

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

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

**MORTALITY UNDER STANDARD INDIVIDUALLY  
UNDERWRITTEN LIFE INSURANCE  
BETWEEN 1986 AND 1987 ANNIVERSARIES**

**ABSTRACT**

This study is the latest in continuing annual reports on intercompany mortality experience under standard individually underwritten life insurance. Because of changes in the number of companies contributing from year to year, direct comparisons with previous studies are affected.

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

- The overall mortality ratio for experience between 1986 and 1987 anniversaries, during policy years 1–15, is 86.3 percent, down about 2 percent from the prior year and continuing the ongoing trend. Virtually all this mortality improvement is in medical experience.
- The mortality ratios for experience between 1982 and 1987 anniversaries, during policy years 1–15, show that there has been greater improvement from the 1975–80 period for males (89.3 percent) than for females (95.0 percent) and that the greatest combined improvement has occurred at issue ages 25–39.
- For 1980–86 issues observed between 1982 and 1987 anniversaries, the mortality ratio for smokers is 152.1 percent and that for nonsmokers is 70.3 percent. Subdivisions of these data into medical, paramedical and nonmedical and into male and female produced little difference in these overall ratios.
- For experience between 1986 and 1987 anniversaries, during policy years 16 and later, the overall mortality ratio is 90.8 percent, about a 1 percent increase from the prior year. The comparable mortality ratios using expected deaths based on the 1980 CSO Tables and the 1979–81 U.S. Population Tables are 68.4 percent and 68.0 percent, respectively.

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**INTRODUCTION**

This report covers the intercompany (U.S.) mortality experience by amount of life insurance under standard individually underwritten issues between 1986 and 1987 anniversaries. The report also combines experience between 1982 and 1987 anniversaries to provide a larger volume of data so that more adequate comparisons of results, particularly for males-females and smokers-nonsmokers, 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	1986-87	1-15	Combined	Combined	Combined	Issue age
2	1986-87	1-15	Combined	Combined	Combined	Policy year
3	1986-87	1-15	Separately	Combined	Combined	Issue age
4	1986-87	1-15	Separately	Combined	Combined	Policy year
5	1986-87	1-15	Separately	Combined	Combined	Issue age and policy year
6	1986-87	1-15	Separately	Combined	Combined	Issue age and policy year
7	1982-87	1-15	Combined	Separately	Combined	Issue age
8	1982-87	1-15	Combined	Separately	Combined	Policy year
9	1982-87	1-15	Separately	Separately	Combined	Issue age
10	1982-87	1-15	Separately	Separately	Combined	Policy year
11	1982-87	1-15	Medical	Separately	Combined	Issue age and policy year
12	1982-87	1-15	Paramedical	Separately	Combined	Issue age and policy year
13	1982-87	1-15	Nonmedical	Separately	Combined	Issue age and policy year
14	1982-87	1-15	Combined	Separately	Combined	Issue age and policy year
15	1982-87	1-15	Separately	Separately	Combined	Issue age and policy year
16	1986-87	1-7	Separately	Combined	Separately	Issue age
17	1986-87	1-7	Separately	Combined	Separately	Policy year
18	1982-87	1-7	Separately	Combined	Separately	Issue age
19	1982-87	1-7	Separately	Combined	Separately	Policy year
20	1982-87	1-7	Combined	Separately	Separately	Issue age
21	1982-87	1-7	Combined	Separately	Separately	Policy year
22	1986-87	16 and over	Combined	Combined	Combined	Attained age
23	1982-87	16 and over	Combined	Combined	Combined	Attained age
24	1982-87	16 and over	Separately	Combined	Combined	Attained age
25	1982-87	16 and over	Combined	Separately	Combined	Attained age

Appendix A — Names of the contributing companies and percentage of total 1986-87 exposures contributed by each company

\*Select (1-15); smoker-nonsmoker (1-7); ultimate (16 and over).

The report is divided into four primary sections:

- I. Select Experience (first 15 policy years) between 1986 and 1987 anniversaries for issues of 1972–1986 (Tables 1–6).
- II. Select Experience (first 15 policy years) between 1982 and 1987 anniversaries for issues of 1972–1986 (Tables 7–15).
- III. Smoker-Nonsmoker Experience (first seven policy years) between 1986–1987 anniversaries and between 1982 and 1987 anniversaries for issues of 1980–1986 (Tables 16–21).
- IV. Ultimate Experience (policy years 16 and over) between 1986 and 1987 anniversaries and between 1982 and 1987 anniversaries (Tables 22–25).

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 1986–87 select and ultimate experience is derived from the contributions of 19 companies. The 1982–87 select and ultimate experience is derived from the contributions of 23 companies, 18 of which contributed data for the entire 1982–87 period. The 1986–87 smoker-nonsmoker experience is derived from the contributions of 13 companies, and the 1982–87 smoker-nonsmoker data is derived from the contributions of 15 companies. Appendix A gives the names and proportionate contributions of companies that contributed 1986–87 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 decreasing use of medical examinations and the increasing use of nonmedical. Table B shows mortality ratios by exposure years since

the introduction of the 1965-70 Basic Tables. The decreases 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 .....	20.7	27.1	52.1
1986 .....	15.7	27.4	56.9

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 .....	58.6 (80.1)	66.5 (90.3)	71.6 (92.2)	64.3 (86.4)	70.8 (90.5)

Table C shows the proportions of medical, paramedical and nonmedical exposures in policy years 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 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 1986-1987 EXPERIENCE

Ages at Issue	Policy Year 1			Policy Years 1-15		
	Medical	Paramedical	Nonmedical	Medical	Paramedical	Nonmedical
0-9 .....	2.0%	0.9%	97.1%	4.3%	1.0%	94.6%
10-19 .....	2.1	2.6	95.4	4.5	2.9	92.6
20-29 .....	2.5	7.8	89.7	7.2	10.7	82.1
30-39 .....	11.6	29.0	59.4	19.6	30.3	50.2
40-49 .....	28.2	49.0	22.8	37.1	43.5	19.4
50 and over ..	49.5	42.3	8.2	55.4	37.4	7.2
All Ages ....	15.7	27.3	57.0	22.0	26.0	52.0

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 socioeconomic 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 previous studies may account for some of the differences in 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.

#### I. 1986-87 SELECT EXPERIENCE (MALES AND FEMALES COMBINED)

The experience between 1986 and 1987 anniversaries during the first 15 policy years presented in Tables 1-6 includes exposures of \$672 billion and actual deaths of \$980 million. The corresponding amounts in the 1985-86 experience were \$691 billion and \$1,005 million, respectively. As previously mentioned, there were differences in the mix of companies; 18 companies

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contributed data for both 1985-86 and 1986-87, whereas 2 companies contributed data for only 1985-86 and 1 company contributed data for only 1986-87.

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 (Section II, Tables 7-15) and for smokers and nonsmokers (Section III, Tables 16-21) are shown later in this report.

TABLE 1

1986-87 EXPERIENCE BY ISSUE AGE  
MALE AND FEMALE LIVES COMBINED; MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED  
ISSUES OF 1972-86 STUDIED BETWEEN 1986 AND 1987 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	Actual Deaths	Expected Deaths	Mortality Ratio	
				1975-80 Basic Tables	1965-70 Basic Tables
0-9 .....	\$ 33,440	\$ 8,298	\$ 12,530	66.2%	33.1%
10-14 .....	10,609	5,850	6,645	88.0	87.7
15-19 .....	21,097	17,772	17,797	99.9	99.2
20-24 .....	53,902	36,037	35,722	100.9	86.7
25-29 .....	105,065	63,594	73,855	86.1	72.9
30-34 .....	131,105	93,507	118,589	78.9	60.9
35-39 .....	119,017	126,335	153,563	82.3	63.6
40-44 .....	80,668	128,106	157,830	81.2	59.5
45-49 .....	50,074	128,534	156,205	82.3	61.5
50-54 .....	32,114	124,826	136,775	91.3	61.2
55-59 .....	20,413	111,352	126,805	87.8	65.5
60-64 .....	9,874	79,967	81,555	98.1	66.2
65-69 .....	3,267	37,953	42,950	88.4	66.8
70 and over .....	913	17,655	14,553	121.3	88.9
Total .....	\$671,558	\$979,786	\$1,135,374	86.3%	64.2%

TABLE 2

1986-87 EXPERIENCE BY POLICY YEAR  
 MALE AND FEMALE LIVES COMBINED; MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED  
 ISSUES OF 1972-86 STUDIED BETWEEN 1986 AND 1987 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	Actual Deaths	Expected Deaths	Mortality Ratio	
				1975-80 Basic Tables	1965-70 Basic Tables
1	\$150,207	\$ 91,977	\$ 128,575	71.5%	51.4%
2	110,892	116,649	125,720	92.8	67.0
3	89,326	117,061	131,865	88.8	64.7
4	85,796	124,907	146,489	85.3	62.8
5	55,629	86,542	103,843	83.3	64.1
6	37,274	65,382	75,245	86.9	65.6
7	27,019	55,410	59,892	92.5	69.1
8	21,749	49,032	51,699	94.8	70.8
9	18,134	42,484	46,246	91.9	68.9
10	17,142	41,776	47,241	88.4	66.6
11	14,455	37,225	46,110	80.7	62.0
12	12,450	42,142	43,358	97.2	74.8
13	11,563	35,878	43,279	82.9	63.5
14	10,431	37,034	42,914	86.3	66.1
15	9,490	36,286	42,897	84.6	64.6
Total	\$671,558	\$979,786	\$1,135,374	86.3%	64.2%

TABLE 3

MEDICAL, PARAMEDICAL, NONMEDICAL 1986-87 EXPERIENCE BY ISSUE AGE  
 MALE AND FEMALE LIVES COMBINED  
 ISSUES OF 1972-86 STUDIED BETWEEN 1986 AND 1987 ANNIVERSARIES  
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES  
 (ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Medical		Paramedical		Nonmedical		Combined	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
0-9	\$ 300	54.0%	\$ 50	41.3%	\$ 7,848	66.9%	\$ 8,298	66.2%
10-14	262	56.3	55	31.6	5,534	93.2	5,850	88.0
15-19	824	108.8	740	121.5	15,956	98.9	17,772	99.9
20-24	2,294	107.7	2,023	84.9	31,124	102.7	36,037	100.9
25-29	8,523	107.7	6,181	61.2	46,298	86.9	63,594	86.1
30-34	16,588	69.7	24,752	83.7	49,784	81.8	93,507	78.9
35-39	34,952	73.9	42,818	80.3	43,092	90.9	126,335	82.3
40-44	47,401	72.9	48,465	81.3	27,037	98.6	128,106	81.2
45-49	52,513	68.6	54,384	95.1	16,420	99.2	128,534	82.3
50-54	64,089	80.2	44,826	100.5	10,941	142.8	124,826	91.3
55-59	59,663	76.9	41,079	106.6	7,770	119.8	111,352	87.8
60-64	53,917	95.2	21,787	112.9	2,017	65.8	79,967	98.1
65-69	26,933	83.5	9,168	111.1	868	66.4	37,953	88.4
70 and over	13,111	116.7	3,367	136.9	911	161.7	17,655	121.3
Total	\$381,370	79.1%	\$299,694	91.9%	\$265,600	92.0%	\$979,786	86.3%

TABLE 4

MEDICAL, PARAMEDICAL, NONMEDICAL 1986-87 EXPERIENCE BY POLICY YEAR  
 MALE AND FEMALE LIVES COMBINED  
 ISSUES OF 1972-86 STUDIED BETWEEN 1986 AND 1987 ANNIVERSARIES  
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES  
 (ACTUAL DEATHS IN \$1,000 UNITS)

Policy Year	Medical		Paramedical		Nonmedical		Combined	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
1.....	\$ 17,187	54.4%	\$ 31,233	78.7%	\$ 37,253	76.0%	\$ 91,977	71.5%
2.....	28,429	83.4	39,756	98.3	38,726	97.7	116,649	92.8
3.....	35,831	91.6	34,914	82.9	36,079	90.3	117,061	88.8
4.....	38,919	76.2	42,744	90.0	41,752	92.7	124,907	85.3
5.....	28,277	70.8	31,396	91.1	26,376	91.5	86,542	83.3
6.....	24,395	75.7	23,959	90.9	15,384	95.4	65,382	86.9
7.....	25,224	86.6	20,956	99.7	8,614	92.6	55,410	92.5
8.....	21,530	82.2	18,266	110.4	8,979	104.9	49,032	94.8
9.....	20,370	83.7	13,478	99.2	8,297	103.2	42,484	91.9
10.....	21,745	82.0	12,749	97.9	7,254	97.6	41,776	88.4
11.....	19,552	70.3	10,262	95.0	7,253	101.7	37,225	80.7
12.....	25,604	93.9	9,156	106.3	7,250	103.8	42,142	97.2
13.....	22,057	75.7	5,704	91.2	7,013	95.7	35,878	82.9
14.....	25,713	83.8	3,384	84.1	7,758	102.0	37,034	86.3
15.....	26,537	80.7	1,738	94.8	7,613	98.4	36,286	84.6
Total.....	\$381,370	79.1%	\$299,694	91.9%	\$265,600	92.0%	\$979,786	86.3%

The mortality ratio for medical, paramedical and nonmedical combined based on the 1975-80 Basic Tables is 86.3 percent. The mortality ratios for the subdivided experience are 79.1 percent for medical, 91.9 percent for paramedical and 92.0 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 virtually no improvement in mortality from the 1975-80 experience (that is, the experience underlying the 1975-80 Basic Tables) at issue ages 15-24 and 60-64 (a 21 percent deterioration at issue ages 70 and over), with the most substantial improvement at issue ages 30-49.

The bulk of the exposures are nonmedical through issue age 29, and the nonmedical experience is generally more favorable than medical and paramedical 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 as 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 (except at issue ages 70 and over), 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 is particularly pronounced for paramedical and nonmedical and may reflect lapsation 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 relatively small at the longer durations.

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

The 1986–87 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 6 shows the ratios of mortality ratios: paramedical to medical, nonmedical to paramedical, and nonmedical to medical. Each of these ratios 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 for the age groups for which the comparisons are not distorted by small amounts of data (for example, medical experience at ages under 30 and nonmedical experience at ages 60 and over).

**TABLE 5**  
**MEDICAL, PARAMEDICAL, NONMEDICAL 1986-87 EXPERIENCE BY ISSUE AGE AND POLICY YEAR**  
**MALE AND FEMALE LIVES COMBINED**  
**ISSUES OF 1972-86 STUDIED BETWEEN 1986 AND 1987 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
<b>Medical</b>										
0-19 .....	\$ 50	24.6%	\$ 270	103.4%	\$ 321	47.1%	\$ 744	118.0%	\$ 1,385	78.0%
20-29 .....	173	17.7	2,970	192.7	2,648	93.9	5,026	106.8	10,818	107.7
30-39 .....	3,681	44.8	12,068	68.7	17,919	85.5	17,872	73.4	51,540	72.5
40-49 .....	9,030	48.5	25,032	65.9	26,661	72.9	39,191	81.1	99,914	70.6
50-59 .....	15,437	74.1	33,513	85.1	35,351	74.3	39,452	79.6	123,752	78.6
60 and over.....	17,245	102.4	29,174	87.4	30,363	102.1	17,177	85.1	93,960	93.8
All Ages .....	\$ 45,616	69.4%	\$103,027	79.2%	\$113,264	81.8%	\$119,462	80.8%	\$381,370	79.1%
<b>Paramedical</b>										
0-19 .....	\$ 81	54.4%	\$ 44	29.4%	\$ 557	124.8%	\$ 163	102.2%	\$ 845	93.4%
20-29 .....	1,387	50.6	1,170	44.1	3,776	77.1	1,871	85.5	8,204	65.8
30-39 .....	17,712	93.6	18,711	68.7	24,007	85.8	7,140	81.7	67,570	81.5
40-49 .....	25,949	86.5	35,613	77.5	29,266	99.2	12,020	105.8	102,848	88.0
50-59 .....	17,780	87.0	36,257	108.9	24,383	112.6	7,485	96.5	85,906	103.3
60 and over.....	8,079	102.3	17,258	116.7	7,419	123.3	1,566	118.7	34,322	114.4
All Ages .....	\$ 70,989	88.6%	\$109,054	87.9%	\$ 89,409	98.8%	\$ 30,243	95.9%	\$299,694	91.9%

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
<b>Nonmedical</b>										
0-19 .....	\$ 5,893	67.3%	\$ 7,979	92.8%	\$ 8,022	88.3%	\$ 7,444	100.9%	\$ 29,338	86.8%
20-29 .....	21,401	78.4	24,210	94.7	17,637	106.0	14,174	100.7	77,422	92.6
30-39 .....	27,978	82.0	39,458	83.3	14,477	91.9	10,963	99.4	92,876	85.8
40-49 .....	12,519	95.9	21,410	97.1	6,052	108.6	3,476	105.5	43,457	98.8
50-59 .....	6,970	173.3	9,074	120.5	1,892	107.9	776	91.9	18,711	132.3
60 and over.....	1,217	87.5	2,076	75.9	448	68.1	55	35.8	3,796	76.9
All Ages .....	\$ 75,979	85.7%	\$104,207	91.5%	\$ 48,528	98.1%	\$ 36,886	100.3%	\$265,600	92.0%
<b>Combined</b>										
0-19 .....	\$ 6,276	66.3%	\$ 8,393	92.1%	\$ 8,900	87.1%	\$ 8,351	102.2%	\$ 31,920	86.3%
20-29 .....	25,110	75.9	29,209	95.1	24,167	98.2	21,145	99.8	99,631	90.9
30-39 .....	52,436	79.8	73,023	76.4	58,033	88.3	36,350	80.7	219,843	80.8
40-49 .....	52,090	77.2	85,556	77.3	62,999	87.3	55,995	87.7	256,640	81.7
50-59 .....	44,210	88.3	82,339	98.4	61,755	86.8	47,875	81.6	236,179	89.6
60 and over.....	28,503	100.1	49,990	95.3	38,230	105.0	18,851	87.0	135,574	97.5
All Ages .....	\$208,626	82.0%	\$328,510	86.0%	\$254,084	90.6%	\$188,566	86.3%	\$979,786	86.3%

TABLE 6  
SUMMARY OF MEDICAL, PARAMEDICAL, NONMEDICAL 1986-87 MORTALITY RATIOS  
MALE AND FEMALE LIVES COMBINED  
ISSUES OF 1972-86 STUDIED BETWEEN 1986 AND 1987 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														
	Med	Para	Non	Med	Para	Non	Med	Para	Non	Med	Para	Non	Med	Para	Non
0-19 .....	24.6%	54.4%	67.3%	103.4%	29.4%	92.8%	47.1%	124.8%	88.3%	118.0%	102.2%	100.9%	78.0%	93.4%	86.8%
20-29 .....	17.7	50.6	78.4	192.7	44.1	94.7	93.9	77.1	106.0	106.8	85.5	100.7	107.7	65.8	92.6
30-39 .....	44.8	93.6	82.0	68.7	68.7	83.3	85.5	85.8	91.9	73.4	81.7	99.4	72.5	81.5	85.8
40-49 .....	48.5	86.5	95.9	65.9	77.5	97.1	72.9	99.2	108.6	81.1	105.8	105.5	70.6	88.0	98.8
50-59 .....	74.1	87.0	173.3	85.1	108.9	120.5	74.3	112.6	107.9	79.6	96.5	91.9	78.6	103.3	132.3
60 and over.....	102.4	102.3	87.5	87.4	116.7	75.9	102.1	123.3	68.1	85.1	118.7	35.8	93.8	114.4	76.9
All Ages .....	69.4%	88.6%	85.7%	79.2%	87.9%	91.5%	81.8%	98.8%	98.1%	80.8%	95.9%	100.3%	79.1%	91.9%	92.0%
Ages at Issue	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 .....	2.21	1.24	2.74	0.28	3.16	0.90	2.65	0.71	1.88	0.87	0.99	0.85	1.20	0.93	1.11
20-29 .....	2.86	1.55	4.43	0.23	2.14	0.49	0.82	1.37	1.13	0.80	1.18	0.94	0.61	1.41	0.86
30-39 .....	2.09	0.88	1.83	1.00	1.21	1.21	1.00	1.07	1.07	1.11	1.22	1.35	1.12	1.05	1.18
40-49 .....	1.78	1.11	1.98	1.18	1.25	1.47	1.36	1.10	1.49	1.30	1.00	1.30	1.25	1.12	1.40
50-59 .....	1.17	1.99	2.34	1.28	1.11	1.42	1.52	0.96	1.45	1.21	0.95	1.15	1.31	1.28	1.68
60 and over.....	1.00	0.85	0.85	1.34	0.65	0.87	1.21	0.55	0.67	1.39	0.30	0.42	1.22	0.67	0.82
All Ages .....	1.28	0.97	1.23	1.11	1.04	1.16	1.21	0.99	1.20	1.19	1.05	1.24	1.16	1.00	1.16

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

## II. 1982-87 SELECT EXPERIENCE (MALES AND FEMALES SEPARATELY)

The experience between 1982 and 1987 anniversaries during the first 15 policy years is presented in Tables 7-15 in the same format as that presented for the 1986-87 experience in Tables 1-6 except that data for males and females are presented separately.

The mortality ratio for 1982-87 medical, paramedical and nonmedical experience combined (Table 7) is 90.1 percent (compared to 86.3 percent for the 1986-87 experience). The mortality ratio for males is 89.3 percent and that for females is 95.0 percent. These mortality ratios are based on expected deaths derived from the separate male and female 1975-80 Basic Tables as are all mortality ratios in this report.

*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 1986-87 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 is a rather unexpected result. These patterns are consistent throughout the experience when subdivided into medical, paramedical and nonmedical.

*By Policy Year (Tables 8 and 10)*

The mortality ratios by policy year (Tables 8 and 10) are highest in policy years 3-10 as compared to policy years 7-9 in the 1986-87 experience (Tables 2 and 4), again reflecting possible lapsation antiselection produced by the heavy replacement activities in recent years. The same pattern is less apparent for females than for males, although the relatively favorable mortality in policy years 1-2 is also apparent for females. This pattern applies primarily to the medical experience. The highest paramedical mortality is for policy years 5-12, and the highest nonmedical mortality is for policy years 6 and over.

**TABLE 7**  
**MALE AND FEMALE 1982-87 EXPERIENCE BY ISSUE AGE**  
**MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED**  
**ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 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 .....	\$ 88,692	\$ 30,713	76.9%	\$ 70,633	\$ 13,854	68.0%	\$ 159,325	\$ 44,567	73.9%
10-14 .....	30,754	22,810	89.3	21,156	7,040	89.5	51,910	29,850	89.4
15-19 .....	75,698	78,011	93.1	41,751	17,094	95.5	117,449	95,105	93.5
20-24 .....	211,219	168,174	98.6	94,747	34,343	88.3	305,967	202,517	96.7
25-29 .....	392,543	276,532	86.9	145,745	54,076	79.3	538,289	330,607	85.6
30-34 .....	491,727	404,986	83.4	151,849	74,009	75.4	643,579	478,995	82.0
35-39 .....	452,839	539,556	86.2	113,629	83,755	81.0	566,472	623,311	85.5
40-44 .....	314,379	578,548	88.2	67,028	89,325	89.5	381,410	667,873	88.4
45-49 .....	201,483	616,273	90.9	41,039	87,522	97.4	242,527	703,796	91.6
50-54 .....	131,374	565,350	95.2	27,051	80,834	102.4	158,427	646,184	96.1
55-59 .....	77,586	457,913	88.5	17,334	80,115	122.9	94,922	538,028	92.3
60-64 .....	33,174	276,084	93.1	9,201	57,789	122.6	42,376	333,874	97.2
65-69 .....	9,822	121,748	81.3	3,750	33,659	134.9	13,573	155,407	88.9
70 and over .....	2,193	46,727	109.7	1,231	21,212	168.3	3,424	67,939	123.0
Total .....	\$2,513,484	\$4,183,426	89.3%	\$806,143	\$734,628	95.0%	\$3,319,651	\$4,918,053	90.1%

TABLE 8

MALE AND FEMALE 1982-87 EXPERIENCE BY POLICY YEAR  
 MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED  
 ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 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 .....	\$ 561,550	\$ 449,916	81.5%	\$198,788	\$ 81,237	77.9%	\$ 760,359	\$ 531,153	80.9%
2 .....	447,151	508,706	89.4	149,881	92,676	93.9	597,036	601,382	90.1
3 .....	338,754	496,583	91.0	111,254	90,092	100.6	450,008	586,675	92.4
4 .....	251,192	428,365	92.9	81,978	75,700	97.1	333,169	504,065	93.5
5 .....	178,270	334,461	93.1	57,475	61,558	99.0	235,745	396,019	94.0
6 .....	135,762	266,904	91.4	42,989	49,580	96.2	178,751	316,484	92.1
7 .....	109,304	236,495	92.7	33,850	42,484	95.1	143,153	278,978	93.0
8 .....	91,234	217,514	94.8	27,757	36,292	90.5	118,991	253,806	94.1
9 .....	78,802	193,410	90.2	23,217	38,616	106.3	102,019	232,026	92.6
10 .....	70,365	187,376	89.8	19,793	34,918	103.2	90,158	222,293	91.7
11 .....	61,072	176,636	87.5	16,277	30,506	97.5	77,349	207,143	88.8
12 .....	54,503	173,947	87.7	13,566	25,518	90.2	68,069	199,465	88.0
13 .....	49,377	168,351	85.1	11,439	26,083	100.2	60,816	194,434	86.9
14 .....	44,994	172,108	86.5	9,637	25,090	100.5	54,631	197,198	88.0
15 .....	41,153	172,654	86.1	8,244	24,279	102.8	49,397	196,933	87.9
Total .....	\$2,513,484	\$4,183,426	89.3%	\$806,143	\$734,628	95.0%	\$3,319,651	\$4,918,053	90.1%

TABLE 9  
 MALE AND FEMALE 1982-87 EXPERIENCE BY ISSUE AGE  
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY  
 ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 ANNIVERSARIES  
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES  
 (ACTUAL DEATHS IN \$1,000 UNITS)

Ages at Issue	Medical		Paramedical		Nonmedical		All Issues	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Male								
0-9 .....	\$ 1,579	62.4%	\$ 385	98.1%	\$ 28,699	77.7%	\$ 30,713	76.9%
10-14 .....	2,039	80.8	427	60.4	20,344	91.4	22,810	89.3
15-19 .....	4,611	91.7	2,819	87.7	70,329	93.4	78,011	93.1
20-24 .....	16,681	99.5	13,915	96.6	137,062	98.9	168,174	98.6
25-29 .....	53,727	91.8	44,202	80.0	176,126	87.1	276,532	86.9
30-34 .....	130,716	82.1	109,493	79.1	162,794	88.1	404,986	83.4
35-39 .....	246,026	85.9	160,845	77.4	127,977	100.9	539,556	86.2
40-44 .....	319,817	83.9	180,124	89.1	73,511	108.4	578,548	88.2
45-49 .....	381,387	87.1	188,982	98.0	41,415	97.6	616,273	90.9
50-54 .....	383,117	90.0	151,494	104.9	26,439	134.8	565,350	95.2
55-59 .....	316,699	83.1	120,598	103.4	18,286	113.2	457,913	88.5
60-64 .....	214,429	90.3	54,742	112.3	4,868	60.5	276,084	93.1
65-69 .....	99,328	78.7	19,221	99.6	2,603	77.4	121,748	81.3
70 and over .....	38,972	106.6	6,188	129.9	1,414	131.9	46,727	109.7
Total .....	\$2,209,129	86.4%	\$1,053,434	91.7%	\$ 891,867	94.3%	\$4,183,426	89.3%



TABLE 9—Continued

Ages at Issue	Medical		Paramedical		Nonmedical		All Issues	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Female								
0-9 .....	\$ 402	42.9%	\$ 30	17.3%	\$ 13,372	69.6%	\$ 13,854	68.0%
10-14 .....	730	129.4	45	23.8	6,264	88.3	7,040	89.5
15-19 .....	300	45.4	485	103.3	16,310	97.5	17,094	95.5
20-24 .....	1,855	132.0	1,670	108.1	30,740	86.0	34,343	88.3
25-29 .....	4,633	102.5	5,925	96.7	43,402	76.1	54,076	79.3
30-34 .....	12,349	94.6	13,183	68.6	48,076	73.8	74,009	75.4
35-39 .....	19,434	83.8	24,031	78.7	39,525	81.0	83,755	81.0
40-44 .....	33,562	100.1	27,789	80.0	27,867	91.0	89,325	89.5
45-49 .....	41,251	97.0	32,243	95.1	13,302	105.4	87,522	97.4
50-54 .....	41,761	94.3	30,512	106.8	7,891	144.2	80,834	102.4
55-59 .....	45,391	116.2	27,689	129.1	6,525	153.4	80,115	122.9
60-64 .....	40,193	122.0	16,087	127.2	1,309	104.0	57,789	122.6
65-69 .....	25,184	131.1	7,572	143.7	516	156.0	33,659	134.9
70 and over .....	16,449	162.5	3,874	179.7	776	297.9	21,212	168.3
Total .....	\$ 283,494	106.6%	\$ 191,136	97.1%	\$ 255,872	84.0%	\$ 734,628	95.0%

TABLE 9—Continued

Ages at Issue	Medical		Paramedical		Nonmedical		All Issues	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Combined								
0-9 .....	\$ 1,981	57.1%	\$ 415	73.3%	\$ 42,070	74.9%	\$ 44,567	73.9%
10-14 .....	2,769	89.7	472	52.7	26,608	90.7	29,850	89.4
15-19 .....	4,911	86.3	3,304	89.7	86,639	94.1	95,105	93.5
20-24 .....	18,536	102.0	15,584	97.7	167,802	96.2	202,517	96.7
25-29 .....	58,360	92.5	50,128	81.7	219,528	84.7	330,607	85.6
30-34 .....	143,066	83.1	122,676	77.8	210,870	84.4	478,995	82.0
35-39 .....	265,461	85.7	184,876	77.6	167,502	95.4	623,311	85.5
40-44 .....	353,379	85.2	207,913	87.8	101,378	103.0	667,873	88.4
45-49 .....	422,637	88.0	221,225	97.6	54,716	99.4	703,796	91.6
50-54 .....	424,878	90.4	182,006	105.2	34,330	136.9	646,184	96.1
55-59 .....	362,090	86.2	148,287	107.4	24,811	121.5	538,028	92.3
60-64 .....	254,622	94.2	70,829	115.4	6,176	66.4	333,874	97.2
65-69 .....	124,512	85.6	26,793	109.1	3,119	84.5	155,407	88.9
70 and over .....	55,421	118.7	10,062	145.5	2,190	164.4	67,939	123.0
Total .....	\$2,492,623	88.3%	\$1,244,570	92.5%	\$1,147,739	91.8%	\$4,918,053	90.1%

TABLE 10

MALE AND FEMALE 1982-87 EXPERIENCE BY POLICY YEAR  
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY  
 ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 ANNIVERSARIES  
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES  
 (ACTUAL DEATHS IN \$1,000 UNITS)

Policy Year	Medical		Paramedical		Nonmedical		All Issues	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Male								
1 .....	\$ 153,086	76.9%	\$ 138,166	83.1%	\$ 153,126	84.8%	\$ 449,916	81.5%
2 .....	194,353	83.5	166,220	94.5	139,807	92.8	508,706	89.4
3 .....	217,685	91.8	151,504	87.8	118,690	93.7	496,583	91.0
4 .....	202,795	94.3	132,145	89.7	92,009	95.9	428,365	92.9
5 .....	166,183	91.5	107,824	95.0	59,960	94.4	334,461	93.1
6 .....	135,928	86.4	83,521	93.6	45,925	102.2	266,904	91.4
7 .....	131,433	89.7	69,364	96.1	35,081	97.2	236,495	92.7
8 .....	125,506	91.0	58,664	100.3	33,087	101.0	217,514	94.8
9 .....	117,610	86.6	45,048	95.3	30,448	98.5	193,410	90.2
10 .....	121,854	87.3	36,269	94.2	29,225	96.2	187,376	89.8
11 .....	117,548	81.9	27,458	97.9	31,472	104.7	176,636	87.5
12 .....	124,217	83.6	18,823	97.9	30,886	102.4	173,947	87.7
13 .....	126,019	81.4	10,527	88.3	30,700	100.9	168,351	85.1
14 .....	136,007	84.2	5,771	94.4	30,204	97.9	172,108	86.5
15 .....	138,904	83.6	2,130	89.1	31,248	99.1	172,654	86.1
Total .....	\$2,209,129	86.4%	\$1,053,434	91.7%	\$ 891,867	94.3%	\$4,183,426	89.3%

TABLE 10—Continued

Policy Year	Medical		Paramedical		Nonmedical		All Issues	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
Female								
1 .....	\$ 16,084	86.3%	\$ 21,634	83.3%	\$ 42,755	73.7%	\$ 81,237	77.9%
2 .....	28,721	132.6	24,588	89.3	37,954	79.8	92,676	93.9
3 .....	28,028	125.2	27,165	103.7	33,365	84.5	90,092	100.6
4 .....	22,877	104.3	24,398	101.4	28,350	89.7	75,700	97.1
5 .....	21,360	108.8	20,867	102.5	19,331	87.5	61,558	99.0
6 .....	16,715	92.3	18,695	107.5	14,056	87.9	49,580	96.2
7 .....	16,663	97.3	15,049	103.9	10,772	82.9	42,484	95.1
8 .....	15,221	92.7	11,030	92.4	10,042	85.6	36,292	90.5
9 .....	18,878	118.5	9,423	98.2	10,278	95.3	38,616	106.3
10 .....	18,939	118.5	6,983	91.8	8,995	87.9	34,918	103.2
11 .....	16,712	104.3	5,107	96.2	8,688	87.3	30,506	97.5
12 .....	14,131	90.7	3,011	89.4	8,264	88.8	25,518	90.2
13 .....	15,966	103.7	1,843	99.1	8,274	94.6	26,083	100.2
14 .....	16,519	105.0	977	107.4	7,542	90.9	25,090	100.5
15 .....	16,680	107.7	366	115.6	7,206	92.6	24,279	102.8
Total .....	\$ 283,494	106.6%	\$ 191,136	97.1%	\$ 255,872	84.0%	\$ 734,628	95.0%

TABLE 10—Continued

Policy Year	Medical		Paramedical		Nonmedical		All Issues	
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio
	Combined							
1 .....	\$ 169,169	77.7%	\$ 159,799	83.2%	\$ 195,881	82.1%	\$ 531,153	80.9%
2 .....	223,074	87.7	190,808	93.8	177,761	89.7	601,382	90.1
3 .....	245,714	94.6	178,669	89.9	152,055	91.5	586,675	92.4
4 .....	225,672	95.2	156,543	91.4	120,359	94.4	504,065	93.5
5 .....	187,543	93.1	128,691	96.2	79,291	92.6	396,019	94.0
6 .....	152,643	87.0	102,216	95.9	59,981	98.4	316,484	92.1
7 .....	148,096	90.5	84,413	97.4	45,853	93.4	278,978	93.0
8 .....	140,727	91.2	69,694	99.0	43,128	97.0	253,806	94.1
9 .....	136,489	89.9	54,472	95.8	40,727	97.6	232,026	92.6
10 .....	140,793	90.5	43,252	93.8	38,221	94.1	222,293	91.7
11 .....	134,260	84.2	32,565	97.6	40,160	100.3	207,143	88.8
12 .....	138,348	84.3	21,835	96.6	39,150	99.2	199,465	88.0
13 .....	141,985	83.4	12,369	89.7	38,974	99.5	194,434	86.9
14 .....	152,526	86.1	6,748	96.1	37,746	96.4	197,198	88.0
15 .....	155,585	85.7	2,496	92.2	38,454	97.8	196,933	87.9
Total .....	\$2,492,623	88.3%	\$1,244,570	92.5%	\$1,147,739	91.8%	\$4,918,053	90.1%

*Comparison of Medical, Paramedical and Nonmedical Experience*

In the 1982–87 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 1986–87 experience, are summarized as follows:

	1982–87			1986–87 Combined
	Males	Females	Combined	
Medical	86.4%	106.6%	88.3%	79.1%
Paramedical	91.7	97.1	92.5	91.9
Nonmedical	94.3	84.0	91.8	92.0
All	89.3%	95.0%	90.1%	86.3%

These mortality ratios suggest the following observations:

1. The more favorable medical mortality ratio for the 1986–87 experience (79.1 percent) relative to the 1982–87 experience (88.3 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 1982–87 nonmedical ratio for females (84.0 percent) relative to paramedical (97.1 percent) and medical (106.6 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. The higher 1982–87 mortality ratio for females (95.0 percent) relative to males (89.3 percent) indicates less improvement for females since the 1975–80 observation period for the 1975–80 Basic Tables.

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

Tables 11–14 subdivide the 1982–87 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 11  
 MALE AND FEMALE MEDICAL 1982-87 EXPERIENCE BY ISSUE AGE AND POLICY YEAR  
 ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 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 .....	\$ 1,102	97.5%	\$ 1,320	68.2%	\$ 2,706	76.6%	\$ 3,101	88.9%	\$ 8,229	81.6%
20-29 .....	8,182	83.1	12,831	100.6	22,373	100.5	27,022	88.7	70,408	93.5
30-39 .....	59,023	81.8	100,572	96.2	101,284	81.6	115,864	79.9	376,743	84.5
40-49 .....	99,165	73.5	171,900	87.9	191,388	90.9	238,751	85.8	701,204	85.6
50-59 .....	109,836	81.4	190,747	99.0	208,010	86.5	191,223	80.1	699,816	86.7
60 and over .....	70,131	89.1	109,294	86.3	106,570	91.6	66,734	85.0	352,729	88.1
All Ages .....	\$347,438	80.5%	\$586,664	92.5%	\$632,331	88.2%	\$642,695	83.0%	\$2,209,129	86.4%
Female										
0-19 .....	\$ 32	9.1%	\$ 512	97.7%	\$ 547	75.2%	\$ 342	61.1%	\$ 1,433	66.2%
20-29 .....	1,089	120.9	1,589	119.3	2,436	128.8	1,374	76.3	6,488	109.5
30-39 .....	4,140	73.1	10,207	116.0	9,326	78.1	8,110	82.4	31,784	87.7
40-49 .....	12,047	118.0	16,853	103.5	19,121	83.1	26,792	100.8	74,813	98.4
50-59 .....	15,348	140.6	17,935	95.7	27,403	97.8	26,466	103.1	87,152	104.6
60 and over .....	12,150	99.1	25,169	137.7	27,583	153.3	16,924	122.9	81,826	131.3
All Ages .....	\$ 44,805	111.2%	\$ 72,265	113.0%	\$ 86,416	103.4%	\$ 80,008	102.3%	\$ 283,494	106.6%
Combined										
0-19 .....	\$ 1,134	76.5%	\$ 1,832	74.5%	\$ 3,253	76.4%	\$ 3,442	85.1%	\$ 9,661	78.9%
20-29 .....	9,270	86.3	14,420	102.4	24,809	102.7	28,397	88.0	76,896	94.7
30-39 .....	63,162	81.1	110,779	97.7	110,610	81.3	123,974	80.1	408,526	84.8
40-49 .....	111,212	76.7	188,753	89.1	210,509	90.2	265,542	87.1	776,016	86.7
50-59 .....	125,183	85.9	208,682	98.7	235,414	87.7	217,689	82.3	786,968	88.4
60 and over .....	82,281	90.4	134,463	92.8	134,152	99.9	83,658	90.7	434,555	94.0
All Ages .....	\$392,243	83.1%	\$658,928	94.4%	\$718,748	89.8%	\$722,703	84.8%	\$2,492,623	88.3%

TABLE 12

MALE AND FEMALE PARAMEDICAL 1982-87 EXPERIENCE BY ISSUE AGE AND POLICY YEAR  
 ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 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 .....	\$ 531	84.0%	\$ 1,433	101.3%	\$ 1,393	72.1%	\$ 274	81.5%	\$ 3,631	84.2%
20-29 .....	12,434	73.2	19,203	85.8	21,739	88.0	4,741	85.3	58,117	83.4
30-39 .....	73,394	77.4	97,745	75.5	82,006	80.9	17,193	83.9	270,338	78.1
40-49 .....	108,900	91.2	133,352	88.3	101,193	101.0	25,661	106.0	369,106	93.5
50-59 .....	80,236	94.7	105,665	109.1	71,554	110.8	14,638	97.4	272,092	104.2
60 and over .....	28,891	113.2	34,075	105.7	14,982	115.8	2,202	106.7	80,150	110.1
All Ages .....	\$304,386	89.0%	\$391,473	90.3%	\$292,867	95.8%	\$ 64,709	95.6%	\$1,053,434	91.7%
Female										
0-19 .....	\$ 0	0.0%	\$ 425	152.1%	\$ 95	29.8%	\$ 40	80.4%	\$ 560	67.3%
20-29 .....	2,605	140.4	1,786	65.1	2,849	108.6	356	79.6	7,595	99.0
30-39 .....	9,747	75.5	12,602	69.0	13,178	81.5	1,688	70.1	37,214	74.8
40-49 .....	11,405	60.4	23,200	97.2	20,717	98.0	4,710	99.9	60,032	87.5
50-59 .....	14,114	109.3	22,037	126.8	18,435	112.8	3,615	107.2	58,201	116.4
60 and over .....	8,351	123.9	12,381	152.8	5,906	132.7	895	116.1	27,533	137.2
All Ages .....	\$ 46,221	86.4%	\$ 72,431	102.5%	\$ 61,180	100.3%	\$ 11,303	96.1%	\$ 191,136	97.1%
Combined										
0-19 .....	\$ 531	65.1%	\$ 1,858	109.7%	\$ 1,488	66.1%	\$ 314	81.3%	\$ 4,191	81.4%
20-29 .....	15,039	79.8	20,988	83.5	24,588	90.0	5,097	84.8	65,712	85.0
30-39 .....	83,141	77.2	110,347	74.7	95,184	81.0	18,881	82.4	307,553	77.7
40-49 .....	120,305	87.0	156,552	89.5	121,910	100.5	30,371	105.0	429,138	92.6
50-59 .....	94,349	96.7	127,702	111.8	89,989	111.2	18,252	99.2	330,293	106.2
60 and over .....	37,242	115.4	46,456	115.1	20,889	120.1	3,097	109.3	107,684	116.0
All Ages .....	\$350,607	88.6%	\$463,903	92.0%	\$354,047	96.5%	\$ 76,012	95.7%	\$1,244,570	92.5%



**TABLE 13**  
**MALE AND FEMALE NONMEDICAL 1982-87 EXPERIENCE BY ISSUE AGE AND POLICY YEAR**  
**ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 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
<b>Male</b>										
0-19 .....	\$ 24,830	78.0%	\$ 27,822	85.4%	\$ 35,978	90.1%	\$ 30,743	101.8%	\$ 119,372	88.7%
20-29 .....	92,498	80.0	83,420	94.4	73,009	101.5	64,260	99.1	313,188	91.9
30-39 .....	108,568	89.8	93,199	90.9	45,356	101.8	43,649	100.2	290,772	93.3
40-49 .....	46,305	103.6	43,444	101.3	13,697	115.1	11,480	106.4	114,926	104.2
50-59 .....	16,615	123.0	19,540	140.1	4,628	89.3	3,943	125.6	44,726	125.0
60 and over .....	4,117	88.6	3,233	56.3	1,099	69.6	434	85.9	8,884	71.2
All Ages .....	\$292,933	88.4%	\$270,658	94.6%	\$173,766	99.2%	\$154,509	101.0%	\$ 891,867	94.3%
<b>Female</b>										
0-19 .....	\$ 11,370	82.2%	\$ 8,763	80.6%	\$ 9,685	86.7%	\$ 6,128	85.5%	\$ 35,946	83.5%
20-29 .....	22,882	75.1	21,404	80.0	17,880	85.0	11,975	82.6	74,141	79.9
30-39 .....	26,574	66.0	28,999	80.3	18,379	83.6	13,648	87.7	87,600	76.9
40-49 .....	13,220	83.1	13,341	93.4	7,193	108.4	7,415	115.8	41,168	95.2
50-59 .....	5,647	132.9	7,625	171.6	816	112.3	328	107.6	\$14,416	148.2
60 and over .....	1,017	125.6	914	124.9	190	109.2	480	357.1	2,601	140.6
All Ages .....	\$ 80,709	76.5%	\$ 81,046	87.0%	\$ 54,143	87.7%	\$ 39,974	90.7%	\$ 255,872	84.0%
<b>Combined</b>										
0-19 .....	\$ 36,199	79.3%	\$ 36,585	84.2%	\$ 45,662	89.4%	\$ 36,871	98.6%	\$ 155,317	87.5%
20-29 .....	115,380	78.9	104,825	91.0	90,889	97.7	76,235	96.1	387,329	89.3
30-39 .....	135,141	83.9	122,198	88.2	63,735	95.8	57,297	96.9	378,372	88.9
40-49 .....	59,525	98.2	56,784	99.3	20,890	112.7	18,896	109.9	156,094	101.7
50-59 .....	22,262	125.4	27,164	147.7	5,444	92.1	4,271	124.0	59,141	130.0
60 and over .....	5,134	94.1	4,147	64.0	1,289	73.5	914	142.8	11,485	80.1
All Ages .....	\$373,642	85.5%	\$351,704	92.7%	\$227,909	96.2%	\$194,484	98.7%	\$1,147,739	91.8%

TABLE 14

MALE AND FEMALE 1982-87 EXPERIENCE BY ISSUE AGE AND POLICY YEAR  
 MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED  
 ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 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 .....	\$ 26,665	78.8%	\$ 30,675	85.2%	\$ 40,076	88.3%	\$ 34,118	100.2%	\$ 131,534	88.1%
20-29 .....	115,156	79.9	116,278	93.5	117,227	98.4	96,045	95.0	444,706	91.0
30-39 .....	243,304	83.5	294,030	86.7	230,240	84.9	176,969	84.3	944,542	85.0
40-49 .....	258,667	85.2	351,797	89.4	307,183	95.1	277,175	88.2	1,194,822	89.5
50-59 .....	210,030	88.5	318,946	104.1	284,321	91.6	209,966	81.6	1,023,263	92.1
60 and over .....	104,802	94.5	147,683	88.9	122,651	93.7	69,423	85.6	444,560	90.9
All Ages .....	\$ 958,622	85.5%	\$1,259,409	92.2%	\$1,101,698	91.8%	\$ 863,696	86.6%	\$4,183,426	89.3%
Female										
0-19 .....	\$ 11,452	79.2%	\$ 9,700	82.9%	\$ 10,327	84.6%	\$ 6,510	83.7%	\$ 37,988	82.3%
20-29 .....	26,682	79.2	24,814	80.0	23,165	90.5	13,758	82.1	88,419	82.6
30-39 .....	41,207	68.9	52,080	81.7	40,919	81.5	23,559	84.5	157,765	78.3
40-49 .....	36,966	80.1	53,794	97.7	47,145	92.8	38,943	103.2	176,847	93.2
50-59 .....	35,788	124.7	48,097	117.5	46,654	103.5	30,409	103.6	160,949	111.7
60 and over .....	21,818	108.3	38,864	142.6	33,679	148.9	18,299	124.7	112,660	133.0
All Ages .....	\$ 173,912	85.7%	\$ 227,349	99.0%	\$ 201,889	97.8%	\$ 131,477	98.0%	\$ 734,628	95.0%
Combined										
0-19 .....	\$ 38,116	78.9%	\$ 40,375	84.6%	\$ 50,403	87.5%	\$ 40,627	97.2%	\$ 169,522	86.7%
20-29 .....	141,838	79.8	141,092	90.8	140,391	97.0	109,803	93.2	533,125	89.5
30-39 .....	284,510	81.0	346,110	85.9	271,159	84.4	200,527	84.3	1,102,307	83.9
40-49 .....	295,633	84.5	405,590	90.4	354,328	94.8	316,118	89.8	1,371,669	90.0
50-59 .....	245,818	92.4	367,043	105.6	330,976	93.1	240,375	83.8	1,184,212	94.3
60 and over .....	126,619	96.6	186,547	96.5	156,330	101.9	87,723	91.6	557,220	97.1
All Ages .....	\$1,132,535	85.5%	\$1,486,758	93.2%	\$1,303,588	92.7%	\$ 995,173	87.9%	\$4,918,053	90.1%

Table 15 shows the ratios of mortality ratios for the 1982–87 experience in the same way as Table 6 for the 1986–87 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 1986. Tables 16 and 17 show the experience between 1986 and 1987 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 1982 and 1987 anniversaries but are otherwise identical to Tables 16 and 17. Tables 20 and 21 show the 1982–87 experience subdivided by sex, but not by type of underwriting.

For 1986–87 experience combined, the mortality ratio for nonsmokers is 69.2 percent, compared to 146.2 percent for smokers. For medical experience, the respective ratios are 60.8 percent and 141.2 percent; for paramedical, 73.8 percent and 151.0 percent; and for nonmedical, 72.7 percent and 145.5 percent.

By issue age (Tables 16 and 18), the adverse effect of smoking is most apparent at ages 50 and over, where some mortality ratios for smokers are as high as 2½ times those for nonsmokers. By policy year (Tables 17 and 19), the mortality ratios for smokers are generally more than twice those of nonsmokers, except for policy year 1.

TABLE 15

SUMMARY OF MALE AND FEMALE 1982-87 MORTALITY RATIOS  
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY  
 ISSUES OF 1972-86 STUDIED BETWEEN 1982 AND 1987 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 .....	97.5%	84.0%	78.0%	68.2%	101.3%	85.4%	76.6%	72.1%	90.1%	88.9%	81.5%	101.8%	81.6%	84.2%	88.7%
20-29 .....	83.1	73.2	80.0	100.6	85.8	94.4	100.5	88.0	101.5	88.7	85.3	99.1	93.5	83.4	91.9
30-39 .....	81.8	77.4	89.8	96.2	75.5	90.9	81.6	80.9	101.8	79.9	83.9	100.2	84.5	78.1	93.3
40-49 .....	73.5	91.2	103.6	87.9	88.3	101.3	90.9	101.0	115.1	85.8	106.0	106.4	85.6	93.5	104.2
50-59 .....	81.4	94.7	123.0	99.0	109.1	140.1	86.5	110.8	89.3	80.1	97.4	125.6	86.7	104.2	125.0
60 and over .....	89.1	113.2	88.6	86.3	105.7	56.3	91.6	115.8	69.6	85.0	106.7	85.9	88.1	110.1	71.2
All Ages .....	80.5%	89.0%	88.4%	92.5%	90.3%	94.6%	88.2%	95.8%	99.2%	83.0%	95.6%	101.0%	86.4%	91.7%	94.3%
Female															
0-19 .....	9.1%	0.0%	82.2%	97.7%	152.1%	80.6%	75.2%	29.8%	86.7%	61.1%	80.4%	85.5%	66.2%	67.3%	83.5%
20-29 .....	120.9	140.4	75.1	119.3	65.1	80.0	128.8	108.6	85.0	76.3	79.6	82.6	109.5	99.0	79.9
30-39 .....	73.1	75.5	66.0	116.0	69.0	80.3	78.1	81.5	83.6	82.4	70.1	87.7	87.7	74.8	76.9
40-49 .....	118.0	60.4	83.1	103.5	97.2	93.4	83.1	98.0	108.4	100.8	99.9	115.8	98.4	87.5	95.2
50-59 .....	140.6	109.3	132.9	95.7	126.8	171.6	97.8	112.8	112.3	103.1	107.2	107.6	104.6	116.4	148.2
60 and over .....	99.1	123.9	125.6	137.7	152.8	124.9	153.3	132.7	109.2	122.9	116.1	357.1	131.3	137.2	140.6
All Ages .....	111.2%	86.4%	76.5%	113.0%	102.5%	87.0%	103.4%	100.3%	87.7%	102.3%	96.1%	90.7%	106.6%	97.1%	84.0%
Combined															
0-19 .....	76.5%	65.1%	79.3%	74.5%	109.7%	84.2%	76.4%	66.1%	89.4%	85.1%	81.3%	98.6%	78.9%	81.4%	87.5%
20-29 .....	86.3	79.8	78.9	102.4	83.5	91.0	102.7	90.0	97.7	88.0	84.8	96.1	94.7	85.0	89.3
30-39 .....	81.1	77.2	83.9	97.7	74.7	88.2	81.3	81.0	95.8	80.1	82.4	96.9	84.8	77.7	88.9
40-49 .....	76.7	87.0	98.2	89.1	89.5	99.3	90.2	100.5	112.7	87.1	105.0	109.9	86.7	92.6	101.7
50-59 .....	85.9	96.7	125.4	98.7	111.8	147.7	87.7	111.2	92.1	82.3	99.2	124.0	88.4	106.2	130.0
60 and over .....	90.4	115.4	94.1	92.8	115.1	64.0	99.9	120.1	73.5	90.7	109.3	142.8	94.0	116.0	80.1
All Ages .....	83.1%	88.6%	85.5%	94.4%	92.0%	92.7%	89.8%	96.5%	96.2%	84.8%	95.7%	98.7%	88.3%	92.5%	91.8%

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 .....	0.86	0.93	0.80	1.49	0.84	1.25	0.94	1.25	1.18	0.92	1.25	1.14	1.03	1.05	1.09
20-29 .....	0.88	1.09	0.96	0.85	1.10	0.94	0.88	1.15	1.01	0.96	1.16	1.12	0.89	1.10	0.98
30-39 .....	0.95	1.16	1.10	0.79	1.20	0.95	0.99	1.26	1.25	1.05	1.19	1.25	0.92	1.20	1.10
40-49 .....	1.24	1.14	1.41	1.00	1.15	1.15	1.11	1.14	1.27	1.24	1.00	1.24	1.09	1.12	1.22
50-59 .....	1.16	1.30	1.51	1.10	1.28	1.41	1.28	0.81	1.03	1.22	1.29	1.57	1.20	1.20	1.44
60 and over .....	1.27	0.78	0.99	1.22	0.53	0.65	1.26	0.60	0.76	1.25	0.80	1.01	1.25	0.65	0.81
All Ages .....	1.11	0.99	1.10	0.98	1.05	1.02	1.09	1.04	1.13	1.15	1.06	1.22	1.06	1.03	1.09
Female															
0-19 .....	0.00	0.00	9.05	1.56	0.53	0.82	0.40	2.91	1.15	1.31	1.06	1.40	1.02	1.24	1.26
20-29 .....	1.16	0.53	0.62	0.55	1.23	0.67	0.84	0.78	0.66	1.04	1.04	1.08	0.90	0.81	0.73
30-39 .....	1.03	0.87	0.90	0.59	1.16	0.69	1.04	1.02	1.07	0.85	1.25	1.06	0.85	1.03	0.88
40-49 .....	0.51	1.38	0.70	0.94	0.96	0.90	1.18	1.11	1.30	0.99	1.16	1.15	0.89	1.09	0.97
50-59 .....	0.78	1.22	0.95	1.32	1.35	1.79	1.15	1.00	1.15	1.04	1.00	1.04	1.11	1.27	1.42
60 and over .....	1.25	1.01	1.27	1.11	0.82	0.91	0.87	0.82	0.71	0.95	3.07	2.91	1.04	1.02	1.07
All Ages .....	0.78	0.88	0.69	0.91	0.85	0.77	0.97	0.87	0.85	0.94	0.94	0.89	0.91	0.87	0.79
Combined															
0-19 .....	0.85	1.22	1.04	1.47	0.77	1.13	0.87	1.35	1.17	0.96	1.21	1.16	1.03	1.07	1.11
20-29 .....	0.92	0.99	0.91	0.82	1.09	0.89	0.88	1.09	0.95	0.96	1.13	1.09	0.90	1.05	0.94
30-39 .....	0.95	1.09	1.03	0.76	1.18	0.90	1.00	1.18	1.18	1.03	1.18	1.21	0.92	1.14	1.05
40-49 .....	1.13	1.13	1.28	1.00	1.11	1.11	1.11	1.12	1.25	1.21	1.05	1.26	1.07	1.10	1.17
50-59 .....	1.13	1.30	1.46	1.13	1.32	1.50	1.27	0.83	1.05	1.20	1.25	1.51	1.20	1.22	1.47
60 and over .....	1.28	0.82	1.04	1.24	0.56	0.69	1.20	0.61	0.74	1.20	1.31	1.58	1.23	0.69	0.85
All Ages .....	1.07	0.97	1.03	0.98	1.01	0.98	1.08	1.00	1.07	1.13	1.03	1.16	1.05	0.99	1.04

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

TABLE 16

SMOKER-NONSMOKER 1986-87 EXPERIENCE BY ISSUE AGE  
SEPARATELY FOR MEDICAL, PARAMEDICAL AND NONMEDICAL; MALES AND FEMALES COMBINED  
ISSUES OF 1980-86 STUDIED BETWEEN 1986 AND 1987 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 .....	\$ 201	\$ 0	0.0%	\$ 100	\$ 250	366.0%	0.00
20-29 .....	2,866	2,588	136.3	441	555	190.3	1.40
30-39 .....	18,531	8,271	44.7	2,831	2,931	97.8	2.19
40-49 .....	18,250	18,382	51.4	3,033	6,703	107.8	2.10
50-59 .....	9,812	21,771	59.1	1,796	10,257	144.2	2.44
60 and over .....	3,179	21,058	82.7	594	9,132	205.8	2.49
All Ages .....	\$ 52,838	\$ 72,070	60.8%	\$ 8,794	\$ 29,828	141.2%	2.32
Paramedical							
0-19 .....	\$ 165	\$ 125	108.6%	\$ 46	\$ 0	0.0%	0.00
20-29 .....	6,787	2,302	52.6	961	559	91.4	1.74
30-39 .....	37,755	23,840	69.8	6,483	7,232	117.3	1.68
40-49 .....	24,514	30,593	71.2	5,322	12,304	126.4	1.77
50-59 .....	8,422	22,724	77.9	2,021	14,210	201.0	2.58
60 and over .....	2,030	13,053	88.7	445	6,187	192.8	2.17
All Ages .....	\$ 79,673	\$ 92,637	73.8%	\$ 15,278	\$ 40,492	151.0%	2.05

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 .....	\$ 10,540	\$ 5,253	89.0%	\$ 2,089	\$ 1,167	101.6%	1.14
20-29 .....	55,647	23,425	72.1	11,603	8,430	123.1	1.71
30-39 .....	57,282	30,918	69.3	13,293	12,734	117.9	1.70
40-49 .....	12,499	15,919	76.3	3,679	9,873	158.9	2.08
50-59 .....	2,286	6,411	85.2	715	7,282	307.6	3.61
60 and over .....	416	1,230	40.6	82	1,220	202.7	4.99
All Ages .....	\$138,670	\$ 83,156	72.7%	\$ 31,461	\$ 40,706	145.5%	2.00
Combined							
0-19 .....	\$ 10,906	\$ 5,378	87.6%	\$ 2,235	\$ 1,417	113.4%	1.29
20-29 .....	65,300	28,315	73.0	13,005	9,544	123.2	1.69
30-39 .....	113,568	63,029	64.8	22,607	22,897	114.7	1.77
40-49 .....	55,263	64,894	65.2	12,034	28,880	130.3	2.00
50-59 .....	20,519	50,906	69.2	4,532	31,749	191.8	2.77
60 and over .....	5,625	35,341	81.8	1,121	16,539	200.5	2.45
All Ages .....	\$271,181	\$247,863	69.2%	\$ 55,534	\$111,026	146.2%	2.11

TABLE 17  
 SMOKER-NONSMOKER 1986-87 EXPERIENCE BY POLICY YEAR  
 SEPARATELY FOR MEDICAL, PARAMEDICAL AND NONMEDICAL; MALES AND FEMALES COMBINED  
 ISSUES OF 1980-86 STUDIED BETWEEN 1986 AND 1987 ANNIVERSARIES  
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES  
 (EXPOSURES IN \$1,000,000 UNITS; ACTUAL DEATHS IN \$1,000 UNITS)

Year of Issue	Policy Year	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
		Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Medical								
1986 .....	1	\$ 13,270	\$ 6,790	37.9%	\$ 2,072	\$ 1,606	55.3%	1.46
1985 .....	2	10,260	15,000	81.1	1,494	2,267	84.3	1.04
1984 .....	3	9,151	15,117	70.4	1,437	5,873	172.7	2.45
1983 .....	4	9,226	13,319	53.0	1,404	6,534	162.7	3.07
1982 .....	5	5,960	10,808	60.8	1,171	7,287	203.1	3.34
1981 .....	6	3,329	7,773	66.9	729	3,296	124.2	1.87
1980 .....	7	1,643	3,263	53.2	487	2,965	158.7	2.98
1980-86 .....	1-7	\$ 52,838	\$ 72,070	60.8%	\$ 8,794	\$ 29,828	141.2%	2.32
Paramedical								
1986 .....	1	\$ 24,567	\$ 17,401	72.6%	\$ 4,397	\$ 4,910	106.5%	1.47
1985 .....	2	17,929	20,287	84.6	3,167	8,521	188.9	2.32
1984 .....	3	13,960	17,620	69.2	2,596	7,301	142.2	2.05
1983 .....	4	10,865	18,190	77.4	2,191	7,757	147.8	1.91
1982 .....	5	7,373	10,268	60.3	1,798	9,209	204.5	3.39
1981 .....	6	3,661	6,701	79.3	816	1,564	75.1	0.95
1980 .....	7	1,319	2,170	69.9	311	1,230	168.4	2.41
1980-86 .....	1-7	\$ 79,673	\$ 92,637	73.8%	\$ 15,278	\$ 40,492	151.0%	2.05



TABLE 17—Continued

Year of Issue	Policy Year	Nonsmoker			Smoker			Ratio of Smoker/Nonsmoker Mortality Ratios
		Exposure	Actual Deaths	Mortality Ratio	Exposure	Actual Deaths	Mortality Ratio	
Nonmedical								
1986 .....	1	\$ 43,560	\$ 18,332	68.4%	\$ 9,911	\$ 6,766	106.9%	1.56
1985 .....	2	29,598	17,302	80.1	6,286	9,696	198.4	2.48
1984 .....	3	25,242	16,358	71.3	5,516	7,205	135.7	1.90
1983 .....	4	22,254	16,335	70.0	5,148	8,708	150.2	2.14
1982 .....	5	13,090	11,296	79.6	3,383	6,131	146.6	1.84
1981 .....	6	4,333	3,101	64.3	1,041	2,004	155.2	2.41
1980 .....	7	592	432	60.7	178	196	110.7	1.82
1980-86 .....	1-7	\$138,670	\$ 83,156	72.7%	\$ 31,461	\$ 40,706	145.5%	2.00
Combined								
1986 .....	1	\$ 81,397	\$ 42,523	61.9%	\$ 16,380	\$ 13,282	95.9%	1.55
1985 .....	2	57,787	52,589	82.1	10,947	20,484	169.5	2.06
1984 .....	3	48,353	49,095	70.3	9,550	20,379	147.2	2.09
1983 .....	4	42,346	47,844	66.5	8,743	22,999	152.7	2.30
1982 .....	5	26,423	32,372	66.1	6,352	22,627	184.4	2.79
1981 .....	6	11,323	17,575	70.6	2,586	6,864	113.9	1.61
1980 .....	7	3,553	5,865	58.9	976	4,391	158.2	2.68
1980-86 .....	1-7	\$271,181	\$247,863	69.2%	\$ 55,534	\$111,026	146.2%	2.11

TABLE 18

SMOKER-NONSMOKER 1982-87 EXPERIENCE BY ISSUE AGE  
SEPARATELY FOR MEDICAL, PARAMEDICAL AND NONMEDICAL; MALES AND FEMALES COMBINED  
ISSUES OF 1980-86 STUDIED BETWEEN 1982 AND 1987 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 .....	\$ 1,014	\$ 75	13.5%	\$ 319	\$ 275	136.6%	10.12
20-29 .....	11,633	7,205	94.2	1,734	1,745	155.5	1.65
30-39 .....	83,852	56,842	76.8	12,358	18,352	160.3	2.09
40-49 .....	79,682	85,824	61.9	13,165	35,838	152.1	2.46
50-59 .....	39,435	96,983	74.2	6,985	37,609	158.7	2.14
60 and over .....	10,825	57,730	76.7	1,836	20,091	161.3	2.10
All Ages .....	\$226,442	\$304,658	71.3%	\$ 36,397	\$113,910	157.1%	2.20
Paramedical							
0-19 .....	\$ 590	\$ 435	110.3%	\$ 126	\$ 40	44.2%	0.40
20-29 .....	21,818	9,064	64.6	3,183	2,578	127.2	1.97
30-39 .....	117,589	58,245	59.0	20,516	22,956	127.3	2.16
40-49 .....	67,710	74,058	66.8	15,692	36,781	137.8	2.06
50-59 .....	24,966	56,590	72.7	6,309	38,296	193.6	2.66
60 and over .....	5,650	31,532	88.4	1,333	16,496	201.5	2.28
All Ages .....	\$238,324	\$229,924	68.1%	\$ 47,158	\$117,147	156.6%	2.30

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 .....	\$ 34,959	\$ 14,663	76.1%	\$ 5,876	\$ 3,204	98.4%	1.29
20-29 .....	155,315	60,697	67.4	33,470	23,246	118.5	1.76
30-39 .....	158,958	81,736	70.9	38,231	35,749	123.3	1.74
40-49 .....	36,672	38,462	70.5	11,001	27,180	163.1	2.31
50-59 .....	6,303	17,747	96.2	2,093	16,092	265.0	2.75
60 and over .....	1,049	3,315	48.5	207	3,032	227.5	4.69
All Ages .....	\$393,255	\$216,621	71.2%	\$ 90,877	\$108,503	142.9%	2.01
Combined							
0-19 .....	\$ 36,563	\$ 15,173	75.1%	\$ 6,321	\$ 3,519	99.1%	1.32
20-29 .....	188,766	76,966	68.9	38,386	27,569	121.1	1.76
30-39 .....	360,399	196,822	68.3	71,105	77,057	131.8	1.93
40-49 .....	184,065	198,344	65.2	39,858	99,799	149.1	2.29
50-59 .....	70,704	171,320	75.5	15,387	91,996	185.7	2.46
60 and over .....	17,523	92,577	78.6	3,375	39,619	180.3	2.29
All Ages .....	\$858,021	\$751,203	70.3%	\$174,432	\$339,559	152.1%	2.16

TABLE 19  
 SMOKER-NONSMOKER 1982-87 EXPERIENCE BY POLICY YEAR  
 SEPARATELY FOR MEDICAL, PARAMEDICAL AND NONMEDICAL; MALES AND FEMALES COMBINED  
 ISSUES OF 1980-86 STUDIED BETWEEN 1982 AND 1987 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	
<b>Medical</b>							
1 .....	\$ 70,185	\$ 55,700	63.6%	\$ 10,927	\$ 18,113	130.8%	2.06
2 .....	60,860	76,637	75.4	9,036	22,811	150.4	1.99
3 .....	46,450	74,696	74.1	6,916	24,002	156.7	2.11
4 .....	29,076	60,385	81.1	4,761	21,768	172.0	2.12
5 .....	13,174	22,956	58.8	2,928	18,605	208.7	3.55
6 .....	5,053	11,021	63.7	1,342	5,646	119.9	1.88
7 .....	1,643	3,263	53.2	487	2,965	158.7	2.98
1-7 .....	\$226,442	\$304,658	71.3%	\$ 36,397	\$113,910	157.1%	2.20
<b>Paramedical</b>							
1 .....	\$ 82,743	\$ 53,223	65.4%	\$ 15,331	\$ 23,227	142.1%	2.17
2 .....	63,637	60,416	72.1	12,091	29,837	170.6	2.37
3 .....	45,110	48,771	63.9	8,944	25,027	149.0	2.33
4 .....	27,694	39,376	72.9	5,955	20,979	162.5	2.23
5 .....	12,963	17,982	64.4	3,327	13,998	182.8	2.84
6 .....	4,859	7,985	72.6	1,199	2,848	99.5	1.37
7 .....	1,319	2,170	69.9	311	1,230	168.4	2.41
1-7 .....	\$238,324	\$229,924	68.1%	\$ 47,158	\$117,147	156.6%	2.30

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 .....	\$144,767	\$ 63,274	69.9%	\$ 33,210	\$ 25,547	118.1%	1.69
2 .....	106,435	57,943	73.8	23,787	30,317	161.3	2.18
3 .....	73,701	44,879	68.4	16,755	22,918	141.6	2.07
4 .....	44,521	31,796	71.9	10,758	18,745	159.2	2.21
5 .....	18,249	14,676	75.8	4,919	8,666	147.9	1.95
6 .....	4,990	3,621	65.5	1,269	2,114	140.4	2.14
7 .....	592	432	60.7	178	196	110.7	1.82
1-7 .....	\$393,255	\$216,621	71.2%	\$ 90,877	\$108,503	142.9%	2.01
Combined							
1 .....	\$297,695	\$172,197	66.4%	\$ 59,469	\$ 66,886	129.0%	1.94
2 .....	230,932	194,996	73.9	44,914	82,965	161.3	2.18
3 .....	165,262	168,346	69.3	32,616	71,947	148.9	2.15
4 .....	101,291	131,557	76.2	21,474	61,492	164.7	2.16
5 .....	44,386	55,614	64.4	11,173	41,269	184.0	2.86
6 .....	14,902	22,627	66.9	3,810	10,608	116.9	1.75
7 .....	3,553	5,865	58.9	976	4,391	158.2	2.68
1-7 .....	\$858,021	\$751,203	70.3%	\$174,432	\$339,559	152.1%	2.16

TABLE 20

SMOKER-NONSMOKER 1982-87 EXPERIENCE BY ISSUE AGE  
SEPARATELY FOR MALES AND FEMALES; MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED  
ISSUES OF 1980-86 STUDIED BETWEEN 1982 AND 1987 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 .....	\$ 20,288	\$ 11,333	76.5%	\$ 3,474	\$ 2,660	101.9%	1.33
20-29 .....	124,796	62,467	70.6	25,358	23,132	128.3	1.82
30-39 .....	274,796	167,568	69.8	54,695	66,238	135.5	1.94
40-49 .....	153,572	175,078	65.3	32,096	87,921	153.1	2.34
50-59 .....	59,439	150,064	73.7	12,078	77,420	182.2	2.47
60 and over .....	13,459	76,780	76.1	2,312	30,367	172.1	2.26
All Ages .....	\$646,350	\$643,291	70.2%	\$130,013	\$287,739	153.8%	2.19
Female							
0-19 .....	\$ 16,276	\$ 3,840	71.1%	\$ 2,847	\$ 859	91.6%	1.29
20-29 .....	63,970	14,499	62.6	13,028	4,437	93.8	1.50
30-39 .....	85,603	29,254	60.7	16,410	10,819	113.1	1.86
40-49 .....	30,493	23,266	64.6	7,762	11,878	124.9	1.93
50-59 .....	11,265	21,256	90.7	3,309	14,576	206.7	2.28
60 and over .....	4,065	15,797	93.9	1,063	9,252	213.5	2.27
All Ages .....	\$211,671	\$107,912	70.5%	\$ 44,420	\$ 51,820	143.4%	2.03

TABLE 21

SMOKER-NONSMOKER 1982-87 EXPERIENCE BY POLICY YEAR  
SEPARATELY FOR MALES AND FEMALES; MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED  
ISSUES OF 1980-86 STUDIED BETWEEN 1982 AND 1987 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 .....	\$220,538	\$145,950	66.7%	\$ 43,620	\$ 54,823	127.6%	1.91
2 .....	173,915	169,450	75.1	33,403	70,391	164.1	2.18
3 .....	125,891	142,892	68.0	24,431	62,594	154.1	2.27
4 .....	77,258	116,274	78.1	16,153	51,851	165.6	2.12
5 .....	33,949	44,086	59.5	8,545	34,795	183.9	3.09
6 .....	11,841	19,272	64.9	3,050	9,464	119.8	1.84
7 .....	2,958	5,367	60.7	811	3,820	154.6	2.55
1-7 .....	\$646,350	\$643,291	70.2%	\$130,013	\$287,739	153.8%	2.19
Female							
1 .....	\$ 77,157	\$ 26,248	64.5%	\$ 15,849	\$ 12,063	135.9%	2.11
2 .....	57,017	25,546	66.7	11,511	12,574	146.9	2.20
3 .....	39,370	25,454	77.9	8,185	9,353	121.9	1.56
4 .....	24,034	15,283	64.0	5,321	9,641	159.8	2.50
5 .....	10,436	11,528	94.4	2,629	6,474	184.4	1.95
6 .....	3,062	3,355	80.9	760	1,144	97.3	1.20
7 .....	595	498	44.8	166	571	187.4	4.18
1-7 .....	\$211,671	\$107,912	70.5%	\$ 44,420	\$ 51,820	143.4%	2.03

For the 1982-87 experience (Tables 18-21), the mortality ratios are as follows:

	Nonsmoker	Smoker	Ratio
Medical	71.3%	157.1%	2.20
Paramedical	68.1	156.6	2.30
Nonmedical	71.2	142.9	2.01
Male	70.2	153.8	2.19
Female	70.5	143.4	2.03
Total	70.3%	152.1%	2.16

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

The proportion of nonsmoker to total exposure is 83.2 percent for males and 82.7 percent for females. 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 that for nonsmokers.

Note that the nonsmoker-smoker data are only on 1980-86 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.

#### IV. ULTIMATE EXPERIENCE (POLICY YEARS 16 AND OVER)

The experience between 1986 and 1987 anniversaries for policy years 16 and over is shown in Tables 22-25. Table 22 presents the total experience with mortality ratios based on four different tables. The mortality ratio based on the 1975-80 Ultimate Basic Tables is 90.8 percent for all ages. This compares to 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.) 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 experience and to a lesser extent, in the 1984-85 experience. Part of this extra mortality at younger ages could be attributed to AIDS deaths.

TABLE 22  
1986-1987 ULTIMATE EXPERIENCE BY ATTAINED AGE  
MALE AND FEMALE LIVES COMBINED  
ISSUES OF 1971 AND PRIOR STUDIED BETWEEN 1986 AND 1987 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			
			1965-70 Ultimate Tables	1975-80 Ultimate Tables	1980 CSO Tables	1979-81 U.S. Life Tables
15-19 .....	\$ 1,369	\$ 936	85.9%	77.7%	48.8%	65.2%
20-24 .....	1,719	1,632	101.6	87.2	59.1	64.0
25-29 .....	2,084	2,231	115.4	105.5	68.2	70.3
30-34 .....	3,321	4,522	120.8	137.4	77.4	82.7
35-39 .....	7,215	10,290	86.7	112.5	60.0	63.7
40-44 .....	11,140	19,840	66.9	92.8	50.8	52.3
45-49 .....	12,155	35,119	66.4	89.8	55.8	53.1
50-54 .....	12,932	59,600	63.8	86.8	59.5	53.0
55-59 .....	13,926	111,803	67.9	93.6	67.0	60.0
60-64 .....	13,195	169,654	69.0	92.7	70.6	62.9
65-69 .....	9,412	185,699	68.0	89.0	69.2	64.9
70-74 .....	5,950	189,124	71.9	90.4	71.3	70.3
75-79 .....	3,698	183,458	71.6	89.2	69.1	75.4
80-84 .....	1,704	138,256	77.7	93.6	74.0	83.6
85-89 .....	708	76,980	69.8	82.0	64.5	76.5
90-95 .....	181	35,819	92.3	101.2	80.2	99.0
All Ages ..	\$100,709	\$1,224,966	71.0%	90.8%	68.4%	68.0%

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 are remarkably similar (68.4 percent and 68.0 percent, respectively). By attained age, the CSO mortality ratios are lower than the population mortality ratios through attained age 44, are higher for ages 45-74, and then are lower again for ages 75 and over.

Tables 23–25 show the experience between 1982 and 1987 anniversaries for policy years 16 and over subdivided in three ways. The mortality ratio for fully paid-up policies (reduced paid-up policies are not included) is 93.7 percent compared to 91.1 percent for premium-paying policies. This lower mortality ratio for premium-paying policies has been a characteristic of the experience for many years.

The mortality ratios for medical (89.0 percent) and nonmedical (102.3 percent) issues are also presented in Tables 23–25. This large difference in mortality ratios exists for virtually each attained-age group. 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.

Mortality ratios for males and females are also presented in Tables 23–25. 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 90.5 percent (down from 92.5 percent for the 1985–86 experience). As a result, the ratio of female-to-male mortality dropped to 61.2 percent from 62.5 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 the 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.

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

<u>Study</u>	<u>TSA Reports No.</u>
Standard Ordinary	Published Annually
Cause of Death	1983
Large Amounts	1985-86-87
Term Conversions	1982
Guaranteed Insurability Option	1982
Substandard	1979
Group Conversions	1979
Waiver of Premium	1978
Accidental Death Benefits	1977

TABLE 23  
 COMPARISONS OF 1982-87 ULTIMATE EXPERIENCE BY ATTAINED AGE  
 MALE AND FEMALE LIVES COMBINED  
 EXPERIENCE BETWEEN 1982 AND 1987 ANNIVERSARIES  
 POLICY YEARS 16 AND OVER  
 (ACTUAL DEATHS SHOWN IN \$1,000 UNITS)

Attained Ages	Premium-Paying		Paid-Up		Ratio of Premium-Paying to Paid-Up Mortality Ratios
	Actual Deaths	Mortality Ratio	Actual Deaths	Mortality Ratio	
15-19 .....	\$ 4,936	82.2%	\$ 80	105.9%	0.78
20-24 .....	7,806	84.2	644	81.4	1.03
25-29 .....	9,803	97.2	1,506	100.1	0.97
30-34 .....	17,405	115.0	2,320	124.9	0.92
35-39 .....	45,573	99.4	2,555	108.9	0.91
40-44 .....	95,848	89.9	3,887	108.0	0.83
45-49 .....	174,828	86.9	6,623	100.3	0.87
50-54 .....	321,101	89.2	15,251	101.6	0.88
55-59 .....	576,151	92.6	33,222	100.7	0.92
60-64 .....	811,344	91.7	61,667	92.1	1.00
65-69 .....	765,995	88.5	139,814	92.9	0.95
70-74 .....	774,082	89.9	180,780	94.2	0.95
75-79 .....	728,690	91.7	204,915	94.0	0.98
80-84 .....	545,080	93.2	181,191	92.3	1.01
85-89 .....	272,669	92.3	143,884	92.0	1.00
90-95 .....	104,259	100.9	76,937	94.3	1.07
All Ages .....	\$4,255,569	91.1%	\$1,055,276	93.7%	0.97

TABLE 24  
 COMPARISONS OF 1982-87 ULTIMATE EXPERIENCE BY ATTAINED AGE  
 MALE AND FEMALE LIVES COMBINED  
 EXPERIENCE BETWEEN 1982 AND 1987 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 .....	\$ 216	39.0%	\$ 4,228	86.4%	2.21
20-24 .....	814	60.6	6,165	87.4	1.44
25-29 .....	1,563	85.4	7,642	104.8	1.23
30-34 .....	2,880	117.5	13,109	116.9	0.99
35-39 .....	7,243	95.3	32,339	100.9	1.06
40-44 .....	23,791	82.5	58,602	94.5	1.15
45-49 .....	67,127	83.2	83,869	92.5	1.11
50-54 .....	163,223	82.8	110,825	98.9	1.19
55-59 .....	362,523	88.1	134,729	106.3	1.21
60-64 .....	578,453	88.5	123,988	109.9	1.24
65-69 .....	603,070	86.7	65,291	108.2	1.25
70-74 .....	628,940	89.5	41,719	108.2	1.21
75-79 .....	580,761	90.3	35,864	104.0	1.15
80-84 .....	428,712	91.6	22,918	97.9	1.07
85-89 .....	230,017	91.2	8,727	93.4	1.02
90-95 .....	91,622	100.0	3,496	104.5	1.04
All Ages .....	\$3,770,955	89.0%	\$753,512	102.3%	1.15

TABLE 25  
 COMPARISONS OF 1982-87 ULTIMATE EXPERIENCE BY ATTAINED AGE  
 EXPERIENCE BETWEEN 1982 AND 1987 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 .....	\$ 4,202	81.1%	\$ 970	85.0%	0.42
20-24 .....	7,374	83.8	1,372	82.0	0.37
25-29 .....	9,809	98.9	2,112	113.2	0.49
30-34 .....	17,498	119.4	2,814	102.9	0.49
35-39 .....	43,044	102.6	5,883	81.8	0.60
40-44 .....	92,276	93.5	9,725	73.7	0.68
45-49 .....	171,601	89.7	15,024	79.2	0.69
50-54 .....	313,655	89.5	26,533	88.7	0.68
55-59 .....	572,860	93.0	44,494	87.1	0.61
60-64 .....	817,821	91.6	63,511	89.9	0.59
65-69 .....	831,382	88.0	65,323	92.1	0.57
70-74 .....	848,717	89.3	76,395	97.1	0.58
75-79 .....	797,612	91.9	76,577	86.9	0.55
80-84 .....	586,906	93.6	73,395	88.8	0.62
85-89 .....	313,933	92.0	50,950	93.9	0.73
90-95 .....	128,758	98.6	25,548	104.5	0.79
All Ages .....	\$5,557,449	91.2%	\$540,627	90.5%	0.61

APPENDIX A

PERCENTAGES OF TOTAL EXPOSURES BETWEEN 1986 AND 1987 ANNIVERSARIES CONTRIBUTED BY EACH COMPANY

Company	First Fifteen Policy Years							16th and Subsequent
	Medical	Paramedical	Nonmedical	Male	Female	Nonsmoker	Smoker	
New York Life	15.2%	16.2%	16.3%	14.7%	18.2%	—	—	13.4%
Equitable	11.1	6.5	8.6	11.2	10.7	18.8%	19.8%	7.3
State Farm Life	8.9	10.1	15.5	8.4	11.5	11.4	14.2	3.8
Prudential	8.3	14.6	20.7	8.1	9.0	9.0	9.4	24.0
Massachusetts Mutual	8.2	10.1	3.0	8.4	6.5	13.0	7.5	5.0
New England Life	7.3	4.5	2.9	7.6	5.6	12.7	16.0	2.7
Phoenix Mutual	6.7	2.1	0.7	6.9	5.3	—	—	1.5
Northwestern Mutual	6.2	3.0	2.0	6.3	5.1	4.9	3.4	8.5
Connecticut Mutual	5.9	5.4	3.6	6.0	5.3	9.3	5.3	3.6
Metropolitan	4.4	8.1	10.4	4.3	5.1	4.3	3.8	8.9
Aetna	3.3	3.6	2.5	3.3	2.8	4.8	7.7	1.4
John Hancock	3.0	7.0	2.3	3.1	3.1	3.7	3.3	6.7
Travelers	2.9	2.6	1.9	2.9	2.8	5.2	6.6	1.6
Mutual of New York	2.4	2.4	3.0	2.4	2.9	—	—	3.8
Franklin Life	2.3	1.1	3.9	2.3	2.6	—	—	1.9
Penn Mutual	2.0	0.7	0.6	2.1	1.7	—	—	2.7
Sun Life	0.8	0.5	1.1	0.8	0.8	1.6	1.8	0.7
Provident Mutual	0.6	1.0	0.8	0.6	0.5	0.6	—	1.5
Lincoln National	0.5	0.5	0.2	0.6	0.5	0.7	1.2	1.0

