

**TRANSACTIONS OF SOCIETY OF ACTUARIES
1983 REPORTS**

TRANSACTIONS

1983 REPORTS OF MORTALITY AND MORBIDITY EXPERIENCE

**REPORTS OF THE COMMITTEE ON ORDINARY
INSURANCE AND ANNUITIES**

**I. MORTALITY UNDER STANDARD ORDINARY
INSURANCE ISSUES BETWEEN 1981
AND 1982 ANNIVERSARIES**

ABSTRACT

This is the latest in a series of annual reports on intercompany mortality experience under Standard Ordinary life insurance policies. It should be noted that the major contributor which did not contribute to the 1980–81 study was able to contribute to this 1981–82 study. However, another company which contributed to the 1980–81 study was unable to contribute to the current study. Because of these differences in contributors, comparisons with previous studies are affected.

General Mortality between 1981 and 1982 Anniversaries

Although a direct comparison with the prior year study is not completely valid because of the different mix of contributors, the following general conclusions can be drawn:

The overall medical mortality ratio in the select period decreased by about 1–2 percentage points.

The overall nonmedical mortality ratio in the select period decreased by about .5–1 percentage point.

The overall paramedical mortality ratios in the select period (first twelve years only) increased by more than 3 percentage points.

The overall mortality ratio in the ultimate period decreased by about 2–3 percentage points.

Medical versus Nonmedical Mortality between 1977 and 1982 Anniversaries

In the select period, for all policy years combined, nonmedical mortality was significantly higher than medical mortality for issue ages 30–44.

In the ultimate period, nonmedical mortality exceeded medical mortality for each of the attained age groups except 15–29 and 35–39.

Premium paying versus Fully Paid-up Mortality in the Ultimate Period, between 1976 and 1981 Anniversaries

Overall mortality on premium-paying insurance was slightly lower than that on fully paid-up insurance.

Male versus Female Mortality between 1977 and 1982 Anniversaries

There was little change from last year's report. In the select period, female mortality averaged 67 percent of male mortality for medical issues and 55 percent for nonmedical issues. In the ultimate period, female mortality was about 62 percent of male mortality.

PRIMARY
INDEX OF TABLES

Table	Exposure Period	Policy Years	Type of Underwriting	Male and Female	Mortality Ratios by
1.....	1981-82	1-15	Medical	Combined	Ages at issue
2.....	1981-82	1-15	Medical	Combined	Year of issue
3.....	1981-82	1-15	Nonmedical	Combined	Ages at issue
4.....	1981-82	1-15	Nonmedical	Combined	Year of issue
5.....	1977-82	1-15	Medical and nonmedical	Combined	Age group at issue and policy year
6.....	1981-82	16 and later	Combined	Combined	Attained ages
7.....	1977-82	16 and later	Medical and nonmedical	Combined	Attained ages
8.....	1977-82	16 and later	Combined	Combined	Attained ages; premium paying and paid-up
9.....	1977-82	1-15	Medical	Separate	Ages at issue
10.....	1977-82	1-15	Nonmedical	Separate	Ages at issue
11.....	1977-82	1-15	Medical and nonmedical	Separate	Age group at issue and policy year
12.....	1977-82	16 and later	Combined	Separate	Attained ages
Appendix A.....	Names of the contributing companies, and proportion of total 1981-82 exposures contributed by each company				

INTRODUCTION

This report covers the intercompany mortality experience under Standard Ordinary insurance between 1981 and 1982 policy anniversaries. The report also covers experience between 1977 and 1982 policy anniversaries for those categories where one year's exposure provided an insufficient volume of data. The following classes of business are included:

1. Standard Ordinary insurance issued subject to a medical examination, observed during each of the first fifteen policy years;
2. Standard Ordinary insurance issued without a medical or paramedical examination, observed during each of the first fifteen policy years;

3. Standard Ordinary insurance issued subject to a paramedical examination, observed during each of the first twelve policy years;
4. Standard Ordinary insurance observed during the sixteenth and subsequent policy years. As in previous reports, this ultimate experience is shown for medical and nonmedical issues combined, with a portion of it also shown for medical and nonmedical issues separately. The ultimate experience is also shown separately for premium-paying and fully paid-up (excluding reduced paid-up) policies.

Each of the tables included in this report (with some minor exceptions) shows amounts exposed to risk, actual amounts of death claims, expected amounts of death claims, and mortality ratios of actual to expected death claims. The expected death claims are based on the 1965-70 Male and Female Basic Tables. All the data were submitted separately for males and females in the select period; some of the data were submitted on a combined male-female basis in the ultimate period, and where it was necessary, the combined Basic Table was used to determine expected death claims.

The 1981-82 experience is derived from the contributions of twenty-one companies, although not all of the companies contributed to all aspects of the study. Each of the tables is based on either select (first fifteen policy years) or ultimate (policy years 16 and subsequent) experience.

The following tabulation compares the 1981-82 aggregate mortality ratios for each major category of experience with the corresponding ratios for the previous year. Please keep in mind, however, that in this comparison and in all others throughout this report, the mix of companies is somewhat different from that in earlier reports which accounts for some of the differences in mortality ratios.

EXPERIENCE BETWEEN POLICY ANNIVERSARIES

	1980-81	1981-82
Medical Select	69.5%	67.8%
Nonmedical Select	79.8	79.2
Paramedical Select*	70.1	73.2
Total Select	71.0	70.7
Ultimate	75.2	72.8
Select & Ultimate	73.6	72.0

*Note that the paramedical experience identified in this report is limited to issues of 1970 and later.

Table A of the Appendix shows the names and proportionate contributions of the twenty-one companies that contributed their experience between 1981 and 1982 policy anniversaries.

EXPERIENCE UNDER STANDARD ISSUES DURING THE
FIRST FIFTEEN POLICY YEARS

Medically Examined Issues

The 1981–82 experience during the first fifteen policy years includes exposures of \$193 billion and actual deaths of \$491 million. The corresponding amounts in the 1980–81 experience were \$177 billion and \$456 million.

The experience by age group at issue is shown in Table 1 for the first fifteen policy years combined. The experience by year of issue is shown in Table 2. The detailed experience by age group at issue for each year of issue, for male and female lives separately, is indicated in Table B of the Appendix which is not shown in this report but is available in computer printout from the Society office Research Department upon request.

The aggregate medical mortality ratio for the period from 1981 to 1982 anniversaries was 67.8 percent. The tabulation following Table 2 compares this result with the results of studies made since the 1965–70 Basic Tables were introduced. The 1981–82 result is the first real improvement since 1978–79. The two tabulations following the Aggregate Mortality Ratios provide information on medical exposures as a percentage of total exposures and for policy year 1 as a percentage of total exposures.

TABLE 1
STANDARD MEDICALLY EXAMINED ISSUES OF 1967 TO 1981
MALE AND FEMALE LIVES COMBINED
EXPERIENCE BETWEEN 1981 AND 1982 ANNIVERSARIES
BY AGE AT ISSUE
POLICY YEARS 1–15 COMBINED
Expected Deaths on 1965–70 Select Basic Tables
(Amounts Shown in \$1,000 Units)

Ages at Issue	Exposed to Risk	Actual Deaths	Expected Deaths	Mortality Ratio
0	\$ 386,905	\$ 36	\$ 437	8.2%
1	281,904	30	152	19.7
2–4	464,031	246	161	152.8
5–9	753,331	229	298	76.8
10–14	900,249	740	592	125.0
15–19	1,498,958	919	1,392	66.0
20–24	6,362,973	5,418	5,772	93.9
25–29	\$118,603,299	11,530	19,237	59.9
30–34	34,003,266	34,243	49,323	69.4
35–39	37,533,383	60,485	81,387	74.3
40–44	32,538,994	79,144	115,331	68.6
45–49	24,995,651	86,481	132,823	65.1
50–54	18,046,415	85,037	130,469	65.2
55–59	10,160,405	60,144	93,398	64.4
60–64	4,506,278	42,788	58,835	72.7
65–69	1,419,849	17,763	25,707	69.1
70 and over	314,117	5,452	8,629	63.2
All ages	\$192,770,008	\$490,685	\$723,944	67.8%

TABLE 2
STANDARD MEDICALLY EXAMINED ISSUES OF 1967 TO 1981
MALE AND FEMALE LIVES COMBINED
EXPERIENCE BETWEEN 1981 AND 1982 ANNIVERSARIES
BY YEAR OF ISSUE
ALL AGES COMBINED
Expected Deaths on 1965-70 Select Basic Tables
(Amounts Shown in \$1,000 Units)

Year of Issue	Policy Year	Exposed to Risk	Actual Deaths	Expected Deaths	Mortality Ratio
1967	15	\$ 5,394,093	\$ 31,130	\$ 47,862	65.0%
1968	14	5,490,756	29,423	45,053	65.3
1969	13	6,214,496	29,509	46,383	63.6
1970	12	6,654,781	33,443	44,500	75.2
1971	11	7,331,143	29,817	44,297	67.3
1972	10	8,247,651	29,382	45,002	65.3
1973	9	8,738,716	30,321	43,851	69.1
1974	8	9,682,723	26,518	44,587	59.5
1975	7	10,066,438	37,233	43,616	85.4
1976	6	11,438,282	34,832	45,877	75.9
1977	5	13,380,756	27,240	46,081	59.1
1978	4	15,762,877	39,684	51,618	76.9
1979	3	20,172,328	35,108	56,087	62.6
1980	2	26,396,790	42,545	57,369	74.2
1981	1	37,798,177	34,501	61,761	55.9
All years of issue		\$ 192,770,008	\$ 490,685	\$ 723,944	67.8%

The next tabulation shows the variation in the 1981-82 aggregate medical mortality ratios among the contributing companies.

MEDICAL ISSUES MORTALITY RATIOS

Exposure Year	Aggregate Mortality Ratio
1972-73	92.9%
1973-74	88.0
1974-75	85.1
1975-76	80.9
1976-77	75.5
1977-78	75.0
1978-79	68.7
1979-80	69.8
1980-81	69.5
1981-82	67.8

COMMITTEE ON MORTALITY—ORDINARY

MEDICAL EXPOSURES AS A PERCENTAGE
OF TOTAL EXPOSURES

Ages At Issue	Policy Year 1	Policy Years 1-15
0-9	5.5%	7.8%
10-19	5.4	7.8
20-29	10.5	16.9
30-39	32.6	42.5
40-49	54.8	65.3
50 and over	71.2	77.8
All ages	33.2%	38.3%

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

Year of Issue	% Medical
1977	34.7%
1978	35.1
1979	35.1
1980	38.2
1981	33.1

The next tabulation shows the variation in the 1981-82 aggregate medical mortality ratios among the contributing companies.

VARIATION IN 1981-82 AGGREGATE
MEDICAL MORTALITY RATES
FOR ALL CONTRIBUTING COMPANIES
FROM 1981-82 ALL-COMPANY AVERAGE
OF 67.8 PERCENT

	Number of Companies	Proportion of Actual Deaths
Percentage points below average:		
More than 15	4	14.6%
10-15	2	10.5
5-10	1	3.3
0-5	0	0
Percentage points above average:		
0-5	4	15.0
5-10	6	25.6
10-15	3	28.7
More than 15	1	2.3

Nonmedical Issues

The 1981-82 experience during the first fifteen policy years includes exposures of \$189 billion and actual deaths of \$150 million. These totals are about 50 percent higher than the 1980-81 totals.

The first nonmedical tabulation shows overall nonmedical proportions for policy year 1 for the last five years of issue.

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

Year of Issue	% Nonmedical
1977	36.4%
1978	36.4
1979	34.4
1980	29.3
1981	36.3

The second nonmedical tabulation reveals nonmedical exposures as a percentage of the total exposures, by age group at issue, for the experience between 1981 and 1982 anniversaries

NONMEDICAL EXPOSURES AS A PERCENTAGE
OF TOTAL EXPOSURES

Ages at Issue	Policy Year 1	Policy Years 1-15
0-9	93.0%	90.9%
10-19	90.1	88.6
20-29	69.1	66.0
30-39	25.9	22.0
40-49	9.4	5.5
50 and over	2.9	1.6
All ages	36.2%	37.6%

For both the first policy year and the first fifteen policy years combined, the ratio of nonmedical business increased sharply from last year.

The experience by age group at issue is shown in Table 3 for the first fifteen policy years combined. The experience by year of issue is shown in Table 4. The detailed unadjusted experience by age group at issue for each year of issue, for male and female lives separately, is included in Table C of the Appendix which is not shown in this report but is available in a computer printout from the Society office Research Department upon request.

TABLE 3
 STANDARD NONMEDICAL ISSUES OF 1967 TO 1981
 MALE AND FEMALE LIVES COMBINED
 EXPERIENCE BETWEEN 1981 AND 1982 ANNIVERSARIES
 BY AGE AT ISSUE
 POLICY YEARS 1-15 COMBINED
 Expected Deaths on 1965-70 Select Basic Units
 (Amounts Shown in \$1,000 Units)

Ages at Issue	Exposed to Risk	Actual Deaths	Expected Deaths	Mortality Ratio*
0	\$ 7,855,850	\$ 2,989	\$ 10,832	27.6%
1	2,983,574	749	1,815	41.3
2-4	4,739,030	1,088	2,026	53.7
5-9	6,285,967	2,411	2,703	89.2
10-14	7,266,718	4,731	4,820	98.2
15-19	20,153,058	16,811	17,698	95.0
20-24	48,394,845	32,538	38,646	84.2
25-29	49,097,901	35,951	42,228	85.1
30-34	26,812,238	24,172	32,737	73.8
35-39	10,248,409	15,968	18,763	85.1
40-44	3,639,586	7,373	9,391	78.5
45-49	1,212,682	2,935	3,703	79.3
50 and over	726,911	2,552	4,373	58.4
All ages	\$189,416,769	\$150,266	\$189,735	79.2%

* Exposures not adjusted for distribution by age within each five-year age group at issue.

TABLE 4
 STANDARD NONMEDICAL ISSUES OF 1967 TO 1981
 MALE AND FEMALE LIVES COMBINED
 EXPERIENCE BETWEEN 1981 AND 1982 ANNIVERSARIES
 BY YEAR OF ISSUE
 ALL AGES COMBINED
 Expected Deaths on 1965-70 Select basic Tables
 (Amounts Shown in \$1,000 Units)

Year of Issue	Policy Year	Exposed to Risk	Actual Deaths	Expected Deaths	Mortality Ratio*
1967	15	\$ 4,202,972	\$ 6,901	\$ 8,826	78.2%
1968	14	4,779,179	7,346	9,356	78.5
1969	13	5,017,496	6,822	8,684	78.6
1970	12	5,714,494	7,051	8,854	79.6
1971	11	6,370,483	6,889	8,873	77.6
1972	10	7,553,209	8,339	9,326	89.4
1973	9	8,502,041	7,411	9,608	77.1
1974	8	9,084,023	7,682	9,422	81.5
1975	7	9,575,819	7,783	9,489	82.0
1976	6	11,165,634	8,533	10,131	84.2
1977	5	13,124,345	9,964	11,324	88.0
1978	4	16,811,044	12,517	14,478	86.5
1979	3	19,867,063	14,350	16,162	88.8
1980	2	26,293,965	14,649	19,903	73.6
1981	1	41,355,003	24,029	35,299	68.1
All years of issue		\$189,416,769	\$150,266	\$189,735	79.2%

* Exposures not adjusted for distribution by age within each five-year group at issue.

The aggregate mortality ratio for the period from 1981 to 1982 anniversaries was 79.2 percent. The third nonmedical tabulation compares this result with the results of the studies made since the 1965-70 Basic Tables were introduced. As that table shows, the overall nonmedical ratio continued to decrease in 1981-82.

Exposure Year	Aggregate Mortality Ratio
1972-73	102.6%
1973-74	99.1
1974-75	94.9
1975-76	88.5
1976-77	87.9
1977-78	85.9
1978-79	84.9
1979-80	82.9
1980-81	79.8
1981-82	79.2

The mortality ratios in Tables 3 and 4 generally understate the mortality ratios for nonmedical business because, in calculating the expected deaths, no adjustment has been made to allow for differences in the average age of the exposure in each nonmedical five-year age group compared with the average age of the exposure in the corresponding age group used in developing the Basic Tables. (The Select Basic Tables were based on medical issues). These differences arise from the fact that companies generally change their nonmedical limits at ages 30, 35, 40, and so on.

It should be noted that generally nonmedical issues over age 50 arise largely from business issued under special circumstances, such as pension trust and salary allotment plans. Nonmedical limits extending to age 50, and in some cases for limited amounts above age 50, have only been introduced in recent years. So-called policyholder's nonmedical, issued on the basis of a previous medical examination within six or twelve months, is also included in nonmedical issues for some companies; others include it in their medical issues.

The final nonmedical tabulation indicates the variation in the 1981-82 aggregate nonmedical mortality ratios among the contributing companies.

VARIATION IN 1981-82 AGGREGATE
NONMEDICAL MORTALITY RATIOS
FOR ALL CONTRIBUTING COMPANIES
FROM 1981-82 ALL-COMPANY AVERAGES
OF 79.2 PERCENT

	Number of Companies	Proportion of Actual Deaths
Percentage points below average:		
More than 15	6	11.4%
10-15	0	0.0
5-10	1	0.9
0-5	3	13.1
Percentage points above average:		
0-5	4	59.7
5-10	3	3.7
10-15	1	2.0
More than 15	3	9.2

Paramedically Examined Issues

The paramedical experience included in this report is for issues from 1967 on. However, for issues before 1970, there were a relatively small number of paramedical issues. The 1981-82 experience during the first fifteen policy years includes exposures of \$121 billion and actual deaths of about \$150 million with no actual deaths for issues before 1970. The volume of paramedical business continues to grow sharply, up from exposures of \$80 billion and actual deaths of \$87 million in 1980-81. The first paramedical tabulation shows paramedical exposures as a percentage of total exposures by age at issue for policy year 1 and policy years 1-15. The next paramedical tabulation indicates exposures for policy year 1 by year of issue as a percentage of total exposures.

PARAMEDICAL EXPOSURES AS A PERCENTAGE
OF TOTAL EXPOSURES

Ages at Issue	Policy Year 1	Policy Years 1-15
0-9	1.5%	1.3%
10-19	4.5	3.6
20-29	20.4	17.1
30-39	41.5	35.5
40-49	35.8	29.2
50 and over	25.9	20.6
All ages	30.6%	24.1%

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

Year of Issue	% Paramedical
1977	28.9%
1978	28.5
1979	30.5
1980	32.5
1981	30.6

The experience by year of issue is shown in the following table. The detailed experience by age group at issue for each year of issue, for male and female lives separately, is included in Table D of the Appendix which is not shown in the report but is available in a computer printout from the Society office Research Department upon request.

STANDARD PARAMEDICALLY EXAMINED ISSUES OF 1970 TO 1981
MALE AND FEMALE LIVES COMBINED
EXPERIENCE BETWEEN 1981 AND 1982 ANNIVERSARIES
BY YEAR OF ISSUE
ALL AGES COMBINED
Expected Deaths on 1965-70 Select Basic Tables
(Amounts Shown in \$1,000 Units)

Year of Issue	Policy Year	Exposed to Risk	Actual Deaths	Expected Deaths	Mortality Ratio
1970	12	\$ 35,084	\$ 60	\$ 128	46.9%
1971	11	198,567	404	838	48.2
1972	10	654,094	1,438	2,480	58.0
1973	9	1,637,165	3,644	5,748	63.4
1974	8	2,927,509	5,622	8,913	63.1
1975	7	4,624,161	10,094	13,171	76.6
1976	6	6,820,466	12,891	16,823	76.6
1977	5	10,002,439	16,331	21,176	77.1
1978	4	12,672,260	19,723	25,488	77.4
1979	3	18,384,088	23,320	31,782	73.4
1980	2	28,405,356	29,504	39,160	75.3
1981	1	34,856,951	26,575	38,756	68.6
All years of issue		\$ 121,218,140	\$ 149,605	\$ 204,463	73.2%

The aggregate paramedical mortality ratio for the period from 1981 to 1982 anniversaries was 73.2 percent. The next tabulation compares this result with the result of studies made since the 1965-70 Basic Tables were introduced. As this table shows, the overall paramedical ratio increased by more

than 3 percent this year compared to last year. This is a sharp reversal from the more than 10 percent decrease in 1980-81 from 1979-80.

Exposure Year	Aggregate Mortality Ratio
1973-74	84.1%
1974-75	85.5
1975-76	81.4
1976-77	78.0
1977-78	80.5
1978-79	74.5
1979-80	80.3
1980-81	70.1
1981-82	73.2

The final paramedical tabulation indicates the variation in the 1981-82 aggregate paramedical mortality ratios among the contributing companies.

VARIATION IN 1981-82 AGGREGATE
PARAMEDICAL MORTALITY RATIOS
FOR ALL CONTRIBUTING COMPANIES
FROM 1981-82 ALL-COMPANY AVERAGE
OF 75.2 PERCENT

	Number of Companies	Proportion of Actual Deaths
Percentage points below average:		
More than 15	5	10.7%
10-15	1	4.1
5-10	2	4.7
0-5	1	0.9
Percentage points above average:		
0-5	6	37.1
5-10	2	25.3
10-15	0	0.0
More than 15	4	17.2

Comparison of Medical, Nonmedical, and Paramedical Experience

It would be desirable for the comparison of medical, nonmedical, and paramedical experience to be based on strictly comparable policies, but data for such a comparison are not available. Medical business generally includes larger amounts of insurance issued to persons at higher average socioeconomic levels than nonmedical and paramedical business. However, medical

business also includes policies issued to persons, within nonmedical or paramedical or paramedical amount limits, who were not acceptable on these bases because of a medical history. Similarly, paramedical business includes persons not acceptable on a nonmedical basis. In addition, there are considerable variations in limits and proportions of medical, nonmedical, and paramedical business among contributing companies.

Table 5 presents the experience on medical and nonmedical select issues between 1977 and 1982 anniversaries. The nonmedical mortality ratios shown in Table 5 have not been age-adjusted to reflect the distribution of nonmedical exposures by age for issue-age groups 40-44 and higher. Table 5 indicates that, for policy years 1-15 combined, nonmedical mortality was generally less than medical for issue ages 1 through 24. That was true also at issue ages 50 and over. But, that group represents less than .5 percent of nonmedical exposures and is subject to special considerations noted earlier.

EXPERIENCE UNDER STANDARD ISSUES DURING THE
SIXTEENTH AND SUBSEQUENT POLICY YEARS

The 1981-82 experience during the sixteenth and subsequent policy years includes exposures of \$107 billion and actual deaths of about \$1.3 billion. The 1980-81 experience included exposures of \$81 billion and actual deaths of \$1.1 billion.

Table 6 shows mortality ratios by attained-age groups based on (1) the 1965-70 Ultimate Basic Tables; (2) the Commissioners 1941 Standard Ordinary Mortality Table; and (3) the Commissioners 1958 Standard Ordinary Mortality Table.

The aggregate mortality ratio for the period from 1981 to 1982 anniversaries on the 1965-70 Ultimate Basic Tables was 72.8 percent. The following tabulation compares this result with the results of previous studies. There is a decrease in the aggregate mortality ratio for the second consecutive year. Decreases occurred in most age groups.

Exposure Year	Aggregate Mortality Ratio
1972-73	93.8%
1973-74	93.4
1974-75	87.1
1975-76	85.0
1976-77	82.0
1977-78	80.5
1978-79	77.0
1979-80	77.1
1980-81	75.2
1981-82	72.8

TABLE 5
COMPARISON OF MEDICAL AND NONMEDICAL EXPERIENCE*
MALE AND FEMALE LIVES COMBINED
(INCLUDING DATA NOT SUBDIVIDED BY SEX)
BETWEEN 1977 AND 1982 ANNIVERSARIES
BY AGE GROUP AT ISSUE AND POLICY YEAR GROUP
(FIRST FIFTEEN POLICY YEARS)

AGE GROUP AT ISSUE	POLICY YEARS									
	1-2		3-5		6-10		11-15		1-15	
	Mortality Ratios on 1965-70 Select Basic Table									
	Medi- cal %	Non- medi- cal %	Medi- cal %	Non- medi- cal %	Medi- cal %	Non- medi- cal %	Medi- cal %	Non- medi- cal %	Medi- cal %	Non- medi- cal %
0	4	21	7	51	40	66	57	77	10	30
1-9	25	46	4	60	122	79	144	101	82	68
10-19	156	100	125	108	100	101	128	97	122	101
20-24	133	93	94	91	89	88	76	77	91	88
25-29	88	87	72	92	83	81	67	71	76	82
30-34	69	78	79	87	67	80	68	77	70	80
35-39	64	83	73	86	74	90	72	84	72	86
40-44	62	74	73	121	68	90	74	89	71	93
45-49	77	68	65	80	62	64	71	80	67	72
50 and over	67	60	66	69	67	44	75	51	69	58
All ages	69	75	69	91	68	86	73	80	70	83
	Ratio of Nonmedical to Medical Mortality Ratios									
0	525		729		165		135		300	
1-9	184		1,500		65		70		83	
10-19	64		86		101		76		83	
20-24	70		97		99		101		97	
25-29	99		128		98		106		108	
30-34	113		110		119		113		114	
35-39	130		118		122		117		119	
40-44	119		166		132		120		131	
45-49	88		123		103		113		107	
50 and over	90		105		66		68		84	
All ages	109		132		126		110		119	

*Exposures not adjusted for distribution by age within each five-year age group at issue.

TABLE 6
STANDARD ISSUES OF 1966 AND PRIOR*
MALE AND FEMALE LIVES COMBINED INCLUDING DATA NOT SUBDIVIDED BY SEX
EXPERIENCE BETWEEN 1981 AND 1982 ANNIVERSARIES
BY ATTAINED AGE
POLICY YEARS 16 AND OVER COMBINED
(Amounts Shown in \$1,000 Units)

ATTAINED AGES	EXPOSED TO RISK	ACTUAL DEATHS	1965-70 ULTIMATE BASIC TABLE		MORTALITY RATIO	
			Expected Deaths	Mortality Ratio	1941 CSO Table	1958 CSO Table
15-19	\$ 1,344,438	\$ 830	\$ 1,073	77.4%	27.3%	38.0%
20-24	2,034,532	2,249	1,939	116.0	42.4	59.4
25-29	2,411,796	2,560	2,293	111.6	33.9	53.1
30-34	3,714,033	3,746	4,351	86.1	25.1	44.1
35-39	7,609,759	9,047	12,626	71.7	22.5	41.0
40-44	11,007,981	17,744	29,528	60.1	22.7	38.1
45-49	13,015,823	36,490	57,341	63.6	28.1	43.6
50-54	15,532,325	79,416	114,236	69.5	35.3	50.7
55-59	16,172,773	131,161	192,780	68.0	38.4	51.9
60-64	13,560,890	170,015	254,525	66.8	40.4	51.7
65-69	8,655,882	178,507	255,331	69.9	44.7	54.5
70-74	5,768,152	198,796	257,669	77.2	49.8	59.3
75-79	3,523,560	188,600	245,017	77.0	52.1	63.0
80-84	1,739,034	138,779	182,984	75.8	52.8	63.1
85-89	651,626	82,749	101,600	81.4	58.0	70.5
90-95	170,892	32,540	36,421	89.3	60.3	72.9
All ages . . .	\$106,913,495	\$1,273,229	\$1,749,712	72.8%	44.1%	56.5%

* Based on data from twenty-one companies.

The next tabulation shows the variation in the 1981–82 aggregate ultimate mortality ratios among the contributing companies based on the 1965–70 Ultimate Basic Table.

VARIATION IN 1981–82 AGGREGATE
ULTIMATE MORTALITY RATIOS
FOR ALL CONTRIBUTING COMPANIES
FROM 1981–82 ALL-COMPANY AVERAGE
OF 72.8 PERCENT

	Number of Companies	Proportion of Actual Deaths
Percentage points below average:		
More than 15.....	1	2.8%
10–15.....	1	4.5
5–10.....	2	8.9
0–5.....	5	18.6
Percentage points above average:		
0–5.....	8	24.7
5–10.....	4	40.5
10–15.....	0	0.0
More than 15.....	0	0.0

Comparison of Ultimate Medical and Nonmedical Experience

Companies were asked to subdivide their ultimate data into medical and nonmedical if they could do so conveniently. Seventeen companies comprising 78.9 percent of the total ultimate exposure were able to subdivide their data (in whole or in part) in this manner. The experience between 1977 and 1982 anniversaries is shown in Table 7. For all attained-age groups except ages 15–29 and ages 35–39, the nonmedical mortality was higher than the medical mortality.

Comparison of Premium-Paying and Fully Paid-up Ultimate Experience

A comparison of the mortality on premium-paying and fully paid-up (excluding reduced paid-up) policies for the period from 1977 to 1982 anniversaries is shown in Table 8 for standard medical and nonmedical issues combined. Nineteen companies submitted their experience separately on premium-paying policies, and seventeen companies did so on fully paid-up policies.

TABLE 7
COMPARISON OF MEDICAL AND NONMEDICAL MORTALITY EXPERIENCE*
MALE AND FEMALE LIVES COMBINED
(INCLUDING DATA NOT SUBDIVIDED BY SEX)
STANDARD ISSUES OF 1966 AND PRIOR
EXPERIENCE BETWEEN 1977 AND 1982 ANNIVERSARIES
BY ATTAINED AGE
POLICY YEARS 16 AND OVER COMBINED
Expected Deaths on 1965-70 Ultimate Basic Tables
(Amounts Shown in \$1,000 Units)

ATTAINED AGES	EXPOSED TO RISK		ACTUAL DEATHS		MORTALITY RATIO		RATIO OF NONMEDICAL TO MEDICAL MORTALITY RATIOS
	Medical	Nonmedical	Medical	Non-medical	Medi-cal	Non-medical	
15-19	\$ 619,472	\$ 3,443,212	\$ 638	\$ 2,597	122.9%	93.7%	76.2%
20-24	1,179,513	3,850,092	1,413	4,253	123.5	112.6	91.2
25-29	1,416,650	3,695,417	1,630	3,695	118.4	102.6	86.7
30-34	2,134,228	7,256,983	1,879	7,474	74.6	85.8	115.0
35-39	5,122,483	15,882,207	7,369	18,992	85.4	72.5	84.9
40-44	11,650,579	18,555,250	20,513	33,675	64.0	68.1	106.4
45-49	20,317,123	15,656,614	61,564	50,864	66.8	75.2	112.6
50-54	30,303,896	11,247,053	160,881	65,076	71.0	81.9	115.4
55-59	32,971,852	6,652,165	276,562	63,333	69.5	83.9	120.7
60-64	27,233,982	2,642,114	367,568	40,772	71.1	86.0	121.0
65-69	15,951,620	771,152	345,574	18,602	72.5	82.5	113.8
70-74	10,334,118	481,138	367,201	18,491	79.1	86.6	109.5
75-79	5,962,612	265,167	327,538	15,215	78.9	82.1	104.1
80-84	2,887,836	115,728	248,487	11,037	81.4	89.7	110.2
85-89	986,619	38,304	132,064	5,735	85.5	95.0	111.1
90-95	250,065	8,088	51,380	1,750	96.2	101.8	105.8
All ages	\$169,322,651	\$90,560,686	\$2,372,262	\$361,561	75.3%	80.9%	107.4%

* Based on data from seventeen companies.

TABLE 8
 COMPARISON OF MORTALITY EXPERIENCE
 UNDER PREMIUM-PAYING AND FULLY PAID-UP POLICIES
 MALE AND FEMALE LIVES COMBINED
 STANDARD ISSUES OF 1966 AND PRIOR
 EXPERIENCE BETWEEN 1977 AND 1982 ANNIVERSARIES
 BY ATTAINED AGE
 POLICY YEARS 16 AND OVER COMBINED
 Expected Deaths on 1965-70 Ultimate Basic Tables
 (Amounts Shown in \$1,000 Units)

ATTAINED AGES	PREMIUM-PAYING POLICIES*			FULLY PAID-UP POLICIES†			RATIO OF PREMIUM- PAYING TO PAID-UP MORTALITY RATIOS
	Exposed to Risk	Actual Deaths	Mortality Ratio	Exposed to Risk	Actual Deaths	Mortality Ratio	
15-19	\$ 5,361,255	\$ 4,656	107.2%	118,847	\$ 185	210.2%	51.0%
20-24	6,909,629	7,480	110.0	1,721,192	1,556	97.7	112.6
25-29	6,844,980	7,115	106.1	2,211,499	2,055	101.2	104.8
30-34	12,200,085	12,370	84.9	2,018,820	2,161	100.0	84.9
35-39	28,056,813	35,255	76.0	1,760,532	2,691	102.9	73.9
40-44	42,804,922	76,116	66.1	2,045,815	4,461	87.7	75.4
45-49	52,153,392	164,261	71.0	2,982,867	10,417	84.4	84.1
50-54	61,652,740	336,142	73.3	4,302,128	21,992	75.8	96.7
55-59	60,845,901	522,677	71.1	5,438,868	44,195	73.8	96.3
60-64	48,080,880	658,537	72.4	6,275,780	82,918	74.0	97.8
65-69	27,998,251	615,304	73.7	7,508,009	163,834	77.0	95.7
70-74	18,526,279	667,110	80.0	5,867,475	196,440	76.6	104.4
75-79	10,880,968	603,994	79.5	3,847,583	199,075	75.3	105.6
80-84	5,324,708	459,220	81.4	2,124,429	177,188	79.6	102.3
85-89	1,626,855	215,804	84.8	1,054,608	132,450	80.8	105.0
90-95	373,761	76,014	95.1	335,546	67,286	94.5	100.6
All ages	\$389,641,417	\$4,462,053	76.2%	\$49,613,998	\$1,108,903	78.2%	97.4%

* Premium-paying based on data from nineteen companies.

† Fully paid-up based on data from seventeen companies.

Although, for all attained ages combined, the mortality ratio on premium-paying policies was almost the same as the mortality ratio on fully paid-up policies, the ratios at attained ages 15-19 and 30-49 for premium-paying policies were significantly less than the ratios for fully paid-up policies.

EXPERIENCE BY SEX

For the select period, each of the twenty-one contributing companies submitted all of its medical, nonmedical, and paramedical data separately for males and females.

Table 9 shows the experience by sex and issue-age group between 1977 and 1982 anniversaries for the first fifteen policy years combined for standard

TABLE 9
 COMPARISON OF MALE AND FEMALE MORTALITY EXPERIENCE
 STANDARD MEDICALLY EXAMINED ISSUES
 OBSERVED BETWEEN 1977 AND 1982 ANNIVERSARIES
 BY AGE AT ISSUE—POLICY YEARS 1-15 COMBINED
 Expected Deaths on 1965-70 Male Select Basic Table
 and 1965-70 Female Select Basic Table
 (Amounts Shown in \$1,000 Units)

AGES AT ISSUES	EXPOSED TO RISK		ACTUAL DEATHS		MORTALITY RATIO		RATIO OF FEMALE TO MALE MORTALITY*
	Male	Female	Male	Female	Male	Female	
0.....	\$ 1,030,900	\$ 547,776	\$ 157	\$ 39	12.0%	5.8%	40.0%
1.....	737,988	371,117	84	50	19.0	25.1	107.9
2-4.....	1,239,064	652,957	632	82	106.9	35.2	23.9
5-9.....	2,234,968	1,213,333	1,215	514	94.6	131.5	81.8
10-14.....	3,003,812	1,241,279	3,031	1,456	116.4	293.0	127.5
15-19.....	6,502,754	1,506,058	8,170	564	116.8	73.2	30.2
20-24.....	32,437,954	3,301,417	27,216	2,309	89.5	117.1	89.3
25-29.....	89,544,033	7,396,989	70,920	3,468	76.6	62.4	69.5
30-34.....	144,673,349	13,135,628	153,850	9,532	70.3	65.7	78.7
35-39.....	150,059,975	14,948,940	259,636	14,720	72.5	58.7	62.9
40-44.....	127,425,104	14,745,240	349,559	33,674	68.9	94.8	84.6
45-49.....	95,759,925	13,459,971	372,925	34,891	66.5	78.6	65.6
50-54.....	62,994,996	10,020,860	318,785	35,042	62.6	73.6	67.3
55-59.....	31,909,014	5,831,932	246,804	25,357	72.3	83.6	54.1
60-64.....	12,734,065	2,931,899	133,927	16,098	68.0	66.0	50.0
65-69.....	3,622,457	1,104,853	65,154	18,448	82.3	143.5	90.2
70 and over.....	719,040	315,970	15,189	4,689	64.9	57.5	70.3
All ages.....	\$766,629,399	\$92,726,220	\$2,027,254	\$200,934	69.1%	79.4%	67.3%

* Female mortality ratios calculated on 1965-70 Male Select Basic Table.

medical issues. Table 10 shows comparable data for standard nonmedical issues. For the purpose of comparing male and female mortality, the right-hand column of each of these tables is based on expected deaths for females calculated on the male table. For all issue ages combined, the ratio of female to male mortality was 67.3 percent for medical issues and 54.9 percent for nonmedical issues. This difference reflects the generally lower ratio of female to male mortality rates at younger ages.

The detailed select experience by sex for the period from 1981 to 1982 policy anniversaries by age group at issue for each year of issue is available in the Appendixes from the Society office Research Department: Table B for medical issues, Table C for nonmedical issues, and Table D for par-medical issues.

TABLE 10
 COMPARISON OF MALE AND FEMALE MORTALITY EXPERIENCE
 STANDARD NONMEDICAL ISSUES
 OBSERVED BETWEEN 1977 AND 1982 ANNIVERSARIES
 BY AGE AT ISSUE—POLICY YEARS 1-15 COMBINED
 Expected Deaths on 1965-70 Male Select Basic Table
 and 1965-70 Female Select Basic Table
 (Amounts Shown in \$1,000 Units)

AGES AT ISSUE	EXPOSED TO RISK		ACTUAL DEATHS		MORTALITY RATIO ¹		RATIO OF FEMALE TO MALE MORTALITY EXPERIENCE
	Male	Female	Male	Female	Male	Female	
0	\$ 17,331,213	\$ 11,959,086	\$ 7,429	\$ 4,006	33.0%	26.3%	63.3%
1	6,754,583	4,497,065	2,119	1,172	52.7	46.4	72.9
2-4	10,757,196	7,289,653	3,229	1,391	65.8	49.6	59.9
5-9	14,671,416	9,854,439	6,990	2,086	91.0	66.0	49.9
10-14	18,748,695	10,354,115	16,801	3,809	107.1	89.3	46.2
15-19	61,970,889	25,850,084	68,884	10,613	105.5	78.3	37.3
20-24	157,542,827	52,529,430	128,492	19,482	92.8	64.1	48.4
25-29	142,936,422	50,703,599	119,374	21,260	88.5	59.4	58.8
30-34	64,904,000	30,010,802	80,013	19,951	85.6	63.1	63.3
35-39	22,262,528	12,737,247	46,141	16,538	88.8	78.7	69.7
40-44	5,882,200	4,942,948	18,653	11,029	90.1	98.6	69.3
45-49	1,898,600	801,524	4,804	2,209	62.1	109.3	99.4
50 and over	1,372,820	297,088	5,568	769	57.3	59.6	61.1
All ages	\$525,114,078	\$221,827,078	\$508,497	\$114,314	88.1%	65.4%	54.9%

¹ Exposures not adjusted for distribution by age.

² Female mortality ratios calculated on 1965-70 Select Basic Table.

Table 11 compares the experience between 1977 and 1982 anniversaries on medical and nonmedical issues, separately for each sex, for policy years 1-2, 3-5, 6-10, 11-15, and 1-15. The nonmedical mortality ratios shown in Table 11 have not been adjusted to reflect the distribution of nonmedical exposures by age for issue-age groups 40-44 and over. For males, the ratios of the nonmedical to the medical mortality ratios exceeded 100 percent at issue ages 0 and 20-44 in policy years 1-15 combined. For females, the ratios exceeded 100 percent for issue ages 0 and 35-49 in policy years 1-15 combined. These results are generally consistent with those in the 1976-81 experience shown in last year's study.

Table 12 shows the experience by sex and attained-age groups between 1977 and 1982 anniversaries for policy years 16 and over, for standard medical and nonmedical issues combined. Seventeen of the contributing companies submitted data (in whole or in part) separately for males and females for policy years 16 and over. As in Tables 9 and 10, for the purpose of comparing male and female mortality, the right-hand column of this table is based on expected deaths for females calculated on the male table. For all ages combined, the ratio of female mortality to male mortality was 62.5 percent.

TABLE 11
 COMPARISON BY SEX OF MEDICAL AND NONMEDICAL EXPERIENCE*
 BETWEEN 1977 AND 1982 ANNIVERSARIES
 BY AGE GROUP AT ISSUE AND POLICY YEAR GROUP
 (FIRST FIFTEEN POLICY YEARS)

AGE GROUP AT ISSUE	POLICY YEARS									
	1-2		3-5		6-10		11-15		1-15	
	Medi- cal %	Non- medi- cal %	Medi- cal %	Non- medi- cal %	Medi- cal %	Non- medi- cal %	Medi- cal %	Non- medi- cal %	Medi- cal %	Non- medi- cal %
Male Experience—Mortality Ratios on 1965-70 Male Select Basic Table										
0	6	22	2	56	36	76	70	83	12	33
1-9	9	52	3	65	138	83	132	100	83	74
10-19	145	108	99	114	104	104	129	98	117	106
20-24	133	107	95	97	89	93	72	76	90	93
25-29	92	105	72	101	83	84	68	71	77	88
30-34	71	91	80	98	68	84	66	77	70	86
35-39	66	89	76	87	74	96	72	84	72	89
40-44	56	74	70	132	67	83	74	83	69	90
45-49	77	53	65	80	61	55	69	62	66	62
50 and over.....	63	58	65	69	66	40	75	61	68	57
All ages.....	67	87	68	99	67	89	72	79	69	88
Female Experience—Mortality Ratios on 1965-70 Female Select Basic Table										
0	0	20	16	43	51	51	13	63	6	26
1-9	56	37	5	51	72	69	203	102	79	55
10-19	205	72	295	83	69	83	118	87	159	81
20-24	133	53	85	69	82	65	173	79	117	64
25-29	55	45	79	65	75	67	35	69	62	59
30-34	50	51	63	61	45	69	115	78	66	63
35-39	40	71	42	84	65	75	77	84	59	79
40-44	152	75	113	105	79	100	79	105	95	99
45-49	77	137	64	79	72	89	94	156	79	109
50 and over.....	102	61	74	56	81	49	75	66	81	58
All ages.....	90	48	74	69	75	73	82	83	79	65
Male Experience—Ratio of Nonmedical to Medical Mortality Ratios										
0	367		2,800		211		119		275	
1-9	578		2,167		60		76		89	
10-19	74		115		100		76		91	
20-24	80		102		104		106		103	
25-29	114		140		101		104		114	
30-34	128		122		124		117		123	
35-39	135		114		130		117		124	
40-44	132		189		124		112		130	
45-49	69		123		90		90		94	
50 and over.....	92		106		61		81		84	
Female Experience—Ratio of Nonmedical to Medical Mortality Ratios										
0	0		269		100		485		433	
1-9	66		1,020		96		50		70	
10-19	35		28		120		74		51	
20-24	40		81		79		46		55	
25-29	82		82		89		197		95	
30-34	102		97		153		68		95	
35-39	177		200		115		109		134	
40-44	49		93		127		133		104	
45-49	178		123		124		166		138	
50 and over.....	60		76		60		88		72	

* Exposures not adjusted for distribution by age.

TABLE 12
 COMPARISON OF MALE AND FEMALE MORTALITY EXPERIENCE*
 STANDARD ISSUES OF 1966 AND PRIOR
 EXPERIENCE BETWEEN 1977 AND 1982 ANNIVERSARIES
 BY ATTAINED AGE—POLICY YEARS 16 AND OVER COMBINED
 Expected Deaths on 1965-70 Male Ultimate Basic Table
 and 1965-70 Female Ultimate Basic Table
 (Amounts Shown in \$1,000 units)

ATTAINED AGES	EXPOSED TO RISK		ACTUAL DEATHS		MORTALITY RATIO		RATIO OF FEMALE TO MALE MORTAL- ITY
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	
15-19	\$ 3,420,600	\$ 1,823,950	\$ 3,627	\$ 789	109.0%	90.2%	41.4%
20-24	5,144,226	2,413,782	6,679	1,248	114.5	92.4	39.7
25-29	5,652,526	2,149,935	7,026	1,042	114.7	84.8	39.1
30-34	10,411,500	2,453,482	11,524	1,498	86.8	82.9	55.8
35-39	23,545,346	3,559,032	31,644	3,084	78.3	72.9	66.4
40-44	35,753,976	3,526,588	64,667	5,233	65.5	76.8	83.5
45-49	43,981,391	4,090,082	141,602	9,917	70.6	81.2	75.6
50-54	52,637,928	5,164,586	287,965	20,057	71.8	87.2	71.0
55-59	51,687,924	5,543,075	445,841	30,895	69.3	85.1	64.5
60-64	40,609,331	4,591,057	569,104	37,985	71.0	82.5	59.0
65-69	25,427,937	3,197,877	570,556	42,023	72.2	88.2	58.3
70-74	16,570,098	2,370,941	614,149	45,799	78.7	73.8	52.0
75-79	9,493,627	1,514,862	544,742	49,293	79.1	67.3	56.4
80-84	4,562,756	804,341	410,329	48,253	82.1	76.6	66.5
85-89	1,620,393	307,128	220,719	30,137	84.5	80.1	71.8
90-95	415,192	80,091	87,175	13,293	96.3	84.7	79.1
All ages	\$330,934,751	\$43,590,811	\$4,017,349	\$340,548	75.5%	78.6%	62.5%

* Based on data from seventeen companies.

† Female mortality ratios calculated on 1965-79 Male Ultimate Basic Table.

APPENDIX

TABLE A
 CONTRIBUTING COMPANIES
 PROPORTION OF TOTAL EXPOSURES BETWEEN 1981 AND 1982 ANNIVERSARIES
 CONTRIBUTED BY EACH COMPANY

COMPANY	FIRST FIFTEEN POLICY YEARS MALE AND FEMALE COMBINED		SIXTEENTH AND SUBSEQUENT POLICY YEARS	FIRST FIFTEEN POLICY YEARS BY SEX				SIXTEENTH AND SUBSEQUENT POLICY YEARS BY SEX	
	Medical	Non-medical		Male	Female	Nonmedical		Male	Female
						Male	Female		
Northwestern Mutual	12.6%	5.8%	7.2%	11.3%	1.3%	3.7%	2.1%	6.4%	0.8%
New York Life Equitable	12.0	13.8	12.1	10.1	1.9	8.9	4.9	10.2	1.6
New York Prudential	7.9	8.9	7.8	7.0	0.9	6.3	2.6	7.0	0.8
Occidental	7.8	27.8	21.2	6.7	1.1	18.2	9.6	18.3	2.9
Massachusetts Mutual	7.5	1.7	0.9	6.7	0.8	1.1	0.6	0.6	0.1
Metropolitan Connecticut	7.2	3.9	4.4	6.5	0.7	2.9	1.0	4.0	4.2
Mutual Connecticut	6.8	12.8	13.5	6.0	0.8	8.5	4.4	4.4	0.5
Phoenix Mutual Connecticut	4.9	2.5	6.1	4.4	0.5	1.9	0.7	5.6	0.5
General	4.1	0.8	1.2	3.7	0.4	0.6	0.3	1.1	0.1
Mutual Benefit	4.0	0.4	1.1	3.5	0.5	0.3	0.1	1.0	0.1
John Hancock	3.5	0.9	2.8	3.2	0.4	0.6	0.3	1.5	0.3
Mutual of New York	3.5	4.7	5.5	3.0	0.4	3.2	1.5	4.6	0.8
Aetna	3.3	3.8	3.4	2.9	0.4	2.7	1.0	3.0	0.4
Penn Mutual	3.1	1.2	1.6	2.8	0.3	0.8	0.4	1.4	0.2
Travelers	2.4	1.9	2.2	2.1	0.3	1.3	0.5	0.0	0.0
Continental Assurance	2.2	1.2	2.2	2.0	0.2	0.9	0.4	1.9	0.2
Lincoln National	1.9	0.8	1.2	1.8	0.2	0.6	0.2	1.1	0.1
Franklin Life	1.8	1.4	1.3	1.6	0.2	0.9	0.4	1.1	0.2
Provident Mutual	1.6	4.1	2.0	1.4	0.2	2.7	1.3	1.6	0.4
Sun Life, Canada	1.3	0.8	1.4	1.2	0.1	0.6	0.2	0.0	0.0
Total*	0.5	0.9	1.0	0.5	0.1	0.6	0.3	0.8	0.1
	99.9%	100.1%	100.1%	88.4%	11.7%	67.3%	32.8%	75.6%	14.3%

*Totals not adjusted for rounding differences.

