

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1988-90 REPORTS**

REPORT OF THE ANNUITY EXPERIENCE COMMITTEE

GROUP ANNUITY MORTALITY

This report presents the 1987 and 1988 calendar-year experience of retired individuals who are covered under insured pension plans in the United States and Canada. Data for calendar-years 1983 through 1986 are also included to provide a comparison with 1987 and 1988 experience and to provide information on mortality improvement over time.

The report includes the experience of contracts providing insurer-guaranteed annuity benefits to ongoing pension plans and the experience of contracts covering closed groups of lives for which purchases are made by a single payment at issue (single-premium closeout business); it also includes contracts that do not contain insurer guarantees of future payments (for example, disbursed-payment arrangements).

The total data reported in this study include all annuities in payment status that are to continue for the future lifetime of the annuitant. With respect to joint and survivor annuities, only the primary annuitant is counted in the exposure and death statistics.

Data collection is generally done during the six months in the year following the experience year. It is possible that deaths will be reported subsequent to the gathering of data. If an insurance carrier submits data early in the year, that carrier will be expected to have a relatively high level of late reported deaths. If a carrier submits data later in the year, that carrier will have a relatively low level of late reported deaths. Although the level of late reporting might range from 1 percent to 3 percent for data submitted 6 months after the end of the experience year, no adjustment is made to the study results for the lag in the reporting of deaths. However, results for years prior to 1987 reflect some level of late reported deaths. Results for years 1987 and 1988 will reflect late reported deaths in the next report.

Ten major pension insurers submitted data in sufficient detail to allow the committee to break the total experience into subsets based on a single parameter or a combination of parameters (note that because of the timing of data submission, data from only nine insurers were included for the 1988 exposure year). The committee believes that the tables in this report produce data cells small enough to be relatively homogeneous, large enough to be credible, and in a format that facilitates data analysis.

FORMAT OF STUDY

The format is the same as that of the Group Annuity Mortality Report of 1985 and 1986 calendar-year experience. The following summary describes the tables.

Tables 1 and 2 summarize 1987 and 1988 exposure and deaths in five-year age groups, males and females by lives and income.

Tables 3–21 present summaries of 1987, 1988, and combined 1987 and 1988 ratios of actual to expected (A/E) mortality in five-year age groups for males and females, by lives and income.

Specifically, in Tables 3–8, A/E ratios are summarized by retirement class: prior to normal retirement date (NRD), on or after NRD, no stated NRD, and past NRD with no payment. In Tables 9 and 10, A/E ratios are summarized by benefit class: life annuity, life annuity with period certain, and modified cash refund annuity. In Tables 11 and 12, A/E ratios are summarized by survivor status: benefit elected is single life annuity or joint life annuity. In Tables 13 and 14, A/E ratios are summarized by years since retirement: 0–1, 2–5, 6–10, and 11 and more years). Table 15 presents the ratio of female to male mortality. In Tables 16 through 21, A/E ratios are summarized by guaranteed versus nonguaranteed status (guarantee status occurs when future benefit payments are guaranteed by an insurer).

Tables 22–33 are comparisons of A/E ratios from one exposure period to the next exposure period. Changes in A/E ratios for males and females by lives and income are summarized for the following classification groups: retirement class, benefit class, survivor class, years since retirement, and five-year age groups.

Specifically, Tables 22–25 present a comparison between 1988 and 1987 exposure years for male lives, male income, female lives, and female income in five-year age groups. Tables 26–29 present a comparison between the combined 1987–1988 and 1985–1986 exposure periods. Tables 30–33 summarize A/E ratios for exposure years 1983 through 1988 for males and females by lives and income in five-year age groups. The tables also provide annual improvement factors from one exposure year to the next, along with an arithmetic average of annual improvement factors over the period from 1983 to 1988.

Charts I–IV are histograms of A/E ratios from 1983 to 1988.

The mortality table used for expected deaths is the 1983 Group Annuity Mortality (GAM) Table without projection. Expected deaths for females are based on the female mortality tables (as opposed to the male mortality table

with the standard six-year setback), except for Table 15, which is based on male mortality with no age setback.

Each of the tables displays exposure and A/E ratio. The amount of exposure provides a key to the credibility of the data in each classification age cell and for the classification group in total. Caution is advised in drawing any conclusions for experience at the very low or very high ages, because exposures are rather limited.

PRINCIPAL OBSERVATIONS

Comparing 1985–1986 calendar-year data against 1987–1988 calendar-year data did not reveal any distortions or unreasonable results for total experience or experience by class. The only major trend exhibited is, as expected, mortality improvement for both males and females over the last two years.

Exposure has increased steadily from the 1985/1986 exposure period to the 1987/1988 exposure period: the increase was 8.3 percent for male lives, 24.3 percent for male income, 11.2 percent for female lives, and 26.5 percent for female income. The increase in exposure is likely due to the increase in the number of insurers submitting data (from eight to ten insurers) as well as to the addition of new contracts. The trends of the increases in exposure indicate that new contracts are leading to a higher level of income (relative to older contracts) as well as a higher proportion of females.

The overall male A/E mortality ratio improved by 0.08 from the 1985/1986 exposure period to the 1987/1988 exposure period (A/E ratios of 1.20 versus 1.12, respectively; see Table 26) based on lives. The improvement based on income was 0.09 (A/E ratios of 1.11 versus 1.02, respectively; see Table 27). An examination of Table 30 reveals that most of the improvement occurred from 1985 to 1986.

The overall female A/E mortality ratio improved by 0.07 from the 1985/1986 exposure period to the 1987/1988 exposure period (A/E ratios of 1.26 versus 1.19, respectively; see Table 28) based on lives. The improvement based on income was 0.09 (A/E ratios of 1.26 versus 1.17, respectively; see Table 29). As with improvement factors for males, most of the improvement for females occurred from 1985 to 1986.

Overall A/E ratios for males are lower based on income than on number of lives (1.12 versus 1.02, respectively; see Tables 26 and 27) for the 1987/1988 exposure period. This phenomenon occurs for every five-year age group. The same phenomenon occurs for female A/E ratios (1.19 versus

1.17 overall; see Tables 28 and 29), although it is not quite as extreme as it is for male A/E ratios. As we concluded in the 1985/1986 report, the data support the notion that higher-income individuals exhibit lower mortality.

A/E ratios for individuals who retire prior to NRD are generally higher than those for individuals who retire on or after NRD for the 1987/1988 exposure period. This is true overall for males and females (based on lives and income; see Tables 7 and 8). Apparently, pension plans are being selected against based on retirement age.

Some selection may also occur based on benefit elected. Examination of Tables 10 and 12 reveals that female annuitants appear to be selecting against pension plans when electing life versus life and certain annuities or when electing single life annuities versus joint life annuities (based on lives and income). However, examination of Tables 9 and 11 reveals that the opposite is true for male annuitants (based on lives and income). Results are *not* consistent across the five-year age groups for males and females.

It is difficult to reach any conclusions about mortality experience based on number of years since retirement. Mortality would be expected to be lower for individuals who recently retired. However, examination of Tables 13 and 14 shows that A/E ratios vary widely within each age group when results from one "years since retirement" category are compared with those from the next. It is inappropriate to compare overall results because categories with the longest period since retirement would have a bias toward the older ages.

As expected, females are living longer than males. The ratio of female mortality to male mortality averages 0.59 (based on lives) and 0.61 (based on income) for the 1987/1988 exposure period (Table 15). Results for the 1985/1986 exposure period were similar. The ratio of female mortality to male mortality tends to increase as age increases.

Mortality has improved in each of the last five years for males based on lives and on income (Tables 30 and 31). The average improvement has been 0.029 based on number of lives and 0.035 based on income from 1983 to 1988. The largest improvement occurred from 1985 to 1986 (0.097 improvement based on income).

Female mortality has also generally improved over the last five years based on number of lives and based on income (Tables 32 and 33). Mortality improvement has averaged 0.022 based on lives and 0.029 based on income. Female mortality has improved considerably from 1985 to 1986 (0.086 based on income) and again from 1987 to 1988 (0.06 based on income).

CONTRIBUTING COMPANIES

The following companies have contributed experience for the investigation covered by this report:

Aetna Life Insurance Company
CIGNA
Equitable Life Assurance Society
John Hancock Mutual Life Insurance Company
Lincoln National Life Insurance Company
Pacific Mutual Life Insurance Company
Principal Mutual Life Insurance Company
Prudential Insurance Company of America
Sun Life Assurance Company of Canada
Travelers Insurance Company

TABLE 1
SUMMARY OF EXPOSURES AND ACTUAL DEATHS FOR CALENDAR-YEAR 1987

Attained Age	Males		Females		Total	
	Exposure	Deaths	Exposure	Deaths	Exposure	Deaths
Lives						
Under 55 ...	5,601.91	70.00	3,614.15	32.00	9,216.06	102.00
55-59	47,303.94	598.00	17,781.62	134.00	65,085.56	732.00
60-64	129,028.29	2,138.00	53,226.99	533.00	182,255.28	2,671.00
65-69	238,848.85	5,773.00	101,240.19	1,356.00	340,089.04	7,129.00
70-74	223,665.17	8,714.00	98,442.35	2,054.00	322,107.52	10,768.00
75-79	157,461.29	9,443.00	74,752.64	2,525.00	232,213.93	11,968.00
80-84	83,820.45	7,671.00	43,600.05	2,452.00	127,420.50	10,123.00
85-89	34,094.97	4,590.00	18,036.28	1,677.00	52,131.25	6,267.00
90-94	9,836.78	1,921.00	5,395.54	825.00	15,232.32	2,746.00
95 and over.	1,966.60	497.00	1,177.17	219.00	3,143.77	716.00
Total	931,628.25	41,415.00	417,266.98	11,807.00	1,348,895.23	53,222.00
Income						
Under 55 ...	\$ 34,032,523	\$ 281,713	\$ 9,323,406	\$ 63,440	\$ 43,355,929	\$ 345,153
55-59	210,158,576	1,976,367	41,923,217	218,100	252,081,793	2,194,467
60-64	638,269,146	8,498,365	123,415,175	1,301,471	761,684,321	9,799,836
65-69	924,007,779	18,416,216	193,074,584	2,407,175	1,117,082,363	20,823,391
70-74	651,936,536	22,480,815	145,406,529	2,867,298	797,343,065	25,348,113
75-79	366,368,818	20,325,685	89,994,886	2,994,881	456,363,704	23,320,566
80-84	162,622,551	13,977,077	44,337,143	2,267,803	206,959,694	16,244,880
85-89	58,678,939	7,079,850	16,239,936	1,478,707	74,918,875	8,558,557
90-94	14,831,974	2,883,031	4,354,890	650,698	19,186,864	3,533,729
95 and over.	2,509,387	627,800	867,658	153,281	3,377,045	781,081
Total	\$3,063,416,229	\$96,546,919	\$668,937,424	\$14,402,854	\$3,732,353,653	\$110,949,773

TABLE 2
SUMMARY OF EXPOSURES AND ACTUAL DEATHS FOR CALENDAR-YEAR 1988

Attained Age	Males		Females		Total	
	Exposure	Deaths	Exposure	Deaths	Exposure	Deaths
Lives						
Under 55...	5,971.65	92.00	3,756.80	22.00	9,728.45	114.00
55-59	49,424.32	683.00	18,162.87	141.00	67,587.19	824.00
60-64	132,778.58	2,252.00	53,788.54	513.00	186,567.12	2,765.00
65-69	235,874.82	5,587.00	102,022.53	1,295.00	337,897.35	6,882.00
70-74	221,164.05	8,388.00	99,853.21	2,116.00	321,017.26	10,504.00
75-79	162,202.31	9,530.00	78,542.78	2,630.00	240,745.09	12,160.00
80-84	88,225.65	8,012.00	47,418.51	2,583.00	135,644.16	10,595.00
85-89	35,929.54	4,707.00	20,142.57	1,879.00	56,072.11	6,586.00
90-94	10,484.98	2,002.00	5,926.74	845.00	16,411.72	2,847.00
95 and over.	2,148.48	566.00	1,361.69	278.00	3,510.17	844.00
Total	944,204.38	41,819.00	430,976.24	12,302.00	1,375,180.62	54,121.00
Income						
Under 55...	\$ 42,347,224	\$ 319,621	\$ 10,357,046	\$ 63,914	\$ 52,704,270	\$ 383,535
55-59	238,147,305	2,645,844	46,379,080	312,534	284,526,385	2,958,378
60-64	713,734,376	9,860,876	136,887,308	1,025,299	850,621,684	10,886,175
65-69	979,519,612	19,394,332	213,005,243	2,313,370	1,192,524,855	21,707,702
70-74	698,620,860	23,199,041	159,795,293	3,119,522	858,416,153	26,318,563
75-79	405,723,211	21,453,790	101,625,827	3,229,133	507,349,038	24,682,923
80-84	183,466,257	15,200,593	51,292,736	2,617,384	234,758,993	17,817,977
85-89	63,754,909	7,835,225	19,030,705	1,740,079	82,785,614	9,575,304
90-94	16,434,294	3,018,058	4,882,865	672,501	21,317,159	3,690,559
95 and over.	2,768,344	707,521	1,026,083	199,027	3,794,427	906,548
Total	\$3,344,516,392	\$103,634,901	\$744,282,186	\$15,292,763	\$4,088,798,578	\$118,927,664

TABLE 3

EXPERIENCE BY RETIREMENT CLASS FOR CALENDAR-YEAR 1987
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Prior to NRD		On/After NRD		No Stated NRD		Past NRD With No Payment		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Male Lives										
Under 55	3,380.91	1.95	728.72	3.20	1,488.95	4.93	3.33	0.00	5,601.91	2.90
55-59	29,927.02	1.58	4,108.04	1.42	13,260.55	2.05	8.33	0.00	47,303.94	1.70
60-64	84,996.99	1.29	14,783.66	1.55	29,128.78	1.69	118.86	3.40	129,028.29	1.41
65-69	111,511.54	1.13	77,945.17	1.22	48,499.09	1.36	893.05	0.29	238,848.85	1.21
70-74	79,515.29	1.13	93,161.36	1.12	50,392.86	1.30	595.66	1.21	223,665.17	1.16
75-79	39,436.09	1.13	75,668.42	1.06	42,074.95	1.18	281.83	0.93	157,461.29	1.11
80-84	13,618.57	1.04	43,818.71	1.01	26,282.17	1.10	101.00	1.81	83,820.45	1.05
85-89	4,005.10	1.02	19,497.19	1.01	10,544.68	1.07	48.00	1.46	34,094.97	1.03
90-94	777.75	1.17	5,720.38	1.02	3,317.65	1.10	21.00	1.55	9,836.78	1.06
95 and over	156.64	0.88	1,155.72	0.85	652.24	1.11	2.00	2.01	1,966.60	0.94
Total	367,325.90	1.14	336,587.37	1.07	225,641.92	1.21	2,073.06	1.10	931,628.25	1.13
Male Income										
Under 55	\$ 20,292,513	1.41	\$ 4,026,044	2.76	\$ 9,702,996	2.57	\$ 10,970	0.00	\$ 34,032,523	1.88
55-59	135,613,974	1.07	13,823,420	1.58	60,696,359	1.61	24,823	0.00	210,158,576	1.26
60-64	397,704,863	1.00	68,333,751	1.22	171,937,894	1.40	292,638	6.80	638,269,146	1.14
65-69	402,743,824	0.96	295,473,676	0.99	223,654,465	1.12	2,135,814	0.05	924,007,779	1.01
70-74	214,376,198	1.01	260,886,377	0.98	175,311,917	1.16	1,362,044	1.51	651,936,536	1.04
75-79	83,612,596	1.06	176,023,757	0.96	106,249,477	1.12	482,988	0.92	366,368,818	1.03
80-84	22,390,099	0.96	86,424,904	0.95	53,497,349	1.07	310,199	2.21	162,622,551	0.99
85-89	5,636,682	0.93	34,067,732	0.92	18,915,140	0.96	59,385	2.27	58,678,939	0.93
90-94	1,077,811	0.96	9,031,542	1.05	4,354,248	1.19	368,373	0.19	14,831,974	1.06
95 and over	288,399	0.33	1,475,321	0.92	743,958	1.15	1,709	3.82	2,509,387	0.90
Total	\$1,283,736,959	1.00	\$949,566,524	0.97	\$825,063,803	1.14	\$5,048,943	0.98	\$3,063,416,229	1.03

TABLE 4
EXPERIENCE BY RETIREMENT CLASS FOR CALENDAR-YEAR 1987
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Prior to NRD		On/After NRD		No Stated NRD		Past NRD With No Payment		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Female Lives										
Under 55.....	2,497.01	4.78	482.30	5.40	633.84	7.75	1.00	0.00	3,614.15	5.37
55-59.....	12,826.67	2.10	1,653.81	2.90	3,287.39	2.61	13.75	21.98	17,781.62	2.29
60-64.....	36,204.13	1.77	7,457.44	2.06	9,479.46	1.90	85.96	0.00	53,226.99	1.83
65-69.....	44,217.95	1.44	36,563.87	1.61	20,124.13	1.48	334.24	1.04	101,240.19	1.51
70-74.....	29,891.98	1.31	44,922.93	1.23	23,424.95	1.34	202.49	0.61	98,442.35	1.28
75-79.....	15,811.33	1.16	38,213.00	1.07	20,560.31	1.15	168.00	1.70	74,752.64	1.11
80-84.....	5,762.57	1.12	23,335.27	1.07	14,333.71	1.10	168.50	2.25	43,600.05	1.09
85-89.....	1,884.50	1.23	10,224.44	1.10	5,861.34	1.18	66.00	1.89	18,036.28	1.14
90-94.....	456.67	1.32	3,236.77	1.13	1,681.60	1.26	20.50	0.39	5,395.54	1.18
95 and over....	95.09	0.69	730.48	0.79	350.60	0.95	1.00	0.00	1,177.17	0.83
Total.....	149,647.90	1.33	166,820.31	1.14	99,737.33	1.21	1,061.44	1.59	417,266.98	1.20
Female Income										
Under 55.....	\$ 6,656,771	3.44	\$ 1,060,331	7.21	\$ 1,603,009	4.60	\$ 3,295	0.00	\$ 9,323,406	4.02
55-59.....	31,136,079	1.37	3,018,010	2.24	7,751,434	2.11	17,694	8.55	41,923,217	1.57
60-64.....	86,253,903	2.05	12,885,730	1.52	24,200,458	1.72	75,084	0.00	123,415,175	1.93
65-69.....	82,272,626	1.41	65,721,078	1.53	44,558,019	1.30	522,861	1.03	193,074,584	1.42
70-74.....	40,440,615	1.25	64,579,144	1.19	40,118,068	1.25	268,702	0.35	145,406,529	1.22
75-79.....	16,086,582	1.24	46,316,093	1.04	27,258,299	1.12	333,912	1.78	89,994,886	1.10
80-84.....	4,352,527	1.02	23,947,063	0.97	15,741,803	1.02	295,750	1.51	44,337,143	1.00
85-89.....	1,202,600	1.22	9,540,487	1.09	5,403,647	1.13	93,202	2.42	16,239,936	1.12
90-94.....	348,633	1.10	2,648,860	1.05	1,327,579	1.41	29,818	0.38	4,354,890	1.16
95 and over....	86,737	0.47	547,605	0.76	233,007	0.89	309	0.00	867,658	0.76
Total.....	\$268,837,073	1.41	\$230,264,401	1.12	\$168,195,323	1.19	\$1,640,627	1.47	\$668,937,424	1.21

TABLE 5
EXPERIENCE BY RETIREMENT CLASS FOR CALENDAR-YEAR 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Prior to NRD		On/After NRD		No Stated NRD		Past NRD With No Payment		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Male Lives										
Under 55.....	3,784.97	2.49	574.12	3.09	1,610.56	6.44	2.00	0.00	5,971.65	3.63
55-59.....	29,651.51	1.68	4,155.96	1.54	15,607.53	2.28	9.32	0.00	49,424.32	1.85
60-64.....	83,700.34	1.41	14,998.93	1.37	33,979.86	1.56	99.45	1.60	132,778.58	1.44
65-69.....	107,517.55	1.10	74,754.25	1.20	52,581.90	1.33	1,021.12	0.70	235,874.82	1.18
70-74.....	77,698.94	1.10	89,185.57	1.13	53,659.80	1.17	619.74	1.22	221,164.05	1.13
75-79.....	41,148.57	1.10	76,732.40	1.05	43,989.67	1.13	331.67	1.02	162,202.31	1.08
80-84.....	13,703.59	1.12	45,367.47	1.00	29,046.51	1.07	108.08	0.64	88,225.65	1.04
85-89.....	3,870.01	1.03	20,396.83	1.00	11,619.70	1.02	43.00	0.54	35,929.54	1.01
90-94.....	723.00	1.02	6,094.92	1.04	3,651.06	1.05	16.00	0.68	10,484.98	1.04
95 and over....	122.32	0.50	1,323.24	1.02	698.92	0.98	4.00	2.07	2,148.48	0.97
Total.....	361,920.80	1.14	333,583.69	1.06	246,445.51	1.15	2,254.38	0.92	944,204.38	1.11
Male Income										
Under 55.....	\$ 25,773,869	1.50	\$ 5,714,231	0.75	\$ 10,854,777	2.87	\$ 4,347	0.00	\$ 42,347,224	1.77
55-59.....	144,810,360	1.26	21,609,706	1.46	71,694,016	1.94	33,223	0.00	238,147,305	1.48
60-64.....	423,435,025	1.12	82,111,065	1.13	207,920,784	1.32	267,502	1.20	713,734,376	1.18
65-69.....	418,350,485	0.97	297,885,912	0.97	260,447,211	1.09	2,836,004	0.39	979,519,612	1.00
70-74.....	221,646,974	0.97	270,486,448	0.98	205,036,716	1.07	1,450,722	0.90	698,620,860	1.00
75-79.....	92,055,321	0.99	188,603,789	0.97	124,494,916	1.00	569,185	1.68	405,723,211	0.98
80-84.....	23,976,626	0.94	94,867,315	0.96	64,332,089	0.97	290,227	0.08	183,466,257	0.96
85-89.....	5,493,279	0.93	36,739,516	0.92	21,469,889	1.00	52,225	0.28	63,754,909	0.95
90-94.....	754,496	0.87	10,066,361	1.01	5,255,790	1.08	357,647	0.16	16,434,294	1.01
95 and over....	302,699	0.21	1,673,807	1.00	786,629	1.08	5,209	2.88	2,768,344	0.91
Total.....	\$1,356,599,134	1.01	\$1,009,758,150	0.97	\$972,292,817	1.07	\$5,866,291	0.59	\$3,344,516,392	1.01

TABLE 6

EXPERIENCE BY RETIREMENT CLASS FOR CALENDAR-YEAR 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Prior to NRD		On/After NRD		No Stated NRD		Past NRD With No Payment		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Female Lives										
Under 55.....	2,564.19	3.38	433.34	3.02	758.77	4.81	0.50	0.00	3,756.80	3.63
55-59.....	12,462.13	2.05	1,787.78	2.34	3,898.88	3.37	14.08	0.00	18,162.87	2.36
60-64.....	35,482.24	1.62	7,468.64	2.01	10,760.49	1.99	77.17	0.00	53,788.54	1.74
65-69.....	43,775.34	1.32	35,698.24	1.47	22,138.72	1.60	410.23	0.86	102,022.53	1.43
70-74.....	30,727.63	1.27	43,572.08	1.32	25,325.93	1.29	227.57	1.09	99,853.21	1.30
75-79.....	16,868.36	1.14	39,217.37	1.07	22,291.63	1.13	165.42	0.96	78,542.78	1.10
80-84.....	6,230.68	1.12	25,098.02	1.05	15,924.39	1.05	165.42	0.91	47,418.51	1.06
85-89.....	1,892.17	1.18	11,275.19	1.12	6,906.21	1.17	69.00	0.89	20,142.57	1.14
90-94.....	442.00	0.86	3,482.00	1.11	1,978.74	1.13	24.00	0.64	5,926.74	1.10
95 and over....	93.17	0.69	855.01	0.97	410.51	0.79	3.00	0.00	1,361.69	0.89
Total.....	150,537.91	1.25	168,887.67	1.14	110,394.27	1.18	1,156.39	0.87	430,976.24	1.18
Female Income										
Under 55.....	\$ 7,086,624	3.92	\$ 1,127,448	1.56	\$ 2,139,876	4.21	\$ 3,098	0.00	\$ 10,357,046	3.73
55-59.....	32,167,454	1.72	4,647,528	1.01	9,531,746	3.65	32,352	0.00	46,379,080	2.04
60-64.....	90,926,535	1.26	16,076,332	1.78	29,807,946	1.50	76,495	0.00	136,887,308	1.37
65-69.....	88,984,012	1.11	70,250,019	1.37	53,070,206	1.28	701,006	0.62	213,005,243	1.24
70-74.....	44,018,448	1.08	67,383,773	1.23	48,060,748	1.30	332,324	0.35	159,795,293	1.21
75-79.....	18,223,764	1.21	50,311,410	1.04	32,822,838	1.00	267,815	0.82	101,625,827	1.05
80-84.....	4,849,674	0.99	27,176,649	0.99	18,939,626	0.99	326,787	1.32	51,292,736	0.99
85-89.....	1,177,016	1.04	10,902,607	1.07	6,851,597	1.22	99,485	0.74	19,030,705	1.12
90-94.....	268,184	1.11	2,937,398	1.06	1,640,723	1.09	36,560	0.80	4,882,865	1.07
95 and over....	89,358	0.35	630,642	0.88	304,510	0.77	1,573	0.00	1,026,083	0.79
Total.....	\$287,791,069	1.16	\$251,443,806	1.11	\$203,169,816	1.16	\$1,877,495	0.89	\$744,282,186	1.13

TABLE 7

EXPERIENCE BY RETIREMENT CLASS FOR CALENDAR-YEARS 1987 AND 1988
 EXPECTED MORTALITY BASIS--1983 GROUP ANNUITY MORTALITY

Attained Age	Prior to NRD		On/After NRD		No Stated NRD		Past NRD With No Payment		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Male Lives										
Under 55.....	7,165.88	2.23	1,302.84	3.15	3,099.51	5.71	5.33	0.00	11,573.56	3.27
55-59.....	59,578.53	1.63	8,264.00	1.48	28,868.08	2.17	17.65	0.00	96,728.26	1.78
60-64.....	168,697.33	1.35	29,782.59	1.46	63,108.64	1.62	218.31	2.57	261,806.87	1.43
65-69.....	219,029.09	1.12	152,699.42	1.21	101,080.99	1.34	1,914.17	0.51	474,723.67	1.19
70-74.....	157,214.23	1.12	182,346.93	1.13	104,052.66	1.23	1,215.40	1.21	444,829.22	1.15
75-79.....	80,584.66	1.11	152,400.82	1.05	86,064.62	1.15	613.50	0.98	319,663.60	1.10
80-84.....	27,322.16	1.08	89,186.18	1.01	55,328.68	1.08	209.08	1.21	172,046.10	1.04
85-89.....	7,875.11	1.02	39,894.02	1.01	22,164.38	1.05	91.00	1.03	70,024.51	1.02
90-94.....	1,500.75	1.10	11,815.30	1.03	6,968.71	1.07	37.00	1.18	20,321.76	1.05
95 and over....	278.96	0.71	2,478.96	0.94	1,351.16	1.04	6.00	2.05	4,115.08	0.96
Total.....	729,246.70	1.14	670,171.06	1.07	472,087.43	1.18	4,327.44	1.01	1,875,832.63	1.12
Male Income										
Under 55.....	\$ 46,066,382	1.46	\$ 9,740,275	1.60	\$ 20,557,773	2.72	\$ 15,317	0.00	\$ 76,379,747	1.82
55-59.....	280,424,334	1.17	35,433,126	1.51	132,390,375	1.79	58,046	0.00	448,305,881	1.38
60-64.....	821,139,888	1.06	150,444,816	1.18	379,858,678	1.36	560,140	4.11	1,352,003,522	1.16
65-69.....	821,094,309	0.97	593,359,588	0.98	484,101,676	1.10	4,971,818	0.24	1,903,527,391	1.00
70-74.....	436,023,172	0.99	531,372,825	0.98	380,348,633	1.11	2,812,766	1.20	1,350,557,396	1.02
75-79.....	175,667,917	1.02	364,627,546	0.97	230,744,393	1.05	1,052,173	1.33	772,092,029	1.01
80-84.....	46,366,725	0.95	181,292,219	0.95	117,829,438	1.01	600,426	1.18	346,088,808	0.97
85-89.....	11,129,961	0.93	70,807,248	0.92	40,385,029	0.98	111,610	1.35	122,433,848	0.94
90-94.....	1,832,307	0.92	19,097,903	1.03	9,610,038	1.13	726,020	0.18	31,266,268	1.03
95 and over....	591,098	0.27	3,149,128	0.96	1,530,587	1.11	6,918	3.12	5,277,731	0.91
Total.....	\$2,640,336,093	1.00	\$1,959,324,674	0.97	\$1,797,356,620	1.10	\$10,915,234	0.78	\$6,407,932,621	1.02

TABLE 8
EXPERIENCE BY RETIREMENT CLASS FOR CALENDAR-YEARS 1987 AND 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Prior to NRD		On/After NRD		No Stated NRD		Past NRD With No Payment		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Female Lives										
Under 55.....	5,061.20	4.08	915.64	4.28	1,392.61	6.14	1.50	0.00	7,370.95	4.50
55-59.....	25,288.80	2.08	3,441.59	2.61	7,186.27	3.03	27.83	10.89	35,944.49	2.32
60-64.....	71,686.37	1.69	14,926.08	2.04	20,239.95	1.95	163.13	0.00	107,015.53	1.79
65-69.....	87,993.29	1.38	72,262.11	1.54	42,262.85	1.54	744.47	0.94	203,262.72	1.47
70-74.....	60,619.61	1.29	88,495.01	1.28	48,750.88	1.31	430.06	0.86	198,295.56	1.29
75-79.....	32,679.69	1.15	77,430.37	1.07	42,851.94	1.14	333.42	1.34	153,295.42	1.11
80-84.....	11,993.25	1.12	48,433.29	1.06	30,258.10	1.07	333.92	1.59	91,018.56	1.07
85-89.....	3,776.67	1.21	21,499.63	1.11	12,767.55	1.17	135.00	1.38	38,178.85	1.14
90-94.....	898.67	1.09	6,718.77	1.12	3,660.34	1.19	44.50	0.53	11,322.28	1.14
95 and over....	188.26	0.69	1,585.49	0.89	761.11	0.86	4.00	0.00	2,538.86	0.86
Total.....	300,185.81	1.29	335,707.98	1.14	210,131.60	1.20	2,217.83	1.22	848,243.22	1.19
Female Income										
Under 55.....	\$ 13,743,395	3.68	\$ 2,187,779	4.28	\$ 3,742,885	4.38	\$ 6,393	0.00	\$ 19,680,452	3.87
55-59.....	63,303,533	1.55	7,665,538	1.50	17,283,180	2.96	50,046	3.04	88,302,297	1.82
60-64.....	177,180,438	1.65	28,962,062	1.66	54,008,404	1.60	151,579	0.00	260,302,483	1.64
65-69.....	171,256,638	1.25	135,971,097	1.45	97,628,225	1.29	1,223,867	0.80	406,079,827	1.33
70-74.....	84,459,063	1.16	131,962,917	1.21	88,178,816	1.28	601,026	0.35	305,201,822	1.22
75-79.....	34,310,346	1.22	96,627,503	1.04	60,081,137	1.06	601,727	1.35	191,620,713	1.08
80-84.....	9,202,201	1.00	51,123,712	0.98	34,681,429	1.01	622,537	1.41	95,629,879	1.00
85-89.....	2,379,616	1.13	20,443,094	1.08	12,255,244	1.18	192,687	1.55	35,270,641	1.12
90-94.....	616,817	1.10	5,586,258	1.05	2,968,302	1.23	66,378	0.62	9,237,755	1.11
95 and over....	176,095	0.41	1,178,247	0.83	537,517	0.82	1,882	0.00	1,893,741	0.77
Total.....	\$556,628,142	1.28	\$481,708,207	1.11	\$371,365,139	1.17	\$3,518,122	1.16	\$1,413,219,610	1.17

TABLE 9

EXPERIENCE BY BENEFIT CLASS FOR CALENDAR-YEARS 1987 AND 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Life		Life and Certain		Modified Cash Refund		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Male Lives								
Under 55	8,457.54	3.52	1,584.85	2.58	1,531.17	2.59	11,573.56	3.27
55-59	73,885.57	1.78	11,651.14	1.91	11,191.55	1.62	96,728.26	1.78
60-64	186,464.26	1.43	36,061.87	1.58	39,280.74	1.25	261,806.87	1.43
65-69	317,556.34	1.24	79,560.38	1.13	77,606.95	1.08	474,723.67	1.19
70-74	284,193.06	1.19	83,997.08	1.07	76,639.08	1.09	444,829.22	1.15
75-79	200,988.79	1.11	62,334.11	1.09	56,340.70	1.04	319,663.60	1.10
80-84	115,114.39	1.05	29,613.43	1.04	27,318.28	1.04	172,046.10	1.04
85-89	50,520.33	1.01	8,660.10	1.02	10,844.08	1.06	70,024.51	1.02
90-94	15,364.29	1.02	1,553.55	1.23	3,403.92	1.12	20,321.76	1.05
95 and over	3,356.92	0.92	240.40	1.12	517.76	1.10	4,115.08	0.96
Total	1,255,901.49	1.13	315,256.91	1.10	304,674.23	1.07	1,875,832.63	1.12
Male Income								
Under 55	\$ 50,716,235	1.96	\$ 9,445,477	1.28	\$ 16,218,035	1.63	\$ 76,379,747	1.82
55-59	341,519,242	1.35	43,499,479	1.67	63,287,160	1.31	448,305,881	1.38
60-64	991,814,747	1.17	151,729,947	1.30	208,458,828	1.01	1,352,003,522	1.16
65-69	1,321,527,026	1.03	278,267,359	0.99	303,733,006	0.92	1,903,527,391	1.00
70-74	887,566,161	1.05	244,910,640	0.99	218,080,595	0.95	1,350,557,396	1.02
75-79	491,239,231	1.01	155,655,170	0.99	125,197,628	0.99	772,092,029	1.01
80-84	231,267,194	0.96	62,476,271	0.96	52,345,343	1.03	346,088,808	0.97
85-89	88,729,609	0.94	15,757,815	0.88	17,946,424	1.01	122,433,848	0.94
90-94	24,182,388	1.00	2,423,827	1.06	4,660,053	1.22	31,266,268	1.03
95 and over	4,294,244	0.93	415,303	0.67	568,184	0.88	5,277,731	0.91
Total	\$4,432,856,077	1.03	\$964,581,288	1.00	\$1,010,495,256	0.99	\$6,407,932,621	1.02

TABLE 10
EXPERIENCE BY BENEFIT CLASS FOR CALENDAR-YEARS 1987 AND 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Life		Life and Certain		Modified Cash Refund		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Female Lives								
Under 55	5,351.71	4.55	1,007.41	3.07	1,011.83	5.67	7,370.95	4.50
55-59	26,725.29	2.33	4,387.27	2.89	4,831.93	1.75	35,944.49	2.32
60-64	74,979.89	1.76	14,281.42	1.74	17,754.22	1.92	107,015.53	1.79
65-69	137,580.60	1.46	28,861.30	1.47	36,820.82	1.50	203,262.72	1.47
70-74	131,124.87	1.29	30,389.99	1.23	36,780.70	1.31	198,295.56	1.29
75-79	103,560.70	1.10	23,131.12	1.18	26,603.60	1.09	153,295.42	1.11
80-84	64,728.37	1.07	11,761.19	1.03	14,529.00	1.10	91,018.56	1.07
85-89	28,706.95	1.13	3,794.63	1.17	5,677.27	1.18	38,178.85	1.14
90-94	8,803.88	1.13	737.96	1.29	1,780.44	1.12	11,322.28	1.14
95 and over	2,113.86	0.86	123.67	0.79	301.33	0.89	2,538.86	0.86
Total	583,676.12	1.18	118,475.96	1.21	146,091.14	1.21	848,243.22	1.19
Female Income								
Under 55	\$ 14,553,780	4.15	\$ 2,589,300	1.22	\$ 2,537,372	4.84	\$ 19,680,452	3.87
55-59	67,165,739	1.86	9,822,760	2.40	11,313,798	1.08	88,302,297	1.82
60-64	185,904,237	1.62	32,256,359	1.71	42,141,887	1.67	260,302,483	1.64
65-69	275,364,639	1.31	57,907,130	1.44	72,808,058	1.30	406,079,827	1.33
70-74	200,097,751	1.23	48,316,378	1.21	56,787,693	1.15	305,201,822	1.22
75-79	128,640,185	1.07	29,608,330	1.17	33,372,198	1.01	191,620,713	1.08
80-84	68,626,784	1.00	12,151,890	0.93	14,851,205	1.05	95,629,879	1.00
85-89	27,664,692	1.11	3,067,944	1.17	4,538,005	1.18	35,270,641	1.12
90-94	7,555,063	1.08	564,186	1.69	1,118,506	1.01	9,237,755	1.11
95 and over	1,626,159	0.77	95,699	0.67	171,883	0.80	1,893,741	0.77
Total	\$977,199,029	1.16	\$196,379,976	1.22	\$239,640,605	1.15	\$1,413,219,610	1.17

TABLE 11
EXPERIENCE BY SURVIVOR STATUS FOR CALENDAR-YEARS 1987 AND 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Single Life		Joint Life		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Males Lives						
Under 55	7,400.77	7.40	4,172.79	11.07	11,573.56	8.22
55-59	62,403.71	1.71	34,324.55	1.89	96,728.26	1.78
60-64	164,957.39	1.43	96,849.48	1.42	261,806.87	1.43
65-69	320,469.51	1.22	154,254.16	1.15	474,723.67	1.19
70-74	332,899.08	1.17	111,930.14	1.07	444,829.22	1.15
75-79	267,120.34	1.11	52,543.26	1.03	319,663.60	1.10
80-84	150,663.24	1.06	21,382.86	0.90	172,046.10	1.04
85-89	61,781.83	1.03	8,242.68	0.92	70,024.51	1.02
90-94	18,411.03	1.06	1,910.73	0.94	20,321.76	1.05
95 and over	3,848.45	0.96	266.63	0.98	4,115.08	0.96
Total	1,389,955.35	1.12	485,877.28	1.09	1,875,832.63	1.12
Male Income						
Under 55	\$ 45,027,678	3.43	\$ 31,352,069	5.65	\$ 76,379,747	4.00
55-59	261,959,883	1.16	186,345,998	1.69	448,305,881	1.38
60-64	737,997,361	1.14	614,006,161	1.18	1,352,003,522	1.16
65-69	1,066,510,949	1.02	837,016,442	0.98	1,903,527,391	1.00
70-74	881,830,947	1.06	468,726,449	0.95	1,350,557,396	1.02
75-79	586,212,710	1.03	185,879,319	0.93	772,092,029	1.01
80-84	279,531,813	1.00	66,556,995	0.88	346,088,808	0.97
85-89	99,721,219	0.97	22,712,629	0.83	122,433,848	0.94
90-94	25,815,642	1.07	5,450,626	0.86	31,266,268	1.03
95 and over	4,750,840	0.91	526,891	0.92	5,277,731	0.91
Total	\$3,989,359,042	1.03	\$2,418,573,579	0.99	\$6,407,932,621	1.02

TABLE 12
 EXPERIENCE BY SURVIVOR STATUS FOR CALENDAR-YEARS 1987 AND 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Single Life		Joint Life		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Female Lives						
Under 55	6,798.67	4.56	572.28	15.30	7,370.95	5.03
55-59	31,405.35	2.23	4,539.14	2.95	35,944.49	2.32
60-64	95,143.88	1.78	11,871.65	1.82	107,015.53	1.79
65-69	187,261.55	1.47	16,001.17	1.42	203,262.72	1.47
70-74	187,760.16	1.28	10,535.40	1.36	198,295.56	1.29
75-79	149,369.85	1.11	3,925.57	0.87	153,295.42	1.11
80-84	89,846.25	1.07	1,172.31	1.00	91,018.56	1.07
85-89	37,760.93	1.14	417.92	1.50	38,178.85	1.14
90-94	11,235.02	1.14	87.26	0.61	11,322.28	1.14
95 and over	2,515.28	0.86	23.58	0.50	2,538.86	0.86
Total	799,096.94	1.18	49,146.28	1.32	848,243.22	1.19
Female Income						
Under 55	\$ 18,016,997	3.39	\$ 1,663,455	37.44	\$ 19,680,452	5.08
55-59	75,935,809	1.78	12,366,488	2.06	88,302,297	1.82
60-64	225,939,472	1.49	34,363,011	2.59	260,302,483	1.64
65-69	366,479,090	1.33	39,600,737	1.30	406,079,827	1.33
70-74	284,667,622	1.22	20,534,200	1.21	305,201,822	1.22
75-79	185,181,661	1.08	6,439,052	0.99	191,620,713	1.08
80-84	93,966,688	0.99	1,663,191	1.30	95,629,879	1.00
85-89	34,709,539	1.12	561,102	1.23	35,270,641	1.12
90-94	9,121,618	1.12	116,137	0.44	9,237,755	1.11
95 and over	1,874,320	0.78	19,421	0.39	1,893,741	0.77
Total	\$1,295,892,816	1.15	\$117,326,794	1.45	\$1,413,219,610	1.17

TABLE 13

EXPERIENCE BY YEARS SINCE RETIREMENT FOR CALENDAR-YEARS 1987 AND 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Years Since Retirement									
	0-1		2-5		6-10		11 and Over		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Male Lives										
Under 55	4,859.38	11.75	5,216.91	8.34	1,156.97	3.02	340.30	2.07	11,573.56	8.22
55-59	41,899.01	1.82	50,562.04	1.73	3,379.25	1.76	887.96	2.40	96,728.26	1.78
60-64	84,738.88	1.39	126,006.39	1.36	47,302.54	1.60	3,759.06	2.18	261,806.87	1.43
65-69	73,092.23	1.20	232,607.78	1.13	127,498.98	1.23	41,524.68	1.44	474,723.67	1.19
70-74	18,651.87	1.04	74,848.11	1.09	234,777.64	1.13	116,551.60	1.23	444,829.22	1.15
75-79	9,768.56	1.00	25,372.15	1.15	50,423.94	1.06	234,098.95	1.10	319,663.60	1.10
80-84	4,491.29	0.93	11,029.12	1.11	12,485.00	1.03	144,040.69	1.04	172,046.10	1.04
85-89	1,648.87	0.83	3,808.55	1.04	4,441.96	0.99	60,125.13	1.03	70,024.51	1.02
90-94	487.78	0.92	1,023.49	1.09	1,110.24	1.07	17,700.25	1.05	20,321.76	1.05
95 and over	141.19	0.58	199.00	0.76	294.50	0.84	3,480.39	1.00	4,115.08	0.96
Total	239,779.06	1.20	530,673.54	1.16	482,871.02	1.14	622,509.01	1.09	1,875,832.63	1.12
Male Income										
Under 55	\$ 35,510,832	4.02	\$ 34,411,951	5.13	\$ 5,234,203	1.41	\$ 1,222,761	0.74	\$ 76,379,747	4.00
55-59	226,952,395	1.37	203,693,766	1.37	14,046,507	1.35	3,613,213	2.28	448,305,881	1.38
60-64	541,891,085	1.06	675,872,922	1.17	117,282,875	1.41	16,956,640	1.83	1,352,003,522	1.16
65-69	342,404,053	0.87	1,003,521,496	0.97	465,254,567	1.08	92,347,275	1.41	1,903,527,391	1.00
70-74	78,997,868	0.92	284,158,787	0.92	689,549,106	1.04	297,851,635	1.08	1,350,557,396	1.02
75-79	32,488,346	0.79	78,188,889	1.03	127,347,402	0.98	534,067,392	1.02	772,092,029	1.01
80-84	11,205,250	0.74	27,537,994	1.00	27,431,419	1.00	279,914,145	0.98	346,088,808	0.97
85-89	4,202,572	0.66	9,374,266	0.87	8,904,208	0.93	99,952,802	0.96	122,433,848	0.94
90-94	1,351,903	0.56	2,796,129	0.83	1,835,834	1.20	25,282,402	1.07	31,266,268	1.03
95 and over	533,582	0.19	394,075	0.63	464,345	0.80	3,885,729	1.08	5,277,731	0.91
Total	\$1,275,537,886	0.96	\$2,319,950,275	1.01	\$1,457,350,466	1.05	\$1,355,093,994	1.02	\$6,407,932,621	1.02

TABLE 14
EXPERIENCE BY YEARS SINCE RETIREMENT FOR CALENDAR-YEARS 1987 AND 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Years Since Retirement									
	0-1		2-5		6-10		11 and Over		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Female Lives										
Under 55	2,590.44	3.10	3,437.92	6.43	1,042.17	5.57	300.42	2.25	7,370.95	5.03
55-59	14,377.21	2.49	18,730.84	2.07	2,432.77	2.84	403.67	5.40	35,944.49	2.32
60-64	32,795.80	1.87	51,035.94	1.68	20,501.07	1.80	2,682.72	2.78	107,015.53	1.79
65-69	33,671.74	1.49	98,962.73	1.43	52,730.11	1.49	17,898.14	1.57	203,262.72	1.47
70-74	10,174.46	1.26	41,444.45	1.28	96,061.63	1.27	50,615.02	1.33	198,295.56	1.29
75-79	5,204.33	0.95	14,922.50	1.09	26,149.18	1.10	107,019.41	1.12	153,295.42	1.11
80-84	2,426.40	0.74	6,626.56	1.04	6,549.11	1.10	75,416.49	1.08	91,018.56	1.07
85-89	1,070.65	0.87	2,663.47	1.11	2,548.62	1.15	31,896.11	1.15	38,178.85	1.14
90-94	276.37	0.78	785.91	1.39	612.67	1.11	9,647.33	1.13	11,322.28	1.14
95 and over	92.69	0.32	213.00	1.02	167.75	0.54	2,065.42	0.90	2,538.86	0.86
Total	102,680.09	1.30	238,823.32	1.32	208,795.08	1.25	297,944.73	1.13	848,243.22	1.19
Female Income										
Under 55	\$ 7,698,046	4.44	\$ 8,995,710	5.80	\$ 2,417,711	5.53	\$ 568,985	2.00	\$ 19,680,452	5.08
55-59	40,988,062	1.73	41,707,741	1.75	4,882,580	2.89	723,914	3.43	88,302,297	1.82
60-64	100,629,616	1.79	125,206,590	1.47	29,929,355	1.73	4,536,922	2.22	260,302,483	1.64
65-69	83,526,599	1.25	214,447,833	1.31	86,562,540	1.42	21,542,855	1.32	406,079,827	1.33
70-74	23,212,925	1.29	76,590,306	1.23	145,055,606	1.22	60,342,985	1.17	305,201,822	1.22
75-79	9,876,774	0.82	23,412,781	1.19	35,400,541	1.11	122,930,617	1.07	191,620,713	1.08
80-84	4,048,554	0.61	9,784,360	1.04	7,965,586	1.04	73,831,379	1.01	95,629,879	1.00
85-89	1,769,694	0.90	3,437,561	0.99	2,682,557	1.15	27,380,829	1.15	35,270,641	1.12
90-94	376,432	0.70	923,944	1.17	653,485	1.50	7,283,894	1.09	9,237,755	1.11
95 and over	148,553	0.14	174,583	0.52	156,860	0.69	1,413,745	0.92	1,893,741	0.77
Total	\$272,275,255	1.25	\$504,681,409	1.27	\$315,706,821	1.23	\$320,556,125	1.08	\$1,413,219,610	1.17

TABLE 15
 COMPARISON OF MALE AND FEMALE MORTALITY EXPERIENCE
 FOR CALENDAR-YEARS 1987 AND 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Exposure		A/E Ratio		Ratio of Female to Male Mortality
	Male	Female	Male*	Female	
Lives					
Under 55	11,573.56	7,370.95	8.22	2.35	0.42
55-59	96,728.26	35,944.49	1.78	1.02	0.58
60-64	261,806.87	107,015.53	1.43	0.83	0.58
65-69	474,723.67	203,262.72	1.19	0.65	0.54
70-74	444,829.22	198,295.56	1.15	0.63	0.55
75-79	319,663.60	153,295.42	1.10	0.62	0.56
80-84	172,046.10	91,018.56	1.04	0.63	0.61
85-89	70,024.51	38,178.85	1.02	0.72	0.70
90-94	20,321.76	11,322.28	1.05	0.80	0.76
95 and over	4,115.08	2,538.86	0.96	0.73	0.76
Total	1,875,832.63	848,243.22	1.12	0.66	0.59
Income					
Under 55	\$ 76,379,747	\$ 19,680,452	4.00	2.46	0.64
55-59	448,305,881	88,302,297	1.38	0.80	0.58
60-64	1,352,003,522	260,302,483	1.16	0.76	0.66
65-69	1,903,527,391	406,079,827	1.00	0.59	0.58
70-74	1,350,557,396	305,201,822	1.02	0.59	0.58
75-79	772,092,029	191,620,713	1.01	0.60	0.60
80-84	346,088,808	95,629,879	0.97	0.59	0.60
85-89	122,433,848	35,270,641	0.94	0.70	0.75
90-94	31,266,268	9,237,755	1.03	0.78	0.76
95 and over	5,277,731	1,893,741	0.91	0.67	0.73
Total	\$6,407,932,621	\$1,413,219,610	1.02	0.63	0.61

*Expected deaths for both males and females using male mortality.

TABLE 16
 EXPERIENCE BY GUARANTEED STATUS FOR CALENDAR-YEAR 1987
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Guaranteed		Nonguaranteed		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Male Lives						
Under 55.....	3,558.46	2.09	2,043.45	4.31	5,601.91	2.90
55-59.....	27,674.94	1.58	19,629.00	1.86	47,303.94	1.70
60-64.....	81,197.43	1.40	47,830.86	1.42	129,028.29	1.41
65-69.....	171,369.69	1.19	67,479.16	1.25	238,848.85	1.21
70-74.....	175,998.43	1.15	47,666.74	1.20	223,665.17	1.16
75-79.....	130,404.22	1.09	27,057.07	1.16	157,461.29	1.11
80-84.....	70,764.20	1.05	13,056.25	1.04	83,820.45	1.05
85-89.....	29,151.67	1.04	4,943.30	0.99	34,094.97	1.03
90-94.....	8,521.84	1.07	1,314.94	1.01	9,836.78	1.06
95 and over....	1,709.70	0.95	256.90	0.84	1,966.60	0.94
Total.....	700,350.58	1.11	231,277.67	1.18	931,628.25	1.13
Male Income						
Under 55.....	\$ 19,731,888	1.85	\$ 14,300,635	1.93	\$ 34,032,523	1.88
55-59.....	110,755,546	1.26	99,403,030	1.25	210,158,576	1.26
60-64.....	343,479,035	1.19	294,790,111	1.07	638,269,146	1.14
65-69.....	597,059,183	0.99	326,948,596	1.03	924,007,779	1.01
70-74.....	467,899,537	1.02	184,036,999	1.11	651,936,536	1.04
75-79.....	279,160,261	1.01	87,208,557	1.09	366,368,818	1.03
80-84.....	128,870,464	0.99	33,752,087	0.98	162,622,551	0.99
85-89.....	47,870,171	0.94	10,808,768	0.89	58,678,939	0.93
90-94.....	12,269,284	1.07	2,562,690	1.03	14,831,974	1.06
95 and over....	2,059,159	0.91	450,228	0.90	2,509,387	0.90
Total.....	\$2,009,154,528	1.02	\$1,054,261,701	1.06	\$3,063,416,229	1.03

TABLE 17

EXPERIENCE BY GUARANTEED STATUS FOR CALENDAR-YEAR 1987
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Guaranteed		Nonguaranteed		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Female Lives						
Under 55.....	2,510.48	5.64	1,103.67	4.80	3,614.15	5.37
55-59.....	11,291.38	2.25	6,490.24	2.35	17,781.62	2.29
60-64.....	37,119.01	1.78	16,107.98	1.95	53,226.99	1.83
65-69.....	76,146.34	1.52	25,093.85	1.48	101,240.19	1.51
70-74.....	80,272.13	1.29	18,170.22	1.21	98,442.35	1.28
75-79.....	62,893.89	1.14	11,858.75	0.98	74,752.64	1.11
80-84.....	37,070.02	1.09	6,530.03	1.08	43,600.05	1.09
85-89.....	15,559.15	1.14	2,477.13	1.17	18,036.28	1.14
90-94.....	4,704.17	1.19	691.37	1.10	5,395.54	1.18
95 and over....	1,022.60	0.85	154.57	0.65	1,177.17	0.83
Total.....	328,589.17	1.20	88,677.81	1.20	417,266.98	1.20
Female Income						
Under 55.....	\$ 6,293,569	3.78	\$ 3,029,837	4.54	\$ 9,323,406	4.02
55-59.....	24,326,957	1.72	17,596,260	1.37	41,923,217	1.57
60-64.....	76,901,189	1.69	46,513,986	2.33	123,415,175	1.93
65-69.....	135,578,764	1.46	57,495,820	1.33	193,074,584	1.42
70-74.....	112,188,481	1.21	33,218,048	1.28	145,406,529	1.22
75-79.....	70,825,327	1.13	19,169,559	1.00	89,994,886	1.10
80-84.....	35,320,510	1.00	9,016,633	0.97	44,337,143	1.00
85-89.....	12,938,109	1.14	3,301,827	1.06	16,239,936	1.12
90-94.....	3,527,836	1.21	827,054	0.92	4,354,890	1.16
95 and over....	697,453	0.82	170,205	0.48	867,658	0.76
Total.....	\$478,598,195	1.20	\$190,339,229	1.24	\$668,937,424	1.21

TABLE 18
 EXPERIENCE BY GUARANTEED STATUS FOR CALENDAR-YEAR 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Guaranteed		Nonguaranteed		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Male Lives						
Under 55.....	3,623.83	2.99	2,347.82	4.63	5,971.65	3.63
55-59.....	27,645.11	1.78	21,779.21	1.95	49,424.32	1.85
60-64.....	81,522.24	1.44	51,256.34	1.44	132,778.58	1.44
65-69.....	166,338.53	1.18	69,536.29	1.19	235,874.82	1.18
70-74.....	172,857.28	1.13	48,306.77	1.14	221,164.05	1.13
75-79.....	134,089.20	1.07	28,113.11	1.15	162,202.31	1.08
80-84.....	74,676.56	1.04	13,549.09	1.05	88,225.65	1.04
85-89.....	30,729.86	1.01	5,199.68	1.00	35,929.54	1.01
90-94.....	9,004.01	1.04	1,480.97	1.03	10,484.98	1.04
95 and over....	1,874.74	1.03	273.74	0.62	2,148.48	0.97
Total.....	702,361.36	1.09	241,843.02	1.16	944,204.38	1.11
Male Income						
Under 55.....	\$ 22,173,615	1.61	\$ 20,173,609	1.94	\$ 42,347,224	1.77
55-59.....	120,549,865	1.48	117,597,440	1.48	238,147,305	1.48
60-64.....	378,567,504	1.15	335,166,872	1.21	713,734,376	1.18
65-69.....	615,052,546	1.01	364,467,066	0.99	979,519,612	1.00
70-74.....	501,912,997	1.01	196,707,863	0.98	698,620,860	1.00
75-79.....	310,826,050	0.97	94,897,161	1.03	405,723,211	0.98
80-84.....	146,055,236	0.94	37,411,021	1.02	183,466,257	0.96
85-89.....	51,917,865	0.94	11,837,044	1.00	63,754,909	0.95
90-94.....	13,296,001	1.03	3,138,293	0.93	16,434,294	1.01
95 and over....	2,261,155	0.99	507,189	0.60	2,768,344	0.91
Total.....	\$2,162,612,834	1.00	\$1,181,903,558	1.04	\$3,344,516,392	1.01

TABLE 19

EXPERIENCE BY GUARANTEED STATUS FOR CALENDAR-YEAR 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Guaranteed		Nonguaranteed		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
<i>Female Lives</i>						
Under 55	2,653.13	3.33	1,103.67	4.32	3,756.80	3.63
55-59	11,760.43	2.58	6,402.44	1.95	18,162.87	2.36
60-64	37,776.78	1.80	16,011.76	1.60	53,788.54	1.74
65-69	77,088.33	1.46	24,934.20	1.33	102,022.53	1.43
70-74	81,532.52	1.31	18,320.69	1.23	99,853.21	1.30
75-79	66,585.36	1.10	11,957.42	1.09	78,542.78	1.10
80-84	40,718.67	1.06	6,699.84	1.04	47,418.51	1.06
85-89	17,452.15	1.14	2,690.42	1.15	20,142.57	1.14
90-94	5,186.68	1.11	740.06	1.02	5,926.74	1.10
95 and over	1,195.11	0.92	166.58	0.69	1,361.69	0.89
Total	341,949.16	1.18	89,027.08	1.17	430,976.24	1.18
<i>Female Income</i>						
Under 55	\$ 7,137,024	4.12	\$ 3,220,022	2.85	\$ 10,357,046	3.73
55-59	28,459,562	2.34	17,919,518	1.56	46,379,080	2.04
60-64	87,509,537	1.42	49,377,771	1.28	136,887,308	1.37
65-69	149,975,357	1.31	63,029,886	1.07	213,005,243	1.24
70-74	124,335,368	1.22	35,459,925	1.18	159,795,293	1.21
75-79	81,506,951	1.05	20,118,876	1.05	101,625,827	1.05
80-84	41,544,049	0.98	9,748,687	1.06	51,292,736	0.99
85-89	15,372,942	1.14	3,657,763	1.04	19,030,705	1.12
90-94	3,923,716	1.06	959,149	1.08	4,882,865	1.07
95 and over	824,168	0.87	201,915	0.45	1,026,083	0.79
Total	\$540,588,674	1.14	\$203,693,512	1.10	\$744,282,186	1.13

TABLE 20

EXPERIENCE BY GUARANTEED STATUS FOR CALENDAR-YEARS 1987 AND 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	Guaranteed		Nonguaranteed		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Male Lives						
Under 55	7,182.29	2.54	4,391.27	4.48	11,573.56	3.27
55-59	55,320.05	1.68	41,408.21	1.91	96,728.26	1.78
60-64	162,719.67	1.42	99,087.20	1.43	261,806.87	1.43
65-69	337,708.22	1.18	137,015.45	1.22	474,723.67	1.19
70-74	348,855.71	1.14	95,973.51	1.17	444,829.22	1.15
75-79	264,493.42	1.08	55,170.18	1.16	319,663.60	1.10
80-84	145,440.76	1.04	26,605.34	1.05	172,046.10	1.04
85-89	59,881.53	1.02	10,142.98	1.00	70,024.51	1.02
90-94	17,525.85	1.05	2,795.91	1.02	20,321.76	1.05
95 and over....	3,584.44	0.99	530.64	0.73	4,115.08	0.96
Total	1,402,711.94	1.10	473,120.69	1.17	1,875,832.63	1.12
Male Income						
Under 55	\$ 41,905,503	1.72	\$ 34,474,244	1.94	\$ 76,379,747	1.82
55-59	231,305,411	1.37	217,000,470	1.38	448,305,881	1.38
60-64	722,046,539	1.17	629,956,983	1.14	1,352,003,522	1.16
65-69	1,212,111,729	1.00	691,415,662	1.01	1,903,527,391	1.00
70-74	969,812,534	1.01	380,744,862	1.04	1,350,557,396	1.02
75-79	589,986,311	0.99	182,105,718	1.06	772,092,029	1.01
80-84	274,925,700	0.97	71,163,108	1.00	346,088,808	0.97
85-89	99,788,036	0.94	22,645,812	0.95	122,433,848	0.94
90-94	25,565,285	1.05	5,700,983	0.98	31,266,268	1.03
95 and over....	4,320,314	0.95	957,417	0.74	5,277,731	0.91
Total	\$4,171,767,362	1.01	\$2,236,165,259	1.05	\$6,407,932,621	1.02

TABLE 21

EXPERIENCE BY GUARANTEED STATUS FOR CALENDAR-YEARS 1987 AND 1988
 EXPECTED MORTALITY BASIS--1983 GROUP ANNUITY MORTALITY

Attained Age	Guaranteed		Nonguaranteed		Total	
	Exposure	A/E Ratio	Exposure	A/E Ratio	Exposure	A/E Ratio
Female Lives						
Under 55	5,163.61	4.46	2,207.34	4.56	7,370.95	4.50
55-59	23,051.81	2.42	12,892.68	2.15	35,944.49	2.32
60-64	74,895.79	1.79	32,119.74	1.78	107,015.53	1.79
65-69	153,234.67	1.49	50,028.05	1.40	203,262.72	1.47
70-74	161,804.65	1.30	36,490.91	1.22	198,295.56	1.29
75-79	129,479.25	1.12	23,816.17	1.03	153,295.42	1.11
80-84	77,788.69	1.07	13,229.87	1.06	91,018.56	1.07
85-89	33,011.30	1.14	5,167.55	1.16	38,178.85	1.14
90-94	9,890.85	1.15	1,431.43	1.06	11,322.28	1.14
95 and over	2,217.71	0.89	321.15	0.67	2,538.86	0.86
Total	670,538.33	1.19	177,704.89	1.19	848,243.22	1.19
Female Income						
Under 55	\$ 13,430,593	3.96	\$ 6,249,859	3.68	\$ 19,680,452	3.87
55-59	52,786,519	2.05	35,515,778	1.47	88,302,297	1.82
60-64	164,410,726	1.55	95,891,757	1.79	260,302,483	1.64
65-69	285,554,121	1.38	120,525,706	1.19	406,079,827	1.33
70-74	236,523,849	1.21	68,677,973	1.23	305,201,822	1.22
75-79	152,332,278	1.09	39,288,435	1.03	191,620,713	1.08
80-84	76,864,559	0.99	18,765,320	1.02	95,629,879	1.00
85-89	28,311,051	1.14	6,959,590	1.05	35,270,641	1.12
90-94	7,451,552	1.14	1,786,203	1.01	9,237,755	1.11
95 and over	1,521,621	0.85	372,120	0.46	1,893,741	0.77
Total	\$1,019,186,869	1.17	\$394,032,741	1.17	\$1,413,219,610	1.17

TABLE 22

SUMMARY OF GROUP ANNUITY MORTALITY EXPERIENCE BY MALE LIVES
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

	1987		1988		Change in A/E Ratios
	Exposure	A/E Ratio	Exposure	A/E Ratio	
Total.....	931,628	1.13	944,204	1.11	-0.02
By Retirement Class					
Prior to NRD.....	367,326	1.14	361,921	1.14	0.00
On/After NRD.....	336,587	1.07	333,584	1.06	-0.01
No Stated NRD.....	225,642	1.21	246,446	1.15	-0.06
Past NRD/No Payment	2,073	1.10	2,254	0.92	-0.18
By Benefit Class					
Life.....	618,689	1.14	637,212	1.12	-0.02
Life and Certain.....	159,124	1.10	156,133	1.10	0.00
Modified Cash Refund	153,815	1.10	150,859	1.05	-0.05
By Survivor Class					
Single Life.....	696,845	1.13	693,110	1.11	-0.02
Joint Life.....	234,783	1.09	251,094	1.09	0.00
By Years Since Retirement					
0-1.....	126,217	1.18	113,562	1.21	0.03
2-5.....	260,880	1.15	269,793	1.18	0.03
6-10.....	240,549	1.15	242,322	1.13	-0.02
11+.....	303,982	1.10	318,527	1.07	-0.03
By Attained Age					
Under 55.....	5,602	2.90	5,972	3.63	0.73
55-59.....	47,304	1.70	49,424	1.85	0.15
60-64.....	129,028	1.41	132,779	1.44	0.03
65-69.....	238,849	1.21	235,875	1.18	-0.03
70-74.....	223,665	1.16	221,164	1.13	-0.03
75-79.....	157,461	1.11	162,202	1.08	-0.03
80-84.....	83,820	1.05	88,226	1.04	-0.01
85-89.....	34,095	1.03	35,930	1.01	-0.02
90-94.....	9,837	1.06	10,485	1.04	-0.02
95 and Over.....	1,967	0.94	2,148	0.97	0.03
Comparison of Female/ Male.....		0.59		0.59	0.00

TABLE 23

SUMMARY OF GROUP ANNUITY MORTALITY EXPERIENCE BY MALE INCOME
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

	1987		1988		Change in A/E Ratios
	Exposure	A/E Ratio	Exposure	A/E Ratio	
Total.....	\$3,063,416,229	1.03	\$3,344,516,392	1.01	-0.02
By Retirement Class					
Prior to NRD.....	\$1,283,736,959	1.00	\$1,356,599,134	1.01	0.01
On/After NRD.....	949,566,524	0.97	1,009,758,150	0.97	0.00
No Stated NRD.....	825,063,803	1.14	972,292,817	1.07	-0.07
Past NRD/No Payment	5,048,943	0.98	5,866,291	0.59	-0.39
By Benefit Class					
Life.....	\$2,101,781,301	1.03	\$2,331,074,776	1.03	0.00
Life and Certain.....	470,508,319	1.00	494,072,969	1.00	0.00
Modified Cash Refund	491,126,609	1.04	519,368,647	0.94	-0.10
By Survivor Class					
Single Life.....	\$1,931,101,299	1.04	\$2,058,257,743	1.02	-0.02
Joint Life.....	1,132,314,930	0.99	1,286,258,649	0.98	-0.01
By Years Since Retirement					
0-1.....	\$ 653,284,079	0.95	\$ 622,253,807	0.97	0.02
2-5.....	1,068,560,661	0.99	1,251,389,614	1.03	0.04
6-10.....	700,905,670	1.07	756,444,796	1.03	-0.04
11+.....	640,665,819	1.05	714,428,175	1.00	-0.05
By Attained Age					
Under 55.....	\$ 34,032,523	1.88	\$ 42,347,224	1.77	-0.11
55-59.....	210,158,576	1.26	238,147,305	1.48	0.22
60-64.....	638,269,146	1.14	713,734,376	1.18	0.04
65-69.....	924,007,779	1.01	979,519,612	1.00	-0.01
70-74.....	651,936,536	1.04	698,620,860	1.00	-0.04
75-79.....	366,368,818	1.03	405,723,211	0.98	-0.05
80-84.....	162,622,551	0.99	183,466,257	0.96	-0.03
85-89.....	58,678,939	0.93	63,754,909	0.95	0.02
90-94.....	14,831,974	1.06	16,434,294	1.01	-0.05
95 and Over.....	2,509,387	0.90	2,768,344	0.91	0.01
Comparison of Female/ Male.....		0.63		0.60	-0.03

TABLE 24

SUMMARY OF GROUP ANNUITY MORTALITY EXPERIENCE BY FEMALE LIVES
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

	1987		1988		Change in A/E Ratios
	Exposure	A/E Ratio	Exposure	A/E Ratio	
Total	417,267	1.20	430,976	1.18	-0.02
By Retirement Class					
Prior to NRD	149,648	1.33	150,538	1.25	-0.08
On/After NRD	166,820	1.14	168,888	1.14	0.00
No Stated NRD	99,737	1.21	110,394	1.18	-0.03
Past NRD/No Payment	1,061	1.59	1,156	0.87	-0.72
By Benefit Class					
Life	286,898	1.19	296,778	1.17	-0.02
Life and Certain	58,023	1.24	60,453	1.18	-0.06
Modified Cash Refund	72,346	1.23	73,745	1.20	-0.03
By Survivor Class					
Single Life	394,053	1.20	405,044	1.17	-0.03
Joint Life	23,214	1.38	25,932	1.28	-0.10
By Years Since Retirement					
0-1	53,979	1.37	48,701	1.23	-0.14
2-5	117,254	1.30	121,569	1.33	0.03
6-10	102,447	1.27	106,348	1.23	-0.04
11+	143,587	1.14	154,358	1.12	-0.02
By Attained Age					
Under 55	3,614	5.37	3,757	3.63	-1.74
55-59	17,782	2.29	18,163	2.36	0.07
60-64	53,227	1.83	53,789	1.74	-0.09
65-69	101,240	1.51	102,023	1.43	-0.08
70-74	98,442	1.28	99,853	1.30	0.02
75-79	74,753	1.11	78,543	1.10	-0.01
80-84	43,600	1.09	47,419	1.06	-0.03
85-89	18,036	1.14	20,143	1.14	0.00
90-94	5,396	1.18	5,927	1.10	-0.08
95 and Over	1,177	0.83	1,362	0.89	0.06

TABLE 25

SUMMARY OF GROUP ANNUITY MORTALITY EXPERIENCE BY FEMALE INCOME
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

	1987		1988		Change in A/E Ratios
	Exposure	A/E Ratio	Exposure	A/E Ratio	
Total	\$668,937,424	1.21	\$744,282,186	1.13	-0.08
By Retirement Class					
Prior to NRD	\$268,837,073	1.41	\$287,791,069	1.16	-0.25
On/After NRD	230,264,401	1.12	251,443,806	1.11	-0.01
No Stated NRD	168,195,323	1.19	203,169,816	1.16	-0.03
Past NRD/No Payment	1,640,627	1.47	1,877,495	0.89	-0.58
By Benefit Class					
Life	\$461,058,559	1.19	\$516,140,470	1.14	-0.05
Life and Certain	92,519,203	1.32	103,860,773	1.14	-0.18
Modified Cash Refund	115,359,662	1.20	124,280,943	1.10	-0.10
By Survivor Class					
Single Life	\$615,652,587	1.18	\$680,240,229	1.13	-0.05
Joint Life	53,284,837	1.81	64,041,957	1.16	-0.65
By Years Since Retirement					
0-1	\$136,484,624	1.42	\$135,790,631	1.08	-0.34
2-5	233,378,967	1.27	271,302,442	1.27	0.00
6-10	148,977,259	1.28	166,729,562	1.19	-0.09
11+	150,096,574	1.10	170,459,551	1.06	-0.04
By Attained Age					
Under 55	\$ 9,323,406	4.02	\$ 10,357,046	3.73	-0.29
55-59	41,923,217	1.57	46,379,080	2.04	0.47
60-64	123,415,175	1.93	136,887,308	1.37	-0.56
65-69	193,074,584	1.42	213,005,243	1.24	-0.18
70-74	145,406,529	1.22	159,795,293	1.21	-0.01
75-79	89,994,886	1.10	101,625,827	1.05	-0.05
80-84	44,337,143	1.00	51,292,736	0.99	-0.01
85-89	16,239,936	1.12	19,030,705	1.12	0.00
90-94	4,354,890	1.16	4,882,865	1.07	-0.09
95 and Over	867,658	0.76	1,026,083	0.79	0.03

TABLE 26
 COMPARISON OF 1988-87 WITH 1986-85 GROUP ANNUITY MORTALITY EXPERIENCE
 BY MALE LIVES
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

	1985-86		1987-88		Change in A/E Ratios
	Exposure	A/E Ratio	Exposure	A/E Ratio	
Total.....	1,731,887	1.20	1,875,833	1.12	-0.08
By Retirement Class					
Prior to NRD.....	688,837	1.21	729,247	1.14	-0.07
On/After NRD.....	591,855	1.15	670,171	1.07	-0.08
No Stated NRD.....	447,764	1.25	472,087	1.18	-0.07
Past NRD/No Payment	3,431	0.96	4,327	1.01	0.05
By Benefit Class					
Life.....	1,099,672	1.22	1,255,901	1.13	-0.09
Life and Certain.....	322,075	1.17	315,257	1.10	-0.07
Modified Cash Refund	310,140	1.15	304,674	1.07	-0.08
By Survivor Class					
Single Life.....	1,344,803	1.20	1,389,955	1.12	-0.08
Joint Life.....	387,085	1.18	485,877	1.09	-0.09
By Years Since Retirement					
0-1.....	224,474	1.39	239,779	1.20	-0.19
2-5.....	495,269	1.27	530,674	1.16	-0.11
6-10.....	469,701	1.19	482,871	1.14	-0.05
11+.....	542,444	1.15	622,509	1.09	-0.06
By Attained Age					
Under 55.....	8,633	3.41	11,574	3.27	-0.14
55-59.....	87,402	1.98	96,728	1.78	-0.20
60-64.....	245,969	1.58	261,807	1.43	-0.15
65-69.....	452,089	1.32	474,724	1.19	-0.13
70-74.....	423,736	1.22	444,829	1.15	-0.07
75-79.....	283,219	1.17	319,664	1.10	-0.07
80-84.....	149,978	1.10	172,046	1.04	-0.06
85-89.....	60,104	1.07	70,025	1.02	-0.05
90-94.....	17,493	1.09	20,322	1.05	-0.04
95 and Over.....	3,263	0.93	4,115	0.96	0.03
Comparison of Female/ Male.....		0.58		0.59	0.01

TABLE 27
 COMPARISON OF 1988-87 WITH 1986-85 GROUP ANNUITY MORTALITY EXPERIENCE
 BY MALE INCOME
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

	1985-86		1987-88		Change in A/E Ratios
	Exposure	A/E Ratio	Exposure	A/E Ratio	
Total.....	\$5,153,766,061	1.11	\$6,407,932,621	1.02	-0.09
By Retirement Class					
Prior to NRD.....	\$2,129,167,573	1.08	\$2,640,336,093	1.00	-0.08
On/After NRD.....	1,571,792,007	1.05	1,959,324,674	0.97	-0.08
No Stated NRD.....	1,445,143,739	1.20	1,797,356,620	1.10	-0.10
Past NRD/No Payment	7,662,742	0.80	10,915,234	0.78	-0.02
By Benefit Class					
Life.....	\$3,392,712,656	1.12	\$4,432,856,077	1.03	-0.09
Life and Certain.....	873,202,053	1.10	964,581,288	1.00	-0.10
Modified Cash Refund	887,851,352	1.06	1,010,495,256	0.99	-0.07
By Survivor Class					
Single Life.....	\$3,432,604,062	1.12	\$3,989,359,042	1.03	-0.09
Joint Life.....	1,721,161,999	1.07	2,418,573,579	0.99	-0.08
By Years Since Retirement					
0-1.....	\$1,010,611,789	1.16	\$1,275,537,886	0.96	-0.20
2-5.....	1,804,023,032	1.13	2,319,950,275	1.01	-0.12
6-10.....	1,264,646,786	1.09	1,457,350,466	1.05	-0.04
11 +.....	1,074,484,454	1.09	1,355,093,994	1.02	-0.07
By Attained Age					
Under 55.....	\$ 49,839,419	2.21	\$ 76,379,747	1.82	-0.39
55-59.....	321,767,628	1.68	448,305,881	1.38	-0.30
60-64.....	1,064,744,662	1.26	1,352,003,522	1.16	-0.10
65-69.....	1,567,252,932	1.14	1,903,527,391	1.00	-0.14
70-74.....	1,128,312,550	1.11	1,350,557,396	1.02	-0.09
75-79.....	622,456,740	1.07	772,092,029	1.01	-0.06
80-84.....	273,825,778	1.03	346,088,808	0.97	-0.06
85-89.....	97,931,850	0.98	122,433,848	0.94	-0.04
90-94.....	23,811,818	1.10	31,266,268	1.03	-0.07
95 and Over.....	3,822,684	0.93	5,277,731	0.91	-0.02
Comparison of Female/ Male.....		0.61		0.61	0.00

TABLE 28
 COMPARISON OF 1987-88 WITH 1986-85 GROUP ANNUITY MORTALITY EXPERIENCE
 BY FEMALE LIVES
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

	1985-86		1987-88		Change in A/E Ratios
	Exposure	A/E Ratio	Exposure	A/E Ratio	
Total.....	762,736	1.26	848,243	1.19	-0.07
By Retirement Class					
Prior to NRD.....	271,830	1.35	300,186	1.29	-0.06
On/After NRD.....	286,492	1.24	335,708	1.14	-0.10
No Stated NRD.....	202,714	1.23	210,132	1.20	-0.03
Past NRD/No Payment	1,701	1.38	2,218	1.22	-0.16
By Benefit Class					
Life.....	506,796	1.28	583,676	1.18	-0.10
Life and Certain.....	113,179	1.19	118,476	1.21	0.02
Modified Cash Refund	142,762	1.27	146,091	1.21	-0.06
By Survivor Class					
Single Life.....	727,581	1.26	799,097	1.18	-0.08
Joint Life.....	35,156	1.46	49,146	1.32	-0.14
By Years Since Retirement					
0-1.....	96,298	1.56	102,680	1.30	-0.26
2-5.....	212,058	1.45	238,823	1.32	-0.13
6-10.....	206,708	1.29	208,795	1.25	-0.04
11+.....	247,672	1.18	297,945	1.13	-0.05
By Attained Age					
Under 55.....	6,048	3.83	7,371	4.50	0.67
55-59.....	33,729	2.37	35,944	2.32	-0.05
60-64.....	101,063	1.91	107,016	1.79	-0.12
65-69.....	189,201	1.58	203,263	1.47	-0.11
70-74.....	184,051	1.35	198,296	1.29	-0.06
75-79.....	134,016	1.18	153,295	1.11	-0.07
80-84.....	74,226	1.12	91,019	1.07	-0.05
85-89.....	29,743	1.19	38,179	1.14	-0.05
90-94.....	8,853	1.20	11,322	1.14	-0.06
95 and Over.....	1,806	0.92	2,539	0.86	-0.06

TABLE 29
 COMPARISON OF 1987-88 WITH 1986-85 GROUP ANNUITY MORTALITY EXPERIENCE
 BY FEMALE INCOME
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

	1985-86		1987-88		Change in A/E Ratios
	Exposure	A/E Ratio	Exposure	A/E Ratio	
Total.....	\$1,117,058,261	1.26	\$1,413,219,610	1.17	-0.09
By Retirement Class					
Prior to NRD.....	\$ 436,404,843	1.33	\$ 556,628,142	1.28	-0.05
On/After NRD.....	367,840,600	1.23	481,708,207	1.11	-0.12
No Stated NRD.....	310,198,857	1.25	371,365,139	1.17	-0.08
Past NRD/No Payment	2,613,961	1.32	3,518,122	1.16	-0.16
By Benefit Class					
Life.....	\$ 741,285,598	1.25	\$ 977,199,029	1.16	-0.09
Life and Certain.....	167,697,480	1.21	196,379,976	1.22	0.01
Modified Cash Refund	208,075,183	1.36	239,640,605	1.15	-0.21
By Survivor Class					
Single Life.....	\$1,038,510,547	1.25	\$1,295,892,816	1.15	-0.10
Joint Life.....	78,547,714	1.52	117,326,794	1.45	-0.07
By Years Since Retirement					
0-1.....	\$ 215,695,919	1.42	\$ 272,275,255	1.25	-0.17
2-5.....	381,852,852	1.44	504,681,409	1.27	-0.17
6-10.....	277,805,627	1.28	315,706,821	1.23	-0.05
11+.....	241,703,863	1.14	320,556,125	1.08	-0.06
By Attained Age					
Under 55.....	\$ 14,728,293	2.24	\$ 19,680,452	3.87	1.63
55-59.....	69,492,070	2.07	88,302,297	1.82	-0.25
60-64.....	208,456,099	1.69	260,302,483	1.64	-0.05
65-69.....	322,346,511	1.48	406,079,827	1.33	-0.15
70-74.....	250,167,590	1.33	305,201,822	1.22	-0.11
75-79.....	149,126,796	1.14	191,620,713	1.08	-0.06
80-84.....	70,062,715	1.05	95,629,879	1.00	-0.05
85-89.....	24,950,298	1.18	35,270,641	1.12	-0.06
90-94.....	6,479,765	1.23	9,237,755	1.11	-0.12
95 and Over.....	1,248,124	0.89	1,893,741	0.77	-0.12

TABLE 30
SUMMARY OF MORTALITY IMPROVEMENT FOR MALE LIVES
FOR CALENDAR-YEARS 1983 TO 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	A/E Ratio						Annual Improvement Factors					Arithmetic Average
	1988	1987	1986	1985	1984	1983	1988 to 1987	1987 to 1986	1986 to 1985	1985 to 1984	1984 to 1983	
Under 55	3.63	2.90	2.87	4.00	3.36	3.63	-0.253	-0.009	0.283	-0.192	0.073	-0.019
55-59	1.85	1.70	1.92	2.04	2.14	2.23	-0.091	0.118	0.057	0.045	0.042	0.034
60-64	1.44	1.41	1.51	1.64	1.68	1.75	-0.023	0.066	0.081	0.022	0.042	0.038
65-69	1.18	1.21	1.26	1.39	1.37	1.41	0.021	0.040	0.096	-0.013	0.029	0.035
70-74	1.13	1.16	1.13	1.31	1.31	1.32	0.027	-0.026	0.131	0.002	0.012	0.029
75-79	1.08	1.11	1.10	1.25	1.24	1.28	0.020	-0.006	0.117	-0.005	0.034	0.032
80-84	1.04	1.05	1.06	1.14	1.14	1.13	0.006	0.013	0.069	-0.003	-0.005	0.016
85-89	1.01	1.03	0.99	1.15	1.15	1.15	0.025	-0.042	0.140	0.000	-0.001	0.025
90-94	1.04	1.06	1.01	1.18	1.18	1.15	0.020	-0.046	0.139	0.001	-0.023	0.018
95 and over	0.97	0.94	0.81	1.06	1.08	1.06	-0.036	-0.161	0.239	0.019	-0.021	0.008
Total	1.11	1.13	1.13	1.27	1.27	1.29	0.016	0.000	0.113	0.001	0.016	0.029

TABLE 31

SUMMARY OF MORTALITY IMPROVEMENT FOR MALE INCOME
FOR CALENDAR-YEARS 1983 TO 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	A/E Ratio						Annual Improvement Factors					Arithmetic Average
	1988	1987	1986	1985	1984	1983	1988 to 1987	1987 to 1986	1986 to 1985	1985 to 1984	1984 to 1983	
Under 55	1.77	1.88	1.78	2.73	2.63	2.46	0.060	-0.054	0.346	-0.039	-0.067	0.049
55-59	1.48	1.26	1.68	1.69	1.76	1.86	-0.177	0.249	0.007	0.043	0.050	0.035
60-64	1.18	1.14	1.21	1.31	1.27	1.37	-0.037	0.063	0.073	-0.032	0.072	0.028
65-69	1.00	1.01	1.09	1.20	1.19	1.27	0.008	0.078	0.087	-0.004	0.061	0.046
70-74	1.00	1.04	1.03	1.19	1.22	1.21	0.038	-0.013	0.139	0.022	-0.011	0.035
75-79	0.98	1.03	1.01	1.14	1.14	1.18	0.047	-0.018	0.112	0.004	0.031	0.035
80-84	0.96	0.99	1.03	1.03	1.03	1.07	0.034	0.038	0.001	-0.006	0.041	0.022
85-89	0.95	0.93	0.93	1.05	1.09	1.10	-0.019	-0.005	0.115	0.039	0.009	0.028
90-94	1.01	1.06	1.00	1.21	1.19	1.13	0.054	-0.066	0.174	-0.012	-0.061	0.018
95 and over	0.91	0.90	0.77	1.09	0.98	1.17	-0.005	-0.168	0.289	-0.116	0.164	0.033
Total	1.01	1.03	1.05	1.17	1.17	1.21	0.018	0.023	0.097	0.005	0.029	0.035

TABLE 32

SUMMARY OF MORTALITY IMPROVEMENT FOR FEMALE LIVES
FOR CALENDAR-YEARS 1983 TO 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	A/E Ratio						Annual Improvement Factors					Arithmetic Average
	1988	1987	1986	1985	1984	1983	1988 to 1987	1987 to 1986	1986 to 1985	1985 to 1984	1984 to 1983	
Under 55	3.63	5.37	4.00	3.65	4.87	3.04	0.324	-0.344	-0.095	0.250	-0.604	-0.094
55-59	2.36	2.29	2.11	2.62	2.69	2.72	-0.032	-0.084	0.197	0.024	0.011	0.023
60-64	1.74	1.83	1.75	2.06	1.77	2.00	0.049	-0.045	0.148	-0.160	0.114	0.021
65-69	1.43	1.51	1.50	1.65	1.63	1.67	0.053	-0.005	0.091	-0.016	0.025	0.029
70-74	1.30	1.28	1.30	1.40	1.41	1.37	-0.014	0.018	0.072	0.005	-0.033	0.010
75-79	1.10	1.11	1.13	1.24	1.22	1.19	0.009	0.016	0.087	-0.012	-0.031	0.014
80-84	1.06	1.09	1.06	1.18	1.16	1.19	0.031	-0.024	0.097	-0.015	0.022	0.022
85-89	1.14	1.14	1.12	1.25	1.28	1.21	-0.002	-0.015	0.105	0.018	-0.053	0.010
90-94	1.10	1.18	1.16	1.24	1.26	1.13	0.068	-0.019	0.069	0.015	-0.116	0.003
95 and over	0.89	0.83	0.93	0.90	0.94	1.03	-0.078	0.114	-0.035	0.039	0.091	0.026
Total	1.18	1.20	1.20	1.33	1.32	1.32	0.022	0.000	0.095	-0.004	-0.004	0.022

TABLE 33
SUMMARY OF MORTALITY IMPROVEMENT FOR FEMALE INCOME
FOR CALENDAR-YEARS 1983 TO 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

Attained Age	A/E Ratio						Annual Improvement Factors					Arithmetic Average
	1988	1987	1986	1985	1984	1983	1988 to 1987	1987 to 1986	1986 to 1985	1985 to 1984	1984 to 1983	
Under 55	3.73	4.02	2.19	2.30	3.47	1.96	0.072	-0.836	0.047	0.338	-0.768	-0.229
55-59	2.04	1.57	1.94	2.22	2.03	2.77	-0.300	0.191	0.125	-0.090	0.265	0.038
60-64	1.37	1.93	1.67	1.71	1.75	1.86	0.289	-0.157	0.026	0.020	0.058	0.047
65-69	1.24	1.42	1.38	1.59	1.65	1.48	0.130	-0.033	0.136	0.036	-0.118	0.030
70-74	1.21	1.22	1.25	1.42	1.32	1.30	0.010	0.025	0.116	-0.073	-0.016	0.012
75-79	1.05	1.10	1.09	1.18	1.17	1.17	0.046	-0.009	0.077	-0.011	-0.005	0.019
80-84	0.99	1.00	1.02	1.08	1.15	1.20	0.001	0.028	0.052	0.060	0.038	0.036
85-89	1.12	1.12	1.17	1.19	1.31	1.17	-0.003	0.042	0.015	0.092	-0.114	0.006
90-94	1.07	1.16	1.17	1.30	1.23	1.23	0.080	0.005	0.106	-0.062	0.002	0.026
95 and over	0.79	0.76	0.90	0.88	0.83	1.14	-0.041	0.161	-0.020	-0.061	0.270	0.062
Total	1.13	1.21	1.21	1.32	1.33	1.32	0.060	0.001	0.086	0.011	-0.012	0.029

CHART I
 SUMMARY OF MORTALITY IMPROVEMENT FOR MALES LIVES
 FOR CALENDAR-YEARS 1983 THROUGH 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

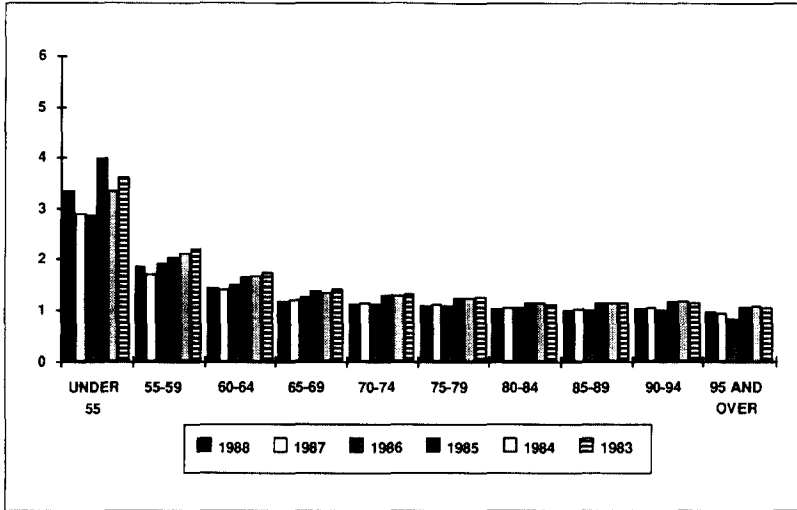


CHART II
 SUMMARY OF MORTALITY IMPROVEMENT FOR MALE INCOME
 FOR CALENDAR-YEARS 1983 THROUGH 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

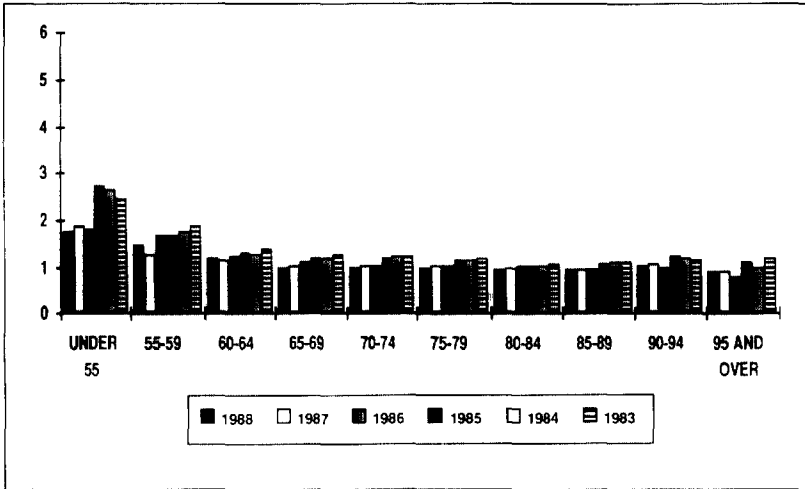


CHART III
 SUMMARY OF MORTALITY IMPROVEMENT FOR FEMALE LIVES
 FOR CALENDAR-YEARS 1983 THROUGH 1988
 EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

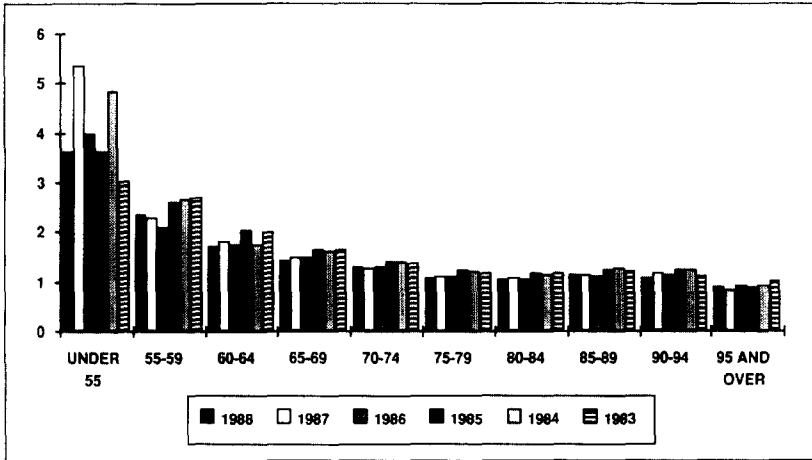


CHART IV
SUMMARY OF MORTALITY IMPROVEMENT FOR FEMALE INCOME
FOR CALENDAR-YEARS 1983 THROUGH 1988
EXPECTED MORTALITY BASIS—1983 GROUP ANNUITY MORTALITY

