Milliman IntelliScript's Curv – Inforce

Aggregating accelerated underwritten segments with traditionally underwritten segments

Susan Bartholf, FSA, MAAA
Eric Carlson, FSA, MAAA

Milliman Curv™ – Inforce by Intelliscript® (Curv) provides retrospective demonstrations to support requirements of Chapters 20 and 31 of the National Association of Insurance Commissioners (NAIC) Valuation Manual (VM-20 and VM-31), including the clarifications introduced in Amendment Proposal Form (APF) 2018-17.[1] This amendment provides additional guidance to companies with respect to the aggregation of mortality experience, including use of segments underwritten using an accelerated process. Aggregation is an important first step in terms of determining a company's VM-20 prudent estimate mortality assumptions.

Background

VM-20 requires separate mortality assumptions for groups of policies expected to have different mortality experience. Aggregation of experience is allowed subject to constraints. Credibility is dependent on the amount of exposure. Prescribed margins and the grading period are dependent upon credibility. A company's approach to aggregation, therefore, has a significant impact on credibility and thus on the prescribed margins and grading period—all key elements of the prudent estimate mortality assumption.

Companies regularly modify their underwriting guidelines. Most of the time these modifications, especially those made within a product, are expected to maintain a relatively consistent mortality level that aligns with the initial pricing expectations. The goal of the underwriting changes is typically to improve processes,

reduce costs, or reflect changes from the medical community (e.g., cholesterol level thresholds).

Before consideration of APF 2018-17, VM-20 may have inadvertently discouraged companies from making changes, especially larger, innovative changes to the extent a change would mean establishing a new mortality segment. A new segment would have low credibility and therefore higher prescribed margins for a number of years in most cases.

APF 2018-17 was proposed by the Life Reserves Working Group of the American Academy of Actuaries (AAA) to address this concern. It has since been adopted by NAIC's Life Actuarial Task Force (LATF). Paraphrasing from the Life Post-NAIC Update presentation of the American Academy of Actuaries, November 29, 2018, APF 2018-17:

- Provides greater clarity regarding the use of aggregate mortality experience for a group of mortality segments and the determination of mortality rates for each of the individual mortality segments
- Provides clarity for determining whether two underwriting approaches are the same or similar, and outlines demonstrations a company may use to support this determination

Providing guidance around aggregation

APF 2018-17 provides guidance in considerations of aggregating policies subject to VM-20. This includes clarifying that the intent is not to allow aggregation that combines policies underwritten through traditional, full medical underwriting with those underwritten using disparate methods such as those often referred to as simplified issue.

APF 2018-17 modified VM-20 Section 9.C.2 to clarify guidance for aggregation by permitting the company to base mortality on the aggregate company experience for a group of mortality segments when determining the company experience mortality rates for each of the individual mortality segments in the group if the mortality segments were subject to the same or similar underwriting processes. Section 9.C.2.iv addresses segments where retrospective demonstrations using statistical analyses, predictive model back-testing, or other modeling methods are used to demonstrate that similar mortality is expected. Aggregation of these mortality segments is allowed subject to

---

[1] The LATF adopted amendment proposal form 2018-17 (APF 2018-17) at the Fall 2018 NAIC National Meeting. It will be considered for NAIC Exec/Plenary adoption at the Summer 2019 meeting.

repeating the retrospective demonstrations at least once every three years to support aggregation.

Curv can develop the necessary retrospective demonstration to support aggregation.

Actual to expected mortality analysis

APF 2018-17 modifies VM-31 Section 3.C.3.m to indicate that the actual to expected mortality analysis be performed at least annually for each mortality segment separately until the change in expected mortality has been shown to be stable and unlikely to change based on further review.

Curv is an effective tool for developing the annual actual to expected mortality assessment for accelerated mortality segments as well as other segments in accordance with VM-31 Section 3.C.3.m.

Curv – Inforce

Milliman IntelliScript's Curv – Inforce (Curv) provides life insurers insight into the risk profile of their individual life businesses. Milliman IntelliScript combines the value of prescription histories with the power of predictive modeling. The risk scores produced by Curv enable insurers to analyze their businesses effectively and efficiently.

Curv aligns well with the requirements in VM-20 and VM-31, including those expected to become part of the Valuation Manual through APF 2018-17. Curv provides mortality insights to use when developing the initial mortality assumptions, for the annual review of those assumptions, for the initial and ongoing retrospective demonstrations required to aggregate segments, and as part of the annual actual to expected mortality analysis.

Curv uses the same proven statistical algorithm that the Irix® – Risk Score model uses for predicting the relative mortality risk of individuals for underwriting. Curv runs a predictive model using de-identified individual prescription histories and produces risk scores representing each individual's relative mortality risk. Results provided to the insurer are grouped, which removes the risk of data being attached to an individual.

No protected health information (PHI) is generated or accessed during the Curv process. Therefore, no special authorizations are required from policyholders. This allows Curv to be used for policies without authorizations or where the authorization is no longer valid, i.e., beyond the contestable period.

Curv produces the relative mortality risk for each mortality segment (or subsets thereof). This assessment would be updated annually or as frequently as necessary to support VM-20 and VM-31 requirements for initial and ongoing support for aggregation of mortality segments and actual to expected mortality analysis.

Policies eligible for acceleration based on product, age, face amounts, or other criteria are segmented into those where requirements were waived and those that went through the traditional underwriting process. Subsets within those two segments may also be assessed subject to the limitation that groups must include at least 25 lives in order to maintain anonymity of the individuals balanced with the need for enough lives to be able to draw conclusions.

Results from Curv provide the retrospective demonstration required by VM-31 to support the aggregation of mortality segments and the annual actual to expected mortality analysis. This mortality insight is provided well before claims experience is credible.

Contact the authors for a sample demonstration.

Milliman

Milliman is among the world's largest providers of actuarial and related products and services. The firm has consulting practices in life insurance and financial services, property & casualty insurance, healthcare, and employee benefits. Founded in 1947, Milliman is an independent firm with offices in major cities around the globe.

milliman.com

CONTACT
Sue Bartholf
sue.bartholf@milliman.com

Eric Carlson
eric.carlson@milliman.com