

BEFORE THE  
POSTAL REGULATORY COMMISSION  
WASHINGTON, D.C. 20268-0001

PERIODIC REPORTING  
(PROPOSAL THIRTEEN)

Docket No. RM2015-7

**RESPONSES OF THE UNITED STATES POSTAL SERVICE  
TO QUESTIONS 1-12 OF CHAIRMAN'S  
INFORMATION REQUEST NO. 3  
(March 27, 2015)**

The United States Postal Service hereby provides its responses to Questions 1-12 of Chairman's Information Request No. 3, issued March 20, 2015. The questions are stated verbatim and followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorney:

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March 27, 2015

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1. Please refer to the Response to CHIR No. 1, question 21, which states “the average elapsed time for the delivery activities being studied...would be measured by the average of the elapsed time between begin activity scan and the mode scan (which was also the end activity scan).”<sup>1</sup>
  - a. Please explain whether total parcel time for in-receptacle, deviation, and accountable parcels in the SAS program “cost pools parcel acct time.sas” includes both the time for the parcel study scans (scan time) and delivery time.<sup>2</sup> Please discuss the differentiation between parcel study scan times and normal delivery scan times, such as barcode tracking scans, during the study.
  - b. If total parcel delivery time used to form the parcel time pool shares does not include scan time, please provide a detailed explanation, along with supporting programs, data, and documentation, of the means by which scan time was removed.
  - c. If scan time was not removed from the total parcel time pools, please provide a revised version of the calculation of the time pool shares with the scan time removed.

**RESPONSE:**

- a. The cost pools for package and accountable time in the SAS program “cost pools parcel acct time.sas” include both the time required for making the deliveries and the time required for scanning the study barcodes.
- b. Not applicable.

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<sup>1</sup> Response of the United States Postal Service to Questions 1-16 and 19-28 of Chairman's Information Request No. 1 (CHIR No. 1), January 12, 2015 (Response to CHIR No. 1, question 21).

<sup>2</sup> See Library Reference Postal Service RM2015-7/1, Public Material Supporting Proposal Thirteen (USPS-RM2015-7/1), Cost Pool Formation Directory, SAS Program folder.

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c. The following table presents the time proportions with scanning time removed:

	<b>Proportions With Scan Time Included</b>	<b>Proportions With Scan Time Excluded</b>	<b>Difference</b>
In Receptacle	0.038	0.030	-0.009
Deviation Package and Accountable	0.047	0.042	-0.005

The next set of tables presents the calculation of the time pool shares with the scan time removed. This mirrors the development of time pool shares presented on pages 17 through 19 of the Report On the City Carrier Street Time Study

Table 7: Time Proportions Derived from the Package and Accountable Field Study

<b>Type of Delivery</b>	<b>Percentage of Street Time</b>	<b>Ratio of Total Street Time to Attributable Street Time</b>	<b>Percentage of Directly Attributable Street Time</b>
In Receptacle	2.98%	1.14	3.41%
Deviation	4.18%	1.14	4.78%
Both	7.16%	1.14	8.20%

The package and accountable delivery time proportions can now be used to modify the street time proportions used to construct the cost pools. Because the route evaluation process incorporates in-receptacle package delivery time into regular delivery time, the regular delivery time proportion is overstated for

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attributable costing purposes. Accuracy requires using the independently measured in-receptacle package delivery time proportion to reduce the route evaluation delivery time proportion. This calculation is done in Table 8.

Table 8: Adjusting Time Proportions To Capture Total Package Delivery

<b>Type of Delivery</b>	<b>Form 3999 Only</b>	<b>Including PA Study Proportions</b>
Regular Delivery	83.38%	79.81%
Package and Accountable Delivery	4.63%	8.20%
Total	88.01%	88.01%

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With this adjustment of the regular delivery time proportion in place, the last step is to incorporate the new regular delivery and package and accountable delivery into the full set of street time proportions. The set of proportions used to calculate the cost pools is presented in Table 9.

Table 9 Street Time Proportions Used  
to Calculate Cost Pools

<b>Street Activity</b>	<b>Time Proportion</b>
Regular Delivery	79.8%
In-Receptacle Package Delivery	3.42%
Deviation Delivery	4.78%
Collection from Street Letter Boxes	0.20%
Travel To and From	5.03%
Relay	3.82%
Network Travel	2.93%
Total	100.00%

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2. Please refer to Library Reference USPS-RM2015-7/1, Report on the City Carrier Street Time Study,<sup>3</sup> at 45, which states that "the composite stochastic term is not correlated with the right-hand-side variables in the regression: [formula omitted]."
- a. Please explain whether any statistical tests were performed to verify this statement. If so, please provide copies of the programs, logs, and output if all are available, or the programs and output if the logs are not available.
  - b. If statistical tests were not performed to verify that the composite stochastic term is not correlated with the right-hand variables in the regression, please explain the reasoning which led to the stated conclusion. For example, please explain how it was determined that Allied Time is not positively or negatively correlated with regular delivery volume, and thus would not result in a correlation of the stochastic error term and regular delivery volumes.

**RESPONSE:**

- a. No statistical tests of this assumption were performed.
- b. Please note that the Report does not assert that there is no correlation, either positive or negative, between allied time and regular delivery volume. Rather, the statement quoted in the question is an assumption that the stochastic error term for allied time is not correlated with regular delivery volume. A standard assumption of regression models is that the right-hand-side variables are not correlated with the stochastic error term for the dependent variable (although they are obviously correlated with the dependent variable). In other words, the regular delivery equation employs the standard assumption that the regular delivery volumes are not correlated with the stochastic error term for regular delivery time. What is added here is the additional assumption that the

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<sup>3</sup> See *id.*, Letter\_Route Report directory.

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stochastic error term for allied time is also not correlated with the right-hand-side variables. Because the relationship between regular delivery volumes and allied time is necessarily more attenuated than the relationship between regular delivery volumes and regular delivery time, this additional assumption seems reasonable.

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3. Please refer to the SAS program "estim variab reg del time.sas."<sup>4</sup> The SAS code that creates the variable for delivery time ( $\text{delivery\_hrs} = \text{street\_hours} - \text{allied\_hours\_3999}$ ) does not appear to subtract in-receptacle parcel delivery time from each observation.
- a. Please explain whether in-receptacle parcel delivery time is included in the delivery time used in the regular delivery regression. If it is not included, please explain how in-receptacle delivery time was removed from regular delivery time and provide the program(s) which removed in-receptacle delivery.
  - b. If in-receptacle delivery time is included in delivery time, please discuss the econometric implications for the shape parameter estimates in the regular delivery equation, including a discussion of the way in which shape variabilities would change.

**RESPONSE:**

- a. To the extent that in-receptacle delivery time is included in the dependent variable in the regular delivery equation, such an inclusion is inadvertent. The model specification depends upon removing allied time from street time. By definition, allied time includes, *inter alia*, in-receptacle delivery time. The implementation of the model specification relies upon actual data and it is quite likely that the Form 3999 data mis-measures in-receptacle delivery time. To the extent the Form 3999 does not capture all in-receptacle time, then some amount of in-receptacle time would be included in the measured regular delivery time.
- b. If in-receptacle delivery time is included in the regular delivery time variable, then that latter variable is measured with error. In general, measurement error in a dependent variable ends up in the stochastic term of the regression and does not affect the estimated coefficients in the regression model. However, if the

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<sup>4</sup> See *id.*, Regular Delivery Equation directory, SAS Programs.

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measurement error in the dependent variable were to be correlated with any of the right-hand-side variables, then the estimated coefficients could be affected, depending upon the correlation between the measurement error and the right-hand-side variable. The impact on the shape variabilities would be dependent upon the nature of correlation of the measurement error. Because the potential measurement error is unobserved, the nature of the possible correlation is unknown.

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4. Please refer to the SAS program "cost pools regular delivery time.sas," which estimates the time pool shares of regular delivery, relay, travel to/from, network travel, and blue box collection time.<sup>5</sup>
- a. Please confirm that removing observations with unreasonable delivery times was limited to observations with gross street time greater than 12 hours, negative gross street time, or negative sector segment, parcel, accountable, relay, travel to/from, travel within, or blue box collection time.
  - b. Please confirm that observations with very short delivery times, *e.g.*, 1 hour or less, were not removed from the formation of the regular delivery time pool.
  - c. If question 4b. is confirmed, please explain why observations with very short delivery times were not removed. As part of the response, please explain why observations with unreasonably high delivery times were deleted but observations with very short delivery times were not deleted.
  - d. If question 4b. is not confirmed, please identify the program in which observations with very short delivery times were removed.
  - e. If the program was not filed, please provide the programs, output and logs (if available), along with supporting documentation.

**RESPONSE:**

- a. Confirmed.
- b. Confirmed.
- c. Discussion with operation experts revealed that across the Postal Service's extensive city carrier delivery network, it was possible to have routes with very short delivery time. Thus, this matter was considered, but there was no basis for determining a lower bound for removing observations with low delivery times. Moreover, in a program that is forming cost pools, eliminating a small number of routes that have very little time will have no impact on the estimated cost pool proportions. For example, the following table presents the original Form 3999

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<sup>5</sup> See *id.*, Cost Pool Formation directory, SAS Programs folder.

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proportions along with the proportions based upon eliminating all routes with less than one hour of delivery time, as suggested in part b.

Street Time Proportions Based upon Form 3999 Data		
	Original Proportions	Dropping Routes with Less than 1 Hour of Delivery Time
Regular Delivery	83.38%	83.38%
Package/Accountable Delivery	4.63%	4.63%
Collections From SLB	0.20%	0.20%
Travel To/From Route	5.03%	5.03%
Network Travel	2.93%	2.93%
Relay	3.82%	3.82%
Number of Observations	112,972	112,656

d. Not applicable.

e. Not applicable.

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5. Please refer to the SAS program "estim variab reg del time.sas."<sup>6</sup>
- a. Please confirm that data step "a2" (data a2) treats observations with negative Allied Time as having zero Allied Time.
  - b. If question 5a. is confirmed, please explain why these observations were adjusted, as opposed to being deleted.
  - c. If question 5a. is not confirmed, please explain.

**RESPONSE:**

- a. Confirmed.
- b. The observations were adjusted so as to preserve as many as possible complete ZIP Code observations. However, given that there were only 24 of the 71,225 route day observations with negative allied time, eliminating them instead of setting them to zero would have no material effect on the estimated variabilities. This is demonstrated in the next table.

<b>Cost Driver</b>	<b>Setting Negatives Equal to Zero</b>	<b>Eliminating Negatives</b>	<b>Difference</b>
DPS	16.76%	16.76%	-0.01%
Cased Mail	6.99%	7.01%	0.01%
Sequenced	3.38%	3.38%	0.00%
FSS	2.95%	2.96%	0.00%
Collection	5.41%	5.37%	-0.03%

- c. Not applicable.

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<sup>6</sup> See Library Reference USPS-RM2015-7/1, Public Material Supporting Proposal Thirteen, Regular Delivery Equation, SAS Programs folder.

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6. Please refer to the file "Form 3999 Activities.xlsx."<sup>7</sup>
- a. Please confirm that the activities are included in Allied Time are:  
RELAY\_HOURS\_3999, TRAVEL\_TO\_HOURS\_3999,  
TRAVEL\_FROM\_HOURS\_3999, VEHICLE\_LOAD\_HOURS\_3999,  
VEHICLE\_UNLOAD\_HOURS\_3999, TRAVEL\_WITHIN\_HOURS\_3999,  
ACCOUNTABLE\_HOURS\_3999, PARCEL\_HOURS\_3999,  
STREET\_BREAK\_HOURS\_3999, BLUE\_COLLECT\_HOURS\_3999,  
DEADHEAD\_HOURS\_3999, PERS\_HOURS\_3999,  
CUST\_CONT\_HOURS\_3999, GAS\_VEHICLE\_HOURS\_3999,  
BACKTRACK\_HOURS\_3999, ANIMAL\_HOURS\_3999,  
WAIT\_RELAY\_HOURS\_3999, WAIT\_TRANS\_HOURS\_3999,  
WAIT\_OTHER\_HOURS\_3999, TEMP\_DETAIL\_HOURS\_3999,  
MGMT\_HOURS\_3999, ACCIDENT\_HOURS\_3999,  
MISC\_OTHER\_HOURS\_3999.
  - b. If question 6a. is not confirmed, please list the activities which comprise Allied Time, and provide a revised version of the file which calculates the sum of time of these activities for each observation which ensures this sum of Allied Time is equal to the hard-coded value of Allied Time for each observation.
  - c. Please confirm that Gross Street time is Sector Segment Time plus Allied time.
  - d. If question 6c. is not confirmed, please explain.

**RESPONSE:**

- a. Confirmed.
- b. Not applicable.
- c. Confirmed.
- d. Not applicable.

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<sup>7</sup> See *id.*, Cost Pool Formation directory, Form 3999 Excel File folder.

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7. Please list the activities which comprise Delivery Operations Information Street (DOIS) street times in the Excel files "Package Study DOIS Masked ZIPS.xlsx" and "CCCS FRAME DOIS STUDY ZIPS.xlsx."<sup>8</sup>

**RESPONSE:**

The list below contains the activities that comprise the street times in the Excel file "Package Study DOIS Masked ZIPS.xlsx." Since Street Time is the sum of Sector Segment Time and Allied Time, this list matches the one from question six with the addition of SECTOR\_SEGMENT\_HOURS\_3999.

**Street Activities Included in DOIS Street Time**

<b>ACTIVITY</b>
SECTOR_SEGMENT_HOURS_3999
<b>ALLIED ACTIVITIES</b>
ACCIDENT_HOURS_3999
ACCOUNTABLE_HOURS_3999
ANIMAL_HOURS_3999
BACKTRACK_HOURS_3999
BLUE_COLLECT_HOURS_3999
CUST_CONT_HOURS_3999
DEADHEAD_HOURS_3999
GAS_VEHICLE_HOURS_3999
MGMT_HOURS_3999
MISC_OTHER_HOURS_3999
PARCEL_HOURS_3999
PERS_HOURS_3999
RELAY_HOURS_3999

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<sup>8</sup> See *id.*, Cost Pool Formation directory, Package Study DOIS Excel File folder and Regular Delivery Equation folder, Frame DOIS Excel File.

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<b>ALLIED ACTIVITIES (CONT)</b>
STREET_BREAK_HOURS_3999
TEMP_DETAIL_HOURS_3999
TRAVEL_FROM_HOURS_3999
TRAVEL_TO_HOURS_3999
TRAVEL_WITHIN_HOURS_3999
VEHICLE_LOAD_HOURS_3999
VEHICLE_UNLOAD_HOURS_3999
WAIT_OTHER_HOURS_3999
WAIT_RELAY_HOURS_3999
WAIT_TRANS_HOURS_3999

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8. Please refer to file "estim\_variab\_reg\_del\_time," line 941, which defines delivery time as the difference between street and allied time.<sup>9</sup> Please explain if Vehicle Load/Unload time is considered as Office time or Street time as part of the daily DOIS route data used in the regular delivery model.

**RESPONSE: -**

In DOIS, Vehicle Load/Unload time is part of allied time, which is a subset of street time. Delivery time is the difference between total street time and allied time (i.e., the total of all components of street time other than allied time), and thus vehicle load/unload time is considered Street time, but not part of delivery time.

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<sup>9</sup> See *id.*, Regular Delivery Equation directory, SAS Logs folder. See *a/so* Response to CHIR No. 1, question 7a., which states "vehicle load and unload time is considered office time in the city carrier model...."

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9. Please refer to the SAS log "estim variab reg del time," which estimates the variability of regular delivery mail shapes, at line 1049.<sup>10</sup>
- a. Please confirm that the square of the Flats Sequencing System (FSS) volume variable is not included in the regression model.
  - b. If question 9a. is not confirmed, please identify the line where the variable is included.
  - c. If question 9a. is confirmed, please explain the reason the squared term for FSS was not included in the regular delivery regression model.
  - d. Please file a revised program, log, and output if the squared FSS term was meant to be included in the regular delivery equation, and file a revised version of the file "Cost Impacts Proposal 13.xlsx" if regular delivery variabilities differ from those filed with the Commission.<sup>11</sup>

**RESPONSE:**

- a. Confirmed.
- b. Not applicable.
- c. The estimated coefficient was not included because it is not different from zero. As explained on page 77 of the Report On the City Carrier Street Time

Study:

Estimation of the model including the FSS dummy variable yields significant coefficients for all but one variable. The only coefficient with a low t-statistic is the second order term on FSS volume. That variable is dropped and the model is re-estimated. The resulting re-estimated model is presented in the next table.

- d. Not applicable.

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<sup>10</sup> See *id.*, Regular Delivery Equation directory, SAS Logs folder.

<sup>11</sup> See *id.*, Cost Impacts directory.

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- 10.** Please run the restricted regular delivery model (*i.e.*, a quadratic model without cross product terms) to facilitate an apples-to-apples comparison of the regular delivery model results with the “restricted” version of the regular delivery model, presented in witness Bradley’s testimony in Docket No. R2005-1 at 38, Table 5.<sup>12</sup> Please provide a comparison of the estimated variabilities and marginal times from each restricted model. Please also provide copies of the restricted program, output and log. (Note: the comparable restricted version in this docket would not include the terms for small parcels).

**RESPONSE:**

The following table presents the variabilities and marginal times from a restricted regular delivery model estimated on the current data set, along with the variabilities and marginal times from restricted regular delivery model in Docket No. R2005-1. The SAS program, listing, and log that generated the results are attached to this response electronically.

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<sup>12</sup> Docket No. R2005-1, USPS-T-14, Testimony of Michael D. Bradley on Behalf of United States Postal Service, April 8, 2005.

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<b>Shape</b>	<b>Variability</b>	<b>Marginal Time</b>
DPS	20.43%	2.52
Cased Mail	6.04%	2.41
Sequenced Mail	3.72%	2.87
FSS	2.53%	4.47
Collection Mail	6.98%	7.42

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<b>Shape</b>	<b>Variability</b>	<b>Marginal Time</b>
Letters	22.80%	1.39
Flats	7.12%	1.36
Sequenced	1.29%	0.82
Collection	8.82%	4.00

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11. Please refer to the file entitled "deviation acct variabilities model.sas."<sup>13</sup> Please explain how the upper limit for a reasonable parcel deviation of 5 minutes per piece and the upper limit for a reasonable accountable deviation of 10 minutes per piece were selected. Please include a discussion of the rationale for the difference between these upper limits, the frequency with which each type of deviation requires the carrier to move their vehicle, and the average amount of time it takes to move a vehicle for each type of deviation.

**RESPONSE:**

The upper limits on the deviation parcel and accountable deliveries were developed in conjunction with operations experts. Discussions with those experts revealed that accountable deliveries typically take significantly longer than deviation parcel deliveries, because of the need for customer contact. Not only do letter carriers need to wait for the customer during accountable deliveries, but also they may need to explain the nature of the accountable piece as well as collect a signature. The upper limits thus reflect operational experience with the two types of deliveries. Also, note that these limits are applied to the average delivery time for a ZIP Code day, but not to individual deliveries. Consequently, there are very few observations beyond the limits. Of over 3,000 ZIP Code days used in the estimation, just 5 have average package delivery time of over 5 minutes per piece, and just 19 have average accountable delivery time over 10 minutes per piece.

The Postal Service does not have data on the frequency with which each type of deviation requires a carrier to move his or her vehicle. However, the average time for all move vehicle deliveries which could include a package, an

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<sup>13</sup> See Library Reference USPS-RM2015-7/1, Deviation Parcel Acct Equation directory, SAS Programs folder.

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accountable, or both is 2.49 minutes. Note that this is the time per delivery, not the time per piece.

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12. As shown in the SAS log "in\_receptacle\_variabilities\_model.sas" at line 2810, the work.scan file used in the IR Parcel model contains 59,558 observations.<sup>14</sup> As shown in the SAS log "dev\_acct\_variabilities\_model.sas" at line 2209, the work.scan file used in the Dev/ACCT model contains 59,434 observations.<sup>15</sup> Please explain why each work.scan data set contains a different number of observations.

**RESPONSE:**

The SAS program "in\_receptacle\_variabilities\_model.sas" has three typographical errors where masked ZIP '68245' is transposed to masked ZIP '68425' which is not part of the study. The initial impact of these mistakes is that the comparable work.dois, work.volume, and work.scan datasets referenced in the question do not have the same number of observations in the respective "in-receptacle" and "dev\_acct" datasets. The corrected SAS code for the "in-receptacle" SAS programs is contained below. However, due to other rigorous outlier checks contained within the "in\_receptacle\_variabilities\_model.sas" program, the final results are not impacted by these typographical errors. The elasticities and marginal times are exactly the same with the corrected and filed program.

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<sup>14</sup> See *id.*, In Receptacle Parcel Equation directory, SAS Logs folder.

<sup>15</sup> See *id.*, Deviation Parcel Acct Equation, SAS Logs.

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***Corrected SAS Code***

*data dois;*

*set dois*

*if zip in('85918','43477','41497','68245','94118','26979','45896') then delete;*

*run;*

*.....*

*data volume;*

*set volume;*

*if zip in('85918','43477','41497','68245','94118','26979','45896') then delete;*

*run;*

*.....*

*data scan;*

*set scan;*

*if zip in('85918','43477','41497','68245','94118','26979','45896') then delete;*

*run;*