



SOCIETY OF ACTUARIES

Article from:

International News

December 2008 – Issue No. 46

The Consequences of Longer Lifespans: A Global Issue

by Ronora Stryker and Steve Siegel

Since joining the SOA's research staff, I have been involved in two Living to 100 research symposiums. Each time that it occurs, I am surprised at the interest we receive from individuals outside the United States. Since its inception in 2002, the symposium has attracted presenters and attendees from such far away places as Spain, Japan, India, Taiwan, Hong Kong, and the Philippines. In the most recent January 2008 symposium alone, there were participants from over 15 different countries!

The fact that the symposium holds international interest, indeed, should not be surprising. When perusing the program, it is immediately apparent that the issues presented and discussed are not confined to the United States but are shared across the globe. For example, understanding how and why we age, measuring current mortality and projecting future trends as well as identifying potential advantages and risks associated with the increasing number of individuals living to advanced ages are just some of the topics covered at the 2008 symposium that have worldwide appeal.

Building on the success of the 2002 and 2005 Living to 100 events, the 2008 Living to 100 Symposium gathered together a diverse range of professionals, scientists, and academics for three days of multidisciplinary, interactive sessions ranging from multi-country perspectives on retirement issues and social security programs as well as emerging societal trends in India as a consequence of improved longevity to even biological breakthroughs that have lengthened the lifespan of the *C. elegans* worm and the potential implications to human longevity.

This article presents a brief summary of some of the thought-provoking presentations from the 2008 symposium. I hope it will also explain to readers why the symposium according to Event Co-Chair, Bob Johansen, "has achieved a position of international prestige among not only actuaries, but also demographers, gerontologists, government offices and

others concerned with increasing longevity, its implications for the future and possible solutions."

The Elderly and Retirement Systems

Regardless of the region, increasing numbers of the aged are creating challenges and opportunities for many. Of particular interest to all attendees were those sessions highlighting significant issues for the elderly and how retirement systems might need to change in the future.

The decline in the popularity of traditional pension programs providing lifetime benefits in the United States and other countries have forced individuals to become increasingly responsible for managing their own retirement funds and making them last longer. A presentation by Anna Rappaport on Society of Actuaries research as well as other symposium speakers revealed that many workers and retirees do not plan long term, and there are significant gaps in knowledge on planning for post-retirement risks as well as the risks themselves. This information points to a need for products that can help retirees cope with impending risks that come along with greater longevity and increased individual financial responsibility. A few examples follow:

1. Longevity Insurance
2. Long-Term Care Insurance
3. Insurance providing health benefits that supplement public health insurance program benefits
4. Products that share risk in different ways, e.g., a product that guarantees a lifetime income but with some adjustment for aggregate mortality risk experience outside of a certain range.

The information presented at the symposium also led many attendees to conclude that individuals will need to work years longer than they have in the past in order to have enough resources to last a lifetime. In the paper presentation,



Ronora Stryker, ASA, MAAA, is a research actuary with the Society of Actuaries in Schaumburg, Ill. She can be reached at rstryker@soa.org.



Steve Siegel, ASA, MAAA, is a research actuary with the Society of Actuaries in Schaumburg, Ill. He can be reached at ssiegel@soa.org.

continued on page 20

“Retirement and Retirement Ages in Canada,” Brian Burnell pointed out that major changes are needed to the traditional concept of retirement to allow for more flexible retirement arrangements such as phased retirement programs in which individuals can extend their working lifetimes often on a reduced workload basis.

Other presentations emphasized the impact of increased longevity on future financial conditions of social insurance and public retirement programs for older individuals. Countries around the world are considering increasing the minimum retirement or eligibility age of these programs to reflect mortality improvement experience of the populations and to mitigate future expected program cost increases.

An additional complication to funding these old age programs is that in many countries the programs are supported by employee/employer contributions. With increasing life expectancy and lower birth rates experienced in many countries, there will likely not be enough workers to support the future costs of these programs. Roberto Ham-Chande discussed challenges Mexico is facing in meeting the needs of its graying population and described how migration is among the factors changing the country’s demographics as younger workers move to the United States leaving behind an increasingly older population.

While some symposium speakers considered reducing governmental program benefits or changing eligibility requirements for benefits received from the current framework, several sessions included discussion on the need for governments to enhance current program benefits to meet the needs of the growing elderly populations. Doug Andrews from Canada as well as Prakash Bhattacharya of India suggested providing increased governmental retirement benefits relative to current program structures to protect older individuals from financial hardship.

Measuring and Projecting Improved Survival

Projecting the numbers of future advanced

age individuals is an essential component in assessing the financial solvency of public retirement and old age programs. The challenges of measuring high age mortality and the difficulty in securing reliable data to do so were important motivators for the first Living to 100 Symposium. These challenges persist.

In this regard, Dr. Jean-Marie Robine, a demographer and gerontologist who is probably best known as the co-validator of the oldest verified supercentenarian of all time, discussed the concepts of the compression of mortality and morbidity.

With respect to morbidity, the onset of disability has been pushed to higher and higher ages. Applied to mortality, this phenomenon can be observed when the shape of a graph of Life Table survivors by attained age for a recent year is compared with that from a hundred years ago. When viewed side by side, it appears that the curve has moved towards a rectangular pattern over time. This movement or apparent compression is sometimes referred to as “squaring of the lx curve.” The implication of this trend is that increasing numbers of persons born in the same year are living similar, longer lifespans, further implying the potential for a fixed maximum lifespan. Robine concluded that there is probably a limit to the ultimate amount of this compression, and further conjectured on alternative patterns of mortality that may emerge. In either case, questions remain still as to whether or not a fixed maximum lifespan exists when viewed from the lens of mortality trends.

To truly gauge mortality trends, it is vital to measure mortality levels on a precise and consistent basis. Given the fundamental importance that measurement represents for all aspects of the study of longevity, the symposium included presentations from several of the world’s leading thinkers in this area. Included among the topics discussed in the sessions on mortality measurement were data validation techniques and integrity checks. As in many other disciplines, accurate data is the fundamental building block and foundation for new breakthroughs.

The measurement of mortality also bears directly on the projection of future mortality levels. The need for mortality level projections that are thoughtfully developed cannot be overstated for many of society's key financial security systems. For instance, government social security systems around the world depend on solid mortality projections for planning purposes to ensure long-term fiscal soundness. In recognition of this, an enlightening session was held at the symposium with prominent actuaries from social security governmental agencies in the United States, United Kingdom and Canada, presenting their most recent mortality projections and methodologies. It was readily apparent from this session that these countries are contending with many of the same longevity issues that may ultimately challenge the long-term solvency of their public programs.

Extending Human Lifespan?

One of the objectives of the Living to 100 series is to highlight some of the latest research into the science of aging. The 2008 symposium led off with a spellbinding presentation by Dr. Cynthia Kenyon on her work with the *C. elegans* worm and the consequences of dietary restrictions on longevity. Through genetic manipulation, the normal two week lifespan of the worm has been extended to four weeks. Kenyon also raised a number of social and economic implications that would need to be addressed if such dramatic extension of longevity could be applied to humans.

While Kenyon's work focused on genetic manipulation as a way of impacting longevity, Dr. Leonard Hayflick, in a later session at the symposium, provided an alternative viewpoint on how this type of manipulation may affect the aging process in humans and its ultimate applicability—or, more accurately, inapplicability. Related to this, Hayflick further discussed a number of theories on the distinction between the biology of aging, the aging process and age related diseases. Kenyon and Hayflick's differing perspectives on the biological questions related to aging reinforced to attendees the

complexity of the issues as well as the diversity of opinion in the scientific community.

Interesting Material for International Actuaries

Over 30 papers were presented at the symposium in addition to several panel discussions. While all papers are worth taking the time to read, the list below highlights papers and session material that may be of special interest to readers with an international area of practice background:

- Leonard Hayflick's "Entropy Explains Aging, Genetic Determinism Explains Longevity, and Undefined Terminology Explains Misunderstanding Both" which discusses the theory of aging.
- Papers presented in the session titled "Social Insurance Perspectives and Implications." These papers describe Social Security mortality projections for the United States, Canada and the United Kingdom.
- Papers discussed in the session titled "Longevity Risk Pricing."
- Eric Stallard's "Estimates of the Incidence, Prevalence, Intensity and Cost of Chronic Disability Among the Elderly" provides an insightful view into expected periods of retirement in various states of health.
- "Living to 100 and Beyond in Canada with Dignity" by Doug Andrews discusses issues of improving the lives of the elderly.
- Brian Burnell's "Retirement and Retirement Ages in Canada Revisited" explores the changing concept of retirement.
- "Micro Pension Plan: Indian Perspective" by Prakash Bhattacharya describes pension issues that are a by-product of the economy in India.
- "Challenges on Improved Life Spans in India—The Actuarial Implications" by N.V. Subramanyan
- "Is the Compression of Morbidity a Universal Phenomenon?" by Jean-Marie

continued on page 22

Robine, et.al. examines the conflicting health trends of 12 countries.

- “Economic Sustainability of Retirement Pensions in Mexico: Is There a Link with the Mexican Origin Population in the United States?” by Roberto Ham-Chande
- New Findings on the International Relationship between Income Inequality and Population Health” by Rob Brown and Steve Prus tests the hypothesis that higher levels of income inequality are directly related to lower levels of population health.
- Material from the session “Implications of Longer Life Spans: What Does This All Mean to Us” which describes the impact of increased longevity on a variety of financial systems and stakeholders.

for the symposium are available in an online monograph on the SOA’s Web site at <http://www.soa.org/livingto100monographs>.

Final Acknowledgement and Thanks

The symposium organizers wish to thank the International Section for being one of the event co-sponsors. Planning has already begun for the 2011 event and the organizers would value any comments or suggestions for making this symposium as worthwhile as possible for actuaries with an international area of practice background. Please feel free to contact us with your thoughts. □

Accessing the information

Complete versions of the papers and material described above as well as others produced



Nhon Ly celebrating his win with the actuarial team at a restaurant in Ho Chi Minh City

Dear Ambassadors and International Section Members,

It’s time to for the 2007 Country Feature Article Competition Wrap-up!

The International Section Council sponsored another Country Feature Competition in 2007.

This competition provided you with a forum to share interesting facts, statistics or experiences that reflect your country’s special qualities. Your article could be about any topic that you found informa-

tive and interesting. It might be about local actuarial organizations and activities, the actuarial profession in traditional or wider fields, financial products or the business sector in your country. The choice was yours!

The response generated 12 entries. The countries and regions featured were: Singapore, Switzerland, Bolivia, The European Union, The Bahamas, Colombia, China, Vietnam, Argentina and the United Kingdom.

The winner was announced earlier this year and the winning article is featured

on the cover of this edition. Nhon Ly won with an article on the changes in the insurance market in Vietnam titled “Vietnam: An Emerging Market, No Longer a War.”

A number of the entries were published earlier in 2008. This edition includes three more entries and there are a few more coming to print in 2009.

Thanks to all the participants for keeping us in touch with developments in your home countries through these great articles. □