



AMERICAN ACADEMY *of* ACTUARIES

May 15, 2009

Mr. Michael McRaith, Chair
Property & Casualty Insurance (C) Committee

Ms. Kim Holland, Chair
Market Regulation & Consumer Affairs (D) Committee

National Association of Insurance Commissioners

Via email: Eric Nordman, enordman@naic.org
Pam Simpson, psimpson@naic.org

Re: NAIC Public Hearing On Credit-Based Insurance Scores: Follow-Up Comments

Dear Commissioners McRaith and Holland:

Thank you for the opportunity to provide this follow-up to the statement I presented on behalf of the Casualty Practice Council (CPC) of the American Academy of Actuaries¹ at the April 30 joint hearing on credit scoring issues. The CPC believes that three issues that arose during the course of the testimony taken and the question and answer period thereafter require further comment:

1. Definition of Correlation;
2. Publication of Actuarial Standards of Practice; and
3. Percentage of Premium Attributed to Credit.

Definition of Correlation

During the period of questioning following our testimony, we were asked if the actuarial standards include a definition of correlation. I stated at that time that I was unaware of a definition of correlation in any of the Actuarial Standards of Practice (ASOPs). We have since confirmed that, indeed, correlation is not defined in any of the ASOPs.

An actuary would normally depend on a typical dictionary definition of correlation, such as the following definition, found at <http://encyclopedia.thefreedictionary.com/correlation>, “The simultaneous change in value of two numerically valued random variables.”² In actuarial

¹ The American Academy of Actuaries is a 16,000-member professional association whose mission is to serve the public on behalf of the U.S. actuarial profession. The Academy assists public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

² <http://encyclopedia.thefreedictionary.com/correlation> (last viewed on May 14, 2009).

practice, there are actually several different measures of correlation that could be used, typically related to different statistical tests that would be applied.

Publication of Actuarial Standards of Practice

Actuarial Standards of Practice (ASOPs) are promulgated by the Actuarial Standards Board (ASB). When the ASB approves a draft standard for exposure, it is published and distributed to all the members of the actuarial organizations governed by the standards of practice of the ASB, as well as individuals who have expressed an interest in the profession's standard-setting, such as state insurance commissioners.³ Committee members also recommend as recipients those who might have a particular need to be informed about a given standard. Finally, exposure drafts are posted on the ASB's publicly viewable website. A more detailed description of the exposure process can be found at <http://www.actuarialstandardsboard.org/aboutasb.asp>.

This is all part of the comprehensive peer review and due diligence process for the creation of ASOPs, in which all interested actuaries, whether working for an insurance company, consulting firm, government, academic institution, or some other entity, have an opportunity to provide input. In addition, other interested parties are also given the chance to offer comments and influence these standards.

Percentage of Premium Attributed to Credit

During the hearing, several witnesses were asked what percentage of an insured's premium can be attributed to credit. In general, the premium that an insured is charged is determined by many considerations, including driving experience and history, vehicle and usage, geographic location, coverages, limits, and deductibles, among other factors, including credit where permitted. The relative weights for a given factor often vary with other factors and vary uniquely and considerably among insurers. How the factors combine to determine the premium also varies among insurers. Because rating algorithms are generally multiplicative in nature, it is confusing to assign a credit or weight to any individual factor without first agreeing upon a set of rules or procedures that would be used to calculate or organize all the rating variables used in the algorithm. Further, while it might be possible to go through several different mathematical exercises and assign various weights to each of the several components, such calculations could be misleading and could suggest incorrect conclusions. We have included a simplified example in Appendix A to further demonstrate this concept.

³ <http://www.actuarialstandardsboard.org/aboutasb.asp> (last viewed on May 14, 2009).

Summary

On behalf of the Casualty Practice Council, thank you again for this opportunity. I would also like to reiterate that if we can further assist the NAIC in its endeavors on this topic, we volunteer our services. We look forward to working with you.

Sincerely,

Jeff Kucera
Chair, Property & All Other Lines Subcommittee
American Academy of Actuaries

Appendix A – Dividing Insurance Premium into Percentage Components

This Appendix examines the question of whether a company can or should assign a percentage to particular rate classifications used to make an individual’s final premium, i.e., what percent of a premium is due to gender, what percent to credit, etc. Because of the complex nature of most rating plans, this is an incredibly difficult task that is rife with the potential for error and misinterpretation. Consider the rates for hypothetical Company X, which has a base rate and three rating factors as follows:

Base Rate = \$200			
	Classification A	Classification B	Classification C
Level	Rating Factors		
1	2.00	1.00	4.00
2	4.00	1.25	2.00
3	6.00	1.50	1.00

An individual happens to be at Level 1 for Classification A, Level 2 for Classification B and Level 3 for Classification C. Therefore the premium for this individual would be $\$200 \times 2.00 \times 1.25 \times 1.00 = \500 . It is not practical to say that any one of the factors comprised “a percentage” of the final premium. Further, if you were to try to assign a percentage, it would be easy to manipulate such results. You might consider Classification A to have the highest weight in the calculation above because it has the largest factors. However, by dividing each of the factors in Classification A by 4, and increasing the base rate by a level of 4 to offset that change, you will end up with all the same insured premiums as before, but now the table would look like the following:

Base Rate = \$800			
	Classification A	Classification B	Classification C
Level	Rating Factors		
1	0.50	1.00	4.00
2	1.00	1.25	2.00
3	1.50	1.50	1.00

With the same individual as in the prior example, his or her premium would still be the same \$500 ($\$800 \times 0.50 \times 1.25 \times 1.00 = \500 .) However, in this case we might say that that Classification B has the greatest weight, since it has the highest factor. Both conclusions would be incorrect, and, in either case, it would be inappropriate and misleading to assign a percentage of the premium to any of the classifications.