

# The Financial Reporter

ISSUE 105 • JUNE 2016



**SOCIETY OF  
ACTUARIES**

**FINANCIAL  
REPORTING  
SECTION**

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# The Financial Reporter

**Issue Number 105 • JUNE 2016**

Published four times a year by the  
Financial Reporting Section Council  
of the Society of Actuaries

475 N. Martingale Road, Suite 600  
Schaumburg, Ill 60173-2226  
Phone: 847.706.3500 Fax: 847.706.3599

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members. Current issues are  
available on the SOA website  
([www.soa.org](http://www.soa.org)). To join the  
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## Section Priorities for 2016

By Leonard Mangini

As I write this in early May, we see that principle-based reserves (PBR) has finally “crossed the threshold” with Idaho, South Carolina, Utah and Washington state all having enacted versions of the Standard Valuation Law (SVL). This brings the number of jurisdictions that have passed the new SVL up to 43, representing 76.16 percent of 2008 market premium—just more than the 42 jurisdictions and 75 percent of market premium required to make the Valuation Manual and PBR operational at Jan. 1, 2017. Under the law, it is up to the individual states to decide whether other states' versions of the SVL are substantially similar enough to operationalize the Valuation Manual in their own state. The NAIC has concluded its legal review on behalf of the member states concluding that variants of the SVL that have already passed are indeed substantially similar. By the time you read this, subject to Plenary approval, the NAIC will be issuing a letter to the individual states recommending that each opine that the substantially similar provision has been met, and that each state positively affirm that they agree so that insurers are clear which states will actually operationalize PBR on Jan. 1, 2017. By the time you read this, Alabama, Massachusetts and Pennsylvania, who have already introduced legislation, may have already passed their own versions as well—so we all have a lot of work to do!

With that in mind, the Section Council held its Annual Face-to-Face Meeting in Chicago in late March to map out strategies and priorities for the rest of the year.

### FACE-TO-FACE MEETING STRATEGIES AND PRIORITIES

First, we decided on the topics that will be covered at the 2016 SOA Annual Meeting being held in Las Vegas from October 23 through October 26. It might not be too difficult to get actuaries to travel to attend given how popular the Annual Meetings have become, with more than 2,000 attendees recently, but we knew it would be a challenge to capture your attention given the lure of the casinos or the networking with so many colleagues. Our goal is to make the Annual Meeting as important to financial reporting actuaries as the Valuation Actuary Symposium already is. We have come up with the following set of 10 very practical sessions that we hope will be relevant to your own professional development and the success of your company:

- US Statutory Update, US GAAP Update, and IFRS Hot Topics—to cover all the bases.
- PBR: Ask the Experts—an open forum for the intersection of pricing, valuation, and tax geared for senior management; and pricing, valuation, and risk management to develop a common ground.
- A linked sequence of five PBR-related sessions that take you from basic to advanced—starting with PBR credibility theory and underwriting score criteria and moving on through four increasingly more advanced topics—PBR practical implications and governance, control effectiveness, enhanced governance frameworks for assumptions, and nested stochastic modeling research.
- We also have a life insurance M&A update.

For those who are too busy to travel, or want the flexibility of distance learning, we plan to have a sequence of five integrated PBR-related webcasts:

- VM-20 Assumption Guidance—useful to financial reporting, pricing, and risk managers as these colleagues begin to work together much more closely.
- VM-31 Documentation Requirements and the PBR Actuarial Report—since assumption and model governance and compliant documentation of the considerable judgment applied is so critical.
- VM-20 Prudent Estimate Mortality—methods, credibility, UCS scoring, and margins.
- VM-G Governance—since the AOMR and the roles of management and actuaries are changing.
- VM-20 Asset Modeling—existing assets and reinvestments.

Since not everybody is concerned just with statutory reporting we will also offer a sequence of integrated US GAAP related webcasts progressing from the most basic to cutting edge material:

- GAAP Basics—term and traditional products.
- GAAP Basics—UL.

We have an ambitious research agenda.

- GAAP Basics—Annuities.
- GAAP—targeted improvements.
- GAAP—assumption management.

We will round out our webcasts with one on IFRS and another on Professionalism. We have an ambitious research agenda.

By the time you read this, attendees of the Life and Annuity Symposium will have seen the results of the recently completed Retention Management study. We have a call for research papers on predictive analytics with five submitted articles related to life insurance. As noted above, the nested modeling project will be presented at the annual meeting.

Two new projects on modern deterministic scenarios and PBR change attribution analysis have already been approved and will be in the works when this article is published. Also, in an effort to reach out to our Canadian colleagues we voted to fund two new projects on the application of credibility theory by Canadian life insurers and the use of predictive analytics by Canadian life insurers.

We will also be regularly providing research project updates in *The Financial Reporter*.

Finally, the section has voted to participate in the new SOA regulatory update website initiative that will provide curated links to financial reporting related material—with useful summaries of the content and routinely updated material impacting emerging and current regulations.

We look forward to helping our members, and the profession in general, deal with all of these changes and as always look for feedback and comments, and for volunteers! ■



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For more information visit [SOA.org/AnnualMeeting](http://SOA.org/AnnualMeeting).

# The Calculus of DAC

By Thomas Bruns

*The views expressed in this article are solely those of the author and do not reflect the views of either his employer or the Society of Actuaries.*

Understanding the Deferred Acquisition Cost (DAC) asset balance movements from one reporting period to the next can be a challenge when reporting under FAS 97. The mechanics of FAS 97 call for an amortization ratio (i.e., k factor) that forces the amortization of the DAC asset to be matched to the earnings received over the life of the product. However, the fact that the k factor is dynamically set results in “unlocking” components of the DAC rollforward. This article shows how the basic equation for the amortization ratio can be used to derive equations that provide insights into what the DAC balance represents. Furthermore, partial derivatives of these equations are used to show how unexpected changes in the Estimated Gross Profit (EGP) stream impact the amortization and unlocking components of the DAC rollforward. The concepts explored here apply not only to the DAC balance, but also to the sales inducement cost (SIC) asset, the front end load (FEL) liability, and SOP 03-1 reserve for excess claims. The equations derived here complement the analysis provided in Steve Malerich’s “Simply Unlocking” article in the June 2015 edition of *The Financial Reporter*.<sup>1</sup>

## DAC ROLLFORWARD

The typical way of analyzing DAC is to rollforward the balance from one period to the next. An example DAC rollforward exhibit is provided below.

Beginning DAC	500,000
+ New Deferrable Expenses	25,000
+ Interest on DAC	10,000
- Amortization (k*EGP)	(45,000)
+ Unlocking	8,000
Ending DAC	498,000

Beginning with the prior period’s balance, the asset is increased for new deferrable expenses. The asset earns interest at the discount rate used in the calculation of the amortization ratio (k). Amortization equal to k multiplied by EGP’s causes the asset to

decrease. As you are all aware, the k factor is calculated as the ratio of the present value of deferrable expenses to EGP’s over the life of the product:

$$(1) \quad k = \frac{PV(Def)}{PV(EGP)}$$

This simple equation will be the basis for deriving the remaining equations in this article.

An unlocking term is included in the rollforward and is needed to arrive at the final DAC balance for the reporting period. Far from being simply a plug in the rollforward, the unlocking row has a significance of its own. The row is needed to handle changes in the k factor that occur when the stream of deferrable expenses and/or EGP’s anticipated at the beginning of the reporting period are replaced with a new stream of cash flows. By adding the unlocking component to the beginning DAC balance, one arrives at what the prior period balance would have been if it had been calculated using the most recent stream of EGP’s and deferrable expenses. In other words, it answers the question of “How would my prior period DAC balance have changed if I knew then what I know now?” In this regard, it might make more sense to move the unlocking row to the top of the rollforward making it the first item to change the prior period balance. Another interpretation is that the unlocking row reflects the revised amortization of all prior periods using the most recently calculated k factor.

There are two primary reasons why the amortization schedule would have changed. First, a quarter’s worth of projected EGP’s and deferrables are replaced with actual values. This component is often referred to as a “true up.” Second, the projection of cash flows beyond the current valuation date has likely changed due to assumption changes or an updated policy inventory. This second component is often referred to as “prospective unlocking.” Stated another way, the unlocking component comes about if our crystal ball used to project cash flows at the beginning of the reporting period was broken. True up occurs when our prior period DAC model did not accurately predict what we now know to have happened this quarter. Prospective unlocking occurs when our prior period DAC model had a different prediction of what we now project for what lies ahead.

While this high level description of the unlocking line is helpful, one often finds the need to answer more detailed questions. For example, if a positive \$3M variance to my EGP stream occurs, how will the DAC balance change? While the additional EGP’s can be expected to cause k\*3M more DAC amortization, how much unlocking will also occur? Is it possible the unlocking effect could outweigh the amortization effect? A further breakdown of the DAC equations is needed to dig deeper.

## BREAKING DOWN THE K FACTOR EQUATION

A first step in achieving greater insights from equation (1) is to break the deferrable and EGP streams into historical cash flows (occurring before the valuation date) and future cash flows (occurring after the valuation date) as shown in equations (2) and (3).

$$(2) \quad PV(Def) = PV(HistDef) + PV(FutDef)$$

$$(3) \quad PV(EGP) = PV(HistEGP) + PV(FutEGP)$$

Substituting these equations into (1), we arrive at:

$$(4) \quad k = \frac{PV(HistDef) + PV(FutDef)}{PV(HistEGP) + PV(FutEGP)}$$

Often either the cohort inception date or the valuation date are used as defining the “present” time when calculating the present values in the k factor equations of (1) or (4). One can switch between the two dates by either multiplying or dividing the top and bottom of equation (1) or (4) by the discount factor between the valuation date and cohort inception date. Because the discount factor is applied to both the top and bottom of the k factor ratio, either choice of “present” time reference results in the same value for k. However, for the DAC balance equations that follow to hold, the present values must be calculated relative to the valuation date. When using the valuation date as the “present” time reference, the PV(HistDef) and PV(HistEGP) terms can be interpreted as cash flows accumulated forward with interest (interest rate equals the discount rate). **For this article, we will choose to calculate all present values using the valuation date as the reference point of time.**

After multiplying both sides of equation (4) by the denominator of the right side, one arrives at the following identity:

$$(5) \quad PV(HistDef) - k * PV(HistEGP) = k * PV(FutEGP) - PV(FutDef)$$

While not proven here, both sides of the equation (5) are also equal to the DAC balance when the PVs are calculated relative to the valuation date. Further insights can be gleaned by looking at each half.

$$(6) \quad DAC = PV(HistDef) - k * PV(HistEGP)$$

Equation (6) focuses on the historical cash flows. The DAC balance can be interpreted as the present value of all historical deferrable expenses minus the present value of historical amortization ( $k * PV(HistEGP)$ ).

$$(7) \quad DAC = k * PV(FutEGP) - PV(FutDef)$$

Equation (7) focuses on the future cash flows. Often the PV(FutDef) term is negligible or nonexistent because the vast majority

While [the] high level description of the unlocking line is helpful, one often finds the need to answer more detailed questions.

of deferrable expenses occur early in the cohort’s life. In that case, the DAC balance carries the interpretation of being equal to the present value of all future DAC amortization. Substituting the k factor definition from equation (1) into equation (7) results in the following equation:

$$(8) \quad DAC = \frac{PV(FutEGP)}{PV(EGP)} * PV(Def) - PV(FutDef)$$

Equation (8) shows the DAC balance is driven by the percentage of EGPs that occur in the future period of the amortization schedule ( $PV(FutEGP)/PV(EGP)$ ). For newer DAC cohorts,



this percentage is near 100 percent and the DAC balance is close to the PV(Def).

The opposite is true for older cohorts that are nearing the end of their amortization period. Equation (8) is also useful for predicting how a change to the EGP stream would affect the DAC balance:

- Increases in future EGPs always result in increases to the DAC balance since they increase the ratio of PV(FutEGP)/PV(EGP).
- Increases in historical EGPs (without increases in future EGPs) always result in decreases to the DAC balance since they decrease the ratio of PV(FutEGP)/PV(EGP). In other words, it is not possible for the unlocking effect of a positive historical EGP variance to outweigh the amortization effect. For historical EGP variances, amortization always beats unlocking.

More insights into the sensitivity of the DAC balance to changes in the deferrable expenses and EGPs can be found by taking partial derivatives.

### PARTIAL DERIVATIVES OF THE DAC EQUATIONS

Equation (8) can be written out in long form by substituting the definitions of equations (2) and (3) to produce the following equation:

$$DAC = \frac{PV(FutEGP)}{PV(HistEGP) + PV(FutEGP)} * (PV(HistDef) + PV(FutDef)) - PV(FutDef) \tag{9}$$

This equation represents the DAC balance as being a function of four variables: PV(HistEGP), PV(FutEGP), PV(HistDef), and PV(FutDef). The following equations can be found by taking the partial derivative of the DAC balance with respect to each of those four variables:

$$\frac{\partial DAC}{\partial PV(HistEGP)} = -k * \frac{PV(FutEGP)}{PV(EGP)} = -k + k * \frac{PV(HistEGP)}{PV(EGP)} \tag{10}$$

$$\frac{\partial DAC}{\partial PV(FutEGP)} = k * \frac{PV(HistEGP)}{PV(EGP)} \tag{11}$$

$$\frac{\partial DAC}{\partial PV(HistDef)} = 1 - \frac{PV(HistEGP)}{PV(EGP)} = \frac{PV(FutEGP)}{PV(EGP)} \tag{12}$$

$$\frac{\partial DAC}{\partial PV(FutDef)} = -1 + \frac{PV(FutEGP)}{PV(EGP)} = \frac{-PV(HistEGP)}{PV(EGP)} \tag{13}$$



These partial derivatives can be used in understanding how the DAC balance is impacted by differences in the EGP and deferrable streams when comparing the prior period and current period schedules. Numerous insights can be gleaned from these equations:

- Equation (10) shows how the DAC balance is affected by changes in historical EGPs. This equation has an amortization (-k) and unlocking (k\*PV(HistEGP)/PV(EGP)) effect. Again we see that the amortization effect must outweigh the unlocking effect because the PV(HistEGP)/PV(EGP) ratio (referred to as the historical ratio in the “Simply Unlocking” article<sup>1</sup>) must be less than 1.
- The DAC impact of historical adjustments are often approximated as DAC\_Adj=-k\*HistAdj. Equation (10) shows that this approximation holds well for young cohorts where the historical ratio is small, but is inaccurate for older cohorts when the unlocking piece of the equation has more weight.
- The historical ratio shows up again in equation (11) showing that older cohorts are more susceptible to DAC unlocking than younger cohorts.
- Equations (12) and (13) deal with the change in DAC due to variances in the stream of deferrables. This contributor to DAC unlocking is often overlooked because there are not typically significant levels of projected deferrables. Increases in historical deferrables serve to increase the DAC balance while increases in projected deferrables push down the DAC balance.

	PV (HistEGP)	PV(FutEGP)	PV(HistDef)	PV(FutDef)	k	Balance
Original	20	30	35	5	80.0%	19.000
Partial Derivs	-48.0%	32.0%	60.0%	-40.0%		

	PV(HistEGP)	PV(FutEGP)	PV(HistDef)	PV(FutDef)	k	Balance
Revised	21	32	35	6	77.4%	18.755
Variance from Original	1	2	0	1		
Estimated DAC Impact= Variance*PartialDeriv	-0.48	0.64	0	-0.4		18.760

## EXAMPLE

An example might help to show how this theory can be used in practice. You are the financial reporting actuary for a small block of Universal Life policies sold five years ago. All the policies are grouped into one cohort and the DAC balance for this cohort is 19M (calculated using equation (6), (7) or (8) above) as shown in the top table above.

Note that the k factor is 80 percent and that the PV of historical EGPs is 20M. Because the PV of Future EGPs is 30M, 40 percent of the EGPs occurred in the past. The four partial derivatives can be calculated using equations (10)-(13).

After quarter end has completed, three changes to our UL model occur that will change the DAC balance calculation:

- We were informed of a 1M gain on our investments that was not included in our original calculation. This changed the PV(HistEGP) by 1M.
- A change to our recurring premium assumption will result in an increase of future EGPs of 2M.
- The recurring premium assumption change also causes a 1M increase to our PV of future deferrables calculation. (See bottom table above.)

Putting these changes through the DAC model causes the DAC balance to drop to 18.755M. This change of -0.245M will appear in the unlocking row when rolling the DAC balance forward to the next reporting period. Using the partial derivatives, an estimate of the DAC impact of each of these changes can be calculated. Adding the three estimated DAC impacts to the original DAC balance, produces a revised DAC balance estimate of 18.76M. While only incurring a modest approximation error, the partial derivative technique allows the attribution of the DAC balance unlocking to be split between the three changes without requiring three separate DAC calculations.

## CONCLUSION

Starting with the basic equation for the DAC amortization ratio, one can derive a variety of equations that provide insight into the DAC balance. The DAC balance can be simplified to a function of four variables: PV(HistEGP), PV(FutEGP), PV(HistDef), and PV(FutDef). Partial derivatives were calculated to show the sensitivity of the DAC balance to the movement of each of these variables. By using these equations, we can better understand how unexpected changes to EGPs or deferrable expenses drive movements in the DAC balance. In addition to improving our intuition, the partial derivative equations can be used to attribute the total change in DAC among the different drivers of two DAC runs. This ability to tease out multiple attributions from only two sets of runs saves time during the financial close and enhances the ability to do ad-hoc analysis. ■

## ENDNOTES

- <sup>1</sup> <https://www.soa.org/Library/Newsletters/Financial-Reporter/2015/june/fr-2015-1ss-101.pdf>



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# VA GAAP Reserving Practices—Survey Highlights

By Aisling Metcalfe, Nicole Kim and Laura Gray

*The views expressed in this article are those of the survey participants (on an anonymous basis) and do not necessarily reflect the views of KPMG nor are they intended as methods of regulatory or tax compliance.*

In 2014 the Financial Accounting Standards Board (FASB) changed direction on the Insurance Contracts project and decided to pursue “targeted changes” to current US GAAP rather than continue efforts toward a joint standard with the IASB. As decided by the board in September, 2015, one of the anticipated targeted changes would require that all variable annuity (VA) guarantee riders (i.e., those with “other than nominal” capital market risk) be recorded at fair value.

Current practice for valuing GMxB riders varies primarily by rider type, but also by a particular company’s specific rider features as applied to certain requirements of FAS 133<sup>1</sup>, such as how the rider can be “net settled.” Typically, riders such as GMDBs, GMIBs and some GMWBs are accounted for using insurance accounting under SOP 03-1. Other riders, such as GMABs and some GMWBs, are currently accounted for as embedded derivatives under FAS 133. Note that FAS 133 requires embedded derivatives to be valued under fair value while FAS 157 in turn defines “fair value” principles.

While timing for these proposed changes is still uncertain, if passed, the requirement to apply fair value concepts and principles as outlined in FAS 157 will certainly bring greater attention and scrutiny to the inputs and assumptions used by companies in developing their liability estimates. (Additional and enhanced disclosures around fair value estimates are also under discussion.) Because FAS 157 presents principles rather than prescriptive rules, there is currently a good deal of diversity in terms of specific assumptions and techniques used.

With these potential changes in store for the industry, and in order to benchmark current industry practice, KPMG performed a survey of 19 companies in October and November of 2015. The survey covered industry practices relating to the valuation

of variable annuities under FAS 133/157 including implied volatility parameters used in the FAS 133/157 liability scenario generator, non-performance risk and liquidity premium adjustments to discount rates, as well as the determination of risk margins. This article will summarize the findings of the survey that highlighted the range of practices in the following key areas:

- Approaches used to calculate the reserve for lifetime GMWB guarantees: split between FAS 133, SOP 03-1 and bifurcation between FAS 133 and SOP 03-1.
- Implied volatility methodology: most survey participants use an at-the-money volatility assumption that varies by contract duration; a minority use a volatility assumption that varies by both contract duration and the “in-the-moneyness” of the contract.
- While most companies do not reflect an explicit liquidity premium in addition to the non-performance risk, for those that do, there is a wide range of variability in the level and in the assessment approach.

The main areas where practice is similar are:

- Drivers of reserve movement are primarily risk-free rate and fund performance.
- Not including an explicit margin in the long-term realized volatility.
- Not explicitly reflecting liquidity premium in the non-performance risk calculation.
- Determining risk margins by individual risk component.

Also, at the time of the survey, the majority of participants indicated either neutral or uncertain views to the FASB’s decision to account for GMxBs at fair value.

## GENERAL TOPICS

The industry is split in its current approach to reserving for lifetime GMWB guarantees (an optional living benefit guarantee under which the policyholder can withdraw a fixed percentage of the total benefit base each year over the lifetime of the policy, even after the benefit base balance has been exhausted). Forty-one percent of the companies surveyed use FAS 133, 21 percent bifurcate between FAS 133 and SOP 03-1, 16 percent use SOP 03-1 and another 16 percent use a combination of FAS 133, SOP 03-1 and bifurcation. There is also a split in the use

- 19 companies
- Represent over 75 percent of premium written by top 10 sellers of VA with guarantees in 2014
- Majority of companies surveyed have VA block greater than \$20 billion

of stochastic interest rates, with only about half the companies using stochastic interest rates to value liabilities.

There were, however, some points of commonality. For most of the companies the two largest drivers of reserve movement are risk-free rates and fund performance. In addition, the majority calculate the FAS 157 reserve quarterly or monthly, while the remaining companies calculate it daily. None of the survey participants calculate the base contract using an FAS 159 (later codified under ASC 825) fair value election.

Most companies use the LIBOR swap curve or the U.S. Treasury curve for the risk-free rate curve in the valuation calculation. Few companies use the OIS curve; the OIS curve is commonly used for the valuation of assets, but the survey shows that it is not commonly used for the valuation of insurance liabilities.

Perhaps surprisingly, few of the companies surveyed had a strong view of the FASB vote to account for GMxBs with “other than nominal” equity risk at fair value: one company had a positive view, four had a negative view and the remainder were uncertain or neutral.

### IMPLIED VOLATILITY

Overall, the survey results showed that companies adopted diverse practices around implied volatility parameters. About half of the companies indicated that they use an at-the-money volatility assumption that varies by durations only, while others indicated that they use a volatility assumption that varies by du-

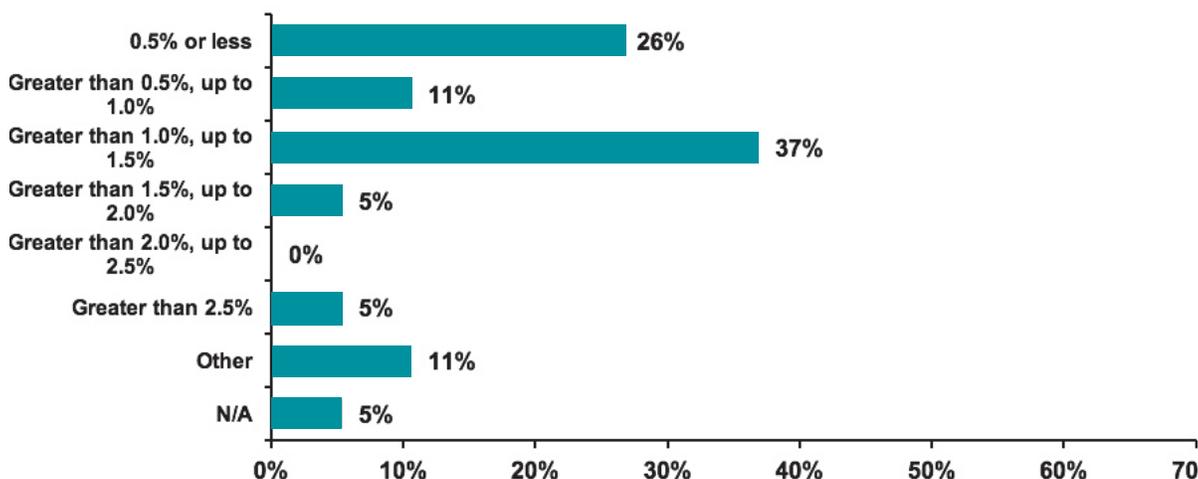
rations and other factors (primarily liability moneyness). When using available market implied volatilities, various durations are used, with most being under 10 years. Twenty-six percent of the companies use a duration up to five years, and 31 percent use durations over five and up to 10 years.

However, there are some areas where practice is similar between companies. The majority of the companies use vendor systems (such as Bloomberg, Markit, and Murex) as the source of implied volatility data. Most companies surveyed use the same equity volatility model for all underlying equity indices. Long-term volatilities are mostly estimated by grading from the last market observable volatility based on average of realized volatility; more than one-third of companies use a five-year grading period. Around half of the participants do not include an explicit risk margin in the long-term realized volatility.

### NON-PERFORMANCE RISK AND LIQUIDITY PREMIUM

The survey results indicated that although there is less diversity in how the non-performance risk is applied in the calculation, there is a wide variety of data sources used in practice to determine non-performance risk. Nearly all the companies reflect non-performance risk in the calculation. Most of these use an increase in the discount rate to reflect non-performance risk. The factors most often considered when determining non-performance risk include the rating of the company, debt issued by the company (their own debt or the debt of similar companies), and credit default swaps with adjustments.

Chart 1: Average level of non-performance risk



As shown in Chart 1, the average level of non-performance risk varies, but is below 1.5 percent for most companies.

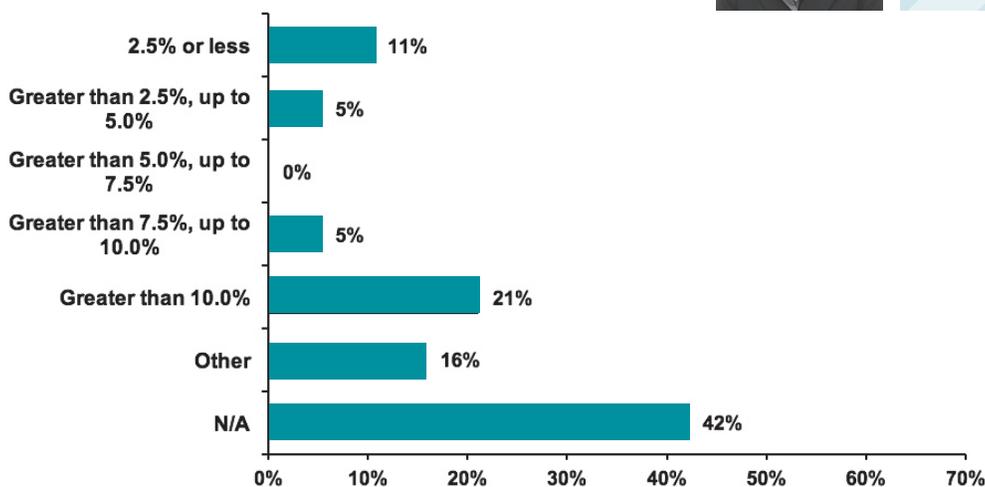
About half of the companies vary the risk adjustment rates by duration. Also, the majority of the companies do not explicitly include a liquidity premium in the calculation. Among those companies that do explicitly include a liquidity premium, the methodology for determining the liquidity premium varies: one-third determine liquidity premium by reference to spreads included in company debt, one-third use observable spreads between public and private bonds, and the remainder use another method. The magnitude of the liquidity adjustment varies, but is under 70 basis points for all companies surveyed.

### RISK MARGINS

There are some similarities between companies in the use of risk margins. For about two-thirds of the companies surveyed, the overall risk margin is determined by individual risk component. Most use judgment based on experience studies to determine/calibrate the level of risk margins. The assumptions which most often include risk margins to reflect uncertainties are surrenders, mortality and GMxB utilization. Also, a significant majority of companies did not report making any simplifications to risk margins for ease of implementation.

Despite these similarities, a large range of risk margins is seen, as shown in Chart 2, from less than 2.5 percent to more than 10 percent (measured as the percentage of the liability without the risk margin).

Chart 2: Range of Risk Margins



### SUMMARY

As discussed above, the survey results showed a range of practice between companies in reserving for VA guarantees. As companies move toward both a broader implementation of FAS 157 for all VA riders as well as more detailed disclosures, we expect to see some convergence in practice, and additional refinements of methodology and assumptions. ■

### ENDNOTES

<sup>1</sup> Within this article we use “FAS 133” (later codified under FASB ASC 815-15), “SOP 03-1” (later codified under ASC 944) and “FAS 157” (later codified under ASC 820) to describe the approaches and inputs used in connection with these VA liabilities.



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# Almost Success!

By Henry Siegel

*To achieve great things, two things are needed; a plan, and not quite enough time. — Leonard Bernstein*

**W**ell, this quarter the International Accounting Standards Board (IASB) moved ever closer to finishing its standard on Accounting for Insurance Contracts. Whether they've achieved a great thing remains to be seen. The exact wording of the standard and its associated guidance remain to be worked out and it's always possible that items will arise in drafting that will require the board to redeliberate certain issues.

If the final standard is not judged a great thing, it's most likely because there was, contrary to Bernstein's requirement, more than enough time. There were many plans; however, there was a constant tension between those who wanted the standard finished and those who maintained that it was better to get things right than to get things done quickly. Overall, despite there being a number of deadlines set in the course of the project, the smart money was always on the board missing those deadlines.

The project began in 1997, nearly 20 years ago, as a project of the International Accounting Standards Committee, the predecessor to the IASB. The IASB adopted the project in 2001. Over the course of the past 15 years, the IASB has had numerous discussions, produced many issue papers and issued two Discussion Papers and three Exposure Drafts. It now looks like a final standard will be produced either late this year or early next year.

Despite the extensive time already spent on the standard, important issues remained to be worked out this past quarter.

## JANUARY MEETING

The board met on January 19–20 to deliberate the remainder of the planned technical decisions on the project.

### Level of aggregation

A very important issue was how contracts can be combined for measurement purposes. In the past, policies were grouped as they were priced and managed. This gave users

the same viewpoint as management. There was concern by the board, however, that this allowed companies to hide losses on some policies by grouping them with profitable ones.

The basic principle the board followed was that the Contractual Service Margin (CSM) should be measured at the contract level. Following objection by the industry, the board tentatively decided to require a loss for onerous contracts to be recognized when the CSM is negative for a group of contracts. Rather than allow groupings based on the pricing and management criteria previously used, however, the board tentatively decided that the group should comprise contracts that at inception:

- “a. have cash flows that the entity expects will respond in similar ways to key drivers of risk in terms of amount and timing; and
- b. had similar expected profitability (i.e., similar contractual service margin as a percentage of the premium).”<sup>1</sup>

There are significant problems with this definition. It's not at all clear what “respond in similar ways” means or what “similar expected profitability” means. With respect to the latter, are two policies whose CSMs are 25 percent and 15 percent of premium similar? If not, where do you draw the line? Are policies with -2 percent and -4 percent similar in profitability? Do universal life policies and variable universal life policies respond similarly to movements in interest rates? How about universal life and traditional participating whole life?

As a result of this decision, it's likely that companies will have many more groupings than currently. Consider how many would be required if similar profitability is not interpreted in a broad way. It could easily multiply groupings by hundreds. It's also not clear whether separate assumptions are needed for each grouping. Does there need to be separate expense assumptions for preferred and standard life insurance policies? In short, there are potentially huge practical issues that may make implementation even more difficult than previously expected.

In addition to loss recognition issues, groupings are critical for the purposes of releasing the CSM over time. On this issue, after discussion, the board tentatively decided:

- “a. The objective for the allocation of the contractual service margin is to recognize the contractual service margin for an individual contract, or groups of homogeneous contracts, in profit and loss over the coverage period of the contract in a way that best reflects the service to be provided by the contract. Hence, if there is no more service to be provided by a contract after the end of the report-

ing period, the contractual service margin for that contract should have been fully recognized in profit or loss.

b. An entity can group contracts for allocating the contractual service margin provided that the allocation of the contractual service margin for the group meets the objective in (a).

c. An entity that groups contracts is deemed to meet the objective in (a) provided that:

i. the contracts in the group:

- have cash flows that the entity expects will respond in similar ways to key drivers of risk in terms of amount and timing; and
- on inception had similar expected profitability (i.e., similar contractual service margin as a percentage of the premium); and

ii. the entity adjusts the allocation of the contractual service margin for the group in the period to reflect the expected duration and size of the contracts remaining after the end of the period.”<sup>2</sup>

Again, there is the same vagueness in this wording and, if not clarified, it may require a very detailed calculation of the release of the CSM. Recognizing that the language needs work, the board instructed the staff to develop the wording during the drafting process to improve the clarity of these requirements.

One issue that the industry raised during discussion with the board concerned situations where regulation required combination of policies for pricing purposes that don't fit the above criteria. A prime example of this is the requirement in some jurisdictions for unisex pricing of annuities. Unfortunately, the board tentatively decided that “there should be no exception to the level of aggregation for determining onerous contracts or the allocation of the contractual service margin when regulation affects the pricing of contracts. Accordingly, contracts with dissimilar profitability, even if as a consequence of regulation, may not be grouped for determining onerous contracts and for the allocation of the contractual service margin.”<sup>3</sup>

This will require recognition of losses on annuities issued on women, for example, while recognition of profits on annuities for men will be over the lifetime of the annuitant. The effect of this requirement is likely to make annuities less attractive for companies to issue. In this situation the users of financial state-

ment will get a view of the product different from what management uses.

Specifying the effect of discretion in the general model

Another issue raised by the industry concerned how to deal with the effects of a company exercising its discretion on participating contracts. The board tentatively decided to require an entity to specify at the inception of the contract how it viewed its discretion under the contract, and to use that specification to distinguish between the effect of changes in market variables and changes in discretion. If the entity is unable to specify in advance how it will determine the amounts due to policyholders, then the default benchmark would be a current market return.

Discount Rates Research

In an unrelated discussion, the board continued to consider the staff's findings on its research project on present value measurements—discount rates. This project will not affect insurance contracts or pensions, but may have effects on other standards such as measurement methodology and treatment of taxes, present value measurement presentation and disclosures, present value measurement objectives and the use of present value measurements in IFRS Standards. The International Actuarial Association will be consulting with the IASB on this project.

## FEBRUARY MEETING

At its February meeting, the board reviewed the mandatory and non-mandatory due process steps that it had taken so far in developing the new Insurance Contracts Standard and also considered the re-exposure criteria in its Due Process Handbook. All 14 board members confirmed that they are satisfied that the board has completed all the necessary due process steps on the Insurance Contracts project to date and that re-exposure was not needed. The board instructed the staff to commence drafting the final standard.

The board will discuss the effective date, and any sweep issues that arise in the drafting process, at a future meeting.

## MARCH MEETING

Amendments to IFRS 4: Applying IFRS 9 Financial Instruments with IFRS 4 Insurance Contracts

Having for the time being disposed of the Standard on insurance contracts, at its March meeting the board considered feedback from the comment letters it received and the outreach meetings it conducted on the Exposure Draft on Applying IFRS 9 Financial Instruments (IFRS 9) with IFRS 4 Insurance Contracts (IFRS 4) (the ED). The board tentatively confirmed its proposals in the ED by deciding:

- “a. to confirm the ED proposal to provide a temporary exemption from applying IFRS 9 for qualifying entities.
- b. to confirm the ED proposal that the eligibility for the temporary exemption should be determined at the reporting entity level only. Hence, the assessment of eligibility should consider all of the activities of the reporting entity, and the reporting entity would apply only one Standard, either IFRS 9 or IAS 39 Financial Instruments: Recognition and Measurement, to all of its financial instruments in its financial statements.
- c. to confirm that there should be a fixed expiry date for the temporary exemption.
- d. to confirm the ED proposal to provide an overlay approach.
- e. to confirm the ED proposal that the temporary exemption from applying IFRS 9 and the overlay approach should be optional.”<sup>4</sup>

These decisions were made despite concerns by some users that they didn't need the deferral option and that allowing it might cause confusion in comparisons between companies.

Any remaining technical issues, including the qualifying criteria for the temporary exemption, will be discussed in the April and May board meetings. The board aims to issue the final amendments to IFRS 4 in September 2016.

We hope that all the time spent both by accountants and actuaries on this project will indeed produce a great result. If so, it will prove that, indeed

**Insurance Accounting is too important to be left to the accountants! ■**

#### ENDNOTES

- <sup>1</sup> IASB January Update (<http://media.ifrs.org/2016/IASB/January/IASB-January-Update-Monthly.pdf>)
- <sup>2</sup> Ibid.
- <sup>3</sup> Ibid.
- <sup>4</sup> March IASB Update ([http://media.ifrs.org/2016/IASB/March/IASB\\_Update\\_March\\_2016.pdf](http://media.ifrs.org/2016/IASB/March/IASB_Update_March_2016.pdf))



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# FASB Insurance Contracts Disclosures and Transition

By Leonard Reback

**T**he Financial Accounting Standards Board (FASB) continued its deliberations on targeted improvements to GAAP accounting for long-duration insurance contracts in February and March. The meetings focused on presentation, disclosure and transition issues.

Perhaps the most important issue addressed at these meetings was the least surprising; FASB officially confirmed that they will be drafting an exposure draft, rather than a final standard. This means that there will be an opportunity to formally comment on FASB's tentative decisions, and that FASB will likely redeliberate some issues in light of those comments. Because FASB had already issued an exposure draft on insurance accounting in 2013, it was not obligated to issue another exposure draft. But given its pursuit of targeted improvements rather than a converged model with IASB, it was widely expected that FASB would issue an exposure draft on its targeted improvements rather than go straight to a final standard.

Although the board appears to have completed its substantive discussions on targeted improvements, FASB did suggest that it would continue to look at issues that the industry has raised about the tentative decisions on participating contracts.

## CLARIFICATION ON SCOPE OF SOP 03-1

Although the disclosure meeting did not address valuation or measurement issues, some of the new disclosures suggest a change to insurance contract valuation that may not have been clear from previous meetings. Some of the new disclosures for SOP 03-1 liabilities imply that even if an SOP 03-1 liability was not required when the contract was issued, the company would be required to continually monitor whether an SOP 03-1 liability becomes necessary subsequent to issue, due to expected future losses. This would be a change from existing GAAP, where the assessment of whether an SOP 03-1 liability is needed is performed only at contract issue.

Apparently, this ongoing assessment of the need for an SOP 03-1 liability would replace existing loss recognition and profits-fol-



lowed-by-losses guidance for non-traditional contracts. It seems likely that if an SOP 03-1 liability is needed after inception, the calculation would be done retrospectively from issue, similar to previous FASB tentative decisions that net premium ratios and deferred profit liabilities would be updated retrospectively upon assumption changes on traditional contracts.

## CLARIFICATIONS ON DAC AMORTIZATION

FASB did provide some clarifications about their tentative decisions on DAC amortization. This was in response to industry questions about how DAC amortization would work, especially since the board's tentative decisions do not make any allowance for a DAC recoverability test as we have today.

Under the tentative decisions, DAC would be amortized over the expected life of a contract in proportion to amount in force, or in some cases via straight line. No interest would be accreted on DAC. FASB clarified that when unexpected contract terminations occur, there should be an immediate proportionate write down of DAC. This will prevent DAC from persisting when there are no contracts in force to support the DAC. FASB also clarified that when assumptions about expected life of the contracts change, DAC amortization should be adjusted prospectively. This means that the DAC balance should not change immediately, but rather the future amortization schedule should be revised.

FASB continued to insist that with these clarifications, no additional recoverability testing is needed. This means that even if the portfolio of contracts has a net premium ratio of 100 percent, i.e., all expected future premiums will be used to pay expected future benefits and expenses, there can still be a separate DAC asset held for those contracts.

At the February meeting, FASB decided to add additional footnote disclosures to the financial statements.

In a separate clarification, FASB noted that only DAC amounts that have already been accrued would be amortized. Today we amortize DAC based on previously accrued amounts plus amounts expected to be accrued in the future for deferrable renewal acquisition costs. But since the tentative decisions eliminate present value considerations from DAC amortization, i.e., accruing interest, the board felt that it no longer would make sense to include future expected accruals in current period amortization. Instead, amortization would increase after those costs have been incurred and accrued as DAC.

## PRESENTATION

The only element of financial statement presentation that was revised was for variable contract guarantees with other-than-nominal capital market risk. FASB now refers to these guarantees as “market risk benefits.” At a previous meeting FASB decided that market risk benefits should be reported on the balance sheet at fair value, and that all changes in fair value except changes due to own credit should be reported in net income. At the February meeting FASB tentatively decided that the fair value of market risk benefits should be shown in a separate balance sheet line item. It also tentatively decided that the change in fair value should be shown in its own line in the income statement.

## DISCLOSURES

At the February meeting, FASB tentatively decided to add numerous additional footnote disclosures related to insurance contracts to the financial statements. These would be required for both annual and quarterly financial statements. The new requirements were separated by different types of assets and liabilities. All types of liabilities, including FAS 60, FAS 120 and SOP 03-1 reserves, policy account balances (including separate accounts), and market risk benefit liabilities would be required to show disaggregated tabular rollforwards from beginning balance to ending balance. Such a rollforward would also be required for deferred acquisition cost (DAC) assets. It was not explicit whether such a rollforward would be required for balances that amortize similarly to DAC, such as deferred sales inducement assets and unearned revenue liabilities.

The individualized disclosures by liability type are as follows.

### Future Policy Benefits (FPBs)

Future policy benefit liabilities, including FAS 60, FAS 120 and SOP 03-1 reserves, would be required to disclose the following:

- The tabular rollforwards would be required to show separately expected future net premiums and expected future benefits.
- Undiscounted values of expected future net premiums and benefits associated with each rollforward.
- Amount of gross premium recorded and amount of any reinsurance recoverable associated with each rollforward.
- Information about significant estimates, judgments, inputs and assumptions for each rollforward. This would include narrative descriptions, including the effect of any changes. It would also include quantitative information about assumptions, such as the range, the weighted average, and how it compared to actual experience.
- Reconciliation of the rollforward amounts to the ending liability balance, interest and gross premium shown in the financial statements.
- Qualitative and quantitative information about situations where the net premium ratio exceeds 100 percent or where an SOP 03-1 liability has to be established subsequent to policy inception.
- Information about estimates, judgments and assumptions used to determine that no SOP 03-1 liability is needed because no future losses are expected. This information is similar to the information that would be provided about estimates, judgments and assumptions in the liability calculation itself.

### Policyholder Account Balances (PABs)

Policyholder account balances on non-traditional contracts would be required to disclose the following:

- Net amount at risk and cash surrender value associated with each rollforward.
- Weighted average earned rate and weighted average credited rate associated with each rollforward, as a measure from which readers could estimate spreads.
- Reconciliation of the rollforward amounts to the liability balance in the balance sheet.
- Table of account balances showing ranges of guaranteed credited rates, and the associated range of excess of current credited rate over guaranteed rate.
- Information about risk management.

Separate account balances would only need to show the cash surrender value and the reconciliation between the rollforward and the balance sheet amount.

### Market Risk Benefits

Market risk benefits would be subject to standard fair value disclosures. But there would be modifications to the standard fair

value rollforwards to be more relevant to insurance contracts. There would also be additional disclosures including:

- Net amount at risk and fees collected associated with each rollforward.
- Information about estimates, judgments and assumptions, including effects of changes and weighted averages, ranges and comparisons to actual experience for assumptions.
- Reconciliation of the rollforward amounts to the ending liability balance. This would need to be shown separately for guarantees that are in-the-money and those that are out-of-the-money.
- Information about risk management.

## TRANSITION

FASB's tentative decisions were as follows:

### Future Policy Benefits

For reserves for future policy benefits, such as FAS 60, FAS 120, FAS 97 limited pay, and SOP 03-1, FASB tentatively decided that the revised valuation should be applied retrospectively back to contract issue. This would mean calculating a net premium ratio for the contracts as of the transition date that takes into account all actual cash flows the contracts have experienced since issue, current discount rates as of the transition date, and current assumptions as of the transition date. Other comprehensive income (OCI) upon transition would be calculated based on the difference between the reserve using current discount rates as of the transition date and the reserve using the discount rates that would have been in effect (in accordance with FASB's tentative decisions) as of the contract issue date.

FASB recognized that this may be impractical for companies to do for all contracts, particularly for contracts that may have been issued decades ago. So, FASB is permitting the retrospective calculation to incorporate estimates of historical information if needed, as long as the estimates are based on objective information.

If even such estimates are not available all the way back to contract issue, the liability as of the transition date would be set equal to the liability under current US GAAP. If the resulting net premium ratio exceeds 100 percent, a loss would be reported to opening retained earnings to the extent of the excess.

Since the transition would be performed on a cohort-by-cohort basis, different cohorts may use different approaches to set the opening reserve upon transition.

### Market Risk Benefits

FASB tentatively decided to measure market risk benefits at fair value as of the transition date. Any impact to fair value resulting from changes in own credit between the issue date and the tran-

sition date would be recorded in accumulated OCI. It was not clear from the tentative decision what, if any, practical expedients would be permitted for determining the "attributed fee" for the market risk benefit.

### DAC

FASB tentatively decided that the DAC balance as of the transition date should be unchanged from current US GAAP, and the revised amortization guidance should be applied only prospectively after the transition date. ■



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# SOA Explorer Tool

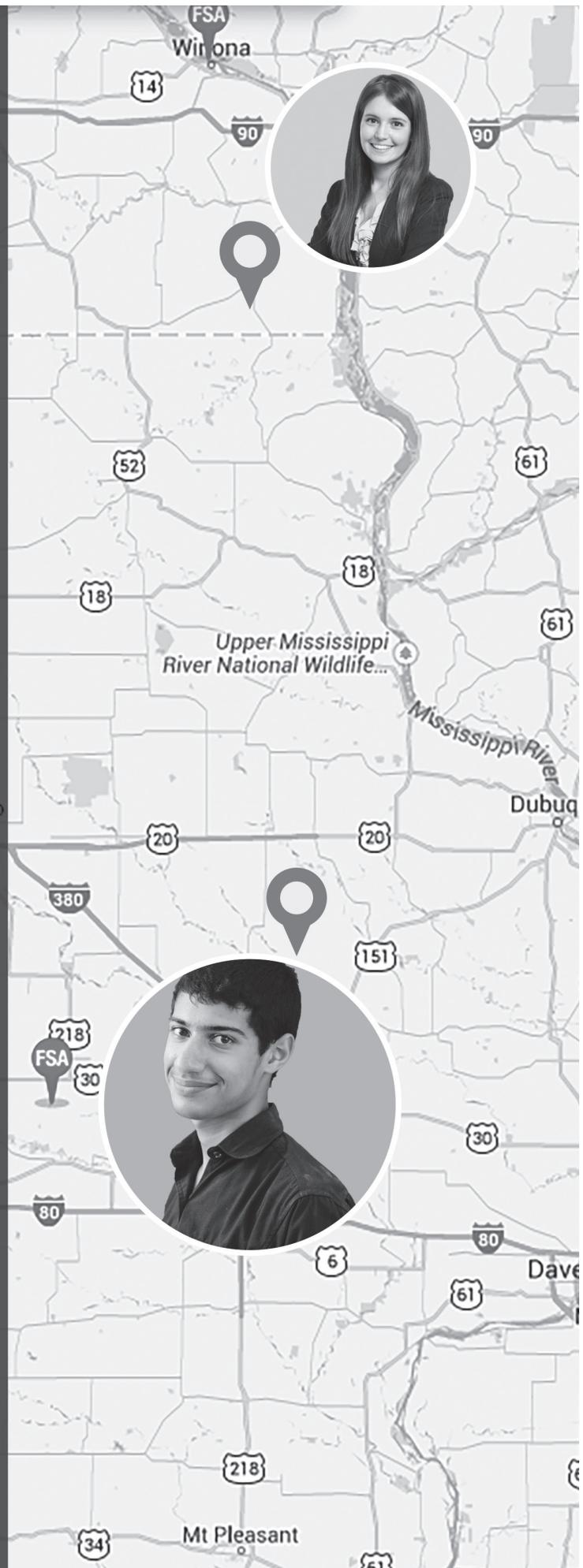
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**SOCIETY OF  
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# PBA Corner

By Karen Rudolph and Ruijuan Wang

*The views expressed in this article are those of the authors and do not necessarily reflect the views of Milliman nor are they intended as methods of regulatory or tax compliance.*

The evolution of VM-20 has brought a renewed focus on statistical credibility. This article will highlight the requirements of VM-20 as it relates to measuring the credibility of a company’s mortality data, remind the reader of several published references on credibility, provide an overview of Limited Fluctuation and Bühlmann Empirical Bayesian methods and highlight some of the findings of a 2009 research study on credibility sponsored by the Society of Actuaries (SOA).<sup>1</sup>

While statistical credibility theory is a broad topic, within this article the authors discuss credibility methods and concepts as applied specifically to the VM-20 mortality credibility requirements. The authors hope you find this a helpful refresher.

## VM-20 MORTALITY CREDIBILITY REQUIREMENTS

The concept of credibility first appears in VM-20 in Section 9A(6) General Assumption Requirements. Here it is stated the company is required to “... use its own experience, if relevant and credible, to establish an anticipated experience assumption for any risk factor. ... For risk factors (such as mortality) to which statistical credibility theory may be appropriately applied, the company shall establish anticipated experience assumptions for the risk factor by combining relevant company experience with industry experience data, tables, or other applicable data in a manner that is consistent with credibility theory and accepted actuarial practice.” For mortality experience, the manner with which credibility is measured is prescribed later in Section 9C(4).

Specific requirements for credibility determination depend on the valuation basic table (VBT) being used to represent industry mortality. Table 1 summarizes the requirements of Section 9C(4).

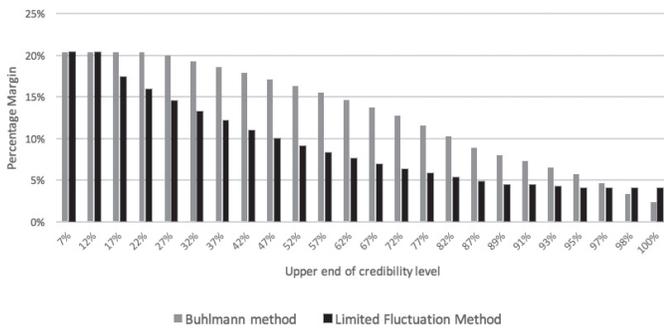
Table 1

	Industry Table	
	2008 VBT	2015 VBT
<b>Permitted methods</b>	A method that follows common actuarial practice as published in actuarial literature including, but not limited to, Limited Fluctuation and Bühlmann Empirical Bayesian	Limited Fluctuation by amount  Or Bühlmann Empirical Bayesian by amount
<b>Constraints</b>	None	Limited Fluctuation method by amount must be calibrated for a minimum probability of at least 95 percent with an error margin of not more than 5 percent.  Bühlmann method can use the direct approximation formula for Z provided in VM-20.
<b>Flexibility in method after first use</b>	No specific requirements are spelled out if a company using the 2008 VBT as industry table wants to change credibility methods.	A company seeking to change credibility methods must request and subsequently receive the approval of the commissioner. The request must include justification for the change and a demonstration of the rationale in support of the change.

## IMPACT OF CREDIBILITY ON PRUDENT ESTIMATE MORTALITY

The credibility of a company’s mortality data drives two very important aspects of the prudent estimate mortality assumption as specified in Section 9C of VM-20. First, the percentage margin to be added to the company experience rates depends on the credibility method used and the credibility of the company’s experience based on that method. Understandably, partially credible mortality data (i.e., credibility less than 100 percent) requires a higher (or greater) margin than does fully credible data. The tables of margins appear in VM-20 Section 9C(5). There are margin tables applicable for when the 2008 VBT is the industry mortality table and margin tables for when the 2015 VBT is the industry mortality table. Chart 1 below shows the percentage margins for attained ages less than 45 for Limited Fluctuation and for Bühlmann when the 2015 VBT is the industry mortality table. Margin percentage rates decrease with increasing attained age, but only the first attained age grouping (the broadest grouping) is shown in Chart 1.

Chart 1  
VM-20 Mortality Margins  
Attained ages <45



The second aspect of the company’s prudent estimate mortality assumption that is dependent upon a company’s mortality credibility measure is the number of years of its own mortality experience which can be recognized, and the schedule for **grading** this experience into the industry table. Here is where the VM-20 requirements diverge from the classical treatment of credibility theory. Most traditional applications that use credibility theory result in a **blending** of the company experience weighted by its credibility measure,  $Z$ , with industry experience multiplied by  $(1 - Z)$ . Within the VM-20 requirements, the  $Z$  factor is used, as noted above, for establishing margins, and for determining how many years the company data may be used before linearly grading this data into the industry mortality rates.

The VM-20 grading rules establish the duration at which grading must begin and the duration at which the prudent estimate mortality rates must be fully graded into the industry mortality rates.

In fact, there are two grading tables: one for valuations before Jan. 1, 2017 (e.g., for AG 48) and one for valuations after. Unlike the mortality margins, the grading rules do not vary by the credibility method used. Also, the credibility categories are broader for grading than for the margins. For valuations as of Jan. 1, 2017 and later, companies with less than 20 percent credibility may not use their own experience, only industry experience. For credibility of 20 percent or greater, the number of policy years that company data may be used before beginning the linear grading to the industry table rates increases with increasing credibility. The linear grading also depends upon the company’s sufficient data period. A sufficient data period ends at the last policy duration that has 50 or more claims. The grading table also sets the duration at which the prudent estimate mortality assumption must be fully graded to 100 percent of the industry table. There are additional considerations related to the grading process applicable for higher attained ages.<sup>2</sup>

## RESOURCES IN ACTUARIAL LITERATURE

Many resources exist that provide background and relevant formulas on the topic of credibility. A small sampling of these are listed here.

- American Academy of Actuaries Credibility Practice Note, July 2008.
- Actuarial Standard of Practice No. 25 Credibility Procedures Applicable to Accident and Health, Group Term Life, and Property/Casualty Coverages, October 1996.
- Expected Mortality: Fully Underwritten Canadian Individual Life Insurance Policies. Committee on Life Insurance Financial Reporting, July 2002. Canadian Institute of Actuaries.
- A Credible Theory of Credibility by Drew Tindall and Jess Mast. Contingencies September/October 2003.
- Credibility Theory Practices Report, Sponsored by the Committee on Life Insurance Research, the Financial Reporting Section, and the Product development Section of the Society of Actuaries. Prepared by Stuart Klugman, Tom Rhodes, Marianne Purushotham, and Stacy Gill of MIB Solutions. 2009 Society of Actuaries.

The reader should note the last reference above provides a comprehensive annotated bibliography. It should also be noted that, while the credibility calculations within VM-20 follow the generally accepted principles, the exact formulas within VM-20 are unique and must be followed to be in compliance.

## OVERVIEW OF LIMITED FLUCTUATION AND BÜHLMANN EMPIRICAL BAYESIAN

Limited Fluctuation and Bühlmann Empirical Bayesian are two well-established statistical credibility methods used to adjust ex-

perience-based estimates. Both are accepted methods in VM-20 to meet the mortality credibility requirements. This section provides a brief introduction to the principles, data requirements, and advantages and disadvantages of the two methods. In this discussion, the value for which credibility is being measured is the company's actual-to-expected mortality ratio (A/E ratio), as is typically produced through a mortality experience study.

The Credibility Theory Practices Report provides a concise summary of the fundamental differences of these two methods.

In both the Limited Fluctuation and the Bühlmann Empirical Bayesian methods, the results are calculated with respect to a mean (A/E ratio) and incorporate a variance. The methods differ in the treatment of the components of the variance ( $\sigma^2$ ). The total variance of the observations is the sum over all companies of two different sources of variation, which are:

1. For each company, the variation of a company's observations about that company's mean, and
2. The variation between each company's mean and the overall mean.

Limited Fluctuation credibility uses only the first source while the Bühlmann Empirical Bayesian method uses both. Thus, Limited Fluctuation credibility requires only data from the company being studied. For the Bühlmann Empirical Bayesian approach, data is needed for all companies under study.<sup>3</sup>

Within VM-20 values are provided for use with the Bühlmann Empirical Bayesian approach to approximate the second variance component above. This is explained in more detail below.

#### Limited Fluctuation

The Limited Fluctuation method is a classic statistical method based on confidence intervals. It only requires the subject company's seriatim experience data, and the underlying distribution of the data is assumed to be approximated by the normal distribution. Under a normal distribution assumption, the credibility factor (Z) can be derived from the following form.

$$\text{Limited Fluctuation } Z = \min \left\{ 1, \frac{r * \hat{m}}{z * \hat{\sigma}} \right\}$$

where

- z (in the denominator) is the z-value from the normal distribution table with selected probability value p. This z-value is provided by any standard two-sided normal distribution table. VM-20 explicitly requires the relative error in the estimate be no more than 5 percent with a probability (p) of at least 95 percent. If p = 95 percent confidence, the z-value is 1.96.

- r is the error margin in the confidence interval development. In practice, VM-20 has specified an error margin of no more than 5 percent, therefore r = .05.

-  $\hat{m}$  is a company's estimated value (i.e., the estimate) and is calculated from the company's experience mortality data, the A/E ratio.

-  $\hat{\sigma}$  is the standard deviation of the estimate.

-  $\hat{m}$  and  $\hat{\sigma}$  are derived from the company experience mortality study data. In most mortality studies, the number of observed lives, the fraction of the year each life was observed, the face amount insured, and the number and amount of claims are all involved in the calculation of these two quantities.

The formula is re-stated below with the constraints required by VM-20.

$$\text{Limited Fluctuation } Z = \min \left\{ 1, \frac{.05 * \hat{m}}{1.96 * \hat{\sigma}} \right\}$$

When there is full credibility (Limited Fluctuation Z=1), the credibility factor with VM-20 constraints means there is more than 95 percent probability that the estimation is no more than 5 percent in error of the true value. As can be seen from the formula, when  $\hat{\sigma}$  is small enough, the credibility factor will be 1. If the conditions of full credibility are not met, the experience data are considered partially credible with the calculated credibility factor value of Limited Fluctuation Z.

#### Bühlmann Empirical Bayesian

Bühlmann Empirical Bayesian method is also called Greatest Accuracy Credibility method. It is based on a linear Bayesian model and requires past experience data from more than one company. As stated above, this method recognizes the variation of a company's observations about that company's mean observation and variation between each company's mean and the overall mean for the entire data set.

The credibility factor takes the form of  $Z = n/(n+k)$ , where n is a measurement using exposures and k requires both the variance of observations in each company and the variance from one company to another. As each company's detailed policy data are confidential, a statistical agent is required to collect the data and perform the calculations for a pure Bühlmann Empirical Bayesian method. Since this is not practical in the context of regulatory reporting, VM-20 specifies a formula to approximate the credibility factor.

$$\text{Bühlmann } Z = \frac{A}{A + \frac{109\% * B - 120.4\% * C}{0.019604 * A}}$$

where

$$A = \Sigma(\text{amount insured}) * (\text{exposure}) * (\text{mortality})$$

$$B = \Sigma(\text{amount insured})^2 * (\text{exposure}) * (\text{mortality})$$

$$C = \Sigma(\text{amount insured})^2 * (\text{exposure})^2 * (\text{mortality})^2$$

Also note that the Bühlmann Empirical Bayesian method will never result in a credibility factor value equal to 1. The VM-20 margin tables take this into account, since the highest credibility category for the Bühlmann approach is 99 percent plus.

Comparison of the two approaches

There are advantages and disadvantages to each approach.

As Limited Fluctuation only requires data from one company and has straightforward inputs, the resulting formulas are relatively easy to understand, implement and interpret. However, it does not specify any procedures to estimate parameters p and r, so they can only be selected arbitrarily. In VM-20 these values are specified. The Limited Fluctuation method only considers the accuracy of the single company’s experience and makes no consideration for the relationship of the company’s experience to industry experience. Finally, this method makes an a priori assumption that the data has a normal distribution. As a result, no quantities can be optimized in the calculation.

As a comparison, Bühlmann Empirical Bayesian is a systematic modeling approach with assumptions and optimizations defined.

No parameters need to be selected arbitrarily. Also, it reflects the accuracy in both single company and industry data through two variance calculations. On the other hand, it is hard to interpret and the calculation process is hard to explain. Finally, in its pure form, use of the Bühlmann approach requires the company to rely on statistical agents for the calculation. This impracticality is overcome by the formulaic approximation found in VM-20 Section 9C(4)a.

Outcomes from 2009 Credibility Theory Practices Report Table 2 shows an excerpt of research results from the “Credibility Theory Practices Report.” The purpose of this is to provide a better understanding of the difference between the two credibility approaches through demonstration.

Credibility results from nonsmoker mortality data for various types of life insurance products of 10 companies are shown in Table 2. Credibility Z-factors by count and by amount for both methods are provided. The “by count” result is included in the table to demonstrate how the by count measure can be materially higher than the “by amount” measure. In VM-20, for valuations in which the industry table is the 2015 VBT, one must use either the Limited Fluctuation or Bühlmann Empirical Bayesian

Table 2

Overall A/E by Amount	Company	Company A/E Ratio by Amount	Limited Fluctuation Z		Bühlmann Z		Bühlmann Z – LF Z	
			By Count	By Amount	By Count	By Amount	By Count	By Amount
77%	A	106%	.972	.708	.962	.935	-.010	.227
77%	B	118.5%	.830	.285	.945	.678	.115	.393
77%	C	63.5%	.664	.254	.949	.757	.285	.503
77%	D	89.2%	.387	.219	.843	.623	.456	.404
77%	E	61.4%	1.000	1.000	.997	.986	-.003	-.014
77%	F	71.6%	1.000	.236	.979	.704	-.021	.468
77%	G	36.8%	.044	.020	.106	.033	.062	.013
77%	H	81.2%	1.000	.409	.996	.863	-.004	.454
77%	I	82.8%	1.000	.833	.988	.963	-.012	.130
77%	J	97.9%	.952	.453	.965	.865	.013	.412

Taken from Appendix A, C and E of Credibility Theory Practices Report

by **amount**, not by count. If a company has historically measured credibility by policy count, it may find that the by amount measure is materially different. VM-20 is silent regarding whether the appropriate basis for exposure is direct or retained insurance amounts. The overall A/E for all companies combined is 77 percent. In Table 2, the Bühlmann calculation does not use the VM-20 approximation, but rather it is the Bühlmann Empirical Bayesian in pure form. Note the differences in outcomes between the two methods, particularly for companies B, C, D, F, H and J, where the Limited Fluctuation method produces a Z value which is 0.4 to 0.5 lower than the Bühlmann Z.

## CONCLUSION

In VM-20, requirements around determining credibility of the company’s mortality data vary by the VBT the company uses to establish its mortality assumption. For valuations using the 2015 VBT, two methods are allowed: the Limited Fluctuation method and the Bühlmann Empirical Bayesian method. Both must be determined based on face amount. Companies accustomed to measuring credibility using policy count may find the by amount requirement produces a different outcome. In VM-20 requirements, the Bühlmann Empirical Bayesian method is applied differently from the pure classic approach, primarily due to the impracticality of one company having access to mortality data from a number of other companies. A 2009 paper reveals that, for a given company, credibility results between the Limited Fluctuation and Bühlmann methods can vary materially. Each method has its own advantages and disadvantages.

In conclusion, the choice of credibility methodology for VM-20 may not be an easy one and what is best for one company may not be best for another. Since any future change in choice needs to be approved by the Commissioner and requires justification, choosing wisely upfront is the best approach. We hope this article provides you with some insights that will help you with that choice. ■

## ENDNOTES

- <sup>1</sup> Credibility Theory Practices Report: Sponsored by the Committee on Life Insurance Research, the Financial Reporting Section, and the Product Development Section. Prepared by Stuart Klugman, Tom Rhodes, Marianne Purushotham, and Stacy Gill of MIB Solutions. See <https://www.soa.org/research/research-projects/life-insurance/research-credibility-theory-pract.aspx>
- <sup>2</sup> These constraints are applicable for valuations as of Jan. 1, 2017 and later.
- <sup>3</sup> Credibility Theory Practices Report, Page I.21



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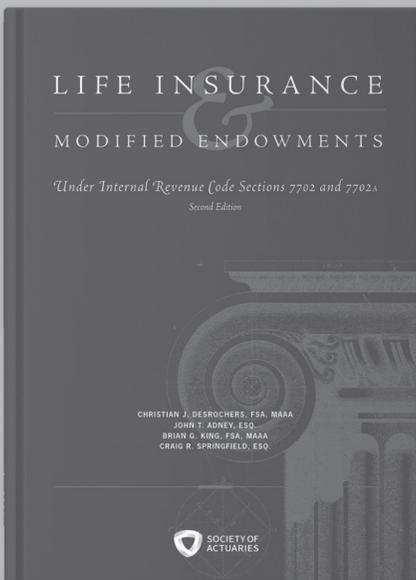


**SOCIETY OF  
ACTUARIES**



**LIFE INSURANCE & MODIFIED ENDOWMENTS**  
Under Internal Revenue Code Sections 7702 and 7702A  
Second Edition

**NEW EDITION**



- This new edition provides a comprehensive analysis of the life insurance qualification requirements imposed by the Internal Revenue Code
- It includes a restructuring and expansion of materials presented in the first edition, with over 100 pages of new information, including:
  - Two “student friendly” chapters that present an introduction to the qualification requirements of Section 7702 and 7702A
  - A new chapter dedicated to the qualification requirements of sections 101(g) and 7702B for accelerated death benefits and long-term care riders
  - Expanded discussions on:
    - The adoption of the 2001 CSO mortality tables and the relevant IRS guidance relating to the section 7702(c)(3)(B)(i) “reasonable mortality” requirements
    - The 2008 updates to the IRS correction procedures for noncompliance with sections 7702 and 7702A
    - Numerous private letter rulings and other IRS guidance issued since the publication of the first edition
    - And more...

# ACA Financial Reporting: The Second Year

By Aaron Wright

As pricing actuaries are preparing to price the fourth year of Affordable Care Act (ACA) plans, valuation actuaries are still in the process of understanding the effects of the ACA risk adjustment, reinsurance, and risk corridor programs (collectively known as the 3R's). While valuation actuaries are addressing uncertainty related to 2015 financial statements, pricing actuaries are developing rates for 2017, for which reinsurance and risk corridors are no longer applicable.

The Health and Financial Reporting Section Councils partnered to survey reporting on new ACA assets and liabilities. This is follow-up to a survey originally conducted in June 2014. The original survey was summarized in the October 2014 edition of *Health Watch*<sup>1</sup> and reprinted in the December 2014 edition of *The Financial Reporter*.

This second survey was given to members of the financial reporting and health sections. The survey was offered from Feb. 15, 2016 through March 18, 2016. There were 25 respondents, which is approximately half of the number of original survey respondents. Because of the small sample size, readers are cautioned that the results from this survey may not be representative of the market in general.

Since the original survey, which solicited thoughts on anticipated reporting of ACA items, the following has occurred:

- Two years of annual statements have been filed, the second of which was filed during the survey response period.
- One year of post-ACA medical loss ratio (MLR) results have been filed. The attachment point for 2015 transitional reinsurance was decreased from \$70 thousand to \$45 thousand.<sup>2</sup>
- The Centers for Medicare and Medicaid Services (CMS) provided allocation for 2014 risk adjustment, reinsurance, and risk corridors:
  - 2014 risk adjustment transfer results by carrier, including certain transfer formula parameters by state and market were publicly reported;<sup>3</sup>

- 2014 risk corridor receivables were prorated to 12.6 percent of the total calculated receivable;<sup>4</sup> and

- The 2014 coinsurance rate on reinsurance increased from 80 percent to 100 percent.

- Following the actual payout of 12.6 percent for risk corridor receivables, the NAIC issued guidance on any remaining accruals for risk corridor receivables for all plan years, 2014-2016.<sup>5</sup>
- CMS announced additional funds from 2014 are available for 2015 reinsurance payments.<sup>6</sup>
- Cost sharing reduction (CSR) reconciliation still has not occurred for plan years 2014 and 2015.<sup>7</sup>
- In certain markets, CMS released preliminary 2015 risk adjustment results<sup>8</sup> and early reinsurance payments were provided.

The following topics were covered by this follow-up survey:

- Company Demographics;
- Risk Adjustment—Individual and Small Group;
- Transitional Reinsurance;
- Risk Corridor; and
- Cost Sharing Reduction Payments.

The focus of the questions includes reviewing 2014 estimates compared with actual 2014 results, data availability for these estimates, and expectations for 2015 estimates.

## COMPANY DEMOGRAPHICS

Of the 25 respondents, 92 percent represented health carriers with the remaining representing multi-line carriers.

Twenty-four percent of the carriers represented cover fewer than 100,000 lives while 32 percent of those represented cover more than one million lives.

Thirty-six percent of respondents identified as mutual/fraternal companies and another 36 percent identified as not-for-profits. One carrier was a privately-held stock company with the remainder being publicly-held.

## RISK ADJUSTMENT

The risk adjustment program is designed to financially protect carriers that enroll a higher risk (less healthy) population than the statewide average. Under this program, funds are transferred from carriers with low-risk enrollees to carriers with higher-risk enrollees as measured by the U.S. Department of Health and

Human Services (HHS) risk adjustment model. The intent of this program is to equalize differences in cost related to differences in risk. The transfer payments in this program occur at the state and market level and apply to non-grandfathered plans in the individual and small group markets inside and outside the exchange.

For risk adjustment, the survey included separate sections for individual and small group market responses. Of the 25 respondents, two did not have business subject to risk adjustment, and one respondent operating in a merged individual/small group market provided responses in the individual section.

For both risk adjustment and reinsurance payments, carriers are required to submit CMS EDGE server data to CMS from which CMS determines final risk adjustment transfers and reinsurance recoveries. Generally, there is back and forth between CMS and carriers in order to meet the data quality requirements for processing before the close of the window for submitting additional information. The EDGE server submission window closes at

the end of April and then CMS processes final risk adjustment transfers and reinsurance recoveries, with this information being made available at the end of June.

Individual Market

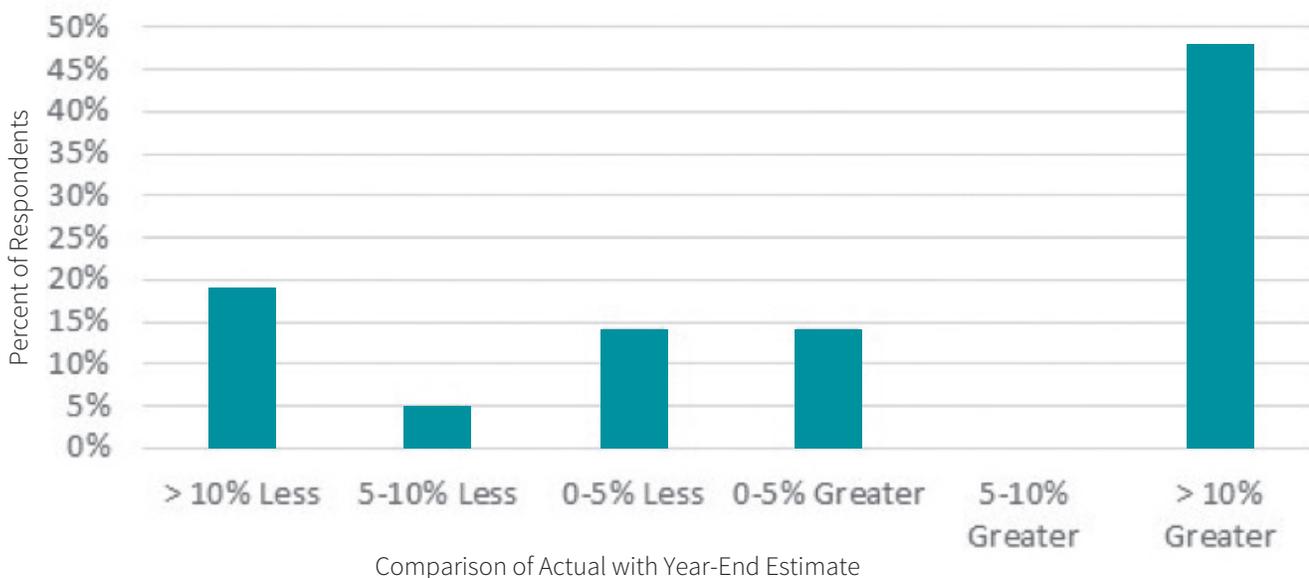
The first two questions focused on actual 2014 results compared to 2014 estimates.

Of those responding to the first question, 76 percent estimated the correct direction of the risk adjustment transfer balance sheet item (i.e., a receivable or payable). One carrier estimated a receivable, but resulted with a payable. The remainder of respondents had estimated \$0 accrual at year-end.

Chart 1 shows the results comparing actual risk adjustment payments with what was estimated as of Dec. 31, 2014. Nearly 50 percent of respondents paid or received more than 10 percent greater than what was expected, while just more than 15 percent paid or received less than 90 percent of what was expected.

Chart 1

Actual Individual Risk Adjustment Payment compared with Year-End Estimate



When asked about methodology changes for 2015, 59 percent of respondents intended to use either the same methodology or a slightly modified methodology compared with what was used in 2014. Thirty-six percent expected to use a methodology for 2015 reporting that is substantially different from what was used in 2014.

Another question focused on drivers of differences between estimated and actual, including the carrier’s own risk score, the applicable market risk score, and some combination of the two. Data processing issues are also included within the scope of this question. Respondents could select multiple items. Key findings from this question include:

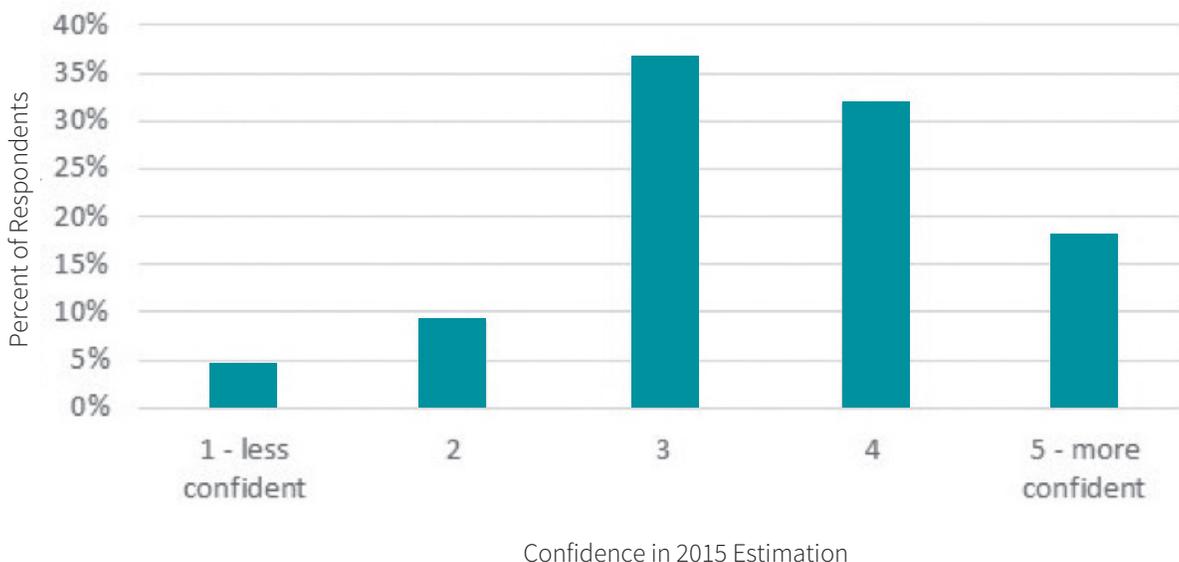
- Ten percent overestimated their final risk score, while no respondents underestimated their own risk score.
- Ten percent overestimated the market risk score, while 35 percent underestimated the market risk score.
- Twenty-five percent felt that between estimating their own risk score and the market risk score, the result was a larger payout than expected.
- Fifteen percent indicated that the combination of estimating their own and the market risk score resulted in a larger receipt than expected.

- Twenty percent felt that data processing was a significant driver of the difference between actual and expected.
- One carrier was not sure what the significant drivers were while another carrier booked \$0 risk adjustment because of their large market share.

In a related question, respondents were asked how their estimated state average plan level risk score (PLRS) compared with the actual state average PLRS. Of 15 respondents, 80 percent underestimated the state average PLRS. Two carriers indicated that their estimate was more than 10 percent less than actual. Three carriers felt their estimates were 5–10 percent less, while another seven carriers had their estimates from 0–5 percent of the final PLRS. Only one carrier said its estimate was greater than the final state average PLRS. Another carrier had cited overestimation of the market risk score as a significant driver (paragraph above), but did not provide a range on the difference. There were two carriers that indicated that they did not have an explicit estimate of the state average PLRS.

Respondents were then asked to rate their ability to develop 2015 risk adjustment estimates compared with 2014, given one year of actual risk adjustments. The range was from one to five, with one representing “I am more confused than 2014 based on the actual payout” and five representing “I am very confident with the methodology I will use for 2015.” Chart 2 shows the results:

Chart 2  
Ability to Develop 2015 Individual Risk Adjustment Estimates



Half selected four or five, with the other half selecting three or lower. The results are skewed towards being more confident, but still 36 percent answered with a three, suggesting that uncertainty is still present in risk adjustment estimates.

The final questions of this section related to EDGE Server data processing.

Eighty-three percent had an EDGE Server claims acceptance ratio of 98 percent or higher, while all carriers responding had an acceptance rate of 94 percent or higher.

Seventy-six percent had an enrollment acceptance ratio of 98 percent or higher and all carriers responding had an acceptance rate of 94 percent or higher.

Just over half of the respondents had performed analyses to compare how close data submission was to optimal. Of those who had performed the analysis, 36 percent felt that additional submissions would have improved the risk score. The remaining respondents felt the risk score would have been unchanged.

CMS established an appeals process for several of the programs under ACA, including the risk adjustment program. In this case, the carrier will request reconsideration from CMS. CMS will

then make a final and binding reconsideration decision. Of survey respondents, 10 percent had filed an appeal.

Thirty-three percent were able to submit supplemental data for the 2014 risk adjustment.

Small Group

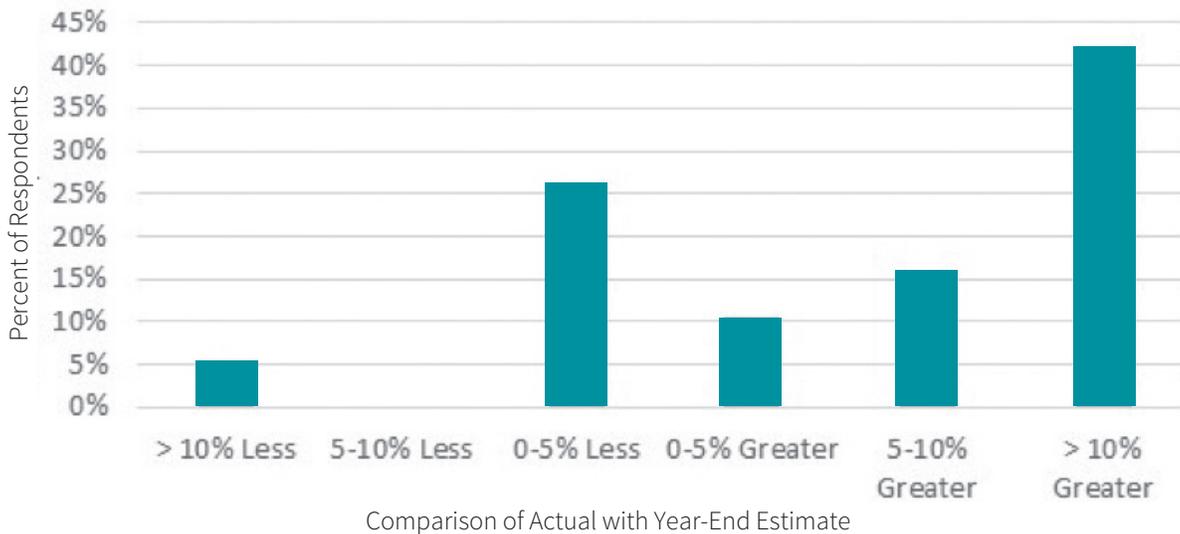
The first two questions focused on actual 2014 results compared with 2014 estimates.

Of those responding to the first question, 57 percent estimated the correct direction of the risk adjustment payable, i.e., a receivable or payable. Two carriers estimated a receivable with the final result being a payable and one carrier estimated a payable and ended up with a receivable. Five respondents accrued \$0 at year-end, with four receiving a risk adjustment transfer and the fifth paying a risk adjustment transfer.

Chart 3 shows the results when comparing actual risk adjustment payments to what was accrued at year-end. Similar to the individual estimates, 42 percent of respondents paid or received more than 10 percent greater than what was expected. However, for small group, only 5 percent paid or received less than 90 percent of what was expected.

Chart 3

Actual Small Group Risk Adjustment Payment compared with 2014 Year-End Estimate



When asked about methodology changes for 2015, 75 percent of respondents intended to use either the same methodology or a slightly modified methodology compared with what was used in 2014. Only 20 percent expected to use a methodology for 2015 reporting substantially different from what was used in 2014, compared with 36 percent in the individual section.

Another question focused on drivers of differences between estimated and actual, including the carrier’s own risk score, the applicable market risk score, some combination of the two, and data processing issues. Respondents could select multiple items. Key findings from this question include:

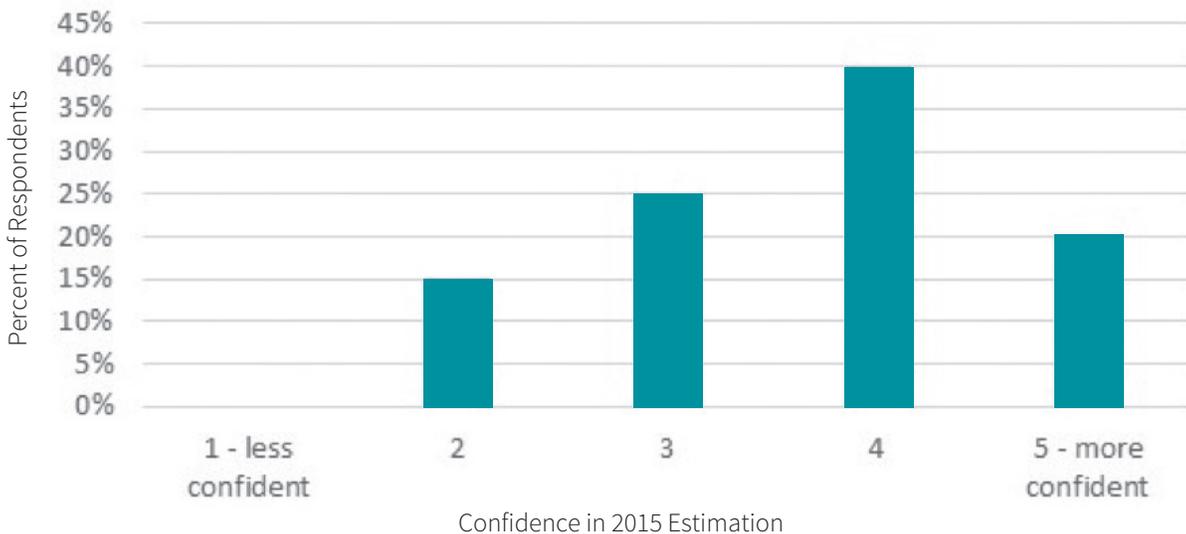
- Ten percent overestimated their final risk score, while 15 percent underestimated their own risk score.
- Twenty percent overestimated the small group market risk score, while 30 percent underestimated the market risk score.
- Ten percent indicated that between estimating their own risk score and the market risk score, the result was a larger payout than expected; while 20 percent felt that the combination of estimating their own and the market risk score resulted in a larger receipt than expected.

- Ten percent indicated that data processing was a significant driver of the difference between actual and expected.

In a related question, respondents were asked how their estimated state average PLRS compared with the actual state average PLRS. Of 14 respondents, the majority were within 5 percent of the state average PLRS, with 29 percent overestimating and 29 percent underestimating. One carrier indicated that their estimate was more than 10 percent less and two carriers felt their estimates were 5–10 percent less than the actual state average PLRS. One carrier did not have an explicit estimate for the state level PLRS, while another, similar to the response above, had differing results by state.

Respondents were then asked to rate their ability to develop 2015 risk adjustment estimates compared with 2014, given one year of actual risk adjustments. The range was from one to five, with one representing “I am more confused than 2014 based on the actual payout” and five representing “I am very confident with the methodology I will use for 2015.” Chart 4 shows the results:

Chart 4  
Ability to Develop 2015 Small Group Risk Adjustment Estimates



The average confidence level for the small group market is 3.65 compared with an average confidence level of 3.50 for the individual market.

Again, given the timing of the survey, it would seem to imply that uncertainty is still very prevalent in risk adjustment estimates.

The final questions of this section related to data processing.

Eighty-one percent of respondents had a claims acceptance ratio of 98 percent or higher, while all carriers responding had an acceptance rate of 96 percent or higher.

Eighty-eight percent of respondents had an enrollment acceptance ratio of 98 percent or higher, and similar to the claims acceptance, all carriers responding had an acceptance rate of 96 percent or higher.

Just under half of the respondents had performed analyses to compare how close data submission was to optimal. Of those who had performed the analysis, 22 percent felt that additional submissions would have improved the risk score. The remaining respondents felt the risk score would have been unchanged.

Of survey respondents, five percent had filed an appeal.

Thirty percent were able to submit supplemental data for the 2014 risk adjustment.

## TRANSITIONAL REINSURANCE

Transitional reinsurance is a temporary program which is in operation from 2014 to 2016. While most health plans<sup>9</sup> are required to contribute to the program, only individual plans receive reinsurance payments. This program's 2015 provisions include:

- Attachment point of \$45,000
- Reinsurance cap of \$250,000
- Coinsurance of 50 percent paid for claims between the attachment point and cap.

For the 2014 calendar year, the coinsurance rate was increased from 80 percent to 100 percent. Also, it should be noted that during the time the survey was available, CMS released a statement citing additional funds (above what was budgeted) for the 2015 plan year. Based on guidance from CMS, the coinsurance rate will be adjusted, if necessary, to pay out the additional funds.

The first survey question of this section related to claims runoff. For all carriers, the change in 2014 claims runoff from what was booked in the annual statement to the time of the survey was 10 percent or less, with 44 percent citing an increase of 0–5 percent

and 28 percent citing a decrease of 0–5 percent. An additional 22 percent cited an increase of 5–10 percent while the remaining 6 percent indicated a decrease of 5–10 percent. One carrier additionally cited high fourth quarter utilization as driving the additional runoff, thus impacting the reinsurance estimate.

Another question was related to the impact of data processing and EDGE server on the final amount received compared with what was booked at year-end. Thirty-five percent of survey respondents felt that the data processing process decreased the amount received, with the remaining 59 percent feeling it had no impact. One respondent felt it increased the amount received. Relating to the EDGE server requirements, another question asked whether the April 30th submission deadline had an impact on estimates. Of those surveyed, only 15 percent felt that the April cutoff had a material impact.

The final question of this section asked about whether or not the 2015 estimate would be affected by CMS's decision to increase the coinsurance rate on the calendar year 2014 reinsurance estimates. Two respondents indicated using a higher coinsurance rate and two more indicated that for year-end reporting they would use the published rate (50 percent), but for other reporting a higher estimate is being considered. Comments for those continuing to use the 50 percent coinsurance rate included:

- “Any payment rate beyond 50 percent will be upside.”
- “We conservatively assumed 50 percent.”
- “Possible amount to receive higher than minimum for 2015, though for year-end purposes reflecting minimum.”
- “No impact still using the published coinsurance.”

## RISK CORRIDOR

The risk corridor program is a temporary program which is in operation from 2014 to 2016, and applies only to individual and small group Qualified Health Plans (QHPs) operating on the exchange or plans substantially similar to QHPs offered off-exchange. Large groups, grandfathered, and self-funded or TPA plans do not participate in the risk corridors program. The goal of the risk corridors program is to temporarily dampen gains and losses, due to the mispricing of plans, by having plans pay or receive funding from the federal government.

The risk corridor formula attempts to dampen any profits or losses, including the impacts of risk adjustment transfers, reinsurance, and claims runoff.

The 2014 proration percentage for payout for the risk corridor receivables was only 12.6 percent of total amount due. Those paying into the program paid the full amount. The reduced payout to those with a risk corridor receivable was a proportional

adjustment to the risk corridor program to ensure revenue-neutrality.

Because of the revenue-neutral requirement and the actual payout of 12.6 percent, there were only two questions on risk corridors. The first focused on a comparison of 2014 year-end estimates for risk corridor to the risk corridor amounts filed with the MLR templates. As mentioned above, the risk corridor itself is calculated from a formula, so any changes in risk corridor are driven by other accruals. Table 1 shows significant drivers of changes between the 2014 final risk corridor and the estimate at year-end and the percent of respondents citing each.

Driver of Risk Corridor Change	Percent of Respondents
Higher Reinsurance Recoveries	20%
Lower Reinsurance Recoveries	13%
Higher Risk Adjustment	20%
Lower Risk Adjustment	0%
Higher Claims Runout	13%
Lower Claims Runout	13%
Other	20%

The largest drivers of change were increases in reinsurance recoveries and increases in risk adjustment transfers. Claims runout was equally impactful in either direction, with 13 percent citing higher claims runout as a significant driver and 13 percent citing lower claims runout as a significant driver. Similarly, 13 percent cited lower reinsurance recoveries as the most significant driver of change. The majority of those citing “Other” did not include any risk corridor accrual in their 2014 year-end statement.

The focus of the second risk corridor survey question was related to what would be accrued for 2015 year-end given the adjustment to risk corridors requiring the program to be revenue-neutral. One survey respondent said they would be accruing a lower estimate and one respondent stated they were recording a payable. The remaining respondents were either not booking anything or at the time of the survey were still undecided. As outlined in the introduction, the NAIC issued guidance on accruals for risk corridor receivables; in general, the guidance suggested that if anything was booked, it should be booked as a non-admitted asset rather than admitted given the lack of funds in 2015 for payout on 2014 risk corridor receivables.

### COST SHARING REDUCTION

Silver product variants are available to individuals whose income is 250 percent or less than the Federal Poverty Level (FPL). The federal government subsidizes a portion of the member cost sharing amounts through CSR payments.<sup>10</sup> The govern-



ment pays carriers an estimated monthly amount to cover CSR payment amounts (prospective payments). As defined in federal guidance, two different methodologies for determining the actual amount exist: a standard methodology and a simplified methodology. Following the plan year, the federal government will true-up the prospective payments based on results from the carrier’s selected methodology.

Of those responding to the survey, the majority of respondents, 55 percent, used the prospective payments from CMS for their estimate of CSR payments. Twenty-five percent used an adjusted amount and the remaining portion did not have business subject to CSR payments. Of those using an adjusted amount, all used an estimated decrease from the prospective amount. Although the range of the CSR estimates has the potential to affect MLR rebates, only one respondent felt that the potential range of CSR payments could impact whether or not MLR rebates were necessary.

While 2014 CSR prospective payments were originally scheduled to be reconciled in spring 2015, CMS postponed the reconciliation to April 2016 to be reconciled together with the 2015 payments.

The majority of respondents used the prospective payments from CMS for their estimates of CSR payments.

Of the respondents, 25 percent expected the delay to affect the methodology (standard vs. simplified) used. The remainder did not expect the delay to impact the methodology.

### CONCLUDING REMARKS

Many thanks to all who took the time to fill out this survey.

Uncertainty in market estimates and overall methodology continues to exist for the risk adjustment program, even as we complete 2015 financial statements. For reinsurance, there is still uncertainty in what actual payments will be for the 2015 plan year. The majority of carriers are using published parameters for 2015 with an expectation of increased parameters in what is actually paid out. The risk corridor formula is absorbing impacts of risk adjustment transfers, reinsurance, and claims runoff as intended. However, the impact is diminished for plans with a risk corridor receivable as the majority of respondents either estimated \$0 or were still deliberating at the time of the survey. The impact of the CSR payments reconciliation is still unknown for 2014 and 2015 accruals. As a result, there is potential for material impact given that the majority of respondents used the CMS prospective payments (based on pricing) and there were large losses for 2014 based on risk corridors filed.

Many thanks to Nancy Hubler and Dave Liner for their peer review as well as the SOA staff who administered the survey. ■

### ENDNOTES

- <sup>1</sup> <https://www.soa.org/news-and-publications/newsletters/health/pub-health-section-newsletters-details.aspx>
- <sup>2</sup> <https://www.gpo.gov/fdsys/pkg/FR-2014-05-27/pdf/2014-11657.pdf>
- <sup>3</sup> <https://www.cms.gov/CCIIO/Programs-and-Initiatives/Premium-Stabilization-Programs/Downloads/RI-RA-Report-Draft-6-30-15.pdf>
- <sup>4</sup> <https://www.cms.gov/CCIIO/Programs-and-Initiatives/Premium-Stabilization-Programs/Downloads/RC-Issuer-level-Report.pdf>
- <sup>5</sup> [http://www.naic.org/documents/committees\\_e\\_app\\_eaiwg\\_related\\_int\\_1501\\_risk\\_corridors.pdf](http://www.naic.org/documents/committees_e_app_eaiwg_related_int_1501_risk_corridors.pdf)
- <sup>6</sup> [https://www.cms.gov/CCIIO/Resources/Regulations-and-Guidance/Downloads/RIC\\_2015ContributionsGuidance.pdf](https://www.cms.gov/CCIIO/Resources/Regulations-and-Guidance/Downloads/RIC_2015ContributionsGuidance.pdf)
- <sup>7</sup> [https://www.regtap.info/uploads/library/APTC\\_CSR\\_Recon\\_timing\\_guidance\\_5CR\\_021315.pdf](https://www.regtap.info/uploads/library/APTC_CSR_Recon_timing_guidance_5CR_021315.pdf)
- <sup>8</sup> [https://www.cms.gov/CCIIO/Programs-and-Initiatives/Premium-Stabilization-Programs/Downloads/InterimRAReport\\_BY2015\\_5CR\\_031816.pdf](https://www.cms.gov/CCIIO/Programs-and-Initiatives/Premium-Stabilization-Programs/Downloads/InterimRAReport_BY2015_5CR_031816.pdf)
- <sup>9</sup> Includes carriers with individual, small group, and large group business markets along with TPAs and self-funded plans.
- <sup>10</sup> Premium subsidies are also available through the advanced premium tax credit (APTC).



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# Financial Reporting Research Update

By Jim Hawke and Ronora Stryker

**R**esearch is a primary mission of the Financial Reporting Section and a significant use of our section dues revenue. Here is an update, as of March 31, 2016, on projects in process, on the horizon, and recently completed.

## ON THE HORIZON ...

**PBA Change Attribution Analysis**—The section council recently approved moving forward with a study of the drivers of change in principle-based reserves. A project oversight group is being formed and the RFP will come out soon.

**Impact of Targeted Changes to US GAAP**—The council has received a proposal for a project to look at how companies will address the various new requirements. We will likely move forward when FASB's new guidance comes out.

## CURRENTLY IN PROCESS ...

**Nested Modeling**—A company survey on the use of nested stochastic modeling and an analysis of techniques to reduce run time and improve the efficiency of nested simulations is nearing completion with a likely release by end of second quarter.

**PBA Implementation Guide Update**—An update to the earlier version including all current developments. The project oversight group (POG) is reviewing the draft report. It will be discussed at the 2016 Life and Annuity Symposium and released by the end of the second quarter.

**Modern Deterministic Scenarios**—Review of possible deterministic scenario sets that could be useful to company management, regulators, and rating agencies under PBA. The POG is reviewing bids to perform the study.

**Predictive Analytics Call for Papers**—The SOA issued a call for articles on the increasing use of predictive analytics by actuaries. The POG has reviewed submissions. Prizes and publication will follow shortly.

**Retention Management**—Research that examines retention management strategies under a principle-based framework for reserves and capital is essentially completed. It will be presented at the 2016 Life and Annuity Symposium and released during the second quarter.

## COMPLETED IN 2015 ...

**Transition from Low to High Interest Rates:** <http://www.soa.org/Research/Research-Projects/Life-Insurance/research-2015-rising-interest-rate.aspx>

**Multiple Measurement Bases:** <http://www.soa.org/Research/Research-Projects/Life-Insurance/2015-earnings-emergence.aspx>

**VBT/CSO Impact Study:** <http://www.soa.org/Research/Research-Projects/Life-Insurance/research-cso-impact-study.aspx>

**Tail risk/correlation of risk primer:** <http://www.soa.org/Research/Research-Projects/Life-Insurance/2015-extreme-events-for-insurers.aspx>

Many of these projects were co-sponsored with other sections and organizations. Please visit the SOA research website for more information, or contact Jim Hawke or Ronora Stryker directly at [jamesshawke@gmail.com](mailto:jamesshawke@gmail.com) or [rstryker@soa.org](mailto:rstryker@soa.org). ■



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