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Social security "summit"

NAFTA project seeks consensus on how to project mortality

by Irwin T. Vanderhoof

In some disciplines, such as medicine, consensus meetings are regular occurrences. The purpose is to find areas of agreement among experts on an important issue where information and knowledge are still evolving. Such meetings seem less common in actuarial matters.

One of these rare attempts to reach consensus on an actuarial issue was held on Oct. 30, immediately following the Society of Actuaries' annual meeting in Washington, D.C. The subject of the seminar was mortality improvement in the NAFTA countries and the impact of such improvements on the financing and benefit adequacy of the countries' individual social security systems. The gathering of about 80 researchers from a variety of disciplines served as a type of summit meeting on the NAFTA countries' mortality projections.

The seminar was Phase 2 of a three-phase SOA research project, "Impact of Mortality Improvement on Social Security: Canada, Mexico, and the United States." The project is intended to provide some guidance for appropriate governmental bodies to use in determining future financing and benefit needs for social security. It is sponsored by the SOA, The Actuarial Foundation (formerly the SOA Foundation), the Retirement Research Foundation, the American Society of Pension Actuaries, the social security administration of each NAFTA country, and the Pension Research Council.

The impact of longer human life spans is likely to be different for each country. Canada is committed to a continuation of the current tax-based system, Mexico has moved to a privatized system, and the United States uses a tax-based system but is talking about partial privatization. If decreases in mortality rates are underestimated, the burden may fall on the taxpayers

and beneficiaries in the case of a public system and on the capital of private insurance companies and private plan sponsors in the case of a private system.

Planning for a new model

Phase 1 of the project was a review of the current knowledge on the issue. This took the form of a series of research reports presented at the Phase 2 seminar. These presentations included a summary of a review of the existing literature on related research, work summaries of the

the input of the alternatives identified at the Phase 2 seminar, the social security administrations of Canada and the United States will test the impact of the alternatives on the long-range financial status of the social security systems. Such a report will not only attempt to show expected results but also highlight the risks implicit in errors in such calculations. The results of this analysis will be announced at a three-hour symposium on Feb. 17, 1998, at the 150th anniversary meeting of



Warren Luckner introduces Jim Hickman and Olivia Mitchell, who led seminar participants through a survey. Results will serve as the basis for testing the impact of current and suggested mortality rates' on the NAFTA countries' social security systems.

mortality experience of the countries, and discussions of the insights provided by biological research and the work of demographers on this subject.

The presentation of Phase 1 material culminated during the final session of the seminar, when those present were asked a series of questions. Both the answers given and the seminar presentations showed much consensus on the methodology used but also pointed to some uncertainty about the projected improvement rates.

Phase 3 will be an attempt to create a model consistent with the consensus methodology and assumptions, apply it to the systems in the three countries, and report the results. As a first analysis of

the American Association for the Advancement of Science in Philadelphia.

Discussions based in demography, medicine, actuarial science

The Oct. 30 seminar was dedicated to the late Sergio Camposortega Cruz, a highly regarded Mexican actuary and one of the scheduled presenters. The session was opened by Michael Sze, chair of the project's oversight group, and Anna Rappaport, 1997-98 SOA president. The remarks emphasized the importance of the work yet to be done.

The first presentation was made by social science researcher Shripad Tuljapurkar. His work, supported by SOA research grants, was to unearth,

list, and summarize existing literature and research on mortality projections for the NAFTA countries and to discuss mortality projections in general. (The mortality history and projections for the three countries also were discussed in a paper submitted by Steve Goss of the U.S. Social Security Administration, Bernard Dussault of the Canadian Public Insurance and Pension Programs, et al.)

The next series of papers focused on NAFTA mortality issues as viewed by demographers. Sam Gutterman, SOA past president, moderated a panel consisting of demographers Michael Wolfson commenting on Canada, Jose Gomez-de-Leon on Mexico, and Sam Preston on the United States. Canada seemed to exhibit the lowest mortality rates, but Mexico, with considerably higher rates, seemed to show the most rapid mortality improvements.

Irwin Vanderhoof moderated the second panel, which consisted of Ron Lee, Jay Olshansky, and Leonard Hayflick. Lee is one of the originators of the Lee-Carter method of demographic mortality projections. This method is a form of the auto-regressive mathematical process known as ARIMA and was strikingly demonstrated by Gomez-de-Leon's work on Mexico. Olshansky, an actuary and biodemographer, discussed the biological basis for extension of life expectancy. He believes there is a limit to the human life span but that the limit hasn't been determined. Anatomy professor Hayflick, on the other hand, is less optimistic about the extension of the active life span.

The luncheon presentation was given by Bob Myers, former chief actuary for the U.S. Social Security Administration, whose discussion centered on the idea that the strength of the U.S. Social Security system rests in its flexibility. The seminar continued in the afternoon with presentations by chief actuaries for the NAFTA countries and the United Kingdom. The subject was the methodologies used by the various systems for mortality projections. Moderated by Warren Luckner, SOA director of research, the session offered discussions by Chris

Speakers represent range of disciplines

The NAFTA mortality seminar brought together experts from diverse disciplines. Speakers and topics were:

- **Christopher Daykin, A.S.A., F.I.A.**, government actuary, United Kingdom; how mortality is projected in the United Kingdom
- **Bernard Dussault, F.S.A., F.C.I.A.**, chief actuary, Canadian Public Insurance and Pensions Programs; how mortality is projected in Canada
- **Jose Gomez de Leon, Sc.D., M.Sc., M.A.**, general secretary for the National Population Council of the Program of Education, Health, and Nutrition, Mexico; demographic characteristics and mortality trends in Mexico
- **Stephen C. Goss, A.S.A.**, deputy chief actuary, U.S. Social Security Administration; how mortality is projected in the United States
- **Leonard Hayflick, Ph.D.**, professor of anatomy, University of California School of Medicine; the biological basis for continued mortality improvement
- **Ronald Lee, Ph.D.**, professor of demography and economics, University of California — Berkeley; the Lee-Carter method and uncertainty in mortality projection
- **Robert J. Myers, F.S.A., F.C.A.S., A.I.A., E.A.**, former chief actuary, U.S. Social Security Administration; how mortality has been projected in the past for the United States
- **S. Jay Olshansky, Ph.D., A.S.A.**, associate professor, Department of Medicine, Center on Aging, Health, and Society and Population Research Center, University of Chicago, member of the American Academy of Actuaries; the biological aspects of mortality and a study on causes of death
- **Virgilia Partida**, director of demographic research, National Population Council (CONAPO), Mexico; Mexican mortality evolution and its impact on the Mexican social security system
- **Samuel H. Preston, Ph.D.**, director, Population Studies Center,

University of Pennsylvania; demographic characteristics and mortality trends in the United States

- **Shripad Tuljapurkar, Ph.D.**, president, Mountain View Research, Inc., Los Altos, Calif.; Phase 1 working drafts, "Mortality Change and Forecasting: How Much and How Little Do We Know?" and "Forecasting Mortality Change: Questions and Assumptions"
- **Michael C. Wolfson, Ph.D.**, director general, Institutions and Social Statistics Branch, Statistics Canada; demographic characteristics and mortality trends in Canada

Moderators and other key speakers were:

- **Sam Gutterman, F.S.A., F.C.A.S.**, director and consulting actuary, Price Waterhouse LLP, consultant to the Social Security Administration and active in the actuarial profession's international activities
- **James C. Hickman, Ph.D., F.S.A., F.C.A.S.**, emeritus professor and dean, University of Wisconsin School of Business
- **Warren Luckner, F.S.A.**, director of research, Society of Actuaries
- **Olivia S. Mitchell, Ph.D.**, International Foundation of Employee Benefit Plans Professor of Insurance and Risk Management, The Wharton School, University of Pennsylvania, and executive director, Pension Research Council
- **Anna M. Rappaport, F.S.A., F.C.A., E.A.**, president, Society of Actuaries, and principal, William M. Mercer Incorporated, Chicago
- **Michael M.C. Sze, Ph.D., F.S.A., F.C.I.A., E.A.**, chair of "Impact of Mortality Improvement" project oversight group, 1994-97 SOA board member, president of Sze Associates, Ltd., Willowdale, Ontario
- **Irwin T. Vanderhoof, Ph.D., F.S.A., A.C.A.S., A.I.A., E.A.**, member of "Impact of Mortality Improvement" project oversight group, clinical professor at New York University's Stern School of Business

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How to learn more about the NAFTA project

Seminar papers are being distributed by the Society of Actuaries.

Mountain View Research and representatives from the U.S. and Canadian social security administrations produced the papers for Phase 1, a study of past experience and an analysis of current literature on mortality improvement in the NAFTA countries. The demographers, economists, medical researchers, and actuaries involved in the Oct. 30 seminar, Phase 2, considered mortality forecasting methodologies, factors affecting mortality change, and mortality assumptions. Phase 2 handouts and papers also are available.

The cost for the Mountain View Research working drafts, a major paper giving an overview of the NAFTA countries' social security systems by Steve Goss, et al., and a seminar summary is \$25. The binder containing the entire seminar package is \$75. For more information, contact the SOA Books Department (phone: 847/706-3526; fax: 847/706-3599; e-mail: bhaynes@soa.org).

Phase 3 results, the creation of a model consistent with the consensus methodology and assumptions and the application to the systems in the three countries, will be presented during a symposium at the American Association for the Advancement of Science (AAAS) Annual Meeting, Feb. 12-17, Philadelphia, Pa. Registration and meeting information is available on the AAAS Web site (www.aaas.org/meetings/meetings.htm) or by contacting Kim Parker at the AAAS (phone: 202/326-6410).

Daykin on the U.K., Bernard Dussault on Canada, Steve Goss on the United States, and Virgilio Partida on Mexico. The final session was the filling out of a questionnaire by participants under the guidance of Jim Hickman and Olivia Mitchell. The questionnaire surveyed participants on forecast methodology, factors affecting mortality improvement, and quantitative assessments about the percentage of future mortality improvements.

Participants in the seminar expressed great satisfaction at its multidisciplinary nature and the quality of the presentations.

Many actuaries attending noted that the same methods used for social security purposes also could apply to more purely actuarial concerns, such as projection of annuitant mortality for impaired life annuities.

Several papers presented at the seminar will be submitted to the *North American Actuarial Journal*. (For availability of seminar materials, see story at left.)

Irwin T. Vanderhoof, an organizer of the NAFTA mortality project, is clinical professor of finance, Stern School of Business, New York University.



Demographics and mortality trends of the NAFTA countries were discussed by (L-R) Samuel Preston, Michael Wolfson, and Jose Gomez de Leon. Sam Gutterman (background) moderated the panel.

PRC plans conference on retirement

The Pension Research Council (PRC) will address a crucial topic for the next century at a conference, "Forecasting Retirement Needs and Retirement Wealth," April 27-28, 1998, at The Wharton School of the University of Pennsylvania.

Presenters will discuss research that explores the links between retirement, health, and wealth. The research draws on a new data set known as the Health and Retirement Study (HRS),

a longitudinal and nationally representative survey of retired Americans and those approaching retirement. The conference will focus on what the research reveals about how people can better prepare to take more individual responsibility for their own retirement.

Anna Rappaport, SOA president, is an organizer of the conference.

More information is available from the PRC (phone: 215/898-7620; fax: 215/898-0310).