USPS-T-1

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

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POSTAL RATE AND FEE CHANGES, 2001   :   Docket No. R2001-1
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DIRECT TESTIMONY OF
ROBERT L. SHAW JR.
ON BEHALF OF
UNITED STATES POSTAL SERVICE

USPS-T-1

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DIRECT TESTIMONY
OF
ROBERT L. SHAW JR.

AUTOBIOGRAPHICAL SKETCH

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My name is Robert Shaw. I am a Mathematical Statistician in 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 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.

1

2 **I.   PURPOSE AND SCOPE OF TESTIMONY**

3 The Postal Service's revenue and cost accounting systems do not generally coincide

4 perfectly with, or specifically identify, individual categories of mail or service. Therefore,

5 the Postal Service must rely on various statistical systems and special studies to

6 provide estimates of accrued costs for certain postal operating functions, and to provide

7 estimates of revenues, volumes and attributable costs for the various categories of mail.

8 IOCS is a work sampling system designed to produce cost estimates for various

9 employee activities in the office.

10

11 The purpose of my testimony is to describe IOCS. My testimony describes the sample

12 design, data collection methodology, the editing and processing of IOCS sample data,

13 the types of estimates produced from the IOCS, and the reliability of major estimates.

14

15 **II.   Sample Design**

16 The In-Office Cost System uses a probability sample of employee activity to develop

17 estimates of proportions of employee work time spent on various office functions, and

18 for certain functions, the proportions of time spent handling and/or processing specific

19 mail categories.

20

21 The IOCS is an ongoing system with a sample selected for each pay period.

22 Approximately 4-5 weeks prior to each sample pay period, sample employees are

23 selected from the most current payroll files for the IOCS sample offices. Employees are

1   sampled independently within Cost Ascertainment Group (CAG) for each of four

2   employee crafts: (1) Clerks, (2) Mailhandlers, (3) City Carriers, (4) Supervisors.

3   Selected employees are then randomly assigned an instant in time during the sample

4   week for observation.

5

6   The IOCS sample design documentation along with sample selection programs is

7   contained in the IOCS Statistical and Computer System Documentation,

8   USPS-LR-J-10/R2001-1. Section II (Statistical Study Design) of the IOCS Statistical

9   and Computer System Documentation describes the sample design; Section IV

10   (Sample Selection Programs) describes the sample selection programs. Appendix H

11   (IOCS CD-ROM Contents) contains the sample selection programs.[1]

12

13   III.   Data Collection

14   The IOCS data collection instrument consists of a data entry program residing on a

15   laptop computer.   This hardware and software is referred to as the IOCS Computerized

16   On-Site Data Entry System (IOCS-CODES). At the scheduled sample time, the data

17   collector locates the sample employee and enters data describing the employee's

18   observed activity directly into CODES. The data entry software guides the data

19   collector through the appropriate questions and performs basic consistency checks on

20   the entered data. Sample data from various laptops at one site are transferred to a

21   base unit computer (a desktop PC). Then, at the end of each week, the data are

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[1] Appendices A-J refer to the appendices of the IOCS Statistical and Computer Documentation, USPS-LR-J-10/R2001-1.

1   transmitted from the base units to a mainframe computer for further editing and

2   processing.

3

4   An overview of field IOCS test administration is contained in Section V (Administering

5   Tests in the Field) of the IOCS Statistical and Computer Documentation

6   (USPS-LR-J-10/R2001-1). Detailed descriptions of IOCS data collection procedures

7   are contained in the IOCS Field Operating Instructions, Handbook F-45 (USPS-LR-I-

8   14/R2000-1). IOCS-CODES computer system documentation and source code are

9   contained in USPS-LR-J-11/R2001-1.

10

11   IV.   Data Validation and Editing

12   After the IOCS data are transmitted to the mainframe computer, a series of COBOL and

13   SAS programs performs data validation, editing, and automated error correction.

14   Included in this process is the assignment of activity codes used in subsequent costing

15   programs.

16

17   Data validation and editing procedures (and the programs associated with these

18   procedures) are contained in Section VI (Data Validation and Editing) and several

19   appendices of the IOCS Statistical and Computer Documentation, USPS-LR-J-

20   10/R2001-1. Specifically, Section VI of USPS-LR-J-10 describes the validation and

21   editing programs, Appendix B (Program ALB040 Flowchart) contains a flowchart

22   documenting the assignment of activity codes, Appendix C (Edit and Consistency

23   Checks for ALB060) describes detailed edit rules, Appendix D (Periodicals IOCS Tally

1   Edits) documents the within county periodicals edits, and Appendix E (Encirclement

2   Rules for FY 2000) describes the encirclement rules used to assign special service

3   activity codes. All validation and editing programs are contained on the CD-ROM

4   described in Appendix H (IOCS CD-ROM Contents).

5   V.   Estimation

6   The IOCS sample data are used to produce estimates of costs by function for each craft

7   group. Cost weight factors are assigned to each sample observation, reflecting both the

8   sample design and accrued costs for CAG and craft group. Hence, a dollar amount can

9   be associated with each record in the IOCS data file. The cost weighted IOCS data file

10 is then converted into a final SAS data set that is used for producing cost estimates.

11

12 Several craft level reports are produced from the final IOCS data file to be used for CRA

13 spreadsheet inputs. One such report is the Carrier Mixed Mail (CARMM) report. In

14 FY1999, the new CARMM cost distribution program replaced the old City Carrier

15 LIOCATT system. Section VII (Estimation), Part G (City Carrier Mixed Mail Cost

16 Distribution Extract and Report) of the IOCS Statistical and Computer Documentation

17 (USPS-LR-J-10/R2001-1) describes the production process of these reports. Appendix

18 J (CARMM Reports & PIVOT Tables vs. Old City Carrier LIOCATT) depicts side-by-side

19 table comparisons between the two systems using FY1998 data.

20

21 As with any sample based estimate, selection of a different sample (according to the

22 same sample design), could result in slightly different estimates. The amount of

23 variation one could expect due to sampling alone is quantified by the coefficient of

1   variation (CV).   CV's can be used to produce confidence intervals for estimates. Table

2   1 presents cost estimates, their estimated CV's, and 95 percent confidence intervals for

3   Cost Segment 3.1, Mail Processing. Tables 2 and 3 provide similar estimates for City

4   Carriers, and for Supervisors. Appendix I (Coefficients of Variation for IOCS-Based

5   Cost Estimates) describes the methodology used to calculate the CVs.

6

7   The development of the cost weighting factors, production of the final SAS data files,

8   CV estimation, and descriptions of various craft level reports are provided in Section VII

9   (Estimation) of USPS-LR-J-10/R2001-1. The source code for weighting, production of

10   final data files, CV estimation, and craft reports is contained on the CD-ROM, described

11   in Appendix H (IOCS CD-ROM Contents).

Table 1

BY2000 MODS-Based Estimated Costs and CVs[2]
Cost Segment 3.1 Mail Processing - Clerks and Mailhandlers

Subclass	Cost Est. ($1,000)	Standard Deviation	95% Confidence Interval Lower Limit	95% Confidence Interval Upper Limit	CV
First Class					
Letters and Parcels	4,904,771	21,850	4,862,127	4,947,780	0.45%
Presort Letters and Parcels	1,348,697	15,263	1,320,546	1,380,375	1.13%
Private Mailing Cards	173,746	5,376	163,366	184,441	3.09%
Presort Cards	37,126	2,497	32,357	42,145	6.73%
Priority	740,897	9,424	722,664	759,606	1.27%
Express	112,507	3,328	104,781	117,829	2.96%
Mailgrams	142	98	0	332	68.87%
Periodicals					
Within County	16,985	1,889	13,224	20,629	11.12%
Regular	610,152	10,529	592,232	633,507	1.73%
Non Profit	103,890	4,310	96,152	113,046	4.15%
Classroom	6,013	1,045	3,992	8,090	17.39%
Standard (A)					
Regular Carrier Route	319,203	8,383	301,687	334,547	2.63%
Regular Other	2,291,151	19,112	2,252,280	2,327,197	0.83%
Non Profit Carrier Route	37,775	2,848	31,279	42,443	7.54%
Non Profit Other	480,187	9,789	461,339	499,712	2.04%
Standard (B)					
Parcels - Zone Rate	291,695	8,238	272,765	305,058	2.82%
Bound Printed Matter	149,853	5,733	138,605	161,078	3.83%
Special Rate	99,379	4,326	91,155	108,111	4.35%
Library Rate	13,976	1,671	10,744	17,297	11.96%
USPS	148,026	5,482	136,856	158,346	3.70%
Free for Blind/Handicapped	12,256	1,401	9,558	15,050	11.43%
International	289,768	5,603	279,897	301,859	1.93%
Registry	35,824	2,319	31,333	40,423	6.47%
Certified	28,605	1,861	24,954	32,250	6.51%
Insurance	1,566	151	1,276	1,868	9.63%
COD	1,038	367	305	1,744	35.38%
Money Orders ***	4,892	N/A	N/A	N/A	N/A
Stamped Envelopes ***	147	N/A	N/A	N/A	N/A
Special Handling	481	189	110	852	39.37%
P.O. Box ***	3,423	N/A	N/A	N/A	N/A
Other Special Services	44,051	1,990	40,260	48,062	4.52%
Total	12,308,220				

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

Table 2

BY2000 CARMM Estimated Costs and CVs[3]
Cost Segment 6.1 Mail Processing - City Carriers Direct Labor Inputs

Subclass	Cost Est. ($1,000) [4]	Standard Deviation	95% Confidence Interval Lower Limit	95% Confidence Interval Upper Limit	CV
First Class					
Letters and Parcels	1,110,962	9,334	1,093,303	1,129,893	0.84%
Presort Letters and Parcels	503,420	6,493	491,106	516,559	1.29%
Private Mailing Cards	60,110	2,306	55,539	64,577	3.83%
Presort Cards	15,881	1,279	13,373	18,386	8.51%
Priority	45,255	2,001	41,376	49,221	4.41%
Express	4,343	714	2,873	5,670	18.08%
Mailgrams	0	0	0	0	0.00%
Periodicals					
Within County	8,961	1,056	6,683	10,824	11.78%
Regular	161,318	3,808	154,174	169,102	2.36%
Non Profit	32,135	1,760	28,734	35,635	5.47%
Classroom	1,163	319	528	1,778	27.40%
Standard (A)					
Regular Carrier Route	276,306	4,749	266,842	285,457	1.72%
Regular Other	644,540	7,343	630,300	659,086	1.14%
Non Profit Carrier Route	17,652	1,256	15,147	20,072	7.11%
Non Profit Other	130,390	3,398	123,490	136,810	2.60%
Standard (B)					
Parcels - Zone Rate	7,031	768	5,435	8,446	11.63%
Bound Printed Matter	11,105	987	9,157	13,024	9.25%
Special Rate	3,375	537	2,294	4,400	16.21%
Library Rate	977	279	423	1,517	29.13%
USPS	12,812	1,062	10,716	14,881	8.24%
Free for Blind/Handicapped	1,061	306	452	1,653	28.86%
International	14,679	1,104	12,393	16,721	7.52%
Registry	886	244	401	1,358	27.55%
Certified	28,065	1,547	25,092	31,155	5.51%
Insurance	1,412	320	770	2,023	22.64%
COD	543	202	172	963	37.18%
Money Orders	0	0	0	0	0.00%
Stamped Envelopes	0	0	0	0	0.00%
Special Handling	0	0	0	0	0.00%
P.O. Box	373	151	73	665	40.48%
Other Special Services	5,591	731	4,199	7,064	13.07%
Total	3,100,350				

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[3] Source for cost estimates: USPS-LR-J-57.
[4] Standard deviations are estimated from a bootstrapped FORTRAN approximation to CARMM cost estimates. See USPS-LR-J-10/R2001-1, Appendix I (Coefficients of Variation for IOCS-Based Cost Estimates) for the programs used.

Table 3

BY2000 Estimated Costs and CVs[5]
Supervisors

Subclass	Cost Est. ($1,000)	Standard Deviation	95% Confidence Interval Lower Limit	95% Confidence Interval Upper Limit	CV
Supervisors					
Mail Processing	926,896	7,010	914,512	941,990	0.76%
Central Mail Mark-up	46,834	2,193	42,565	51,161	4.68%
Window Service	139,018	3,819	131,862	146,834	2.75%
Adminstrative and Support	32,923	1,772	29,604	36,550	5.38%
City Delivery Carriers	551,121	7,612	536,072	565,910	1.38%
Clerk Messengers	6,882	889	5,181	8,665	12.91%
Rural Delivery Carriers	21,901	1,544	18,838	24,892	7.05%
Vehicle Service	34,337	1,538	31,302	37,332	4.48%
Employees/Labor	191	132	0	455	69.16%
Higher Level Supervisors	204,513	4,960	193,869	213,313	2.43%
Gen Supv.: Mail Processing	305	133	40	561	43.54%
Gen Supv.: Collection/Delivery	129	130	0	382	100.62%
Supervisor Training	51,388	2,159	46,955	55,417	4.20%
Quality Control/Revenue Prot.	37,798	1,740	34,283	41,104	4.60%
Supv. Of Mixed Clk/Mailhandler Activities	100,867	3,197	94,789	107,324	3.17%
Supv. Of One or More Crafts	667,181	8,901	651,036	685,927	1.33%
Other	842,601	8,601	823,759	857,476	1.02%
Total	3,664,885				