



# A HEALTH RESEARCH AGENDA

Health and health-care markets are different. These environmental differences shape the unique nature of health insurance and, in turn, the nature of health actuarial practice and research.

Good health is fundamental to personal achievement: persons in poor health and their families suffer emotional, economical, and social problems. “The sick individual suffers isolation, loss of wholeness, loss of certainty, loss of freedom to act, loss of the familiar world; the future is in doubt and all attention is concentrated on the present. . . . When ill, we no longer trust our bodies and . . . we no longer trust life” (Mordacci and Sobel 1998). It is no wonder that the highly personal nature of health makes health care and health care financing such important public and political issues.

Health-care markets function in ways that are uncharacteristic of most free markets. Noble Prize winner, Kenneth Arrow,<sup>1</sup> argues in his seminal work, “Uncertainty and the Welfare Economic of Medical Care,” that specialized information, which is usually unknown and often unknowable to vulnerable patients, uncertainty about physician competence, and uncertainty concerning medical care outcomes, all undermine free market economic principals to the point where health-care markets cannot and do not function optimally without government intervention. No wonder health care and health insurance are characterized by outsized cost increases, wide variations in the quality of medical care, and a lack of universal coverage.

Health insurance, too, is different. The keys to successful management of health insurance portfolios differ significantly from risk in most other actuarial areas practice. First, health insurance products, most notably medical expense insurance, are very much in the public’s eyes, often as politically charged issues. Political sensitivities affect the types of products and risk management tools used by actuaries. Second, there is relatively

less stability in the frequency and severity of use of health care services than in most other insured events. This characteristic makes it difficult to predict underlying claims costs. In addition, individual choices create relatively large risks of adverse selection and moral hazard that can easily affect claims. This lack of stability makes the nature of health actuaries’ jobs less focused on mathematical models and more focused on broader risk management. To successfully manage health insurance pools, health actuaries historically have paid more attention to the effects of sales and marketing, underwriting, care management, and claims handling on resultant health insurance portfolio losses than on developing and refining their mathematical tools.

The special characteristics of health insurance and health actuarial practice are reflected in the research. Health actuarial research can be classified into three general categories: *product*, *process*, and *policy*.

*Product research* has been a mainstay of health actuarial work for decades. This category helps to fill voids in a thorough understanding of underlying claims and unusual product-specific characteristics. Prominent examples of this type of research are the many periodic and special experience analyses conducted by Society of Actuaries (SOA) Research Committees. As new products, for example long-term care insurance, have been developed, the SOA has quickly begun projects that provide health actuaries with inter-company claims data that they need for pricing and reserving. There have also been many special analyses, such as durational claims experience for underwritten medical expense insurance and an important study of high-cost medical expense claims experience. More recently, the American Academy of Actuaries (AAA) has provided data and analyses for social insurance programs. Good examples are their analyses of the new Medicare Prescription Drug (Part D) program.

*Process research* is relatively new category, and one that is of increasing importance. Health-risk adjustment is an example of this type of research. Management of medicare and medicaid and of

<sup>1</sup> Kenneth Arrow, *The American Economic Review*, December 1963.

multiple competing health plans offered to employees of large businesses lead to interest in developing ways to adjust health plan claims charges to compensate for by-plan differences in overall risk profiles, which are caused by individuals' choices among their health plan options. While actuaries have not been the only discipline involved with developing and testing solutions to this difficult problem, actuaries have been very much involved in the research and development of commercially useful health-risk adjustment tools. Both the SOA and AAA have contributed important theoretical papers and practical analyses. Another example of process research is new, more sophisticated models for pricing and managing private health insurance pools. Research into the development and practical applications, of multi-year, multi-decrement statistical models, has been published, by actuarial academic researchers, in the United States and Europe.

*Policy research* is another area of growing interest. Since health-care financing is so much in the public eye, there are many policy questions concerning public social insurance programs, regulation of private health insurance, new government initiatives, analyses of problems encountered by health care systems in developed and developing nations, and design of potential solutions to the problems of evolving health care systems. All of these questions are ones where health actuaries have important, unbiased information to add to the health policy and political debates. Much of the work of Committees of the AAA Health Practice Council fit into this category, as do special reports prepared by the SOA.

The SOA and AAA are both very involved with research projects within the three research categories. In addition a great amount of research work is done, by health actuaries, for their employers and consulting clients. For example, recent developments in managed care involve the use of historical data to help predict future high-cost claimants. Actuarial research is helping health plans strengthen their competitive advantages by developing accurate predictive techniques. A second historical example is that of actuaries having used proprietary health claims information to develop medical expense insurance rating manuals. While these types of research often involve important advances in health actuarial practice, little of this work is made avail-

able in the actuarial literature due to its high proprietary value.

While much of the health actuarial research does not fit the more common model of mathematically-oriented actuarial research, health actuaries are very involved with a wide range of published and unpublished research on product, process, and policy issues. As health care and health care financing have changed, health actuaries have played a significant role in researching and developing new directions for both public and private health care financing systems.

As medical care and health care financing continue to evolve, new items will be added to the health actuarial research agenda. While needs and interests will change, there are some clear additions to the future health research agenda.

*Product research* currently is the most comprehensively attacked category: the SOA and AAA are very responsive to new needs. In the future, health actuaries would benefit expanding the scope of published research to include more practical product "how to" information and refinements to widely used actuarial techniques.

*Process research* has enormous potential. Predictive modeling will be increasingly used to improve pricing of employer groups, to accurately identify potential high-cost health plan members, and to support health plans' direct-to-customer sales efforts. There is also a strong need for health actuaries to reevaluate traditional medical diagnosis-based health risk assessment and risk selection systems. These historically important private health insurance underwriting tools are quickly becoming outdated as medical knowledge and technology has moved into an era of effective preventive medicine in which many people who are being treated for widespread medical diagnoses (e.g., hypertension, hypercholesterolemia, and psychotropic drug use) actually are better risks than many of those who are either undiagnosed or untreated risks. These and other process problems should generate a significant volume of future research.

*Policy research* is another area that health actuaries demonstrate the value of our professional training and experience. Research into the drivers of long-term health care cost increases and their effect on social health insurance programs such as Medicare and Medicaid, and the evolution of health care systems in developed and developing

nations are both actuarial research issues with worldwide implications. Actuaries can also be valuable help in the design and development of small-scale social health insurance programs that are of increasing interest to the poorest nations in our international community. Actuaries' specialized expertise will also be helpful in the design and analysis of clinical trials and the effectiveness of alternative (traditional) medicine.

Health research has a very full future agenda. The SOA, AAA, and new Health Section of the International Actuarial Association are committed to participating in this exciting work. Many research topics are not typically considered as actuarial research, reflecting the special nature of health, health care, and health care financing. Health actuaries working on these issues are encouraged to submit their research to journals like the *North American Actuarial Journal* and the

*ASTIN Bulletin*. Adding a broad range of health research the actuarial literature will make actuaries' important contributions more widely available and further demonstrate our value to wider audiences.

#### REFERENCE

MORDACCI, ROBERTO, AND RICHARD SOBEL. 1998. Health: A Comprehensive Concept. *The Hastings Center Report*. 28(1): 34-37.

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