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

POSTAL RATE AND FEE CHANGES, 2000 | Docket No. R2000–1

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS RAMAGE TO INTERROGATORIES OF THE ALLIANCE OF NONPROFIT MAILERS (ANM/USPS–T2–1, 3-4, 9-14) (March 7, 2000)

The United States Postal Service hereby provides the responses of witness Ramage to the following interrogatories of the Alliance of Nonprofit Mailers: ANM/USPS–T2-1, 3-4, 9-14, filed on February 22, 2000. Interrogatories ANM/USPS–T2-2, 6 and 8 were redirected to witness Degen. Interrogatories ANM/USPS–T2-5 and 7 were redirected to witness Van-Ty-Smith.

Each interrogatory is stated verbatim and is followed by the response.

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

Daniel J. Foucheaux, Jr.
Chief Counsel, Ratemaking

Kenneth N. Hollies

RESPONSE OF UNITED STATES POSTAL SERVICE WITNESS RAMAGE
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ANM/USPS-T2-1.

(a) Please provide a table showing, for each of the fiscal years 1990 through 1999: (a) the total number of IOCS tallies for Cost Segment 3.1, Mail processing, and (b) a breakdown of those tallies into direct tallies, mixed mail tallies, and not handling mail tallies.

(b) Provide a similar table for Cost Segment 6.1, In-office Carrier Cost.

(c) For each of the same years, please specify the number of direct tallies for Carrier route ("ECR") commercial and nonprofit Standard A (formerly third-class) mail.

RESPONSE:

The Postal Service has objected to providing these analyses for each of the fiscal years 1990 through 1999. The following response provides the requested tabulations for three fiscal years, 1993, 1996, and 1998 (the respective base years in Docket Nos. R94-1, R97-1, and R2000-1).

(a) The following table summarizes the IOCS tallies for Cost Segment 3.1, mail processing.

Table A - Mail Processing

	1993	1996	1998
Direct Tallies	96122	88132	87019
Mixed Mail Tallies	18673	17836	16809
Non-Handling Tallies	60146	54988	58805

(b) The following table summarizes the IOCS tallies for Cost Segment 6.1, In-Office Carrier Cost.

Table B - Carriers

	1993	1996	1998
Direct Tallies	6327	5322	5159
Mixed Mail Tallies	273	289	316
Non-Handling Tallies	2671	2718	2906

(c) The following table summarizes the number of direct tallies for Carrier route ("ECR") commercial and nonprofit Standard A (formerly third-class) mail.

Table C - ECR

	1993	1996	1998
ECR-Commercial	6920	6344	5843
ECR-Nonprofit	715	549	575

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ANM/USPS-T2-2. During the period FY 1990 through FY 1999, the Postal Service has increased the volume of letter mail sorted on automation equipment and the volume of flats sorted on mechanized equipment. At the same time, the percentage of not handling tallies has also increased.

(a) Please explain why automation and mechanization have resulted in so many more not handling IOCS tallies.

(b) Please produce all studies, analyses, reports and similar documents generated since Docket No. R97-1 that support your response to part (a).

RESPONSE:

Redirected to witness Degen, USPS-T-16.

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ANM/USPS-T2-3. Witness Kingsley, USPS-T-10, describes the Postal Service's plans to introduce automated flat sorting equipment and reduce the amount of manual and mechanized sorting of flats. Once all of the AFSM 100s described in her testimony are fully deployed, do you expect that will result in a further increase in (i) the percentage of not handling tallies, and (ii) the percentage of mixed mail tallies? Please explain.

RESPONSE:

I have not studied this matter.

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ANM/USPS-T2-4. Witness Kingsley, USPS-T-10, also describes the Postal Service's plans for increased use of robotics and tray management systems. Please explain how widespread deployment of robotics and tray management systems is likely to affect the percentages of not handling and mixed mail tallies.

RESPONSE:

I have not studied this matter.

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ANM/USPS-T2-5. Please confirm that within MODS pools, mixed mail tallies are distributed to the classes and subclasses of mail in proportion the direct tallies. If you do not confirm, please explain how costs associated with mixed mail tallies are distributed.

RESPONSE:

Redirected to witness Van-Ty-Smith, USPS-T-17.

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ANM/USPS-T2-7. Please confirm that within MODS pools, "not handling" mail tallies are distributed to the classes and subclasses of mail in proportion the direct tallies. If you do not confirm, please explain how costs associated with not handling mail tallies are distributed.

RESPONSE:

Redirected to witness Van-Ty-Smith, USPS-T-17.

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ANM/USPS-T2-8. Please confirm that, if the costs associated with "not handling" mail tallies are distributed within MODS pools in proportion to direct tallies, "not handling" mail tallies add no independent information to cost estimates for the classes and subclasses of mail. If you fail to confirm unconditionally, please:

(a) Explain fully.

(b) Explain how the cost distribution can change as the proportion of "not handling" tallies increases or decreases.

(c) Identify any other additional information that you contend is gained from "not handling" mail tallies.

RESPONSE:

Redirected to witness Degen, USPS-T-16.

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ANM/USPS-T2-9. Please refer to your testimony at page 6, lines 14-20, where you discuss the coefficient of variation ("CV").

(a) In terms of the reliability of the mail processing cost estimates produced by the IOCS, is a mixed mail tally as accurate and reliable an indicator of cost as is a direct tally? Please explain fully.

(b) How are mixed mail tallies treated when computing the CV? In particular, are mixed mail tallies included in "n," where "n" represents the total number of observations? If so, please provide the theoretical justification for including the number of mixed mail tallies in "n."

(c) For any given sample size, what effect does the percentage or proportion of mixed mail tallies have on the CV?

(d) How are not handling mail tallies treated when computing the CV? In particular, are not handling mail tallies included in "n," where "n" represent the total number of observations? If so, please provide the theoretical justification for including the number of not handling mail tallies in "n."

(e) For any given sample size, what effect does the percentage or proportion of not handling tallies have on the CV?

RESPONSE:

(a) I believe that a mixed mail tally is as accurate and reliable as a direct mail tally. If the data collector observes the sample employee handling a container or item of mixed mail, then that is how it is recorded. Mixed mail tallies can lead to an accurate and reliable estimate of the costs of the observed activity "mixed mail". The cost weighted sum of these mixed mail observations is about $1.1 billion with a CV approximation of around 1%. Only one subclass of direct mail (First Class Letters & Parcels) would be expected to have a smaller CV (around .8%) for its cost weighted sum of about $3.7 billion.

(b) CV's for IOCS cost estimates are computed using a bootstrap estimation procedure as described in USPS-LR-I-12, Appendix I. Bootstrapping consists of randomly selecting the same number of observations with replacement from the sample data, and calculating estimates based on the selected observations.

This is repeated many times and the variance of the resulting estimates over all iterations is calculated. An IOCS sample observation in which the sampled employee was handling an item or a container is a valid sample observation and is eligible for resampling just as any other IOCS sample observation.[1] So, if a particular stratum has n observations (including some mixed mail ones), then a replicate sample of size n is chosen with replacement from these n observations for each iteration.

(c) I have not studied the relationship between the proportion of mixed mail observations and resulting CVs.

(d) "Not handling" observations are valid IOCS sample observations, just as are mixed mail observations. Consequently, they are also included in "n". See also my response to part (b), above.

(e) I have not studied the relationship between the proportion of mixed mail observations and resulting CVs.

[1] For counted mixed mail observations, a single sample observation is divided into multiple records on the IOCS data file, one for each subclass by shape combination represented in the count of the mixed mail item. The weighting factors for that observation are also divided proportionally to the counts of each mail category observed in the item so that the total weight for the observation remains unchanged. When the data are resampled in the bootstrap process, the entire set of records corresponding to the original underlying observation is treated as the sampling unit.

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ANM/USPS-T2-10. The 29 CV's for Cost Segment 3.1 Mail Processing–Clerks and Mailhandlers, shown in your Table 1, range were distributed as follows in BY98.

Range of CV	Number
0.00—1.00	2
1.01—2.01	3
2.01—3.00	3
3.01—4.00	4
4.01—5.00	4
5.01—10.00	5
10.01—20.00	4
20.01—40.00	1
> 40.01	3
Total	29

What was the comparable distribution in fiscal years 1990 through 1997? In responding to this question, you may use a different distribution if you so desire, but please provide comparable distributions for the fiscal years 1990 through 1998.

RESPONSE:

The Postal Service has objected to production of this table for every year from 1990 through 1998. Instead, we have produced the table for a time series including FYs 1993, 1996, and 1998. The following table provides analogous summary tabulations of CVs that were presented in Dockets No. R94-1, R97-1, and R2000-1. The distribution for FY 1993 was extracted from Table 1 of USPS-T-1, Docket No. R94-1.[2] The distribution for FY 1996 was extracted from Table 6 of USPS-T-12, Docket No. R97-1.[3]

[2] For comparability with the FY 1998 column, the CVs of subtotals and mixed mail shown in Table 1 of USPS-T-1, Docket No R94-1, have been excluded from this distribution.

[3] For comparability with the FY 1998 column, the CV for mixed mail shown in Table 6 of USPS-T-12, Docket No. R97-1, has been excluded from this distribution.

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	FY1993	FY1996	FY 1998
Range of CV			Number
0.00—1.00	1	2	2
1.01—2.01	2	4	3
2.01—3.00	4	2	3
3.01—4.00	5	3	4
4.01—5.00	5	4	4
5.01—10.00	6	7	5
10.01—20.00	2	4	4
20.01—40.00	4	3	1
> 40.01	1	2	3
Total	30	31	29

ANM/USPS-T2-11. The CVs shown in your Table 1 range from a low of 0.46 percent to a high of 66.87 percent. The Postal Service and the Commission, of course, use only the point estimates of cost produced by the IOCS. How high can the CV's be and still provide confidence that the point estimate of cost is in fact a reliable indicator of the true cost?

RESPONSE:

The CVs are provided so that users of the IOCS estimates can weigh how much random variation could be expected simply due to the specific sample we observed against the intended use of the estimate. There is no one answer or formula to indicate that only estimates with CVs below a pre-determined level should be used. The decision as to whether a particular level of sampling variation is acceptable depends on the intended use of the estimate.

Consider a cost estimate of 10,000,000 with a CV of 10%. Then the associated 95% confidence interval would be from 8,000,000 to 12,000,000. With this 10% CV, we would be highly confident that the true cost is less than 15,000,000, but we would be less confident that the true cost is less than 10,500,000.

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ANM/USPS-T2-12. Referring to the distribution of CVs shown in ANM/USPS-T2-9, which of the CVs shown there are would you consider to be so high as to render the cost estimate either unreliable, or likely to result in substantial variation from case to case?

RESPONSE:

A point estimate with high CV could be expected to vary more substantially from sample to sample than a point estimate with a lower CV. The user of that estimate is made aware of the extent of that type of variation via sampling error estimates, such as those provided in Table 1. There is no one answer or formula to indicate that only estimates with CVs below a pre-determined level should be used. See my response to ANM/USPS-T2-11.

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ANM/USPS-T2-13. USPS witness Sharon Daniel (USPS-T-28) uses IOCS tallies to estimate the cost of First-Class Mail, Periodicals, and Standard A mail by weight increment.

(a) Can the formula which you use to compute the CV for cost estimates by subclass also be used to compute the CV for the cost estimates by weight increments in witness Daniel's testimony? Please explain.

(b) Please provide the CV's for each weight increment cost estimate developed by witness Daniel, and explain what formula you use for this purpose.

RESPONSE:

(a) - (b) The bootstrap procedure can be used to compute CVs for many different types of cost estimates developed from the IOCS sample data, including the cost estimates by weight increment produced by witness Daniel.

However, even with modern computers, both the time required and costs of directly computing variances for a large number of estimates is excessive. When a simple relationship between survey estimates and their variances can be determined from a relatively small subset of possible estimates, that relationship can be used to approximate variances for other estimates. This is referred to as the generalized variance function (GVF) approach. The GVF approach is particularly useful for surveys for which it is impractical to compute and tabulate CVs for every potential estimate, or when it is not possible in advance to anticipate all estimates for which sampling error estimates may be required.

For IOCS, a GVF was estimated using the set of estimates and associated bootstrap variances from USPS-LR-I-12. This GVF is specified as follows:

$\ln(V) = a + b \ln(C)$, where

C = the cost estimate,

V = the relative variance of the cost estimate = $(CV)^2$,

a = 4.14590908, and

b = -0.943352.

This GVF was then evaluated for each IOCS-based cost estimate contained in Tables 1, 2, and 4a of witness Daniel's testimony, USPS-T-28. The results are provided in the attached table for the cost segment 3.1, 3.2, and 6.1 estimates.

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CVs for Cost Estimates of USPS-T-28 Table 1:

Costs by Ounce Increment for First-Class Single-Piece

(from USPS LR-I-91 detailed costs)

	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11+	Total
all mp (3.1) tally	5,688,966	1,046,407	506,122	357,547	143,170	94,341	65,956	65,005	42,948	42,304	23,260	8,076,026
cv estimate	0.5%	1.2%	1.6%	1.9%	2.9%	3.6%	4.2%	4.3%	5.2%	5.2%	6.9%	0.4%
window service (3.2) tally	716,028	49,149	19,864	15,205	7,834	5,013	3,169	2,452	2,207	1,878	2,459	825,257
cv estimate	1.4%	4.9%	7.5%	8.5%	11.6%	14.3%	17.7%	20.0%	21.0%	22.7%	20.0%	1.3%
delivery in-office (6.1) tally	1,071,699	115,867	40,767	27,972	12,610	7,091	4,231	4,781	3,189	1,949	1,751	1,291,907
cv estimate	1.1%	3.2%	5.3%	6.4%	9.2%	12.1%	15.5%	14.6%	17.7%	22.3%	23.5%	1.0%
Total of 3.1, 3.2, and 3.3	7,476,693	1,211,423	566,754	400,724	163,614	106,445	73,355	72,238	48,343	46,130	27,470	10,193,189
cv estimate	0.5%	1.1%	1.5%	1.8%	2.8%	3.4%	4.0%	4.1%	4.9%	5.0%	6.4%	0.4%

CVs for Cost Estimates of USPS-T-28 Table 2:

Costs by Ounce Increment for First-Class Presort

(from USPS LR-I-91 detailed costs)

	0 to 1	1 to 2	2 to 3	3 to 4	4 to 5	5 to 6	6 to 7	7 to 8	8 to 9	9 to 10	10 to 11+	Total
all mp (3.1) tally	2,100,683	191,020	63,609	45,344	10,313	9,605	2,354	2,923	1,270	3,810	1,709	2,422,927
cv estimate	0.8%	2.6%	4.3%	5.1%	10.2%	10.5%	20.4%	18.4%	27.3%	16.3%	23.7%	0.8%
window service (3.2) tally	38,043	1,841	204	111	377	23	13	10	11	9	126	40,613
cv estimate	5.5%	22.9%	64.7%	86.2%	48.4%	180.8%	238.2%	267.0%	255.8%	280.8%	81.1%	5.3%
delivery in-office (6.1) tally	606,998	45,769	8,792	4,082	1,223	1,012	519	754	201	188	238	668,395
cv estimate	1.5%	5.0%	11.0%	15.7%	27.8%	30.4%	41.6%	34.9%	65.1%	67.2%	60.1%	1.4%
Total of 3.1, 3.2, and 3.3	2,745,724	238,629	72,605	49,537	11,914	10,640	2,886	3,687	1,482	4,007	2,073	3,131,934
cv estimate	0.7%	2.3%	4.1%	4.9%	9.5%	10.0%	18.5%	16.5%	25.4%	15.9%	21.7%	0.7%

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CVs for Cost Estimates of USPS-T-28 Table 4a:

Regular and Nonprofit Periodicals Combined Unit Costs by Weight Increment

(from USPS LR-I-93 detailed costs)

	0 to 1	1 to 2	2 to 3	3 to 5	5 to 6	6 to 7	7 to 9	9 to 13	over 13	Total
all mp (3.1) tally	43,531	92,106	93,316	258,185	111,023	73,024	129,619	108,149	163,659	1,072,613
cv estimate	5.2%	3.6%	3.6%	2.2%	3.3%	4.0%	3.1%	3.4%	2.8%	1.1%
window service (3.2) tally	6	1,056	205	1,132	154	362	392	306	144	3,759
cv estimate	339.4%	29.8%	64.5%	28.8%	73.8%	49.3%	47.5%	53.4%	76.2%	16.4%
delivery in-office (6.1) tally	11,502	26,494	22,182	65,332	29,856	26,221	34,208	27,536	22,449	265,781
cv estimate	9.7%	6.5%	7.1%	4.3%	6.2%	6.5%	5.8%	6.4%	7.0%	2.2%
Total of 3.1, 3.2, and 3.3	55,040	119,656	115,703	324,648	141,033	99,608	164,220	135,992	186,252	1,342,152
cv estimate	4.6%	3.2%	3.3%	2.0%	3.0%	3.5%	2.8%	3.0%	2.6%	1.0%

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ANM/USPS-T2-14. USPS witness Sharon Daniel states that the "IOCS was not specifically designed for the purpose of measuring the impact of weight on costs." USPS-T-28, p. 4, lines 24-28.

(a) Do you agree?

(b) If your answer to part (a) is anything but unqualified agreement, please explain fully.

(c) If the Postal Service contends that the IOCS produces a valid and reliable measure of the effect of weight on costs, please produce all studies, analyses, and similar documents generated since Docket No. R97-1 that support this contention.

RESPONSE:

(a)-(b) I agree with Sharon Daniel's statement. I do not think that IOCS alone can measure the impact of weight on costs because it cannot be used to estimate volumes. However, the IOCS can produce reliable estimates for which it was not specifically designed. For example, it can be used to estimate costs by weight increment for various subclasses of mail. My response to ANM/USPS-T2-13 demonstrates that there are many weight increments for which the IOCS cost estimates have small CV's.

(c) Not applicable.

DECLARATION

I, Mark F. Ramage, hereby declare under penalty of perjury that the foregoing answers are true and correct to the best of my knowledge, information and belief.

Mark F. Ramage

Date: MARCH 7, 2000

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.

KN Hollies

Kenneth N. Hollies

475 L'Enfant Plaza West, S.W.
Washington, D.C. 20260–1137
(202) 268–3083 Fax –5402
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