



SOCIETY OF
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REINSURANCE
SECTION

Reinsurance News

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Reinsurance News

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Call for articles for next issue of *Reinsurance News*.

While all articles are welcome, we would
especially like to receive articles on topics
that would be of particular interest to
Reinsurance Section members.

Please email your articles to
Ronald Poon-Affat (rpoonaffat@rgare.com) or
Dirk Nieder (nieder@genre.com).
Some articles may be edited or
reduced in length for publication purposes.

Publication Schedule
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Chairperson's Corner

By David Vnenchak

Autumn is a busy time for both the Reinsurance Section and the Society of Actuaries (SOA). It is a time for change, and with this change comes a renewed focus on the future. With the SOA elections taking place at the end of the summer, autumn is the time of the year when the newly elected SOA volunteers assume their positions and replace those who have arrived at the end of their tenure.

This September the Reinsurance Section Council welcomed the newly elected members Faisal Haddad, Nina Han and Sean Kim. I'd like to take this opportunity to welcome these new members and to wish them many successes during their time on the council. As these three arrived, three other members simultaneously celebrated an end to their productive three-year terms. In particular, I would like to acknowledge and thank Emily Roman and Jeremy Lane for all their hard work and many hours volunteered for the purpose of advancing the reinsurance profession.

In addition to announcing the SOA election results, the Reinsurance Section focused on another important activity. The SOA's Reinsurance Seminar was offered on September 24 and 25, marking the seventh consecutive year in which the SOA offered a reinsurance-focused actuarial conference. While many are familiar with the ReFocus conference, which is co-sponsored by the SOA and held every year in Las Vegas, some readers may not be aware of the Reinsurance Seminar. I'd like to take this opportunity to provide a little background on the event.

THE HISTORY OF THE SOA'S REINSURANCE SEMINAR

The seminar began in 2013 and was the brainchild of then Reinsurance Section Council member Mike Kaster. The initial seminar was called the Reinsurance Boot Camp and was held in Toronto. It was designed as an introduction to the first principles of reinsurance for individuals with limited experience in the industry. The original material for the conference was drawn from the Reinsurance Section's library of LEARN materials, which were developed to provide an introduction of reinsurance principles to state regulatory staff (please see the July 2019 issue of *Reinsurance News* for more information on LEARN).

Following the success of the Reinsurance Boot Camp, the council felt that there was an actuarial audience who was interested in a reinsurance-focused conference. The Reinsurance Section designed the subsequent event to feature more advanced topics and held the Advanced Reinsurance Seminar in New York in



2014. Over the next two years, the seminar took on the pattern of alternating between introductory topics and advanced topics.

In 2017, the conference agenda was changed yet again to focus on intermediate-level reinsurance topics and was renamed the Life & Annuity Reinsurance Seminar. The 2017 conference, which was also held in New York over two half-days, was a big hit and doubled the attendance from previous years.

The event was a huge success, featuring top-notch speakers who imparted insights on a variety of topics.

As the seminar has progressed, the focus and goals have advanced and changed. Recently the agenda was redesigned to provide both standard reinsurance education and sessions on timely trending topics. Rather than offering a pure actuarial-focused view of what is happening in reinsurance, the seminar attempts to offer different perspectives and provide a more holistic view of the industry. This is done by including speakers who are experts in a variety of different disciplines, including areas impacting and related to reinsurance. The list of presenters includes professionals in such disciplines as law, investment banking, reinsurance treaty work and claims administration. The perspective shared during the seminar is not purely from the reinsurance side but includes the viewpoint of direct insurance company professionals and consultants as well. These viewpoints are shared during the sessions and

also during the networking activities held over the course of the event.

2019 REINSURANCE SEMINAR

This September, the Reinsurance Seminar was held at The Wit in Chicago. The event was split over two days and focused on giving life and annuity practitioners an in-depth view of the fundamentals of reinsurance from the perspective of a U.S. life insurance company.

The event was a huge success, featuring top-notch speakers who imparted insights on a variety of topics, including the types of reinsurance, the impact of regulatory reforms on reinsurance, longevity and pension risk transfer, offshore reinsurance, reserve financing and captive reinsurance, annuity and asset-intensive reinsurance, reinsurance treaty remediation and the impact of mortality improvement and its impact on reinsurance.

If you were able to make the Reinsurance Seminar in person, we hope that you got a lot out of the meeting, and we hope to see you again. If you were not able to make it, we hope that you'll consider joining us next fall for the eighth installment of the seminar. We on the Reinsurance Section Council would love to hear your feedback on how we can make this event more relevant to you. Please don't hesitate to reach out to me or to one of the many members of the council to share your opinions. ■



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LIVING to 100

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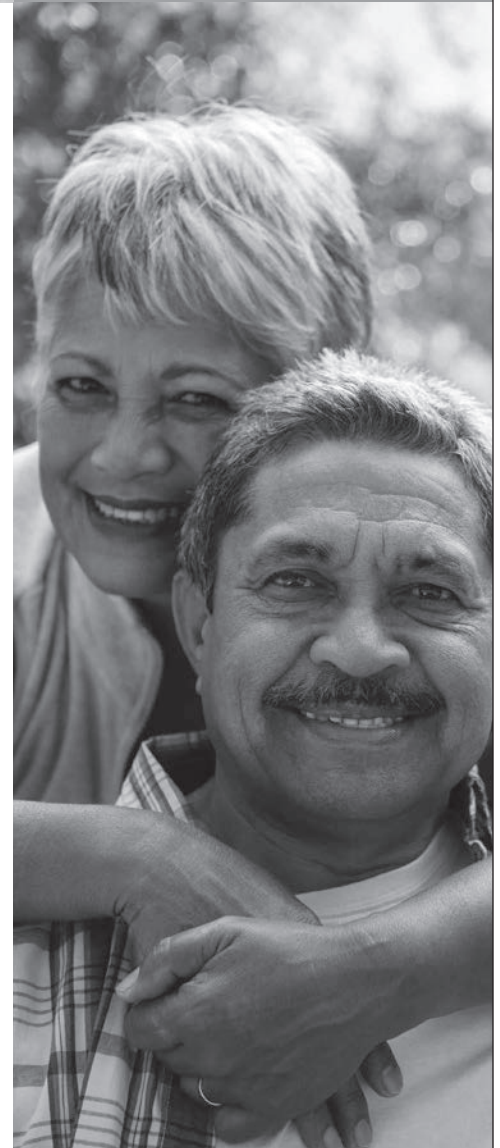
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Registration for the 2020 Living to 100 Symposium is now open. This prestigious event brings together thought leaders from around the world to share ideas and knowledge on increasing lifespans. Expert presenters will explore the latest longevity trends, share research results and discuss implications of a growing senior population.

New this year are teaching sessions that will provide practical pointers to help actuaries measure and forecast mortality at advanced ages.

Symposium speakers include:

- Steve Horvath, Professor of Human Genetics and Biostatistics for the David Geffen School of Medicine at University of California, Los Angeles
- Jacquelyn B. James, Director of the Boston College Center on Aging & Work and the Sloan Research Network on Aging & Work
- Ronnie Klein, FSA, MAAA, Director of the Global Ageing program at The Geneva Association



Visit [SOA.org/Livingto100](https://www.soa.org/Livingto100) for more information

Quo Vadis Reinsurance

By Dirk Nieder

In May 1842 the Great Fire in Hamburg killed dozens of people and destroyed about a third of the city. The claims resulting from this disaster seriously strained the financial health of local insurance companies and were one of the main factors motivating the establishment in 1846 of the first professional reinsurance company, Kölnische Rückversicherungs-Gesellschaft (Cologne Re). In 1854 the company obtained a license for life reinsurance business, and today it operates under the brand name Gen Re.

The insurance world has gone through dramatic demographic and social changes over the last 170 years. Whereas only 30 percent of people survived age 65 in the 1850s, well over 90 percent survive to this age today.¹ The respective insurance risk has evolved from the risk of dying to the risk of outliving accumulated savings after retirement. Today, the risks faced by insurance and reinsurance industries include terrorism and damage resulting from the concentration of population and assets in hazard-prone areas.

The reinsurance industry has also seen the emergence of abundant alternative capital, reinsurance brokers attempting

to increase their impact as intermediaries, and direct insurers increasingly retaining business that was traditionally reinsured. The influence of new solvency regimes and IFRS 17 on the reinsurance industry is still not fully known. These developments affect the business performance of reinsurance companies, and the enhancement of their advisory consulting services is a frequent recommendation for reinsurers to stay fit for the future.

Technology is driving changes in the reinsurance industry as well. The use of blockchains for the placement and administration of reinsurance² and the use of artificial intelligence for managing the renewal of reinsurance business could increase efficiency and reshape the industry. In particular, life reinsurers receive credit for not only investing in technology to improve their own processes but also supporting the transformation challenges of direct insurers.³

Examples, such as Blackberry and Nokia, serve as warnings to companies that may need to adjust their business models at a time of change and aggressive competition. But reinsurance companies should stay alert to the threat of losing their identity, which has been the basis of their activities for more than 170 years, and turning into companies focusing more on consulting and technology than on reinsurance.

I hope you will find food for thought about the future of the reinsurance industry in the great collection of articles in this issue of *Reinsurance News*. It includes a historical review of life reinsurance over the last 35 years, explorations of topics such as IFRS 17, a Q&A that continues our series of interviews with CEOs of reinsurance companies, and an article on the involvement of reinsurers in the world of InsurTechs.

I would like to thank all of the writers who have contributed to this edition of the newsletter. ■



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ENDNOTES

- 1 Max Roser, "Life Expectancy," Our World in Data, 2019, <https://ourworldindata.org/life-expectancy>.
- 2 Ingemar Svensson and Ross Campbell, "Unblocking Blockchain," *Reinsurance News*, 90, March 2018, <https://www.soa.org/globalassets/assets/library/newsletters/reinsurance-section-news/2018/march/2018-reinsurance-news-issue-90.pdf>.
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Interview with José Carlos Cardoso, CEO of IRB Brasil RE

By Ronald Poon-Affat

With over 30 years of experience in the insurance market, José Carlos Cardoso joined IRB Brasil RE five years ago. During this time, the company, which was privatized in 2013, reinvented itself, expanded its business and nowadays is the Latin American leader in the reinsurance industry, being among the top 10 reinsurers worldwide as to market value: US\$7.75 billion in July 2019. These are, however, only a few of the good results of a consistently profitable reinsurer. Two years after the IPO, IRB became a corporation; since then its shares have appreciated by 267 percent in the Brazilian stock market, and the risk rating agency A.M. Best upgraded its rating to A. Some of the rationale behind the IRB Re's innovative model and robust financial results are set out here.

Ronald Poon-Affat (RP): The Brazilian reinsurance market started just over 10 years ago. How would you describe the current scenario and the challenges it poses?

José Carlos Cardoso (JC): Nowadays we have a very well-structured market, featuring 16 local, 40 admitted and 76 eventual reinsurers authorized to operate in Brazil, according to data published by the regulating agency Susep in 2018. This market is still growing, despite the economic downturn in recent years. Brazilian reinsurers reached another level, went international, and the country slowly established itself as a regional hub. The reinsurance market is strongly connected to the country's growth, and the sector is optimistic about the outlook for the years to come. It is worth mentioning that investments in some sectors, such as oil and gas, have already shown significant growth.

RP: IRB was at first a state company and went through several changes during its 80 years that resulted in its privatization and IPO. How was it possible to reinvent the company and achieve such striking results?

JC: We started investing heavily on staff training in order to show the benefits of a results-based management, to impart the "ownership attitude" in their mind-set. Additionally, we



José Carlos Cardoso

developed a unique and innovative management model, in which providing excellent services and generating value for the shareholder are the main objectives. Thus, the business decisions we make always prioritize the results. This is the company's guideline. We are concerned with presenting solid results, regardless of whether they come from the underwriting, finance or "these or that" business line. The management model is fully integrated and allows our target to be the result the customer will bring us. It is cultural: the company is focused on generating sustainable and evolving results. Everyone has clear goals for what they will do next month, next semester, next year and in the next few years.

RP: How was it to be the leader of this process?

JC: It is a dream that started coming true five years ago, when Fernando Passos [deputy CEO] and I joined IRB. He left a brilliant and meteoric career with a large Brazilian bank, and I swapped an international career built in the top global reinsurers to make a bet together, or rather, to initiate a transformation process. We knew it would be a big challenge, mainly because this transformation involved, among other things, a culture change. However, we did not imagine we would face so many problems along the way. But they only fueled our desire to succeed and create a genuinely Brazilian company in a universe led by great global players. In August 2019 we were ranked as the world's sixth largest reinsurer by market value on a listed stock market.

RP: What are the differentials of the IRB business model?

JC: Traditionally, the reinsurance market is very lean: you have the underwriting sector, the financial sector and the claim sector. In most models, these sectors are independent and do not communicate. When we started at IRB, we noticed this was not the best way, and we decided to implement an integrated management. We analyzed business opportunities as a whole: underwriting, finance and administrative areas. Another differential is to focus on customer needs. We do not look at the customer per business line, isolated; we analyze portfolios and take decisions using our pricing tools. These models enable us to take decisions with flexibility and autonomy so that solutions are combined in different business lines and adapted to the actual customer needs.

RP: Is this model crucial for the company to be the most profitable in the world?

JC: IRB has some differences to international players. Our ratio of administrative expenses in relation to the premiums was 4.8 percent in 2018, below that of the great international players. We have a leaner structure, with 400 employees, and we do not make long-term transactions. We operate on “short tail,” which turned out to be an advantage, as we have no risk liabilities assumed for many years and claims now materialize to values much higher than those originally priced.

RP: The company’s growth has crossed Brazilian borders and registered good rates abroad. Is there a strategy to expand this participation?

JC: Our expansion abroad has two drivers. The first—which is our priority—is to grow within South America replicating the model developed here in Brazil, because the risks are quite similar to ours. This means that a soy crop in Brazil is not that different from one in Bolivia, nor is a car factory in Argentina very different from a car factory here.

Another driver of international growth is the strategic partnerships, in which we do business with some big players. This mitigates the risk of taking on business in areas where we are not yet knowledgeable, but we have our partners using their expertise to underwrite. This way we undertake part of these businesses and learn from them.

RP: How is it possible to develop new products that are more suitable to customers’ needs in such a traditional market?

JC: The Brazilian markets, as well as the Latin American ones, need to enhance their product portfolios. There are few

countries with parametric insurance-based solutions, which in the agriculture line is a strong trend worldwide. The most modern life insurance products are also within our scope, as are others focusing on oil and gas and ocean freight.

RP: The technological advance has “shaken up” many sectors. Has this wave come to the insurance and reinsurance industry yet? Or will we still see a revolution?

JC: The world has changed, and there is no way back. Our segment still has a lot to develop in this sense. Insurance and reinsurance as we know them today will not exist in 10 years. Exponential machine learning technologies, artificial intelligence, big data, and blockchain have set the pace for greater transformations, not only in technology but also in social behavior. You have to understand that. We currently use these technologies to streamline and improve underwriting, and we invest in innovation-focused initiatives, such as the InsurTech innovation program, a partnership with a university and an insurer aimed to conduct research, development and innovation in such segments. Another initiative is the operating agreement with the digital bank C6, which is part of IRB’s strategy to position itself as a strategic partner for fintechs. In addition, we subscribed to 8.93 percent shares of B3i, which is one of the leading global initiatives for the development of new technologies in the insurance and reinsurance industry, including the registration of these operations through a blockchain platform.



RP: What is the role of the actuary in this new market?

JC: Technology propels a series of changes, besides allowing access to endless information. However, to understand such changes and interpret these data, we need more and more skilled professionals. Our industry will face severe changes, and actuaries, who are data scientists, must lead this process. They must be prepared to read this huge volume of data and give creative and accurate answers, creating new products, streamlining processes and subscribing quickly and accurately. It is necessary to give meaning to information as well as to use technology to get it. This is the role of the actuary.

RP: The insurance and reinsurance industry is often not the first option of young talents. How can companies attract and retain professionals?

JC: The insurance and reinsurance industry has developed a lot and is constantly changing. Nowadays, those who work in this segment are in contact with professionals around the globe, with very complex education. The market offers great growth possibilities, opportunities and challenges. IRB's current team is a mix of youth and experience, with highly qualified professionals. The results achieved by the company are the consequence of the commitment and effort of each employee. When a

company grows and values its employees, they grow together. Our company also invests in innovation and staff training, sending employees to the best courses in Brazil and also to the best universities in the world. We encourage the professional development of each of our team members. The result of this has enabled us not only to keep our talent, but to access the best professionals in the market.

RP: Reinsurers are crucial for the economy, but what about in the social area?

JC: The reinsurance industry is strongly connected to the country's economic development. For IRB, social development is also a very important aspect—it is part of our strategy. Through our own initiatives, external support and partnerships, we invest to improve life in society, creating purpose and building responsible bonds with the world we live in and the people with whom we relate. That is why we sponsor social, cultural and sports initiatives that are benefiting thousands of people in 2019. ■



Ronald Poon-Affat, FSA, FIA, MAA, CFA, is editor of *Reinsurance News*. He can be contacted at rpoonaffat@rgare.com.

The First Thirty-Five: Part 1

By John Tiller

For the 35th anniversary of *Reinsurance News*, I was asked to write about changes that have taken place in the life, health and annuity reinsurance world in the past 35 years. I assume this honor is because I was a founder of the Section and served on the Section Council when the newsletter began.

This discussion focuses primarily on the U.S. life reinsurance market. The memories and opinions are mine and do not represent those of the Reinsurance Section or any company. Further, these comments are generalities; exceptions can be found to all of them. This is the first article of two, addressing the period surrounding the founding of the Section and *Reinsurance News*.

THE GOOD OLD DAYS

To understand the changes, a common understanding of “The Good Old Days,” the period prior to roughly 1980, is needed. Reinsurance was much different than today, applying primarily to life insurance. Ceding companies knew little about reinsurance, depending on their reinsurance “partners” to tell them what they needed to know.

Most reinsurance was ceded on a yearly renewable term (YRT) basis, and a meaningful portion of that was experience rated. Coinsurance was rare. Market forces led to profitability and product offerings that were roughly the same for all players. My company’s standard profit objective was roughly \$1 per thousand in force per year. Most reinsurers had two YRT rate scales for all insurers, one experience rated and one non-refund. Most scales had a positive first-year premium, creating little if any surplus strain for the reinsurer. Other than updating these scales for evolving experience, the reinsurance world had been relatively stable for decades.

Many “big Eastern mutuals” ceded reinsurance on a modified coinsurance (mod-co) basis with experience refunds. A block of this mod-co at my company showed gross margins in excess of \$3 per thousand each year.

There was no objective standard for minimum capital. Risk-based capital had not been created; capital was not considered



in pricing. When necessary, we applied a return-on-investment hurdle of roughly 15 percent, where the investment was the surplus strain without capital.

Reinsurance relationships were treated as partnerships. Most cedants had only two automatic reinsurers and were loyal to them. If a reinsurer lost money, the ceding company tried to find a way to “make it up.” If a ceding company made an error in underwriting, the reinsurer tended to accept the claim.

A second layer of automatic reinsurance sometimes brought in more reinsurers. Most facultative reinsurance was due to underwriting concerns or capacity needs and was submitted to the automatic reinsurers only. Facultative submissions were sent by mail and took about two weeks to turn around.

Individual cessions were handled on a manual basis. The ceding company sent information to the reinsurer, who created an administrative record for each cession and billed on each policy anniversary. The cedant was required to notify the reinsurer of any changes in the policy and to review an annual listing of in-force reinsurance. That worked well as long as the number of cessions was relatively small.

DRIVERS OF CHANGE

So what evil snakes entered and destroyed this Garden of Eden? There were several, appearing in roughly the order discussed here. All occurred largely in a five-year period from 1979 through 1983.

The Product Revolution

Prior to roughly 1980, most insurers primarily sold whole life, either participating, non-par or both. Only a few companies sold significant amounts of term insurance. Most term insurance had level premiums and benefit periods of 10 to 20 years or up to age 65. Decreasing term plans were intended to meet specific needs, such as paying a mortgage or putting a child through college. Conversions to whole life were common. Some actuaries and insurers believed that term insurance was a poor deal for the policyholder who paid premiums and had no non-forfeiture benefits. Term insurance was considered risky, with worse experience than whole life. Direct product margins were high, and reinsurance margins reflected this.

Annual Renewable Term

Around 1980, the term market leaders introduced long-term annual renewable term policies, for which premiums increased annually. Insurer and reinsurer actions in response to these new products led to what I call “the first quota share mess.” These new term products, and others that will be addressed later, resulted in a rapid increase in sales at a time when many direct insurers were skeptical or hesitant regarding such products. But insurers needed term products to complete their product offering and satisfy their agents. Reinsurers were joyous to provide reinsurance for these products, usually on a coinsurance basis, and for the other new products that quickly followed.

Annual renewable term (ART) coinsurance generally provided 100 percent allowances in the first policy year, a new concept that allowed the reinsurer to participate in the surplus strain. Many insurers moved to reinsure on a quota share basis, partly because they were afraid of the product and the volumes sold, but primarily because of the great deals the insurers obtained.

ART rates were based on issue age without a select period. Then one company introduced select and ultimate term. The direct premiums were based on issue age and duration with a select period. As the product spread, it developed that a healthy policyholder obtained lower premiums by applying for a new policy elsewhere. A newly underwritten select and ultimate rate could be lower than the second-duration rate of a policy issued one year earlier, and the agent could collect a new first-year commission. Companies felt compelled to allow healthy policyholders to “reenter” by issuing a new policy. The effect of this was a snowballing problem for the industry. Healthy policyholders moved elsewhere, leaving the remaining group with poorer mortality than anticipated.

The large volume of competitive term insurance policies changed the nature of the reinsurance industry. Reinsurers had to design products for each product of each ceding company.

Each quote had to live and die on its own, and insurers pushed for lower and lower reinsurance costs. The \$1 per thousand per year margin became a present value \$1 per thousand by 1985, and even that level of margin deteriorated quickly.

Over 50 percent of term business was ceded to reinsurers, and many insurers made a profit on the reinsurance. By 1983, most reinsurers were losing money. Many insurers also realized the situation was untenable. The day before its spring 1983 meeting in Chicago, the Society of Actuaries (SOA) sponsored a term insurance seminar to discuss product issues with both insurers and reinsurers.

I missed this meeting due to a prior commitment. After about two weeks out of the office, I returned to a different world. One reinsurer had begun to reprice all of its term coinsurance, and most other reinsurers followed. Quote share was replaced by excess reinsurance on more profitable terms. So ended the era of the first quota share mess, but there were ramifications for years to come.

Note that reinsurers’ mortality assumptions were largely correct at issue. The problem was that persistency was much worse than anticipated. Acquisition expenses were not recovered as expected, and mortality on the renewal risks was somewhat worse than expected as many healthier risks left the pool by re-entering another pool.

The effect of UL on reinsurance was as great as that of the new term products. With the introduction of UL, the old concept of a YRT scale for all companies died.

Universal Life

The second part of the product revolution was the introduction of universal life (UL) around 1981. At first only a few stock insurers offered UL, but the product quickly gained popularity with agents and buyers, eventually replacing non-par whole life.

The effect of UL on reinsurance was as great as that of the new term products. With the introduction of UL, the old concept of a YRT scale for all companies died. By necessity, all reinsurance pricing was now “tailor-made.” The introduction of select and ultimate costs of insurance was the final brick in the road to lower margins. Insurers also wanted monthly reinsurance premium calculations that stressed their administrative capabilities.

Nonsmoker and Preferred Products

In the early 1980s, data showed that nonsmokers had significantly lower mortality than did smokers. Nonsmoker products became the rage, with reinsurers supporting this somewhat experimental product. Soon other preferred products, such as those for positive lifestyles or better medical metrics, were introduced and dominated the direct insurance markets. Reinsurers naturally followed.

Brokerage, Sales and Underwriting

Prior to the introduction of these new products, most agents sold primarily for one insurer, and brokerage was rare. Now agents began to search for the best product, price or underwriting through brokerage. The old bond between the agent and the insurer was redefined, with less loyalty. Insurers responded by introducing new products, often with strong reinsurer support. Facultative underwriting became relatively common in order to obtain the best rating. In some instances, direct insurers began to loosen their own underwriting standards.

Administration

Many insurers were now ceding part of every term risk. Most insurers also wanted monthly reinsurance cost calculations on UL products. The administrative capacities of both insurers and reinsurers were overwhelmed. Self-administration was assumed to be the solution. However, with no industry-accepted standards and no commercial systems, each insurer and reinsurer developed the new processes separately. These systems usually took longer than anticipated to develop and were prone to error.

AIDs and Blood Testing

At the same time, the industry became aware of AIDS and its potential effect on insured mortality. The Reinsurance Section sponsored the SOA's first major spotlight on AIDS with a seminar in the mid-1980s. This seminar helped the industry understand and adapt to the situation. Fortunately for the industry, the major group of individuals that contracted AIDS had not purchased life insurance. There was no meaningful increase in claims. However, it was clear that the old underwriting processes needed to be changed to guard against unknown future risks.

New and less expensive medical tests were developed about this time, and blood testing became the “game-changer.” It became cost-effective to obtain tests for multiple conditions. Underwriters could answer questions they had not even considered a few years earlier.

Tax-Driven Reinsurance and Surplus Relief

The 1959 Tax Act had some interesting provisions regarding reinsurance. As interest rates increased in the 1970s, a few companies realized that reinsurance could be used to significantly reduce federal income tax based on provisions of the 1958 Tax Act for some insurers, especially larger mutual companies. In about three

years, using the then-applicable IRS Code Section 820, the tax revenue from U.S. life insurers was reduced by about 70 percent. The IRS and Congress reacted and wrote a new tax code for insurance companies, including the infamous Section 845.

In the mid-1970s, reinsurers and some insurers began to provide surplus relief through very low risk reinsurance vehicles. Traditional coinsurance, mod-co or combination treaties provided reinsurance to a ceding company using high allowances in the first year to create a gain in the ceding company and a loss in the reinsurer. No cash was transferred except for a fee to the reinsurer. There was little economic risk due to the pricing. Typically, the reinsurer was repaid from earnings on the reinsured block in five to six years, and the ceding company recaptured the block. Statutory regulation did not have the tools to block these low-risk treaties.

Repercussions on the Reinsurance Industry

Beginning with the quota share mess, most reinsurers lost money and became cautious for about 20 years. Several suffered GAAP loss recognition, at least one exited the business, and others avoided term coinsurance for decades. Reinsurance relationships changed; the partnership concept was replaced with “give me the lowest cost or get out.” Agents and insurers came to see facultative options as a way to significantly increase sales rather than as a source of assistance in underwriting. Margins reduced to a level that was too low to support the capital needed for many reinsurers. This led to lower prices and lower margins for direct insurers as well. The profitability of the industry has never recovered. Perhaps all of these changes were desirable, but it is hard to see that, even from this distance.

For some years, the profits from tax-driven and surplus relief transactions allowed some reinsurers to show significant profits. By 1985 the 1958 Tax Act was history; IRS Code Section 845 shut down most tax-driven reinsurance. Surplus relief continued to some extent, but the final nail in that coffin came with Life and Health Reinsurance Agreement Model Regulation in the 1990s.

It was in this world that the Reinsurance Section and *Reinsurance News* began.

This article is the first of two. Part 2 will be included in the next edition of *Reinsurance News* and bring events forward to today. ■



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Complexity Abounds for Reinsurers Adopting IFRS 17 Insurance Contracts

By Andrew Holland and Pras Ariyam

Despite the changes proposed to the IFRS 17 accounting standard (originally issued in May 2017), reinsurers continue to feel disadvantaged by some of its aspects. There has been lots of press coverage highlighting the issues for reinsurance from a direct writer's perspective ("reinsurance held"), so this article intends to focus on the issues from a reinsurer's perspective ("reinsurance assumed").

As we know, the insurance industry is plagued with complex processes, legacy systems and—more often than not—limitations in data. These issues are pronounced for reinsurers, particularly the lack of data given that they receive data from the direct writers. This complicates the implementation of a standard that already requires a significant volume of data to produce the balance sheet, income statement and corresponding disclosures. While many of the standard's requirements should work for

reinsurers, inherent complexities of how business works make implementation of the standard a challenging task.

Typically reinsurers suffer from both a lack of data and delays in receiving those data.

- **Lack of data.** It is common for reinsurers to have an incomplete picture of all the data attributes associated with the underlying policies originally written by the direct insurer, particularly where seriatim data are not available. Such attributes can include, but are not limited to, sum assured and underwriting year for the inception of the underlying policy. Reinsurers currently use a range of techniques to derive these data points, when required, for current IFRS, capital and internal reporting purposes. For example, for risk premium business, reinsurers use risk premium rates to derive the sum assured. The standard is principles based and does not prescribe whether such techniques are appropriate for IFRS 17 purposes; therefore, leveraging existing techniques makes a lot of sense. Firms will need to explore the financial impact of such techniques as well as the impact on the financial reporting process, assuming such work is performed by separate teams and/or out of cycle.
- **Delays in receiving data.** The standard points to calculations at the time of the insurance contract being sold, particularly to support requirements such as the onerous contracts test. This introduces added complexity for reinsurers as they have to estimate anticipated volumes expected to attach within the contract boundary. While this may



already be done for pricing purposes, the process will need to be robust for financial reporting as expected profitability on new contracts is likely to be an area of interest both internally (to management) and externally (to shareholders, analysts and other interested parties).

This extends to valuation at subsequent reporting dates, where reinsurers continue to work with delays in receiving information. Delays in receiving the cedant's statement of accounts necessitates more estimation techniques, adding further complexity to the calculation of the insurance asset or liability. While there is always a degree of estimation in today's world, the granularity at which this calculation will need to be performed will probably be more detailed than firms have been used to in the past. This, coupled with the standard pointing to the use of actual cash flows, adds further practical difficulty and strain to a firm's architecture and reporting processes. As a result, we understand firms are exploring simplification, for example, using the cedant's statement of accounts as a proxy for cash, introducing further judgment.

The inherent complexities faced by reinsurers has resulted in much lobbying by the industry by both reinsurers and direct insurers. Although some in the industry have flagged a number of requirements that they consider should be re-examined, we see the focus being on three particular requirements:

- **Annual cohorts.** The standard requires an entity to separate contracts issued more than one year apart into separate groups. While the treaty is the "contract" for reinsurers, and therefore the annual cohort should be set according to the year of the treaty's inception, there remains some degree of ambiguity in how to apply this requirement to treaties that are open-ended. Long-term treaties can remain open to new business for more than one accounting year, which means the underlying policies can attach over a number of accounting years. Interpreting this requirement using the underwriting year of the treaty means the policies would be written into one annual cohort, even if they have attached over more than one accounting year. Some argue that this contravenes the standard since the annual cohorts contain policies that have been issued and attached over more than one year.

An alternative approach is to split the treaty into annual cohorts based on the underwriting year of the underlying policies. This approach can add a significant amount of complexity to the modeling process for reinsurers, particularly when they don't typically have this data. This also introduces complications for features such as profit commissions that can also span multiple accounting years. In this case, firms

have to align the underlying policies to their respective annual cohort as well as the profit commission cash flows.

While the challenges in applying the annual cohorts requirement differs slightly depending on whether you are an insurer or a reinsurer, as well as the measurement model used (general measurement model or the variable fee approach), many in the industry have been challenging the relevance and usefulness of annual cohorts, arguing that the operational complexities of complying with the requirements outweigh the benefits. This is compounded for those who argue that this is not aligned to the way they manage their business. Up to now, there has been a strong push from insurers writing participating business eligible for the variable fee approach to remove the annual cohorts requirement when there is mutualization across generations. Reinsurers appear to have been less vocal, although one may argue that there are some parallels between long-term treaties open to new business, particularly when there is profit sharing spanning more than one accounting year and participating contracts where profit sharing spans multiple generations.

The inherent complexities faced by reinsurers has resulted in much lobbying by the industry by both reinsurers and direct insurers.

- **Contract boundaries.** In September 2018, the Transition Resource Group (TRG), a forum set up by the International Accounting Standards Board (IASB) to debate implementation of the standard, discussed how cash flows outside the boundary of the contract relate to future contracts. Practically speaking, this means that for a treaty with a 90-day termination clause, a reinsurer would set up four contracts, assuming a January 1 inception date, which many argue is operationally burdensome and not in line with how reinsurers manage their business. More fundamentally, for long-term treaties open to new business that span one or more accounting years, to apply this requirement as described and meet the grouping requirements by separating contracts issued more than one year apart, a reinsurer would need to know the underwriting year of the underlying policies. As explained earlier, reinsurers do not necessarily have this information, so complying with this requirement may be challenging.

Furthermore, a reinsurance treaty differs from an insurance contract in that if no notice has been served by either party,

the reinsurer is obliged to accept policies up to the next termination date. By splitting into four quarterly contracts and recognizing at the beginning of each quarter, one does not recognize the reinsurance contract asset/liability that covers the policies expected to attach up to the next termination date. Some argue that this is out of line with more fundamental accounting principles as well as undervaluing (for profitable business) the contractual service margin at any given valuation date where notice has not been served.

- **Profit commissions.** The reclarification of the definition of an investment component by the TRG and the IFRS 17 Exposure Draft issued in June 2019 has received a mixed response. The difficulty in implementing this requirement should not be understated. A topical area is in relation to profit commissions. The recent clarification points to a profit commission being a non-distinct investment component (NDIC) when considering the interplay with claims—that is, in any scenario, there is always a minimum amount that is repaid back to the policyholder (in this case, the cedant). While the concept of removing an NDIC from insurance revenue is understandable and works for contracts where a minimum amount is always paid to the policyholder (such as a deposit), many question why profit commissions fall into this category. Reinsurers often use profit commissions as a mechanism for sharing experience, both positive and negative. These mechanisms are particularly useful when there is a lack of experience that serves to prevent one party benefiting excessively at the cost of the other party. Some argue that if the experience were known, this would equate to a corresponding increase (or decrease) in premiums more akin to a premium refund.

Many continue to argue that treating profit commissions as NDICs provides little benefit to the users of the financial statements. Further, there is a concern in determining the minimum amount that is payable in all scenarios. When the NDIC is a deposit or lump sum, determining the minimum amount is fairly straightforward; however, when the

minimum amount can represent a combination of profit commission and claims, establishing the minimum amount becomes inherently more complex. The need for stochastic modeling becomes an increasing possibility, which may require a sizable investment for organizations that do not have stochastic capability.

With these points in mind, it is difficult not to be sympathetic to the industry. That said, it is evident the standard setters have taken steps to alleviate some of the concerns raised, even though some may think more is required. With the go-live date for IFRS 17 fast approaching, our advice is for firms to continue to work through the requirements of the standard, considering both the operational and financial implications, rather than expecting further material changes to those requirements. If they are not already doing so, reinsurers should engage with their cedants to work through the data required and, where applicable, develop sensible techniques to derive the attributes required, leveraging work that is done for current reporting, whether it is for capital or internal purposes.

Reinsurance is a complex area of the standard. The cliché that the devil is in the details seems to ring true here. With many ways of interpreting the requirements, particularly for reinsurance, it will be interesting to see where the industry eventually lands and the extent of convergence between firms. ■



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Re-Act: 2020 Canadian Reinsurance Conference (CRC)

By Amhlaoihb Lynch

July 16, 2019, marked the 50th anniversary of the moon landing, an incredible accomplishment, particularly when you compare technology then to technology today. The moon landing (not to mention Woodstock) culminated an era of cultural, political and technological change. In many ways, the changes we have seen throughout the 2010s feel akin to the changes experienced in the 1960s and are most notable for those of us working in the life insurance industry. Some have argued that the life industry's approach to its clients has not altered materially since the 1960s, although that is now changing.

Over the past several years, the CRC has explored those changes. This year we are continuing with the theme of change that began in 2017 with "Insurance Evolution," continued to "Reimagining Insurance" in 2018, and moved to this year's "Platform Revolution." The theme for 2020 will be "Action"—or more pointedly "Re-Action"—in terms of how the industry has been changing in order to remain relevant and ensure that companies like Amazon, Google and Facebook do not compete in our domain.

It is still early to assess the impact of the changes the industry has undertaken, but early results are promising. The industry's activities are much like the moon landing in that NASA developed a deliberate plan to prepare for a moon landing, and that plan was not accomplished in a single step. There were many building blocks and steps to NASA's plan, and in many ways, the life insurance industry is following similar steps and lessons.

The 2020 CRC committee is pleased to announce that Colonel Chris Hadfield will be the conference's key note speaker. Colonel Hadfield was the first Canadian commander of the International Space Station and is an accomplished pilot. In addition to his accomplishments as an astronaut and pilot, Colonel Hadfield co-hosted National Geographic's hit show "One Strange Rock," along with Will Smith. Colonel Hadfield will share his inspirational story and lessons learned on how he was able to achieve his goals and overcome adversity.

ABOUT THE CRC

The CRC, a premier global insurance industry conference, is dedicated to providing a forum for industry participants to learn about developments affecting our business and providing an opportunity to network with peers.

The CRC was first held in 1956 and has continually been providing top-notch education and networking for over 60 years.

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He has previously spoken at other life insurance events and will share his thoughts on the journey in which the life industry finds itself. Like Apollo 11, transformation does not come in a single step, and Colonel Hadfield is aptly able to share his perspective for the industry in what will be both a fun and memorable discussion.

The 2020 CRC will continue to deliver a packed agenda of main stage executive industry guests along with a series of break-out session selections. New for 2020, the committee will deliver “Ted Talk”-style discussions that will focus on the latest trends as they impact underwriting, claims, operations, pricing and product development and finance. The conference’s goal is to cater to all attendees regardless of experience or career level, and 2020 will be no exception.

The conference will be held March 24, 2020, at the Metro Toronto Convention Centre. It is Canada’s premier life insurance conference and consistently attracts more than 500 attendees. It is a great networking opportunity as participants include senior industry executives as well as those outside the industry, with growing participation from InsurTech organizations.

Please join me on March 24, 2020, for the best one-day conference you will attend and for the opportunity to hear Chris Hadfield speak. ■



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High-Cost US Medicare Beneficiaries During 2016

By Thomas Roberts

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This article presents analysis of Medicare beneficiaries with very high medical costs during 2016. These beneficiaries are of particular interest and concern, generally being the sickest and medically most complex. Better understanding of these beneficiaries and their treatment could lead to improved quality and efficiency of care. Analysis of their claims can aid projections of the expected level and variance for Medicare fee-for-service, Medicare Advantage, or reinsurance costs.

The aggregate spending on these beneficiaries is disproportionate to their numbers, and very high in absolute terms. In our dataset (the 5% Medicare sample), the 1% highest-cost beneficiaries during 2016 had claims exceeding USD 125,000 and generated 15% of the total allowed claims. Projecting to the USD 663bn in total 2016 Medicare spending, total costs for such beneficiaries were around USD 100bn.¹

Claim costs that reach these levels indicate intense and usually lengthy medical care. Each of these large claimants underwent a severe medical and personal ordeal, often near or at the end of their lives. The human suffering involved and the potential to ameliorate it are among the crucial reasons to study these claimants.

KEY FINDINGS

- The 1% highest-cost beneficiaries had claims exceeding USD 125,000 and generated 15% of the total claims.
- The 0.1% highest-cost beneficiaries had claims exceeding USD 250,000 and generated 3.5% of the total claims.
- Inpatient claims comprise more than 50% of the large-claim costs.
- Per beneficiary, large-claim costs for disability-eligible beneficiaries are 2–4x the costs for aged-eligible. Disabled individuals tend to have higher health needs and costs.

- Costs for dual-eligible beneficiaries (who are eligible for both Medicare and, due to low income, Medicaid) are 2–3x costs for non-duals beneficiaries. Dual-eligibles have higher rates of chronic illness.
- Costs for ESRD beneficiaries (having end-stage renal disease, permanent kidney failure) are more than 10x costs for the other beneficiary categories.
- For claimants above USD 125,000, costs are highest in the Pacific region and lowest in the Mountain region. Pacific costs are more than 2x Mountain costs, in part due to higher average inpatient hospital costs.
- Males are 25–60% more costly than females, in part due to higher rates of chronic conditions like cardiovascular disease.
- Surprisingly, on the largest claims (more than USD 250,000), the 75+ age group is 20–30% less costly than the 65–74 age group. Tragically, perhaps the oldest, very sick patients are more likely to die before their claims exceed USD 250,000.
- The highest-cost ICD-10 primary diagnosis categories are:
 - Diseases of the circulatory system (19% of costs),
 - Neoplasms (11%),
 - Certain infectious and parasitic diseases, including sepsis (11%), and
 - Diseases of the genitourinary system (the organ system of the reproductive organs and the urinary system), including diabetes (10%).



DATA AND METHODOLOGY

In this paper, we primarily examine claim cost rates above various thresholds. This could correspond to the expected claim cost to a payer (government, insurer or reinsurer). Some previous studies have examined, from various perspectives, high-cost claimants in various populations.²

Our data source is the 2016 Medicare 5% sample Limited Data Set from the Centers for Medicare and Medicaid Services (CMS).³ This dataset includes eligibility and claim information on 3.1 million members, comprising a random sample of 5% of all Medicare beneficiaries. The dataset includes more than USD 18bn in paid claims and more than USD 22bn in allowed claims during 2016.⁴ We study the allowed claims in this paper.

The files were stripped of data elements that might permit identification of beneficiaries. The claims include Medicare Parts A and B hospital and outpatient medical services, but not Part D prescription drugs.

In this study, we exclude data from members without both Parts A and B benefits, members without fee-for-service coverage (e.g., those with Medicare Advantage), and a small number of members with erroneous data. With these restrictions, the study dataset includes 1.8 million beneficiaries with USD 21.4bn in allowed claims during 2016.

For this paper, we generally define “large claimants” as those beneficiaries with allowed claim costs over USD 125,000 during 2016.

CLAIM DISTRIBUTION

Examining beneficiaries whose 2016 total allowed claims exceeded various thresholds, we see that a small number of beneficiaries generated a large portion of total claim costs. For example, the 1% of beneficiaries with claims more than USD 125,000 generated more than 15% of total allowed claim costs (over USD 3.2bn).⁵ (See Table 1)

We’ll study costs two different ways in this paper:

- “Ground-up”—the full allowed claim, as shown in the table above, and
- “Excess”—the portion of the allowed claim above a threshold.⁶

For example, for a beneficiary with USD 400,000 allowed during 2016, the “ground-up” claim is USD 400,000, while the claim “excess” of the USD 125,000 threshold is USD 275,000.

Table 2 indicates per-beneficiary per-month (PBPM) costs, severity and frequency of claims excess various thresholds.⁷

Table 1
Large Claim Distribution

Threshold	USD 0	USD 125,000	USD 250,000	USD 500,000
Beneficiaries at or Exceeding Threshold	1,810,256	17,291	2147	155
% of Beneficiaries at or Exceeding Threshold	100.00%	0.96%	0.12%	0.01%
Of all Beneficiaries		About 1 in 100	About 1 in 1,000	About 1 in 10,000
Allowed Amount for These Beneficiaries	USD 21,370m	USD 3,224m	USD 738m	USD 105m
% of Allowed Amount for These Beneficiaries	100.0%	15.1%	3.5%	0.5%

Table 2
Large Claim Severity and Frequency

Threshold	USD 0	USD 125,000	USD 250,000	USD 500,000
Beneficiary-Months	20,060,684	190,653	23,533	1,720
PBPM Cost Excess the Threshold	USD 1,065.26	USD 52.96	USD 10.03	USD 1.37
Severity: Average Claim Size Excess the Threshold	USD 11,805	USD 61,441	USD 93,713	USD 176,769
Frequency: Claimants per 1,000 Beneficiary-Years	1,082.81	10.34	1.28	0.09

SERVICE CATEGORY

For the largest claims, inpatient services are a larger portion of the allowed amount. Inpatient hospital costs are generally much higher than costs for outpatient or other services, and the patients are sicker, so the high proportion of inpatient costs in excess claims is expected. (See Figure 1)

ELIGIBILITY CATEGORY

The three main paths to Medicare coverage eligibility are age over 65, disability or end-stage renal disease (“ESRD,” permanent kidney failure requiring dialysis or transplant).⁸ We observe significantly different excess costs for these three populations.

Costs for disabled beneficiaries exceed costs for aged beneficiaries by about 15% at the ground-up level and are more than double excess USD 125,000. Disabled individuals typically have higher health needs and may have severe medical conditions.

In Table 3, there are ESRD members in all three categories, but the “Other” category is almost entirely ESRD members. ESRD members have ground-up and excess costs far higher than average.

When trying to mitigate large claims, ESRD and disabled beneficiaries should be target segments.

Figure 1
Ground-up Costs by Service Category for Beneficiaries Exceeding Thresholds

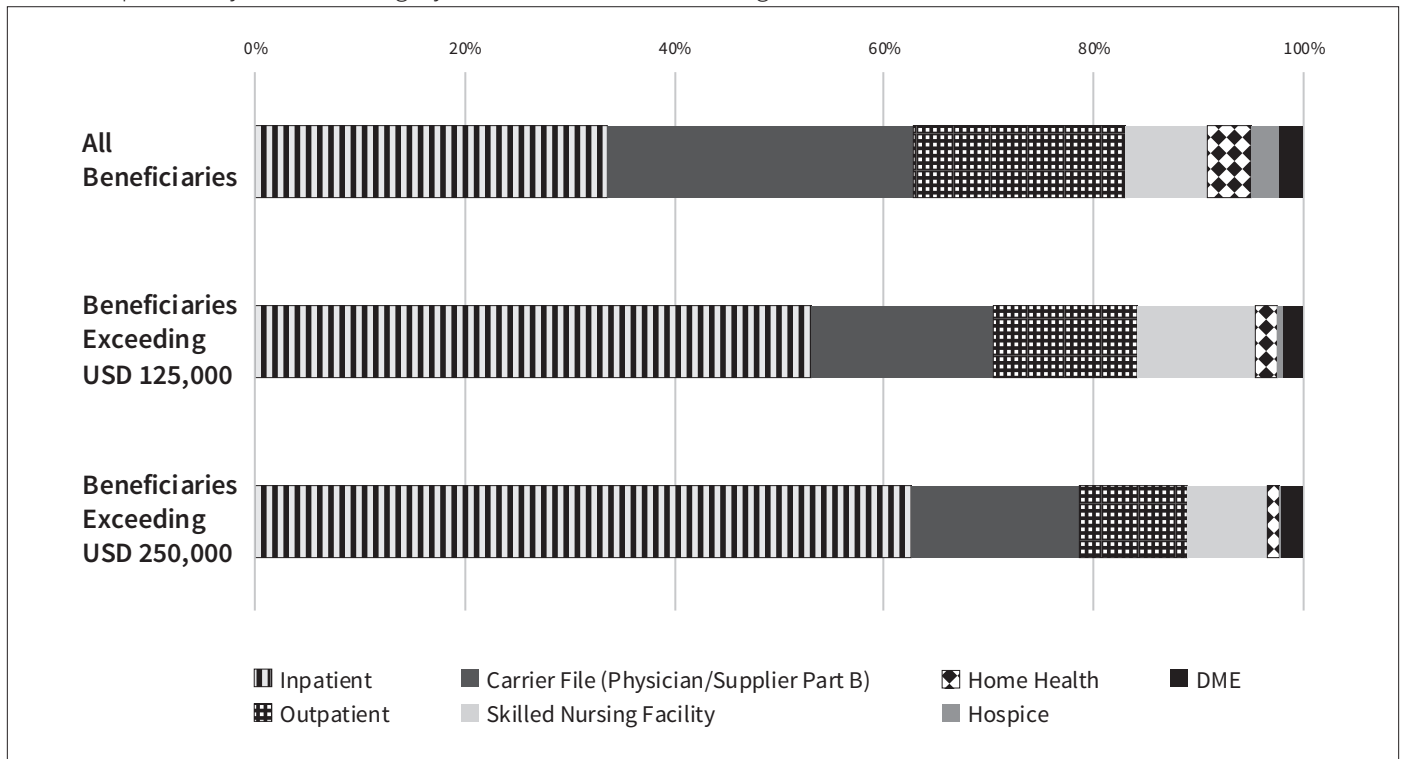


Table 3
PBPM by Eligibility Category

Eligibility Category	Beneficiaries	Ground-up PBPM Costs	PBPM Costs Excess USD 125,000	PBPM Costs Excess USD 250,000
Total	1,810,256	USD 1,065.26	USD 52.96	USD 10.03
Aged	1,494,339	USD 1,031.59	USD 42.32	USD 6.71
Disabled	311,345	USD 1,173.00	USD 96.43	USD 24.53
Other (Mostly ESRD)	4,581	USD 5,605.98	USD 748.03	USD 153.87

BENEFICIARY STATUS

As stated in a CMS publication, “dual-eligible beneficiaries are generally described as beneficiaries eligible for both Medicare and Medicaid.”⁹ Dual-eligible individuals may receive full Medicaid benefits or partial assistance through several programs.

Most beneficiaries are “non-dual” (not receiving any Medicaid benefits or other assistance).

Dual-eligible individuals “experience high rates of chronic illness, with many having long-term care needs and social risk factors.”¹⁰ As a result, higher costs are observed on

dual-eligible members, particularly at the larger claim levels. (See Table 4)

REGION

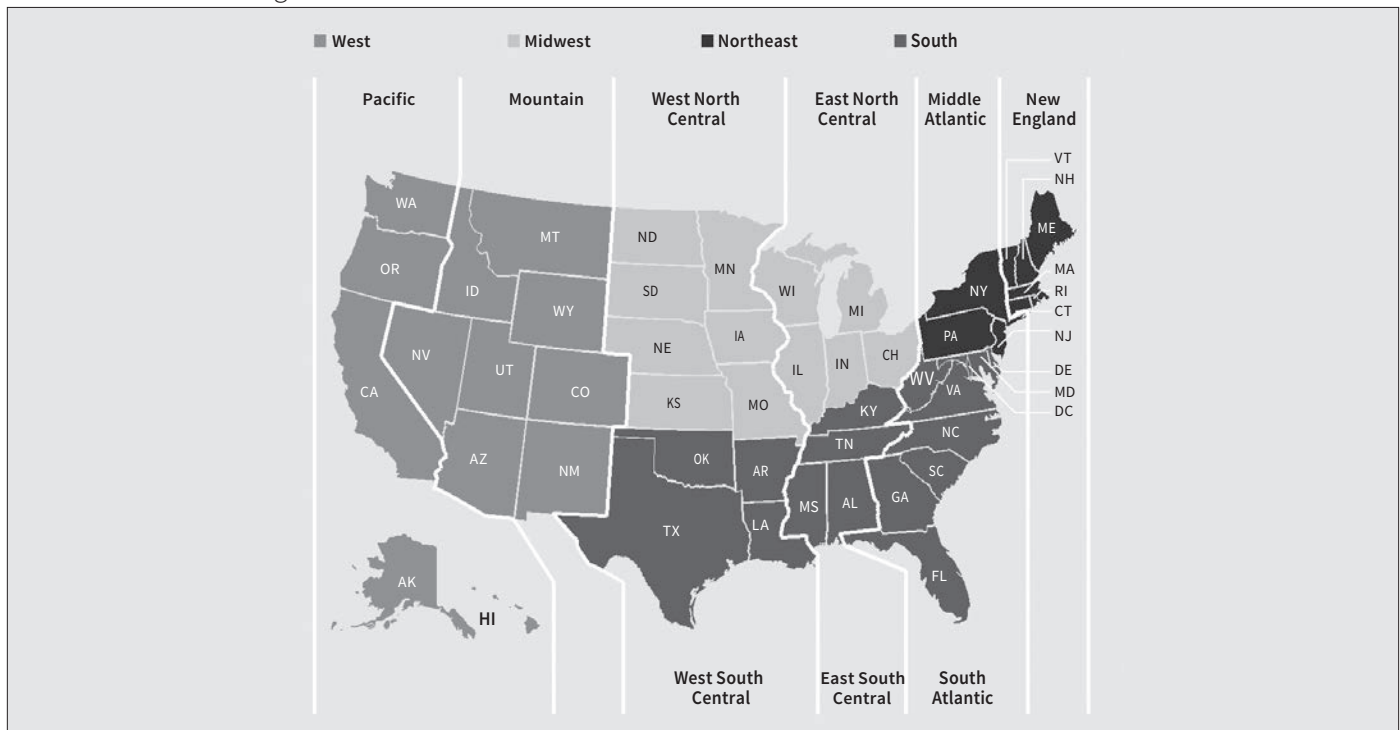
The U.S. Census Bureau groups states into nine regions.^{11,12} (See Figure 2)

In excess of the USD 125,000 level, the Pacific region has the highest cost and the Mountain region has the lowest. These cost differences are primarily driven by frequency (the number of large claims that occur) and secondarily by severity (the size of the excess claim). In part, this is due to higher inpatient per-day costs in the Pacific region.¹³

Table 4
PBPM by Beneficiary Status

Beneficiary Status	Beneficiaries	Ground-up PBPM Costs	PBPM Costs Excess USD 125,000	PBPM Costs Excess USD 250,000
Total	1,810,256	USD 1,065.26	USD 52.96	USD 10.03
ESRD	22,188	USD 7,187.13	USD 1,055.21	USD 192.59
Full or partial dual, non-ESRD	363,319	USD 1,337.23	USD 77.28	USD 16.48
Non-dual, non-ESRD	1,424,749	USD 908.45	USD 32.24	USD 5.76

Figure 2
U.S. Census Bureau Regions



“Other” in Table 5 includes U.S. territories.

GENDER AND AGE

Because under-65 members are usually disabled or ESRD, PBPM costs are significantly higher.

Males are much more costly than females at the excess levels. In part, this is due to higher rates of chronic conditions (including

cancer, cardiovascular disease or diabetes) in age 65+ men than in women.¹⁴

Surprisingly, at the USD 250,000 excess level, the age 75+ population is less costly (per beneficiary) than the age 65–74 population. This is due to both lower frequency and lower severity. This is an unexpected result. Tragically, perhaps the oldest, very sick patients are more likely to die before their claims have time to exceed USD 250,000.

Table 5
PBPM by Region

Region	Beneficiaries	Ground-up PBPM Costs	PBPM Costs Excess USD 125,000	PBPM Costs Excess USD 250,000
Total	1,810,256	USD 1065.26	USD 52.96	Suppressed
Pacific	224,149	USD 1091.83	USD 78.60	USD 18.71
Mountain	116,619	USD 935.32	USD 35.01	USD 6.41
West North Central	127,214	USD 967.95	USD 35.89	USD 7.31
West South Central	198,083	USD 1114.79	USD 53.14	USD 8.24
East North Central	282,621	USD 1064.93	USD 50.71	USD 9.53
East South Central	130,081	USD 993.13	USD 35.13	USD 5.81
New England	102,648	USD 1096.22	USD 51.07	USD 9.72
Middle Atlantic	232,083	USD 1176.89	USD 74.16	USD 15.08
South Atlantic	387,144	USD 1057.93	USD 45.57	USD 7.01
Other	9,614	USD 541.59	USD 18.95	Suppressed

Table 6
PBPM by Gender/Age

Gender—Age	Beneficiaries	Ground-up PBPM Costs	PBPM Costs Excess USD 125,000	PBPM Costs Excess USD 250,000
Total	1,810,256	USD 1,065.26	USD 52.96	USD 10.03
F <65	149,262	USD 1,273.51	USD 92.26	USD 19.24
F 65–74	469,931	USD 814.47	USD 35.61	USD 5.79
F 75+	370,748	USD 1,277.47	USD 34.60	USD 4.10
M <65	159,899	USD 1,177.94	USD 114.75	USD 32.33
M 65–74	412,154	USD 847.29	USD 50.43	USD 9.86
M 75+	248,262	USD 1,365.38	USD 55.78	USD 7.98

DIAGNOSES

Among claimants exceeding USD 125,000, the highest-cost ICD-10 primary diagnoses are diseases of the circulatory system, neoplasms and certain infectious and parasitic diseases (including sepsis). (See Figure 3 and Table 7)

CONCLUSION

In this paper, we explored 2016 Medicare large-claim costs, which are driven by hospital inpatient costs. A disproportionate percentage of the excess costs correspond to the highest

claimants. We identified segments with significantly higher costs than average, including ESRD, disabled and dual-eligible beneficiaries; certain regions like the Pacific states; and men. For the largest claims, age 75+ PMPM excess costs were found to be lower than 65–74 costs. Diseases of the circulatory system were the most common diagnosis among excess claims.

This analysis focused on costs and results from 2016 only. Further analyses could develop in the following directions:

Figure 3
Highest-cost ICD-10 Primary Diagnoses

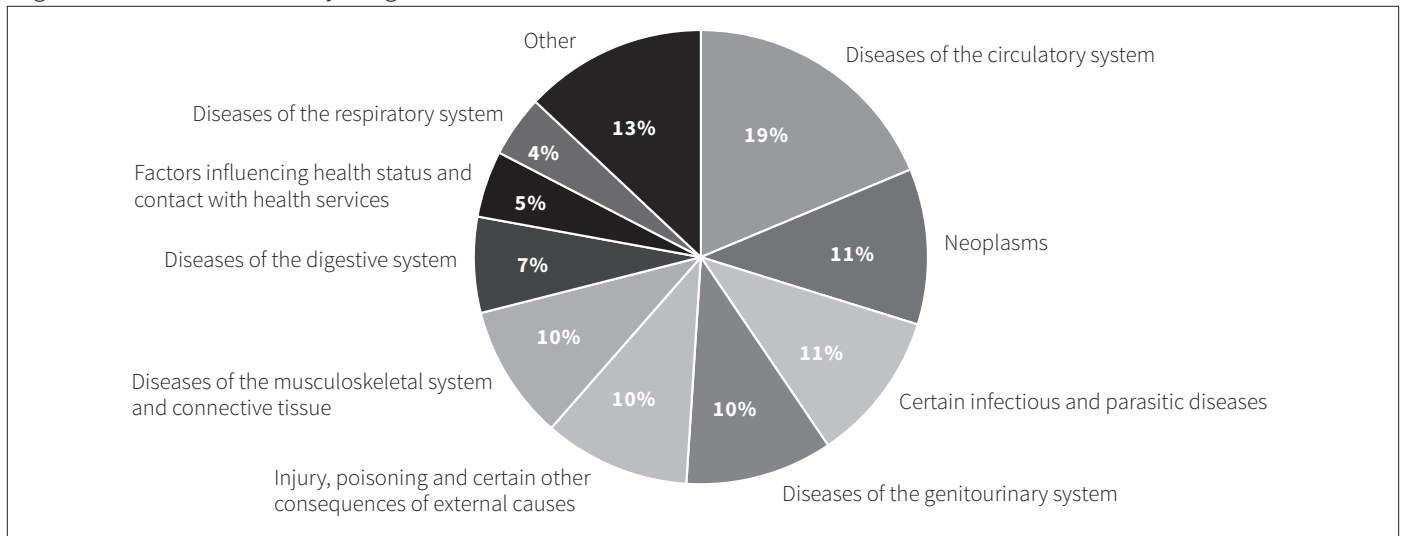


Table 7
Ground-up Allowed Costs by ICD-10 Range, for Beneficiaries with Claims Exceeding USD 125,000

ICD-10 Code Range of Primary Diagnosis	Description	Highest-Cost Condition in the Category	Percentage of Costs
100-199	Diseases of the circulatory system	Heart disease	19%
C00-D49	Neoplasms	Cancers	11%
A00-B99	Certain infectious and parasitic diseases	Sepsis	11%
N00-N99	Diseases of the genitourinary system	Chronic kidney disease (inc. ESRD)	10%
S00-T88	Injury, poisoning and certain other consequences of external causes	Surgical and medical complications	10%
J00-J99	Diseases of the respiratory system	Respiratory failure	10%
Z00-Z99	Factors influencing health status and contact with health services	Chemotherapy, Immunotherapy	7%
K00-K95	Diseases of the digestive system	Gastrointestinal hemorrhage	5%
M00-M99	Diseases of the musculoskeletal system and connective tissue	Muscle weakness	4%
Various	Other		13%

- Discussing the many ways to improve care and control high-claim costs through active claims management. CMS, payers, vendors and reinsurers have a variety of programs.
- Updating with 2017 data, and studying year-to-year trends and variability.
- Obtaining and including Part D drug claim data.
- Applying a statistical model to separate the influence of the various characteristics studied in this paper.
- Expanding clinical interpretation and analyzing utilization patterns.
- Assessing the potential variance in large-claim costs for a population.

The topic of large claimants in Medicare is of interest in its own right and connects with other important areas, including Medicare’s funding status and the quality and efficiency of care. We look forward to conducting further research and welcome any comments or questions. ■

This article is online at <https://www.swissre.com/dam/jcr:c659499b-c3ff-4167-b842-a437c393f6bc/2019-08-us-medicare-beneficiaries.pdf>.

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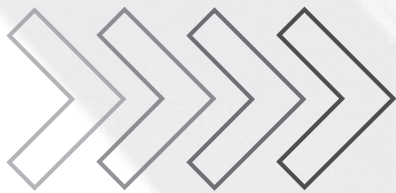
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ENDNOTES

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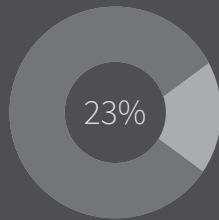
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Reinsurance and Principle-Based Reserves—Insights Into Emerging Practices

By Kevin Carr II, Simon Gervais, Haley Jeorgesen and Chris Whitney

Mandatory implementation of life principle-based reserves (PBR) is just around the corner and there is no shortage of work to do, as most products have yet to be moved to PBR.

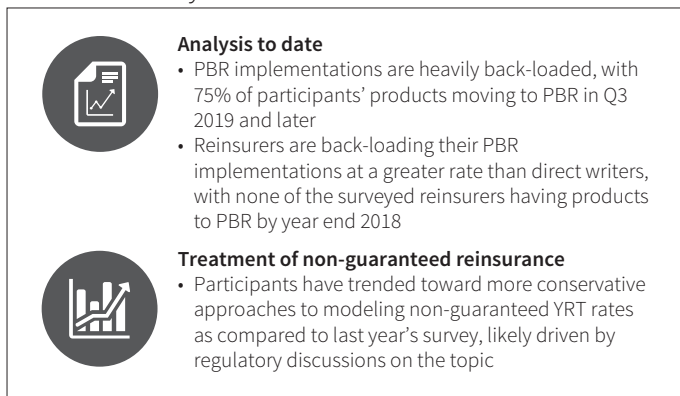
Oliver Wyman recently completed its 2019 PBR survey, with more than 40 participants covering 85 percent of the individual life market, including 23 of the top 25 life writers and five reinsurers.

This article expands on the key survey findings shown in Figure 1, focusing on implementation trends, analysis to date and recent discussions on the treatment of non-guaranteed reinsurance.

PBR IMPLEMENTATIONS ARE HEAVILY BACK-LOADED, PARTICULARLY FOR REINSURERS

Figure 2 (Pg. 27) summarizes actual PBR implementations through 2018 and planned implementations through the remainder of the optional implementation period.

Figure 1
Key Findings from the 2019 Oliver Wyman PBR Emerging Practices Survey



As of year-end 2018, one-third of direct writers and none of the surveyed reinsurers had moved products to PBR. Planned implementations remain low for 2019 and the data collected shows that most products will move to PBR at the very end of the optional phase-in period.

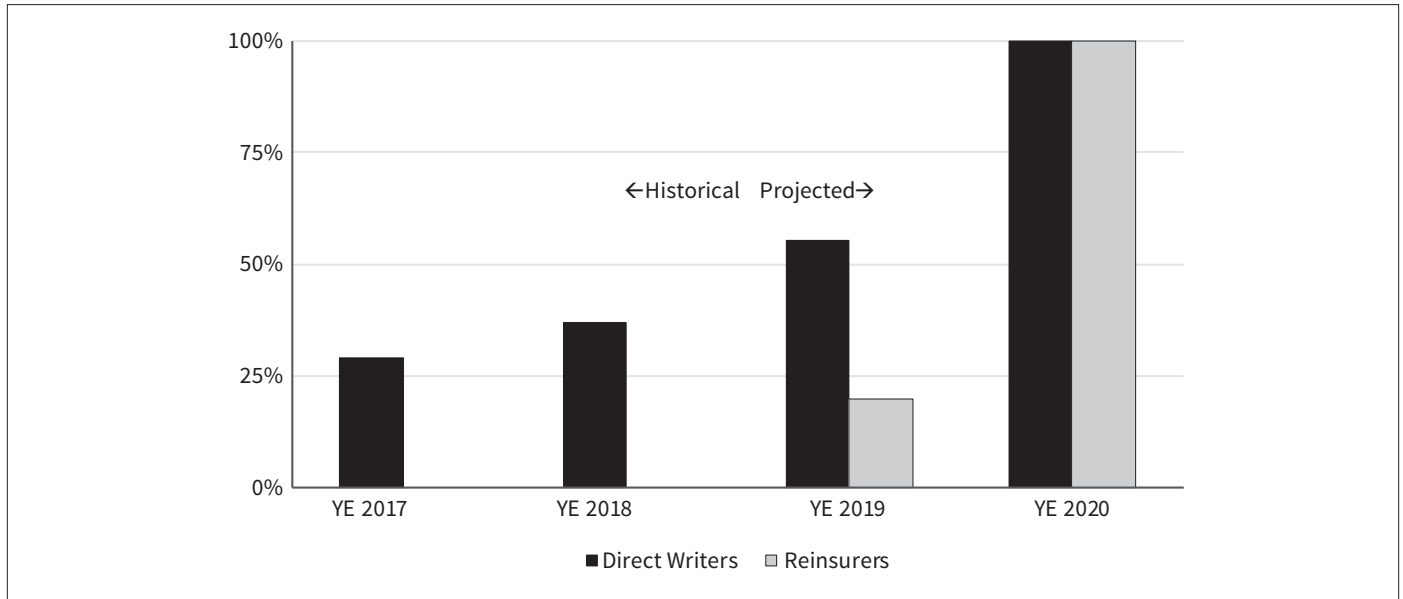
We continue to believe the back-loading of PBR implementation for direct writers is driven by the following:

- Competitive pressures and prevalence of reserve financing solutions for term and, to a lesser extent, ULISG, for which reserve reductions decrease tax leverage
- Resource constraints and the level of effort required to move products to PBR, including additional reporting and disclosure requirements
- Evolving PBR requirements, which have material impacts on profitability

Reinsurers follow an even more back-loaded implementation pattern, with more than 75% of their products planned to move to PBR until 2020. The drivers of delayed implementation are similar for reinsurers as direct writers, but further amplified due to the business in scope for PBR:

- Coinsurance: Primarily term with a high prevalence of reserve financing solutions

Figure 2
Percentage of Participants with Products on PBR by Year End



The percentages were calculated as (number of participants with at least one product in category on PBR) / (total participants), split by Direct Writers and Reinsurers

- Yearly renewable term (“YRT”): Regulatory treatment was being actively discussed with a wide range of potential solutions in-play until an interim solution was finalized in June of 2019

Overall, the continued evolution of PBR requirements is a key driver of delayed implementation. The National Association of Insurance Commissioners (NAIC) Life Actuarial Task Force (LATF) increased the frequency and length of its calls during the first half of 2019 to finish any high-priority changes to PBR requirements for inclusion in the 2020 *Valuation Manual*; it approved 55 changes through June 30, which was formally adopted into PBR requirements at the summer NAIC meeting.

REINSURERS ARE BEHIND BUT MAKING PROGRESS ON THEIR PBR ANALYSIS

Table 1 summarizes the percentage of the life product portfolio for which participants had performed PBR analysis as of last year’s and this year’s survey.

Reinsurers had analyzed a small portion of their portfolio in 2017, but made considerable progress in 2018.

Table 1
Percentage of Products for Which the Impact of PBR Was Analyzed

Product Type	12/31/2017	12/31/2018
Direct Writers	56%	61%
Reinsurers	11%	48%

THE BROADER RESOURCE LANDSCAPE NEEDS TO BE CONSIDERED

Given that implementations are heavily backloaded, adhering to timelines will be crucial in the final stretch of the optional phase-in period. Direct writers and reinsurers must consider the time it takes to reprice, file and launch their offering, and that there will likely be additional strain on both internal and external resources from regulatory changes taking place simultaneously (e.g., Financial Accounting Standards Board targeted improvements for long duration contracts, variable annuity reform, IFRS updates). Stakeholders need to be well informed of any required work and expected timelines for remaining implementations.

TREATMENT OF NON-GUARANTEED REINSURANCE DEVELOPMENTS

The treatment of YRT (Yearly Renewable Term) reinsurance was extensively evaluated in Oliver Wyman’s 2019 survey. Compared to 2018, the industry was slightly more conservative in its approach to modeling non-guaranteed YRT rates, but more aggressive approaches are still prevalent (e.g., 30 percent assumed immediate increases to YRT rates).

In June 2019, LATF adopted an amendment to VM-20 that sets the reinsurance credit to one-half c_x in response to the wide variation in modeling of non-guaranteed YRT reinsurance arrangements. Reference to the amendment proposal form and applicability are summarized in Table 2 (Pg. 28).

Table 2
 Details on June 2019 LATF Decision on
 Non-Guaranteed Reinsurance

APF*	2019-39
Applicability	Business issued in 2020 and beyond
Modeling of reinsurance	Not required
Reserve credit (or assumed reserve)	½ c _x
Solution	Temporary

* Amendment Proposal Form. The text of this can be found at https://www.naic.org/documents/index-industry_latf_apf_2019-39.docx.

Regulators agreed that this solution is only temporary and not principles-based, and a field test is underway with a goal of determining a permanent solution in time for inclusion in the 2021 *Valuation Manual*. The field test timeline is ambitious and overlapping with year-end financial reporting, therefore third-party consultants are being considered.

Mandatory PBR implementation is upon us, and many products remain to be moved to PBR by Jan. 1, 2020.

Before the LATF decision, a third of the surveyed companies anticipated making changes to reinsurance agreements as a result of PBR. Of those, half were looking to guarantee the current scale for a period of time, and a third were looking to reduce the guaranteed maximum rates. Possible reasons for these changes include:

- Supporting modeling approaches
- Taking judgment out of modeling decisions
- Reducing or eliminating regulatory risk in light of anticipated changes to requirements

As the recent temporary prescription on non-guaranteed reinsurance sets a precedent of regulatory intervention in which

significant discretion existed, actuaries gain to understand areas where their practices are less conservative relative to their peers.

THE ROAD AHEAD

Mandatory PBR implementation is upon us, and many products remain to be moved to PBR by Jan. 1, 2020; particularly for Reinsurers. As stated, we believe that the back-loading is largely conscious, but that many implementations are effectively behind, requiring additional focus and resources to reach the finish line.

As evidenced by the recent discussion on non-guaranteed reinsurance, PBR continues to evolve. We expect the discussion on non-guaranteed reinsurance reserve continue as potential long-term solutions are evaluated.

As everything comes together, it will be important to skillfully manage all impacted areas—product, modeling, pricing, assumption setting—and to build in optionality that allows swift reaction to potential changes in regulations. ■



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Lawn Boy

By Barbara Clay

Future Farmers of America was the dream of a suburban boy in Wisconsin. My husband, John Clay, loved the idea of driving tractors, working with equipment and taking care of the land. Life led him to become an elementary school teacher, and he was able to combine his passions for education and farming by providing a lawn service that went well beyond your basic lawn care. I have had the privilege of being the “bookkeeper” for the JC Lawn Care service, and I’d like to share the story of how a good heart can positively affect a community.

John began teaching third grade at Eden Lake Elementary in Eden Prairie, Minnesota, in 1987. This was a dream come true for a recent college graduate who left a teaching position in Wisconsin, moved to Minnesota to marry his sweetheart, and had to teach as a substitute for a year and a half. During that time of transition, John began to mesh his love for teaching with his love for working the land. He started a small service in an aging neighborhood where he focused on helping widows with their lawn care needs. This was the inauguration of the JC Lawn Care Service.

As a couple, we moved to Eden Prairie in 1993 where John could be both teacher and a member of the community. During his time in the classroom, several of John’s students, both boys and girls, did not have father figures in the home. This spurred on the next phase of the lawn service. John hired these kids, starting at age 11, so he could help to provide some of the guidance they were missing. Each employee had to agree to the following:

- Be on time for work
- Commit to and show up for work (unless a family event or homework conflicted and notice was provided)
- Put half of their earnings into the bank for further education
- Share their savings progress by presenting their bank deposit book throughout the season

Over the years, employment expanded to any student who was interested in working, and a couple of heartwarming stories evolved.

The first is the story of a young boy who was being raised by a single mother. Josh Stalvig began working for John at the age of 11. He continued his employment through college and up until his early 30s to help supplement his income and support his growing family. Along the way, the Stalvigs became family friends. Josh asked John to be a groomsman in his wedding. The funny thing was that the best man had been a previous



third-grade student of John's. The greatest tribute was that Josh named his youngest son John in honor of his mentor.

The second story combines John's love for the annual Iditarod Trail Sled Dog Race, teaching and the lawn service.

The second story combines John's love for the annual Iditarod Trail Sled Dog Race, teaching and the lawn service. John and his colleagues created an amazing award-winning program for their students at Eden Lake that used the Iditarod as a focus for teaching. During the program development, John had the opportunity to meet Gary Paulson, an author and a dogsled musher, first in Alaska and then on several other occasions. Eden Lake's Gifted and Talented teacher, a dear friend of John's, needed a meaningful way to teach her students about finances

and investing. Gary agreed to write a book with this focus in mind. Right in front of them was the practical application of these topics in the lawn service, leading to the idea for the book *Lawn Boy*. Check it out on Amazon!

It has been a great ride supporting the wonderful things that were offered through the lawn service. Not only has it provided learning opportunities and income for kids, supported family structures and supplied the idea for a book, it has also provided services free of charge for our church, a horse rescue farm and families in need. All of this came to be because there was once a young boy with a big heart who loved the land and wanted to give back to his community. ■



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The Dynamics of Emerging Asia's Life Insurance Markets—Findings From a Recent Peak Re Executive Survey

By Franz Josef Hahn

Driven by rapidly growing middle classes, emerging Asia's life insurance markets have witnessed a tremendous expansion over the past two decades. Their total premium volume has grown to about US\$500 billion, with China alone accounting for more than 70 percent. In total, emerging Asia today originates about one sixth of the world's life insurance business.

Against this exciting backdrop, Peak Re has commissioned a survey among regional life insurance executives, conducted by Dr. Schanz, Alms & Company, a Zurich-based consultancy. Peak Re is a Hong Kong-based global reinsurer with the clear purpose of supporting the needs of communities and emerging middle-class society by meeting their reinsurance needs.

The research draws on in-depth interviews with senior executives of 29 national, regional and international (re)insurance companies and intermediaries based in eight different markets. The underlying qualitative interview approach enabled us to probe deeper, obtaining clarifying responses from the participating executives. In addition, by including both global and regional players, as well as generalists and specialists, we have been able to collate a broad yet nuanced picture of the marketplace, covering life insurance, fixed-benefit type health insurance and reimbursement-type medical insurance.

The following article presents a summary of the survey's key findings (see <https://www.peak-re.com/wp-content/uploads/2019/03/EALP19.pdf> for the full report).

DIGITALIZATION TOPS CORPORATE STRATEGIC AGENDAS

In order to establish a regional portfolio of strategic corporate priorities, executives were asked to name those areas that rank highest on their corporate development agenda for the next

three to five years. Not surprisingly, digitalization emerged on top. Efforts concentrate on online distribution, automated underwriting, policy administration and claims settlement (including a few initiatives around artificial intelligence-based applications). Most executives stress the potential of technology in cutting operating and distribution expenses, which are considered a major obstacle to higher levels of insurance penetration. Such investments in modern technologies and analytics are not limited to proprietary direct channels but also extend to agency forces and interfaces and the related back-end processes. At this stage, cost-efficiency considerations prevail, whereas only a minor share of technology investments is designed to create additional revenues.

Driven by rapidly growing middle classes, emerging Asia's life insurance markets have witnessed a tremendous expansion over the past two decades.

LIFE AND HEALTH INSURANCE PREMIUMS EXPECTED TO CONTINUE OUTGROWING GDP

An overwhelming majority of 86 percent of executives believe that life and health insurance premiums will continue outpacing GDP growth. There is a broad consensus that health products will grow fastest. This outperformance is driven by a bouquet of political, economic, social and technological factors. The offerings of some public schemes no longer meet the increasing demands of the wealthier parts of the population. This emerging gap boosts private sector insurance sales of mortality, morbidity and longevity solutions, supported by generally increasing levels of per capita income and a growing awareness of the need for income protection. At the same time, urbanization is progressing rapidly across the region, translating into weakening family ties and heightening the need for alternative, more formal protection schemes. Also, virtually all executives expect digital technologies and advanced analytics to further accelerate premium growth as a result of improved outreach to underserved segments of the population, enhanced product appeal and lower transaction costs.

Some executives who do not expect premiums to outgrow GDP point to recruitment constraints that could threaten the effectiveness of the agency force, a career option that is of limited attractiveness to the younger generations. In addition, some markets have a strong bias toward savings products with relatively subdued growth prospects in a "lower for longer" interest rate environment.

STRONG GROWTH IN ONLINE DISTRIBUTION LIMITED TO SHORT-TERM AND SIMPLE PRODUCTS

In terms of growth dynamics, direct online sales stand out, albeit from a very low base. Citing the region's young and technology-savvy population, most executives spot a great potential for online in simple and easy to understand areas such as term life, personal accident and (to a lesser extent) critical illness. However, with the notable exception of China, online sales have not yet gained any major visibility in emerging Asia. But even in China, as a result of a relaxation of qualification and certification requirements, sales through agents surged in 2018, while online sales contracted by 13 percent, according to the China Banking and Insurance Regulatory Commission (CBIRC).

Technology platforms rank second as far as perceived sales growth is concerned, although at still marginal overall levels. A number of executives see the real opportunity for such platforms in generating leads for fully "digitalized" agents and independent advisors who are viewed as the third most rapidly expanding force in distribution.

MORBIDITY CONSIDERED THE SINGLE MOST IMPORTANT PROTECTION GAP

The most frequently mentioned protection gap in emerging Asia relates to morbidity: environmental pollution and changing lifestyles give rise to a rapid growth of cancer, diabetes and cardiovascular diseases. Millions of families are viewed as being exposed to such calamities that, if they affect the main breadwinner, could even throw the family back into poverty.



In the eyes of the executives polled, the second most severe protection gap is longevity, especially in China and Thailand. These concerns reflect not only demographic trends but also major social changes that erode historically reliable informal protection schemes, such as family ties and village communities.

Mortality risk ranks third. It is less visible and prominent than morbidity and longevity risk, but it is still expected to grow in overall economic and social relevance as incomes continue to rise, social security benefits fail to keep pace with this momentum and household savings ratios erode given a higher propensity to consume.

Generally speaking, protection gaps in emerging Asia encompass both non-insurance and underinsurance. In most countries less than one year of income is protected through insurance.

AWARENESS SEEN AS MOST RELEVANT REASON FOR UNDERINSURANCE

According to the executives polled, a lack of awareness is the main reason for underinsurance, defined as people buying less insurance than is economically beneficial to them. Cultural obstacles were identified as the second most relevant roadblock to insurance buying. Many customers still rely on traditional family ties or government support for protection. Others expect a "return" from insurance and do not believe that "peace of mind" as such is worth a regular premium payment even if claims fall short of it. Affordability ranks third as major parts of the population still do not enjoy the excess income needed to purchase insurance. This challenge is exacerbated by the high costs of distribution.

IMPROVED EDUCATION AND FINANCIAL LITERACY VIEWED AS MOST EFFECTIVE REMEDIES

Most executives think that education is the main key to unlocking the full potential of life and health insurance in emerging Asia. The second most promising remedy to underinsurance is seen in the area of distribution. Existing sales channels are not only considered too expensive but also adversely impacted by trust-eroding practices such as misselling. Most executives believe that digital technologies can help address both issues. The same is true for product appeal and simplicity, identified as the third most relevant approach to tackling underinsurance. Technology offers the potential to revolutionize product design, underwriting and claims settlement.

TERM AND WHOLE LIFE AND FIXED-BENEFIT HEALTH INSURANCE ARE MOST PROFITABLE AREAS

For most executives, term and whole life insurance is the most profitable product line. The price elasticity of demand is relatively low, not least because of still dominant agency distribution.

The picture is different for savings-type life insurance policies: more than three quarters of the executives participating in the survey report current profitability levels below the average of the past three years. The main concern is the protracted low interest rate environment, exacerbated by an increasing volatility in financial markets.

Margins on health insurance products that offer fixed benefits for critical illnesses, cancer, diabetes or in the form of hospital cash are viewed as attractive by most executives. Over the past few years, demand for such products has increased substantially on the back of growing awareness, better education and higher disposable incomes. Besides savings business, medical (reimbursement-type) insurance is viewed as presenting the most serious profitability challenges. Fifty-six percent of the executives polled consider the current level of margins as being below the average of the past three years. Many customers see medical insurance as a “commodity,” similar to auto insurance. Additional competitive pressure arises from endemic medical inflation, partially due to a lack of public policy efforts to curb surging hospital costs.

STABLE PROFITABILITY OUTLOOK FOR TERM AND WHOLE LIFE AS WELL AS HEALTH INSURANCE

Forty-eight percent of executives expect margins on term and whole life insurance business to remain stable over the next 12 to 24 months. The outlook is slightly more optimistic for savings products. Thirty percent of executives expect higher margins as interest rates seem to have crossed their low point. On the other hand, regulatory developments exert fundamental pressure on savings-type business. Risk-based solvency regulations, similar to Solvency II, in combination with new accounting standards (IFRS 17) are weighing on earnings. Under such regimes, the economic valuation of insurers' assets and liabilities can make it uneconomical to offer long-term guarantees and assume financial market risks on behalf of policyholders—a key element of life insurers' traditional value proposition.

As far as fixed-benefit health products are concerned, 56 percent of the executives polled do not foresee any major changes to profitability over the next 12 to 24 months. The outlook for medical reimbursement products is more pessimistic given this line's comparatively commoditized nature and a frequently limited scope for repricing.

IMPLICATIONS FOR REINSURERS

Life reinsurers primarily assume biometric risk that covers exposures related to human life conditions. As such, they are relatively immune to the global downturn in traditional savings business that has spread to emerging Asia in the wake of ultra-low interest rates and regulatory changes that make it uneconomical for life insurers to offer yield guarantees. Positively speaking, life reinsurers are set to benefit greatly from the shift toward protection products that can be observed across emerging Asia. China is a particularly striking example: life premiums contracted by more than 5 percent in 2018, after expanding at a double-digit average rate over the past 10 years. This drop reflects regulatory tightening affecting sales of short-term universal life policies, in line with the government's strategic intent to engineer a shift toward protection-type products that address emerging challenges, such as the rise of chronic diseases, and to mitigate financial risks arising from wealth management-type short-term insurance products.

The launch of personal tax-deferred pension insurance in China is another future opportunity for life reinsurers with an appetite for longevity risk. In Thailand, where the population is aging rapidly, private pension plans, including annuities, are already quite popular and require reinsurance protection.

CONCLUSION

Emerging Asia has a total population of 3.6 billion. The region generates a GDP of about US\$17.5 trillion, which is equivalent to 22 percent of the world's total. At an inflation-adjusted growth rate of 6.8 percent per annum between 2012 and 2017, the economies of emerging Asia expanded almost twice as fast as the world economy. Going forward, although projected to decrease slightly, this growth differential will remain fundamentally intact.

At Peak Re, we are confident that these markets and segments will continue to contribute significantly to life and health insurance revenues in the coming years. ■



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The Future of Underwriting With Neil Sprackling, President, US Life & Health for Swiss Re

By Peter E. Kelley

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Peter Kelley (PK): In the simplest analysis, how has technology influenced the underwriting process ... and how is it changing it?

Neil Sprackling (NS): Insurers are developing ways to make underwriting easier, faster, and more convenient for consumers through automation, triage models, risk scores, and the use of alternative data sources, like electronic health records. Insurers are offering a seamless process with accelerated underwriting programs that provide instant approval for qualified applicants at the point of sale. They are also looking for ways to streamline processes for customers who still require full underwriting. All together, these tools are intended to improve the customer experience of purchasing insurance.

Underwriting tools are enabling a faster decision and generally come in two forms: acceleration and automation.

Analytics tools are being introduced to process vast quantities of data as we begin to see their proliferation. This opens more opportunities for insurers to streamline decisions and identify new evidence-based approaches that may complement traditional approaches. Mortality models such as LifeScore360 and underwriting models such as Swiss Re's Lab Requirements are examples of this.

PK: How has technology altered our perception risk, and then how we analyze and assess it?

NS: Through research, we learn more about drivers of risk, and as new data become available, we can research what protective



Neil Sprackling

value those data or that underwriting tool provides. One of the more significant changes in how we analyze and assess risk is around the difference between causation and correlation. For example, medical literature tells us that high blood pressure causes a higher risk of death, or smoking is the primary cause of lung cancer. Predictive models tend to show correlations to mortality, leading to insights that might not be as clear using traditional methods and frequently involve connections across multiple factors. However, it is still essential to provide a valid explanation (i.e., with actuarial justification) of drivers of mortality and to explain that those drivers can be used legally and ethically for risk selection. Thus, a combination of methodologies continues to be valuable.

PK: With technology like GPS/tracking, the ability to gather post-underwriting data that further assesses risk opens a wholly deeper ability to manage risk. What are the implications of this phenomenon for the industry?

NS: I expect this will lead to material product innovation. Life insurance products can be structured to reward policyholders who actively manage their health. A great example of this is John Hancock's Vitality product, where policyholders can earn statuses (e.g., Platinum, Gold, Silver) that lead to premium discounts. Optimistically, this should not only have a positive impact on the industry but more broadly, positively influence individuals' overall health. It could also help mitigate some of

the lapse anti-selection we see when healthy policyholders lapse their policy to buy a cheaper product.

The real opportunity presented using post-sale data is that the underwriting functions move away from a pure segmentation and pricing of risk to potentially actually influencing those risks. For example, can we motivate our customers to make healthier life choices through financial and other incentives to their benefit and society as a whole? The nature of single time frame underwriting also means we must reflect future uncertainties in the price, which by its nature must include some reflection of those uncertainties. We can underwrite people with diabetes with current moderate levels of control and offer a price that considers the risk of some such patients' control deteriorating and others improving their disease control, with estimates of proportions in each direction. If we know we have the capability to adjust the price to risk at a later point in time to reflect those future fluctuations, then we can support more accurate, cheaper pricing at the outset.

PK: What, if anything, has substantively changed with time-tested mortality tables?

NS: Mortality ratings evolve continually over time as new medical studies become available to form the evidence behind ratings. Data and technology are shaping and changing medical practice, and new types of medical studies are available, which will continue to develop the way mortality tables are built and evaluated. There will continue to be a select and ultimate mortality curve after underwriting. With post-underwriting data being collected and used, it should flatten the mortality curve for those that actively manage their health. Those that do not maintain their health will have a relatively steeper mortality slope. In effect, anytime new, positive underwriting information is collected after issue, it will create some new selection to the mortality curve.

PK: What are the practical applications for Predictive Modeling and the use of proxy data in the underwriting process of something as simple as, say, a life insurance policy?

NS: Predictive models are being used to identify cohorts of people that can bypass one or more traditional underwriting steps (triage), replace or augment information used in the underwriting process, as well as identify cohorts of people that could be at risk of policy lapse.

Today there is interest in evaluating and potentially using additional data sources on applicants that could provide information on their future health trajectory. That information might either be overtly clinical in nature, such as a history of prescriptions an applicant takes or perhaps be a continuous measurement on

the applicant obtained from biosensors related to things like heart rate or step counts. How these alternative information sources augment or replace traditional underwriting requirements continues to evolve in the industry, with some companies and regulators embracing these alternative information sources more than others. Since these new sources are not yet universally available on all applicants, there remains a need to be able to assess risk using traditional methods. So in the case of something like blood pressure that in the distant past was collected by a licensed physician employee of an insurance company, there are various downstream alternatives companies are evaluating that offer varying degrees of value, availability, and ease of use.

PK: How effective, and how accepted, is the emergence of “wearables” as a post-underwriting risk management solution?

NS: There's a growing trend where consumers are increasingly aware of the value of their own data and want something in exchange for them. Our industry can deliver on that. With the quality of health data getting better and better, we can provide information about their personal health risks that they can't get anywhere else.

Currently more common than the use of wearables is the ordering of post-issue APS. By using post-issue risk management tools in conjunction with accelerated underwriting tools, insurance companies can audit the accuracy and fairness of those tools.



The insurance company of the future could serve as a “personal risk manager” for insurance customers. With additional information about the health of existing customers, insurance carriers can alert customers to changing health (and financial) risks and help support them with interventions as well as risk mitigation tools. Swiss Re has taken this idea and developed a new product concept that we believe can help make insurance more accessible for people with diabetes and those with mild chronic conditions, who typically find it intimidating to purchase insurance.

PK: Is the basic insurance model, “ex-ante compensation” based on predictive outcomes, actually changing? If so, how are products changing amid these technological advances?

NS: Knowing the trends and the challenges, Swiss Re is looking to create new opportunities that enable our clients to 1) make better, faster decisions (e.g., accelerated UW, simplified issue); 2) create tailored products (e.g., modifiable risks); and 3) build smarter and more engaging connections. Behavioral economics shows us that people don’t want to pay now for an uncertain future benefit. That’s the fundamental premise behind insurance. The more we can help insurance owners realize benefits today, the more people will want to buy our products. Historically, companies have added benefits such as acceleration for critical illnesses, while Living Will and other services are available today to assist those with dementia. One example of how technology has enabled active risk management to prevent or mitigate risk is through wearables that provide heart rate monitoring, which in turn may detect risks of stroke sooner and may recommend intervention.

PK: Your research identifies that, even in the face of such momentous technological advances, the role of the underwriter remains critical, the “fulcrum of the process” as your report states. Care to elaborate on this?

NS: Humans are complex beings, and as a result, there will always be individuals with health profiles that will require human intervention. Part of our role as insurers is to protect lives. Channels that support new technologies that leverage different data sources generally decline applicants with complex health histories. In contrast, a human underwriter can provide a fair risk assessment to those who need us most and, equally, to niche markets like the high sum assured business and foreign national lives.

The changing landscape presents an interesting paradigm. We need to ensure that we continue to build the next generation of underwriters so that the expertise that has protected the underlying risk is not lost. However, we know that they will mostly deploy their knowledge differently. The Underwriters of the Future will need new skill sets in data analytics and will need to embrace collaboration, innovation, and technology. They will consult and build rules to accelerate and automate the process and will take a “portfolio view” of the risk vs. a single view of individual risks. To become future-ready, how we transition and upskill our underwriters is central to our industry’s success. To this end, Swiss Re is engaged in strategic workforce planning with an external consulting company, using workforce and industry trends, as well as listening to our clients. ■



Peter E. Kelley is principal—Jon Hope Publishing Co., Inc. He can be contacted at pkelley@lifehealth.com.

REFERENCE

<https://www.swissre.com/institute/research/topics-and-risk-dialogues/risk-dialogue-underwriting/underwriting-next-generation-edi-schmid.html>

The Bulletin Board Reinsurance Section Research Update

By Ronora Stryker

Did you know that each year the Reinsurance Section Council (RSC) allocates a significant amount of Section revenue to research for its members? In fact, the RSC has assembled a dedicated group of volunteers in a research team to oversee the process to ensure relevant and quality studies are produced. Currently the team is developing research project ideas in topic areas such as reinsurance and principle-based reserving, as well as managing and measuring extreme event risk. Here is an update, as of September 2019, on the Reinsurance Section's sponsored research in process and studies recently completed.

CURRENTLY IN PROCESS

“Predictive Modeling in Life Insurance Underwriting.” To promote a deeper understanding of predictive modeling and how it impacts underwriting, this study uses a case study approach to create a resource to help practitioners develop, evaluate, implement and monitor predictive models in underwriting. This project is in the early stages; a request for proposals has been issued to find an individual or consultant to perform the study.

“Mortality Improvement Trend Analysis.” To help actuaries develop and set mortality improvement assumptions, the focus of this project is on better understanding the key drivers of mortality improvement and how they vary. Work has yet to begin on the project; the Reinsurance Section is currently seeking bids from individuals or entities to perform the research.

“Life Reinsurance Treaty Recapture Provisions.” In today's environment recapture provisions are an important industry topic. In this study, recapture provisions from reinsurance treaties are compiled and analyzed, highlighting the reasons each specific provision is of particular importance to direct-writing companies and/or to reinsurers and how current practice differs from the past. Additionally, the researcher(s) will identify the underlying objective each party to the transaction is aiming to achieve with the recapture provision, what obstacles have been



encountered and what solutions have been found. Work is in the late stages; the research report is undergoing final review.

“Company Practice Survey of Individual Life Insurance Accelerated Underwriting.” A company practice survey was administered to both direct writers and reinsurers in early 2019. Among the areas addressed were the structure of accelerated underwriting programs, how programs are monitored, how accelerated underwritten business is performing relative to expectations and how companies are considering accelerated underwriting cohorts in the context of VM-20 assumption setting. The survey is closed, and the aggregation and analysis of the responses complete. Currently the report is being drafted and is targeted to be released by the end of the year. Preliminary

survey results are available. <https://www.soa.org/resources/research-reports/2019/accelerated-underwriting/>

RECENT PUBLICATIONS

“A Machine Learning Approach to Incorporating Industry Mortality Table Features in Mortality Analysis.” This research applies a machine learning approach that enables a practicing actuary to incorporate key industry mortality table features into insured mortality analysis. <https://www.soa.org/resources/research-reports/2019/2019-machine-learning-approach/>

“Considerations for Predictive Modeling in Insurance Applications.” This study examines how best to implement predictive modeling into relevant areas of actuarial practice. <https://www.soa.org/resources/research-reports/2019/considerations-predictions-insurance-applications/>

“Earnings Emergence Insurance Accounting under Multiple Financial Reporting Bases.” This expands a 2015 research report on earnings emergence under multiple financial reporting bases. The original report looked at deferred annuities and term life insurance under U.S. SAP, U.S. GAAP, IFRS, CALM and market-consistent balance sheet approaches. This expanded report adds universal life and includes updates for principle-based U.S. statutory reserves, targeted changes to U.S. GAAP and the new IFRS for insurance products. <https://www.soa.org/resources/research-reports/2018/earnings-emergence/>

“Mortality Analysis for 1898–1902 Birth Cohort.” This report examines the old-age mortality trajectories for the five extinct (or nearly extinct) U.S. cohorts. <https://www.soa.org/resources/research-reports/2018/birth-cohort/>

“The Impact of Genetic Testing on Life Insurance Mortality.” This study develops a tool for insurers to examine the potential impact of a ban on using genetic testing in life insurance underwriting. <https://www.soa.org/resources/research-reports/2018/impact-genetic-testing/>

REQUEST FOR RESEARCH IDEAS

Do you have an idea for a research topic you would like to see the Reinsurance Section consider for funding? If so, we want to hear from you! For more information, please contact Jean-Marc Fix, chair of the Reinsurance Section’s research team, or Ronora Stryker. ■



Ronora Stryker, ASA, MAAA, is a senior practice research actuary for the Society of Actuaries. She can be reached at rstryker@soa.org.



The SOA, in partnership with the Brazilian Insurance Association, held a three-day conference on IFRS17 & Solvency II in Sao Paulo, Brazil, July 15–17 2019. From left to right: Ronald Poon-Affat, FSA (co-editor of *Reinsurance News*), Maris Gosmann, MIBA (co-presenter & University Lecturer), and Carlos Arocha, FSA (lead presenter at the event).



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