ORIGINAL

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

SPECIAL SERVICES REFORM, 1996

Docket No. MC96-3

RESPONSE OF UNITED STATES POSTAL SERVICE
WITNESS ELLARD TO INTERROGATORIES OF
THE OFFICE OF THE CONSUMER ADVOCATE
(OCA/USPS-T6—1-6)

The United States Postal Service hereby provides responses of witness Ellard to the following interrogatories of the Office of the Consumer Advocate: OCA/USPS-T6—1-6, filed on July 3, 1996, 1996.

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

Respectfully submitted,

UNITED STATES POSTAL SERVICE

By its attorneys:

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July 17, 1996

WITNESS: Timothy D. Ellard

OCA/USPS-T6-1. Please refer to page 9 of SSR-111. This section describes how the first sample box is determined when all boxes are at one location

a. Please confirm that the first sampled box is determined by the placement interval. For example if the placement interval is 2, then the first sampled box would be the second rented box. If you do not confirm, please explain.

b. Please confirm that if the placement interval is 2 or larger, then it is impossible for the first rented box to be included in sample. If you do not confirm, please explain.

c. Please confirm that if the placement interval is 3 or larger, then it is impossible for the first two rented boxes to be included in sample. If you do not confirm, please explain.

d. Please confirm that if the placement interval is $k \geq 2$ then it is impossible for the first k-1 boxes to be included in the sample. If you do not confirm, please explain.

e. The instructions on page 9 state, "Please do not place all 25 cards in the first 25 boxes, as these could be long-time box holders." Please confirm that there is a propensity for the first boxes to be associated with long-time box holders and for the last rented boxes to be associated with more recently rented boxes. If you do not confirm, please explain and reconcile with the page 9 instructions.

f. Please provide a distribution of placement intervals used in this survey by box size. For example, how many placement intervals of 1, 2, 3, ... , n were used for each box size, where n represents the largest computed placement interval.

g. Other than possibly the long-term box holders, are there any other identifiable groups of box holders that were systematically excluded or over represented in the sample? Please explain.

RESPONSE to OCA/USPS-T6-1.

a-d. Confirmed.

e. I cannot confirm this statement. I have no information on which to base the assumption that the first boxes in the sequence are more likely to be associated with long term box holders than are later boxes in the sequence. The statement cited in the instructions to

postmasters simply stated one possible reason that the cards should not be placed in a cluster, but spread out.

f. These data are not available to me because the postmasters were not asked to return their calculations to Opinion Research Corporation.

g. I have no information that would lead me to believe any subset of box holders is over or under represented in the sample.

OCA/USPS-T6-2. Please refer to page 9 of SSR-111. This section explains how the placement interval is used to select sample boxes when all boxes are at one location.

a. In the example, based on a total of 106 boxes, the first box sampled is the 4th rented box. Then every 4th box after that is sampled.

i. Please confirm that the 25th sampled box is box number 100. If you do not confirm, please explain.

ii. The instructions say to continue with every 4th box "until you have covered all boxes." Please explain whether you would include the 104th box in the sample (placing 26 cards) or whether you would exclude the 104th box from the sample.

b Suppose that there were 73 rented size 1 boxes, and your procedure is used to select a sample of size 25. Then the placement interval would be int(73/25) = 2.[1]

i. Please confirm that the first sampled box is the second rented box. If you do not confirm, please explain.

ii Please confirm that the 25th sampled box is the 50th rented box If you do not confirm, please explain.

iii. Please confirm that boxes 51, 52, ... , 73 are excluded from the sample. If you do not confirm, please explain.

iv. If boxes 51-73 would not be excluded from the sample, please confirm that boxes 52, 54, ..., 72 would be included in sample, so that 36 cards would be placed (instead of 25). If you do not confirm, please explain.

c. If there are n>25 rented, boxes, then please confirm:

i. The first sampled box is box int(n/25). If you do not confirm, then please explain.

ii. The last sampled box is box 25*int(n/25). If you do not confirm, please explain.

iii. Boxes 1, 2, ... , int(n/25)-1 are excluded from sample whenever n≥50. If you do not confirm, please explain.

iv. Boxes j, j+1, j+2, ... , n , where j=25*int(n/25)+1, are excluded from sample whenever n>25*int(n/25). If you do not confirm, please explain.

[1] The greatest integer less than or equal to x is referred to by int(x). Thus int (2.92) = 2.

d. Please confirm that as a rule the long-time box holders (lowest box numbers) and those with the highest box numbers have a greatly reduced (or zero) chance of selection as compared to the rest of the box holders at this location. If you do not confirm, please explain.

e. Page 32 of SSR-111 describes the second stage of sample selection as "a random sample of box holders." Please confirm that this box selection can not be considered random, considering that the first sample box is not randomly selected (it is completely determined by the number of rented boxes in the PSU), thus causing the first rented boxes to be systematically excluded from sample selection whenever the number of rented boxes is not an exact multiple of 25. If you do not confirm, please explain.

RESPONSE to OCA/USPS-T6-2.

2a i. Confirmed.

2a.ii. The 104th box would not be included in the sample.

2b.i-iv. Confirmed

2c.i-iv. Confirmed

2d. I cannot confirm the statement. Please see my Response to OCA/USPS-T6-1g.

2e. I confirm that this sample cannot be considered random. I used a systematic sample to keep the task uncomplicated while, at the same time, ensuring the cards were widely distributed.

OCA/USPS-T6-3. Please refer to pages 9-10 and 51-52 of SSR-111 for the correspondence between sample selection procedures and the computation of design or base weights. Suppose that the value of B_{12} was 73 and that there were more than 25 boxes of types 2 and 3 so that 25 boxes would be selected of each type.

a. Please confirm that 25 cards would be distributed to the box type 1 boxes of this PSU. If you do not confirm, please explain.

b. Please confirm that 25 out of 73 (or 34 25 percent) rented boxes would have been selected. If you do not confirm, please explain.

c. Please confirm that P_{12}=0.3425 for this example. If you do not confirm, please explain.

d. For this example, please confirm that the probability of selection for the first rented box and the last 23 rented boxes was equal to zero. If you do not confirm, please explain how these could be included in the sample.

e. If 24 of the 73 rented boxes have a zero probability of selection, then please confirm that the 25 selected boxes are selected from the 49 remaining boxes that are allowed a positive chance of selection. If you do not confirm, please explain.

f. Please confirm that the probability of selection for those boxes allowed a chance of selection, would be 25/49, or approximately 0 5102. If you do not confirm, please explain.

g. Please confirm that the P_{bz} probability you compute is not valid for the 49 boxes allowed a chance for selection and it is not valid for the 24 boxes that are not given a chance for selection. If you do not confirm, please explain.

RESPONSE to OCA/USPS-T6-3.

3.a-c. Confirmed.

3 d. This is confirmed. However, note that the process of placing cards was intentionally simplified at the possible expense of introducing bias. There was, however, no reason to expect any bias. The simplification was introduced to reduce more likely sources of bias from lack of cooperation by selected post offices, or misplacement of cards due to complexity of the allocation scheme.

3.e. This is confirmed. However the post-stratification is intended to provide compensation for potential bias.

3.f. This is confirmed.

3.g. These are confirmed. However, I have no reason to believe that the presence of this bias would have an important impact on the Findings of my Study.

OCA/USPS-T6-4. Please refer to the formula for P_{rbz} at the 4th line of page 52, SSR-111.

a. Please confirm that P_{rbz} refers to the probability of selection for an arbitrary box holder of box type b in PSU z. If you do not confirm, please explain.

b. Please confirm that the probability of selection for the r-th selected renter of the b-th box size in the z-th PSU is just 1. If you do not confirm, please explain how a selected renter would not be selected.

RESPONSE to OCA/USPS-T6-4.

4.a. This is confirmed. P_{rbz} does reflect the probability of selection for the *r*-th selected renter (an arbitrary box holder) of the *b*-th box size in the *z*-th PSU.

4.b. This is not confirmed. The probability of selection for the *r*-th renter of the *b*-th box size in the *z*-th PSU is given by:

$$P_{rbz} \equiv P_z \times P_{bz}, \forall r = 1,\ldots,n_{bz}$$

The only time this probability is equal to unity is when P_z and P_{bz} are both equal to one; a highly unlikely event.

OCA/USPS-T6-5. At page 51 of SSR-111, four steps of weighting are presented. These are described as: (1) computation of design or base weights, (2) adjustment for differential nonresponse, (3) adjustment for frame inadequacies, and (4) "cross-examination of final weights."

a. Please confirm that step 1 refers to the formula for D_{rbz} on page 52 of SSR-111. If you do not confirm, please explain.

b. Please confirm that the D_{rbt} on page 53 are the trimmed values of D_{rbz}. In other words, the D_{rbz} are trimmed, depend on z, but do not depend on t. If you do not confirm, please explain and provide a precise definition of D_{rbz}.

c. Please provide the formula or algorithm used to trim the design weights.

d. Please confirm that steps 3 and 4 are accomplished by the formula at the top of page 53 of SSR-111. If you do not confirm, please explain.

e. According to the formula at the top of page 53, the final weighting factor, F_{rbt}, does not depend on the value of z. Please confirm that probability of box selection does depend on z, and explain why your final weights do not. If you do not confirm, please explain.

f Please confirm that the survey estimate of B_{bt} would be given by $\sum_r \sum_z D^*_{rbz} I_{zt}$, where D^*_{rbz} refers to the trimmed design weights, and I_{zt} is 1 if the z-th PSU is tier t, zero otherwise. If you do not confirm, please explain and provide a formula for D_{rbt} as used in the formula at the top of page 53 of SSR-111.

g. If you confirm part e, above, please explain why it would be inappropriate to compute the final weighting factor using a formula such as $F_{rbtz} = D^*_{rbz} B_{bt} / \sum_r \sum_z D^*_{rbz} I_{zt}$.

h. Step 2 refers to an adjustment for differential nonresponse. Please provide a citation for the portion of the weighting documentation which describes how this is accomplished for your survey.

RESPONSE to OCA/USPS-T6-5.

5.a. This is confirmed. The design weight for the *r*-th selected renter of the *b*-th box size in the *z*-th PSU, D_{rbz}, was calculated by.

$$D_{rbz} = \frac{1}{P_{rbz}}$$

5.b. This is confirmed. The trimmed design weight for the r-th selected renter of the b-th box size in the z-th PSU, is given by D_{rbt}. This factor does depend on z and not on t. A better notation would have been D^{*}_{rbz}.

5.c. The trimming algorithm consisted of a simple method where excessively large weights (larger than three times the average weights) were trimmed and the excess weights were distributed among other weights. This weight trimming was compensated for implicitly by post-stratification.

5.d. This is not confirmed. Adjustment for frame inadequacies was accomplished by post-stratification as described by the formula at top of page 53 of SRS-111. Cross-examination of weights was done after computation of weights. This manual process has nothing to do with the referenced formula.

5.e. This confirms that the probability of box selection, P_{rz}, does depend on z. However, final weights do not. Final weights were calculated within post-strata defined by tier and box size.

5.f. This statement is not confirmed. The survey estimate of the number of box holders of size b in the t-th tier, B_{bt}, is given by:

$$B_{bt} = \sum_{r} \sum_{z} F_{rbz} \times I_{bt}$$

where I_{bt} is 1 when the corresponding respondent is a box holder of size b in the t-th tier. As a matter of fact, this is a parameter and not an estimate and therefore subject to zero variance. It is inappropriate to use the design weights for this purpose, since the design weights have been calculated using proxy MOS (household counts) instead of the number of box holders Moreover, in order to reduce variances, design weights have been trimmed. Please refer to page 32 of SSR-111 for more details.

5.g. We do not confirm the statement in OCA/USPS-T6-5e that refers to weighting.

5.h. Considering that the survey data were to be post-stratified to the target population counts, a separate nonresponse adjustment procedure was omitted for this study.

OCA/USPS-T6-6. Please refer to the sample disposition for ID number 11 at page 42 of SSR-111

a. Please confirm that this line refers to a unique sampled PSU.

b. Please explain what this number represents. For example, of the 75 sampled boxes holders, does this mean than an attempt was made at calling 33 of them? or, does it mean that a total of 33 calls were made, some of them repeat calls, to a smaller number of sample box holders?

c. This line has an entry for 7 "renters completes " Does this mean that the response rate for this PSU was 7/75, 7/33, or something else Please explain.

d. Please explain how the response rate (or nonresponse rate) computed from this sample disposition table is used in step 2 of the weighting process described on page 51 of SSR-111.

e. This line contains an entry for 63 "waiting call attempts." Does this mean that 63 call attempts were made to the 18 persons waiting for a box (ID no. 11, page 34 of SSR-111)? Please explain.

f. This line contains an entry for 6 "waiting completes." Does this mean that a total of 6 respondents of the 18 persons waiting for boxes actually provided a complete response to the questionnaire? Please explain.

RESPONSE to OCA/USPS-T6-6.

6.a. This is confirmed. This is a continuation of the line that starts on page 34 and refers to a unique PSU. Going back to page 34, we can see that 16 renter cards were received from this location. Seven interviews with renters were completed.

6.b. Call attempts, in this case, refer to dialings. We made thirty-three calls to 16 locations, to complete seven interviews.

6.c. A response rate might consider three levels of response, first by the postmasters, then to the card placement (16 responses to 75 placements), and finally to the phone calls (seven of fifteen).

6.d As noted in the Response to OCA/USPS-T6-5 h, a separate non-response calculation was not conducted.

6.e. The waiting study has not been included in my Testimony.

6.f. See my Response to OCA/USPS-T6-6.e

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.

Kenneth N. Hollies

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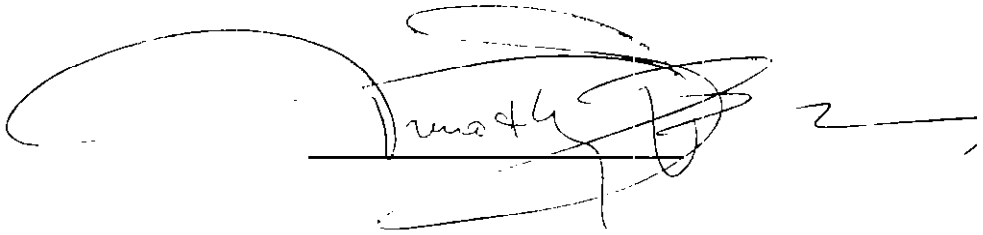
July 17, 1996, 1996

DECLARATION

I, Timothy D. Ellard, declare under penalty of perjury that the foregoing answers are true and correct, to the best of my knowledge, information and belief.



Dated: July 17, 1996