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POSTAL RATE COMMISSION  
OFFICE OF THE SECRETARY

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

POSTAL RATE AND FEE CHANGES, 1997

Docket No. R97-1

DIRECT TESTIMONY OF  
BRADLEY V. PAFFORD  
ON BEHALF OF  
UNITED STATES POSTAL SERVICE

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3 DIRECT TESTIMONY  
4 OF  
5 BRADLEY V. PAFFORD  
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9 AUTOBIOGRAPHICAL SKETCH  
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12 My name is Bradley V. Pafford. I am a Mathematical Statistician in Statistical  
13 Policy and Programs, Finance. I have been employed by the Postal Service since  
14 1991. During that time I have worked on statistical design issues for improving the  
15 Service's statistical information systems. I provided technical support to witness Steele  
16 in Docket No. R94-1, and for Postal Service statistical issues in Dockets MC95-2, and  
17 MC96-3.

18 Prior to my employment with the Postal Service, I was a Mathematical  
19 Statistician with the U. S. Department of Agriculture (USDA), National Agricultural  
20 Statistics Service (NASS) for eleven years. During that time I conducted survey  
21 research in areas such as questionnaire design, response errors, and establishing  
22 survey quality assurance programs. I worked in the survey methods area analyzing  
23 survey data and developing estimation techniques for complex surveys. I also worked  
24 for four years in NASS field offices supervising field data collection, and was directly  
25 responsible for the publication of estimates of various agricultural commodities. I have  
26 published many USDA technical reports, and have contributed papers at the American  
27 Statistical Association Annual Conference and the Bureau of the Census Annual  
28 Research Conference.

29 I was awarded a Bachelor of Science degree with a major in Forestry from  
30 Virginia Polytechnic Institute and State University in 1977, and a Master of Science

1 degree in Forestry from Virginia Polytechnic Institute and State University in 1979. My  
2 Master of Science degree in Forestry concentrated on survey research in outdoor  
3 recreation environments, with my master thesis developed around a time and location  
4 probability sample of users of the Cape Hatteras National Seashore in the Outer Banks  
5 of North Carolina. In 1985 I received a Masters of Statistics degree from North Carolina  
6 State University.

7 I am currently a member of the American Statistical Association and the  
8 Washington Statistical Society, where in the past I served on the Quantitative Literacy  
9 Subcommittee. I was an instructor of statistics at the USDA graduate school from 1988  
10 - 1992.

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PURPOSE AND SCOPE OF TESTIMONY

The purpose of my testimony is to describe the major statistical information systems which generate estimates of revenues and volumes underlying the Postal Service's request. My testimony covers the general design of the revenue and volume system, the type of estimates that are produced, and tables showing the reliability of major estimates of revenues, volumes, and weight. More detailed descriptions of the statistical design of each system are contained in Library Reference H-89.

The statutory requirement that each class of mail and special service be priced so as to cover its volume variable costs compels the Postal Service to determine the revenues and volumes of each class, subclass, and special service. However, the Service's revenue systems do not often coincide with, or specifically identify, individual categories of mail or service. Therefore, the Postal Service relies on various statistical systems to provide estimates of the revenues and volumes of the various categories of mail.

1 ESTIMATION OF REVENUE AND VOLUME

2           The Postal Service's postage revenue accounting system contains several  
3 accounts which are associated with specific classes or subclasses of mail. However,  
4 most postage revenue accounts are general accounts which are not identified with  
5 specific mail categories. In addition, the revenue accounting system does not contain  
6 any volume information. Therefore, the Postal Service supplements its revenue  
7 accounting information with mailing statement data from mailers through the PERMIT  
8 System, and with statistical data from the Revenue, Pieces and Weight (RPW) System  
9 to develop estimates of revenue and volume for each class and subclass of mail and  
10 special service. The RPW system includes two major subsystems: the Non-countable  
11 Subsystem and the Domestic Probability Subsystem.

12           A. Non-countable Subsystem

13           The Non-countable Subsystem is built around eight revenue accounts and  
14 information supplied by mailers on mailing statements. The revenue accounts include:  
15 A/C 41416 (First-Class bulk permit imprint mail); A/C 41310 and 41320 (publishers'  
16 second-class mail); A/C 41411 and 41440 (third-class bulk permit imprint regular-rate  
17 mail); A/C 41414 and 41441 (third-class bulk permit imprint nonprofit-rate mail); and,  
18 A/C 41412 (fourth-class permit imprint bound printed matter). These accounts do not  
19 provide revenue by rate category, and they provide no volume information at all. To  
20 provide this additional detail, information supplied by mailers on mailing statements is  
21 gathered from all automated bulk mail entry offices, and a stratified sample of offices  
22 where the bulk mail entry function has not been automated. Offices mailing statement  
23 data are summarized each Postal Quarter. Library References H-72 through H-76  
24 provide detailed documentation of the automated bulk mail entry system, or PERMIT  
25 System. The mailing statement forms include: Form 3600 (First-Class permit imprint),

1 Form 3541 (second-class), Form 3602 (third-class regular and non-profit rate permit  
2 imprint), and Form 3605 (fourth-class bound printed matter permit imprint). Copies of  
3 FY 1996 mailing statements are provided in Library Reference H-89.

4 In the case of First-Class bulk mail, the estimates from the Non-countable  
5 Subsystem for First-Class bulk permit imprint constitute the Postal Service's final  
6 estimates for its constituent rate categories since all revenue from First-Class bulk  
7 permit imprint falls in A/C 41416. Also for First-Class bulk mail, the estimates from the  
8 Non-countable Subsystem for PERMIT System precanceled stamped and metered mail  
9 constitute the Postal Service's final estimates for its constituent rate categories. In the  
10 case of domestic publishers' second-class mail, the estimates from the Non-countable  
11 Subsystem constitute the Postal Service's final estimates for its constituent rate  
12 categories since all revenue for this class of mail falls in A/C 41310 and A/C 41320. For  
13 third-class bulk regular-rate, third-class bulk nonprofit-rate and fourth-class bound  
14 printed matter, some revenue falls in general postage revenue accounts, where it is not  
15 identified with a specific category of mail. For the components of these three  
16 categories whose revenue is in the general postage revenue accounts, revenue and  
17 volume are estimated by the Domestic Probability Subsystem.

18 Quarterly estimates from the Non-countable Subsystem are added to  
19 provide Fiscal Year estimates of the revenue, pieces and weight, by rate category.  
20 Details of the design of the Non-countable Subsystem are in Library Reference H-89.

1           B.     Domestic Probability Subsystem

2                   Many categories of mail are not identified within the Postal Service's  
3 revenue accounting system. For these categories, estimates of revenue and volume  
4 are developed by the Domestic Probability Subsystem. The Domestic Probability  
5 Subsystem is a continuous probability sample of mail exiting the U.S. postal system. All  
6 domestic mail exiting the Postal Service is partitioned into frame units, as part of a  
7 sampling frame. A frame unit is a mail exit point, or MEP. A sampling unit is a  
8 randomly selected MEP and day within the Postal Quarter, or MEP-day. For each  
9 MEP-day in the sample, a subsample of the mail is selected. The revenue and weight  
10 of the selected mailpieces are recorded by rate category. Data collection is done via  
11 direct entry into portable microcomputers under the Computerized On-Site Data Entry  
12 System (CODES). CODES - RPW is documented in Library References H-54 through  
13 H-59. From the sample data, estimates of the proportion of revenue, pieces and weight  
14 are developed and used to distribute general postage account revenue to the measured  
15 categories of mail. Separate estimates are developed for each Postal Quarter, which  
16 are in turn combined to produce Fiscal Year estimates.

17                   A description of the sample design and data collection procedures of the  
18 Domestic Probability Subsystem is contained in Library Reference H-89, and Library  
19 Reference G-44 of Docket No. R94-1.



1 C. Preparation of Revenue and Volume Estimates

2 Fiscal Year estimates from the Non-countable and Domestic Probability  
3 Subsystems of RPW are combined with miscellaneous data to produce estimates of  
4 revenue and volume for all categories of mail in the RPW reporting system. The RPW  
5 reporting system is documented in Library References H-38. Because the Postal  
6 Service's statistical information systems are based on the Postal Fiscal Year (PFY), a  
7 final adjustment to these estimates is made to produce Government Fiscal Year (GFY)  
8 estimates. For Fiscal Year 1996, GFY estimates of the revenue, pieces and weight for  
9 the categories of mail are presented in Tables 1, 2 and 3. Coefficients of variation  
10 (expressed as percentages), and upper and lower 95% confidence limits are also  
11 presented

**TABLE 1  
FISCAL YEAR 1996 REVENUE ESTIMATES  
AND ASSOCIATED CONFIDENCE LIMITS**

Service Category	REVENUE (\$1,000s)	C.V./1 OF ESTIMATE (PERCENT)	LOWER 95% CONFIDENCE LIMIT /3	UPPER 95% CONFIDENCE LIMIT /3
<b>First-Class Mail:</b>				
Letters and parcels	21,194,141	0.50	20,987,050	21,401,232
Presort letters & pcl	10,050,277	N/C		
Carrier Presort letters	754,886	N/C		
Postal cards	91,344	4.24	83,713	98,975
Private mailing cards	535,832	N/C		
Presort private cards	281,102	N/C		
Carrier Presort cards	50,387	N/C		
Domestic mail fees	158,569	4.42	144,775	172,363
Total First-Class	33,116,539	N/C		
<b>Priority Mail</b>				
Priority Mail	3,320,546	1.27	3,237,505	3,403,587
Domestic mail fees	946	19.50	583	1,309
Total Priority	3,321,491	1.27	3,238,427	3,404,555
<b>Express Mail</b>	736,805	N/C /2		
<b>Mailgrams</b>	1,596	N/C		
<b>Second-class mail:</b>				
Within county	75,741	N/C		
Outside county:				
Regular rate	1,579,682	N/C		
Nonprofit publ	328,314	N/C		
Classroom publ	9,428	N/C		
Total publishers'	1,993,165	N/C		
Publishers' - label 3579	19,925	7.24	17,085	22,765
Application fees	775	N/C		
Total second-class	2,013,865	N/C		

**TABLE 1  
(CONTINUED)**

Service Category	REVENUE (\$1,000s)	C.V./1 OF ESTIMATE (PERCENT)	LOWER 95% CONFIDENCE LIMIT /3	UPPER 95% CONFIDENCE LIMIT /3
<b>Third-class mail:</b>				
Single-piece rate	135,455	5.74	120,132	150,778
Bulk rate - basic	1,477,871	N/C		
- carrier route	4,298,520	N/C		
- 3/5-dig. prsrt	4,845,728	N/C		
Total regular	10,622,119	N/C		
Nonprofit - basic	392,621	N/C		
- carrier route	241,626	N/C		
- 3/5-dig. prsrt	691,627	N/C		
Total nonprofit	1,325,874	N/C		
Bulk mailing fees	53,979	N/C		
Domestic mail fees	37,647	14.30	27,041	48,253
Special handling	19	113.14	0	61
Total third-class	12,175,094	N/C		
<b>Fourth-class mail:</b>				
Parcels (zone rate)	691,369	1.91	665,404	717,334
Bound printed matter	448,035	2.02	430,213	465,857
Special fourth-class rate	334,694	3.22	313,491	355,897
Library rate	47,957	7.15	41,205	54,709
Domestic mail fees	1,577	10.41	1,253	1,901
Special handling	378	15.55	262	494
P.A.L. fees	71	24.87	36	106
Total fourth-class	1,524,081	1.60	1,476,089	1,572,073
U.S. Postal Service Mail	-			
Free mail for the blind and handicapped	-			
Total domestic mail	52,889,471	N/C		
Total international mail	1,648,759	N/C		
Total all mail	54,538,230	N/C		

**TABLE 1**  
**(CONTINUED)**

Service Category	REVENUE (\$1,000s)	C.V./1 OF ESTIMATE (PERCENT)	LOWER 95% CONFIDENCE LIMIT /3	UPPER 95% CONFIDENCE LIMIT /3
Special and other services:				
Registry - fees affixed	113,277	2.94	106,709	119,845
Insurance	49,195	3.03	46,258	52,132
Collect-on-delivery	21,305	24.04	11,216	31,394
Certified	558,485	1.61	540,783	576,187
Special delivery	3,800	29.29	1,608	5,992
Money orders	180,543	N/C		
Subtotal	926,606	2.07	888,817	964,395
Out. MO taken into rev	40,780	N/C		
Stamped envelopes	15,914	N/C		
Box rents	570,303	N/C		
Total specl & other svcs	1,553,602	N/C		
Total mail and special & other services	56,091,832	N/C		
Other income	526,418	N/C		
Total income	56,618,250	N/C		

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1/ Coefficient of Variation =  $100 \times (\text{Est. Std. Deviation} / \text{Est. Revenue})$

2/ Not Computed.

3/ Lower Limit = Est. Revenue - (1.97 X Est. Standard Deviation)

Upper Limit = Est. Revenue + (1.97 X Est. Standard Deviation)

**TABLE 2  
FISCAL YEAR 1996 PIECE ESTIMATES  
AND ASSOCIATED CONFIDENCE LIMITS**

Service Category	PIECES (\$1,000s)	C.V./1 OF ESTIMATE (PERCENT)	LOWER 95% CONFIDENCE LIMIT /3	UPPER 95% CONFIDENCE LIMIT /3
<b>First-Class Mail:</b>				
Letters and parcels	54,150,759	0.63	53,479,095	54,822,423
Presort letters & pcl	36,213,548	N/C		
Carrier Presort letters	2,843,645	N/C		
Postal cards	454,006	4.23	416,139	491,873
Private mailing cards	2,598,099	N/C		
Presort private cards	1,639,197	N/C		
Carrier Presort cards	316,820	N/C		
Domestic mail fees	-			
<b>Total First-Class</b>	<b>98,216,074</b>	<b>N/C</b>		
<b>Priority Mail</b>	<b>937,273</b>	<b>1.24</b>	<b>914,337</b>	<b>960,209</b>
Domestic mail fees	-			
<b>Total Priority</b>	<b>937,273</b>	<b>1.24</b>	<b>914,337</b>	<b>960,209</b>
<b>Express Mail</b>	<b>57,573</b>	<b>N/C /2</b>		
<b>Mailgrams</b>	<b>4,204</b>	<b>N/C</b>		
<b>Second-class mail:</b>				
<b>Within county</b>	<b>877,829</b>	<b>N/C</b>		
<b>Outside county:</b>				
Regular rate	6,984,301	N/C		
Nonprofit publ	2,205,180	N/C		
Classroom publ	58,885	N/C		
<b>Total publishers'</b>	<b>10,126,194</b>	<b>N/C</b>		
<b>Publishers' - label 3579</b>	<b>-</b>			
<b>Application fees</b>	<b>-</b>	<b>N/C</b>		
<b>Total second-class</b>	<b>10,126,194</b>	<b>N/C</b>		

**TABLE 2  
(CONTINUED)**

Service Category	PIECES (\$1,000s)	C.V./1 OF ESTIMATE (PERCENT)	LOWER 95% CONFIDENCE LIMIT /3	UPPER 95% CONFIDENCE LIMIT /3
<b>Third-class mail:</b>				
Single-piece rate	145,807	7.82	123,334	168,280
Bulk rate - basic	5,776,422	N/C		
- carrier route	29,180,737	N/C		
- 3/5-dig. prsrt	24,374,086	N/C		
Total regular	59,331,244	N/C		
Nonprofit - basic	2,966,936	N/C		
- carrier route	2,908,617	N/C		
- 3/5-dig. prsrt	6,333,530	N/C		
Total nonprofit	12,209,084	N/C		
Bulk mailing fees	-			
Domestic mail fees	-			
Special handling	-			
Total third-class	71,686,135	N/C		
<b>Fourth-class mail:</b>				
Parcels (zone rate)	212,828	1.83	205,168	220,488
Bound printed matter	516,111	1.13	504,638	527,584
Special fourth-class rate	189,793	3.37	177,176	202,410
Library rate	30,133	9.74	24,349	35,917
Domestic mail fees	-			
Special handling	-			
P.A.L. fees	-			
Total fourth-class	948,866	1.35	923,672	974,060
U.S. Postal Service Mail	360,114	3.14	337,830	382,398
Free mail for the blind and handicapped	49,969	12.46	37,708	62,230
Total domestic mail	182,386,402	N/C /2		
Total international mail	1,053,071	N/C		
Total all mail	183,439,473	N/C		

**TABLE 2  
(CONTINUED)**

Service Category	PIECES (\$1,000s)	C.V./1 OF ESTIMATE (PERCENT)	LOWER 95% CONFIDENCE LIMIT /3	UPPER 95% CONFIDENCE LIMIT /3
Special and other services:				
Registry - fees affixed	18,623	2.97	17,535	19,711
Insurance	28,724	3.24	26,893	30,555
Collect-on-delivery	4,866	24.27	2,540	7,192
Certified	270,832	3.03	254,690	286,974
Special delivery	382	29.22	162	602
Money orders	214,029	N/C		
Subtotal	537,456	N/C		
U.S. Postal Service Special Service Transactions:				
Registry	14,567	7.92	12,293	16,841
Certified	1,915	20.85	1,129	2,701
Special Delivery	299	18.44	190	408
Special Handling	15	83.85	0	40
Return Receipts	1,311	24.62	675	1,947
Total	16,796	8.14	14,101	19,491

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1/ Coefficient of Variation =  $100 \times (\text{Est. Std. Deviation} / \text{Est. Revenue})$

2/ Not Computed.

3/ Lower Limit =  $\text{Est. Revenue} - (1.97 \times \text{Est. Standard Deviation})$

Upper Limit =  $\text{Est. Revenue} + (1.97 \times \text{Est. Standard Deviation})$

**TABLE 3  
FISCAL YEAR 1996 WEIGHT ESTIMATES  
AND ASSOCIATED CONFIDENCE LIMITS**

Service Category	POUNDS (\$1,000s)	C.V./1 OF ESTIMATE (PERCENT)	LOWER 95% CONFIDENCE LIMIT /3	UPPER 95% CONFIDENCE LIMIT /3
<b>First-Class Mail:</b>				
Letters and parcels	2,437,451	0.53	2,412,113	2,462,789
Presort letters & pcl	1,434,480	N/C		
Carrier Presort letters	112,903	N/C		
Postal cards	2,838	4.23	2,601	3,075
Private mailing cards	16,493	N/C		
Presort private cards	12,791	N/C		
Carrier Presort cards	2,562	N/C		
Domestic mail fees	-			
<b>Total First-Class</b>	<b>4,019,519</b>	<b>N/C</b>		
<b>Priority Mail</b>	<b>1,562,801</b>	<b>1.43</b>	<b>1,518,863</b>	<b>1,606,739</b>
Domestic mail fees	-			
<b>Total Priority</b>	<b>1,562,801</b>	<b>1.43</b>	<b>1,518,863</b>	<b>1,606,739</b>
<b>Express Mail</b>	<b>63,727</b>	<b>N/C /2</b>		
<b>Mailgrams</b>	<b>-</b>	<b>N/C</b>		
<b>Second-class mail:</b>				
Within county	256,785	N/C		
Outside county:				
Regular rate	3,250,571	N/C		
Nonprofit publ	594,585	N/C		
Classroom publ	30,082	N/C		
<b>Total publishers'</b>	<b>4,132,022</b>	<b>N/C</b>		
Publishers' - label 3579	-			
Application fees	-			
<b>Total second-class</b>	<b>4,132,022</b>	<b>N/C</b>		



**TABLE 3  
(CONTINUED)**

Service Category	POUNDS (\$1,000s)	C.V. /1 OF ESTIMATE (PERCENT)	LOWER 95% CONFIDENCE LIMIT /3	UPPER 95% CONFIDENCE LIMIT /3
Third-class mail:				
Single-piece rate	31,301	5.22	28,081	34,521
Bulk rate - basic	675,326	N/C		
- carrier route	4,111,416	N/C		
- 3/5-dig. prsrt	3,373,518	N/C		
Total regular	8,160,261	N/C		
Nonprofit - basic	200,697	N/C		
- carrier route	192,403	N/C		
- 3/5-dig. prsrt	429,727	N/C		
Total nonprofit	822,827	N/C		
Bulk mailing fees	-			
Domestic mail fees	-			
Special handling	-			
Total third-class	9,014,389	N/C		
Fourth-class mail:				
Parcels (zone rate)	1,094,939	1.93	1,053,229	1,136,649
Bound printed matter	1,231,296	1.11	1,204,384	1,258,208
Special fourth-class rate	319,402	3.36	298,246	340,558
Library rate	50,971	3.48	47,474	54,468
Domestic mail fees	-			
Special handling	-			
P.A.L. fees	-			
Total fourth-class	2,696,608	1.20	2,632,740	2,760,476
U.S. Postal Service Mail	97,832	5.20	87,818	107,846
Free mail for the blind and handicapped	32,595	17.87	21,122	44,068
Total domestic mail	21,619,494	N/C-2		
Total international mail	253,462	N/C		
Total all mail	21,872,957	N/C		

1/ Coefficient of Variation =  $100 \times (\text{Est. Std. Deviation} / \text{Est. Revenue})$

2/ Not Computed.

3/ Lower Limit =  $\text{Est. Revenue} - (1.97 \times \text{Est. Standard Deviation})$

Upper Limit =  $\text{Est. Revenue} + (1.97 \times \text{Est. Standard Deviation})$