

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1991-92 REPORTS**

**REPORT OF THE INDIVIDUAL LIFE INSURANCE
EXPERIENCE COMMITTEE**

**MORTALITY UNDER STANDARD INDIVIDUALLY
UNDERWRITTEN LIFE INSURANCE
BETWEEN 1987 AND 1988 ANNIVERSARIES**

ABSTRACT

This study is the latest in continuing annual reports on intercompany mortality experience under standard individually underwritten life insurance. The same 19 companies contributed their data to both the 1986-87 study and this study.

The mortality ratios in the report are based on the 1975-80 Basic Tables. The primary results for this study are as follows:

- The overall mortality ratio in Table 1 for experience between 1987 and 1988 anniversaries, during policy years 1-15, is 85.6 percent, down 0.7 percent from the prior year and continuing the ongoing trend. Unlike the prior study, medical ratios were more than 5 percent higher, but this was more than offset by corresponding improvements in both paramedical and nonmedical experience.
- The mortality ratios in Table 7 for experience between 1983 and 1988 anniversaries, during policy years 1-15, show a significantly greater improvement (compared to 1982-87 anniversaries) for females (3 percentage points, down to 91.9 percent) than for males (1 percentage point, down to 88.2 percent). The greatest improvement from the 1975-80 period is still at issue ages 30-39; however, the increasing adverse effects of AIDS claims in future studies may well reverse this trend for males at these ages.
- For 1980-87 issues observed between 1983 and 1988 anniversaries, the mortality ratio in Table 18 for smokers is 148.7 percent and that for nonsmokers is 70.5 percent, virtually unchanged from the prior year. Subdivisions of these data into medical, paramedical and nonmedical and into male and female produced little difference in these overall ratios, except that the nonmedical ratios continue to be somewhat less than either the medical or paramedical ones.
- For ultimate experience between 1987 and 1988 anniversaries, the overall mortality ratio in Table 22 is 86.3 percent, about a 5 percent decrease from 1986-87. The comparable mortality ratios using expected deaths based on the 1980 CSO tables and the 1979-81 U.S. Population Tables are 65.2 percent and 64.6 percent, respectively.

INTRODUCTION

This report covers the intercompany (U.S.) mortality experience by amount of life insurance under standard individually underwritten issues between

1987 and 1988 anniversaries. The report also combines experience between 1983 and 1988 anniversaries in order to provide a larger volume of data, so that broader comparisons of results, particularly for males-females, for smokers-nonsmokers, and for medical-paramedical-nonmedical issues, can be made.

INDEX OF PRIMARY TABLES

Table	Exposure Period	Policy Years*	Medical, Paramedical, or Nonmedical	Male or Female	Smoker/ Nonsmoker	Mortality Ratios by
1	1987-88	1-15	Combined	Combined	Combined	Issue age
2	1987-88	1-15	Combined	Combined	Combined	Policy year
3	1987-88	1-15	Separately	Combined	Combined	Issue age
4	1987-88	1-15	Separately	Combined	Combined	Policy year
5	1987-88	1-15	Separately	Combined	Combined	Issue age and policy year
6	1987-88	1-15	Separately	Combined	Combined	Issue age and policy year
7	1983-88	1-15	Combined	Separately	Combined	Issue age
8	1983-88	1-15	Combined	Separately	Combined	Policy year
9	1983-88	1-15	Separately	Separately	Combined	Issue age
10	1983-88	1-15	Separately	Separately	Combined	Policy year
11	1983-88	1-15	Medical	Separately	Combined	Issue age and policy year
12	1983-88	1-15	Paramedical	Separately	Combined	Issue age and policy year
13	1983-88	1-15	Nonmedical	Separately	Combined	Issue age and policy year
14	1983-88	1-15	Combined	Separately	Combined	Issue age and policy year
15	1983-88	1-15	Separately	Separately	Combined	Issue age and policy year
16	1987-88	1-8	Separately	Combined	Separately	Issue age
17	1987-88	1-8	Separately	Combined	Separately	Policy year
18	1983-88	1-8	Separately	Combined	Separately	Issue age
19	1983-88	1-8	Separately	Combined	Separately	Policy year
20	1983-88	1-8	Combined	Separately	Separately	Issue age
21	1983-88	1-8	Combined	Separately	Separately	Policy year
22	1987-88	16 and over	Combined	Combined	Combined	Attained age
23	1983-88	16 and over	Combined	Combined	Combined	Attained age
24	1983-88	16 and over	Separately	Combined	Combined	Attained age
25	1983-88	16 and over	Combined	Separately	Combined	Attained age

Appendix A — Names of the contributing companies and percentage of total 1987-88 exposures contributed by each company

*Select (1-15); smoker-nonsmoker (1-8); ultimate (16 and over).

The report is divided into four primary sections:

- I. Select Experience (first 15 policy years) between 1987 and 1988 anniversaries for issues of 1973–1987 (Tables 1–6).
- II. Select Experience (first 15 policy years) between 1983 and 1988 anniversaries for issues of 1973–1987 (Tables 7–15).
- III. Smoker-Nonsmoker Experience (first eight policy years) between 1987 and 1988 anniversaries and between 1983 and 1988 anniversaries for issues of 1980–1987 (Tables 16–21).
- IV. Ultimate Experience (policy years 16 and over) between 1987 and 1988 anniversaries and between 1983–1988 anniversaries (Tables 22–25), for issues of 1972 and prior.

Each section subdivides experience by insurance issued subject to a medical examination (medical), insurance issued subject to a paramedical examination (paramedical), and insurance issued without a paramedical or medical examination (nonmedical).

Most of the tables in this report show actual amounts of death claims (to the nearest \$1,000) and mortality ratios of actual-to-expected death claims based on the 1975–80 Male and Female Basic Tables. (Tables 1, 2 and 22 also show mortality ratios based on the 1965–70 Basic Tables.) In addition, Tables 1, 2, 7, 8, 16–21, and 22 show amounts exposed to risk (to the nearest \$1,000,000). All data in Sections I, II, and III were submitted separately for males and females.

The 1987–88 select and ultimate experience is derived from the contributions of the same 19 companies contributing to the 1986–87 study. The 1983–88 select and ultimate experience is derived from the contributions of 23 companies, 18 of which contributed data for the entire 1983–88 period. The 1987–88 smoker-nonsmoker experience is derived from the contributions of 15 companies, and the 1983–88 smoker-nonsmoker data are derived from the contributions of 13 companies. Appendix A gives the names and proportionate contributions of companies that contributed 1987–88 experience. Appendixes B, C, and D, which are not published here but can be obtained from the Society Research Department, contain detailed medical, paramedical and nonmedical experience, respectively, by ages at issue for each year of issue, for males and females separately.

The following summary tables show some interesting trends. Table A shows the change in proportions of policies issued by type of underwriting and reflects the substantially decreased use of medical examinations and increased use of nonmedical. However, there is a reversal of this trend for

1987 issues, indicating that there may be more medicals and paramedicals used in connection with blood testing.

Table B shows mortality ratio by exposure years since the introduction of the 1965-70 Basic Tables. The decreases in the ratios are a continuation of the trend that has continued almost without exception since these annual studies were started.

TABLE A
EXPOSURES FOR POLICY YEAR 1
AS PERCENTAGE OF TOTAL EXPOSURES

Year of Issue	Medical	Paramedical	Nonmedical
1977	34.7%	28.9%	36.4%
1978	35.1	28.5	36.4
1979	35.1	30.5	34.4
1980	38.2	32.5	29.3
1981	33.1	30.6	36.3
1982	29.2	25.1	45.7
1983	24.7	23.5	51.8
1984	22.5	25.3	52.2
1985	20.8	27.1	52.1
1986	15.7	27.3	57.0
1987	17.1	30.9	52.0

TABLE B
AGGREGATE MORTALITY RATIOS BASED ON 1965-70 SELECT BASIC TABLES
(NUMBERS IN PARENTHESIS ARE MORTALITY RATIOS
BASED ON THE 1975-80 BASIC TABLES)

Exposure Year	Policy Years 1-15				Policy Years 16 and Over
	Medical	Paramedical	Nonmedical	Combined	
1973-74	88.0%	84.1%	99.1%	89.9%	93.4%
1974-75	85.1	85.5	94.9	87.8	87.1
1975-76	80.9	81.4	88.5	82.3	85.0
1976-77	75.5	78.0	87.9	77.9	82.0
1977-78	75.0	80.5	85.9	77.4	80.5
1978-79	68.7	74.5	84.9	72.1	77.0
1979-80	69.8	80.3	82.9	73.3	77.1
1980-81	69.5	70.1	79.8	71.0	75.2
1981-82	67.8	73.2	79.2	70.7	72.8
1982-83	68.0	69.9	74.2	69.6	73.2
1983-84	68.6(93.6)	68.8(92.2)	70.8(89.6)	69.1(92.4)	71.2(91.8)
1984-85	66.2(90.5)	69.9(94.3)	72.4(92.5)	68.5(91.9)	71.0(91.1)
1985-86	61.2(83.7)	67.9(91.8)	72.0(92.4)	65.5(88.0)	70.0(89.8)
1986-87	57.8(79.1)	68.0(91.9)	71.5(92.0)	64.2(86.3)	71.0(90.8)
1987-88	61.0(83.5)	64.3(87.2)	67.2(86.5)	63.6(85.6)	67.5(86.3)

Table C shows the proportions of medical, paramedical and nonmedical exposures in policy year 1 and policy years 1-15 by issue age groups. This indicates that the use of nonmedical predominates at issue ages under 30 and that medicals still account for about half of the exposures (which are based on amounts of insurance) at issue ages 50 and over.

TABLE C
EXPOSURES AS PERCENTAGE OF TOTAL EXPOSURES FOR 1987-1988 EXPERIENCE

Ages at Issue	Policy Year 1			Policy Years 1-15		
	Medical	Paramedical	Nonmedical	Medical	Paramedical	Nonmedical
0-9.....	2.7%	1.4%	95.9%	4.0%	1.7%	94.3%
10-19.....	2.4	3.7	93.9	4.5	3.5	92.0
20-29.....	2.9	8.9	88.2	6.7	11.2	82.1
30-39.....	12.1	32.5	55.4	18.3	31.8	49.9
40-49.....	27.7	51.2	21.1	34.5	45.7	19.8
50-59.....	45.2	45.5	9.3	49.8	41.6	8.6
60-69.....	57.9	34.2	7.9	59.6	34.9	5.5
70 and over.....	65.5	27.1	7.3	70.4	24.2	5.4
All Ages.....	17.1	30.9	52.0	21.4	28.1	50.5

It would be desirable for the comparisons of medical, paramedical and nonmedical experience to be based on strictly comparable policies, but such comparisons are not possible. Medically underwritten business generally includes larger amounts of insurance issued to persons at higher socio-economic levels than nonmedical and paramedical business. However, medical business also includes policies issued to individuals within nonmedical or paramedical amount limits who were not acceptable on these bases because of medical histories. Similarly, paramedical policies include persons not acceptable on a nonmedical basis. In addition, there are considerable variations in amount limits and proportions of medical, nonmedical, and paramedical policies among contributing companies. In this comparison and throughout this report, the difference in the mix of companies from that in some previous studies may account for some of the differences in 1983-88 and 1987-88 mortality ratios.

Note also that some of the more recent nonmedical issues are likely based on applications with limited medical history questions (that is, simplified underwriting). In addition, nonmedical issues over age 50 often arise from business issued under pension trust and salary allotment plans. So-called

policyholder's nonmedical, issued on the basis of a previous medical examination within 6 or 12 months, is also included in nonmedical issues for some companies.

1. 1987-88 EXPERIENCE (MALES AND FEMALES COMBINED)

The experience between 1987 and 1988 anniversaries during the first 15 policy years presented in Tables 1-6 includes exposures of \$687 billion and actual deaths of \$1,041 million. The corresponding amounts in the 1986-87 experience were \$672 billion and \$980 million, respectively. As previously mentioned, the same 19 companies contributed data for both 1986-87 and 1987-88.

The experience for the first 15 policy years compared by issue age group is shown in Table 1 and that by policy year is shown in Table 2. Separate data for medical, paramedical and nonmedical are shown by issue age group in Table 3 and by policy year in Table 4. Separate data for males and females (Tables 7-15) and for smokers and nonsmokers (Tables 16-21) are shown later in this report.

TABLE 1
1987-88 EXPERIENCE BY ISSUE AGE
MALE AND FEMALE LIVES COMBINED; MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED
ISSUES OF 1973-87 STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
EXPECTED DEATHS BASED ON 1965-70 AND 1975-80 BASIC TABLES
(EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Exposure	1975-80		Mortality Ratio	
		Actual Deaths	Expected Deaths	1975-80 Basic Tables	1965-70 Basic Tables
0-9	\$ 33,300	\$ 9,807	\$ 12,412	79.0%	40.3%
10-14	10,394	6,535	6,573	99.4	99.0
15-19	19,823	14,929	16,614	89.9	88.9
20-24	50,394	34,073	33,275	102.4	87.7
25-29	101,505	59,316	71,741	82.7	69.9
30-34	130,896	97,851	120,057	81.5	63.0
35-39	124,393	127,868	162,732	78.6	60.9
40-44	87,973	137,545	170,836	80.5	59.0
45-49	54,798	136,659	168,687	81.0	60.6
50-54	34,823	146,573	148,112	99.0	66.5
55-59	22,416	116,904	140,643	83.1	62.2
60-64	11,210	89,684	93,855	95.6	64.7
65-69	3,923	44,103	51,878	85.0	64.5
70 and over...	1,189	19,093	18,584	102.7	75.4
Total	\$687,038	\$1,040,940	\$1,215,999	85.6%	63.6%

TABLE 2

1987-88 EXPERIENCE BY POLICY YEAR
 MALE AND FEMALE LIVES COMBINED; MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED
 ISSUES OF 1973-87 STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1965-70 AND 1975-80 BASIC TABLES
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Policy Year	Exposure	1975-80		Mortality Ratio	
		Actual Deaths	Expected Deaths	1975-80 Basic Tables	1965-70 Basic Tables
1	\$146,863	\$ 96,425	\$ 132,614	72.7%	52.1%
2	118,864	106,354	135,644	78.4	56.5
3	87,997	106,462	131,602	80.9	59.0
4	72,304	124,424	130,448	95.4	70.1
5	67,568	116,834	139,780	83.6	63.9
6	45,337	88,735	98,905	89.7	67.3
7	31,737	69,485	72,156	96.3	71.8
8	23,106	53,665	57,947	92.6	69.1
9	18,851	49,890	50,356	99.1	74.2
10	15,969	39,639	45,692	86.8	65.2
11	14,938	37,490	46,899	79.9	61.4
12	12,830	40,078	45,758	87.6	67.4
13	11,074	36,630	42,935	85.3	65.5
14	10,312	36,531	42,994	85.0	65.2
15	9,286	38,299	42,271	90.6	69.5
Total	\$687,038	\$1,040,940	\$1,215,999	85.6%	63.6%

TABLE 3

MEDICAL, PARAMEDICAL, NONMEDICAL 1987-88 EXPERIENCE BY ISSUE AGE
 MALE AND FEMALE LIVES COMBINED
 ISSUES OF 1973-87 STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Medical		Paramedical		Nonmedical	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
0-9	\$ 166	32.6%	\$ 55	28.4%	\$ 9,327	80.8%
10-14	887	211.9	120	51.4	5,478	94.2
15-19	492	66.9	611	98.7	13,599	91.4
20-24	1,718	92.9	2,340	99.9	28,750	102.7
25-29	8,829	127.1	7,980	77.8	39,999	77.3
30-34	15,438	70.3	27,824	89.3	50,311	80.5
35-39	34,701	76.4	44,962	75.7	41,994	81.3
40-44	46,174	73.0	56,287	81.6	29,909	95.8
45-49	64,376	85.7	48,588	73.7	16,757	85.0
50-54	76,356	95.0	53,435	103.0	9,601	101.8
55-59	59,957	74.8	42,933	93.8	9,234	109.8
60-64	53,794	93.8	28,424	101.1	3,687	88.2
65-69	28,778	80.4	12,738	103.4	1,430	79.1
70 and over...	12,167	89.2	5,685	57.7	866	112.8
Total	\$403,833	83.5%	\$331,983	87.2%	\$260,943	86.5%

TABLE 4

MEDICAL, PARAMEDICAL, NONMEDICAL 1987-88 EXPERIENCE BY POLICY YEAR
 MALE AND FEMALE LIVES COMBINED
 ISSUES OF 1973-87 STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (ACTUAL DEATHS IN 1,000 UNITS)

Policy Year	Medical		Paramedical		Nonmedical	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
1	\$ 25,199	72.4%	\$ 34,283	76.1%	\$ 32,179	71.3%
2	27,188	73.8	34,325	74.1	33,737	80.9
3	21,746	61.1	37,513	84.8	30,206	82.3
4	38,958	102.9	41,045	95.0	35,376	96.6
5	39,055	79.4	42,077	87.2	34,002	86.6
6	36,046	93.9	28,770	83.9	23,847	92.0
7	30,215	97.6	24,990	96.9	14,281	93.9
8	25,884	90.5	19,806	95.7	7,900	92.1
9	25,767	99.8	16,362	99.7	7,687	95.1
10	19,899	81.9	12,733	94.6	7,007	88.4
11	18,417	69.1	12,086	93.8	6,912	94.0
12	22,510	81.1	10,627	97.1	6,941	98.7
13	22,390	82.3	7,889	90.2	6,352	91.3
14	23,751	81.6	5,987	93.3	6,792	91.0
15	26,808	88.3	3,489	84.1	7,725	99.7
Total	\$403,833	83.5%	\$331,983	87.2%	\$260,943	86.5%

The mortality ratio for medical, paramedical and nonmedical combined based on the 1975-80 Basic Tables is 85.6 percent. The mortality ratios for the subdivided experience are 83.5 percent for medical, 87.2 percent for paramedical and 86.5 percent for nonmedical. These aggregate ratios do not present an accurate comparison of these three sets of data because of the different age distributions.

By Issue Age (Tables 1 and 3)

The pattern of mortality ratios by issue age shows relatively little improvement in mortality from the 1975-80 experience (that is, the experience underlying the 1975-80 Basic Tables) at issue ages under 25 and at issue ages 60 and over. However, there has been substantial improvement at issue ages 25-49.

The bulk of the exposures are nonmedical through issue age 29, and the nonmedical experience is generally more favorable than expected at these ages—presumably because much of the medical and paramedical issues were

within nonmedical amount limits but required examinations because of medical history. The data for issue ages 30–39 include a substantial proportion of medical, paramedical and nonmedical, and not unexpectedly the mortality ratios are lowest for medical, almost as low for paramedical, but higher for nonmedical, particularly at issue ages 35–39.

At issue ages 40–59, the bulk of the experience is medical and paramedical. The medical experience has relatively low mortality ratios, and the mortality ratios for paramedical increase with age. The amount of nonmedical data decreases with age and the mortality ratios increase with age.

At issue ages 60 and over, the medical experience continues to show relatively low mortality ratios, and the paramedical mortality experience produces high mortality ratios. The nonmedical data are very limited.

By Policy Year (Tables 2 and 4)

The mortality ratios by policy year for medical, paramedical and nonmedical separately are generally lowest in the first six policy years and highest in policy years 7–12. This pattern may reflect lapsation and antiselection due to replacement of policies issued just prior to the introduction of interest-sensitive products in the early 1980s. Note that the paramedical experience is less mature (that is, there were relatively few paramedical issues before the mid-1970s), and therefore the amount of exposure is still relatively small at the longer durations.

Combined totals have been omitted from Tables 2 and 4, because they would be exactly the same as the corresponding male-female totals in Tables 1 and 3. This is because about 4 percent of the 1987–88 actual deaths (\$44 + million) have not been identified as either medical, paramedical nor nonmedical issues. Separate combined ratios were not calculated for the 96 percent group of identified business.

By Issue Age and Policy Year (Tables 5 and 6)

The 1987–88 experience is subdivided, separately for medical, paramedical and nonmedical, in Table 5 into six issue age groups, each further subdivided into four policy-year groups. These subdivisions provide an opportunity to examine the separate medical, paramedical and nonmedical data in more detail than that provided by issue age for all policy years combined (Table 3) and by policy year for all issue ages combined (Table 4).

TABLE 5
 MEDICAL, PARAMEDICAL, NONMEDICAL 1987-88 EXPERIENCE BY ISSUE AGE AND POLICY YEAR
 MALE AND FEMALE LIVES COMBINED
 ISSUES OF 1973-87 STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Policy Years 1-2		Policy Years 3-5		Policy Years 6-10		Policy Years 11-15		Policy Years 1-15	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Medical										
0-19	\$ 20	9.9%	\$ 150	51.0%	\$ 765	135.3%	\$ 610	101.2%	\$ 1,545	92.9%
20-29	707	76.7	2,043	154.5	4,396	180.4	3,400	82.6	10,546	119.9
30-39	3,482	42.3	11,973	78.4	20,196	92.7	14,489	65.5	50,139	74.4
40-49	15,602	75.3	32,478	92.0	26,793	69.0	35,677	82.0	110,549	79.9
50-59	16,400	70.6	27,204	72.9	53,213	104.3	39,496	80.8	136,314	84.9
60 and over	16,177	88.1	25,913	78.2	32,447	96.9	20,203	92.5	94,739	88.7
All Ages.	\$52,387	73.1%	\$ 99,760	81.3%	\$137,810	93.1%	\$113,876	80.7%	\$403,833	83.5%
Paramedical										
0-19	\$ 379	197.4%	\$ 0	0.0%	\$ 261	55.4%	\$ 147	66.7%	\$ 786	75.2%
20-29	854	30.7	1,813	74.3	5,004	112.2	2,649	90.8	10,320	81.9
30-39	14,557	69.5	23,579	89.4	24,436	78.3	10,213	84.7	72,786	80.4
40-49	22,876	65.4	35,264	72.0	31,626	88.4	15,110	99.4	104,876	77.7
50-59	19,820	88.5	37,948	104.1	28,857	103.0	9,743	90.6	96,368	98.7
60 and over	10,122	100.4	22,032	103.5	12,476	116.6	2,217	111.0	46,847	106.3
All Ages.	\$68,608	75.1%	\$120,636	88.9%	\$102,661	92.8%	\$ 40,078	92.9%	\$331,983	87.2%

TABLE 5—Continued

Ages at Issue	Policy Years 1-2		Policy Years 3-5		Policy Years 6-10		Policy Years 11-15		Policy Years 1-15	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Nonmedical										
0-19	\$ 5,771	69.9%	\$ 6,595	83.3%	\$ 8,583	98.3%	\$ 7,456	101.8%	\$ 28,405	88.1%
20-29	18,483	73.2	20,956	90.3	17,071	96.9	12,238	89.3	68,749	86.2
30-39	25,375	76.0	37,257	81.4	19,692	82.3	9,980	90.0	92,305	80.9
40-49	10,155	74.0	22,287	94.7	10,669	102.7	3,554	108.1	46,666	91.6
50-59	4,039	95.9	9,805	111.6	3,980	102.2	1,010	107.2	18,835	105.6
60 and over	2,091	104.1	2,684	79.4	726	62.6	483	231.0	5,984	88.6
All Ages	\$ 65,915	75.9%	\$ 99,584	88.5%	\$ 60,721	92.4%	\$ 34,722	95.0%	\$ 260,943	86.5%
All Table 1 Issues										
0-19	\$ 6,602	73.4%	\$ 6,849	78.9%	\$ 9,609	98.3%	\$ 8,212	100.8%	\$ 31,272	87.8%
20-29	21,343	69.1	27,286	94.7	26,471	107.8	18,288	88.2	93,388	88.9
30-39	47,309	71.1	79,253	84.4	64,475	83.6	34,682	76.6	225,719	79.8
40-49	52,602	70.4	97,821	83.2	69,088	81.1	54,693	88.2	274,204	80.8
50-59	44,162	81.5	82,942	91.3	86,123	103.7	50,250	82.9	263,478	91.2
60 and over	30,761	93.6	53,568	86.4	45,649	100.6	22,903	95.3	152,880	93.0
All Ages	\$202,779	75.6%	\$347,720	86.5%	\$301,415	92.7%	\$189,027	85.6%	\$1,040,940	85.6%

Table 6 shows the ratios of mortality ratios: paramedical to medical, nonmedical to paramedical, and nonmedical to medical. Each of these would be expected to exceed 100 percent because in each case the ratio is that of the less exacting underwriting requirement to the more exacting. This is generally true except for the age groups for which the comparisons are distorted by small amounts of data (for example, medical and paramedical experience at ages under 30, durations 1-5).

II. 1983-88 SELECT EXPERIENCE (MALES AND FEMALES SEPARATELY)

The experience between 1983 and 1988 anniversaries during the first 15 policy years is presented in Tables 7-15 in the same format as that presented for the 1987-88 experience in Tables 1-6 except that data for males and females are presented separately.

This experience includes exposures of \$3.4 trillion, and actual deaths of \$5.1 billion. Corresponding 1982-87 figures were \$3.3 trillion and \$4.9 billion, respectively.

The mortality ratio for 1983-88 medical, paramedical and nonmedical experience combined (Table 7) is 88.8 percent (compared to 90.1 percent for the 1986-87 experience). The mortality ratio for males decreased from 89.3 percent to 88.2 percent and that for females decreased from 95.0 percent to 91.9 percent. These mortality ratios are based on expected deaths derived from the separate male and female 1975-80 Basic Tables.

By Issue Age (Tables 7 and 9)

The mortality ratios by issue age (Tables 7 and 9) show a pattern for both males and females that is somewhat similar to the 1987-88 experience (Tables 1 and 3): relatively high ratios at issue ages 15-24 and relatively low ratios at ages 25-39. However, the mortality ratios for females are much more than 100 percent at issue ages 55 and over, which may reflect a possibly higher degree of mortality-related antiselection at issue than may be the case for males. These patterns are consistent throughout the experience when subdivided into medical, paramedical and nonmedical.

By Policy Year (Tables 8 and 10)

The increase in mortality ratios by policy year, followed by a decrease, again reflect the possible lapsation antiselection produced by the heavy replacement activities in recent years. However, this replacement has shown

TABLE 6
SUMMARY OF MEDICAL, PARAMEDICAL, NONMEDICAL 1987-88 MORTALITY RATIOS
MALE AND FEMALE LIVES COMBINED
ISSUES OF 1973-87 STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES

Ages at Issue	Policy Years 1-2			Policy Years 3-5			Policy Years 6-10			Policy Years 11-15			Policy Years 1-15		
	Mortality Ratio														
	Med	Para	Non	Med	Para	Non	Med	Para	Non	Med	Para	Non	Med	Para	Non
0-19	9.9%	197.4%	69.9%	51.0%	0.0%	83.3%	135.3%	55.4%	98.3%	101.2%	66.7%	101.8%	92.9%	75.2%	88.1%
20-29	76.7	30.7	73.2	154.5	74.3	90.3	180.4	112.2	96.9	82.6	90.8	89.3	119.9	81.9	86.2
30-39	42.3	69.5	76.0	78.4	89.4	81.4	92.7	78.3	82.3	65.5	84.7	90.0	74.4	80.4	80.9
40-49	75.3	65.4	74.0	92.0	72.0	94.7	69.0	88.4	102.7	82.0	99.4	108.1	79.9	77.7	91.6
50-59	70.6	88.5	95.9	72.9	104.1	111.6	104.3	103.0	102.2	80.8	90.6	107.2	84.9	98.7	105.6
60 and over	88.1	100.4	104.1	78.2	103.5	79.4	96.9	116.6	62.6	92.5	111.0	231.0	88.7	106.3	88.6
All Agcs.	73.1%	75.1%	75.9%	81.3%	88.9%	88.5%	93.1%	92.8%	92.4%	80.7%	92.9%	95.0%	83.5%	87.2%	86.5%
	Ratio of Mortality Ratios														
	Para to Med	Non to Para	Non to Med	Para to Med	Non to Para	Non to Med	Para to Med	Non to Para	Non to Med	Para to Med	Non to Para	Non to Med	Para to Med	Non to Para	Non to Med
0-19	19.86	0.35	7.04	0.00	0.00	1.63	0.41	1.78	0.73	0.66	1.53	1.01	0.81	1.17	0.95
20-29	0.40	2.39	0.95	0.48	1.22	0.58	0.62	0.86	0.54	1.10	0.98	1.08	0.68	1.05	0.72
30-39	1.65	1.09	1.80	1.14	0.91	1.04	0.84	1.05	0.89	1.29	1.06	1.37	1.08	1.01	1.09
40-49	0.87	1.13	0.98	0.78	1.32	1.03	1.28	1.16	1.49	1.21	1.09	1.32	0.97	1.18	1.15
50-59	1.25	1.08	1.36	1.43	1.07	1.53	0.99	0.99	0.98	1.12	1.18	1.33	1.16	1.07	1.24
60 and over	1.14	1.04	1.18	1.32	0.77	1.02	1.20	0.54	0.65	1.20	2.08	2.50	1.20	0.83	1.00
All Agcs.	1.03	1.01	1.04	1.09	0.99	1.09	1.00	1.00	0.99	1.15	1.02	1.18	1.04	0.99	1.04

Key: Med = medical
 Para = paramedical
 Non = nonmedical.

signs of abating, due in large measure to the recent trends of declining interest rates. If these trends continue, they may start to affect the 1988-89 and later experience more favorably.

The same mortality pattern by policy year has become significantly more pronounced for females than for males, although the relatively favorable mortality in policy years 1-2 is also apparent for females. The highest male paramedical mortality is for policy years 7-12, and the highest male nonmedical mortality is for policy years 6 and over.

Comparison of Medical, Paramedical and Nonmedical Experience

In the 1983-88 experience, the mortality ratios (using expected deaths based on the 1975-80 Basic Tables) of medical, paramedical and nonmedical separately, subdivided by males and females as compared to the combined mortality ratios in the 1987-88 experience, are summarized as follows:

	1983-88			1987-88 Combined
	Males	Females	Combined	
Medical	85.0%	101.1%	86.6%	83.5%
Paramedical	90.3	96.2	91.2	87.2
Nonmedical	93.1	82.9	90.5	86.5
All	88.2%	91.9%	88.8%	85.6%

These mortality ratios suggest the following observations:

1. The more favorable medical mortality ratio for the 1987-88 experience (83.5 percent) relative to the 1983-88 experience (86.6 percent) may be due to the increasingly greater proportion of medicals on large policies for which underwriting investigations are more extensive.
2. The more favorable 1983-88 nonmedical ratio for females (82.9 percent) relative to paramedical (96.2 percent) and medical (101.1 percent) suggests that examinations, because they largely identify cardiovascular risk profile characteristics (that is, build, blood pressure, pulse), may be of relatively less value in underwriting females at the older ages, where most of the relatively unfavorable paramedical and medical experience occurs.
3. As previously mentioned, the higher 1983-88 mortality ratio for females (91.9 percent) relative to males (88.2 percent) indicates less improvement

TABLE 7
MALE AND FEMALE 1983-88 EXPERIENCE BY ISSUE AGE
MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED
ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
(EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Male			Female			Combined		
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio
0-9	\$ 90,661	\$ 31,616	77.6%	\$ 73,871	\$ 14,335	67.5%	\$ 164,532	\$ 45,951	74.1%
10-14	30,830	23,071	90.6	22,003	7,360	89.9	52,834	30,431	90.4
15-19	70,762	72,839	93.0	41,343	16,735	94.2	112,105	89,574	93.3
20-24	194,431	158,631	101.1	95,609	34,994	88.9	290,042	193,625	98.6
25-29	382,784	264,597	85.4	154,021	55,942	77.1	536,806	320,539	83.8
30-34	496,043	407,706	83.0	164,105	77,773	72.4	660,151	485,479	81.1
35-39	470,103	548,058	84.3	126,646	91,654	79.1	596,754	639,711	83.5
40-44	331,378	590,541	86.3	75,235	95,228	85.8	406,616	685,769	86.2
45-49	210,670	614,649	87.6	45,069	92,018	94.3	255,744	706,667	88.4
50-54	136,724	592,533	96.1	29,202	86,643	101.7	165,928	679,176	96.7
55-59	82,911	484,945	87.4	18,957	78,038	108.1	101,871	562,982	89.7
60-64	36,745	309,892	93.5	10,472	63,596	117.7	47,219	373,488	96.9
65-69	11,215	139,229	80.9	4,296	39,133	135.2	15,512	178,362	88.7
70 and over	2,645	52,630	103.5	1,541	25,274	161.7	4,186	77,904	117.1
Total	\$2,547,904	\$4,290,937	88.2%	\$862,371	\$778,722	91.9%	\$3,410,299	\$5,069,659	88.8%

TABLE 8
 MALE AND FEMALE 1983-88 EXPERIENCE BY POLICY YEAR
 MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED
 ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Policy Year	Male			Female			Combined		
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio
1	\$554,028	\$439,910	79.4%	\$206,624	\$81,915	74.5%	\$760,672	\$521,825	78.6%
2	456,239	512,434	87.0	161,467	89,252	82.8	617,710	601,686	86.3
3	348,803	502,367	87.1	119,788	96,157	97.6	468,591	598,524	88.6
4	262,953	468,476	93.5	89,487	82,970	94.3	352,440	551,446	93.6
5	195,599	371,804	89.4	65,298	73,554	99.1	260,897	445,357	90.9
6	142,874	298,803	92.9	47,075	55,562	93.7	189,949	354,365	93.0
7	110,732	251,911	94.7	36,192	45,528	92.4	146,924	297,439	94.3
8	90,030	219,270	93.8	28,839	37,756	87.9	118,869	257,027	92.8
9	75,803	195,643	91.8	23,909	40,667	106.0	99,712	236,310	93.9
10	67,366	182,072	88.5	20,491	37,025	104.3	87,857	219,097	90.8
11	59,341	171,069	84.9	17,278	32,183	96.0	76,618	203,252	86.5
12	52,982	174,692	88.2	14,532	27,241	89.3	67,514	201,933	88.3
13	47,582	164,146	84.1	12,221	27,558	98.7	59,803	191,704	86.0
14	43,618	167,165	85.5	10,373	25,868	97.6	53,991	193,034	87.0
15	39,955	171,173	86.6	8,794	25,486	102.4	48,749	196,659	88.4
Total	\$2,547,904	\$4,290,937	88.2%	\$862,371	\$778,722	91.9%	\$3,410,299	\$5,069,659	88.8%

TABLE 9
MALE AND FEMALE 1983-88 EXPERIENCE BY ISSUE AGE
MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY
ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
(ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Medical		Paramedical		Nonmedical	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Male						
0-9	\$ 1,477	64.1%	\$ 440	95.4%	\$ 29,390	77.8%
10-14	1,832	80.5	542	70.6	20,647	92.5
15-19	3,803	87.4	2,881	96.7	65,676	93.3
20-24	14,208	103.5	13,392	105.1	129,459	100.4
25-29	45,011	91.1	39,942	77.6	174,911	85.5
30-34	111,503	79.0	112,393	81.2	178,352	87.3
35-39	219,400	82.7	174,425	77.1	144,048	96.5
40-44	291,405	81.4	202,264	86.9	87,255	105.3
45-49	351,742	85.0	202,804	91.1	49,405	92.2
50-54	375,412	90.9	175,082	103.4	31,324	125.6
55-59	310,882	81.3	143,198	100.8	24,354	114.3
60-64	226,278	91.3	70,989	106.7	7,294	65.8
65-69	106,887	77.9	27,238	99.4	3,585	74.6
70 and over	41,680	100.1	8,302	120.1	2,120	130.2
Total	\$2,101,520	85.0%	\$1,173,892	90.3%	\$947,820	93.1%
Female						
0-9	\$ 322	36.0%	\$ 30	14.6%	\$ 13,932	69.6%
10-14	760	142.3	50	24.4	6,550	88.6
15-19	327	52.8	495	103.2	15,913	96.1
20-24	1,714	134.0	1,289	84.8	31,703	87.7
25-29	5,154	123.0	5,426	89.1	44,995	73.4
30-34	11,025	89.5	13,365	67.2	52,180	71.0
35-39	19,305	86.3	25,836	76.0	45,013	78.4
40-44	30,227	94.4	32,074	79.5	32,166	88.6
45-49	37,314	92.9	36,040	92.2	17,207	105.2
50-54	40,015	92.8	34,788	104.7	10,404	140.1
55-59	36,013	92.0	32,194	124.0	8,721	147.7
60-64	39,220	114.1	21,469	125.4	2,213	123.4
65-69	27,357	131.9	10,373	140.6	783	170.7
70 and over	17,741	149.2	6,594	209.2	826	210.4
Total	\$266,494	101.1%	\$220,022	96.2%	\$282,607	82.9%
Male/Female Combined						
0-9	\$ 1,799	56.2%	\$ 470	70.4%	\$ 43,322	74.9%
10-14	2,592	92.2	592	60.9	27,197	91.6
15-19	4,130	83.1	3,376	97.6	81,589	93.8
20-24	15,922	106.1	14,680	102.9	161,162	97.6
25-29	50,165	93.6	45,368	78.8	219,906	82.7
30-34	122,528	79.9	125,758	79.4	230,532	83.0
35-39	238,706	83.0	200,261	77.0	189,061	91.5
40-44	321,632	82.5	234,338	85.8	119,421	100.2
45-49	389,056	85.7	238,844	91.3	66,612	95.3
50-54	415,427	91.1	209,870	103.6	41,728	128.9
55-59	346,895	82.3	175,392	104.4	33,076	121.6
60-64	265,497	94.1	92,458	110.6	9,508	73.8
65-69	134,243	85.0	37,611	108.1	4,368	83.0
70 and over	59,422	111.0	14,896	148.0	2,946	145.8
Total	\$2,368,014	86.6%	\$1,393,914	91.2%	\$1,230,427	90.5%

TABLE 10

MALE AND FEMALE 1983-88 EXPERIENCE BY POLICY YEAR
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY
 ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (ACTUAL DEATHS IN \$1,000 UNITS)

Policy Year	Medical		Paramedical		Nonmedical	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Male						
1	\$ 138,453	75.4%	\$ 142,150	81.3%	\$149,581	81.9%
2	175,129	79.4	169,822	90.6	149,322	91.8
3	191,472	83.5	157,355	85.6	130,277	91.9
4	202,092	95.3	147,777	90.6	109,121	96.9
5	169,910	88.7	123,247	89.6	76,668	91.9
6	147,227	91.6	93,773	90.2	56,200	100.0
7	131,854	92.1	80,615	98.1	38,826	96.9
8	119,526	88.8	67,507	101.2	31,905	99.1
9	113,817	88.6	52,710	96.6	28,739	96.3
10	111,340	85.1	42,784	94.2	27,920	95.5
11	105,138	77.4	35,987	97.8	29,710	104.1
12	117,836	83.5	27,156	98.5	29,679	103.0
13	116,805	79.8	16,920	88.7	29,316	100.8
14	126,846	82.9	10,814	93.8	29,380	97.3
15	134,076	83.6	5,277	88.6	31,173	101.1
Total	\$2,101,520	85.0%	\$1,173,892	90.3%	\$947,820	93.1%
Female						
1	\$ 14,277	79.4%	\$ 22,947	80.7%	\$ 43,349	72.0%
2	19,715	94.4	25,035	84.2	41,820	78.6
3	26,675	124.2	28,789	101.8	36,724	81.9
4	22,897	105.8	25,724	96.2	33,300	88.7
5	21,200	102.4	27,393	113.1	24,745	85.8
6	16,442	88.0	21,440	106.7	17,566	85.8
7	15,688	91.6	17,339	101.5	12,500	83.4
8	14,084	85.9	13,286	93.0	10,387	85.1
9	18,661	119.8	11,229	96.8	10,741	96.2
10	18,374	119.4	9,150	96.8	9,500	89.4
11	15,917	101.7	7,079	95.9	9,187	87.9
12	13,566	88.0	4,770	90.8	8,792	89.6
13	15,983	104.3	3,210	96.3	8,365	90.4
14	15,730	100.3	1,921	100.7	8,164	91.8
15	17,286	110.7	709	79.1	7,465	89.4
Total	\$266,494	101.1%	\$220,022	96.2%	\$282,607	82.9%
Male/Female Combined						
1	\$ 152,730	75.8%	\$ 165,097	81.2%	\$ 192,931	79.5%
2	194,845	80.6	194,857	89.8	191,143	88.5
3	218,147	87.0	186,143	87.7	167,001	89.5
4	224,989	96.3	173,501	91.4	142,421	94.9
5	191,111	90.0	150,640	93.2	101,413	90.3
6	163,669	91.2	115,214	92.8	73,766	96.2
7	147,542	92.0	97,954	98.7	51,327	93.3
8	133,610	88.5	80,793	99.8	42,292	95.2
9	132,477	92.0	63,939	96.6	39,480	96.2
10	129,714	88.7	51,934	94.6	37,421	93.9
11	121,054	80.0	43,066	97.5	38,897	99.7
12	131,403	83.9	31,926	97.3	38,471	99.6
13	132,788	82.1	20,129	89.9	37,682	98.3
14	142,575	84.5	12,735	94.8	37,544	96.0
15	151,362	86.0	5,986	87.3	38,638	98.6
Total	\$2,368,014	86.6%	\$1,393,914	91.2%	\$1,230,427	90.5%

for females since the 1975–80 period on which the 1975–80 Basic Tables were based. However, this gap has narrowed somewhat, in contrast to 1982–87.

By Issue Age and Policy Year (Tables 11–15)

Tables 11–14 subdivide the 1983–88 experience into the same six issue age groups and the same four policy-year groups as in Table 5. This provides an opportunity to examine the experience by issue age-policy year cells.

Table 15 shows the ratios of mortality ratios for the 1983–88 experience in the same way as Table 6 for the 1987–88 experience, except that Table 15 shows these ratios of mortality ratios separately for male and female. For males, as expected, the ratios of the less exacting underwriting requirement to the more exacting generally exceed 100 percent as in Table 6, except where the comparisons are distorted by small amounts of data. For females, the results are the opposite of what would be expected; the ratios of mortality ratios are generally less than 100 percent except for issue ages 50 and over (however, the amount of nonmedical data at issue ages 50 and over is quite small), and for issue ages under 20, where the amount of medical and paramedical data is also quite small.

III. SMOKER-NONSMOKER EXPERIENCE

Tables 16–21 present smoker-nonsmoker experience for issues of 1980 through 1987, submitted by 16 of the 19 overall contributing companies. Tables 16 and 17 show the experience between 1987 and 1988 anniversaries separately for medical, paramedical and nonmedical, but for males and females combined, by issue age and policy year, respectively. Tables 18 and 19 show the experience between 1983 and 1988 anniversaries but are otherwise identical to Tables 16 and 17. Tables 20 and 21 show the 1983–88 experience subdivided by sex but not by type of underwriting.

For 1987–88 experience combined, the mortality ratio for nonsmokers is 71.1 percent, compared to 142.0 percent for smokers. For medical experience, the respective ratios are 72.8 percent and 146.5 percent; for paramedical, 68.6 percent and 146.0 percent; and for nonmedical, 72.4 percent and 133.3 percent.

TABLE 11

MALE AND FEMALE MEDICAL 1983-88 EXPERIENCE BY ISSUE AGE AND POLICY YEAR
 ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Policy Years 1-2		Policy Years 3-5		Policy Years 6-10		Policy Years 11-15		Policy Years 1-15	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Male										
0-19	\$ 637	69.6%	\$ 1,055	64.4%	\$ 2,718	85.0%	\$ 2,702	84.9%	\$ 7,112	79.6%
20-29	6,981	93.3	8,724	84.5	19,730	107.9	23,785	87.9	59,220	93.8
30-39	45,145	73.3	91,784	94.0	92,698	80.7	101,276	76.7	330,904	81.5
40-49	85,584	68.2	169,282	87.2	172,506	87.4	215,775	84.7	643,147	83.3
50-59	101,901	79.7	179,118	92.8	219,307	92.1	185,968	78.8	686,294	86.3
60 and over	73,334	90.6	113,511	83.3	116,805	92.7	71,194	85.2	374,845	87.8
All Ages	\$313,582	77.6%	\$563,475	89.0%	\$623,763	89.4%	\$600,700	81.5%	\$2,101,520	85.0%
Female										
0-19	\$ 23	7.0%	\$ 512	109.3%	\$ 534	75.4%	\$ 341	62.6%	\$ 1,410	68.8%
20-29	813	109.2	2,164	184.6	2,458	140.7	1,433	79.4	6,867	125.6
30-39	2,662	52.9	8,987	107.5	10,888	94.5	7,793	79.7	30,330	87.4
40-49	9,254	96.2	16,770	106.9	16,821	77.7	24,695	98.0	67,541	93.6
50-59	9,179	88.2	15,619	84.7	24,282	87.4	26,949	105.2	76,028	92.4
60 and over	12,062	94.6	26,720	135.6	28,265	142.8	17,272	117.2	84,318	125.9
All Ages	\$33,992	87.4%	\$70,772	110.9%	\$83,248	100.1%	\$78,482	101.0%	\$266,494	101.1%
Male/Female Combined										
0-19	\$ 660	53.2%	\$ 1,567	74.4%	\$ 3,252	83.2%	\$ 3,042	81.7%	\$ 8,521	77.6%
20-29	7,794	94.8	10,889	94.7	22,187	110.8	25,217	87.3	66,087	96.3
30-39	47,807	71.8	100,770	95.1	103,587	81.9	109,070	76.9	361,234	81.9
40-49	94,838	70.2	186,052	88.7	189,327	86.5	240,470	85.9	710,688	84.2
50-59	111,080	80.3	194,737	92.1	243,588	91.6	212,917	81.4	762,322	86.9
60 and over	85,396	91.2	140,231	89.9	145,070	99.5	88,465	90.0	459,163	93.0
All Ages	\$347,574	78.4%	\$634,246	91.0%	\$707,011	90.5%	\$679,182	83.4	\$2,368,014	86.6%

TABLE 12
 MALE AND FEMALE PARAMEDICAL 1983-88 EXPERIENCE BY ISSUE AGE AND POLICY YEAR
 ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Policy Years 1-2		Policy Years 3-5		Policy Years 6-10		Policy Years 11-15		Policy Years 1-15	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Male										
0-19.....	\$ 910	156.9%	\$ 1,094	97.7%	\$ 1,444	72.3%	\$ 416	81.0%	\$ 3,863	91.8%
20-29.....	9,524	66.8	15,014	82.8	21,793	91.2	7,002	88.1	53,333	83.0
30-39.....	69,217	74.6	98,809	77.0	92,976	82.2	25,815	85.7	286,818	78.7
40-49.....	113,902	86.6	141,127	81.8	112,908	97.9	37,131	103.9	405,068	89.0
50-59.....	85,504	92.5	124,254	106.2	86,426	109.7	22,096	95.4	318,281	102.2
60 and over.....	32,914	107.3	48,081	102.1	21,841	111.2	3,693	108.4	106,529	105.7
All Ages.....	\$311,971	86.1%	\$428,379	88.4%	\$337,389	95.6%	\$96,153	95.3%	\$1,173,892	90.3%
Female										
0-19.....	\$ 0	0.0%	\$ 435	174.5%	\$ 105	28.7%	\$ 35	43.9%	\$ 575	64.6%
20-29.....	1,890	111.9	1,373	57.5	2,919	103.6	533	74.2	6,715	88.2
30-39.....	9,589	73.9	12,882	70.7	14,063	74.8	2,668	68.7	39,202	72.7
40-49.....	11,922	56.2	24,916	93.0	23,932	99.0	7,344	101.0	68,114	85.8
50-59.....	14,395	102.7	25,159	125.1	21,882	111.5	5,545	101.7	66,982	113.1
60 and over.....	10,187	125.9	17,141	149.3	9,545	142.1	1,562	114.7	38,435	139.0
All Ages.....	\$47,983	82.5%	\$81,906	103.4%	\$72,445	99.9%	\$17,689	94.2%	\$220,022	96.2%
Male/Female Combined										
0-19.....	\$ 910	117.3%	\$ 1,529	111.7%	\$ 1,549	65.6%	\$ 451	76.0%	\$ 4,438	87.0%
20-29.....	11,414	71.6	16,387	79.9	24,712	92.5	7,535	86.9	60,048	83.6
30-39.....	78,806	74.5	111,691	76.2	107,039	81.1	28,483	83.7	326,019	77.9
40-49.....	125,824	82.4	166,042	83.3	136,840	98.1	44,476	103.4	473,182	88.5
50-59.....	99,899	93.9	149,414	109.0	108,308	110.1	27,641	96.6	385,262	104.0
60 and over.....	43,101	111.2	65,222	111.4	31,386	119.0	5,255	110.2	144,964	112.8
All Ages.....	\$359,954	85.6%	\$510,284	90.5%	\$409,834	96.3%	\$113,842	95.1%	\$1,393,914	91.2%

TABLE 13

MALE AND FEMALE NONMEDICAL 1983-88 EXPERIENCE BY ISSUE AGE AND POLICY YEAR
 ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Policy Years 1-2		Policy Years 3-5		Policy Years 6-10		Policy Years 11-15		Policy Years 1-15	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Male										
0-19.....	\$ 23,052	74.3%	\$ 27,054	85.3%	\$ 34,428	91.3%	\$ 31,180	103.7%	\$115,713	88.7%
20-29.....	88,948	78.2	84,972	94.5	70,153	101.5	60,298	99.3	304,370	91.2
30-39.....	114,508	88.1	115,090	89.3	51,645	97.1	41,157	98.7	322,400	91.1
40-49.....	48,103	97.9	58,054	98.7	19,341	109.5	11,162	103.5	136,660	100.2
50-59.....	18,682	121.5	25,630	129.3	6,660	89.9	4,706	129.4	55,678	120.4
60 and over.....	5,611	95.1	5,267	61.6	1,364	55.6	756	123.0	12,998	74.2
All Ages.....	\$298,904	86.6%	\$316,066	93.6%	\$183,591	97.9%	\$149,259	101.2%	\$947,820	93.1%
Female										
0-19.....	\$11,273	80.1%	\$ 8,690	78.0%	\$ 9,776	87.9%	\$ 6,656	87.2%	\$ 36,395	82.8%
20-29.....	22,701	72.3	22,466	78.6	18,924	86.7	12,607	80.9	76,698	78.7
30-39.....	28,681	65.1	33,725	75.9	20,452	79.0	14,335	86.9	97,193	74.3
40-49.....	14,941	82.5	18,013	92.6	8,946	104.4	7,473	114.6	49,373	93.8
50-59.....	6,157	131.2	10,380	158.5	2,226	129.9	362	96.2	19,125	143.4
60 and over.....	1,416	127.5	1,494	140.4	371	112.3	541	386.9	3,823	144.5
All Ages.....	\$85,170	75.1%	\$94,769	85.2%	\$60,694	87.4%	\$41,975	89.7%	\$282,607	82.9%
Male/Female Combined										
0-19.....	\$ 34,325	76.1%	\$ 35,744	83.4%	\$ 44,204	90.5%	\$ 37,836	100.4%	\$ 152,108	87.2%
20-29.....	111,649	76.9	107,438	90.6	89,076	97.9	72,904	95.6	381,068	88.4
30-39.....	143,189	82.3	148,814	85.9	72,097	91.2	55,492	95.3	419,593	86.6
40-49.....	63,044	93.7	76,067	97.2	28,287	107.9	18,635	107.6	186,033	98.4
50-59.....	24,839	123.8	36,010	136.5	8,886	97.4	5,068	126.3	74,803	125.5
60 and over.....	7,027	100.2	6,762	70.3	1,735	62.3	1,297	171.9	16,821	83.4
All Ages.....	\$384,073	83.7%	\$410,835	91.5%	\$244,285	95.1%	\$191,233	98.4%	\$1,230,427	90.5%

TABLE 14

MALE AND FEMALE 1983-88 EXPERIENCE BY ISSUE AGE AND POLICY YEAR
 MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED
 ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Policy Years 1-2		Policy Years 3-5		Policy Years 6-10		Policy Years 11-15		Policy Years 1-15	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Male										
0-19.....	\$ 25,233	76.4%	\$ 29,407	84.5%	\$ 38,590	90.0%	\$ 34,297	101.6%	\$ 127,526	88.3%
20-29.....	108,584	78.3	111,757	92.6	111,782	100.2	91,106	95.0	423,228	90.7
30-39.....	234,590	80.6	313,600	86.4	239,064	84.7	168,511	82.3	955,764	83.8
40-49.....	255,475	81.1	378,353	86.4	305,660	92.3	265,703	87.9	1,205,190	87.0
50-59.....	212,878	87.4	339,071	99.6	312,595	96.3	212,934	80.9	1,077,478	91.9
60 and over.....	115,586	95.1	170,460	86.5	140,010	94.4	75,695	86.4	501,750	90.5
All Ages.....	\$952,344	83.3%	\$1,342,647	89.9%	\$1,147,700	92.5%	\$848,246	85.9%	\$4,290,937	88.2%
Female										
0-19.....	\$ 11,346	76.8%	\$ 9,637	80.7%	\$ 10,415	85.4%	\$ 7,032	85.1%	\$ 38,430	81.4%
20-29.....	25,721	74.2	26,289	80.4	24,300	91.9	14,626	80.7	90,936	81.2
30-39.....	42,173	65.9	56,906	78.2	45,438	80.7	24,909	82.4	169,427	75.9
40-49.....	36,791	71.9	61,104	95.5	49,813	91.5	39,538	101.3	187,246	89.8
50-59.....	30,865	101.8	52,570	113.2	48,390	98.5	32,856	104.4	164,681	104.7
60 and over.....	24,272	107.0	46,175	140.6	38,181	142.2	19,375	119.3	128,003	129.8
All Ages.....	\$171,167	78.6%	\$252,681	96.9%	\$216,538	96.1%	\$138,336	96.5%	\$778,722	91.9%
Male/Female Combined										
0-19.....	\$ 36,579	76.5%	\$ 39,044	83.5%	\$ 49,005	89.0%	\$ 41,329	98.4%	\$ 165,956	86.6%
20-29.....	134,304	77.5	138,046	90.0	136,082	98.6	105,731	92.7	514,164	88.8
30-39.....	276,763	78.0	370,505	85.0	284,502	84.0	193,421	82.3	1,125,191	82.5
40-49.....	292,265	79.8	439,456	87.6	355,473	92.2	305,241	89.5	1,392,436	87.3
50-59.....	243,743	89.0	391,641	101.3	360,984	96.6	245,790	83.4	1,242,158	93.4
60 and over.....	139,858	97.0	216,635	94.2	178,191	101.8	95,070	91.5	629,754	96.4
All Ages.....	\$1,123,512	82.6%	\$1,595,328	90.9%	\$1,364,238	93.1%	\$986,582	87.2%	\$5,069,659	88.8%

TABLE 15
SUMMARY OF MALE AND FEMALE 1983-88 MORTALITY RATIOS
MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY
ISSUES OF 1973-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES

Ages at Issue	Policy Years 1-2			Policy Years 3-5			Policy Years 6-10			Policy Years 11-15			Policy Years 1-15		
	Mortality Ratios														
	Medical	Para-medical	Non-medical	Medical	Para-medical	Non-medical	Medical	Para-medical	Non-medical	Medical	Para-medical	Non-medical	Medical	Para-medical	Non-medical
Male															
0-19	69.6%	156.9%	74.3%	64.4%	97.7%	85.3%	85.0%	72.3%	91.3%	84.9%	81.0%	103.7%	79.6%	91.8%	88.7%
20-29	93.3	66.8	78.2	84.5	82.8	94.5	107.9	91.2	101.5	87.9	88.1	99.3	93.8	83.0	91.2
30-39	73.3	74.6	88.1	94.0	77.0	89.3	80.7	82.2	97.1	76.7	85.7	98.7	81.5	78.7	91.1
40-49	68.2	86.6	97.9	87.2	81.8	98.7	87.4	97.9	109.5	84.7	103.9	103.5	83.3	89.0	100.2
50-59	79.7	92.5	121.5	92.8	106.2	129.3	92.1	109.7	89.9	78.8	95.4	129.4	86.3	102.2	120.4
60 and over	90.6	107.3	95.1	83.3	102.1	61.6	92.7	111.2	55.6	85.2	108.4	123.0	87.8	105.7	74.2
All Ages	77.6%	86.1%	86.6%	89.0%	88.4%	93.6%	89.4%	95.6%	97.9%	81.5%	95.3%	101.2%	85.0%	90.3%	93.1%
Female															
0-19	7.0%	0.0%	80.1%	109.3%	174.5%	78.0%	75.4%	28.7%	87.9%	62.6%	43.9%	87.2%	68.8%	64.6%	82.8%
20-29	109.2	111.9	72.3	184.6	57.5	78.6	140.7	103.6	86.7	79.4	74.2	80.9	125.6	88.2	78.7
30-39	52.9	73.9	65.1	107.5	70.7	75.9	94.5	74.8	79.0	79.7	68.7	86.9	87.4	72.7	74.3
40-49	96.2	56.2	82.5	106.9	93.0	92.6	77.7	99.0	104.4	98.0	101.0	114.6	93.6	85.8	93.8
50-59	88.2	102.7	131.2	84.7	125.1	158.5	87.4	111.5	129.9	105.2	101.7	96.2	92.4	113.1	143.4
60 and over	94.6	125.9	127.5	135.6	149.3	140.4	142.8	142.1	112.3	117.2	114.7	386.9	125.9	139.0	144.5
All Ages	87.4%	82.5%	75.1%	110.9%	103.4%	85.2%	100.1%	99.9%	87.4%	101.0%	94.2%	89.7%	101.1%	96.2%	82.9%
Male/Female Combined															
0-19	53.2%	117.3%	76.1%	74.4%	111.7%	83.4%	83.2%	65.6%	90.5%	81.7%	76.0%	100.4%	77.6%	87.0%	87.2%
20-29	94.8	71.6	76.9	94.7	79.9	90.6	110.8	92.5	97.9	87.3	86.9	95.6	96.3	83.6	88.4
30-39	71.8	74.5	82.3	95.1	76.2	85.9	81.9	81.1	91.2	76.9	83.7	95.3	81.9	77.9	86.6
40-49	70.2	82.4	93.7	88.7	83.3	97.2	86.5	98.1	107.9	85.9	103.4	107.6	84.2	88.5	98.4
50-59	80.3	93.9	123.8	92.1	109.0	136.5	91.6	110.1	97.4	81.4	96.6	126.3	86.9	104.0	125.5
60 and over	91.2	111.2	100.2	89.9	111.4	70.3	99.5	119.0	62.3	90.0	110.2	71.9	93.0	112.8	83.4
All Ages	78.4%	85.6%	83.7%	91.0%	90.5%	91.5%	90.5%	96.3%	95.1%	83.4%	95.1%	98.4%	86.6%	91.2%	90.5%

TABLE 15—Continued

Ages at Issue	Policy Years 1-2			Policy Years 3-5			Policy Years 6-10			Policy Years 11-15			Policy Years 1-15		
	Ratio of Mortality Ratios														
	Para to Med	Non to Para	Non to Med	Para to Med	Non to Para	Non to Med	Para to Med	Non to Para	Non to Med	Para to Med	Non to Para	Non to Med	Para to Med	Non to Para	Non to Med
Male															
0-19.....	2.25	0.47	1.07	1.52	0.87	1.32	0.85	1.26	1.07	0.95	1.28	1.22	1.15	0.97	1.11
20-29.....	0.72	1.17	0.84	0.98	1.14	1.12	0.84	1.11	0.94	1.00	1.13	1.13	0.89	1.10	0.97
30-39.....	1.02	1.18	1.20	0.82	1.16	0.95	1.02	1.18	1.20	1.12	1.15	1.29	0.97	1.16	1.12
40-49.....	1.27	1.13	1.43	0.94	1.21	1.13	1.12	1.12	1.25	1.23	1.00	1.22	1.07	1.13	1.20
50-59.....	1.16	1.31	1.53	1.14	1.22	1.39	1.19	0.82	0.98	1.21	1.36	1.64	1.18	1.18	1.39
60 and over.....	1.18	0.89	1.05	1.23	0.60	0.74	1.20	0.50	0.60	1.27	1.13	1.44	1.20	0.70	0.84
All Ages.....	1.11	1.01	1.12	0.99	1.06	1.05	1.07	1.02	1.10	1.17	1.06	1.24	1.06	1.03	1.10
Female															
0-19.....	0.00	0.00	11.38	1.60	0.45	0.71	0.38	3.06	1.17	0.70	1.98	1.39	0.94	1.28	1.20
20-29.....	1.02	0.65	0.66	0.31	1.37	0.43	0.74	0.84	0.62	0.93	1.09	1.02	0.70	0.89	0.63
30-39.....	1.40	0.88	1.23	0.66	1.07	0.71	0.79	1.06	0.84	0.86	1.26	1.09	0.83	1.02	0.85
40-49.....	0.58	1.47	0.86	0.87	0.99	0.87	1.27	1.06	1.34	1.03	1.13	1.17	0.92	1.09	1.00
50-59.....	1.16	1.28	1.49	1.48	1.27	1.87	1.27	1.17	1.49	0.97	0.95	0.91	1.22	1.27	1.55
60 and over.....	1.33	1.01	1.35	1.10	0.94	1.04	1.00	0.79	0.79	0.98	3.37	3.30	1.10	1.04	1.15
All Ages.....	0.94	0.91	0.86	0.93	0.82	0.77	1.00	0.87	0.87	0.93	0.95	0.89	0.95	0.86	0.82
Male/Female Combined															
0-19.....	2.21	0.65	1.43	1.50	0.75	1.12	0.79	1.38	1.09	0.93	1.32	1.23	1.12	1.00	1.12
20-29.....	0.76	1.07	0.81	0.84	1.14	0.96	0.83	1.06	0.88	1.00	1.10	1.09	0.87	1.06	0.92
30-39.....	1.04	1.10	1.15	0.80	1.13	0.90	0.99	1.12	1.11	1.09	1.14	1.24	0.95	1.11	1.06
40-49.....	1.17	1.14	1.34	0.94	1.17	1.10	1.13	1.10	1.25	1.20	1.04	1.25	1.05	1.11	1.17
50-59.....	1.17	1.32	1.54	1.18	1.25	1.48	1.20	0.88	1.06	1.19	1.31	1.55	1.20	1.21	1.45
60 and over.....	1.22	0.90	1.10	1.24	0.63	0.78	1.20	0.52	0.63	1.23	1.56	1.91	1.21	0.74	0.90
All Ages.....	1.09	0.98	1.07	0.99	1.01	1.01	1.06	0.99	1.05	1.14	1.03	1.18	1.05	0.99	1.05

Key: Med = medical
 Para = paramedical
 Non = nonmedical.

By issue age (Tables 16 and 18), the adverse effect of smoking is most apparent at ages 50-59, where the mortality ratio for smokers is almost 2.5 times that for nonsmokers. By policy year (Tables 17 and 19), the medical mortality ratios for smokers are somewhat lower in the earlier durations (1-3).

For the 1983-88 experience (Tables 18-21), the mortality ratios are as follows:

	Nonsmoker	Smoker	Ratio
Medical	71.5%	153.1%	2.14
Paramedical	68.4	152.9	2.24
Nonmedical	71.6	140.3	1.96
Male	70.7	151.0	2.14
Female	69.4	137.2	1.98
Total	70.5%	148.7%	2.11

The ratio of smoker to nonsmoker mortality ratios is remarkably consistent. The lower ratio for nonmedical smokers reflects the younger age distribution, where the ratio of smoker-to-nonsmoker mortality is somewhat lower than at older ages. The lower ratios for female smokers may be due to lighter smoking on average among females than males.

The proportion of nonsmoker to total exposure is 82.9 percent for males and 82.5 percent for females; each is down slightly from the 1982-87 study (83.2 percent and 82.7 percent, respectively). This is a somewhat higher proportion than may have been expected, perhaps due to nonadmission of smoking habits by some smokers. Those who did not admit smoking may have been among the lighter smokers. The inclusion of some of the lighter smokers in the nonsmoker instead of the smoker group would have increased the mortality ratio for smokers more than for nonsmokers.

Note that the nonsmoker-smoker data are only on 1980-87 issues and are heavily concentrated in the earlier policy years. However, it does not appear likely that the overall ratio of smoker-to-nonsmoker mortality ratios will change greatly as the experience matures.

TABLE 16

SMOKER-NONSMOKER 1987-88 EXPERIENCE BY ISSUE AGE
SEPARATELY FOR MEDICAL, PARAMEDICAL AND NONMEDICAL; MALES AND FEMALES COMBINED
ISSUES OF 1980-87 STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
(EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Medical							
0-19	\$ 293	\$ 60	35.6%	\$ 199	\$ 110	77.0%	2.16
20-29	3,453	3,098	132.6	518	105	30.1	0.23
30-39	23,847	12,701	49.8	3,562	6,913	170.5	3.42
40-49	26,776	40,116	72.1	4,478	12,309	124.9	1.73
50-59	14,873	41,297	69.7	2,670	19,935	177.1	2.54
60 and over	5,097	38,429	88.1	889	9,080	122.3	1.39
All Ages	\$ 74,340	\$135,701	72.8%	\$12,317	\$48,450	146.5%	2.01
Paramedical							
0-19	\$ 265	\$ 70	44.0%	\$ 71	\$ 0	0.0%	0.00
20-29	8,466	3,657	65.8	1,202	522	67.1	1.02
30-39	50,799	34,382	70.4	8,327	10,286	122.1	1.73
40-49	41,396	43,560	57.1	9,200	21,981	124.6	2.18
50-59	13,879	38,975	76.6	3,429	22,581	176.9	2.31
60 and over	3,324	21,668	84.1	737	10,718	190.9	2.27
All Ages	\$118,130	\$142,312	68.6%	\$22,966	\$66,088	146.0%	2.13

TABLE 16—Continued

Ages at Issue	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Nonmedical							
0-19.....	\$ 13,075	\$ 5,603	78.7%	\$ 3,296	\$ 1,369	78.4%	1.00
20-29.....	69,135	30,609	74.5	12,966	8,790	113.4	1.52
30-39.....	82,456	46,420	67.2	17,172	20,257	134.8	2.01
40-49.....	16,715	22,995	77.8	4,682	10,969	130.3	1.68
50-59.....	2,910	8,598	81.4	981	7,011	200.8	2.47
60 and over.....	558	2,983	66.9	188	1,797	147.1	2.20
All Ages.....	\$184,849	\$117,208	72.4%	\$39,285	\$50,192	133.3%	1.84
Combined							
0-19.....	\$ 13,634	\$ 5,733	77.0%	\$ 3,566	\$ 1,479	76.3%	0.99
20-29.....	81,054	37,364	76.3	14,686	9,417	106.1	1.39
30-39.....	157,103	93,504	65.2	29,061	37,456	136.2	2.09
40-49.....	84,887	106,671	66.1	18,361	45,259	126.0	1.91
50-59.....	31,663	88,869	73.6	7,079	49,526	180.0	2.45
60 and over.....	8,979	63,080	85.4	1,815	21,594	151.4	1.77
All Ages.....	\$377,319*	\$395,221	71.1%	\$74,568*	\$164,730	142.0%	2.00

*These exposures (also Table 17) are about three-fourths of the total exposures contributed for policy years 1-8 in Table 2.

TABLE 17

SMOKER-NONSMOKER 1987-88 EXPERIENCE BY POLICY YEAR
 SEPARATELY FOR MEDICAL, PARAMEDICAL AND NONMEDICAL; MALES AND FEMALES COMBINED
 ISSUES OF 1980-87 STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Policy Year	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Medical							
1.....	\$18,163	\$ 18,420	70.8%	\$ 2,662	\$ 4,527	117.3%	1.66
2.....	14,066	16,129	60.0	1,917	5,644	152.0	2.53
3.....	10,100	15,851	63.2	1,582	3,789	94.8	1.50
4.....	8,859	28,874	108.6	1,526	4,903	107.0	0.99
5.....	10,667	22,725	64.3	1,953	12,381	186.5	2.90
6.....	7,236	18,008	72.2	1,528	8,879	164.0	2.27
7.....	3,489	12,250	87.9	743	4,722	151.2	1.72
8.....	1,760	3,444	44.8	406	3,605	206.3	4.61
1-8.....	\$74,340	\$135,701	72.8%	\$12,317	\$48,450	146.5%	2.01
Paramedical							
1.....	\$ 33,324	\$ 20,824	61.2%	\$ 6,256	\$ 9,985	145.4%	2.38
2.....	25,394	20,002	57.7	4,397	10,776	162.7	2.82
3.....	17,830	25,247	75.9	3,322	7,987	117.8	1.55
4.....	13,639	24,997	77.2	2,737	11,111	157.8	2.05
5.....	13,344	24,665	69.2	2,981	13,455	155.9	2.25
6.....	9,163	16,585	69.1	2,185	8,828	140.5	2.04
7.....	3,920	8,477	86.9	823	3,279	140.1	1.61
8.....	1,516	1,515	40.3	265	668	93.0	2.31
1-8.....	\$118,130	\$142,312	68.6%	\$22,966	\$66,088	146.0%	2.13

TABLE 17—Continued

Policy Year	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Nonmedical							
1.....	\$ 48,952	\$ 18,491	61.0%	\$10,444	\$ 8,701	122.2%	2.00
2.....	40,829	20,795	70.8	7,906	7,924	131.2	1.85
3.....	28,789	18,722	72.5	5,889	7,092	125.4	1.73
4.....	24,525	23,178	89.3	5,348	8,203	137.9	1.54
5.....	23,471	19,546	69.8	5,197	9,578	142.9	2.05
6.....	13,719	13,106	77.5	3,381	6,186	130.5	1.68
7.....	4,022	2,921	60.7	947	2,263	178.7	2.94
8.....	541	449	65.2	174	245	136.1	2.09
1-8.....	\$184,849	\$117,208	72.4%	\$39,285	\$50,192	133.3%	1.84
Combined							
1.....	\$100,439	\$ 57,735	63.9%	\$19,362	\$ 23,212	130.1%	2.04
2.....	80,289	56,926	62.6	14,220	24,344	148.7	2.37
3.....	56,720	59,820	71.1	10,793	18,868	114.8	1.62
4.....	47,023	77,049	90.7	9,611	24,217	137.8	1.52
5.....	47,482	66,936	67.6	10,131	35,414	161.2	2.38
6.....	30,118	47,699	72.4	7,093	23,893	145.4	2.01
7.....	11,431	23,648	83.0	2,513	10,264	152.5	1.84
8.....	3,817	5,408	44.5	845	4,518	170.8	3.83
1-8.....	\$377,319	\$395,221	71.1%	\$74,568	\$164,730	142.0%	2.00

TABLE 18

SMOKER-NONSMOKER 1983-88 EXPERIENCE BY ISSUE AGE
 SEPARATELY FOR MEDICAL, PARAMEDICAL AND NONMEDICAL; MALES AND FEMALES COMBINED
 ISSUES OF 1980-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Medical							
0-19.....	\$ 1,308	\$ 135	18.7%	\$ 518	\$ 385	111.9%	5.99
20-29.....	17,078	10,983	97.4	2,637	2,088	121.7	1.25
30-39.....	115,359	73,160	69.1	17,982	27,621	160.2	2.32
40-49.....	110,349	128,855	64.3	18,827	50,752	143.9	2.24
50-59.....	55,191	141,049	73.2	9,889	58,581	164.3	2.24
60 and over.....	16,080	97,085	81.1	2,753	29,397	146.8	1.81
All Ages.....	\$315,364	\$451,267	71.5%	\$52,606	\$168,823	153.1%	2.14
Paramedical							
0-19.....	\$ 856	\$ 505	91.2%	\$ 197	\$ 40	28.5%	0.31
20-29.....	33,254	13,515	62.9	5,075	3,368	103.8	1.65
30-39.....	181,814	100,479	63.5	33,487	37,867	124.9	1.97
40-49.....	113,136	122,372	63.3	26,683	64,423	137.0	2.16
50-59.....	39,380	96,421	74.1	9,933	62,164	188.1	2.54
60 and over.....	8,991	53,225	86.5	2,074	27,243	197.1	2.28
All Ages.....	\$377,430	\$386,517	68.4%	\$77,450	\$195,106	152.9%	2.24

TABLE 18—Continued

Ages at Issue	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Nonmedical							
0–19	\$ 48,034	\$ 20,267	76.8%	\$ 9,172	\$ 4,573	91.4%	1.19
20–29	249,682	102,300	70.0	53,102	37,000	118.0	1.68
30–39	253,914	133,908	69.5	59,939	60,706	128.7	1.85
40–49	54,343	62,210	72.8	16,106	39,763	155.1	2.13
50–59	9,241	26,400	90.8	3,084	23,292	243.0	2.68
60 and over	1,606	6,298	55.8	395	4,829	189.0	3.39
All Ages	\$616,821	\$351,382	71.6%	\$141,798	\$170,163	140.3%	1.96
Combined							
0–19	\$ 50,197	\$ 20,907	75.6%	\$ 9,886	\$ 4,998	91.1%	1.21
20–29	300,013	126,797	70.9	60,814	42,456	116.9	1.65
30–39	551,086	307,547	67.3	111,409	126,195	133.2	1.98
40–49	277,828	313,437	65.4	61,616	154,938	143.6	2.19
50–59	103,812	263,871	75.0	22,907	144,036	184.0	2.45
60 and over	26,678	156,607	81.3	5,222	61,469	168.8	2.08
All Ages	\$1,309,615*	\$1,189,166	70.5%	\$271,854*	\$534,091	148.7%	2.11

*These exposures (also Tables 19–21) are about 55% of the total exposures contributed for policy years 1–8 in Table 8.

TABLE 19
 SMOKER-NONSMOKER 1983-88 EXPERIENCE BY POLICY YEAR
 SEPARATELY FOR MEDICAL, PARAMEDICAL AND NONMEDICAL; MALES AND FEMALES COMBINED
 ISSUES OF 1980-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Policy Year	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Medical							
1	\$ 93,676	\$ 76,881	64.9%	\$14,947	\$ 24,120	127.3%	1.96
2	79,258	96,161	72.1	12,059	29,903	148.5	2.06
3	59,527	93,179	71.6	9,317	29,492	144.1	2.01
4	39,338	90,493	87.6	6,715	27,802	155.0	1.77
5	24,383	46,566	61.8	5,062	31,689	199.5	3.23
6	12,290	29,029	68.7	2,870	14,525	143.5	2.09
7	5,132	15,513	77.3	1,230	7,687	154.0	1.99
8	1,760	3,444	44.8	406	3,605	206.3	4.61
1-8	\$315,364	\$451,267	71.5%	\$52,606	\$168,823	153.1%	2.14
Paramedical							
1	\$123,567	\$ 78,093	64.4%	\$24,148	\$ 36,947	146.4%	2.27
2	95,009	83,823	67.6	18,512	43,793	167.9	2.48
3	67,260	77,712	67.9	13,796	35,317	139.0	2.05
4	43,611	66,791	74.8	9,547	33,992	161.1	2.15
5	27,207	43,367	66.9	6,664	28,203	167.7	2.51
6	14,022	24,570	70.2	3,383	11,676	127.7	1.82
7	5,239	10,647	82.8	1,134	4,509	146.8	1.77
8	1,516	1,515	40.3	265	668	93.0	2.31
1-8	\$377,430	\$386,517	68.4%	\$77,450	\$195,106	152.9%	2.24

TABLE 19--Continued

Policy Year	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Nonmedical							
1.....	\$210,584	\$ 88,229	67.5%	\$ 48,644	\$ 40,183	126.6%	1.88
2.....	158,648	83,747	72.8	35,036	40,686	150.5	2.07
3.....	109,283	67,345	69.9	24,729	31,626	135.2	1.93
4.....	71,887	56,638	78.3	17,026	28,043	151.8	1.94
5.....	42,556	34,894	72.6	10,414	18,621	145.3	2.00
6.....	18,709	16,727	74.5	4,650	8,300	132.9	1.78
7.....	4,613	3,353	60.7	1,125	2,459	170.4	2.81
8.....	541	449	65.2	174	245	136.1	2.09
1-8.....	\$616,821	\$351,382	71.6%	\$141,798	\$170,163	140.3%	1.96
Combined							
1.....	\$ 427,827	\$ 243,203	65.7%	\$ 87,740	\$101,250	133.4%	2.03
2.....	332,915	263,731	70.8	65,607	114,382	156.1	2.21
3.....	236,069	238,236	69.9	47,842	96,435	139.2	1.99
4.....	154,837	213,922	80.8	33,289	89,837	156.2	1.93
5.....	94,146	124,827	66.3	22,140	78,513	172.5	2.60
6.....	45,020	70,326	70.5	10,903	34,501	135.2	1.92
7.....	14,984	29,513	76.8	3,489	14,655	154.2	2.01
8.....	3,817	5,408	44.5	845	4,518	170.8	3.83
1-8.....	\$1,309,615	\$1,189,166	70.5%	\$271,854	\$534,091	148.7%	2.11

TABLE 20
 SMOKER-NONSMOKER 1983-88 EXPERIENCE BY ISSUE AGE
 MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED; SEPARATELY FOR MALES AND FEMALES
 ISSUES OF 1980-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Male							
0-19.....	\$ 27,720	\$ 15,475	76.5%	\$ 5,502	\$ 3,902	96.1%	1.26
20-29.....	197,794	101,984	72.3	40,130	34,901	121.8	1.68
30-39.....	416,622	261,485	69.3	85,150	108,480	137.8	1.99
40-49.....	229,283	273,726	65.3	49,108	135,524	147.6	2.26
50-59.....	86,593	231,558	73.9	17,900	122,056	182.5	2.47
60 and over.....	20,290	130,264	79.4	3,555	47,148	161.8	2.04
All Ages.....	\$978,302	\$1,014,492	70.7%	\$201,346	\$452,011	151.0%	2.14
Female							
0-19.....	\$ 22,478	\$ 5,431	73.0%	\$ 4,384	\$ 1,096	76.8%	1.05
20-29.....	102,219	24,813	65.7	20,684	7,555	98.6	1.50
30-39.....	134,465	46,062	57.9	26,259	17,715	110.7	1.91
40-49.....	48,546	39,712	65.9	12,508	19,414	120.8	1.83
50-59.....	17,218	32,312	84.3	5,007	21,980	192.7	2.28
60 and over.....	6,388	26,343	92.2	1,667	14,321	197.3	2.14
All Ages.....	\$331,313	\$174,674	69.4%	\$70,509	\$82,080	137.2%	1.98

TABLE 21
 SMOKER-NONSMOKER 1983-88 EXPERIENCE BY POLICY YEAR
 MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED; MALES AND FEMALES SEPARATELY
 ISSUES OF 1980-87 STUDIED BETWEEN 1983 AND 1988 ANNIVERSARIES
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Policy Year	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
	Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Male							
1.....	\$315,029	\$ 206,351	66.4%	\$ 64,113	\$ 84,319	134.5%	2.03
2.....	247,948	227,174	71.9	48,348	97,469	160.6	2.23
3.....	177,645	200,459	68.5	35,554	83,346	143.7	2.10
4.....	116,639	188,019	83.1	24,781	75,159	156.8	1.89
5.....	71,485	100,765	62.8	16,730	65,735	172.6	2.75
6.....	34,572	59,595	70.1	8,353	29,060	136.1	1.94
7.....	11,849	27,570	82.4	2,776	12,827	155.9	1.89
8.....	3,135	4,558	42.7	691	4,095	175.9	4.11
1-8.....	\$978,302	\$1,014,492	70.7%	\$201,346	\$452,011	151.0%	2.14
Female							
1.....	\$112,798	\$ 36,851	62.0%	\$23,627	\$16,930	127.8%	2.06
2.....	84,967	36,557	64.6	17,259	16,913	134.8	2.09
3.....	58,424	37,777	78.2	12,288	13,089	116.1	1.49
4.....	38,197	25,903	67.0	8,508	14,678	153.3	2.29
5.....	22,662	24,062	87.0	5,410	12,778	171.8	1.98
6.....	10,448	10,731	72.9	2,550	5,441	130.9	1.80
7.....	3,135	1,943	39.1	714	1,828	143.2	3.66
8.....	682	850	57.5	154	423	133.6	2.32
1-8.....	\$331,313	\$174,674	69.4%	\$70,509	\$82,080	137.2%	1.98

IV. ULTIMATE EXPERIENCE (POLICY YEARS 16 AND OVER)

The experience between 1987 and 1988 anniversaries for policy years 16 and over is shown in Tables 22–25. The Table 22 mortality ratio based on the 1975–80 Ultimate Basic Tables has improved to 86.3 percent for all ages. This compares to 90.8 percent for the 1986–87 experience, 89.8 percent for the 1985–86 experience and 91.1 percent for the 1984–85 experience. (Note that the company mix changed somewhat each year, prior to 1986–87.) The ratios by attained age group are quite similar for ages 40–84. However, for attained ages 25–39, the ratios exceeded 100 percent, indicating an increase in mortality from the 1975–80 period from which mortality rates for expected deaths were obtained. This same mortality pattern appears in the 1985–86 and 1986–87 experience. Part of this extra mortality at younger ages could be attributed to AIDS deaths.

Table 22 also presents mortality ratios based on the 1965–70 Ultimate Basic Tables, the 1980 CSO Tables and the 1979–81 U.S. Population Life Tables (Whites and Non-Whites Combined). The mortality ratios based on the 1980 CSO and the 1979–81 U.S. Population Tables remain remarkably similar (65.2 percent and 64.6 percent, respectively) to the corresponding ratios for 1986–87 experience. By attained age, the CSO mortality ratios are lower than the population mortality ratios through attained age 44, higher for ages 45–74, and then lower again for ages 75 and over.

Tables 23, 24 and 25 show the experience between 1983 and 1988 anniversaries for policy years 16 and over subdivided in three ways. In Table 23, the mortality ratio for fully paid-up policies (reduced paid-up policies are not included) is 92.7 percent compared to 89.4 percent for premium-paying policies. Corresponding ratios for 1982–87 experience were 93.7 percent and 91.1 percent, respectively. These lower mortality ratios for premium-paying policies have been a characteristic of the experience for many years.

The mortality ratios for medical (86.9 percent) and nonmedical (101 percent) issues are presented in Table 24. This large difference in mortality ratios exists for virtually all attained-age groups. This result may be due more to lapsation antiselection among nonmedical policies than to the more rigorous initial selection applied to medical policies. As a result of higher lapse rates (generally by the better risks), the nonmedical exposure may contain an increasingly higher proportion of poorer risks than the medical experience.

TABLE 22
 1987-88 ULTIMATE EXPERIENCE BY ATTAINED AGE
 MALE AND FEMALE LIVES COMBINED
 ISSUES OF 1972 AND PRIOR STUDIED BETWEEN 1987 AND 1988 ANNIVERSARIES
 POLICY YEARS 16 AND OVER
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Attained Ages	Exposure	Actual Deaths	Mortality Ratios			
			1975-80 Ultimate Tables	1965-70 Ultimate Tables	1980 CSO Tables	1979-81 U.S. Life Tables
15-19	\$ 1,470	\$ 1,083	83.7%	92.4%	52.7%	70.4%
20-24	1,879	1,719	83.1	97.1	56.6	60.8
25-29	2,139	2,238	102.7	112.3	66.6	68.3
30-34	3,367	4,168	125.0	109.9	70.4	75.3
35-39	7,082	9,836	110.0	84.9	58.7	62.2
40-44	11,685	20,217	90.4	65.0	49.4	50.7
45-49	13,029	35,236	83.7	61.8	52.1	49.3
50-54	13,375	56,837	79.4	58.2	54.5	48.3
55-59	14,278	115,302	93.3	67.5	66.8	59.7
60-64	13,959	169,630	86.9	64.6	66.2	58.9
65-69	10,254	190,396	83.3	63.5	64.8	60.7
70-74	6,826	197,834	81.8	65.1	64.6	63.5
75-79	3,954	189,679	86.3	69.3	66.9	72.7
80-84	1,974	149,441	87.4	72.6	69.3	77.5
85-89	706	83,775	90.6	77.2	71.3	83.8
90-95	206	38,035	95.3	86.7	75.8	92.3
All Ages	\$106,183	\$1,265,426	86.3%	67.5%	65.2%	64.6%

TABLE 23
 COMPARISONS OF 1983-88 ULTIMATE EXPERIENCE BY ATTAINED AGE
 MALE AND FEMALE LIVES COMBINED
 EXPERIENCE BETWEEN 1983 AND 1988 ANNIVERSARIES
 POLICY YEARS 16 AND OVER
 (ACTUAL DEATHS SHOWN IN \$1,000 UNITS)

Attained Ages	Premium-Paying		Fully Paid-up		Ratio of Premium-Paying to Paid-up Mortality Ratios
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	
15-19.....	\$ 4,837	80.3%	\$ 51	70.5%	1.14
20-24.....	7,586	82.8	549	76.5	1.08
25-29.....	9,740	98.4	1,387	108.2	0.91
30-34.....	17,237	116.5	2,321	130.5	0.89
35-39.....	45,357	101.9	2,739	119.3	0.85
40-44.....	94,738	89.2	3,568	99.2	0.90
45-49.....	171,886	86.2	6,121	99.0	0.87
50-54.....	299,601	86.0	12,773	95.7	0.90
55-59.....	557,284	92.4	29,631	99.0	0.93
60-64.....	795,424	90.1	55,249	90.4	1.00
65-69.....	770,871	86.4	129,781	91.1	0.95
70-74.....	776,584	87.0	170,080	92.5	0.94
75-79.....	725,063	89.5	195,403	93.1	0.96
80-84.....	547,835	91.8	175,213	91.4	1.00
85-89.....	270,180	90.5	140,740	92.3	0.98
90-95.....	108,972	100.9	75,641	95.3	1.06
All Ages.....	\$5,203,195	89.4%	\$1,001,249	92.7%	0.96

TABLE 24
 COMPARISONS OF 1983-88 ULTIMATE EXPERIENCE BY ATTAINED AGE
 MALE AND FEMALE LIVES COMBINED
 EXPERIENCE BETWEEN 1983 AND 1988 ANNIVERSARIES
 POLICY YEARS 16 AND OVER
 (ACTUAL DEATHS SHOWN IN \$1,000 UNITS)

Attained Ages	Medical		Nonmedical		Ratio of Nonmedical to Medical Mortality Ratios
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	
15-19	\$ 204	39.4%	\$ 4,258	83.9%	2.13
20-24	692	54.6	6,430	88.2	1.62
25-29	1,466	83.2	7,880	105.2	1.26
30-34	2,300	97.8	13,905	121.3	1.24
35-39	6,875	97.1	33,397	102.8	1.06
40-44	22,494	79.9	61,951	94.8	1.19
45-49	64,869	81.7	88,605	91.2	1.12
50-54	151,790	79.2	115,684	95.4	1.21
55-59	357,523	87.6	146,620	104.7	1.20
60-64	585,802	86.3	138,656	107.6	1.25
65-69	638,414	84.4	79,380	106.4	1.26
70-74	676,496	86.4	47,570	105.6	1.22
75-79	627,569	88.4	38,913	101.7	1.15
80-84	469,272	90.0	25,700	97.7	1.09
85-89	247,207	89.1	9,358	93.4	1.05
90-95	103,827	99.5	3,486	101.7	1.02
All Ages	\$3,956,802	86.9%	\$821,792	101.0%	1.16

Mortality ratios for males and females are presented in Table 25. However, the female mortality ratios used to calculate the female-to-male ratio of mortality ratios in the last column are based on the 1975-80 Ultimate Male Basic Table, so that male and female mortality ratios can be compared on the same basis. The female ultimate mortality ratio is 90.4 percent (down only from 90.5 percent for the 1986-87 experience), while the male ultimate mortality improved to 89.8 percent, down from 91.2 percent in the 1986-87 study. As a result, the ratio of female-to-male mortality increased by 1 percent, to 62 percent. This ratio varies from less than 50 percent at attained ages 15-34, due to the relatively low accidental death rate of females at these young ages (where accidents are a primary cause of death), up to close to 70 percent at attained ages 40-54, down to about 60 percent at attained ages 55-84 where females are less subject to coronary artery disease.

TABLE 25
 COMPARISONS OF 1983-88 ULTIMATE EXPERIENCE BY ATTAINED AGE
 EXPERIENCE BETWEEN 1983 AND 1988 ANNIVERSARIES
 POLICY YEARS 16 AND OVER
 (ACTUAL DEATHS SHOWN IN \$1,000 UNITS)

Attained Ages	Male		Female		Ratio of Female to Male Mortality Ratios
	Actual Deaths	Mortality Ratio*	Actual Deaths	Mortality Ratio*	
15-19.....	\$ 4,118	80.0%	\$ 958	82.3%	0.42
20-24.....	7,131	82.5	1,441	85.8	0.39
25-29.....	9,715	100.4	2,231	119.0	0.51
30-34.....	17,501	122.6	2,918	102.0	0.47
35-39.....	43,195	106.3	6,236	82.7	0.58
40-44.....	91,698	93.1	10,379	72.7	0.68
45-49.....	171,092	89.3	15,215	75.8	0.66
50-54.....	297,410	86.3	26,827	88.5	0.71
55-59.....	566,469	93.1	44,733	86.2	0.60
60-64.....	817,622	90.0	67,347	91.7	0.61
65-69.....	857,134	86.6	69,119	91.3	0.58
70-74.....	880,334	87.2	78,318	94.4	0.58
75-79.....	823,010	90.0	82,406	88.0	0.57
80-84.....	612,520	91.9	81,302	91.5	0.66
85-89.....	326,114	90.9	53,853	91.9	0.72
90-95.....	138,126	98.8	28,062	103.9	0.79
All Ages.....	\$5,663,188	89.8%	\$571,346	90.4%	0.62

*These ratios, and their associated expected deaths, are derived from the 1975-80 Ultimate Male Basic Tables.

* * * * *

The latest prior individual life experience studies, for various items, are in the following *TSA Reports*:

Study	<i>TSA Reports</i> No.
Standard Ordinary	Published Annually
Cause of Death	1983
Large Amounts	1985-87
Term Conversions	1982
Guaranteed Insurability Option	1982
Substandard	1979
Group Conversions	1979
Waiver of Premium	1978
Accidental Death Benefits	1977

APPENDIX A

PERCENTAGES OF TOTAL EXPOSURES BETWEEN 1987 AND 1988 ANNIVERSARIES
CONTRIBUTED BY EACH COMPANY

Company	First Fifteen Policy Years							16th and Subsequent
	Medical	Paramedical	Nonmedical	Male	Female	Nonsmoker	Smoker	
New York Life	16.1%	18.6%	9.1%	14.3%	10.6%	14.7%	16.2%	13.9%
Equitable	12.2	7.0	8.8	9.3	8.3	12.1	7.5	8.7
State Farm Life	9.3	10.0	18.5	12.7	18.0	14.2	16.2	12.8
Prudential	8.3	13.6	20.8	14.9	19.5	14.8	19.8	17.1
Massachusetts Mutual	7.7	10.3	3.4	6.8	4.7	7.7	5.0	6.1
New England Life	7.6	4.7	3.3	5.2	3.0	5.9	7.7	4.3
Phoenix Mutual	6.9	2.4	0.8	2.9	1.6	—	—	2.4
Northwestern Mutual	6.7	4.4	3.1	4.4	3.6	4.5	2.6	4.7
Metropolitan	4.4	7.9	11.3	8.0	11.3	10.2	9.2	9.1
Penn Mutual	3.7	1.6	2.5	2.8	1.7	2.5	2.7	2.5
Actna	3.5	3.8	3.2	3.6	3.1	4.3	5.0	3.1
Connecticut Mutual	3.2	2.1	1.4	2.2	1.5	2.0	0.9	2.2
John Hancock	2.7	6.9	2.3	3.6	3.9	3.4	3.4	4.1
Mutual of New York	2.6	2.7	3.5	3.0	3.1	—	—	3.1
Franklin Life	2.3	1.1	4.4	2.9	3.3	—	—	2.8
Sun Life	1.1	0.7	1.5	1.2	1.2	1.4	2.0	1.1
Travelers	0.8	1.0	1.0	1.0	0.8	1.2	1.4	0.8
Provident Mutual	0.5	0.9	0.9	0.9	0.6	0.9	—	0.9
Lincoln National	0.4	0.3	0.2	0.3	0.2	0.2	0.4	0.3