

Errata for *Fundamentals of General Insurance Actuarial Analysis*

Posted July 7, 2015

Changes:

Page 403 – Section number should be 21.4.2.

Page 799 – value at the bottom of the page should be $250.0 / 930.9 = 0.27$.

Missing Section:

Page 674 – section 32.1 is missing the following content:

32.1 PURPOSE OF RISK CLASSIFICATION

32.1.1 SUCCESS CRITERIA FOR AN INSURANCE SYSTEM

In the 2011 Public Policy Monograph titled “On Risk Classification” (the Monograph), the American Academy of Actuaries (the Academy) identifies three success criteria for an insurance system that is “intended to serve the needs of a broad at-risk group over a long time horizon”:

- i. Coverage is widely available to those in the at-risk group who desire it.
- ii. The terms of coverage, taken as a whole, are sufficiently acceptable to those eligible to be participants.
- iii. The security system will have access to sufficient resources to fulfill its promises. (American Academy of Actuaries Risk Classification Work Group, 2011, p. 2)¹

An effective risk classification system can assist an insurance system to achieve these success criteria. In meeting the objective of coverage that is widely available, the Monograph states:

In a competitive system, the use of risk classification systems enhances the accuracy of estimates of the expected cost of providing specific coverages and of fluctuations in the expected cost, and thus allows potential coverage providers to make better informed choices about whether to offer those coverages. Risk classification systems, therefore, promote more competition, with numerous coverage providers, each making its own decisions. (American Academy of Actuaries Risk Classification Work Group, 2011, p. 39)

Through risk classification, insurers are able to determine prices based on expected costs and thus promote **individual equity**. The Monograph states:

¹ The six quotations on these page are all ©2011. Reprinted by permission of the American Academy of Actuaries. This material may not be reprinted for any other use or for charge. As the Academy may supplement, update, or amend its articles and materials from time to time, parties should refer to the Academy website at www.actuary.org to confirm whether any additions, changes, supplements, deletions, or modifications have been made since the initial publication date.

Individual equity is innately well-understood and generally well-received by potential participants, since it tends to align price with perceived value and to produce sets of prices the relationship among which is perceived as reasonable. Where social adequacy considerations result in a departure from strict individual equity, the ability to demonstrate that the departure is not arbitrary can enhance acceptance of the system. (American Academy of Actuaries Risk Classification Work Group, 2011, p. 39)

Finally, insurers must have access to sufficient financial resources to meet their obligations. The Monograph concludes:

By grouping together risks into relatively homogeneous classes, the risk classification system reduces the adverse selection that occurs when high-risk and low-risk participants are offered identical coverage at the same price. In addition, risk classification facilitates the estimation of the expected cost of coverage (and fluctuations in the expected cost) and in this way increases understanding of the level of financial resources needed to fulfill the security system's promises. In these ways, an effective risk classification system increases the likelihood that the financial or personal security system will fulfill its promises. (American Academy of Actuaries Risk Classification Work Group, 2011, p. 40)

32.1.2 FAIRNESS AND EQUITY

The financial soundness of an insurance system depends greatly on the ability of insurers to adequately price the products they sell to insureds. If insurers cannot recover their costs through adequate premium rates, the financial soundness of the insurance system will be at risk and insurers could potentially be unable to fulfill their promises.

A corollary to this point is that if the premium rates reflect expected costs, then insurers providing financial protection to insureds through the issuance of GI policies will be able to charge premium rates that are **fair**. Fair is a challenging term to define in the context of GI rates, and risk classification systems in particular. Among the numerous definitions provided by the Merriam Webster Dictionary are:

- a) marked by impartiality and honesty: free from self-interest, prejudice, or favoritism; and
- b) conforming with the established rules: allowed.²

In drafting the U.S. Standard on risk classification, there was discussion about defining fair and **equitable**. It is noted in Appendix 2 of the U.S. Standard on risk classification that “Court decisions notwithstanding, there is no general agreement as to what characterizes ‘equitable’ classification systems or ‘fair’ discrimination.” (Actuarial Standards Board-US, 2011, p. 11) In the end, equitable and fair are deliberately not defined terms in the U.S. Standard; instead, these terms are described as follows:

Rates within a risk classification system would be considered equitable if differences in rates reflect material differences in expected cost for risk characteristics. In the context of

² <http://www.merriam-webster.com/dictionary/fair>, accessed June 16, 2013.

rates, the word *fair* is often used in place of the word *equitable*. (Actuarial Standards Board-US, 2011, p. 3)

This description of fair is limited to its use in the context of rates. In a fair (i.e., equitable) risk classification system, risks that have higher costs, as reflected by higher expected frequency and/or higher expected severity of claims, would be charged higher rates than risks with lower expected costs.

The Monograph expands upon the challenge in achieving *fairness* and *equity* in the context of **social adequacy**:

Systems that achieve individual equity often are perceived as fair by participants since the amount each participant pays is reasonably related to his or her expected cost of coverage. But “fairness” can mean different things to different people. The term *social adequacy* sometimes is used to describe the goal of making coverage available to all or most of a group at prices that are deemed affordable. If a security system³ has social adequacy as a major goal, prices may not be set to be consistent with individual equity. (American Academy of Actuaries Risk Classification Work Group, 2011, p. 4)

Ignoring the issue of social adequacy, the ability to charge rates that are fair encourages insurers to produce refined risk classification systems. This is especially true for insurers operating in competitive environments with an objective of increasing their market share. Furthermore, insurers will be motivated to operate in environments where risks can be classified to reflect differences in expected costs; and as a result, there will be greater availability of coverage for all insureds.

32.1.3 WHAT RISK CLASSIFICATION IS NOT INTENDED TO DO

Equally important to understanding the purpose of risk classification is recognizing what risk classification is *not* intended to do. First, determining the expected costs for a particular class of risks is not the same as predicting the costs for an individual risk in the class. It is impossible and unnecessary to predict costs for any individual risk. If the occurrence, timing, and magnitude of an event were known in advance, there would be no economic uncertainty and thus no reason for insurance.

Second, estimating the expected costs for a particular class should not be viewed as grading the risks. The Monograph notes that some view risk classification as:

... a form of “grading,” in which “good” behavior of the risk subject is awarded and “bad” behavior penalized. This is not, of course, the intention of coverage providers in establishing a risk classification system. Rather, risk classification is intended to facilitate accurate estimates of risk probabilities and expected costs of coverage. (American Academy of Actuaries Risk Classification Work Group, 2011, p. 47)

³ In the Monograph, security system is defined as a private or governmental arrangement for advance risk transfer.