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

POSTAL RATE AND FEE CHANGES	:	Docket No. R2005-1
PURSUANT TO PUBLIC LAW 108 -18	:	

DIRECT TESTIMONY OF ROBERT L. SHAW, JR. ON BEHALF OF THE UNITED STATES POSTAL SERVICE

USPS-T-2

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USPS-LR-K-9/R2005-1	IOCS Statistical and Computer Documentation (source code and data on CD-ROM)
USPS-LR-K-10/R2005-1	IOCS-CODES Computer System Documentation and Source Code (on CD_ROM)
USPS-LR-K-23/R2005-1	Supplemental Statistical Programs Policies & Data Collection Instructions
USPS-LR-J-34/R2001-1	Supplemental Statistical Programs Policies & Data Collection Instructions
USPS-LR-I-14/R2000-1	Handbook F-45, In-Office Cost System, Field Operating Instructions

DOWNSTREAM USERS

USPS-T-9	Base Year Costs – Witness Meehan
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DIRECT TESTIMONY
OF
ROBERT L. SHAW JR.

AUTOBIOGRAPHICAL SKETCH

My name is Robert Shaw. I am a Mathematical Statistician in Revenue and Cost Systems, Finance. I have been employed in this capacity by the Postal Service since November of 2000. In my present position, I am the program manager for the In-Office Cost System (IOCS). I testified in Docket No. R2001-1 about IOCS (USPS-T-1). I was program manager for the System for International Revenue and Volume Outbound (SIRVO) between 1998 and 2000. I held various positions, including program manager, as a Mathematical Statistician with the Origin Destination Information System (ODIS) between 1990 and 1998.

From 1975 to 1990, I was employed as a letter carrier by the Postal Service. Within this time frame I was also detailed into supervisory roles in Delivery Services as needed.

I received an Associate of Arts Degree in 1980 from Miami University of Ohio, a Bachelor of Science Degree in Mathematics in 1983 and a Master of Arts Degree in Economics in 1986, both from Cleveland State University.

I. PURPOSE AND SCOPE OF TESTIMONY

The Postal Service's revenue and cost accounting systems do not generally coincide perfectly with, or specifically identify, individual categories of mail or service. Therefore, the Postal Service must rely on various statistical systems and special studies to provide estimates of accrued costs for certain postal operating functions, and to provide estimates of revenues, volumes and attributable costs for the various categories of mail. IOCS is a work sampling system designed to produce cost estimates for various employee activities in the office.

The purpose of my testimony is to describe IOCS. My testimony describes the sample design, data collection methodology, the editing and processing of IOCS sample data, the types of estimates produced from the IOCS, and the reliability of major estimates.

II. Sample Design

The In-Office Cost System uses a probability sample of employee activity to develop estimates of proportions of employee work time spent on various office functions, and for certain functions, the proportions of time spent handling and/or processing specific mail categories.

The IOCS is an ongoing system with a sample selected for each pay period. Approximately 4-5 weeks prior to each sample pay period, sample employees are selected from the most current payroll files for the IOCS sample offices. Employees are

sampled independently within Cost Ascertainment Group (CAG) for each of four employee crafts: (1) Clerks, (2) Mail Handlers, (3) City Carriers, and (4) Supervisors. Selected employees are then randomly assigned an instant in time during the sample week for observation.

The IOCS sample design documentation along with sample selection programs are contained in the IOCS Statistical and Computer System Documentation, USPS-LR-K-9/R2005-1. Section II of the IOCS System Documentation describes the sample design; Section IV describes the sample selection programs. Appendix H (IOCS CD-ROM) contains the sample selection programs.[1]

III. Data Collection

The IOCS data collection instrument consists of a data entry program residing on a laptop computer. This hardware and software is referred to as the IOCS Computerized On-Site Data Entry System (IOCS-CODES). At the scheduled sample time, the data collector locates the sample employee and enters data describing the employee's observed activity directly into CODES. The data entry software guides the data collector through the appropriate questions and performs basic consistency checks on the entered data. Sample data from various laptops at one site are transferred to a base unit computer (a desktop PC). Then, five times a month, the data are transmitted from the base units to a mainframe computer for further editing and processing.

An overview of field IOCS test administration is contained in section V of the IOCS Documentation (USPS-LR-K-9/R2005-1). Detailed descriptions of IOCS data collection procedures are contained in the IOCS Field Operating Instructions, Handbook F-45 (USPS-LR-I-14/R2000-1). Updates to the Handbook F-45 are contained in Supplemental Statistical Programs Policies & Data Collection Instructions (USPS-LR-J-34/R2001-1 and USPS-LR-K-23/R2005-1). IOCS-CODES computer system documentation and source code are contained in USPS-LR-K-10/R2005-1.

IV. Data Validation and Editing

After the IOCS data are transmitted to the mainframe computer, a series of COBOL and SAS programs performs data validation, editing, and automated error correction. Included in this process is the assignment of activity codes used in subsequent costing programs.

Data validation and editing procedures (and the programs associated with these procedures) are contained in Section VI and several appendices of the IOCS Statistical and Computer Documentation, USPS-LR-K-9/R2005-1. Specifically, Section VI of USPS-LR-K-9 describes the validation and editing programs, Appendix B contains a flowchart documenting the assignment of activity codes, Appendix C describes detailed edit rules, Appendix D documents the Within County periodicals edits, and Appendix E contains a flowchart documenting the encirclement rules used to assign special service activity codes. All validation and editing programs are contained on the CD-ROM described in Appendix H.

[1] Appendices A-I refer to the appendices of the IOCS Statistical and Computer Documentation, USPS-LR-K-9/R2005-1.

V. Estimation

The IOCS sample data are used to produce estimates of costs by function for each craft group. Cost weight factors are assigned to each sample observation, reflecting both the sample design and accrued costs for CAG and craft group. Hence, a dollar amount can be associated with each record in the IOCS data file. The cost weighted IOCS data file is then converted into a final SAS data set that is used for producing cost estimates.

Several craft level reports are produced from the final IOCS data file to be used for CRA spreadsheet inputs. One such report is the Carrier Mixed Mail (CARMM) report. Section VII (Estimation), Part G (City Carrier Mixed Mail Cost Distribution Extract and Report) of the IOCS Statistical and Computer Documentation (USPS-LR-K-9/R2005-1) describes the production process of these reports.

As with any sample based estimate, selection of a different sample (according to the same sample design), could result in slightly different estimates. The amount of variation one could expect due to sampling alone is quantified by the coefficient of variation (CV). CVs can be used to produce confidence intervals for estimates. Table 1 presents cost estimates, their estimated CVs, and 95 percent confidence intervals for Cost Segment 3.1, Mail Processing. Tables 2 and 3 provide similar estimates for City Carriers, and for Supervisors. Appendix I describes the methodology used to calculate the CVs.

The development of the cost weighting factors, production of the final SAS data files, CV estimation, and descriptions of various craft level reports are provided in Section VII of USPS-LR-K-9/R2005-1. The source code for weighting, production of final data files, CV estimation, and craft reports are contained on the CD-ROM, described in Appendix H (IOCS CD-ROM Contents).

Table 1

BY04 MODS-based estimated mean distributed costs and CVs[2]
Cost Segment 3.1 Mail Processing - Clerks and Mail Handlers

Subclass	Cost Est. ($1,000)	Std Deviation	95% Lower Limit	95% Lower Limit	CV
First Class					
Letters and Parcels	4,221,963	30,752	4,159,810	4,280,357	0.73%
Presort Letters and Parcels	1,357,980	20,190	1,315,207	1,394,353	1.49%
Private Mailing Cards	165,954	6,105	154,046	177,979	3.68%
Presort Cards	47,729	3,365	41,006	54,196	7.05%
Priority	779,005	12,120	755,125	802,634	1.56%
Express	163,068	4,996	152,858	172,442	3.06%
Mailgrams	20	1	17	23	6.71%
Periodicals					
Within County	11,964	1,625	8,777	15,145	13.58%
Outside County	827,304	15,176	794,928	854,419	1.83%
Standard Mail					
Enhanced Carrier Route	308,548	10,423	289,507	330,363	3.38%
Regular	3,008,934	27,145	2,959,007	3,065,415	0.90%
Package Services					
Parcel Post	244,720	8,102	228,692	260,452	3.31%
Bound Printed Matter	132,004	5,980	120,539	143,980	4.53%
Media Mail	115,433	5,674	104,259	126,502	4.92%
USPS	178,100	7,529	164,100	193,615	4.23%
Free for Blind/Handicapped	15,568	2,492	10,682	20,451	16.01%
International	284,272	6,178	272,387	296,606	2.17%
Registry	39,208	2,453	34,178	43,795	6.26%
Certified	36,233	2,409	31,493	40,936	6.65%
Insurance	704	351	18	1,392	49.79%
COD	734	341	63	1,399	46.41%
Money Orders	0	N/A	N/A	N/A	N/A
Stamped Envelopes	0	N/A	N/A	N/A	N/A
Special Handling	1,214	443	354	2,090	36.48%
P.O. Box	4,948	1,291	2,478	7,540	26.10%
Other Special Services	44,482	2,435	39,735	49,281	5.47%
Total	11,990,087				

[2] Source for cost estimates: USPS-LR-K-55

Table 2

BY04 CARMM estimated mean distributed costs and CVs[3], All Offices
Cost Segment 6.1 Mail Processing - City Carriers Direct Labor Inputs

Subclass	Cost Est. ($1,000)[4]	Std Deviation	95% Lower Limit	95% Lower Limit	CV
First Class					
Letters and Parcels	932,061	18,299	896,483	968,217	1.96%
Presort Letters and Parcels	426,375	10,425	406,471	447,337	2.45%
Private Mailing Cards	57,206	3,025	51,249	63,107	5.29%
Presort Cards	18,245	1,703	14,893	21,569	9.33%
Priority	36,586	2,403	32,009	41,430	6.57%
Express	5,118	844	3,478	6,788	16.50%
Mailgrams	0	0	0	0	N/A
Periodicals					
Within County	6,724	987	4,826	8,696	14.68%
Outside County	218,182	6,360	206,056	230,989	2.92%
Standard Mail					
Enhanced Carrier Route	254,233	8,308	237,777	270,342	3.27%
Regular	864,650	14,621	836,591	893,905	1.69%
Package Services					
Parcel Post	8,368	1,127	6,200	10,617	13.46%
Bound Printed Matter	12,897	1,468	10,096	15,850	11.38%
Media Mail	7,497	962	5,596	9,369	12.84%
USPS	20,227	1,881	16,512	23,883	9.30%
Free for Blind/Handicapped	950	332	307	1,607	34.90%
International	15,414	1,548	12,354	18,424	10.05%
Registry	978	293	402	1,550	29.95%
Certified	30,546	1,947	26,692	34,324	6.37%
Insurance	1,356	398	588	2,148	29.35%
COD	406	183	48	764	44.95%
Money Orders	0	0	0	0	N/A
Stamped Envelopes	0	0	0	0	N/A
Special Handling	0	0	0	0	N/A
P.O. Box	906	285	343	1,461	31.48%
Other Special Services	6,985	1,337	4,386	9,627	19.14%
Total	2,925,910				

[3] Source for cost estimates: USPS-LR-K-55
[4] Standard deviations are estimated from a bootstrapped FORTRAN approximation to CARMM cost estimates. See USPS-LR-K-9/R2005-1, Appendix I (Coefficients of Variation for IOCS-Based Cost Estimates) for the programs used.

Table 3

BY04 estimated mean distributed costs and CVs[5]
Supervisors

Subclass	Cost Est. ($1,000)	Std Deviation	95% Lower Limit	95% Lower Limit	CV
Supervisors					
Mail Processing	860,402	9,680	840,652	878,596	1.13%
Central Mail Mark-up	57,255	9,493	33,099	70,310	16.58%
Window Service	153,884	5,538	143,110	164,821	3.60%
Administrative and Support	32,615	2,457	27,762	37,392	7.53%
City Delivery Carriers	583,850	11,990	560,237	607,237	2.05%
Clerk Messengers	0	0	0	0	N/A
Rural Delivery Carriers	29,385	3,685	22,222	36,666	12.54%
Vehicle Service	37,278	1,722	33,996	40,747	4.62%
Employees/Labor	126	124	0	368	98.86%
Higher Level Supervisors	272,898	8,650	255,777	289,685	3.17%
Gen Supv.: Mail Processing	0	0	0	0	N/A
Gen Supv.: Collection/Delivery	0	0	0	0	N/A
Supervisor Training	35,763	2,229	31,338	40,075	6.23%
Quality Control/Revenue Prot.	37,886	2,037	33,841	41,827	5.38%
Supv. Of Mixed Clk/Mail Handler Activities	75,776	3,600	68,655	82,767	4.75%
Supv. Of One or More Crafts	811,652	15,714	775,142	836,739	1.94%
Other	894,504	25,486	835,245	935,150	2.85%
Total	3,883,272				

[5] Source for cost estimates: USPS-LR-K-55