



SOCIETY OF ACTUARIES

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for negative contingencies, not positive ones.

Visions, missions, goals, and objectives are often "buzzwords" that are once-a-year topics at conferences and company gatherings. For many actuaries, a positive vision for the future, I believe, is not always easy to conceptualize, verbalize, or visualize.

The visions described were:

- Continue to create value — real and perceived — for the client, company, and society.
- Be the leading insurance company in the brokerage market.
- Be around 100 more years, providing service to insurance companies so they can achieve their goals and objectives.
- Survive and grow in size and profitability.
- Create and support business simulation models that enable financial institutions to look at business holistically.

- Be the premier actuarial organization in the world.
- Be the provider of choice for the parent company's affinity market, i.e., customers of parent company's products.

Conclusion

These actuarial leaders expressed diverse leadership ideas and practices; many are similar to what was found in other industries. In a way, it reinforces the phenomenon that what is happening to the insurance industry is not unique to that industry. It is symptomatic of what is happening in the environment.

Similarly, their responses and behaviors related to change are broad-based. They are not limited to responses that are products of their actuarial training and experience but are combinations of their technical and nontechnical training, experiences, and thoughts.

One strength the actuary can bring to the leadership position is the ability to evaluate the financial impact of change. If that is kept in balance by a consideration of the sociological impact, then it enhances and does not impede his or her effectiveness.

Are actuarial leaders able to manage business organizations well into the '90s and beyond? My small sample shows that these leaders are open to new ideas, optimistic for their organizations, sensitive to people issues, and strive to be in touch with their customers. If these results are indicative of what the leaders in the insurance industry are thinking and doing, then I believe the insurance industry can weather the storm of problems brought by change. It can eventually make change its ally in fulfilling its reason for existence — to provide financial security.

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Early-release copies of TSA papers

The following papers have been accepted for publication in Volume 45 of the *Transactions*. Members who would like an early-release copy before it is published in a preprint should send \$5 for each paper to the SOA Books and Publications Department.

"Loading Gross Premiums for Risk without Using Utility Theory" by Colin M. Ramsay

In pricing insurance products, it is difficult to explicitly include a product's inherent level of riskiness. A way around this is to use von Neumann's and Morgenstern's expected utility theory to develop a price that includes the level of risk the insurer faces. However, this theory has many difficulties associated with it. In the real world, the evidence is overwhelming that neither individuals nor corporations behave in the manner described by this theory's axioms.

Instead, risk measure functions are used in this paper to load gross premiums. A function R is called a risk measure function if it measures the level of "riskiness," r , inherent in insurance risk X where $r = R[X]$. For an insurance risk X and a given risk measure function $R[X]$, it is suggested that the gross premium be calculated as a function of the mean ($E[X]$) and the level of risk r .

The variance is the most commonly used risk measure function, i.e., $R[X] = \text{Var}[X]$. However, it does not adequately measure risk if the distribution of X is positively skewed. For positively skewed distributions, risk measure functions depending on the third and/or fourth cumulants are provided. In particular, the normal power approximation is used to derive one such risk measure. Risk measure functions based on the normal power approximation may be useful in pricing financial risks in portfolio analysis.

"Percentile Pension Cost Methods: A New Approach to Pension Valuations" by Colin M. Ramsay

Traditional pension cost methods (such as the projected unit credit, entry age normal, and aggregate) are based on the actuarial present value of future benefits. Since the actuarial present value is based solely on expected values, these traditional cost methods have two serious deficiencies:

- 1) They tend to underestimate plan liabilities. It will be shown that, for example, at age 65, about a 45% chance exists that an amount equal to the (traditional) accrued liability will be sufficient to pay a lifetime benefit. This calls into question the notion that a fair value of a retiree's future benefits is the accrued liability, and that a fully funded plan is one with no "unfunded liabilities."

- 2) They cannot provide plan sponsors with certain valuable pieces of information. For example, traditional cost methods cannot be used to determine the probability that the accumulation of a particular sequence of contributions will ultimately provide enough funds to pay benefits. They also cannot be used to determine the size of fund needed to ensure that retirees' lifetime benefits are paid with a specified probability.

Issues affecting the security of pension benefits are important to the Pension Benefit Guaranty Corporation (PBGC). Because of its role as an "insurer" of vested pension benefits, the PBGC is exposed to certain risks when a plan terminates. Traditional pension theory does not provide an adequate mechanism for determining the actual termination liability or for determining risk premiums for this type of termination insurance.

In response to these deficiencies, a new family of cost methods, called α -percentile cost methods, is developed in this paper. These cost methods are based on the probability of adequately covering all participants' benefits. Expressions for the normal cost, the accrued liability, and the gain are provided.