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R&D Learning Series - #2

How the PEARL Program Can Help Clients with Accelerated Underwriting Programs

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What is PEARL and its objectives?

The PEARL program (**P**redictive **E**xpertise **A**ctuarial **R**esearch **L**ab) is designed to provide clients with a better understanding of their mortality experience, enabling them to make informed decisions to optimize profitability. The program leverages predictive models to address clients’ concerns and priorities, such as growth, automated/accelerated underwriting (AUW), expanding distribution, and accessing new markets.

What are the advantages of predictive models?

Predictive models play a crucial role in the PEARL program. We use these models to adjust industry mortality tables in the US and Canada to account for significant variations by issue age, duration, and other variables not considered in these tables, such as face amount and product type. The models show that the best estimate of mortality is not a flat percentage of the industry table. For example, the shape of mortality rates in the first few durations can differ significantly by face amount band, due to higher misrepresentation in lower bands. Building or using results from such models allows clients to make more accurate assumptions and avoid unexpected surprises with their mortality experience.

What results are we giving back to clients?

The PEARL program offers clients a free, recurring report that benchmarks their experience against the industry. It includes an analysis of the distribution of sales versus the industry, which is a key point in understanding variations in mortality experience. Then, we provide a traditional actual-to-expected (A/E) analysis using our industry model as the expected basis. Finally, we build a customized model to reflect clients specific mortality experience. With this customized model, we can really pinpoint the main deviations of experience versus the industry. Ex:

- This client’s business with face amount in excess of $2.5M has better mortality than the industry by 5%
- Its mortality of issue age 75+ is 10% higher than the industry

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The key advantage of analysis the mortality experience with this model is that it provides independent factors that explains mortality deviations, whereas a traditional A/E analysis ignores the correlation between factors and may lead to double-counting. Ex:

- Business with high face amount has a higher proportion of high issue age
- The good experience of high face amount may be offset by the bad experience of high issue age
  - Traditional A/E would not show better experience for high face amount
  - Looking at A/Es across a combination of different variables is a limited solution since credibility issues arise quickly

Information is also provided for variations in mortality across geographic regions. Knowing the main drivers behind good and bad mortality experience, clients can take tangible actions to optimize their profitability (ex: limit issue ages, target growth in specific regions, adjust underwriting tools and requirements, etc.).

How can we help with Accelerated Underwriting?

The PEARL program helps clients understand the cost of accelerated underwriting programs, known as mortality slippage. We focus on calculating slippage precisely rather than determining which policies should be accelerated. Traditional mortality slippage calculation involves the use of confusion matrices, where policies selected for Random Holdout (RHO), or Post-Issue Audits (PIA) are analysed. Risk class assignment is compared between full and accelerated underwriting and slippage is calculated from assumed differences in mortality between risk classes.

The precision of slippage estimates from RHO and PIA can vary. RHO involves randomly selecting applicants to provide additional evidence, such as blood or urine samples, before issuing a policy. Estimating mortality slippage from these applicants can be effective but may underestimate slippage if applicants who have misrepresented are more inclined to drop out of the underwriting process. PIA, on the other hand, involves ordering additional evidence after issuing a policy, which can provide a better estimate of slippage for placed policies.

What are the main differences between US and Canada Accelerated Underwriting programs?

The biggest difference between US and Canadian accelerated underwriting programs is access to third-party data. In the US, companies have access to prescription drugs and recent medical procedures, which helps them classify applicants by risk class and reduce mortality slippage. In contrast, Canadian companies rely more on information declared by applicants , random holdout and use predictive models to detect misrepresentation (smoker status, BMI, etc.).

With PEARL, we use the actual number of claims for accelerated policies and compare it with the expected number of claims from the customized PEARL model trained on the client's experience, which reflects expected mortality with full underwriting. This approach allows us to calculate overall slippage and to illustrate how slippage varies by gender, issue age, face amount, risk class, etc. With this information, clients have a much better idea of the actual cost of their program and can perform precise cost/benefit analyses on program extensions (higher face amount, higher issue age, etc.). Since this information is provided on a regular basis, clients can identify positive or negative trends over the years.

Conclusion

The PEARL program is used to provide benchmarking services for our clients and prospects, allowing them to leverage detailed information to protect their bottom line. Actuaries aim to ensure they are onboarding profitable business, and having PEARL in their toolkit will assist in achieving this goal. approach allows us to calculate overall slippage and to illustrate how slippage varies by gender, issue age, face amount, risk class, etc. With this information, clients have a much better idea of the actual cost of their program and can perform precise cost/benefit analyses on program extensions (higher face amount, higher issue age, etc.). Since this information is provided on a regular basis, clients can identify positive or negative trends over the years.

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