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1982 Government Employment Response
Evaluation Study

by

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1. EXECUTIVE SUMMARY

In the 1982 Government Employment Response Evaluation Study, 318 local governments were sampled to measure the error in the data reported to the Census Bureau by local governments. Using the knowledge gained from this evaluation survey, future censuses and surveys will be improved through redesigning forms and procedures in order to reduce reporting, clerical, and editing errors and to reduce respondent burden. Although this study was designed specifically to study respondent errors in the employment phase of the 1982 Census of Governments, the annual survey of government employment should also benefit from this study since some of the same information is collected and published annually in that survey.

The results of the study indicate that changes may be necessary in the reporting forms and the computer edit procedures for data on part-time employees of general-purpose governments. For several functions (fire, corrections, etc.), edit changes to either payroll or total number of employees caused the published average monthly pay to be significantly different from the evaluation responses, while the reported data were not found to be significantly different. Currently, part-time average monthly pay by function is not published but if it is published in the future, a computer edit of the ratio of payroll to number of employees is recommended, particularly if either payroll or number of part-time employees has been changed by a computer edit. There is also evidence that many governments place employees in the wrong function. Central administration (a general category), judicial and legal (a new category in 1982), and water transportation (a category often confused with water supply system) were involved in several misclassifications. The instructions given on the questionnaire for these functions should be clarified to reduce reporting error.

2. DETAILED FINDINGS OF THE STUDY

2.1 Background

The Census of Governments is taken every 5 years and has four major phases: (1) Survey of government organization, (2) Survey of government employment, (3) Survey of government finances and, (4) Survey of taxable property values.

This evaluation study was concerned with only one part of the survey of government employment, mail survey responses on the number of employees and their gross salaries or wages for the pay period that included October 12, 1982. These data are used by State and local government officials for comparative analyses and for assessing employment and pay levels. The Federal Government uses the data to compute the public sector portion of the Gross National Product, to allocate operational subsidies to local public housing agencies, and to make and evaluate legislation that affect State and local government employment and pay levels. Academic instructors and research organizations also use these data.

In the fall of 1977, Governments Division staff members interviewed officials of five governments in the Washington, DC area in order to determine the feasibility of verifying reported data by checking government records and by interviewing local government officials. These pilot interviews identified several types of reporting errors, inaccurate conversion of weekly or bi-weekly data to monthly, mixing of data for full-time and part-time employees, inaccurate classification of employees by function, and omission of certain types of employees.

Based on the results of this pilot survey, Governments Division selected a nonprobability sample of 17 general-purpose governments, 5 special districts, and 7 school districts to further develop the verification

procedures. For each case, field agents compiled employment and payroll data from administrative data. The data from the field agents were then compared to the reported data from the census and major discrepancies were reconciled with the local officials.

Funding was later approved for a larger study of about 300 general-purpose governments and school districts from a 9-State area. A probability sample was selected so that the error in the reported and published data could be measured statistically. This report covers the results of this probability sample. The data from this sample will be used to determine the reasons for the reporting and processing errors. The questionnaire and/or the survey procedures will be adjusted in order to correct the problems.

2.2 Objectives

The main purpose of this study was to identify and statistically measure the reporting and processing errors in the employment phase of the census of governments. Questionnaire wording as well as the procedures for editing the data were examined to see if alterations in any of the procedures could reduce the number and significance of respondent errors. The previous pilot studies had revealed eight errors that occurred frequently.

1. Errors in converting from weekly or bi-weekly payroll to monthly payroll.
2. No distinction between full-time and part-time employment and payroll.
3. Omission of whole categories of employees.
4. Misclassification of certain employees (i.e., including them in the wrong functional category).
5. Use of estimates rather than actual values.
6. Duplication of employee and payroll amounts in more than one category of the report.

7. Erroneous inclusion of vacant positions in the number of employees.
8. Noncorrespondence between payroll and various groups of employees.

Interviewers were told about these errors and were given examples of some of the reporting forms containing the common errors.

2.3 Results

Tables 1 through 3 give the percent errors and standard errors for average monthly salary, total number of employees, and payroll by type of government for full-time and part-time employment. The percent error in these tables is calculated using the following formula:

$$p = 100(x' - y')/y' \quad (2.1)$$

where x' is the estimate of employment that was reported in the census.

y' is the estimate from the evaluation survey.

The percent errors for payroll and average monthly salary were calculated in the same manner.

In Tables 1 through 3, the percent errors that are significantly different from zero are for part-time general-purpose government employees. In particular, the reported number of employees, the published payroll, and the published average monthly salary for part-time general-purpose government employees are all significantly different from the corresponding evaluation study estimates.

Tables 4 through 6 contain average monthly salary, number of employees, and payroll by function for full-time and part-time employees. Tables 7 through 9 contain the percent errors and standard errors by function. In table 8, which includes the percent errors for the number of employees, the functions for which the reported data were significantly different from the evaluation data included the central administration, judicial and legal, public welfare, health, hospitals, and the "other" category for both full-time

and part-time employees. The reported data for part-time correction, natural resources, electrical power systems, and library employees and the full-time highways and water transportation employees were also significantly different from the evaluation data. For the published data, full-time and part-time central administration, judicial and legal, public welfare, and natural resources employees were significantly different from the evaluation data. Full-time airport employees, "other fire" employees, and "other" employees, as well as part-time "other police" employees also displayed significant differences between the published and the evaluation data.

Many of these findings were expected. For example, both the central administration and other categories are mistakenly used as "catchall" categories. If a person is a hospital administrator, he/she may be placed in the central administration category rather than in the hospitals category. Many persons that should have been placed in financial administration were placed in central administration. The same phenomenon is evident in the "other" category. The data indicate that research should be done on "judicial and legal" which was a new category in the 1982 census. The data also show that the government officials who are completing the census forms are still confusing the water supply systems and the water transportation categories but the computer edits are correcting those mistakes. Similarly, part-time correction officials are often misclassified as police but, the computer edit is also correcting these errors. According to the findings of this survey, the computer edits for other police personnel and other fire employees should be closely examined. There is also evidence that many welfare, health, and hospital employees are being misclassified by the respondent and that the computer edit for welfare needs to be examined.

In table 9, there were many significant differences for the payroll figures by function. This was expected since the pay interval is often reported inaccurately. Some respondents report a biweekly pay period when the pay interval is actually twice a month or vice versa. Sometimes the pay interval is not the same for all employees in a function. Respondents were instructed to indicate the number of employees and corresponding payroll for each different pay interval. These instructions were not always followed.

For full-time employee payrolls in table 9, significant differences were found between the reported and evaluation study results and also between the published and evaluation study results for the following functions airport, public welfare, health, and hospitals. For water transportation, sewers and sewerage, and libraries, the reported data were significantly different from the evaluation data but the computer edit improved the reported figures so that they were not significantly different. For central administration, judicial and legal, all other fire protection, and "other," the published data were significantly different from the evaluation data but the reported data were not significantly different.

Table 9 also shows that data for part-time employees displayed significant differences for both the reported and the published data for correction, public welfare, natural resources, libraries, and "other." For hospitals and electric power systems, the reported data were significantly different from the evaluation but the computer edit improved the estimates. For central administration, judicial and legal, other police, highways, housing and community development, water supply system, and college grade-instructional, the published data were significantly different from the evaluation but the reported data were not.

Many of these significant differences were expected for the reasons that were previously discussed. According to the data presented in table 9, the computer edit for payroll items should be closely examined. For full-time employees, there were seven significant differences with the reported data and 8 with the published data. For part-time employees, there were 7 significant differences with the reported data and 12 with the published data.

2.4 Recommendations

Mail canvass survey materials used in the employment phase of the quinquennial census of governments and in the annual survey of government employment should be reviewed and modified where necessary to:

1. Improve general instructions and definitions pertaining to the reporting of part-time employees and payrolls.
2. Improve instructions for the reporting of payroll values when the reporting government has multiple payrolls with differing pay intervals.
3. Improve the definitions provided for individual function categories.

Computer editing procedures used in the employment phase of the census of governments and the annual survey of government employment should be carefully reviewed and modified where necessary to:

1. Improve the quality of edited employment and payroll values for individual functional categories.
2. Provide better "edit listings" for analyst review.
3. Flag significant differences between originally reported values and computer edited values.

3. SAMPLE SELECTION AND DESIGN

The response evaluation study was a reinterview survey of the data collected from local government officials for the 1982 Census of

Governments. Because of budget considerations, the sample for the evaluation study was restricted to general-purpose governments (county, municipality, and township) and school districts in New Jersey, Pennsylvania, Delaware, Maryland, Virginia, West Virginia, Kentucky, North Carolina, and South Carolina. Special districts were not sampled. A probability sample of 229 general-purpose governments and 89 independent school districts was selected. Of these, 41 general-purpose governments and 16 independent school districts did not report in the census. They were not reinterviewed.

A stratified simple random sample of units from the 1982 Census of Governments was selected. The sample was stratified first by general-purpose government and independent school district categories and then by size of the government. The stratification for the evaluation study is given in table 10. Within each stratum, the units were ordered by type of government and within type of government by size (1980 population for general-purpose governments and 1981 enrollment for the independent school districts). A systematic random sample of units was taken within each stratum.

4. METHODOLOGY

4.1 Interviewing

Interviews for the evaluation study were conducted by Governments Division and Field Division. The interviewers were instructed to send an introductory letter to the sample government about a week before calling the local official for the best time to visit his/her office. Each interviewer was given photocopies of the original census forms for each selected government. Interviewers held a short interview with the local government official who completed the 1982 survey questionnaire to determine the sources used to fill out the census form and to ensure that all categories of employees were included on the original census form. After completing the

initial interview, the interviewer filled out the census forms using the appropriate sources and then reconciled the differences between the original census forms and the evaluation. After the data were reconciled and edited, the completed forms were sent to the regional office.

4.2 Processing

Governments Division's Employment Branch prepared field enumeration packets for each of the sampled governments selected for the response evaluation study. Each packet contained the name, address and telephone number of the government official who reported original data to the Census Bureau, a photocopy of the respondent's reply, a copy of the published data, and worksheets for the enumerator's compilation of data from original source documents, (The worksheets provided space for the notation of discrepancies between reported and compiled data.) The packets also contained an interview guide within standardized questions asked of all respondents concerning the sources used in completing the 1982 Census of Governments questionnaire, the process used in completing the form, and the respondent's understanding and interpretation of instructions and definitions contained in the Bureau's original mail request.

Completed field assignment materials were returned to the Governments Division. Each completed assignment was then reviewed by an experienced subject matter analyst to (1) determine if enumerator classification of data were accurate, (2) to check enumerator's mathematical calculations of totals and conversion of nonstandard pay interval amounts to standard pay interval values, (3) to review the enumerator's notes concerning the interview with the original respondent, and (4) to determine if compiled data should be adjusted

on the basis of remarks/explanations made by the enumerator on the compilation worksheets. Three sets of data were then keyed for each completed unit -- reported data, published data, and response evaluation survey compiled data.

The three data sets consisting of records for each of the successfully completed survey units were then provided to a Statistical Research Division statistician for development of the statistical analysis presented in the tables that accompany this report.

4.3 Estimation

For this study, the error rates for the reported and published number of employees, average monthly salary, and payroll and their standard errors were calculated using the specifications given in Hurwitz (1983). The formula that was used to calculate the percent errors is given in equation 2.1. The estimate for x' is given in equation 4.1.

$$x' = \sum_{h=1}^L \frac{N_h}{n_h} \sum_{i=1}^{n_h} x_{hi} \quad (4.1)$$

where x_{hi} = the value (either reported or published for either payroll or number of employees) obtained from the census for the i^{th} sample unit in the h^{th} stratum.

N_h = the total number of universe units in stratum h .

n_h = the number of sample units (or governments) from stratum h .

The estimate for y' is calculated in the same manner using y_{hi} , the value (payroll or number of employees) obtained from the evaluation survey for the i^{th} sample unit in stratum h .

The estimate of the variance of p, the percent error, is

$$s_p^2 = 100^2 (x'/y')^2 (s_{x'}^2 / x'^2 + s_{y'}^2 / y'^2 - 2 s_{x'y'} / x'y')$$

where
$$s_{x'}^2 = \sum_{h=1}^L \frac{N_h (N_h - n_h)}{n_h (n_h - 1)} \left[\sum_{i=1}^{n_h} x_{hi}^2 - n_h \bar{x}_h^2 \right] \quad (4.2)$$

$$\bar{x}_h = \sum_{i=1}^{n_h} x_{hi} / n_h$$

The estimated variance of y' , $s_{y'}^2$, is similarly defined. The covariance between x' and y' is estimated by

$$s_{x'y'} = \sum_{h=1}^L \frac{N_h (N_h - n_h)}{n_h (n_h - 1)} \left[\sum_{i=1}^{n_h} x_{hi} y_{hi} - n_h \bar{x}_h \bar{y}_h \right] \quad (4.3)$$

The percent error in average monthly salary was calculated using the following equation.

$$p_A = 100 \left(\frac{\bar{u} - \bar{w}}{\bar{w}} \right) \quad (4.4)$$

where $\bar{u} = u'/x'$ or the ratio of payroll (u') to number of employees (x') from the census data (either reported or published).

$\bar{w} = w'/y'$ or the ratio of payroll (w') to number of employees (y') from the evaluation study data.

The variance was estimated by

$$\begin{aligned}
 s_{PA}^2 = & 100^2 (\bar{u}/\bar{w})^2 [s_{u'}^2 / u'^2 + s_{x'}^2 / x'^2 + s_{w'}^2 / w'^2 \\
 & + s_{y'}^2 / y'^2 - 2s_{u'x'} / u'x' - 2s_{w'y'} / w'y' \\
 & - 2s_{u'w'} / u'w' - 2s_{x'y'} / x'y' + 2s_{u'y'} / u'y' \\
 & + 2s_{w'x'} / w'x'] \quad (4.5)
 \end{aligned}$$

The totals, variances, and covariances in equation 4.5 were estimated using equations 4.1 through 4.3.

Reference

Hurwitz, Blanche S. (1983), Census Bureau memorandum to Alan V. Stevens dated May 12, 1983, and entitled "Government Employment Survey Evaluation Study."

Note: In the following tables, the error rate is calculated as 100 times the difference in estimated average from reported (or published) data and estimated average from evaluation data divided by estimated average from evaluation data. Also, the estimated standard error of the error rate is given in parentheses.

Table 1. Estimated Error Rates of Average Monthly Salaries,
by Type of Government and Employment

Type of government and employment	Average monthly salary			Error rate (in percent)			
	Reported	Published	Evaluation	Reported		Published	
All governments	1,329	1,226	1,238	7.4	(4.6)	-1.0	(1.1)
Full-time	1,537	1,452	1,474	4.3	(4.4)	-1.5	(1.1)
Part-time	381	291	313	22.0	(12.3)	-6.8	(3.8)
General-purpose governments	1,254	1,159	1,160	8.1	(7.6)	-.1	(1.5)
Full-time	1,436	1,365	1,384	3.8	(6.8)	-1.4	(1.3)
Part-time	365	264	291	25.5	(20.0)	-9.4	(3.4)
School systems	1,406	1,298	1,320	6.5	(5.4)	-1.7	(1.7)
Full-time	1,642	1,547	1,568	4.7	(5.6)	-1.3	(1.8)
Part-time	396	319	336	18.0	(15.1)	-5.1	(6.2)

**Table 2. Estimated Error Rates of Number of Employees,
by Type of Government and Employment**

Type of government and employment	Number of employees			Error rate (in percent)			
	Reported	Published	Evaluation	Reported		Published	
All governments	794,623	814,637	804,918	-1.3	(9.6)	1.2	(9.5)
Full-time	651,503	655,970	641,300	1.6	(6.3)	2.3	(6.4)
Part-time	143,120	158,667	163,618	-12.5	(7.3)	-3.0	(8.0)
General-purpose governments	399,738	422,981	412,701	-3.1	(7.1)	2.5	(7.5)
Full-time	331,609	343,998	328,096	1.1	(7.8)	4.8	(8.1)
Part-time	68,129	78,983	84,605	-19.5	(8.6)	-6.6	(9.4)
School systems	394,885	391,656	392,217	.7	(9.6)	-.1	(9.5)
Full-time	319,894	311,972	313,204	.7	(10.1)	-.1	(9.9)
Part-time	74,991	79,684	79,013	-5.1	(12.3)	.8	(13.3)

**Table 3. Estimated Error Rates of Total Payroll,
by Type of Government and Employment**

Type of government and employment	Total payroll (in thousands)			Error rate (in percent)			
	Reported	Published	Evaluation	Percent		Published	
All governments	1,056,165	998,387	996,250	6.0	(13.0)	.2	(10.1)
Full-time	1,001,577	952,166	945,090	6.0	(8.4)	.7	(6.5)
Part-time	54,588	46,221	51,160	6.7	(15.2)	9.7	(9.4)
General-purpose governments	501,106	490,207	478,560	4.7	(10.3)	2.4	(7.6)
Full-time	476,244	469,395	453,951	4.9	(10.1)	3.4	(7.8)
Part-time	24,862	20,812	24,609	1.0	(17.7)	-15.4	(7.8)
School systems	555,059	508,179	517,690	7.2	(13.0)	-1.8	(10.1)
Full-time	525,334	482,771	491,139	7.2	(13.3)	-1.8	(10.2)
Part-time	29,726	25,409	26,551	12.0	(24.6)	-4.3	(16.9)

Table 4. Estimated Average Monthly Salaries, by Governmental Function

Function	Full-time			Part-time		
	Reported	Published	Evaluation	Reported	Published	Evaluation
Governmental administration:						
Financial	1,373	1,288	1,403	467	335	338
Central	1,155	1,213	1,246	228	163	162
Judicial and legal	1,437	1,410	1,401	869	431	483
Public safety:						
Police protection:						
Police officers	2,001	1,777	1,762	321	321	323
Other	1,215	1,146	1,165	389	325	352
Correction	1,376	1,354	1,373	502	365	495
Fire protection:						
Firefighters	1,769	1,775	1,778	30	65	168
Other	1,566	1,329	1,645	214	112	209
Transportation:						
Highway	1,549	1,293	1,314	526	286	581
Air	1,656	1,500	1,546	509	416	515
Water	1,360	989	989	0	0	0
Social services and income maintenance:						
Public welfare	1,061	1,138	1,086	388	360	380
Health	1,347	1,323	1,330	734	499	496
Hospitals	1,227	1,240	1,207	527	516	628
Environment and housing:						
Street cleaning and refuse collection	1,376	1,185	1,212	709	343	410
Sewerage	1,235	1,313	1,340	739	415	346
Parks and recreation	1,354	1,233	1,222	504	313	312
Housing and urban renewal	1,441	1,438	1,433	538	257	545
Natural resources	863	990	852	338	217	609
Local utilities:						
Water supply	1,273	1,251	1,269	542	242	535
Electric power	1,278	1,269	1,291	0	667	667
Gas supply	0	0	0	0	0	0
Transit	1,239	1,267	1,295	618	592	569
Education services:						
Local schools:						
Instructional	1,876	1,736	1,757	464	338	282
Noninstructional	1,113	1,096	1,095	329	302	345
Higher education:						
Instructional	1,614	1,884	2,150	737	426	689
Noninstructional	1,336	1,336	1,377	219	219	218
Libraries	1,169	1,237	1,268	368	297	382
Other	1,167	1,190	1,233	287	240	278

Table 5. Estimated Number of
Employees, by Governmental Function

Function	Full-time			Part-time		
	Reported	Published	Evaluation	Reported	Published	Evaluation
Governmental administration:						
Financial	20,307	20,225	19,647	2,741	2,968	3,190
Central	28,267	28,487	24,141	16,885	23,576	29,166
Judicial and legal	16,486	16,495	17,005	2,320	2,257	2,791
Public safety:						
Police protection:						
Police officers	56,193	56,419	56,793	2,895	2,686	2,383
Other	9,642	9,584	9,465	10,167	10,049	10,941
Correction	13,842	14,128	14,042	685	794	881
Fire protection:						
Firefighters	19,929	19,626	18,720	3,157	3,081	899
Other	1,334	940	1,942	633	677	393
Transportation:						
Highway	25,046	26,082	26,254	968	980	759
Air	969	1,445	1,046	77	97	76
Water	197	26	26	0	0	0
Social services and income maintenance:						
Public welfare	26,304	30,451	28,435	4,857	5,331	6,504
Health	12,197	13,824	14,844	1,477	1,774	1,868
Hospitals	10,073	12,341	7,378	902	746	500
Environment and housing:						
Street cleaning and refuse collection	16,184	16,579	16,408	422	831	436
Sewerage	8,031	8,327	9,014	534	542	674
Parks and recreation	13,645	14,105	13,528	6,739	7,298	6,840
Housing and urban renewal	2,932	3,032	3,015	378	405	337
Natural resources	2,069	1,660	2,041	116	106	640
Local utilities:						
Water supply	11,458	10,800	10,957	193	163	185
Electric power	1,670	1,730	1,624	0	24	24
Gas supply	0	0	0	0	0	0
Transit	1,025	1,091	954	224	246	260
Education services:						
Local schools:						
Instructional	219,076	214,918	218,646	27,413	28,746	27,562
Noninstructional	94,960	91,196	89,500	41,782	45,142	45,185
Higher education:						
Instructional	3,310	3,310	2,491	3,845	3,845	3,886
Noninstructional	2,548	2,548	2,567	1,951	1,951	2,380
Libraries	6,158	6,340	6,379	3,917	4,095	4,381
Other	27,651	30,261	24,433	7,842	10,247	10,477

Table 6. Estimated Payroll,
by Governmental Function

Function	Full-time payrolls			Part-time payrolls		
	Reported	Published	Evaluation	Reported	Published	Evaluation
Governmental administration:						
Financial	27,890	26,048	27,574	1,280	994	1,077
Central	32,646	34,564	30,072	3,853	3,836	4,735
Judicial and legal	23,693	23,259	23,824	2,016	976	1,347
Public safety:						
Police protection:						
Police officers	112,415	100,232	100,051	928	862	770
Other	11,712	10,981	11,024	3,950	3,262	3,851
Correction	19,042	19,133	19,278	344	290	436
Fire protection:						
Firefighters	35,247	34,837	33,276	94	200	155
Other	2,089	1,249	3,195	135	76	82
Transportation:						
Highway	38,802	33,737	34,497	510	281	441
Air	1,604	2,167	1,617	39	40	39
Water	268	26	26	0	0	0
Social services and income maintenance:						
Public welfare	27,911	34,654	30,871	1,887	1,922	2,469
Health	16,434	18,290	19,736	1,085	886	927
Hospitals	12,360	15,301	8,902	475	385	314
Environment and housing:						
Street cleaning and refuse collection	22,263	19,639	19,889	299	285	179
Sewerage	9,921	10,931	12,081	395	225	233
Parks and recreation	18,481	17,392	16,525	3,396	2,286	2,134
Housing and urban renewal	4,225	4,361	4,320	204	104	184
Natural resources	1,786	1,643	1,739	39	23	390
Local utilities:						
Water supply	14,589	13,508	13,901	105	39	90
Electric power	2,134	2,196	2,097	0	16	16
Gas supply	0	0	0	0	0	0
Transit	1,270	1,383	1,235	138	146	148
Education services:						
Local schools:						
Instructional	410,878	373,181	384,237	12,713	9,715	7,770
Noninstructional	105,710	99,950	98,010	13,754	13,630	15,584
Higher Education:						
Instructional	5,342	6,236	5,357	2,832	1,637	2,678
Noninstructional	3,404	3,404	3,535	427	427	518
Libraries	7,198	7,840	8,089	1,442	1,217	1,672
Other	32,263	36,024	30,133	2,247	2,462	2,915

**Table 7. Percent of Estimated Error Rates (in Percent)
of Average Monthly Salary, by Governmental Function**

Function	Full-time				Part-time			
	Reported		Published		Reported		Published	
Governmental administration:								
Financial	-2.1	(8.3)	-8.2	(6.0)	38.4	(35.1)	-0.8	(6.0)
Central	-7.3	(7.1)	-2.6	(1.9)	40.6	(16.5)	0.2	(5.6)
Judicial and legal	2.6	(3.3)	0.6	(1.4)	80.1	(73.6)	-10.7	(9.9)
Public safety:								
Police protection:								
Police officers	13.6	(12.8)	0.8	(2.1)	-0.8	(16.2)	-0.7	(17.0)
Other	4.3	(7.3)	-1.6	(1.8)	10.4	(17.0)	-7.3	(4.8)
Correction	0.2	(2.4)	-1.4	(1.7)	1.3	(5.8)	-26.3	(10.6)
Fire Protection:								
Firefighters	-0.5	(4.6)	-0.1	(2.9)	-82.2	(16.1)	-61.4	(9.3)
Other	-4.8	(16.8)	-19.2	(9.6)	2.2	(17.5)	-46.3	(6.9)
Transportation:								
Highway	17.9	(17.4)	-1.6	(1.7)	-9.5	(23.2)	-50.7	(11.7)
Air	7.1	(1.9)	-3.0	(3.5)	-1.3	(5.6)	-19.3	(10.3)
Water	37.5	(2.1)	0.0	(1.7)	-100.0	(0.0)	-100.0	(0.0)
Social services and income maintenance:								
Public welfare	-2.3	(3.2)	4.8	(2.8)	2.3	(9.0)	-5.0	(6.9)
Health	1.3	(3.5)	-0.5	(2.7)	47.9	(47.6)	0.6	(8.2)
Hospitals	1.7	(3.1)	2.8	(5.8)	-16.2	(4.4)	-17.8	(5.2)
Environment and housing:								
Street cleaning and refuse collection	13.5	(12.6)	-2.3	(4.4)	73.0	(52.0)	-16.4	(14.5)
Sewerage	-7.8	(3.5)	-2.0	(2.3)	113.9	(119.9)	20.0	(25.9)
Parks and recreation	10.9	(12.6)	0.9	(2.2)	61.5	(52.9)	0.4	(4.2)
Housing and urban renewal	0.6	(1.8)	0.4	(1.8)	-1.2	(9.0)	-52.8	(13.8)
Natural resources	1.3	(6.9)	16.2	(7.6)	-44.6	(16.2)	-64.5	(9.9)
Local utilities:								
Water supply	0.4	(5.5)	-1.4	(4.1)	1.4	(27.5)	-54.7	(15.7)
Electric power	-1.0	(6.6)	-1.7	(6.4)	-100.0	(0.0)	0.0	(23.6)
Gas supply	-100.0	(0.0)	-100.0	(0.0)	-100.0	(0.0)	-100.0	(0.0)
Transit	-4.3	(5.7)	-2.1	(5.4)	8.7	(11.0)	4.0	(9.7)
Education services:								
Local schools:								
Instructional	6.7	(5.9)	-1.2	(2.3)	64.5	(46.0)	19.9	(14.2)
Noninstructional	1.7	(5.9)	0.1	(2.7)	-4.6	(4.4)	-12.5	(3.8)
Higher education:								
Instructional	-25.0	(16.3)	-12.4	(10.0)	6.9	(8.8)	-38.2	(13.6)
Noninstructional	-3.0	(7.6)	-3.0	(7.6)	0.4	(8.4)	0.4	(8.4)
Libraries	-7.8	(3.0)	-2.5	(3.5)	-3.5	(4.1)	-22.1	(7.3)
Other	-5.4	(6.2)	-3.5	(2.9)	3.0	(10.5)	-13.7	(4.2)

**Table 8. Estimated Error Rates (in Percent)
of the Number of Employees, by Governmental Function**

Function	Full-time				Part-time			
	Reported		Published		Reported		Published	
Governmental administration:								
Financial	3.4	(2.2)	2.9	(2.1)	-14.1	(10.0)	-7.0	(9.1)
Central	17.1	(5.8)	18.0	(4.5)	-42.1	(5.7)	-19.2	(4.5)
Judicial and legal	-3.1	(1.2)	-3.0	(1.2)	-16.9	(6.4)	-18.8	(5.8)
Public safety:								
Police protection:								
Police officers	-1.1	(0.9)	-0.7	(0.6)	21.5	(13.6)	12.7	(13.2)
Other	1.9	(4.9)	1.3	(4.0)	-7.1	(4.2)	-8.3	(3.4)
Correction	-1.4	(1.5)	0.6	(1.7)	-22.2	(6.6)	-9.9	(13.3)
Fire protection:								
Firefighters	6.5	(4.5)	4.8	(4.5)	251.2	(280.7)	242.7	(281.1)
Other	-31.3	(35.7)	-51.6	(21.0)	61.1	(52.6)	72.3	(54.0)
Transportation:								
Highway	-4.6	(2.3)	-0.7	(1.3)	27.5	(40.8)	29.1	(40.1)
Air	-7.4	(0.7)	38.1	(18.5)	1.3	(0.8)	27.6	(20.1)
Water	657.7	(35.8)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Social services and income maintenance:								
Public welfare	-7.5	(2.9)	7.1	(3.3)	-25.3	(6.1)	-18.0	(5.8)
Health	-17.8	(3.3)	-6.9	(3.9)	-20.9	(9.3)	-5.0	(8.6)
Hospitals	36.5	(10.8)	67.3	(36.6)	80.4	(19.6)	49.2	(29.8)
Environment and housing:								
Street cleaning and refuse collection	-1.4	(1.1)	1.0	(2.4)	-3.2	(25.5)	90.6	(73.7)
Sewerage	-10.9	(7.6)	-7.6	(6.4)	-20.8	(23.7)	-19.6	(36.8)
Parks and recreation	0.9	(4.2)	4.3	(3.8)	-1.5	(5.0)	6.7	(5.5)
Housing and urban renewal	-2.8	(4.2)	0.6	(3.9)	12.2	(20.4)	20.2	(21.6)
Natural resources	1.4	(17.1)	-18.7	(6.9)	-81.9	(13.1)	-83.4	(12.1)
Local utilities:								
Water supply	4.6	(8.5)	-1.4	(8.5)	4.3	(23.6)	-11.9	(18.6)
Electric power	2.8	(2.6)	6.5	(4.9)	-100.0	(0.0)	0.0	(0.0)
Gas supply	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)	0.0	(0.0)
Transit	7.4	(5.6)	14.4	(10.0)	-13.8	(13.7)	-5.4	(13.8)
Education services:								
Local schools:								
Instructional	0.2	(0.5)	-1.7	(2.0)	-0.5	(12.0)	4.3	(16.3)
Noninstructional	6.1	(3.5)	1.9	(3.1)	-7.5	(5.0)	-0.1	(5.3)
Higher education:								
Instructional	32.9	(29.1)	32.9	(29.1)	-1.1	(0.6)	-1.1	(0.6)
Noninstructional	-0.7	(0.6)	-0.7	(0.6)	-18.0	(13.7)	-18.0	(13.7)
Libraries	-3.5	(4.9)	-0.6	(3.0)	-10.6	(4.7)	-6.5	(4.1)
Other	13.1	(6.6)	23.8	(5.2)	-25.2	(12.2)	-2.2	(4.3)

**Table 9. Estimated Error Rates (in Percent)
of Total Payroll, by Governmental Function**

Function	Full-time		Part-time	
	Reported	Published	Reported	Published
Governmental administration:				
Financial	1.1 (8.7)	-5.5 (6.4)	18.9 (31.0)	-7.7 (7.2)
Central	8.6 (8.1)	14.9 (4.0)	-18.6 (10.2)	-19.0 (6.7)
Judicial and legal	-0.5 (3.0)	-2.4 (1.2)	-49.7 (61.8)	-27.5 (9.9)
Public safety:				
Police protection				
Power of arrest	12.4 (12.6)	0.2 (1.4)	20.5 (25.2)	12.0 (24.1)
Other	6.2 (9.8)	-0.4 (3.7)	2.6 (16.1)	-15.3 (5.4)
Correction	-1.2 (2.1)	-0.8 (1.4)	-21.2 (8.6)	-33.5 (7.1)
Fire protection:				
Firefighters	5.9 (6.0)	4.7 (4.5)	-37.6 (19.3)	32.3 (79.9)
Other	-34.6 (34.3)	-60.9 (18.4)	64.6 (43.0)	-7.5 (22.6)
Transportation:				
Highway	12.5 (16.8)	-2.2 (1.7)	15.5 (24.4)	-36.4 (22.6)
Air	-0.8 (0.0)	34.0 (16.4)	0.0 (0.0)	2.9 (6.0)
Water	941.8 (38.6)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Social services and income maintenance:				
Public welfare	-9.6 (3.3)	12.3 (3.2)	-23.6 (5.6)	-22.2 (5.4)
Health	-16.7 (3.0)	-7.3 (2.9)	17.0 (35.9)	-4.5 (3.6)
Hospitals	38.8 (9.0)	71.9 (35.9)	51.2 (14.8)	22.6 (22.1)
Environment and housing:				
Street cleaning and refuse collection	11.9 (12.1)	-1.3 (4.9)	67.5 (63.2)	59.4 (51.9)
Sewerage	-17.9 (6.4)	-9.5 (6.2)	69.5 (57.8)	-3.5 (30.1)
Parks and recreation	11.8 (12.8)	5.2 (3.4)	59.1 (53.4)	7.1 (6.2)
Housing and urban renewal	-2.2 (4.3)	1.0 (4.2)	10.8 (27.0)	-43.3 (20.9)
Natural resources	2.7 (12.5)	-5.5 (8.7)	-90.0 (8.4)	-94.1 (4.9)
Local Utilities:				
Water supply	4.9 (5.8)	-2.8 (7.4)	5.7 (29.4)	-60.1 (10.9)
Electric power	1.8 (3.4)	4.7 (4.9)	-100.0 (0.0)	0.0 (0.0)
Gas supply	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)	0.0 (0.0)
Transit	2.8 (2.2)	11.9 (8.3)	-6.4 (6.9)	-1.6 (6.7)
Education services:				
Local schools:				
Instructional	6.9 (5.7)	-2.9 (2.2)	63.6 (61.6)	25.0 (32.1)
Noninstructional	7.9 (5.5)	2.0 (2.5)	-11.7 (6.8)	-12.5 (6.9)
Higher education:				
Instructional	-0.3 (1.5)	16.4 (15.2)	5.7 (4.5)	-38.9 (12.5)
Noninstructional	-3.7 (2.7)	-3.7 (2.7)	-17.7 (12.7)	-17.7 (12.7)
Libraries	-11.0 (5.0)	-3.1 (2.4)	-13.7 (5.4)	-27.2 (7.5)
Other	7.1 (6.9)	19.5 (3.2)	-22.9 (7.4)	-15.6 (5.8)

**Table 10. Stratification for the Government
Employment Response Evaluation Study**

General-purpose governments			Independent school districts		
(1980 population)	N_h	n_h	(1981 enrollment)	N_h	n_h
300,000 and over	37	37	18,000 and over	16	16
104,000 to 299,999	68	34	6,250 to 17,999	175	25
25,970 to 103,999	360	60	3,010 to 6,249	345	23
4,863 to 25,969	1219	53	1,240 to 3,009	480	10
Under 4,863	<u>3825</u>	<u>45</u>	Under 1,240	<u>480</u>	<u>10</u>
	5509	229		1511	89