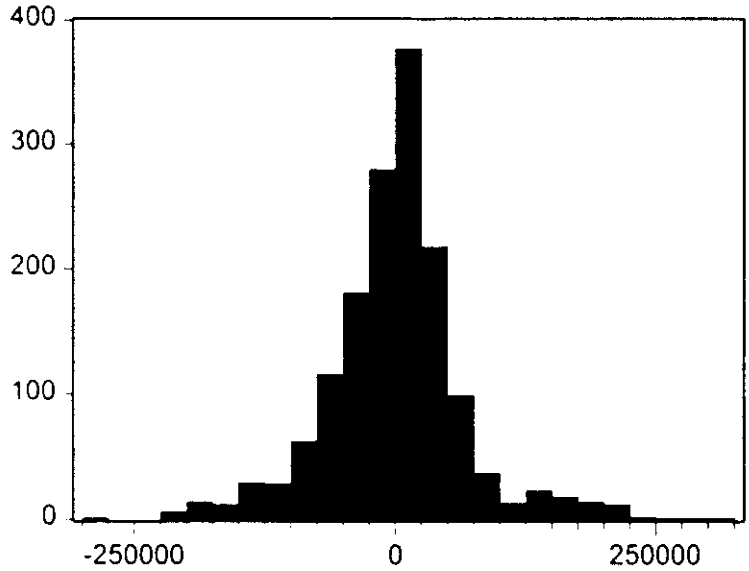
Both test statistics indicate rejection of normality. Analysis of the statistics reveals that rejection does not occur due to asymmetry but to the fact that the residuals are leptokurtic. This is demonstrated by the following plots:

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 8

Full Quadratic Residuals:



Restricted Quadratic Residuals:



RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 9

9. Please refer to LR-K-81. Please provide tests or other evidence that the Commission may rely on to confirm that the coefficients of the estimated parameters of witness Bradley's restricted quadratic model are not biased due to the omission of interaction terms. Please perform an appropriate test to determine whether the excluded interaction terms are correlated with the regressors remaining in the restricted quadratic model, along with documentation of this test.

RESPONSE:

In this instance, the Commission has the best possible evidence of the effect of omitting the interaction terms -- the estimation of the model with the terms included. Because both models (with and without the cross product terms) were estimated and presented before the Commission, it can directly assess the effect of omitting the interaction terms by comparing the results of the full quadratic model and the restricted quadratic model. The interactive terms were dropped to deal with the multicollinearity inherent in the full quadratic model. However, as the question points out, this approach raises the possibility of inducing bias. Thus, the selection of the model depends upon weighing the benefit from reducing the effect of multicollinearity with the cost of potentially inducing some bias. If one feels that benefits outweigh the costs, then one would select the restricted quadratic model. If one does not, then one would select the full quadratic model.

Given that the interaction terms are excluded to reduce multicollinearity, (a condition in which the right-hand-side variables are inter-correlated) one would expect the interaction terms to be correlated with remaining regressors. Indeed,

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 9

the interaction terms are simply transformations on the included terms. Below I present the matrix of correlations between the included reqressors (on the rows) and the excluded interaction terms (in the columns). Below each correlation coefficient is the p-value for the null hypothesis of no correlation.

	lf	lse	lcv	lspr	ldp	fse	fcv
let	0.85678	0.37775	0.50269	0.78128	0.90886	0.32424	0.46113
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
let2	0.89447	0.28365	0.42846	0.86051	0.91252	0.23139	0.38115
	< 0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
cf	0.86695	0.29209	0.42200	0.60662	0.67950	0.37405	0.55249
	< 0001	< 0001	<.0001	< 0001	<.0001	<.0001	<.0001
cf2	0.91453	0.20098	0.37814	0.63271	0.65883	0.28023	0.52721
	< 0001	< 0001	<.0001	<.0001	<.0001	<.0001	<.0001
seq	0.12284	0.88722	0.19021	0.10605	0.17143	0.87188	0.17768
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
seq2	0.09984	0.78055	0.15850	0.09850	0.14221	0.75533	0.14730
	<.0001	<.0001	<.0001	0.0001	<.0001	<.0001	<.0001
cv	0.17430	0.18147	0.80651	0.15918	0.16572	0.17221	0.72481
	<.0001	< 0001	< 0001	< 0001	<.0001	<.0001	<.0001
cv2	0.06320	0.07834	0.61391	0.08147	0.06611	0.05976	0.46908
	0.0130	0.0021	<.0001	0.0013	0.0093	0.0188	<.0001
spr	0.65389	0.27026	0.40834	0.86214	0.71580	0.23618	0.38471
	<.0001	<.0001	<.0001	< 0001	<.0001	<.0001	<.0001
spr2	0.63609	0.14048	0.27396	0.92374	0.65193	0.11534	0.24589
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
dp	0.61420	0.34568	0.37235	0.60983	0.84987	0.29188	0.35430
	< 0001	< 0001	<.0001	<.0001	<.0001	<.0001	<.0001

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 9

dp2	0.62973	0.31569	0.31606	0.64053	0.89798	0.25896	0.30416
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
dens	0.00877	-0.06177	-0.06023	-0.01771	0.09739	-0.06853	-0.09437
	0.7305	0.0152	0.0179	0.4867	0.0001	0.0070	0.0002
dens2	-0.00814	-0.07714	-0.05894	-0.02404	0.05819	-0.08007	-0.08429
	0.7491	0.0024	0.0205	0.3451	0.0222	0.0016	0.0009

	fspr	fdp	scv	sspr	sdp	cspr	cdp
let	0.71967	0.81136	0.18891	0.30325	0.30994	0.35412	0.41448
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
let2	0.74795	0.77156	0.11367	0.21377	0.21925	0.27194	0.31148
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
cf	0.76043	0.87638	0.16077	0.23913	0.23743	0.30507	0.36405
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
cf2	0.81469	0.88559	0.09219	0.15364	0.15076	0.25553	0.30139
	<.0001	<.0001	0.0003	<.0001	<.0001	<.0001	<.0001
seq	0.09825	0.15932	0.69370	0.87596	0.90532	0.15473	0.23058
	0.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
seq2	0.08987	0.13163	0.66621	0.82162	0.78674	0.13790	0.19137
	0.0004	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
cv	0.16506	0.18282	0.55461	0.19100	0.18223	0.74541	0.83552
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
cv2	0.06795	0.06240	0.51876	0.08066	0.08071	0.63543	0.65845
	0.0075	0.0142	<.0001	0.0015	0.0015	<.0001	<.0001
spr	0.83878	0.68869	0.18067	0.33717	0.26093	0.46601	0.40827
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
spr2	0.87188	0.61506	0.08079	0.18874	0.13071	0.35949	0.25401
	<.0001	<.0001	0.0015	<.0001	<.0001	<.0001	<.0001
dp	0.58187	0.78335	0.20947	0.32672	0.38317	0.31686	0.44138
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 9

dp2	0.60305	0.81149	0.17402	0.29373	0.35092	0.26537	0.37635
	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
dens	-0.03714	0.04007	-0.06619	-0.05400	-0.05424	-0.08604	-0.09355
	0.1446	0.1154	0.0093	0.0338	0.0330	0.0007	0.0002
dens2	-0.03764	0.01851	-0.06483	-0.06514	-0.07029	-0.07627	-0.08816
	0.1392	0.4673	0.0108	0.0104	0.0057	0.0027	0.0005

	spdp	ldns	fdns	sdns	cdns	spdns	dpdns
let	0.74563	0.44526	0.37355	0.09983	0.04385	0.34438	0.31718
	< 0001	< 0001	<.0001	<.0001	0.0849	<.0001	<.0001
let2	0.74105	0.42842	0.33148	0.04144	0.04421	0.30439	0.26802
	< 0001	<.0001	<.0001	0.1034	0.0824	<.0001	<.0001
cf	0.60016	0.23950	0.39163	0.06824	-0.00465	0.23434	0.17413
	< 0001	< 0001	<.0001	0.0073	0.8550	<.0001	<.0001
cf2	0.59223	0.18169	0.31685	0.01746	-0.01887	0.17948	0.11529
	< 0001	< 0001	<.0001	0.4927	0.4585	<.0001	<.0001
seq	0.14813	-0.01778	-0.01127	0.64288	0.00394	0.02283	-0.01718
	< 0001	0.4849	0.6582	<.0001	0.8771	0.3698	0.4997
seq2	0.13413	-0.00526	-0.00058	0.46915	0.01037	0.01796	-0.00609
	< 0001	0.8364	0.9817	< 0001	0.6839	0.4805	0.8109
cv	0.17760	-0.01419	-0.03659	0.03352	0.65026	-0.01444	-0.06565
	< 0001	0.5773	0.1505	0.1879	<.0001	0.5705	0.0098
cv2	0.08203	0.00376	-0.00330	0.03124	0.60310	0.02230	-0.01457
	0.0013	0.8827	0.8969	0.2197	<.0001	0.3810	0.5672
spr	0.91603	0.16606	0.17714	0.09353	-0.00432	0.37568	0.16395
	< 0001	< 0001	<.0001	0.0002	0.8653	<.0001	<.0001
spr2	0.88971	0.11199	0.12180	0.01473	-0.01643	0.26480	0.09183
	< 0001	< 0001	<.0001	0.5629	0.5188	<.0001	0.0003
dp	0.77870	0.41075	0.37137	0.13696	-0.02006	0.44082	0.47676
	< 0001	< 0001	<.0001	<.0001	0.4308	<.0001	<.0001

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 9

dp2	0.81774	0.45340	0.41249	0.09255	-0.01023	0.49066	0.53973
	<.0001	<.0001	<.0001	0.0003	0.6880	<.0001	<.0001
dens	0.01535	0.69032	0.70751	0.28107	0.28538	0.68255	0.73278
	0.5465	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001
dens2	0.00159	0.58061	0.62367	0.17607	0.18381	0.55495	0.62939
	0.9503	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 10

10. Please refer to LR-K-81. Please perform an F-test of the hypothesis that all of the coefficients of the cross product terms contained in the full quadratic model are simultaneously equal to zero, along with documentation of this test.

RESPONSE:

An F-test of the hypothesis that all the coefficients on the cross product terms contained in the full quadratic model are simultaneously equal to zero is given by the following formula:

$$F_{J,n-K} = \frac{(e_R' e_R - e'e)/J}{e'e/(n-K)},$$

where e_R represents the residuals from the restricted model, e represents the residuals from the unrestricted model, J is the number of restrictions, n is the number of observations and K is the number of parameters in the regression model This formula has a computationally convenient form:

$$F_{J,n-K} = \frac{\left(R^2 - R_R^2\right)/J}{(1-R^2)(n-K)}.$$

Calculation of this statistic for the full and restricted quadratic model yields a test statistic of 13.34, indicating rejection of the null hypothesis.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 11

11. Page 39, lines 1-2 of witness Bradley's testimony (USPS T-14) states that "[d]espite the loss of many right-hand-side variables the fit of the equation is still quite good and most coefficients have their expected signs and magnitudes."

a. Did you test to determine whether a better outcome was achieved by selectively removing a smaller number of the interaction terms from the full quadratic model? If so, please provide the results.
b. If you have not previously done so, please run your full quadratic equation removing only the interaction terms involving small parcels, and provide documentation of the results.
c. If this does not achieve a better outcome, please run your full quadratic model dropping interaction terms for both small parcels and letters, and provide documentation of the results.
d. If you believe additional improvements could be achieved by dropping additional interaction terms, please do so, and provide documentation of the results.

RESPONSE:

a No

b The requested estimation was performed. The SAS program, SAS log and SAS listing for the requested estimation are attached as "Dropping Interactions with Small Parcels.sas", "Dropping Interactions with Small Parcels.lst" and "Dropping Interactions with Small Parcels.log".

c This estimation did produce a better outcome relative to the full quadratic model. The Variance Inflation Factors are lower for this estimation than for the full quadratic model, although they are not as low as they are in the restricted quadratic.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 11

d. I believe that better results can be obtained by continuing the process and dropping all of the cross product terms. That would lead to the restricted quadratic model presented and documented in my testimony.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 12

12. Please refer to LR-K-81. Please provide, if possible, the sample correlations of the matching residuals from the full quadratic and parcel/accountable regressions. Please confirm that if the error terms of these two regression models are correlated, it may be possible to improve the efficiency of the estimated parameters by re-estimating both with feasible generalized least-squares.

RESPONSE:

Because the data sets used to estimate the regular delivery equation and the parcel/accountable delivery equation are not the same, correlation across the residual can only be performed on the subset of the observations common to both equations. The residuals from the full quadratic equation and the parcel/accountable equations were matched by Zip Code and date. This matching produced 1,468 matched residuals. The correlation of the matched residuals is 0.1435.

In theory, there is an efficiency gain from pursuing a FGLS or "Seemingly Unrelated Regressions" approach to estimation. However the efficiency gain is dependent upon the amount of correlation of the disturbances across the equation and the amount of correlation across the right-hand-side variables. The greater the correlation in the disturbances and the less the correlation in the right-hand-side variables, the less the efficiency gain. Given the low estimated correlation of the residual, the fact that delivery points appear in both equations, and the likely correlation across the volume measures in both equations, a

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 12

reasonable inference is that there would be little actual efficiency gain from FGLS.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 13

13. Please refer to LR-K-81.

a. Please confirm whether, on average, a carrier participating in the study delivered all of the mail shapes given to him/her on any given day, including large parcels, accountables, letters, flats, sequenced mail, small parcels and collection mail.

b. Please confirm that your models for regular mail delivery make no use of the corresponding data for parcels/accountables.

c. Please confirm that your model for parcels/accountables makes no use of the corresponding data for other kinds of mail.

d. If your answers to a. and c. are in the affirmative, please explain why you chose to fit independent models for regular mail and parcels/accountables.

RESPONSE:

a. The CCSTS data set tracked the mail delivered on routes and the time it took to delivery that mail. When there was only one carrier on a route, then one would expect that carrier to deliver all of the all mail delivered on that route on that day. When there was more than one carrier on a route, one would expect the set of carriers to deliver all of the mail delivered on that route on that day.

b. Not confirmed. The regular delivery equation makes use of small parcels and collection mail, both of which were collected in the parcel/accountable data set.

c. Confirmed.

d. Independent models were fit for two reasons. First, regular delivery and parcel/accountable delivery are separable activities. In other words, the time it

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 13

takes to make a special access to deliver a large parcel or the customer time required for handling an accountable is not a function of the other volumes on the route. Second parcel/accountable delivery time is small compared to regular delivery time and parcel/accountable volumes are small relative to letter and flat volumes. Trying to estimate the effect of large parcels and accountables on parcel/accountable time while it is embedded in the regular delivery equation would be difficult empirically. Given that regular delivery and parcel/ accountable delivery are separable activities, there is no need to pursue this difficult estimation approach, and I believe a more accurate estimate of large parcel and accountable variabilities can be obtained from a separate regression.

RESPONSE OF POSTAL SERVICE WITNESS BRADLEY
TO POIR NO. 9, QUESTION 14

14. Please refer to LR-K-81.

a. Please confirm that the residuals from both the full quadratic and restricted models show evidence of heteroskedastic errors.
b. Please confirm that the sample observations are sums taken over different numbers of routes.
c. Is this likely to cause the errors to be heteroskedastic?
d. Can the observations in the sample be scaled to eliminate this source of heteroskedasticity?

RESPONSE:

a Confirmed

b Confirmed.

c It is possible, but it is difficult to ascertain the likelihood that this is the cause of the heteroskedasticity.

d The observations can certainly be scaled by the inverse of the number of routes The results of the exercise are presented in my testimony at pages 52 and 53. Moreover, please note that I follow a general procedure to correct for the presence of heteroskedasticity, regardless of its source.

1 CHAIRMAN OMAS: Is there any additional
2 written cross-examination for Witness Bradley?
3 (No response.)
4 CHAIRMAN OMAS: There being none, that
5 brings us to oral cross-examination. Two parties have
6 requested oral cross-examination: the Office of the
7 Consumer Advocate and Val-Pak Direct Marketing
8 Systems, Inc., and Val-Pak Dealers Association, Inc.
9 It is now 10 of 12. I will try and go until
10 around one, so whoever is crossing at that time, I'm
11 not being rude; I just plan to try to interrupt at
12 that point, but I thought it was best that we get
13 started with Mr. Bradley.
14 Mr. Costich?
15 MR. COSTICH: Thank you, Mr. Chairman. Rand
16 Costich for the OCA.
17 CROSS-EXAMINATION
18 BY MR. COSTICH:
19 Q Good morning, Professor Bradley.
20 A Good morning, Mr. Costich.
21 Q Could you turn to page 16 of your testimony?
22 A I have it.
23 Q And would you look at footnote 13?
24 A Yes, sir.
25 Q And there is a sentence in there, or part of

1 a sentence, that says: "Collection costs are measured
2 separately." Do you see that?
3 A I do.
4 Q At this point, are you talking about
5 collection costs during regular delivery or collection
6 costs as a separate cost pool?
7 A This clause is referring to collection costs
8 at the customer delivery point, which would be part of
9 regular delivery.
10 Q But there is a separate cost pool for
11 collection costs at collection boxes.
12 A I call them "street letter boxes" to try to
13 keep the terminology clear, but there is a separate
14 collection cost pool for collection street letter
15 boxes, yes.
16 Q Do you know how the size of that cost pool
17 was determined?
18 A It was determined by the scanning part of
19 the study. As you know, the study had a scan part and
20 a volume part, and one of the things that the carriers
21 scanned was the activity of going to street letter
22 boxes to collect mail.
23 Q Now, I may have misheard, but I thought
24 Witness Stevens said that those scans weren't used in
25 this study.

1 A I don't think -- I'm not sure exactly what
2 he said, but I don't think he meant to say that. I
3 think what he was referring to were the volume data,
4 not the scan data.
5 Q So the scan data were used to set up a
6 proportion of time that would be called collection
7 from street boxes.
8 A Correct.
9 Q But the variability for that cost pool was
10 not estimated in your study.
11 A That's correct.
12 Q And where did the variability for that come
13 from?
14 A That came from the Postal Rate Commission's
15 accepted methodology.
16 Q So, at least in part, we're still using
17 Commission methodology for carrier costs.
18 A Well, I would say, to a great degree, even
19 the new study uses Commission methodology. One of the
20 things that we tried to do with the study was be
21 consistent with what the Commission had established.
22 Q Could you look at lines 9 and 10 on page 16?
23 A Yes.
24 Q Here, you're saying that you consulted with
25 experts at headquarters in setting up the delivery

1 scans. Is that correct?

2 A I was part of the team that people talked

3 about earlier this morning that helped to design and

4 implement the study, and so we did talk to delivery

5 experts, both at headquarters and in the field, in

6 terms of conversations and also feedback on the beta

7 test.

8 Q Specifically, with respect to defining the

9 delivery scans, could you describe in a short way the

10 discussions that went on?

11 A I can certainly describe my recollection of

12 them. A couple of points came out in terms of our

13 discussions with operations people at headquarters.

14 One of them was we talked to them about the way they

15 saw or defined activities on the street and asked them

16 to say, well, if you were to break down the carrier's

17 day and define different activities, and you talked to

18 the carrier, what would they be? And one example of

19 that was they talked about what we've defined as the

20 regular delivery activity, which is somewhat different

21 than the way we've take in the past when we split it

22 more finely. So that was one example.

23 Another example that came out of the beta

24 test was we originally had hoped to have more detailed

25 scans on the street, a high number of scans, every

1 time they leave or come to their vehicle, but it
2 became clear that that really was not an effective way
3 to set up the study in terms of self-scanning, so that
4 was the feedback we got from the field.
5 So those are examples of the types of
6 feedback that we would have gotten.
7 Q Could you look at page 17?
8 A I have it.
9 Q The first full paragraph.
10 A Uh-huh.
11 Q Here, you're describing what you call
12 "delivery technologies." Is that right?
13 A Yes, yes.
14 Q I would just like to try to through these
15 and see how they match up with some of the variables
16 that are in your time pool data.
17 A Okay.
18 Q Do you have your library reference --
19 A -- 81?
20 Q -- 81, yes?
21 A I do.
22 Q And page 4 of that.
23 A Got it.
24 Q Under C.1, you have a title, "Time Pool
25 Data.PRN." Do you see that?

1 A I have it.

2 Q And then, starting with the fourth variable

3 in the list, "BUD," and that's defined there as

4 "business curbline deliveries." Correct?

5 A Correct.

6 Q Now, does that mean the same thing as your

7 first technology on page 17 of your testimony, which

8 is called "curbline"?

9 A If you would allow me a two-sentence

10 predicate, I think I could help explain these two

11 things rather than a direct answer, and then I'll

12 answer directly. Is that okay?

13 On page 17, we're talking about the way that

14 the carrier behaves. Is the carrier in a vehicle? Is

15 the carrier walking? What type of activity they are

16 doing. The variables that you refer to here are the

17 types of delivery points. So it could be a curbline

18 delivery point. It could be a central delivery point.

19 Now, sometimes you have exact correspondence between

20 what the carrier does and the type of delivery, but

21 it's possible that a carrier could have somewhat

22 different technology for similar delivery points.

23 So, with that predicate involved, that they

24 are not exactly the same thing, -- one is describing

25 carrier activities, the other the types of delivery

1 points -- I would answer that business curbline, BUD,
2 and residential curbline, RUD, those curbline
3 deliveries, would generally be the type of delivery
4 points that would be accessed or delivered to in a
5 curbline section. Yes, there is a correspondence.
6 Q The next set in the library reference is
7 business central deliveries, and there is also a
8 corresponding residential central deliveries. Do
9 those correspond to any technology that you have
10 listed?
11 A Yes. That would correspond to Technology 6
12 on line 10. It's called "central apartment" in my
13 testimony.
14 Q And then the third ones in your library
15 reference are business NDCBU and residential NDCBU
16 deliveries, and do they correspond to a technology on
17 page 17?
18 A Yes. That would be number 4 in line 9,
19 NDCBU.
20 Q Okay. Now, we've run out of delivery point
21 descriptions, but you've still got three technologies
22 left. In your library reference, the last set of
23 delivery points is called "other."
24 A Correct.
25 Q I've seen that "other" category also

1 described as door-to-door delivery. Is that familiar
2 to you?
3 A Perhaps at-the-door delivery as opposed to
4 door to door, but I think we're getting at the idea
5 that this is the kind of delivery where the box is
6 right on the customers' door or at the door slot, that
7 sort of thing.
8 Q That seems to be how the training book for
9 the address management system describes these other
10 delivery points.
11 A As door to door?
12 Q Yes.
13 A Well, then I accept it.
14 Q Codes are generally assigned for door-to-
15 door deliveries, called "other" in the edit book.
16 A Okay.
17 Q How does that fit in with the last three
18 technologies that you have?
19 A Okay. For two, which is called "park and
20 loop/foot," a foot route is a city route where a
21 carrier is walking down a city block and goes to every
22 house, and so that would be an at-the-door type of
23 delivery. It could be a slot in urban areas, the mail
24 slots, or it could be the boxes on a house.
25 "Park and loop" is what we think of as a

1 traditionally suburban neighborhood where the carrier
2 drives out, parks, takes a satchel, and walks to each
3 house, and, again, it could be a slot, but more likely
4 there it's a box or a receptacle in the house.
5 "Dismount" is a little more difficult
6 because dismount is not homogenous in the sense of the
7 types of delivery receptacles. In a dismount route,
8 essentially the carrier is in the vehicle all day
9 long, and at each individual delivery or a small
10 number of deliveries, two or three, they get out of
11 the vehicle. Now, my understanding is that could
12 occur at a curbline where there might be a city route
13 where, for whatever reasons, -- maybe the box is faced
14 toward that customer's house rather than the street,
15 and they would have to get out to do that. It also
16 might be in an urban area where it would be similar to
17 a city route except the houses are too big, the land
18 lots are big, and so it doesn't make sense to have the
19 carrier walk from house to house, so they essentially
20 drive from house to house, get out, go up, deliver the
21 mail, and come back. So it's a mixture of delivery
22 stop types.
23 Q So if I live in a suburban house, and the
24 carrier, after completing a loop, goes back to her
25 vehicle and drives up to my sidewalk and gets out and

1 walks up to my front door, I'm living in a mansion.
2 A I'm sorry. Was there a question there?
3 (Laughter.)
4 BY MR. COSTICH:
5 Q I must live in a mansion. That's what I
6 observe.
7 A Are you asking me -- I'm sorry. I really
8 didn't get the question.
9 (Laughter.)
10 MR. COSTICH: Then I'll withdraw it.
11 THE WITNESS: Thanks.
12 BY MR. COSTICH:
13 Q You've got one more technology on the list.
14 A Oh, yes, VIM. VIM is a very rare occurrence
15 in terms of the delivery technologies. It doesn't
16 happen very often, but that is more where the carrier
17 is taking -- the carrier may do one of two things, as
18 I understand it. One, they may essentially operate
19 like a mail room type of activity in a big high-rise
20 building. So the carrier would be there, and they
21 would organize the mail, and the people would actually
22 come and pick it up almost like it was a postal
23 station, but it would be in the building. I think
24 that's most of it. But there is also the possibility
25 that the carriers who may be in a New York City type

1 of environment could actually vertically improve the
2 mail. This is, again, a truly tiny amount of
3 activity, but that's what I know about VIM.
4 Q If I had to force it into one of the four
5 categories of delivery points that AMS uses, is there
6 one that it would fit better in?
7 A I guess, I think a better way to think about
8 it is you want to match delivery types to
9 technologies. In other words, the six technologies
10 are defined by whether the carrier has a vehicle, what
11 the carrier does, and not so much the delivery type.
12 So I guess, to me, the question would be,
13 what type of delivery type would be associated with a
14 VIM route? And to the extent that it was similar --
15 this is a tough one. On one hand, I want to say
16 central apartment because you have the idea of a
17 central location, but there the carrier is actually
18 sticking mail in the mail room, whereas my
19 understanding in VIM is it's more likely to be a
20 caller service. It would be hard. It would be hard.
21 Q Could you look at page 12 of your testimony?
22 A Yes.
23 Q Look at lines 21 to 23.
24 A Yes.
25 Q Here, you're saying that one of the goals of

1 the CCSTS was to estimate volume variable costs with
2 lower variance. Is that right?
3 A Yes, sir.
4 Q Would you say that that was a primary goal
5 of the study?
6 A I'm always uneasy when I have to identify
7 which goals are primary and secondary, but I think it
8 was an important one.
9 Q In terms of estimating volume variable costs
10 with lower variance, would you say that the CCSTS was
11 successful?
12 A I believe so.
13 Q Could you look at your response to OCA/USPS-
14 T-14-5?
15 A I have it.
16 Q Now, here, you were asked to provide
17 marginal times implicit in your estimating equations.
18 Is that correct?
19 A Yes, sir.
20 Q And in the response, you provided a table
21 that shows marginal times for both your full quadratic
22 and restricted quadratic. Correct?
23 A Yes, sir.
24 Q And where it says "variability" over those
25 two columns, that should really be "marginal time."

1 A Yes. Thank you.

2 Q I would like to direct your attention to the

3 restricted quadratic estimates for letters and flats.

4 They look almost the same to my ignorant eye. Can you

5 tell me whether they are statistically different from

6 each other?

7 A I have not done any such tests.

8 Q How would one go about performing such a

9 test?

10 A Well, the marginal costs are potentially

11 nonlinear functions of the estimated parameter, so I

12 think to do so, one would have to perform what's

13 called a "bootstrap analysis" to do it. It's a

14 statistical technique where you do repeated sampling.

15 Q But just looking at the two numbers for

16 letters and flats here, we can't just say, "Well, they

17 look pretty close. We might as well treat them the

18 same."

19 A I don't know for what purpose you want to

20 treat them the same, but I would certainly agree, they

21 are very close.

22 Q In your testimony, you have a table showing

23 the estimated parameters of your models and something

24 called "HC standard error" --

25 A Yes, sir.

1 Q -- and another column called "HC T-
2 statistic" or something like that. Is that correct?
3 A That's correct.
4 Q I'm rapidly trying to find the page.
5 A I think pages 35 through 38 would be where
6 you're looking.
7 Q Let's just look at page 38, which is, I
8 believe, your restricted model. Is that correct?
9 A Correct.
10 Q I take it that the HC standard error is
11 something that one uses to judge the accuracy of the
12 estimated coefficient. Is that correct?
13 A I think the word that statisticians would
14 use is probably "precision," and that has a specific
15 meaning, which would be the confidence interval
16 associated with an estimated coefficient could be
17 calculated using the HC standard error.
18 Q And, in fact, that's how you get the T
19 statistic.
20 A The T statistic is the ratio of the
21 estimated coefficient to the HC standard error.
22 Q Long ago, when I took statistics we said
23 that a T statistic with an absolute value greater than
24 two meant that you had a statistically significant
25 estimate. Does that sound right to you?

A If you could allow me just to be a little bit more formal, the T statistic greater than 1.96 allows you to reject the null hypothetical that the coefficient is zero. When you said it's significantly different, really it means significantly different from zero.

Q I would like to go through these two statistics that you have here.

A Uh-huh.

Q There are two for letters. Correct?

A Yes, sir.

Q One is for the plain, old letters term, and the is for the squared term.

A Right.

Q The first one is 4.4. That sounds good to me. Does that sound good to you?

A It's certainly greater than two.

Q And the next one is a -.18.

A Correct.

Q I guess we would reject the null hypothetical that the coefficient that you estimated was different from zero.

A You would fail to reject it.

Q Can you also put some sort of a distribution around the estimated coefficient and come up with a

1 probability, not just rejecting or accepting a 95-
2 percent confidence interval but a precise probability
3 that it must be something less than 95 percent?
4 A Sorry. I didn't get that one. You could
5 certainly put a confidence interval around it.
6 Q Well, you have a standard error of a decimal
7 point, many zeroes, and then a two.
8 A Correct.
9 Q And that looks like it's actually -- it
10 looks like there's more zeroes in your estimate, but
11 maybe they are the same. I think there's more zeroes
12 in the estimate.
13 A Okay.
14 Q When you have a standard error that's ten
15 times bigger than your estimate, that's not good, is
16 it?
17 A What a large standard error relative to the
18 estimate means is that that coefficient is imprecisely
19 estimated as compared to the linear coefficient, which
20 we would say is much more precisely estimated.
21 Correct.
22 Q Okay. Now, if you look at the two T
23 statistics for flats, --
24 A Uh-huh.
25 Q -- the one for the linear term is actually

1 smaller than the one for the squared term.

2 A Correct.

3 Q And neither one of them is greater than

4 1.96.

5 A No. The squared term is 1.66, and the

6 magical number for a 10-percent confidence is 1.65,

7 but your point is well taken.

8 Q Does it concern you that the squared term

9 seems to be more precise than the linear term?

10 A No.

11 Q Does the sign on the estimate of the squared

12 term indicate that the marginal cost of flats is

13 increasing with volume?

14 A Yes, yes.

15 Q Could you look at the two statistics for

16 sequenced mail?

17 A I have them.

18 Q It looks like we beat the 10-percent --

19 A Correct.

20 Q And the sign of the coefficient on the

21 squared term is negative.

22 A Right.

23 Q Does that indicate that marginal cost is

24 decreasing with increased volume?

25 A Yes.

1 Q Could you skip down to small parcels, those
2 two --
3 A I have it.
4 Q -- two statistics there? They don't look so
5 good.
6 A Small parcels is a low-frequency event.
7 What I mean is if a carrier on a particular route will
8 have 1,800 letters, they may have 19 small parcels.
9 So from an econometric point of view, it's much more
10 difficult to precisely estimate that coefficient
11 because there's not a lot of them delivered on a
12 typical route. So, yes, those are imprecisely
13 estimated compared to the others.
14 Q Could you look at the next page, 39?
15 A I have it.
16 Q And in Table 6, you have your variabilities
17 for both the full, quadratic, and the restricted.
18 A Yes.
19 Q Here again, you don't have a standard error
20 or a T statistic associated with these numbers.
21 A These are also nonlinear functions of the
22 parameters. So it's not just a matter of reading it
23 off a computer printout or something. It would be a
24 complicated process to do so.
25 Q These are the important numbers, though.

1 Right?

2 A They are important numbers, yes.

3 Q These are the numbers that are used to

4 create volume variable costs.

5 A Correct. That's right.

6 Q How would one go about determining whether,

7 in this case, these are significantly different from

8 one?

9 A Do you mean the sum of them or each

10 individual one?

11 Q Each individual one.

12 A I think that an approach, again, would be

13 you could do a bootstrap-type analysis to calculate a

14 variance for each one and then do a hypothesis test.

15 As opposed to the hypothesis test before where we

16 tested the null that it was actually zero, you could

17 do a similar test to test the null that it was one.

18 Q Did you attempt to do anything like that?

19 A No, sir.

20 Q In any of your discussions with folks at

21 headquarters, did anyone inquire as to whether such a

22 test ought to be done?

23 A No. I would say, probably for two reasons.

24 There was no a priori reason to believe it would be

25 one because a lot of previous work in carriers

1 suggested even lower variabilities than this; and,
2 secondly, because they are materially different than
3 one, I think people used the ocular T tests to say
4 that they were different.
5 Q How much work would it be to develop the
6 bootstrap variances that you were talking about?
7 A Considerable.
8 Q So you would feel comfortable leaving all of
9 us with the ocular test of significance.
10 A I am.
11 MR. COSTICH: I have no further questions,
12 Mr. Chairman.
13 CHAIRMAN OMAS: Thank you, Mr. Costich.
14 Mr. Olson?
15 CROSS-EXAMINATION
16 BY MR. OLSON:
17 Q Dr. Bradley, hi. My name is William Olson
18 representing Val-Pak Direct Marketing Systems and Val-
19 Pak Dealers Association.
20 A Good morning.
21 Q Good morning. And I want to ask you if we
22 can begin with your testimony at page 19.
23 A I have it.
24 Q At line 3, you say, "Volume data were
25 collected by shape," and then, at lines 9 and 10, it

1 says -- is it DOIS? --

2 A I believe that's show it's said, yes.

3 Q -- the DOIS system collects volume by shape.

4 Correct?

5 A Yes.

6 Q And then on lines 11 and 12, you say, "The

7 CCS data-collection effort also collects volume by

8 shape." Correct?

9 A Correct.

10 Q First of all, you've been in the hearing

11 room during my questions to Mr. Stevens.

12 A Yes.

13 Q And you know -- I'm sure you know, but I'll

14 just ask you if you know what a detached address label

15 is.

16 A I do.

17 Q Do you know whether the CCS includes DALs in

18 their volume count?

19 A Mr. Haranush really is the person who is the

20 expert on CCS. I will venture a guess, but you have

21 to recognize, it may have error in it.

22 My understanding is that CCS does count the

23 DALs, yes.

24 Q And, indeed, as I think we've demonstrated,

25 counts them as letters as opposed to flats or parcels.

1 A That's my understanding.

2 Q And do you know if the CCS records the DALs

3 separately or just includes them among all letter-

4 shaped mail?

5 A Again, subject to correction by Mr.

6 Harahush, my understanding is that the DALs would be

7 included in the letter count.

8 Q And under DOIS, -- I know very little about

9 DOIS, but you discuss it on lines 9 and 10, is it the

10 same there? Do you know if DOIS includes DALs in this

11 volume count?

12 A I believe it does, yes.

13 Q And understanding that it does count DALs,

14 is it the same thing, that it counts them as letters

15 and not as flats or parcels, the host piece?

16 A I think it depends upon how the DAL is

17 handled. I believe if the DAL is cased, it would be

18 counted as a letter, but if the DAL came to the

19 delivery station already sorted in block sequence for

20 the carrier to take out as a separate bundle, then I

21 believe it would be sequenced.

22 Q Some of this, I, frankly, don't know how

23 DOIS plays into this. Your study is not based on DOIS

24 data. Correct?

25 A I would be glad to try to explain it, if

1 it's helpful.

2 Q Thank you.

3 A As was mentioned earlier by counsel, this
4 study was done in 2002, is when the data effort went
5 out. So planing obviously took place in 2001. At
6 that point, the DOIS system was just being originated.
7 It was just starting up. We had two concerns in
8 collecting volume data. One, we wanted the local
9 people to really make an effort to be accurate because
10 there are always issues as to whether or not you can
11 use operational data for a rate case study, and do
12 they really accurately report to headquarters in an
13 operational study? So we asked the local people to
14 measure it and report it to us carefully, to check the
15 measurements and all that kind of stuff.

16 However, with an eye to the future, we
17 described our shaped data consistent with what was
18 then the new DOIS system. So, in other words, the
19 DOIS system had a set of protocols for saying what a
20 letter was or what a flat was, and we matched our
21 definitions to those definitions, with the idea and
22 the hope that if the Commission would accept this
23 general approach, then we would be able to someday
24 eventually dispense with the difficult, expensive
25 process of collecting from the field and just collect

1 it from the operational data bases.

2 So we did ask them to send us their data,

3 as, I think, Witness Stevens said earlier. There may

4 well have been instances where they sent us the same

5 thing they put into the DOIS system, but we were

6 really ahead of the DOIS system when we did this

7 study, and so that's, I think, a little confusion in

8 how it's used.

9 Q Okay. So for my purposes, the key issue is

10 how CCS treats DALs and not how DOIS treats DALs --

11 correct? -- because we're not dealing with DOIS data.

12 A I don't know what your purpose is, but in

13 terms of the distribution key, that's based upon CCS,

14 not DOIS at all.

15 Q Okay. Let me ask you to go to page 26 of

16 your testimony. You have a section there called

17 "Identifying the Variables To Be Included in the

18 Econometric Equation," --

19 A Yes, sir.

20 Q -- and at the end of that page you say, "In

21 this section, I describe how the right-hand-side

22 variables were chosen."

23 A Yes, sir.

24 Q You've already discussed the need to

25 distinguish by shape between letters and flats, and

1 you've discussed density in parcels and other issues
2 in here. But your variables are defined -- well,
3 first of all, your equation is presented on page 29.
4 Correct?
5 A Yes, sir.
6 Q And the variables are set out at the top of
7 page 30. Correct?
8 A Yes.
9 Q Okay. What I want to focus on is your
10 variable, S, sequenced mail, --
11 A Yes.
12 Q -- and ask you some questions about that.
13 We actually did. We asked you, T-14-9(b), if you can
14 turn to that one, --
15 A Got it.
16 Q -- the first sentence of B says: "Sequenced
17 mail includes mailer-prepared, full-coverage mailings,
18 either letters or flats, which do not require casing."
19 Correct?
20 A That's what it says, yeah.
21 Q And that's your definition of "sequenced
22 mail."
23 A I didn't originate it, but that's the
24 definition that's in the study, yes.
25 Q And in Section C, where it says, about the

1 middle of your response, six lines down, it says:
2 "Sequenced mail is mail that includes full-coverage
3 mailings, either letters or flats, which do not
4 require casing without regard to class and subclass,"
5 and that's consistent with what you say in B, is it
6 not?
7 A It is.
8 Q Okay. You do understand, do you not, that
9 ECR saturation mail, whether it be letters or flats,
10 must be sequenced by line of travel?
11 A I'm not sure what "line of travel" is.
12 Q Walk sequence?
13 A Okay. I'm with you. ECR saturation --
14 you're saying that to get the rate category, ECR
15 saturation, the mailer must prepare it in walk
16 sequence.
17 Q Yes, either if it's flats or letters.
18 A Either way.
19 Q Yes. Is that something new to you?
20 A I'm actually not an expert on the rate
21 categories, so I accept it.
22 Q I'm not asking you to be.
23 A Okay.
24 Q If you'll accept it, that's okay.
25 A Sure.

1 Q So what I'm trying to get at, though, is
2 what you say here in 9(b).
3 A Uh-huh.
4 Q You say that sequenced mail, as you use the
5 term, includes mailer-prepared, full-coverage
6 mailings, either letters or flats, which do not
7 require casing, and by the way that I understand the
8 requirements of the Domestic Mail Manual, that is
9 synonymous with all ECR saturation letters and flats.
10 A I do believe some ECR saturation mail could
11 be cased, however. For example, if it was a foot
12 route or a park-and-loop route, and there is a limited
13 number of bundles that the carrier can take, again --
14 Q I certainly agree with that.
15 A Uh, okay. Good.
16 Q That's why I'm questioning what you wrote in
17 your response because you didn't say that. You said,
18 "Sequenced mail includes mailer-prepared, full-
19 coverage mailings, either letters or flats, which do
20 not require casing."
21 A Correct.
22 Q But what I'm suggesting to you is that
23 it sounds like you mean the words "sequenced mail" to
24 include all ECR saturation letters and flats. Do you
25 really mean that? You don't mean that, do you?

1 A First of all, this definition is not by
2 class or subclass. This is an operational definition,
3 so this definition comes from the way Postal Service
4 operations defines sequenced mail in the field. To be
5 honest with you, defining this class or subclass was
6 not a consideration. I'm not trying to say it is ECR
7 saturation, or it's not ECR saturation or any of those
8 things. What it is, is, as a workload measure, it's
9 mail that is not cased, it's already prepared by the
10 mailer, and the carrier takes it to the street as a
11 separate bundle.
12 Q Okay. That, I think, is the definition you
13 used in your testimony, but it's not what it says
14 here.
15 A I don't see a difference.
16 Q Well, the difference is that here you talked
17 about mail which doesn't require casing. Well, line-
18 of-travel mail doesn't require casing. Whether it's a
19 letter or a flat, it can go to the street as a third
20 bundle. It does not require casing, to use the term
21 that you used in both of these definitions.
22 All I'm trying to get you to say is I think
23 what you mean is not mail which does not require
24 casing, but I think what you mean is mail that is not
25 cased and is not DPS'd. Isn't that what sequenced

1 mail is, the way you use it and the way Witness
2 Stevens used it?
3 A I guess I'm confused. If it's cased, it
4 seems to me it requires casing.
5 Q Well, if it comes to the Postal Service in a
6 line of travel -- let me give Val-Pak's mail as an
7 illustration. You've probably seen coupons in an
8 envelope from Val-Pak. It is bar coded, it's ECR
9 saturation letters, it is in line-of-travel or walk
10 sequenced, and when it goes to a DDU, it can be
11 handled in whatever method that the carrier would find
12 most efficient. It can either be taken to the street
13 directly as a third bundle, or it can be DPS'd if they
14 want to ship it back to the plant, or it can be cased
15 by the carrier.
16 So what I'm focusing on is you say "which do
17 not require casing," and I'm suggesting, is the word
18 "required" not the wrong word in your response?
19 A Okay. No. I think it's the right word. I
20 think that you may be thinking about a DMM type of
21 definition. This is an operational definition. In
22 other words, you just mentioned it can be handled by
23 the carrier most efficiently.
24 Well, this is an operational definition that
25 says "required casing." In other words, it says "if

1 it's cased." My understanding of this definition is
2 very practical: Did this mail get cased or not? When
3 I say "required casing" here, that's saying, at the
4 local unit, did they make a decision to case it or
5 not? So I think the definitions are the same.
6 Q So what you're saying -- I guess I'm getting
7 down to what the difference is. I think what you may
8 be saying is that the Postal Service, at the delivery
9 unit, did not view it to require casing on that given
10 day. You're not saying all line-of-travel mail
11 requires casing, are you? It is taken out as third
12 bundles. It doesn't require casing to get delivered.
13 A Let me try again.
14 Q Okay.
15 A The sequenced mail was the mail that did not
16 require casing. The cased letters and flats are the
17 mail that did require casing. Okay? So if it did not
18 get cased, it's called "sequenced" and taken out as a
19 bundle. If it did get cased, it would be counted in
20 cased letters or flats.
21 I'm not trying to be obtuse; I just don't
22 know what I'm missing. Sorry.
23 Q I'm submitting to you, and this is the last
24 time I'll ask it -- I'll just let it go, but I'm just
25 submitting to you that ECR letters or flats which are

1 in line of travel do not require casing. They don't
2 require casing. They can be taken to the street as a
3 third bundle. And you say sequenced mail only
4 includes mail which requires casing. I'm saying line-
5 of-travel mail does not require casing. If the Postal
6 Service can take it to the street as a third bundle
7 without casing, how can you say it requires casing?
8 A I don't set policies. I just have a very
9 practical measurement: Did they case it or not? If
10 the word "requires" is bothering you, to me, that
11 meant was it cased or not.
12 Q If that's what you mean the word "required"
13 to mean, then we can move on.
14 A Okay. Good.
15 Q I'll go with your definition from your
16 testimony, which is, I believe, very clear.
17 A Okay.
18 Q It's this that confused me.
19 A I'm sorry.
20 Q So when we go to your testimony on page 29,
21 and we look at your equation there, is it clear, then,
22 that you are not speaking about a definition of
23 sequenced mail which includes all ECR saturation mail?
24 It does not include all saturation ECR mail because it
25 only includes the pieces that are taken directly to

1 the street as a third bundle.

2 A Correct.

3 Q Okay. So you're really dealing, in your

4 definition of "sequenced mail," just with the mail

5 that bypasses casing, and it's taken directly to the

6 street.

7 A That's correct.

8 Q Okay. Now, since you count this volume of

9 sequenced mail, the variable on the top of page 30, as

10 a separate item, can I assume you'll agree with

11 Witness Stevens, there is no double counting? In

12 other words, if a piece is counted as a letter, or if

13 it's counted as a flat, it will not also appear in

14 Category S, sequenced mail.

15 A Correct.

16 Q The categories could be said to be mutually

17 exclusive.

18 A Indeed, well done.

19 Q I'm just trying to show off.

20 Let me go into something I know less about,

21 even less about, which is your coefficients for your

22 regression equation on page 29. And when you estimate

23 betas these days, all that I understand is you put the

24 different volume counts for all of your variables into

25 the equation, you press the start button on the

1 computer, and it pops out the beta. Is that correct?

2 A That's not a bad description.

3 Q All right. Well, let's go with that. Let

4 me ask you, did the volume counts which you used for

5 S, sequenced mail, include, then, the following items?

6 It included letters taken directly to the street as a

7 third bundle and DALs taken directly to the street

8 without casing or DBS'ing and flats taken to the

9 street as a third bundle, not cased.

10 A Correct.

11 Q Okay. On the other hand, if a letter, --

12 Witness Stevens said he hoped you and he were on the

13 same track -- I'm sure you are, and I'll just confirm

14 that -- on the other hand, if a letter were either

15 DPS'd or cased, it would be counted as a letter.

16 Correct?

17 A Correct.

18 Q If it was a DAL that was DPS'd or cased, it

19 would be treated as a letter.

20 A Correct.

21 Q If it was a flat that was cased, because

22 they can't be DPS'd -- if a flat is cased, it's

23 treated as a flat.

24 A It's a flat.

25 Q Now, let's go to page 58 of your testimony

1 where you discuss sequenced mail in more detail.

2 A Yes.

3 Q And at line 6, you say: "Some ECR

4 saturation mail is delivery-point sequenced by the

5 Postal Service." Correct?

6 A Yes.

7 Q And, obviously, if it's DPS'd, it has to be

8 letter shaped, so another way to say that would have

9 been some ECR, letter-shaped, saturation mail is DPS'd

10 by the Postal Service --

11 A Okay.

12 Q -- because the Postal Service is not

13 currently DPS'ing any of their flats. Correct?

14 A I'm not testifying on mail processing.

15 Q Well, I think we'll accept that.

16 However, are you aware that Witness Lewis,

17 in response to some of our interrogatories, has said

18 that the Postal Service in some places now routinely

19 DPS's DALs?

20 A I was not aware of that, but I accept it.

21 Q Do you have any idea how large the volume of

22 DALs that are entered with ECR saturation flats or

23 parcels are, how large a number of DALs there are in

24 the system?

25 A No, I don't.

1 Q Witness Kelley has an estimate he submitted
2 in a library reference. I'll just represent to you, I
3 believe it was 3.4 billion pieces that he came up
4 with. I assume you have no way to evaluate whether
5 that's high, low, accurate, inaccurate. You have no
6 other number to offer.
7 A I have no other number to offer.
8 Q Okay. But the volume of DALs, if that's the
9 case, could be approaching the volume of ECR
10 saturation letters. Can I ask you to accept that,
11 subject to checking?
12 A Sure.
13 Q Okay. If we look at your testimony on page
14 [illegible], line 17, and even on a simple equation -- I'm no
15 mathematician, but to read that, as I understand it,
16 it says, to get the volume of sequenced mail on the
17 left, you take the total ECR saturation volume, and
18 you subtract from it the ECR saturation that's DPS'd
19 or cased or end cased, I guess, is the better way to
20 say it. Correct?
21 A Correct. It's end cased.
22 Q Now, where does the number of total ECR
23 saturation pieces come from?
24 A The carrier cost system, CCS.
25 Q Does it come from RPW?

1 A I believe it comes from the carrier cost
2 system, CCS.
3 Q So who gives you that input?
4 A Witness Harahush.
5 Q And do you know anything about, since now he
6 is off the stand, anything about how he derives that
7 number?
8 A I'm not going to be very helpful there. I
9 think he really is the person that knows.
10 Q Do you identify in your testimony anywhere
11 where the source of that number comes from?
12 A Well, in my testimony, I'm laying out the
13 theory of how one does this calculation. I didn't
14 actually do the calculation, so I think Witness Meehan
15 is the one who has the actual calculations and all of
16 the documentation to the sources and that kind of
17 stuff. My job was just to figure out how to do it.
18 Luckily, I didn't have to do the calculation.
19 Q You specify on the very next page a
20 procedure by which you derive the number of cased
21 pieces because you don't have the number of cased ECR
22 saturation mail. Is that correct?
23 A Say that again. I just want to make sure I
24 understand your question.
25 Q From what I understand, there are four

1 numbers here in this equation --

2 A Right.

3 Q -- that are expressed by words, of course.

4 A Sure.

5 Q And sequenced mail is what you're trying to

6 derive.

7 A Correct.

8 Q Okay. To get to there, you have to come up

9 with three numbers.

10 A Yeah.

11 Q The first is total ECR saturation, and you

12 said that it did not come from RPW but came from

13 CCS, --

14 A Right.

15 Q -- that was given to you by Witness

16 Harahush, I guess, --

17 A Right.

18 Q -- and then you subtract from that the

19 number of ECR saturation pieces which are DPS'd, and

20 you say, fortunately, the CCS gives you --

21 A -- gives you that number.

22 Q So you have a specific number from, again,

23 Witness Harahush.

24 A Right, right.

25 Q And then, on the other hand, you don't have

1 a --

2 A Correct.

3 Q -- a number -- I've got to say the question

4 before you say "correct" --

5 A I'm sorry.

6 Q You don't have an ECR saturation volume of

7 the pieces that are cased, so you have to come up with

8 a system to derive one, and you do that.

9 A Correct.

10 Q Okay. Now, the way you do that, as I

11 understand it, if I look at the top of page 59, you

12 say you've got a three-step procedure, and Step 1 is

13 to identify the casing hours for ECR saturation from

14 IOCS -- right? --

15 A Correct.

16 Q -- and then you establish casing

17 productivities. They are different for letters and

18 flats. Correct?

19 A Correct.

20 Q And then you, in Step 3, divide the hours by

21 the productivities and get the pieces.

22 A Correct.

23 Q Are you aware of the fact that when a

24 carrier is casing a DAL, that it is recorded in the

25 IOCS as a flat?

A I've heard some discussions of the issue, but I'm not familiar with the details.

Q Just to amplify the question, my understanding is the IOCS instruction manual advises the tally taker to look to the host piece to record the shape of the host piece and not put it down as a letter-shaped DAL. Does that sound right, or do you not know?

A I don't know about the rules for IOCS.

Q Okay. If you're developing the casing cost for flats, wouldn't that include two components? Wouldn't it include the cost of casing ordinary address flats and the cost of casing DALs? Am I right about the IOCS instructions?

A I don't know the details of IOCS. From my perspective, theoretically, you want to get the hours for letters and divide that by letter productivity, get the hours for flats and divide that by the flat productivity to come up with your estimates of the volumes, but I'm really not familiar with the details of what IOCS puts in those hours or those bits and pieces. This is just the theory.

Q Would you say that since a DAL is letter shaped, that it would be cased at the same rate as letters as opposed to flats?

1 A I really haven't studied casing.

2 Q If you refuse to answer -- not refuse --

3 A (Laughter.)

4 Q If you decline to answer again, I won't push

5 you, but, I mean, isn't it logical that if a DAL is

6 letter shaped, that a letter-shaped productivity would

7 apply to it as opposed to a flat shaped just because

8 the host piece in a bucket somewhere is a flat or a

9 parcel?

10 A Again, I'm not an expert. It sounds

11 reasonable, but I really don't know about the details

12 of the instruction.

13 Q Is it your understanding, then, that the

14 number, going back to the simple word equation here on

15 page 58, that the number you get from Witness Harahush

16 of the total ECR saturation pieces includes all ECR

17 saturation letters, DALs, and flats, or is it just the

18 ECR saturation letters and flats?

19 A I'm not that familiar with DALs. I thought

20 a DAL was counted as a letter in CCS. I think that's

21 what he said earlier. If the class on a DAL is ECR

22 saturation and is counted as a letter, that would be

23 included in CCS's letter count for ECR saturation.

24 Q So are you saying, then, that the total ECR

25 saturation number that you get from Witness Harahush

1 consists of two components, the total number of ECR
2 flats and the total number of ECR letters and ECR DALs
3 incorporated in that number of ECR letters? Is that
4 what you said?
5 A What I said is I don't know really.
6 (Laughter.) I was trying to make that clear.
7 In concept, it is ECR letters. Whether or
8 not it includes the DALs or not is a measurement
9 issue. You would really have to check with him. I
10 don't know offhand.
11 Q Well, let's assume for a moment the number
12 did not include DALs. I want to ask you about the
13 implication of that for your formula.
14 A If it did not include the --
15 Q In other words, if it was simply the ECR
16 saturation letters and ECR flats, and the number of
17 DALs was disregarded the way that it is in RPW --
18 that's the way the count is for RPW --
19 A Right.
20 Q -- if the number is not in total ECR
21 saturation, then we are subtracting from that the
22 number of DPS'd pieces and the number of cased pieces,
23 which include a lot of DALs which weren't in the total
24 ECR saturation number. Do you see my point?
25 A Yeah, I do.

1 Q If that were true, would that not present --
2 A -- an issue?
3 Q -- a serious issue about the reliability of
4 the numbers?
5 A To the extent that DALs are, in reality, a
6 large portion of ECR saturation, they should be in
7 that count. I would agree. In other words, I think
8 what we're saying is if we look at the first number
9 after the equal sign, that should include the DALs
10 because when we get down to sequenced mail, which
11 could include DALs, too, we want to make sure that we
12 only subtract those pieces from the total pie that
13 should be taken out, and I agree with that.
14 Q And if the first number had no DALs in it,
15 and you subtracted out DPS'd DALs --
16 A Right.
17 Q -- because I already told you Witness Lewis
18 said that there were such things --
19 A Sure.
20 Q -- and we take cased DALs, and I don't have
21 an estimate -- I don't think the Postal Service has an
22 estimate to share with you from the record, but
23 Witness Kelley has that number, I believe, of 3.4
24 billion DALs, even if 2 billion DALs were cased, that
25 would be a whole lot of pieces to take out of this,

1 would it not? If they are not in the total, and you
2 subtract them from it, you've got sort of gibberish,
3 don't you?
4 A I would agree that the subtraction should be
5 entirely consistent. Again, I'm not familiar with
6 DALs or not. My understanding is that the total
7 saturation ECR was the total letters in the delivery,
8 in CCS, for ECR. Whether it's called a DAL or not, I
9 don't know, but it was the total letters. Subtracted
10 from that would be the letters that were DPS'd,
11 whether they are DALs or not, and the letters that
12 were cased, whether they were DALs or not.
13 So, in that sense, the answer to your first
14 question, does the first total ECR include DALs, I
15 think the answer to that would be yes because this is
16 supposed to be the total ECR saturation number coming
17 out of CCS, and I think he said this morning they
18 count DALs as letters.
19 Q I'm just wondering if, since you don't know,
20 and we don't have this here, we'll just have to
21 speculate about this possibility, --
22 A Sure.
23 Q -- and in your response just then, you
24 limited your answer to letters.
25 A I'm sorry.

1 Q You didn't reference flats. You didn't mean
2 to do that, did you?
3 A I thought you just said DALs were only
4 letters.
5 Q But in your formula to get to sequenced
6 mail, sequenced mail would include letters and flats.
7 Correct?
8 A Absolutely, absolutely, absolutely.
9 Q Okay. So if we take, then, the first number
10 to the right of the equal sign of total ECR
11 saturation, if it includes letters and flats but no
12 DALs, -- let's assume that for just the purpose of the
13 question -- we don't know if it's true, since you
14 can't speak to that, and I missed my chance -- we
15 subtract from it DPS'd letters and DALs, and we
16 subtract from it cased DALs, we wind up with --
17 A -- the wrong number.
18 Q -- the wrong number for sequenced mail.
19 A I agree, theoretically.
20 Q Underestimated number.
21 A Theoretically, if you subtract off two
22 numbers that include DALs for a number that does not
23 include DALs, you're either subtracting too much, or
24 you haven't started with enough. I agree.
25 Absolutely.

1 MR. OLSON: Thank you so much, Dr. Bradley.
2 I really appreciate you working through it with me.
3 It's not easy.
4 THE WITNESS: Sure.
5 MR. OLSON: Thank you, Mr. Chairman.
6 CHAIRMAN OMAS: Right on time, five minutes
7 to spare.
8 Is there anyone else who wishes to cross-
9 examine this witness?
10 (No response.)
11 CHAIRMAN OMAS: Are there any questions from
12 the bench?
13 COMMISSIONER GOLDWAY: I have some questions
14 about the data that was prepared. What were the
15 sources of shape volume data for regular mail that you
16 used in the study?
17 THE WITNESS: The sources?
18 COMMISSIONER GOLDWAY: Uh-huh.
19 THE WITNESS: There were two data-collection
20 efforts. One was for letters and flats, and one was
21 for, that you spoke earlier, parcels and accountables.
22 The letters, flats, and sequenced mail was recorded by
23 the supervisor in each of the delivery units, and then
24 that data was sent to headquarters and key punched.
25 So for the letters and flats and sequenced mail, the

1 source was local counts, often the same kind of volume
2 data that they are now reporting into DOIS, so that
3 was the first one.
4 For larger and small parcels and
5 accountables and things like that, we actually had to
6 undertake, again, the same delivery units, but the
7 carriers would record what volumes they were carrying,
8 send that to headquarters, and it's key punched into a
9 data set.
10 COMMISSIONER GOLDWAY: Could you describe
11 the screening that you applied to the shape volume
12 data that was used?
13 THE WITNESS: In actuality, Witness Stevens
14 did that part of the study in terms of the screening.
15 I got the data after it would have been screened. In
16 speaking for him, I think what he instituted was aa
17 review of the data as it came in. He looked for
18 things that were obvious, -- extra columns, missing
19 data, out of order, 10 million pieces, those sorts of
20 things -- and then we would go back to the field and
21 check the veracity of those numbers.
22 COMMISSIONER GOLDWAY: What criteria did he
23 use?
24 THE WITNESS: That, I don't know. You would
25 have to ask him on that one.

1 COMMISSIONER GOLDWAY: Miscoding of routes
2 and dates; would that be some of it?
3 THE WITNESS: Certainly, I know that he made
4 an effort to be sure that the recording of both routes
5 and dates were accurate, yes.
6 COMMISSIONER GOLDWAY: And outliers? Did
7 you provide any guidance on outliers?
8 THE WITNESS: In my response to POIR 9, I do
9 provide an analysis of outliers, Question 10.
10 COMMISSIONER GOLDWAY: Do you know what
11 percent of the data was screened out for any of these,
12 misquoting outliers or any other criteria?
13 THE WITNESS: I don't think he screened out
14 the data. I think he made the effort to verify and
15 correct the data. My understanding is he did not
16 throw out data; he just would verify it and correct
17 it.
18 COMMISSIONER GOLDWAY: So the data is there.
19 THE WITNESS: The data are all there. No
20 data have been thrown away.
21 COMMISSIONER GOLDWAY: And that includes the
22 actual data for shape and volume and the scan data.
23 THE WITNESS: Correct. All three sets.
24 Actually, we were talking earlier, there is one for
25 letters and flats, one for the parcels and

1 accountables, and they were volume counts. Then the
2 third thing we did was ask the carriers to take their
3 scanners with them on the street and record what they
4 did. That information was in their scanner. At the
5 end of the day, they take that, they put that in a
6 cradle, and then that uploads to the computer, so that
7 would be the third data set.
8 COMMISSIONER GOLDWAY: But that was also
9 screened, then.
10 THE WITNESS: Yes, for dates and ZIP codes
11 and all that kind of stuff. That's correct.
12 COMMISSIONER GOLDWAY: Then you had the data
13 to work with.
14 THE WITNESS: Correct, correct.
15 COMMISSIONER GOLDWAY: I have a sort of
16 curiosity question.
17 THE WITNESS: Sure.
18 COMMISSIONER GOLDWAY: A couple of years
19 ago, the Postal Service made a big deal about
20 purchasing Segways to use for their carriers.
21 THE WITNESS: Those little machines?
22 COMMISSIONER GOLDWAY: Those little
23 machines. Many, many, many were purchased, and I
24 wondered if when you were conducting the study,
25 whether that was one of the technologies that was

1 reviewed.

2 THE WITNESS: We didn't come across any

3 Segways in our --

4 COMMISSIONER GOLDWAY: So what ever happened

5 to those Segways?

6 THE WITNESS: They weren't being used by

7 carriers in our ZIPs.

8 COMMISSIONER GOLDWAY: We don't know what

9 happened to those.

10 THE WITNESS: Okay.

11 COMMISSIONER GOLDWAY: Okay. Thank you.

12 CHAIRMAN OMAS: Are there any additional

13 questions?

14 MR. OLSON: Mr. Chairman, may I say that in

15 my rush to meet your deadline, I forgot to ask one

16 thing, which is if I could ask the witness or the

17 Postal Service to --

18 CHAIRMAN OMAS: Mr. Olson, I did not want

19 you to rush. I simply said --

20 MR. OLSON: It's just an excuse, Mr.

21 Chairman.

22 CHAIRMAN OMAS: I'm not one to interfere

23 with your timing, with your billing.

24 (Laughter.)

25 MR. OLSON: For that, the entire room is

1 grateful.

2 CHAIRMAN OMAS: (Laughter.)

3 MR. OLSON: Mr. Chairman, it was a

4 transparent excuse to simply say I had forgotten to

5 ask the witness and the Postal Service if they could

6 clarify the one matter that the witness admitted could

7 be a significant problem if the CCS does not include

8 DALs on page 58. I would like to ask the witness or

9 the Postal Service if they could clarify the record on

10 that to confirm that there are DALs in that ECR

11 number; otherwise, the witness has testified that we

12 have a wrong number for sequenced mail, so I would

13 request that that be provided for the record.

14 CHAIRMAN OMAS: Mr. Koetting and the

15 witness, can your provide this?

16 MR. KOETTING: Mr. Hollies tells me that his

17 witness, Mr. Harahush, should be able to provide an

18 answer.

19 MR. OLSON: Thank you so much.

20 CHAIRMAN OMAS: Thank you, Mr. Olson.

21 MR. OLSON: And would that be done so that

22 we could use it?

23 (Laughter.)

24 CHAIRMAN OMAS: I would hope so.

25 MR. OLSON: Is there a date the chair is

1 imposing typically on these requests?

2 CHAIRMAN OMAS: Well, if we could have it as

3 soon as possible, we would appreciate it. Obviously,

4 it's available. It just needs to be --

5 MR. KOETTING: Professor Bradley's

6 recollection was the question was asked and answered

7 this morning, so it might be available in the

8 transcript.

9 CHAIRMAN OMAS: Well, if you could give us

10 an idea this afternoon when we reconvene, we would

11 appreciate it.

12 MR. OLSON: Thank you.

13 CHAIRMAN OMAS: Mr. Koetting, would you like

14 some time with your witness?

15 MR. KOETTING: If I could have 30 seconds.

16 CHAIRMAN OMAS: Have I got you on a time

17 schedule as well?

18 (Discussion off the record.)

19 CHAIRMAN OMAS: Mr. Koetting?

20 MR. KOETTING: The Postal Service has no

21 redirect, Mr. Chairman.

22 CHAIRMAN OMAS: Thank you.

23 Mr. Bradley, that completes your testimony

24 here today. We certainly appreciate your contribution

25 to our record, and you are now excused. Thank you.

1 THE WITNESS: Thank you.

2 (The witness was excused.)

3 CHAIRMAN OMAS: We will now take a break for

4 about an hour, and we'll come back at about 2 o'clock,

5 and we will receive testimony from Witness Lewis.

6 (Whereupon, at 1:03 p.m., a luncheon recess

7 was taken.)

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1 A F T E R N O O N S E S S I O N

2 (2:08 p.m.)

3 CHAIRMAN OMAS: Mr. Koetting?

4 MR. KOETTING: Thank you, Mr. Chairman.

5 Before I introduce the next witness I would like to

6 mention that we had a conversation with Mr. Olson

7 after we went off the record regarding his request for

8 further clarification from Mr. Harahush about an item

9 that he discussed in his cross-examination of Dr.

10 Bradley, and we were able to resolve that such that I

11 believe that it's fair to say that he has relieved us

12 of any obligation to provide anything further.

13 We believe the transcript from Mr. Harahush

14 will be sufficient. Perhaps Mr. Olson's understanding

15 is different?

16 CHAIRMAN OMAS: Mr. Olson?

17 MR. OLSON: Gee, I don't recall

18 participating in that conversation. Actually, since

19 it involves witness Meehan and two other witnesses now

20 what I'm trying to do is simply track that the right

21 number was used.

22 Counsel assures me that my concerns are

23 misplaced, but I just need to have something that I

24 can sink my teeth into to make sure that my concerns

25 were misplaced. So I will attempt to work with him

1 informally to track the number to make sure it has the
2 DALs in it.
3 If it does then I'll drop it immediately,
4 otherwise all I have is a quick don't worry about it
5 to go on which probably isn't enough for the record.
6 CHAIRMAN OMAS: Well, Mr. Koetting, will you
7 work with Mr. Olson to try to resolve it?
8 MR. KOETTING: I believe Mr. Hollies will.
9 CHAIRMAN OMAS: Mr. Hollies? Passing the
10 buck.
11 MR. HOLLIES: Mr. Chairman, the specific
12 request just before the lunch break was whether DALs
13 were included in a specific number given by witness
14 Harahush.
15 CHAIRMAN OMAS: Correct.
16 MR. HOLLIES: The answer is that the DALs
17 are included. Now, this other matter about tracking a
18 number is a conversation that came later and was
19 beyond the scope of what we talked about before the
20 break.
21 CHAIRMAN OMAS: Could we add that to it? I
22 think it was originally included in his original
23 request, Mr. Hollies. We can go back, but at the same
24 time can you produce those previous for Mr. Olson?
25 MR. HOLLIES: The number in question is the

1 one that was provided by witness Harahush. With
2 respect to tracking numbers we often work informally
3 with Mr. Olson. I don't see why that should be a
4 problem.
5 CHAIRMAN OMAS: Very good.
6 Mr. Olson, do you agree with that?
7 MR. OLSON: I look forward to that collegial
8 relationship. Thank you.
9 CHAIRMAN OMAS: Thank you.
10 Mr. Koetting?
11 MR. KOETTING: Thank you, Mr. Chairman. I'm
12 sorry I brought it up. The Postal Service calls as
13 its next witness Jeffrey Lewis.
14 CHAIRMAN OMAS: Mr. Lewis, would you please
15 stand and raise your right hand?
16 Whereupon,
17 JEFFREY W. LEWIS
18 having been duly sworn, was called as a
19 witness and was examined and testified as follows:
20 CHAIRMAN OMAS: Thank you. You may be
21 seated.
22 DIRECT EXAMINATION
23 BY MR. KOETTING:
24 Q Could you please state your full name and
25 your position for the record?

1 A My name is Jeffrey W. Lewis and I work in
2 operations, Postal Service headquarters.
3 Q Mr. Lewis, I've just handed you a document
4 entitled direct testimony of Jeffrey W. Lewis on
5 behalf of the United States Postal Service which has
6 been designated as USPS-T-30. Are you familiar with
7 that document?
8 A Yes.
9 Q Was it prepared by you or under your
10 supervision?
11 A Yes.
12 Q If you were to testify orally today would
13 this be your testimony?
14 A Yes.
15 Q I'm correct that you have no library
16 references associated with this testimony, correct?
17 A Correct.
18 MR. KOETTING: Mr. Chairman, with that the
19 Postal Service requests that the direct testimony of
20 Jeffrey W. Lewis on behalf of the United States Postal
21 Service, USPS-T-30, be admitted into evidence.
22 CHAIRMAN OMAS: Is there any objection?
23 (No response.)
24 CHAIRMAN OMAS: Hearing none, I will direct
25 counsel to provide the reporter with two copies of the

1 corrected direct testimony of Jeffrey W. Lewis. That
2 testimony is received into evidence; however, as is
3 our practice it will not be transcribed.
4 (The document referred to was
5 marked for identification as
6 USPS-T-30 and was received in
7 evidence.)
8 CHAIRMAN OMAS: Mr. Lewis, have you had an
9 opportunity to examine the packet of designated
10 written cross-examination presented to you here?
11 THE WITNESS: Yes, sir, I have.
12 CHAIRMAN OMAS: If those questions were
13 posed to you today orally would they be the same as
14 those you provided in writing?
15 THE WITNESS: Yes.
16 CHAIRMAN OMAS: Are there any corrections or
17 additions you would like to make to your testimony?
18 THE WITNESS: No.
19 CHAIRMAN OMAS: Counsel, would you please
20 provide two copies of the corrected designated written
21 cross-examination of witness Lewis to the reporter?
22 That material is received into evidence and is to be
23 transcribed into the record.
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1 (The document referred to was
2 marked for identification as
3 ADVO/USPS-T-30-1 and was
4 received in evidence.)
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BEFORE THE
POSTAL RATE COMMISSION
WASHINGTON, DC 20268-0001

Request of the United States Postal Service for a Recommended Decision on Changes in Rates of Postage and Fees for Postal Services

Docket No. R2005-1

DESIGNATION OF WRITTEN CROSS-EXAMINATION
OF UNITED STATES POSTAL SERVICE
WITNESS JEFFERY W. LEWIS
(USPS-T-30)

Party	Interrogatories
Advo, Inc.	ADVO/USPS-T30-1 DFC/USPS-T30-1-3 OCA/USPS-T14-1a.v redirected to T30 VP/USPS-T30-1-6, 9-12, 17, 19-21, 26, 30-31 VP/USPS-T14-7b redirected to T30
Newspaper Association of America	ADVO/USPS-T30-1 VP/USPS-T30-7-8, 20-23
Office of the Consumer Advocate	DFC/USPS-T30-4 OCA/USPS-T30-1-5, 7 OCA/USPS-T14-1a.v redirected to T30 VP/USPS-T30-1-6, 12, 20-21

Party	Interrogatories
Valpak Direct Marketing Systems, nc. and Valpak Dealers' Association Inc.	VP/USPS-T30-1-17, 19-27, 29-31
	VP/USPS-T14-7b redirected to T30

Respectfully
submitted,

Steven W. Williams
Secretary

INTERROGATORY RESPONSES OF
UNITED STATES POSTAL SERVICE
WITNESS JEFFERY W. LEWIS (T-30)
DESIGNATED AS WRITTEN CROSS-EXAMINATION

Interrogatory	Designating Parties
ADVO/USPS-T30-1	Advo, NAA
DFC/USPS-T30-1	Advo
DFC/USPS-T30-2	Advo
DFC/USPS-T30-3	Advo
DFC/USPS-T30-4	OCA
OCA/USPS-T30-1	OCA
OCA/USPS-T30-2	OCA
OCA/USPS-T30-3	OCA
OCA/USPS-T30-4	OCA
OCA/USPS-T30-5	OCA
OCA/USPS-T30-7	OCA
OCA/USPS-T14-1a.v redirected to T30	Advo, OCA
VP/USPS-T30-1	Advo, OCA, Valpak
VP/USPS-T30-2	Advo, OCA, Valpak
VP/USPS-T30-3	Advo, OCA, Valpak
VP/USPS-T30-4	Advo, OCA, Valpak
VP/USPS-T30-5	Advo, OCA, Valpak
VP/USPS-T30-6	Advo, OCA, Valpak
VP/USPS-T30-7	NAA, Valpak
VP/USPS-T30-8	NAA, Valpak
VP/USPS-T30-9	Advo, Valpak
VP/USPS-T30-10	Advo, Valpak
VP/USPS-T30-11	Advo, Valpak
VP/USPS-T30-12	Advo, OCA, Valpak
VP/USPS-T30-13	Valpak
VP/USPS-T30-14	Valpak
VP/USPS-T30-15	Valpak
VP/USPS-T30-16	Valpak
VP/USPS-T30-17	Advo, Valpak
VP/USPS-T30-19	Advo, Valpak
VP/USPS-T30-20	Advo, NAA, OCA, Valpak
VP/USPS-T30-21	Advo, NAA, OCA, Valpak

Interrogatory	Designating Parties
VP/USPS-T30-22	NAA, Valpak
VP/USPS-T30-23	NAA, Valpak
VP/USPS-T30-24	Valpak
VP/USPS-T30-25	Valpak
VP/USPS-T30-26	Advo, Valpak
VP/USPS-T30-27	Valpak
VP/USPS-T30-29	Valpak
VP/USPS-T30-30	Advo, Valpak
VP/USPS-T30-31	Advo, Valpak
VP/USPS-T14-7b redirected to T30	Advo, Valpak

RESPONSE OF POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF ADVO, INC.

ADVO/USPS-T30-1. In response to an example posed in VP/USPS-T30-5, you state that . . . "normally, where carriers are delivering to centralized, cluster box, curbline, and dismount deliveries, they would take both sequenced mailings directly to the street uncased." In response to VP/USPS-T30-30, you state that . . . "Where City carriers serve sections of curbline deliveries on a route, they should take both components of detached address label mailings directly to the street for those sections." Is that also the case where carriers are delivering to centralized, cluster box, or dismount deliveries or sections?

RESPONSE:

Yes.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORIES OF DOUGLAS F. CARLSON

DFC/USPS-T30-1. Please refer to your testimony at pages 218 and 219. Please discuss the extent to which letter carriers who deliver mail to customers also collect mail from collection boxes.

Response

Local managers have significant discretion in how they establish City carrier assignments. They establish City carrier assignments based upon local operational needs. City carrier assignments may, and often do, include the responsibility to collect mail from collection points in addition to delivering mail to customers. The Postal Service does not maintain statistics showing the extent to which letter carriers who deliver mail to customers also collect mail from collection boxes.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORIES OF DOUGLAS F. CARLSON

DFC/USPS-T30-2. Please discuss the extent to which the Postal Service uses dedicated collection routes, rather than letter carriers who are also delivering mail to customers, to collect mail from collection boxes.

Response

Local managers have significant discretion in how they establish City carrier assignments. They establish City carrier assignments based upon local operational needs. Many field managers establish 'dedicated' collection routes, City carrier assignments that consist solely of collecting mail from collection boxes, to facilitate the management of their local collections process. The Postal Service does not maintain statistics showing the extent to which letter carriers who deliver mail to customers also collect mail from collection boxes.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORIES OF DOUGLAS F. CARLSON

DFC/USPS-T30-3. To the extent that information is available in the Collection Point Management System database or another database, please identify the percentage of collection boxes for which at least one collection per day is performed by a letter carrier whose duties on that day also include delivery of mail to customers. Please provide a breakdown for residential boxes and business collection boxes (as those boxes are coded in the database).

Response

The Postal Service does not maintain statistics showing the extent to which letter carriers who deliver mail to customers also collect mail from collection boxes.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORIES OF DOUGLAS F. CARLSON

DFC/USPS-T30-4. Please refer to your testimony at page 22, lines 6–14.

a. In which way is the mail that arrives at the VIM room "unworked"?

b. Please explain why mail delivered to a VIM room would not be sorted or sequenced by business name, suite number, or apartment number.

Response

In using the term "unworked," I meant that the mail dropped at a VIM room still requires preparation prior to delivery. Not all of the mail arrives sorted or sequenced by business name, suite number, or apartment number. Flat or parcel sorting operations, for example, do not generally provide a significant number of separations below carrier route. In addition to separating mail by delivery point or customer, a carrier on a VIM route must consolidate the various types of mail (letters, flats, and packages) destined for each customer.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

OCA/USPS-T30-1. Witness Stevens indicates that your testimony provides a "more complete discussion of DOIS (Delivery Operations Information System)." USPS-T-15 at 23.

a. Have you (or others) furnished documentation of DOIS in the current rate case? If so, please provide full citations. If not, then please furnish complete DOIS documentation.
b. Is it correct that DOIS documentation is only available through the Postal Service's intra-net? If not, then please explain.
c. On what date was DOIS first introduced to delivery offices? On that date, how many offices were placed under DOIS?
d. At the present time, how many delivery offices operate under DOIS?
e. How many delivery offices do not operate under DOIS?
f. What is the total number of delivery offices?
g. Is DOIS used in delivery offices that include city carrier routes?
h. Is DOIS used in delivery offices that include rural carrier routes?
i. What is the number of delivery offices that consist solely of city carrier routes and do not include any rural carrier routes?
j. What is the number of delivery offices that consist solely of rural carrier routes and do not include any city carrier routes?
k. What is the number of delivery offices that consist of a mix of city and rural carrier routes?
l. If the figures given in response to parts i., j. and k. do not equal the figure given in response to part f., then what offices would be included in the remainder? Please describe in full.
m. Please give the number of delivery offices consisting solely of city carrier routes that operate under DOIS.
n. Please give the number of delivery offices consisting of a mix of city and rural carrier routes that operate under DOIS.
o. Are DOIS reports ever generated by or for headquarters? If so, please list all such reports, including their purpose and the information contained in them.

Response

A. The Postal Service has not provided DOIS documentation.

B. Yes, because the DOIS program team determined that interactive training would better meet the needs of Postal managers, the DOIS training and user's guide is only available online.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

C. National deployment of DOIS began with 33 'delivery units' on May 19, 2001. The DOIS program team deployed DOIS systems based upon supervisor assignments rather than by office or even ZIP code. The DOIS team designated these supervisor assignments as 'delivery units' and defined a 'delivery unit' as a grouping of city delivery routes under the management of one supervisor.

D. The Postal Service does not have a count of how many delivery offices have DOIS systems. The DOIS program team deployed DOIS systems based upon supervisor assignments rather than by office or even ZIP code. The DOIS team designated these supervisor assignments as 'delivery units' and defined a 'delivery unit' as a grouping of city delivery routes under the management of one supervisor. DOIS is deployed to 7,939 delivery units.

E. Please see my response to part D. The Postal Service does not have a count of the number of offices without DOIS.

F. Current Address Management data shows that within the Postal System there are 32,777 Post Offices, Stations, and Branches with delivery operations. This includes City, Rural, Highway Contract, Post Office Box and General Delivery.

G and H. The DOIS system was designed to facilitate the management of City delivery routes. It is deployed in offices with City delivery and offices with both City and Rural delivery operations.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

I. The Postal Service has 3,499 delivery offices with City delivery that do not have Rural delivery.

J. The Postal Service has 11,856 delivery offices with Rural delivery that do not have City delivery.

K. The Postal Service has 5,574 delivery offices with both City and Rural delivery.

L. The Postal Service has 11,848 delivery offices without City or Rural delivery. These offices provide General, Post Office Box and Highway Contract delivery.

M and N. Please see my response to part D. The Postal Service does not have a count of the number of offices using DOIS consisting solely of City delivery or with both City and Rural delivery.

O. DOIS was designed as a supervisor tool. As such, it only provides unit-level reports. It does not provide roll-up or summary level reporting. Persons with DOIS access can get to any report in DOIS, for example, HQ can generate those unit-level reports, the same information a supervisor or unit manager looks at.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

OCA/USPS-T30-2. Please refer to your testimony at page 6.

a. Have you (or others) furnished documentation of the Piece Count Recording System (PCRS) in the current rate case? If so, please provide full citations. If not, then please furnish complete PCRS documentation.

b. Give a detailed description of how PCRS integrates mail counting procedures with the automated mail processing equipment. Give separate descriptions for each distinct shape of mail, e.g., letters, flats, and packages, and the type of automated equipment used to sort the mail, e.g., Barcode Sorters (BCS); Automatic Flat Sorting Machines (AFSM), by type of AFSM; Small Package and Bundle Sorters (SPBS); Parcel Sorting Machines (PSM), etc. Please give a complete set of descriptions for all types of automated equipment used in PCRS.

c. Please give a detailed description of how PCRS improves and standardizes procedures for measuring and converting mail handled outside the automated mailstream. Please give a complete set of descriptions for all types of non-automated mail.

d. Does PCRS consist of filling in forms or tables? If so, then provide the forms or tables used in PCRS. If not, are other standardized types of data put into PCRS? List all such types of data collected.

e. On what date was PCRS first introduced to delivery offices? On that date, how many offices were placed under PCRS?

f. At the present time, how many delivery offices operate under PCRS?

g. How many delivery offices do not operate under PCRS?

h. Is PCRS used in delivery offices that include city carrier routes?

i. Is PCRS used in delivery offices that include rural carrier routes?

j. Please give the number of delivery offices consisting solely of city carrier routes that operate under PCRS.

k. Please give the number of delivery offices consisting of a mix of city and rural carrier routes that operate under PCRS.

l. Are PCRS reports ever generated by or for headquarters? If so, please list all such reports, including their purpose and the information contained in them.

Response

A. A copy of the Piece Count Recording System Management Instruction is being filed as USPS-LR-K-128.

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B. The PCRS instructs Customer Service unit managers and supervisors to use, where available, End of Run reports from mail processing equipment as the basis of their volume counts. Customer Service managers generally receive End of Run data from letter and flat operations but not parcel/package operations.

C. The PCRS requires all Customer Service operations to follow the same mail counting and recording procedure. The process, which includes the use of End of Run reports, route statistics, and mailing information, results in more accurate mail counts. The PCRS Management Instruction in USPS-LR-K-128 contains a detailed description of the mail counting requirements at pages 5 through 9.

D. The PCRS Management Instruction in USPS-LR-K-128 includes the volume recording forms that field offices use.

E. The Postal Service initially implemented the Piece Count Recording System in September of 1998. The instruction applied to all Customer Service operations as of the implementation date.

F and G. Current Address Management data shows that within the Postal System there are 32,777 Post Offices, Stations, and Branches with delivery operations. This includes City, Rural, Highway Contract, Post Office Box and General Delivery. The mail counting procedures articulated in the PCRS applies to each of those offices.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

H and I. Yes, the PCRS applies to both City and Rural delivery offices.

J. The Postal Service has 3,499 delivery offices with City delivery that do not have Rural delivery.

K. The Postal Service has 5,574 delivery offices with both City and Rural delivery.

L. There are no PCRS system reports.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

OCA/USPS-T30-3. Please refer to your testimony at page 6.

a. Have you (or others) furnished documentation of the Time and Attendance Control System (TACS) in the current rate case? If so, please provide full citations. If not, then please furnish complete TACS documentation.
b. Does TACS consist of filling in forms or tables? If so, then provide the forms or tables used in TACS. If not, are other standardized types of data put into TACS? List all such types of data collected.
c. On what date was TACS first introduced to delivery offices? On that date, how many offices were placed under TACS?
d. At the present time, how many delivery offices operate under TACS?
e. How many delivery offices do not operate under TACS?
f. Is TACS used in delivery offices that include city carrier routes?
g. Is TACS used in delivery offices that include rural carrier routes?
h. Please give the number of delivery offices consisting solely of city carrier routes that operate under TACS.
i. Please give the number of delivery offices consisting of a mix of city and rural carrier routes that operate under TACS.
j. Are TACS reports ever generated by or for headquarters? If so, please list all such reports, including their purpose and the information contained in them.

Response

A. Objection filed.

B. TACS is a time and attendance collection system. Data are input into the system via electronic time clocks for the majority of our employees. Time and attendance data are also input from paper forms, such as manual timecards or leave slips, or via a voice-recognition system known as TVR (TACS Voice-Recognition).

C. The Postal Service's first implementation of TACS was in 213 Finance Numbers in Columbia, SC District in October 1999. These 213 Finance Numbers included Plants and administrative offices as well as delivery units.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

D and E. All delivery offices operate under TACS.

F and G. Yes, TACS is used in offices with both City and Rural delivery.

H. The TACS system tracks deployment by Finance Number rather than by office. TACS has 3,367 Finance Numbers with just city carriers.

I. The TACS system tracks deployment by Finance Number rather than by office. TACS has 4,616 Finance Numbers with both city and rural carriers.

J. TACS is a time and attendance record keeping system. As such, reports are regularly generated by headquarters personnel for the purpose of tracking the time and attendance of headquarters employees. TACS is not designed for, or used to, generate any national level reports.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

OCA/USPS-T30-4. Please refer to your testimony at pages 6 -7.

a. Have you (or others) furnished documentation of the Managed Service Point (MSP) system in the current rate case? If so, please provide full citations. If not, then please furnish complete MSP documentation.
b. Does MSP consist of filling in forms or tables? If so, then provide the forms or tables used in MSP. If not, are other standardized types of data put into MSP? List all such types of data collected.
c. On what date was MSP first introduced to delivery offices? On that date, how many offices were placed under MSP?
d. At the present time, how many delivery offices operate under MSP?
e. How many delivery offices do not operate under MSP?
f. Is MSP used in delivery offices that include city carrier routes?
g. Is MSP used in delivery offices that include rural carrier routes?
h. Please give the number of delivery offices consisting solely of city carrier routes that operate under MSP.
i. Please give the number of delivery offices consisting of a mix of city and rural carrier routes that operate under MSP.
j. Are MSP reports ever generated by or for headquarters? If so, please list all such reports, including their purpose and the information contained in them.

Response

A. The Postal Service has not provided documentation of the Managed Service Point system (MSP). MSP is an application contained within DOIS. The training and users guide for the MSP feature of DOIS is only available online as a part of the DOIS training.

B. The MSP application provides delivery supervisors with information about the consistency of street delivery. The MSP system does not involve forms. Supervisors place a small barcoded label either in or near the mailbox at selected addresses on each delivery route. Carriers scan these barcodes when making delivery. The MSP system compares that time of delivery with the scheduled delivery time for that location

allowing the supervisor to monitor success in delivering customers' mail within the same one-hour window every day. Supervisors use that information to better manage service and performance.

C. The MSP system began as a field initiative. The Postal Service incorporated MSP into DOIS in September of 2003. The Postal Service does not have statistics on MSP deployment prior to when we incorporated the application into DOIS.

D. MSP is used in each office with DOIS. As in my response to OCA/USPS-T30-1, the Postal Service does not have a count of how many delivery offices have DOIS systems. DOIS is deployed to 7,939 'delivery units.'

E. Offices without DOIS do not have MSP. I have no statistics on the number of delivery offices without DOIS.

F and G. Supervisors use MSP in offices with City delivery and in offices with both City and Rural delivery. However, in delivery offices that include Rural carrier routes, supervisors do not use MSP on those Rural routes. MSP, which is a component of the DOIS system, was designed as a tool for managing City delivery routes.

H and I. Please see my response to OCA/USPS-T30-1. The Postal Service does not have a count of the number of offices using DOIS consisting solely of City delivery or with both City and Rural delivery.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO
INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE

J. DOIS was designed as a supervisor tool. As such, it only provides unit-level reports. It does not provide roll-up or summary level reporting. Persons with DOIS access can get to any report in DOIS, for example, HQ can generate those unit-level reports, the same information a supervisor or unit manager looks at.

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OCA/USPS-T30-5. Please refer to your testimony at page 7 where you describe the capabilities of the "DOIS system interfaces."

a. Describe in detail what you mean by that phrase.
b. Please provide the complete DOIS system interface database from the time it was first implemented through today.
c. Provide separate fields for delivery offices broken down: by delivery day, by carrier, by hours worked per carrier, by volume workload for each carrier day that corresponds to the hours worked, by DPS letters, by non-DPS-letters, by flat shape, by package shape, and by number of bundles.
d. On what date was the DOIS system interface first introduced to delivery offices? On that date, how many offices were placed under the DOIS system interface?
e. At the present time, how many delivery offices operate under the DOIS system interface?
f. How many delivery offices do not operate under the DOIS system interface?
g. Is the DOIS system interface used in delivery offices that include city carrier routes?
h. Is the DOIS system interface used in delivery offices that include rural carrier routes?
i. Please give the number of delivery offices consisting solely of city carrier routes that operate under the DOIS system interface.
j. Please give the number of delivery offices consisting of a mix of city and rural carrier routes that operate under the DOIS system interface.
k. Are DOIS system interface reports ever generated by or for headquarters? If so, please list all such reports, including their purpose and the information contained in them.

Response

A. In using the term "interfaces," I meant that other non-DOIS processes and applications pass information to the DOIS system and receive information from the DOIS system.

B and C. There is no DOIS system interface database.

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D – J. The DOIS designers built these interfaces into the DOIS software, so all offices with DOIS have software with these DOIS system interfaces. See my response to OCA/USPS-T30-1.

K. There are no DOIS system interface reports.

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OCA/USPS-T30-7. Does the Postal Service possess any data systems or databases other than those mentioned in the above interrogatories that contain (1) delivered volumes by date, by ZIP Code, by shape or (2) street workhours by date, by ZIP Code? If so, please identify, describe, and provide documentation for those systems or databases

Response

The Postal Service has no national reporting system other than the DOIS system that contains daily delivered volume and street workhours by date and ZIP code.

RESPONSE OF POSTAL SERVICE WITNESS JEFFREY W. LEWIS
TO INTERROGATORY OF THE OFFICE OF THE CONSUMER ADVOCATE
REDIRECTED FROM WITNESS BRADLEY

OCA/USPS-T14-1. Please refer to the testimony of witness Jeffery W. Lewis (USPS-T-30).

> a. At page 3, lines 13-16, witness Lewis states that "adding bundles results in carriers retrieving mail from more sources when delivering mail on the street. For example, carriers must check and withdraw mail from the bundle of DPS letters, from the bundle of cased mail, and from each of the additional bundles taken directly to the street."
>
> * * * * *
>
> v. Do you consider "small parcels" to constitute a separate bundle (for operational purposes, not for labor agreement purposes)? If not, why not?

OCA/USPS-T14-1a.v. **Response**

I would not consider small parcels to constitute a separate bundle. Carriers often incorporate small parcels into the bundle of cased letters and flats. When carriers do not incorporate the small packages with the bundle of cased mail, they carry them as single pieces.

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

VP/USPS-T30-1
Please refer to your testimony (USPS-T-30) at page 3, lines 1-3. In Base Year 2004, what was the total number of city carrier (i) foot routes and (ii) park and loop routes where carriers could not be required to carry more than one "third bundle" on the street?

Response

In FY 2004, the number of routes classified as foot routes was 11,454 and the number of routes classified as park and loop routes was 87,793. However, the Postal Service does not maintain statistics identifying the routes where on-street work rules strictly limit to three the number of bundles carriers take directly to the street. Whether or not carriers can work from more than three bundles when making deliveries on the street is a function of the type of deliveries they are serving rather than the classification of the route or whether it has an assigned vehicle. For example, a carrier on a foot route who is delivering mail relayed to a high-rise mailroom may have more than three bundles of mail for those deliveries. Similarly, a carrier serving a street of curbline deliveries on a route classified as park and loop may work from more than three bundles when delivering to that section of the route.

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VP/USPS-T30-2
Please refer to your testimony (USPS-T-30) at page 3, lines 8-10. In Base Year 2004, what was the total number of city carrier motorized routes delivering to "curbline, centralized, cluster box unit (CBU), and dismount stops" where carriers had no restrictions on the number of "third bundles" they could take directly to the street?

Response

In FY 2004, the number of routes classified as curbline routes was 38,686 and the number of routes classified as dismount routes was 25,418. However, as I explained in my response to VP/USPS-T-30-1 above, the Postal Service does not maintain statistics identifying the routes with no restrictions on the number of bundles carriers take directly to the street. Whether or not carriers can work from more than three bundles when making deliveries on the street is a function of the type of deliveries they are serving rather than the classification of the route or whether it has an assigned vehicle.

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VP/USPS-T30-3
Please refer to your responses to preceding interrogatories VP/USPS-T30-1 and 2 and indicate whether the total number of routes provided in the response to those two questions was the total number of city carrier delivery routes in Base Year 2004. In the event that the number of routes provided in response to those two questions does not account for the total number of city carrier delivery routes, please indicate the total number of such routes and explain the difference.

Response

The Postal Service had 165,618 City carrier routes at the end of FY2004. In addition to the foot, park and loop, curbline, and dismount routes listed above, there were another 2,267 routes classified as other routes.

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VP/USPS-T30-4

Please assume that on some particular day a city carrier has one ECR Saturation sequenced mailing for delivery that day. With the understanding that carriers may have some discretion concerning whether they case a sequenced mailing while in the delivery unit, what percent of the time would you expect the carrier to take such a sequenced Saturation mailing (uncased) directly to the route? If your response depends on the type of route, please provide a separate response for each route type(s) for which there is a distinction regarding the way such a Saturation mailing is likely to be handled. Similarly, if your response depends on whether the sequenced mailing consists of letters, addressed flats, or unaddressed flats with Detached Address Labels ("DALs"), please provide a separate response for each shape for which there is a distinction regarding the way such a Saturation mailing is likely to be handled.

Response

Depending on the type of delivery served, City carrier work rules allow for three or more bundles on the street. Normally, carriers have one bundle of DPS letters and one bundle of cased letters and flats and, therefore, could take at least one additional bundle of sequenced mail to the street on any given day. The supervisor of the operation is responsible for ensuring carriers take the appropriate number of bundles of mail directly to the street.

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VP/USPS-T30-5

Please assume that a city carrier on a motorized route has two ECR Saturation flat mailings for delivery on a certain day, each sequenced to line of travel. For the purpose of your response to the following question, assume that volume on that day ranges from "light" to "normal" and deferral of one of the mailings is not a consideration. With the understanding that carriers on motorized routes have discretion concerning whether they case a sequenced mailing while in the delivery unit or take sequenced mailings directly to their vehicles, what percent of the time would you expect the carrier to take both of the sequenced flat mailings (uncased) directly to the vehicle?

a. Unless you always anticipate that the carrier would take both sequenced mailings directly to the vehicle, please indicate the more important reasons that would lead the carrier on a motorized route to case one of the sequenced flat mailings in the office.

b. Please explain in detail what you mean by "check and withdraw" in your testimony at page 3, line 15.

Response

Whether or not carriers can work from more than three bundles when making deliveries on the street is a function of the type of deliveries they are serving rather than the classification of the route or whether it has an assigned vehicle. The supervisor of the operation is responsible for ensuring carriers take the appropriate number of bundles of mail directly to the street. As to your example, normally, where carriers are delivering to centralized, cluster box, curbline, and dismount deliveries, they would take both sequenced mailings directly to the street uncased.

b. By "check and withdraw" I meant that when making delivery, carriers must look at each bundle to determine if there is mail for the stop they are at, and, if there is mail for that stop, remove the mail from the bundle and deliver it.

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VP/USPS-T30-6

Please assume that a city carrier on a motorized route has at the Destination Delivery Unit ("DDU") two ECR Saturation mailings for delivery on a certain day, each sequenced to line of travel, and one of the mailings consists of Saturation letters, while the other consists of Saturation flats. For the purpose of ;your response to the following question, please assume that deferral of one of the mailings is not a consideration, including the deferral that would occur if the letters were sent back to the plant to be delivery point sequenced ("DPS"). With the understanding that such carriers have discretion concerning whether they case the mail while in the delivery unit or take sequenced mailings directly to their vehicles, what percent of the time would you expect the carrier to take the sequenced mailings of Saturation flats and letters (uncased) directly to the vehicle? Unless you always anticipate that the carrier would take both sequenced mailings directly to the vehicle, please indicate the reasons that would lead the carrier on a motorized route to case one of the sequenced mailings in the office.

Response

Whether or not carriers can work from more than three bundles when making deliveries on the street is a function of the type of deliveries they are serving rather than the classification of the route or whether it has an assigned vehicle. The supervisor of the operation is responsible for ensuring carriers take the appropriate number of bundles of mail directly to the street. As to your example, normally, where motorized carriers are serving centralized, cluster box, curbline, and dismount deliveries, the supervisor would ensure they take their sequenced mailings directly to the street uncased. If the carriers in your example were carriers on motorized routes that served park and loop deliveries, for those park and loop deliveries, the supervisor would ensure the carriers collated the mailings together into a third bundle.

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VP/USPS-T30-7.
At page 3 of your testimony (ll 12-13), you note that "{t}he additional bundles carriers take to the street save a considerable amount of in-office time." At the same time, you also note (ll. 14-16) that "carriers must check and withdraw mail...from each of the additional bundles taken directly to the street," which implies that a trade-off exists between in-office time saved and street time added. With respect to the potential for saving in-office time, please answer the following questions:

a. Does the Postal Service have any studies or analysis of the **actual** amount of time required to case an ECR Saturation mailing of **addressed** flats, such as catalogs? If so, please provide those results. Further, if the analysis shows how casing time varies depending on physical characteristics, such as weight or size, or whether the piece is tabbed or untabbed, please provide that information.

b. Does the Postal Service have any studies or analysis of the **actual** amount of time required to case an ECR Saturation mailing of **unaddressed** flats? If so, please provide those results. Further, if the analysis shows how casing time varies depending on physical characteristics, such as weight or size, number of inserts in the host piece, size of the host piece, etc., please provide that information.

c. Does the Postal Service have any studies or analysis of the **relative** amount of time required to case an ECR Saturation mailing of **unaddressed** flats in comparison to the time required to case an ECR Saturation mailing of **addressed** flats? If so, please provide that information.

Response

a. – c. I am unaware of any Postal Service studies or analyses focused on the actual or relative handling times related to either addressed or unaddressed ECR Saturation mailings other than the study and analysis provided in Docket C87-2 by witness Acheson and in docket R90-1 by witness Shipe. The Postal Service has not conducted, since the settlement of bundle-handling and casing equipment issues driven by DPS implementation, studies or analyses focused on

the actual or relative handling times related to either addressed or unaddressed ECR Saturation mailings.

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VP/USPS-T30-8.
Please refer to VP/USPS-T30-7. With respect to the time required for carriers to "check and withdraw mail ... from each additional bundles taken directly to the street," please answer the following questions:

a. Aside from the testimony of Postal Service witness Acheson in Docket No. C87-2, does the Postal Service have any subsequent studies or analysis of the **actual** amount of time required to check and withdraw an **addressed flat**, such as a catalog, from an extra bundle? If so, please provide those results. Further, if the analysis shows how the time varies depending on physical characteristics, such as weight or size, or whether the piece is tabbed or untabbed, please provide.

b. Does the Postal Service have any studies or analysis of the **actual** amount of time required to check and withdraw a **DAL and an unaddressed flat** from an extra bundle? If so, please provide those results. Further, if the analysis shows how casing time varies depending on physical characteristics, such as weight or size, number of inserts in the host piece, size of the host piece, etc. please provide.

c. Does the Postal Service have any studies or analysis of the **relative** amount of time required to check and withdraw a **DAL and an unaddressed flat** in comparison to the time required to check and withdraw an **addressed flat**? If so, please provide those results.

Response

a. – c. I am unaware of any Postal Service studies or analyses focused on the actual or relative handling times related to withdrawing addressed or unaddressed flats from bundles other than the studies and analyses provided in Docket C87-2 by witness Acheson and in docket R90-1 by witness Shipe. The Postal Service has not conducted, since the settlement of bundle-handling and casing equipment issues driven by DPS implementation, studies or analyses focused on the actual or relative handling times related to either addressed or unaddressed flats.

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VP/USPS-T30-9.
At page 3 of your testimony (ll. 12-13), you note that "[t]he additional bundles carriers take to the street save a considerable amount of in-office time." At the same time, you also note (ll. 14-16) that "carriers must check and withdraw mail...from each of the additional bundles taken directly to the street." This latter statement confirms the testimony of Postal Service witness Acheson in Docket No. C87-2, and implies that a trade-off exists between in-office time saved and street time added.

a. With respect to your discussion concerning additional bundles of sequenced mail, what evidence does the Postal Service have that the in-office time saved exceeds the extra street time required to check and withdraw mail from extra bundles?

b. For motorized routes with no restriction on the number of bundles that city carriers can take directly to the street, what is the largest number of additional sequenced bundles (in addition to the normal bundles of DPS letters and cased flats) that, as a practical matter, carriers can handle in their vehicles? That is, is there some number of additional sequenced bundles beyond which it becomes more practical, or more cost-effective, to case some sequenced mailings in the office?

Response

a. The Postal Service relies on field delivery operations experience in determining the value of bundle handling work methods.

b. I know of no guidance or analysis limiting the number of bundles that City carriers can work from while on the street.

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VP/USPS-T30-10.
As a hypothetical, please assume that a city carrier had only one Standard ECR Saturation mailing to deliver on a particular day (along with the normal volume of other mail), and that Saturation mailing consisted of letter-shaped mail sequenced by line of travel ("LOT").

a. Does the Postal Service have in place a standard policy or procedure that prescribes how city carriers should handle letter-shaped Standard ECR Saturation mailings under such circumstances?

b. If your answer to preceding part a is the affirmative, please provide copies of all relevant policies or procedures issued by headquarters.

c. If your answer to preceding part b is anything other than an unqualified affirmative:

(i) What is the likelihood that the carrier would take the letter-shaped Standard ECR Saturation mailing presorted to LOT directly to the carrier's vehicle and would treat the letters as a "third" bundle?

(ii) What is the likelihood that the letter-shaped Standard ECR Saturation mailing would be sent to the plant to be DPS with other letter-shaped mail?

Response

a. and b. The Postal Service has not issued a specific policy prescribing how city carriers should handle letter-shaped Standard ECR Saturation mailings. City carrier work rules allow carriers to work from three or more bundles on the street.

c.i. Normally, carriers have one bundle of DPS letters and one bundle of cased letters and flats. Therefore, carriers can take at least one additional bundle of sequenced mail to the street on any given day. The supervisor of the operation

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is responsible for ensuring carriers take the appropriate number of bundles of mail directly to the street.

c.ii. If, as you say, the sequenced mailing in your example is committed for delivery on this particular day, the delivery unit supervisor would not have the option to send it to the plant for DPS processing.

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VP/USPS-T30-11.
The following assumptions involve a hypothetical. First, please assume that on some particular day carriers at a DDU have two Standard ECR Saturation flat mailings to deliver, along with the usual assortment of other mail. Second, assume that the volume of mail for delivery that day is normal, and carriers will have no problem delivering both of the two Saturation mailings. Third, assume carriers operating out of this DDU can take only one of the two Saturation mailings to the street as a third bundle; *i.e.*, they have either foot routes or park and loop routes. Fourth, assume the two mailings are addressed catalogs having the same dimensions (length and height), but differing with respect to weight (and thickness), as follows: one of the two Saturation mailings is a catalog weighing 2.5 ounces, while the other is a catalog weighing 5.0 ounces.

a. Of the two Saturation flat mailings, is either more likely to be taken to the route as a third bundle, or would each one have an equal probability of being taken?

b. Has the Postal Service issued any written instructions establishing the order or priority for implementing the third bundle option on foot routes and park and loop routes? If so, please provide a copy of all applicable instructions (i) that were in effect during the Base Year and (ii) that are now in effect.

c. If the Postal Service has not issued any written instructions establishing the order or priority for implementing the third bundle option, do DDUs have any general instructions or understanding concerning the priority? If so, please provide a copy.

Response

a. and b. The Postal Service has not issued a specific policy establishing requirements for the composition of third bundles. Supervisors make this determination on a route-by-route basis after evaluating the service requirements, actual and expected workload, carrier casing proficiency, and other factors. Because of that, it is not possible to say whether a supervisor would deliver both bundles on the particular day or not. If the supervisor decided to deliver both bundles on the particular day, he or she would most likely direct carriers to create a third bundle by collating the mailings together.

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c. I have no knowledge of individual delivery unit policies establishing requirements for third bundles.

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VP/USPS-T30-12.
Please assume that on some particular day the carriers at a DDU have two Standard ECR Saturation mailings of flats to be delivered that day. Assume further that the routes served by the DDU either are **foot routes** or **park and loop routes**, and that carriers on those routes will need to case one of the two mailings of Saturation flats prior to leaving the office. Assume further that a typical route for this office has 480 delivery points. Finally, assume that the "first" Saturation mailing is approximately 3/32nds of an inch thick and the "second" is 5/32nds of an inch thick.

a. Please confirm that 480 pieces of the first mailing, stacked one on top of another, will measure about 3.75 linear feet. If you do not confirm, please provide the correct measurement.

b. Please confirm that 480 pieces of the second mailing, stacked one on top of another, will measure about 6.25 linear feet. If you do not confirm, please provide the correct measurement.

c. For a standard vertical flat case used by city carriers, what is the interior width that is available for each residential delivery point on the route?

d. When city carriers are using standard vertical flat cases, please confirm that thicker mailpieces tend to fill up the available space more quickly than thinner mailpieces.

e. Of the two mailings described above, which would city carriers most likely take to their vehicles as a third bundle, and which would they most likely case while in the office?

Response

a. and b. Confirmed.

c. The width of the address separations in city carrier cases is adjustable to allow for variances in the volume for different addresses.

d. Confirmed

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

e. The supervisor would most likely direct carriers to collate the two mailings together to make a third bundle.

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

VP/USPS-T30-13.
Although DALs are not required to be pre-barcoded, it seems conceivable that some mailers nevertheless might barcode their DALs voluntarily.

a. Is this ever known to occur?

b. If so, what is the best estimate of the percentage of DALs that are pre-barcoded?

c. Would having barcodes on DALs facilitate processing? Please explain.

Response

a. Yes.

b. The Postal Service has no estimate of the volume or percentage of the amount of letter-shaped DAL pieces processed on automated equipment.

c. Yes, because in today's DPS operations a barcode is required to sort the letter-shaped piece of a DAL mailing, prebarcoding eliminates the need for the Postal Service to encode the pieces prior to DPSing them. However, prebarcoding is not the only consideration regarding whether the Postal Service can DPS the letter-shaped piece of a DAL mailing.

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

VP/USPS-T30-14.

a. Are the specifications for DALs such that they could be processed on Delivery Bar Code Sorters ("DBCSs"), Carrier Sequence Bar Code Sorters ("CSBCSs"), or other automation equipment if the Postal Service so desired? That is, do the thickness, height, length, etc. of DALs conform with the specifications for processing on the Postal Service's automation equipment?

b. Can the Postal Service apply barcodes to DALs by running them through the various pieces of automation equipment that are equipped with Optical Character Readers ("OCRs")?

c. If Standard ECR flats with DALs are entered at a destinating Processing and Distribution Center ("P&DC"), or upstream of a destinating P&DC, to what extent is automation equipment likely to be used to sort the DALs into delivery point sequence?

d. Unless the answers to preceding parts of this interrogatory are to the effect that DALs are never sorted on automation equipment, of those DALs that are sorted on automation equipment, please provide your best estimate of the percentage of DALs that are pre-barcoded, and the percentage of DALs that the Postal Service must first barcode before sorting on automation equipment.

Response

a. Please see the response to VP/USPS-T39-2 in R2001-1.

b. Yes.

c. Please see my response to VP/USPS-T30-15.b below. I know there is field interest in DPSing the letter-shaped component of a DAL mailing and that in some places delivery and plant managers have implemented local procedures to do this. I do not know how much more of this processing would occur if mailers entered DAL mailings at or upstream of a plant.

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d. Headquarters guidance regarding DPSing the letter-shaped components of a DAL mailing includes prebarcoding as a prerequisite.

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VP/USPS-T30-15.

a. When Standard ECR flats with DALs are entered at DDUs, are the DALs sometimes returned to the P&DC to be DPS on automation equipment?

b. If so, please describe the circumstances under which this is likely to occur, and indicate whether pre-barcoding of DALs is a significant consideration in whether they are processed on automation equipment?

Response

a. Yes.

b. Prior to a delivery unit decision to return to the plant for DPS processing the letter-shaped piece of a DAL mailing, the delivery unit must address a number of issues. The delivery unit must ensure that the letter-shaped piece is compatible with automated processing and prebarcoded. The delivery unit must determine that there is enough time to allow the plant to process and return the mailing for delivery within service commitments. The delivery unit and the plant must establish mail flow and communications processes to ensure that carriers have both the letter-shaped and flat-shape pieces of the mailing for delivery on the same day.

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

VP/USPS-T30-16.

a. To what extent and under what circumstances are DALs sorted with other lettershaped mail (*i.e.*, whether cased manually or by automation equipment)?

b. Approximately what percentage of DALs are sorted with letter-shaped mail?

c. To what extent and under what circumstances are DALs cased with flat-shaped mail?

d. Approximately what percentage of DALs are sorted with flat-shaped mail?

e. When DALs are cased with flat-shaped mail, and carriers subsequently "finger" pieces in the flat-shaped bundle while on their routes, do carriers ever encounter any difficulty in not seeing or not finding the DALs between larger-sized flats?

Response

a - d. The Postal Service does not maintain statistics that track the number or composition of bundles City carriers take directly to the street. Therefore, it is not possible to know what percentage of DAL mailings the Postal Service sorts either manually or on automation with either letter-shaped or flat-shaped mail.

e. With few exceptions, City carriers combine letter-shaped and flat-shaped mail when preparing mail for delivery. Carriers are very proficient in working with the bundle of letter and flat-shaped mail.

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

VP/USPS-T30-17.

a. Do carriers always leave the DDU with DALs sorted with either their letter mail or their flat mail?

b. Unless your answer to preceding part a is an unqualified affirmative, under what circumstances would carriers take DALs to their route separately (*i.e.*, along with the accompanying mailpieces), without any sortation whatsoever?

c. If carriers sometimes take DALs directly to their route without any sortation whatsoever, how often is this likely to occur?

Response

a. No.

b. Normally, carriers have one bundle of DPS letters and one bundle of cased letters and flats and, therefore, could take at least one additional bundle of sequenced mail, including mail from a DAL mailing, to the street on any given day.

c. Any time carriers have a sequenced mailing available, the supervisor of the operation is responsible for ensuring carriers take the appropriate number of bundles of mail directly to the street.

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

VP/USPS-T30-19.
As a hypothetical, please assume that carriers on foot routes or park and loop routes (*i.e.*, carriers that are restricted to three bundles) are faced with the following situation: (i) four Saturation mailings of Standard ECR unaddressed flats (consisting of host pieces with untabbed inserts) with DALs are entered at the DDU during the day on a Monday, (ii) none of these mailings have any requested day of delivery, and (iii) the volume of mail in the DDU for delivery on the next day (Tuesday) is "light."

a. Will one of the DAL mailings be taken on Tuesday as a third bundle and the flat-shaped pieces in the three other DAL mailings be cased manually and also delivered on Tuesday?

b. Unless the answer to preceding part a is an unqualified affirmative, please describe the most likely procedure for handling these four mailings in terms of (i) day of delivery, and (ii) whether the mailings will be cased manually or taken directly to the route as bundles without being cased. Please feel free to make whatever further assumptions you consider necessary in order to provide a responsive answer to this interrogatory, stating explicitly each such further assumption that you deem necessary and appropriate.

Response

a. and b. The supervisor of the operation is responsible for determining the most efficient and effective way to deliver the mail within service commitments. If the delivery unit received the mailings during the day on Monday, the supervisor has both Tuesday and Wednesday to deliver the mailings. The supervisor will likely determine on a route by route basis whether to deliver all the mail on Tuesday, to deliver it both on Tuesday and on Wednesday, or deliver it all on Wednesday. Supervisors make this determination on a route-by-route basis after evaluating the service requirements, actual and expected workload, carrier casing proficiency, and other factors. In your example, it is not possible to say how

many of the mailings the supervisor would decide to deliver on Tuesday or Wednesday.

In any case, where carriers are serving foot or park and loop deliveries, the supervisor is most likely to direct the carriers to case the letter-shaped pieces into an empty case and take either one set of flat pieces as the third bundle or collate together into a third bundle the flat-shaped pieces from two or more of the mailings.

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

VP/USPS-T30-20.
Please refer to your testimony at page 6, where you describe the Piece Count Recording System ("PCRS"), and state (ll. 10-12) that "[t]he PCRS also improved and standardized procedures for measuring and converting mail handled outside the automated mailstream." Assume that a carrier with 550 possible stops receives an unaddressed Saturation mailing (consisting of host pieces with untabbed inserts) with DALs, and these Saturation pieces cover between 90 and 100 percent of the stops.

a. Please describe how these pieces and the accompanying DALs would be counted in the PCRS.

b. Would the carrier do a physical count to verify the actual number of DALs?

c. If there were 525 DALs, and the carrier took those plus 525 host pieces to the route, would the PCRS record those as 1,050 pieces?

Response

a. First, I should note that City carriers do not deliver unaddressed mail. A DAL mailing includes an address on the mailing's letter-shaped piece.

Supervisors record sequenced mail in 'sets' which are then converted to pieces on the basis of one piece per residential address. Supervisors record as cased volume those pieces that require casing. Supervisors record as delivered volume those pieces that do not require casing.

b. The number of pieces a route is credited for in a 'set' is determined by the number of residential deliveries on the route.

RESPONSE OF POSTAL SERVICE WITNESS JEFFERY W. LEWIS TO INTERROGATORY OF VALPAK DEALERS' ASSOCIATION, INC.

c. No, if the carrier took the DAL mailing to the street, the PCRS volume would show 525 delivered letter-shaped pieces and 525 delivered flat-shaped pieces.

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-21.
a. In Base Year 2004, what was the average number of stops, or possible deliveries, for city carrier (i) foot routes, (ii) park and loop routes, and (iii) curbline routes?

b. Your testimony at page 4 states that, "[b]ecause automation reduced carrier inoffice time, routes serve increasing numbers of deliveries and cover more delivery territory." (USPS-T-30, p. 4, ll. 13-15.) Please indicate the extent to which the average number of deliveries by city carriers has changed since 1993, when "the Postal Service introduced delivery point sequencing (DPS) of letter shaped mail on automated mail processing equipment." (USPS-T-30, p. 2, ll. 10-11.) If the percentage change in the average number of deliveries differs according to type of route, please show separately each type of route.

Response
A and **B.** Please see the tables below. Please note that statistics showing possible deliveries by delivery mode are not available prior to FY 2002 and possible delivery and route statistics are not available for FYs 1993 and 1994.

CITY MODE TYPE	2002	2003	2004	May 2005
CURB	21,101,098	21,322,172	21,658,994	21,798,457
DISMOUNT	13,826,711	14,022,139	14,276,827	14,583,688
FOOT	6,314,035	6,211,285	6,030,239	5,920,429
OTHER	222,082	221,985	321,311	303,815
PARK_LOOP	42,607,810	42,706,141	42,825,190	42,891,006
TOTALS	84,071,736	84,483,722	85,112,561	85,497,395
CURB	25.10%	25.24%	25.45%	25.50%
DISMOUNT	16.45%	16.60%	16.77%	17.06%
FOOT	7.51%	7.35%	7.09%	6.92%
OTHER	0.26%	0.26%	0.38%	0.36%
PARK_LOOP	50.68%	50.55%	50.32%	50.17%

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

City Routes	Foot	Park & Loop	Curbline	Dismount	Other	Total
1993						
1994	24,288	101,814	35,309	16,270	2,051	179,732
1995						
1996	20,357	90,194	36,714	18,827	2,165	168,257
1997	16,870	88,424	37,436	21,483	2,014	166,227
1998	15,448	87,918	38,613	22,661	1,715	166,355
1999	14,397	89,388	38,761	23,392	1,472	167,410
2000	13,513	89,781	39,237	24,939	920	168,390
2001	12,800	89,690	39,310	25,314	901	168,015
2002	12,148	88,421	38,982	25,549	799	165,899
2003	11,786	88,265	38,677	25,372	875	164,975
2004	11,470	87,825	38,696	25,440	1,020	164,451

FY	Total Routes	Total PDs	PDs/Route
1993			
1994	244,793	123,985,589	506
1995			
1996	239,453	129,306,538	540
1997	239,422	131,165,414	548
1998	242,224	132,593,413	547
1999	245,102	134,052,674	547
2000	248,824	135,946,051	546
2001	250,091	137,682,307	551
2002	248,436	139,401,798	561
2003	247,783	141,273,118	570
2004	248,061	142,188,093	573

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-22.
a. In Base Year 2004, what was the average number of pieces delivered each day by city carriers on (i) foot routes, (ii) park and loop routes, and (iii) curbline routes?

b. Your testimony at page 4 states that "[w]ith increasing deliveries per route, carriers must transport and deliver more mail during the course of the day." (USPS-T-30, p. 4, ll. 15-16.) Please indicate the extent to which the volume of mail delivered by city carriers has changed since 1993, when "the Postal Service introduced delivery point sequencing (DPS) of letter shaped mail on automated mail processing equipment." (USPS-T-30, p. 2, ll. 10-11.)

Response

A. The Postal Service does not maintain statistics showing volume by route classification.

B. The Postal Service does not have a national system that shows delivered volume from 1993. I based the statement you have quoted from my testimony upon personal experience. However, the following volume data from Annual Reports and route data from the Address Management System illustrate the point.

Year	Volume	Routes
1993	171,022.0	
1994	178,039.4	244,793
1995	180,733.7	
1996	183,439.5	239,453
1997	190,888.1	239,422
1998	196,904.7	242,224
1999	201,643.5	245,102
2000	207,882.2	248,824
2001	207,462.6	250,091
2002	202,821.9	248,436
2003	202,184.7	247,783
2004	206,105.6	248,061

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-23.
a. In Base Year 2004, what was the average weight of the pieces delivered each day by city carriers on (i) foot routes, (ii) park and loop routes, and (iii) curbline routes?

b. Your testimony at page 4 states that "[a]dditionally, today's mail is bulkier than before, because customers receive more flat and package-shaped mail than they did in the 1980s." (USPS-T-30, p. 4, ll. 16-18.) Please indicate the extent to which the weight of mail delivered by city carriers has changed since 1990. VP/USPS-T30-21.

Response

A and B. The Postal Service does not maintain statistics showing the weight of mail delivered by route. I based the statement you have quoted from my testimony upon personal experience. However, the following Revenue, Pieces, and Weight system data from Annual Reports and route data from the Address Management System illustrate the point.

Year	Weight	Routes
1993	19,598.3	
1994	21,026.5	244,793
1995	21,925.7	
1996	21,873.0	239,453
1997	23,352.4	239,422
1998	24,812.3	242,224
1999	25,562.2	245,102
2000	26,840.6	248,824
2001	25,975.9	250,091
2002	24,562.7	248,436
2003	24,851.9	247,783
2004	25,280.9	248,061

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-24.
In section 2.2 of your testimony (USPS-T-30, pp. 2-3), you discuss the practice of carriers taking mailer-sequenced mail directly to the street without in-office preparation. In addition to ECR and Nonprofit ECR Saturation mail, what other categories of sequenced mail do carriers take directly to the street?

Response

Carriers can take any sequenced mail directly to the street without prior in-office casing. To qualify for worksharing rates mailers prepare all carrier routed mail in either "walk sequence" or "line of travel" sequence. Carriers take those mailings and internally DPSed mail directly to the street.

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-25.
The billing determinants for Base Year 2004 for ECR and Nonprofit ECR ("NECR") Saturation mail show the following volumes (in millions):

	ECR Commercial	NECR Nonprofit	Total
Letters	2,783	661	3,444
Nonletters	9,880	456	10,336
Total	12,669	1,117	13,780

a. Of the total volume of 3,444 million Saturation letters, what was the volume or percentage of such letters that was taken directly to the street by city carriers in Base Year 2004?

b. Of the total volume of 10,336 million Saturation nonletters, what was the volume or percentage of such nonletters taken directly to the street by city carriers in Base Year 2004?

Response

A and B. The Postal Service does not maintain statistics showing the volume of either letter or non-letter shaped Saturation mail carriers take directly to the street without casing.

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-26.
a. Under what circumstances would carriers case unaddressed flats consisting of a host piece, sometime referred to as an "outer piece" or "wrap," plus several accompanying loose inserts within the host piece?

b. If (or when) carriers were to case unaddressed flats, would they also case the accompanying Detached Address Label ("DAL"), or would that be redundant?

c. Please describe all circumstances under which carriers would case Standard ECR "wraps," rather than (or in addition to) the accompanying DAL.

d. To your knowledge, how often does it occur that carriers actually case the "wraps" instead of (or in addition to) the DAL?

Response

A. On Rural and Highway contract routes, carriers have significant discretion with regard to workmethods. Many rural and HCR carriers case both the detached address label and the unaddressed component of detached address label mailings as a way to minimize the number of bundles they must work from on the street. Supervisors of City delivery routes should direct carriers to handle unaddressed components of detached address label mailings as a third bundle.

B. Rural and Highway contract route carriers often case both the addressed and the unaddressed pieces of detached address label mailings as a way to minimize the number of bundles they must work from on the street. Where City carriers are limited in the number of bundles they can take directly to the street, supervisors should direct those carriers to case the detached address label component and take the unaddressed flat components of detached address label mailings as a third bundle.

C. Rural and Highway Contract carriers have significant discretion regarding the workmethods they employ. Most Rural and Highway Contract carriers use workmethods that minimize the number of bundles they must work from while on the street, including casing either or both components of detached address label mailings.

City carriers should not case the flat component of detached address mailings. Supervisors should direct City carriers to take those pieces to the street as an additional bundle. Where City carrier workrules limit the number of bundles those carriers can take directly to the street, supervisors should direct the carriers to case the detached address label component of a detached address label mailing and handle the flat component as a third bundle.

D. Managers should not permit carriers to case the flat component of a detached address mailing so that they can take the letter-sized address label component directly to the street as a bundle.

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-27.

a. Does the Postal Service have any data or studies on the rate at which carriers are able to case "wraps" in vertical flat cases? If so, please provide.

b. Does the Postal Service have any data or studies that indicate whether carriers can case "wraps" at the same rate as Standard ECR catalogs of similar weight and dimensions? If so, please provide.

c. Does the Postal Service have any data or studies that indicate whether carriers can case "wraps" at the same rate as Periodicals of similar weight and dimensions? If so, please provide.

d. Does the Postal Service have any data or studies that indicate whether carriers can case "wraps" at the same rate as Bound Printed Matter ("BPM") pieces of similar weight and dimensions? If so, please provide.

Response

A, B, C, and D. As in my response to VP/USPS-T30-7, I am unaware of any Postal Service studies or analyses focused on the casing rate for flats other than the studies provided in Docket C87-2 by witness Acheson and in Docket R90-1 by witness Shipe.

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-29.

a. Please describe how DALs and associated mailpieces are handled, cased, carried, and delivered on rural carrier routes.

b. Please describe how rural carriers are compensated for handling and delivering DALs and accompanying unaddressed flats and parcels. As part of your answer, please indicate whether they are compensated for one or two pieces.

c. Please describe how rural carriers are compensated for handling and delivering addressed ECR flats without DALs.

d. Is the compensation that rural carriers receive for handling addressed flats without DALs equal to the compensation they receive for handling unaddressed flats with DALs? If not, please explain all differences.

e. For rural carriers that use their own vehicles, how many separate "bundles" can the carrier accommodate within arm's reach in a typical vehicle used by rural carriers?

Response

A. Rural carriers have significant discretion with regard to the workmethods they employ. They determine, largely based upon the type of vehicle they use and their personal preference, the number of bundles into which they prepare their mail. Most Rural carriers employ workmethods that minimize the number of bundles they must work from while on the street and prepare all of their mail into one bundle for delivery. To do that when they have detached address label mailings, they case both components.

B. If the DAL has a specific address, the route will be credited (during the mail count) for a letter-size piece (.0555 minutes per piece plus a strap out credit of .01428 minutes per piece). If the DAL is provided in DPS order, the route will be

credited with a DPS letter (.0333 minutes per piece). If the DAL is simplified address, the route will be credited with a boxholder for each piece (.04 minutes per piece) The accompanying unaddressed piece, regardless of its size or shape, flat or parcel, will be credited as a boxholder (.04 minutes per piece). There will always be two credits provided, one for the DAL, one for the accompanying piece.

C. There is no difference in the compensation provided to a rural route between an addressed flat and an addressed ECR flat. Both are credited as flats (.1 minutes per piece plus a strap out credit of .01428 minutes per piece). Carriers may elect to handle an ECR flat mailing as a separate bundle.

D. No. An addressed flat is credited at .1 minutes per piece (plus strap out .0142 minutes per piece); an unaddressed flat is credited as .04 minutes per piece.

E. Rural carriers have significant discretion regarding the number of bundles they handle. Because the Postal Service requires Rural carriers to provide a vehicle that is large enough to accommodate the normal mail volume on their route, vehicle size varies from route to route and there is no typical vehicle for rural carriers. The Postal Service provides vehicles similar to the vehicles used by City carriers to about 24% of all rural routes.

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-30.
Please indicate whether city carriers case all or some DALs on all non-curbline delivery portions of their routes under the following facts:

a. If the portion of a carrier's route that is curbline is 75 percent, would the carrier not sort the DALs for the curbline portion of the route?

b. If the portion of a carrier's route that is curbline is 50 percent, would the carrier not sort the DALs for the curbline portion of the route?

c. If the portion of a carrier's route that is curbline is 25 percent, would the carrier not sort the DALs for the curbline portion of the route?

d. Please describe in detail all circumstances when carriers would not case DALs in the office.

Response

A, B, and C. Where City carriers serve sections of curbline deliveries on a route, they should take both components of detached address label mailings directly to the street for those sections.

D. Where carriers are not limited in the number of bundles they can take directly to the street, they should take sequenced mail, including the detached address label component of a detached address label mailing, directly to the street without casing it. Also, where the Delivery and Plant operations can coordinate the DPS processing of the detached address label component of a detached address label mailing, carriers would not case those pieces.

RESPONSES OF USPS WITNESS LEWIS TO INTERROGATORIES OF VALPAK DEALERS ASSOCIATION

VP/USPS-T30-31.
Please assume that, on a particular day, a Destination Delivery Unit ("DDU") has no Standard ECR Saturation mailings of flats, but it has received one Standard ECR Saturation letter mailing, entered at the DDU, for delivery that day (or the next).

a. If the DDU is among those that receive mail delivery point sequenced ("DPS'd") from the processing and distribution center ("P&DC"), what is the likelihood that carriers on foot routes or park and loop routes will either (i) take the Saturation letter mailing directly to their routes as a "third" bundle; or (ii) sort the Saturation letters manually in the office; or (iii) send the Saturation letter mailing back to the P&DC to be DPS'd? Please explain your response and state whether the Postal Service has a relevant policy or practice.

b. If the DDU is not one that receives mail in delivery point sequence ("DPS") from the P&DC, and does not have a Carrier Sequence Bar Code Sorter ("CSBCS"), what is the likelihood that carriers on foot routes or park and loop routes will either (i) take the Saturation letter mailing directly to their routes as a "third" bundle, or (ii) sort the Saturation letters manually in the office? Please explain your response and state whether the Postal Service has a relevant policy or practice.

Response

A. Sorting the mailing with the DPS letters would be the preferred approach. To do that, the Delivery and Plant operations must coordinate on a couple of issues. The delivery unit must ensure that the letter-shaped piece is compatible with automated processing. The delivery unit must determine that there is enough time to allow the plant to process and return the mailing for delivery within service commitments. If DPSing the mailing was not possible, where City carriers are not limited in the number of bundles, they should take the mailing directly to the street without casing it. Otherwise, they would case the mailing.

B. If DPSing the mailing was not possible, where City carriers are not limited in the number of bundles, they should take the mailing directly to the street without casing it. Otherwise, they would case the mailing.

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS LEWIS TO VALPAK INTERROGATORY REDIRECTED FROM WITNESS BRADLEY

VP/USPS-T14-7.
Section I.A of your testimony, at pages 1-2, criticizes the datedness of the data underlying the established model, and concludes by stating that "more recent data would be preferable" (p. 2, l. 21). Then, at page 59 (ll. 11-14), Step 2 of your procedure for estimating the amount of cased ECR Saturation mail relies on data from a study by witness Shipe presented in Docket No. R90-1.

b. Would you agree that carrier casing productivities may have changed with widespread adoption of vertical flats cases by city carriers? If not, please explain why not.

Response

B. Yes, I agree that carrier casing productivities may have changed with the widespread adoption of vertical flats cases by city carriers. Witness Shipe's R90-1 testimony articulates the expected effect of vertical flats casing.

1 CHAIRMAN OMAS: Is there any additional
2 cross-examination for witness Lewis?
3 (No response.)
4 CHAIRMAN OMAS: However, at this point I
5 think I have something that needs to be put into the
6 record. I have here a response to POIR 6, Questions
7 4(a) and 4(b) which I will give to the reporter.
8 If these questions were posed to you here
9 today would they be the same as those you provided?
10 THE WITNESS: Yes, sir.
11 CHAIRMAN OMAS: I'm handing two copies to
12 the reporter.
13 (The document referred to was
14 marked for identification as
15 POIR 6, Question 4(a) and
16 4(b) and was received in
17 evidence.)
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RESPONSE OF POSTAL SERVICE WITNESS LEWIS
TO POIR NO. 6, QUESTION 4(a)-(b)

4. This question addresses the practice of day-to-day adjustments in routes, which involve pivoting or off-loading volume to other carriers with under time.

(a) Is this the same or similar to the process described by witness Lewis on page 7, lines 13-16 of his USPS-T-30 testimony?

(b) Please confirm that pivoting occurs regularly on city carrier routes and provide an estimate of how frequently this process occurs in terms of the percent of routes affected on a typical day?

RESPONSE:

a) Yes.

b) Pivoting occurs regularly in delivery units with City carrier routes. The Postal Service does not maintain or track data showing instances where routes are pivoted.

1 CHAIRMAN OMAS: That now brings us to oral
2 cross-examination. Two participants have requested
3 oral cross-examination: The Office of Consumer
4 Advocate, Val-Pak Direct Marketing Systems, Inc. and
5 Val-Pak Dealers Association, Inc.
6 Before, Mr. Costich, you begin I'd just like
7 to tell Mr. Olson, I would hope you would inform us if
8 the barter between counsel and you does not go well.
9 MR. OLSON: Thank you.
10 CHAIRMAN OMAS: Mr. Costich, would you
11 introduce yourself for the record, please?
12 MR. COSTICH: Thank you, Mr. Chairman. I'm
13 Rand Costich for the OCA.
14 CROSS-EXAMINATION
15 BY MR. COSTICH:
16 Q Good afternoon, Mr. Lewis.
17 A Hi.
18 Q Could you turn to page 3 of your testimony
19 and could you look at lines 13 through 16?
20 A Okay.
21 Q Here you say that adding bundles results in
22 carriers retrieving mail from more sources when
23 delivering mail on the street. Could you elaborate on
24 why you thought that was important enough to put in
25 your testimony?

1 A It's a different set of tasks than they were
2 doing before and in my testimony I was talking about
3 what's changed since in the early 1980s in delivery.
4 One of the things that's changed is that we
5 have put a lot more focus on taking mail directly to
6 the street and working from bundles, and that you have
7 more things you have to reference whenever you're
8 working on the street as far as taking mail from them.
9 It adds to the complexity and possibly adds
10 to the time that it takes to actually do street
11 delivery. I was trying to convey that in the
12 testimony as one of the changes that's happened.
13 Q To the extent that adding bundles might
14 increase the time that it took carriers to complete
15 their routes did the --
16 A Well, to complete the street delivery.
17 Q That's one of the cost pools you're
18 referring to? Is that why you're arguing?
19 A Well, just what I meant to say was it
20 doesn't necessarily change the amount of time it takes
21 to complete their route, it just changes -- it affects
22 the street part of it. It should take much less time
23 on the office portion of their route.
24 Q Okay. You were understanding me to be
25 referring to both office and street time?

1 A (Nonverbal response.)
2 Q Do you know whether the CCSTS collected data
3 on the number of bundles that the sampled carriers
4 carried with them?
5 A I don't.
6 Q Could you turn to page 22? In the middle of
7 the page you're describing what are called vertically
8 improved mail deliveries, correct?
9 A Uh-huh.
10 Q In lines 6 and 7 you say that VIM delivery
11 occurs in some high-rise, multi-tenant office
12 buildings. Is that correct?
13 A Yes.
14 Q Does that mean that a VIM delivery would be
15 a business delivery?
16 A It could include business deliveries and
17 probably in most instances it does, but I wouldn't say
18 that if there were residential deliveries in a
19 building that had a VIM method of delivery that the
20 residential wouldn't be delivered through the VIM.
21 Q On line 6 you also say that there's
22 generally a mailroom associated with a VIM delivery.
23 Is that correct?
24 A Yes.
25 Q Can you tell me where the word *vertical*

1 comes into all of this?

2 A It's before my time. I'm not sure where it

3 comes in. I think probably as was described before

4 that you're talking about multi-floor buildings, but

5 I'm not sure of the terminology *vertically improved*

6 *mail*, what the source of that is. No.

7 Q The description you give here is accurate

8 you think? It generally involves a mailroom?

9 A Yes.

10 Q Could you look at your response to OCA

11 Interrogatory No. T-30-7?

12 A Okay.

13 Q Here, the OCA asked you for databases that

14 might contain street work hours by date, by zip code.

15 Do you see that?

16 A Yes.

17 Q You responded that no national reporting

18 system, other than DOIS has delivered volume or street

19 work hours by zip and date. Is that correct?

20 A Volume *and* street hours, rather than *or*

21 street hours. Yes.

22 Q The question asked for volumes or street

23 hours. Do you know of a Postal Service database that

24 would contain street work hours by date, by zip?

25 A Well, the time and attendance system would

1 have an LDC that was street work hours and it's
2 recorded by date. I'm not sure that it's done by zip
3 code. It's probably more done by finance number.
4 Q Could you explain why the database described
5 by witness Stephens this morning would not fall within
6 the description given in this interrogatory?
7 A Which database was that? I'm not sure which
8 one.
9 Q 2004, using scanning to develop times for
10 another delivery study.
11 A I have no knowledge of that study.
12 Q When you received this interrogatory did you
13 consult any of the other delivery team members as to
14 how to respond?
15 A My interrogatories were all run by people
16 that work in operations in my office and my
17 understanding of what witness Stephens' testimony this
18 morning was is that they've collected some data, but
19 that it's not necessarily even organized into a
20 database at this point, it was just data that was
21 collected.
22 My answer here is truthful from an
23 operations perspective. We don't have any other
24 database that has street times in it.
25 Q So you were not aware of the data collection

1 that witness Stephens described this morning?
2 A No.
3 MR. COSTICH: No further questions, Mr.
4 Chairman.
5 CHAIRMAN OMAS: Thank you, Mr. Costich.
6 Mr. Olson?
7 MR. OLSON: Thank you, Mr. Chairman.
8 CROSS-EXAMINATION
9 BY MR. OLSON:
10 Q Mr. Lewis, welcome back.
11 A Thank you.
12 Q William Olson representing Dealers of Val-
13 Pak Direct Marketing Systems and Val-Pak Dealers
14 Association. I want to begin with your response to
15 our Interrogatory No. T-30-1 if you can turn to that?
16 A Yes.
17 Q In the second sentence of that response you
18 say the Postal Service does not maintain statistics
19 identifying the routes where on street work rules
20 strictly limit to three the number of bundles carriers
21 take directly to the street, correct?
22 A Yes.
23 Q There are routes where the number of bundles
24 is strictly limited aren't there?
25 A I've delivered routes like that. Yes.

1 Q Generally speaking, how are those routes
2 identified? Let me ask you this. Let me put it
3 another way.
4 A The answer is they aren't.
5 Q Well, the specific routes may not be, but
6 let me ask you generally speaking, aren't foot routes
7 limited in the number of bundles that can be taken on
8 the street?
9 A Generally, foot routes, their mail is
10 prepared in the office and then relayed out to them.
11 Like when I was in Chicago recently as a manager you
12 have routes that are walk outs that serve high-rises
13 that would have mail relayed out to them that would be
14 in more than just three bundles or two bundles.
15 They can have -- as described in the
16 testimony and interrogatories if there is sequenced
17 mail that comes for that building it could come out as
18 a separate bundle.
19 Q Well, you say that and later in your
20 response you say a carrier on a foot route who is
21 delivering mail relayed to a high-rise mailroom may
22 have more than three bundles for those deliveries,
23 right?
24 A Correct.
25 Q So that would be true for those deliveries,

1 but for a foot route, if he doesn't have a high-rise
2 mailroom for the other address points on the route
3 those would be subject to the limitation on the number
4 of bundles, correct?
5 A Quite likely.
6 Q So generally speaking, for foot routes would
7 it not be true that all delivery points on foot routes
8 would be subject to the strict limitation on the
9 number of bundles you can take except for high-rise
10 mailrooms?
11 A If they're doing CBUs on a foot route, those
12 you could take bundles out too. That was what I was
13 trying to point out in this, that it's not as black
14 and white as just saying foot routes are restricted.
15 It's more a function of the delivery territory than
16 the classification of a route.
17 There are foot routes probably that have no
18 centralized delivery, no CBU kind of delivery and that
19 would be restricted, but probably there are many of
20 them that aren't completely restricted. It's more
21 driven by the kind of delivery than the classification
22 of the route.
23 Q Well, what I'm trying to get at is some
24 generalization -- if there is one we can make -- about
25 foot routes and you've identified two exceptions.

1 Actually, in response to this interrogatory you use
2 curbline deliveries as an exception to a park and loop
3 route. You're talking about cluster boxes now.
4 Let's just deal with foot routes. Other
5 than the portions of their route that have a high-rise
6 mailroom or a cluster box isn't it true that for the
7 rest of their route they operate under a limitation on
8 the number of bundles they can handle?
9 A The same could be said for a park and
10 loop --
11 Q Well, we'll get to that in a second. Yes.
12 A -- or for a curbline that has deliveries
13 that are other than curbline. That was why I didn't
14 describe this with a generalization, because I think
15 in generalizing you're going to miss the detail that
16 from an operations perspective I thought was
17 important.
18 Q Well, I appreciate the details, but I also
19 want to get some general information that we can use
20 to understand what the norm is. For foot routes what
21 you've told me I think is that they do operate under a
22 limitation on the number of bundles unless they have
23 one of these two exceptions: a high-rise mailroom or
24 a cluster box of some sort. Would that not be a true
25 statement?

1 A Yes.
2 Q Is there any way to know the number of
3 delivery points that fall in those two exceptions, one
4 being high-rise mailroom and the other being cluster
5 boxes of some sort?
6 A Yes, but I couldn't tell you the number of
7 deliveries on foot routes necessarily and cut it like
8 the foot routes that don't have any of those as
9 compared to the ones that do because the database
10 isn't set up to be able to give that information which
11 is why I thought it's a little bit difficult to use
12 the generalization that says foot routes are precluded
13 from taking more than three bundles.
14 Q Do you know the answer with respect to all
15 routes as to what percentage of the delivery points
16 are high-rise mailrooms or cluster boxes?
17 A I think in one of the other interrogatories
18 that you had asked I provided that information. Yes.
19 Q Do you recall the number of the
20 interrogatory?
21 A Look around 21, something like that. Many
22 of the questions you asked really triggered things
23 that I think would be important things for us to know
24 and important ways for us to cut the data. It's
25 frustrating that we don't have the data cut that way.

1 I can tell you the answer to this question
2 and the answer to this question, but I can't combine
3 them, okay?
4 Q Is Interrogatory No. 21 the one where you --
5 A I think that's the one. Yes.
6 Q Where would that tell us in your response to
7 Interrogatory No. 21 how many of the delivery points
8 for all routes were either high-rise mailrooms or
9 cluster boxes?
10 A This actually talks about the way that AMS
11 -- let's see. This has got possible deliveries by
12 delivery mode and in this number probably the dismount
13 and the other would be where you'd find the
14 centralized. The data's just -- that's why I was
15 unable to give you that information when you asked in
16 the earlier interrogatories.
17 It's just not cut the way that it would seem
18 like it would make sense to cut it.
19 Q So am I correct in saying that for all mail
20 routes that your response to Interrogatory No. 21
21 doesn't tell us about those delivery points that
22 involve high-rise mailrooms or cluster boxes?
23 A It doesn't specifically break them out. No.
24 Q Do you have any estimate for foot routes or
25 for all routes, either one, the percentage of delivery

1 points that are either (a) high-rise mailroom; or (b)
2 cluster box?
3 A No.
4 Q Let's talk about park and loop routes. You
5 identify one exception in your response to Val-Pak 1
6 to the requirement of the on street work rules that
7 strictly limit to three the number of bundles carriers
8 take directly to the street.
9 The exception you identify in the last
10 sentence is a carrier serving a street of curbline
11 deliveries may work for more than three bundles when
12 delivering to that section of the route. Do you see
13 that?
14 A Uh-huh.
15 Q That's accurate?
16 A Uh-huh.
17 Q So do you have any estimate of the number of
18 such curbline deliveries within park and loop routes?
19 If you don't that's okay, I just have to ask you.
20 A No. That's the part that's frustrating.
21 Probably from an operations perspective we should know
22 that, but you know that's not the way that the data's
23 cut at this point. Some of what I learned from your
24 questions.
25 Q Glad we're providing a service. With

1 respect to park and loop, though, it is true that the
2 general work rule is three bundles and no more,
3 correct, with the exception of the curbline
4 deliveries?
5 A If on my route that's classified as park and
6 loop there's garden apartments that have centralized
7 deliveries the mail would go straight to the street
8 for that section of the route.
9 Again, it's driven by not the classification
10 of the route, but the kind of deliveries and if
11 there's enough deliveries in a section that warrants
12 being able to break that out and take that straight to
13 the street that's what we would direct a carrier to
14 do.
15 Q So now we have two exceptions for park and
16 loop. First, it's curbline deliveries that's in your
17 response to our interrogatory and now you mentioned
18 central delivery for garden apartments. Any other
19 exceptions?
20 A Sure. If they had CBUs, same thing.
21 Q Cluster boxes?
22 A Correct.
23 Q Anything else?
24 A I think those are the three kinds of
25 deliveries that don't require that you prepare the

1 mail in the office that you can work from more than
2 one bundle, the idea being that the carrier is not
3 walking from delivery point to delivery point.
4 When they're walking from delivery point to
5 delivery point they're constrained by the number of
6 bundles that they can work from by our work rules.
7 Q That constraint is no more than three
8 bundles?
9 A Correct.
10 Q Those three bundles would be a DPS letter
11 bundle, a cased letter flat bundle and a third bundle?
12 A Correct.
13 Q The third bundle would typically be a piece
14 of saturation mail, either letter or flat?
15 A Some kind of sequenced mail. In your
16 discussion earlier we in operations, as Dennis said,
17 don't look at the classification of mail. I pretty
18 much know shapes and can tell if something is
19 sequenced. Air mail is not flat, it comes sequenced a
20 lot, right? Yeah.
21 Q The statistics that you provide in response
22 to -- I didn't write down which interrogatory
23 response, but maybe you'll recall it. The response
24 where you identify the number of foot routes, and park
25 and loop routes, and curbline and dismount routes, do

1 you recall that? I think that's your response.
2 A It probably was. I think that's also in
3 Interrogatory No. 21 isn't it, or is that just
4 possible deliveries? Yes. The second table of data
5 in Interrogatory No. 21 there's a historical trend of
6 breakouts of routes.
7 Q Yes. Thank you. That's where it is. If
8 you were to add these numbers up as I have -- and I'll
9 ask you to accept this subject to check with, whatever
10 that means -- the foot routes plus the park and loop
11 routes equal about something over 99,000 routes. Does
12 it look about right?
13 A It looks about right.
14 Q The curbline and dismount routes are
15 something over 64,000?
16 A (Nonverbal response.)
17 Q Yes? Shaking your head means yes.
18 A Yes.
19 Q So that's by my math about 61 percent are
20 either foot routes or park and loop routes, the
21 remaining being curbline or dismounts, okay?
22 A (No response.)
23 Q Will you just accept that those numbers,
24 those percentages are about right?
25 A That's the math. Yes.

1 Q That's all I'm asking. Now, you've got
2 another category. What does the other category
3 include? What types of routes are there other than
4 foot, park and loop, curbline and dismount? Cluster
5 box routes?
6 A The donkey that takes the mail to the bottom
7 of the Grand Canyon, boat routes, bicycle routes, you
8 know? There's a mish-mash of other kinds of routes
9 that would have delivery on them.
10 Q Those are considered city routes?
11 A They could be I guess. That's the answer I
12 got from the AMS people about what actually
13 constitutes the other routes. I'm not sure what
14 exactly is in the other routes. They're other city
15 routes.
16 Q Are these city carrier routes, or rural
17 routes or both?
18 A These are city routes in this table.
19 Q Including the others?
20 A Right. That's the problem with the route
21 classification that I was trying to reiterate in the
22 answers about the kinds of deliveries is the
23 classifications, I'm not sure our data speaks to us so
24 well as it did 15 years ago.
25 Q If the other is a city route, though, you

1 might not include the Grand Canyon necessarily?
2 A We have rural routes in Vienna.
3 Q I know. I used to be in one in Oakton.
4 Well, what I'm getting at is is it not generally true
5 that curbline and dismount routes do not have a limit
6 to require no more than three bundles? Is that true?
7 A It's not true. That a route is classified
8 as curbline doesn't mean that there aren't sections of
9 the route that the carrier carries as park and loop
10 that would have that restriction.
11 Q I understand now. So it really all devolves
12 down to portions of routes --
13 A Correct. The classification.
14 Q -- rather than the broader categorization of
15 a route and to foot, park and loop, curbline and
16 dismounts?
17 A (Nonverbal response.)
18 Q Okay. Yes. You have to audibly respond to
19 the --
20 A I wasn't sure you asked a question, but the
21 answer is yes.
22 Q When I got to the end of those four -- foot,
23 park and loop, curbline and dismount are the broader
24 categories and you're saying it's the function on each
25 of those routes that could be where the work rule

1 applies or does not apply, right?

2 A The types of deliveries. Yes.

3 Q So the exception to or the types of delivery

4 points where the work rules would apply could also

5 occur in curbline and dismount? In other words, if a

6 curbline route or a dismount route had a -- what do

7 you call them -- high-rise mailroom then the rule

8 would not apply there, but if they had a walking

9 portion it would apply there?

10 A Correct.

11 Q Now, having finally gotten to this point is

12 there any estimate of the number of delivery points

13 for all routes or any section of these routes where a

14 carrier is restricted in the number of bundles he or

15 she can carry?

16 A In the AMS data we would have the categories

17 of or we would be able to have count of the kinds of

18 deliveries that should not be encumbered by this work

19 rule. Yes.

20 Q Were you able to access that data to respond

21 to our questions?

22 A This is what I could get from AMS that I

23 could trust. I think we need to go back and get

24 better information from the way that they put their

25 data together. I think it would be useful for us

1 operationally. I learned that trying to come up with
2 ways of describing this for you in the
3 interrogatories. It's frustrating.
4 MR. OLSON: I guess I'd say, Mr. Chairman,
5 if it's possible for the Postal Service to develop a
6 better response to the question as to what percentage
7 of the delivery points, either on different categories
8 of routes or all routes that are subject to the third
9 bundle restriction that would be very important
10 information for the record as far as we were concerned
11 and we'd request that information.
12 CHAIRMAN OMAS: Mr. Koetting?
13 MR. KOETTING: I thought I just heard the
14 witness say that he didn't necessarily think that the
15 data would be reliable, but maybe the witness could
16 speak to that some more.
17 CHAIRMAN OMAS: Mr. Lewis?
18 THE WITNESS: We're meeting with AMS on
19 trying to redefine the information we can get out of
20 their database so that it does speak to more of these
21 issues. Part of that was me raising my hand about
22 these are legitimate questions, I can't get answers
23 from programmers that work in Memphis.
24 I'm not sure that if you asked for this
25 information in two weeks I can get it in two weeks.

1 It's something that we'll have to work on the design
2 of their database with them.
3 MR. OLSON: No. I fully understand the
4 lateness of response on some interrogatories and such
5 has been out of the control of the witness.
6 THE WITNESS: I was pounding my head against
7 the wall.
8 CHAIRMAN OMAS: Do you think we can try and
9 see if we can get that information?
10 THE WITNESS: I would try. Yes, sir.
11 CHAIRMAN OMAS: Mr. Koetting?
12 MR. KOETTING: Well, I'm perfectly willing
13 to do that. If he's saying it can't be done within
14 two weeks --
15 CHAIRMAN OMAS: Could you give us a
16 timetable at least?
17 THE WITNESS: Okay.
18 CHAIRMAN OMAS: I'd be appreciative.
19 Mr. Olson?
20 MR. OLSON: Thank you. I look forward to
21 receiving that. Thank you.
22 CHAIRMAN OMAS: Okay.
23 BY MR. OLSON:
24 Q Mr. Lewis, I want to ask you about mailings
25 with DALs and get some information about that. You

1 may have heard me ask a few questions about DALs.
2 When you have a mailing of unaddressed flats with
3 detached address labels isn't it true that the DALs
4 come to the delivery unit presorted by line of travel?
5 A I'm not sure whether it's walk sequence of
6 line of travel. They generally come with some kind of
7 sequence to them. Yes.
8 Q Are you someone who could tell me the
9 difference between walk sequence and line of travel?
10 A I think that what we give to mailers for
11 them to walk sequence is a different file and that the
12 line of travel what it does is take address ranges and
13 do an up the even and down the odds. That would be
14 the line of travel, and that's our mailers' best
15 notion of how something would be delivered as compared
16 to a walk sequence.
17 I think we give them a different file for
18 that. I'm not positive, but that's my understanding
19 of the differences. One is computed pretty much by
20 block face and up and even and down and odd kind of a
21 basis. They come different on the labels.
22 There's LOT and there's WS, and we look at
23 them in operations to see which they are, and have an
24 idea of how a particular mailer prepares the mailing
25 and use that about the decision of whether you flip

1 through and see if it can be taken straight to the
2 street or not.
3 Q Which of those if you know is required now
4 of ECR saturation mailings?
5 A I deliver them, I don't do classification.
6 Q I accept that. Thank you. Let's stick with
7 that illustration of the unaddressed flats and the
8 DALs.
9 If the DALs are sequenced -- walk sequenced
10 or line of travel -- and there's a pile of unaddressed
11 flats that are to go with it, the host piece -- I
12 believe one of the witnesses before used that term --
13 then if the carriers were to take both of those pieces
14 to the street would that be counted as one bundle or
15 two bundles?
16 A From an operations perspective if they're
17 taking both of them to the street and you're talking
18 about would this be one bundle or two bundles from a
19 work rule perspective the question wouldn't come up.
20 If I'm working on a route that is constrained in the
21 number of bundles I can only do one bundle.
22 If you're talking about a route that has
23 deliveries where I can take mail straight to the
24 street I guess you would call it two bundles. We
25 don't count bundles so much.

1 Q Well, let's just go back to the first half
2 of your answer which had to do with the routes that
3 are constrained to take only three bundles. I'm just
4 asking if it's considered one bundle to have the
5 unaddressed flats and the addressed line of travel or
6 walk sequence DALs so that is the third bundle, the
7 combination of the two under the work rule?
8 A No. You would either have the bundle that's
9 letter-shaped or the bundle that's flat-shaped which
10 is why where we're restricted in the number of bundles
11 they generally case the letter-shaped piece.
12 Q So on a route that's restricted and it
13 already had a bundle of DPSed letters, and vertical
14 flat case letters and flats it would not be
15 permissible to take uncased DALs along with those
16 unaddressed flats? Is that what you're saying?
17 A I could not require a carrier to take a
18 bundle of DALs and the flat bundle. No.
19 Q So for that purpose it would be considered
20 two different bundles? It would get you up to a
21 fourth bundle which would be impermissible, right?
22 A Correct.
23 Q So is that one of the main reasons that DALs
24 are cased? To avoid that requirement?
25 A That should be the only reason.

1 Q If you're dealing with a route where the
2 third bundle limitation does not apply however and
3 they can take let's say four bundles they could take
4 the DPSed letters, the VFC mail, the DALs in LOT or WS
5 and the unaddressed flats then, correct?
6 A Correct.
7 Q Could you look at your response to our
8 Interrogatory No. 2. I promise I'm not going to go
9 through all 30 of them like this. In this question
10 we're talking about the curbline and dismount routes.
11 In a curbline route the carrier by definition is in a
12 vehicle, correct?
13 A Yes.
14 Q If it's a city route is it always a postal
15 vehicle?
16 A No.
17 Q It could be a private vehicle, or is that a
18 contract route or what would that be?
19 A Could be a private vehicle, could be a
20 leased vehicle. Generally, they're postal vehicles.
21 Q If they're in a postal vehicle how many
22 trays can be accommodated in that vehicle?
23 A I'm not sure there's any restriction in the
24 number of trays that will fit in an LLV.
25 Q Well, I don't mean in the backs or the extra

1 mail, but I'm thinking of the carrier working the mail
2 and doing curbline deliveries. He or she would
3 presumably have the DPS letters, the VFC mail, the
4 DALs, the unaddressed flats within reach that you can
5 take one off each pile and deliver it?
6 A Uh-huh. Generally, it's two or three trays
7 that are right there next to the carrier.
8 Q Well, would there not have to be room for
9 more than two or three? Wouldn't there have to be
10 under my scenario room for four trays?
11 A No.
12 Q What am I missing?
13 A When I'm doing Pine Street and I'm preparing
14 the mail to go out I put all the different mail for
15 Pine Street in a tray together. Spruce Street would
16 be in the tray right behind Pine Street together. The
17 bundles I'm taking directly to the street, I could set
18 them with the other mail that goes for a particular
19 section.
20 Q Forgive me. I just don't know this. Are
21 you saying that the carrier integrates the DPSed
22 letters with the VFC mail prior to going on the
23 street?
24 A Generally, the DPS mail is going to be in
25 sequence and I could have a couple of trays of DPS

1 mail or just have one and when I run out of mail for
2 that tray bring a new tray up, but more flats. If the
3 issue is the mail that's going to the street, the
4 cased mail and any bundles that I would take I can
5 pull down a street, take the bundles and have them in
6 the same tray.
7 That's how I did it. It's a housekeeping
8 thing, you know? How do I keep all the mail that I'm
9 working at the same time close enough that I can work
10 from the trays. That's some of what's complicated by
11 bundles that Mr. Costich was asking me about. It's a
12 little bit more complicated than it was back in the
13 day. A bundle of letters and a bundle of flats, but
14 we do a lot of it every day.
15 Q So are you saying when you would pull down
16 from the vertical flats case you would put that behind
17 the deliveries for each delivery point or at least
18 each street --
19 A Generally, you pull down streets or sections
20 of a route. Yes.
21 Q Well, let me go back to my original question
22 which was physically in the Postal Service vehicle how
23 much room is there, how many different trays can be
24 arrayed within reach of a driver making delivery?
25 A You can probably have about this much room

1 with a little bit less depth. That's two or three
2 trays unless I put them on top of each other.
3 Q Like 24 inches or 30 inches let's say?
4 A Thirty, 36 inches. Yes.
5 Q Of length of tray?
6 A Yes. Width I was --
7 Q The width?
8 A Yes. Trays laying like that.
9 Q So you're indicating three or so trays
10 within that available width?
11 A Yes.
12 Q So there is a constraint on a vehicle as to
13 how many trays and that's about what you think it
14 typically is?
15 A Right, but if I have say parcels for this
16 section of my route, when I'm reloading the shelf next
17 to me I can put the parcels as long as they're not
18 blocking my vision and then I can, you know if I have
19 small packages, or accountables or something -- I
20 mean, I'm not restricted to only working out of trays.
21 There's space in between the trays, space in
22 between the bundles.
23 Q With the exception of parcels which I
24 understand you're basically dealing with room for
25 three trays in a typical vehicle. Is that correct?

1 A Yeah.
2 Q Let's jump all the way to Interrogatory No.
3 T-30-26. In all three answers you have similar
4 language where you say, like in (a), second line, many
5 rural and HCR -- meaning highway contract route I
6 guess -- carriers case both the detached address label
7 and the unaddressed component of the detached address
8 label mailings as a way to minimize the number of
9 bundles they must work from on the street, correct?
10 A Yes.
11 Q Then you have similar clauses in your
12 responses to (b) and (c). Do you see those?
13 Beginning of (b) and it's the second paragraph of (c).
14 A I tried to write the answers so that they
15 were each standalone.
16 Q No. It's excellent answers. I'm just
17 trying to clarify that it's in each of these
18 responses. Here's my question. I don't understand I
19 guess why rural and highway contract routes would see
20 their carriers casing the DALs and the unaddressed
21 components to minimize the number of bundles if the
22 number of bundles that they had was a problem.
23 Why would they need to minimize the number
24 of bundles? That's my question.
25 A It's a completely different management

1 process with a contract or a rural carrier than with a
2 city carrier. Both of them are like piece work. You
3 know, if somebody bids onto a highway contract route
4 how ever long it takes them they get that much and
5 with a rural carrier you get the evaluation of the
6 route.
7 With the city carrier I pay them by the
8 hour, so they might have work rules that work better
9 for them. With city carriers we prefer to have work
10 rules that minimize costs, so we'll take bundles
11 directly to the street because overall that reduces
12 the amount of time it takes to finish an assignment.
13 With the rural carrier I'm not so worried
14 about how long it takes them to finish their
15 assignment as long as they stay within their
16 evaluation for the year and stay within the FLSA
17 rules. Both of these two kinds of delivery also
18 involve a much higher percentage of people using their
19 own vehicles.
20 If I'm using my own private vehicle I don't
21 have a shelf set up and a system set up for being able
22 to work in the vehicle like with a city delivery
23 carrier who's got a postal vehicle. So they do it for
24 those two reasons and they'll spend more time
25 preparing the mail in the office so they can get

1 finished quicker on the street because it's more
2 convenient for them.
3 They can get done quicker with the street
4 portion of their delivery. Both of them are generally
5 delivering in probably a higher percentage of curbline
6 deliveries. Like, for a rural carrier delivering mail
7 along a trafficked road, they want to minimize the
8 time that they're out sticking mail out a window as
9 compared to with a city carrier where that isn't so
10 much an issue.
11 Q That's very helpful. Thank you. Turn to
12 (c) however because rural and highway contract
13 carriers are different, but your response here in that
14 second paragraph goes back to city carriers and it
15 contrasts the two and that's what I want to focus on.
16 You say city carriers should not case the
17 flat component of the detached addressed mailing.
18 Supervisors should direct city carriers to take those
19 pieces to the street as an additional bundle. I want
20 to understand the basis of that statement as to why
21 they should do it that way, why they should not case
22 the flat component of DALs. What's the reason for
23 that *should*? Time? Money? Work constraints?
24 A The time that they spend casing it we have
25 to pay them for.

1 Q Your point being that it's --
2 A It's not necessary to case it, so we
3 shouldn't pay them to do something that's not
4 necessary to do.
5 Q Even though it might take some additional
6 time on the streets to deliver the third bundle?
7 A It takes less additional time on the street
8 to work from an additional bundle than it would take
9 to case the mail and avoid having that bundle.
10 Q Are there Postal Service policies or rules
11 which state that? Is that what you've just said, that
12 the preference is to take something as a third bundle
13 if it can be taken as a third bundle or is that just
14 common knowledge among all carrier supervisors?
15 A I'm trying to think if there's -- I'm sure
16 that it's in writing in places. Yes.
17 Q Nothing you can think of offhand, though?
18 A (No response.)
19 Q It's okay.
20 A We did a significant amount of training when
21 we did the delivery point sequencing and talked about
22 bundles. As I mentioned in my testimony, there's been
23 a lot of communication about bundles. I was trying to
24 think of some specific landmark kind of memo that says
25 that and I can't think of a specific landmark memo,

1 but I think you could ask any city delivery supervisor
2 and they would tell you that.
3 Q I just skipped one question, let me see if I
4 can skip another. If a supervisor of a city carrier
5 saw that there were two ECR saturation mailings, let's
6 deal with addressed flats -- catalogs, for example --
7 and another mailing to go out that day would be a
8 saturation letter -- like, for example Val-Pak's mail.
9 You're familiar with what Val-Pak sends?
10 A We got some the other day and my wife and I
11 were eagerly going through it.
12 Q Bless you.
13 A Thank you.
14 Q In that situation with the addressed flat
15 catalogs and the Val-Pak mailing or any other ECR
16 saturation letter-shaped mailing what would the
17 supervisors instruct the carriers as to which mailing
18 should go to the street as an extra bundle?
19 A Well, if you went through it the first thing
20 I'd do as a supervisor is see if I couldn't send the
21 letters back and get them to come back in DPS. That
22 would be my first thing. Then, if I couldn't do that
23 and I had to take both of them out by doing something
24 myself I'd look at whether I could defer one as
25 compared to taking both of them.

1 If I end up having to take both of them at
2 the same time I would think that the productivity for
3 casing the letters would be better than the
4 productivity for casing the flats, so I would have
5 them case the letters and take the flats to the
6 street.
7 That's the way that we would like for people
8 to think through that. The preference is to have to
9 case nothing.
10 Q Typically, the supervisor would not leave
11 that to the discretion of the carrier, but to tell
12 them that's a better way to do it?
13 A Correct.
14 Q Let me ask you a question about carriers
15 that have no limitations on the number of extra
16 bundles.
17 When they receive a DAL mailing this time --
18 not a flat catalog, but a DAL together with a flat
19 unaddressed piece -- this is a no restriction route
20 we're talking about or a portion of a route as you
21 taught me before, would the supervisors likely
22 instruct them to take the DALs themselves as an extra
23 bundle as well as the flats?
24 A Yes.
25 Q If they didn't take them as an extra bundle

1 would they case them or DPS them? In other words, go
2 through the same decision tree you just did for
3 letters versus catalogs and help me understand how a
4 carrier's supervisor would handle a DAL mailing.
5 Would you prefer to have them have the DALs
6 DPSed? Would you prefer to have them cased? Would
7 you prefer to bring them on the street as opposed to
8 the fourth bundle, or fifth bundle, or whatever it
9 would be that day?
10 A If I have a DAL mailing that comes in and I
11 don't have routes that have restrictions on being able
12 to take the bundles to the street I would send both
13 pieces out to the street and have them deliver them as
14 additional bundles.
15 Q Is there ever any practical constraint on
16 the number? Could you have eight separate bundles in
17 a curbline route?
18 A We don't usually. A lot of times people who
19 are giving us mailings know when their competitors'
20 mailings are coming and our marketing people try and
21 work with them so that -- they often try and have mail
22 come into somebody's house prior to a sale or prior to
23 a weekend and we generally are able to coordinate days
24 so that I'm not hit with more bundles than I can
25 actually effectively handle out on the street.

1 They're pretty sensitive to how our
2 operations work. They don't want to take the chance
3 that their mail is not going to get delivered on a
4 date that they want it to be delivered. So a lot of
5 that get's coordinated.
6 The hypothetical that you pose, you know, I
7 could get stuck like that by not managing my inventory
8 and my delivery unit and be stuck with a bunch of
9 mailings, but generally, the mailings don't come to me
10 that way. I'm not given that problem to try and
11 solve.
12 Q If there were a problem on a given day where
13 there were a lot of bundles or the next day, for
14 example, would the tendency be to want to DPS the DALs
15 or to manually case them? You said the letters would
16 be DPSed.
17 A We have issues making the DALs run on
18 automation. They generally are not thick enough
19 cardstock that they'll go through a machine twice
20 without damaging some portion of them and the mailers
21 see that as something important to them, that piece of
22 mail they put advertising on and stuff.
23 They want that delivered with the flat
24 that's associated with it. So we are still working
25 through how you can get to where you can process DALs.

1 We have something out now that talks about you have to
2 know that it's an appropriate thickness, we want it to
3 be barcoded before it comes to a delivery unit.
4 So we don't want people sending back stuff
5 that's not barcoded. That's another operation through
6 a machine and more opportunity to screw up a mailer's
7 mailing. Mostly DPS and DAL is not something we
8 encourage at this point.
9 I don't think that the DALs come, the
10 addressed piece comes in good enough stock that we can
11 be sure that we're get the mail or all their stuff
12 delivered the way it's supposed to. If I'm in a
13 delivery unit what I'm more likely to do if I'm stuck
14 with a bunch of them is case the address pieces and
15 collate the flat pieces.
16 What hurts me is having to handle flats.
17 That hurts worse than trying to case the letter-shaped
18 pieces.
19 Q What does *collate* mean? I'm sorry.
20 A I've got two stacks and I take one off of
21 each one, one off of each one, one off of each one.
22 Don't case them into a case. I don't need to go
23 through. I can collate more productively than I can
24 case, so I take these mailings and turn them into one-
25 third bundle that has a couple of flat pieces instead

1 of just one flat piece, for example.

2 Q DALs are not required to be barcoded

3 currently, correct?

4 A I don't know. I think probably not.

5 Q Well, you were just saying about how it

6 would be better if they were barcoded because they

7 wouldn't have to be OCRed and reduce the risk of --

8 A Which is why I think they're probably not

9 because we wouldn't have sent the memo out like that

10 if they were required to be, but I'm not a

11 classification guy.

12 Q Was the memo to mailers or to --

13 A Our operations people.

14 Q It's having to do with how to process DALs

15 generally?

16 A Trying to put some definition around if this

17 is something you think you want to do, what the

18 requirements ought to be. Trying to get them to think

19 through what's the right way to handle this if you

20 want to try processing them.

21 We don't see a whole lot of success in

22 processing DALs on machines yet.

23 Q Yet meaning until the cardstock is improved,

24 for example, and barcodes added and whatever else?

25 A Well, I say yeah because I think we'll get

1 to that working with mailers on improving the
2 cardstock, and the barcoding and stuff. I don't think
3 we're there yet.
4 Q Have you seen barcodes on DALs to your
5 knowledge?
6 A Me personally, I couldn't say that I have.
7 I may have. It's not something that I remember
8 seeing.
9 Q In response to one of our interrogatories,
10 it was 14(b), you said that DALs are sometimes run
11 through OCRs to put barcodes on, correct? That does
12 happen sometimes?
13 A Yes. That's the only way you'll get a
14 barcode on them, if it came without a barcode.
15 Q Unless it was prebarcoded?
16 A Right.
17 Q You don't have any estimate of how many of
18 those occur I take it?
19 A No. I think it's got to be a pretty small
20 number at this point.
21 Q My last questions involve your answer to
22 Interrogatory No. 31. In response to (a) you talk
23 about sorting. The mailing with the DPSed letters
24 would be the preferred approach. The question had to
25 do with both ECR saturation letters and ECR saturation

1 flats and I just want to clarify which you were
2 talking about as you responded?
3 I don't know if the question was artfully
4 worded. That's our problem. You talk about sorting
5 an ECR saturation letter mailing I assume on DPS
6 equipment. That's what you're referring to in the
7 beginning of your response?
8 A Let me read the question and the answer.
9 Your question talks about a letter mailing, that's why
10 I assumed it was a letter mailing. If you were going
11 to DPS it it would be on a barcode sorter or to DPS.
12 Right.
13 Q So what you're saying is totally consistent
14 with what you just said a few minutes ago, that in
15 your decision tree on a standard ECR saturation letter
16 that one of the first things you think of is sending
17 it back to the plant to be DPSed, correct?
18 A That's the cheapest way for me to get it
19 delivered. Yes. As long as that's not going to
20 impact a service commitment that's what we expect
21 managers to do.
22 Q It's the cheapest part of that comment you
23 just made that I'm going to focus on because I'm
24 trying to figure out how we know that. We've talked
25 about the significant cost savings that come from not

1 manually casing a saturation mailing and taking it
2 directly to the street and there must be cost savings
3 by not DPSing mail. Isn't that true?
4 If you DPS it you're incurring a cost per
5 piece aren't you?
6 A Something that happens in the plant. Yes.
7 Q So if you have the opportunity to take those
8 saturations letters out of the third bundle and avoid
9 all the DPS costs wouldn't that be desirable? Why is
10 the first thing you're thinking of in your decision
11 tree DPSing?
12 A I maybe was a little less than complete in
13 talking about that it's the cheapest, but it's also
14 probably the easiest for us from an operational
15 perspective.
16 I already have a DPS bundle, and the cased
17 letter, and flat bundle and introducing an additional
18 bundle and taking away what if I needed to use an
19 additional bundle for a mailing that came, if I had
20 the service window to be able to send something back
21 that's what I would do just because then if I did get
22 something that showed up that had to be taken out I
23 wouldn't be forced to have to case this stuff.
24 It's also what carriers are the most
25 familiar with and it's easier for them to handle two

1 bundles, so that's the reason I would do that. It
2 probably is the cheapest, but I'm not sure if like you
3 say it would be cheaper than just sending it straight
4 to the street.
5 Sending it straight to the street has some
6 inconvenience and contingency things associated with
7 it as well that would lead me to say send it back to
8 the plants and put it into DPS. Understand that?
9 Q I think. Some of the contingency factors
10 are that there could be, for example, another
11 saturation flat mailing --
12 A Correct.
13 Q -- that you'd want to take to the street
14 more than you'd want to take an ECR saturation letter
15 mailing to the street, correct?
16 A Correct. Today I'm looking at my mail for
17 tomorrow, but tomorrow the plant might find something
18 that's committed for tomorrow that should have been
19 here at the same time. I always prefer to leave
20 myself some contingency. That's why I would send it
21 back. That's what I have in thinking it through this
22 answer.
23 Q You used the word *cost* or *cheaper* or
24 something, I wasn't sure I heard exactly what you
25 said. Were you saying that DPSing it you thought was

1 still cheaper than taking it out of the third bundle?
2 A No, I don't. I think you're correct that it
3 probably is cheaper to not send it back and process it
4 and then go through the process of delivering it.
5 Operationally, I think it's probably cleaner or I
6 would prefer as an operations manager to send it back.
7 Q Just as a final question, have you ever seen
8 any cost estimates, perhaps not what you work with
9 routinely but having to do with taking letters out as
10 a third bundle versus DPS'ing them?
11 A No. I'm trying to think now. We sometimes
12 get the information that gets presented in rate cases,
13 but I don't know that we drive operational decisions,
14 some of the breakouts by classification because we
15 don't see classes of mail; we see shapes of mail, and
16 it's harder for an operations manager to associate by
17 classes of mail what costs are. We shape a lot more.
18 MR. OLSON: I've had every question
19 answered, and I'm very grateful. Thank you.
20 Thank you, Mr. Chairman.
21 CHAIRMAN OMAS: Thank you, Mr. Olson.
22 Are there any other -- Mr. Costich?
23 MR. COSTICH: Thank you, Mr. Chairman. If I
24 could follow up a little bit.
25 //

1 CROSS-EXAMINATION

2 BY MR. COSTICH:

3 Q Mr. Lewis, I believe you said that the in-
4 office productivity for casing letters is higher than
5 it is for flats. Did I hear that?

6 A Yes.

7 Q Would that also be the case on the street?

8 A For?

9 Q Well, I'm thinking of, say, the centralized
10 delivery where it looks almost like a case. Would you
11 expect it to take more time to get a flat into some of
12 those receptacles than a letter?

13 A I think, yes.

14 MR. COSTICH: Thank you. No further
15 questions.

16 CHAIRMAN OMAS: Ms. Goldway?

17 COMMISSIONER GOLDWAY: Thank you.

18 Your discussion with Mr. Olson covered some
19 of the concerns that I had raised earlier about the
20 fact that there clearly are management decisions made,
21 at least at the supervisory level, about how to handle
22 the third or fourth bundle. My concern is that there
23 seems to be more discretion exercised by a supervisor
24 in determining the handling of standard mail and ECR
25 saturation mail than there is first-class mail.

1 First-class mail, you've got to do it. You've got an
2 obligation; it goes through the system as quickly as
3 you can.
4 But there are options for saturation mail,
5 standard mail in terms of when it's delivered, whether
6 you hold it back, whether you send it back to DPS,
7 whether you ask a mail carrier to collate it or to
8 carry it in four bundles. Where is the time and the
9 cost of that supervision measured in the cost system
10 for letter carriers in office?
11 THE WITNESS: I'm sure someone can tell you
12 where that is. We track supervisor hours by LDCs,
13 labor distribution codes, and supervisor hours would
14 be in LDC 20, but where they fit in with the costing
15 systems, I don't know.
16 COMMISSIONER GOLDWAY: Those codes show that
17 they have been working on bulk mail and standard mail
18 as opposed to --
19 THE WITNESS: No.
20 COMMISSIONER GOLDWAY: -- just mail sorting.
21 No.
22 THE WITNESS: It would be just operations.
23 Correct. I'm not sure where you would find that in
24 the costing data.
25 COMMISSIONER GOLDWAY: I think that's a real

1 issue I'm concerned about because it seems to me that
2 we have questions about what the ultimate costs for
3 bulk mail and standard mail, and this discussion
4 you've had with Mr. Olson raises some concerns I have
5 about that. I guess I'll have to ask my staff to see
6 if they can find out any more out about that.
7 Just a question for you in general about all
8 of these issues: You indicate that because of
9 delivery-point sequencing and better automation and
10 motorization, that the in-office time for letter
11 carriers has been reduced overall. They have more
12 time on the street, less time sorting mail. Is that
13 what you're saying?
14 THE WITNESS: Yes.
15 COMMISSIONER GOLDWAY: So if that's the
16 case, why aren't deliveries earlier in the day?
17 THE WITNESS: Earlier delivery is a big
18 issue with us from a management perspective, from a
19 customer perspective, from a labor perspective, and
20 it's one of the challenges that are senior managers
21 are pushing on us a lot, trying to move carrier start
22 times earlier. But you have to look at operations as
23 a cycle, and delivery starts where mail processing
24 leaves off. I can't schedule people to come to work
25 and not have enough mail to keep them productively

1 busy through the course of their eight-hour day, so I
2 need to schedule whenever I've got mail in the office.
3 One of the things that -- how can I explain
4 this? -- one of the things that happened when we
5 started doing automation, because so much of our focus
6 was on the incoming side of operations, doing all of
7 the incoming secondary sequencing of mail for the
8 carriers, and so forth, is that window expanded. When
9 I started carrying mail, we would start at 6 o'clock
10 in the morning. Carriers in the same office probably
11 start closer to 8 o'clock now in order to get more of
12 the processing done.
13 What we've tried to do is put more focus on
14 the outgoing part of the mail, and some of the newer
15 equipment that we're getting get us out of outgoing
16 operations earlier so you can start the incoming
17 operations earlier and get the mail into the carrier
18 offices earlier. But I think it's a function of when
19 the mail is available that's caused us to push carrier
20 start times later, and we're working to push that
21 back.
22 COMMISSIONER GOLDWAY: So all of this
23 automation in processing of the mail actually has
24 created a system where the mail comes to the delivery
25 unit later in the morning, you're saying. So is it

1 taking more time?

2 THE WITNESS: There is very much less mail

3 that a carrier actually has to case, and the mail that

4 they have to case is usually mail -- it's the stuff

5 that rejects off the last operation.

6 COMMISSIONER GOLDWAY: So the mail has been

7 processed more.

8 THE WITNESS: Yes.

9 COMMISSIONER GOLDWAY: So when it comes in

10 at eight instead of coming in at six, it should only

11 take him two hours when it may have taken him four

12 before.

13 THE WITNESS: Yes.

14 COMMISSIONER GOLDWAY: He still should be

15 getting out and delivering --

16 THE WITNESS: Close to the same time in the

17 morning, but we're putting a lot more focus on the

18 kind of equipment we use on the outgoing so that

19 instead of having to handle something twice or three

20 times to get it on a truck or an airplane to go

21 someplace, you can get it done in one pass through or

22 two passes, an opening and a sorting pass, and we're

23 trying to move the operating window back to before

24 midnight to be finished with outgoing as compared to

25 now, probably it's 1 o'clock or 2 o'clock before you

1 get out of outgoing operations.

2 That's the dynamic. You have to look at

3 operations as a whole 24-hour process, not just the

4 eight to 12 hours of delivery operations. What we do

5 isn't real complicated until you start trying to

6 integrate all of the pieces of it.

7 COMMISSIONER GOLDWAY: Okay. Then I have a

8 couple of other sort of intuitive questions here for

9 your comments.

10 In looking at the impacts of these volume

11 variability studies and what the difference is with

12 the proposed measurement standard versus the old one,

13 it looks like you say that there is a lot more cost in

14 handling single-piece letters on the street, and I

15 don't quite get that because the cost, it seems to me,

16 is in the office when they are cased, but once they

17 are on the street, you know, they are the first part

18 of the stack, and they are sort of the marker. They

19 are the easy things to put in the mailbox.

20 It's the bulk mail that may or may not have

21 discretion, as you describe it. It's the flats that

22 are awkward to put in the mailbox. Why is it that

23 this new system seems to have increased the

24 measurement costs for single-piece letters? Do you

25 have an answer for that one?

1 THE WITNESS: I don't. I don't get so much
2 into the costing. I don't --
3 COMMISSIONER GOLDWAY: But don't you think
4 that handling single-piece letters on the street is
5 pretty easy? Isn't that the easiest part?
6 THE WITNESS: I'm not sure how that relates
7 to the costing models, is my dilemma.
8 COMMISSIONER GOLDWAY: When you have a
9 letter carrier on the street, --
10 THE WITNESS: Right.
11 COMMISSIONER GOLDWAY: -- and he's got his
12 mail, and he's coming through, the first-class letters
13 seem to me the ones, when he is taking them from the
14 truck, are the easiest ones to then stick in the
15 mailbox and the most readily marked as belonging in a
16 particular mailbox. Am I intuitively incorrect?
17 Wouldn't you agree?
18 THE WITNESS: As an operations manager and
19 knowing, as I was saying, we look at things by shape,
20 the letter-shaped mail seems to be the easiest to
21 handle to me. I'm not sure how the costing people
22 take all of that apart and put it back together again.
23 I'm not sure what all goes into costs for different
24 kinds of mail. I don't do that.
25 COMMISSIONER GOLDWAY: All right. Thank

1 you.

2 CHAIRMAN OMAS: Any other follow-up?

3 (No response.)

4 CHAIRMAN OMAS: Mr. Koetting, would you like

5 some time with your witness?

6 MR. KOETTING: I think I would like a couple

7 of minutes, Mr. Chairman, perhaps five minutes.

8 CHAIRMAN OMAS: Five minutes, you've got.

9 Thank you.

10 (Whereupon, at a 3:27 p.m., a brief recess

11 was taken.)

12 CHAIRMAN OMAS: Mr. Koetting?

13 MR. KOETTING: The Postal Service does have

14 one brief line of redirect, Mr. Chairman.

15 CHAIRMAN OMAS: Proceed.

16 REDIRECT EXAMINATION

17 BY MR. KOETTING:

18 Q Mr. Lewis, do you recall, in your last

19 conversation with Commissioner Goldway, she was

20 discussing the differences in delivery costs between

21 first-class mail and other kinds of mail, and you were

22 replying in terms of the delivery cost of different

23 shapes of mail, letters versus flats? Do you recall

24 that conversation?

25 A Yes, I do.

1 Q And that conversation was in terms of the
2 delivery cost. Correct?
3 A Yes.
4 Q Are carriers involved in activities other
5 than delivering mail?
6 A Yes. The whole collections process that
7 carriers are involved with as well.
8 MR. KOETTING: That's all we have, Mr.
9 Chairman.
10 CHAIRMAN OMAS: Is there any follow-up?
11 (No response.)
12 CHAIRMAN OMAS: There being none, Mr. Lewis,
13 that concludes your testimony here today. We
14 appreciate your contribution to our record, and you're
15 now excused.
16 THE WITNESS: Thank you.
17 CHAIRMAN OMAS: Thank you.
18 (The witness was excused.)
19 CHAIRMAN OMAS: This concludes today's
20 hearings. We will reconvene tomorrow morning at nine-
21 thirty when we will receive testimony from Postal
22 Service Witnesses Pafford, Smith, and Kelley. Thank
23 you and have a nice evening.
24 //
25 //

1 (Whereupon, at 3:38 p.m., the hearing was
2 adjourned, to be reconvened at 9:30 a.m. on Friday,
3 July 8, 2005.)
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1 REPORTER'S CERTIFICATE

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3 DOCKET NO.: R2005-1

4 CASE TITLE: Request of the United States Postal Service for a Recommended Decision on Changes in Rates of Postage and Fees for Postal Services

5 HEARING DATE: 7/7/05

6 LOCATION: Washington DC

7

8 I hereby certify that the proceedings and evidence are

9 contained fully and accurately on the tapes and notes

10 reported by me at the hearing in the above case before the

11 United States Postal Rate Commission.

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14 Date: 7/7/05

15

16

17 Official Reporter

18 Heritage Reporting Corporation

19 Suite 600

20 1220 L Street, N.W.

21 Washington, D.C. 20005-4018

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