

Report of the Individual Life Insurance Experience Committee

Mortality Under Standard Individually Underwritten Life Insurance Between 1995 and 2000 Policy Anniversaries

Introduction

This study is the latest in continuing annual reports on intercompany mortality experience by amount of insurance under standard individually underwritten issues. This includes both preferred and standard classifications. The previous report discussed experience over the 1995-96 study period. This study focuses on the trends and individual year results over the 1995-96, 1996-97, 1997-98, 1998-99, and 1999-00 study periods and also examines experience in the most recent five-year period (1995-2000) in order to provide a larger volume of data so that broader comparisons of results can be made.

Twelve companies contributed data to the Society of Actuaries (SOA) for some years of this study with ten companies contributing in 1995-96, eleven in 1996-97, twelve in 1997-98, eleven in 1998-99, and ten in 1999-00. Eight companies contributed in every year of the study. This level of contribution is consistent with the 1995-96 study, but is down considerably from the 15-20 companies that contributed in earlier studies. In order to facilitate comparisons, the 1995-96 data included in this report excludes the Bragg data that was included in the previously published report. The SOA is actively pursuing increasing the number of contributors and anticipates twenty or more companies for future reports. The reader must be aware that differences in mortality from previous studies may be due to actual mortality differences or changes in companies contributing to the SOA. Given the relatively small number of contributors, the overall level of results and trends should be viewed with caution as the exposure base varied from year to year. Due to the small number of contributing companies, detailed tables are not provided with this report as in previous reports. Summaries of exposure amounts are included in Appendices 1-3, and a list of contributing companies is included in Appendix 4. Future studies will include enhanced reporting capabilities.

As in the 1995-96 study, the ratios of actual to expected mortality are based on the 1975-80 Basic Tables and the 2001 Valuation Basic Tables (VBT). Select period experience is defined as experience in durations 25 and prior. Ultimate experience is defined as experience in durations 26 and over due to the 25 year select period built into the 2001 VBT. The 2001 VBT has composite and smoker distinct bases. The 2001 VBT was based on experience from contributions to the SOA for the 1990-95 study period. This pure industry experience from 1990-95 was supplemented at the higher ages and projected forward to the year 2001. The 2001 VBT was the basis for the 2001 CSO table.

For this report, A/E ratios using the 2001 VBT are calculated using the smoker distinct versions of the table when the smoking status is known. Policies with unknown smoking status use the composite tables. The 2001 VBT represents an Age Nearest Birthday (ANB) table. The data submitted for this study was a mix of Age Nearest Birthday and Age Last Birthday with

approximately 53% ANB in the select period and 71% in the ultimate period. This has the effect of slightly overstating the A/E ratios for the majority of the adult issue ages.

Two methodology changes were made from the previous study for the 1996-97 and later study periods. First, smoker distinct data is included for the first fifteen years only instead of twenty-five years as some erroneous smoker data was identified in later durations (15-25). Second, previous studies assigned issue age 70 mortality to all issue ages over 70. For this study, the 1975-80 Basic Tables were enhanced using the Milliman & Robertson (now Milliman USA) extension table to reflect age specific mortality for issue ages over 70. These rates are included Appendices 5 and 6. The extension tables goes from ages 71 through 87 and up through attained age 102. In the 1995-96 study, the impact of both changes described above is less than 1% of total expected claims.

Overview

Overall select period mortality experience decreased significantly over the individual years in the study. The actual to expected (A/E) mortality ratios using the 2001 VBT and the 1975-80 Basic Tables for the individual study years and most recent five-year period are listed in the tables below. The A/E ratios using the 2001 VBT appear low given the fact that the 2001 VBT has been projected forward to the year 2001. Again, the overall level should be viewed with caution as it is based on a very small number of companies and may also be influenced by the change in the mix of companies from year to year.

1995-00 Select Period Experience					
A/E Ratios by Face Amounts Based on 2001 VBT					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
1995-96	1996-97	1997-98	1998-99	1999-00	1995-00
90.4%	92.2%	87.4%	84.3%	83.5%	87.2%

1995-00 Select Period Experience					
A/E Ratios by Face Amounts Based on 1975-80 Basic Tables					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
1995-96	1996-97	1997-98	1998-99	1999-00	1995-00
66.5%	66.7%	62.7%	60.6%	59.3%	62.6%

The insured population is subject to two main decreases in mortality. One source is the secular decrease in mortality in the general population. The second source is a decrease due to a trend towards higher face amount policies with more underwriting requirements.

Intercompany improvement over 1995-2000 was consistent with improvement in the general population.¹ Generally, male improvement is greater than female improvement, improvement is greater for younger issues ages, and smoker mortality did not improve. These trends are discussed further within the individual sections of this report.

¹ See U.S. Population Mortality Improvement by Doug Doll, Product Matters, July 2003

Overall A/E ratios in the ultimate period also decreased over the individual years in the study with the rate of improvement higher for males than females. Ultimate experience is defined as experience in durations 26 and higher. The A/E mortality ratios using the 2001 VBT and the 1975-80 Basic Tables for the individual study years and most recent five-year period are listed in the tables below.

The ratios are much higher than the select period ratios. This may be indicative of lack of credible data particularly for females in development of the 2001 VBT and also the emphasis of smoothness over fit.

1995-00 Ultimate Period Experience						
A/E Ratios by Face Amounts Based on 2001 VBT						
Combined Nonsmoker, Smoker and Unknown Smoker						
	1995-96	1996-97	1997-98	1998-99	1999-00	1995-00
Male	112.9%	103.8%	100.4%	99.6%	96.5%	102.2%
Female	120.9%	106.2%	114.1%	111.8%	112.3%	112.8%

1995-00 Ultimate Period Experience						
A/E Ratios by Face Amounts Based on 1975-80 Basic Tables						
Combined Nonsmoker, Smoker and Unknown Smoker						
	1995-96	1996-97	1997-98	1998-99	1999-00	1995-00
Male	83.4%	77.9%	75.5%	75.1%	72.8%	76.7%
Female	94.8%	84.7%	90.6%	88.9%	89.1%	89.4%

Detailed analysis of the experience is divided into four primary sections:

- I. Select Experience (first 25 policy years) for the individual study periods 1995-96, 1996-97, 1997-98, 1998-99, 1999-00.
- II. Select Experience (first 25 policy years) for the five-year period from 1995-00.
- III. Smoker-Nonsmoker Experience for the individual and five-year study periods.
- IV. Ultimate Experience (policy years 26 and over) for the five-year study periods.

**I. SOA Select Period Experience for Years
1995-96, 1996-97, 1997-98, 1998 -99, 1999-2000
(Combined Male, Female, Nonsmoker, Smoker and Unknown Smoker)**

The succession of one year study periods of select experience over the period from 1995-00 is useful for discerning mortality trends. To facilitate this process, the 1995-96 SOA results from this committee's previous paper are used.

The trends will be discussed using A/E ratios based on the 2001 Valuation Basic Tables (2001 VBT). The 2001 VBT has separate mortality tables by male and female for nonsmokers, smokers and composite tables that are applied to policies with unknown smoking status. The number of policies with unknown smoking status is small for the first fifteen policy years, and substantial thereafter. The 1975-80 Basic Tables use the same mortality table for nonsmokers, smokers and unknown smoking status. The lack of separate tables by smoking status introduces a statistical bias. Although the general trends are common under both sets of tables, the statistical bias can lead to differences between the 1975-80 Basic Tables and the 2001 VBT. For readers wanting to see results based on the 1975-80 Basic Tables, tables are presented at the end of this section.

One key trend is that overall mortality is both decreasing and below the levels anticipated by the 2001 VBT:

One Year Study Periods for 1995-00 Select Period Experience					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 2001 VBT					
	1995-96	1996-97	1997-98	1998-99	1999-00
Total	90.4%	92.2%	87.4%	84.3%	83.5%

Over the period from 1995-2000, the decline is in the range of from 1.5% to 2% per year. This result is consistent with the secular decrease in mortality in the general population.

A second key trend is the decrease in mortality being concentrated in nonsmokers. Over the one year study periods from 1995-2000, the smoker mortality is close to the level anticipated by the 2001 VBT.

One Year Study Periods for 1995-00 Select Period Experience by Smoking Habit					
Combined Males and Females					
15 Year Select Period; A/E Ratios by Face Amounts Based on 2001 VBT					
Smoking Status	1995-96	1996-97	1997-98	1998-99	1999-00
Nonsmoker	87.4%	91.5%	86.1%	83.5%	80.6%
Smoker	93.1%	106.0%	99.2%	99.7%	98.0%

Although there is a 25 year select period for the 2001 VBT, the nonsmoker and smoker data was limited to 15 years due to data limitations.

The next sub-sections present more detailed analysis by Medical Basis, Issue Age, Policy Year, Amount Bands and Sex. Section III contains detailed analysis of Smoker-Nonsmoker experience.

By Medical Basis

The expectation that increased underwriting requirements result in lower A/E ratios is supported by the one year studies. In each of the study years, the A/E ratios increase from Medical to Paramedical to Nonmedical. For each medical basis, A/E ratios show a mortality decrease from the 1995-96 study levels to the 1999-2000 study.

For the one year study periods from 1995-2000, the select period A/E ratios by medical basis with expected mortality based on the 2001 VBT Basic Tables follow.

One Year Study Periods for 1995-00 Select Period Experience by Medical Basis					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 2001 VBT					
Medical Basis	1995-96	1996-97	1997-98	1998-99	1999-00
Medical	85.8%	81.7%	82.3%	77.2%	75.9%
Paramedical	89.7%	97.5%	87.8%	86.3%	84.0%
Nonmedical	100.8%	103.4%	96.4%	93.7%	95.3%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

By Issue Age

In the 1995-96 study, all issue age groupings (except 0-19) show A/E ratios of around 90% of the 2001 VBT. From the 1995-96 study to the 1999-00 study, A/E ratios decrease in every issue age grouping except for 60+. In the 1999-00 study, the A/E ratios ranged from 75.1% at issue ages 40-49 to 92.1% at issue ages 0-19 with an average of 83.5%.

For the one year study periods from 1995-2000, the select period experience by issue age with expected mortality based on the 2001 VBT Basic Tables follow.

One Year Study Periods for 1995-00 Select Period Experience by Issue Age					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 2001 VBT					
Issue Age	1995-96	1996-97	1997-98	1998-99	1999-00
0-19	100.4%	96.8%	99.8%	88.4%	92.1%
20-29	92.0%	82.6%	79.3%	81.2%	80.0%
30-39	88.4%	87.3%	78.2%	77.2%	76.6%
40-49	91.5%	92.2%	84.6%	81.9%	75.1%
50-59	89.2%	95.1%	90.6%	88.5%	86.2%
60+	90.7%	94.2%	92.9%	87.3%	91.7%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

By Policy Year

Comparing the 1995-96 study to the 1999-00 study, there was an improvement in the A/E ratios for all policy year groupings except durations 6-10; the largest percentage improvements occurred in both policy years 1-2 and 3-5. There is no clear relationship in patterns of improvement for policy year groupings from one study period to the next study period.

For the one year study periods from 1995-2000, the select period experience by policy year with expected mortality based on the 2001 VBT Basic Tables follow.

One Year Study Periods for 1995-00 Select Period Experience by Policy Year					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amount Based on 2001 VBT					
Policy Year	1995-96	1996-97	1997-98	1998-99	1999-00
1-2	85.4%	92.3%	73.2%	79.4%	70.3%
3-5	96.0%	90.3%	83.1%	80.2%	71.9%
6-10	84.9%	93.2%	91.4%	88.1%	88.1%
11-15	92.6%	98.6%	92.5%	88.7%	87.1%
16-20	92.4%	82.8%	82.0%	77.0%	86.2%
21-25	98.4%	85.8%	84.6%	79.6%	83.3%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

By Amount Bands

Within each study year, there is a general pattern of decreasing A/E ratios as amount bands increase for all years in the study (except for some expected fluctuations in the highest amount bands). There has been a noticeable shift over the individual years in the study towards higher face amount policies. Policies with face amounts \$250,000 and over comprised about 37% of the exposure in 1995-96 and 48% in 1999-00. Based on this significant shift in exposure, the decrease in overall A/E ratios during the study period is partially driven by a trend towards higher face amount policies with more underwriting requirements.

Within each amount band, there is a general pattern of decreasing A/E ratios in succeeding study years. The \$1,000,000 + amount band exhibited the largest change in A/E ratios going from 81.3% in 1996-97 to 60.4% in 1999-00. The change in the \$1,000,000 + policy amount band is due in part to the variability of average death claims in the top policy amount band. Particularly at amount bands beginning at \$100,000 or higher, analysis by amount band is a proxy for more underwriting requirements.

For the one year study periods from 1995-2000, the select period experience by amount bands with expected mortality based on the 2001 VBT Basic Tables follow.

One Year Study Periods for 1995-00 Select Period Experience by Amount Bands					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios By Face Amount Based on 2001 VBT					
Amount Bands	1995-96	1996-97	1997-98	1998-99	1999-00
< \$25,000	110.1%	111.3%	110.8%	99.7%	100.1%
\$25,000 - \$49,000	104.7%	102.1%	99.9%	96.9%	98.5%
\$50,000 - \$99,999	96.5%	104.1%	100.7%	99.1%	99.3%
\$100,000 - \$249,999	89.3%	91.7%	87.2%	84.9%	85.1%
\$250,000 - \$499,999	79.2%	82.5%	75.2%	71.1%	75.4%
\$500,000 - \$999,999	84.0%	78.8%	70.6%	70.6%	76.6%
\$1,000,000 +	75.1%	81.3%	79.7%	78.0%	60.4%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

By Sex

With the exception of an increase in the male mortality ratio from 1995-96 to 1996-97, A/E ratios have been improving over the one year study periods from 1996-2000. When compared to the prior experience, the female mortality ratio increased in both 1996-97 and 1998-99. However, female A/E ratios improved from 87.8% in 1995-96 to 83.9% in 1999-00. Overall, male mortality had slightly greater improvement as A/E ratios improved from 91.1% in 1995-96 to 83.3% in 1999-00

For the one year study periods from 1995-2000, the select period experience by sex with expected mortality based on the 2001 VBT Basic Tables follow.

One Year Study Periods for 1995-00 Select Period Experience by Sex					
Combined Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 2001 VBT					
Sex	1995-96	1996-97	1997-98	1998-99	1999-00
Male	91.1%	93.5%	87.5%	83.4%	83.3%
Female	87.8%	87.9%	86.8%	87.3%	83.9%
Total	90.4%	92.2%	87.4%	84.3%	83.5%

Tables Using 1975-80 Basic for Expected Mortality

The 1975-80 Basic Tables have a 15 year select period and have separate male and female tables. The 1975-80 Basic Tables use the same mortality table for nonsmokers, smokers and unknown smoking status. The lack of separate tables by smoking status introduces a statistical bias in mortality ratios because different mixes of nonsmoker, smoker, and unknown smoking status are weighted with the same mortality rate. Although the general trends are common under both sets of tables, the statistical bias can lead to differences between the 1975-80 Basic Tables and the

2001 VBT. The tables below are presented for readers wanting to see results based on the 1975-80 Basic Tables.

By Smoking Status

One Year Study Periods for 1995-00 Select Period Experience by Smoking Habit					
Combined Males and Females					
15 Year Select Period; A/E Ratios by Face Amounts Based on 1975-80 Basic Tables					
Smoking Status	1995-96	1996-97	1997-98	1998-99	1999-00
Nonsmoker	55.4%	57.3%	54.1%	52.6%	50.1%
Smoker	123.8%	138.6%	129.8%	130.8%	128.1%

By Medical Basis

One Year Study Periods for 1995-00 Select Period Experience by Medical Basis					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 1975-80 Basic Tables					
Medical Basis	1995-96	1996-97	1997-98	1998-99	1999-00
Medical	64.9%	60.4%	60.7%	57.0%	54.9%
Paramedical	63.9%	68.4%	60.9%	60.0%	58.1%
Nonmedical	74.0%	75.8%	70.2%	68.5%	69.6%
Total	66.5%	66.7%	62.7%	60.6%	59.3%

By Issue Age

One Year Study Periods for 1995-00 Select Period Experience by Issue Age					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 1975-80 Basic Tables					
Issue Age	1995-96	1996-97	1997-98	1998-99	1999-00
0-19	65.2%	63.3%	65.7%	58.6%	61.3%
20-29	69.7%	62.5%	59.8%	61.2%	60.1%
30-39	56.0%	54.8%	48.8%	48.0%	47.5%
40-49	61.4%	61.2%	55.5%	53.6%	48.7%
50-59	67.6%	71.4%	67.0%	65.1%	62.8%
60+	77.9%	77.5%	76.6%	72.1%	74.5%
Total	66.5%	66.7%	62.7%	60.6%	59.3%

By Policy Year

One Year Study Periods for 1995-00 Select Period Experience by Policy Year					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 1975-80 Basic Tables					
Policy Year	1995-96	1996-97	1997-98	1998-99	1999-00
1-2	52.7%	55.3%	43.3%	47.2%	41.5%
3-5	61.1%	55.4%	50.5%	48.4%	42.8%
6-10	64.5%	69.0%	65.7%	62.9%	61.8%
11-15	74.8%	78.3%	73.4%	70.7%	69.0%
16-20	72.7%	65.5%	63.2%	58.2%	63.7%
21-25	78.2%	69.9%	69.0%	65.3%	68.2%
Total	66.5%	66.7%	62.7%	60.6%	59.3%

By Amount Bands

One Year Study Periods for 1995-00 Select Period Experience by Amount Bands					
Combined Males, Females, Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 1975-80 Basic Tables					
Amount Bands	1995-96	1996-97	1997-98	1998-99	1999-00
< \$25,000	94.3%	95.7%	95.4%	86.0%	86.3%
\$25,000 - \$49,000	83.9%	81.8%	80.2%	78.1%	79.2%
\$50,000 - \$99,999	74.5%	79.9%	77.4%	76.5%	76.7%
\$100,000 - \$249,999	63.6%	65.2%	61.7%	60.3%	60.3%
\$250,000 - \$499,999	54.4%	55.7%	50.2%	47.4%	49.6%
\$500,000 - \$999,999	57.5%	52.5%	46.8%	46.7%	49.6%
\$1,000,000 +	53.4%	55.3%	54.2%	53.2%	39.8%
Total	66.5%	66.7%	62.7%	60.6%	59.3%

By Sex

One Year Study Periods for 1995-00 Select Period Experience by Sex					
Combined Nonsmoker, Smoker and Unknown Smoker					
A/E Ratios by Face Amounts Based on 1975-80 Basic Tables					
Sex	1995-96	1996-97	1997-98	1998-99	1999-00
Male	64.8%	65.5%	60.8%	57.9%	57.3%
Female	73.2%	71.3%	70.1%	70.8%	66.8%
Total	66.5%	66.7%	62.7%	60.6%	59.3%

II. Select Period Experience over the 5-Year Period from 1995-2000

Overall

The overall select period mortality experience for the five year period from 1995-00 was 62.6% of the 1975-80 Basic Table and 87.2% of the 2001 Valuation Basic Table. This result reflects a 15% decrease in overall mortality compared to the 1991-96 results of 73.3% of the 1975-80 Basic Table, and 101.0% of the VBT. As mentioned previously, the overall improvement in results should be viewed with caution as it is based on a different number and mix of companies. The improvement can also be attributed to a trend towards higher face amount policies with more underwriting requirements.

By Sex

Male mortality improved 15% (from 71.9% of the 1975-80 Basic Table in the 1991-96 study to 60.8% in 1995-00 study) while female experience improved 12% (from 79.6% of the 1975-80 Basic Table in the 1991-96 study to 69.8% in the 1995-00 study).

Male mortality is 87.4% of the 2001 VBT (compared to 102.0% in the 1991-96 study) and female mortality is 86.6% of the 2001 VBT (compared to 97.1% in the 1991-96 study).

By Issue Age

Select Period Experience over the 5 Year Period from 1995-00 by Issue Age, Males only Smokers, Nonsmokers, and Unknown Smoking Status Combined A/E Ratios by Face Amount		
Issue Age	1975-80 Basic Table	2001 VBT
0-9	52.7	87.0
10-19	73.4	106.0
20-29	64.9	84.2
30-39	51.4	80.4
40-49	54.7	84.7
50-59	63.9	90.4
60-69	71.7	94.0
70+	67.4	87.8
Total	60.8	87.4

Select Period Experience over the 5 Year Period from 1995-00 by Issue Age, Females only Smokers, Nonsmokers, and Unknown Smoking Status Combined A/E Ratios by Face Amount		
Issue Age	1975-80 Basic Table	2001 VBT
0-9	50.8	79.5
10-19	67.2	97.0
20-29	56.8	79.3
30-39	48.1	83.1
40-49	59.1	83.0
50-59	81.7	87.0
60-69	90.1	87.1
70+	90.0	94.0
Total	69.8	86.6

Issue age groups 20-29, 30-39, and 40-49 experienced the most improvement for both males and females over the 1991-96 study (15-20%). Males showed more improvement than the females at the juvenile issue ages and for issue ages over 50. Overall, the ages less than 20 experienced about 13% improvement while ages 50 and higher experienced between 9% and 13% improvement over the 1991-96 study. There is much less volatility in results when using the 2001 VBT as the expected basis versus the 1975-80 Table. This suggests that the 2001 VBT provides a much better fit in reflecting recent experience by issue age.

By Policy Year

Select Period Experience over the 5 Year Period from 1995-00 by Policy Year Males, Females, Smokers, Nonsmokers, and Unknown Smoking Status Combined A/E Ratios by Face Amount		
Policy year	1975-80 Basic Table	2001 VBT
1-2	47.4%	79.4%
3-5	51.2%	84.2%
6-10	64.5%	89.2%
11-15	72.6%	91.4%
16-20	63.7%	83.4%
21-25	69.7%	85.6%
Total	62.6%	87.2%

As in previous studies, we see a drop in mortality from 72.6% in policy years 11-15 to 63.7% in policy years 16-20 which coincides with the beginning of the ultimate period for the 1975-80 Basic Table. There is also a drop in mortality in the same place compared to the 2001 VBT even though it has a 25 year select period. Also, durations 11-15 showed the least amount of improvement from the 1991-96 study to the 1995-00 study.

Mortality experience by duration has a much steeper slope in the ratios using the 1975-80 Basic Table (increasing from 47.4% in durations 1-2 to 72.6% in durations 11-15) compared to the 2001 VBT due to the steeper slope built into the 2001 VBT.

By Medical Basis

Select Period Experience over the 5 Year Period from 1995-00 by Medical Basis and Sex Males, Females, Smokers, Nonsmokers, and Unknown Smoking Status Combined Based on the 1975-80 Basic Table A/E Ratios by Face Amount			
	Medical	Paramedical	Nonmedical
Male	55.6%	60.6%	73.0%
Female	75.8%	66.6%	67.6%
Combined	59.1%	61.7%	71.3%

Select Period Experience over the 5 Year Period from 1995-00 by Medical Basis and Sex Males, Females, Smokers, Nonsmokers, and Unknown Smoking Status Combined Based on the 2001 VBT A/E Ratios by Face Amount			
	Medical	Paramedical	Nonmedical
Male	79.7%	89.2%	100.0%
Female	83.0%	85.7%	92.4%
Combined	80.4%	88.5%	97.6%

Mortality experience for Medical and Paramedical business is very similar compared to the 1975-80 Basic Table (59.1% and 61.7%, respectively) although Medical experience is better than Paramedical experience compared to the 2001 VBT (80.4% and 88.5% respectively). Nonmedical ratios are highest no matter which expected basis is used.

By Amount Bands

Select Period Experience over the 5 Year Period from 1995-00 By Amount Band Males, Females, Smokers, Nonsmokers, and Unknown Smoking Status Combined A/E Ratios by Face Amount		
Amount Band	Ratio to 1975-80 Basic Table	Ratio to 2001 VBT
<\$25,000	91.3%	106.4%
\$25,000-49,999	80.4%	100.2%
\$50,000-\$99,999	76.9%	99.9%
\$100,000-\$249,999	61.9%	87.4%
\$250,000-\$499,999	50.9%	76.2%
\$500,000-\$999,999	49.8%	75.4%
\$1,000,000+	50.5%	74.6%
Total	62.6%	87.2%

Much of the reduction in mortality with increasing policy amount band reflects two things. First, more comprehensive underwriting requirements are used at the larger amount bands compared to the smaller amount bands. Also, the prevalence of smokers decreases with increasing policy size causing lower overall mortality.

Notice the much smaller reduction in mortality at the larger sizes using the 2001 VBT Table. Since the 2001 VBT employs smoker-distinct mortality rates, the decreasing prevalence of smokers at the larger face amounts adjusts for this factor and the use of more underwriting requirements dominates the reduction in mortality.

III. Smoker-Nonsmoker Experience

This section presents detailed analysis of smoker-nonsmoker experience during the first 15 years of the select period for the one year study periods (1995-96, 1996-97, 1998-99, 1999-00) and the 5 year study period (1995-00). Smoker distinct data is included for the first fifteen years only instead of twenty-five years as some erroneous smoker data was identified in later durations (15-25). The A/E ratios are shown using both the 1975-80 Basic Tables and the 2001 VBT. The A/E ratios for the 2001 VBT are calculated using smoker distinct versions of the tables. Based on the 1995-2000 data, smokers comprise 14% of the total exposure by face amounts.

The chart below summarizes overall results and a comparison to previous studies. The ratio of smoker to nonsmoker mortality ratios is included. Since the 1975-80 Basic Table is a composite table, actual to expected ratios are significantly different and the ratio of the results has traditionally been used in the past to compare the level of smoker mortality versus nonsmoker mortality. Since the 2001 VBT uses sex distinct tables, the ratio below was calculated using the nonsmoker tables as the expected basis for all policies and taking the ratio of the results for smokers relative to nonsmokers.

The ratio of smoker to nonsmoker mortality increased from 2.22 to 2.42 from the 1991-96 study period to the 1995-00 illustrating the high rate of improvement for nonsmokers. However, this may be driven more by the change in the number and mix of companies and movement to higher face amount business, which is likely to have a larger impact on nonsmokers.

Study Period	1975-80 Basic Table A/E Ratios by Face Amounts			2001 VBT A/E Ratios by Face Amounts		
	A/E Nonsmoker	A/E Smoker	Ratio	A/E* Nonsmoker	A/E* Smoker	Ratio**
1994-95	60.4%	137.0%	2.27	N/A	N/A	N/A
1995-96	55.4%	123.8%	2.23	87.4%	93.1%	2.17
1996-97	57.3%	138.6%	2.41	91.5%	106.0%	2.34
1997-98	54.1%	129.8%	2.39	86.1%	99.2%	2.31
1998-99	52.6%	130.8%	2.48	83.5%	99.7%	2.38
1999-00	50.1%	128.1%	2.55	80.6%	98.0%	2.41
1991-96	60.2%	133.4%	2.22	98.0%	104.5%	N/A
1995-00	53.5%	129.8%	2.42	85.5%	99.2%	2.33

* A/E Ratio for Nonsmokers and Smokers was calculated using the smoker distinct versions of the 2001 VBT.

**To obtain a similar measure as the 1975-80 Ratio, the Ratio of smoker to nonsmoker mortality for the 2001 VBT was calculated by using the nonsmoker table as the expected basis for both smokers and nonsmokers and taking A/E Smoker / A/E Nonsmokers.

The chart on this page and the following page summarizes results for the one year study periods (1995-00) by issue age, policy duration, sex, and is useful to analyze trends over time. The A/E ratios are based on the smoker distinct versions of the 2001 VBT. The higher face amount categories are expected to see greater year to year fluctuations, particularly for smokers and should be viewed with caution as the credibility is limited.

One Year Study Periods for 1995-00 Select Period Experience					
Nonsmokers A/E Ratios by Face Amounts Based on 2001 VBT					
	1995-96	1996-97	1997-98	1998-99	1999-00
By Issue Age					
20-29	92.1%	83.0%	77.7%	79.8%	78.7%
30-39	89.6%	84.0%	75.4%	75.1%	74.3%
40-49	91.7%	93.0%	84.8%	79.0%	71.6%
50-59	84.6%	96.1%	88.3%	87.9%	86.0%
60-69	82.9%	100.0%	92.4%	97.9%	93.8%
70 and over	79.8%	81.3%	105.8%	81.7%	94.7%
By Policy Duration					
1-2	86.8%	87.7%	69.4%	83.5%	69.4%
3-5	93.0%	87.6%	82.8%	82.4%	71.5%
6-10	82.7%	91.4%	88.6%	82.8%	84.9%
11-15	90.0%	95.8%	90.6%	84.7%	84.3%
By Sex					
Male	88.9%	92.8%	86.6%	82.8%	79.8%
Female	82.0%	86.9%	84.6%	85.5%	82.9%
By Amount Bands					
Under 25,000	118.8%	131.8%	129.6%	104.7%	106.6%
25,000-49,999	113.8%	116.7%	110.2%	106.9%	114.0%
50,000-99,999	96.7%	107.7%	104.8%	102.5%	102.5%
100,000-249,999	88.1%	90.7%	87.1%	85.1%	84.6%
250,000-499,999	74.8%	81.1%	73.8%	71.4%	74.6%
500,000-999,999	83.2%	83.2%	70.7%	72.3%	72.9%
1,000,000+	75.6%	80.4%	81.6%	79.0%	58.5%

One Year Study Periods for 1995-00 Select Period Experience					
Smokers					
A/E Ratios by Face Amounts Based on 2001 VBT					
	95-96	96-97	97-98	98-99	99-00
By Issue Age					
20-29	86.7%	78.0%	80.3%	86.5%	85.0%
30-39	83.3%	103.7%	92.9%	87.0%	92.0%
40-49	95.7%	103.6%	92.5%	103.2%	94.4%
50-59	97.6%	113.4%	118.4%	117.1%	106.0%
60-69	100.3%	116.7%	100.5%	85.6%	102.4%
70 and over	83.1%	89.8%	87.2%	107.5%	100.5%
By Policy Duration					
1-2	91.0%	122.7%	94.1%	69.6%	95.6%
3-5	105.0%	105.5%	94.7%	86.5%	85.0%
6-10	88.7%	101.0%	105.3%	111.5%	105.8%
11-15	92.6%	108.1%	96.5%	100.9%	97.0%
By Sex					
Male	92.2%	109.8%	99.7%	97.6%	98.7%
Female	96.0%	94.5%	97.7%	105.4%	96.1%
By Amount					
Under 25,000	111.7%	127.3%	124.5%	110.0%	111.1%
25,000-49,999	106.6%	112.6%	114.2%	111.8%	111.4%
50,000-99,999	100.9%	127.0%	114.1%	115.9%	113.5%
100,000-249,999	94.1%	102.8%	98.5%	94.4%	93.1%
250,000-499,999	88.5%	99.2%	82.0%	78.7%	80.3%
500,000-999,999	81.5%	71.1%	71.3%	77.2%	104.6%
1,000,000+	54.9%	90.8%	87.9%	111.8%	79.3%

One Year Study Periods (1995-00) - Trends

Overall, nonsmokers experienced a significant improvement over the five year study period. The highest rates of improvement occurred for issue ages less than fifty, early policy durations (1-5), for males, and policies with face amounts \$500,000 – \$999,999. The female nonsmoker mortality is relatively flat. Issue ages 50-59 showed slight deterioration. Issue ages sixty and above had a spike in the 1996-97 study period, but then had significant improvement over the remainder of the study period.

The smoker mortality does not indicate any clear improving trends. There is some improvement for issue ages 20-29 and 40-49, but worsening for the other age groups. There was considerable variability over the five years.

Five Year Study Period (1995-00)

The analysis in this section is based on aggregate data for the five year study period and is useful to determine relationships between smoker and nonsmoker mortality. The A/E ratios in the charts are based on the 1975-80 Basic Table. Since this table is not smoker distinct, determining the ratio of smoker to nonsmoker mortality is easier.

By Issue Age and Sex

The results for the 1995-00 study by issue age and sex reveal that the ratio of smoker to nonsmoker mortality increases by issue age from the earliest ages where it is close to 2.0 until issue ages 40-49 for males where the ratio peaked at 2.70 and issue ages 50-59 for females where the ratio peaked at 2.87. The male ratio then decreased to 1.93 for ages 60+ and the female ratio decreased to 1.97 for ages 70+. The 1995-96 report commented that the male ratio peaked in the early issue ages and the female ratio continued to increase. The data included in this report shows less distinction by sex.

The lower A/E ratios for both male nonsmokers and smokers (52.1% and 126.8%) versus female nonsmokers and smokers (59.2% and 139.8%) indicates greater mortality improvement for males relative to females since inception of the 1975-80 Basic Table. A previous experience report that included five year averages starting with 1986-1991 and ending with 1991-1995, commented on the deterioration in both female nonsmoker and smoker mortality during this time period. Relative to the 2001 VBT, the ratios are 85.9% and 99.7% for male nonsmokers and smokers and 84.5% and 98.1% for female nonsmokers and smokers. The percent exposure by sex show approximately 69% males and 31% females. Smokers comprise approximately 10% of the population for each sex. This 1991-95 study reported this percentage as 14%.

1995-2000 Select Period Experience by Smoking Status, Issue Age, and Gender A/E Ratios by Face Amounts Based on 1975-80 Basic Table						
	Males			Females		
Issue Age	Nonsmoker	Smoker	Ratio	Nonsmoker	Smoker	Ratio
20-29	58.4	114.1	1.95	52.8	90.2	1.71
30-39	44.5	112.4	2.53	42.9	92.6	2.16
40-49	45.9	123.8	2.70	49.9	128.2	2.57
50-59	55.5	145.6	2.63	66.6	191.4	2.87
60+	67.4	130.0	1.93	83.3	164.2	1.97
Total	52.1	126.8	2.43	59.2	139.8	2.36
% Total Exposure	62%	10%		24%	4%	

By Policy Year

The 1995-00 study shows a significantly lower ratio of smoker to nonsmoker mortality for policy years 11-15 and similar ratios within durations 1-10. The A/E ratios for both smokers and nonsmokers increase with duration.

1995-00 Select Period Experience A/E Ratios by Face Amounts based on 1975-80 Basic Table By Policy Year			
	Nonsmoker	Smoker	Ratio
1-2	42.3%	105.5%	2.49
3-5	45.8%	111.5%	2.42
6-10	55.5%	136.9%	2.46
11-15	61.9%	138.5%	2.23

By Amount Bands

The results for the 1995-00 study by amount band show generally decreasing A/E ratios with increasing policy size for both nonsmokers and smokers relative to 1975-80 Table. For nonsmokers the ratio is 88% for the smallest policies and decreases smoothly to between 46.3% and 46.9% for the highest face amount bands (policies \$250,000 and over). Smokers also experience significantly lower A/E ratios for higher face amounts, but the difference is less than for nonsmokers resulting in generally higher ratios of smoker to nonsmoker mortality with increasing face amount band. The ratio for policies under \$25,000 is 1.88 compared to ratios of 2.41, 2.29, and 2.43 for policies with face amounts \$250,000-\$499,999, \$500,000-\$999,999, and \$1,000,000 and over.

1995-00 Select Period Experience			
A/E Ratios by Face Amounts based on 1975-80 Basic Table			
By Amount Bands			
	Nonsmoker	Smoker	Ratio
Under 25,000	88.0%	166.2%	1.88
25,000-49,999	75.2%	148.2%	1.96
50,000-99,999	67.1%	149.9%	2.23
100,000-249,999	53.9%	123.8%	2.29
250,000-499,999	45.3%	109.2%	2.41
500,000-999,999	45.8%	105.0%	2.29
1,000,000+	46.9%	114.5%	2.43

IV. Ultimate Experience (Policy Years 26 and over)

The ultimate experience from exposure years beginning with anniversaries in 1995 through anniversaries in 2000 is comprised of business in policy durations 26 and higher. Consistent with the 15 year select period in the 1975-80 Basic Tables, previous reports defined ultimate experience as policy years 16 and over. Given the introduction of the 25-year select period in the 2001 VBT, ultimate experience is now defined as policy years 26 and over.

By Sex

The table below by sex and attained age shows actual-to-expected (A/E) mortality ratios by face amount compared to the 1975-80 Basic Tables as well as the 2001 VBT for age groups under attained age 30, 30-39,...80-89, and 90+. A new feature is the “average” duration for each of these age groups. This is an arithmetic average based on policy counts. The average duration increases from about 27 years at the youngest age group to over 50 years for the oldest age group (90+), with the average duration for both sexes being about 40 for all ages combined.

Ultimate Experience
Between 1995-2000 Anniversaries
Unknown, Nonsmoker, and Smoker

Gender	Attained Ages	A/E 75-80 Basic Tables	A/E 2001 VBT	Average Policy Duration	% of Exposure
Male	Under 30	66.4%	80.8%	27.3	1%
Male	30-39	107.1%	128.7%	31.0	4%
Male	40-49	84.7%	106.8%	34.2	11%
Male	50-59	64.5%	87.4%	35.8	27%
Male	60-69	67.0%	90.9%	37.7	27%
Male	70-79	74.4%	105.6%	40.9	21%
Male	80-89	84.3%	107.1%	45.7	8%
Male	90+	94.6%	107.4%	53.5	1%
Male	Total	76.7%	102.2%	39.9	100%
Female	Under 30	56.3%	65.2%	27.3	4%
Female	30-39	100.5%	114.7%	31.0	9%
Female	40-49	72.2%	104.2%	34.8	16%
Female	50-59	72.0%	81.2%	36.9	23%
Female	60-69	88.3%	95.6%	38.8	19%
Female	70-79	94.4%	114.8%	41.9	19%
Female	80-89	89.1%	123.6%	46.0	9%
Female	90+	90.9%	117.8%	50.9	1%
Female	Total	89.4%	112.8%	40.2	100%

The A/E patterns are quite similar for both sexes. Looking at the 2001 VBT comparison, the under 30 age group is well below the expected basis, but then spikes upwards of 100% for attained age groups 30-39 and 40-49. This is likely due, at least in some part, to AIDS claims at these ages. The majority of the impact of AIDS claims was removed in the development of the VBT. Another cause could be selective lapsation since these policies were originally issued to relatively young policyholders. The data in these early age groups is also limited. The A/E ratios then dip below 100% for the next 2 age groups before climbing back above 100% for the balance of the older ages. The overall mortality ratio for males is 76.7% and 102.2% relative to the 1975-80 Basic Tables and the 2001 VBT respectively. For females, the overall mortality ratios are 89.4% and 112.8% respectively. The average duration of policies exposed increases with increasing attained age. Current ultimate experience is higher than anticipated in the VBT. The ultimate section of the 2001 CSO (of which the 2001 VBT was the starting point) is intended for the ultimate experience of currently issued policies under current underwriting standards.

By Premium-paying Status

The table below shows results for the five year study period by decennial age groupings and totals for policies designated as either Premium-Paying or Paid-Up. Paid-Up policies do not include policies in a Reduced Paid-Up status or Extended Term Insurance. The results indicate Paid-Up policies experienced higher mortality, a trend that has been noticed in previous reports.

1995-2000 Ultimate Experience (Policy Years 26 and over) By Premium-Paying Status						
	1975-80 Basic Table			2001 VBT		
Attained Age	Premium-Paying	Paid-Up	Ratio	Premium-Paying	Paid-Up	Ratio
Under 30	46.8%	67.1%	1.43	56.3%	80.3%	1.43
30-39	82.5%	113.9%	1.38	97.3%	136.0%	1.40
40-49	64.2%	95.8%	1.49	80.9%	136.2%	1.68
50-59	50.6%	70.0%	1.38	66.1%	97.5%	1.47
60-69	51.1%	60.9%	1.19	67.6%	82.3%	1.22
70-79	55.0%	68.3%	1.24	76.6%	95.3%	1.24
80-89	61.9%	69.9%	1.13	79.4%	90.8%	1.14
90 +	62.2%	79.2%	1.27	72.2%	93.4%	1.29
Total	56.2%	70.2%	1.25	74.5%	92.2%	1.24

APPENDIX 1

Based on Face Amounts Exposed in Durations 25 and prior

	Exposure in \$1,000,000 Units				
	95-96	96-97	97-98	98-99	99-00
By Medical Basis					
Medical	\$239,530	\$257,261	\$280,728	\$274,573	\$271,738
Paramedical	\$395,626	\$467,704	\$553,349	\$565,770	\$630,623
Non-Medical	\$420,408	\$441,147	\$472,855	\$462,193	\$467,658
Total	\$1,055,563	\$1,166,112	\$1,306,931	\$1,302,536	\$1,370,019
By Issue Age					
0-9	\$60,134	\$64,033	\$66,194	\$65,028	\$65,744
10-19	\$33,814	\$35,625	\$36,700	\$36,488	\$38,118
20-29	\$183,098	\$192,794	\$207,548	\$202,725	\$210,663
30-39	\$408,472	\$453,202	\$514,148	\$513,619	\$543,430
40-49	\$242,909	\$276,823	\$317,291	\$315,076	\$332,799
50-59	\$87,642	\$101,003	\$118,082	\$121,014	\$129,718
60-69	\$30,942	\$33,170	\$36,273	\$36,938	\$37,746
70 and over	\$8,552	\$9,462	\$10,695	\$11,648	\$11,803
Total	\$1,055,563	\$1,166,112	\$1,306,931	\$1,302,536	\$1,370,019
By Policy Year					
1-2	\$262,050	\$295,759	\$340,663	\$334,239	\$350,257
3-5	\$315,152	\$340,257	\$343,144	\$328,825	\$355,229
6-10	\$311,226	\$331,636	\$376,653	\$371,050	\$370,653
11-15	\$114,390	\$136,495	\$174,176	\$185,312	\$198,934
16-20	\$34,508	\$41,429	\$49,853	\$59,272	\$69,321
21-25	\$18,237	\$20,536	\$22,441	\$23,839	\$25,625
Total	\$1,055,563	\$1,166,112	\$1,306,931	\$1,302,536	\$1,370,019
By Amount					
<\$25,000	\$54,329	\$54,859	\$52,608	\$49,433	\$46,930
\$25,000 - \$49,999	\$77,634	\$81,995	\$82,470	\$80,338	\$81,643
\$50,000 - \$99,999	\$167,040	\$162,110	\$164,813	\$159,510	\$158,382
\$100,000 - \$249,999	\$356,594	\$375,634	\$410,463	\$398,444	\$408,692
\$250,000 - \$499,999	\$162,988	\$191,472	\$235,491	\$243,502	\$265,813
\$500,000 - \$999,999	\$116,426	\$145,787	\$176,173	\$179,652	\$196,628
1,000,000 +	\$120,551	\$154,254	\$184,913	\$191,657	\$211,930
Total	\$1,055,563	\$1,166,112	\$1,306,931	\$1,302,536	\$1,370,019
By Smoking Status*					
Non-Smoker	\$832,276	\$925,475	\$1,048,092	\$1,037,719	\$1,086,449
Smoker	\$107,167	\$112,832	\$117,784	\$112,957	\$113,814
By Sex					
Male	\$731,284	\$808,869	\$906,962	\$893,046	\$932,632
Female	\$324,279	\$357,243	\$399,970	\$409,491	\$437,388
Total	\$1,055,563	\$1,166,112	\$1,306,931	\$1,302,536	\$1,370,019

APPENDIX 2

Exposure Percentages – Select Period Based on Face Amounts Exposed in Durations 25 and prior

	%				
	Exposure				
	95-96	96-97	97-98	98-99	99-00
By Medical Basis					
Medical	23%	22%	21%	21%	20%
Paramedical	37%	40%	42%	43%	46%
Non-Medical	40%	38%	36%	35%	34%
Total	100%	100%	100%	100%	100%
By Issue Age					
0-9	6%	5%	5%	5%	5%
10-19	3%	3%	3%	3%	3%
20-29	17%	17%	16%	16%	15%
30-39	39%	39%	39%	39%	40%
40-49	23%	24%	24%	24%	24%
50-59	8%	9%	9%	9%	9%
60-69	3%	3%	3%	3%	3%
70 and over	1%	1%	1%	1%	1%
Total	100%	100%	100%	100%	100%
By Policy Year					
1-2	25%	25%	26%	26%	26%
3-5	30%	29%	26%	25%	26%
6-10	29%	28%	29%	28%	27%
11-15	11%	12%	13%	14%	15%
16-20	3%	4%	4%	5%	5%
21-25	2%	2%	2%	2%	2%
Total	100%	100%	100%	100%	100%
By Amount					
<\$25,000	5%	5%	4%	4%	3%
\$25,000 - \$49,999	7%	7%	6%	6%	6%
\$50,000 - \$99,999	16%	14%	13%	12%	12%
\$100,000 - \$249,999	34%	32%	31%	31%	30%
\$250,000 - \$499,999	15%	16%	18%	19%	19%
\$500,000 - \$999,999	11%	13%	13%	14%	14%
1,000,000 +	11%	13%	14%	15%	15%
Total	100%	100%	100%	100%	100%
By Smoking Status*					
Non-Smoker	89%	89%	90%	90%	91%
Smoker	11%	11%	10%	10%	9%
By Sex					
Male	69%	69%	69%	69%	68%
Female	31%	31%	31%	31%	32%
Total	100%	100%	100%	100%	100%

APPENDIX 3

Based on Face amounts exposed for Ultimate Period (Durations 26 and later)

1995 – 2000 Data Combined

Exposure in \$1,000,000 Units

Attained Ages	Exposure
25-29	\$3,268
30-34	\$3,924
35-39	\$4,506
40-44	\$6,403
45-49	\$13,897
50-54	\$22,017
50-59	\$23,814
60-64	\$23,145
65-69	\$21,561
70-74	\$19,782
75-79	\$15,496
80-84	\$9,493
85-89	\$4,216
90 and over	\$1,541
Total	\$173,063

APPENDIX 4

List of Contributing Companies

Connecticut Mutual
Guardian
Lincoln National
Manufacturer's Life
Massachusetts Mutual
Metropolitan
Mutual Life of New York (MONY)
New York Life
Northwestern Mutual
State Farm
Travelers
USAA Life

APPENDIX 5

**1975-80
Modified
Basic
ANB S&U
Combined**

Male

Duration	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Ultimate
Issue Age																
71	0.00868	0.01333	0.01827	0.02377	0.02906	0.03255	0.03755	0.04179	0.04797	0.04993	0.05524	0.06757	0.08257	0.09936	0.11447	0.13205
72	0.00950	0.01456	0.02004	0.02595	0.03173	0.03542	0.04083	0.04547	0.05215	0.05441	0.06024	0.07369	0.09002	0.10821	0.12466	0.14363
73	0.01040	0.01593	0.02197	0.02840	0.03471	0.03864	0.04446	0.04948	0.05669	0.05921	0.06561	0.08031	0.09813	0.11784	0.13562	0.15605
74	0.01142	0.01750	0.02415	0.03120	0.03811	0.04234	0.04859	0.05398	0.06176	0.06446	0.07142	0.08748	0.10687	0.12819	0.14723	0.16912
75	0.01253	0.01924	0.02653	0.03430	0.04185	0.04644	0.05318	0.05894	0.06735	0.07018	0.07772	0.09520	0.11622	0.13918	0.15944	0.18261
76	0.01374	0.02110	0.02908	0.03762	0.04587	0.05086	0.05815	0.06435	0.07345	0.07641	0.08454	0.10349	0.12616	0.15077	0.17221	0.19652
77	0.01501	0.02305	0.03176	0.04109	0.05009	0.05553	0.06346	0.07019	0.08007	0.08319	0.09192	0.11235	0.13665	0.16289	0.18551	0.21085
78	0.01640	0.02516	0.03464	0.04480	0.05460	0.06052	0.06918	0.07652	0.08722	0.09049	0.09979	0.12167	0.14755	0.17538	0.19917	0.22560
79	0.01797	0.02751	0.03783	0.04887	0.05952	0.06597	0.07542	0.08337	0.09490	0.09825	0.10805	0.13132	0.15875	0.18814	0.21310	0.24077
80	0.01969	0.03008	0.04129	0.05328	0.06484	0.07184	0.08212	0.09070	0.10304	0.10641	0.11667	0.14133	0.17030	0.20125	0.22736	0.25636
81	0.02155	0.03285	0.04503	0.05802	0.07053	0.07810	0.08924	0.09844	0.11160	0.11495	0.12564	0.15169	0.18221	0.21474	0.24201	0.27237
82	0.02353	0.03582	0.04902	0.06308	0.07659	0.08474	0.09675	0.10655	0.12052	0.12381	0.13494	0.16243	0.19454	0.22867	0.25712	0.28880
83	0.02567	0.03903	0.05335	0.06855	0.08310	0.09179	0.10461	0.11495	0.12971	0.13291	0.14448	0.17345	0.20721	0.24300	0.27266	0.30565
84	0.02798	0.04254	0.05809	0.07452	0.09013	0.09930	0.11285	0.12364	0.13913	0.14219	0.15419	0.18469	0.22016	0.25767	0.28857	0.32292
85	0.03047	0.04633	0.06320	0.08093	0.09764	0.10725	0.12146	0.13264	0.14882	0.15170	0.16413	0.19618	0.23341	0.27268	0.30486	0.34061
86	0.03312	0.05036	0.06866	0.08776	0.10561	0.11562	0.13047	0.14198	0.15883	0.16149	0.17433	0.20796	0.24698	0.28806	0.32154	0.35872
87	0.03591	0.05462	0.07441	0.09496	0.11398	0.12440	0.13987	0.15169	0.16920	0.17159	0.18483	0.22007	0.26092	0.30383	0.33863	0.37725

APPENDIX 5

**1975-80
Modified
Basic
ANB S&U
Combined
Female**

Duration Issue Age	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Ultimate
71	0.00398	0.00563	0.00740	0.00927	0.01127	0.01357	0.01622	0.01944	0.02326	0.02776	0.03406	0.04259	0.05266	0.06544	0.07876	0.09391
72	0.00437	0.00623	0.00823	0.01038	0.01268	0.01533	0.01836	0.02200	0.02627	0.03125	0.03831	0.04768	0.05867	0.07257	0.08696	0.10324
73	0.00482	0.00691	0.00918	0.01163	0.01425	0.01725	0.02067	0.02474	0.02948	0.03497	0.04276	0.05302	0.06500	0.08010	0.09563	0.11312
74	0.00538	0.00774	0.01032	0.01309	0.01606	0.01944	0.02325	0.02776	0.03298	0.03899	0.04750	0.05870	0.07171	0.08806	0.10478	0.12355
75	0.00602	0.00871	0.01163	0.01476	0.01810	0.02187	0.02609	0.03105	0.03676	0.04330	0.05256	0.06473	0.07881	0.09646	0.11443	0.13453
76	0.00676	0.00979	0.01309	0.01662	0.02035	0.02454	0.02918	0.03461	0.04083	0.04793	0.05796	0.07113	0.08632	0.10532	0.12458	0.14606
77	0.00756	0.01098	0.01470	0.01865	0.02281	0.02744	0.03253	0.03845	0.04520	0.05287	0.06370	0.07792	0.09727	0.11467	0.13525	0.15814
78	0.00848	0.01232	0.01649	0.02089	0.02549	0.03058	0.03613	0.04256	0.04986	0.05812	0.06980	0.08510	0.10265	0.12450	0.14644	0.17077
79	0.00955	0.01386	0.01850	0.02336	0.02842	0.03397	0.04000	0.04695	0.05482	0.06369	0.07623	0.09267	0.11144	0.13479	0.15813	0.18395
80	0.01077	0.01557	0.02071	0.02607	0.03159	0.03761	0.04413	0.05162	0.06007	0.06956	0.08300	0.10061	0.12066	0.14556	0.17033	0.19768
81	0.01210	0.01744	0.02311	0.02898	0.03498	0.04150	0.04852	0.05656	0.06561	0.07574	0.09012	0.10893	0.13029	0.15680	0.18305	0.21196
82	0.01354	0.01945	0.02568	0.03209	0.03860	0.04563	0.05317	0.06178	0.07144	0.08223	0.09757	0.11763	0.14035	0.16850	0.19627	0.22679
83	0.01509	0.02160	0.02843	0.03540	0.04244	0.05000	0.05807	0.06727	0.07756	0.08903	0.10536	0.12671	0.15083	0.18067	0.21000	0.24217
84	0.01676	0.02392	0.03136	0.03892	0.04650	0.05461	0.06323	0.07304	0.08398	0.09614	0.11349	0.13617	0.16172	0.19331	0.22424	0.25810
85	0.01856	0.02639	0.03448	0.04264	0.05078	0.05946	0.06865	0.07908	0.09068	0.10356	0.12197	0.14600	0.17304	0.20642	0.23900	0.27458
86	0.02048	0.02901	0.03778	0.04658	0.05529	0.06456	0.07433	0.08539	0.09768	0.11129	0.13078	0.15622	0.18477	0.22000	0.25426	0.29161
87	0.02251	0.03179	0.04127	0.05072	0.06003	0.06990	0.08026	0.09198	0.10497	0.11933	0.13993	0.16681	0.19693	0.23405	0.27003	0.30919