

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

**I. MORTALITY UNDER STANDARD INDIVIDUALLY  
UNDERWRITTEN LIFE INSURANCE  
BETWEEN 1988 AND 1989 ANNIVERSARIES**

**ABSTRACT**

This study is the latest in continuing annual reports on intercompany mortality experience under standard individually underwritten life insurance. Nineteen companies contributed their data to this study, as listed in Appendix A. Because of changes in the list of contributing companies from year to year, direct comparisons with previous studies are affected.

The ratios in the report of actual to expected mortality are based on the 1975-80 Basic Tables. For purposes of comparison with previous reports, overall results are also given based on the 1965-70 Basic Table in Tables B, 1, and 2 for select experience (policy years 1-15) and in Tables B and 22 for ultimate experience (policy years 16 and over).

The overall mortality ratio in Tables B, 1, 2, and 5 for select experience between 1988 and 1989 anniversaries is 82.6%, down 3.0% from the 1987-88 study and continuing the ongoing trend. The improvement occurs for medical, paramedical, and nonmedical business.

The overall mortality ratio in Tables 7, 8, and 14 for select experience between 1984 and 1989 anniversaries is 85.7%, down 3.1% from the 1983-88 study. The improvement occurs for both males, down 2.9% to 85.3%, and females, down 4.4% to 87.5%.

The overall ratio of smoker to nonsmoker mortality in Tables 16 and 17 in policy years 1-9 for experience between 1988 and 1989 anniversaries is 2.07, up from 2.00 in the prior one-year study. For experience between 1984 and 1989 anniversaries, the overall ratio in Tables 18 and 19 is 2.16, up from 2.11 in the prior five-year study.

The overall mortality ratio in Tables B and 22 for ultimate experience between 1988 and 1989 anniversaries is 84.8%, down 1.5% from the 1987-88 study. The comparable mortality ratios using expected deaths based on the 1980 CSO tables and the 1979-81 U.S. Population Tables are 64.4% and 64.0%, respectively.

**SPECIAL NOTE**

Tables 7-15 and 18-21 are five-year experience tables. The normal expectation with respect to these is that they represent the current year's experience and the prior four individual years', with perhaps a few minor adjustments to prior year's files. However, for the current two studies a significant number of

adjustments and additions have been made to prior year's data as part of the data validations and clean up of the current year's data.

## INTRODUCTION

This report covers the intercompany (U.S.) mortality experience by amount of life insurance under standard individually underwritten issues between 1988 and 1989 anniversaries. The report also combines experience between 1984 and 1989 anniversaries in order to provide a larger volume of data so that broader comparisons of results can be made, particularly for males-females, for smokers-nonsmokers, and for medical-paramedical-non-medical issues.

### INDEX OF PRIMARY TABLES

Table	Exposure Period	Policy Years*	Medical, Paramedical, or Nonmedical	Male or Female	Smoker/ Nonsmoker	Mortality Ratios by
1 .....	1988-89	1-15	Combined	Combined	Combined	Issue age
2 .....	1988-89	1-15	Combined	Combined	Combined	Policy year
3 .....	1988-89	1-15	Separately	Combined	Combined	Issue age
4 .....	1988-89	1-15	Separately	Combined	Combined	Policy year
5 .....	1988-89	1-15	Separately	Combined	Combined	Issue age and policy year
6 .....	1988-89	1-15	Separately	Combined	Combined	Issue age and policy year
7 .....	1984-89	1-15	Combined	Separately	Combined	Issue age
8 .....	1984-89	1-15	Combined	Separately	Combined	Policy year
9 .....	1984-89	1-15	Separately	Separately	Combined	Issue age
10 .....	1984-89	1-15	Separately	Separately	Combined	Policy year
11 .....	1984-89	1-15	Medical	Separately	Combined	Issue age and policy year
12 .....	1984-89	1-15	Paramedical	Separately	Combined	Issue age and policy year
13 .....	1984-89	1-15	Nonmedical	Separately	Combined	Issue age and policy year
14 .....	1984-89	1-15	Combined	Separately	Combined	Issue age and policy year
15 .....	1984-89	1-15	Separately	Separately	Combined	Issue age and policy year
16 .....	1988-89	1-9	Separately	Combined	Separately	Issue age
17 .....	1988-89	1-9	Separately	Combined	Separately	Policy year
18 .....	1984-89	1-9	Separately	Combined	Separately	Issue age
19 .....	1984-89	1-9	Separately	Combined	Separately	Policy year
20 .....	1984-89	1-9	Combined	Separately	Separately	Issue age
21 .....	1984-89	1-9	Combined	Separately	Separately	Policy year
22 .....	1988-89	16 and over	Combined	Combined	Combined	Attained age
23 .....	1984-89	16 and over	Combined	Combined	Combined	Attained age
24 .....	1984-89	16 and over	Separately	Combined	Combined	Attained age
25 .....	1984-89	16 and over	Combined	Separately	Combined	Attained age

Appendix A — Names of the contributing companies and percentage of total 1988-89 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 1988 and 1989 anniversaries for issues of 1974-1988 (Tables 1-6)
- II. Select experience (first 15 policy years) between 1984 and 1989 anniversaries for issues of 1974-1988 (Tables 7-15)
- III. Smoker-nonsmoker experience (first 9 policy years) between 1988 and 1989 anniversaries and between 1984 and 1989 anniversaries for issues of 1980-1988 (Tables 16-21)
- IV. Ultimate experience (policy years 16 and over) between 1988 and 1989 anniversaries and between 1984 and 1989 anniversaries for issues of 1973 and prior (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 Basic Tables for male and female lives. Tables B, 1, 2, and 22 also show mortality ratios based on the 1965-70 Basic Tables. In addition, Tables 1, 2, 7, 8, and 16-22 show amounts exposed to risk (to the nearest \$1,000,000), and Tables 1 and 2 show expected deaths (to the nearest \$1,000).

The 1988-89 select and ultimate experience is derived from the contributions of 19 companies, 18 of which contributed to the 1987-88 study. The 1984-89 select and ultimate experience is derived from the contributions of 23 companies, 18 of which contributed data for the entire 1984-89 period. Note that 17 of these 18 companies are listed in the reports as having contributed to the underlying one-year studies, but one more company was able to contribute data retrospectively for inclusion in the recent five-year study. The 1988-89 smoker-nonsmoker experience is derived from the contributions of 16 companies, and the 1984-89 smoker-nonsmoker data are derived from the contributions of 18 companies. Appendix A gives the names and proportionate contributions of companies that contributed 1988-89 experience. Appendices 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, as well as data in smoker and nonsmoker categories.

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 nonmedicals since 1980. However, there is a reversal of this trend for 1987 and 1988 issues, indicating that there may be more medicals and paramedicals used in connection with an increased use of blood testing.

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
1988.....	17.2	36.1	46.7

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

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)
1988-89.....	60.1(82.3)	59.5(80.9)	65.3(85.0)	61.3(82.6)	66.6(84.8)

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 amount of insurance) at issue ages 50 and over.

TABLE C  
EXPOSURES AS PERCENTAGE OF TOTAL EXPOSURES FOR 1988-89 EXPERIENCE

Ages at Issue	Policy Year 1			Policy Years 1-15		
	Medical	Paramedical	Nonmedical	Medical	Paramedical	Nonmedical
0-9 .....	3.1%	2.6%	94.3%	4.0%	2.0%	94.0%
10-19 .....	3.0	6.7	90.3	4.5	4.5	91.0
20-29 .....	4.0	17.7	78.3	6.3	13.5	80.2
30-39 .....	12.8	39.9	47.2	17.5	34.6	47.9
40-49 .....	27.1	52.1	20.8	32.5	46.5	21.0
50-59 .....	42.7	44.8	12.5	46.5	43.8	9.7
60-69 .....	54.8	34.4	10.8	56.5	36.9	6.6
70 and over .....	60.1	28.4	11.6	62.5	27.4	10.1
All Ages .....	17.2%	36.1%	46.7%	20.5%	30.7%	48.7%

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 the 1988-89 and 1984-89 mortality ratios.

Note also that some of the more recent nonmedical issues are likely based on applications with limited medical history, even though such simplified underwritten cases are ordinarily excluded from this study. In addition, nonmedical issues over age 50 often arise from business issued under pension trust and salary allotment plans. So-called policyholders' nonmedical, issued on the basis of a medical examination with the previous 6 or 12 months, is also included in nonmedical issues for some companies.

**I. 1988-89 SELECT EXPERIENCE  
(MALES AND FEMALES COMBINED)**

The experience between 1988 and 1989 anniversaries during the first 15 policy years presented in Tables 1-6 represents exposures of \$891 billion and actual deaths of \$1,299 million. The corresponding amounts in the 1987-88 experience were \$687 billion and \$1,041 million. As previously mentioned, there were differences in the mix of companies: 18 companies contributed data for both 1987-88 and 1988-89, whereas one company contributed data for only 1987-88 and one company contributed data for only 1988-89.

The experience for the first 15 policy years is compared by issue-age group in Table 1 and by policy year 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. Tables 5 and 6 present the data by issue-age and policy-year groupings for each underwriting classification.

TABLE 1

1988-89 EXPERIENCE BY ISSUE AGE  
MALE AND FEMALE LIVES COMBINED; MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED  
ISSUES OF 1974-88 STUDIED BETWEEN 1988 AND 1989 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 .....	\$ 43,611	\$ 10,529	\$ 15,906	66.2%	32.6%
10-14 .....	12,902	6,114	7,987	76.6	75.9
15-19 .....	22,131	16,346	18,386	88.9	88.1
20-24 .....	58,080	37,904	37,799	100.3	86.0
25-29 .....	128,457	74,416	89,496	83.2	70.6
30-34 .....	173,971	120,863	157,671	76.7	59.3
35-39 .....	166,020	156,435	215,120	72.7	56.4
40-44 .....	117,740	164,633	223,473	73.7	53.8
45-49 .....	72,094	184,673	215,580	85.7	64.1
50-54 .....	44,751	174,778	186,574	93.7	62.5
55-59 .....	29,165	148,452	181,843	81.6	60.9
60-64 .....	15,006	110,205	124,746	88.3	59.9
65-69 .....	5,404	65,537	70,504	93.0	70.6
70 and over .....	1,871	28,325	27,997	101.2	74.8
<b>Total .....</b>	<b>\$891,209</b>	<b>\$1,299,217</b>	<b>\$1,573,089</b>	<b>82.6%</b>	<b>61.3%</b>

TABLE 2

1988-89 EXPERIENCE BY POLICY YEAR  
 MALE AND FEMALE LIVES COMBINED; MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1988 AND 1989 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	\$190,692	\$ 119,600	\$ 170,128	70.3%	50.2%
2	152,277	142,161	181,167	78.5	56.4
3	122,504	148,257	180,991	81.9	59.8
4	93,525	134,925	165,683	81.4	60.0
5	79,651	134,707	165,616	81.3	62.2
6	68,617	125,736	155,727	80.7	60.4
7	45,227	91,289	108,467	84.2	62.4
8	31,509	70,573	79,533	88.7	66.2
9	23,854	66,193	65,384	101.2	75.8
10	19,722	48,168	57,507	83.8	62.9
11	16,470	50,626	53,008	95.5	73.3
12	14,266	45,869	50,020	91.7	70.5
13	12,295	41,966	48,358	86.8	66.7
14	10,686	40,009	45,948	87.1	67.0
15	9,907	39,131	45,546	85.9	66.0
Total	\$891,209	\$1,299,217	\$1,573,089	82.6%	61.3%

TABLE 3

MEDICAL, PARAMEDICAL, NONMEDICAL 1988-89 EXPERIENCE BY ISSUE AGE  
 MALE AND FEMALE LIVES COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1988 AND 1989 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	\$ 438	66.0%	\$ 30	9.5%	\$ 10,061	68.2%
10-14	56	11.2	401	122.1	5,657	80.5
15-19	642	79.3	532	58.4	15,121	91.1
20-24	3,113	157.8	3,908	113.7	30,774	95.6
25-29	10,089	124.7	11,356	74.5	52,664	80.3
30-34	23,976	87.7	31,813	68.3	64,403	77.9
35-39	38,346	67.4	56,737	67.3	60,198	83.6
40-44	52,884	67.3	68,061	70.9	41,006	88.1
45-49	87,611	97.3	67,594	74.3	26,232	82.2
50-54	88,767	92.4	67,825	92.6	16,492	111.1
55-59	64,697	65.8	67,048	97.4	14,122	113.5
60-64	58,871	80.7	43,574	100.1	6,423	95.3
65-69	45,051	96.9	17,818	88.2	2,107	69.2
70 and over	16,524	90.2	9,107	128.5	2,161	91.4
Total	\$491,070	82.3%	\$445,810	80.9%	\$347,427	85.0%

TABLE 4  
 1988-89 EXPERIENCE BY POLICY YEAR  
 MALE AND FEMALE LIVES COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1988 AND 1989 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 .....	\$ 31,483	69.5%	\$ 45,914	68.4%	\$ 42,128	73.7%
2 .....	41,935	77.2	55,807	78.8	43,139	79.7
3 .....	43,757	78.8	55,177	79.1	46,904	86.8
4 .....	35,992	72.3	52,910	81.3	43,773	89.2
5 .....	40,929	81.5	48,934	80.2	38,090	81.3
6 .....	40,709	75.9	43,501	80.4	39,391	87.9
7 .....	40,235	97.7	29,614	79.4	21,440	71.5
8 .....	30,278	84.3	25,220	90.8	15,074	95.0
9 .....	34,414	103.0	20,923	92.7	10,856	115.7
10 .....	22,272	73.8	16,813	91.3	9,082	101.8
11 .....	28,489	97.3	14,224	94.1	7,912	91.8
12 .....	25,828	89.6	12,792	93.0	7,248	97.3
13 .....	25,036	85.3	9,836	83.5	7,093	98.4
14 .....	24,535	83.9	7,861	83.5	7,613	104.3
15 .....	25,173	81.6	6,279	90.9	7,678	98.4
Total .....	\$491,070	82.3%	\$445,810	80.9%	\$347,427	85.0%

Note that the totals of the actual deaths as classified by underwriting basis in Tables 3 and 4 would be approximately \$15 million less than the total actual deaths in Tables 1 and 2. This difference, which results from business not identified as either medical, paramedical, or nonmedical, is only approximately 1% of the total. Consequently, subtotals for the 99% of business that has been classified by underwriting basis are not shown.

The overall mortality ratio for policy years 1-15 for experience between 1988 and 1989 anniversaries based on the 1975-80 Basic Tables is 82.6%. The comparable ratio from the 1987-88 study was 85.6%. The mortality ratios by underwriting basis in the current one-year study are 82.3% for medical, 80.9% for paramedical, and 85.0% for nonmedical. The comparable ratios from the prior one-year study are 83.5%, 87.2%, and 86.5%, respectively. Thus, improvement occurred in all categories, particularly paramedical. These aggregate ratios by underwriting basis are not directly comparable because of the different distributions by issue age.

*By Issue Age (Tables 1 and 3)*

The overall select mortality ratio of 82.6% is down from 85.6% in the prior one-year study. This improvement is shared by all issue-age groups



except 25-29, 45-49, and 65-69. Relative to the 1975-80 Basic Tables, favorable mortality occurs in all issue-age groups except 20-24 and 70 and over.

Overall nonmedical mortality is 85.0% of expected, as noted above. Non-medical issues constitute the vast bulk of business written at issue ages through 29, almost half of the business written at issue ages 30-39, and somewhat more than one-fifth of the business written at issue ages 40-49. Mortality ratios more favorable than expected occur for all these issue ages, presumably because much of the medical and paramedical issues were within nonmedical amount limits but required examination because of the medical history.

Overall medical and paramedical mortality are 82.3% and 80.9% of expected, respectively, as noted above. Medical and paramedical issues together represent more than half of the business written at issue ages 30-39 and almost 90% of the business written at issue ages 50 and over. Among these issue ages, paramedical mortality more favorable than medical tends to occur between issue ages 30 and 49, whereas at issue ages 50 and above medical mortality is for the most part more favorable than paramedical.

#### ***By Policy Year (Tables 2 and 4)***

The mortality ratios by policy year are lower in the first seven years and higher in the remaining eight years of the select period. This pattern, in general, holds for medical, paramedical, and nonmedical business. The cause of this pattern may be antiselection due to replacement of policies issued prior to the introduction of interest-sensitive products and nonsmoker rates in the early 1980s.

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

In Table 5, actual deaths and mortality ratios are given by underwriting basis separately for six issue-age groups, each subdivided into four policy-year groups. This breakdown provides 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 in Table 3 and by policy year for all issue ages combined in Table 4.

Table 6 shows the ratios of mortality ratios: paramedical to medical, non-medical to paramedical, and nonmedical to medical. Each of these would be expected to exceed 1.00 because in each case the ratio is that of the less exacting underwriting requirement to the more exacting. The exceptions to this rule tend to occur more generally for the issue-age groups for which the comparisons are distorted by small amounts of data as well as in the

TABLE 5

MEDICAL, PARAMEDICAL, NONMEDICAL 1988-89 EXPERIENCE BY ISSUE AGE AND POLICY YEAR  
 MALE AND FEMALE LIVES COMBINED ISSUES OF 1974-88 STUDIED BETWEEN 1988 AND 1989 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 .....	\$ 340	106.0%	\$ 110	37.5%	\$ 410	59.1%	\$ 276	41.6%	\$ 1,136	57.6%
20-29 .....	767	50.4	1,511	94.8	7,396	257.2	3,528	86.6	13,202	131.2
30-39 .....	7,915	66.8	13,991	68.6	25,924	89.0	14,491	63.6	62,322	74.0
40-49 .....	26,173	88.3	31,632	70.3	34,636	67.3	48,054	113.2	140,495	83.3
50-59 .....	20,218	64.9	39,197	86.0	56,473	85.9	37,575	72.3	153,464	78.9
60 and over .....	18,004	71.7	34,237	80.3	43,069	97.0	25,136	98.5	120,448	87.5
Total .....	\$ 73,418	73.7%	\$120,679	77.6%	\$167,910	86.4%	\$129,062	87.5%	\$491,070	82.3%
Paramedical										
0-19 .....	\$ 297	65.7%	\$ 5	1.8%	\$ 461	88.8%	\$ 200	65.8%	\$ 963	61.9%
20-29 .....	4,841	79.8	3,216	81.1	3,314	69.1	3,893	101.2	15,264	81.8
30-39 .....	21,547	63.4	26,717	66.8	28,071	69.8	12,215	73.3	88,551	67.7
40-49 .....	32,432	63.0	44,378	67.7	41,330	81.9	17,514	90.2	135,656	72.6
50-59 .....	28,572	92.1	51,326	96.6	40,931	93.0	14,043	101.0	134,874	94.9
60 and over .....	14,031	94.2	31,379	95.3	21,962	109.2	3,127	109.4	70,501	99.6
Total .....	\$101,721	73.7%	\$157,022	80.2%	\$136,072	85.0%	\$ 50,993	89.5%	\$445,810	80.9%
Nonmedical										
0-19 .....	\$ 7,142	69.4%	\$ 7,567	75.6%	\$ 8,329	78.7%	\$ 7,801	103.9%	\$ 30,841	80.3%
20-29 .....	17,900	60.5	26,176	85.8	24,844	105.6	14,516	102.5	83,438	85.3
30-39 .....	31,946	79.3	49,309	81.7	32,864	78.2	10,481	87.6	124,601	80.6
40-49 .....	17,773	92.2	28,479	84.3	17,278	78.8	3,707	106.3	67,239	85.7
50-59 .....	7,308	98.7	12,347	117.1	10,125	121.5	834	83.1	30,614	112.2
60 and over .....	3,198	71.5	4,887	101.6	2,401	91.9	205	83.0	10,691	88.0
Total .....	\$ 85,267	76.6%	\$128,768	85.8%	\$ 95,844	87.9%	\$ 37,546	97.8%	\$ 347,427	85.0%
All Issues										
0-19 .....	\$ 7,829	70.0%	\$ 7,682	71.1%	\$ 9,200	77.9%	\$ 8,277	97.6%	\$ 32,990	78.0%
20-29 .....	23,514	63.0	31,263	85.6	35,604	113.6	21,938	99.3	112,321	88.2
30-39 .....	61,529	71.1	91,056	74.2	87,525	78.1	37,188	72.3	277,299	74.4
40-49 .....	76,909	76.1	109,496	74.1	93,624	75.0	69,276	106.0	349,307	79.6
50-59 .....	56,564	80.6	106,139	94.5	108,074	90.8	52,452	78.4	323,231	87.7
60 and over .....	35,414	78.8	72,251	87.9	67,932	100.7	28,469	99.4	204,068	91.4
Total .....	\$261,761	74.5%	\$417,891	81.6%	\$401,961	86.1%	\$217,602	89.6%	\$1,299,217	82.6%

TABLE 6  
SUMMARY OF MEDICAL, PARAMEDICAL, NONMEDICAL 1988-89 MORTALITY RATIOS  
MALE AND FEMALE LIVES COMBINED  
ISSUES OF 1974-88 STUDIED BETWEEN 1988 AND 1989 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.....	106.0%	65.7%	69.4%	37.5%	1.8%	75.6%	59.1%	88.8%	78.7%	41.6%	65.8%	103.9%	57.6%	61.9%	80.3%
20-29.....	50.4	79.8	60.5	94.8	81.1	85.8	257.2	69.1	105.6	86.6	101.2	102.5	131.2	81.8	85.3
30-39.....	66.8	63.4	79.3	68.6	66.8	81.7	89.0	69.8	78.2	63.6	73.3	87.6	74.0	67.7	80.6
40-49.....	88.3	63.0	92.2	70.3	67.7	84.3	67.3	81.9	78.8	113.2	90.2	106.3	83.3	72.6	85.7
50-59.....	64.9	92.1	98.7	86.0	96.6	117.1	85.9	93.0	121.5	72.3	101.0	83.1	78.9	94.9	112.2
60 and over.....	71.7	94.2	71.5	80.3	95.3	101.6	97.0	109.2	91.9	98.5	109.4	83.0	87.5	99.6	88.0
Total.....	73.7%	73.7%	76.6%	77.6%	80.2%	85.8%	86.4%	85.0%	87.9%	87.5%	89.5%	97.8%	82.3%	80.9%	85.0%
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.....	0.62%	1.06%	0.65%	0.05%	42.37%	2.02%	1.50%	0.89%	1.33%	1.58%	1.58%	2.50%	1.07%	1.30%	1.39%
20-29.....	1.58	0.76	1.20	0.86	1.06	0.90	0.27	1.53	0.41	1.17	1.01	1.18	0.62	1.04	0.65
30-39.....	0.95	1.25	1.19	0.97	1.22	1.19	0.78	1.12	0.88	1.15	1.19	1.38	0.91	1.19	1.09
40-49.....	0.71	1.47	1.04	0.96	1.24	1.20	1.22	0.96	1.17	0.80	1.18	0.94	0.87	1.18	1.03
50-59.....	1.42	1.07	1.52	1.12	1.21	1.36	1.08	1.31	1.41	1.40	0.82	1.15	1.20	1.18	1.42
60 and over.....	1.31	0.76	1.00	1.19	1.07	1.27	1.13	0.84	0.95	1.11	0.76	0.84	1.14	0.88	1.01
Total.....	1.00%	1.04%	1.04%	1.03%	1.07%	1.11%	0.98%	1.04%	1.02%	1.02%	1.09%	1.12%	0.98%	1.05%	1.03%

Key: Med = Medical  
Para = Paramedical  
Non = Nonmedical

younger issue-age groups where some distortion was introduced by the requirement at times of a medical or paramedical exam for some history of an impairment.

## II. 1984-89 SELECT EXPERIENCE (INCLUDING SEX-DISTINCT DATA)

The experience between 1984 and 1989 anniversaries during the first 15 policy years is presented in Tables 7-15 in the same format as that presented for the 1988-89 experience in Tables 1-6 (Tables 11-14 correspond to Table 5), except that data for males and females are presented separately as well as combined.

This experience represents exposures of \$3.9 trillion and actual deaths of \$5.7 billion. Corresponding 1983-88 figures were \$3.4 trillion and \$5.1 billion, respectively. As previously mentioned, 23 companies contributed to the five-year study.

The overall mortality ratio for policy years 1-15 for experience between 1984 and 1989 anniversaries is 85.7%. The comparable ratio from the 1983-88 study was 88.8%. The mortality ratio for males decreased from 88.2% to 85.3%, and the mortality ratio for females decreased from 91.9% to 87.5%. These mortality ratios are based on expected deaths derived from the separate male and female 1975-80 Basic Tables.

The mortality ratios by underwriting basis in the current five-year study are 83.6% for medical, 86.7% for paramedical, and 88.3% for nonmedical. The comparable ratios from the prior five-year study are 86.6%, 91.2%, and 90.5%, respectively. Thus, improvement occurred in all categories, as for the one-year studies. As noted before, these aggregate ratios by underwriting basis are not directly comparable because of the different distributions by issue age.

### *By Issue Age (Tables 7 and 9)*

The pattern by issue age for males parallels that for the 1988-89 experience (for males and females combined), with ratios near 100% only for issue ages 20-24 and 70 and over. Mortality experience for the younger adult female issue ages is quite favorable, increasing for issue ages 45-54 and exceeding 100% for issue ages 55 and over. These patterns hold generally by underwriting basis when the business is analyzed separately for medical, paramedical, and nonmedical issues.

TABLE 7  
 MALE AND FEMALE 1984-89 EXPERIENCE BY ISSUE AGE  
 MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$ 102,095	\$ 32,875	72.8%	\$ 85,342	\$ 15,707	64.5%	\$ 187,438	\$ 48,582	69.8%
10-14 .....	33,514	23,934	87.6	24,898	8,100	87.8	58,413	32,034	87.7
15-19 .....	69,829	71,327	92.3	43,234	17,721	95.5	113,063	89,049	92.9
20-24 .....	191,777	158,106	102.5	102,848	36,496	86.3	294,625	194,602	99.0
25-29 .....	414,788	280,379	84.1	177,752	62,824	74.6	592,541	343,203	82.2
30-34 .....	566,382	452,541	81.1	194,938	86,875	67.3	761,323	539,416	78.5
35-39 .....	548,225	599,531	79.1	153,765	107,209	75.6	701,995	706,741	78.5
40-44 .....	389,274	652,558	82.3	91,689	105,970	79.1	480,968	758,528	81.8
45-49 .....	244,471	669,007	83.5	53,742	107,739	94.3	298,218	776,746	84.9
50-54 .....	156,705	656,879	93.7	34,499	98,479	98.7	191,206	755,359	94.3
55-59 .....	98,249	553,193	84.2	23,232	89,017	101.1	121,484	642,211	86.2
60-64 .....	45,299	373,670	91.2	13,678	75,709	109.1	58,979	449,379	93.8
65-69 .....	14,395	186,928	84.4	5,952	45,238	115.8	20,347	232,167	89.1
70 and over .....	3,726	74,780	106.8	2,404	33,539	144.2	6,130	108,320	116.1
Total .....	\$2,878,735	\$4,785,715	85.3%	\$1,007,977	\$890,629	87.5%	\$3,886,737	\$5,676,345	85.7%

TABLE 8  
 MALE AND FEMALE 1984-89 EXPERIENCE BY POLICY YEAR  
 MEDICAL, PARAMEDICAL, NONMEDICAL COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$ 602,448	\$ 463,155	76.1%	\$ 232,749	\$ 91,865	72.0%	\$ 835,217	\$ 555,021	75.4%
2 .....	510,820	577,909	85.6	186,173	98,496	76.5	696,997	676,406	84.1
3 .....	409,432	567,998	82.3	145,041	105,826	86.5	554,473	673,825	82.9
4 .....	313,919	534,765	86.7	108,663	98,394	89.6	422,582	633,160	87.2
5 .....	238,091	447,509	84.7	80,693	90,953	95.6	318,785	538,463	86.4
6 .....	177,041	367,288	87.5	59,189	69,080	88.2	236,230	436,368	87.6
7 .....	128,798	289,523	89.4	43,005	55,000	89.3	171,803	344,523	89.4
8 .....	100,299	241,295	89.9	33,451	44,881	87.5	133,750	286,177	89.5
9 .....	82,642	224,544	93.8	27,018	45,020	101.7	109,660	269,565	95.1
10 .....	70,396	194,302	87.7	22,585	36,492	91.6	92,982	230,795	88.3
11 .....	60,374	180,263	85.4	18,799	34,091	92.4	79,173	214,355	86.5
12 .....	53,381	183,590	89.6	15,937	32,287	95.4	69,318	215,878	90.4
13 .....	47,853	167,777	83.4	13,506	31,874	102.3	61,360	199,652	85.9
14 .....	43,428	175,561	88.0	11,428	28,476	96.8	54,856	204,037	89.1
15 .....	39,808	170,229	85.4	9,734	27,886	102.4	49,542	198,115	87.4
Total .....	\$2,878,735	\$4,785,715	85.3%	\$1,007,977	\$890,629	87.5%	\$3,886,737	\$5,676,345	85.7%

TABLE 9

MALE AND FEMALE 1984-89 EXPERIENCE BY ISSUE AGE  
 MEDICAL, PARAMEDICAL, NONMEDICAL SEPARATELY  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 ANNIVERSARIES  
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES  
 (EXPOSURES IN \$1,000,000 UNITS; 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.....	\$ 1,076	46.2%	\$ 235	35.3%	\$ 31,255	74.6%
10-14.....	1,548	69.9	718	74.7	21,618	90.3
15-19.....	3,146	78.0	2,956	91.2	64,695	93.2
20-24.....	14,571	121.8	14,456	107.7	127,142	100.2
25-29.....	42,589	92.9	42,310	73.2	189,444	84.9
30-34.....	115,401	82.5	123,494	74.9	205,459	85.1
35-39.....	206,646	75.7	204,957	73.7	174,025	91.5
40-44.....	287,965	78.0	236,233	80.9	111,149	96.9
45-49.....	350,047	82.5	233,911	84.3	69,387	85.1
50-54.....	381,372	88.5	217,886	99.3	43,843	120.8
55-59.....	315,809	76.0	192,524	97.0	33,657	112.4
60-64.....	249,345	89.0	104,498	99.3	13,156	79.3
65-69.....	135,411	83.1	44,245	93.1	5,316	71.1
70 and over.....	51,045	98.8	18,711	132.6	4,296	126.1
Total.....	\$2,155,975	82.5%	\$1,437,138	85.9%	\$1,094,449	90.7%
Female						
0-9.....	\$ 604	61.9%	\$ 55	19.4%	\$ 14,998	65.4%
10-14.....	537	96.6	250	92.0	7,312	88.1
15-19.....	301	46.7	504	88.3	16,915	98.3
20-24.....	1,149	89.6	1,387	79.1	33,627	86.9
25-29.....	5,076	117.4	5,654	79.8	51,565	72.2
30-34.....	8,531	65.1	16,527	68.0	60,277	67.5
35-39.....	18,587	77.4	31,111	71.9	55,397	77.4
40-44.....	28,227	83.9	37,159	72.1	39,313	86.1
45-49.....	40,361	99.2	42,724	88.1	22,330	99.4
50-54.....	41,881	91.7	41,678	99.9	13,234	126.7
55-59.....	37,581	85.4	38,433	111.4	11,827	146.1
60-64.....	41,203	100.1	30,603	124.4	2,986	112.6
65-69.....	28,496	107.6	14,048	124.1	1,849	238.2
70 and over.....	22,332	132.6	9,555	183.8	1,207	123.9
Total.....	\$274,872	93.7%	\$269,692	91.5%	\$332,841	81.1%
Male/Female Combined						
0-9.....	\$ 1,680	50.8%	\$ 290	30.5%	\$ 46,253	71.3%
10-14.....	2,085	75.3	968	78.5	28,931	89.8
15-19.....	3,448	73.7	3,460	90.7	81,611	94.2
20-24.....	15,720	118.7	15,843	104.4	160,769	97.1
25-29.....	47,665	95.1	47,964	73.9	241,009	81.9
30-34.....	123,933	81.0	140,022	74.0	265,737	80.4
35-39.....	225,233	75.8	236,068	73.4	229,423	87.6
40-44.....	316,192	78.5	273,392	79.6	150,462	93.8
45-49.....	390,408	84.0	276,635	84.8	91,717	88.2
50-54.....	423,253	88.8	259,565	99.4	57,077	122.1
55-59.....	353,390	76.9	230,958	99.1	45,485	119.6
60-64.....	290,549	90.4	135,102	104.1	16,143	83.9
65-69.....	163,907	86.5	58,293	99.0	7,165	86.9
70 and over.....	73,378	107.1	28,266	146.4	5,503	125.6
Total.....	\$2,430,848	83.6%	\$1,706,830	86.7%	\$1,427,291	88.3%

*By Policy Year (Tables 8 and 10)*

The 1984-89 pattern by policy year for males has leveled off compared to the 1983-88 experience, where the ratios first increased and then decreased. This could be the result of an abatement in the replacement activity, due in large measure to the recent trends of declining interest rates. The general trend for the female ratios is to increase by duration.

By underwriting basis, however, mortality ratios for males for paramedical business to some slight extent and nonmedical business to a greater extent show a tendency to increase by duration, whereas the ratios for medical business tend to be more constant in this regard. For females, the general trend upward by duration can be seen for each underwriting basis.

*Comparison of Medical, Paramedical, and Nonmedical Experience*

Although, as mentioned before, caution needs to be exercised in comparing mortality ratios by underwriting basis due to the different distributions by issue age, the overall pattern for males (82.5% for medical, 85.9% for paramedical, and 90.7% for nonmedical) conforms with the supposition that higher ratios will occur for the less exacting requirements, but this pattern is reversed for females (93.7% for medical, 91.5% for paramedical, and 81.1% for nonmedical). This might suggest that examinations, because they largely identify cardiovascular risk profile characteristics (build, blood pressure, and pulse), may be of relatively less value in underwriting females at the older ages, where more of the less favorable paramedical and medical experience occurs and where the cancer risk may exceed the cardiovascular risk.

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

Tables 11-14 subdivide the 1984-89 experience into the same six issue-age groups and the same four policy-year groups as in Table 5, but with the additional breakdown by sex. This provides an opportunity to examine the experience by issue age-policy year cells.

Table 15 summarizes these mortality ratios and gives the ratio of the mortality ratios as in Table 6, again with the additional breakdown by sex. For males, as expected, the ratios of the less exacting underwriting requirement to the more exacting basis generally exceed 1.00, 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 the mortality ratios are generally less than 1.00, with due allowance for the distortions caused by the small amount of data. A possible explanation for this phenomenon was suggested in the previous section.



TABLE 10

MALE AND FEMALE 1984-89 EXPERIENCE BY POLICY YEAR  
 MEDICAL, PARAMEDICAL, NONMEDICAL SEPARATELY  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 ANNIVERSARIES  
 EXPECTED DEATHS BASED ON 1975-80 BASIC TABLES  
 (EXPOSURES IN \$1,000,000 UNITS; 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 .....	\$ 137,276	72.5%	\$ 162,295	76.1%	\$ 153,807	79.8%
2 .....	187,340	79.8	199,998	85.3	169,816	91.6
3 .....	190,497	75.4	194,400	82.4	157,770	89.1
4 .....	199,388	84.1	183,041	86.3	139,716	93.0
5 .....	185,010	85.9	151,600	83.4	101,612	86.0
6 .....	162,923	87.2	119,053	84.7	79,389	92.7
7 .....	143,993	90.1	95,988	92.3	47,585	84.4
8 .....	122,920	84.3	79,577	97.0	37,259	98.3
9 .....	127,876	92.3	64,057	94.7	31,499	101.9
10 .....	110,797	82.9	53,026	93.8	29,114	99.1
11 .....	106,355	78.9	44,109	95.5	28,572	101.8
12 .....	116,914	84.9	36,163	95.5	29,163	106.0
13 .....	112,417	78.8	25,093	87.1	28,452	101.8
14 .....	127,686	85.6	17,550	89.0	29,280	100.8
15 .....	124,579	80.0	11,180	92.4	31,409	103.5
Total .....	\$2,155,975	82.5%	\$1,437,138	85.9%	\$1,094,449	90.7%
Female						
1 .....	\$ 16,298	74.3%	\$ 27,082	75.2%	\$ 47,067	71.4%
2 .....	22,853	90.2	29,400	77.3	43,356	71.1
3 .....	24,248	94.6	31,058	86.3	45,667	80.9
4 .....	22,779	91.8	33,324	98.2	41,040	84.5
5 .....	23,601	99.4	32,703	106.6	33,078	84.8
6 .....	17,733	80.7	25,638	99.0	25,007	84.6
7 .....	16,602	85.4	20,391	96.8	18,006	86.8
8 .....	14,626	80.8	17,276	96.0	12,934	86.3
9 .....	18,860	111.5	14,060	95.1	11,976	96.9
10 .....	14,920	93.1	11,463	94.8	10,089	87.3
11 .....	14,499	91.4	9,636	99.3	9,925	88.6
12 .....	15,583	99.7	7,434	97.3	9,107	87.0
13 .....	18,071	115.2	5,085	92.9	8,683	87.5
14 .....	16,261	100.7	3,445	95.6	8,696	90.8
15 .....	17,931	111.4	1,689	84.6	8,205	90.2
Total .....	\$ 274,872	93.7%	\$ 269,692	91.5%	\$ 332,841	81.1%
Male/Female Combined						
1 .....	\$ 153,574	72.7%	\$ 189,378	75.9%	\$ 200,875	77.7%
2 .....	210,193	80.8	229,399	84.2	213,172	86.5
3 .....	214,745	77.2	225,459	82.9	203,437	87.1
4 .....	222,167	84.9	216,366	87.9	180,757	91.0
5 .....	208,612	87.2	184,304	86.7	134,691	85.7
6 .....	180,656	86.5	144,692	86.9	104,397	90.6
7 .....	160,595	89.6	116,379	93.0	65,591	85.0
8 .....	137,546	83.9	96,853	96.8	50,193	94.9
9 .....	146,737	94.4	78,118	94.7	43,476	100.4
10 .....	125,717	84.0	64,490	94.0	39,204	95.8
11 .....	120,854	80.3	53,746	96.1	38,497	98.0
12 .....	132,498	86.4	43,598	95.8	38,270	100.8
13 .....	130,488	82.4	30,179	88.1	37,135	98.1
14 .....	143,948	87.1	20,996	90.0	37,976	98.3
15 .....	142,511	83.0	12,869	91.3	39,614	100.4
Total .....	\$2,430,848	83.6%	\$1,706,830	86.7%	\$1,427,291	88.3%

TABLE 11  
 MALE AND FEMALE MEDICAL 1984-89 EXPERIENCE BY ISSUE AGE AND POLICY YEAR  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$ 152	16.4%	\$ 790	54.6%	\$ 2,317	72.6%	\$ 2,512	83.5%	\$ 5,771	67.3%
20-29 .....	4,445	62.7	8,506	88.6	22,677	137.2	21,531	87.6	57,160	98.9
30-39 .....	39,884	66.8	89,302	83.7	103,849	85.0	89,010	71.5	322,047	78.0
40-49 .....	93,781	71.8	166,252	77.0	162,340	77.0	215,638	91.3	638,013	80.4
50-59 .....	97,807	73.2	182,070	86.3	236,996	90.1	180,307	75.5	697,181	82.4
60 and over .....	88,546	95.9	127,973	79.7	140,328	94.2	78,953	85.0	435,802	88.1
All Ages .....	\$324,617	76.5%	\$574,895	81.5%	\$668,510	87.4%	\$587,952	81.7%	\$2,155,975	82.5%
Female										
0-19 .....	\$ 323	83.4%	\$ 255	55.2%	\$ 452	58.8%	\$ 412	74.0%	\$ 1,443	66.3%
20-29 .....	473	60.4	1,988	172.4	2,110	119.5	1,654	86.9	6,225	111.1
30-39 .....	2,696	51.0	4,870	53.2	11,519	92.0	8,033	78.9	27,119	73.0
40-49 .....	9,437	88.7	18,832	110.8	16,289	72.5	24,029	99.1	68,588	92.3
50-59 .....	10,545	87.2	14,834	70.8	26,009	85.5	28,072	107.2	79,462	88.6
60 and over .....	15,677	86.6	29,849	117.3	26,361	107.4	20,145	123.1	92,032	109.0
All Ages .....	\$ 39,151	82.8%	\$ 70,629	95.2%	\$ 82,742	89.5%	\$ 82,348	103.7%	\$ 274,872	93.7%
Male/Female Combined										
0-19 .....	\$ 475	36.1%	\$ 1,045	54.7%	\$ 2,769	69.9%	\$ 2,924	82.0%	\$ 7,214	67.1%
20-29 .....	4,918	62.5	10,494	97.6	24,788	135.5	23,185	87.6	63,386	100.0
30-39 .....	42,580	65.5	94,173	81.3	115,369	85.7	97,044	72.0	349,167	77.6
40-49 .....	103,218	73.1	185,085	79.5	178,629	76.6	239,668	92.0	706,601	81.4
50-59 .....	108,352	74.4	196,904	84.9	263,006	89.6	208,380	78.7	776,643	83.0
60 and over .....	104,224	94.4	157,822	84.8	166,690	96.1	99,098	90.7	527,835	91.1
All Ages .....	\$363,768	77.1%	\$645,525	82.8%	\$751,252	87.7%	\$670,300	83.9%	\$2,430,848	83.6%

TABLE 12

MALE AND FEMALE PARAMEDICAL 1984-89 EXPERIENCE BY ISSUE AGE AND POLICY YEAR  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$ 887	97.3%	\$ 654	64.9%	\$ 1,774	81.1%	\$ 593	77.9%	\$ 3,909	80.3%
20-29 .....	11,638	63.8	13,183	75.6	21,357	88.0	10,587	93.8	56,766	79.7
30-39 .....	78,742	69.2	106,662	71.3	107,768	79.3	35,276	80.4	328,451	74.1
40-49 .....	124,401	77.8	163,246	76.0	132,867	91.8	49,628	99.2	470,144	82.5
50-59 .....	101,936	91.8	165,413	100.5	110,759	101.8	32,302	96.8	410,411	98.2
60 and over .....	44,687	101.3	79,881	96.8	37,176	106.5	5,709	106.1	167,455	100.3
All Ages .....	\$362,294	80.9%	\$529,042	84.0%	\$411,703	91.3%	\$134,097	92.7%	\$1,437,138	85.9%
Female										
0-19 .....	\$ 169	59.4%	\$ 255	95.2%	\$ 340	76.2%	\$ 45	35.3%	\$ 809	71.9%
20-29 .....	1,879	85.4	1,180	49.6	3,040	97.9	942	81.5	7,041	79.6
30-39 .....	11,800	71.7	15,162	70.0	16,334	70.2	4,341	69.9	47,639	70.5
40-49 .....	13,786	51.1	27,072	81.7	28,076	95.5	10,947	104.3	79,883	79.9
50-59 .....	15,923	93.5	28,719	110.4	27,139	108.6	8,330	101.6	80,112	105.1
60 and over .....	12,923	116.5	24,697	144.0	13,900	130.6	2,685	120.6	54,206	131.8
All Ages .....	\$ 56,483	76.3%	\$ 97,087	96.5%	\$ 88,830	96.7%	\$ 27,292	96.1%	\$ 269,692	91.5%
Male/Female Combined										
0-19 .....	\$ 1,056	88.3%	\$ 909	71.3%	\$ 2,114	80.2%	\$ 638	71.8%	\$ 4,718	78.7%
20-29 .....	13,517	66.1	14,363	72.5	24,397	89.1	11,530	92.7	63,808	79.7
30-39 .....	90,543	69.6	121,825	71.2	124,103	78.0	39,618	79.1	376,090	73.7
40-49 .....	138,187	73.9	190,319	76.8	160,944	92.4	60,575	100.1	550,027	82.1
50-59 .....	117,859	92.0	194,133	101.8	137,898	103.1	40,632	97.7	490,524	99.3
60 and over .....	57,611	104.4	104,579	105.0	51,076	112.1	8,394	110.3	221,662	106.6
All Ages .....	\$418,777	80.2%	\$626,129	85.7%	\$500,533	92.2%	\$161,389	93.2%	\$1,706,830	86.7%

TABLE 13

MALE AND FEMALE NONMEDICAL 1984-89 EXPERIENCE BY ISSUE AGE AND POLICY YEAR  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$ 23,495	71.4%	\$ 29,213	85.6%	\$ 33,621	87.8%	\$ 31,238	104.5%	\$ 117,569	86.9%
20-29 .....	87,001	74.5	94,428	92.1	75,955	103.5	59,202	103.6	316,587	90.5
30-39 .....	122,618	87.5	149,176	85.7	68,159	88.5	39,531	98.0	379,485	87.9
40-49 .....	56,692	96.9	82,256	88.5	30,366	89.4	11,220	104.3	180,537	92.0
50-59 .....	25,055	123.4	34,072	117.8	13,593	104.8	4,778	117.9	77,500	117.0
60 and over .....	8,759	93.0	9,951	78.1	3,151	69.0	905	121.9	22,768	82.9
All Ages .....	\$323,623	85.6%	\$399,099	89.6%	\$224,848	93.6%	\$146,877	102.8%	\$1,094,449	90.7%
Female										
0-19 .....	\$ 11,892	75.9%	\$ 9,513	75.3%	\$ 10,551	87.9%	\$ 7,268	89.5%	\$ 39,226	81.0%
20-29 .....	23,137	68.1	26,161	76.7	22,460	90.1	13,433	78.7	85,192	77.4
30-39 .....	30,836	62.7	43,290	73.5	26,151	75.0	15,396	86.1	115,674	71.9
40-49 .....	16,731	79.2	24,284	88.5	13,067	100.9	7,560	114.6	61,643	90.5
50-59 .....	6,329	120.4	13,350	147.8	4,992	130.4	390	91.8	25,062	135.2
60 and over .....	1,496	86.2	3,186	170.5	791	123.3	568	363.2	6,042	137.2
All Ages .....	\$ 90,423	71.2%	\$119,786	83.2%	\$ 78,014	87.4%	\$ 44,617	88.7%	\$ 332,841	81.1%
Male/Female Combined										
0-19 .....	\$ 35,388	72.8%	\$ 38,727	82.8%	\$ 44,172	87.8%	\$ 38,507	101.2%	\$ 156,796	85.4%
20-29 .....	110,139	73.0	120,589	88.2	98,415	100.1	72,635	97.9	401,779	87.3
30-39 .....	153,454	81.1	192,466	82.6	94,310	84.3	54,928	94.3	495,160	83.6
40-49 .....	73,424	92.2	106,540	88.5	43,434	92.6	18,780	108.2	242,180	91.6
50-59 .....	31,384	122.8	47,423	125.0	18,586	110.6	5,169	115.4	102,563	121.0
60 and over .....	10,256	91.9	13,138	90.0	3,943	75.7	1,473	163.9	28,811	90.4
All Ages .....	\$414,047	82.0%	\$518,886	88.0%	\$302,862	91.9%	\$191,494	99.1%	\$1,427,291	88.3%

TABLE 14

MALE AND FEMALE 1984-89 EXPERIENCE BY ISSUE AGE AND POLICY YEAR  
 MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$ 25,219	71.3%	\$ 30,861	83.2%	\$ 37,712	86.3%	\$ 34,344	102.0%	\$ 128,138	85.5%
20-29 .....	106,221	73.0	119,657	90.2	120,910	104.6	91,697	97.9	438,485	89.9
30-39 .....	247,650	77.3	354,461	80.1	284,330	83.2	165,631	78.2	1,052,073	79.9
40-49 .....	284,167	79.2	427,511	79.0	328,527	83.3	281,358	93.8	1,321,565	82.9
50-59 .....	232,054	84.9	395,029	94.3	364,339	94.0	218,649	78.8	1,210,073	89.1
60 and over .....	145,751	97.0	222,752	84.7	181,134	95.8	85,740	86.4	635,379	90.6
All Ages .....	\$1,041,065	81.1%	\$1,550,274	84.5%	\$1,316,954	89.4%	\$ 877,421	86.4%	\$4,785,715	85.3%
Female										
0-19 .....	\$ 12,434	75.0%	\$ 10,024	74.1%	\$ 11,343	85.8%	\$ 7,726	87.7%	\$ 41,528	79.6%
20-29 .....	25,807	68.1	29,731	77.4	27,663	92.1	16,117	79.7	99,320	78.5
30-39 .....	46,579	63.8	65,169	70.8	54,347	76.1	27,988	81.2	194,084	71.6
40-49 .....	40,754	66.6	72,573	90.5	57,789	88.5	42,592	102.7	213,709	86.1
50-59 .....	33,931	95.0	58,616	101.6	58,156	97.7	36,793	105.5	187,497	99.8
60 and over .....	30,854	97.0	59,060	130.5	41,175	114.8	23,398	124.8	154,488	117.3
All Ages .....	\$ 190,362	74.3%	\$ 295,174	90.2%	\$ 250,475	91.0%	\$ 154,617	97.5%	\$ 890,629	87.5%
Male/Female Combined										
0-19 .....	\$ 37,654	72.5%	\$ 40,885	80.8%	\$ 49,056	86.2%	\$ 42,070	99.0%	\$ 169,666	84.0%
20-29 .....	132,028	72.0	149,388	87.3	148,573	102.0	107,814	94.7	537,805	87.6
30-39 .....	294,229	74.8	419,630	78.5	338,677	81.9	193,620	78.6	1,246,157	78.5
40-49 .....	324,922	77.4	500,084	80.5	386,316	84.0	323,951	94.9	1,535,275	83.3
50-59 .....	265,986	86.0	453,646	95.2	422,496	94.5	255,442	81.7	1,397,571	90.4
60 and over .....	176,606	97.0	281,813	91.4	222,309	98.9	109,139	92.5	789,867	94.8
All Ages .....	\$1,231,427	80.0%	\$1,845,449	85.3%	\$1,567,429	89.7%	\$1,032,039	87.9%	\$5,676,345	85.7%

TABLE 15

SUMMARY OF MALE AND FEMALE 1984-89 MORTALITY RATIOS  
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY  
 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		
	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 .....	16.4%	97.3%	71.4%	54.6%	64.9%	85.6%	72.6%	81.1%	87.8%	83.5%	77.9%	104.5%	67.3%	80.3%	86.9%
20-29 .....	62.7	63.8	74.5	88.6	75.6	92.1	137.2	88.0	103.5	87.6	93.8	103.6	98.9	79.7	90.5
30-39 .....	66.8	69.2	87.5	83.7	71.3	85.7	85.0	79.3	88.5	71.5	80.4	98.0	78.0	74.1	87.9
40-49 .....	71.8	77.8	96.9	77.0	76.0	88.5	77.0	91.8	89.4	91.3	99.2	104.3	80.4	82.5	92.0
50-59 .....	73.2	91.8	123.4	86.3	100.5	117.8	90.1	101.8	104.8	75.5	96.8	117.9	82.4	98.2	117.0
60 and over .....	95.9	101.3	93.0	79.7	96.8	78.1	94.2	106.5	69.0	85.0	106.1	121.9	88.1	100.3	82.9
All Ages .....	76.5%	80.9%	85.6%	81.5%	84.0%	89.6%	87.4%	91.3%	93.6%	81.7%	92.7%	102.8%	82.5%	85.9%	90.7%
Female															
0-19 .....	83.4%	59.4%	75.9%	55.2%	95.2%	75.3%	58.8%	76.2%	87.9%	74.0%	35.3%	89.5%	66.3%	71.9%	81.0%
20-29 .....	60.4	85.4	68.1	172.4	49.6	76.7	119.5	97.9	90.1	86.9	81.5	78.7	111.1	79.6	77.4
30-39 .....	51.0	71.7	62.7	53.2	70.0	73.5	92.0	70.2	75.0	78.9	69.9	86.1	73.0	70.5	71.9
40-49 .....	88.7	51.1	79.2	110.8	81.7	88.5	72.5	95.5	100.9	99.1	104.3	114.6	92.3	79.9	90.5
50-59 .....	87.2	93.5	120.4	70.8	110.4	147.8	85.5	108.6	130.4	107.2	101.6	91.8	88.6	105.1	135.2
60 and over .....	86.6	116.5	86.2	117.3	144.0	170.5	107.4	130.6	123.3	123.1	120.6	363.2	109.0	131.8	137.2
All Ages .....	82.8%	76.3%	71.2%	95.2%	96.5%	83.2%	89.5%	96.7%	87.4%	103.7%	96.1%	88.7%	93.7%	91.5%	81.1%
Male/Female Combined															
0-19 .....	36.1%	88.3%	72.8%	54.7%	71.3%	82.8%	69.9%	80.2%	87.8%	82.0%	71.8%	101.2%	67.1%	78.7%	85.4%
20-29 .....	62.5	66.1	73.0	97.6	72.5	88.2	135.5	89.1	100.1	87.6	92.7	97.9	100.0	79.7	87.3
30-39 .....	65.5	69.6	81.1	81.3	71.2	82.6	85.7	78.0	84.3	72.0	79.1	94.3	77.6	73.7	83.6
40-49 .....	73.1	73.9	92.2	79.5	76.8	88.5	76.6	92.4	92.6	92.0	100.1	108.2	81.4	82.1	91.6
50-59 .....	74.4	92.0	122.8	84.9	101.8	125.0	89.6	103.1	110.6	78.7	97.7	115.4	83.0	99.3	121.0
60 and over .....	94.4	104.4	91.9	84.8	105.0	90.0	96.1	112.1	75.7	90.7	110.3	163.9	91.1	106.6	90.4
All Ages .....	77.1%	80.2%	82.0%	82.8%	85.7%	88.0%	87.7%	92.2%	91.9%	83.9%	93.2%	99.1%	83.6%	86.7%	88.3%

TABLE 15—Continued

Ages at Issuc	Policy Years 1-2			Policy Years 3-5			Policy Years 6-10			Policy Years 11-15			Policy Years 1-15		
	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 .....	5.95%	0.73%	4.37%	1.19%	1.32%	1.57%	1.12%	1.08%	1.21%	0.93%	1.34%	1.25%	1.19%	1.08%	1.29%
20-29 .....	1.02	1.17	1.19	0.85	1.22	1.04	0.64	1.18	0.75	1.07	1.10	1.18	0.81	1.14	0.91
30-39 .....	1.04	1.26	1.31	0.85	1.20	1.02	0.93	1.12	1.04	1.12	1.22	1.37	0.95	1.19	1.13
40-49 .....	1.08	1.25	1.35	0.99	1.16	1.15	1.19	0.97	1.16	1.09	1.05	1.14	1.03	1.11	1.14
50-59 .....	1.25	1.34	1.69	1.16	1.17	1.37	1.13	1.03	1.16	1.28	1.22	1.56	1.19	1.19	1.42
60 and over .....	1.06	0.92	0.97	1.22	0.81	0.98	1.13	0.65	0.73	1.25	1.15	1.44	1.14	0.83	0.94
All Ages .....	1.06%	1.06%	1.12%	1.03%	1.07%	1.10%	1.04%	1.03%	1.07%	1.13%	1.11%	1.26%	1.04%	1.06%	1.10%
Female															
0-19 .....	0.71%	1.28%	0.91%	1.72%	0.79%	1.36%	1.30%	1.15%	1.49%	0.48%	2.53%	1.21%	1.08%	1.13%	1.22%
20-29 .....	1.42	0.80	1.13	0.29	1.55	0.44	0.82	0.92	0.75	0.94	0.97	0.90	0.72	0.97	0.70
30-39 .....	1.41	0.87	1.23	1.32	1.05	1.38	0.76	1.07	0.82	0.89	1.23	1.09	0.97	1.02	0.98
40-49 .....	0.58	1.55	0.89	0.74	1.08	0.80	1.32	1.06	1.39	1.05	1.10	1.16	0.87	1.13	0.98
50-59 .....	1.07	1.29	1.38	1.56	1.34	2.09	1.27	1.20	1.53	0.95	0.90	0.86	1.19	1.29	1.53
60 and over .....	1.35	0.74	1.00	1.23	1.18	1.45	1.22	0.94	1.15	0.98	3.01	2.95	1.21	1.04	1.26
All Ages .....	0.92%	0.93%	0.86%	1.01%	0.86%	0.87%	1.08%	0.90%	0.98%	0.93%	0.92%	0.86%	0.98%	0.89%	0.87%
Male/Female Combined															
0-19 .....	2.45%	0.82%	2.02%	1.30%	1.16%	1.51%	1.15%	1.09%	1.26%	0.88%	1.41%	1.23%	1.17%	1.08%	1.27%
20-29 .....	1.06	1.11	1.17	0.74	1.22	0.90	0.66	1.12	0.74	1.06	1.06	1.12	0.80	1.10	0.87
30-39 .....	1.06	1.17	1.24	0.88	1.16	1.02	0.91	1.08	0.98	1.10	1.19	1.31	0.95	1.13	1.08
40-49 .....	1.01	1.25	1.26	0.97	1.15	1.11	1.21	1.00	1.21	1.09	1.08	1.18	1.01	1.12	1.13
50-59 .....	1.24	1.33	1.65	1.20	1.23	1.47	1.15	1.07	1.23	1.24	1.18	1.47	1.20	1.22	1.46
60 and over .....	1.11	0.88	0.97	1.24	0.86	1.06	1.17	0.68	0.79	1.22	1.49	1.81	1.17	0.85	0.99
All Ages .....	1.04%	1.02%	1.06%	1.03%	1.03%	1.06%	1.05%	1.00%	1.05%	1.11%	1.06%	1.18%	1.04%	1.02%	1.06%

Med = Medical  
 Para = Paramedical  
 Non = Nonmedical

### III. SMOKER-NONSMOKER EXPERIENCE

Tables 16-21 present smoker-nonsmoker experience for issues of 1980 through 1988. Tables 16 and 17 show the experience between 1988 and 1989 anniversaries by issue age and policy year, respectively, separately for medical, paramedical and nonmedical issues, as submitted by 16 of the 19 overall contributing companies. Tables 18 and 19 show the experience between 1984 and 1989 anniversaries but are otherwise identical to Tables 16 and 17. Tables 20 and 21 show the 1984-89 experience subdivided by sex. Eighteen companies contributed to the five-year study.

For 1988-89 experience given in Tables 16 and 17, the overall mortality ratio for nonsmokers is 66.1%, compared to 136.6% for smokers. These results are quite uniform by underwriting basis: for medical experience, the respective ratios are 66.4% and 131.0%; for paramedical, 63.2% and 142.6%; and for nonmedical, 69.6% and 133.9%.

For 1984-89 experience a similar pattern emerges in Tables 18 and 19. Generally similar experience is revealed when the data are grouped by sex in Tables 20 and 21. The 1984-89 results are summarized below:

	Nonsmoker	Smoker	Ratio
Medical	67.6%	145.4%	2.15
Paramedical	64.7%	149.8%	2.31
Nonmedical	69.5%	139.7%	2.01
Male	67.3%	146.7%	2.18
Female	66.4%	138.4%	2.08
Total	67.1%	145.2%	2.16

In both the one-year and the five-year studies, the ratios of smoker to nonsmoker mortality are higher for the older issue-age groups, exceeding 2.00 for issue ages 40 and over for all issues combined and for most underwriting categories. In both studies, the pattern by policy year is not quite as evident, although the higher ratios tend to occur at the earlier durations. In this regard, note that the maximum duration is policy year 9, with a concentration of the exposure in the earlier policy years.



TABLE 16

SMOKER-NONSMOKER 1988-89 EXPERIENCE BY ISSUE AGE  
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY; MALES AND FEMALES COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1988 AND 1989 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 .....	\$ 726	\$ 265	73.1%	\$ 116	\$ 0	0.0%	0.00
20-29 .....	5,381	5,128	140.5	715	510	108.5	0.77
30-39 .....	37,160	33,083	82.0	4,724	4,401	82.0	1.00
40-49 .....	40,326	50,874	60.4	5,908	16,960	129.2	2.14
50-59 .....	21,757	54,963	61.7	3,421	21,608	146.0	2.36
60 and over .....	8,264	47,794	66.8	1,333	15,385	138.5	2.07
Total .....	\$113,616	\$192,108	66.4%	\$16,220	\$ 58,866	131.0%	1.97
Paramedical							
0-19 .....	\$ 660	\$ 92	23.2	\$ 239	\$ 51	37.6	1.63
20-29 .....	15,486	7,703	76.1	2,053	1,190	90.6	1.19
30-39 .....	83,325	43,635	54.9	12,434	14,213	115.4	2.10
40-49 .....	60,524	61,624	55.0	12,823	31,043	127.7	2.32
50-59 .....	20,282	59,717	75.9	4,795	30,402	160.2	2.11
60 and over .....	5,097	31,686	74.3	1,144	18,095	189.6	2.55
Total .....	\$185,377	\$204,458	63.2%	\$33,492	\$ 94,996	142.6%	2.26
Nonmedical							
0-19 .....	\$ 21,891	\$ 7,317	65.7%	\$ 2,331	\$ 1,698	128.8%	1.96
20-29 .....	92,834	38,707	69.7	16,157	11,775	121.1	1.74
30-39 .....	111,230	65,855	67.7	22,418	24,240	119.7	1.77
40-49 .....	25,309	30,950	64.8	6,694	18,375	145.8	2.25
50-59 .....	4,737	16,481	95.1	1,376	9,080	176.4	1.86
60 and over .....	1,106	6,080	70.7	298	3,386	155.7	2.20
Total .....	\$257,109	\$165,392	69.6%	\$49,277	\$ 68,555	133.9%	1.92
Combined							
0-19 .....	\$ 23,278	\$ 7,674	64.5%	\$ 2,687	\$ 1,749	114.8%	1.78
20-29 .....	113,702	51,538	74.3	18,926	13,475	117.1	1.58
30-39 .....	231,716	142,574	65.7	39,578	42,854	113.0	1.72
40-49 .....	126,160	143,448	58.8	25,427	66,379	132.6	2.26
50-59 .....	46,778	131,163	70.9	9,594	61,091	156.9	2.21
60 and over .....	14,468	85,560	69.7	2,775	36,867	161.5	2.32
Total .....	\$556,104	\$561,959	66.1%	\$98,989	\$222,418	136.6%	2.07

TABLE 17

SMOKER-NONSMOKER 1988-89 EXPERIENCE BY POLICY YEAR  
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY; MALES AND FEMALES COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1988 AND 1989 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.....	\$ 26,613	\$ 20,340	55.4%	\$ 3,724	\$ 9,742	187.5%	3.38
2.....	22,363	30,886	69.7	2,815	7,301	131.2	1.88
3.....	16,731	33,653	78.6	2,054	3,696	70.4	0.90
4.....	12,767	20,458	56.6	1,683	7,995	154.9	2.74
5.....	11,712	24,871	65.4	1,691	9,169	156.1	2.39
6.....	11,457	27,704	67.2	1,839	8,937	127.1	1.89
7.....	7,368	21,338	75.9	1,422	6,420	108.5	1.43
8.....	3,090	8,148	56.8	655	3,998	121.2	2.13
9.....	1,512	4,707	63.1	331	1,605	96.7	1.53
All years 1-9.....	\$113,616	\$192,108	66.4%	\$16,220	\$ 58,866	131.0%	1.97
Paramedical							
1.....	\$ 53,714	\$ 30,406	59.5%	\$10,308	\$ 12,999	124.2%	2.09
2.....	40,075	32,251	59.1	6,666	17,037	169.6	2.87
3.....	28,341	31,977	64.4	4,393	14,781	168.3	2.61
4.....	20,205	29,082	65.9	3,439	12,179	141.5	2.15
5.....	16,035	28,442	64.9	2,912	13,494	143.5	2.21
6.....	13,513	26,411	65.3	2,781	11,917	127.4	1.95
7.....	8,792	17,345	65.7	2,018	9,544	139.9	2.13
8.....	3,397	6,534	68.4	742	2,231	92.4	1.35
9.....	1,301	2,006	55.0	230	810	114.6	2.08
All years 1-9.....	\$185,377	\$204,458	63.2%	\$33,492	\$ 94,996	142.6%	2.26

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.....	\$ 62,438	\$ 23,439	57.7%	\$13,105	\$ 11,770	130.6%	2.26
2.....	51,750	27,249	71.4	9,491	9,262	113.0	1.58
3.....	41,540	26,827	74.1	6,995	9,970	147.0	1.98
4.....	30,575	25,949	81.3	5,519	9,301	145.3	1.79
5.....	27,179	22,318	68.2	5,129	9,244	135.3	1.98
6.....	24,711	24,685	75.6	4,812	10,290	141.3	1.87
7.....	14,828	11,483	57.0	3,312	6,767	126.8	2.22
8.....	3,600	2,950	63.0	803	1,769	144.9	2.30
9.....	485	489	73.2	108	180	122.5	1.67
All years 1-9.....	\$257,109	\$165,392	69.6%	\$49,277	\$ 68,555	133.9%	1.92
Combined							
1.....	\$142,766	\$ 74,185	57.8%	\$27,138	\$ 34,512	139.9%	2.42
2.....	114,188	90,388	66.0	18,973	33,601	141.1	2.14
3.....	86,613	92,458	71.8	13,443	28,449	136.7	1.90
4.....	63,549	75,490	67.3	10,641	29,476	146.1	2.17
5.....	54,926	75,633	66.0	9,733	31,908	144.3	2.19
6.....	49,681	78,801	68.9	9,433	31,145	131.6	1.91
7.....	30,990	50,166	67.2	6,753	22,731	125.8	1.87
8.....	10,087	17,633	61.7	2,202	7,999	115.4	1.87
9.....	3,299	7,202	61.2	669	2,595	103.2	1.69
All years 1-9.....	\$556,104	\$561,959	66.1%	\$98,989	\$222,418	136.6%	2.07

TABLE 18  
 SMOKER-NONSMOKER 1984-89 EXPERIENCE BY ISSUE AGE  
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY; MALES AND FEMALES COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$ 2,268	\$ 375	31.6%	\$ 333	\$ 10	5.3%	0.17
20-29 .....	21,473	14,357	100.0	3,126	1,951	95.2	0.95
30-39 .....	142,638	104,193	73.7	20,651	25,674	118.9	1.61
40-49 .....	137,320	164,477	61.3	22,423	65,348	141.4	2.31
50-59 .....	71,567	175,959	64.6	12,573	79,744	159.4	2.47
60 and over .....	24,932	147,095	73.7	4,281	50,786	151.2	2.05
Total .....	\$ 400,201	\$ 606,458	67.6%	\$ 63,389	\$223,515	145.4%	2.15
Paramedical							
0-19 .....	\$ 1,790	\$ 597	55.6%	\$ 383	\$ 91	39.0%	0.70
20-29 .....	50,268	21,234	64.9	7,037	4,528	100.2	1.54
30-39 .....	270,116	145,059	59.6	44,867	51,115	120.7	2.03
40-49 .....	173,978	179,618	58.4	38,695	92,039	130.1	2.23
50-59 .....	61,154	158,129	72.4	15,079	97,674	178.1	2.46
60 and over .....	15,290	89,474	77.7	3,575	53,267	199.1	2.56
Total .....	\$ 572,599	\$ 594,113	64.7%	\$109,639	\$298,716	149.8%	2.31

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 .....	\$ 73,709	\$ 28,183	72.7%	\$ 7,196	\$ 4,585	107.9%	1.48
20-29 .....	337,608	138,931	69.8	65,255	45,478	117.2	1.68
30-39 .....	361,538	194,656	66.8	78,962	82,526	125.2	1.87
40-49 .....	80,757	94,810	67.3	22,411	59,014	150.8	2.24
50-59 .....	14,390	43,442	90.0	4,431	34,141	228.8	2.54
60 and over.....	2,793	13,985	67.9	699	8,639	180.3	2.66
Total .....	\$ 870,797	\$ 514,011	69.5%	\$178,957	\$234,385	139.7%	2.01
Combined							
0-19 .....	\$ 77,768	\$ 29,155	71.0	\$ 7,913	\$ 4,686	100.3	1.41
20-29 .....	409,351	174,523	70.9	75,419	51,958	114.5	1.61
30-39 .....	774,293	443,909	65.6	144,481	159,316	122.7	1.87
40-49 .....	392,055	438,906	61.2	83,530	216,402	138.6	2.26
50-59 .....	147,112	377,531	70.1	32,084	211,560	176.6	2.52
60 and over.....	43,016	250,555	74.7	8,556	112,693	173.0	2.32
Total .....	\$1,843,598	\$1,714,582	67.1%	\$351,985	\$756,616	145.2%	2.16

TABLE 19

SMOKER-NONSMOKER 1984-89 EXPERIENCE BY POLICY YEAR  
 MEDICAL, PARAMEDICAL AND NONMEDICAL SEPARATELY; MALES AND FEMALES COMBINED  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$101,040	\$ 75,923	56.9%	\$ 14,724	\$ 29,751	151.2%	2.66
2 .....	89,282	107,367	67.2	12,366	32,580	147.1	2.19
3 .....	70,655	109,814	68.1	10,473	27,660	114.1	1.68
4 .....	52,545	103,728	73.7	8,642	37,805	156.3	2.12
5 .....	39,294	76,438	62.2	7,271	44,413	187.1	3.01
6 .....	26,161	69,513	75.9	5,236	24,731	128.8	1.70
7 .....	13,421	41,547	79.9	2,920	15,335	126.1	1.58
8 .....	5,587	13,886	55.6	1,248	8,556	146.2	2.63
9 .....	2,211	8,238	78.6	504	2,680	108.8	1.39
All years 1-9 .....	\$400,201	\$606,458	67.6%	\$ 63,389	\$223,515	145.4%	2.15
Paramedical							
1 .....	\$176,509	\$102,107	59.9%	\$ 32,861	\$ 47,981	140.6%	2.35
2 .....	134,665	110,157	61.5	23,720	59,485	169.8	2.76
3 .....	97,099	111,513	65.8	17,717	51,642	148.5	2.26
4 .....	66,932	100,054	70.4	13,473	49,855	156.6	2.23
5 .....	46,519	76,833	65.5	10,190	44,250	156.8	2.40
6 .....	29,250	53,945	67.5	6,633	25,397	127.8	1.89
7 .....	14,501	28,284	70.0	3,417	14,994	141.4	2.02
8 .....	5,377	8,561	59.5	1,215	3,666	98.6	1.66
9 .....	1,744	2,656	55.8	407	1,441	114.4	2.05
All years 1-9 .....	\$572,599	\$594,113	64.7%	\$109,639	\$298,716	149.8%	2.31

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 .....	\$ 251,753	\$ 99,762	63.2%	\$ 53,196	\$ 44,512	125.8%	1.99
2 .....	204,547	105,598	70.5	40,127	48,086	148.7	2.11
3 .....	156,283	97,647	70.6	31,156	43,362	142.6	2.02
4 .....	110,173	87,245	77.3	22,828	38,209	147.4	1.91
5 .....	76,859	61,821	69.5	16,163	28,833	137.7	1.98
6 .....	46,485	42,850	72.9	9,880	19,215	134.3	1.84
7 .....	19,687	14,878	57.2	4,450	9,800	142.4	2.49
8 .....	4,336	3,493	61.9	990	2,061	142.2	2.30
9 .....	670	714	75.5	163	302	134.4	1.78
All years 1-9 .....	\$ 870,797	\$ 514,011	69.5%	\$178,957	\$234,385	139.7%	2.01
Combined							
1 .....	\$ 529,303	\$ 277,792	60.2%	\$100,782	\$122,245	137.1%	2.28
2 .....	428,494	323,124	66.1	76,214	140,152	156.6	2.37
3 .....	324,038	318,975	68.0	59,347	122,665	137.2	2.02
4 .....	229,652	291,028	73.6	44,944	125,871	153.6	2.09
5 .....	162,673	215,092	65.3	33,626	117,497	161.2	2.47
6 .....	101,897	166,308	72.2	21,751	69,344	129.9	1.80
7 .....	47,610	84,710	71.5	10,789	40,130	135.3	1.89
8 .....	15,301	25,941	57.6	3,454	14,284	129.6	2.25
9 .....	4,626	11,609	71.7	1,074	4,423	112.1	1.56
All years 1-9 .....	\$1,843,598	\$1,714,582	67.1%	\$351,985	\$756,616	145.2%	2.16

TABLE 20

SMOKER-NONSMOKER 1984-89 EXPERIENCE BY ISSUE AGE  
 MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED; MALES AND FEMALES SEPARATELY  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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 .....	\$ 42,550	\$ 21,251	71.8%	\$ 4,283	\$ 3,341	97.0%	1.35
20-29 .....	267,337	140,069	72.9	49,003	41,298	117.0	1.60
30-39 .....	581,781	373,258	67.2	109,662	135,817	126.6	1.88
40-49 .....	320,900	379,516	60.9	65,894	186,806	141.5	2.32
50-59 .....	121,090	334,150	70.1	24,919	178,337	174.9	2.49
60 and over.....	31,898	204,259	72.3	5,735	87,192	169.3	2.34
All Ages.....	\$1,365,560	\$1,452,505	67.3%	\$259,497	\$632,792	146.7%	2.18
Female							
0-19 .....	\$ 35,217	\$ 7,904	69.0%	\$ 3,630	\$ 1,345	109.4%	1.58
20-29 .....	142,013	34,453	63.6	26,416	10,659	105.6	1.66
30-39 .....	192,511	70,651	58.4	34,819	23,498	103.9	1.78
40-49 .....	71,155	59,389	63.7	17,636	29,595	122.8	1.93
50-59 .....	26,021	43,381	69.6	7,164	33,222	186.4	2.68
60 and over.....	11,118	46,295	87.8	2,820	25,501	187.0	2.13
All Ages.....	\$ 478,037	\$ 262,076	66.4%	\$ 92,488	\$123,824	138.4%	2.08



TABLE 21

SMOKER-NONSMOKER 1984-89 EXPERIENCE BY POLICY YEAR  
 MEDICAL, PARAMEDICAL AND NONMEDICAL COMBINED; MALES AND FEMALES SEPARATELY  
 ISSUES OF 1974-88 STUDIED BETWEEN 1984 AND 1989 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.....	\$ 385,098	\$ 233,829	61.0%	\$ 72,976	\$ 99,561	136.6%	2.24
2.....	315,735	277,114	67.5	55,659	119,369	162.2	2.40
3.....	240,010	268,356	67.4	43,588	104,579	140.8	2.09
4.....	171,261	248,498	73.9	33,395	104,551	153.4	2.07
5.....	122,859	178,854	63.7	25,328	97,385	160.4	2.52
6.....	77,904	141,330	72.0	16,563	58,032	131.1	1.82
7.....	36,678	72,608	71.9	8,311	33,246	135.0	1.88
8.....	12,147	22,931	58.6	2,775	12,597	133.2	2.27
9.....	3,865	8,981	62.4	897	3,468	100.4	1.61
All years 1-9.....	\$1,365,560	\$1,452,505	67.3%	\$259,497	\$632,792	146.7%	2.18
Female							
1.....	\$ 144,204	\$ 43,963	56.0%	\$ 27,805	\$ 22,684	139.3%	2.49
2.....	112,759	46,009	58.9	20,554	20,783	130.6	2.22
3.....	84,028	50,618	71.4	15,759	18,085	119.4	1.67
4.....	58,391	42,530	71.4	11,548	21,319	154.6	2.17
5.....	39,813	36,238	74.4	8,297	20,112	165.3	2.22
6.....	23,992	24,978	73.5	5,187	11,312	124.1	1.69
7.....	10,932	12,101	69.5	2,478	6,884	137.2	1.97
8.....	3,153	3,009	51.0	679	1,686	108.1	2.12
9.....	761	2,627	146.7	176	955	194.0	1.32
All years 1-9.....	\$ 478,037	\$ 262,076	66.4%	\$ 92,488	\$123,824	138.4%	2.08

In the 1984-89 study, the proportion of nonsmoker to total exposure is 84.0% for males and 83.8% for females. Each such proportion is up slightly from the 1983-88 study (82.9% and 82.5%, respectively). These are somewhat higher proportions than may have been expected, perhaps due to nonadmission of smoking habits by some smokers.

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

The experience between 1988 and 1989 anniversaries for policy years 16 and over is shown in Table 22. The overall mortality ratio based on the 1975-80 Ultimate Basic Tables is 84.8%, down from 86.3% in the 1987-88 study. Note that the company mix changed slightly between the two studies. The ratios by attained age group are fairly uniform, except for those from 25 to 39, all of which are in excess of 100%. Part of this extra mortality at younger ages could be attributed to AIDS deaths.

TABLE 22  
1988-89 ULTIMATE EXPERIENCE BY ATTAINED AGE  
MALE AND FEMALE LIVES COMBINED  
ISSUES OF 1973 AND PRIOR STUDIED BETWEEN 1988 AND 1989 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 .....	\$ 1,758	\$ 1,219	79.9%	87.9%	50.1%	67.1%
20-24 .....	2,011	1,821	83.4	97.0	56.5	61.0
25-29 .....	2,236	2,460	109.2	119.1	70.4	72.7
30-34 .....	3,474	4,488	131.1	115.2	73.6	79.2
35-39 .....	7,006	11,016	125.3	96.8	66.9	71.2
40-44 .....	11,646	19,880	89.7	64.6	49.1	50.6
45-49 .....	13,346	35,665	83.2	61.5	51.8	49.2
50-54 .....	13,142	55,985	79.7	58.5	54.8	48.7
55-59 .....	13,500	102,503	87.8	63.6	63.0	56.3
60-64 .....	13,440	167,381	89.0	66.3	68.0	60.5
65-69 .....	11,337	207,001	79.4	60.7	62.0	58.1
70-74 .....	6,915	205,274	83.7	66.6	66.2	65.1
75-79 .....	4,122	191,058	83.2	66.8	64.6	70.2
80-84 .....	2,163	162,011	86.2	71.7	68.4	76.5
85-89 .....	810	92,316	86.3	73.6	68.0	79.9
90-95 .....	235	42,064	91.2	83.1	72.6	88.3
All Ages .....	\$107,149	\$1,302,149	84.8%	66.6%	64.4%	64.0%

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), with overall mortality ratios of 66.6%, 64.4%, and 64.0%, respectively.

The experience between 1984 and 1989 anniversaries for policy years 16 and over is shown in Tables 23-25. In Table 23, the mortality ratio for premium-paying policies is 87.8%, compared to 91.1% for fully paid-up policies (reduced paid-up policies are not included). Corresponding ratios for the 1983-88 experience were 89.4% and 92.7%, respectively. This pattern of lower mortality ratios for premium-paying policies has been a characteristic of the experience for many years.

TABLE 23  
COMPARISONS OF 1984-89 ULTIMATE EXPERIENCE BY ATTAINED AGE  
MALE AND FEMALE LIVES COMBINED  
EXPERIENCE BETWEEN 1984 AND 1989 ANNIVERSARIES  
POLICY YEARS 16 AND OVER  
(ACTUAL DEATHS 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 .....	\$ 5,040	78.9%	\$ 179	221.5%	0.35
20-24 .....	7,395	79.3	843	122.3	0.64
25-29 .....	10,154	102.4	1,198	110.3	0.92
30-34 .....	17,558	118.5	2,210	132.2	0.89
35-39 .....	46,646	107.0	2,898	129.4	0.82
40-44 .....	93,819	88.2	3,697	102.8	0.85
45-49 .....	170,209	84.9	5,879	100.6	0.84
50-54 .....	287,024	83.7	11,274	95.7	0.87
55-59 .....	536,271	91.6	25,391	95.3	0.96
60-64 .....	784,740	89.0	49,850	89.7	0.99
65-69 .....	795,869	83.6	121,418	88.9	0.94
70-74 .....	794,373	85.3	162,912	91.5	0.93
75-79 .....	741,006	87.5	185,854	90.3	0.96
80-84 .....	576,702	90.7	173,216	89.7	1.01
85-89 .....	291,570	90.1	142,140	91.1	0.98
90-95 .....	122,186	99.7	75,734	94.5	1.05
All Ages .....	\$5,280,568	87.8%	\$964,701	91.1%	0.96

In Table 24, the mortality ratio for medical issues is 86.2%, compared to 99.9% for nonmedical issues. Corresponding ratios for the 1983-88 experience were 86.9% and 101.0%, respectively. This large difference in mortality ratios exists for virtually all attained age groups.

TABLE 24  
 COMPARISONS OF 1984-89 ULTIMATE EXPERIENCE BY ATTAINED AGE  
 MALE AND FEMALE LIVES COMBINED  
 EXPERIENCE BETWEEN 1984 AND 1989 ANNIVERSARIES  
 POLICY YEARS 16 AND OVER  
 (ACTUAL DEATHS 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 .....	\$ 169	32.4%	\$ 4,524	81.0%	2.49
20-24 .....	706	55.9	6,560	84.3	1.50
25-29 .....	1,517	82.4	8,641	110.1	1.33
30-34 .....	2,161	89.1	15,072	126.3	1.41
35-39 .....	7,564	107.3	35,670	108.0	1.00
40-44 .....	22,270	77.1	64,914	95.2	1.23
45-49 .....	64,108	78.6	93,659	91.1	1.15
50-54 .....	146,599	76.4	121,737	94.0	1.23
55-59 .....	356,704	87.7	155,143	102.3	1.16
60-64 .....	604,326	85.7	154,780	106.0	1.23
65-69 .....	688,586	84.0	93,681	103.4	1.23
70-74 .....	750,755	85.3	56,351	104.0	1.22
75-79 .....	707,454	87.1	41,943	98.0	1.12
80-84 .....	550,386	89.3	28,980	96.6	1.08
85-89 .....	302,011	89.4	10,924	94.4	1.05
90-95 .....	129,349	96.7	3,684	98.6	1.01
All Ages .....	\$4,334,674	86.2%	\$896,272	99.9%	1.15

In Table 25, the mortality ratio for males is 88.7%, compared to 90.6% for females. Corresponding ratios for the 1983-88 experience were 89.8% and 90.4%, respectively. In the last column, the female mortality ratios used to calculate the female-to-male ratio of mortality ratios are based on the 1975-80 Ultimate Basic Table for Male Lives, so that male and female mortality ratios can be compared on the same basis. On this basis, the overall ratio of female to male mortality is 0.62, the same as in the prior five-year study.

TABLE 25  
 COMPARISONS OF 1984-89 ULTIMATE EXPERIENCE BY ATTAINED AGE  
 EXPERIENCE BETWEEN 1984 AND 1989 ANNIVERSARIES  
 POLICY YEARS 16 AND OVER  
 (ACTUAL DEATHS 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 .....	\$ 4,328	80.0%	\$ 1,007	79.0%	0.38
20-24 .....	7,028	80.2	1,751	99.2	0.46
25-29 .....	10,109	104.8	2,384	122.5	0.50
30-34 .....	18,050	126.9	3,201	105.1	0.46
35-39 .....	45,126	113.8	6,648	83.7	0.54
40-44 .....	91,869	93.1	11,420	73.7	0.67
45-49 .....	171,376	88.4	16,479	76.3	0.66
50-54 .....	289,051	84.4	27,951	89.7	0.72
55-59 .....	553,911	92.4	46,168	87.8	0.61
60-64 .....	823,608	89.4	70,424	91.9	0.60
65-69 .....	902,807	84.5	74,837	92.0	0.59
70-74 .....	931,922	86.5	85,054	95.6	0.58
75-79 .....	870,479	88.1	90,231	89.5	0.58
80-84 .....	674,252	90.9	88,726	91.1	0.65
85-89 .....	370,500	91.1	57,676	87.4	0.68
90-95 .....	157,905	96.8	31,288	100.3	0.77
All Ages .....	\$5,922,330	88.7%	\$615,251	90.6%	0.62

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

Study	<i>TSA Reports No.</i>
Standard Ordinary	1991-92
Cause of Death	1995-96
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

