

## SCOR's New Leadership Team *Building Deeper Client Relationships*



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SCOR's announcement of a new leadership team in the Americas acknowledges the completion of the integration and alignment that followed its acquisition of two large US reinsurers. We are one company with one culture, connected to the resources of SCOR's global organization. Our path forward follows an uncompromising commitment to understanding client needs and working together to create opportunities.

I am honored to serve as CEO of SCOR Global Life in the Americas. Clients who know me know that I am a people person. I believe being "in the field" with clients is the best way to keep SCOR relevant as a reinsurance partner. So I will continue to spend a good deal of my time in the market.

This is why I am excited to have an individual with exceptional actuarial and financial talents as my Deputy CEO. **Brona Magee** brings the technical expertise that is so crucial to our business. She started with SCOR in 2006 at our Irish operation and assumed the position of CFO for SCOR Global Life Americas in 2013. As Deputy CEO, she will be responsible for all technical aspects of the business.

To focus more resources on our US clients, we now have a dedicated US market operation with **Brock Robbins** at the helm. Brock is responsible for life business in the US. He formerly held the position of Senior Vice President and Chief Pricing Actuary.

**Bruce Lundeen** has returned to the US to assume the role of Chief Pricing Officer for the Americas. Bruce served as Chief Pricing Officer for Asia, based in Singapore since 2011.

**Michael Colannino**, who has served in numerous technical and senior leadership roles in the organization, continues to head our operations in Canada and Latin America.

SCOR Global Life has made headway in deepening relationships and strengthening our value proposition for clients. While we are pleased with our progress, we are determined to keep improving our performance. On behalf of everyone at SCOR, I wish you a successful New Year and look forward to building on our partnership in 2016 and beyond. ∞



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Deputy CEO



**Brock Robbins**  
Head of US Markets



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# Inforce Management

## Inforce Block Transactions Are a Powerful Tool

### Executive Summary

The concept of inforce management has taken on increased importance due to low interest rates and an increasing number of level-premium term life insurance policies reaching their post-level periods. As George explains, inforce management can take many forms, though perhaps the most discussed option is using inforce block transactions to transfer the risks to other companies.

George examines some of the trends in inforce management and what factors might contribute to a company preferring one option over another.



**By George Hrischenko, FSA, MAAA**  
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Managing inforce business has become a growing priority for life insurers. In the following article, I take a look at forces driving inforce performance, different actions companies are taking (with a focus on inforce block transfers) and the chances that these actions will become a permanent feature of their risk management agenda.

While many factors influence the performance of inforce business, two forces driving inforce management strategies are the recession and prolonged low interest-rate environment and blocks of term policies reaching their post level period.

### The Economy

Until the mid-2000s many companies managed existing blocks of business in relatively quiet back-office departments. But the effect of the recession and prolonged low interest rate environment on inforce performance brought inforce management into the spotlight. Product features that originally were designed to be modest became rich benefits.

Unlike new business that is priced based on today's mortality, lapse and interest rates assumptions, inforce business has these assumptions already factored in. While improvements in some pricing factors (e.g., actual mortality experience, mortality improvement) can alleviate pressures in other areas, it cannot offset the decline in expected investment returns.

### Post-Level Term

Focus on inforce management increased as the first

wave of XXX level-premium term policies began to reach their post-level term (PLT). The combination of high lapses and correspondingly deteriorating residual mortality spurred carriers to investigate ways to maintain profitability during the PLT. Companies consequently have been testing PLT pricing structures that could enhance persistency of better risks in the early post-level durations.

### Inforce Transactions

Companies typically have options available to manage inforce business. For example, mutual companies encourage as many policyowners as possible to exercise the conversion provisions, rolling policyowners into permanent products. Larger life insurers may determine that the embedded value is worth retaining the business and manage any mortality strain in-house, even though this may tie up capital for some time.

Inforce transactions can provide many advantages as part of an inforce management strategy. We address these as adverse, neutral and opportunistic below.

*Adverse Outcomes.* In some cases, today's realities simply cannot support the original pricing assumptions used in pricing the product. In this worst case, the block may become a long-term drain on earnings and capital. A number of companies have adopted de-risking strategies, offloading unprofitable business to reinsurers or other companies that may have the scale to more effectively manage the block. Our experience has shown that investors and regulators value predictability in mortality experience and in earnings: divestitures of loss-making business (with a recorded one-time charge against earnings) commonly are viewed as positive.

*Neutral Outcomes.* Instances may arise where the estimated effect to a business portfolio falls within

**Figure 1 – Inforce Reinsurance Activity, 2011-2014**

	2011	2012	2013	2014
<b># Transactions</b>	22	29	21	19
<b>Total Volume</b>	\$314.5bn	\$553.8bn	\$257.1bn	\$321.6bn
<b>Average Volume</b>	\$14.3bn	\$19.1bn	\$12.2bn	\$16.9bn
<b>Largest Deal</b>	\$100.3bn	\$127.3bn	\$96.6bn	\$101.0bn

*Deal activity, both by number of transactions and business volume, peaked in 2012, though two transactions accounted for more than \$250bn of volume. Note: Includes both affiliate and non-affiliate activity. (Source: Statutory reporting.)*

the margin of error. In such a case entering an inforce transaction is not necessarily a priority, but the cost of internal management – on resources and capital – may be questionable. Financial tools such as hedge programs can help life insurers manage the downside risk while protecting any earnings potential.

*Opportunistic Circumstances.* A number of life insurers may find themselves in a position where actively managing inforce business can add to earnings. In such a situation, entering an inforce transaction makes sense if the resulting benefits outweigh what the company can achieve on its own. The most compelling benefit for such companies is in accelerating cash flow, either through an immediate realization of the future profit stream, a release of reserves and capital, or both. This can be especially beneficial if a company is considering expanding a (profitable) product line or when the business in question has become secondary to the company's objectives.

## Who Is Involved?

Since 2012, inforce block transactions have been almost evenly split between transactions involving affiliated captive reinsurers and deals utilizing professional reinsurers. Each approach has advantages.

*Affiliate Captives.* Using affiliate captives has allowed carriers to cede the reserve and capital strain to an arms-length, but affiliated, company, usually in a favorable reserve or tax jurisdiction. The ceding parent receives the reserve credit and uses funds raised by bonds issued by the captive to finance the reserve strain. However, captive use has come under increased regulatory scrutiny, culminating with the adoption of Actuarial Guideline 48 and pending updates to the NAIC Credit for Reinsurance Model Law and Regulation. Lastly, and depending on how the transaction may be structured, the risk usually will

ultimately remain with the parent.

*Professional Reinsurers.* Reinsurers offer the expertise to evaluate the performance of blocks of business perhaps better than any other financial institution. By ceding an inforce block to a (non-affiliated) reinsurer, the life insurer can relinquish all reserve, capital and mortality issues to the assuming company. It is then up to the reinsurer to determine how best to manage the block. For these reasons, regulators are more open to such transactions.

However, carriers usually cede 100% of the block to a single reinsurer, which may raise concentration-of-risk concerns.

*A Third Way, with a Third Party.* To address some of the drawbacks of the above approaches, we are seeing a trend where commercial banks are getting involved in the transaction. In these scenarios, the carrier brings the block of business to the table, the reinsurer uses its valuation expertise to estimate embedded value and to assume the pure risk, and the bank acts as the financing agent for the capital and reserve strain associated with the block. The primary advantage is that each party brings their core asset to the transaction. A challenge involves acquiring all parties' buy-in, which increases ultimate execution risk.

## A Trusted Partner in Business Optimization

The key to inforce management remains making the inforce block perform as efficiently as possible. SCOR has worked with client companies in evaluating different approaches to maximize the earnings potential locked in inforce blocks. We have engaged in a variety of transactions focused on providing the best return for carriers with the least volatility.

If you would like to learn more about what SCOR can do to help your company optimize your business portfolio, please contact your account executive or me. ∞

# The Life Insurance Market in 2015

## A Transformative Year

### Executive Summary

Matt Lichty, who heads Marketing for SCOR Global Life in the US, takes a look at the past year from a primary company's perspective. His conclusion: It was a good year for the life insurance market in both sales and innovation. And based on 2015's performance, 2016 could be better.



**By Matt Lichty**  
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The past calendar year has been one of the most visibly active years in recent memory for the life insurance industry. Companies posted positive organic sales growth, executed on strategies to modernize products, services, operations and distribution and continued to invest in data and technology innovations to fuel future growth. Regulators enacted new rules for indexed universal life and kept Principles-Based Reserving on track for 2017 implementation.

### Sales Are Up

In 2015 companies began to see results from their recent focus on growth (following a period of portfolio de-risking and balance sheet bolstering). This focus on growth – along with an improving economy and rising levels of consumer confidence – is producing favorable production figures. Total annualized

premium increased more than 7% for the first three quarters in 2015, driven by universal life (nearly half of which was indexed UL) and whole life. Term was up slightly.

Sales growth for most perm products remains quite impressive, indicating a consumer preference for illustrated cash values compared to other non-insurance investment options. While the growth rate for IUL sales was down slightly from previous quarters, it is still impressive at nearly 19% during the third quarter. The enactment of Actuarial Guideline 49 (AG49), which addresses IUL crediting illustrations, seems to have had minimal impact on accumulation products so far.

Term life sales growth was more modest, registering 2% growth over 3Q sales in 2014 and 1.4% year to date. Still, given the large volume of term business written, these are favorable results. The average face amount for term products sold in 2015 is \$1.28 million, up 2.6%.

### Innovation and Engagement

Over the past year a growing number of carriers have committed resources to challenging the status quo in life insurance product design and delivery.

Perhaps the most notable application of innovation involved a company introducing a telematics-driven life insurance product. Utilizing new fitness technology, the carrier offers premium discounts and immediate rewards to customers who upload data from their insurer-provided telematics device to the company's website. Rewards are grouped, with insureds able to earn greater benefits based on their activity.

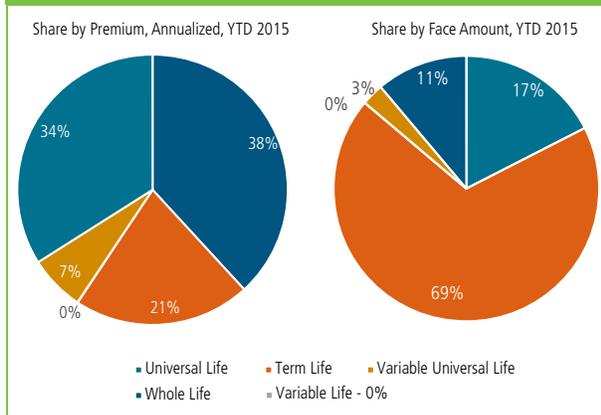
Stories abound about "orphan policyholders." More carriers recognize the lost potential cross- and up-selling due to a lack of policyowner engagement beyond the point of sale. One company introduced a social media campaign that is driven by the customer's social

**Figure 1 – Life Insurance Sales, 2015 YTD**

Policy Type	Annualized Prem. (\$000)	Growth, YTD
Term Life	\$1,633,658	1.4%
Universal Life	2,948,504	10.0%
of which, IUL	1,588,712	18.7%
VUL	514,010	0.5%
Variable Life	2,607	(5.5)%
Whole Life	2,624,411	10.0%
<b>Total</b>	<b>\$7,190,654</b>	<b>7.4%</b>

*Sales over the first three quarters of 2015 (annualized) continued to deliver overall healthy growth. Permanent products had an especially good quarter overall. (IUL included in total UL. LIMRA International.)*

**Figure 2 – Market Share by Product**



*Annualized premium for perm products accounted for almost 80% of all premium income through the third quarter, but term life dominates face amount issued. (Source: LIMRA International)*

media profile. An algorithm tailors a “personalized” message from hundreds of preapproved slogans and images based on the customer’s profile. Even in the telematics case mentioned above, ongoing rewards and website interaction provide opportunities to open dialog with existing customers.

In 2015 we saw one company create an independent division to experiment with distribution concepts outside industry norms. It created a website-only company-owned agency that evaluates applicants and issues small face amount policies at point of sale. By utilizing technology through client-facing portals and underwriting algorithms, the company is reaching a client base previously overlooked and testing the application of the technology for broader expansion within the company.

We are also seeing the introduction of messaging that transforms the life insurance discussion from one focusing on eventual death to how the carrier and customer can work together to provide the customer a longer, more fulfilling life – a much easier sales proposition.

These initiatives remain in testing mode, and some may fail. But companies are investing resources into novel approaches, knowing that innovation is an iterative process with wins and losses along the way.

## Regulation by Principles

The NAIC and state regulators demonstrated ambitious progress over the past year as well. Perhaps most promising is VM-20. The keystone to our

industry’s progress towards principles-based reserves, the valuation approach is close to the 75%-of-premium threshold but still requires two or three more states to approve to pass the 42-state hurdle for implementation in 2017.

Regulators have responded quickly in other areas too. Actuarial Guideline 48 seeks to ensure, among its many goals, that insurer-owned captives maintain sufficient reserves and capital. AG49 covers sales illustrations for IUL products to protect both consumers and insurers from overly optimistic cash value forecasts. The spirit of these guidelines is to promote prudent use of captives and IUL, respectively. The success of AG48 and AG49, therefore, could be open to regulators’ interpretation.

## Conclusion

Sales continue to improve across most product lines, generating positive growth for the industry overall through the first three quarters of 2015. Equally important, life insurers have demonstrated over the past year some truly ingenious ways to strengthen relationships with their customers. 2015 has possibly marked the start of a transformation in the life insurance industry.

As your reinsurer SCOR is optimistic about the coming year, and we look forward to helping clients maximize their opportunities. ∞

# US Mortality Improvement Analysis Methodology

## Executive Summary

Mortality improvement factors play an important role in pricing traditional products issued by life insurers, such as life insurance, annuities and long-term care. Modeling future improvement, however, can be a complex exercise that may be difficult for non-actuaries to understand.

In this article, David presents several relatively simple alternative approaches to modeling mortality improvement that are accurate, consistent and easy to understand.



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Actuaries incorporate mortality improvement assumptions into their calculations for a variety of product lines. The notion that continued medical advances and lifestyle improvements will reduce future mortality rates has significant implications for life insurance, annuities, pensions, medical and long-term care insurance products.

Estimating mortality improvement, however, can be challenging. In this article I briefly introduce the most common industry approach and then discuss how companies may estimate mortality improvement for their target market a little more easily by presenting modeling alternatives.

## The Industry Standard

Actuaries have forecasted mortality improvement in their pricing methodologies, though it remains an inexact science. For our industry, the Lee-Carter approach<sup>i</sup> to estimating mortality improvement remains a widely used and accepted standard. It is very robust, though like many of our best-in-class models, it can be a little complex for non-practitioners.

## Alternative Models

For actuaries, the complexity of the Lee-Carter method is reasonable, especially in light of the results it can produce. However, some companies may not have use for the intricacies of Lee-Cater or may find that explaining the model's dynamics to non-statisticians a bit challenging. As an alternative, I suggest a couple of methods that balance simplicity with effectiveness.

Both methods use actual observed annual mortality improvement rates or estimated improvement rates through regression techniques. In our examples, I use United States population data from the Human Mortality Database<sup>ii</sup>. Each method has its advantages and disadvantages (Figure 1).

**Figure 1 – Alternative Approaches to Mortality Improvement Estimation**

Approach	Advantages	Disadvantages
Use Actual Annual Improvement Rates	Generates both mean improvement rate and standard deviation	No attempt to smooth or trend rates or address outlier years
Create Regression Model of Mortality Rates	Can identify and compensate for outlier mortality data	Cannot generate mortality improvement standard deviation -- key for estimating confidence intervals

Using actual population mortality experience, actuaries can calculate year-by-year improvement rates and average these values over the time period under consideration. The advantage of this method is that mortality improvement standard deviations can also be calculated – a vital component to determine confidence intervals. The disadvantage of this method is that, in using raw mortality rates, it makes no attempt to smooth or trend the data.

Alternatively, actuaries may create a regression model from the historical data and use modeled mortality rates to calculate an implied improvement rate. The advantage of this approach is that the impact of anomalous values (or outliers) is minimized and thus may represent a better view of mortality trends. However, once the underlying mortality rates have

been fitted to a model, the resulting smoothed mortality rates cannot be used to calculate a standard deviation for the dataset.

In theory, a log-linear regression model of the  $q_x$  rates should produce results that are consistent with the methodology used to project mortality rates into the future. In practice, a simpler linear model produces nearly identical results. Figure 2 compares annualized improvement rates from linear and log-linear regression models for the US Population Males 1950-2007.

**Figure 2 – Linear and Log-Linear Estimates of Mortality Improvement**

Age Group	Linear	Log-Linear
20-24	0.69%	0.71%
30-34	0.51%	0.56%
40-44	1.08%	1.06%
50-54	1.54%	1.50%
60-64	1.40%	1.42%
70-74	1.08%	1.11%
80-84	0.80%	0.82%

To one decimal place, the linear and log-linear modeled rates are almost identical, so either model may be used to produce satisfactory results.

## Combining Methods

Two sets of annualized improvement rates – one calculated by a simple average of raw values and the other by a regression model – may differ by only several hundredths or tenths of a percentage point. However, I want to use the most appropriate mean (i.e., from a regression model), but I will also need a standard deviation to produce confidence intervals. Note that simply changing the mean of a series of values by subtracting a constant amount from each value does not change the standard deviation of the series. Therefore, I can safely use the raw data's standard deviation combined with our regression model's mean to capture the best of both worlds.

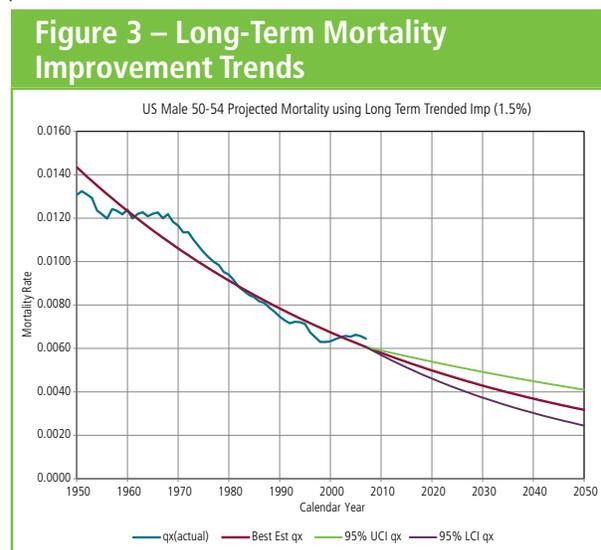
## Central Limit Theorem

The resultant standard deviation represents the fluctuation in annual improvement rates. In projecting future mortality, I typically need to calculate the fluctuation in the *long-term* mean of improvement rates. I use the central limit theorem to determine

the standard deviation (stdev) of the mean of our historical sample dataset from the standard deviation of the annual improvement rates:

$$\text{stdev (n-year average annual imp rate)} = \text{stdev (dataset 1-year annual imp rate)} / \sqrt{(n)}$$

Figure 3 illustrates our projection method. The historical period is 1950-2007 and the projection period is 2008-2050.



I have calculated the historical mean improvement rate from a log-linear model of the  $q_x$ 's. Our best-estimate mortality projection uses the regression model to forecast rates into the future. To calculate a confidence interval around this best estimate, I first determine the standard deviation of the mean improvement rate from the normalized standard deviation of the 1950-2007 sample dataset by dividing by the square root of 57 (the observed years of annual improvement).

Multiplying the standard deviation of the mean by  $\pm 1.96$  produces 95% confidence limits around our best estimate improvement rate. I may then project mortality by the following iterative formula:

$$q_{x+t} = (q_{x+t-1}) * (1 - \text{imp rate})$$

## Choosing Appropriate Historical Periods

In determining average historical improvement rates, I should use only the most appropriate time periods from the available dataset. I begin by looking at the pattern of mortality rates since 1950 by age group and gender. A year in which a significant and permanent change occurred in the pattern for a specific age

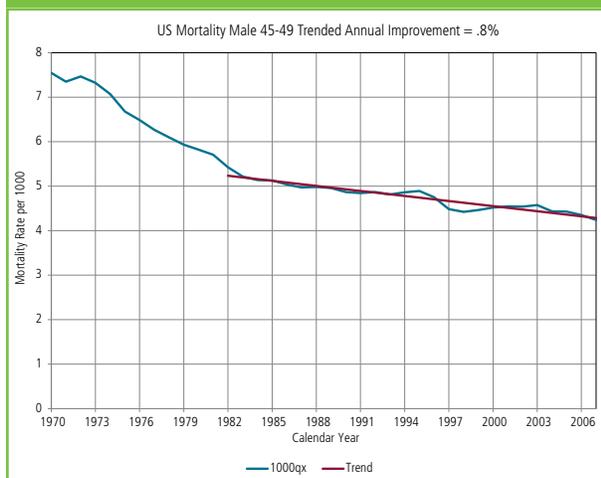
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# US Mortality Improvement Analysis Methodology (cont.)

group and gender may be used to censor the data prior to that year. However, I always should ensure that I am using a reasonable number of data points. For example, a change that occurred in 2003 would not normally warrant excluding prior data without a sufficiently strong rationale.

For males 45-49, a significant and seemingly permanent change in the pattern of mortality occurred around 1982 (Figure 4). Thus, I have created a linear regression model for the raw  $q_x$ .

**Figure 4 – Identifying Permanent Changes in Trends**



For comparison purposes, a regression that included all data points from 1970 to 2007 would have produced an average improvement rate of 1.6% as opposed to the 0.8% rate I actually used. Using the data back

to 1970 would appear to overstate the degree of improvement that was “reset” in 1982.

## Conclusion

As advances in the medical field, lifestyle changes and general health improvement continue to develop among the population, accurately estimating mortality improvement will become increasingly important for modeling life insurance business.

More readily available and usable data allows life insurers to build their own mortality projections in-house. In this article, I have presented a simple example of one such approach, combining the best of actual improvement rates with a regression model.

SCOR has dedicated full-time resources to developing and evaluating different approaches to making the best modeling decisions. We continue to work with clients to help them understand their business more fully and extract the greatest value from the data they possess. If you would like to discuss your company’s approach to incorporating mortality improvement into your models more effectively, please contact me. ∞

## References:

<sup>i</sup>For more information on Lee-Carter, see <http://www.theactuary.com/archive/old-articles/part-6/longevity-3A-mortality-improvement/>

<sup>ii</sup>The Human Mortality Database. U.S.A. Deaths and Exposure-to-risk 1933-2007. <http://www.mortality.org>.



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