USPS–RT–5

BEFORE THE

POSTAL RATE COMMISSION

WASHINGTON, D.C. 20268-0001

Docket No. R2000–1

POSTAL RATE AND FEE CHANGES, 2000

REBUTTAL TESTIMONY

OF

CARL G. DEGEN

ON BEHALF OF THE

UNITED STATES POSTAL SERVICE

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AUTOBIOGRAPHICAL SKETCH

My name is Carl Degen. I am Senior Vice President of Christensen Associates. Details of my training and experience appear in my direct testimony in this docket (USPS–T–16).

I. PURPOSE AND SCOPE (A GUIDE TO MY TESTIMONY)

The purpose of this rebuttal testimony is to respond to issues raised by various intervenors with respect to my direct testimony in this docket. My discussion follows the logic of the Postal Service's methodology. I discuss the separation of clerk and mail handler costs into mail processing, window service, and administrative components. Next, I address issues related to the volume-variability of clerk and mail handler mail processing costs. Then, I respond to criticisms of the Postal Service's methodology for distributing the volume-variable mail processing costs to subclass. In Section V, I highlight some of the Periodicals Operation Review Team observations that explain increasing Periodicals costs, so that the Commission can see that those costs have been incurred for the benefit of Periodicals and that no reduction in Periodicals costs, beyond the cost savings already presented by the Postal Service, is justified. In the last section of this testimony I address some of AAP witness Siwek's criticisms of the Bound Printed Matter survey performed by Christensen Associates, on which Postal Service witness Crum relied.

II. SEPARATION OF CLERK AND MAIL HANDLER COSTS AT MODS OFFICES INTO THE MAIL PROCESSING, WINDOW SERVICE, AND ADMINISTRATIVE COMPONENTS SHOULD USE MODS OPERATION CODES

In Docket No. R97–1, the Postal Service proposed that clerk and mail handler costs for MODS offices be separated into mail processing, window

service, and administration using the MODS codes rather than Question 18, as was done historically. The partition based on MODS codes results in some costs "migrating" from window service and administration to mail processing. The change was made because "the main concern is identifying the activities actually performed by the employees clocked into the operation in a cost pool in order to ensure an accurate distribution of those costs" (Docket No. R97–1, USPS–T–12 [Degen], page 7, lines 3–6). In the current docket and in Docket No. R97–1, witness Sellick has opined that the migration "should be reversed to ensure treatment consistent with the Commission's established practice" (Tr. 27/13126, lines 4-5). In fact, witness Sellick expressly denies that his testimony indicates that the IOCS-based partition results in more accurate cost estimates (Tr. 27/13134–5). Furthermore, witness Neels (UPS–T–1), upon whose testimony witness Sellick relies for mail processing variabilities, suggests that the Postal Service's change in methodology does not appear to be "of a significant nature" (Tr. 27/12940) for clerk and mail handler variabilities. In short, the UPS witnesses provide no operational or economic grounds for the IOCS-based cost partition.

In the Commission's Docket No. R97–1 *Opinion and Recommended Decision*, it stated that:

> The variability of Segment 3 costs depends on whether a specific cost element is categorized as administrative, window service, or mail processing, before its variability is evaluated. For this reason, adhering to the established variability assumption for mail processing costs requires adherence to the established apportionment of Cost Segment 3 costs among its components, based on IOCS activity codes. Accepting witness Bradley's MODS pool variabilities, as the Postal Service and the presort mailers propose, requires accepting the reapportionment of Cost Segment 3 costs that is implied by organizing Segment 3 activities by MODS codes (PRC's *Opinion and Recommended Decision*, Volume 1, page 129).

The Commission is correct that the partition impacts the volume-variability of Segment 3 costs and that, if the Commission accepts the Postal Service's volume-variability analysis in this proceeding, it would be most accurate to adopt the MODS-based partition of clerk and mail handler costs. However, even if the Commission again fails to adopt measured volume-variabilities for clerk and mail handler costs, it should adopt the Postal Service's partition of MODS office costs based on MODS codes. The issue is not adherence to "the established variability assumption." Rather, the issue is: "What is the most accurate method for measuring volume-variable clerk and mail handler costs?"

MODS operation codes are the most accurate way to partition clerk and mail handler costs into mail processing, window service, and administrative activities. Most of the "migrated costs" are associated with IOCS tallies that would be classified as representing administrative activities using IOCS question 18, part G. We know, from the MODS codes of those tallies, that the observed employees were clocked into MODS Function 1 or Function 4 support operations. The Postal Service's methodology correctly distributes those costs based on the supported Function 1 or Function 4 operations, whereas the IOCS-based method ignores the MODS information and inappropriately treats the tallies as representing general administrative functions.

Witness Stralberg's opposition to the MODS-based partition largely stems from the existence of tallies that "migrate" from the window service component to Function 4 operations, mostly Function 4 support. In this docket he says, "Since Van-Ty-Smith's program includes a window-service-based distribution key for Function 4 support pool costs, the potential distortion caused by the presence of window service costs in cost segment 3.1 would appear to be less than in Docket No. R97–1" (Tr. 24/11390, lines 3–6). Witness Stralberg advocates the

distribution of not-handling costs in these support cost pools "using a window-service-based distribution key" (Tr. 24/11390, lines 8-9).

The basis for witness Stralberg's opinion is anecdotal evidence regarding the sharing of clerks among tasks without re-clocking that he collected on Periodicals Review Team visits. I do not dispute that this occurs, but the extent is unknown. However, we do know that clerks who move between mail processing and window service can perform only very limited functions. In order to sell stamps, window service clerks are given individual responsibility for their stamp stocks, which are typically worth in excess of $50,000. Accountability is maintained through regular audits that are very time consuming. Mail processing clerks that are shared on an ad hoc basis would not have stamp stock and could not conduct financial transactions. Mail processing clerks observed by IOCS tally takers in the window service unit are most likely retrieving held mail, retrieving collection mail from the window, or assisting with other types of pickups.

In arguing that all migrated window-service not-handling costs be distributed using a window-service distribution key, witness Stralberg is arguing for the introduction of bias. We know that the migrated costs would not be associated with postage sales and other financial transactions, which comprise the majority of the costs entering the window-service distribution key.

The protestations of witness Stralberg notwithstanding, the Postal Service's proposed partition of clerk and mail handler costs using MODS codes should be adopted without modification. It is a more accurate method than the IOCS-based method regardless of the Commission's decision on measured volume-variabilities.

III. THE POSTAL SERVICE'S MEASURED VOLUME-VARIABILITIES FOR MAIL PROCESSING COSTS ARE SIGNIFICANTLY MORE ACCURATE THAN THE COMMISSION'S IOCS-BASED METHOD AND SHOULD BE ADOPTED

IIIA. OPERATIONAL ANALYSIS IS THE FOUNDATION

The Docket No. R97–1 and R2000–1 proceedings have been marked by considerable debate regarding the proper method of measurement of the volume-variability of mail processing costs. UPS and the OCA have been the primary opponents of the Postal Service's estimated volume-variabilities. The arguments of their respective witnesses, Neels and Smith, suffer from the same flaw—they do not address the fundamental question before the Commission. In direct testimony in the current proceeding, witness Smith tries to state the question succinctly, but there are telling omissions in his statement. He says, "Volume-variability for mail processing is defined as the percentage change in cost that results from a percentage change in volume"[1] (Tr. 27/13153, lines 4–6). This is a good start, but a more complete statement of the question at hand is: "If Postal Service volume increases as forecast for the test year, how much will

[1] In the copy of witness Smith's direct testimony originally filed with the Commission, the quoted sentence ended with the phrase "holding delivery points and other non-volume factors constant." Witness Smith removed this phrase in an erratum filed June 28, 2000, referenced in his response to USPS/OCA–T4–33 (Tr. 27/13284). The change to witness Smith's testimony appears to be motivated by his unwillingness to take a stand on the issue of whether or not "growth" in delivery points must be considered part of the growth in volume. This is surprising given that, in his response to an earlier interrogatory, witness Smith clearly states, "There could be a growth in volume with no growth in delivery points. Conversely, conceivably, there could be a growth in delivery points without a change in volume" (Tr. 27/13254). The qualification that witness Smith's "erratum" removed is crucial to separating the costs associated with volumes from those caused by deliveries or other non-volume factors.

costs by subclass increase, holding non-volume factors, such as delivery points, constant?"

The differences in the two statements of the issue are enormous. My statement of the problem makes it clear that we are talking specifically about the Postal Service, we are talking specifically about the volume increase expected for the test year, and, we are talking about holding non-volume factors, such as delivery points, constant. *This accurate and straightforward statement of the* issue can be used to filter out the irrelevant alternatives that witnesses Neels and Smith used to successfully confuse the Docket No. R97–1 proceeding and continue to advance in this proceeding.

Proceeding from a clear statement of the issue, the steps to measuring volume-variability are as follows.

- Understand the pattern of expected volume growth for the test year.
- Understand what cost-causing factors will vary in response to volume growth in the test year.
- Develop and estimate models that reflect the pattern of expected volume growth and hold non-volume cost-causing factors constant.
- Review the resulting estimates for robustness and reasonableness vis-à-vis the structure of each operation.

By following the above procedure, the Postal Service has developed reliable estimates of mail processing volume-variability factors. As I will discuss below, none of the "alternatives" offered by witnesses Neels and Smith is adequate because it either violates our understanding of the pattern of expected volume growth, fails to hold constant non-volume factors, or does not reflect the extent to which changes to the structure of Postal Service operations can occur over the rate cycle. The "alternatives" of witnesses Neels and Smith are inconsistent with the facts and should be rejected as a basis for volume-variability.

IIIB. OCA WITNESS SMITH MISINTERPRETS MY GRAPHICAL ANALYSIS

My direct testimony (USPS-T–16, pages 24–29) includes a discussion of the graphical analysis that witness Smith claimed to represent "visually compelling" evidence of 100 percent variability in the Docket No. R97–1 proceeding. In response to my discussion, OCA witness Smith says, "Mr. Degen's graphs can be used to justify any of the three techniques under consideration in this case—fixed effects, pooled, or 'between'" (Tr. 27/13207, lines 2–3). Witness Smith has missed the point of my testimony. I agree that one could draw graphs to justify any of the listed models. Furthermore, the graphs witness Smith reproduces well illustrate the differences among the assumptions underlying each of the models. However, witness Smith's interpretation of the graphs is wrong on two major points. First, the graphs depict a situation in which the fixed-effects model is *by construction* the correct model. Thus, witness Smith's "belief" that the "pooled" line represents the correct cost relationship in the graphs demonstrates the folly of visual analysis, as there is no relationship at all between the pooled line and the data I generated for the illustrations. Second, while it may be possible to draw graphs to depict a situation in which any of the models might be correct, only the fixed effects model is consistent with both the data and the fact that there are cost causing factors, unrelated to mail volume, which will not change over the rate cycle—the relevant horizon for the analysis.

Witness Smith says, "The facility by facility plots (labeled "Plant A" and "Plant B") are the types of plots that both Dr. Bradley and Dr. Bozzo generate and estimate. These are short term plots of data" (Tr. 27/13212, lines 11–13).

Regardless of what they are called,[2] my graphic illustrations are consistent with the fact that there are cost-causing characteristics that will not change in response to test-year volume increases. During oral cross-examination, witness Smith was asked about his plot showing an expansion path along the line corresponding to a pooled or cross-section model.

Postal counsel asked:

> Does your response indicate that point C would not necessarily represent the optimal capacity to [which] point A would expand if the amount of processing it performed increased from TPH sub zero to TPH sub 1?

And witness Smith replied:

> *C is a different plant*, and so I have trouble talking about plant A expanding. In fact, Dr. Bozzo has indicated that due to the fixed effects of various plants, they have different costs, so one could imagine that, for example, *a rural plant that expanded would be a bit different from an urban plant* [emphasis added] (Tr. 27/13335, lines 8–17, in reference to the diagram at 13211).

Witness Smith is prolonging analysis to which he already knows the conclusion. He acknowledges that fixed effects exist and that "rural" plants will be different from "urban" plants, yet continues to suggest that pooled and cross-section models must be considered. Fixed-effects that will not change with volume do exist, and any model that does not control for them is biased. The "between" estimator, that witness Smith calls the "least bad," is irrelevant because it is inconsistent with the facts regarding the pattern of expected volume growth and changes in plants that will occur over the rate cycle. If witness Smith wants to argue for consideration of the "between" estimator, he should have to do more

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[2] Short run and long run are relative terms in economics that reflect the extent to which inputs are assumed to be changeable. Continued used of these terms confuses the record. In my mind, the horizon at issue is the period between the base year and the test year, which is also a reasonable and practical approximation of the expected rate cycle. Considerations of other horizons are diversions that are irrelevant to the question before the Commission.

than argue it is a conceptual possibility. He should have to show that its assumptions are consistent with the pattern of expected growth and the expected changes in operations over the rate cycle. He cannot do so because it is not true.

IIIC. MODS DATA ARE USEABLE

MODS data are not perfect, but they are more than adequate for estimation of volume-variability factors. The models based on MODS data are clearly better than the alternative, which relies on no data at all. The R^2 statistics obtained in the various models that have been considered are all very high. This means that there is very little noise in the data. There is absolutely no indication that errors in the MODS data are materially distorting the measurement of volume-variability. As a population of data, rather than a sample, the MODS data have an enormous advantage of sheer sample size over survey data. Even after application of sample selection criteria to screen for data errors, the breadth of the sample is far greater than what could be obtained by any feasible sampling effort. Furthermore, Dr. Bozzo (and Dr. Bradley) have applied sample selection *criteria and specified models designed to avoid any bias in the estimates of* volume-variability.

Whatever imperfections exist in the MODS data set, it more than meets any reasonable threshold in terms of being an improvement over the IOCS-based determination of variabilities, the ad hoc nature of which is thoroughly documented in Dr. Bozzo's testimony (USPS–T–15, pages 4–13). It is somewhat ironic that Dr. Neels, after criticizing MODS data at the beginning of his testimony (Tr. 27/12796–12798), uses FHP as a proxy for volume and calculates the elasticity of TPH with respect to FHP, when FHP is undisputedly the most error-prone of the MODS data. Witness Neels may argue that he is

trying to use the best data available, which is precisely what the Postal Service has argued. The MODS hours and TPH are the best data available, and they offer material improvements over the existing method of using no data at all.

IIID. OPERATIONAL ANALYSIS LEADS TO THE CONCLUSION THAT MEASURED VOLUME-VARIABILITY WILL BE LESS THAN 100 PERCENT

IIID.a Operational Analysis Has Two Roles

Operational analysis plays two roles in developing measures of volume-variability. First, it provides our understanding of the pattern of expected volume growth and the cost-causing factors that will not vary as the result of volume growth by the test year (USPS–T–16, page 6, lines 18–23). Second, it creates our a priori expectation against which we can assess the reasonableness of the results. However, our operational conclusion that volume-variability is less than 100 percent is in no way imposed on the econometric models. The models are unconstrained and could yield estimates of 100 percent or more, if the data so dictate.[3] In this section I will discuss the operational analysis of UPS witness Neels (Tr. 27/12819–12827). My discussion follows the sub headings in witness Neels's testimony.

IIID.b Setup and Takedown Time

Witness Neels agrees that setup and takedown times cause volume-variability to be less than 100 percent for some range of increase in volume. He states,

[3] Witness Neels concurs. In his response to USPS/UPS–T1–38, he says, "In general, I believe that a translog model, such as the one used by Dr. Bozzo, can yield a 100 percent (or greater) variability" (Tr. 27/12981).

> Mr. Degen argues that setup and takedown times for an operation represent a fixed cost that does not vary with the volume of mail processed. Over at least some range of volumes, Mr. Degen is almost certainly correct. For small increases in volumes, these costs will remain fixed and with growth they will be amortized over ever larger volumes, giving the result that such operations will exhibit economies of scale (Tr. 27/12820).

Witness Neels further indicated that "[r]eplication of setup and takedown times in response to continuing growth in volume could create a situation in which costs increase in a stepwise fashion in direct proportion to volume" (Tr. 27/12822, lines 7–9). His reasoning is incorrect for three reasons. First, decisions to deploy automation are not always tied to volume changes. Consider FSMs as an example. This record includes substantial evidence that some test-year deployments are a function of the availability of new technology rather than a specific response to test-year volume growth.[4] Second, for there to be 100 percent volume-variability, all plants would need increased machine deployment in proportion to their respective increases in test-year volumes. Witness Neels has not shown that this is true. In fact, all evidence suggests that this will not be the case. Third, witness Neels seems to be under the impression that each machine has only one set-up and take-down each day or even each tour when he argues that "[r]eplication of setup and takedown times in response to continuing growth in volume could create a situation in which costs increase in a stepwise fashion in direct proportion to volume" (Tr. 27/12822, lines 7–9). This is not the case. Scheme changes, not volumes, drive the number of setups and takedowns, particularly in secondary scheme operations. The number of

[4] Witness Neels, in his section on automation and mechanization, cites four examples of additional automation deployment described by witness Kingsley (USPS–T–10). These illustrate the point that machine deployment is not driven by volume. The deployments quoted there include no mention of volume. In fact, with respect to MLOCRs it says, "[N]o additional deployments are planned" (Tr. 27/12778, lines 4–25).

schemes is driven by the network (number of delivery units and the number of delivery points) independent of volume. Dr. Neels step function argument may apply, at most, to the cases where machines run dedicated schemes for entire tours.

IIID.c Volume Growth in the Shoulders of the Peak

Witness Neels says, "What Degen ignores is the possibility that growth in volume could occur during the peak periods that govern staffing levels in these operations, rather than in addition to the shoulders of the peak when extra capacity is available" (Tr. 27/12825, lines 3–5). Witness Neels's statements flatly misrepresent the clear meaning of my testimony. I do not ignore the possibility that increases might occur "at the peak." As I said explicitly in my direct testimony, "Increases in total collection volume *that exhibit the current time distribution* will not increase cancellation hours proportionately because the staffing early and late in the operation will not need to change—some of the waiting time will simply be converted to processing time" [emphasis added] (UPS–T16, page 37, lines 20–24).

Witness Neels goes on to say that "[i]f all volumes grow proportionately—including the peak period volume that sets staffing levels—one would expect staffing levels to grow proportionately in response" (Tr. 27/12825, lines 7–8). This statement reveals a fundamental misunderstanding of Postal Service staffing—peaks and shoulders are not staffed the same. Additional peak volumes may increase peak staffing, but it need not increase shoulder staffing. In an operation like cancellation there is nearly always excess capacity at start-up and finish. Increases in overall volume may increase peak staffing, but staffing in the shoulders will not change. Similarly, staffing of container sortation (opening) both inbound and outbound has excess capacity at startup and finish.

The unfounded assumption on which Dr. Neels's arguments fail is his presumption that it is impossible to adjust staffing at the peak without directly and proportionately adjusting staffing for the shoulder periods. If peak and shoulder staffing automatically moved in lockstep, his claims might have some validity. Peak and shoulder staffing do not move in lockstep, and to the extent that staffing adjustments at the peak are not matched by staffing adjustments in the shoulders, the necessary result will be volume-variability less than 100 percent.

IIID.d Gateway Operations

Witness Neels says, "The need to make full use of downstream processing capacity implies that gateway staffing levels are in fact volume driven" (Tr. 27/12825, lines 19–20). Dr. Neels misunderstands the role of the gateway. Gateways are generally capable of much more throughput than the downstream operations they feed. The issue is not that gateways, such as collection, must be staffed to get *all mail* downstream as soon as possible. Rather, as I stated in my direct testimony, "Early in the operation, as collection mail arrives, *inventories of mail must accumulate quickly at downstream operations* to insure no interruption due to inadequate mail supply. Late in the operation, cancellation must be staffed to *quickly clear any late arriving volumes*" [emphasis added] (USPS–T–16, page 37, lines 17–20). Increased mail volume in the shoulders simply means more of the gateway (shoulder) time is spent processing rather than waiting, as I explained in my direct testimony (see USPS–T–16, page 37, lines 23–34).

IIID.e Worker Pacing

Witness Neels argues, for a number of reasons, that my analysis of worker pacing assumes "an extremely short run view of volume-variability" (Tr. 27/12827, lines 9–10). Some of his confusion may be my fault. Witness Neels

interprets my statement that "manual sortation relies heavily on the discretionary effort of employees" (USPS–T–16, page 41, lines 25–26) to apply only to random fluctuations in daily mail volume. This is not the case. In my direct testimony I should have made it clear that, by not adding additional manual clerks as average daily volume grows, the Postal Service is able to capture this discretionary effort. Furthermore, spreading the costs associated with "fixed" activities, such as final pull-downs of cases, over larger volumes of mail, would increase operation productivity, and allow volume growth to be accommodated without a proportional increase in work hours, and without requiring an increase in the effort exerted by manual clerks. Volume growth without a proportional increase in work hours means volume-variability is less than 100 percent.

IV. THE COMMISSION SHOULD ACCEPT THE POSTAL SERVICE'S DISTRIBUTION OF VOLUME-VARIABLE COSTS TO SUBCLASS

IVA. THE COMMISSION NEEDS THE MOST ACCURATE ESTIMATES OF MARGINAL COSTS

The need for marginal cost estimates in the rate setting process derives from the Postal Reorganization Act's mandate that prices be set to cover costs causally attributable to the subclass of mail. Witness Neels's assertion that mail processing costs caused by deliveries should be included in volume-variabilities (Tr. 27/12845, line 15–16) is at odds with basic economics and the plain meaning of *volume-variability*.

In his direct testimony, witness Neels pays lip service to the fact, which is described at length in my direct testimony (USPS–T–16) and witness Kingsley's testimony (USPS–T–10), that it is costly to the Postal Service to provide service to its ever-growing network. The Commission acknowledges the distinction

between volume and network in its use of volume-variable transportation and city carrier street costs. However, Dr. Neels presses his argument by incorrectly trying to tie the network-related costs to volumes anyway (Response to USPS/UPS–T1–5, Tr. 27/12905–6). When pressed, witness Neels admitted that the costs of the network that are independent of volumes would not be attributable to subclasses as marginal (volume-variable) cost or incremental cost, but claimed that he could not think of any such costs (Response to USPS/UPS–T1-37, Tr. 27/12977–8). However, the testimonies of witness Kingsley and myself, which witness Neels cites, include descriptions of operation set-up costs that are determined by the number of delivery units, not volumes (See for example USPS–T–10, page 21, lines 11–15 and USPS–T–16, page 45, lines 17 –20).

Once variabilities have been determined, calculating volume-variable costs by subclass is a zero-sum exercise. All volume-variable costs must be distributed to the subclasses of mail that cause them. The Postal Service method partitions cost into segments and components with the intent of more accurately identifying the costs incurred for each subclass. In Docket No. R97–1, the Postal Service refined its methodology for clerk and mail handler cost estimation. A major part of the Postal Service's new methodology was the measurement of volume-variability for mail processing costs. However, an equally important part of the new methodology was the introduction of a new partitioning of mail processing costs designed to more accurately identify use of resources by class of mail.

In Docket No. R97–1, the Commission adopted the Postal Service's MODS-based partition of mail processing costs into cost pools, but issues of cost distribution within those cost pools still remain. In deciding among the distribution alternatives proposed by the Postal Service and the intervenors, it is

important to understand that broader is not always better. Unsupported allegations of bias do not justify broader distribution, for the same reasons that we do not simply divide total costs by total volumes. A broad distribution of costs, when it is not justified, can be more wrong than a narrow distribution of costs. There is no easy way out. Every decision the Commission makes in this regard has winners and losers. The Commission must evaluate all the evidence when making its decisions and choose the alternative best supported by the facts.

IVB. THE POSTAL SERVICE'S MIXED-MAIL DISTRIBUTION IS THE MOST ACCURATE

IVB.a Item and Container Information Must Not Be Ignored, Even If Broader Distribution of Mixed-Mail Costs is Adopted

The item and container type of mail being handled is information from which we can more accurately infer the subclass of mail being handled. Ignoring this information biases the distribution of costs. In Docket No. R97–1 there was discussion of the strong correlation between container type and class of mail. Witness Cohen compiled a table showing that direct tallies of green sacks are observed to contain First-Class Mail 73 percent of the time and brown sacks contain Periodicals mail 72 percent of the time (Docket R97–1, Tr. 26/14048). The purpose of witness Cohen's table was to show that the correlations are not 100 percent. However, as I said in my rebuttal testimony in that docket,

> The existence of <u>any</u> correlation between item [and container] type and subclass means that bias will likely result if item [and container] type is not used to partition mixed mail costs (Docket No. R97–1, Tr. 36/19331).

In response to MPA/USPS–T16–17 (Tr. 15/6515–32), I provide the results of a broad distribution of allied mixed mail costs within item and container type.

The broad distribution can be viewed as increasing the sample of direct tallies from which the distribution key is developed for each item and container type. While I believe that the Postal Service's method is more accurate, broad distribution within item and container type is an acceptable alternative.

Witness Stralberg was absolutely right when he said that "[m]aintaining this broad distribution [the PRC's Docket No. R97–1 method] effectively means *ignoring the container and item type information in the allied cost pools*" [emphasis added] (Tr. 24/11353). Witness Stralberg can justify this because he "believes" there is the "possibility" of bias. The Commission must act on the facts. Absent proof and quantification of the bias, the Commission should accept the Postal Service's proposed method or, at least, only apply broad distribution of allied mixed costs *within* item and container type.

IVB.b There is No Evidence of Bias in Direct Pallet Tallies

There is no evidence of bias in sampling pallets as alleged by witness Stralberg. In my direct testimony, I present quantitative analysis of the potential bias in the Postal Service's mail processing cost distribution methodology (USPS–T–16, pages 58–68). None of this analysis is rebutted or even discussed by witness Stralberg. Instead he simply reiterates his concern that there are "severe possibilities of bias" (Tr. 24/11353, line 21, with details at Tr. 24/11387–8, lines 7–19 and 1–2). The Commission accepted the Postal Service's use of items and containers in Docket No. R97–1 with the exception of the Commission's broad distribution of allied. The only new analysis is quantitative and it supports the Postal Service's methodology. The Commission should continue its use of the Postal Service's method for non-allied and extend it to allied, as well.

IVB.c Use of Question 19 Data, in Lieu of Item and Container Information, to Distribute Allied Mixed Mail Costs Discards Useful Information and Tells Us Nothing About What an Employee Was Doing—Only Where the Tally Taker Observed Her

Witness Stralberg argues that Question 19 data can improve the accuracy of the cost distribution for Function 4, non-MODS, allied, and "support" cost pools (Tr. 24/11379, lines 16–20). However, substituting Question 19 data for item and container information discards shape information for 75 percent of the MODS Allied mixed-mail costs. Earlier in witness Stralberg's testimony he states, "The objective of postal costing is to identify causal links between accrued costs and mail subclasses" (Tr. 24/11373, lines 12–13). Yet, Question 19 data tell us nothing about the causal relationship between subclasses of mail and a worker's time, especially when the worker is clocked into Function 4, non-MODS, allied, or support cost pools.

In Table 1, I show the identification of mixed-mail costs by shape from Question 19 data compared to the shape information obtained from item and container type. For the shape-specific mixed cost pools, the correlation is very high, but not perfect. This indicates that, for a small amount of costs, the Question 19 method would distribute costs contrary to the shape indicated by the container being handled. However, the most important point from Table 1 is that the Question 19 method provides shape information for only 14 percent of mixed-mail costs. Item and container information provides the shapes for another 75 percent of mixed mail costs, but witness Stralberg's method discards it.[5]

The Postal Service's methodology distributes empty container costs associated with each of these cost pools using the distribution of costs by

[5] Calculated as the sum of letter, flat, parcel, and class costs (based on item/container for cost pool 5750) divided by total mixed-mail costs.

container type. When a platform worker, creating a flat-bundle or parcel sorting corral, is tallied retrieving an empty hamper from a BCS operation, Question 19 will report the BCS location. If, as witness Stralberg proposes, those costs were distributed only to letters, then flat and parcel costs would be biased downward. In Function 1, non-allied cost pools, the consistency between Question 19 and MODS operation is extremely high. However, the activities of Function 4, non-MODS, allied, and support are much less location specific. In these cost pools, some workers are required to move among activities, transporting full and empty containers.[6]

The Postal Service's method ignores the location of the tallied worker and distributes the associated costs using the cost distribution by container type within the Function 4, non-MODS, and allied pools.[7] Movement of containers, container retrieval, and corral set up are non-trivial portions of Function 4, non-MODS, and allied activities.

IVC. BROAD DISTRIBUTION OF ALLIED NOT-HANDLING COSTS IS NOT SUPPORTED BY THE FACTS AND WILL BIAS PERIODICALS COSTS DOWNWARD.

Witness Stralberg argues that not-handling costs are increasing. There was a time when not-handling costs increased as a percentage of the total costs, but that proportion has been very stable in recent years as shown by the following table.

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[6] Workers clocked into support may be collecting or relaying data. In Section IVD below, I discuss the fact that mail handling is incidental to, rather than the cause of, support activities. My discussion here will be confined to the non-support activities.

[7] Platform costs are distributed using direct tallies from all allied pools. Opening and pouching use direct tallies within their respective pools.

Comparison of Not-Handling Costs
Relative to Total Clerk and Mail Handler Mail Processing Costs
(dollar-weighted tally costs)

Fiscal Year	Not-Handling (%)
1993	45
1994	46
1995	45
1996	45
1997	47
1998*	46

* Uses the Postal Service Docket No. R2000–1 partition of clerk and mail handler costs. For FY93–FY97, the Postal Service's Docket No. R97–1 methodology is used.

Witness Stralberg stated very clearly during oral cross-examination that he believes IOCS is accurately measuring the level of not-handling costs.

Postal counsel asked,

> Are you saying that the observed not-handling time is wrong or just that it could or should be lower?

Mr. Stralberg answered,

> I am not saying it is wrong. I believe that the IOCS actually -- accurately reflects the fact that there is a lot of not-handling time (Tr. 24/11484, lines 12–16).

Mr. Stralberg's only issue with not-handling time, from a costing perspective, is that he believes there should be broad distribution of allied not-handling costs because they are not caused in proportion to the direct and mixed tallies observed within allied operations. He says, "Costs at allied operations, particularly their large 'not-handling' component, are mainly driven by piece distribution requirements" (Tr. 24/11353, lines 9–10). Based on this conclusion, witness Stralberg recommends that allied not-handling cost be broadly distributed irrespective of the cost pool in which they were incurred. I disagree for several reasons.

First, his argument applies, at most, only to platform operations, which represent 42 percent[8] of MODS office allied not-handling costs. The other two large components of allied are opening and pouching. Opening units sort containers of mail, which will be sorted as pieces, but also containers with mail that will be sorted as bundles, and containers that will not be opened. Pouching operations are essentially bundle sort operations. Witness Stralberg's arguments simply do not apply to the large, non-platform portion of allied operations.

Second, witness Stralberg's assertion that all platform not-handling time is caused by mail that requires exigent processing is not true. As I explained in my direct testimony, workers clocked into platform operations also have responsibility for movement of mail to operations within the plant (see USPS–T–16, p. 50). The movement of mail inherently involves not-handling time. This was acknowledged by witness Stralberg during written and oral cross-examination (see Tr. 24/11435 and 11482, lines 4–14). In particular, the mail that witness Stralberg argues should not bear any not-handling costs, cross-docked pallets, involves not-handling costs by his own admission.

With respect to time spent waiting for trucks, witness Stralberg simplistically characterizes not-handling costs as being "incurred in order to serve other operations effectively, e.g. getting the mail prepped and to piece distributions as quickly as possible" (Tr. 24/11376, lines 16–18). As I explained in my direct testimony, "the waiting time is necessary so the vehicles can be quickly loaded or unloaded" (USPS–T–16, page 50, lines 17–18). Witness Stralberg acknowledged that, at least some waiting time is caused by the need to unload trucks quickly (Tr. 24/11480, lines 6–8).

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[8] See USPS–LR–I–184 in response to interrogatory DMA/USPA–T17–1 (Van-Ty-Smith). Calculated from worksheet 'MODS' located in workbook 'T1701.xls' by dividing cell S50, by the sum of cells O50 through V50.

Third, not all preferential mail is sorted as pieces. In fact, Periodicals, the class which most concerns witness Stralberg, undergoes significant bundle sortation. More than 47 percent of Periodicals mail is in firm or carrier-route bundles, and another 34 percent is in 5-digit bundles.[9] Many 5-digit bundles are not opened for piece sortation in plants—the piece sortation is done in the delivery unit. Witness Stralberg's recommendation that allied not-handling costs should be broadly distributed would bias Periodicals costs downward. Periodicals require exigent processing, but have less than proportional piece handlings in the plant.

The Commission should not accept witness Stralberg's recommendation for broad distribution of allied not-handling costs. His argument applies, at best, to only platform costs. Within the platform cost pool, witness Stralberg acknowledges causes of not-handling costs besides exigent mail. Finally, piece distribution costs understate the importance of Periodicals within exigent mail, because more than 80 percent of Periodicals is in bundles that do not receive piece distribution within the plant.

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[9] See LR–I–87. The numbers reported are for Regular Rate and Nonprofit combined. From Table 8, page 27; 79.4 million Regular Rate pieces are presented in firm bundles; 3.007 billion Regular Rate pieces are presented in carrier route bundles; 2.257 billion Regular Rate pieces are presented in 5-Digit automation bundles; and 337.8 million Regular Rate pieces are presented in 5-Digit non-automation bundles. From Table 11, page 30; 2.4 million Nonprofit pieces are presented in firm bundles; 1.279 billion Nonprofit pieces are presented in carrier route bundles; 381.5 million Nonprofit pieces are presented in 5-Digit automation bundles; and 181.0 million Nonprofit pieces are presented in 5-Digit non-automation bundles. The 47 percent of Nonprofit and Regular Periodicals in firm and carrier route bundles is calculated as the ratio of the sum of Regular Rate and Nonprofit pieces in firm and carrier route bundles to the sum of FY98 Regular and Nonprofit RPW volume. The 37 percent in 5-Digit bundles is calculated as the ratio of the sum of Regular Rate and Nonprofit pieces in 5-Digit automation and 5-Digit non-automation bundles to total RPW Regular Rate and Nonprofit RPW volume.

IVD. SUPPORT COSTS SHOULD BE BROADLY DISTRIBUTED BECAUSE THEY ARE CAUSED BROADLY

In Section C of witness Stralberg's direct testimony, he states that "[t]he objective of postal costing is to identify causal links between accrued costs and mail subclasses" (Tr. 24/11373, lines 12–13). This objective appears to be forgotten in section 6 when witness Stralberg recommends that direct tally costs within the support cost pools be assigned to the classes of mail with which they were observed. For clerks and mail handlers in processing operations, I agree with witness Stralberg's reasoning—the mail being handled can reasonably be inferred to be the cause of the associated cost. However, when we know that an observed clerk or mail handler is functioning in a support role, actual piece handlings are incidental to, rather than the cause of, those support activities.

The Commission should follow the logic of witness Stralberg's section C recommendation instead of his recommendation in Section 6. All support costs should be broadly allocated because support costs are caused by the broad operations being supported rather than the incidental piece handlings that tally takers may observe.

V. INCREASING COSTS DO NOT JUSTIFY ADJUSTMENTS TO PERIODICALS COSTS BEYOND THOSE ALREADY SPECIFIED

Complaints put forth by the Periodicals mailers involving increased costs based on allegations of inefficient processes or the existence of annexes provide no basis for any adjustment of Periodicals costs. It is my understanding, however, that a number of cost savings opportunities and costing methodology changes, which provide a basis for a $203 million adjustment to Periodicals costs, have been identified on the record.

The cost savings opportunities, beyond what was contained in the Postal Service's Request, are:

1. Requiring preparation of basic rate carrier route Periodicals mail in line of travel sequence, which would result in savings of approximately $23 million in the test year (see Response of United States Postal Service to MPA/USPS–47, April 18, 2000, and USPS–LR–I–307, April 18, 2000).
2. Changes in other Periodicals mail preparation requirements involving (a) mandatory compliance with the L001 option; (b) elimination of carrier route skin sacks; and (c) allowing barcoded and non-barcoded bundles in the same sack, which would result in total test year savings of about $15 million (see Responses of United States Postal Service Witness O'Tormey to MPA/USPS–ST42–4 and 5, May 9, 2000, and USPS–LR–I–332, May 15, 2000).
3. Efforts to reduce bundle breakage, which would result in savings of around $15 million in the test year (see Response of United States Postal Service Witness O'Tormey to MPA/USPS–ST42–10, May 9, 2000).
4. Various mail processing enhancements involving (a) increased manual distribution productivity; (b) better AFSM 100 performance; and (c) addition of OCRs and automatic feeders to the FSM 1000, which could result in total test year cost savings of approximately $6 million (see Response of United States Postal Service Witness O'Tormey to MPA/USPS–ST42–8 and 9, May 9, 2000, and Response of United States Postal Service to TW/USPS–9, May 9, 2000).

5. A work methods change embodied in a Memorandum of Understanding with the National Association of Letter Carriers, which could result in savings of approximately $7 million in the test year (see Response of United States Postal Service to TW/USPS–7, May 9, 2000).

The costing methodology changes, which have been identified as superior to or acceptable alternatives for what was contained in the Postal Service's Request, are:

1. A broader distribution of mixed mail costs, maintaining item and container information, which would result in a reduction of Periodicals costs in the base year of approximately $17 million (see Tr. 21/8449–50 and USPS–LR–I–313, May 9, 2000).

2. A change in the rural carrier mail shape adjustment using annual data, which would result in a reduction of base year Periodicals costs of about $17 million (see Response of United States Postal Service to MPA/USPS–49 and USPS–LR–I–335, May 12, 2000).

3. New city carrier load time variability regressions, which would result in a reduction of base year Periodicals costs of around $50 million (see Response of United States Postal Service Witness Baron to ADVO/USPS–T12–11 and USPS–LR–I–310, May 12, 2000; Response of United States Postal Service Witness Baron to UPS/USPS–T12–13 and USPS—LR–I–398, June 6, 2000).

4. New city carrier dismount/drive time variability assumptions, which would result in a reduction of base year Periodicals costs of approximately $46 million (see Rebuttal Testimony of United States Postal Service Witness Baron, USPS–RT–12).

5. A new distribution key for AMTRAK Roadrailer costs, which would result in a reduction in Periodicals base year costs of about $ 2 million[10] (see Rebuttal Testimony of United States Postal Service Witness Pickett, USPS–RT–9).

There is no basis in the record for any adjustments to or reallocations of Periodicals costs beyond those listed above, which have been specifically identified and supported on the record.

Several witnesses in this proceeding, Cohen, O'Brien, and Stralberg have called the Commission's attention to the issue of rapidly increasing Periodicals costs. At the Commission's request, the Postal Service provided testimony from witnesses Unger and O'Tormey. I was a member of the Periodicals Operations Review Team (the Team) and participated in all the site visits. I agree with the recommendations in the Team's report,[11] but I feel that some important findings of the Team have not been sufficiently stressed in the testimony thus far. These findings indicate that no adjustment to actual Periodicals costs, beyond those already specified by the Postal Service, is necessary or justified.

VA. SERVICE

The Periodicals Operations Review Team identified fifteen issues and made recommendations. I believe that five of the fifteen issues have, in whole or in part, arisen from service pressure.

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[10] It is my understanding that MPA witness Nelson also identified a potential base year savings of approximately $ 5 million for Periodicals based on use of a different distribution key for rail empty equipment costs. See MPA–T–3, at 10. It is my understanding that the Postal Service does not challenge this redistribution.

[11] "Report of the Periodicals Operations Review Team," filed as LR–I–193.

- Enforcement and Enhancements of Entry/Acceptance Requirements (Issue 4)
- Flats Operation Plan (Issue 5)
- Combination and Separation of Mail Classes (Issue 6)
- Interclass Cost Impacts (Issue 12)
- Low Cost and Good Service Are Not Mutually Exclusive (Issue 13)

Understanding the unique nature of Periodicals service expectations is key to understanding the pressure on the Postal Service. There is general pressure from First-Class and Standard mailers to meet published or reasonable delivery standards. But, for Periodicals, there are mailer and recipient pressures for particular-day delivery. The Team's report says, "Periodicals, more than any other type of mail, are often expected on a specific day by recipients" (p. 37).

Many factors affect the Postal Service's ability to provide particular-day delivery, only some of which are controlled by the Postal Service. However, many recipients assume that delivery delays are always due to the Postal Service. Mailers' failures to meet critical entry times, poor address quality, and poor mail preparation increase the cost of achieving particular-day delivery. Recipients and publishers can and have generated enormous service pressure on the Postal Service in recent years. In my opinion, that pressure has played a substantial role in the increase in Periodicals costs. I do not mean to say that the Postal Service's operating decisions have always been the best way to address service concerns, but I think it is important for the Commission to understand that service has played in important role in operating decisions. Below I will discuss each of the five issues that I believe arise, at least in part, from service pressure.

VA.a Enforcement and Enhancement of Acceptance/Entry Requirements (Issue 4)

When mail is presented after the critical entry time, the Postal Service has two choices. It can deviate from its standard operating plan or fail to provide particular-day service. During the site visits, I observed sortation operations on platforms that were specifically in place to handle late arriving mail. The Periodicals Review Team Report said:

> We also recommend that local postal managers recognize that mailers who miss critical entry times should not expect the Postal Service to undertake measures to deliver such mail as if it were not delayed in entry (p. 4).

While this recommendation may be appropriate, it is difficult to universally implement when field managers know they may be rightly or wrongly held accountable for delays. My discussions with Postal Service personnel revealed that failing to meet critical entry times is an inherent problem for some publications. The task of collecting timely information, getting it printed, and getting it to the Postal Service by the critical entry time frequently cannot be done. For other publications the process is generally successful, but there are regular failures. The Postal Service is in the very difficult position of having to incur additional costs or lose goodwill with publishers and readers.

> Based on team experiences in the sites visited, there appears to be a mindset that service levels must be met regardless of the cost implications (p. 37).

The connection between mail preparation and service is not as direct, but it still exists. Refusal of poorly prepared mail causes delayed mail and unhappy mailers and recipients. I spoke with acceptance personnel who clearly expressed a real hesitancy to employ the extreme measure of rejecting late or poorly prepared mailings.

VA.b Flats Operation Plan (Issue 5)

The Team recommended that the Postal Service develop and implement a systemwide operations plan for processing Periodicals. I agree with the recommendation as a cost saving measure, but adherence to it would mean no deviations for late arriving mail, with the inherent issues I previously mentioned.

VA.c Combination and Separation of Mail Classes (Issue 6)

The Team report stated:

> Opportunities exist for reducing costs without compromising service by combining flats of different mail classes in incoming sorting operations, as is already being done successfully in some locations (p. 5).

I agree with this statement, but the "opportunities" must be carefully reviewed. As the Team report later says:

> [T]his separation is performed because the USPS believes that by having pure streams of mail, it has more flexibility to meet its service standards (p. 21).

It is not just belief, but rather fact, that the Postal Service has more flexibility to meet service standards when it maintains separate mail streams. The real issue is how often that flexibility is used and whether the avoided service failures are worth the additional costs. Field managers that we observed were clearly sometimes insuring better service by incurring additional cost. However, it would be equally wrong to ignore the increased opportunities for service failures inherent in commingling classes.

VA.d Interclass Cost Impacts (Issue 12)

It is important to understand that the existence of a separate Periodicals class is due, at least in part, to service considerations. The need to separate

Periodicals flats from Standard flats is the direct result of a separate service standard for Periodicals. Any discussion of interclass cost impacts must begin with this understanding.

Just as with letter automation, the Postal Service attempts to identify the most compatible mail to run on its deployed flat automation. There is mailer pressure to process Periodicals on automation, so many offices perform "triage" operation on Periodicals to identify volumes that will be machine-compatible. In some cases, the machine-compatible Periodicals mail is not processed on the FSM. In some cases, machine-compatible Periodicals are processed manually because the remaining processing window (after First-Class has been sorted) is too short. We do not know how frequently this occurs, but we do know that service is at least sometimes a factor.

VA.e Low Cost and Good Service Are Not Mutually Exclusive (Issue 13)

I agree that low cost and good service are not mutually exclusive. However, I do not believe that there is no trade-off between cost and service. In general, my experience is that efficiently run operations can also run consistently and provide reliable service. But, very high levels of consistency and reliability can cause substantial additional costs.

Consider the example of separate mail streams by class. I don't think anyone doubts that Periodicals mail processing costs would be lower if they were simply part of the Standard Mail stream. Periodicals are handled as a separate stream in nearly all cases because of the need for better service.

The point that I would like the Commission to understand is that, while not all service comes at a cost, much of it does. The problem is to identify where and to what extent the trade-offs occur. I am sure that all Periodicals mailers

would like lower costs holding service constant. I am also sure that all Periodicals mailers would like better service holding costs constant. What no one knows is the extent to which Periodicals mailers are willing to trade off cost for service. In fact, different types of Periodicals mailers have very different cost-service trade-offs. What we do know is that service is very important to Periodicals mailers in general and that Periodicals mailers are very vocal about it, which influences operating decisions and causes costs.

VA.f Summary

The point of this discussion has been to demonstrate to the Commission that service plays an integral role in the Postal Service's operating decisions and has, therefore, been an important factor in increasing costs. I fully support efforts to improve Postal Service efficiency and to find the proper balance between service and cost. However, I do not agree that the observed cost increases are simply inefficiencies that are caused by other classes of mail and, therefore, should not be considered Periodicals costs.

VB. FLAT AUTOMATION

Flat automation includes FSMs for piece sortation and SPBS for bundle sortation. The evolution of Postal Service flat automation is well documented in the current proceeding. I believe it would be fair to characterize the Postal Service as moving along the learning curve.

The Commission made no adjustment for the costs of moving along the learning curve for letter automation. Similarly, no adjustment other than those proposed by the Postal Service should be made for the current costs of automating flat processing. A review of some of the Periodicals Operation Review Team observations will demonstrate that costs are being incurred as the

Postal Service learns to automate flat mail processing that will benefit Periodicals.

The FSM 881 jams when certain types of mail are run on it. Flimsy pieces, open-sided pieces, sticky polywrapped pieces, and pieces with oversized polywrap all cause jams. Saying that mail is or is not compatible with the FSM 881 is an arbitrary distinction. In reality, almost any flat mail can be processed on an FSM 881, but some types of pieces generate such frequent jams that the processing becomes impractical and too costly.

Many factors have contributed to the need for "triage" operations to determine how flat mail should be processed. These operations are necessary so that the new equipment can be efficiently utilized. Mail piece characteristics, bar-coding, and available machine types all determine the need for and complexity of the triage operations. These triage operations are caused by the lack of homogeneity of the mail pieces.

The small parcel and bundle sorters appear to be an improvement over manual bundle sortation in terms of productivity and depth of sort. To increase the overall efficiency of the SPBSs, the Postal Service has installed auto-feed systems that reduce the required staffing. However, the auto-feed system has caused increased bundle breakage. The Periodicals Operations Review Team identified Postal Service and mailer actions to reduce bundle breakage and capture the savings from the auto-feed systems. It also recommended consideration of alternative technologies going forward (See pages 24–26 of the report). This is another example of moving along the automation learning curve.

By arguing that Periodicals mail is not responsible for the learning curve costs, the Periodicals mailers would seem to be arguing that Postal Service efforts to automate flat mail have proceeded too quickly—before significantly better technology was available. This is ironic because Periodicals mailers have

continually pushed for more automation and more processing of Periodicals flats on existing automation. Costs may have been avoided by waiting for better technologies with a wider range of tolerance for piece characteristics, or it could simply have postponed the inevitable learning curve. The important points are that the Postal Service is moving forward with cooperation from the mailers and that the effort will benefit all flat mail, including Periodicals. The Commission should not make any adjustments beyond those already proposed to reallocate the cost of the flat-automation learning curve.

VC. ANNEXES

In direct testimony, witness O'Brien says,

> The movement of Periodicals into annexes was not requested by Periodicals mailers, nor was it caused by a growth of Periodicals mail volume. So why should Periodicals be paying for it? (Tr. 24/11184).

But, the Team's report says,

> In many cases Annexes appear to be created to accommodate deployments of automation equipment, such as Small Parcel & Bundle Sorters (p. 31).

and also,

> Flats bundles are at risk of breaking during bundle sorting, especially when dumped on the automated feed systems of SPBS machines (p. 24).

Clearly, annexes are being employed not to handle increases in flat volumes, but rather to house the increased deployment of equipment to process existing flat volumes, among other reasons.[12] It is wrong to argue that annex

[12] Witness Kingsley reported that a February 2000 survey revealed that 34 of the 67 mail processing annexes processed some Periodicals mail (See MH/USPS–T10–7, filed 4/5/00 and MH/USPS–T10–17, filed 4/28/00). However, my

costs are not for the benefit of the mail being processed therein. IOCS provides an estimate of the portion of clerk and mail handler time that is spent handling Periodicals, which includes clerks and mail handlers working in annexes and on the platforms that move mail to and from those annexes. There is no justification for any adjustment to Periodicals costs, because Periodicals are processed in annexes that were required to deploy the machines on which they are processed.

VI. THE BPM MAIL CHARACTERISTICS SURVEY PROVIDES RELIABLE DATA FOR COST MEASUREMENT

Witness Siwek states in his testimony that "the BPM Mail Characteristics Survey is fraught with a set of statistical oddities and infirmities" (Tr. 30/14578, lines 2–3). Witness Siwek's oddities and infirmities appear to boil down to the estimation of volumes by office for one stratum, the use of FY98 volumes to inflate sample data from FY99, and the collapsing of strata 2 and 3 to estimate standard errors. While witness Siwek's criticisms may very well be technically correct, as I demonstrate below, they are absurd from a practical standpoint. In the real world, the perfect data seldom exist and small compromises must be made.

Instead of using estimated volumes for the smallest offices (stratum 4), witness Siwek's criticisms imply abandoning the efficiency advantages of stratified sampling. Given the available resources, the result would not be useable due to the enormous standard errors from any practical sample size. With respect to the use of FY98 annual data, I can only say that complete FY99

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understanding is that only one annex processes only Periodicals mail. Most of the annexes that process Periodicals mail are flat annexes that also process Standard Mail.

data were not yet available. They have since become available and I will demonstrate that their use makes little difference, as we expected.

Finally, the collapsing of strata 3 and 4 is a necessary and frequently used step in application of the bootstrapping technique. The alternative is no standard errors, which cannot be preferred.

The choice of the stratified sampling method was driven primarily by the simple fact that very few offices actually report acceptance of Bound Printed Matter. With this fact in mind, I will proceed to discuss witness Siwek's criticisms.

VIA. THE INCREASED EFFICIENCY OF A STRATIFIED SAMPLE MORE THAN OFFSETS THE SMALL POTENTIAL BIAS FROM HAVING TO ESTIMATE VOLUMES FOR THE SMALL OFFICES

In general, stratification will produce large gains in precision under the following conditions:[13]

1. The population is composed of institutions varying widely in size.
2. The principal variables to be measured are closely related to the sizes of the institutions.
3. A good measure of size is available for setting up the strata.

All of these conditions are satisfied with respect to presorted Bound Printed Matter mailings.

Bias does exist when strata populations are measured with error.[14] But, almost any information available on a population of interest is subject to some form of measurement error. Every study employing stratification based on real-world data is subject to this criticism. Absent a sterile sampling environment,

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[13] See William G. Cochran, *Sampling Techniques,* 3rd Edition, Wiley 1977, at page 101.

[14] See Cochran, at page 117.

such sources of bias can only be avoided by abandoning stratification in favor of a simple random sample.

However, bias is not the only criterion that should be considered when making methodological decisions. Due to the fact that BPM volumes are concentrated in a small proportion of all offices, simple random sampling would require enormous resources to yield useful estimates with acceptable standard errors. Given the distribution of BPM across offices, the gains in precision that result from stratification are large and the population measurement bias is small.

VIA.a Offices Accepting BPM Vary Widely by Size

There are over 27,500[15] Postal Service facilities authorized to accept Bound Printed Matter. Of these 27,500, the 150 largest finance numbers accepted over 89 percent of the 1998 presorted BPM volume, while the 20 largest finance numbers accepted over 58 percent of the total.[16] The largest finance number accepted 41.5 million pieces, compared to the 20th largest office which accepted 4.8 million pieces. In contrast, 23,200 of the 27,500 acceptance locations accepted little or no presorted BPM in 1998.

VIA.b The Size of the Office is Closely Related to the Variables of Interest

LR–I–109 measures the current drop-shipping practices of BPM mailers. The size of the mailing is the principal determinant in the decision to transport the mail to a facility other than the facility where it is verified. A mailer is likely to

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[15] In the National Consolidated Trial Balance, 27,883 unique finance numbers reported revenue of some kind in FY99.

[16] See Table 4, below.

incur the additional transportation cost if the reduction in postage is larger than the cost of the transportation needed to get the pieces to a facility closer to their destination. Mailers of similar size will have similar dropshipping incentives, with larger mailers generally dropshipping more.

VIA.c A Good Measure of Size is Available for Establishing the Strata

The PERMIT system and the National Consolidated Trial Balance (NCTB) revenues provide excellent measures of the size of each finance number's presorted BPM volumes. For instance, in 1998 over 96 percent of BPM revenue was collected at automated PERMIT system sites. In the NCTB reports, four percent of the presorted BPM revenues are at offices not reported in the PERMIT database. The correlation of volume and revenue across finance numbers is nearly perfect (.99).[17]

VIA.d The Case for Choosing Stratification Over Simple Random Sampling

Since BPM is concentrated in so few offices, simple random sampling, while unbiased, is likely to provide unreliable estimates. Even if we restrict sampling to the 4,278 offices reporting BPM revenue in 1998, a random sample of 44 offices would result in an 81 percent probability that none of the largest 20 offices would be selected. Similarly there would be an 80 percent probability the sample would contain 2 or fewer of the largest 150 offices. Witness Siwek's recommendation of unstratified random sampling would have the Postal Service making inferences about dropshipping based on a sample that contained few, if any, dropshippers.

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[17] 1998 PERMIT System.

Another illustration of the shortcomings of an unstratified random sample is presented in Table 2, which presents a comparison of the offices actually sampled in LR–I–109 with the expected distribution of offices by stratum from a simple random draw from the 4278 offices reporting BPM in 1998. As illustrated in this table, one would expect that only a single office out of a sample of 214 would be from the largest 20 offices. Only seven or eight offices from this sample would be from the largest 150 offices.

Both of these examples illustrate that a simple random sample approach wastes resources, and yields samples from which inferences about dropshipping should not be made. Even though random sampling provides unbiased estimates, it would not likely provide reliable estimates given the distribution of BPM volumes in the population. In contrast, Table 2 also illustrates that by stratifying offices, the Bound Printed Matter Mail Characteristics Survey employed resources such that the characteristics of over 56 percent of BPM mail volume would be sampled with certainty. Moreover, 96 percent of the population would not be subject to witness Siwek's accusation of error estimating stratum volumes. Lacking unlimited budget, stratified random sampling is the preferred approach.

VIA.e Bias Resulting from Measurement Error in Stratum 4 is Insignificant

As defined in LR–I–109 (page 4), stratum 4 consists of offices not reporting in the PERMIT system. For these offices, the only information available about Bound Printed Matter is office-specific permit imprint BPM revenue from the NCTB. The survey imputes piece counts for stratum 4 offices from their reported revenue and the mean revenue per piece for stratum 3 offices. Since

actual revenue per piece for each office in stratum 4 is unknown, the resulting inflation factors will be measured with error.

Two factors suggest that the bias from estimating volumes will not be appreciable. First, the bias will be insignificant since there are no systematic differences between stratum 3 offices and stratum 4 offices. The BPM customers at both stratum 3 and 4 offices generally do not have the volume necessary to make dropshipping profitable, nor do they typically have sufficient route density to prepare national carrier route mailings. Furthermore, there is no evidence to indicate that there are systematic differences between stratum 3 and 4 offices in the mailing characteristics determining postage: weight, sortation, and drop shipment behavior. On the contrary, strata 3 and 4 are comprised of over 27,000 relatively homogeneous offices. Second, the measurement error affects a small fraction of presorted Bound Printed Matter. Strata 3 and 4 offices accepted less than 11 percent of presorted Bound Printed Matter in 1998, with less than half of that attributable to stratum 4.

Table 3 illustrates the effect that bias in the revenue per piece measure has on the estimates presented in the Bound Printed Matter survey. Column 1 of Panel A provides the baseline measure for the entry profile, measured assuming that revenue per piece in stratum 3 is the same as in stratum 4. Columns 2 and 3 give the distributions if we assume that the stratum 4 revenue per piece is actually plus or minus ten percent from the stratum 3 average. Similarly, columns 4 and 5 show the distributions assuming plus or minus 25 percent. No appreciable difference in the distributions is observed even with the extreme assumption that the stratum 4 average could be 25 percent different from stratum 3.

VIA.f The Bias from Using the FY98 Data for Weights is Small

As with population measurement errors, issues arise in most applied statistical research because of changes in populations over time. Ideally, observations from a stratified random sample would be sampled and weighted in proportion to their contemporaneous population proportions.. Since one cannot simultaneously establish the sample design, collect the data, and construct the sample weights, temporal fluctuations in population characteristics make it impossible to create strictly unbiased and efficient estimates. However this is not to say the information gained in such research is unreliable and unsuitable for policy decisions. The relevant question pertains to whether the gains from efficiency outweigh the bias inherent in using a stratified approach.

Since a full year of information on offices was necessary in order to assign each office with the appropriate sampling probability, and rates were to be based on FY1998 volumes, the sample design for the Bound Printed Matter Mail Characteristics Study utilized 1998 data, the most recent full year for which data were available. However, data were collected from June 21 through July 17 of 1999. The final results presented to witness Crum in August of 1999 use the survey data collected in 1999 to represent national totals from base year 1998.

As witness Siwek asserts, the LR–I–109 estimates cannot be unbiased estimates of either year because the sample design and data collection are based on different periods. Bias results from the error introduced because BPM volume in each office changes from year to year or because mailer behavior is not identical from one year to the next. The magnitude of the bias depends on the size of the difference in the two years. Since we have some indirect evidence about changes in Bound Printed Matter, we can infer that the bias alluded to by witness Siwek is likely to be small.

Specifically, there is not evidence that relative office sizes changed significantly between 1998 and 1999, nor evidence that mailer behavior changed markedly. In 1998 the largest 20 offices accounted for 56.08 percent of presorted BPM volumes, in 1999 these same 20 offices accounted for 56.33 percent of the presorted BPM—a difference of only one-quarter of a percentage point. Table 4 shows the distribution of presorted BPM by strata for 1998 and 1999.

While BPM population proportions did fluctuate from 1998 to 1999, fluctuations in easily observed characteristics are minor. For example, Table 5 shows that the zone distributions of pieces in the PERMIT system are nearly identical between FY1998 and FY1999. This is especially significant since any material changes in mailer drop-shipping behavior will be reflected in the zone distribution of pieces. Furthermore, as demonstrated in Table 6, recasting the statistics presented in LR–I–109 Bound Printed Matter using 1999 volumes does not materially affect the estimated distributions. The meager differences in strata sizes between the two years indicate that any bias is small.

VIB. SMALL BIAS IN THE STANDARD ERRORS IS PREFERRED TO NO STANDARD ERRORS

Mr. Siwek also claims that the standard errors reported in LR–I–109 are unsound (Tr. 30/14578, line 27 to Tr. 30/14579, line 8). This observation follows from the fact that data were collected on only one BPM mailing for stratum 3 offices. Because there is only one observation, the bootstrap estimate of stratum 3's variance is zero. Therefore, standard bootstrap estimates of the variance will understate the true variance. This problem is generally addressed by collapsing strata when estimating the population variance, as was done in the Bound

Printed Matter Mail Characteristics Survey.[18] This procedure will result in variance estimates that are larger than the true variance, thereby providing conservative estimates for the confidence intervals.

[18] See Cochran, at page 138.

Table 1
BY98 IOCS Mail Processing Mixed-Mail Tallies (Dollar Weighted)—Clerks/Mailhandlers
Crosswalk of Question 19 Activity Code to Item/Container Information
MODS 1 & 2 Allied Cost Pools Only
(excludes empty items and containers)

	Mixed	Mixed Item/Container Tally Dollar Weights (000)						% of
Shape	Actv (Q19)	Letters	Flats	Parcels	Class	None	Total	Total
Letters	5610	23,102	1,682	196	521	1,072	26,573	8%
Flats	5620	198	12,914	36	119	1,376	14,643	4%
Parcels	5700	299	278	4,281	1,559	600	7,017	2%
None	5750	96,150	58,688	52,207	51,941	38,432	297,418	86%
Total		119,750	73,563	56,719	54,139	41,480	345,651	100%
% of Total		35%	21%	16%	16%	12%	100%	
% 5750 of Total 5750		32%	20%	18%	17%	13%	100%	
% 5750 w/ shape or class from item/container of total mixed-mail							75%	

Note: This table was created using the 1998 IOCS data set as presented in USPS LR–I–12. Cost pool assignments are based on the proposed MODS based cost distribution methodology described by witness Van-Ty-Smith in USPS–T–17 and USPS LR–I–106. This methodology is also used to classify individual tallies as mixed-mail items, counted mixed-mail containers, and uncounted mixed-mail containers. All mixed-mail tallies are then summed by mixed-mail activity code (IOCS field F262) and item/container categories based on item and container type. Item type is assigned based on *IOCS field F9214, container type based on IOCS field F9219, and counted container contents based* on IOCS fields F9901 through F9919. Individual item and container types are then assigned to the above categories as follows: Letters—loose cards and letters in containers and letter trays, Flats—loose flats in containers and flat trays, Parcels—loose IPP's and parcels in containers and small parcel trays, Class—all sacks (individual items and in counted containers), None—all remaining items and container types.

Table 2
Expected Samples Using Stratified Random Sampling v. Simple Random Sampling

	Number of Offices	*Distribution of* FY98 BPM Pieces	*Offices* Selected in LR–I–109	Expected distribution of *simple random draw of size N* N=44	N=100	N=150	N=214
Stratum 1	20	56.1%	20	0.2	0.5	0.7	1.0
Stratum 2	130	33.2%	16	1.3	3.0	4.6	6.5
Stratum 3	971	6.9%	4	10.0	22.7	34.0	48.6
Stratum 4	3,157	3.8%	4	32.5	73.8	110.7	157.9
Total	4,278	100.0%	44	44	100	150	214

NOTE: The expected value is calculated as the product of the sample size and the ratio of the number of offices in each stratum to the total number of offices in the population. See LR–I–109 for programs and documentation for summarizing strata volumes.

Table 3
Distribution of Bound Printed Matter by Entry Profile and Zone
Mail Processing Version
All Containers

	1	2	3	4	5
	Base Line	10 % Adjustments		25 % Adjustments	
	Revenue Per Piece Equal to Stratum 3 Average	Revenue Per Piece 10% < Stratum 3 Average	Revenue Per Piece 10% > Stratum 3 Average	Revenue Per Piece 25% < Stratum 3 Average	Revenue Per Piece 25% > Stratum 3 Average
A. Entry Profile:	All Zones	All Zones	All Zones	All Zones	All Zones
DDU	7.1%	7.2%	7.0%	7.5%	6.8%
DDU - Destinating 3-Digit ZIP Area	1.2%	1.2%	1.2%	1.2%	1.2%
DDU - Destinating BMC Service Area	1.1%	1.1%	1.1%	1.1%	1.2%
Origin AO	3.9%	3.9%	3.9%	3.9%	3.9%
Destinating SCF	17.3%	17.2%	17.4%	17.1%	17.4%
SCF - Destinating BMC Service Area	3.4%	3.4%	3.4%	3.4%	3.4%
Origin SCF	4.9%	4.9%	4.9%	4.9%	4.9%
Destinating BMC	39.1%	39.1%	39.2%	39.0%	39.2%
Origin BMC	21.5%	21.5%	21.5%	21.5%	21.5%
Destinating ASF	0.4%	0.4%	0.4%	0.4%	0.4%
Origin ASF	0.0%	0.0%	0.0%	0.0%	0.0%
Total Pieces	467,297,415	467,297,415	467,297,415	467,297,415	467,297,415
B. Zone Distribution:	All Entry Profiles	All Entry Profiles	All Entry Profiles	All Entry Profiles	All Entry Profiles
Local	15.0%	15.1%	14.9%	15.2%	14.8%
Zone 1	31.7%	31.6%	31.7%	31.5%	31.8%
Zone 2	16.8%	16.8%	16.8%	16.7%	16.8%
Zone 3	10.9%	10.9%	10.9%	10.9%	11.0%
Zone 4	12.4%	12.4%	12.4%	12.3%	12.4%
Zone 5	8.1%	8.1%	8.1%	8.1%	8.1%
Zone 6	2.4%	2.4%	2.4%	2.4%	2.4%
Zone 7	1.6%	1.6%	1.5%	1.6%	1.5%
Zone 8	1.2%	1.2%	1.2%	1.2%	1.2%
Total Pieces	467,297,415	467,297,415	467,297,415	467,297,415	467,297,415

NOTE: Proportions are for total FY1999 volumes. Volumes are inflated using the sources and procedures described in LR–I–109. Average revenue per piece for Stratum 3 (in column 1) is .89.

Table 4
Presorted BPM
Distribution of Pieces by Strata

	FY1998		FY1999	
	Pieces	Percent of Total	Pieces	Percent of Total
Strata:				
Stratum 1	257,850,605	56.1%	263,199,979	56.3%
Stratum 2	152,853,389	33.2%	147,780,079	31.6%
Stratum 3	31,624,815	6.9%	44,614,183	9.5%
Stratum 4	17,468,091	3.8%	11,685,173	2.5%
	459,796,900		467,279,415	

NOTE: FY1998 & FY1999 PERMIT System Data. See LR–I–109 (pages 206–223) for programs and documentation used to summarize PERMIT system data.

Table 5
Presorted BPM
Distribution of Pieces by Zone

	FY1998	FY1999
Local	13.1%	13.8%
Zone 1&2	50.9%	50.6%
Zone 3	13.5%	13.2%
Zone 4	9.0%	8.9%
Zone 5	6.5%	6.6%
Zone 6	2.6%	2.5%
Zone 7	1.9%	1.9%
Zone 8	2.4%	2.6%

NOTE: FY1998 & FY1999 PERMIT System Data. See LR–I–109 (pages 206–223) for programs and documentation used to summarize PERMIT system data.

Table 6

Distribution of Bound Printed Matter by Entry Profile and Zone: 1998 and 1999 Volumes
Mail Processing Version
All Containers

	Inflated Using 1998 Volumes	Inflated Using 1999 Volumes
A. Entry Profile Distribution:	All Zones	All Zones
DDU	7.2%	7.1%
DDU - Destinating 3-Digit ZIP Area	1.2%	1.2%
DDU - Destinating BMC Service Area	1.0%	1.1%
Origin AO	2.7%	3.9%
Destinating SCF	16.0%	17.3%
SCF - Destinating BMC Service Area	3.6%	3.4%
Origin SCF	5.6%	4.9%
Destinating BMC	41.4%	39.1%
Origin BMC	20.9%	21.5%
Destinating ASF	0.3%	0.4%
Origin ASF	0.0%	0.0%
Total Pieces	459,792,628	467,297,415
B. Zone Distribution:	All Entry Profiles	All Entry Profiles
Local	14.6%	15.0%
Zone 1	32.0%	31.7%
Zone 2	17.7%	16.8%
Zone 3	10.9%	10.9%
Zone 4	11.9%	12.4%
Zone 5	7.7%	8.1%
Zone 6	2.4%	2.4%
Zone 7	1.6%	1.6%
Zone 8	1.3%	1.2%
Total Pieces	459,792,628	467,297,415

Proportions are for total FY1998 and FY1999 volumes. Volumes are inflated using the sources and procedures described in LR-I-109.