# SCORVIEWS

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

# New Technology, Data Sources Accelerated Underwriting Evolves

A year ago in this publication I commented on the growing interest in automated underwriting. Twelve months later, that observation seems like an understatement. Investment in underwriting innovation is speeding up rapidly across the industry. A fundamental shift is underway with intense focus on electronic data, advanced analytics and new sources of evidence for non-fluid underwriting.

SCOR is at the forefront of this movement. For more than a decade now, SCOR Velogica has advanced the use of electronic data and underwriting algorithms to help make the purchase of low face amount life insurance faster and easier. Today, thanks to continuous enhancements to the platform, our clients are using Velogica to accelerate underwriting for both their simplified issue and traditionally underwritten business.

Our Research & Development team is studying a variety of new and developing data sources to determine their application to life insurance risk selection. In this issue of *SCORviews*, Ammon Dixon and Peter Komsthoeft address risk score based underwriting and how to integrate risk scoring into an existing underwriting process. They also share SCOR's view on the effectiveness of Risk Classifier, the risk assessment tool from LexisNexis. As Ammon and Peter point out, legacy underwriting required trial and error to perfect and so will these new approaches.

As a leading life reinsurer, SCOR is committed to sharing our knowledge, especially as it relates to the pricing and selection of mortality risk. Our actuarial and medical experts are involved in a variety of industry support activities. Mary Bahna-Nolan, who heads Life R&D for SCOR, recently spoke to regulators (NAIC LATF) on simplified issue and accelerated underwriting mortality under VM-20. You can view her presentation on our website. During the annual meeting of the Society of Actuaries in October, SCOR will have a number of presenters on the agenda, including our medical directors. Dr. Richard Braun, Chief Medical Director, will address the role of chronic disease in higher mortality rates, and Dr. Bill Rooney, Medical Director, will participate on a panel on genetics testing.

As a full service reinsurer, SCOR seeks to be our clients' lead reinsurer, to support new business growth and develop solutions to risk and capital management needs. We are determined to keep improving our performance so that we increasingly add value to your company.  $\infty$ 

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

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The Art & Science of Risk

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Accelerated Underwriting Opportunities	Pg.	2
Pandemic Threats Must Be Monitored	Pg.	6
Breast Cancer in Women	Pg.	9
Term Life Sales Leadership	Pg.	10

# Accelerated Underwriting Opportunities

# New data sources, technology improve process

#### **Executive Summary**

Opportunities for point of sale underwriting are increasing as new data sources become available and processing techniques are developed. Risk scores are being analyzed by SCOR's R&D Center for impacts to underwriting and mortality assessment.



**By Ammon Dixon**AVP, Strategic Research

Mortality R&D

adixon@scor.com

Momentum is building for change in the life insurance industry. In the past year especially, companies have begun to actively explore new ways to deliver their products to the marketplace. The focus has been on improving the customer experience and driving new business. Supporting this focus has been a drive to bring new data, whether that be electronic versions of existing data or completely new sources of information, into the underwriting process.

Historically, point of sale underwriting has been limited to simplified issue policies which are constrained to lower face amounts and higher premiums. However, with additional data sources and processing techniques, accelerated underwriting is now possible for new business outside the simplified issue market.

Criminal history, clinical laboratory results, electronic health record, financial background, underlying credit history components and social media content are examples of data that are either accessible now



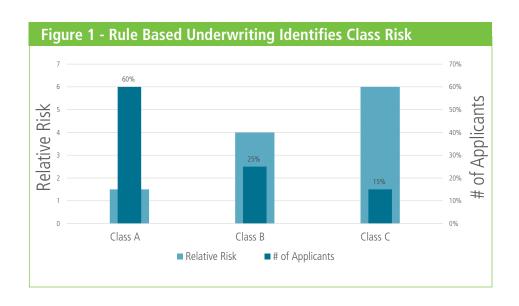
**By Peter Komsthoeft**VP, Underwriting Research
Mortality R&D
pkomsthoeft@scor.com

or are in development. With many of these new data elements and their combinations comes a new challenge in the form of risk scores.

The majority of these scores are created from highly credible data (solid data, lots of records, good mortality feedback, etc.), using sound statistical modeling techniques and, on a standalone basis, appear to perform well as a predictor of mortality. The challenge comes in determining if or when, where and how these scores can augment or replace traditional underwriting processes.

### **Legacy Underwriting**

Legacy underwriting is significantly based on expert opinion and continuous adjustment, some by trial and error. It relies on rules and qualification ranges. Interaction between various sources of information is less strongly considered than in statistical model approaches.



Traditional underwriting has generally resulted in consistent, predictable long term mortality experience within an underwriting class. (This likely explains why the industry has been slow to introduce new data and technology to the underwriting process.) However, while mortality experience may be acceptable at an underwriting class level, a closer look shows that individual mortality within an underwriting class can vary greatly between applicants (Figure 1). In other words, legacy underwriting is good at predicting mortality experience at the underwriting class level but less so at the individual applicant level.

#### **Risk Score Based Underwriting**

By contrast, mortality risk scores are typically built using statistical models designed to express the actual mortality risk of an individual. These scores take the form of underlying hazard values or some mapped structure for the hazard value such as a percentile.

Successful use and integration of a score can vary depending on the data that is used to build the model and how that data relates to the applied population. For example, a risk scoring model that uses property and casualty data (life insurance applicants would likely be a subset of this data) will need recalibration to be more applicable to typical life insurance applicants. Likewise, a model built using a population of life insurance applicants with low policy face amounts will likely have key attachment point variation when applied to a high face amount population. The underlying mortality patterns may hold up, but at the very least an adjustment factor may be needed.

With this in mind, it is critical to understand how the score performs in a specific population and to appreciate the relative differences between each population. Scores are unforgiving. If the model determines an association exists between an input and mortality, the score will reflect it.

However, correlation does not always translate to causation. For instance, if an observation is that people who eat curly fries live longer, their longevity does not necessarily mean that it is because they eat curly fries.

Another consideration when utilizing scoring models is that low incidence conditions will not be reflected well within a score, as scores can only reflect the information available. Statistical significance requires a minimum number of observations to establish a correlation. Scoring models can also be less flexible than the traditional underwriting process because adding information typically requires the entire model to be rebuilt. Models look at associations. If someone has multiple conditions, many models will tend to skew towards riskier scores due to rating the overlapping conditions and not being able to fully adjust for the overlaps.

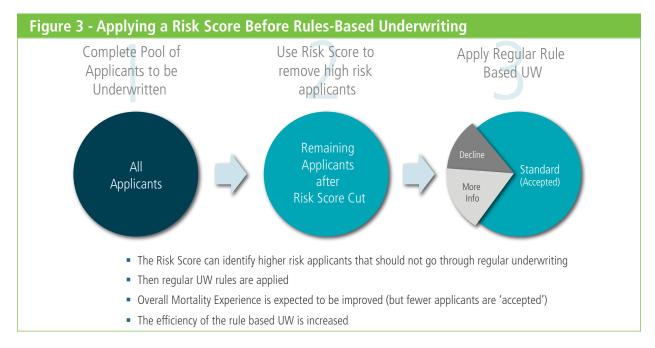
#### What's Next

Based on experiences to date, there are many hurdles in attempting to implement a standalone risk score. These range from supporting the producers to legal and compliance with several challenges in between. The most successful initiatives have taken a hybrid approach — layering risk scores with traditional underwriting in various combinations.

It is important to realize that both legacy underwriting approaches and new model (risk score) approaches are predictive models. Due to the different nature of



## Accelerated Underwriting Opportunities (cont.)



each approach, combining them is not an insignificant undertaking.

Legacy, rule-based selection creates pools of individuals who together meet certain mortality expectations, but the individual mortality risk within the pool is often widely dispersed. Scores can be used to expose and mitigate the dispersion

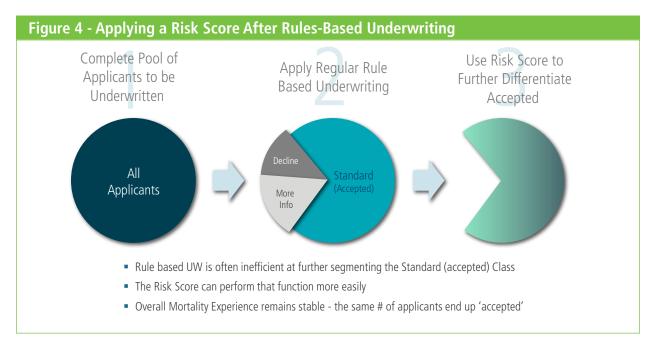
Companies need to determine when in the underwriting process to insert the risk score – before or after legacy underwriting or somewhere in the middle. Where the score falls into the underwriting process can have significantly different impacts on the overall process and its outcomes. In some cases the resulting underwriting decision will be counterintuitive from past approaches, causing underwriter and producer consternation and anxiety.

Integrating risk scores into the underwriting process can be time consuming, complex and risky. However, in the near term it is also the most realistic path forward to gain the advantages the scores offer while not unbalancing the rest of the underwriting and sales process. Future iterations of these scores and greater familiarity with their potential and impacts will continue to allow them to take on a greater role and influence in underwriting.

Once you have determined your company is ready to move forward with investigation into one or more of

these data sources or risk scores, you will need to do or obtain several things in order to be successful:

- Stakeholder consensus on overriding business goals
- A baseline for current portfolio composition, key metrics and performance. Many of these data points likely already exist and now need to be brought together.
- Knowledge of the data used to build the score and how the score relates to your applicant population
- A parallel study of legacy underwriting data including decisions to which the scores can be appended. This will allow better tuning of the selection rules.
- Key performance indicators and a method for tracking them on your block of business (e.g., if your population had 18% tobacco user selfadmission previously it should remain relatively stable if the new process is successful)
- Proactive monitoring
- Adjustments and changes based on lead indicator findings
- An aggressive communication and feedback plan for all stakeholders



Just as legacy underwriting required trial and error to perfect, so will these new approaches using risk scoring. However, the legacy underwriting process has evolved over many years, even decades. Current market needs will not allow for that much time in regard to adopting risk scores. Reacting to early results and adjusting the process will have to be done in faster iterations.

Risk scores promise to be great tools if built for and assimilated appropriately into life insurance underwriting. SCOR believes they are here to stay. We are heavily invested in studying and understanding the effectiveness of risk scoring and helping clients effectively integrate risk scoring into the underwriting process.  $\infty$ 

#### LexisNexis Risk Classifier: A Preview

New data and advanced analytics continue to shake up the way life insurers underwrite mortality risk. SCOR's Research and Development team is focused on understanding the predictive value of LexisNexis Risk Classifier in life insurance. Research shows that data used in the scoring model may well be the next frontier in life underwriting.

Risk Classifier is a risk assessment tool from LexisNexis that uses data from attributes derived from public records, driving history and credit to assess a proposed insured's risk profile. We used LexisNexis data and output from their predictive model to analyze the correlation between their Risk Classifier scores and mortality in the sample population that was provided. The depersonalized data included 7.5 million records from a property and casualty insurance population and contained more than 200,000 deaths.

Our comprehensive review found that Risk Classifier is an excellent predictor of all-cause mortality in the population that we studied with many indicators that could be applied to life insurance assumptions. For more on our study of LexisNexis Risk Classifier, please visit our website.

# Zika, Ebola, MERS & More

### Pandemic Threats Must Be Monitored

#### **Executive Summary**

Monitoring pandemic risk is a key consideration in global risk management. While Zika headlines remind us that new risks are always emerging, a review of recent outbreaks illustrate the low risk of outbreaks becoming pandemics.



**Doris Azarcon** *Director, Actuary – Risk dazarcon@scor.com* 

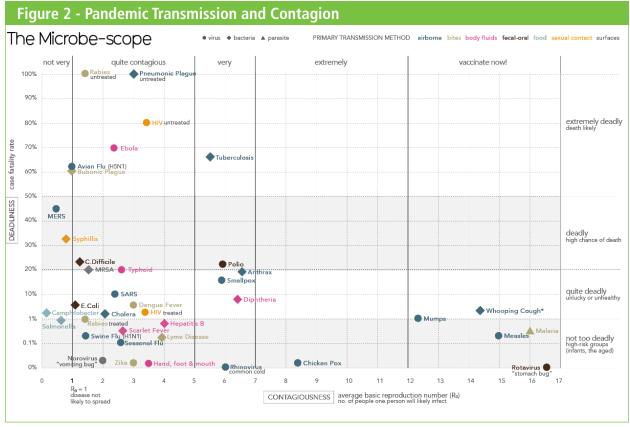
While the Zika virus may have minimal impact to mortality, headlines about the spread of Zika and the recently concluded Ebola outbreak remind us that new risks for potential pandemics continually emerge. Companies must prepare risk management and mitigation plans in case of extreme loss scenarios such as pandemics. One tool used to measure enterprise risk is footprint scenario analysis, where we look at historical events and assess the nature and magnitude of losses if the same event were to occur today.

Two historical pandemic events that we can use for footprint scenario analysis are the influenza pandemics of 1918 and 2009. The death toll of the 1918 flu is usually estimated to be 20 million to 50 million victims

worldwide, although other estimates run as high as 100 million victims. The exact number is hard to know given the lack of accurate record keeping in many parts of the world. Mortality associated with the 2009 flu is estimated between the World Health Organization's officially reported 18,500 laboratory confirmed deaths to "hundreds of thousands" according to a study published in the *Lancet Infectious Diseases journal* in September 2012.

Using detailed data such as age, health conditions and socio-economic status of the affected portfolios, we can estimate how our insurance portfolio may be impacted if such an event were to occur today. Typically, we consider both a true footprint (assuming the same conditions are prevailing) and a current day scenario (assuming medical advances and other interventions are available). In this way, an insurer can estimate the potential impact of a pandemic, no matter how remote, on the portfolio.

Figure 1 - Potential Pandemic Risks					
Outbreak	<b>Contagion Ranking</b>	Fatality Ranking	Pandemic Potential		
1918 H1N1 (historical)	Moderate - Low	Low	Pandemic		
2009 H1N1 (historical)	Moderate - Low	Very Low	Pandemic		
Ebola	Moderate - Low	High	Low. Symptoms arise quickly after infection so new cases can be quarantined quickly.		
Middle East Respiratory Syndrome (MERS)	Low	High	Low, though no vaccine or specific treatment currently available.		
H5N1 influenza	Low	High	Low. Candidate vaccine already developed.		
H7N9 influenza	Low	High	Low. Candidate vaccine already developed.		
Zika	Moderate	Extremely low	Low		



Viruses related to the most recent outbreaks can be found towards the left section of the graph (lower contagiousness). Most, except for Zika, are considered highly fatal. While the pandemic potential of many of these viruses seem low, we need to consider other factors that would provide conditions resulting in a "perfect storm" that would create a pandemic resulting in extreme losses. Source: www. informationisbeautiful.net/visualizations/the-microbescope-infectious-diseases-in-context/

#### **Potential Pandemic Losses**

What are the potential losses if pandemics of this same magnitude were to occur today?

Some experts claim the next pandemic is overdue. A pandemic has occurred every 20 to 30 years for the past few centuries, and the most recent one, the H1N1 influenza pandemic, originated in 2009. Pandemics often develop when humans have little or no immunity to viruses created by genetic mutation.

By reviewing a few recent outbreaks, we can assess the potential pandemic risk (Figure 1).

Though we see from the chart that the risk of a pandemic developing as a result of the most recent headline outbreaks is low, what might a modern pandemic look like? During his 2006 TED prize acceptance speech, Dr. Larry Brilliant shared results of

a study he did with top epidemiologists who predicted effects of the next pandemic:

- A billion people get sick and as many as 165 million people die
- Global recession and depression occur as just-intime inventory systems and the rubber band of globalization break
- Economic cost would be at one to three trillion dollars, as those who escape death lose their jobs and healthcare benefits

Dr. Brilliant estimated that a global pandemic today could spread from one discreet site of origination to global infections within three weeks, given the frequent and widespread use of international travel (Figure 3).

### Pandemic Threats (cont.)

Historian Dr. Mark Humphries has found evidence that the 1918 influenza may have originated in China, when a new and deadly virus appeared in the winter of 1917-18. The subsequent mobilization of the Chinese Labor Corps, sent by the Chinese government to the Western front of World War I to assist the Allies, may have been the catalyst for the global spread of the virus.

There are other theories as to the geographic origin of the 1918 influenza, but it is clear that the massive movement of people between relatively isolated locations due to the war may have accelerated its spread. Other historical epidemics have occurred under similar situations whereby new pathways of travel opened up, allowing contact between previously isolated groups. In our modern day scenario, we need to consider potential triggers that could cause local outbreaks such as MERS or Ebola to become global pandemics.

Monitoring pandemic risk is a key consideration in SCOR's global risk management process. SCOR has sponsored global forums where academicians, epidemiologists, industry experts and other stakeholders come together to discuss looming challenges and best practices. Our team of pandemic analysts around the world consult frequently with each other and with external experts on events in their respective regions and any implications they may have to progress from outbreak to pandemic. We continuously and conservatively model potential pandemic impacts to our block of business. ∞

#### Figure 3 - Pandemic Risk Factors

#### **Conditions Favorable to Pandemics**

New viral strain develops that people have little or no immunity to

No preventative vaccine immediately available to stop spread of new infections

No effective antiviral or antibiotic treatment available to prevent fatalities

Inability to detect the epidemic in its early stages and lack of coordinated communication during pandemic development

Population growing and increasingly centralized, in closer proximity which increases risk and spread of contagious diseases

#### **Current Conditions that Lower Pandemic Risk**

CDC takes routine preparedness actions whenever a new virus with pandemic potential is identified, including developing a candidate vaccine virus to make a vaccine in case needed

Antibiotics since the 1940s and antivirals since the 1960s are now widely used and continuously developed

Sophisticated surveillance monitoring and global communication plan plus 24/7 internet news

#### Resources:

www.cdc.gov/flu/avianflu/h7n9-virus.htm

www.who.int/influenza/human\_animal\_interface/influenza\_h7n9/RiskAssessment\_H7N9\_23Feb20115.pdf?ua=1

www.history.com/topics/1918-flu-pandemic

www.mphonline.org/worst-pandemics-in-history/

 $www.medicalnewstoday.com/articles/148945.\\ php?page=3$ 

www.elsevier.es/es-revista-medicina-universitaria-304-articulo-history-progress-antiviral-drugs-from-5166557961500037X

wih.sagepub.com/content/21/1/55.abstract

www.informationisbeautiful.net/visualizations/the-microbescope-infectious-diseases-in-context/

www.ted.com/talks/larry\_brilliant\_wants\_to\_stop\_pandemics

# **Breast Cancer in Women**

# Mortality Decreases during Past 12 Years

#### **Executive Summary**

Systematic screenings for breast cancer in women and improvements in diagnosis and treatment strategies have lowered the mortality of breast cancer during the past 12 years.

Breast cancer is responsible for more than 520,000 deaths each year and is the fifth most frequent cause of death in the world. One in eight women risks developing breast cancer in her lifetime.

A new *INFORM* newsletter published by SCOR, entitled "Breast Cancer in Women," explores improvements in diagnosis, classifications and treatment of breast cancer which are reducing the mortality of breast cancer in countries with high standards of living. In the past 12 years, breast cancer mortality is down 22.2%, which the report's authors say is attributed to the progress made in systematic screening and treatment therapies.

Still, 1.7 million new cases are diagnosed every year worldwide, which is an age-standardised incidence rate of 43.1 per 100,000. Breast cancer represents 25% of cancers diagnosed worldwide. Risks connected with cancer in general and breast cancer in particular are being reevaluated following recent epidemiological data in oncology as well as new diagnostic and therapeutic techniques.

Immunohistochemical analysis and genetic profiling of breast cancer tumors have led to identification of four primary profiles of tumors, which are essential for prognosis and treatment strategy. Patient survival varies according to the prognostic factors.

The report — written by Delphine Labojka, Method & Process Manager; Dr. Patrick Malamud, Oncologist, Medical Officer; and Dr. Xuân-Viêt Pham, Rheumatologist, Medical Officer — is available on the Special Reports page of the Knowledge Center on our website. ∞

#### **Breast Cancer Awareness Month**

Each October focus turns to breast cancer. A number of annual campaigns seek to raise awareness of the risks and the value of screening and early detection as well as treatment options available to women and men who are diagnosed with one of the many forms of breast cancer. According to BreastCancer. org, an estimated 310,000 people in the United States will be diagnosed with breast cancer this year, and 80% of those will be invasive breast cancers in women. Nearly 41,000 die from the disease, though the mortality rate has been falling since 1989.

Breast cancer incidence rates in the U.S. began decreasing in 2000, after increasing for the previous two decades. The American Cancer Society reports there are more than 2.8 million breast cancer survivors in the United States, which includes women still being treated and those who have completed treatment.

# Term Life Sales Leadership

### How Important Is Price?

#### **Executive Summary**

As many insurers are currently reviewing the need for term repricing in light of PBR implementation during the next three years, they may need to consider price elasticity of consumer demand on term products. Term products are becoming more price competitive. Consumers are becoming increasingly informed, as more term products are selling online. Will term life insurers respond to increased consumer price sensitivity when repricing term products?



**Hiroe Noonan, FLMI, MBA**Senior Strategic Business Analyst
HNoonan@scor.com

For many life insurance companies, term life price elasticity is not a major component in pricing strategy. Other factors — actuarial assumptions, profitability such as ROI/ROC target achievement and price competitiveness against peers in the targeted market segments — often drive the strategy.

Price elasticity of demand is a measure of the relationship between a change in the quantity demanded of a particular good and a change in its price – does increased demand drive the price down? Or does a price hike decrease consumer demand? Usually the amount of competition in the marketplace keeps prices more flexible – and lower.

#### **The Insurer Perspective**

Unlike industries where price elasticity is a key factor in the company's pricing strategy, insurers appear to pay less attention to the impact of their term life price changes on their sales. They may view term life products as relatively 'inelastic' like water, gasoline, prescription medicines, smartphones or other highend electronic devices in which demand is not greatly impacted by price changes.

Many insurers may also view other factors such as distribution, branding, financial strength and other marketing strategies as playing bigger roles than pricing in term life sales. Accurately predicting the immediate to mid-term effect of any price hike or decrease of term products may not seem critical.

There are notable degrees of differences in price sensitivities among life insurers. In general, companies who participate in online/direct term sales market are much more price sensitive, as they need to compete against many other competitors.

Companies using brokerage as their core distribution force are also price sensitive. They are not, however, price-elasticity sensitive, because their main concern is to maintain or improve their price competitiveness against peers. Their focus is how to set the prices to beat their competitors while maintaining the overall returns within their targets.

Companies who mainly use their own captive agents to sell term products are less concerned about price competitiveness, but this does not necessarily mean they set their price considering the direct effect of their price changes to the sales growth. Often times their term life products are viewed as somewhat optional or supplemental products to their main focus products, such as whole life.

As a result, prices of term products are not set acutely attuned to the price sensitivity of consumer demand. But do these no- to low-elasticity sensitive pricing strategies have no risk?

### **The Consumer Viewpoint**

Consumers are increasingly price sensitive in terms of shopping for term life insurance – LIMRA International's 2016 Insurance Barometer Study shows that 38% of consumers say "best price" is the most or second-most important factor in deciding to buy term product in 2015, while only 25% ranked price this way in 2011 (Figure 1).

Other factors consumers view as important are "proper amount of coverage" and "understanding what they are buying" but not "my insurer's brand" or "relationship with my agent/broker/advisors." Among those factors, however, "best price" is the only factor to achieve significant growth in importance during the past five years.

What should insurers do to adjust to this consumer preference trend, especially in their pricing strategy? There is no data or single study that answers the question. But if you take a look at the correlation between companies with top term sales and their price change history during the past decade, the data suggest a possibility that life insurance companies' price change decisions may affect sales more than they anticipated, both in positive and negative ways.

When we compared the Top 10 term writers (by premium) over the past 10 years (2005 – 2015), only six companies in the Top 10 group in 2005 were able to stay in the group after 10 years. Within the Top 5 group, only one company could keep its top status.

When we look at the term competitiveness of these companies (using premium comparison analysis based on selected cells, such as 20-year, \$500,000 face, age 35 and best underwriting classes) during the past 10 years, all of them changed prices sometime during the decade. Some of them made drastic changes to their prices, either downward or upward, while others changed only modestly.

Meanwhile, some companies who were not in Top 10 in the term sales ranking have reduced their term price during the past year and have achieved a strong sales growth and a jump in market share and rankings.

Interestingly, not all top term writers are price leaders. Many tend to sit in the mid-top group or within a competitive price range. And some top term writers raised prices but maintained or even improved their market position.

#### More than Price...

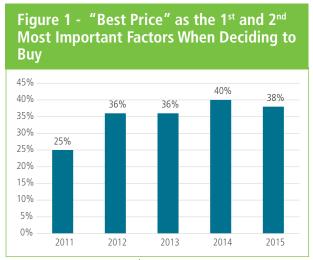
When we take a closer look at why some companies could not maintain the top term ranking status during the past 10 years, price is not the only consideration. During the past decade, life insurance companies experienced numerous adverse situations - financial crisis, low interest rate environment, regulatory changes, consumer demographics and demand changes. Due to these factors, some companies experienced financial and branding difficulty that led to the decline in their sales.

Some companies also made strategic decisions to reduce competitiveness in their term life segment in order to improve profitability and reduce risks, therefore raising prices. But their strategic price increase decision could result in greater-than-anticipated reduction in term sales, negatively impacting the company's revenues. This could happen if companies are not correctly taking increasing consumers' price sensitivity into their assumptions.

#### ...But Price has its Place

This examination of term price changes to term market sales leadership is based on limited data. But comparing the history of top term writers to price competitiveness during the past decade does suggest that term price changes can have drastic effects on insurers' sales growth as driven by consumer demand reaction, sometimes perhaps much more than insurers planned.

In the past decade, the term market has become more competitive. Online and other direct-to-consumer term sales have increased, and consumers are becoming increasingly informed, which could raise term's price elasticity of demand. With PBR implementation during the next three years, insurers will be reviewing their term pricing strategies. The price elasticity of consumer demand on term products may be worth considering as part of that review. ∞



Source: LIMRA International

# **Industry Meeting Calendar**

# **SCOR Employee Presentations**

As a leader in the US life reinsurance industry, SCOR is committed to sharing its knowledge and experience with the industry overall. In addition to volunteering time, service and expertise to industry associations, a key mission is to share our perspective at industry meetings, through presentations and one-on-one meetings.

Mary Bahna-Nolan, Executive Vice President & Head of our Life R&D Center, recently made a presentation to the NAIC LATF on mortality issues related to simplified issue and accelerated underwriting. A copy of her presentation is available on our website; see Industry Communications within our Knowledge Center.

Below is a list of upcoming industry events and SCOR employees scheduled to present. We look forward to seeing you at the upcoming meetings.  $\infty$ 

Upcoming Industry Meetings					
Meeting (Location, Date)		Session	SCOR Presenter		
KC Risk Selectors	Kansas City October 20	Hypertrophic cardiomyopathy	Bill Rooney, MD		
		How would I get started with predictive modeling? (#040PD)	Sandra To, FSA, MAAA		
SOCIETY OF ACTUARIES	Las Vegas	Controls Effectiveness & Process Optimization (#106WS)	Sandra To, FSA, MAAA		
SOA Annual Meeting	October 23-26	One Thing Leads to Another: the Role of Chronic Disease in Higher Mortality Rates (#123PD)	Richard Braun, MD		
_		Genetic Testing (#015PD)	Bill Rooney, MD		
		Women's Leadership Forum: Untying Double Binds (#27) featuring Sara Jordan-Bloch	Mary Beth Ramsay, FSA, EA, MAAA		



#### Charlotte

101 South Tryon Street Suite 3200 Charlotte, NC 28280

#### Kansas City

11625 Rosewood Street Suite 300 Leawood, KS 66211

#### Minneapolis

901 Marquette Avenue Suite 1500 Minneapolis, MN 55402

#### Toronto

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

#### Montreal

1250 Boulevard René Lévesque Ouest Bureau 4510 Montréal - Québec H3B 4W8 Canada

#### Mexico

Oficina de Representación en México Edificio Torre del Angel Paseo de la Reforma 350, piso 6 Col. Juárez CP 06600 México DF Mexico

#### an Paulo

SCOR Global Life U.S. Re Escritorio de Representação no Brasil Ltda R.Luigi Galvani 70, suite 121 04575-020 São Paulo - SP Brazil

#### Santiago

Edificio Isidora Magdalena Norte Magdalena 181, Piso 12, Oficina 1201 Norte 7550055 Las Condes Santiago Chile

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