SOCIETY OF ACTUARIES

Reinsurance News

August 2006, Issue No. 58

newsletter for members of the reinsurance section

LIFE REINSURANCE DATA FROM THE MUNICH AMERICAN SURVEY

by David M. Bruggeman

Munich American's annual survey, which is conducted on behalf of the Society of Actuaries 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) Recurring reinsurance:[1] conventional reinsurance covering an insurance policy with an issue date in the year in which it was reinsured,

(2) Portfolio reinsurance: reinsurance covering an insurance policy with an issue date in a year prior to the year in which it was reinsured, or financial reinsurance, and,

(3) Retrocession reinsurance: reinsurance not directly written by the ceding company.

Complete survey results can be found at Munich American's Web site: *www.marclife.com* (look under Publications).

Life Reinsurance Production

The survey shows U.S. reinsurance production dropping 50.6 percent in 2005. All categories of reinsurance in the United States, with the exception of retrocession, decreased in 2005. While a 50 percent decrease in production sounds dramatic, most of the decrease can be traced to the drop-off in portfolio

[1] Included in the definition of recurring 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.

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NEWSLETTER OF THE REINSURANCE SECTION

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This newsletter is free to section members. A subscription is $20.00 for non-members. Current-year issues are available from the Publications Orders Department. Back issues of section newsletters have been placed in the Society library, and are on the SOA Web site, *www.soa.org*. Photocopies of back issues may be requested for a nominal fee.

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PREFERRED MORTALITY STUDY PRELIMINARY RESULTS TO BE REVEALED AT ANNUAL MEETING

The SOA is currently sponsoring the largest, most complex and multi-faceted mortality study ever undertaken by an actuarial organization. Our initial research, to be unveiled Oct. 15-18 at the SOA Annual Meeting, will reveal the results of experience studies that will support redefinition of reserve requirements for preferred life policies. The likely outcome of this project will be to better reflect preferred mortality in life insurance liabilities while still assuring adequate protection for policyholders and investors. Learn more about this study by going to *www.soa.org* and searching for "preferred mortality." ✹

RE-EVALUATE

by Larry Carson

'Cuz they say two thousand zero zero party over,
Oops out of time
So tonight I'm gonna party like it's 1999

I was dreamin' when I wrote this
So sue me if I go 2 fast
But life is just a party, and parties weren't meant 2 last

–Prince, 1999

While I certainly wouldn't compare the state of today's life reinsurance industry to the nuclear Armageddon described in this wonderful hit from the 1980's, a quick glance at what's going on in our industry today doesn't exactly paint a pretty picture. The reinsurance "party" of the mid- to late-1990's is now officially over.

Take a close look at the 2005 SOA/Munich American Life Reinsurance Survey elsewhere in this issue. There's been a lot of blather about a drop of over 50 percent in life reinsurance production from 2004 to 2005. It's actually not nearly that bad—the Scottish-ING Re transaction in 2004 raised the "portfolio" reinsurance number for that year to an extremely high level. But, even if we look just at the "recurring" number, we can see a drop of close to 19 percent from 2004 to 2005. In fact, the face amount reinsured is close to where it was back in 1999.

So, it appears that the party is truly over. We can all speculate on the reasons why—securitizations, worsening relationships between reinsurers and direct writers, and an increased comfort with higher retentions by direct writers are three reasons that come immediately to mind. But, ultimately what really matters is, where do we go from here?

That's where your Reinsurance Section comes in. We're engaged in some very exciting activities, including the traditional (sponsoring sessions at the spring and annual meetings) and the new (to us at least)—Webcasts, sponsored research, and, perhaps most excitingly, the inaugural ReFocus conference next March in Las Vegas, which will bring together top reinsurance professionals from numerous disciplines. Our focus is on helping ensure that we, the reinsurance actuarial community, stay relevant and on the cutting edge in a quickly-changing world.

THERE'S BEEN A LOT OF BLATHER ABOUT A DROP OF OVER 50 PERCENT IN LIFE REINSURANCE PRODUCTION FROM 2004 TO 2005. IT'S ACTUALLY NOT NEARLY THAT BAD ...

I would urge you to join us at the Reinsurance Section's hot breakfast during the Annual Meeting in Chicago. There, Graham Mackay (next year's Chair) and I will review our activities during the past year, look forward to next year and engage in an open dialogue with you, our members, on what you would like to see as our priorities going forward. Of course, please feel free to contact any member of the Reinsurance Section Council at any time (our contact information is on the SOA Web site), and, by all means, get involved! ✷

Sincerely,
Larry Carson, Chair
Reinsurance Section Council

Larry Carson, FSA, MAAA, is vice president and actuary with the Financial Markets division at RGA Reinsurance Company in Chesterfied, Mo. He can be reached at *lcarson@rgare.com*.

Life Reinsurance New Business Production Results for 2004 and 2005 ($U.S. Millions)

	U.S.			Canada			Total		
	2004	2005	Change	2004	2005	Change	2004	2005	Change
Ordinary Life									
Recurring	1,037,543	843,668	-18.7%	100,357	110,009	9.6%	1,137,900	953,677	-16.2%
Portfolio	831,703	38,743	-95.3%	0	987	100.0%	831,703	39,730	-95.2%
Retrocession	31,249	42,625	36.4%	2,921	7,000	139.6%	34,170	49,625	45.2%
Total Ordinary	1,900,495	925,036	-51.3%	103,278	117,996	14.3%	2,003,773	1,043,032	-47.9%
Total Group	54,400	41,078	-24.5%	17,515	22,245	27.0%	71,915	63,323	-11.9%
Total Life	1,954,895	966,114	-50.6%	120,793	140,241	16.1%	2,075,688	1,106,355	-46.7%

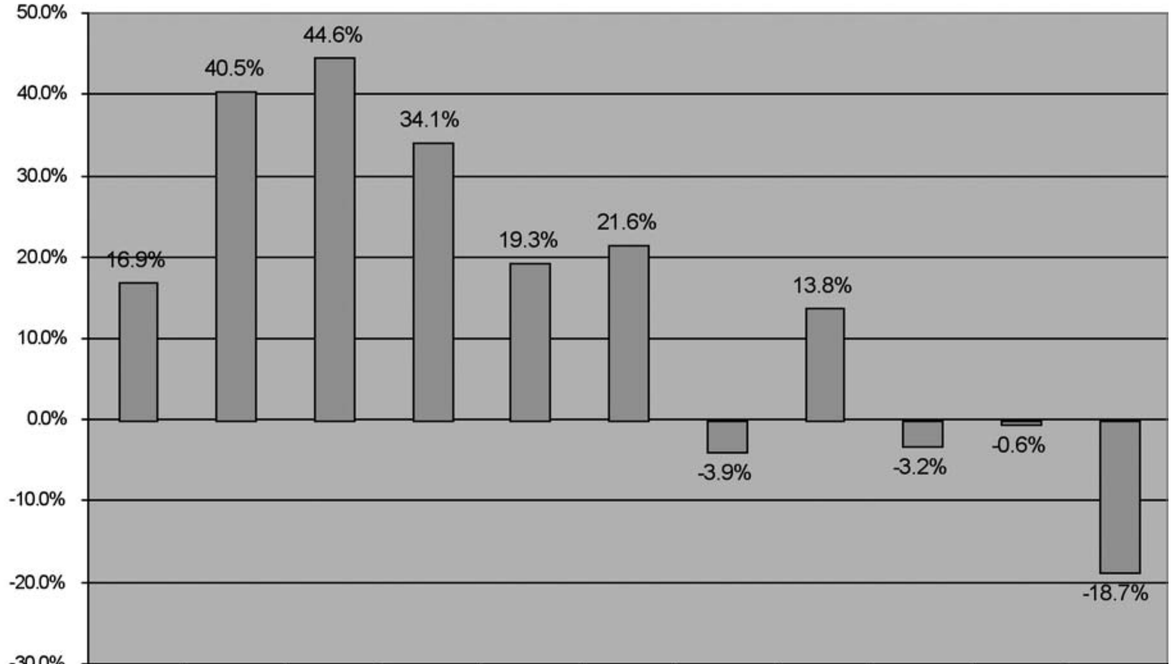
production, which was at an all-time high level in 2004. More alarming is the 18.7 percent decrease in recurring production. In Canada, every category of life reinsurance increased in 2005, resulting in a 16.1 percent overall increase.

U.S. Recurring Business

Not only did U.S. recurring production fall for the third straight year in 2005, the 18.7 percent decrease reported in 2005 was one of the largest decreases ever recorded. Double-digit growth throughout the 1990s has since been followed by decreases in four of the last five years. While the prior year's decreases were minimal, a 0.6 percent decrease in 2004 and a 3.2 percent decrease in 2003, the 18.7 percent decrease in 2005 is substantial. The chart on page 5 shows the annual percentage change in U.S. recurring new business from 1995 to 2005. From 1995 to 2000, the market enjoyed large double-digit growth. These were the "boom" years for life reinsurance when reinsurance pricing was very competitive and direct companies moved to first-dollar quota-share arrangements. When Regulation XXX became effective in 2000, the direct writer's need for surplus relief from the reserve strain kept up the need for reinsurance. The year 2002 appears to be a high-water mark for life reinsurance as production has slowed down in recent years. What happened in 2005 to cause the decrease in recurring new business? There were a couple of things going on in 2005 that could account for the drop. First, some of the top reinsurers undertook major repricing efforts in 2005. The repricing often resulted in an increase in reinsurance rates and thus, some direct companies may have chosen to retain more of their business. Second, direct writers began seeking out and finding alternate financial solutions outside of reinsurance to fund their Regulation XXX reserve strain. When Regulation XXX became effective in 2000, most direct companies turned to the reinsurance industry to provide surplus relief stemming from the new reserve requirements. This worked fine for the first couple of years, but then reinsurance prices began to rise and some of the larger direct companies sought out ways to finance their reserve strain themselves. Once they had found their own solution, the need for reinsurance lessened and they elected to retain more of their business. To note, I think 2005 saw more term business being reinsured on an YRT basis, often excess of retention, than in quite some time.

On page 6 are the 2005 U.S. recurring numbers by company. Included are market share and percentage change from 2004. The companies can easily be divided into three groups: companies with market share of 10 percent and above, companies with

Annual Percentage Change in U.S. Recurring New Business (1995-2005)



	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
% Change	16.9%	40.5%	44.6%	34.1%	19.3%	21.6%	-3.9%	13.8%	-3.2%	-0.6%	-18.7%

market share between five percent and 10 percent and companies with market share below five percent. There are some noteworthy items to take away from these results.

1) The top group, consisting of five companies (RGA, Scottish, Transamerica, MARC and Swiss), accounted for 76.6 percent of the market share in 2005. If we add the 12.6 percent market share of the next group, which consists of two companies (Generali, Canada Life), we see that the top seven companies accounted for almost 90 percent of the market in 2005. Ten years ago it took twice that many companies (14) to make up 90 percent of the market.

2) Three of the top five reinsurers reported sizable decreases in recurring production in 2005. One reinsurer reported a slight increase and only one reported double-digit growth—an occurrence that was quite common a few years ago. RGA held the top position in 2005 with a 21.7 percent market share. They reported a 17.3 percent increase in recurring production and were, by far, the top writer—leading the number two writer, Scottish, by over $50 billion. Sizable decreases were recorded by Swiss Re (47.2 percent), Scottish (45.5 percent) and MARC (19.9 percent), whereas Transamerica reported a 4.3 percent increase in recurring new business. In total, the top five companies, who made up for 76 percent of the 2005 market, experienced a 22.7 percent decrease in production from 2004 to 2005.

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3) In the second group, both Generali USA and Canada Life experienced nice increases in production. The 27.0 percent increase for Generali and the 17.3 percent increase for Canada life resulted in a 22.7 percent increase for this second group.

THE YEAR 2002 APPEARS TO BE A HIGH-WATER MARK FOR LIFE REINSURERS AS PRODUCTION HAS SLOWED DOWN IN RECENT YEARS.

4) The third group had nine reinsurers garnering a total 10.8 percent market share. Two new entrants are included in this group, Wilton Re and Ace Tempest. Collectively, this group experienced a 14.1 percent decrease in production, due mostly to the GE Insurance Solutions decline.

Now let's go way back in the survey archives and revisit a theory brought up by the authors at that time called the "wave theory." The wave theory went something like this: reinsurers who are successful in increasing their production in a short period of time will ultimately crest, and then see a downturn in production. When the wave "breaks" and the production decreases, another reinsurer steps in to take up the slack, perpetuating the cycle. In the past, the crest of the wave has increased with each cycle, however this element of the theory has not held in the last few years. The chart on page 7 even shows U.S. recurring amounts for the top five writers. Please note that the numbers do include the companies acquired. So the Swiss numbers include Lincoln National

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

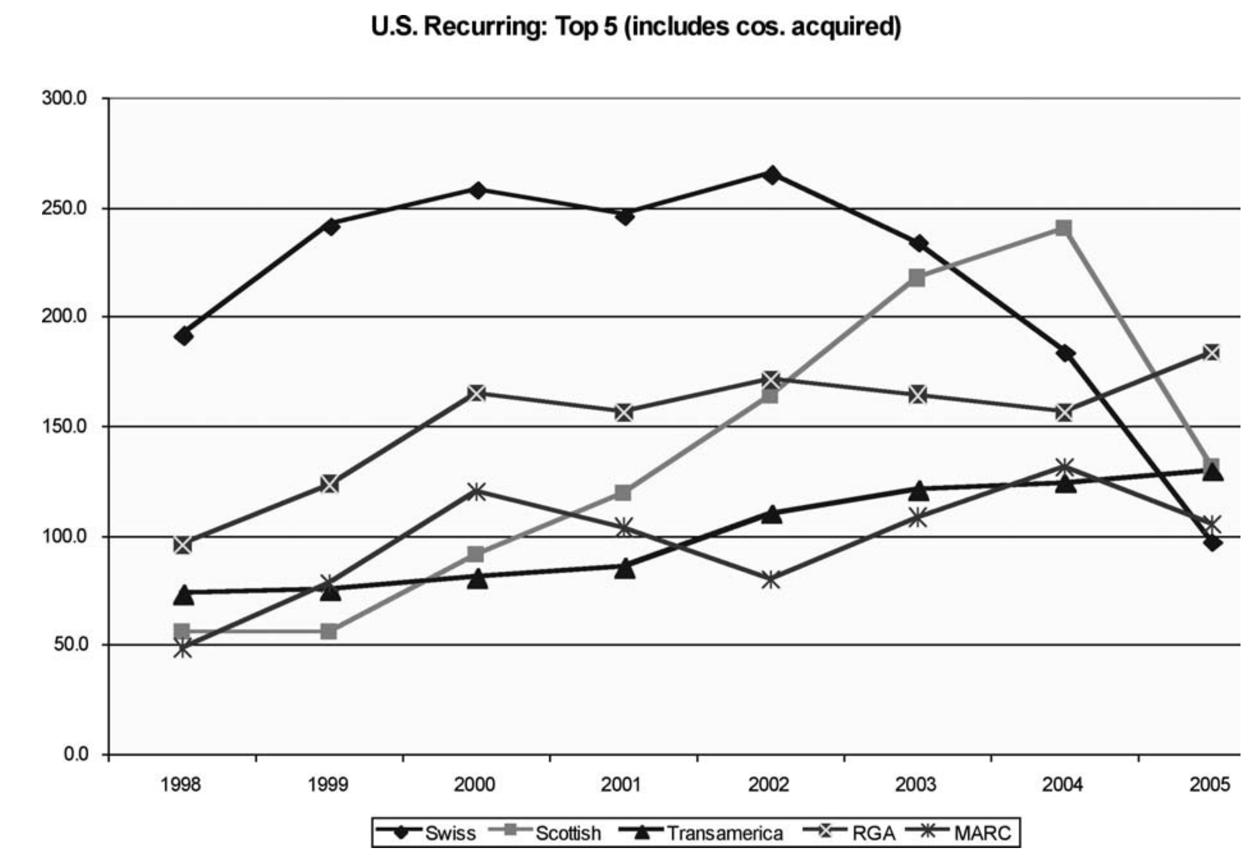
Company	2004 Assumed Business	2004 Market Share	2005 Assumed Business	2005 Market Share	Increase in Production
RGA	156,431	15.1%	183,491	21.7%	17.3%
Scottish Re	240,258	23.2%	130,974	15.5%	-45.5%
Transamerica Re	124,200	12.0%	129,600	15.4%	4.3%
Munich American Re	131,438	12.7%	105,294	12.5%	-19.9%
Swiss Re	184,172	17.8%	97,245	11.5%	-47.2%
Generali USA Life Re	48,483	4.7%	61,584	7.3%	27.0%
Canada Life	38,223	3.7%	44,824	5.3%	17.3%
SCOR Life Re	32,275	3.1%	27,796	3.3%	-13.9%
General Re Life	15,675	1.5%	21,559	2.6%	37.5%
Revios Re	19,758	1.9%	17,232	2.0%	-12.8%
Hannover Re	8,409	0.8%	7,467	0.9%	-11.2%
Wilton Re	0	0.0%	6,116	0.7%	100.0%
Optimum Re	2,202	0.2%	5,010	0.6%	127.5%
Ace Tempest	0	0.0%	4,200	0.5%	100.0%
GE Ins. Solutions	36,019	3.5%	1,276	0.2%	-96.5%
TOTALS	**1,037,543**	**100.0%**	**843,668**	**100.0%**	**-18.7%**

(acquired in 2001), RGA's numbers include Allianz (acquired in 2003), Scottish Re's numbers include ING (acquired in 2004), and MARC's numbers include CNA (acquired in 2000). The chart clearly illustrates that the wave theory is still relevant today. The Swiss Re line rides a high wave from 1998–2003 and then drops. The Scottish line increases throughout the years and then drops in 2005. The RGA, Transamerica and MARC lines exhibit the classic wave features with waves cresting higher and higher each year. In RGA's and Transamerica's case, the waves are still rising while for MARC, the wave went down in 2005.

Canada Recurring Business

In Canada, recurring new business increased 9.6 percent. One hundred ten billion dollars was written in 2005 compared to $100.3 billion in 2004. Indications are that Canadian direct life sales were about at the same level in 2005 as in 2004. So even with stagnant direct sales, Canadian recurring reinsurance continued to grow. This is a similar pattern witnessed in the U.S. a few years ago and would imply that Canada's direct writers are reinsuring more life insurance than ever before. Three companies dominated the Canadian market: Munich Re, RGA and Swiss Re. These three reinsurers account for 96.8 percent of the market. Munich Re held a 44.6 percent market share and had a 15.5 percent increase in new business production in 2005. RGA's 56.1 percent increase in recurring new business from 2004 resulted in a 28.5 percent market share and although Swiss Re had a 16.8 percent decrease in recurring production, they still maintained a 23.7 percent market share. Totals for Canadian recurring ordinary reinsurance assumed in 2004 and 2005 are shown in the chart on page 8.

continued on page 8



Portfolio and Retrocession Business

In the last two years, U.S. portfolio production reached its highest level ever in 2004 and then dropped to one of its lowest levels in 2005. With two major acquisitions in 2004 (Scottish Re's acquisition of ING Re and Swiss Re's acquisition of the CNA direct block), portfolio reinsurance reached a new high. However, in 2005, portfolio reported its lowest level in 10 years. The 289.3 percent increase reported in the United States in 2004 gave way to a 95.3 percent decrease in 2005. The lack of any mega-mergers or acquisitions in 2005, along with fewer in force block opportunities being offered by the direct writers, were major culprits in the decline experienced in 2005. Canada reported minimal portfolio business in 2005 compared to zero portfolio business in 2004.

Even with the drop in recurring production, U.S. retrocession production rose 36 percent in 2005. The increase can be attributed to retro in force block deals finalized in 2005. In force block deals also helped the Canadian retrocession market show a 140 percent increase in production. It should be noted that the Canadian market is relatively smaller and subject to wider swings in production.

Comparison with Direct Market

Preliminary estimates from the American Council of Life Insurers (ACLI) show U.S. ordinary individual life purchases decreased 2.7 percent from 2004 to 2005. With the sizable drop in U.S. recurring new business of 18.7 percent, the percentage reinsured level reached an eight-year low of 47.0 percent. This marks the first time since 1997 that the reinsured percentage has fallen below 50 percent. The percentage reinsured reached a high of 61.8 percent in 2000, but has since steadily declined the last three years.

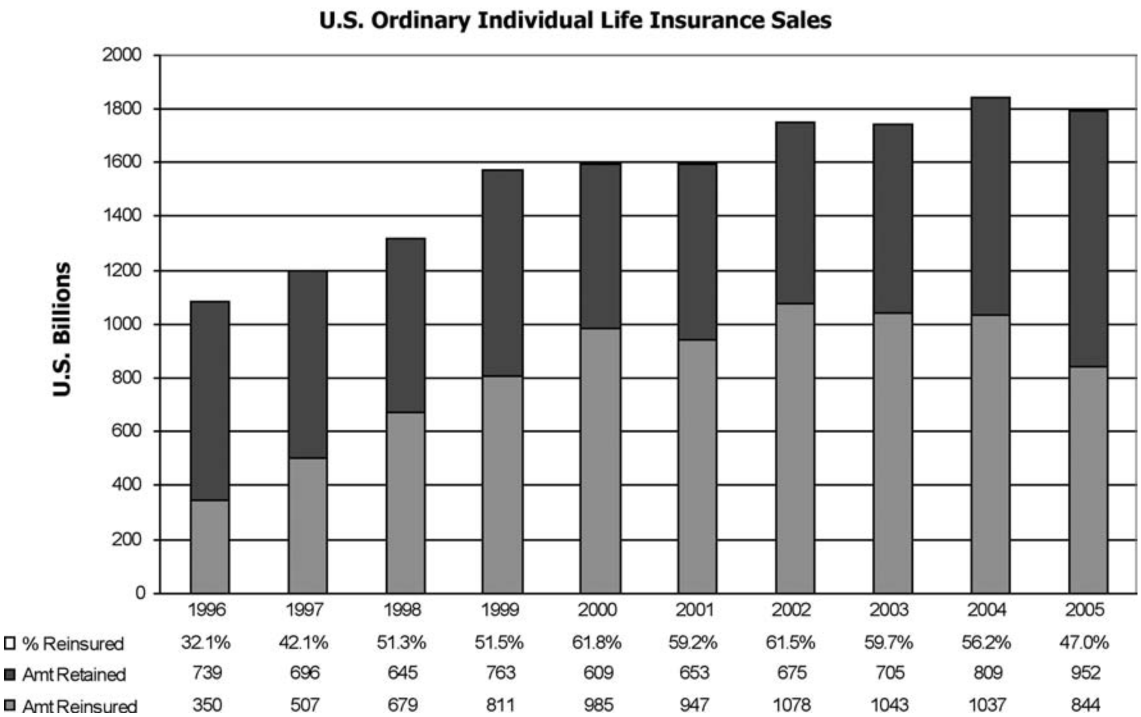
The graph on page 9 compares ordinary life new business totals with the recurring life reinsurance totals for the United States.

Conclusion

The year 2005 was quite a year for life reinsurers, especially in the United States. Major repricing efforts and the direct writer's ability to find alternate XXX reserve financing solutions were contributing factors to the drop-off in U.S. ordinary recurring production. In addition, the slow-down of M&A activity and fewer in force block opportunities led to record lows for portfolio reinsurance. Only retrocession business enjoyed an increase in production. It

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

Company	2004 Assumed Business	2004 Market Share	2005 Assumed Business	2005 Market Share	Increase in Production
Munich Re (Canada)	42,466	42.3%	49,034	44.6%	15.5%
RGA Re (Canada)	20,091	20.0%	31,354	28.5%	56.1%
Swiss Re	31,382	31.3%	26,115	23.7%	-16.8%
Optimum Re (Canada)	2,877	2.9%	3,282	3.0%	14.1%
Revios	206	0.2%	191	0.2%	-7.3%
General Re Life	0	0.0%	19	0.0%	100.0%
Canada Life	66	0.1%	14	0.0%	-78.8%
GE Ins. Solutions (Can)	3,258	3.2%	0	0.0%	-100.0%
TOTALS	**100,346**	**100.0%**	**110,009**	**100.0%**	**9.6%**



is difficult to predict what will happen in 2006, but some factors that may influence the 2006 results include:

1) We saw three of the top five U.S. reinsurers report sizable decreases in new business production in 2005. Will another year of decreasing production be acceptable to these companies?

2) Wilton Re and ACE Tempest Re entered the life reinsurance market in 2005 and XL Re has announced their entry into the market as well. What impact will these new players have on the market?

3) Principles-based reserving may be on the horizon, but Regulation XXX won't be going away in 2006. Will direct writers look to reinsurers for reserve strain relief or will they seek alternate solutions?

In closing, we would like to thank all of the survey participants for their support with the survey.

Disclaimer

Munich American Reassurance Company prepared the survey on behalf 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. ✷

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EXECUTIVE PERSPECTIVES ON STRATEGY AND RISK IN REINSURANCE

by Gaetano Geretto

Attitudes on strategy and risk vary according to environmental circumstances for most companies. At best, they present a snapshot of people's thinking at a specific point in time. David Bruggeman's article elsewhere in this newsletter showed a dramatic drop in new business for U.S. life reinsurers in 2005, while the Canadian reinsurance market showed steady gains. These are certainly challenging and interesting times for life reinsurers in North America. In order to better understand the perspective of life reinsurers as they face a less certain future, Pelecanus surveyed executives from life reinsurers and retrocessionaires, in both the United States and Canada, on strategy and risk in the early part of 2006. What follows is an extract from the surveys with contrasts between the Canadian and American markets.

ATTITUDES ON STRATEGY AND RISK VARY ACCORDING TO ENVIRONMENTAL CIRCUMSTANCES FOR MOST COMPANIES. AT BEST, THEY PRESENT A SNAPSHOT OF PEOPLE'S THINKING AT A SPECIFIC POINT IN TIME.

Methodology and Participation

The survey was developed in accordance with the U.S. Safe Harbor requirements of the Federal Trade Commission and the Department of Justice on anti-trust compliance. Simply put, the requirements are that the survey would need to be administered by an objective third party, be based on data that was at least three months old, and have at least five participants, where no single participant's data could present more than 25 percent of any statistic.

There were 16 participants in the U.S. survey (11 reinsurers and five professional retrocessionaires) and five participants in the Canadian survey. Based on the data from the 2005 Munich American Re Survey of the U.S. life reinsurance market, these respondents comprise close to 70 percent of the new business assumed and 67 percent of the recurring business in force in the U.S. ordinary life reinsurance market. Similarly, the Canadian respondents comprise close to 100 percent of the new business assumed and almost 90 percent of the recurring business in force in the Canadian ordinary life reinsurance market.

Strategy—Industry

In reviewing strategy, it is usually of interest to executives to conduct a SWOT analysis (strengths, weaknesses, opportunities, threats) of the industry. In terms of the strengths of the industry, U.S. reinsurance executives (including retrocessionaires) believe the greatest industry strength was the strong existing in force business, whereas Canadian reinsurance executives felt the greatest industry strength was access to capital. Both groups felt that the greatest industry weakness was the weakening of relationships with life insurers.

There was consensus about the greatest industry opportunity in both markets being the development of new risk management processes such as securitization. However, U.S. executives saw the deterioration in actual experience versus expected experience as the greatest industry threat, whereas in Canada, similar to the industry's greatest weakness, it was felt to be the weakening of relationships with life insurers.

Strategy—Company

The reinsurance executives were also asked to do the same SWOT analysis, but with respect to their individual company. Not surprisingly, results differed.

In both the United States and Canada, from a company perspective, the greatest strength noted was capable and experienced staff in their company. The U.S. survey participants felt that the lack of profitable products and services was the greatest company weakness, whereas in Canada, it was the lack of access to capital. In Canada, it was interesting to note that their greatest industry strength was also perceived to be the greatest company weakness! This is not altogether surprising as the statutory capital and surplus requirements in Canada put a burden on growing companies.

Executives in both markets shared consensus about the greatest company opportunity which was seen to be the strengthening of relationships with life insurers. Whereas the weakening relationship with life reinsurers was viewed as the greatest company threat in the United States, the greatest company threat noted by Canadian respondents, was the lack of access to capital.

Strategy—Lines of Business

The business line credited with creating the most success for the industry and individual companies in Canada and the United States, was Individual Mortality Yearly Renewable Term (YRT). Group Long-Term Disability, Critical Illness and Group Life Mortality were considered more important in Canada than in the United States. Similarly, reinsurance on Corporate Owned Life Insurance (COLI) was a significant business line in the United States, but not in Canada.

Strategy—Issues Concerning Stakeholders

Among a list, the following were deemed as the first and second most important strategic issues in the United States and Canada by respondents:

- "We work with our shareholders to ensure their target returns for our business are met and the inherent business risk is appropriately managed."

EXECUTIVES IN BOTH MARKETS SHARE CONSENSUS ABOUT THE GREATEST COMPANY OPPORTUNITY AS IT IS SEEN TO BE THE STRENGTHENING OF RELATIONSHIPS WITH LIFE INSURERS.

- "We work with our clients to strengthen our relationship into a 'win-win' that recognizes the real cost of underwritten risks."

When respondents were asked to rank the various stakeholder interests which they manage, in the United States shareholders placed first and clients placed second, whereas the order was reversed in Canada.

With respect to their shareholders, the frustration at the lack of sustained financial performance and the actual returns being below target were the two most contentious issues identified by U.S. respondents.

In both Canada and the United States, the resistance to more explicit treaty language on counter-party risk, data reporting and underwriting were the most contentious issue of respondents with their clients. With respect to reinsurers dealing with their retrocessionaires, the most contentious issue in the U.S. survey was the continuing decrease in capacity, whereas in Canada, this issue ranked as the third most important issue after the increase in rates for excess retrocession capacity.

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Executive Perspectives … from page 11

With respect to reinsurers dealing with regulators, in the United States, the most contentious issue was the lack of understanding of the risks and rewards involved in the company's various business lines. In Canada, in response to the same question, the top issue was regulatory analysts who have little real understanding of the rewards and risks in the company's strategy.

Risk Management

The risk that most needed mitigation in the United States was mortality risk; in Canada, regulatory risk was the risk that most needs mitigation. U.S. respondents purchased catastrophe cover as the means to best mitigate risk followed by the purchase of currency hedges. In Canada, the same two tools were also used to mitigate risk, but their importance was reversed.

When asked to rank the greatest risk to be managed in today's reinsurance world, the U.S. respondents believed that sustained sub-par returns that taint the industry's risk management reputation to be the greatest risk. Canadian respondents ranked this particular issue fifth, but believed that life insurers choosing to manage risks through their own or different means to be the top risk to manage. U.S. respondents saw this latter risk as the fourth greatest risk to manage.

Respondents were asked to rank a variety of options to improve the evaluation of their business. The strengthening of the errors and omissions (E&O) clause in all treaties ranked first among U.S. respondents. Canadian reinsurance company executives had a diversity of opinions on this question. Some believed that the establishment of a risk management committee that meets regularly on internal controls has been the most valuable improvement to the evaluation of their business, while others believed the development of expectations of underwriting guidelines and exception thresholds in the treaty were more important.

Reinsurance executives believed that both their clients and their retrocessionaires need to share the same philosophy on specific reinsured risks as they do.

Enterprise Risk Management

Forty percent of companies in both Canada and the United States meet monthly on enterprise risk management issues. Respondents to both surveys used some form of risk management techniques, either developed in-house or developed by their parent company. GAAP earnings is the measure most often used to assess a change in risk by U.S. respondents and it is the second most popular measure in Canada after statutory capital. Half of the U.S. respondents will take immediate action when there is a greater than 10 percent decrease in earnings or capital, whereas 40 percent of Canadian respondents would do likewise at the same threshold.

Executives responding to both surveys see enterprise risk management, strategy development, execution and stakeholder management as integrated and related processes.

For reinsurers, as per the U.S. respondents, the risk appetite is generally developed jointly by company officers and the board of directors, but in the Canadian survey this process ranks second to the shareholders clearly communicating their tolerance for risk.

Sustainability

A purchase of a block of business that is no longer strategic to the seller was considered to be the best means to sustain one's business in the United States. This issue placed third in Canada, after finding a strategic partner to provide necessary capital to sustain growth, which was deemed first.

The most likely function to be outsourced by U.S. and Canadian respondents was investment management. In Canada, the least likely function to outsource was underwriting and was the fourth least likely function to be outsourced in the United States.

When asked to rank criteria among admired life insurance companies, superior execution was at the top of the list in Canada and the United States. When asked to rank the same criteria for admired life reinsurers, superior execution again was the most admired criterion by U.S. respondents and fifth most admired criterion in Canada. Being leaders in client service ranked first among Canadian respondents.

When applying the same criteria to the ranking of a list of retrocessionaires, Manulife Re was viewed as the most admired retrocessionaire by both U.S. and Canadian respondents. Sun Life Re placed second among U.S. respondents and tied for second with RBC Financial among Canadian respondents.

When asked the same question about life reinsurers, RGA was identified as the most admired life reinsurance company in the U.S. survey, followed by Munich American Re. Among Canadian respondents, RGA and Munich Re tied for the most admired life reinsurer in the Canadian market.

Participating Companies:

U.S. Survey Participants:

Reinsurers
ACE, Gen Re, Hannover, MAX Re, Munich American, Optimum Re, RGA, SCOR, Swiss Re, Transamerica Re, Wilton Re

Retrocessionaires
AXA Equitable, Manulife Re, RBC Financial, RMA (BMO), Sun Life Re

Canadian Survey Participants

Munich Re Canada, Optimum Re Canada, RGA Canada, SCOR Re Canada, Swiss Re Canada

Conclusion

The results of the survey give a snapshot into the thoughts and concerns of Canadian and American life reinsurance executives. The snapshot reflects their apprehensions about the market and how it has evolved over the last few years. The survey results also demonstrate the executives' strategic perspectives on their respective markets and the challenges of managing diverse stakeholder relationships. Their attitudes toward risk reveal how they choose to manage their businesses. The qualities that they admire in their clients, their peers and their retrocessionaires provide insights into their appreciation of excellence as a quality and their ongoing commitment to this goal.

Executives in the life reinsurance industry in both Canada and the United States are developing their strategic perspectives, managing stakeholder relationships, mitigating risk and sustaining their businesses, such that vibrant and dynamic reinsurance marketplaces flourish in both the United States and Canada. ✺

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REINSURERS AND THE SOA INTERNATIONAL EXPERIENCE STUDY (IES)

by William Horbatt

Participating Companies
- AEGON
- Aspecta
- AIG/ALICO
- Bradesco
- Brazil Previdenza
- Generali
- G&T
- ICATU Hartford
- ING
- MetLife
- NY Life
- Occidente
- Prudential (U.S.)
- Winterthur
- Zurich

Countries under Study
AR – Argentina
BR – Brazil
Ca – Caribbean
CL – Chile
GT – Guatemala
IT – Italy
MY – Malaysia
MX – Mexico
PL – Poland
KR – South Korea
TW – Taiwan

Knowing that approximately one tenth of the SOA's membership lives outside North America, the Society of Actuaries International Section recently initiated a research effort to examine mortality and persistency experience of emerging insurance markets to help these foreign-based actuaries in their day-to-day work pricing and reserving life insurance products. In addition, the research results should be useful for North American and other life insurers considering expanding into international markets.

In many of the countries studied, local country actuaries have been involved in designing the inter-company study. To facilitate data collection, a Microsoft Access/Excel tool has been developed to standardize data as well as help local actuaries perform intra-company mortality and persistency studies.

Starting with just a handful of participating companies in a few countries, the initiative has expanded to include over one dozen multinational and local country life insurance companies in over 10 countries (see box on the left). Preliminary results were presented at the recent International Congress of Actuaries in Paris with favorable responses from attendees. The figures on page 15 illustrate some of the results presented for Poland.

International reinsurance companies are beginning to develop interest in this study. A reinsurer may not, by itself, have credible data in a particular market and may be looking for resources to help evaluate potential market risks. A reinsurer may also wish to "benchmark" its experience against an inter-company study of the same market to help better manage its business. In some countries, other important management variables have been studied such as agent retention and productivity. Several countries are even considering expanding the variables studied to include expenses. Conducting experience studies is a lot of work and reinsurers are welcome to participate.

How is the IES Extended to a New Country?

Normally, a new country enters the International Experience Study IES as follows:

- The IES is directed by a working group (IESWG) that advises the SOA's Research Department on directions that the study should take. Once three companies in a given country agree to participate, the IESWG and the SOA confirm that appropriate resources are available to conduct a study in the country and efforts begin.

- A separate working group (local IESWG) is formed from the local actuaries that will be participating in the IES, and this group is responsible for determining what will be studied (e.g.,

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Figure 1: Polish Individual Life Mortality (Policy Count Basis)

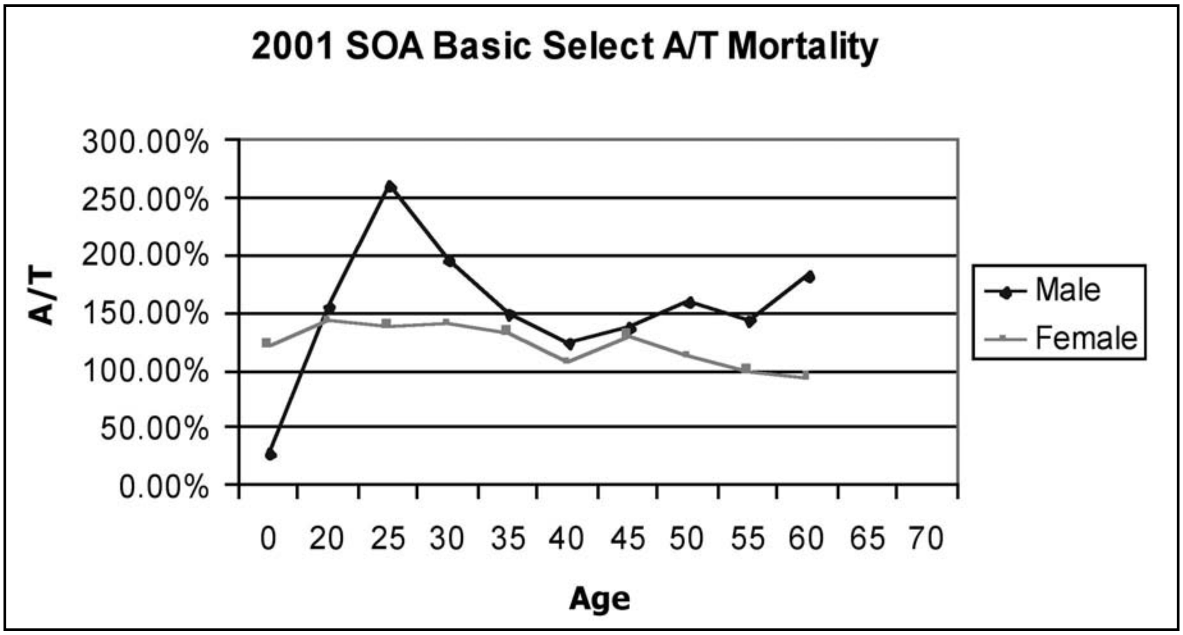
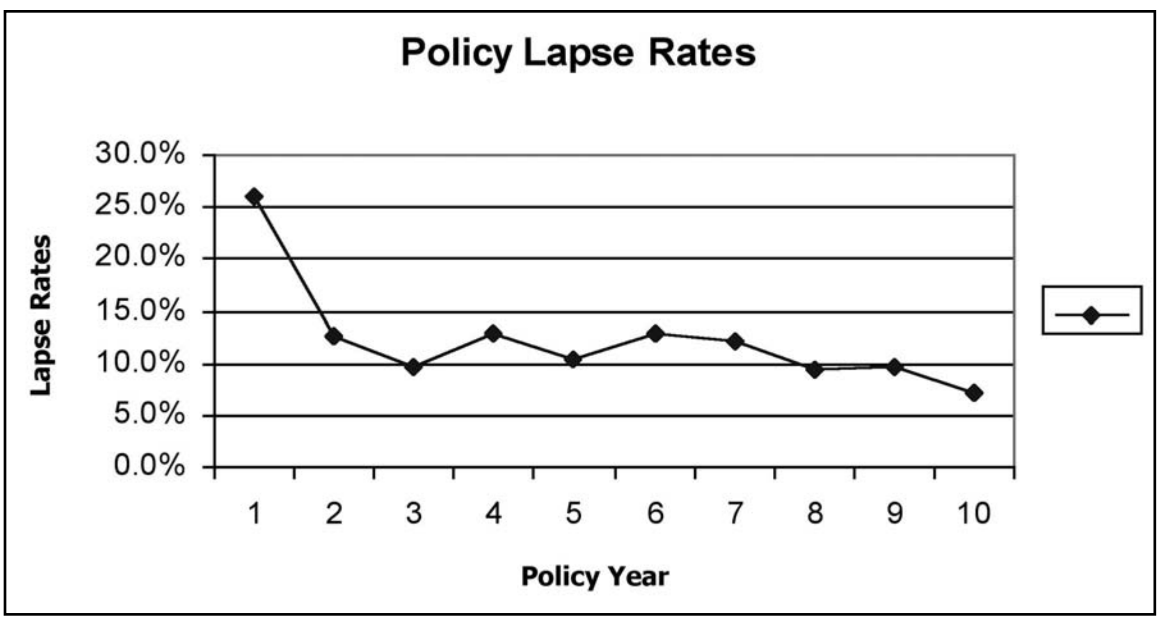


Figure 2: Poland Individual Life Persistency (Policy Count Basis)



individual life insurance mortality experience only, or individual and group life experience; mortality and persistency; etc.)

COMPANIES ARE ALSO USING THE SOFTWARE AS A MANAGEMENT TOOL TO PERFORM INTRA-COMPANY MORTALITY AND PERSISTENCY STUDIES TO BETTER UNDERSTAND AND MANAGE THEIR BUSINESSES.

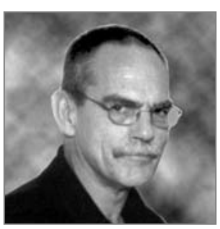
- The SOA provides participating companies with the Microsoft Access/Excel experience study "tool" to help with validating the data submitted. Companies are also using the software as a management tool to perform intra-company mortality and persistency studies to better understand and manage their business.

- The SOA's Research Department acts as the centralized clearinghouse for data. The "tool" outputs data into Excel spreadsheets and individual company data, which are then submitted to the SOA to be aggregated with the other data contributions. Summarized results are returned to the local IESWG for their review.

- The SOA's Research Department provides technical support and advice and helps the local IESWG review their data for accuracy and consistency.

- Results are published in the IES report on the SOA's Web site. To view the most recent report, please see:

http://www.soa.org/ccm/content/areas-of-practice/special-interestsections/international/papers-presentations-research-and-resources/2004-international-experience-survey-working-group-report/



William R. Horbatt, FSA, MAAA, is co-chair of the SOA's International Experience Study Working Group and a consulting actuary with the Actuarial Consortium in Short Hills, N.J. He can be reached at *Horbatt@ActuarialConsortium.com.*

How Reinsurance Actuaries Can Help

International reinsurance companies can play a unique role in this research effort:

- They can contribute exposure and claim data to the study, whenever permitted by the terms of their client agreements.

- As they have contacts with local country actuaries in the international markets they operate in, they can assist in recruiting additional companies to join the IES in any country.

- Reinsurance actuaries can assist the IESWG in analyzing country data in the markets where they participate.

- They can assist companies they reinsure in learning how to use the new Microsoft Access/Excel experience study "tool."

- They can assist companies' "data scrubbing" to solve the inevitable problems encountered with data errors.

- They can help with funding study expenses, such as the continued development of the Microsoft Access/Excel "tool" or travel expenses for in-country face-to-face meetings.

Reinsurers or reinsurance actuaries interested in participating may contact either Ronora Stryker, Research Actuary at the SOA at *rstryker@soa.org* or Bill Horbatt, IESWG co-chair at *Horbatt@acturarialconsortium.com*. ✺

WHERE HAVE YOU GONE, FORMULA RESERVES?
UPDATE ON PRINCIPLES-BASED RESERVES FOR LIFE INSURANCE

by Richard Daillak

The life insurance industry, the actuarial profession and regulators are working together to fashion a new valuation approach, *Principles-Based Reserving (or PBR)*. All hope that the new approach will be better and more sustainable than current valuation methods. PBR lays out broader principles for reserving, in place of fixed formulas, and then makes it the valuation actuary's professional responsibility to apply those principles fairly, in each case, to determine the policy reserve. Under PBR, actuaries will model the future cash flows of a product, using their training and judgment to create the model and set assumptions and explicit margins.

The principles-based approach will probably also be extended to capital requirements. (Recent C3 Phase II changes to RBC are already one step there.) The principles-based approach is expected to better align reserve and capital requirements with the true financial risks of insurance products. From that, we can expect important benefits for both consumers and industry.

Who are the Players?

The NAIC's actuarial arm, the Life and Health Actuarial Task Force (LHATF), is working with the American Academy of Actuaries (AAA) to design a suitable principles-based structure.

To do the job, the AAA has formed a large number of PBR working groups. Over 10,000 volunteer-hours are reported to have been spent on the project thus far. The Reinsurance Working Group, chaired by Sheldon Summers of the California Insurance Department, is considering the reinsurance issues. That work group, and the others, are eager for skilled volunteers willing to help.

Industry is also very much involved, both by enabling the actuarial volunteers to give their time to the professional work groups, and in an advocacy role, via the ACLI.

Where Does the Work Stand?

Work is proceeding quickly. The AAA has targeted delivery of a full life PBR framework by the end of 2006. However, that could mark only the "end of the beginning," with a long road remaining to final adoption. Some speculate that it may be 2009 or later before the life valuation changes become effective.

The latest working drafts of a PBR model regulation for life insurance and three supporting actuarial guidelines were presented at the June 2006 NAIC meeting and have been posted on the Academy's PBR Web pages (*www.actuary.org/risk.asp*). Work on these documents by the volunteer groups continues actively.

Here are a few highlights as of June, 2006.

The life PBR reserve is to be the greater of a "Deterministic Reserve" and a "Stochastic Reserve" calculated for the life business.

- The Deterministic Reserve is a seriatim gross premium valuation, with a policy cash value floor. This reserve is deterministic mostly in the sense that only *one* path of interest rates and asset returns will be modeled, not several. Beyond that, actuarial judgment is very much at play. The cash flow model will be designed by the actuary; assumptions may reflect company experience, if credible; and explicit margins are set using professional actuarial judgment.

- Stochastic results are determined by running a similar model over multiple, stochastically-generated scenarios. However, at this time, *only* variation in interest rates and asset performance need be reflected through such stochastic analysis.

- Each scenario is to be valued using a "greatest present value of accumulated deficiency" approach, rather than a gross premium valuation (per LHATF instructions).

- Stochastic modeling may use grouped data, rather than seriatim.

- A final Stochastic Reserve value is determined by taking a *conditional tail expectation, or CTE,* that averages the tail of the stochastic distribution.

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- Chance variation outside of interest rates and asset performance—for example, random fluctuations in lapse or mortality—will likely be handled non-stochastically, by applying a margin to best estimates. (But *systematic* variation correlating with the economic scenarios—for example, dynamic lapse rates—is to be reflected in the stochastic modeling.)

- Reserve assumptions will no longer "lock in" at issue, but will be revisited, and potentially unlocked, year by year.

- Reinsurance cash flows are among those to be modeled in both deterministic and stochastic reserves.

Because of the broader scope for actuarial judgment in PBR, guidance, review and governance are all being strengthened. New ASOPs are being developed; the actuary's work will be subject to independent peer review; and detailed documentation will be required. To assemble better industry data for judging assumptions and margins, a requirement for companies to submit experience data has been proposed.

Many issues remain. Here are a few that are mentioned frequently:

- Tax considerations. Statutory valuation references are embedded in Internal Revenue Code sections dealing with company and product taxation. A variety of complications might arise from PBR, depending on its final form.

- Retroactive or prospective application. Most expect that principles-based reserving will be applied only prospectively, at least initially. But principles-based required capital is also in view, and changes to required capital are often applied to all business in force.

- Levels of margins and conservatism. Caps, floors and other limits will all be subject to actuarial judgment. These items are likely to be debated even more hotly when final adoption nears.

Richard H. Daillak, FSA, MAAA, is vice president and corporate actuary with Swiss Re Life & Health America in Armonk, N.Y. He can be reached at *richard_daillak@swissre.com*.

Implications for Reinsurance

Because reinsurance is a somewhat specialized field within the larger life insurance industry, it is possible that other working groups might create documents that have unintended effects on reinsurers. Industry guidance on such topics as appropriate margins, the use of experience data, the level of aggregation allowed in the Stochastic Reserve calculation, and many other topics need to be considered from a reinsurance perspective. The PBR Reinsurance Working Group monitors activities of the other groups, and comments on the implications of these other work products on reinsurance.

In addition, the PBR Reinsurance Working Group is considering specific reinsurance issues. Examples include:

- In theory, PBR could allow the accurate valuation of reinsurance arrangements not generally allowed reserve credit under current risk transfer rules. Should the reserve credit rules be revisited now that the valuation technology will be more robust?

- Information exchange can be imperfect, and less than timely, in reinsurance. Reinsurer and cedant will have to bridge that gap as they set assumptions for their respective PBR valuations.

- Counterparty behavior becomes a consideration in the reserve cash flow modeling. This could include dramatic actions, like recapture, but also more subtle matters, like the counterparty's setting of policy or treaty elements it may control—premium rates, COIs, crediting rates, etc.

- Even the determination of the appropriate level of reserve credit for reinsurance and the use of collateral is being considered in light of a principles-based framework.

Finally, by altering product reserve and capital costs, the principles-based approach could result in a variety of marketplace and product design changes for consumers, direct writers and reinsurers. As PBR takes firmer shape, those broader effects will likely be an important topic of discussion in these pages.

Stay tuned. The PBR story is just beginning. ✺

A SERIES OF FORTUNATE ACCIDENTS INTERVIEW WITH OSCAR SCOFIELD, CHAIRMAN, SCOTTISH HOLDINGS, INC.

by Richard Jennings

On April 1, 2006, Oscar R. Scofield retired as chairman & CEO of Scottish Re (U.S.). Scofield is widely acknowledged as one of the leading members of the life reinsurance industry, with more than 40 years of experience. Prior to joining Scottish Re, he held senior management positions at General Electric Capital, Transamerica Re and Gen Re. In this interview, he shares with us his thoughts as he looks back on his reinsurance career and forward to what lies in store for him as he enters the next phase of his life.

Oscar Scofield

Scofield is a member of the Board of Regents of Wartburg College, in Waverly, Ohio, where he graduated with a degree in social studies. Wartburg, a nationally recognized four-year liberal arts college of the Evangelical Lutheran Church of America, was a fairly expensive school to go to at the time when Scofield was heading to college. His pastor and mother wanted him to go, so he took a job at Lutheran Mutual Life Insurance Company, as a janitor sweeping floors, to put himself through four years of college. He then proceeded to go to graduate school at the University of Northern Iowa staying close to his night job at Lutheran Mutual.

After finishing at Northern Iowa in February 1964, Scofield was looking to begin teaching high school in the fall when a fortunate accident happened. While sweeping floors at Lutheran Mutual, the medical director, Dr. O.C. Hardwig, asked Scofield about his plans for the future. Scofield said he was planning to hang around until school started in the fall. Dr. Hardwig asked Scofield if he had ever thought about becoming an underwriter. Scofield then learned that underwriters at the time made $4,800 a year, whereas teachers only made $4,400, and from that point on he was committed to the insurance business.

Scofield trained as an underwriter at Lutheran Mutual, under the wings of Ron Larson and Paul Scherb. He loved it. In 1967 he moved to Wisconsin Life Insurance Company in Madison, Wis., as manager of the underwriting department. There he continued with life underwriting, but also added some group life and disability to his expertise.

While living in Madison, he got into the radio business. By day he worked as an underwriter; by night he was known as "Karl London," on a local rock radio station. Neither employer knew about his other "gig" and he really enjoyed being on the radio. Approaching the age of 30, he was looking to make a determination about which career to focus on.

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Another fortunate accident—he met with George Weir from North American Re who was their reinsurer at the time. Scofield and Weir hit it off, which then led to an offer for Scofield to move to New York. At the time, Scofield had never been on a commercial airliner.

In 1970, he moved to New York, arriving with just a suitcase. It was an exciting time to be at North American Re. They underwrote a lot of celebrities; baseball players for the Mets and the Yankees, and many entertainers. It was an "eye opening" experience. He got to travel with the sales guys and had his eye on doing the same. His boss at the time, Chris Cox, a wonderful boss who has since passed away, said that Oscar was doing such a great job that they couldn't afford to have him leave underwriting. Then another fortunate accident happened …

MY LIFE HAS BEEN A SERIES OF FORTUNATE ACCIDENTS. AFTER 40 YEARS IN THE BUSINESS, WHAT STANDS OUT THE MOST ARE THE PEOPLE.

Over cocktails with Gerry Taylor, who was with what was to become General Re, at a Metropolitan Underwriting Discussion Group (MUD) meeting in New York, they discussed the possibility of a position in their Connecticut office. So soon he was off to Connecticut to work with the "two Bobs:" Bob Shepler and Bob Mooney, who were great to work with. In the meantime he got married. When his wife asked what he was going to be doing, he said he wasn't sure. How much would he be making? Well he wasn't too sure about that either, but he thought it would be enough.

Scofield found life at General Re to be intoxicating. He was soon moved to Chicago to be in sales. He had never been in sales before and now was handling big ticket deals. From 1972 to 1980 he grew the sales operation, eventually returning to Connecticut in 1980, to create their "Special Treaty" department, which became their financial reinsurance unit. There he worked with Mel Young and Randy Howard, and together they learned an awful lot. At the time IRC Section 820 was around and they were able to do a lot of "creative" things. In all, Scofield spent more than 15 years with General Reassurance Corporation, the life reinsurance division of General Re. He joined General Re in 1971 and served as vice president through 1983. Scofield left General Re to join GE Capital, where he was president of Monogram Reassurance Corporation, president of Puritain Excess & Surplus Lines Company and vice president and director of Puritan Insurance Group.

GE relocated him to Johnston, R.I., which was a nice place to raise a family. Then another fortunate accident took place. He remembers talking to Towers, Perrin, Forster & Crosby (TPF&C) at the time about how GE was planning to grow the business, and how they were looking to make an acquisition, but the potential targets, General Re and ERC, weren't for sale. Before leaving he was told that it wasn't a sure thing that ERC couldn't be sold. ERC was owned at the time by Getty Oil, and he was given the name of the person to speak to there. He decided to follow up on that lead and a year later the deal was done. ERC was sold and the Rhode Island operation was moved to Kansas City.

In 1986, he was approached by his old mentor Bob Shepler to see if he would consider coming back to General Re. After talking to them, he found out that the company wasn't doing that well, so he decided to help them out. He returned to General Re in 1986 as president, chief executive officer and director. He was charged with helping rebuild the company and turn things around. He was successful in returning the company to a profitable status and eventually positioning the company to be sold. The company became Life Re Corporation which eventually became part of Swiss Re.

In February 1989, Scofield was named vice president—sales, Transamerica Reinsurance, and chairman of Osborn Laboratories, an insurance testing services lab. In 1994, he helped Stan Johnson of Kanawha Insurance Group roll out their long-term care product initiative on a national basis.

Around that time he was called on by Peter Chapman, a former teacher of his and good personal friend, to go into consulting together. Together they co-founded Chapfield Corporation, a licensed reinsurance intermediary and consulting firm. One of their potential clients was Scottish Re, and he got to know Scott Wilkomm very well. This turned out to be yet another very fortunate accident, since this resulted in Scofield being invited to join Scottish Re as a consultant until they decided what they were going to do with their U.S. companies.

Scofield joined Scottish Re (U.S.) Inc., then a wholly-owned subsidiary of Scottish Annuity & Life Holdings Ltd., on Sept. 18, 2000 as chief operating officer. The rest, as they say, is history. Scofield stayed with Scottish Re, becoming chairman and CEO in 2002, and witnessed their explosive growth to become one of the leading life reinsurance companies today. Scofield will remain as a nonexecutive board member serving as chairman of Scottish Re U.S., Scottish Holdings Inc., and Scottish Re Life Corporation.

Scofield chose his 65th birthday, April 1, 2006, as his retirement date. As he looks back on his busy and successful career, he observes that he hasn't had much time to do what he wanted to do outside of work. So now, in his retirement, he will have the time to do some of that. His board duties will keep him busy for approximately 50 to 100 days a year, and he also has a consulting company, Eisenach Reinsurance Services. The name comes from the City of Eisenach, Germany, where Wartburg Castle is located, after whom his former college is named. It was there that St. Katherine became the first social worker, and Martin Luther translated the New Testament into German.

"My life has been a series of fortunate accidents," says Scofield. "After 40 years in the business, what stands out the most are the people. There are still 15 to 20 of us from the Gen Re days who still get together once a year; it's hard to believe. We tell the same stories every year. Of course, Joe Kolodney can't remember most of them, but he never forgets the punch line."

Over the years, the more things change, the more things stay the same. In the early days, the business was about 99 percent on a YRT basis. Ceded business was written up on cession cards. The transformation of the business has been significant, but at the heart of all of this is a personal relationship. Scofield remembers a time when they couldn't get a client to sign a treaty for more than two and a half years. Nowadays that wouldn't be allowed to happen. He remembers when his mentor, Bob Shepler, told him they had a billion in force. They considered the figure to be unfathomably large, and brainstormed about the idea of an advertising campaign to promote their tremendous size. Now, some reinsurers, including Scottish Re, are a thousand times larger.

WHEN HIS WIFE ASKED WHAT HE WAS GOING TO BE DOING, HE SAID HE WASN'T SURE. HOW MUCH WOULD HE BE MAKING? WELL HE WASN'T TOO SURE ABOUT THAT EITHER, BUT HE THOUGHT IT WOULD BE ENOUGH.

When asked what advice he would pass along to new and aspiring actuaries, Scofield said to be prepared to make yourself over several times during your career. He has had to do that a few times himself and has benefited from the experience.

In addition to his Board of Regents duties with Wartburg College, Scofield also works with undergraduate students at Appalachian College, mentoring them before entering the working world. He recently escorted several of them on a trip to the United Kingdom.

He is also an avid motorcycle fan, and member of the Board of Directors of the American Motorcycle Heritage Foundation, which is responsible for directing operations of the Motorcycle Hall Of Fame. He is looking forward to soon taking delivery of a new BMW motorcycle from his son's dealership. The path ahead of him is an open road and he is looking forward to not having to wake up and check his e-mail first thing in the morning. ✷

Richard Jennings, FLMI, ACS, is senior market research consultant with Manulife Reinsurance in Toronto, Canada. He can be reached at *richard_jennings@manulife.com.*

SOCIETY OF ACTUARIES' REINSURANCE SECTION AND THE

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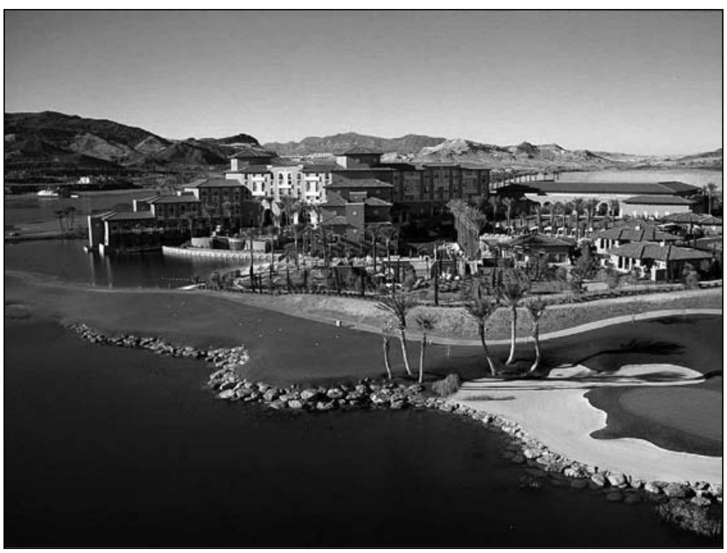

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- Principles-based reserving—impact on life writers and reinsurers; and,
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You'll also want to take part in our exciting golf tournament, preceding the conference. More information on this event will be available soon at *www.soa.org*.

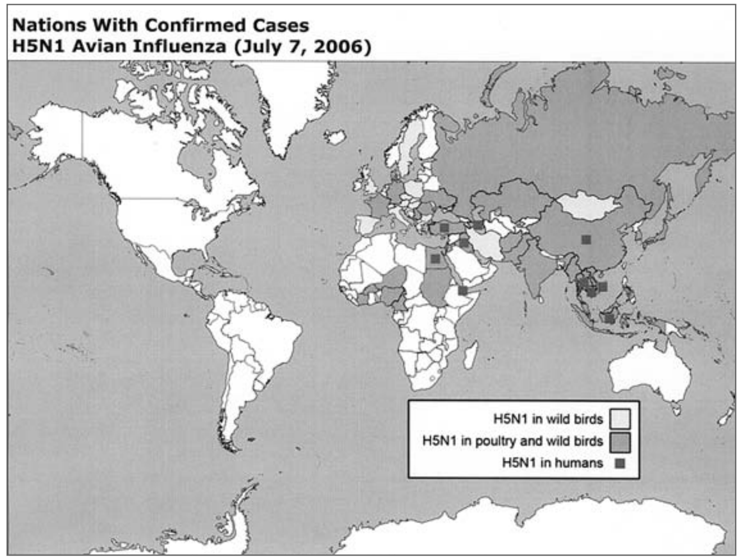
PANDEMIC INFLUENZA—WHAT CAN ACTUARIES DO?

by Sylvie Hand

For all those who attended the recent SOA Health 2006 Spring Meeting in Florida, not even the cheerful combination of blue water, white sand and sunny skies could detract from the sobering thoughts presented by Dr. Michael T. Osterholm in his keynote address on "Pandemics and Business Preparedness." Dr. Osterholm firmly believes that an outbreak of pandemic influenza is not a question of if, but rather, when. This speech was followed by a session entitled "Pandemics and Other Extreme Events: Is the Industry Ready?" where Jim Toole and Max Rudolph extrapolated the issues raised by Dr. Osterholm into an excellent overview of the potential impact from a pandemic on life and health insurance industries. I am sure that everyone who was present at the luncheon and the afternoon session came away with a heightened awareness of not only the potential business impact of a pandemic, but also the societal and personal impacts that such an event would have.

This raises an important issue for actuaries. Given all the "noise" surrounding the topic of avian influenza today, how can actuaries distill the mass of information—which is often conflicting—into the critical questions to raise and explore within their own organizations? The actions taken by actuaries today to address this threat are important for two reasons.

First, by helping to raise awareness and develop preparedness, actuaries will embody the SOA brand vision statement: "Actuaries will be recognized as the leading professionals in risk management." Actuaries (and those engaged in the business of risk management) are uniquely positioned to help companies and communities prepare for a pandemic.



These numbers are confirmed by the World Health Organization and may not reflect news or country reports. This map is reprinted with courtesy of the Pandemic Flu Web site which can be found at *www.pandemicflu.gov.*

Secondly, while the opportunity exists to reinforce brand awareness through the development of pandemic preparedness, it is important to keep in mind that any resulting brand benefits are merely a side-benefit, not the main event—raising awareness and helping people plan for the outbreak is simply the right thing to do, for our colleagues, our stakeholders, our communities, and our families.

So, what can actuaries do? How should risk management professionals address the pandemic threat within the context of their own organizations? First, by asking questions and creating dialogue. Every part of the organization needs to be aware of, and involved with, this preparation. How many companies today have formal preparedness plans? According to a recent survey,[1] 18 percent of respondents said they were confident their company was prepared to manage a pandemic flu. That is a low statistic given that such groups as the World Health Organization, the Centers for Disease Control and

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[1] Deloitte Center for Health Solutions and the ERISA Industry Committee, January 2006 survey.

the Center for Infectious Disease Research and Policy at the University of Minnesota all share Dr. Osterholm's view that a pandemic flu is almost a certainty. Even for that 18 percent, how many employees within those companies actually know what the plan contains? If your company has such a plan, do you know what it entails? Do you know what your department would do in such an event? It is not enough to develop a plan; it is vital that the plan be communicated, debated, tested and continually revised—a living document that is part of an organization's DNA.

THIS IS WHERE ACTUARIES WILL BE SO VALUABLE IN THE PLANNING PROCESS WITHIN THEIR ORGANIZATION—TAKING HIGH-LEVEL ASSUMPTIONS AND DEVELOPING THESE CASCADING QUESTIONS INTO DECISION TREES IS A SKILL AT WHICH ACTUARIES EXCEL.

For life and health insurers, we know that a pandemic will have an impact in all areas of the business—mortality, morbidity, possible asset impairment, operations, liquidity and business continuity. From a risk management perspective, questions for each can be generated. For example, let's look at the potential operational impacts. What absentee rate should be assumed? What is the appropriate duration to which the rate will be applied? Will the rate rise and fall during that period, following the outbreak waves in each community? How should the rate be developed and applied? If the rate used is based on an estimate of people who will become "clinically ill," which is defined as unable to attend work or other activities for at least one and a half days, then the estimate may be understated if a number of people choose to absent themselves from work for reasons such as providing care to clinically ill dependents. And does (or should) the estimated rate include a "fear factor?" As both Dr. Osterholm and Max Rudolph emphasized, the fear factor should not be ignored. Fear will cause people to behave in irrational, or at least unpredictable, ways. Will people elect to quarantine themselves as a preventative mechanism, thus dramatically increasing the absenteeism rates?

From taking one seemingly straightforward assumption such as absenteeism, you can see the difficult questions that quickly arise. This is where actuaries will be so valuable in the planning process within their organizations—taking high-level assumptions and developing these cascading questions into decision trees is a skill at which actuaries excel.

Let's take another simple example—the issue of paper. We have been talking about the paperless office for years now, and while improvements definitely have been made, I have yet to actually see a paperless office. Can we function without paper? When planning for the business interruption caused by a pandemic (or any other extreme event for that matter), let's assume that all non-essential functions are delayed or temporarily halted. One of the critical functions for an insurance company is the timely payment of benefits—this is the heart of our business. Within your insurance company, how are benefits paid? Are they paid electronically, or are cheques cut and mailed? If it is the latter, how large is the stock of cheque forms that normally is maintained on-site? Who supplies the cheque forms? How much stock does that company maintain, and how long does it take for it to re-supply your company? What if its supply chain breaks down?

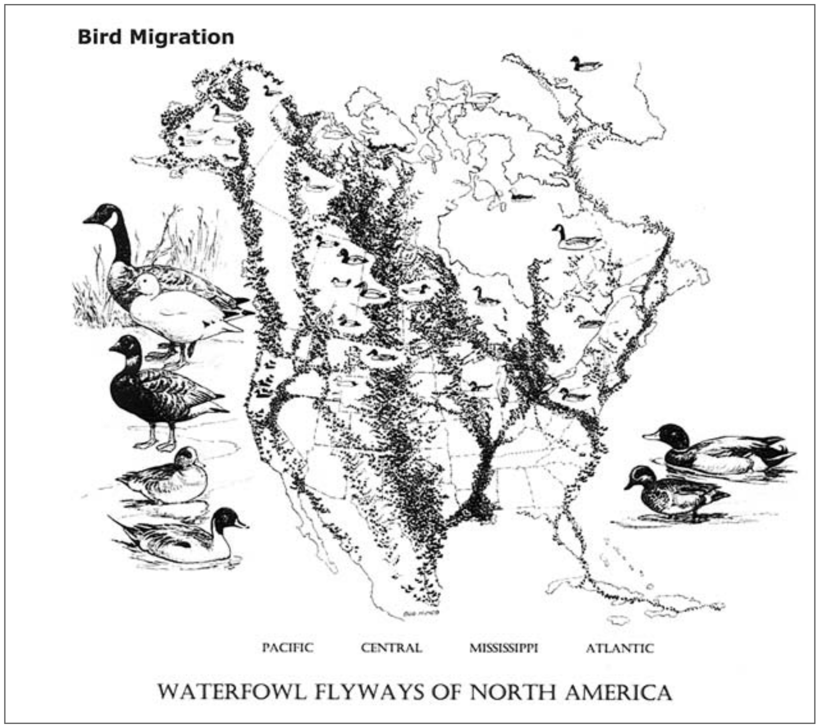
These questions can be applied to all critical areas of a company, and they demonstrate an important issue raised by Dr. Osterholm at the Spring Health Meeting—the just-in-time nature of global supply chains, and what may happen when they are interrupted. Again, this type of planning will benefit from the unique view provided by actuaries.

Estimating the potential mortality and morbidity impacts actually may actually be more straightforward than trying to plan for the varied operational impacts. For life insurers, it is not the total number of fatalities that generates questions, but the age group into which those deaths may fall, i.e., what will be the shape of the excess mortality curve?

For the 1918 influenza, the statistics show a W-shaped curve, with an unusual number of deaths in the 20-40 year-old age bracket. The W-shaped curve is naturally the real concern for life insurers, as a "normal" influenza excess mortality curve, which is typically V-shaped with higher numbers of deaths in the young and old age brackets, would have much less of a financial impact. While this is an important question, it is not one that any amount of planning can mitigate, apart from estimating the financial consequences of such an excess mortality curve.

This raises another issue for life insurers. The mortality risk posed by any new outbreak is not something that can be avoided, as it is embedded within existing policies. Reinsurance credit risk should therefore fall under greater scrutiny, and once again, there are questions to be asked. It is not only important to examine how the net retained amount at risk will be impacted under various excess mortality curves, but also to consider different credit risk scenarios. If payments from reinsurers are delayed or not made, how will it impact the life insurer's financial condition? What concentration of risk from an influenza pandemic do your reinsurers have, and what are their plans for managing this risk? What percentage of their capital is at risk? Given the dominant position of a relatively small number of reinsurers in the proportional mortality reinsurance sector, credit risk concentration is a valid concern.

Beyond proportional mortality reinsurance, catastrophe reinsurance should also be considered. While there are possible reinsurance solutions for a pandemic, both pricing and capacity remain uncertain. By contrast, traditional catastrophe reinsurance, designed to respond to occurrence-based perils such as earthquakes and terrorism, offers relatively stable price and capacity. In fact, these coverages make excellent sense when considering the stressed operating conditions that a pandemic outbreak will cause. What would happen to a life insurer's financial condition if such a catastrophe occurred during the course of a pandemic outbreak? The modeling firm Risk Management Solutions (RMS) estimates that a pandemic could last up to three years. Certainly, it may take several years for a life insurance company to recover fully from a pandemic. During that time, the company may need the additional protection from volatility caused by catastrophic events that such reinsurance provides. Finally, there is a positive aspect in that this type of reinsurance may be purchased from different companies than the companies supplying proportional mortality reinsurance, thus adding diversification in credit risk.



Flyway map demonstrates how migratory birds blanket North America. This map is reprinted with courtesy of the Pandemic Flu Web site which can be found at *www.pandemicflu.gov.*

Beyond generating questions, what analysis can actuaries provide? There are many publicly available estimates of the potential impact of a pandemic, both in terms of the number of fatalities and the number of hospitalizations that may be required. It is therefore possible to perform an approximate market share analysis on the number of death and medical claims an insured population might generate. In his presentation, Max Rudolph demonstrated a deterministic scenario approach based on the 1918 epidemic in the United States, assuming an infection rate of 25 percent (i.e., 25 percent of the population became ill, and of those, 2.5 percent died). Thus, 0.25 *

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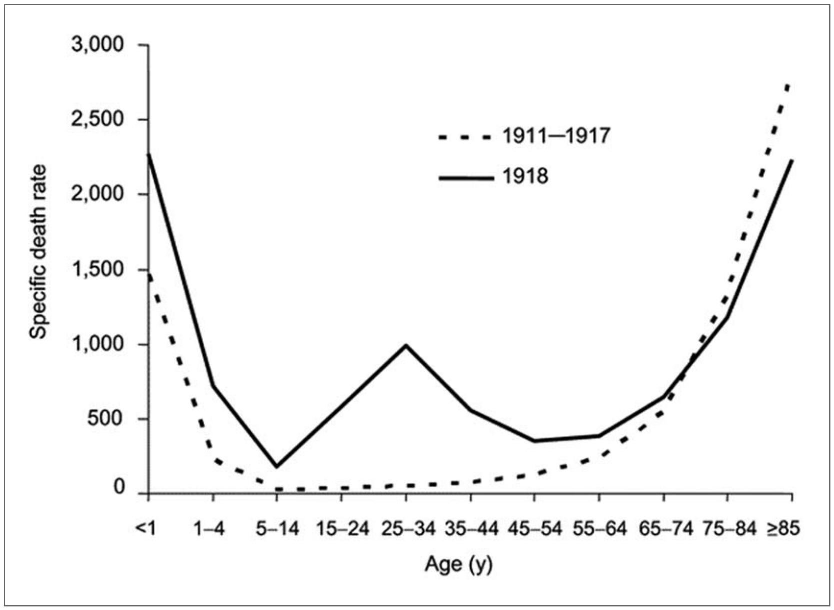
1918 Influenza: the Mother of All Pandemics



"U" and "W" shaped combined influenza and pneumonia mortality, by age at death, per 100,000 person in each age group, United States, 1911-1918. Influenza- and pneumonia-specific death rates are plotted for the interpandemic years 1911-1917 (dashed line) and for the pandemic year 1918 (solid line). Reprinted with permission from the CDC Web site (*www.cdc.gov/ncidod/EID/vol12no01/05-0979-G2.htm*).

0.025 = 0.6 percent excess mortality, on a population-wide basis. While the general population mortality may be worse than what is experienced within an insured population, this excess mortality rate can be applied to a life insurance portfolio to approximate the impact of the 1918 influenza on today's insured lives.

RMS recently developed a model to assess the impact of a pandemic influenza on a life insurance portfolio. Their model looks at 1,890 different possible pandemic scenarios and then simulated the outcomes by varying assumptions that will impact the outcome, such as infection rate, vaccination development and deployment and other intervention measures. The model is based on the current avian influenza virus H5N1 and estimates the likelihood that it may evolve into a form that is easily transmissible between humans. However, no model can assess or predict whether or not the next pandemic will exhibit the same excess mortality curve as in the 1918 outbreak.

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In conclusion, the keynote address provided by Dr. Osterholm and the panel session given by Jim Toole and Max Rudolph demonstrated clearly that planning for a pandemic will make all the difference in how our organizations, and our society, respond to such an event. While a great deal of information was presented, the audience was left with two overall impressions:

1. Actuaries have a key role.

Due to their unique skill set, actuaries will have an important role to play in helping companies plan and prepare for a pandemic influenza outbreak. This role extends beyond the pure actuarial function into that of business planning. By helping to develop and prioritize key questions, actuaries can help to define the issues that will impact their own organizations and, by extension, their own communities. By doing so, actuaries will fulfill the SOA's vision statement as the leading risk management professionals.

2. A pandemic won't happen in isolation.

While planning for a pandemic will help us all deal with the various impacts, there are many factors we cannot control or influence. It is important to review the financial consequences that may result, but financial flexibility will be needed more than a pre-determined set of financial responses. As such, risk transfer options—and the associated reinsurer credit risk—must be carefully examined. One cannot assume that a pandemic will occur in isolation, and we must therefore plan for the occurrence of catastrophic events happening within the same two-to-three-year period within which the financial impacts of a pandemic are being experienced. In this light, traditional catastrophe reinsurance, providing protection against specific occurrences such as natural disasters or terrorism, may make the difference between financial failure and survival. ✷

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