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

POSTAL RATE AND FEE CHANGES, 2006	Docket No. R2006–1

DIRECT TESTIMONY
OF
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ON BEHALF OF THE
UNITED STATES POSTAL SERVICE

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Autobiographical Sketch

My name is A. Thomas Bozzo. I am a Vice President with Laurits R. Christensen Associates (LRCA), which is an economic research and consulting firm located in Madison, Wisconsin. My education includes a B.A. in economics and English from the University of Delaware, and a Ph.D. in economics from the University of Maryland-College Park. My major fields were econometrics and economic history, and I also completed advanced coursework in industrial organization. While a graduate student, I was the teaching assistant for the graduate Econometrics sequence at Maryland. In the 1995-1996 academic year, I taught undergraduate microeconomics and statistics at Maryland, and monetary economics at the University of Delaware. I joined LRCA as an Economist in June 1996, was promoted to Senior Economist in January 1997, and to my present position in January 2003.

Much of my work at LRCA has dealt with theoretical, statistical, and measurement issues related to Postal Service cost methods, particularly for mail processing. I worked with the team that produced, tested, and implemented the recently revised In-Office Cost System (IOCS) data collection instrument from the start of the project. I have presented five pieces of testimony in previous rate cases. In Docket Nos. R2005-1 and R2001-1, I gave direct testimony on mail processing volume-variability factors (USPS-T-12 and USPS-T-14, respectively). In Docket No. R2000-1, I provided direct and rebuttal testimony on econometric estimates of volume-variability factors for mail processing labor costs (USPS-T-

15 and USPS-RT-6) and rebuttal testimony on the Postal Service's estimates of costs by weight increment (USPS-RT-18).

In Docket No. R97–1, I worked in support of the testimonies of witnesses Degen (USPS–T–12 and USPS–RT–6) and Christensen (USPS–RT–7). Other postal projects have included econometric productivity modeling for Postal Service field units, analysis of In-Office Cost System data, estimation of standard errors of Cost and Revenue Analysis (CRA) inputs for the Data Quality Study, and surveys of Remote Barcode System and rural delivery volumes. I have also worked on telecommunications costing issues and on various litigation support projects.

In the current proceeding, I also present testimony on the Postal Service's econometric analysis of mail processing volume-variability factors for BY 2005 (USPS-T-12).

Purpose and Scope of Testimony

The purpose of this testimony is to describe the design process for the In-Office Cost System (IOCS) data collection instrument implemented at the start of FY 2005. I describe the uses for IOCS data, and the consequent required data elements. I then discuss the methods used to collect those data elements and the major changes to the data collection approach employed in the IOCS instrument. This testimony also describes the testing and validation process employed by the Postal Service prior to nationwide implementation of the new instrument. Dr. Czigler's testimony (USPS-T-1) describes details of the FY 2005 IOCS instrument, the IOCS sample design, and the processing procedures that assign cost weights, activity codes, and operation codes subsequently used in IOCS-based cost models. Dr. Czigler also discusses IOCS results for city carriers and supervisors. I identify major changes to IOCS-based cost results for clerks and mail handler labor believed to derive from the implementation of the redesigned IOCS instrument, and discuss probable causes of the changes.

I. Background: Requirements for IOCS Data

The IOCS is a multistage probability sample that provides data on the activities of the Postal Service's supervisors, clerks, mail handlers, and city delivery carriers. (See Dr. Czigler's testimony, USPS-T-1, for details of the IOCS sample design.) IOCS data are used in various analyses to produce volume-variable—and, by extension, incremental—costs directly for labor cost segments and components encompassing over half of the Postal Service's total costs, and indirectly for a number of additional cost components.[1]

The development of volume-variable costs in the CRA normally involves three steps:

- Partitioning costs from accounting systems into analytically useful cost components or cost pools;
- Determining the degree of volume-variability, or the size of the pool of volume-variable costs to be distributed to subclasses of mail or other mail categories; and
- Distributing volume-variable costs to subclasses.

IOCS data are necessary inputs for all three requirements. The partition of costs often relies upon work activity information that is unavailable from accounting systems; IOCS sample data provide the portions of work time by activity. When volume-variability factors from other studies are not available, IOCS data can indicate the proportion of work time spent in activities whose costs are assumed

[1] For example, facility and capital equipment costs employ distribution keys from labor cost components.

to be 100 percent volume-variable or non-volume-variable. In particular, IOCS data identify certain activities treated as non-volume-variable costs in the Commission's mail processing cost model.

IOCS data on the characteristics of the mail handled by clerks, mail handlers, and city carriers in the course of various in-office work activities are used to form subclass distribution keys for the associated cost components or cost pools. Ensuring reliability of the distribution key data, therefore, was a major concern of the redesign. In addition, the causes, and even existence, of not-handling observations in IOCS have been highly contentious, so the redesign sought to improve the understanding of work activities (other than "overhead" activities such as paid breaks and clocking in or out) that are associated with not-handling tallies.

The role of IOCS in the distribution of costs is perhaps the system's best-known, and perhaps most contentious, function. However, no redesign of the IOCS system could ignore the other functions of the system and provide the full set of required data elements.

Below, I describe the process by which the Postal Service team that redesigned the IOCS data collection instrument improved the quality of the data produced by the system, while collecting all of the information required for CRA production.

II. The IOCS Redesign Approach

II.A. Overall Goals of the IOCS Redesign

The IOCS Redesign project originated as a follow-up to the Data Quality Study (DQS) jointly conducted by the Postal Service, the Commission, and the Government Accountability Office. The DQS report recommended replacing IOCS with a system or systems focused on collecting distribution key data, or improving IOCS by including additional sub-sampling of mixed-mail observations and reducing not-handling observations. The Postal Service's redesign efforts to date implement, in part, the second DQS option.

The IOCS redesign, as implemented in FY 2005, had four overall goals:

1. Modernize the IOCS activity questions for consistency with the present organization of work activities in the sampled crafts;
2. Improve the accuracy of mailpiece information collected in IOCS;
3. Lay the groundwork for later enhancements to IOCS pertaining to subsampling mixed-mail; and
4. Retain the data elements required for production of the CRA in both the Postal Service and Commission methods.

The redesign process examined the entire IOCS questionnaire and considered the necessity of conducting some readings by telephone. The result is an almost totally new IOCS data collection instrument. The remainder of this section describes the costing considerations underlying the redesign goals.

II.B. Mail Processing Distribution Keys

Central to the Postal Service's decision to retain the IOCS sampling structure with data collection improvements was the determination that IOCS measures the concepts of interest for the cost distribution methodology. IOCS must produce cost distribution information in a variety of operating environments, including automated mail sorting, manual sorting activities (involving both clerks and carriers), non-piece material handling operations or "allied labor," and other non-distribution operations. A system that efficiently collected information for one of these environments, such as a system of sampling pieces from machine outputs, can be totally unable to collect subclass distribution data in others.

The traditional IOCS reading methods collect mailpiece data when sampled clerks, mail handlers, and city carriers are observed handling mail at the time of the reading. In early versions of IOCS, reading methods effectively "forced" pieces of mail into the employee's hand.[2] While this approach yielded few not-handling tallies, a concern was that the piece selected would not necessarily be representative of the mail being worked at the time of the reading. This was eventually replaced by the current "snapshot" approach, in which a handling-mail tally would only be recorded if the sampled employee actually was handling mail when first encountered by the data collector. This helped preserve the randomization via the reading time, at the cost of creating pools of not-handling tallies, which potentially represent volume-variable costs to be distributed to classes and subclasses of mail.

[2] As a result, long-range comparisons of fractions of direct tallies between annual IOCS samples are not generally "apples-to-apples."

IOCS sampling procedures can vary based on the type of operation being observed, and the redesign team considered several broad situations in determining potential changes to the IOCS survey instrument.

II.B.1. Sorting Operations

For sorting operations, the general goal is to obtain a random sample of the mail processed through the operations. This is comparatively straightforward to achieve using IOCS methods for manual sorting operations, since pieces are physically handled by the employee in the process of being sorted into the letter case, flat case, or container. The random selection of employees and reading—and, by extension, work time in the operations where the employees work—serves to extract the samples of mailpieces from the manual workflow. The traditional IOCS reading methods were geared towards a manual piece sorting environment, and remain appropriate for it.

In automated and mechanized operations, the goal is similar—obtain subclass information for the mail passing through the operation—but a complication is that while employees still handle mail to a considerable extent when feeding mail to the machines and sweeping sorted mail from the output bins, they may also spend substantial time monitoring the machine operation without actually touching mailpieces—in other words, “not handling” mail. Obtaining mailpieces from not-handling time while the machine is processing mail is necessary if all mail being handled through automated and mechanized operations is to be eligible for sampling. This requirement was addressed, prior

to the FY 2005 IOCS redesign, by implementing sampling rules that directed data collectors to obtain mailpieces from the operation's "source of supply" (i.e., the mail staged for processing at the time of the reading) for not-handling tallies where mail is present in the operation. As modified, the IOCS sampling rules retain the property of extracting a sample of mailpieces from the operation. The primary concern of the IOCS redesign team was to ensure that data collectors correctly and consistently apply the sampling rules when obtaining mailpieces from the relevant operations. This led to software modifications that instruct data collectors with the appropriate mailpiece sampling procedure based on the activity information provided earlier in the questionnaire.

II.B.2. "Allied Labor" Operations and Container Tallies

In "allied labor" operations such as opening units, dispatch units, and platform operations, the units of mail handlings are, in old IOCS terminology, "items" of mail such as bundles, letter trays, flat tubs, and sacks, as well as "containers" of mail including pallets, boxes, and various types of wheeled containers. Sampling container handling activities is complicated by relatively irregular workflows and, in many cases, less spatially-defined work centers. Compared to sorting operations, little if any operating data are collected from non-IOCS sources to establish a "universe" of container handlings such that data collectors could be sent to specific locations expressly to observe container handlings.

The IOCS activity sampling method enables random samples of container handlings to be taken without advance information on the time or location of any particular handling. The IOCS design team focused on ensuring that handlings were correctly classified in IOCS, and that data collectors appropriately used existing sub-sampling rules applicable to various types of mail containers. This is a precursor to developing subsampling procedures applicable to most or all types of "mixed mail."

IOCS does collect subclass information from some types of container handlings. For "identical mail" containers, a single piece can represent the entire container contents by definition. Other IOCS subsampling methods—collectively termed the "top piece rule"—also use single pieces to represent the contents of certain types of non-identical containers, notably letter trays, flat tubs, and bundles, as well as readings where the employee has multiple loose pieces of mail in the hand. Subclass information also has been obtained for mixed sacks and pallets by counting the pieces in the sack by subclass and shape. This procedure for obtaining subclass information was extended to short boxes on pallet skids, which are commonly used at SPBS and APPS runouts and may be observed with mail of a single class or subclass.

For other mixed-mail containers, IOCS collects information on the type(s) of contents (loose pieces by shape, trays, bundles, sacks, etc.), but does not currently obtain subclass information. These tallies of "identified" mixed-mail containers would be the primary object of future mixed-mail subsampling enhancements to IOCS. In two cases—tall pallet boxes and Postal Paks—the

team decided not to attempt collecting content identifying information, as the size and opacity of these types of containers make it effectively impossible to reliably determine the contents of the entire container.

Finally, empty container handlings are separately identified; the redesigned software now specifically distinguishes containers with other empty equipment from containers with non-empty equipment and from totally empty containers (which could not always be separately identified with the old IOCS instrument).

Although the IOCS redesign team decided not to add container subsampling so that training efforts could be directed primarily towards implementing the new survey instrument for the collection of existing IOCS data elements, some new mixed-mail container data elements were added to IOCS in this round in anticipation of future data collections and/or mixed-mail model revisions.

The IOCS questionnaire redesign includes a reworking of the “item” versus “container” distinction to avoid the use of IOCS-specific jargon and to fix some problematic definitions—for example, both multiple loose pieces of mail in the hand and mailer-packaged bundles were considered “bundles” in IOCS. To deal with cases of employees observed handling multiple items or containers, the rules for determining mail eligible for sampling were reviewed and reformulated into a series of mail “isolation” and “selection” criteria applicable to different types of mail handlings; based on the responses to the questionnaire, the appropriate rule is presented on-screen to the data collector, helping to reinforce training and

to ensure that telephone respondents are aware of correct IOCS mail sampling procedures.

The redesigned IOCS instrument also collects container label information for sacks and pallets, and additional information on platform loading and unloading operations to allow future linking of IOCS and TRACS data. These data elements have not yet been incorporated into the Postal Service's mixed-mail procedures, pending further study.

II.C. Employee Activity Information

II.C.1. Clerks and Mail Handlers

In the mail processing cost component, both the Postal Service and the Commission methods use MODS workhour data to assign a portion of costs to operation-based cost pools. However, IOCS data are still required for the assignment of substantial costs incurred in certain types of facilities—mainly, post offices, stations, and branches that do not report MODS data, as well as Bulk Mail Centers (BMCs).[3] IOCS also provides a backup source of activity information to associate tallies with cost pools when the MODS operation is missing or invalid. IOCS activity information also determines volume-variable cost amounts for some cost pools in the Postal Service and particularly the Commission versions of the CRA.

[3] Bulk Mail Centers recently began reporting data to MODS, and my understanding is that the Postal Service plans to investigate the use of BMC MODS data to develop BMC cost pools.

As originally designed, the IOCS clerk and mail handler activity questions (IOCS question 18) made little or no distinction between types of distribution operations, and considered non-platform allied labor to be a subset of distribution-related activities. This characterization was broadly consistent with the mail processing environment prior to the advent of mechanized and automated sorting, and the growth of workshared mail that bypasses piece sorting at various Postal Service facilities. Adding, and over time greatly expanding, a question—question 19 in the old IOCS, identifying mail processing equipment used by the employee at the time of the reading—partly addressed the shortcoming, but still failed to represent operations in IOCS as they are currently organized, particularly for non-platform "allied labor" work. The structure of the IOCS clerk and mail handler activity question did not distinguish "quasi-allied labor" activities—container handlings and other work indirectly related to sorting but performed in the course of sorting operations—from "stand-alone" LDC 17 allied labor operations (e.g., opening units) on the basis of IOCS tally data. The implementation of MODS-based cost pools in BY 1996 partly remedied the IOCS shortcoming, but IOCS was still required to provide the activity information for sites not reporting to the MODS system. A focus of the activity redesign, therefore, was to allow a "MODS-like" classification of activities at all sites.

As sorting and allied labor operations proliferated on the workroom floor, certain IOCS response categories expanded accordingly. However, trying to classify new activities within the old questionnaire structure led to the

accumulation of a variety of questionnaire weaknesses. These included long response lists, common activities being included in counterintuitive response categories, and activities being classified under operationally non-significant labels such as “miscellaneous” and “other” operations that potentially have costing consequences. Meanwhile, for some major operations, IOCS collected little information on employees’ activities beyond whether or not the employees were handling mail at the time of the reading.

To collect better information on the wide variety of work activities performed in Postal Service facilities, the IOCS redesign involved developing a highly “telescoped” clerk and mail handler activity questionnaire incorporating an up-to-date characterization of the organization of operations. “Telescoping” is the practice of using more, but shorter, questions in conjunction with computer-directed branching to allow the IOCS-CODES software to classify a broad array of activities. This is in contrast to the old IOCS data collection software which was, in many respects, a computerized implementation of the scan sheets employed prior to the computerization of IOCS data collection in the early 1990s, and as such used relatively little branching or other computer direction of the questionnaire. The redesigned clerk and mail handler activity questions also include branches specific to plant, BMC, and non-plant activities.

II.C.2. City Carrier Activities

The IOCS redesign team also telescoped the city carrier route classification and activity questions. Since carrier units are more geographically

dispersed than mail processing plants (where most clerk and mail handler costs are incurred), it is necessary to use telephone readings for much of the IOCS city carrier data collection. Telescoping facilitates telephone administration of IOCS by focusing phone respondents on the specific information required at each stage of the questionnaire. The city carrier activity redesign also featured the development of a reading method that limits telephone respondents' need to visit the carrier's work location repeatedly, as well as scripted instructions directing respondents to obtain mailpieces according to IOCS selection rules. The scripted selection rule no longer depends on telephone respondents' familiarity with IOCS selection rules.

II.C.3. Supervisor Activities

Since the volume-variable costs for supervisor activities depend on the nature of the work being supervised, the supervisor activity questions required modification to mirror the structure of the activities for the supervised craft employees. The questions for higher-level supervisor activities—activities involving subordinate supervisors—were clarified to ensure that information was collected on the craft(s) of employees overseen by the subordinate supervisor.

II.D. Mailpiece Information

Accurate costing also requires reliable identification of subclasses and some other rate categories for sampled mailpieces. Similar to the need to classify the broader array of work activities present in today's automated

processing environment, the broader array of workshared mail products also requires more mailpiece markings to be recorded to accurately identify subclasses and rate categories. The resulting challenge of determining correct classifications was particularly acute for telephone respondents. The mail identification task is made still more challenging by mail marking rules that often provide mailers with increased marking options.

Previously, class identification in IOCS involved the application of a number of decision rules in which data collectors were instructed to observe class and rate markings, the revenue on the piece, and some physical mailpiece characteristics in order to arrive at a class or subclass determination. Data collectors entered the *result* of applying the decision rules, as well as supporting marking information. Data collectors were required to make and accurately record the information with minimal disruption to operations, and often (in the case of telephone tallies) without seeing the selected mailpiece. The IOCS redesign team believed that restructuring IOCS question 23—the IOCS mail identification question series—could improve the overall accuracy of mailpiece information by facilitating on-site readings and reducing the identification demands on telephone respondents.

In pursuit of these goals, the redesigned IOCS takes a different approach, in which data collectors record mail markings and other piece characteristics (they “key what they see”), influenced by the use of similar methods in the ODIS/RPW mail identification questions. With the IOCS redesign, the mail identification criteria are applied in the course of processing the mailpiece data

collected in the tally to determine class and subclass of mail. Additionally, the IOCS-CODES software incorporates a variety of features designed to improve the quality of the mailpiece data. These include telescoping of questions, for instance providing lists of rate marking options based on responses to previous questions, and providing on-line help to reinforce data collector training in identifying markings. The redesigned IOCS-CODES software also incorporates a number of additional consistency checks that alert data collectors to potential data entry errors during the reading itself, when typographical errors such as misregistered weight or revenue entries can be most easily corrected.

II.E. Telephone Readings

To conduct readings efficiently at over 3,700 facilities in the first-stage (finance number) sample, a large fraction of IOCS readings are conducted by telephone. Most observations of city carriers and other employees at non-plant post offices, stations, and branches are conducted by phone, as well as a small fraction of readings at plants and BMCs.[4]

The old IOCS data collection instrument was particularly problematic for telephone readings. The essence of a telephone reading is relaying the questions over the phone to the respondent, but the old questionnaire lacked specific wording for many questions, making it unclear exactly how the data collector should phrase the information requests. More generally, the old IOCS

[4] My understanding is that Postal Service's data collection policies have diminished the use of telephone readings at plants.

questionnaire effectively assumed telephone respondents were trained in IOCS sampling procedures, mail identification rules, and IOCS-specific jargon.[5]

The lengthy lists of responses for some questions also posed telephone administration issues. If respondents do not correctly absorb the entire list of responses, the result could be a missed class or rate marking, or an incorrect activity classification. Additionally, some questions were redesigned so that the user selects the first applicable option, eliminating the need to train data collectors or respondents on how to identify the best choice of all available options when more than one response may be applicable, as in the case of conflicting or otherwise non-exclusive markings or characteristics.

In the early phases of the redesign effort, the Postal Service consulted with the Census Bureau on Computer-Assisted Telephone Interview (CATI) techniques. My understanding is that the CATI project had been pursued as a possible approach to centralizing telephone readings, which the Postal Service eventually declined to implement. However, it provided useful guidance towards developing a script for the questionnaire administration that is friendly to both trained data collectors and untrained telephone respondents. In addition to the script, new features include on-screen instructions that help reinforce data collector training, and improved focus of “downstream” questions based on responses to previous items in the questionnaire.

[5] Examples include the distinctions between “items” and “containers” and between “miscellaneous” and “other” activities.

III. Testing

III.A. “Pre-Beta” Design Stage

The IOCS redesign effort involved a cross-functional working group including Statistical Programs, IOCS data users in Product Finance, operations experts, and personnel with experience in field data collection. In the initial phase of the redesign project, the existing IOCS survey instrument was “pulled apart” to identify the data elements necessary for ongoing CRA production and those that are not, existing items in need of reorganization, and new items required to meet the redesign goals. The redesigned questionnaire was developed as an extensive flowchart that was eventually implemented by the IOCS-CODES programmers (see USPS-LR-L-10, IOCS-CODES Computer System Documentation and Source Code).

Early in the process, members of the redesign team conducted site visits to identify work-activity classifications for inclusion in the employee activity sections of the questionnaire, and tested the feasibility of relaying the new IOCS questions to phone respondents.

The IOCS redesign team involved field personnel early in the process. While the questionnaire was under development, focus groups of data collectors and Managers of Statistical Programs (MSPs) were convened to obtain feedback on the draft questions and features of the IOCS-CODES data collection software. The focus groups helped the redesign team develop questionnaire language that is clear to data collectors and to telephone respondents, as well as user-friendly features of the IOCS-CODES software.

As an initial operating version of the new IOCS-CODES software was completed, the Postal Service conducted an informal test to verify that the new structure of the mail identification questions created no major problems that might not have been recognized in the design process. This initial “keying test” used a set of test mailpiece images derived from Postal Service training materials as well as real mailpieces collected from LRCA staff. The test pieces were selected to cover all CRA subclasses, but not to be representative of pieces sampled in IOCS. The test set over-represented pieces the redesign team judged to be difficult and included sufficient pieces from smaller mail categories to ensure that repeated observations from the associated mail marking responses would be obtained.

In the test, each data collector was assigned a group of 60 pieces to enter using both the production (old) IOCS-CODES software and a “pre-beta” version of the redesigned software that was provided to the testers without documentation or detailed training. Given the test environment and the deliberate inclusion of difficult pieces in the test set, the results had no bearing upon error rates under “real world” conditions; rather, this pre-beta test was intended to show the relative performance of the old and new IOCS-CODES software under controlled conditions.

The test showed similar error rates between the old and new IOCS-CODES software. As such, it gave the redesign team additional confidence that the new IOCS questionnaire was not fundamentally more difficult to use, while

leaving room for further refinement and data collector training. The team proceeded to refine the instrument for a beta test phase prior to deployment.

III.B. Beta Test

The Postal Service conducted a field test of improved beta releases of the software to identify any issues that could be addressed during implementation and training. Because the beta software was expected to provide improved data quality, the redesign team also expected that beta test data would presage possible data differences that might become evident upon full implementation.

The test commenced in May, 2003, at 6 districts; at that time, the Postal Service planned to deploy the software nationally at the start of FY 2004 (October 1, 2003). The IOCS readings for the test sites were scheduled according to the normal IOCS sample selection procedure. The scheduled readings were then conducted with the test release of the new software. In the IOCS production data, the beta readings were recorded as "missed."[6]

The compilation of tally data from the beta test made it apparent that some noteworthy shifts in the IOCS results were likely once the redesigned IOCS software was fully deployed. However, rather than deploy the new IOCS software as originally planned at the beginning of FY 2004, the IOCS team decided to delay implementation, thus allowing time for further investigation and expansion of beta testing—the beta test was expanded to three additional districts—and for further fine-tuning of the software. The Postal Service

[6] That is, the production data for FY03 and BY04 did not include results from the beta test readings with the new IOCS-CODES software.

conducted two additional tests of the redesigned software: a “photocopy study” comparing beta test results to actual mailpiece characteristics obtained from images of sampled pieces, and a “keying study” comparing the performance of the new and old mailpiece identification questions under “laboratory” conditions.

The beta test continued through the end of FY 2004. The direct tally results from the final beta version of question 23 prior to full release are presented in Table 1, below.

Table 1. Beta Test Direct Tally Subclass Distribution, Final Pre-Release Version

Mail Class	Clerks and Mail Handlers Beta	Clerks and Mail Handlers Non-Beta	Clerks and Mail Handlers % Shift	Carriers Beta	Carriers Non-Beta	Carriers % Shift	Total Beta	Total Non-Beta	Total % Shift
First-Class SnglPC	35%	37%	-6%	27%	32%	-17%	33%	35%	-7%
First-Class Presort	12%	10%	15%	20%	15%	35%	13%	11%	16%
FCM SnglPC – CARD	1%	2%	-11%	2%	2%	-23%	1%	2%	-15%
FCM Presort – CARD	1%	0%	29%	1%	1%	42%	1%	0%	30%
Priority	6%	8%	-18%	1%	1%	-15%	5%	6%	-12%
Express	1%	2%	-9%	0%	0%	1%	1%	1%	-1%
Periodicals	6%	6%	-11%	7%	8%	-10%	6%	7%	-13%
Standard-ECR	3%	2%	55%	12%	9%	36%	5%	4%	27%
Standard-Regular	23%	22%	3%	27%	30%	-10%	23%	24%	-3%
Parcel Post	2%	2%	6%	0%	0%	21%	2%	1%	16%
Bound Printed Matter	3%	1%	151%	1%	0%	56%	2%	1%	153%
Media Mail	1%	1%	13%	0%	0%	28%	1%	1%	21%
USPS mail	2%	2%	37%	2%	1%	107%	2%	2%	51%
Intl mail	4%	5%	-24%	0%	1%	-84%	3%	4%	-17%
Free mail	0%	0%	-11%	0%	0%	102%	0%	0%	3%
Total Obs.	5,146	40,457		1,166	14,134		6,312	54,591	

III.C. The Photocopy Study

The fundamental limitation of the beta test was that it provided no means of determining whether data shifts reflected changes in mail mix, improved data quality, or data entry errors. The photocopy study was thus conceived as a means for comparing results from the revised IOCS-CODES software with the "truth."

Nine beta test districts participated in the photocopy study. When a direct tally was taken at a participating site, the data collector or telephone respondent was also instructed to photocopy the sampled piece. The accumulated photocopies were collected and mailed to LRCA, where staff members entered the pieces using the new IOCS-CODES software.[7] To ensure correct results, two LRCA staffers independently entered each piece in the beta IOCS-CODES software, and the results were reconciled to eliminate keying errors. If needed, senior LRCA staff with mail identification experience resolved any remaining discrepancies. LRCA sent the results from the photocopied pieces to USPS Headquarters, where the data were assigned activity codes and linked to the field data entry results. Summary tables were produced showing differences between the "actual" results from the LRCA entry and the field results.

The photocopy study eventually collected 5,344 pieces from three major revisions to IOCS question 23 (the mailpiece identification questions); ultimately, 3,063 pieces were obtained from tallies that were recorded using the last pre-

[7] The staff used the same software version used in the field data collection.

release version of question 23.[8] This represents 49 percent of the direct tallies recorded at the participating sites for the near-final version. Of these, 50 percent were telephone readings. Compared to the beta test results, the photocopy study data include fewer parcel-shape pieces—and more specifically, fewer Package Services pieces—mainly due to the difficulty of photocopying larger parcels. The principal results of the study are presented in Table 2, below.

Over the course of the study, class and subclass-level error rates declined markedly with the question 23 revisions. Error rates are higher for finer levels of class/subclass/rate category detail because they are dependent on correct entry of more data elements.

A key unknown prior to the photocopy study was how real-world data collection conditions, including telephone tallies and the need to interrupt operations for on-site readings, would affect IOCS error rates. However, the absolute error rates under the conditions of the photocopy study were roughly comparable to a contemporaneous keying test conducted under laboratory conditions. As a result, it does not appear that the performance of the new IOCS-CODES software suffers material adverse effects from field data collection conditions.

[8] Some beta release versions incorporated only minor tweaks to question 23.

Table 2. Summary of Photocopy Study Tallies by Subclass and Beta Software Version

Unweighted tallies	First			Second			Third (Final Pre-release)		
Mail Class	LRCA	Beta	% Shift	LRCA	Beta	% Shift	LRCA	Beta	% Shift
First-Class Single Piece	162	168	4%	596	599	1%	998	1,018	2%
First-Class Presort	78	74	-5%	276	259	-6%	493	470	-5%
First-Class Single Piece – CARD	7	10	43%	28	32	14%	50	51	2%
First-Class Presort – CARD	1	3	200%	7	5	-29%	19	19	0%
Priority	26	28	8%	81	81	0%	156	154	-1%
Express	7	7	0%	16	17	6%	37	36	-3%
Periodicals	35	35	0%	125	121	-3%	199	198	-1%
Standard-ECR	32	31	-3%	99	101	2%	184	177	-4%
Standard-Regular	121	117	-3%	410	412	0%	789	794	1%
Parcel Post	3	3	0%	23	27	17%	19	19	0%
Bound Printed Matter	4	3	-25%	17	15	-12%	6	7	17%
Media Mail	1	1	0%	13	15	15%	30	28	-7%
USPS mail	6	7	17%	22	29	32%	22	32	45%
Intl mail	22	18	-18%	61	59	-3%	58	56	-3%
Free mail	1	1	0%	1	3	200%	3	4	33%
Total	506	506		1,775	1,775		3,063	3,063	
Subclass errors		25			68			83	
Subclass error percentage		4.9%			3.8%			2.7%	
Class errors		13			36			32	
Class error percentage		2.6%			2.0%			1.0%	

III.D. The 2004 Keying Study

The final element of pre-release testing was a "keying test" conducted in April, 2004, using methods refined from the preliminary keying test. As with the earlier test, a set of 300 test pieces was developed to cover all of the CRA mail categories while over-representing relatively less commonly observed subclasses to ensure that the associated question 23 responses would be encountered in the test results with sufficient frequency. Since some photocopy study data were available as the set of test pieces was being assembled, the distributions of mail markings for the First-Class Mail and Standard Mail pieces collected in the photocopy study were used to calibrate a "realistic" distribution of those characteristics in the keying test set.[9] Participating data collectors were assigned to key 60 pieces from the test set using either the production IOCS-CODES software or the current beta version of the redesigned software.

The study yielded 4,327 observations from the old or production IOCS-CODES software and 3,284 observations from the beta software. A few test pieces were identified as producing unusually large error rates in the old software; the results also were calculated excluding these outliers, which did not materially affect the measured error rate in the redesigned software. The results were calculated from raw (unweighted) responses as well as results weighted to FY 2003 direct tallies by subclass, with the latter intended to better indicate "true"

[9] For example, photocopy study data were used to calibrate the frequency of Manifest Mailing System (MMS) rate markings in the keying test set. The presence of MMS markings is not observable separate from other presort mail markings in historical IOCS production data.

error rates given the prevalence of common (and relatively easy-to-code) pieces in actual IOCS samples. The results are summarized in Table 3, below. The subclass-level error rates from the redesigned IOCS-CODES software were less than half those from the old IOCS production software.

Table 3. Summary of Subclass Error Rates from April 2004 Keying Study

Version	Obs.	Error rate, CRA Subclass	Obs. (outliers removed)	Subclass error rate (outliers removed)	Weighted Subclass error rate (outliers removed)
Redesigned beta	3284	2.1%	3240	2.1%	1.7%
Production ("old" IOCS)	4327	5.8%	4268	4.7%	3.8%

IV. Changes Due to IOCS Redesign in the BY 2005 CRA

IV.A. Changes in the Composition of the Tallies

The composition of the FY 2005 data set, in terms of tallies with subclass information ("direct" tallies), mixed-mail tallies, and other (not-handling) tallies, showed relatively large changes compared to recent prior-year results from the old IOCS-CODES software. Direct tallies increased to 48 percent of mail processing tallies, up 5 percentage points from 43 percent in BY 2004. Direct tallies increased to 20 percent of window service labor in BY 2005 (before variabilities) from 17 percent in BY 2004. Total direct tallies also increased in the city-carrier in-office component (C/S 6.1) over BY 2004, though the increase slightly lagged the increase in total C/S 6.1 cost. Mixed-mail containers with "identified" contents increased to 6.8 percent of mail processing tallies, from 5.7 percent in BY 2004; nearly all of the increase was identified as loose pieces in the containers. See Table 4, below, for a summary of the changes.

Table 4. Composition of IOCS Tallies by Cost Component

	BY00			BY04			BY05		
Tally Category	Mail Proc	Window	Carrier	Mail Proc	Window	Carrier	Mail Proc	Window	Carrier
Direct Tallies									
Pieces	34.9%			30.4%			36.2%		
Items	10.1%			12.0%			9.3%		
Containers	0.4%			0.5%			2.2%		
Total Direct	45.3%	13.3%	21.6%	42.9%	17.2%	17.5%	47.7%	20.0%	18.0%
Mixed Tallies									
Mixed Item Tallies									
Uncounted Item	0.5%			0.4%			0.2%		
Empty Item	2.6%			2.5%			1.8%		
Total Item	3.1%			2.9%			2.0%		
Mixed Container Tallies									
Identified Container									
Loose Pieces	1.7%			1.3%			2.5%		
Items	3.2%			4.4%			4.3%		
Subtotal	4.9%			5.7%			6.8%		
Unidentified Container	0.2%			1.2%			0.2%		
Empty Container	4.5%			4.8%			4.6%		
Total Container	9.6%			11.6%			11.6%		
Tall Pallet Boxes							0.4%		
Total Mixed	12.7%	0.2%	2.0%	14.5%	0.4%	2.0%	14.0%	0.4%	2.4%
Not-Handling Tallies	41.9%	86.5%	76.4%	42.6%	82.4%	80.5%	38.3%	79.7%	79.6%
TOTAL	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Sources: USPS-T-11; Docket No. R2005-1, USPS-T-11; Docket No. R2001-1, USPS-T-13; analysis of IOCS data.

The automatic prompting for mailpiece selection in several branches of the redesigned IOCS-CODES software appears to account for much of the direct tally increase in mail processing. The BY 2005 data suggest that data collectors previously may have underutilized the sampling rules intended to obtain pieces from not-handling observations at automated sorting operations. Direct tallies should be obtained for most of the machine runtime, as well as some non-runtime activities such as final sweeps of trays or tubs from machines. Indeed, sorting operations historically have showed high direct tally fractions relative to other mail processing operations, as would be expected. Those fractions had, however, been somewhat lower than the fractions of runtime and other handling time recorded in the new IOCS activity data. Increased runtime and other handling time may also occur as a byproduct of the Postal Service's productivity improvement initiatives.

For carrier in-office tallies, the increased tallies appear to reflect an increase in measured in-office time, in line with data from the TACS system; previously, IOCS tended to record less in-office time than TACS. Carrier in-office activities mostly involve handling mail, while on-street readings result in not-handling (activity code 6710) tallies, so an increase in carrier in-office tallies would be expected to result in more carrier handling and direct tallies, other things equal. In the redesigned carrier questionnaire, data collectors and respondents are instructed to obtain a mailpiece using IOCS selection rules[10]

[10] The respondent is instructed to obtain a piece (either the top piece or the piece closest to the sampled employee's right hand) whenever available. Later data processing determines whether the mailpiece information is used for the activity code, depending on what the employee is handling. The combined procedure is equivalent to the traditional "top piece rule" criteria.

when observing the carrier; the change in procedure was intended to reduce respondents' discretion in choosing pieces. This did not materially change the rate with which carrier in-office direct tallies were observed.

The identified container increase is likely the result of training to clarify when employees should be considered to be "handling" the container; it was clarified that employees using powered transport equipment to move containers should be considered to be "handling" the containers. There was an accompanying increase in direct tallies involving the use of powered transport equipment, as well as some additional direct tallies for manually handled containers. The detailed container isolation and selection rules also appear to have contributed to the change by simplifying the identification of the fractions of mixed containers that are occupied by various item and loose piece types when the employee is handling multiple containers simultaneously; data collectors are now specifically directed to record the contents for the selected container.

IV.B. Effects on Mail Processing Cost Pools

The redesigned IOCS question 18 extends MODS operation concepts to BMC and Post Office/Station/Branch operations. This allows "quasi-allied labor" activities associated with a sorting operation to be distinguished from general allied labor operations that may incidentally be carried out in the vicinity of a specific sorting operation. The former activities have a strong causal relationship to the sorting operation (and are generally part of the MODS cost pools), while the latter are ambiguous and merit "broader" distribution in general allied labor pools to avoid biased mixed-mail distributions.

Previously, the limitations of IOCS activity information led the costs of quasi-allied labor activities associated with sorting operations at BMCs and Post Offices/Stations/Branches to be included in the general allied labor cost pools. In BY 2005, when incurred as part of a sorting operation, those activities' costs are included in the sorting cost pools. Accordingly, the MODS-like operation definitions from the redesigned IOCS question 18 generally shift BMC and non-MODS costs from allied labor cost pools to distribution cost pools.

IV.C. Subclass Cost Changes Due to IOCS Redesign

Implementing the redesigned IOCS survey instrument appears to have resulted in a number of subclass cost shifts in the BY 2005 CRA. In this section, I discuss subclasses that saw relatively large changes in clerk and mail handler (mail processing and/or window service) unit costs between BY 2004 and BY 2005, and probable IOCS design-related causes of the shifts. By "large" unit cost changes, I refer to changes that exceed the volume-variable cost change for all subclasses by amounts that are both statistically and quantitatively significant.[11]

To isolate the effects of IOCS redesign on costs, I have sought to remove the effects of general cost level changes and other adjustments to IOCS-based costs carried out in the CRA model (e.g, premium pay adjustments). That is, I examine the outputs of witness Van-Ty-Smith's IOCS data processing, which serve as inputs to the CRA model, rather than at the level of the final CRA segments and components. In addition to clerk and mail handler labor cost

[11] I consider unit cost changes of less than 0.05 cents to be quantitatively insignificant. I also do not discuss changes for the International Mail, Free Mail, or USPS Mail categories.

inflation, the update to the Postal Service volume-variability analysis increased variabilities on average by two percentage points in the Postal Service CRA (from 83 percent to 85 percent, see USPS-T-12).

Most IOCS-related subclass changes in the window service component are either statistically or quantitatively insignificant. It is my understanding that the BY 2005 window service costs incorporate corrections and updates to volume-variability factors. For a presentation of the effects of these changes see the testimony of witness Bradley (USPS-T-17). Even the increase for single piece First-Class Mail, though statistically significant, is not especially large—the IOCS-based direct labor cost change is 0.11 cents/piece, before the distribution of overheads and application of variabilities. The underlying phenomenon is a modest increase in costs for the "serving a customer" activity over BY 2004 that is concentrated in activities involving specific pieces of mail. See Table 5, below.

Table 5. Window Service "Serving A Customer" Tallies by Activity, BY 2004-BY 2005

Activity Category	BY04		BY05		Change
Selling Postage - Direct Tallies	11,243	1.8%	25,721	4.1%	14,478
Selling Postage - Mixed/Not Handling	630,612	98.2%	606,379	95.9%	-24,233
Subtotal Selling Postage	641,855	100.0%	632,100	100.0%	-9,755
Other Activities - Direct Tallies	249,173	38.1%	287,129	39.0%	37,957
Other Activities - Mixed/Not Handling	404,743	61.9%	449,912	61.0%	45,169
Subtotal Other Activities	653,916	100.0%	737,041	100.0%	83,125
Total Direct Tallies	260,415	20.1%	312,851	22.9%	52,435
Total Mixed/Not Handling	1,035,356	79.9%	1,056,291	77.1%	20,935
Total At Window - Serving a Customer	1,295,771	100.0%	1,369,142	100.0%	73,370

I discuss factors affecting mail processing volume-variable costs for selected other subclasses below. To assist in the analysis, I decomposed the mail processing volume-variable cost changes from BY 2004 (Postal Service method) to BY 2005 into cost pool changes, distribution key changes, and changes in the overall volume-variable cost level. I compared the unit cost changes relative to the cost shift to the approximate standard error of the difference. The result of the decomposition is shown in Table 6, below.

Table 6. Decomposition of Changes in Mail Processing Cost

Subclass	Cost Pool	Dist Key	Cost Level	Total Cost	Volume	Unit Cost	Unit Cost vs. Cost Level	Approximate Standard Difference*
First-Class SnglPC	-0.3%	-4.3%	6.0%	1.2%	-4.0%	5.3%	-0.6%	-0.66
First-Class Presort	0.8%	6.4%	6.0%	13.6%	3.7%	9.6%	3.4%	1.42
FCM SnglPC – CARD	-0.4%	-4.9%	6.0%	0.3%	-0.2%	0.5%	-5.1%	-1.06
FCM Presort – CARD	0.0%	20.3%	6.0%	27.5%	7.0%	19.1%	12.5%	1.46
Priority	3.9%	7.9%	6.0%	18.8%	4.6%	13.6%	7.2%	3.69
Express	5.2%	6.3%	6.0%	18.5%	2.5%	15.6%	9.1%	2.38
Within-County Periodicals	-7.7%	69.3%	6.0%	65.5%	0.3%	65.0%	55.7%	3.40
Outside-County Periodicals	-2.4%	1.6%	6.0%	5.1%	-0.8%	6.0%	0.0%	0.02
Standard-ECR	-6.2%	53.9%	6.0%	53.0%	6.1%	44.1%	36.0%	10.51
Standard-Regular	-1.1%	-6.3%	6.0%	-1.8%	5.4%	-6.8%	-12.0%	-9.58
Parcel Post	4.3%	16.3%	6.0%	28.6%	3.2%	24.5%	17.5%	4.45
Bound Printed Matter	5.0%	5.4%	6.0%	17.2%	5.4%	11.2%	4.9%	0.89
Media Mail	9.2%	-6.8%	6.0%	7.8%	-4.3%	12.7%	6.3%	1.01
International Mail	-2.2%	-7.1%	6.0%	-3.7%	0.9%	-4.6%	-10.0%	-3.43

* “Unit Cost vs. Cost Level” divided by the approximate CV.

IV.C.1. Periodicals

Within-County Periodicals showed the largest percentage increase in mail processing unit costs—65 percent (USPS method, before CRA adjustments) overall; 56 percent above the general increase in mail processing volume-variable cost. By comparison, the 6 percent unit cost change for Outside-County Periodicals (in line with the general volume-variable cost increase) was modest.

The Within-County increase appears to have resulted from new methods to facilitate identification of Periodicals in the redesigned Question 23. Previously, the data collector (or respondent) identified the mail as Periodicals in the "class of mail" question, then provided information on the title, ISSN, and/or publication number in a follow-up question, assisted by a lookup list of titles built into the IOCS-CODES software. In FY 2004, the Periodicals lookup list was greatly expanded, from fewer than 1,500 titles to more than 20,000 titles, resulting in an increase in tallies concentrated in Outside-County Periodicals titles added to the list in FY 2004. In the redesigned software, Periodicals may be identified through a questionnaire branch specifically directed towards pieces without indicia, or alternately via "Periodicals" markings on the piece. As before, a lookup list facilitates entry of title, ISSN, and/or publication number.

Between BY 2004 and BY 2005, the increase in Periodicals tallies was concentrated in Within-County titles not included in the FY 2004 or pre-FY 2004 lookup lists. The composition of Outside-County tallies is similar in BY 2004 and BY 2005. The tally composition comparison is shown in Table 7, below. Tallies not on either lookup list would include the least commonly encountered titles in

the system. Any tally preliminarily identified as Within-County Periodicals in the automated processing of IOCS data is reviewed for evidence of eligibility to claim Within-County rates (see USPS-LR-L-9, Appendix D). Since title information must be entered in IOCS, and the tallies are reviewed after processing, I consider it unlikely that pieces not belonging to the Within-County subclass are being misidentified. The photocopy and keying studies also showed no tendency for data collectors to misidentify pieces of other classes as Periodicals.

Table 7. Composition of Periodicals Tallies, FY 2002-BY 2005

Category	FY02 Dlr Wgts	FY02 % of Total	FY03 Dlr Wgts	FY03 % of Total	BY04 Dlr Wgts	BY04 % of Total	BY05 Dlr Wgts	BY05 % of Total	BY04-BY05 % Change
In-County in FY03 table	1,717	23%	1,698	24%	1,096	15%	1,285	12%	17%
In-County in FY04 table	2,957	39%	2,589	36%	3,468	49%	3,751	35%	8%
In-County not in either table	2,875	38%	2,917	40%	2,551	36%	5,698	53%	123%
Total In-County	7,549	100%	7,204	100%	7,115	100%	10,734	100%	51%
Outside County in FY03 table	269,398	76%	262,970	75%	237,223	59%	271,606	57%	14%
Outside County in FY04 table	66,966	19%	69,113	20%	145,088	36%	173,529	37%	20%
Outside County not in either table	18,405	5%	17,449	5%	20,601	5%	29,955	6%	45%
Total Outside County	354,769	100%	349,532	100%	402,912	100%	475,090	100%	18%
Total Periodicals, FY03 table	271,115	75%	264,668	74%	238,318	58%	272,892	56%	15%
Total Periodicals, FY04 table	69,923	19%	71,702	20%	148,556	36%	177,281	36%	19%
Total Periodicals not in either table	21,280	6%	20,366	6%	23,152	6%	35,653	7%	54%
Total Periodicals	362,318	100%	356,736	100%	410,026	100%	485,825	100%	18%

Tally dollar weights in $000

IV.C.2. Standard Mail

The FY 2005 IOCS data lead to a marked increase in ECR unit mail processing costs, and a smaller but statistically significant decrease in non-ECR Standard Mail unit costs. ECR costs increased 44 percent (36 percent above the overall mail processing volume-variable cost increase), while non-ECR costs fell by 7 percent (12 percent relative to overall volume-variable cost). The CARMM city carrier in-office labor costs show a similar pattern.[12]

The changes to the IOCS mail identification questions (see Section II.D, above) generally were intended to focus data collectors and respondents on identifying markings. With ECR, identifying the class of mail (Standard Mail) but not the rate marking (ECRLOT, ECRWSH, or ECRWSS) would lead to an overstatement of Standard Regular costs and an understatement of Standard ECR costs. This is the likely cause of the Standard Mail shifts.

The old IOCS-CODES software incorporated a consistency check that required entry of an ECR rate marking if the "class of mail" (old question 23B) was entered as Standard ECR, but not if the "class of mail" was entered as Standard Mail.[13] In BY 2004, 12.6 percent of ECR tallies were entered as "Standard Mail" (vs. Standard ECR) in the old question 23B. The ECR markings themselves were middle choices in a relatively long list of rate markings in the old question 23C. The new IOCS design uses a "telescoped" sequence of markings

[12] The (very small) window service costs for both ECR and Regular decreased in percentage terms, however, despite the overall increase in mail-related window service costs.

[13] The pieces usually will bear a "Presorted Standard" marking (or an abbreviation) in the indicia, and an ECR rate marking elsewhere, such as an optional endorsement line.

options appropriate for pieces recorded as having Standard Mail class markings. It also includes instructions on locating markings in endorsement lines, where ECR rate markings commonly are located. As a result, it is less likely that the class would be correctly identified while the rate marking was missed. The photocopy study showed no tendency for large or systematic misclassifications of ECR pieces: the study collected 347 ECR pieces, while data collector entry resulted in 343 pieces coded as ECR pieces—a slight net understatement of ECR. Misidentification of non-Standard Mail pieces as ECR was relatively rare according to the photocopy study data, and offset by cases in which ECR markings were missed.

IV.C.3. Priority Mail

Mail processing unit costs for Priority Mail increased 14 percent overall, 7 percent above the overall volume-variable cost level. The bulk of the cost shift is the result of a rise in Priority Mail direct tallies, concentrated in operations where significant amounts of Priority Mail processing would be expected (Manual Priority, SPBS Priority, non-MODS manual parcel-shape sorting). In contrast to ECR and Within-County Periodicals, where IOCS question 23 changes improving the identification of the subclasses are the likely drivers of the cost changes, the Priority Mail cost shift derives in part from increases in total cost (not measured by IOCS) in facilities that previously were Priority Mail Processing Centers (PMPCs), now Logistics and Distribution Centers (L&DCs).

Costs recorded at finance numbers assigned to the PMPC cost pool in BY 2004 increased sharply in BY 2005. While my understanding is that L&DC

operations are diversifying beyond Priority Mail processing, the L&DC cost increases included Priority Mail-specific operations. Most of the remaining Priority Mail cost increase resulted from increased identification of containers with loose parcel-shape pieces in the FY 2005 IOCS data. Many containers of loose IPP and parcel-shape pieces result from runs of Priority Mail processing schemes on SPBS, LIPS, and APPS equipment.

IV.C.4. Parcel Post

Parcel Post unit mail processing costs increased 24 percent, 18 percent above the volume-variable cost level increase. Somewhat like Priority Mail, the Parcel Post cost increase reflects a combination of additional direct tallies, increased costs related to handling mixed parcels, and some effect from cost pool changes. The larger unit cost increase for Parcel Post mostly reflects a larger direct tally increase than was observed for Priority Mail; that also led to a relatively larger increase in mixed-mail costs.

Consistent with the different mail processing flows for Parcel Post versus Priority Mail, the Parcel Post increases are concentrated in BMC operations and parcel operations at post offices, stations, and branches. Including “quasi-allied labor” costs associated with parcel operations at those facilities in the sorting cost pools appears to have shifted some mixed-mail from “broad” distribution keys in the allied labor cost pools to “narrower” distributions in the sorting operations that better reflect sorting-related cost causality.

IV.C.5. Express Mail

Express Mail unit costs increased 16 percent, 9 percent above the general volume-variable cost level increase. The increase is due to a combination of cost pool-related shifts and direct tally increases.

The cost pool shift is concentrated in the Express Mail In-Office cost pool for post offices, stations, and branches. Volume-variable costs for that pool increased $12.3 million, or 37.3 percent, over BY 2004. Express Mail operations were classified as “miscellaneous” operations in the old IOCS questionnaire; it may have been difficult for respondents less familiar with IOCS to classify the operations appropriately. The fraction of Express Mail in the distribution key actually increased fractionally, so it does not appear that non-Express Mail activities are being misclassified. Indeed, Express Mail costs in the general post office, station, and branch allied labor cost pool decreased.

Pieces for which the data collector indicated that the piece was paid with an Express Mail corporate account comprise much of the direct tally increase. The Express Mail corporate account option had moved from the eighteenth and last response in the FY 2004 indicia question to the third option in question 23E2 (“presence of indicia”). While the photocopy study showed some indication that the Express Mail corporate account response was over-selected, it did not lead to material errors in the mailpiece coding—that is, the affected pieces actually were Express Mail. Thus, there is no indication that the shift represents misclassification of non-Express Mail pieces.

IV.D. Sampling Variation of Subclass Estimates

The IOCS redesign does not affect the IOCS sample size, and accordingly would be expected to have relatively little effect on the sampling variations of the IOCS-based estimates. Still, the coefficients of variation (CVs) reported by Dr. Czigler for the mail processing volume-variable cost estimates exhibit some improvement in excess of what would be expected from returning the IOCS beta sites to the production sample: the median CV for the CRA subclasses declined by 11 percent, from 4.7 percent in BY 2004 to 4.2 percent in BY 2005. The additional improvement in the CVs is the result of the increased share of direct tallies in the mail processing component.