

DOCKET SECTION

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

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POSTAL RATE AND FEE CHANGES, 1997

POSTAL RATE COMMISSION  
OFFICE OF THE CLERK  
Docket No. R97-1

UNITED STATES POSTAL SERVICE  
INTERROGATORIES AND REQUESTS FOR PRODUCTION OF DOCUMENTS TO  
THE FLORIDA GIFT FRUIT SHIPPERS ASSOCIATION WITNESS MEREWITZ  
(USPS/FGFSA-T1-39-55)

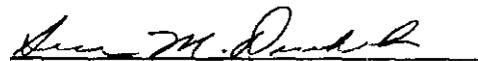
Pursuant to rules 25 and 26 of the Rules of Practice and Procedure and rule 2 of the Special Rules of Practice, the United States Postal Service directs the following interrogatories and requests for production of documents to the Florida Gift Fruit Shippers Association witness Merewitz: USPS/FGFSA-T1-39-55.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Daniel J. Foucheaux, Jr.  
Chief Counsel, Ratemaking

  
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February 2, 1998

USPS/FGFSA-T1-39. Please refer to your revised testimony on page 7, line 8. Please confirm that the 13.1% should be 16.0%. If you do not confirm, please explain the difference between the 13.1% figure on page 7 and the 16 percent figure on page 6 that was revised upwards from 13.1 percent in the original.

USPS/FGFSA-T1-40. Please refer to page 7 of your revised testimony.

Please reconcile the apparent conflict in the following two statements:

Lines 1-2: "The result was a 10.8 percent increase in real purchased highway transportation services."

Lines 10-11: "So during this period there was a 16% real increase in the purchase of highway transportation services by the postal service."

USPS/FGFSA-T1-41. Please refer to page 27, line 3, of your revised testimony where you state "FACCAT weighting is alternately used and not used."

- a. Please confirm that this statement was not in your original testimony.
- b. Please provide citations to the record of this proceeding which support your allegation that FACCAT weighting is not used.

USPS/FGFSA-T1-42. Please refer to your response to USPS/FGFSA-T1-2, where you state that you reviewed "other materials concerning C.S.14."

Please list those materials.

USPS/FGFSA-T1-43. Please refer to your response to USPS/FGFSA-T1-5(b).

Do you regard container capacity as a measure of cube or a measure of cube and miles?

USPS/FGFSA-T1-44. Please refer to your response to USPS/FGFSA-T1-12(a). Is your use of the term "workload" in this response the same as your definition of "workload" on page 5, line 17 of your revised testimony? If not, please answer interrogatory USPS/FGFSA-T1-12(a) using the definition of "workload" as you use it on page 5, line 17 of your revised testimony.

USPS/FGFSA-T1-45. Please refer to your response to USPS/FGFSA-T1-16.

Please explain specifically how TRACS data should be weighted to yield "actual volume."

USPS/FGFSA-T1-46. Please refer to your response to USPS/FGFSA-T1-18.

Please confirm that the 49% change in total spending is for the six year period 1990-1996.

USPS/FGFSA-T1-47. Please refer to your response to USPS/FGFSA-T1-20.

Please provide a reference citation to the source of the figure "7.75 observations on average".

USPS/FGFSA-T1-48. Please refer to your response to USPS/FGFSA-T1-25.

- a. Please confirm that you consider BMC to SCF1 to be line-haul. If you do not confirm, please explain in detail.
- b. Do you consider SCF1 to SCF2 to be line-haul or back haul?  
Please explain your understanding of how TRACS would classify this leg.
- c. Do you consider SCF2 to AO to be line-haul or back haul?  
Please explain your understanding of how TRACS would classify this leg.
- d. Do you consider AO to SCF2 to be line-haul or back haul?  
Please explain your understanding of how TRACS would classify this leg.
- e. Please confirm that you consider SCF2 to BMC to be back-haul.  
If you do not confirm, please explain in detail.

USPS/FGFSA-T1-49. Please refer to your response to USPS/FGFSA-T1-26.

Please answer the question as originally asked. In other words, please identify each of the legs as either line haul or back haul.

USPS/FGFSA-T1-50. Please refer to your response to USPS/FGFSA-T1-27.

- a. Please confirm that you consider BMC to SCF to be line-haul. If you do not confirm, please explain in detail.
- b. Do you consider SCF to AO to be line-haul or back haul? Please explain your understanding of how TRACS would classify this leg.

USPS/FGFSA-T1-51. Please refer to your response to USPS/FGFSA-T1-30(a), where you state that "there is no logical reason to aim to produce anything other than the minimum variance estimate."

- a. Would you consider constraints on availability of data collection staff in some localities a logical reason or constraint for not allocating a sample in a way that strictly minimizes variance?
- b. Would you consider concerns about delaying mail or interfering with postal operations logical reasons for not focusing solely on strictly minimizing the variance in the TRACS sample allocation?
- c. Have you analyzed the effect on the precision of TRACS estimates due to minor departures from an optimum, or minimum variance allocation? If so, please provide copies of that analysis.
- d. When discussing deviations from the sample allocation which minimizes variance, the late William G. Cochran, in Sampling Techniques, 3<sup>rd</sup> edition, pages 115-116 (copies of which are attached for your reference) states that "the optimum can be described as flat". Please confirm that Cochran shows that

deviations in the sample allocation of as large as 20% from the optimum allocation can increase the variance at most 4%. If not confirmed, please explain fully and provide sound evidence in support of your position.

- e. Do you have any substantial basis for concluding that the TRACS sample allocation deviates from the variance minimizing optimum allocation by as much as 20%? If so, please provide all such evidence.

USPS/FGFSA-T1-52. Please confirm that the file *contre~1.wb3*, provided in library reference LAM-H-1 is identical to the file *c:\myfiles\contr.wb3* named at the bottom of LAM4b. If you do not confirm, please provide the latter and explain any and all differences between the two files.

USPS/FGFSA-T1-53. Please refer to LAM3.

- a. Please confirm that LAM3 was produced using the program *c:\dkrerun1.wb3* as noted on page 3 of the exhibit.
- b. Please confirm that the program *c:\dkrerun1.wb3* is identical to the file *DKRERU~1.wb3* contained in library reference LAM-H-1.
- c. Please confirm that LAM3 contains output from a SAS program that you have not provided.
- d. If you do not confirm subpart (c) above, please explain in detail.

- e. If you confirm subpart (c) above, please provide the SAS program.

USPS/FGFSA-T1-54. Please refer to LAM 4a.

- a. Please confirm that the file name (C:\dk.rerun1.wb3,sheet A) handwritten at the bottom of LAM 4a, page 6 is the file used to produce the library reference.
- b. Is it your understanding that this library reference is identical to the file DKRERU~1.WB3 provided in LAM-H-1? If they are not identical explain any differences.
- c. LAM 4a appears to be the output of a SAS program. Please provide the SAS program.

USPS/FGFSA-T1-55. Please refer to the file intrae~1.wb3 contained in LR-LAM-H-1.

- a. Please confirm that this file was used to generate LAM-H-1.
- b. The file contains a reference to C:\WINDOW...ttyGFS\hist\intra.erpp.wb3. Please provide this file.

CHAPTER 5A

Further Aspects  
of Stratified Sampling

5A.1 EFFECTS OF DEVIATIONS FROM THE OPTIMUM  
ALLOCATION

This chapter discusses a number of special topics in the practical use of stratified sampling. Sections 5A.1 to 5A.8, 5A.10, and 5A.15 deal with problems that may come up in the planning of the sample; the remaining sections deal with techniques of analysis of results. The present section considers the loss in precision by failure to achieve an optimum allocation of the sample.

Suppose that it is intended to use optimum allocation for given  $n$ . The sample size  $n_h'$  in stratum  $h$  should be

$$n_h' = \frac{n(W_h S_h)}{\sum W_h S_h} \quad (5A.1)$$

From equation (5.27), page 99, the resulting minimum variance is

$$V_{min}(\bar{y}_{st}) = \frac{1}{n} (\sum W_h S_h)^2 - \frac{1}{N} \sum W_h S_h^2 \quad (5A.2)$$

In practice, since the  $S_h$  are not known, we can only approximate this allocation. If  $\hat{n}_h$  is the sample size used in stratum  $h$ , the variance actually attained, from equation (5.6), page 92, is

$$V(\bar{y}_{st}) = \sum \frac{W_h^2 S_h^2}{\hat{n}_h} - \frac{1}{N} \sum W_h S_h^2 \quad (5A.3)$$

The increase in variance caused by the imperfect allocation is

$$V(\bar{y}_{st}) - V_{min}(\bar{y}_{st}) = \sum \frac{W_h^2 S_h^2}{\hat{n}_h} - \frac{1}{n} (\sum W_h S_h)^2 \quad (5A.4)$$

In the first term on the right substitute for  $W_h S_h$  in terms of  $n_h'$  from (5A.1). This

gives the interesting result

$$\begin{aligned} V(\bar{y}_{st}) - V_{min}(\bar{y}_{st}) &= \frac{(\sum W_h S_h)^2}{n^2} \left( \sum \frac{n_h'^2}{\hat{n}_h} - n \right) \\ &= \frac{(\sum W_h S_h)^2}{n^2} \sum \frac{(\hat{n}_h - n_h')^2}{\hat{n}_h} \end{aligned} \quad (5A.5)$$

Reverting to equation (5A.2), if the fpc (last term on the right) is negligible, we see that

$$\frac{V_{min}(\bar{y}_{st})}{n} = \frac{(\sum W_h S_h)^2}{n^2} \quad (5A.6)$$

Hence the proportional increase in variance resulting from deviations from the optimum allocation is

$$\frac{V(\bar{y}_{st}) - V_{min}(\bar{y}_{st})}{V_{min}(\bar{y}_{st})} = \frac{1}{n} \sum_{h=1}^L \frac{(\hat{n}_h - n_h')^2}{\hat{n}_h} \quad (5A.7)$$

where  $\hat{n}_h$  is the actual and  $n_h'$  the optimum sample size in stratum  $h$ . If the fpc is not negligible, the = sign in (5A.7) becomes  $\geq$ .

Let  $g_h = |\hat{n}_h - n_h'|/\hat{n}_h$  be the absolute difference in the sample sizes in stratum  $h$ , expressed as a fraction of the actual sample size  $n_h$ . Then (5A.7) becomes

$$\frac{V - V_{min}}{V_{min}} = \sum_{h=1}^L \frac{\hat{n}_h}{n} g_h^2 \quad (5A.8)$$

a weighted mean of the  $g_h^2$ . A conservative upper limit to  $(V - V_{min})/V_{min}$  is therefore  $g^2$ , where  $g$  is the largest proportional difference in any stratum. Thus, if  $g = 0.2$  or 20%, the proportional increase in variance cannot exceed  $(0.2)^2$  or 4%. If  $g = 30\%$  the proportional increase in variance is at most 9%. In this sense the optimum can be described as flat.

TABLE 5A.1

## EFFECTS OF DEVIATIONS FROM OPTIMUM ALLOCATION

Stratum	$n_h'$ (opt)	$\hat{n}_h$ (act)	$\frac{ \hat{n}_h - n_h' }{\hat{n}_h}$	$\frac{(\hat{n}_h - n_h')^2}{\hat{n}_h}$
1	200	150	0.33	16.7
2	100	120	0.17	3.3
3	40	70	0.43	12.9
Total	340	340	—	32.9

## CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon all participants of record in this proceeding in accordance with section 12 of the Rules of Practice.

  
Susan M. Duchek

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February 2, 1998