



SOCIETY OF ACTUARIES

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# Small Talk



## The Strategic Importance of Inter-Company Mortality Studies

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**B**road-based mortality studies form the backbone of the life actuarial profession. Credible data is a big part of our profession's credo, "To substitute facts for appearances and demonstrations for impressions." However, few companies have sufficient exposure or deaths to construct their own mortality table. Even if some large companies have enough data, we are still left with a vast majority of companies that do not. Historically, the void has been filled by means of inter-company studies.

ments to the level of mortality rates obtained from industry-wide experience. This allows insurance companies to offer the best premiums to customers, without the larger risk loads normally necessary when pricing with out credible data.

- The financial health of life insurance companies, vital for the personal security of millions of Americans, has been assured, due to the ability of regulators to set appropriate tabular mortality standards. Valuation tables that contain adequate margins of safety without being onerous have only been possible because of accurate inter-company studies that capture insured mortality experience.

### The Benefits of Inter-Company Mortality Tables

Insurance companies have become insolvent for a variety of reasons, most commonly due to losses on their asset portfolio. But few companies have encountered solvency problems due to adverse mortality experience. A number of factors have contributed to this impressive record of more than a century of experience. But it is due in no small measure to the standardization of underwriting practices and the accurate measurement of mortality rates pertaining to the underwritten insured population by means of inter-company studies.

While inter-company studies have played a major role as described above in ensuring the health of the life insurance industry, other factors have also contributed. One factor is the care and professionalism with which actuaries have performed their vital function in insurance companies. Another factor is the steady improvement in longevity, which contributed increasing margins to premium rates over most of the last century.

The following are a couple of the major benefits of inter-company mortality tables:

### Changes in the Environment

We now describe some changes in the environment that make inter-company studies more important than ever—at the same time that these studies have become increasingly more difficult to conduct.

- Actuaries have been able to price insurance products with confidence, knowing that they can correctly capture their own company's experience by making only simple adjust-

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Over the last 20 years, underwriting practices have undergone substantial changes, and this trend is continuing. The developments in technology for the electronic capture, storage and distribution of information have resulted in a wide array of new underwriting tools. Clinical studies have identified reliable markers of potential health problems, which can be used to classify risk. New knowledge is continuously being created in this area. As a result, underwriting and risk classification is not quite as standardized across the industry as it used to be. Companies experiment frequently with new risk classes and attempt to use them as a means of gaining competitive advantage.

So far, inter-company mortality studies have not offered any help in dealing with these new developments, as there are no tools for separation by risk class or underwriting results in the studies. Companies find themselves in the situation of pricing with less than perfect data. At the same time, intense competition often makes it necessary to forego the bigger risk margins that are normally used when pricing in these situations. A mitigating factor for many companies is the fact that they have reinsured a significant portion of the mortality risk.

Reinsurers, due to their ability to pool the mortality experience of many companies, may have a better knowledge of underlying insured mortality and trends than most direct writers. Many direct insurers are in the situation that they “back” into the mortality level they use for pricing their policies based on the reinsurance premiums they are charged. This creates a situation of information asymmetry between the contracting parties in a reinsurance agreement. Direct writers can be at a disadvantage under these circum-

stances, especially in an environment with fewer reinsurance companies and expanding demand for reinsurance.

It appears that most actuaries do not have a good idea of the slope of mortality in the current environment — they seem to have only a general idea of the overall level of mortality. A weak and shallow knowledge in the actuarial community of mortality levels, trends and slopes is not healthy for the profession. This can stifle innovation, since the lack of data prevents actuaries from engaging in “data-mining” to get new ideas for risk classification and underwriting techniques.

We live in a time when changes in medical technology, genetic engineering and other developments have the potential to further change longevity trends. Due to the aging of the population and changing insurance needs, the age of the life insurance applicant may be higher in the future than it has been historically — this presents new challenges in actuarial pricing. Good mortality data with accurate measurement of trends and slopes is vital for meeting these challenges.

The comfort of laying-off most of the mortality risk through reinsurance can come to an end, leaving direct writers in the uncomfortable position of pricing products without adequate data and being forced to retain a bigger portion of the risk.

Regulators, frustrated with the difficulty of establishing tabular mortality standards and formulaic reserves in this rapidly changing environment of product innovation, could delegate the function entirely to the actuary. If that happens, actuaries can suddenly find themselves in the

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▶ Income taxes and policy structure are also issues: The March issue of the Product Development Section's Newsletter contained an excellent article, “Notice 2004-56: Guidance on Mortality under IRC section 7702,” by John Adney and Craig Springfield. I instantly recognized the significance of this article co-authored by John Adney, who is an attorney — being one of the foremost authorities on tax law for over 20 years. This deals with reasonable mortality charges. Because 2001 CSO has been the 26-state mortality table, the IRS felt the need to issue this. Also, Ed Robbins has written an article on a new revenue ruling that favorably affects family term riders. Smaller companies often have these traditional riders, and this is especially good news for us.

We also wish to highlight the educational endeavors of the Smaller Insurance Company Section. W. Howell Pugh has written an article on the sessions for the SOA's upcoming

Annual Meeting that our section is sponsoring or co-sponsoring. The Annual Meeting will be held in New York from November 13-16, 2005.

I am in charge of the Smaller Company Issue at the Valuation Actuary Symposium this September 22-23, 2005 in Orlando. We customarily run a panel discussion with heavy audience participation on several issues of interest to us. The issues will be settled upon closer to the meeting. The article shows the program as of the date we are writing this (end of March).

Finally, we are happy to have a letter to the editor from Tom Herget concerning the article on gross premium valuation (GPV) published in our November 2004 issue. His comments helpfully add to that article. We are always happy to have responses to what we publish. ●

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## Companies can also create new risk classes by experimenting with the data, vastly expanding the opportunity to innovate.

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situation of determining the appropriate mortality assumption for their company's business, without enough data to make a decision for which they are comfortable. They would need to justify their decisions to regulators, as well as to the management of their companies. With insufficient supporting data available to the actuary, company management could exert intense pressure to set reserves at a level below an actuary's comfort level.

### Possible Solutions

Reinvigorating inter-company studies can have a very positive effect in addressing these problems. By cooperating, everyone can win. It will be good for the consumer, foster innovation, maintain and improve insurance company financial strength and facilitate regulation by allowing it to focus on the right issues. But it will happen only if many more companies participate in the studies and go the extra mile in contributing new types of data that are not collected presently.

For inter-company studies to solve the problems described, the design of the studies will need to change. The focus will have to shift away from simply publishing standardized mortality tables each year. Since underwriting policies and risk classifications vary significantly across companies, standardized tables are of limited value. However, the data collected on each policy during the underwriting process, such as laboratory test results, can be submitted to the inter-company study. When these underwriting data are pooled across many companies and analyzed against mortality experience, a detailed understanding of the mortality that can be expected for various values and combinations of test results can be obtained. If this database is made available to each company, the company can customize its mortality analysis to the types of laboratory tests it uses in its underwriting and the ranges of test values that are used to define its risk classes.

Under proposals currently under consideration at the SOA, the new studies will emphasize the collection of underwriting data—the lab test results and other information compiled at the time of underwriting will need to be submitted to the inter-company study. This data will be pooled across all companies, as well as the deaths arising out of this exposure.

The proposals call for the expanded data, described in the previous paragraph, to be made available to all companies,

for them to do their own customized analysis of the data. Of course, to ensure privacy, any markers that will permit the individual identification of policyholders or the company will need to be deleted. By slicing and dicing the database to fit their own underwriting criteria, a company can determine the expected mortality experience for its unique risk class definitions. Companies can also create new risk classes by experimenting with the data, vastly expanding the opportunity to innovate.

### Annuity Products

The previous discussion focuses on life insurance. But there is a growing strategic importance to annuitant mortality.

The demand for income annuities is expected to expand in the future. Defined contribution pension plans have been slowly replacing defined benefit plans for two decades. As a result, future retirees may need to annuitize a portion of their pension account balances to manage longevity risk. When a large number of customers seek income annuity products, it will be necessary to develop refined annuity tables in order to offer substandard annuities that meet the needs of the marketplace.

The higher demand for income annuities will occur at a time when mortality trends will be more uncertain than ever. The older ages are of greatest interest from an annuity perspective. New technologies and medical breakthroughs hold out the prospect for a substantial increase in life expectancy. But there are also theories that predict that mortality improvement will slow down in the future. It is possible that the effects of the scientific advances will be slower to materialize.

There has been no industry-wide experience study of individual income annuities for almost two decades. It will be necessary to perform a study to develop a good baseline against which trends to monitor going forward. The SOA recently initiated a new annuity study. The actuarial profession should stay on top of mortality developments, at both the theoretical and practical levels, in this crucial area.

### Conclusion

Inter-company mortality studies are of considerable strategic importance for the life insurance industry. We should ensure that these studies occur on a timely basis, keeping with innovations in product design, as well as information technology. By remaining relevant, flexible and offering the new levels of access to inter-company experience made possible by technology, these studies can benefit consumers, actuaries, regulators and—not least—support the financial health of the life insurance industry. We have a glorious tradition of cooperation for the common good; inter-company studies have clearly served the public interest. We now need to take the crucial steps necessary to ensure that the studies will enable us to meet the new challenges we will face in the coming years. ●