



SOCIETY OF
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Chairperson's Corner

Hindsight: What Has Changed Since Retirement 20/20?

By Grace Lattyak



If you could design the perfect retirement system, what would it look like? In broad terms, that is what the Society of Actuaries' (SOA's) *Retirement 20/20* initiative sought to define. Over five years, this question was studied and culminated in two conferences in 2010 where winning papers (and others) were presented. There were a number of common themes drawn from the papers:

- Focusing retirement accumulations on annuity income provided
- Requiring or defaulting individuals to take a portion of their benefit as annuity income
- Preselecting investment mixes
- Building some variability into retirement income
- Changing the role of the employer, which may manifest through a two-layer system of annual income for basic expenses and account balances for discretionary income. Funding would be shared between the employers and employees.

Six years later, have we moved closer or farther away from the ideal identified? Should any of the themes be changed or adjusted based on what we know now, that we did not know seven years ago? In this article, we attempt to start the discussion and welcome your thoughts.

BACKGROUND

In late 2005, the SOA Pension Section Council started the *Retirement 20/20* initiative, based on a desire to develop a better retirement system by improving on the shortcomings of both defined benefit and defined contribution plans. Several conferences ensued to evaluate the issues.

The 2006 conference, "Building the Foundation for New Retirement Systems," looked at the needs, risks and roles for the four major system stakeholders (individuals, society, markets and employers). The 2007 conference, "Resolving Stakeholder Tensions Aligning Roles with Skills," focused on determining

and aligning the optimal roles for the various stakeholders. The 2008 conference, "Defining the Characteristics of the 21st Century Retirement System," discussed optimal characteristics for successful retirement systems.

Based on the work of these conferences, the SOA issued a call for models in the summer of 2009 to solicit ideas for new Tier II retirement systems that align with the principles of the *Retirement 20/20* initiative. Four of these papers were discussed at 2010 conferences in Washington, D.C. and Toronto.

OBSERVATIONS ON CHANGES IN LAST SEVEN YEARS

Although in 2012 Senator Harkin introduced the "USA Retirement Funds" bill, which addressed many of the issues raised in *Retirement 20/20*, the bill stalled in Congress. Many companies and consultants have come to the conclusion that employers should not be the stakeholder holding the investment risk, and many companies have embraced lump-sum payouts and annuity buyouts as a way to remove large portions of the liability from their balance sheets.

FOCUSING RETIREMENT ACCUMULATIONS ON INCOME PROVIDED

The Department of Labor has been working on lifetime income disclosure rules for the past few years, and we have seen proposals requiring such disclosures in potential legislation and in the report of the Bipartisan Policy Commission.

Hindsight 20/20:

Good intentions but no concrete changes

REQUIRE OR DEFAULT INDIVIDUALS TO TAKE A PORTION OF THEIR BENEFIT AS ANNUITY INCOME

In 2008, the Department of Labor Advisory Council issued the report "Spend Down of Defined Contribution Plan Assets at Retirement." Components of that report addressed simplifying

proposed annuity provider selection rules, encouraging additional participant disclosure regarding conversion of account balances into annual retirement income. Recent legislative proposals and the Bipartisan Policy Commission report both propose safe harbors to allow employers to include annuities through their defined contribution plans.

Hindsight 20/20:

Good intentions around defined contribution annuity availability but minimal concrete changes; defined benefit lump sums in conflict with this tenet

However, there has not been much change in defined contribution plan distributions. There has been much discussion about the advantages, but little action has been taken. There are continuing reservations regarding annuity options both from the employer and employee perspectives.

In defined benefit plans, there has been a trend to providing windows for electing lump sums in order to reduce the employer's exposure to financial risk.

PRESELECTING INVESTMENT MIXES

Target date funds have been increasingly popular in 401(k) plans. They simplify employee investment decisions by focusing on when the payout is to occur with little attention to the employee's appetite for risk. In 2016 Aon Hewitt research noted 70 percent of 401(k) participants are invested in target date funds. This has allowed many sponsors to reduce the number of investment options available. Many plans provide that the default investment option is a target date fund.

Hindsight 20/20:

Positive movement toward this tenet

BUILDING SOME VARIABILITY INTO RETIREMENT INCOME

Target benefit plans are hybrid plans where the contribution is determined based on funding to a level of target retirement income. Benefits can increase or decrease based on investment

or demographic experience. We have seen implementation of these plans in Canada recently.

Hindsight 20/20:

Exploration of this tenet in systems with design flexibility

Although many states are facing serious issues in their state plans, Wisconsin's long-standing plan design provides a different approach to one controversial, but common, component—the cost of living allowance (COLA). In Wisconsin, the COLA is based on investment returns; if investment returns are negative, benefits to retirees from prior COLAs can be reduced.

CHANGING THE ROLE OF THE EMPLOYER

A handful of states have passed laws mandating automatic enrollment of employees into state retirement plans if the employer does not provide a retirement plan. The Bipartisan Policy Commission report also suggests a federal system that allows for employees without access to employer retirement plans to automatically defer income into a federal retirement plan.

Hindsight 20/20:

States are experimenting with ways to expand coverage

So what are your thoughts on how to improve the retirement system? Look for a survey coming to your inbox soon to share your ideas. ■



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ENDNOTES

- 1 See the conference report at <http://retirement2020.soa.org/Files/2012-new-designs-soa.pdf>.
- 2 Aon Hewitt's 2016 Universe Benchmarks.



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SOCIETY OF
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A View from the SOA's Staff Fellow for Retirement

By Andrew Peterson

As I read various newsletters and research that crosses my desk, one topic that has really gained in prominence in the last year or two has been the topic of financial wellness. Over the years, there has been significant concern and much hand-wringing about the lack of financial literacy in the United States. In light of the difficulties in fostering these skills, I would surmise this is an issue not only in the United States, but also in other countries where Society of Actuaries (SOA) members practice. This concern about financial literacy has evolved into the concept of “financial wellness” and is now being discussed, developed and delivered as an employee benefit.

As pension actuaries working with retirement plans, the financial wellness connections to our work should be fairly obvious, since participants who don't have a basic financial understanding are not likely to be able to understand or to appropriately plan for significant financial events, like retirement. To that end, the SOA's Committee on Post-Retirement Needs and Risks recently completed a call for essays on the topic of Financial Wellness. Prizes were awarded to the top six essays. The winning essay, “Calculating ROI: Measuring the Benefits of Workplace Financial Wellness,” by Greg Ward, is being featured in this newsletter. The full set of essays is available here <https://www.soa.org/News-and-Publications/Publications/Essays/2017-financial-wellness-essay-collection.aspx>; however, I'd like to provide further background and whet your appetite on this topic by providing excerpts from the introduction as follows:

Financial Wellness is a hot topic in the employee benefit environment. Employers have increasingly recognized that employees with difficulties are easily distracted and less productive. . . . The essays represent a thought-provoking array of views and perspectives. The call for essays gives background and can be found at <https://www.soa.org/Research/Research-Opportunities/Call-For-Papers/financial-wellness.aspx>. We are very pleased to have a diverse group of authors including about half actuaries and about half other professionals.

Financial wellness is a different way to think about financial success compared to much traditional actuarial work. They are not inconsistent, but they are somewhat different. Financial wellness is holistic by definition. It includes quite a lot of emphasis on debt management and on getting the job done. Traditional discussions by actuaries are often focused on risks, one at a time, although they can be holistic. There is not as much focus on debt and on implementation.

There are a variety of definitions of financial wellness. In the call for essays, the definition from the Consumer Financial Protection Bureau was used:

The U.S. Consumer Financial Protection Bureau (CFPB), which was created only five years ago, has produced several reports and is particularly focused on these topics. The CFPB has defined financial well-being as “a state of being wherein you:

- *Have control over day-to-day, month-to-month finances;*
- *Have the capacity to absorb a financial shock;*
- *Are on track to meet your financial goals; and*
- *Have the financial freedom to make the choices that allow you to enjoy life.”*



COMMENTS ON ESSAYS

The essays submitted cover the big picture of financial wellness generally including retirement wellness. Several of the essays are targeted at employer issues. One of the prizewinners focuses on success in these programs and another at return on investment. Other essays focus on the individual: for example, the individual as risk manager and managing procrastination. One essay focuses on the use of technology in building solutions and another on practical issues. These essays are about making programs work and be effective.

Other essays add to the content and provide more content linked to financial wellness. For example, one of the prizewinning essays focuses on the 401(k) as a lifetime financial solution. Another deals with effective late-in-life solutions to practical problems. We believe that these essays add to the literature and content as financial wellness is more accepted.

PRIZEWINNING ESSAYS

First Prize

- Greg Ward, “Calculating ROI: Measuring the Benefits of Workplace Financial Wellness”

Second Prize

- Tianyang Wang, “Fighting Procrastination for Financial Wellness—Harness the Power of Inertia”
- Julie Stich, “What Makes a Workplace Financial Wellness Program Successful?”

Third Prize

- Ken Steiner, “Using Sound Actuarial Principles to Enhance Financial Well-Being”
- Jack Towarnicky, “The 401(k) as a Lifetime Financial Wellness Solution”
- Scot Marcotte and John Larson, “Financial Well-Being as a Technology Solution”

I encourage you to read these essays and think about how they might influence your work as a pension actuary. As always, we welcome your feedback, ideas and suggestions. ■



Andrew Peterson, FSA, EA, MAAA, is senior staff fellow—retirement systems at the Society of Actuaries in Schaumburg, Illinois. He can be reached at apeterson@soa.org.

RPEC Update: Public Pension Mortality Study

The Retirement Plans Experience Committee (RPEC) and the SOA are working on a study of mortality in public pension plans. The data has been validated and currently the dataset contains approximately 45 million life years. The committee is now performing multivariate analysis on the dataset in order to review potential variations in mortality rates, including by job classification and geographic region. The preliminary actual-to-expected mortality ratios based on aggregate RP-2014 rates are generally below 100%. Interestingly, the preliminary actual-to-expected mortality ratios tend to be considerably closer to 100% when

based on the RP-2014 White Collar tables. This could be attributable to the fact that the relatively high blue-collar concentration in the aggregate RP-2014 table may be different from blue-collar concentration in the public plan data set.

There has been a delay in the study timing due to data collection and verification issues. Currently, the plan is to issue an exposure draft report in the fall of 2018, with completion and publication of the final report in spring 2019 after a 3–4 month exposure period.

Perspectives from Anna: 2017 Living to 100 Symposium

By Anna Rappaport

The Society of Actuaries (SOA) has sponsored a research program, “Living to 100 and Beyond,” for the last 15 years. This program has been a place for new ideas, exchange of information, discussion of controversies, learning how other disciplines view related issues, and identifying points of agreement and disagreement. The cumulative program output since 2002 includes more than 150 scientific papers, a number of presentations and panel discussions, and six symposia. The triennial symposia bring together a diverse group of experts with different perspectives on the need to understand changes in life expectancy and maximum life span and strategies to adapt to these longer life spans. I personally feel very proud that the SOA has taken the leadership role in sponsoring this effort and bringing together numerous organizations to help.

I really enjoy participating in this program because each symposium gives me a chance to learn new perspectives and developments that I might have overlooked and to network with people from different areas. This article offers some of these perspectives on the 2017 symposium and the effort overall.

Accessing information about Living to 100: For each of the six symposia there is a monograph posted on the Living to 100 website at <https://livingto100.soa.org>. The 2017 monograph including the new papers should be available in the fall of this year. Individual presentations from 2017 can be accessed in the “agenda” section of livingto100.soa.org. All of the papers from 2002 to 2014 and the findings are summarized in a report prepared by Ernst & Young. That report is split between technical issues and implications, and can be found at <https://www.soa.org/research-reports/2016/Living-to-100-Insight-on-the-Challenges-and-Opportunities-of-Longevity/> The report also highlights areas of agreement and disagreement and it includes abstracts for all of the published papers in an Appendix.

BIG IDEAS—BIOLOGY

A focus on biology has been a regular part of Living to 100. In 2017, there were two major presentations highlighting developments in biological and medical research. One overlapping theme in those two presentations is a relationship between the biological aging process and the development of many different diseases. If that aging process can be stopped or slowed down, it would have a major impact on the incidence of various diseases and potentially extend the period that people are able to be healthy, albeit not necessarily impacting total life spans.

Nir Barzilai is professor of medicine and genetics at the Albert Einstein College of Medicine at Yeshiva University and director of the Institute for Aging Research. His presentation was titled “How to Die Young at a Very Old Age.” He is conducting research on centenarians, and searching for a drug that can intervene in the aging process. He is actively involved in promoting a large research project “TAME: Targeting Aging with Metformin.” The hope is that the study will demonstrate that metformin can target multiple morbidities of aging, and that it will then be approved for use on a widespread basis. The study also has goals of providing a different paradigm for studying next generation drugs that target multiple morbidities of aging, and to apply the studies of science as powerful new tools to achieve primary prevention of numerous diseases. If the associated researchers achieve the hoped-for results, this work could help in extending healthy life expectancy and lead to major reductions in medical costs. It could also change the way medicine is practiced to focus less on specific diseases and much more on the total person and on cross-disease prevention. (You can learn more about his research at <https://www.einstein.yu.edu/centers/aging/longevity-genes-project/>.)

Judith Campisi is an internationally recognized biochemist at the Buck Institute for Research on Aging. She has made contributions to understanding why age is the largest single risk factor for developing a variety of diseases including cancer. She explained cellular processes and senescent cells—older cells that have stopped dividing—and how they contribute to disease and the aging process. Senescence occurs when cells experience certain types of stress, especially stress that can damage the genome. The senescent cells help prevent cancer by blocking damaged cells from multiplying. But there is a trade-off: The lingering senescent cells may also cause harm to the body. Her research group found evidence that senescent cells can disrupt normal tissue functions and, ironically, drive the progression of cancer over time. Senescent cells also promote inflammation, which is a common feature of all major age-related diseases. Her research is shedding light on anti-cancer genes, DNA repair mechanisms that promote longevity, molecular pathways that protect cells against stress, and stem cells and their role in aging and age-related disease. Her research integrates the genetic,



environmental and evolutionary forces that result in aging and age-related diseases, and identifies pathways that can be modified to mitigate basic aging processes. She is collaborating with many other research groups on similar issues. Her research and related work has the potential to make major changes in the way aging and disease are viewed. (For more information about her work, see <http://www.buckinstitute.org/campisiLab>.)

Together, these two presentations left me with the idea that there are potentially major changes in the way we view aging, and how we can deal with the diseases of aging, that can lead to modest changes in life expectancy but a big reduction in the number of “sick” years at the end of life. That would be great news. In the final panel at Living to 100, *Jay Olshansky* focused on the future and suggested the above as one scenario. He also explored an opposite scenario, and that is that we continue to attack heart disease and cancer, as well as other major causes of death, without directly addressing aging. He suggested, however, that such a scenario would lead to continued growth of Alzheimer’s disease and longer and longer periods of frailty, which in turn lead to greater demands for long-term care. We all have a major stake in successfully addressing the aging issues so that we can overall have healthier and more meaningful lives.

BIG IDEAS—A FOCUS ON PEOPLE: LIVING WELL IN GOOD COMMUNITIES

There were different discussions of the human aspect of aging, a new focus for Living to 100. *Steve Vernon* presented the Stanford Center on Longevity’s *Sightlines Project*, which defines three major domains for living well to old ages: financial stability, health and social engagement. The formal recognition of social engagement is new for many people. This project includes indicators of how well we are doing in these domains and recommendations for improvement. Social engagement was a new area of emphasis for Living to 100. The SOA is a sponsor and

supporter of the Sightlines Project. At the same session, *Cynthia Hutchins*, director of Business Gerontology from Bank of America Merrill Lynch, provided insight about the need to plan for seven life priorities: health, home, family, leisure, giving, work and finance. Both of these discussants provided strong messages that merely planning for money and health is not enough.

Phyllis Mitzen’s “The Changing Face of Eldercare” presentation focused on big ideas: making communities friendly to an aging population, and steps that support people staying in their communities longer. The World Health Organization has established a program of age-friendly communities and a process to help communities become more age-friendly. The eight domains of an age-friendly community are:

1. Community and health care
2. Transportation
3. Housing
4. Outdoor space and buildings
5. Social participation
6. Respect and social inclusion
7. Civic participation and employment
8. Communication and information.

She said that there are 332 age-friendly cities today in 36 countries. The AARP is the U.S. affiliate of this network. The AARP program focuses on safe-walkable streets, age-friendly housing and transportation options, access to needed services, and opportunities for residents of all ages to participate in community life. Age-friendly communities do not replace the need for senior housing and nursing homes, but they give people new options and may make it feasible for them to stay in the community longer.

Mitzen also focused on the “Village” movement, or the formation of neighborhood-based groups for seniors that support people aging within the community. Such organizations are heavily reliant on volunteerism and people helping each other. The first village was formed in Boston in the Beacon Hill neighborhood in 2002. Mitzen founded and chairs **Skyline Village** in Chicago. ¹ My view is that villages are very helpful and can replace or supplement extended family for seniors who need to be part of a support network where they live. To learn more about the village movement, see http://www.vtvnetwork.org/content.aspx?page_id=0&club_id=691012.

MORTALITY IMPROVEMENT: A MAJOR CONCERN

Actuaries establish prices and calculate reserves for financial security products and programs. Rates of mortality improvement are important in these financial calculations. Different mortality tables are used for different programs based on the populations covered, the purpose of the calculations and the product or program in question.

Living to 100 was started around the year 2000 because of the difficulty in finding reliable data at very high ages and the added difficulty of projecting change. In 2017, Social Security actuaries from the United States, United Kingdom and Canada again compared mortality and projection methodology. *All agreed that mortality improvements at the high ages are slowing compared to the past 25 years.* Canadian mortality continues to be significantly lower than U.S. mortality. The United States has a shorter life expectancy than many other (“first world”) countries. In addition to the discussion by the Social Security actuaries of what they do, *Larry Pinzur* presented a session on approaches to the measurement and projection of mortality improvement. Recent Retirement Plans Experience Committee (RPEC) work blends near-term mortality improvement based on recent experience with longer-term mortality improvement based on expert opinion. Social Security considers cause of death analysis in setting assumptions as to longevity improvements.

For me, it was very interesting that there did not seem to be any major disagreements about future mortality improvement. This was in sharp contrast to some of the earlier conferences that indicated much more divergence of opinion. Many of the papers deal with mortality improvement and modeling. I do not know whether the absence of sharp disagreement was a reflection of the attendee mix or whether it reflects greater consensus about this key assumption.

PUBLIC POLICY ISSUES

Population aging is changing the fabric of our societies, and affects many areas of policy. *David Sinclair*, director of the International Longevity Centre in the United Kingdom, provided insight into several big policy challenges in the United Kingdom. They were addressing issues such as the cost of aging, saving more, providing an adequate workforce, getting older people to spend more, delivering health and care (which we would call long-term care or long-term services and supports), maximizing the opportunity of technology, and responding to the issues surrounding housing wealth. In my view, there is a major overlap with big underlying issues in the United States.

Rob Brown, retired professor from the University of Waterloo and former president of the SOA and the International Actuarial Association, provided insight into issues getting recent attention in Canada. Social security benefits had recently been increased, but following a failed attempt to raise statutory retirement ages, the legislation was reversed. The majority of the public does not have employer-sponsored benefits. There are challenges in funding health care, and in the provision of health and long-term care. Canada seems to be going in a different direction than many countries, as it is maintaining and/or improving social benefits.

John Cutler, an attorney and senior fellow at the National Academy of Social Insurance, pointed to the huge uncertainty in the United States linked to the Trump election. Concern about jobs, particularly among mid-career people and those nearing retirement, as well as flat/declining wages, seemed to be very important in the election, but other than encouraging manufacturing in the United States, it is unclear what, if anything, will be proposed to address these issues. The federal government plays a huge role in health care and it is quite unclear how that role may change going forward. Proposals to modify that role are a high priority in the new administration, but there is no universal consensus about the replacement programs. Less visible but also very important are the need to bring Social Security into financial balance as well as private pension and retirement savings issues.

Even though aging affects many areas of life, there does not appear to be a consistent, integrated, multidisciplinary focus on aging outside of Living to 100 and a few other similar efforts. *Mitzen*, in the Changing Face of Eldercare session, shared points made in a letter from the SCAN Foundation to then-President-Elect Trump. They requested that he:

- Name and give authority to a national leader who will build solutions for older Americans across all domestic policy areas.
- Protect older Americans and their families from financial bankruptcy when long-term care needs strike.
- Modernize Medicare to pay for team-based, organized care to get more value for older Americans with complex care needs.
- Accelerate federal and state efforts to integrate Medicare and Medicaid.
- Build new ways to measure health care quality based on what older Americans want.

While the above are ambitious goals, they provide some ideas about changes that would be very positive if appropriate focus were given them.

My view is that there are many similarities between demographics and the big issues facing our countries as we deal with population aging, but our solutions vary. Sharing of information is very valuable. An international issue that concerns me greatly is the ever-increasing length of retirement and the failure of policymakers to appropriately address it.

REPEATED THEMES

There was a lot of emphasis on illness and the need for long-term services and supports throughout the 2017 Living to 100 conference. The scientific presentations pointed to developments that may reduce the need for such services in the long term. The public policy panel on the Impact of Aging pointed

out that there are gaps in the system for providing and financing support in all of the countries discussed. The U.S. is badly in need of a better system. The companion individual session also pointed to difficulties around caregiving. Long-term care was prominently featured in the panel on Challenges and Strategies for Financing an Increasingly Long Life. A major long-term care event that is not prepared for is a major threat to the retirement planning of middle class Americans, and a major cause of running out of money. Private insurance markets are in need of innovation, and a variety of product approaches were presented. The Changing Face of Eldercare session brought in an entirely different dimension, looking at ideas to help people age in their own communities. Technology also offers new options and was mentioned at several different points.

Retiring later and working in retirement were also mentioned during the discussions, but there was much less current emphasis on these topics, having been major areas of interest in the 2014 symposium. In fact, in 2014 these two topics seemed to be the major recurring areas of emphasis.

Public programs are very important to the economic and health security of the aged in all of the countries discussed. There are challenges to the health care systems and some uncertainty about them in all of the countries. Technology offers great promise to health delivery. The United States has major uncertainty over health policy due to the recent change in national government.

Financial products is a theme that seems to be discussed in every recent Living to 100 conference. The SOA post-retirement risk research indicates that private sector financial products, other than health insurance, are not very popular with individuals and that they want to rely more on employee benefits. Two areas discussed (and where innovation is taking place, but more is needed), are long-term care insurance and payout products. Other SOA projects and Living to 100 offer considerable discussion about these products.

The last theme that I would like to mention is the individual and their responsibility to plan for themselves and deal proactively with the unavoidable prospect of aging. SOA post-retirement risk research documents gaps in knowledge and how people plan and manage assets. Occasional “shocks” are unpleasant to

think about, but it is important to deal with them in advance rather than merely on an “as-they-occur” basis. Living to 100 touched on this and related issues several times. For me, the new message was the need to expand our discussion, as we think about these topics, to include a focus on the individual in the community and the community around them.

CONCLUSION

For me, it has been a great privilege to participate in Living to 100 as a member of the planning committee, as a paper writer, and as a presenter. If I think about the large and complex variety of issues that we are dealing with as society ages as a mosaic, each of us has knowledge and perspectives that fill in some of the tiles. For each of us, they are different. At Living to 100, I am able to fill in more tiles and to have contact with people whose knowledge is in very different parts of the total space. That helps me deepen my understanding in the areas where I concentrate and change my perspective. I hope that many of you will read the papers and the overview paper, and that you will participate in the next rounds of Living to 100. A big “thank you” to the SOA for this effort. ■

P.S.: A personal story: This effort is particularly meaningful to me since “*Responding to the Aging Society*” was a major theme when I served as SOA president 20 years ago, in 1997–1998. I have chaired the Committee on Post-Retirement Needs and Risks since its inception, and its work overlaps with Living to 100 and was highlighted in several sessions. I keyed the first Living to 100 and have written a paper for each of the six symposia.



Anna Rappaport, FSA, serves as chairperson of the Committee on Post-Retirement Needs and Risks (aka the Committee on Post-Retirement Risk).

ENDNOTES

1 <http://www.skylinevillagechicago.org>

The Big Picture: Highlights from the Impact of Aging Sessions at the 2017 Living to 100 Symposium

By John Cutler (with assistance from the panelists)

Every three years the Society of Actuaries (SOA) sponsors a symposium on “Living to 100 and Beyond.” The 2017 symposium was in Orlando in January 2017. Orlando—a city geared toward the young—found retirement experts talking about living to and beyond age 100. The SOA hosts this conference to explore issues related to longevity. This article will address two sessions that took a policy perspective at a high level, as well as from the perspective of individuals and what they need to do to respond. This article includes input from the panelists at the two sessions:

- Session 1C Panel: Impact of Aging: What Are the Biggest Current Policy Challenges Emerging from the UK/US/Canada as a Result of Aging?
- Session 2C Panel: Impact of Aging: What Can Individuals and the Private Sector Do to Address the Challenges Resulting from Aging?

SESSION 1C PANEL

Impact of Aging: What Are the Biggest Current Policy Challenges Emerging from the UK/US/Canada as a Result of Aging?

The first session reviewed visible current public policy challenges and developments as presented by speakers from three countries: the United Kingdom, Canada and the United States.

Anna Rappaport observed that the impact of aging is pervasive. It affects the fabric of society: what our communities look like, what health care we need, what products we buy, who is in the labor force and who needs help, among other concerns. Population aging affects countries all over the world. There are many common demographic threads although the speed of the impact of aging is very different by country. The response to the demographic shifts is quite different. In each of the two sessions,

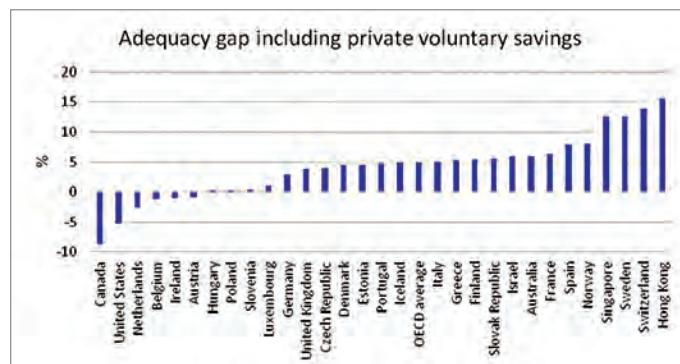
speakers from three different countries provided examples of current issues and responses, and then they held an informal panel discussion.

David Sinclair, from the International Longevity Centre in the United Kingdom (ILC-UK), spoke in both sessions. He provided insights from the research at the ILC-UK, which often includes multiple countries. He believed the sessions provided a useful opportunity to explore how different countries were responding to the challenges of demographic change. The panel considered how individuals, the insurance industry and governments could help ensure the financial and social well-being of future retirees. The discussions were wide-ranging, from increasing interest in using housing equity to fund retirement through debates on the potential for care insurance products.

David also presented new ILC-UK research on the global savings gap.

ILC-UK’s forthcoming research finds that the U.S. pension system is pretty good in terms of affordability (to the state) but that it performs poorly on adequacy for those who fail to save, resulting in relatively high poverty rates among the older population in the United States. This research will be available on the ILC-UK website¹ sometime this spring.

While the findings suggest that a young U.S. worker on average wage may not face the same savings gap as younger people in other countries, the debate pointed out that “averages can be misleading,” particularly when you consider the nature of inequalities in the United States.



David reported that while the picture may look rosy for the United States, the average person entering the workforce today will need to save at least \$5,608, or 11.1 percent of earnings every year, in order to secure an adequate retirement income.

The ILC-UK survey presented during the debate highlighted that while the system might work for those young Americans who do save, there are millions of people with no savings at all.

While just over half of the working population is currently saving into a private pension (54 percent), that still leaves a sizable proportion and number of people who are not saving into a pension and are therefore likely to face a significant retirement income shortfall.

It was further pointed out that in the United States, some long-term savings may be absorbed by health care costs.

There was interest in whether mandatory saving in places like Hong Kong and Singapore would result in positive outcomes for future generations of retirees. One participant highlighted that while the mandatory saving levels in Singapore are relatively high, the fact that some of this money can be used to buy property, for example, reduces the monetary resources available for retirement.

There was some surprise in the audience about the relatively poor positioning of Switzerland in the ILC-UK research results, a position that is driven by the fact that today's pensioners in that country are relatively wealthy. In those countries where older people today are relatively wealthy, future generations are more likely to find it difficult to get to replacement rates similar to their grandparents.

Those who understood the Canadian situation felt that the high positioning in the research results was deserved. Reforms are on the way to ensure sustainability, and there was a sense that Canada was heading in the right direction in terms of long-term retirement savings.

Robert Brown, formerly a professor of actuarial science at the University of Waterloo, gave us the Canadian headlines. Canada is moving in an opposite direction from many countries.

Canada is expanding its Social Security system; namely, the Canada Pension Plan (CPP). While the CPP now replaces 25 percent of one's wages up to the average industrial wage, a new tier of benefits will increase this replacement ratio to 33.33 percent of wages up to 114 percent of the average wage. The new tier of benefits will be fully funded to avoid the potential pitfalls of intergenerational transfers.

The previous Conservative government had proposed raising the age of eligibility for Old Age Security (OAS) benefits from age 65 to age 67 between 2023 and 2029. The Liberal government, however—elected Oct. 19, 2015—has rescinded this legislation, thus returning the age of eligibility for OAS back to 65. No actuarial logic was used in either proposal.

The average exit age from the labor force in Canada has been steadily rising since the turn of the century. Obviously, this has not been in response to legislation but is totally voluntary.

Canada is becoming increasingly unhappy with the efficiency of its health care delivery systems (each province runs its own system within federal guidelines). Canadians have always felt comfortable in believing that they do a better job at delivering health care than their neighbors to the south. However, they are now finally becoming aware that there are countries of the world that do a considerably better job at a lower cost.

John Cutler, senior fellow at the National Academy of Social Insurance, spoke about the United States. For the United States, it is an interesting time. It seems much more likely that benefits would be cut rather than increased. However, there is no way to tell where policy will go on many major issues:

- **Health insurance:** Will the Affordable Care Act be repealed and replaced?
- **Medicare:** Will we see the adoption of premium support?
- **Medicaid:** Are block grants coming?
- **Social Security:** Will the shortfall predicted for 2033 be addressed?
- **Pension and retirement security issues:** Will the large number of people without access to employer-based retirement systems be addressed? And what about the flat/declining real wages of the middle class?

Anna Rappaport reported that the interactive discussion in the first panel focused on several important issues. The panel started off with a discussion of what concerns the public the most. Outliving assets was high on the list discussed. In the United States, health care is a particularly visible issue at the moment, although many other countries also share concerns about health care costs and delivery. As the population ages, more and more health care is needed. Financing of long-term care is a very big issue and it is closely related to health care. However, while most developed countries have a highly organized health care financing system, the same is not true for long-term care financing. Gaps in these systems are widespread, and few countries have public systems that finance long-term care outside of their respective "welfare" programs. Long-term care was discussed in a number of sessions throughout the conference.

Three interrelated big issues are working later in life, statutory retirement ages, and how we retire. These three issues are important in multiple countries. When a retirement system switches from defined benefit to defined contribution, it generally loses incentives that encourage retirement at a specific time, and people may well work longer. But for people who want to work longer, finding jobs can be a problem. The panel also discussed intergenerational concerns and friction, as well as the roles of the public and private sector. While many countries are trying to reduce the role of the public sector, Canada is going in the opposite direction.

Highlighted links for more on these three countries are below:

United Kingdom

How Long Will We Work for? Independent Review of the State Pension Age: Interim Report (2016): <https://www.gov.uk/government/consultations/state-pension-age-independent-review-interim-report-with-questions>

How Will We Pay for Care?: Dilnot Commission on Social Care Funding (2011): <http://webarchive.nationalarchives.gov.uk/20130221130239/https://www.wp.dh.gov.uk/carecommission/files/2011/07/Fairer-Care-Funding-Report.pdf>

Changes in Pension Policy: Information on Pension Freedoms: <https://www.gov.uk/government/news/pension-changes-2015>

Canada

CIA Paper: Report on Issues Related to Increasing the “Retirement Age”: www.cia-ica.ca/docs/default-source/2013/213038e.pdf

IAA Releases Paper on Determination of Retirement and Eligibility Ages: Actuarial, Social and Economic Impacts: <http://www.actuaries.org/index.cfm?lang=EN&DSP=PUBLICATIONS&ACT=PAPERS>

CPP Reform: What’s Changing and How It Will Affect Canadians: <http://www.theglobeandmail.com/globe-investor/retirement/cpp-reform-whats-changing-and-how-it-will-affect-you/article30551445/>

United States

Fiduciary responsibility (Department of Labor): www.dol.gov/general/topic/retirement/fiduciaryresp#doltopics

Phased Retirement—U.S. Office of Personnel Management (OPM)(Aug. 8, 2014): www.opm.gov/retirement-services/phased-retirement/

Longevity Annuities (Department of Treasury): <https://www.treasury.gov/press-center/press-releases/Pages/jl2448.aspx>

States Are Working to Provide Benefits to Those Without Employer Plans: <http://www.pewtrusts.org/en/research-and-analysis/fact-sheets/2016/07/how-states-are-working-to-address-the-retirement-savings-challenge-three-approaches>

For even more information, see the reference lists available as part of the session materials for Session 1C that include major websites, legislative information and research reports for those three nations.

SESSION 2C PANEL

Impact of Aging: What Can Individuals and the Private Sector Do to Address the Challenges Resulting from Aging?

On the second panel, the focus was on specific issues and potential solutions at a more granular level. Susana Harding, of the International Longevity Centre in Singapore, picked up on many of the same themes as David Sinclair (who was also on this panel). She pointed out that each of us experiences aging every day in different ways, depending on where we are from (context) and whether we are born female or male (gender). At the individual level, aging has both positive and negative impacts and, to a large extent, is influenced by how much self-care we do.

In Singapore, there is a movement that has been started by the Tsao Foundation to empower elders to take charge of their own aging process and build up their self-care abilities to be able to continue to age in place and to age well in the community.

The self-care program, the Self Care on Health for Older Persons in Singapore (SCOPE), is now being offered in different locations and centers all over Singapore. SCOPE has also been accepted by the Ministry of Health as one of the programs under the National Senior’s Health Programme as part of the Action Plan for Successful Ageing in Singapore.

“Self care starts with me” is becoming a commitment by elders who join the program, and this commitment is translating into changes in their lifestyle, especially in terms of exercise, nutrition and chronic disease management. As more older Singaporeans know how to take care of themselves, we look forward to better utilization of health care and delay in the onset of disability, both of which translate into savings in health care cost.

Cindy Hounsell, president of the Women’s Institute for a Secure Retirement (WISER), spoke as well. She believes the challenges associated with aging in the United States are enormous. Policymakers are unaware of the issues among their own constituencies. A large segment of the aging baby boomers has not planned for the years after they stop working, and the result is a significant segment of the population with few financial resources other than Social Security, the public retirement system.

A general lack of financial knowledge puts many families at risk with their decision-making—few people outside of those in the employer-sponsored retirement system world know how to begin or how to execute a plan that will help them achieve retirement success. There is also a general distrust of financial institutions, so many people who might seek help just give up or avoid looking for help in finding a financial solution.

Women, in particular, are at risk of running out of money as they have fewer savings and a need for *more* money due to the impact of their living longer with higher expenses for health care and the likelihood of chronic illness and long-term care needs.

However, planning how to deal with the future can make a huge difference. The key challenge is knowing where to find the help you will need. There are many services that are available to the aging population, but most people are unaware of how that system works or the resources that they can tap into. Every state offers a range of special home- and community-based services through the local area agencies on aging—with programs funded by the U.S. Administration on Aging. These services include transportation, adult day care, caregiver support, health promotion programs and more to help people continue to live in their own homes.

Knowing where the help and resources are located and how to access them is an important key to living independently in old age. But, for the future generations, there needs to be increased access to retirement savings plans from the moment they begin

work, and better education on what the financial implications are for living a longer life.

John Cutler is an attorney and a senior fellow at the National Academy of Social Insurance (NASI) as well as a special advisor to the Women's Institute for a Secure Retirement (WISER). In addition, he has volunteered on a number of Society of Actuaries projects and committees. John has over 25 years expertise in the areas of health care, Medicare, long term care insurance, disability, aging, and insurance benefit design in both the public and private sectors. ■



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ENDNOTES

- 1 www.ilcuk.org.uk

Diverse Perspectives on the 2017 Living to 100 and Beyond Symposium

Compiled by Anna Rappaport

INTRODUCTION

Living to 100 and Beyond is a multidisciplinary symposium that provides insights into changing life spans, the underlying societal forces that drive such changes and that may lead to future changes, and on societal responses to changing life spans. The symposia have an international focus and include an emphasis on understanding mortality change and measurement, financial security, and a variety of other issues. This is a compilation of several interviews with people who came to the 2017 Living to 100 and Beyond Symposium with different backgrounds and lenses. The interviews focus on their impressions and issues important to the general topic.

AN ADVISER'S PERSPECTIVE ON THE LIVING TO 100 AND BEYOND SYMPOSIUM: BETH PICKENPAUGH

Beth Pickenpaugh is a certified financial planner and actuary located in Chattanooga, Tennessee. She has attended two Living to 100 Symposia. She serves on the Society of Actuaries (SOA) Committee on Post-Retirement Needs and Risks.

Can you tell us a little about yourself and the work that you do? Do you have any particular areas of specialty with regard to the types of issues you advise clients on?

I bring a number of different disciplines to my practice of financial planning. In addition to being an actuary, I have a graduate degree in math and operations research, the study of optimizing outcomes with scarce resources. My credentials and experience also include divorce financial settlement analysis as well as counseling on the ongoing financial issues that divorced individuals face. I love the personal nature of financial planning—how what we learn affects the quality of life of the end user. In theory I deal with making sure that their resources are properly invested to match their liabilities and that their risks are covered. In practice, I must be able to counsel on an ever-broadening spectrum of disciplines.

Please share with us two or three things you heard at Living to 100 that you found to be particularly interesting or helpful?

Judith Campisi's talk on "Suppressing Aging and Extending Longevity: Will the Twain Meet?" was an excellent example of the quality of speakers this symposium attracts. She took a fascinating subject that is normally beyond the reach of those outside her field and made it accessible. It takes a very special person at the edge of their field to make the complex digestible like that. I find that to be a quality that many of the general session speakers possess. At the end of her talk I grasped the biology behind the research of how health span might be increased, but not necessarily maximum life span. Also in her session, she skillfully illustrated that beating cancer will take either changing the environment in the body so that it does not have a chance to grow, or interfering with the mutations of cells. Getting a peek into the edges of research is fascinating with important financial consequences for those who may see less disability than their ancestors.

I find the life expectancy and maximum longevity discussions that permeate the sessions to be helpful as a planner. I am especially interested in how the survival curves are changing and why. I found it particularly fascinating that lack of social engagement carries the same mortality risk factors as obesity and smoking.

What things did you find to be surprising?

I found it both surprising and encouraging that there is research that indicates a likely hope for changing the way we age and shortening the period of disability in our lives (General Session I, Nir Barzilai). The financial implications for the delay of diabetes, cardiovascular disease, cancer and cognitive decline are far-reaching not just in types but in patterns of expenses over time. This could change the types and characteristics of risks we look to address as financial planners. This increase in healthy years also will allow more workers to remain in the workforce longer, one of the best ways to increase retirement financial wellness.

Were any of the findings disturbing?

If we fail to address the aging process but continue to address other causes of death such as heart disease and cancer, it was proposed that Alzheimer's likely will be more widespread and last longer, taking an even greater toll on the resources available at the end of life. This could have devastating financial consequences both individually and to society as a whole. Even if there are assets saved and insurance purchased, the current types of long-term care insurance only cover a few years of care and do not help if care needs persist. Assets would need to be spent down until one qualifies for Medicaid, leaving a potential spouse or loved one even more financially at risk for their own needs. (This was brought home by Jay Olshansky in the final panel



discussion, but was touched on in many other talks throughout the symposium.)

What did you enjoy the most?

What I enjoy the most about attending the Living to 100 Symposium is the vast global brain trust of the people who attend from a wide range of disciplines. It is unquantifiable to me to be able to talk to the leaders in their fields and to decision-makers in government and private sectors, and to be able to have difficult subjects presented by those who can make them comprehensible. It is obvious that these are people who share a passion for improving the quality of life in later years.

Do you feel that other financial advisers would benefit from coming to future Living to 100 sessions? Why?

As financial advisers, we deal with very diverse aspects of our clients' financial lives in making recommendations about income streams, savings, investments, insurance, and so on. Our expectations about life and health spans can affect those recommendations significantly. The information from the experts at this symposium is a good start to help us recognize the areas that we may need to understand more fully. I walk away with books recommended by experts in their fields, websites that are indispensable and expert contacts to reference when questions arise.

You mentioned that you do quite a lot of reading on aging. Can you share with us two or three books or articles that you would recommend and why?

In *The Upside of Aging: How Long Life is Changing the World of Health, Work, Innovation, Policy, and Purpose*, Paul Irving, president of the Milken Institute (an independent economic think tank whose mission is to improve the lives and economic conditions of people in the United States and around the world), compiled articles written by leading thinkers on the opportunities

inherent in our aging society. This book is filled with research and ideas from leaders of many disciplines related to aging.

Laura Carstensen, Ph.D., director of the Stanford Center of Longevity, wrote *A Long Bright Future: An Action Plan for a Lifetime of Happiness, Health, and Financial Security*. Carstensen is a psychologist and writes this book to answer the question of how we can make the most out of the added years of life. She suggests that we design a new way of thinking about the rhythms of life that includes a longer youth, a break at mid-life to reposition and working into our 70s or 80s. She makes a great case and educates the reader along the way.

Why Zebras Don't Get Ulcers was written by Robert Sapolsky, a professor of biology and neurology at Stanford. He has been called one of the best science writers of our times—I would agree. This is an immensely interesting book tying stress to the aging process with useful notes citing many excellent articles and books for further reading.

PERSPECTIVES FROM AN ACTUARY VERY INVOLVED WITH PENSION MORTALITY RESEARCH: LARRY PINZUR

Larry Pinzur spent his career as a pension actuary with Aon Hewitt and is a major contributor to the work of the SOA Retirement Plans Experience Committee.

Can you tell us a little about yourself and the work that you do? What about the work you are doing to help the SOA define mortality standards for pension plans?

I started working as a pension actuary at Hewitt Associates immediately after obtaining my graduate degrees—in statistics and number theory! Thirty-eight years later, I am still employed by Aon Hewitt (but now on a very part-time basis) performing “actuarial R&D” with special emphasis on demographic assumptions.

My past volunteer work with the SOA focused almost exclusively on pension-related mortality and longevity issues. I first joined the Retirement Systems Research Committee just as the RP-2000 Mortality Tables were being finalized. I joined the Retirement Plans Experience Committee (RPEC) in 2009 as replacements for the RP-2000 tables (and projection Scale AA) were being contemplated. Since 2009, I have been actively involved with RPEC's development of the interim mortality projection Scale BB, the RP-2014 pension mortality tables, and mortality projection scales MP-2014, MP-2015 and MP-2016.

For the past few years, I have also been a member of the SOA's Longevity Advisory Group. This volunteering experience has given me the opportunity to broaden my perspective, providing some insight on mortality/longevity applications beyond those that are primarily related to retirement programs.

What are some of the challenges that pension actuaries face as they must consider longevity in their work? How does the SOA work help them?

I realize that this is going to sound a bit tautological, but the biggest longevity-related challenge for pension actuaries is the selection of appropriate sets of mortality assumptions—both base rates *and* a projection scale—that predict with a reasonable degree of accuracy how long covered individuals are going to live! If anything, the selection of an appropriate mortality assumption has been magnified in importance due to the current low interest rate environment and the large number of closed/frozen defined benefit plans.

In addition to their traditional uses in the assessment of the long-term financial viability of pension and other postretirement programs, there has been a growing need for more specialized subpopulation mortality assumptions. Actuaries around the world are involved with very significant longevity de-risking transactions (including complex hedging strategies and various types of group annuity contracts) that require careful analysis of the anticipated mortality experience of specific covered groups.

Increased sponsor emphasis on the adequacy of lifetime income from defined contribution plans has also refocused the pension actuarial community on some key longevity issues. The latest online longevity tools present a range of life span probabilities (not just a single life expectancy value at age 65) that reflect a number of user-specific inputs, such as anticipated retirement age, personal habits (e.g., tobacco usage, overall activity level) and the general health status of the user and others who might rely on the income stream. (I encourage those who haven't tried out the SOA's "Longevity Illustrator" to do so at <http://www.longevityillustrator.org/>.)

How does the Living to 100 Symposium series link to the SOA's activities to support pension and retirement programs?

The Living to 100 Symposia generally include three types of sessions that support the SOA's pension/retirement programs:

1. Those that focus on leading-edge academic research related to the measurement and projection of mortality rates, often with particular emphasis on retirement-aged populations.
2. Discussions addressing the myriad societal issues arising from the aging populations in developed countries around the world; for example, the policy challenges (availability/delivery/cost) of future health care, the need for more comprehensive pre-/post-retirement financial education.
3. Last but certainly not least, presentations made by non-actuaries (demographers, biologists, geneticists and other medical professionals) who provide glimpses into the important research being performed in their respective areas of expertise. This research could have very dramatic implications

for all actuaries (not just pension actuaries) attempting to predict future longevity patterns.

Please share with us two or three things you heard at the 2017 Living to 100 Symposium that you found to be particularly interesting or helpful?

Both of the featured presentations at the 2017 symposium were about the potential to extend human life spans through a suppression of aging—and they were both outstanding. In his talk titled "How to Die Young at a Very Old Age" (General Session I), Dr. Nir Barzilai first described some results of his genetic research on exceptional longevity. But even more impressive was his description of the TAME (Targeting Age with Metformin) project, of which he is one of the prime movers. The underlying hypothesis of this project is that aging is the fundamental mechanism for many diseases, and that metformin (an inexpensive drug that already exists for treating type 2 diabetes) could potentially slow down the normal aging process.

Dr. Judith Campisi's presentation (General Session III) focused on certain biological processes occurring at the end of a cell's life cycle. I was surprised to learn that every cell has one of two possible fates at the end of its "life span"; apoptosis or senescence. Very briefly, apoptosis is the process of programmed cell death, after which the remains of the dead cell get removed. With senescence, on the other hand, the aged cell remains viable and retains the ability to negatively influence neighboring cells through certain secretions. While senescence seems to serve useful functions early in life, the accumulation of senescent cells at advanced ages appears to be detrimental to the health of the organism.

Truly amazing research, with potentially huge implications for future human longevity!

Were any of the findings disturbing?

Among the most disturbing issues discussed at the symposium were those that dealt with the looming tsunami of aging populations around the world and the associated crises that governments face in providing financial security and adequate health care to their citizens. There were also a number of very sobering predictions made about the potential for very dramatic increases in incidence of Alzheimer's cases over the next few decades primarily due to progress made in reducing death rates from other causes.

What did you enjoy the most?

Of course, I really enjoy meeting up with actuaries (not just SOA members—and not just pension actuaries!) who are keenly interested in mortality/longevity issues. But the aspect of the Living to 100 Symposium that makes it truly unique is the opportunity it provides to interact with world-renowned experts who are

conducting leading-edge biological/demographic research on issues that will likely have huge implications not just for actuaries, but for society at large.

Is there anything else you would like to tell us?

A big thanks to the organizers; I'm already looking forward to the 2020 symposium!

A PERSPECTIVE ON "LIVING TO 100" FOCUSED IN IMPROVING THE LIVES OF OLDER PERSONS: PHYLLIS MITZEN

Phyllis Mitzen presented "The Changing Face of Eldercare" at the 2017 Living to 100 Symposium. She has spent her career in the field of aging involved in providing service and working in education, policy and the community to improve the lives of older individuals.

Tell me a little about yourself and the work you do. How does it impact the lives of older Americans?

I have worked in the field of aging since my first job as an activity director in a for-profit nursing home in 1972. That experience, along with my dad's serious chronic illness and untimely death, convinced me that for practical and moral reasons our society must plan for and develop ways for all of us to age with dignity and have a voice in how programs and services should be developed. I went on to receive an AM in Social Service Administration from the University of Chicago. I worked for 20+ years at CJE SeniorLife developing and managing a variety of home- and community-based services. Currently I coordinate the Older Adults Studies Program at SSA/University of Chicago encouraging second-year master's students to specialize in aging. I also consult with Health & Medicine Policy Research Group, a public health think tank focusing on access to health care and long-term care. And I am founding president of Skyline Village Chicago Inc., a grass roots organization that connects older adults with one another to strengthen our social networks, friendships and ability to make choices in how we live.

Share the highlights of your vision for the future of long-term care and health care for America.

I believe that the social determinants of health will become integrated into our concept of what health means. These factors include housing, transportation, socio-economic status, mental health and substance abuse, education, food insecurity, early life, social supports, and stress—particularly caregiver stress. This is already forcing hospitals to reach out into their communities to collaborate with existing organizations and to create programs that focus on prevention of serious health issues that are only exacerbated as we age—obesity, diabetes, heart disease, arthritis and hypertension.

I envision municipalities awakening to the possibilities and challenges posed by their aging citizens. This vision includes

planning and sharing best practices from neighboring communities at home and around the world. A good example of this is Chicago Sister Cities International (CSCI) engaging Shanghai Civil Affairs Bureau in a yearly cultural exchange of ideas on ways we can learn from each other to address planning for our aging populations.

What would you like to see changed from the current state?

I believe that hospitals need to do a lot more to work with public health and with social services agencies as well as government to improve the lives of people. There is clear evidence that social determinants of health have enormous influence on whether a person flourishes or not.

I believe in the right of individuals to have access to health care, which, when received early in life can mitigate many of the problems that people have as they age.

On a policy front I want Medicare to be able to negotiate with pharmacy companies on the cost of drugs. And speaking of drugs, we must address the prescription drug addiction problem that affects people of all ages. Finally, significant resources must be allocated to research on Alzheimer's disease and on research that promotes a healthy life throughout a normal life span.

I believe that communities need to look closely at how they are organized and structured—are streets not only bikable, but walkable? Are buildings accessible? Are older adults at the table when planning for new initiatives that impact their lives? This is particularly true as millennials develop technology for "them" without consulting with and educating both themselves and the older adults.

What factors are most important in giving people a choice about where to age, and what should people know to get help when they need it?

Putting financial security aside for a moment, it is important to educate people to think about their choices and options before they need them, and help them to plan. However, being realistic, most people don't imagine that they will ever need long-term care options, or that they will ever be forced to move from a beloved home where they've lived for decades. There are many more living options available to people now than when I started working in this field 40 years ago, but unfortunately people still allow dread of a nursing home to color their thinking, so who can blame them for putting off planning. I recommend that people take a look at the website www.planyourlifespan.org to get a start on thinking through their options. Things to think about regarding where to live include ease in access to and in the home: Are there stairs? Is lighting good? Is it close to transportation, to shopping, to health care, to open space like parks? There are professionals who can assist in making decisions. Geriatric care

managers can be social workers, nurses or counselors who have been certified through professional associations as having an understanding of aging issues and resources. Elder law attorneys can also be another good source of information.

Are available choices changing and, if so, how?

Choices are changing rapidly. What is not changing is the need for a dedicated workforce trained and sensitive to the needs of older adults. What is changing is the technology that provides access to this workforce, and provides help and reassurance to older adults and their families. Smart homes controlled from smart phones can and will continue to be adapted to the needs of older adults, persons with disabilities and their families. Housing options have also adapted over the years to market demand—for example, assisted living for people who don't need 24-hour nursing care. The “shared economy” will also have a huge impact on how people age—we already see it with Uber and ride-sharing services taking the sting out of giving up your car. I can envision Airbnb morphing into home-sharing options.

The WHO Age Friendly Cities initiative and AARP's Livable Communities focus on better communities for aging persons.

Why are these initiatives important and what can people do to bring them to their communities?

WHO, anticipating the aging of the population throughout the world, created an initiative and a framework for communities to use to evaluate their readiness for the inevitable aging of their citizens. Planning for your community is much like planning for yourself. You may not want to do it, but not planning can lead to unpleasant consequences. For communities, not planning means that people will not have options as they age. Not planning means that a large segment of their neighbors will either retreat or leave. It takes community leaders with vision and citizens willing to roll up their sleeves to develop a plan and to follow through. AARP is the U.S. partner in this initiative and focuses on livable communities for all ages. Its website is filled with resources, and it provides many opportunities for communities to share information with one another about best practices.

What are two or three things you learned at the Living to 100 Symposium that were particularly interesting? Surprising? Disturbing?

First and foremost, I was intrigued with the work being done by Dr. Barzilai and Jay Olshansky to slow the aging process and thereby slowing the disease process. Early in my career I attended a lecture about squaring off the health curve in the second half of life. It appears that Barzilai and Olshansky are focused on the means to do this.

I was struck by the discussion between the United States, Canada and Great Britain and how similar our issues are—not

enough savings, difficulty in figuring out how to pay for “social care” or chronic care, youth resentful that they are paying into a system they feel won't be there for them when they grow old.

What did you enjoy the most?

I was thrilled to have conversations with people who think about aging issues from perspectives entirely different from mine. I was excited to discuss familiar issues such as livable communities, workforce and caregiving, gender and health care with people who thought about these issues through a financial and longevity lens. It was one of the more gratifying and stimulating conferences I have attended.

Are there books or articles that you would recommend that may be useful to actuaries to help them understand the human aspects of aging?

I recommend *Being Mortal* by Atul Gawande to everyone I know. The author is a physician who writes regularly for *The New Yorker*. When his physician father was diagnosed with cancer they both realized that their training had not prepared them as physicians on how to navigate the end of his life. Gawande writes eloquently about how he, as a physician, needed to learn from his patients.

I also recommend Ashton Applewhite's *This Chair Rocks: A Manifesto Against Ageism*. Applewhite writes wittily and passionately about how we can create an age-friendly world, friendly to all ages. One of my favorite quotes from her book is “All aging is ‘successful’—not just the sporty version—otherwise you're dead.”

A REGULATOR'S PERSPECTIVE ON THE LIVING TO 100 AND BEYOND SYMPOSIUM: JOHN ROBINSON

John Robinson is a regulator, and is past president of the International Association of Black Actuaries. He has served on the SOA Board of Directors.

Can you tell us a little about yourself and the work that you do?

I spent 23 years as a life insurance actuary, primarily in financial reporting. I also spent six years in OPEB, which combines concepts of mortality and morbidity with pension-type actuarial cost methods.

Most recently, I started a new career as a life insurance regulator for the state of Minnesota. As a regulator, I have a role in overseeing the companies domiciled in Minnesota, and I also serve on several National Association of Insurance Commissioners (NAIC) committees that discuss aspects of regulation affecting the whole country.

Why is the aging society important to life insurance regulators?

Life insurance regulators are primarily concerned that mortality assumptions used for statutory valuations are appropriate. During 2016, I joined a work group that is reviewing the inadequacy of the mortality assumptions for single premium immediate annuities (SPIAs) and other similar lifetime payout products. The problem is that the old mortality tables do not reflect the mortality improvements that have occurred in the last few decades; at the same time, these assumptions are locked in at issue, per the statutory valuation rules.

It is also the case that the formula for risk-based capital, which prescribes the minimum capital that a life insurance company should hold, includes no charge for longevity risk. The same work group is addressing this issue as well.

It should always be noted that life insurance companies and life insurance regulators are primarily concerned with insured lives, not the general population.

Please share with us two or three things you heard at Living to 100 that you found to be particularly interesting or helpful?

1. (General Session I) The prospect that metformin, if it performs as advertised, can defer the onset of multiple diseases, is very interesting. It is important also that the drug can be priced within reach of most Americans, which means that the impact could be widespread. The potential impact on reserves for lifetime-payout products will be important to regulators.

2. (General Session II) The perspective that post-retirement needs to consider three components—financial, physical health and psychosocial health—is an interesting departure from the paradigm of thinking only of the financial component.

This symposium has included eminent presenters who look at aging from the perspective of the physical sciences. This “basic science” can no doubt inform actuaries as we examine mortality for our own purposes. It is my hope that future symposia will explore some of the “softer” sciences, such as sociology, psychology and behavioral economics, in discussing post-retirement issues and aging.

What things will be most useful in your work?

I don't see much as directly relevant to my work, but it provides an awareness of what I might expect to see in mortality rates at the higher ages in future CSO mortality tables.

What things did you find to be surprising?

In the presentation on the Human Mortality Database, the basic objective is to calculate D (number of deaths) / E (exposure). It was surprising how complicated this gets when you consider factors like data quality and migration.

I was not surprised that most first-world countries are represented in the database; but I was disappointed at the dearth of information on third-world countries. In particular, I saw no countries from the continent of Africa—not even South Africa, which has a substantial actuarial profession.

Were any of the findings disturbing?

The most disturbing message is that the U.S. society is not prepared to provide all its citizens a comfortable life beyond, say, age 80. This will probably only happen for those that have lots of money *and* lots of family support. It has caused me to start thinking about where (i.e., what other country) I might live after retirement.

What did you enjoy the most?

The most enjoyable part of an SOA meeting is always networking with colleagues and meeting new colleagues.

Do you feel that other regulators would benefit from coming to future Living to 100 sessions? Why?

Regulators who have a particular interest in mortality should attend this symposium. However, most regulators have a wide-ranging portfolio of responsibilities, and a conference focused solely on late-age mortality may not resonate with them.

HEALTH EXPECTANCY AND AN ACTUARIAL PERSPECTIVE ON THE LIVING TO 100 SYMPOSIUM: FAYE ALBERT

Faye Albert is an actuary located in Miami, Florida. She has attended all six Living to 100 Symposia.

Can you tell us a little about yourself and the work that you do? Do you have any particular areas of specialty with regard to the types of issues you advise clients on?

I have practiced as a life insurance actuary first working for insurance companies and then in consulting. My focus has been on mortality and factors affecting mortality, but I have also done work in the area of health expectancy. At the 2008 Living to 100 Symposium I co-authored a paper with Jim Brooks and Jack Bragg suggesting a way to look at health expectancy. It is available on the SOA website.¹

You have attended all of the Living to 100 Symposia. What attracted you?

Living to 100 and Beyond is a multidisciplinary symposium and provides insights into how life spans are changing, what forces drive these changes, what additional changes are in the offing, and how society responds to changing life spans. The symposia have an international focus and include an emphasis on understanding mortality change and measurement, and financial security. All these questions are intriguing; the meeting is not overwhelming in size, and feels collegial.

All past symposia are available on the SOA website. The 2017 symposium will be available in the fall. Past meetings are interesting as well, for example, comparisons of mortality among the United States, Great Britain and Canada is shared by their respective social security actuaries.²

Please share with us two or three things you heard at Living to 100 that you found to be particularly interesting or helpful?

The research described by both Dr. Nir Barzilai and Dr. Judith Campisi was fascinating. (General Session I and General Session III)

Their work suggests that as we live longer, we may be able to age without the pathologies and disabilities associated with old age, or at least postpone these pathologies and disabilities. Preliminary research suggests this, and Barzilai is conducting a formal research study to demonstrate that metformin has had success in accomplishing this. Other medications may have even better results.

How does this help us in our work?

In the work on health expectancy that I did in 2008 we segregated life expectancy into periods that might be expected to be healthy, requiring assisted living and/or requiring skilled nursing care, based on observations prior to that time.

Eric Stallard's 2016 article, "Compression of Morbidity and Mortality: New Perspectives,"³ defined morbidity compression by focusing on the reduction in lifetime activities of daily living (ADLs) and/or cognitive impairment (CI) disability days, using ADL and CI disability measures designed to be maximally compatible with the 1996 federal Health Insurance Portability and Accountability Act (HIPAA) requirements for tax-qualified

long-term care insurance and services (Internal Revenue Service 1997).

Work defining morbidity compression, substituting impressions of improved health for observable measures, is an exciting area for research. If a straightforward definition for "infirm old age" could be created, then it would be easier to quantify morbidity compression. This would be most useful and more feasible in light of the advances in medicine described at the last Living to 100 Symposium.

How can health expectancy be used?

Health expectancy, like life expectancy, is an average. It is not a good indication of what any one individual can expect, but it is a good indication that many people will have periods of needing help and it offers some averages. For individuals, it can offer a strong signal of the importance of planning and it can be a wake-up call. For employers, it offers a good indication of what their employees may face in the future in the aggregate. Likewise, for policymakers, it offers a good indication of what might be expected. Health expectancies will be even better if they also include information about the 90 percent as well as the 50 percent.

Note: Levels of impairment and the need for assistance are defined by inability to perform prescribed ADLs and by CI. ■

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Calculating ROI: Measuring the Benefits of Workplace Financial Wellness

By Gregory Ward

Editor's Note: This article is part of the 2017 Financial Wellness essay collection and won first prize for the best essay submitted.



As human resources executives and benefit-plan sponsors prepare their 2017 budgets, many will question the value of investing in a workplace financial wellness program. Determining the true value of such a program has proved to be elusive, but recent research from the Financial Finesse Financial Wellness Think Tank has introduced a viable way to forecast the potential return on investment (ROI) of the programs using data collected from actual clients. This model, as reported in a 2016 report,¹ provides results that indicate employers can find it beneficial to invest in a high-quality financial wellness program.

WORKPLACE FINANCIAL WELLNESS ROI PREDICTIVE MODEL

The predictive model is based on the observed improvements in employee financial behavior as it relates to wage garnishments, absenteeism, and utilization of flexible spending and health savings accounts. By evaluating the difference in each behavior at each level of financial wellness (as measured on a 0–10 financial wellness scale), the model measures the value of the improvements in the following three areas.

Garnishments

According to the findings, for every level of improvement in an employee's financial wellness score, there is a decrease in the likelihood of garnishments. For example, the likelihood of garnishment fell from 4.80 percent to 1.84 percent when moving from a financial wellness score of 4 to 6. For a 50,000-life employer, this decrease in the frequency of garnishments could save more than \$440,000 a year in reduced garnishment processing costs (based on an average \$300 annual cost to process garnishments).

Absenteeism

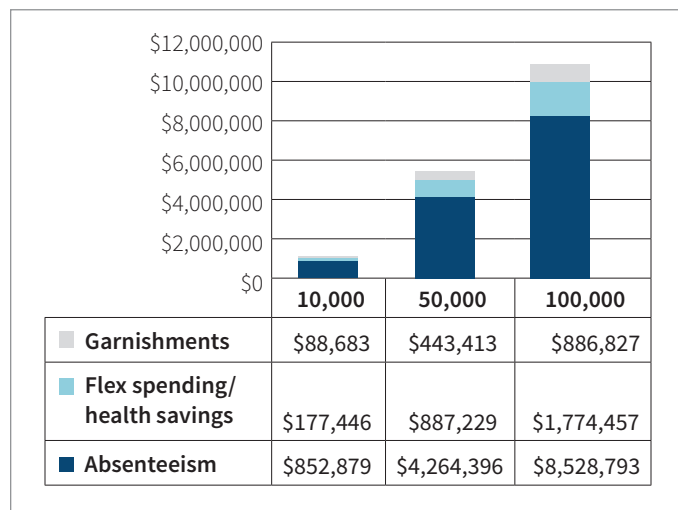
The study also found similar decreases in the average number of hours of unplanned absences as employee financial wellness improved. Specifically, the average number of hours of unplanned absences fell from 13.73 hours to 10.35 hours when moving from a financial wellness score of 4 to 6. Based on an average annual salary of \$50,000, a 50,000-life employer could save upward of \$4.2 million a year in unplanned absences.

FSA and HSA Participation

The study also observed steady increases in contributions to flexible spending and health savings accounts as employee financial wellness improved. The average combined contribution to a flexible spending and health savings account increased from \$905.55 to \$1,137.50 when moving from a financial wellness score of 4 to 6. Since contributions to flexible spending and health savings accounts are not subject to Federal Insurance Contributions Act (FICA) tax, an increase in participation could save a 50,000-life employer nearly \$900,000 a year in reduced matching FICA tax payments.

Figure 1 shows the projected cost savings of an incremental shift in the median workforce financial wellness score from 4 to 6 using the ROI model for employers of various sizes.

Figure 1
Projected Cost Savings of Incremental Shift in Workforce Financial Wellness Score From 4 to 6 (by employer size)



IMPROVING THE ROI MODEL

The cost savings illustrated are simply the tip of the iceberg. A much more in-depth analysis is needed to more accurately calculate the true financial impact of a financial wellness program. For example, previous studies suggest that a well-constructed financial wellness program may contribute to reductions in health

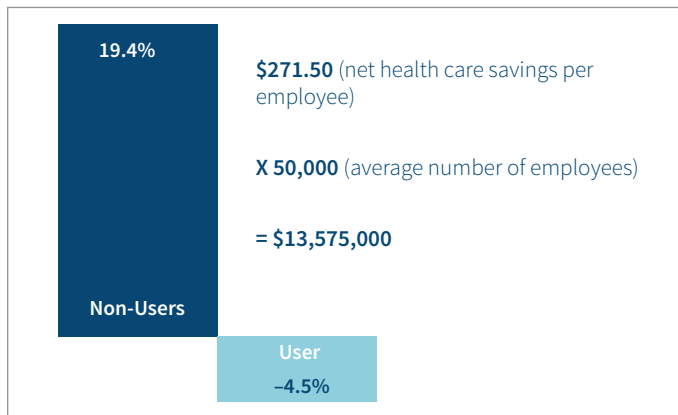
care costs, costs associated with delayed retirement, and costs associated with recruiting, retaining and engaging employees.

Health Care Cost Savings

A 2014 study from the American Psychological Association² reports that 64 percent of those surveyed cited money as a significant source of stress, and that Americans are paying for this stress with their health.³ Financial stress has been attributed to decreased employee productivity,⁴ increased absenteeism and increased employer health care costs.

Financial wellness programs are correlated with lower health care costs. A study⁵ of a Fortune 100 health care company found that employer health care costs associated with employees who used the company's financial wellness program actually decreased by 4.5 percent, while the costs associated with employees who never used the program increased by 19.4 percent. This equated to a cost savings of \$271.50 per employee. If a 50,000-life employer experienced the same cost savings by offering a comprehensive workplace financial wellness program, it could save the employer more than \$13.5 million a year, as shown in Figure 2.

Figure 2
Potential Annual Health Care Cost Savings

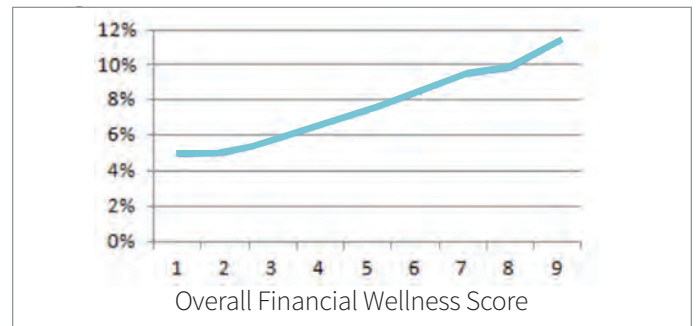


Reducing Costs of Delayed Retirement

Employees today are woefully underprepared for retirement, with only 21 percent indicating they are on track to achieve their income goals in retirement, according to recent research from Financial Finesse.⁶ As employees progress through the late career cycle, those who are underprepared may have to delay their retirement for financial reasons. This has repercussions throughout the workforce. According to the Transamerica Center for Retirement Studies,⁷ 65 percent of baby boomers either plan to work past age 65 or do not plan to retire at all. For every year an employee who would like to retire delays retirement for financial reasons, the employer faces estimated additional costs between \$10,000 and \$50,000.

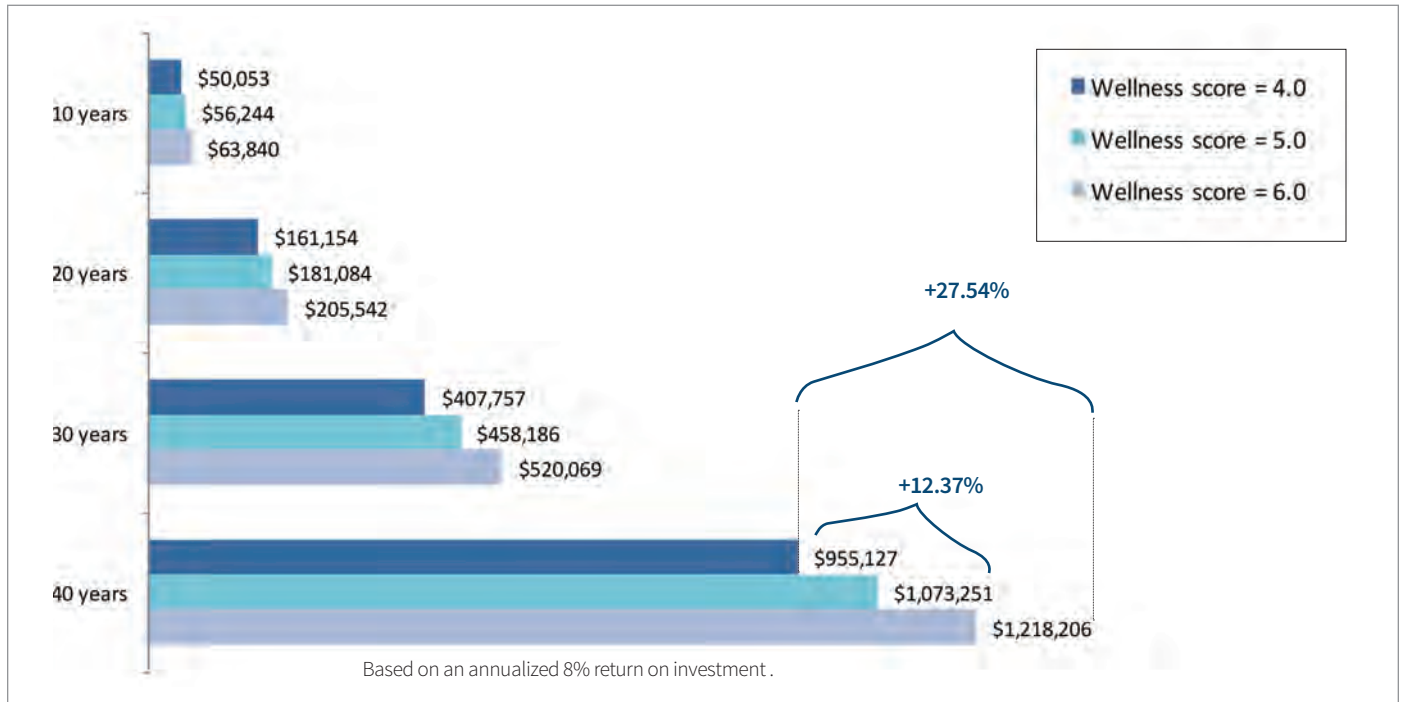
Figure 3 shows that as employees' overall financial wellness levels increased, so did contribution rates to employer-sponsored retirement plans. Higher contribution rates reduce the likelihood of delayed retirement since employees are more financially prepared.

Figure 3
Deferral Election Percent



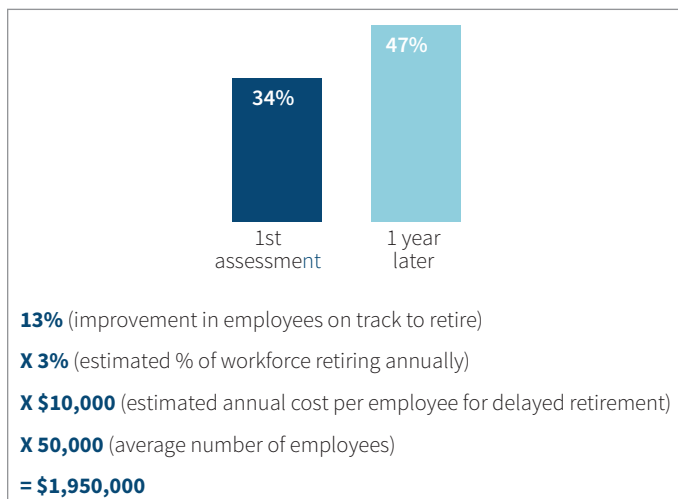
For younger employees, the research suggests that increases in contribution rates due to improved financial wellness could increase lifetime retirement savings by as much as 12 to 28 percent, as shown in Figure 4.

Figure 4
Potential Improvement in Retirement Plan Balance for an Employee Making \$50,000 a Year



In addition, research found that employees who engaged repeatedly in their employer’s financial wellness program increased their likelihood of being on track for retirement—from 34 percent to 47 percent.⁸ Figure 5 shows that for a 50,000-life employer, this 13-point improvement could equate to nearly a \$2.0 million annual cost reduction related to delayed retirement.

Figure 5
Potential Cost Savings for Helping Employees Retire on Time



Recruit, Retain and Engage Top Talent

According to the 2016 Deloitte Millennial Survey,⁹ two-thirds of younger employees plan to leave their current job by 2020, with 25 percent saying they plan to leave in less than a year. Turnovers cost companies money. Citing the research of W. F. Cascio, a SHRM Foundation’s report¹⁰ indicates that “direct replacement costs can reach as high as 50% to 60% of an employee’s annual salary, with total costs associated with turnover ranging from 90% to 200% of annual salary.” That puts costs anywhere between \$45,000 and \$100,000 when replacing an employee making \$50,000 a year. A 2016 Paychex survey¹¹ found that approximately 70 percent of employees cited low pay as a reason they have left or would leave a job, and 45 percent said they have or would leave due to a lack of benefits.

Most employees are dissatisfied with their pay and benefits because they haven’t fully maximized the value of what their company offers. By not taking full advantage of employer-provided benefits such as company matching programs, discounted voluntary benefits, and health and wellness benefits, employees potentially leave thousands of dollars on the table every year. The money they are forgoing could be the difference between sinking deeper into debt and proactively saving toward key financial goals.

If a 50,000-life company with a 10 percent turnover rate initiates a comprehensive workforce financial wellness program that results in 50 fewer employees leaving the company (i.e., a 1 percent reduction in the turnover rate), it could equate to more than \$2.2 million in annual savings, as shown in Figure 6.

Figure 6
Potential Cost Savings by Reducing Turnover

1% (projected reduction in employee turnover)
X 10% (turnover rate of employees)
X \$45,000 (estimated net cost to replace employee)
X 50,000 (average number of employees)
= \$2,250,000

MEASURING AN ORGANIZATION'S ROI

Using actual, quantifiable data, Financial Finesse has developed an ROI model that can help employers project potential cost savings when implementing a financial wellness program. Based on this model, a large employer can potentially save millions of dollars every year when factoring costs such as wage garnishments, absenteeism, and utilization of flexible spending and health savings accounts. That number gets even greater when taking into account reductions in health care costs, delayed retirement and turnover. Table 1 shows the total a company could save across all categories.

Table 1
Projected Annual Savings for Company With Increased Financial Wellness

Garnishments	\$443,413
FSA/HSA contributions payroll taxes	\$887,229
Absenteeism	\$4,264,396
Health care	\$13,575,000
Delayed retirement	\$1,950,000
Turnover	\$2,250,000
Estimated Total	\$23,370,038

While far from perfect, this model paves the way for measuring the effectiveness of corporate-sponsored workplace financial wellness programs. It will also serve as a catalyst for further development of the financial wellness industry. ■



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How Should Financial Economics Principles Be Applied (Or Not Applied) to Public Pension Plans?

By Thomas Lowman

There have been papers written about the application of financial economics to public pension plans. One such paper, titled “Financial Economics Principles Applied to Public Pension Plans,” was a working draft that came from the joint American Academy of Actuaries/Society of Actuaries (SOA) Pension Finance Task Force.¹ Part of me wants to say that there is nothing new in these papers that has not been said before. However, if there are some new things, I would say they are the following:

1. These papers have clearly moved into the areas of funding and investing more than simply disclosure (these generally had been fringe thoughts before).
2. They tend to present one set of views for the actuarial profession to adopt as its sole policy (which, given the views proposed, is likely why no actuarial organization will adopt it as a sole policy even if the organization had that power).

Let me dispel two myths:

- The first myth is that the Actuarial Standards of Practice (ASOPs) do not allow actuaries to calculate public plan contribution needs based on bond rates. Section 3.6 of ASOP 27 says:

Each economic assumption selected by the actuary should be reasonable. For this purpose, an assumption is reasonable if it has the following characteristics: . . .
d. It reflects the actuary’s estimate of future experience, *the actuary’s observation of the estimates inherent in market data*, or a combination thereof; . . .

I italicized the authorizing words and note that section 3.6.1 goes on to talk about bond rate considerations. Few public plan clients ask the plan actuary to make use of this alternative because it is not common practice. I believe the authors wish to change the actuarial standards to only allow the use

of market bond rates (such is not even the case now in the private sector). If employers wish to convert to bond rates, they can read my May 2009 paper published by the SOA, “The Debate Over Applying FE Principles to the Funding of Public Pension Plans: A Transition Proposal and Other Ideas.” I found no takers to even transition to a bond-based calculation.

- The second myth is that actuaries are miscalculating liabilities. Actuaries know how to estimate solvency liabilities. It is somewhat unfortunate that the term actuarial liability for funding purposes is confused by some to imply that actuaries think this is an understated solvency calculation. However, actuaries are not confused and others choosing to misrepresent it as something else are using it as a debating ploy.

Now onto the substance of the two key recommendations in these papers. I’ll start with the proposition that:

[M]anaging a plan in an economically efficient manner without violating intergeneration equity requires keeping the plan fully funded on a solvency basis and as much as possible not taking investment risks.

To me, fully hedging the solvency liability and not taking investment risk in search of higher returns means (in overly simple terms) plans should sell all of their stocks and buy bonds. I am as unhappy with this statement as I am with the actuary who, when asked about investment mixes, supported 80 percent to 100 percent in equities. Nowhere in the ASOPs does it talk about how funds must be invested. Actuaries should not (cannot) be giving investment advice, and there is no way requiring a conservative investment mix should be in the ASOPs. Actuaries try to give risk advice, and it is a fine line when it comes to investing. Giving advice on asset allocations to a pension fund for a fee is generally the job of an SEC-registered investment adviser. The audience for selling the proposed insurance-company-like investing approach should generally be the board of trustees. I see no hope of the authors of these articles succeeding in this arena.

The other key recommendation was to measure liabilities for funding purposes based on bond rates. It certainly is a plausible position but not the choice of the actuary. This debate goes back to at least 2003 when Jeremy Gold and Larry Bader said that this is a policy choice. The Gold /Bader statement on discount rates for funding purposes may have been more intended for private sector plans where Congress made policy choices. I believe that both risk decisions (either in the form of the discount rate basis for funding or the investment mix) are policy choices. In the public sector it is really up to the plan sponsors or their boards of trustees to make these choices. Note that the actuaries are not the Congress nor state and local governments nor boards of trustees, i.e., actuaries do not make policy choices



and are not fiduciaries. Of course the concern with state and local governments and boards making policy choices is that there are inherent governance risks.

I understand the frustration with governance risks and the view by some that the actuaries are the only adults in the room, so somehow the actuaries should fix the problems that do exist. The actuaries might be the most knowledgeable about many pension topics but we are not the only adults in the room and actuaries are not the elected officials or labor/management board members given the power to make these calls.

So what do these alternative papers mean to me? At best they present an economic argument to not take risk but one which almost all trustees will soundly reject. At worst, it will be used politically by some to try to terminate public sector plans with greater damage being done. Even finding that some public plans that find themselves in trouble need to cut benefits or raise contributions does not provide a true comparison to the more common benefit leakage issues with the alternatives that are commonly proposed. But my real concern is that it takes energy away from dealing with some of the governance and risk problems we should all want to fix with the existing system.

So what are these problems? Certainly one is the natural desire to contribute to the plan as little as possible to maximize current spending on other taxpayer needs. While not always a bad thing, some forms this may take include (1) not contributing the full actuarially determined contribution, (2) using methods that hide the true cost of the plan often independent of the discount rate, and (3) lack of a complete risk management plan.

A complete risk management plan would, among other things, anticipate the problem that as the plan grows faster than payroll growth, the risk of larger contribution increases grows. Most board members look at investment risk focused on the investments' volatility. Many also look at long time horizon risks and may factor the plan liabilities and plan sponsor size into their long time horizon models. I believe that if more thought was put into this area, then trustees would decide that asset allocation policies need to become more conservative than most are today, since not having a plan to adopt more conservative allocations means taking on increasing risks over time. However, different policymakers will make different choices. Some labor trustees might opt for higher equity investments than management trustees, but almost none would likely opt for the insurance company approach.

The real questions are: (1) Who gets to decide how much risk can be taken? and (2) How do you measure and communicate that risk? The actuary does not get to decide how much risk can be taken. I also have my own article in the January 2017 *Pension Forum* on "Model Legislation for Better Public Plan Governance (vs. Risk Disclosure)." I wrote this in 2015 trying to deal with larger governance problems focused on not paying the actuarially determined contribution (regardless of the discount rate used). Yet even this idea has been soundly rejected by various groups. My *Pension Forum* article even suggests two sound uses on solvency-style liabilities. Being pragmatic, we need to try to focus on problems we agree on and that we think we can solve together. Where we have difficulty getting agreement with policymakers (e.g., changes in asset allocation to reflect plan maturity or simply paying the actuarially determined contribution), we as a profession should say more. However, a take-no-risk mandate is not what I would recommend since the down side of what we have now is not as bad as the alternatives others have proposed. ■



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ENDNOTES

- 1 The task force was disbanded in mid-2016 before a final paper was produced, but the working draft was briefly posted on the SOA website. It was a resource for several SOA-sponsored professional development events in 2016 and prior.

Financial Economics and Pension Plans

By Aaron Weindling

The pension actuarial community is engaged in an ongoing and vigorous debate about our valuation paradigms. Some—often described as representing “financial economics” or “FE”—believe that actuarial practice has been built on a flawed foundation. They argue that traditional actuarial analysis is at odds with the valuation practices of economists, and pension valuations do not properly reflect risk. The security of plan participants’ benefits has been severely jeopardized as a result. Others disagree. They assert that fundamental characteristics of pension plans render these criticisms inapplicable. Very long time frames, severe limitations on the ability to trade or settle pension obligations, and other important factors are not properly considered by the detractors’ arguments.

As those with jaded views of human nature might have predicted, a healthy exchange of views has sometimes devolved into an unproductive quarrel. Ironically, the two sides often seem unaware of what they are really arguing about. The FE model is uncontroversial as a theoretical construct. The disagreement relates to how these conclusions apply to pension plans in the real world and how they should therefore be reflected in actuarial practice.

The discussion recently reignited in the context of public pension plans, and that exchange catalyzed the creation of this essay. It addresses an important yet seldom-discussed underlying issue: the relationship between models and reality.

MODELS

The uneasy relationship between theory and practice is not specifically actuarial. Similar issues exist throughout the physical and social sciences. The topic is essentially philosophical in nature, and many of these thoughts have been motivated by entries in the online *Stanford Encyclopedia of Philosophy*. Even my clumsy and untrained attempts to consider these resources have been very rewarding, and interested readers are encouraged to consult them and the primary sources that they cite.

Models in their various forms have been used for millennia. These include physical objects (such as architectural models), analogies (such as relating atoms to billiard balls), and

mathematical constructs (such as the capital asset pricing model). They share the following elements:

- A model is used to represent a *target system*, the aspect of the real world under study. The target system of the FE models asserted in our actuarial exchanges is retirement systems.
- A model contains *idealizations*. These intentional simplifications of the target system allow for tractable analysis without the full complexity of the target system itself. Many of the idealizations in the FE-based actuarial models have been described as principles of economics, financial economics and public finance.
- A model is used for *surrogate reasoning* when conclusions developed within the model are applied to the target system itself. In our case, surrogate reasoning might lead a plan sponsor to fully fund the plan and allocate investments to liability-matching assets.

IDEALIZATIONS

There are at least two distinct kinds of idealizations. The first, sometimes called Aristotelian idealization, or isolation, simply strips out complexity that is considered irrelevant to the phenomenon of interest. An actuarial example might be disregarding participants’ favorite color when we perform valuations. Although a characteristic of the plan population, it doesn’t affect the benefit obligation. A second type is called Galilean idealization. This knowingly introduces distortions of the target system to the model. These could include simplifications about decrement timing, selection of optional forms, or the many other messy complexities that exist in the real world but are difficult to represent analytically.

Several objectives drive the idealizations in a model, including:

- Reasonably representing the phenomena of interest in the target system
- Constructing a model in which important conclusions can be derived
- Creating understandable dynamics that will advance the intuition of model users

Model users must assess how closely the idealizations correspond to the dynamics of the target system. This assessment is often subjective. After all, if there were a clear and universally agreed-upon understanding of how the target system worked, building the model may not have been necessary. Users must also understand how the idealizations were relied upon. Only then can they understand the extent to which different idealizations might have altered the model’s conclusions.

UNREALISTIC MODELS

Franco Modigliani and Merton H. Miller’s 1958 article, “The Cost of Capital, Corporation Finance and the Theory



of Investment,” asserted, among other things, that the capital structure of a firm does not affect its value. The model in which this was demonstrated is highly idealized; both the premises and this conclusion can be criticized as unrealistic. So how can this work represent such an important contribution? Miller reflected on this in his 1988 article, “The Modigliani-Miller Propositions After Thirty Years”:

Skepticism about the practical force of our invariance proposition was understandable. . . . But the view that capital structure is literally irrelevant or that “nothing matters” in corporate finance, though still sometimes attributed to us (and tracing perhaps to the very provocative way we made our point), is far from what we ever actually said about the real-world applications of our theoretical propositions. Looking back now, perhaps we should have put more emphasis on the other, upbeat side of the “nothing matters” coin: showing what *doesn’t* matter can also show, by implication, what *does*.

This more constructive approach to our invariance proposition and its central assumption of perfect capital markets has now become the standard one in teaching corporate finance.

In other words, Miller’s suggested use of the model does not assert that the conclusion is realistic. But if readers object to it, they must take issue with the model’s idealizations. Then the focus can shift to the idealized aspects that are considered implausible, what dynamic is believed to exist in the real world, and how this discrepancy would alter the model conclusions to inform appropriate real-world actions.

Highly idealized models in the physical sciences, sometimes called thought experiments or *gedankenexperiments*, have also been used extensively to explain important principles. Schrödinger’s cat is a famous example in quantum physics.

Here, too, a model does not need to closely resemble reality to be valuable. The appropriate use of such models is not direct surrogative reasoning. These models can be of great pedagogical value by establishing relatively simple base cases. They can identify the considerations that are most critical to formulating real-world conclusions. And they can inspire extensions of the initial work that de-idealize the initial model.

EMPIRICAL EVIDENCE

Gathering empirical evidence in support of a model’s conclusions can provide confidence in its use for surrogative reasoning. According to the scientific method, scientists are to establish predictions from a model and then conduct corresponding experiments in the real world. The model should be rejected if the experiments and observations are inconsistent with the assertions of the model. On the other hand, an ongoing failure to demonstrate a theory’s falsity provides it additional credibility. Although this approach may be common in the physical sciences, it is problematic in economics. The interplay of many complicating factors makes it difficult to experimentally isolate specific phenomena. Many economic models lead to statements such as “everything else being equal,” and everything else is never equal. Moreover, economic models often involve extensive idealizations. These considerations have led to specific criticism of economic models by philosophers of science.

And it is difficult to invent experiments that relate to applying financial economics principles to pension plans. The plans’ obligations are not traded on the capital markets and their valuations are not prepared according to FE principles. Such experiments would be extremely valuable to the actuarial community, should they be feasible.

Consider one common assertion from FE proponents. It takes various forms, but fundamentally states that trillions of dollars are exchanged based on the same FE model. This appears to provide promising support. Here is empirical evidence that the model can be successfully applied. Unfortunately, it does not stand up to more careful scrutiny.

Successful surrogative reasoning with a model does not make its idealizations true. They are false by definition. This even applies to the bedrock no-arbitrage principle that is so fundamental in financial modeling. As Emanuel Derman wrote in “Metaphors, Models & Theories”:

The law of one price is not a law of nature. It’s a general reflection on the practices of human beings, who, when they have enough time and enough information, will grab a bargain when they see one. The law usually holds in the long run, in well-oiled markets with enough savvy participants, but there are always short- or even longer-term exceptions that persist.

This is not necessarily a problem, as the relevant issue is the usefulness of the model rather than the independent and absolute truth of its idealizations.

Consider the simple mental model that I use to navigate when driving. It presumes that the earth is flat. This is false, yet the model has been exceptionally successful. Of the many times that I have gotten lost, none can be fairly attributed to the curvature of the earth. Yet my model's success does not prove that the earth is flat; it only demonstrates that the model can be a basis for surrogative reasoning.

Furthermore, the evidence cited must relate to the target system under consideration. The success of my model when driving does not make it advisable to use this model for a SpaceX flight. Evidence that a model can be successfully used for surrogative reasoning about financial instruments does not in itself prove it valid for application to public pension plans.

MULTIPLE MODELS

Scientists often use several models simultaneously, and philosophers of science generally agree that this is not problematic. For example, the National Weather Service uses three different models for its predictions. Wave-particle duality suggests that sometimes light behaves like a wave, while at other times it exhibits properties of particles. Notable instances of multiple models are used in chemistry, physics and other fields.

Peter Diamond's 2010 lecture for the Nobel Memorial Prize in Economic Sciences endorsed this practice. He said:

Too many economists take the findings of individual studies literally as a basis for policy thinking, rather than drawing inferences from an individual study, combining them with inferences from other studies that consider other aspects of a policy question, as well as with intuitions about aspects of policy that have not been formally modeled. Assumptions that are satisfactory for basic research, for clarifying an issue by isolating it from other effects, should not play a central role in policy recommendations if those assumptions do not apply to the world. To me, taking a model literally is not taking a model seriously. It is worth remembering that models are incomplete—indeed, that is what it means to be a model.

Our goal need not be to crown a single champion in competition among models. We should consider the implications of each approach, identifying and acknowledging their strengths and weaknesses.

CONCLUDING REMARKS

A greater appreciation of the nature of models and how they relate to the world will enable a more constructive exchange of views. Labeling financial economics “right” or “wrong” does not properly reflect the essence of models. The following practices would help to make the discussion both more civil and more productive:

- Advocates of applying a model based on financial economics should freely acknowledge its idealized nature. They should be prepared to discuss the validity of conclusions when the idealizations are not perfectly upheld. They should not claim that effective surrogative reasoning with similar models in financial markets proves it valid for pension systems.
- Opponents of applying this model should not criticize it simply because it is idealized. That is not a fault. In fact, heavily idealized models may still provide great insight. Such actuaries should also recognize that the current paradigm is itself based on a model; its many idealizations should also be explicitly discussed.
- All actuaries should renounce the polarization that now contaminates our consideration of financial economics. Recognizing the validity of a model for one purpose does not necessarily require discarding all other models for other purposes. The retirement system is far too complex to be fully and faithfully represented by any single model. ■



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A System to Evaluate and Compare Defined Contribution Plans

By Marc Des Rosiers and Dylan Porter

Employers in many sectors of the U.S. and Canadian economy have been moving from defined benefit retirement plans to defined contribution (DC) savings plans over the past 30 years. As reliance on DC programs increased, did the knowledge base of individual users—employees—keep pace?

Participants in these programs receive communications prepared by their employers about plan design and plan features. But how do participants obtain independent information on the effectiveness of a program? And how can a participant compare two programs from two different potential employers? Does a wide range of investment choices improve the expected income at retirement? Or is it better to join a plan with higher company contributions? How do you weigh the dizzying array of plan features against each other?

Who better to address these issues than retirement actuaries? Our training and experience are focused on building quantitative models to assess the likelihood of good and bad outcomes. But access to actuarial analysis has traditionally been limited to institutional entities such as employers or labor groups representing large numbers of employees. An individual employee must rely on information at hand, which too often is in the form of a glossy folder with large photographs and small words.

The Society of Actuaries (SOA) Pension Section Research Committee and researcher Marc Des Rosiers recently completed a project to address these needs: “A System to Evaluate and Compare Defined Contribution Plans.”

We were guided by two analogies as we set goals for this project:

1. When you buy a laundry washing machine, how do you know if it is expected to last two years or 20 years? You’re not a mechanical engineer, and even if you were it would be impractical to disassemble and examine each offered machine to see which is made of the best materials. Instead, you can read *Consumer Reports’* evaluation of your choices. There you’ll find a set of quantitative criteria describing features



and quality of a wide range of washing machines. You’ll make a more informed buying decision.

The DC Evaluation System we constructed enables potential employees to evaluate DC programs on a range of plan features, to assess and compare relative strengths and weaknesses among different plans.

2. When you visit the grocery store, how do you know which foods are the best nutritional choice? Instead of running food samples through your home chemical laboratory, you rely on the nutritional information panel. In a standard format, you see quantified calories, carbohydrates, vitamins and minerals. The buyer still must take the initiative to read and act on this information. And it can still be tempting to let your taste buds make bad choices! But at least information is accessible to enable buyers to improve nutritional outcomes.

The DC Evaluation System presents measures of employer contributions, plan fees, auto features and other metrics that can drive retirement readiness. Individual users will still need to make sound employment and savings choices, but it is our hope they may now do so with more information about the effectiveness of offered DC savings plans.

The tool and methodology from this project are designed to be used by an actuary to produce output that is accessible and understandable to DC savings plan participants.

APPROACH

In this project, we developed a framework to evaluate the value and effectiveness of a DC plan that highlights strengths and weaknesses and considers in the evaluation not only quantitative, but qualitative features.

The framework can be used to evaluate plan provisions on a stand-alone basis, as well as factoring in success measures for

existing plans. The value of each feature is arrived at by comparing a feature to the range of possibilities in a particular industry or the plan universe as a whole.

A report, spreadsheet and presentation are available for download.¹

As this is an emerging area of research, we tried to make the model as flexible as possible to allow for users to modify it for their own purpose and views. The model can be modified by changing the weight of individual features—or exclude them altogether.

Also, there is leeway in evaluating qualitative criteria depending on what is considered valuable. For example, a large menu of investment options may be desirable in some cases, but detrimental in others. The model allows the user to evaluate these features according to their own informed judgment.

OVERVIEW OF MODEL

The “value” of the plan is calculated as the weighted average value of each feature, and is a number between 0 and 100 percent. In other words, the plan value is arrived at using an objective function.

The objective function has two versions: one based on plan terms only, without regard to existing participant experience; and another, based on both plan terms and existing participant experience.

$$\text{Plan value} = (\text{Provisions}) \times w_1 + (\text{Adequacy}) \times w_2 + (\text{Other criteria}) \times w_3 + (\text{Plan success}) \times w_4$$

The sum of w_1 to w_4 is 1. All plan criteria are grouped under four main categories:

“Provisions” combines the value of features such as employer contribution levels, employer matching, investment fees and options, availability of retirement income solutions, vesting, eligibility, auto-enrollment and auto-escalation, and communications.

“Adequacy” provides a measure of the value provided by the plan to a career employee, based on expected replacement ratios, using a simplified calculation approach.

“Other criteria” includes items such as plan governance, investment monitoring and review process, risk management framework and compliance, and a host of other qualitative criteria for completeness.

“Plan success” is an evaluation of the participation levels and the appropriateness of participants’ investing, using a simplified approach to quickly determine the value.

While quantitative criteria use formulae for determining their value, qualitative criteria use a simple scale of “poor,” “fair,” “good,” “very good” or “excellent” that maps to values between 0 and 1.

ANALYTIC HIERARCHY PROCESS

The weights for the objective function are derived using the Analytic Hierarchy Process (AHP), a branch of operations research, invented by mathematician Thomas L. Saaty in the 1970s. AHP is a structured technique for organizing and analyzing complex decisions. This method ensures the importance of each criterion is consistent with each other.

Using AHP to calculate all the weights of the objective function is the “secret sauce” of the model. AHP is an application of linear algebra concepts, in particular “eigenvectors.” Interestingly, some of these linear algebra concepts are also used in Google’s PageRank algorithm!

Since there are so many criteria to combine together, determining weights intuitively introduces a subjective element that could lead to inconsistencies between criteria.

For example, suppose we have four criteria: A, B, C and D. Combining those needs consideration of the relative importance of all possible pairs: A and B, A and C, A and D, B and C, B and D, and C and D. This results in a two-dimensional matrix. Using AHP allows us to convert all these relationships to a one-dimensional vector. Moreover, the method provides tests for verifying the consistency of the weights derived with AHP.



SUMMARY

Our research proposed a methodology for quantifying the value of a DC plan, taking into account not only employer contributions and matching, but also plan design elements, such as auto-enrollment and auto-escalation, investment options, fees and other nonmonetary features.

This framework compares various plan features against a range of existing possibilities. The weights for the objective function use a structured approach to ensure consistency. The system can be used to compare one program with those of other employers in the same industry or geographical area.

This rating system is well-suited to highlight strengths or weaknesses of the programs under review and helps users compare programs using a rational approach.

The author and project team encourage interested practitioners to use the tool on an open source basis, and welcome suggestions for wider dissemination and improvements.

Marc Des Rosiers is lead researcher and author of this project. Dylan Porter initiated the project and led the SOA project oversight group. The project received excellent input from many contributors, who are acknowledged in the full project report. ■



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ENDNOTES

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