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POSTAL RATE COMMISSION
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POSTAL RATE COMMISSION
OFFICE OF THE SECRETARY

SPECIAL SERVICES REFORM, 1996

Docket No. MC96-3

REVISED RESPONSE OF UNITED STATES POSTAL SERVICE
TO INTERROGATORY OF
THE OFFICE OF THE CONSUMER ADVOCATE
(OCA/USPS-83)

The United States Postal Service hereby provides the response to the following interrogatory of the Office of the Consumer Advocate: OCA/USPS-83, filed on September 18, 1996. The original response was filed on October 2, 1996.


The original response inadvertently failed to include the response to subpart (b)(iii) and misnumbered the responses to the following subparts.

Respectfully submitted,

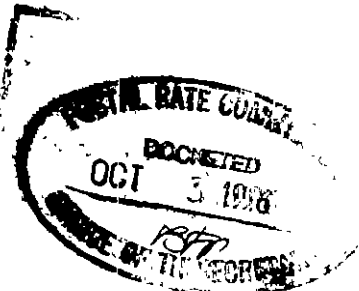
UNITED STATES POSTAL SERVICE

By its attorneys:

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October 3, 1996



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OCA/USPS-83. Please refer to the FY 1995 c.v. estimates for IOCS (SSR-90, pages 18-20) and to the documentation of the variance estimation formulas for the FY 1993 IOCS estimates at Tr. 1/56-58 of Docket No. R94-1, June 1, 1994. The response to interrogatory OCA/USPS-31a stated that the MC96-3 variance estimation formulas are "basically the same as the R94-1 formulas" for IOCS cost estimates. References to application of the R94-1 formulas to the MC96-3 IOCS cost estimates assume that the minor changes to the R94-1 formulas stated in response to OCA/USPS-31a have been implemented.

- a. Since "IOCS CAG B" does not constitute a certainty stratum for FY 1995 (refer to the response to OCA/USPS-59), is the variance formula for certainty strata (Tr. 1/56-57) correct for CAG B?
 - i. Was the CAG B R94-1 variance formula used for FY 1995 variance estimation for "IOCS CAG B?"
 - ii. If the CAG B R94-1 variance formula no longer applies for FY 1995, please provide the corrected formula and SSR-90 tables.
 - iii. If the CAG B R94-1 variance formula no longer applies for FY 1995 (but it was used anyway), please confirm that the effect of using the R94-1 variance formula for FY 1996 would be to understate variance. If you do not confirm, please explain.
- b. Please refer to the formula for $\text{var}(p_{ik})$ for the noncertainty strata at Tr. 1/57.
 - i. Please confirm that this formula represents the variance of a proportion estimate from a cluster sample design. If you do not confirm, please explain.
 - ii. Please confirm that variance formulas for cluster sample designs (with subsampling within selected clusters) generally have two terms—one capturing variance between the clusters (offices) and one capturing variance within clusters (tallies within offices). For example,¹ for subsampling with units of equal size, the formula would be

¹ See Cochran, W. (1977), *Sampling Techniques*, 3rd Ed., page 279.

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$$v(\bar{p}) = \frac{1-f_1}{n(n-1)} \sum_i^n (p_i - \bar{p})^2 + \frac{f_1(1-f_2)}{n^2(m-1)} \sum_i^n p_i q_i. \text{ If you do not confirm, please explain.}$$

- iii. Please confirm that IOCS sampling for the non-certainty strata is a cluster sample (office selection) with subsampling within office (employee selection). If you do not confirm, please provide the correct terminology.
- iv. Please confirm that the formula for $v(p_{ik})$ at Tr. 1/57 only captures the variance between clusters with the $1/[m_k(m_k-1)] \sum_j n_{kj}^2/[n_k/m_k]^2 * (p_{ijk}-p_{ik})^2$ term. If you do not confirm, please explain how sampling error introduced by subsampling within selected offices is accounted for. If you confirm, please confirm that the effect of omitting the within-cluster variance term is to understate variance. If you do not confirm, please explain fully.
- v. Please provide a textbook reference for the formula used for $\text{var}(p_{ik})$ at Tr. 1/57.

OCA/USPS-83 Response.

a.

- i. No.
- ii. The response to OCA/USPS-31.a indicated that an additional stratum was established for variance computations, and the formula for the noncertainty strata was used there. That additional stratum was in CAG B. SSR-90 tables were computed on that basis.
- iii. Not applicable. See (a)(i) and (ii), above.


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- b.
- i. Not confirmed. This formula represents the variance of a ratio estimate from a cluster sample design. The denominator is a random variable.
 - ii. Not necessarily. Ultimate cluster variance estimators could have one term.
 - iii. Confirmed.
 - iv. See (b)(ii), above.
 - v. See Cochran, W. (1977), *Sampling Techniques*, 3rd Ed., page 66.

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.


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