

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1984 REPORTS**

REPORT OF THE COMMITTEE ON RETIREMENT PLANS

**MORTALITY AMONG MEMBERS
OF SELF-ADMINISTERED PENSION SYSTEMS**

This report is the latest in a series of reports published by the Committee on Retirement Plans Research (formerly the Committee on Self-Administered Retirement Plans) presenting five-year experience on self-administered pension plans. Previous reports of the Committee were published in the *1958 Reports* (covering exposure years 1935–57), *1962 Reports* (covering exposure years 1935–61), *1966 Reports* (covering exposure years 1935–64), *1971 Reports* (covering exposure years 1933–70), *1976 Reports* (covering exposure years 1945–74), and *1979 Reports* (covering exposure years 1945–79).

Actual-to-expected ratios (A/E) in the Committee's reports since 1976 have been measured against the UP-1984 Table* (set forward one year for males and set back four years for females, unless otherwise indicated). The UP-1984 mortality rates shown in Table 4 were based on the mortality experience published by the Committee in the *1976 Reports*.

The 1979 report included data covering more than 30 years and six retirement systems. This report adds 1980–84 data from three of the former six systems, 1981–83 data from one other of the former six systems, and 1980–84 data on two new systems. The participants in the study have varied over the years, but two systems (the Federal Civil Service Retirement System and the Public Utility Company Pension Plan) have participated in each study and trends on those systems for the last 40 years provide an important historical perspective on mortality among pensioners in the United States. The participants in this report are covered by the following systems:

- Medicare participants in the United States Social Security System (Medicare)
- The Federal Civil Service Retirement System (CSRS)
- A Public Utility Company Pension Plan (Public Utility)
- An Electrical Union Pension Plan (Electrical Union)
- The New York State Employees' Retirement System (New York)
- The United States Military Retirement System (U.S. Military).

Most of the data are for retired members of the participating systems. Additional data on active and disabled employees from some of the systems permit a comparison among active, disabled and retired mortality; and data

*William W. Feller and Paul H. Jackson, "Noninsured Pensioner Mortality: The UP-1984 Table," *PCAPP* XXV(1975-76):456.

weighted by dollar amount of annuity or by retirement class for three of the systems provide additional information on differences in mortality within a retirement system. The data reported here cover mortality experience between 1981 and 1983 for the Public Utility and 1980 and 1984 for the other systems. Additional data and analysis on the governmental programs can be obtained from the respective actuarial offices.

Reports on Medicare and Social Security experience can be obtained from the Office of the Actuary of the Social Security Administration. Reports include the *Annual Report of the Board of Trustees of the Federal OASDI Trust Funds*.

Reports on the U.S. Military Retirement System can be obtained from the Office of the Actuary of the Department of Defense. Two published reports are the *Annual Statistical Report on the Military Retirement System* and the *Valuation of the Military Retirement System*.

Reports on the Civil Service Retirement System can be obtained from the Office of the Actuary of the Office of Personnel Management. Two published reports are the *Compensation Report* and the *Report of the Board of Actuaries of the Civil Service Retirement System*.

The data were provided by the actuaries of each of the contributing systems. Again, where possible, the primary data exclude active employees and disability retirees. Major exceptions are the Medicare data, which include disabled retirees, and the Electrical Union data, which include actives and disabled retirees. The data for the Public Utility and the military exclude vested retirees.

SUMMARY OF FINDINGS

This report finds that mortality has continued to improve as it has for almost every system in every report. The underlying trend over the past 40 years has been a reduction of 1.6 percent a year with an average improvement of 2.0 percent in the last five years. The five-year average improvement started at 2.1 percent in the first study, dropped to less than 0.7 percent a year in the early 1960s and increased to 2.3 percent in the prior study.

The rate of improvement has varied by system from 2.0 percent over 40 years for the largely white-collar Public Utility population to 0.9 percent over the last 25 years for the largely blue-collar Electrical Union population. Using the Medicare experience as the baseline, the actual-to-expected ratios within the last five years have ranged from 64.9 percent for males in the Public Utility to 105.2 percent for males in the New York system.

Three of the systems provided detailed information on subgroups within the system. Experience for these subgroups showed that mortality is significantly lower for those receiving higher pensions. Mortality in the years immediately following retirement is as much as a third lower for members who receive the higher annuities than for other annuitants. The differences by amount of annuity tend to decline as age increases and almost disappear by age 85.

COMPARISON AMONG SYSTEMS

Table 1 contains a description of the experience included in the current report. Table 2 contains a summary of the current pensioner mortality and a comparison of it to prior periods, where available, for each group. In Table 3 mortality trends are expressed as average annual improvements from the beginning of each system's participation in this series of reports.

TABLE 1
GROUP EXPERIENCES INCLUDED IN REPORT

Most Recent Time Period Covered	Number of Deaths	Description of Group	Table
1980/84	6,647,588	Medicare from Social Security System	7
1980/84	168,497	Civil Service Retirement System	9
1981/83	19,074	Public Utility	10
1980/84	25,833	Electrical Union, including nonretired	11
1980/84	27,987	New York State	12
1980/84	69,681	U.S. Military	13

In Graph 1 the period-to-period trends for all of the systems combined are compared. The average trend is the unweighted average for the separate groups. If a weighted average were used, the Medicare data would dominate the comparison since they include over 95 percent of the deaths. The averages are compared to the rates for CSRS males since that is the largest homogeneous group that has been in the study for the entire period.

The weighted average improvement in mortality for all systems was 1.6 percent a year during the 40-year history of these studies. The average annual improvement started at 2.1 percent in the 1950s and then dropped to as low as 0.7 percent before rising to 2.3 percent in the late 1970s and 2.0 percent

TABLE 2
HISTORY OF PENSIONER MORTALITY
ACTUAL-TO-EXPECTED MORTALITY RATIOS
ON UP-1984 BASIS

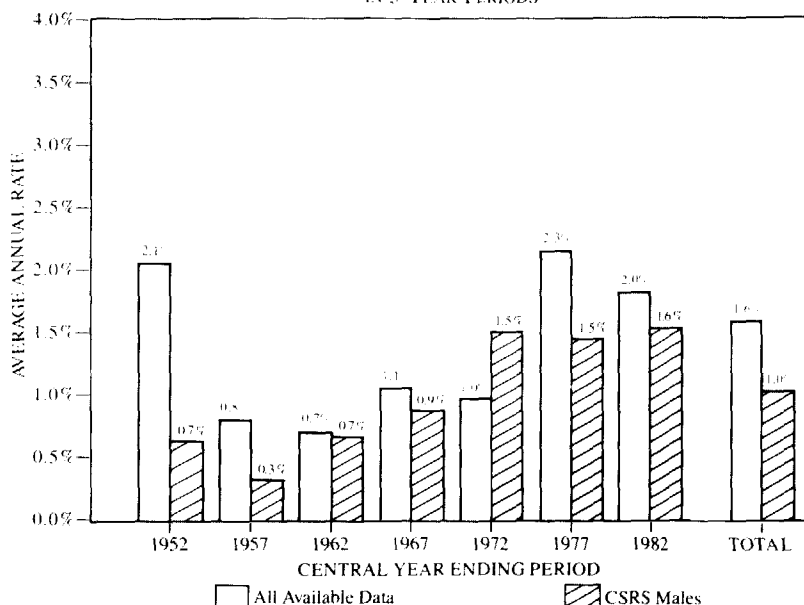
Group	1945-49	1950-54	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84
Medicare*								
Males	—	—	—	—	—	122%	113%	108%
Females	—	—	—	—	—	116	104	100
CSRS								
Males	124%	120%	118%	114%	109%	101	93	86
Females	125	112	102	99	92	90	82	82
Electrical Union	—	—	—	131	127	124	120	109
Public Utility								
Males	144	134	132	132	128	115	96	70
Females	163	133	128	118	108	106	86	70
Military	—	—	—	—	—	—	—	94
New York	—	—	—	—	—	—	109	94

*Medicare experience for the previous study was for exposure years 1973 through 1977. The 122 percent and 116 percent were derived by readjustments to approximate 1975 to 1979 experience. Other exceptions to the five-year groupings are the CSRS experience in the *1979 Reports*, which was for 1975 through 1979, and the Public Utility experience, which was for 1976 and 1977 in the *1979 Reports* and for 1981 through 1983 in the current study.

TABLE 3
TRENDS IN MORTALITY IMPROVEMENT

Group	Earliest Period	Average Annual Improvement	
		Since Earliest Study	Since Last Study
Males			
Medicare	1970/74	1.2%	0.9%
CSRS	1945/49	1.0	1.4
Public Utility	1945/49	1.9	5.6
Military	1980/84	NA	NA
Females			
Medicare	1970/74	1.5	0.8
CSRS	1945/49	1.2	0.0
Public Utility	1945/49	2.3	3.7
Unisex			
Electrical Union	1960/64	0.9	1.9
New York	1975/79	2.9	2.9

GRAPH 1
ANNUAL RATE OF MORTALITY IMPROVEMENT
IN 5-YEAR PERIODS



in the last five years. Improvement has generally been better for females than for males with an average of 1.7 percent for females and 1.4 percent for males for the three groups reporting data by sex. The highest rate of improvement has been for the Public Utility and the lowest for the Electrical Union.

The actual-to-expected ratios on the UP-1984 data present historical trends. However, use of the UP-1984 Table requires arbitrary adjustments to estimate the male/female mix. A table that separates the male/female experience provides better intergroup comparisons. The 1980 to 1984 Medicare experience was selected for this purpose since it covers almost the entire universe of pensioners in the United States. The table was extended before age 65 by multiplying the UP-1984 Table by the ratio of Medicare to UP-1984 experience from 65 to 69.

In Table 4 and Graph 2 the UP-1984 and Medicare mortality rates are compared. The UP-1984 Table, with its recommended one-year set-forward

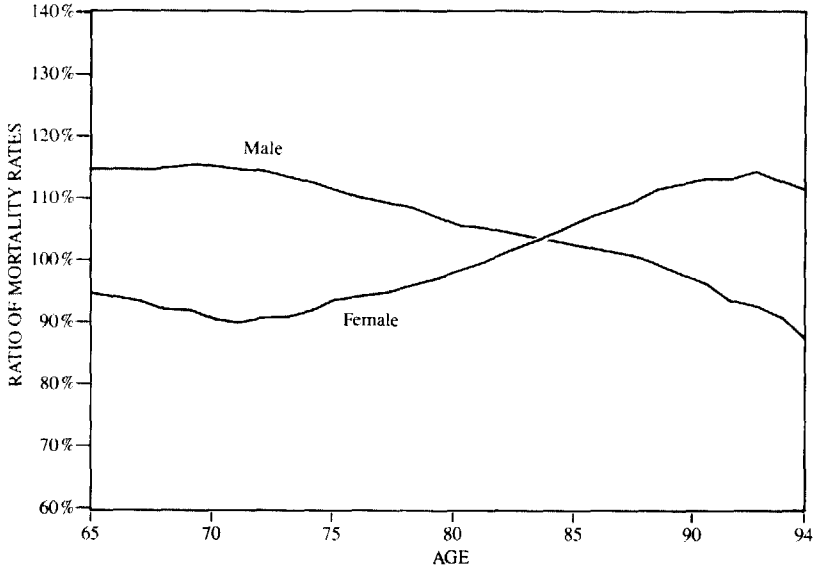
TABLE 4
COMPARISON OF MEDICARE TO UP-1984 MORTALITY

Age	Males			Females		
	Medicare	UP-1984 Plus 1	Medicare/ UP 1984	Medicare	UP-1984 Minus 4	Medicare/ UP-1984
65.....	0.028	0.025	114.5%	0.015	0.016	95.0%
66.....	0.031	0.027	114.5	0.016	0.017	94.3
67.....	0.034	0.030	114.5	0.018	0.019	93.7
68.....	0.037	0.032	114.6	0.019	0.021	92.4
69.....	0.040	0.035	115.2	0.021	0.023	92.1
70.....	0.043	0.038	115.1	0.023	0.025	90.6
71.....	0.047	0.041	114.5	0.025	0.027	90.1
72.....	0.051	0.045	114.3	0.027	0.030	90.9
73.....	0.055	0.049	113.5	0.029	0.032	91.1
74.....	0.060	0.053	112.5	0.032	0.035	92.1
75.....	0.064	0.058	111.4	0.035	0.038	93.9
76.....	0.069	0.063	110.0	0.039	0.041	94.5
77.....	0.075	0.069	109.1	0.042	0.045	95.1
78.....	0.081	0.075	108.6	0.047	0.049	96.0
79.....	0.087	0.081	107.0	0.051	0.053	97.3
80.....	0.093	0.089	105.6	0.057	0.058	98.6
81.....	0.101	0.096	105.3	0.063	0.063	100.0
82.....	0.109	0.104	104.4	0.070	0.069	101.7
83.....	0.117	0.113	103.7	0.077	0.075	103.3
84.....	0.126	0.122	103.2	0.085	0.081	104.6
85.....	0.135	0.132	102.4	0.094	0.089	106.7
86.....	0.145	0.143	101.5	0.104	0.096	108.0
87.....	0.157	0.155	101.0	0.114	0.104	109.4
88.....	0.167	0.168	99.5	0.126	0.113	111.4
89.....	0.179	0.182	97.9	0.137	0.122	112.3
90.....	0.191	0.198	96.6	0.149	0.132	113.1
91.....	0.202	0.215	93.8	0.162	0.143	113.2
92.....	0.216	0.233	92.9	0.177	0.155	114.0
93.....	0.230	0.253	91.1	0.189	0.168	112.5
94.....	0.239	0.274	87.3	0.203	0.182	111.3

for males, provides a margin by being less than the Medicare experience in early years but then rises above the Medicare rates after age 87. The recommended four-year setback for females produces a table that falls within 10 percent of the Medicare experience for most ages. When the total actual-to-expected ratios are calculated, the UP-1984 with one-year set-forward is 93 percent of the Medicare male experience and the UP-1984 with four-year setback is exactly 100 percent of the Medicare female experience. The UP-1984 Table set forward two years would produce a ratio of 101 percent of the male table. This suggests that a six-year difference is closest to the actual male/female difference.

GRAPH 2

MEDICARE AS PERCENT OF UP-1984 RATES



In Table 5 the Medicare experience is compared to the experience summarized in two other standard tables that are often used in valuations of pension plans. These are the 1971 and 1983 Group Annuity Mortality (GAM) tables. Since these tables include margins against adverse experience, the rates shown are substantially lower than the underlying actual mortality experience. The margins built into the 1971 GAM still provide rates that are lower than the more recent experience. The 1983 GAM table contains margins that range up to 83 percent at the younger retirement years. The margins in both tables decline as age increases.

In Table 6 the UP-1984 and the Medicare experience are compared to the experience of some of the other groups. Actual-to-expected ratios are measured using the Medicare experience. While the UP-1984 results with the recommended adjustments are close to those of the Medicare experience, the rates do not include a margin to recognize that the typical pensioner group has better-than-average experience. A setback of one year would come closer to the actual pensioner experience for males and a setback of seven years would be needed to approximate the typical female pensioner group. These setbacks would have to be increased further to anticipate future improvement in mortality.

TABLE 5
COMPARISON OF MEDICARE TO OTHER STANDARD TABLES
(Male Mortality)

Age	Medicare	1971 GAM		1983 GAM	
		Rates	Medicare/1971 GAM	Rates	Medicare/1983 GAM
65.....	0.028	0.021	133.9%	0.016	182.5%
66.....	0.031	0.024	131.9	0.018	177.4
67.....	0.034	0.026	128.9	0.020	171.4
68.....	0.037	0.029	126.0	0.022	165.4
69.....	0.040	0.032	123.4	0.025	161.3
70.....	0.043	0.036	120.1	0.028	157.5
71.....	0.047	0.040	117.0	0.030	154.2
72.....	0.051	0.044	116.1	0.033	152.5
73.....	0.055	0.047	116.0	0.037	150.1
74.....	0.060	0.051	116.2	0.040	147.4
75.....	0.064	0.055	116.4	0.045	144.4
76.....	0.069	0.060	115.7	0.049	140.6
77.....	0.075	0.066	113.6	0.055	136.7
78.....	0.081	0.073	111.7	0.061	133.6
79.....	0.087	0.080	109.1	0.067	129.5
80.....	0.093	0.087	107.0	0.074	126.2
81.....	0.101	0.095	106.2	0.081	124.4
82.....	0.109	0.104	105.0	0.089	121.9
83.....	0.117	0.112	104.2	0.098	120.0
84.....	0.126	0.121	104.0	0.106	118.8
85.....	0.135	0.130	104.0	0.115	117.8
86.....	0.145	0.139	104.3	0.124	117.0
87.....	0.157	0.149	105.4	0.134	117.1
88.....	0.167	0.159	105.6	0.144	116.2
89.....	0.179	0.169	105.9	0.155	115.3
90.....	0.191	0.180	106.6	0.166	115.1
91.....	0.202	0.191	105.8	0.178	113.1
92.....	0.216	0.202	107.3	0.191	113.6
93.....	0.230	0.213	108.0	0.203	113.3
94.....	0.239	0.227	105.6	0.218	109.8

TABLE 6
ACTUAL-TO-EXPECTED ON MEDICARE EXPERIENCE

Male Tables	
New York	105.2%
UP-1984 set forward two years	100.9
Medicare	100.0
UP-1984 set forward one year	92.9
Military	83.1
Civil Service	79.3
Public Utility	64.9
Female Tables	
UP-1984 set back four years	100.0%
Medicare	100.0
New York	97.1
Civil Service	82.7
Public Utility	70.7

Medicare

The data from the Social Security system are for all Medicare enrollees. Data for the five-year period (1980–1984) by age group are shown in Table 7. With the exception of the CSRS retirees, the Medicare experience is the universe from which the other experience in this study is drawn. Before 1983, federal civilian employees were not covered by Medicare, so that the CSRS data include some experience that is not in the Medicare data. However, 80 percent of federal retirees had managed to obtain Medicare coverage from other employment even before 1983 so the large majority of those retirees are also in the Medicare base.

TABLE 7
MEDICARE

Age Group	Males		Females	
	A:E UP-1984	Number of Deaths	A:E UP-1984	Number of Deaths
65-69.....	115%	505,428	94%	319,296
70-74.....	115	715,728	91	507,384
75-79.....	110	712,642	94	617,223
80-84.....	105	595,722	100	693,127
85-89.....	102	428,323	108	679,850
90-94.....	95	211,917	113	441,226
95-99.....	81	60,819	106	158,903
Total.....	108%	3,230,579	100%	3,417,009

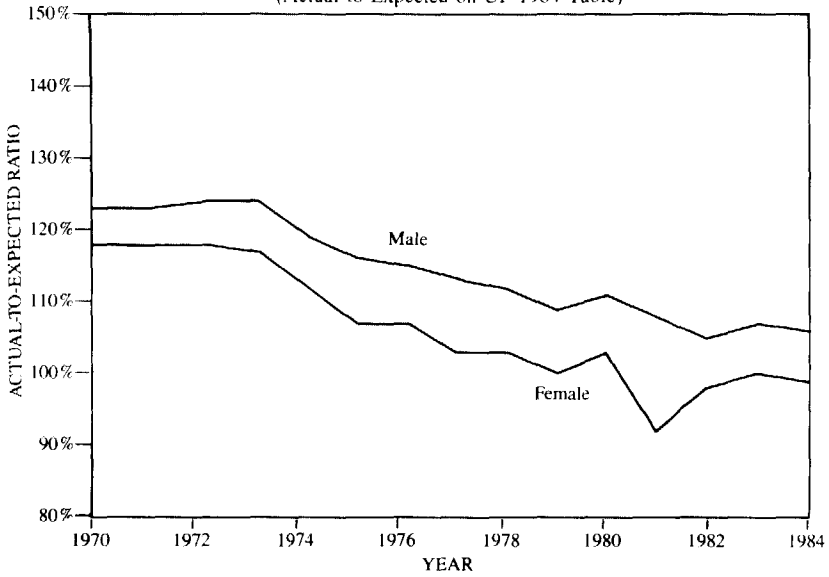
The average improvement in the last five years has been 0.9 percent for males and 0.8 percent for females, compared to the 2.0 percent unweighted average for all experience groups. The Medicare experience may differ from that of the other groups in the study for two reasons: (1) the Medicare experience includes disability retirees, and (2) data for the other systems are mainly on retirees who have worked a full career for a large employer. These full-career employees may be in better health than the average person in the general population.

The Medicare experience is drawn from a very large group, with over a million deaths a year. Therefore, significant trends can be drawn from year-to-year experience. The experience for 1970 through 1984 is shown in Table 8 and Graph 3. From 1970 through 1984, the average annual improvement was 1.1 percent for males and 1.2 percent for females. Half of the total drop in the 15-year period occurred between 1973 and 1975. The average decreases shown in Table 8 differ slightly from the averages shown for Medicare in Table 3 since the latter are based on five-year accumulations of the single-year data.

TABLE 8
TREND IN MEDICARE MORTALITY
(Actual-to-Expected on UP-1984 Table)

Year	Male	Female
1970	123%	118%
1971	123	118
1972	124	118
1973	124	117
1974	119	112
1975	116	107
1976	115	107
1977	113	103
1978	112	103
1979	109	100
1980	111	103
1981	108	92
1982	105	98
1983	107	100
1984	106	99
Average Annual Improvement	1.1%	1.2%

GRAPH 3
TREND IN MEDICARE MORTALITY
(Actual-to-Expected on UP-1984 Table)



The Civil Service Retirement System

Experience on the Civil Service Retirement System (CSRS) has been observed for all 40 years covered by these studies. During that period the average annual improvement in mortality has been 1.0 percent for males and 1.2 percent for females. In the most recent period the improvement has been 1.4 percent for males, but there was no noticeable improvement for females. Summarized data for CSRS are shown in Table 9.

Public Utility Company Retirement Plan

The Public Utility Retirement Plan is the other system that has been represented in all studies in this series. The data shown in Table 10 are for 1981 through 1983. The Public Utility experience has typically been better than for the other groups. In the last five years, the average annual improvement has been 5.6 percent for males and 3.7 percent for females compared to the average 2.0 percent among all groups. Over the 40 years of these reports, the average improvement has been 1.9 percent for males and 2.3 percent for females compared to an average of 1.6 percent among all groups.

TABLE 9
CIVIL SERVICE RETIREMENT SYSTEM

Age Group	Males		Females	
	A/E UP-1984	Number of Deaths	A/E UP-1984	Number of Deaths
Under 55	73%	318	122%	73
55-59	72	3,902	85	579
60-64	77	12,421	70	1,947
65-69	79	20,338	70	4,055
70-74	86	24,262	69	5,548
75-79	90	22,789	78	6,956
80-84	93	20,899	88	7,859
85-89	94	17,407	96	6,474
90-94	94	7,222	103	3,113
95-99	85	1,561	107	774
Total	86	131,119	82	37,378

TABLE 10
PUBLIC UTILITY

Age Group	Males		Females	
	A/E UP-1984	Number of Deaths	A/E UP-1984	Number of Deaths
Under 55	266%	152	215%	119
55-59	229	407	102	286
60-64	120	946	72	467
65-69	79	1,215	63	778
70-74	64	1,505	60	1,409
75-79	69	2,335	66	1,993
80-84	68	1,988	68	1,724
85-89	65	1,096	77	1,240
90-94	71	481	83	607
95 and over	63	152	87	174
Total	70%	10,277	70%	8,797

The actual-to-expected ratios are very high under age 60. This indicates that the relatively few employees who retire early under this system are in worse health than the employees who wait until age 60 or later to retire.

Electrical Union

The Electrical Union data represent commingled active and retired mortality. The total experience improved by 8 percent since the last study. When those over 65 (primarily pensioners) are considered, as shown in Table 11, the improvement has been an average of 1.9 percent in the last five years and 0.9 percent a year over the 25 years these data have been observed. This compares to 2.0 percent in the last five years and 1.6 percent over the past 25 years for all groups combined. The Electrical Union improvement in mortality has been significantly lower than the general improvement in past studies, but the improvement for the last five years is close to average.

Some of the observed variations in trend may, however, be an artifact of the method used to measure the mortality. Data on the system are available only by five-year age groups. Expected mortality must be assigned based on an assumed average age for each of the groupings. Shifts in these ages may mask the actual trend, although the long-term variations are valid.

TABLE 11
ELECTRICAL UNION

Age Group	A/E UP-1984	Number of Deaths
Under 25	73%	80
25-29	108	196
30-34	99	236
35-39	82	288
40-44	77	355
45-49	76	492
50-54	82	905
55-59	92	1,728
60-64	98	2,532
65-69	98	3,228
70-74	107	4,318
75-79	107	4,802
80-84	113	3,710
85 and over	123	2,963
Total	105%	25,833
65 and over	109%	19,021

New York State

The New York State data have been added for this study. New York was able to provide a ten-year history so that a comparison of trends with the other groups was possible. When the data were combined for males and females, the average increase in the last decade was 2.9 percent compared with 2.0 percent for all systems in the study.

Table 12 contains the experience by male and female for the 1980 to 1984 period. The males averaged 116 percent of the results in the UP-1984 Table and the females averaged 97 percent of the results in that table.

TABLE 12
NEW YORK STATE

Age Group	Males		Females	
	A/E UP-1984	Number of Deaths	A/E UP-1984	Number of Deaths
Under 60	189%	609	125%	305
60-64	150	1,698	122	1,069
65-69	121	3,632	98	1,790
70-74	109	4,367	83	1,896
75-79	113	3,784	90	1,662
80-84	108	2,445	96	1,347
85-89	106	1,331	107	946
90-94	111	482	119	406
95 and over	80	96	102	122
Total	116%	18,444	97%	9,543

U.S. Military Retirement System

This study includes data, for the first time, on the military retirement system, as shown in Table 13. The data are for nondisabled retirees from active duty. The data are not broken down by sex, but almost 99 percent are male. The actual deaths average 94 percent of expected compared to 86 percent for CSRS males and 108 percent for Medicare males.

TABLE 13
MILITARY RETIREMENT SYSTEM

Age Group	A/E UP-1984	Number of Deaths
35-39	125%	71
40-44	91	1,364
45-49	94	4,484
50-54	97	8,787
55-59	102	10,904
60-64	92	14,178
65-69	90	11,459
70-74	94	7,445
75-79	94	5,231
80-84	91	3,218
85-89	91	1,637
90-94	91	711
95-99	72	163
100 and over	17	29
Total	94%	69,681

Active, Disabled, and Retired

Data for subgroups of the CSRS and U.S. Military retirement system permit a comparison of active and retired mortality and of mortality of disabled and nondisabled retirements.

In Table 14 the disabled and retired mortality for U.S. Military and CSRS annuitants are compared. U.S. Military experience can be compared as early as age 42, since members can retire on full annuity at any age with 20 years of service. Valid CSRS experience begins at age 50 since involuntary immediate retirement can take place after age 50 if the employee then has at least 20 years of service. Disability experience begins at four times nondisability experience in the early ages of comparison. The difference gradually decreases until there is little noticeable difference after age 82.

TABLE 14
DISABILITY MORTALITY AS PERCENTAGE OF NONDISABILITY MORTALITY

Age	Military	CSRS Males*	CSRS Females*
42	373%	—	—
47	358	—	—
52	236	336%	407%
57	194	308	288
62	156	239	292
67	143	195	185
72	129	—	—
77	117	—	—
82	106	—	—

*Derived from published tables.

In Table 15 the active and retired mortality are compared for CSRS annuitants. Mortality for active employees averages less than two-thirds of the mortality for retirees. The difference increases by age, indicating that employees who work to the older ages are substantially healthier than those who retire at earlier ages.

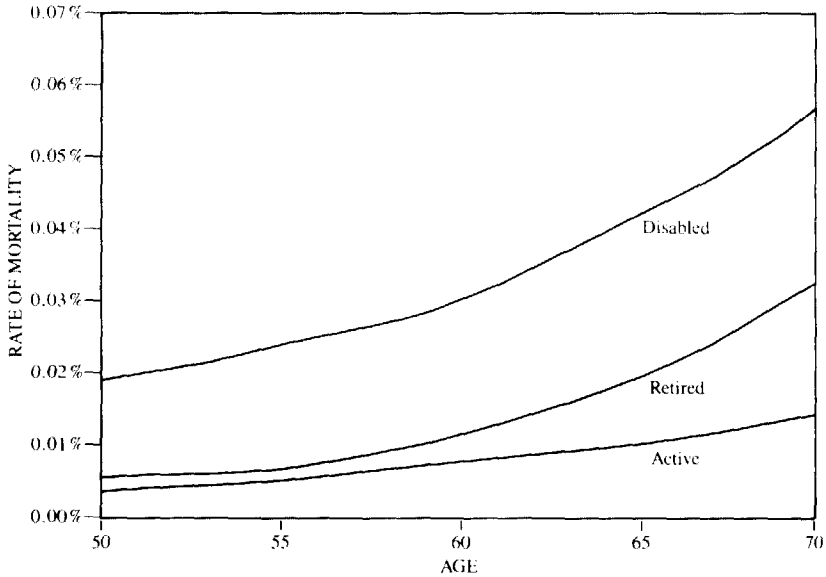
TABLE 15
ACTIVE MORTALITY AS PERCENTAGE OF RETIRED MORTALITY*

Age	CSRS Males	CSRS Females
50	66%	89%
55	79	56
60	68	57
65	54	42
70	44	40

*Derived from published tables.

The CSRS experience is taken from rates published by the Office of Personnel Management (OPM). Since the rates were graduated by OPM actuaries, actual age-to-age fluctuations may be masked. In Graph 4 the three sets of data are compared.

GRAPH 4
ACTIVE, RETIRED AND DISABLED MORTALITY
CSRS EXPERIENCE



Class of Retiree

This series of reports has shown historical trends of the experience by number and amount of pension for the Public Utility retirees. The mortality rates by number have always been significantly higher than by amount and this trend, shown in Table 16, has continued in the latest reporting period. The difference reflects the fact that mortality is lower for people who earn higher pay.

TABLE 16
MORTALITY BY NUMBER AND AMOUNT OF ANNUITY
PUBLIC UTILITY RETIREMENT PLAN

Age Group	Males			Females		
	A/E on Number	A/E on Amount	Amount/ Number	A/E on Number	A/E on Amount	Amount/ Number
60-64	120%	64%	54%	72%	67%	94%
65-69	79	55	70	63	56	89
70-74	64	62	97	60	57	96
75-79	69	62	90	66	63	95
80-84	68	59	87	68	65	95
85-89	65	65	100	77	66	85

The Public Utility experience is corroborated in this report by similar data for the two new participant systems. The New York State data in Table 17 show that the average rate of mortality by number was 19 percent higher than the rate by amount of pension from 60 to 64, with the difference gradually declining thereafter.

TABLE 17
MORTALITY BY NUMBER AND AMOUNT OF ANNUITY
NEW YORK STATE

Age Group	Average Mortality Rate		Amount/Number
	Number	Amount	
60-64	0.021	0.017	81%
65-69	0.027	0.024	87
70-74	0.037	0.034	91
75-79	0.055	0.054	98
80-84	0.083	0.083	100
85-89	0.127	0.128	101

In Table 18 the U.S. Military data are split between officers and enlistees. The officers, with an average annuity that is 127 percent greater than the average annuity of enlistees, enjoy mortality rates that are a third lower through age 70, with the difference declining to zero after age 85. The military experience is drawn from graduated tables produced by the military system actuaries so actual short-term trends may be masked.

TABLE 18
OFFICER AND ENLISTED MORTALITY RATES
MILITARY RETIREMENT SYSTEM*

Central Age	Mortality Rate		Officer/Enlisted
	Enlisted	Officer	
47	0.004	0.003	70%
52	0.008	0.005	61
57	0.013	0.008	61
62	0.019	0.012	63
67	0.030	0.020	66
72	0.048	0.033	69
77	0.070	0.055	79
82	0.097	0.090	92
87	0.140	0.140	100

*From published tables.