



Life Reinsurance Data from the Munich American Survey

by James L. Sweeney & David M. Bruggeman

DISCLAIMER:

This survey is prepared by Munich American Reassurance Company at the request of the Society of Actuaries Reinsurance Section as a service to Section members. The contributing companies provide the numbers in response to the survey. These numbers are not audited and Munich American, the Society of Actuaries, and the Reinsurance Section take no responsibility for the accuracy of the figures.

Munich American's annual survey, which is conducted on behalf of the Statistical Research Committee of the Reinsurance Section, covers Canadian and U.S. ordinary and group life reinsurance new business production and in force. The ordinary numbers are further subdivided into:
1) conventional reinsurance (recurring)¹,
2) reinsurance with an issue date in a year prior to the year in which it was

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Highlights of the 1999 Manulife Reinsurance Mortality Study

by Manon Laverdiere & Jas Bhatia

Editor's Note: Details of this study are available on the SOA website. It can be found under Reinsurance in the Special Interest Section.

Manulife Reinsurance, in conjunction with the Reinsurance Council of the Society of Actuaries, conducts an annual study of mortality experience on large amount and older age policies. The experience data is submitted to the Society of Actuaries by nine contributing companies. The consolidated data is analyzed in terms of mortality ratios by number and amount, and the results are further subdivided by age, sex, duration, smoking and underwriting status, reinsurance method, and level of retention.

The exposure includes only single life policies issued in the United States and valued in U.S. currency. Expected deaths are based on 100% of the SOA 1975-80 Select & Ultimate table which varies by age and sex, age nearest and age last birthday. The basic tables were extended to issue age 90 and the resulting tables were used to calculate the expected mortality for issue ages greater than 70. Ultimate ages were also extended in the 1991 study to age 105 from 100.

The 1999 large amount study covers experience for calendar year 1996 and the earliest issue year reported was 1960. Manulife has been conducting these studies since 1990 covering experience during calendar years 1987 and later. The advanced age study has been conducted since 1993 covering experience in calendar years 1990 and later. Both studies present results individually for each calendar year as well as a cumulative result of all study years. The results of

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Chairperson's Corner....

by William Wellnitz



On behalf of the Reinsurance Section Council, I would like to express my appreciation to Munich American Reassurance for once again conducting the Life Reinsurance Production and Inforce Survey. I would also like to thank the companies that participated in the survey. Over the years, this survey has drawn increasing attention and has been relied on as source of industry data in a wide variety of applications including rating agency and stock analyst reports. This widening use is both gratifying and troubling. Of foremost concern is the integrity and reliability of the data presented.

Considerable effort has been put into the survey procedures and instructions so that the process does not create a burden on the reporting companies while ensuring that the data is useful and informative. However, the quality of the data reported is entirely in the hands of the participating companies.

Over the last few years there have been instances where the data provided has been suspect. In those instances, Munich will attempt to resolve any reporting issues with the company. However, in the end, Munich will report

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reinsured, or financial reinsurance (portfolio), and,
3) reinsurance not directly written by the ceding company (retrocession).

Complete survey results are available from the authors upon request. These results may also be obtained at Munich American's web site: www.marclife.com

Life Reinsurance Production

1998 proved to be another big year for

life reinsurance. This marks the fifth straight year new business production in the reinsurance market experienced a sizable increase. Prior to 1994, life reinsurance production remained relatively flat. In 1998, the total U.S. market, including retrocession and group life, experienced a 31.1% increase with impressive increases in ordinary recurring and ordinary portfolio. The Canadian market recorded just a nominal increase in total production, with the

increase in ordinary recurring new business being offset by decreases in ordinary portfolio and retrocession reinsurance.

Ordinary new business in North America increased 33.6%, with all of the increase coming from the United States. On the group side, both U.S. and Canadian new business decreased, resulting in an overall decrease in group business of 31.5%.

Life reinsurance production results for 1997 and 1998 are summarized below.

Life Reinsurance New Business Production (\$U.S. Millions)

	U.S.			Canadian			Total		
	1997	1998	Change	1997	1998	Change	1997	1998	Change
Ordinary Life									
Recurring	506,668	678,057	33.8%	21,981	28,720	30.7%	528,649	706,777	33.7%
Portfolio	143,673	203,095	41.4%	9,980	7,729	-22.6%	153,653	210,824	37.2%
Retrocession	40,306	53,767	33.4%	5,108	828	-83.8%	45,414	54,595	20.2%
Total Ordinary	690,647	934,919	35.4%	37,069	37,277	0.6%	727,716	972,196	33.6%
Total Group	46,950	31,814	-32.2%	1,773	1,572	-11.3%	48,723	33,386	-31.5%
Total Life	737,597	966,733	31.1%	38,842	38,849	0.0%	776,439	1,005,582	29.5%

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Current-year issues are available from the Books Department. Back issues of Section newsletters have been placed in the Society library.

Photocopies of back issues may be requested for a nominal fee.

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There was almost a 34% increase in recurring new business in the United States in 1998, a remarkable increase, but smaller than the increase reported in 1997. Recurring business may offer a more revealing picture of production trends. While some companies may not have been able to accurately distinguish between ordinary categories, we have attempted to remove the double counting on retrocession and block reinsurance from the recurring figures.

Four companies reported incremental

increases in total U.S. and Canadian recurring new business in excess of \$20 billion in 1998. Companies with increases over \$20 billion include: Lincoln Re (\$38.6), Employers/ERC (\$29.0), RGA (\$23.4) and newcomer Annuity and Life Re (\$21.3).

Companies with increases over \$10 billion include Transamerica (\$14.1) and CNA (\$13.8). The significance of such large increases from individual companies can be put in better perspective when one considers that prior to 1996,

only one company had ever reported a new business increase in excess of \$10 billion.

Only four companies reported a decrease in new business, and all of them were small decreases except for Security Life, who reported a \$6.3 billion decrease in new business.

Totals for Canadian and U.S. recurring ordinary reinsurance assumed in 1997 and 1998, as well as percentage changes can be found below.

U.S. Ordinary Recurring Reinsurance (U.S. Millions)

Company	1997			1998		
	Assumed Business	Market Share	Increase in Production	Assumed Business	Market Share	Increase in Production
Allianz	27,870	5.5%	44.4%	33,027	4.9%	18.5%
AUL	25,603	5.1%	79.6%	34,296	5.1%	34.0%
Annuity and Life Re	0	0.0%	0.0%	21,352	3.1%	100.0%
BMA	20,132	4.0%	15.7%	21,920	3.2%	8.9%
CIGNA Re	1,015	0.2%	-27.1%	814	0.1%	-19.8%
CNA	9,473	1.9%	2.2%	23,269	3.4%	145.6%
Cologne	14,934	2.9%	25.5%	17,575	2.6%	17.7%
Crown	3,584	0.7%	266.8%	7,134	1.1%	99.1%
Employers/ERC	23,757	4.7%	123.1%	52,805	7.8%	122.3%
Gerling Global	12,466	2.5%	4.8%	17,662	2.6%	41.7%
Lincoln Re	39,897	7.9%	34.6%	78,545	11.6%	96.9%
Munich American Re	17,937	3.5%	49.0%	25,337	3.7%	41.3%
Optimum Re (US)	1,439	0.3%	39.8%	1,337	0.2%	-7.1%
Phoenix Home Life	34,347	6.8%	59.6%	34,663	5.1%	0.9%
Reassurance Co. of Hannover	2,333	0.5%	62.9%	3,638	0.5%	55.9%
RGA	39,293	7.8%	39.0%	62,704	9.2%	59.6%
Security Life	62,202	12.3%	54.5%	55,925	8.2%	-10.1%
Swiss Re (incl. Life Re)	109,889	21.7%	66.0%	111,817	16.5%	1.8%
Transamerica Re	59,513	11.7%	14.2%	73,636	10.9%	23.7%
Winterthur/Republic Vanguard	486	0.1%	-0.6%	513	0.1%	5.6%
World-Wide Re	498	0.1%	23.6%	88	0.0%	-82.3%
Totals	506,668	100.0%	44.6%	678,057	100.0%	33.8%

(continued on page 4, column 1)

Life Reinsurance Data From the Munich American Survey*continued from page 3***Canada Ordinary Recurring Reinsurance (U.S. Millions)**

Company	1997			1998		
	Assumed Business	Market Share	Increase in Production	Assumed Business	Market Share	Increase in Production
Allianz	0	0.0%	0.0%	1	0.0%	0.0%
BMA	12	0.1%	33.3%	0	0.0%	-100.0%
CIGNA Re	19	0.1%	-47.2%	4	0.0%	-78.9%
CNA	34	0.2%	750.0%	36	0.1%	5.9%
Cologne	3	0.0%	50.0%	1	0.0%	-66.7%
ERC-Canada	0	0.0%	0.0%	536	1.9%	100.0%
Gerling Global	30	0.1%	233.3%	4	0.0%	-86.7%
Lincoln Re	1,306	5.9%	220.1%	3,976	13.8%	204.4%
Munich Re (Canada)	7,053	32.1%	57.8%	7,945	27.7%	12.6%
Optimum Re (Canada)	715	3.3%	-26.1%	750	2.6%	4.9%
RGA Re (Canada)	5,107	23.2%	10.2%	5,690	19.8%	11.4%
RGA	40	0.2%	-60.8%	1,715	6.0%	4187.5%
Security Life	0	0.0%	0.0%	33	0.1%	100.0%
Swiss Re (incl. Life Re)	7,659	34.8%	13.0%	8,029	28.0%	4.8%
Transamerica Re	2	0.0%	0.0%	0	0.0%	-100.0%
Totals	21,980	100.0%	26.2%	28,720	100.0%	30.7%

Comparison with direct market

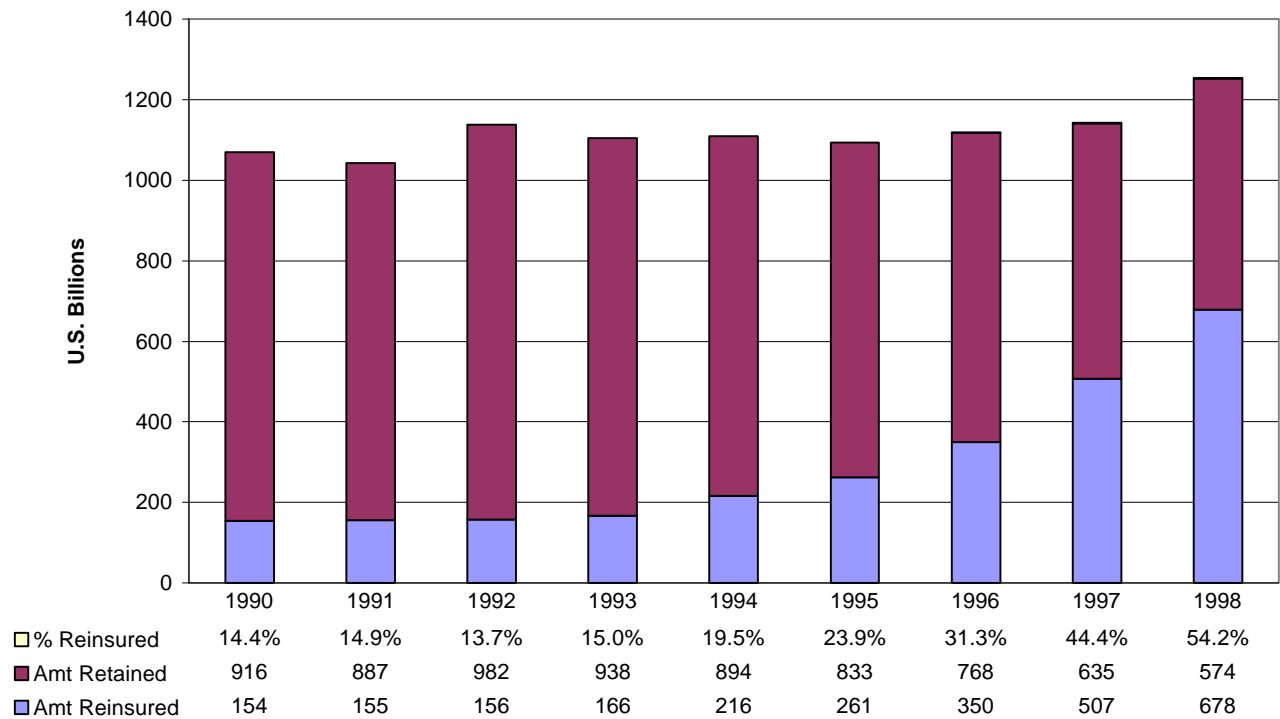
New direct life insurance purchases, which had been flat for many years, showed signs of life in 1998. The American Council of Life Insurance (ACLI) estimates that 1998 U.S. ordinary life insurance purchases increased 9.6% from last year. Prior to 1998, life sales increased only 5.33% for the entire period covering 1990 to 1997.

Without a doubt, the increase in first dollar quota share arrangements has had a tremendous impact on new business reinsured. The magnitude of the impact becomes apparent when one compares the life purchases data from the ACLI to the reinsurance survey production numbers. The comparison reveals that the percentage of life sales reinsured has grown from 14.4% in 1990 to 54.2% in 1998. This marks the first time in survey

history that the percentage is greater for reinsured than for retained. Although one could suspect that some of the recurring reinsurance reported may actually be from the assumption of blocks of in force business, such as with a company merger.

The graph on page 5 compares ordinary life new business totals with the recurring life reinsurance totals for the United States.

U.S Ordinary Individual Life Insurance Sales



Life Reinsurance In Force (\$U.S. Millions)

	U.S.			Canadian			Total		
	1997	1998	Change	1997	1998	Change	1997	1998	Change
Ordinary Life									
Recurring	1,545,578	1,996,436	29.2%	110,024	129,190	17.4%	1,655,602	2,125,626	28.4%
Portfolio	325,309	411,983	26.6%	17,275	15,729	-8.9%	342,584	427,712	24.8%
Retrocession	185,220	214,374	15.7%	15,842	14,536	-8.2%	201,062	228,910	13.9%
Total Ordinary	2,056,107	2,622,793	27.6%	143,141	159,455	11.4%	2,199,248	2,782,248	26.5%
Total Group	106,486	108,141	1.6%	22,647	22,000	-2.9%	129,133	130,141	0.8%
Total Life	2,162,593	2,730,934	26.3%	165,788	181,455	9.5%	2,328,381	2,912,389	25.1%

Life Reinsurance In Force

As a result of the large new business production, 1998 life reinsurance in force business increased 25.1% from 1997. This follows increases of 25.2% in 1997 and 14.8% in 1996. U.S. total life in force increased 26.3% while the Canadian market experienced an increase of 9.5% in in force for 1998.

The in force survey results for 1997 and 1998 are summarized below.

Conclusion

The reinsurance market has experienced exceptional growth in each of the last five years. The level of competitiveness in the market continues and there appears to be no slowing down in 1999. Although it is difficult to predict future trends, it is possible that with Guideline XXX expected to become effective January 1, 2000, in many states, the need

for reinsurance could become greater than ever before.

Footnotes

1) Included in the definition of conventional category is business assumed from the direct side of companies that also have a reinsurance division. Business assumed from the reinsurance division would fall under the retrocession category.

Highlights of the 1999 Manulife Reinsurance Mortality Study

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the Older Age and Large Amount studies will be discussed separately.

1999 Large Amount Study: Results

Policies for large amounts are those with a total face amount greater than \$1 million.

The experience underlying the year 1996 data is based on a total exposure of \$42 billion and claims of \$77 million. The exposure by number is 121,138 policies and 176 deaths. The overall mortality ratio is 44.1% by amount and 54.5% by number. This is an improvement over the 1995 ratios which were 50.6% and 51.4% respectively and continues the trend in improvement since 1991. In fact, the 1996 ratio is the lowest in all study years.

The experience underlying the years 1987-1996 data are based on a total exposure of \$639.3 billion and claims of \$1.4 billion. The total exposure by number is 1,090,130 policies and 1,874 deaths. The overall mortality ratio is 60.2% by amount and 60.5% by number.

The mortality ratios are also presented for various classifications, first for 1996 experience alone and then the cumulative result for the entire study period from 1987 to 1996.

Sex:

87% of the total exposure was from policies issued on male lives. The mortality ratio by amount is 42.8% for males and 52.0% for females.

The ratios by number are 54.8% and 51.8%. Ratios by amount for 1987-1996 are 58.4% and 73.8% for males and females. Ratios by number are 59.1% and 72.7%.

Issue Age:

More than 80% of the claims by number and 86% of claims by amount occurred between issue ages 40 and 69. Mortality ratios by amount for issue age groups 40

to 49, 50 to 59, and 60 to 69 are 24.6%, 65.4%, and 60.8%.

Comparable ratios by amount for the 1987-1996 period are 61.3%, 66.3%, and 62.8%.

Policy Years:

The mortality ratio by amount for durations 1 & 2 are below the overall ratio (44.1%) by 7% and 6% respectively. The mortality ratios for policy years 3 to 5 are between 7 and 44% above the overall ratio.

In the 1987-1996 period, the mortality ratio is high in year 1 due to aviation claims and varies between 49% -60% in years 2 to 4. The ratio in years 6 to 10 is high due to large claims over the years.

Smoking Status:

89% of the total exposure amount was from policies issued on non-smoking lives. Only 5% of the total exposure amount were aggregate issues. The overall mortality ratio by amount for non-smokers is 45.7% compared to 44.5% in 1995.

The ratio for smokers is 44.0% (156.1% in 1995). The ratio by amount for the 1987-1996 period is 52.0% for nonsmokers and 114.3% for smokers. Note that the expected table is not differentiated by smoker status resulting in a much higher ratio for smokers.

Underwriting Status:

Standard issues represent 94% of the total exposure amount. The mortality ratio by amount for standard policies is 45.7% compared to 51.2% in 1995 and 36.3% (46.9% in 1995) for sub-standard policies. The ratios by amount for the 1987-1996 period are 61% for standard policies and 55.5% for sub-standard policies.

Reinsurance Status:

The mortality ratio for facultative business is lower than that for automatic

business, in contrast to all previous years except 1994.

The facultative ratio is 36.0% compared to the automatic which is 55.7%. The ratios by amount for the 1987-1996 period are 65.9% and 53% for facultative and automatic reinsurance.

Plan of Insurance:

Data by plan of insurance was provided for approximately 38.1% of the total exposure amount. The policies were grouped Universal Life, Whole Life, and Term with mortality ratios by amount of 23.9, 25.4, 57.5% respectively. A result for 1987-1996 is not available.

Method of Reins:

The mortality ratios by amount for YRT reinsurance is 44.6% and 40.9% for coinsurance. A result for 1987-1996 is not available.

1999 Advanced Age Study: Results

Policies for advanced age are those with an issue age of 70 or over.

The experience underlying the year 1996 data is based on a total exposure of \$1.3 billion and claims of \$16.2 million. The exposure by number is 6,176 policies and 144 deaths. The overall mortality ratio is 32.8% by amount and 54.3% by number.

The experience underlying the years 1990-1996 data are based on a total exposure of \$11.3 billion and claims of \$156 million. The exposure by number is 66,354 policies and 1,453 deaths. The overall mortality ratio is 41.3% by amount and 56.1% by number.

The mortality ratios are also presented for the various classifications, first for 1996 experience and then the cumulative result for the entire study period from 1990 to 1996.

Sex:

55% of the total exposure by amount was from policies issued on male lives. The mortality ratio by amount is 30.1% for males and 38.1% for females.

This compares to 28.1% and 31.8% in 1995. The ratios in 1996 (1995) by number are 51.1% (49.3%) and 60.9% (59.9%) for males and females. The mortality ratios by amount for 1990-1996 are 39.4% and 45.6%. Ratios by number during the period are 53.6% and 62.3%.

Issue Age:

Almost all of the claims occur between the ages of 70 and 79 since over 95% of the exposure is in this range. This is consistent through all study years.

Policy Years:

The mortality ratio by amount varies greatly by duration with the highest ratio at duration 16+.

The mortality ratio by number is less

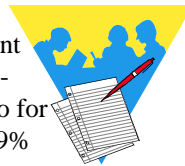
than the overall ratio for durations 1-5, with the exception of duration 5.

Smoking Status:

The mortality ratio by amount is 30.6% (24.9% in 1995) for non-smokers and 26.0% (62.6% in 1995) for smokers. The ratios by amount for the entire study period 1990-1996 are 35.1 and 78.6%, respectively.

Underwriting Status:

Standard issues represent 77.1% of the total exposure. The mortality ratio for standard policies is 32.9% and 32.8% for substandard. Ratios by amount for the 1990-1996 period are 42.2 and 39.4%.



Reinsurance Status:

Facultative business accounts for over 70% by exposure amounts. The mortality ratio for facultative business is lower

than for automatic business in 1996. The facultative ratio by amount is 25.5% compared to 56.4% for automatic. The corresponding ratios by amount for the 1990-1996 period are 39.4% and 42.4%.

Plan of Insurance:

Data by plan of insurance was provided for approximately 49.4% of the exposure. The policies were grouped by Universal Life, Whole Life, and Term with mortality ratios by amount of 23.6%, 28.2%, and 48.8%. A result for the combined years 1990-1996 is not available.

Method of Reins:

The mortality ratio by amount for YRT reinsurance is 30.8% and 35.9% for coinsurance. A result for study years 1990-1996 is not available.

Chairperson's Corner

continued from page 1

“These reporting deviations have the potential to harm the integrity of the survey and the reliability of it as a measure of the health and vitality of the life reinsurance market.”

the final numbers supplied. These reporting deviations have the potential to harm the integrity of the survey and the reliability of it as a measure of the health and vitality of the life reinsurance market.

I would encourage all users of the

survey to carefully reflect on the data before drawing any conclusions or incorporating the data into any analysis. I also encourage those actuaries at the participating companies who are responsible for providing the survey data to make sure that they understand the reporting defini-

tions and that they apply the same high level of professionalism to the survey response as they do to their other actuarial duties.

It is the hope of the Reinsurance Section Council that with careful construction and thoughtful use, this survey will continue to be reliable and informative and justify the effort it takes to produce. Again, my thanks to all involved.

New Reinsurance Section Council

- | | |
|---|-------------------|
| 1) Timothy J. Alford *
<i>Lincoln Re, Fort Wayne, IN</i> | 2002 |
| 2) John E. Bailey
<i>Protective Life Insurance Company, Birmingham, AL</i> | 2001 |
| 3) Graham J. Bancroft
<i>Sun Life Assurance of Canada, Toronto, ON</i> | 2000 |
| 4) Robert W. Beal *
<i>Milliman & Robertson, Inc., Portland, ME</i> | 2002 |
| 5) Robert L. Buckner *
<i>ERC Life Reinsurance Corporation, Overland Park, KS</i> | 2001 (2-yr. term) |
| 6) Bryan J. Featherstone
<i>(Company N/A), Farmington, CT</i> | 2002 |
| 7) Jeffrey S. Katz *
<i>CNA Insurance Company, Chicago, IL</i> | 2002 |
| 8) James B. Keller
<i>Lincoln Re, Fort Wayne, IN</i> | 2001 |
| 9) Michael W. Pado
<i>AXA Life Insurance Company, New York, NY</i> | 2000 |

- ***The term of the new Council members begins at the Society's October Annual Meeting.***

*** *Newly Elected Council members***



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