SCORviews

WINTER 2020

MESSAGE FROM THE SCOR GLOBAL LIFE AMERICAS CEO

Rethinking Everything We Do!

By **J.C. Brueckner**
CEO, SCOR Global Life Americas
jcbrueckner@scor.com

As we enter the new decade, every industry seems to be on the verge of massive transformation. Life insurance is no exception. To stay relevant, we need to challenge ourselves to rethink everything we do…to reimagine our processes and rules and recast the guidelines that shape our business.

In this environment, collaboration and alliances are more important than ever. At SCOR, our goal is to be your innovation partner and trusted advisor in managing risk and developing product and process solutions that leverage advancements in data, analytics, insurtech ecosystems and more.

This edition of *SCORviews* reflects our commitment to innovation and thought leadership across all areas of the business, especially underwriting and mortality risk management. For more information and insight on these topics, feel free to contact our expert authors.

Accelerated Underwriting. At SCOR, we are challenging ourselves to reimagine how we underwrite business to take advantage of innovation and create a better customer experience. Accelerated underwriting is becoming the norm. SCOR Underwriters Thomas Ballweg and James Atkins discuss monitoring techniques that can help companies mitigate risks associated with these new underwriting processes.

Agile Insight. From new product development to underwriting to actuarial and operational work, SCOR Agile teams collaborate across business functions to make SCOR an innovative and "agile" organization. Jennifer Nusbaun, our resident Agile expert, discusses the risks of innovation and how Agile can help life insurers mitigate them.

Mortality Risk. With one of the largest pools of mortality risk in the world, SCOR continually studies and compares our own experience with industry trends and population mortality. Actuaries Colleen Murray and Beaman Senecal share key observations in mortality trends and why life-insured mortality rates differ greatly from general population rates.

Financial Reporting. Rounding out this edition, Sean Hayward, Chief Actuary for the U.S., interviews Deloitte Partner Jason Morton on the unprecedented wave of new financial reporting requirements. They share expert opinions on the impact that these new requirements will have on managing and reporting business performance.

Clearly, things are always changing and evolving. Our goal at SCOR is to help you keep up. We look forward to working in partnership with your company as we drive toward a decade of successful transformation and continued growth and prosperity. ■

INSIDE THIS ISSUE

SCOR
The Art & Science of Risk

Monitoring the Performance of Accelerated Underwriting

By **Thomas Ballweg**
Senior Underwriting Consultant
tballweg@scor.com

By **James Atkins**
AVP, Underwriting Quality Assurance
jatkins@scor.com

The number of companies that have implemented some version of an accelerated underwriting (AUW) program has increased significantly in the last few years.

Whether your company is among those who successfully developed an AUW program or is still planning or considering one, congratulations! This is a monumental accomplishment for any organization.

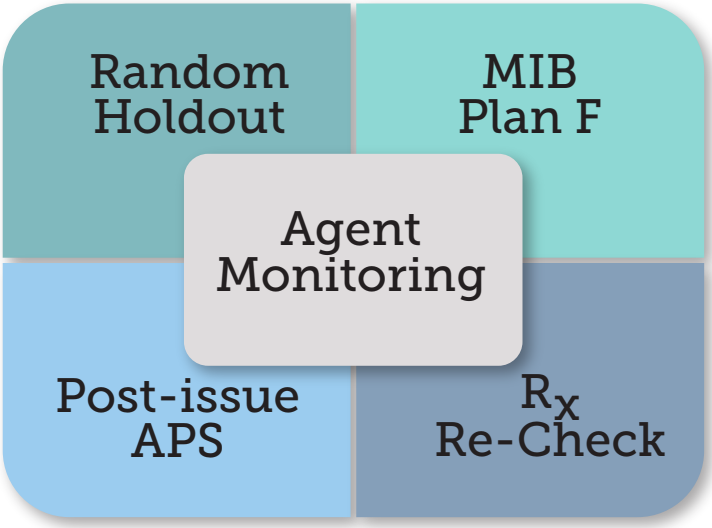
The implementation of an AUW program requires a significant amount of time, research, resources and training. It is likely your company had to navigate multiple hurdles and roadblocks in order to bring your AUW product to market.

However, this is the just the beginning.

SURVEY SAYS

According to the 91 companies that participated in Hank George's 2019 Life Underwriting Requirements Survey, 57% indicated they already had an existing AUW program while 34% are either in the planning stages or are currently considering implementing one.

Figure 1 –Monitoring Techniques



Most companies currently engage more than one technique to evaluate the accuracy of their AUW program.

Importance

The success of any AUW program is highly dependent on routine monitoring and detailed reporting analysis. Due to the relative infancy of accelerated underwriting, it is premature for any credible mortality data to be available and, therefore, frequent monitoring is paramount to identify any gaps in the program or concerning trends.

The SOA estimates it will require anywhere from two to 10 years, perhaps even longer, before credible mortality data become available. As a result, monitoring AUW programs is vital to mitigating the risk of higher-than-expected mortality, particularly in the beginning stages as AUW programs continue to evolve.

Benefits

Monitoring provides an opportunity and the ability to modify existing rules, update guidelines and eligibility requirements, evaluate the effectiveness of data sources and fill/close potential gaps in your program should they arise. Monitoring provides opportunities to discover potential training needs for both agents and underwriters.

In addition, reinsurance pool members rely on companies to provide detailed reporting of their AUW results in order to validate the original pricing assumptions. The more information and verifiable data that is shared with your reinsurance partners, the greater the overall comfort level reinsurers will have with your AUW program.

Monitoring techniques

Multiple pre- and post-issue monitoring techniques exist including (but not limited to) Random Hold Out (RHO), Post-issue APS, RX Recheck and MIB Plan F. Most companies currently employ more than one technique to evaluate the accuracy of their AUW programs.

Pre-issue monitoring

Random Hold Out (RHO) is a process in which the company elects to put an applicant, who has otherwise qualified to have underwriting requirements waived via AUW, through the full underwriting process. This method may reveal what could be missing in the absence of fluids.

Not surprisingly, RHO is often unpopular with agents who may be selling the AUW concept to a prospective client without explaining the potential hold out for full underwriting review. Agents may be uninformed of the process or simply be setting high expectations without full disclosure.

The percentage of RHOs varies by company but is typically between 5% and 10%. Some companies may also elect to have a much higher hold out percentage at the launch of their AUW program and adjust downward once they have developed a level of comfort and determined that results align with their initial expectations and assumptions.

Note, a higher percentage or number of random holdouts permits companies to obtain and validate results much faster. Companies are able to react more quickly and make modifications to their program much sooner if needed.

Continued

Monitoring the Success of Accelerated Underwriting

Cont.

Figure 2 – Confusion Matrix

Random holdout	AUW decision (if not randomly held out): Best NT	2nd Best NT	Residual NT	Best TB	Residual TB
Best NT	96	3			
2nd Best NT	9	11	2		
Residual NT	4	2	14		
Best TB				5	
Residual TB		5			1
Substandard			2		
Decline	1				

Cells shaded in red denote areas where the random holdout identified new information resulting in a worse class/decision. Tobacco mis-classifications, Substandard and Decline/Postponed outcomes in the RHO/Post-Issue APS results are the most concerning and would have the largest impact to mortality slippage.

RHO provides a "sentinel effect" when the agent and applicant are aware they may be selected for further underwriting evaluation. Tracking the percentage of RHOs and at what stage in the AUW process an applicant withdraws their application may provide insight into potential anti-selective behavior.

A confusion matrix uses results from either RHOs or post-issue APS reviews and compares the decision that would have been assigned (prior to the RHO or APS) to the decision made with the RHO and/or APS results. Ideally, there should be very few cases that have a different decision.

Post-issue monitoring

Post-issue APS may assist in revealing undisclosed medical information. According to the June 2019 survey completed by Milliman on behalf of the SOA, primary reasons for companies obtaining a post-issue APS are to determine:

1. the magnitude of cases that slipped through
2. the weaknesses in the underwriting process
3. the percentage of cases that slipped through
4. whether the applicant has properly disclosed past or current tobacco use

Review of an APS post issue affords companies the opportunity to audit the accuracy of the applicant's responses and validate the accuracy of the AUW assessment without inconveniencing the applicant or agent.

Post-issue APS does have limitations; for example, a special authorization may be required, and requests for records may simply be ignored and go unfilled. APS may not be available on all applicants since not all of them will have primary care physicians. When an APS is obtained, it may contain only limited information and not include lab information or vitals (blood pressure and build). Nicotine use in the APS is self-reported by the applicant and, therefore, not always a good source for verifying tobacco use history.

Post-Issue APS ordering varies by company but hovers around 10%.

RX Recheck is the reordering of an Rx report post-issue. The purpose is to identify newly prescribed medications that could have potentially impacted whether the risk qualified for AUW as well as the impact to the overall risk assessment.

MIB Plan F provides an alert to members when new applicant information is received and reported by another company for two years after the original MIB inquiry. Plan F helps prevent anti-selection and provides a safeguard for companies with the option to rescind a policy should a material misrepresentation or non-disclosure be discovered within the contestable period.

Agent Monitoring should also be considered for inclusion into the AUW monitoring and audit process. Doing so permits companies to identify outliers and inconsistencies in the business. Potential red flags include significant shift or uptick in AUW case submissions compared to historical fully underwritten business, a considerable percentage of withdrawn applications selected for RHO and no admitted history on application but RX recheck shows otherwise.

Other metrics for monitoring to ensure actual results are in line with expected include:

- AUW eligible as a percentage of total cases submitted over a given time period
- Accelerated cases as a percentage of AUW eligible cases
- AUW Approved & Placed percentages overall and by risk class
- Fully underwritten (FUW) Approved & Placed percentages overall and by risk class - how is the AUW program affecting the residual FUW business?
- Percentage of AUW business qualifying by age group
- Percentage of AUW business qualifying by amount
- Percentage of cases withdrawn once it becomes an RHO
- Of those targeted for post-issue APS review, what percentage didn't have an APS available and what was the total % of APS's actually being reviewed?

Accelerated underwriting programs are becoming more prevalent, and it will be years before we have credible mortality data to assess the long-term effectiveness of these programs. Monitoring these programs from the beginning helps companies mitigate risks associated with accelerated underwriting.

SCOR Global Life has underwriters, actuaries and data scientists who can help your company design an AUW program or consult on monitoring. Contact your account representative or one of us for additional information. ■

REFERENCES

Kerbeshian, J, FSA, MAAA & Matson, Patricia, FSA, MAAA, Emerging Underwriting Methodologies and Their Impact on Mortality Experience Delphi Study. 2018;32

Klein, A, FSA, MAAA & Rudolph, K, FSA, MAAA, Company Practice Survey of Individual Life Insurance Accelerated Underwriting – Preliminary Results. 2019;34

George, H, 2019 Life Underwriting Requirements Survey. 2019;4

Seven Deadly Risks of Innovation (and How Agile Mitigates Them)

By Jennifer Nusbaum
AVP, Agile Process Optimization
jnusbaum@scor.com

While several major insurers have undertaken Agile transformations in the last few years, much of the industry still lags behind in their adoption of Agile practices and methodologies. Many in the Agile community believe this is due to a traditional industry focus on risk avoidance and mitigation and that the insurance industry as a whole still views a transition to Agile as too much risk for not enough benefit.

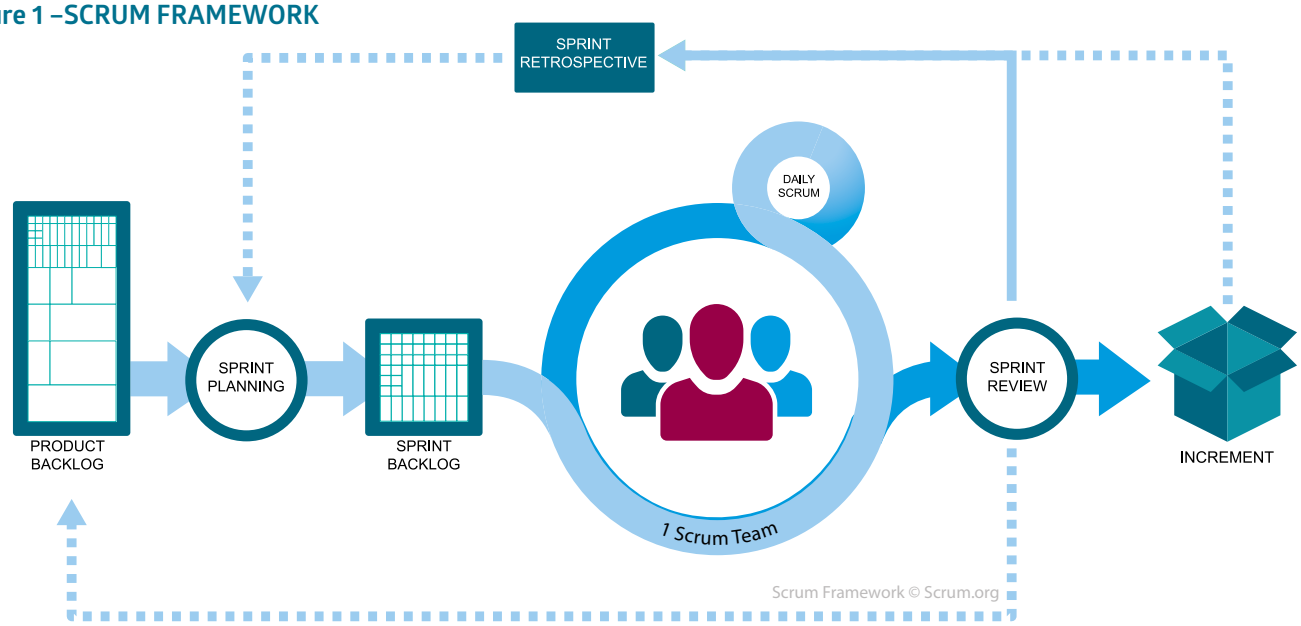
However, when we look at the future of Life insurance, we can clearly see that companies who master the art of product innovation are the ones who will ultimately be successful in the long term.[1] And when it comes to innovation, far from introducing risk, Agile methodologies actually help mitigate risk in a variety of ways!

So let's talk about the seven biggest risks that accompany new product innovation and how Agile helps us avoid them.

Ag·ile /ˈajəl/

Relating to or denoting a method of project management that is characterized by the division of tasks into short phases of work and frequent reassessment and adaptation of plans.

Figure 1 –SCRUM FRAMEWORK



1 The risk of undesirable products

A product can be undesirable for many reasons. Maybe you built the wrong thing, or perhaps you built the thing that was right for some other group but not your customers. The end result is the same in any scenario: you've created a product that your customers are not interested in buying.

Agile methodologies like Scrum (see Figure 1)[2] build three key elements of empiricism into every aspect of their framework: Transparency, Inspection and Adaptation. Using Scrum, teams build their product iteratively and incrementally, checking in frequently with internal stakeholders and external clients along the way, gathering feedback to ensure that what they are building is truly meeting the customer's needs and desires.

2 The risk of being late to market

Say you do manage to design a product that you know your customers will love. What happens if your competitor gets their version to market before you do? Not being able to decide and execute fast enough is almost as bad as not knowing what to build at all.

Agile teams use prioritized Product Backlogs[3] and work in short, iterative cycles (often called Sprints) to maximize their ability to react to a quickly changing market and close the OODA (observe, orient, decide, act) Loop[4] on their competitors (see Figure 2 on next page).

3 The risk of missed deadlines

Every team wishes they had a crystal ball that would tell them exactly how long it's going to take to design and build a new product, how complex the work will be and what road bumps they'll run into along the way.

Sadly, there are no crystal balls. But Agile teams have the next best thing: daily points of inspection and adaptation built into their process in the form of Daily Standup[5] meetings.

Agile teams also use the concept of Sprint Velocity[6] to know on average how much work their team is capable of doing every two weeks, which allows them to predictably tell their stakeholders when an increment of work is likely to be finished.

4 The risk of stagnation

The world (and the Life insurance market specifically) is rapidly changing. How do we ensure that our teams are keeping abreast of the latest advances in information, process and technology and not just operating on a "same as last year" mentality, accruing technical debt?

The answer? Agile Retrospectives[7]. The practice of meeting at the end of each two-week iteration as a team to reflect on what went well and what areas could use some work helps develop and support a culture of continuous improvement that ensures the team does not stagnate or plateau, the focus being what can be made better every two weeks.

Continued

Seven Deadly Risks of Innovation

Cont.

Figure 2: OODA Loop

5 The risk of disappearing workforce

The world of work is changing. Maintaining an organization of highly skilled, highly engaged employees is becoming more vital than ever and also more difficult. According to the latest Gallup Poll[8], "A record 47% of the workforce says now is a good time to find a quality job, and more than half of employees (51%) are searching for new jobs or watching for openings.". Three of the biggest reasons employees list for choosing to leave a position are bad management, company culture and work-life balance.

If only there were a framework out there that focused on self-organizing teams who collaborate to achieve their goals at a sustainable pace that allows for work-life balance. Good news, there is. Once again, Agile provides, by building a focus on self-organizing teams and sustainable pace into its core[9].

6 The risk of waste

When designing the Toyota Production System in the late 1950s, Taichii Ohno, the father of Lean Manufacturing, identified "Muda," the concept of waste, as one of the three main impediments to a company's successful operation (the others being "Mura" inconsistency and "Muri" overburden)[10]. He wanted to help Toyota conserve resources by eliminating waste in its processes.

Because Agile methodologies are the spiritual successor to Lean practices, Agile teams focus on designing the simplest possible solution that meets clients' needs and prioritizing the highest value work first in their Backlogs[11] to reduce the risk of wasting time and money building features or functionality that the clients don't ultimately need or want.

7 The risk of groupthink

In our modern market, diversity of thought and experience is an organizational advantage that companies need to have. Lack of diversity can lead to missed opportunities at best and fundamentally bad product design at worst. There must be a variety of voices in the room, and those voices must feel empowered to make themselves heard[12].

Agile teams are designed to be cross-functional and self-organized, bringing together team members with diverse skill sets and empowering them to take full ownership of every aspect of product design as well as hold each other accountable to their commitments. Agile won't magically make your team more diverse, but it is designed to make sure every member of a diverse team feels heard and valued.

Conclusion

The insurance market is changing, and the future of our industry changes along with it. The companies that survive in this brave new data-driven, customer-centric world will be the ones that master the innovation game[13]. And when it comes to new product development, Agile teams build better products and deliver them sooner. Sure, you could stick with the same old sequential process your teams have had for decades, but why take the risk?

Want to know more? SCOR has seasoned Agilists ready to help. From new product development to underwriting to actuarial and operational work, our Agile teams collaborate across business functions to make SCOR an innovative, customer focused, Agile organization. Contact me directly if you'd like to engage our Agile Process Optimization team for information or training. ■

REFERENCES

1. http://go.cakeandarrow.com/millennials-modern-insurance-report
2. https://www.scrumalliance.org/about-scrum/overview
3. https://www.scruminc.com/product-backlog/
4. https://en.wikipedia.org/wiki/OODA_loop
5. https://www.scruminc.com/daily-scrum/
6. https://www.scruminc.com/velocity/
7. https://www.scruminc.com/retrospectives/
8. https://www.gallup.com/workplace/238085/state-american-workplace-report-2017.aspx
9. https://scrumguides.org/scrum-guide.html#team-dev
10. https://en.wikipedia.org/wiki/Toyota_Production_System
11. https://agilemanifesto.org/principles.html
12. https://open.nytimes.com/why-having-a-diverse-team-will-make-your-products-better-c73e7518f677
13. https://hbr.org/1986/01/the-new-new-product-development-game

Why Changes to US GAAP and IFRS Are a Good Thing

By Jason Morton
Principal. Deloitte

By Sean Hayward
SVP, Chief Actuary
shayward@scor.com

Across the globe life insurers are seeing an unprecedented wave of new financial reporting requirements. These changes – the biggest in the last 40 years – will significantly impact how insurers manage their business.

The objective of US GAAP changes and IFRS-17 is to improve, simplify and enhance accounting for long duration contracts. This is expected to have a profound impact on the emergence and volatility of earnings for long term life insurance contracts. Additionally, implementation will require significant changes to systems, processes and controls and likely will require the accumulation of data that previously has not been captured and presented in financial statements and disclosures.

At SCOR, we are making rapid progress in transitioning to the new financial reporting environment. We are developing and implementing an entirely new architecture with a stronger actuarial dimension to support our business and enable automation, integration and efficiencies where our clients and our data are in the core of our business.

We see IFRS-17 and changes to US GAAP as a great opportunity to build a foundation for a "Gold Source" for our financial and actuarial processes, facilitating Agile decision-making based on robust information.

In the following Q&A, Jason Morton, a partner at Deloitte, offers expert insight on the fundamental changes underway and the expected impact on how life insurers and reinsurers manage and report business performance.

Sean: What are the primary goals of the new reporting requirements within US GAAP and IFRS-17, and how do these new requirements differ from current ones?

Jason: The number one goal of the Financial Accounting Standards Board (FASB) is to increase transparency in the assumptions that underlie reserves for long-duration contracts. They want to avoid the significant reserve strengthenings that can come from a block of business that has been deteriorating (but still passing the loss recognition test on a line of business level) which finally tips over to a loss recognition event. Along with that change they are truly simplifying how Deferred Acquisition Cost (DAC) gets calculated.

The new Long Duration Targeted Improvements (LDTI) requirements differ from current GAAP by impacting primarily non-interest sensitive life and some payout annuity products by doing away with assumption lock-in and for GMDB riders attached to variable annuities which will now be reserved for using fair value techniques. IFRS-17 also does away with assumption lock-in but also contains a new construct where reserves are the sum of a minimum amount to cover future benefits plus a contingent profit margin component.

Many believe that current reporting standards are not equipped to provide adequate insights into the performance of the business; for LDTI in particular the new disclosure requirements are meant to increase that insight.

Sean: What are the biggest challenges facing companies as they adjust to the new standards?

Jason: Data acquisition, reconciliation and analysis have emerged as one of the top issues to overcome in implementing the new accounting standards. When companies have assessed the need to perform more in-depth experience studies and have these studies stand up to audit, as well as replacing actual premiums and claims over previously projected components in reserve calculations, they have come to realize that much work is needed to build or refine front-end data systems and processes.

The same can be said for the back-end process of taking output from multiple reserve runs and constructing new disclosures that display the attribution of reserve movement. Existing data warehouses generally are not able to handle the new requirements without significant re-work, and this has resulted in system initiatives that require heavy involvement from companies' technology groups.

Continued

Why Changes to US GAAP and IFRS Are a Good Thing

Cont.

Sean: Can you comment on the need for greater coordination between finance and actuarial?

Jason: Initially, many viewed the new accounting as largely actuarial in nature, mainly affecting companies' core actuarial systems. But as time has gone by, it has become clear that a significant amount of interaction is needed between finance and actuarial functions to set new accounting policies for how best to interpret the new standards, for creating and supporting disclosures and financial results, and in some cases set new builds for accounting systems such as accounting rules engines to help facilitate the new reporting process in a controlled way. Many suspect that finance will have a greater degree of involvement in the development of actuarial reserves under the new standards going forward.

Sean: Given the profound impact on the emergence and volatility of earnings, what can companies do to educate key stakeholders – senior management, board members, investors, analysts, etc. – to prepare them for the new world and what to expect?

Jason: Significant analysis of draft results will be needed prior to the go-live dates of the new standards. Financial impact analysis will be key in this education, understanding the difficulty of performing such analysis while still building and testing the underlying systems.

Ideally, volatility and profit emergence analysis are performed after the new systems are in place, but senior management needs insight sooner so many companies are planning to use one or two representative product lines as pilots to meet this need. The analyst community is eager to see how the new accounting will impact insurers at transition and going forward, but they also realize that companies need to get to a certain level of comfort internally before presenting to external parties.
In their implementation roadmaps, many companies are planning to use the year prior to go live as real-life dry runs in order to get comfortable with the new accounting. However, the industry is generally behind where they expected to be at this time, which puts pressure on the ability to have as much insightful analysis prior to go-live.

After new systems and processes are built there is also much testing and operational readiness to carry out before results can be deemed accurate.

Sean: As challenging and onerous as these changes are, what advantages and opportunities do you see once we make it to the other side?

Jason: Insurers have been carrying out actuarial modernization initiatives for many years, some for a decade or more, and still are far from ready to handle these new accounting requirements. Given the importance of published financial results and their scrutiny by external auditors and other bodies, companies have had to invest in modernizing their platforms – for many insurers the investments and resource dedication has been very significant.

But the outcome will be a modern-day platform involving a greatly reduced number of systems, many of which are vendor-supported, and improved support systems such as for experience studies, all of which provide increased insight into the business and its future expected performance. ■

Mortality Trends for Term and Perm Life Insurance

By **Beaman Senecal**
Director, Actuary - Experience Analysis
bsenecal@scor.com

By **Colleen Murray**
SVP, Head of Experience Analysis
comurray@scor.com

The U.S. population mortality has been in the news over the last three years with a consistent message – there's been a stalling of mortality improvement and a noted increase in opioid-related deaths. While the drivers of population mortality do influence life-insured experience, there are also very large effects on life-insured mortality due to the policy purchasing process.

A specific subset of the general population will be represented in the insured market, which will vary from company to company depending on their target markets. Not everyone has life insurance for one reason or another and, furthermore, there are effects from the underwriting process which has changed over time as underwriting practices evolve. As a result, life-insured mortality rates have differed greatly from population rates for many decades.

GENERAL POPULATION

While the drivers of population mortality do influence life-insured experience, there are also very large effects on life-insured mortality due to the policy purchasing process.

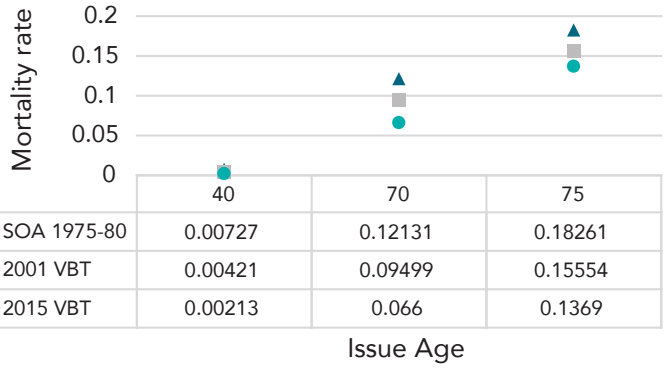
There have been significant declines in life-insured mortality rates in life insurance industry tables over the last 30 years. In Figure 1, male mortality rates at issue ages 40, 70 and 75 at duration 16 (attained ages 55, 85 and 90) are shown to the right. Please note the SOA 7580 mortality table was not smoker/non-smoker distinct.

The percentage changes in industry table mortality rates have been very large for the younger ages (2015 VBT rate is 29.3% of the 75-80 rate by attained age 55), more moderate at 85 and very moderate at 90 (2015 VBT rate is 75.0% of the 75-80 rate by attained age 90). The recognized improvement for males age 90 has only been near 0.5% each year between the release of each table.

The SOA's 2009-2015 Individual Life Insurance Mortality Experience (ILEC) study focuses on years after those used to develop the 2015 VBT, which used data from 2002-2009, and it provides mortality information from the first half of the last decade. The experience is on fully underwritten life insurance sold individually. It excludes group life, converted, substandard, guaranteed and simplified issue business.

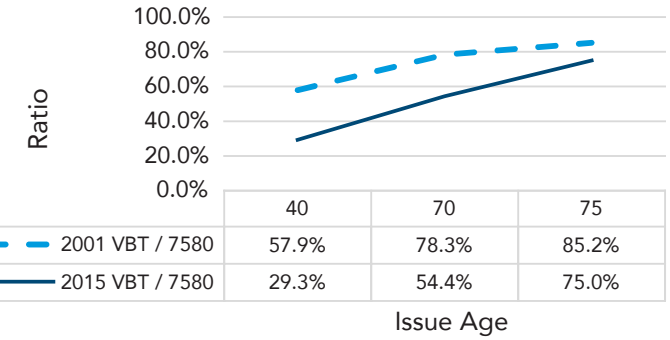
The number of companies contributing to the study vary by calendar year. The least number of companies comes from 2009 where 48 companies contributed, while the most is from 2014 when 93 companies contributed.

FIGURE 1: MORTALITY RATES AT DURATION 16



	40	70	75
▲ SOA 1975-80	0.00727	0.12131	0.18261
■ 2001 VBT	0.00421	0.09499	0.15554
● 2015 VBT	0.00213	0.066	0.1369

FIGURE 2: RATIO OF MORTALITY RATE TO SOA 7580



	40	70	75
2001 VBT / 7580	57.9%	78.3%	85.2%
2015 VBT / 7580	29.3%	54.4%	75.0%

Figure 2 shows the ratio of the 2001 VBT and 2015 VBT to the SOA 7580 rates.

Continued

Mortality Trends for Term and Perm Life Insurance

Cont.

Figure 3 – Attained Ages 0-69

0-69 Attained Age UW Class	Actual Claims Count across Study Years				Claims / 2015 VBT
	2009-2011	2012-2013	2014-2015	Total	Total
Super Preferred	5,477	6,333	7,522	19,332	68.1%
Preferred NS	6,850	7,348	8,423	22,621	82.5%
Residual NS	7,643	9,209	11,177	28,029	126.5%
Grand Total	**19,970**	**22,890**	**27,122**	**69,982**	**89.7%**

Note: Super Preferred represents the best of either 3 or 4 available underwriting classes. Preferred NS is mostly the 2nd best of 3 or 4 available and sometimes the best of 2.

TERM

Attained Ages 0-69

As young-to-middle ages had the most historical mortality improvement when moving from older industry tables to newer tables, let's first look at experience within attained ages 0-69 for term business. Many companies contributed data that was included in the ILEC study and a variety of selection criteria can be applied.

We chose to focus on plans that had preferred class(es) available, attained ages 0-69, policies issued 1996+, durations 4+, face amounts $100-2499K and excluded post-level term experience. Preferred underwriting (UW) criteria became more standardized after 1995 for companies that offered preferred. Claims rates from and patterns in durations 1-3 vary from the combination of the contestable period and company claims practices.[1]

This Term experience has more than 5,000 claims in each combination of Underwriting Class / Study Year group. The actual to expected (A/E) ratios by count using the 2015 VBT rates as the expected basis are summarized in Figure 3.

Observations from an analysis of the experience includes:

1. Underwriting class provided a large differentiation in mortality rates. Super Preferred had 44% lower rates when compared to Residual. Preferred rates were 34% lower than Residual (Figure 4).
2. Over time, the 2015 VBT A/Es generally decrease with the highest ratios in observation years 2009-2011 and the lowest from 2014-2015 in the Super Preferred and Preferred Non-smokers underwriting classes.
3. There is very little change in A/Es for Residual Non-smokers from 2012-2013 to 2014-2015.

These observations indicate Term life-insured mortality generally continued to decrease across the first part of the past decade. The next summary (Figure 5) shows the 2015 VBT Count A/Es by Issue Year group for each underwriting class. Super Preferred and the Preferred Non-smoker classes display quite similar A/Es for each issue year group. Thus, the mortality rate decreases shown above are not explained by mix changes within issue year cohorts.

There are unanswered questions as to why the Residual Non-smoker class does not have the same decrease in A/Es in later study years. Also unanswered is why this class has decreasing A/Es in more recent issue years.

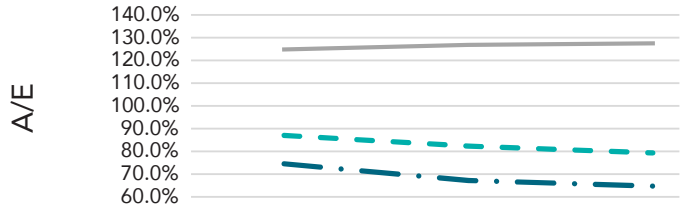
It is difficult to answer some of these questions from an industry study which combines many companies with different mixes of business that cannot be differentiated. Some insureds in this class could have found lower rates and obtained new policies. The marketing of the newer Standard Plus underwriting class could have facilitated this, increasing the exodus rate of better risks from the Residual group. It is also possible that the Residual group was more affected, some years after policy issue, by negative health-related changes that are impacting the U.S. population, such as cardiovascular disease.

SCOR's attained ages 0-69 mortality experience through 2017 has also been analyzed using an internally developed mortality table that has an additional underwriting class dimension. Much of the recent study year experience exhibited 8-12% lower mortality rates when compared to study years 2010-2013. Paralleling the ILEC results, there was generally more improvement in Super Preferred and Preferred Non-smoker classes than in the Residual Non-smoker class.

Let's review our tour of attained ages 0-69 Term mortality.

1. These ages cover most of the individual life term exposures.
2. Historical life-insured mortality improvement seen in the industry tables has been high. There is no smoker distinction in the SOA 7580 mortality table. The 2001 VBT reflected very little experience on policies with the issue years 1996+ general style of preferred underwriting. Much of the experience underlying the 2015 VBT was from issue years 1996+.
3. Preferred and Super Preferred, throughout most of the last decade, continued to produce much lower mortality than Residual. Each class's preferred discount remained stable or mildly improved
4. Recent life-insured mortality, compared to 2015 VBT, displayed some improvement.
5. Relatively stable life underwriting and distribution since 1996 may lead to revised life-insured mortality improvement expectations for this decade. Life-insured mortality improvement could be more moderate compared to the higher rates seen across previous industry tables. As accelerated underwriting processes open the door to more people who might not otherwise go through the underwriting process to obtain insurance, it is reasonable to expect future differences in mortality level and slope by duration, as well as differences in future improvement.

FIGURE 4: 2015 VBT A/E AT ATTAINED AGES 0-69 BY STUDY YEAR AND UNDERWRITING CLASS

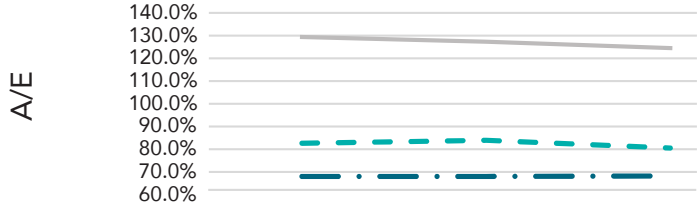


	2009-2011	2012-2013	2014-2015
Super Preferred	74.5%	67.2%	64.7%
Preferred NS	87.0%	82.3%	79.3%
Residual NS	124.8%	126.8%	127.5%

Study Year Group

Figure 4 shows a large differentiation in mortality rates among underwriting class

FIGURE 5: 2015 VBT A/E AT ATTAINED AGES 0-69 BY ISSUE YEAR AND UNDERWRITING CLASS



	1996-1999	2000-2004	2005+
Super Preferred	68.0%	68.0%	68.2%
Preferred NS	82.6%	83.9%	80.5%
Residual NS	129.4%	127.3%	124.5%

Issue Year Group

Figure 5 shows quite similar A/Es for each issue year group for Super Preferred and the Preferred Non-smoker classes.

Continued

Mortality Trends for Term and Perm Life Insurance

Cont.

Figure 6 – Experience on Permanent Products, Attained Ages 0-69

0-69 Attained Age UW Class	Actual Claims Count across Study Years				Claims / 2015 VBT
	2009-2011	2012-2013	2014-2015	Total	Total
Super Preferred	505	707	1,110	2,322	71.8%
Preferred NS	2,713	2,910	3,583	9,206	83.0%
Residual NS	2,809	3,009	3,949	9,767	122.4%
Grand Total	**6,027**	**6,626**	**8,642**	**21,295**	**95.4%**

PERM

Experience on Permanent Products, Attained Ages 0-69

Adoption of three or more Non-smoker UW classes was slower for Perm products. The next summary shows there were relatively few Perm Super Preferred claims in the ILEC study, with very few from issue years before 2005. This different historical Perm UW class distribution drove higher Perm 2015 VBT A/Es overall. However, within each UW Class, the Perm mortality rates in Figure 6 are a lot like the Term (Figure 3) mortality rates.

Perm experience had about one-third of the Term claims and as a result the credibility within a study year group is lower, especially for Super Preferred. Due to the lower credibility, less emphasis could be placed on any observed differences in the timing of mortality rate changes and instead focus on overall observed changes. Figure 7 displays significant decreases in Super Preferred and Preferred Non-smoker mortality after 2011. Thus, the direction of change in mortality rates in the first half of the last decade for attained ages 0-69 with Perm life insurance coverage has been the same as it was for Term.

Mortality within Attained Ages 70-84 and 85+

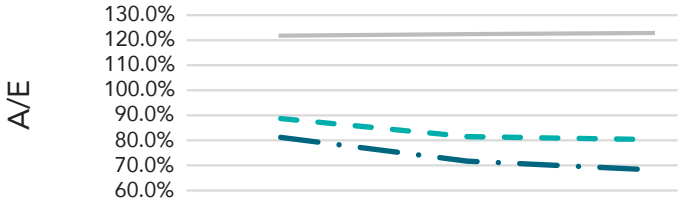
The characteristics of life insurance policies on insureds with attained ages 70+ can be described as complex and displaying convergence of mortality rates at very high attained ages. For instance,

1. Term provided 75% of attained ages 0-69 ILEC experience and 40% of 70-84 experience. Conversely, almost all the ages 85+ exposure is from Perm.
2. Use of specific "older age, 70+" underwriting tests increased across 2003-2008. With limited study years there is correlation of duration and issue year groups. It is unclear whether observed durational mortality differences, even as a percent of 2015 VBT, are driven by duration or by issue year underwriting and marketing.
3. Differences in mortality rates between Preferred and Residual are less at ages 85+ than they are at ages 0-69. How much preferred discount wears off by attained age 70, 75 and 80? This is a topic that could warrant an article all by itself.
4. As noted in Figure 8, a much larger portion of ages 85+ exposure is on Residual policies and very little is from Super Preferred. This is in part due to the slower adoption of preferred risk classes on permanent business, which drives the exposure at the oldest attained ages.

Estimation of life-insured mortality improvement for attained ages 70+ should be considered complex. Noting much less historical improvement for attained ages 85-89 and 90+ indicates only data known to be from very similar risks should be used to compare mortality rates across study year groups.

Given the changes in mix of business and underwriting approaches over time, it is difficult to tell if improvement is occurring or if changes in mortality rates are due to a cohort of business moving through particular durations. The inherent complexity highlights the benefits of studying attained ages 70+ observed mortality across underwriting class, attained age group, duration and other characteristics to better understand the drivers of the experience.

FIGURE 7: 2015 VBT A/E AT ATTAINED AGES 0-69 BY STUDY YEAR AND UNDERWRITING CLASS



	2009-2011	2012-2013	2014-2015
Super Preferred	81.2%	71.7%	68.2%
Preferred NS	88.7%	81.5%	80.3%
Residual NS	121.8%	122.4%	122.9%

Study Year Group

Figure 7 shows significant decreases in Super Preferred and Preferred Non-smoker mortality after 2011.

FIGURE 8: UW CLASS EXPOSURE PERCENT OF ATTAINED AGE GROUP

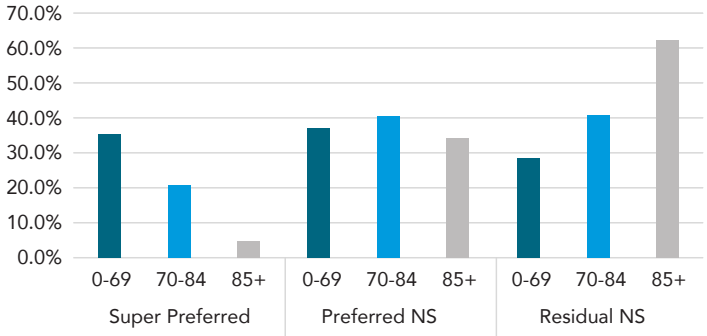


Figure 8 shows a much larger portion of ages 85+ exposure is on Residual policies and very little from Super Preferred.

Conclusion

Attained ages 0-69 provide a very large proportion of U.S. Fully Underwritten Individual Life exposure amount. After 1980, the Smoker proportion decreased significantly. After 1990, new underwriting as preferred-or-better was introduced and became a majority by the early 2000s. Thus, reductions in life insured mortality rates exceeded population mortality improvements between 1980 and 2010. Increasingly stable underwriting and marketing practices from 1995 to 2000 provided a foundation for more moderate life-insured mortality improvements, about 1-2% per year, from 2010 through 2017. The improvement rates were similar to the range of rates seen in the total U.S. population and those from the subset of the population that attended college.

The complex and more limited older age mortality experience discourages improvement estimation. This is especially true for relatively short periods like 5-10 years. Thus, the low historical ages 85+ improvements deserve consideration when estimating future improvements.

The life-insured survivorship curve is now even more "square" in shape. On permanent products with very low lapse rates, most death claims are expected in ages 85+. The related financial and pricing implications are significant. This is especially true for permanent products with low cash value (high net amount at risk) where future expectations include low nominal interest rates. ■

Footnote

1 We also selected "yes" for the common company indicator for more consistency of contributing companies, and we exclude the Standard Plus experience due to its minimal experience compared to the other classes.

THOUGHT LEADERSHIP

SCOR Recognition & Industry Activities

SCOR is delighted to have recently been recognized as a Top 10 Underwriting Solution Provider by CIO Outlook magazine. Read the interview with Al Mele about Velogica on our website (SCORGlobalLifeAmericas.com > Solutions > Underwriting > Related Articles).

SCOR is pleased to announce that SOA has chosen the following SCOR presenters for the annual Life and Annuity Symposium, which will be held in St. Louis, MO on May 4&5.

Sean Hayward
New Financial Reporting Regimes: Why Transparency Is Good Business

James Lynch
Predictive Analytics: The New Way to Forecast Mortality

Beaman Senecal
Mortality Hot Topics: Mortality Improvement and Older Age Mortality

Manisha Dias
Direct to Consumer Model Is Disrupting the Traditional Life Insurance Model


Al Mele
Jennifer Nusbaum
Life Insurance Goes Agile: How Organizational Agility Helps Teams, Partners, Consumers

We have rebranded our SCORcast webinars as SCOR Campus and already have two webinars in 2020:

Richard Braun, MD,
Nonalcoholic Fatty Liver Disease was hosted by Dr. Richard Braun in January.

Nathalie Racco
Liquid Biopsy will be hosted by Nathalie Racco in February.

You can find the links to both webinars on the home page of our website at scorgloballifeamericas.com.

SCOR
The Art & Science of Risk

Editor
Pam Granzin
704.344.2725
pgranzin@scor.com
www.scor.com/SGLA

SCOR Global Life
Americas Reinsurance Company,
a division of SCOR.

CHARLOTTE
101 South Tryon Street
Suite 3200
Charlotte, NC 28280

KANSAS CITY
11625 Rosewood Street
Suite 300
Leawood, KS 66211

MINNEAPOLIS
650 Third Avenue
South Suite 1600
Minneapolis, MN 55402

MONTREAL
1 Place Ville Marie
Suite 2010
Montreal, Quebec
H3B 2C4
Canada

TORONTO
199 Bay Street, Suite
2800 Toronto,
ON M5L 1G1 Canada