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# Determining VM-20 Mortality for Accelerated Underwriting Programs

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As companies begin implementing principle-based reserving (PBR) for life insurance, several questions emerge around how valuation requirements apply to accelerated underwriting programs. This article outlines challenges regarding the treatment of these programs under VM-20, in addition to discussing considerations for statutory reserving in light of future innovation.

## EMERGENCE OF ACCELERATED UNDERWRITING

Accelerated underwriting (AUW) is one of the new buzz words in life insurance. As a generation of digital consumers comes of age, life insurance companies are forced to confront a rapidly changing landscape of buyer expectations. The traditional months-long application and underwriting process is being challenged by companies looking to meet these new expectations with accelerated underwriting programs that drive faster decisions and a less invasive underwriting experience for consumers.

Companies often position these programs as combining the ease of simplified underwriting with the rigor of traditional underwriting methods, and correspondingly target premiums that align more closely to traditionally underwritten products. One common theme among these programs is the concept of **triage**, which treats underwriting requirements as dynamic and adds them as needed through a linear customer journey (application, tele-interview, real-time data such as prescription history or motor vehicle records, medical exam, physician records).

Another way to think about the triage concept is as an expansion of the familiar age/amount grid where, in addition to the dimensions of policy size and issue age, there is also a dimension for risk. This risk dimension of the grid could be determined using the requirements gathered earlier in the accelerated underwriting process to determine when additional requirements, including a medical exam, are needed.

In order to maintain premiums in line with traditionally underwritten products, companies often enhance their programs with new data sets, such as credit data and public records data, which can provide risk selection benefits expected to complement those used today.

Programs vary greatly, which complicates the job of the valuation actuary. However, it is likely that significant convergence will emerge in the coming years, as established third-party vendors enter the space, and as carriers and reinsurers begin to understand which designs are most effective at balancing risk selection with speed, customer experience and cost. This convergence may result in standard tools or approaches that can aid in identifying risks for valuation purposes.

## CHALLENGES FOR PBR VALUATION

The adoption of accelerated underwriting programs is happening at the same time as companies are implementing PBR, providing an early test for valuation actuaries as they interpret VM-20. At issue is how VM-20 directs companies to measure and deal with change.

Under VM-20, the deterministic reserve (DR) and stochastic reserve (SR) calculations entail considerable new work for company actuaries. While DR and SR methods are prescribed in VM-20, each company determines and discloses assumptions specific to its book of business, within limits, to model and calculate the reserves.<sup>1</sup>

Mortality assumptions are at the heart of the DR and SR calculations. A company determines how to divide its book into mortality segments. These segments are subsets of policies expected to have different mortality experience than other groups of policies based on certain characteristics (e.g., gender, underwriting class, etc.). Separate prudent estimate mortality assumptions are set for each mortality segment.

Valuation and pricing actuaries have always had to consider how changes in underwriting techniques, standards or data sources will impact future experience. The advent of PBR and rapid spread of AUW programs presents a unique but not insurmountable challenge. In particular, there are several open questions related to the treatment of mortality margins and credibility, appropriateness of industry mortality tables, VM-31 disclosures, and VM-51 data collection.

## Mortality Margins And Credibility

The mortality margin added to company experience data varies by the level of credibility, and directly impacts the level of the DR and SR.<sup>2</sup> In addition, margins may be further increased, if appropriate, to reflect uncertainty, including any uncertainty that may be due to changes to underwriting methods.

Changes to life underwriting methods can range from relatively minor elements, such as adjustments for starting to screen a particular condition, to start-from-scratch programs for new products and markets. AUW programs can fit anywhere in that range. When a company changes its underwriting program to use AUW methods, does VM-20 require a fresh mortality assumption or the use of a margined-up industry table assuming zero credibility? It depends.

If a company decides to use a new mortality segment to reflect the change, direct experience data may be limited. In that case, VM-20 (Section 9.C.2.b) allows use of experience from “other books of business within the company with similar underwriting” and other sources with “underwriting and expected mortality experience characteristics that are similar” to those within the new segment.

If an underwriting change is minor, incremental or designed to produce mortality experience similar to another segment, then experience data may need to be adjusted. VM-20 (Section 9.C.2.f) and VM-31 (Section 3.C.3.e) require specific documentation criteria. In addition, the actuary may consider whether an additional mortality margin is warranted on policies affected by the underwriting change. VM-20 also allows experience across different mortality segments, including genders and risk classes, to be combined to determine credibility at an aggregate level, provided mortality for the segments “was determined using an aggregate level of mortality experience.”

VM-20 (Section 9.C.2.d) provides requirements for acceptable mortality aggregation techniques. Recently, the American Academy of Actuaries’ Life Reserves Work Group proposed an amendment to VM-20 to the NAIC’s Life Actuarial (A) Task

Force on this topic. It provides additional guidance to companies for determining when experience from different mortality segments may be considered similar and aggregated based on supporting studies, analyses and demonstrations.

Clearly, the degree to which a company can demonstrate how a new AUW program relates to its company experience data is critical for setting its DR and SR mortality assumptions.

### Industry Mortality Tables

Currently, there is no prescribed valuation mortality table for AUW. Without clear guidance, there may be potential inconsistencies between the statutory reserve and the mortality risk that the statutory reserve is intending to capture.

Under PBR, the Net Premium Reserve (NPR) calculation must currently use the 2017 Commissioners’ Standard Ordinary (CSO) mortality table for medically underwritten policies. Without a clear alternative available, companies may interpret that the CSO should be used for AUW, subject to the presence of substandard mortality risk in excess of the CSO.<sup>3</sup> In addition, VM-20 does not clarify whether an industry table distinct from prescribed traditional underwriting tables should be used when grading from company experience data. VM-20 refers to Section VM-M, which points to the 2015 Valuation Basic Table (VBT) and 2008 SOA Limited Underwriting Table—companies may consider how an AUW program relates to medical underwriting programs in deciding whether to use the VBT. In addition, the SOA Relative Risk tool is not applicable to AUW, as some traditional underwriting criteria required for the tool’s input is not applicable. Therefore, the company may need to use actuarial judgment to map to an applicable industry table and then clearly disclose its rationale in the VM-31 PBR Actuarial Report.

Figure 1  
Example Decision-making Considerations for Determining AUW PBR Mortality

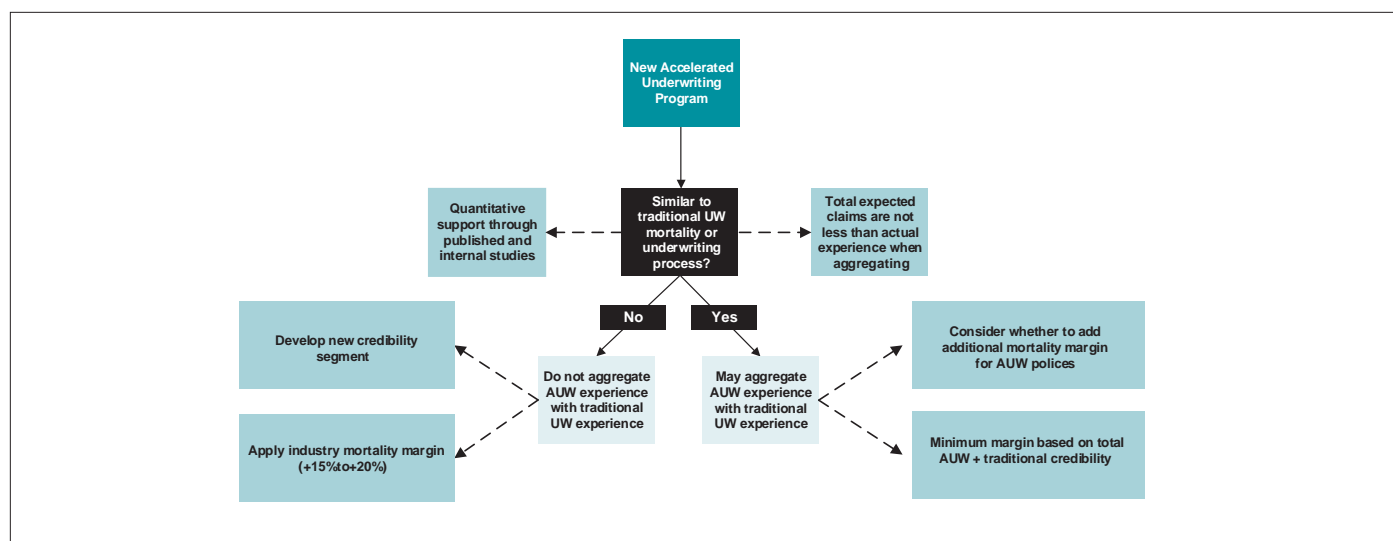


Figure 1 (Pg. 5) shows an example thought process and associated steps for deciding whether or not to aggregate accelerated underwriting experience with traditional underwriting experience for determining the VM-20 credibility calculation. Note that determining whether or not to aggregate with traditional underwriting experience affects the minimum margin required for the VM-20 modeled reserve.

The SOA has gathered data from past accelerated underwriting surveys. One challenge is determining a common definition of “accelerated underwriting,” and ensuring that such a definition is broad enough to address emerging techniques used to select risk. In August 2018, the SOA published a Delphi Study on A UW practices across the life insurance industry, including information on data elements, risk selection methods and mortality expectations. Due to the range of practices, this study does not suggest a common definition for A UW. Therefore, companies are encouraged to interpret and disclose their own A UW valuation assumptions, subject to any guidance.

A UW programs are expected to continually evolve, which potentially includes new types of underwriting programs that are not currently envisioned. As a result, it’s likely that these ever-changing programs cannot be feasibly embodied in the development of a single mortality table, and actuaries will need to capture underwriting changes without relying on the adoption of a single table.

### VM-31 PBR Disclosures

VM-31 (Section 3.D) requires A UW disclosures for mortality segments (3.a), mortality subdivisions (3.b), industry table mapping (3.c), alternative data sources (3.d) and credibility methods (3.f). In particular, companies that choose to aggregate accelerated underwriting experience with traditional underwriting must disclose accompanying underwriting adjustments (3.e) and additional margins (3.l). This consists of providing external published studies (e.g., medical, clinical or other studies) and “mathematics” used to arrive at such adjustments.

For companies that decide to aggregate traditionally underwritten mortality experience with A UW to determine credibil-



ity, these VM-31 requirements will be especially important in providing justification and rationale that doing so still results in a prudent estimate for the modeled reserve. Company analytics and disclosure of any additional margins applied to A UW groups of policies are an important component of a VM-31 PBR Actuarial Report.

### VM-51 Data Collection

VM-51 contains specific data elements that companies must disclose to the NAIC<sup>4</sup>, which introduces a host of implementation, technology and data security issues for companies with A UW programs. A currently exposed VM amendment proposes including disclosures of several predictive modeling data elements if used, such as credit data, facial imaging technology and wearable technology.

Adding these additional elements for A UW and predictive analytics poses potential pain points for fast-evolving programs. VM-51 presents challenges for A UW in establishing the logistical process to gather and catalogue new elements, leveraging the appropriate data warehouses, and achieving reasonable timing to satisfy the data request.

In addition, there are potential challenges related to the structure of gathering such data. For instance, drafts of VM-51 amendment proposals have asked for binary “yes” or “no” responses to whether facial aging technology is used, but this does not indicate the type of technology or level of involvement it has in the risk selection process.

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## INNOVATION AND PBR

While this article focuses on AUW programs, this certainly isn't the only type of innovation emerging in mortality risk selection today that impacts life insurance valuation. Many companies have launched or are developing wellness programs that engage policyholders during the duration of a contract to exercise, diet and better manage specific chronic conditions such as diabetes. In addition to the costs required to run these programs, some companies may even offer rewards to policyholders based on their achievements in the form of reduced premiums or increased coverage, with the goals of reducing policyholder mortality risk and increasing persistency. Depending on each specific case, it may not be clear whether benefits of such a program can be reflected as underwriting adjustments to future anticipated mortality within VM-20 or can only be reflected through the valuation date, similar to mortality improvement.

### ENDNOTES

- 1 See Section 14.1 of the Academy Practice Note on Life Principle-Based Reserves Under VM-20 for guidance on determining appropriate margins when setting assumptions that are neither stochastically determined nor prescribed.
- 2 The process for using company experience data to set a prudent estimate mortality assumption for deterministic and stochastic reserves is outlined in Section 9.C of VM-20. A company starts with experience data and an industry table for each mortality segment and adds a prescribed minimum margin based on credibility to each, plus additional margins as deemed necessary. The company experience mortality plus margin is then graded to an industry table plus industry prescribed margins. The starting year and speed of grading depends on the credibility of the company's experience data.
- 3 The 2017 version of the VM-20 Practice Note exposure draft addresses this topic in Q4.26, suggesting that some actuaries may reserve for additional substandard risk in excess of the CSO table by using  $1/2c(x)$  of the additional mortality, and some actuaries may also add this reserve on to the NPR when comparing to the DR. Note that pre-PBR Commissioners' Reserve Valuation Method (CRVM) requires substandard mortality to be reflected in the statutory reserve.
- 4 Recent proposals indicate that the NAIC will be the experience data statistical agent for VM-50 and VM-51 requirements. Therefore, companies will be providing data to the NAIC. Several details related to data confidentiality and implementation of this proposal are still being sorted out at the time of this article.

The introduction of PBR is intended to balance minimizing solvency risk with the desire to provide companies the room to innovate and keep the life insurance industry relevant in the age of digital consumers. In fact, this dual mandate is imperative, as innovation may add short-term risks to the balance sheet but also helps to ensure the long-term viability and solvency of a company in a rapidly changing world.

PBR can be adapted to reflect the reality of accelerated underwriting. Further innovation will only highlight more opportunities to expand the NAIC Valuation Manual's framework to achieve the appropriate long-term/short-term and innovation/solvency balance. It is incumbent on valuation actuaries to understand any limitations and both apply the framework according to emerging practice and suggest future guidance to address them. ■

*The views expressed in this article are those of the authors and do not necessarily reflect the views of their employers.*



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