

THE

VOLUME 13 ISSUE 2

Actuary

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Understanding the long-term
financial challenges

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Legislative options to make the
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How much have Medicare Advantage organizations
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The Actuary is published bimonthly (February, April, June, August, October, December) by the Society of Actuaries, 475 N. Martingale Rd., Suite 600, Schaumburg, IL 60173-2226. Periodicals postage paid at Schaumburg, IL, and additional mailing offices. USPS #022-627.

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Tomorrow needs a plan today

BY RICHARD BERGER

My wife and I live in a private housing community in Northeast Pennsylvania, and I am a member of its board of directors. After the homeowners' association incurred significant costs to fix a valve on our dam, our cash reserves were very low and our board wanted to know how large our reserve funds should be. In order to have some credibility with our members, we decided to engage a consulting firm that specializes in reserve studies for homeowners' associations like ours. Our goal was to determine how much would be needed to maintain our capital assets over a 40-year period. The consulting firm presented a report that showed the need for a much larger reserve fund, and the board decided to raise dues to build adequate reserves for the long run.

Richard Berger, FSA, EA, MAAA, is retired after a 35-year career as a consulting actuary.

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Less than a month later, the members of our association met to vote on the budget, which included a dues increase of more than 40 percent. After a presentation by our consulting firm, followed by comments and questions from members, the new budget was passed by a wide margin. Despite the successful passage of the new budget, most members did not attend the meeting and did not understand and agree with the board's actions; only 15 percent of the membership heard the presentation and voted on

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the budget. Our educational campaign was a big success with those at the meeting, but it did not reach the majority who did not attend the meeting, many of whom remain convinced that our decision was not the right one.

Despite our community's small size and private nature, this episode illustrates some of the key problems of *public* finance. Beyond the annual give-and-take in the negotiation of the current year budget, governments need to look into the future, identify needs and plan for revenues to meet those needs. The first task is to identify what types of future expenditures need to be made. The second is to estimate the cost and timing of each of those expenditures. Finally, the sources of funds to support the expenditures must be identified and matched in amount and timing. Unfortunately, analysis is only the first step. Citizens must be educated, and the winners and losers must struggle to find a compromise.

The need for such analysis and planning is everywhere you look. Roads, water systems and electrical grids must be built, maintained and replaced. Pensions and retiree medical coverage for government workers are long-term obligations. Mandated programs providing income and health care for low-income residents must fit in state and federal budgets, this year and into the future. Some of these long-term problems are being monitored and analyzed, but many are not.

In this issue of *The Actuary*, we are fortunate to have a two-part analysis of a very large problem that is just around the corner in the United States. Sometime in the mid-2030s, Social Security will not have sufficient income to pay all scheduled benefits. Stephen Goss, the chief actuary for the U.S. Social Security Administration, outlines the long-term outlook of the OASDI (Old-Age, Survivor and Disability Insurance) system: how the problem developed and what the future would be without any changes. Our second article on Social Security provides a menu of options for dealing with the crisis, including changes to the benefits and increases in taxation. The author, Karen Glenn, is the acting deputy chief actuary for the U.S. Social Security Administration.

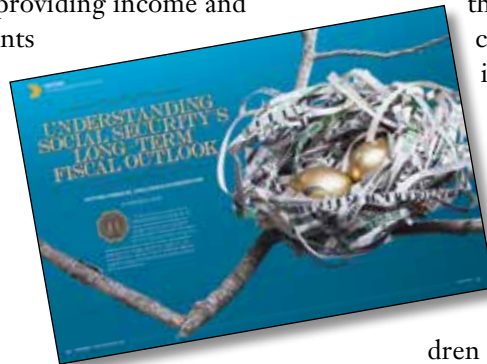
Awareness of Social Security and the retiree medical insurance program, Medicare, is widespread in the United States. Less well-known is a part of the Medicare program, Medicare Advantage (MA). Total Medicare spending was projected to be in excess of US\$600 billion for the fiscal year that just ended; the spending for MA participants was about a quarter

of the total, while the number of MA participants was 31 percent of total Medicare participants. Brad Piper and Julia Friedman of Milliman

have written an article about Medicare Advantage repayment rates and how the providers are coping with the reductions in such rates under the Affordable Care Act. Given the size of the Medicare program and MA's potential for controlling costs, this article provides some interesting information for consideration.

Some of our colleagues are working professionally to analyze the future and provide guidance to government programs. But most of us will become involved as workers and employers who may need to pay increased taxes, and as retirees who may have their benefits reduced. Our children, grandchildren and future generations will be affected by the decisions that will be made.

What can we do? In the case of Social Security, the pending shortfall will become a very large and contentious issue, as the winners and losers fight to maintain their positions. We can become involved by understanding the key factors causing the crisis and the options available to meet it. Then, we can spread the word, by writing or speaking, by informing the voters and their representatives. The key will be sticking to the facts and avoiding personal opinions (if that is possible). We can help prepare the ground so that when the eventual political battles begin, the combatants will at least be speaking the same language. ■





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BY CRAIG W. REYNOLDS

Craig W. Reynolds, FSA, MAAA, is president of the Society of Actuaries.

from the **PRESIDENT**

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Giving back by helping future actuaries

As president of the Society of Actuaries (SOA), one of the most enjoyable experiences is speaking with many different practicing actuaries from around the world. During these conversations, one idea consistently emerges: I often hear how grateful actuaries are for having chosen the actuarial profession.

Some of the reasons why include variety, challenge, opportunities to employ math and critical thinking skills, respect of peers, opportunities for growth and favorable compensation. We have earned these benefits with years of sweat equity—by staying in school, taking exams and working overtime to climb the corporate ladder. However, sometimes we forget the people who helped us get there. Isaac Newton once famously said, “If I have seen further than others, it is by standing upon the shoulders of giants.” We also can safely say, “If I have climbed higher, it is because I have been helped up by giants.”

Some of the giants who helped me along the way include:

- ❶ | My many great math teachers, most notably my Algebra II teacher, Terry Wuebke, who told me, “People who can do math can do anything.” This simple (and only mildly exaggerated) statement inspired me to pursue the study of mathematics.
- ❷ | My family, who inspired me and demonstrated an uncompromising work ethic, while providing me with the money and encouragement to pursue a top-notch college education.
- ❸ | Dennis Loring, an actuary who came to my college campus to recruit, who convinced me that the profession was worth pursuing.
- ❹ | The first job interviewers I encountered, who were patient with my ridiculously unprepared questions of the form, “So, what exactly is an actuary, anyway?”
- ❺ | All of the supervisors, peers and staff with whom I have worked, who have been patient with my foibles, conscientious in their teaching and supportive in my struggles.

We all have influential and impactful people in our lives—people who have given us a boost up or who held the light to illuminate the path ahead. I can continue to show my thanks in a tangible way by giving back to those who follow me. I encourage you to do the same.

What are some ways in which you can do so? Let me offer a few ideas:

- ❶ | When a high school or college student calls to ask about the profession, take a few minutes to talk to him or her. Or, even better, offer to let him or her job shadow you.

“Helping others grow and thrive within the profession takes only a few moments of your time, and it can make a lasting difference for them.”

- ② | If your local university has an actuarial club, offer to speak about actuarial work, participate in its online forums or attend networking events. (This is particularly important for women and underrepresented racial and ethnic minority programs.)
 - ③ | Visit your old high school or university to share your thoughts about the rewarding work that can be obtained with a degree in mathematics or actuarial science.
 - ④ | Help others—on LinkedIn, for example—by providing job-hunting advice or by critiquing a resume.
 - ⑤ | Volunteer to tutor students in mathematics at a local school. One key way to help our profession’s diversity challenges is to grow the pipeline of qualified candidates from other racial and ethnic groups.
- ⑥ | Take the time to talk to your coworkers who need career advice or insights on how to pass actuarial exams.

Of course, the best way we can give back is to be the best actuaries we can be. It is important to recognize the social responsibility that comes with this profession. Your work at all times must utilize assumptions and methodologies that are fair to all users of your actuarial work product. By doing this, you honor those who helped you get to where you are today.

Helping others grow and thrive within the profession takes only a few moments of your time, and it can make a lasting difference for them. Give back, to say thanks for all that has been given to you. ■

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A ROUNDUP OF NEWS FROM THE GLOBAL COMMUNITY

Whether you travel the world or never leave your home country, you are affected by global organizations, international requirements and the increasingly international nature of the actuarial profession itself. Here is some news from around the world.

SOA PRESIDENT IN INDIA

The Society of Actuaries (SOA) President Craig Reynolds, FSA, MAAA, attended the 18th Global Conference of Actuaries (GCA) Feb. 1–2 in Mumbai, India. Rajesh Dalmia, president of the meeting sponsor, the Institute of Actuaries of India, invited Reynolds to attend.

The 18th GCA included four plenary sessions and 15 concurrent sessions covering insights into issues relating to life insurance, general insurance, health insurance, pension and employee benefits, data sciences and enterprise risk management (ERM).

During his visit, Reynolds met with Dalmia and other leaders of the Indian actuarial profession. “India is a huge market with great potential for actuarial services. It is the second-most populous country in the world, and the seventh-largest economy,” Reynolds notes. “Rules have recently changed to allow foreign insurers to own up to a 49 percent share of Indian insurers, and many Western insurers are exploring this market.”

With about 300 fully qualified actuaries in India, Reynolds notes there is much work to be done to grow the profession in the area. “We will continue to seek out ways to support the Indian profession, meet the local market needs and serve our candidates in the region,” Reynolds concludes.



IAA MEETING IN RUSSIA

The presidential leadership of the SOA and its delegation plan to attend the International Actuarial Association (IAA) meeting May 25–29 in St. Petersburg, Russia.

The IAA holds meetings twice a year around the world to encourage the development of the global profession. These events also provide an opportunity for actuarial groups to network, discuss research projects and collaborate in new developments.

During their visit to St. Petersburg, the SOA representatives will take the opportunity to meet with The Actuaries Institute (AI) from Australia, the Institute and Faculty of Actuaries (IFoA) from the United Kingdom, the Institute of Actuaries of India (IAI) and the Chinese Actuarial Association (CAA).

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SELF-DRIVING CARS TO HIT THE STREETS IN 10 YEARS

Reduced congestion. Fewer accidents. Electric power cutting pollution. A new video clip from *Business Insurance* gives viewers a look at the driverless car and subsequent questions about customer adoption and regulation.

Developers say the public will see real deployment of self-driving vehicles in the early 2020s, with full volume deployment by 2025. Insurance leaders contend this time frame gives actuaries three to five years to collect the data required to develop pricing and determine how claims would affect insurers.

RELATED LINKS

Business Insurance Video

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Google Self-Driving Car Team

➔ for.tn/1QusVYh

Self-Driving Cars—Good for Seniors?

➔ bloom.bg/1oY2GiW

NEW DATA POINTS ON LONGEVITY

According to a recently published longitudinal cohort study in the online general medical journal *BMJ Open*, there can be reduced risk of premature death among retirees based on involvement with social groups. The study notes that people who maintained social interactions with groups after retiring had a lower risk of death in the six years following retirement. For instance, people with two social groups had a 2 percent risk of death, compared with a 12 percent risk for people who did not maintain social groups.

According to the Centers for Disease Control and Prevention (CDC), there is a longevity gap between the United States and other developed nations, due in part to deaths from car accidents, gun violence and drug use in the

United States. The 2012 average life expectancy in several developed countries was 78.6 years for men and 83.4 years for women. In the United States, the life expectancy was 76.4 years for men and 81.2 years for women.

RELATED LINKS

BMJ Open Cohort Study

➔ bit.ly/BMJcohort

CDC Data

➔ bit.ly/CDCinjuries

U.S. Longevity Gap

➔ bit.ly/USNewsLifeGap

THOUGHTS OF RETIREMENT? TRY THIS SOCIAL SECURITY CALCULATOR

In an attempt to keep workers from retiring and then discovering later that their Social Security benefits aren't stretching far enough, the Consumer Financial Protection Bureau (CFPB) launched a free tool that can help consumers calculate monthly benefits before they take the plunge into retirement, as reported in the *Chicago Tribune*.

RELATED LINKS

CFPB Calculator

➔ bit.ly/SSCalculator

Answers to Social Security Questions

➔ fw.to/Gr2MAmj

IBM, HEALTH CARE AND BIG DATA

The growing number of opportunities and developments with big data for health care is no surprise. Several publications wrote about IBM's purchase of Truven Health Analytics, how this deal will impact health insurers, and the possibilities with predictive analytics in this industry and other fields. Consider reading the Plain Talk letter from SOA President Craig Reynolds, FSA, MAAA, about why actuaries are the right experts to lead predictive analytics in health care.

Additionally, a recent survey of the property and casualty industry found that insurers plan to increase their usage of predictive analytics during the next two years.

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IBM Purchase

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IBM & Predictive Analytics

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SOA Plain Talk Letter

➔ bit.ly/SOAPAHealth

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IMPORTANT PANDEMIC RESEARCH FINDINGS

With risks and concerns surrounding Zika virus outbreaks, it's important to understand the likelihood of a pandemic coming to your area. Industry experts concur it's a viable possibility.

The SOA provides a wealth of information on extreme events, pandemics and related insurance. Arm yourself with important facts and visit the related links listed below.



RELATED LINKS

Extreme Events for Insurers: Correlation, Models and Mitigation Study

➔ bit.ly/SOAExtremeEvents

When Black Swans Aren't: Holistically Training Management to Better Recognize, Assess and Respond to Extreme Events

➔ bit.ly/SOABlackSwans

2014 Emerging Risks Survey

➔ bit.ly/SOAEmergingRisks

Potential Impact of Pandemic Influenza on the U.S. Health Insurance Industry

➔ bit.ly/SOAFluPandemic

Potential Impact of Pandemic Influenza on the U.S. Life Insurance Industry

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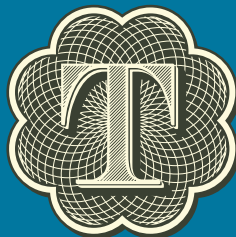
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UNDERSTANDING SOCIAL SECURITY'S LONG-TERM FISCAL OUTLOOK

PUTTING FINANCIAL CHALLENGES IN PERSPECTIVE

BY STEPHEN C. GOSS



The Social Security program faces a substantial financing challenge for the future, largely due to demographic changes that have been long known and understood. This article will explain the nature and reasons for this projected imbalance and provide context to better understand the implications for changes that will be needed. See “Preserving Reserves” on page 26 for an article that addresses legislative changes that have been considered to address the financing challenges.



Social Security is financed primarily with payroll taxes, which are invested daily into the trust funds, allowing payment of scheduled benefits from these trust funds. Because the program has no borrowing authority, the trust funds must maintain positive reserves. These reserves rise and fall when incoming revenue exceeds or falls short of outgo to pay benefits. Whenever the reserves begin to decline and approach depletion, Congress must act to make timely adjustments. Such adjustments in tax rates and scheduled benefit levels always have been made throughout the 80-year history of the program.

PROJECTED IMBALANCE BETWEEN SCHEDULED REVENUE AND COST

On a combined basis, the two Social Security Trust Funds, Old-Age and Survivors Insurance (OASI) and Disability Insurance (DI), ran

cash-flow surpluses (non-interest income exceeded expenditures) from 1985 through 2009. As a result, the combined OASI and DI Trust Fund reserves grew substantially, reaching more than 350 percent of the annual cost of the program, as shown in **FIGURE 1**. This growth was a direct result of the Social Security Amendments of 1983, which substantially improved the financial status of the program for decades into the future.

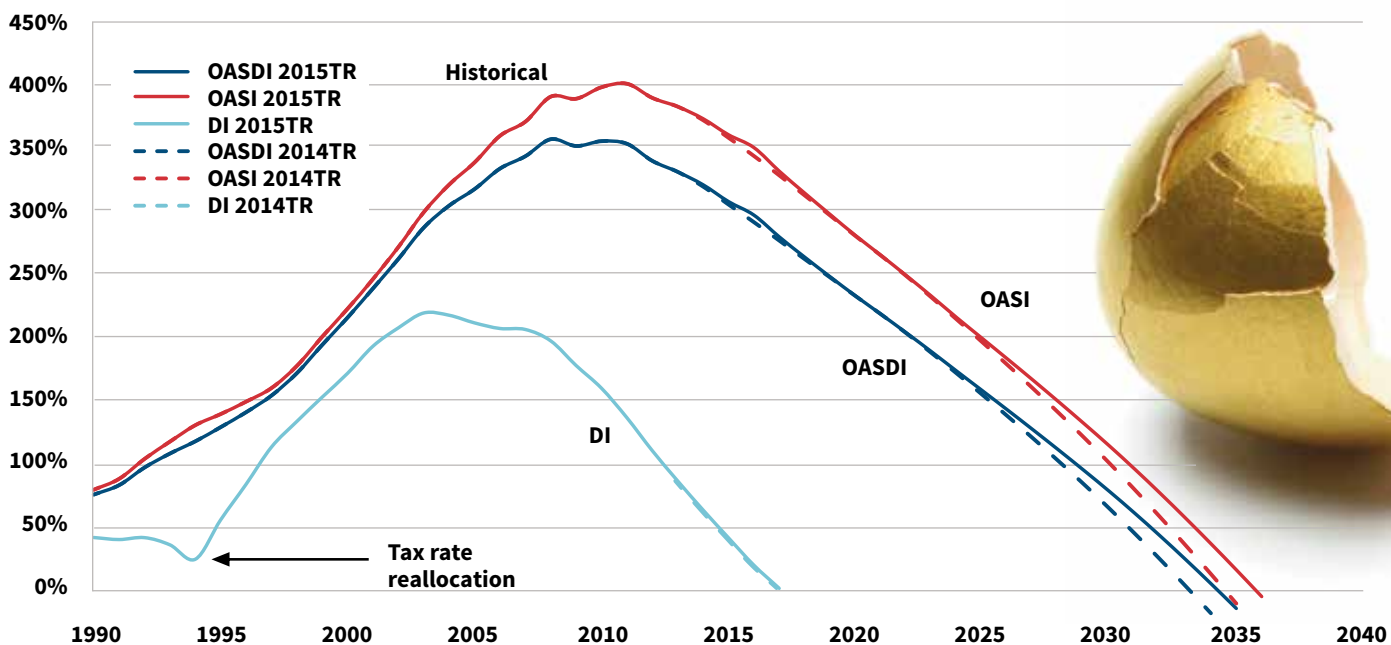
However, due to long understood and anticipated demographic trends, plus the recent recession, expenditures began to exceed non-interest income for the program in 2010. In the absence of legislative changes, expenditures will continue to exceed non-interest income, and by 2020 expenditures will exceed total income (including interest), requiring redemptions from the trust fund reserves in order to pay the scheduled benefits

in full and on time. Based on the intermediate assumptions of the 2015 OASDI Trustees Report, we project that the reserves of the combined trust funds will become depleted in 2034, at which point actual expenditures would be limited to the continuing income to the program. This is because the law does not allow the trust funds to borrow in order to finance scheduled benefit payments. **FIGURE 2** illustrates the reduction in expenditures that would be required starting in 2034 if Congress does not act to correct the imbalance for the entire Social Security program. In 2034, continuing tax revenue would be sufficient to cover 79 percent of the full scheduled benefits on a timely basis, requiring reductions or delays in benefit payments.

For the DI Trust Fund alone, reserve depletion was projected to occur much sooner, in December of 2016, until the recent passage of the



FIGURE 1 SOCIAL SECURITY TRUST FUND RATIOS (ASSETS AS A PERCENTAGE OF ANNUAL COST)



Source: Intermediate Projections from the 2014 and 2015 OASDI Trustees Reports

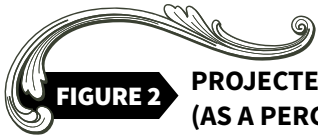
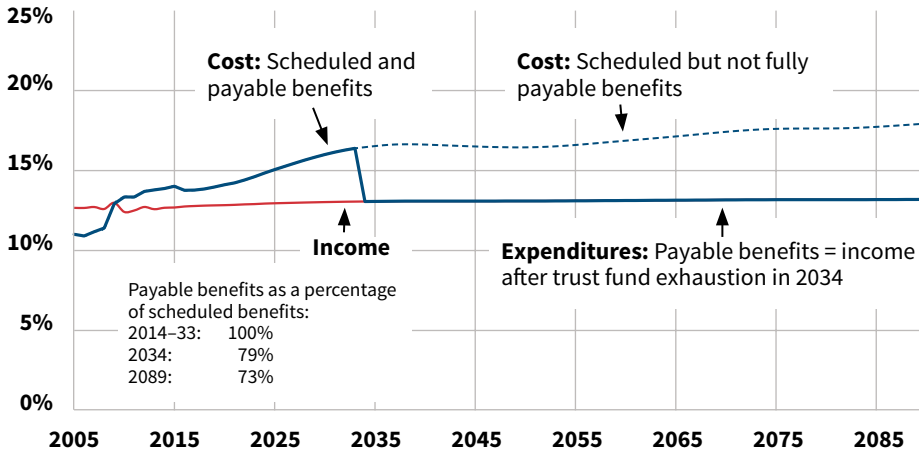


FIGURE 2 PROJECTED OASDI COST/EXPENDITURES AND INCOME (AS A PERCENTAGE OF TAXABLE PAYROLL)



Source: 2015 OASDI Trustees Report Intermediate Assumptions

Bipartisan Budget Act of 2015. This new law provides for a temporary reallocation of a portion of the OASI payroll tax to the DI fund. As a result, DI Trust Fund reserve depletion is now projected for mid-to-late 2022.

ADJUSTMENTS NEEDED TO REDUCE OR ELIMINATE THE IMBALANCE

Because the Social Security program (OASI and DI combined, or OASDI) is

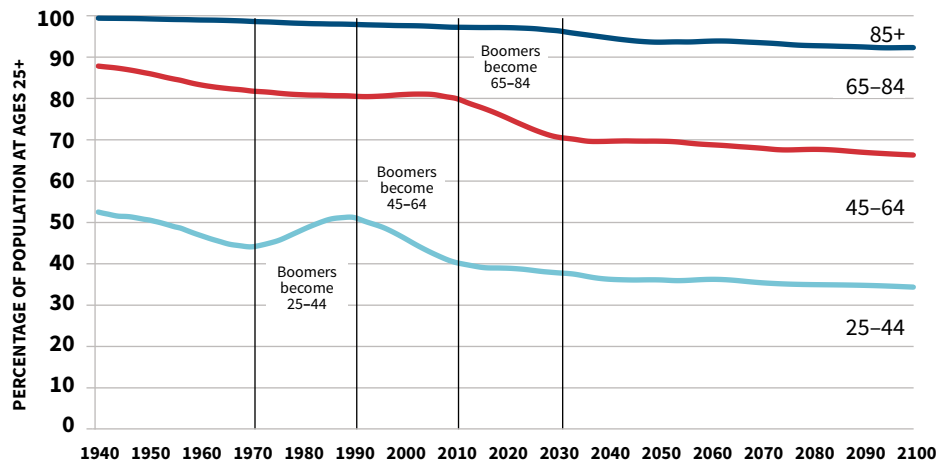
financed on a pay-as-you-go basis, the age distribution of the adult population is the most important determinant of the level of payroll tax needed to provide any desired benefit level.

FIGURE 3 illustrates that the share of the adult population that is over age 65 was essentially flat at 20 percent from 1970 until 2008. As the baby boomers (born in 1946 through 1965) move into retirement age, the share of the adult population over age 65 will grow to 30 percent. As a result, Congress will need to change the law to increase scheduled tax rates, decrease scheduled benefit levels or adopt some combination of these two solutions.

The changing age distribution also illustrates why DI cost as a percentage of payroll has grown between 1980 and 2010, but will stabilize in the future. The share of the working-age population (ages 25 to 64) that is over age 45, where disability prevalence is higher than at younger ages, has grown dramatically as the baby boomers have aged.



FIGURE 3 AGE DISTRIBUTION OF THE POPULATION AGE 25+, 1940-2100

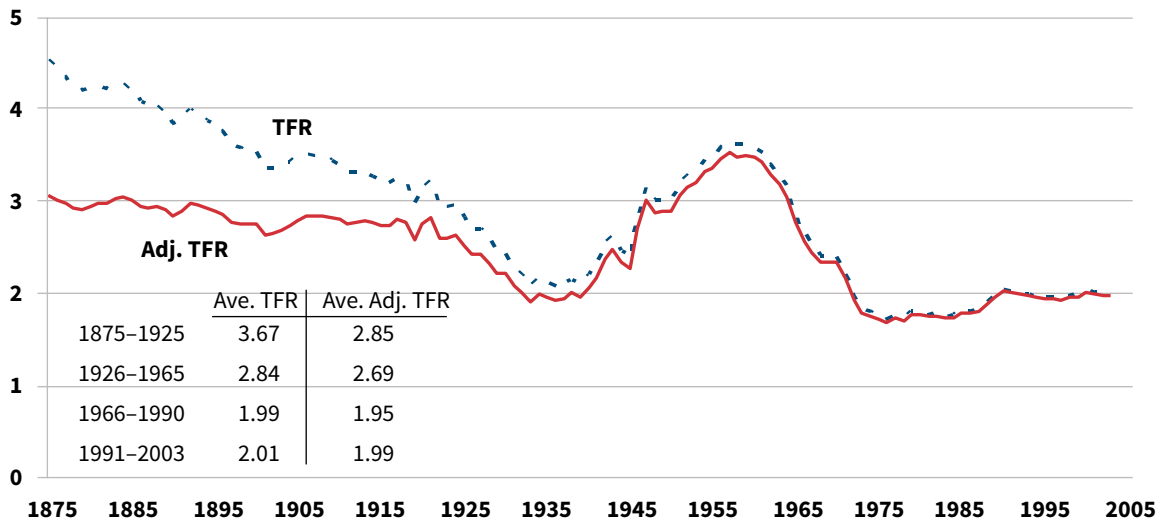


Source: 2015 OASDI Trustees Report



THE DRAMATIC CHANGE IN THE AGE FROM AN AVERAGE BIRTH RATE OF TO 2.0 CHILDREN PER WOMAN AFTER

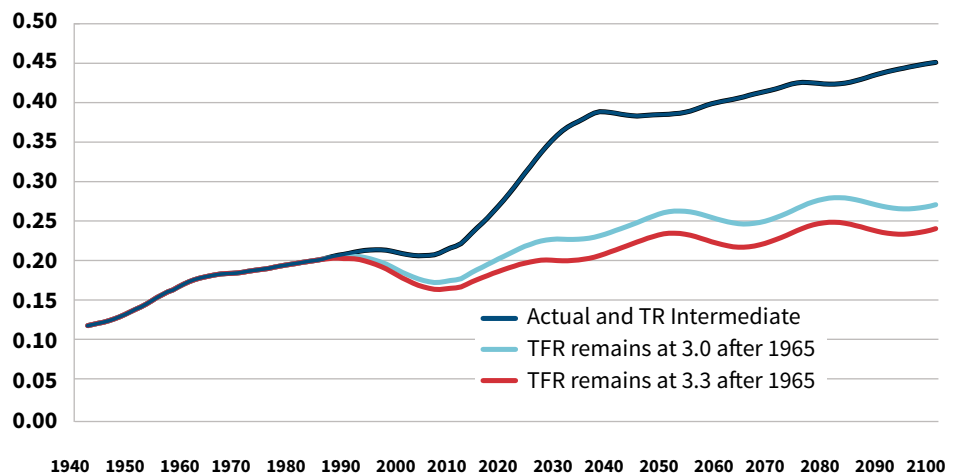
FIGURE 4 U.S. TOTAL FERTILITY RATE (TFR) WITH AND WITHOUT ADJUSTMENT FOR SURVIVAL TO AGE 10



Source: Unpublished data from the Office of the Chief Actuary, U.S. Social Security Administration

This aging of the population is largely due to the drop in birth rates that occurred after 1965, as shown in **FIGURE 4**. During the baby boom years, the average birth rate in the United States was 3.3 children per woman on a lifetime basis. In fact, adjusting for survival of children to age 10, the overall birth rate averaged nearly 3.0 children per woman from 1875 to 1965. The dramatic change in the age distribution reflects this drop from an average birth rate of 3.0 children per woman until 1965 to 2.0 children per woman after 1965. The effect is clear when we consider that in the future there will be two children of working age per retirement-

FIGURE 5 AGED DEPENDENCY RATIO OF THE POPULATION: 65+ TO 20-64



Source: 2015 OASDI Trustees Report and calculations from the Office of the Chief Actuary, U.S. Social Security Administration

DISTRIBUTION REFLECTS THIS DROP 3.0 CHILDREN PER WOMAN UNTIL 1965 1965.



age couple, rather than the three children there were in the past.

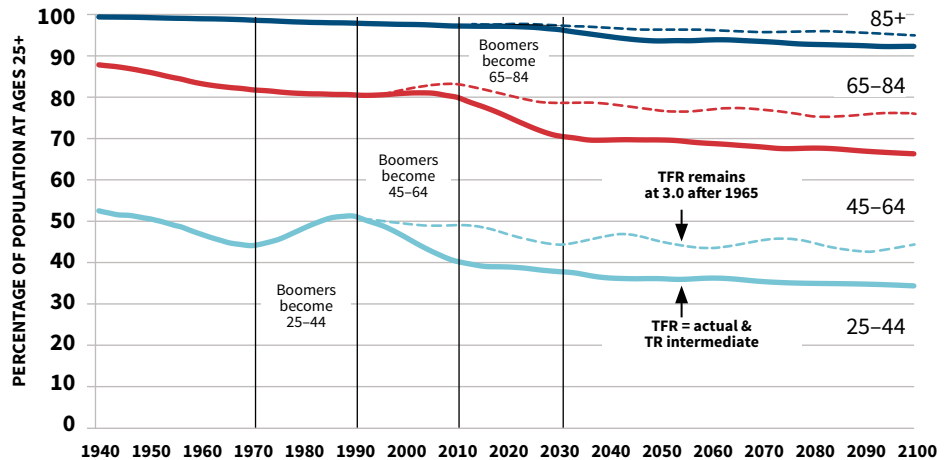
The effect of the drop in birth rate on the age distribution can be seen even more strikingly in the aged dependency ratio, which is the ratio of the population over age 65 to the working-age population between ages 20 and 64. If birth rates had remained at 3.3 or even 3.0 children per woman after 1965, the aged dependency ratio would not shift significantly over the next 20 years. The rise in the ratio due to reductions in death rates would be more gradual, and OASDI financial imbalances would be far lower. See **FIGURE 5** for reference.

Similarly, the overall changes in the age distribution of the adult population would have been far less dramatic if the birth rate had remained at 3.0 children per woman. The increase in the share of the working-age population most at risk for disability (those over age 45) between 1980 and 2010 would not have occurred. In addition, the dramatic increase in the share of the adult population over age 65 between 2010 and 2030 would not be occurring, as shown in **FIGURE 6**.

It is important to keep in mind that we would have different challenges if birth rates had remained high in the United States. We need to adjust our thinking from past concerns about overpopulation to the new reality of a sudden change in the age distribution of the population due to the drop in birth rates.

FIGURE 6

AGE DISTRIBUTION OF THE POPULATION AGE 25+, 1940–2100: WHAT IF THE BIRTH RATE (TFR) HAD REMAINED AT 3.0?

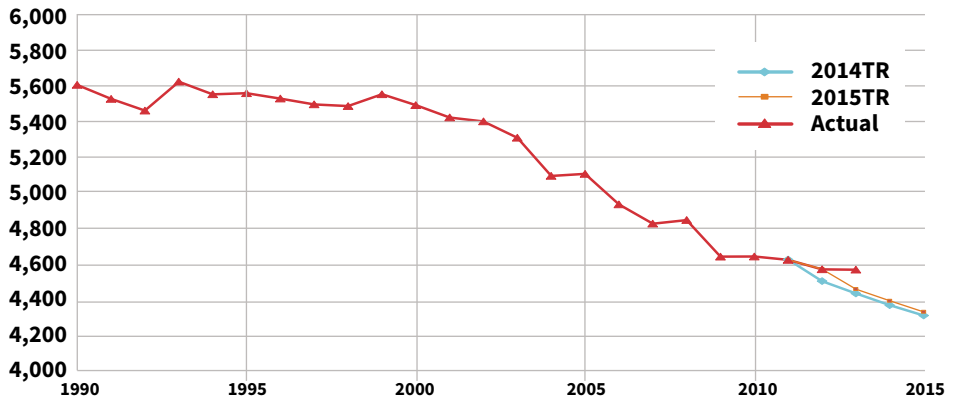


Source: 2015 OASDI Trustees Report and calculations from the Office of the Chief Actuary, U.S. Social Security Administration

FIGURE 7

MORTALITY EXPERIENCE: COMPARISON OF RECENT DATA AND NEAR-TERM PROJECTIONS

Age-sex adjusted death rates (ages 65 and older)



Source: 2014 and 2015 OASDI Trustees Reports

Remedying OASDI’s fiscal shortfall for 2034 and beyond will require a roughly 25 percent reduction in the scheduled cost of the program, a 33 percent increase in scheduled tax revenue or a combination of these changes. Adjusting the Social Security retirement age for changes in longevity—after the scheduled increase to age 67 is complete—would eliminate only about one-fifth of the shortfall over the next 75 years. Other adjustments to scheduled tax and benefit levels that address the changing age distribution will be needed.

Increases in longevity are difficult to project, and opinions vary. The Trustees’ projections for declines in death rates have been generally quite accurate. However, recent experience from 2009–2013 has shown little reduction in death rates, less than was assumed in recent Trustees Reports.

We will continue monitoring this trend carefully.

Note that the age-sex adjusted death rates in **FIGURE 7** on page 21 represent what the overall death rate would be at ages 65 and older, if the age-sex distribution of the population always stayed the same as it was in 2010. Such adjustment provides a pure indication of change in death rates, unaffected by changes in the age and sex distribution of the population.

IMPLICATIONS OF THE SOCIAL SECURITY IMBALANCE

From 1985 through 2009, when Social Security was building trust fund reserves, these reserves were invested in special-issue Treasury securities, as required by law. During that period, this trust fund investment meant that the Treasury Department needed to borrow less from the public than

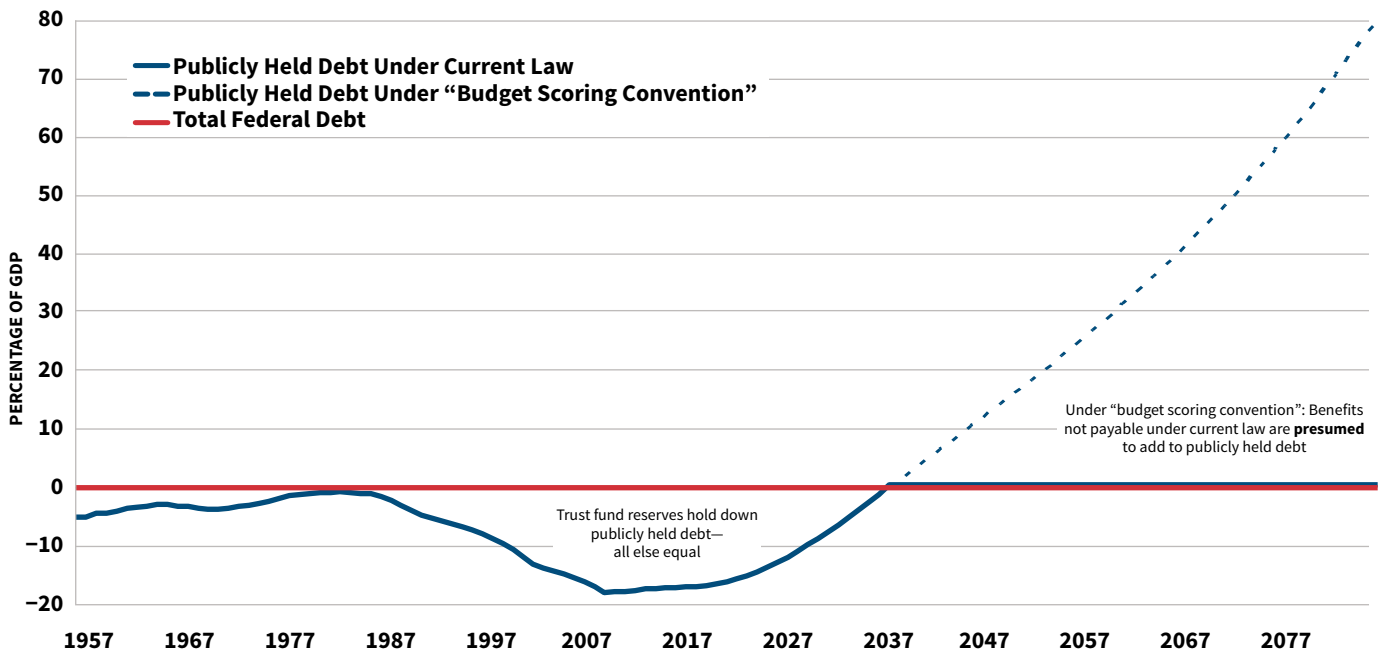
otherwise would have been required to cover the on-budget annual deficits. Currently the OASI and DI Trust Funds hold \$2.8 trillion in reserves, which are a portion of the roughly \$19 trillion in total federal debt subject to limit.

Between now and 2034, as the OASI and DI Trust Fund reserves are drawn upon to support full payment of scheduled benefits, redemptions of the reserves will mean that the Treasury will need to issue additional debt held by the public. However, the total publicly held debt in 2034 would be no greater than if the trust funds had not invested the \$2.8 trillion in Treasury securities up to this point.

A far more fundamental consideration is that the trust funds have no borrowing authority. As a result, either fund would be unable to pay full scheduled benefits once it has



FIGURE 8 SOCIAL SECURITY TRUST FUND EFFECT ON FEDERAL DEBT MEASURES: 1957–2085

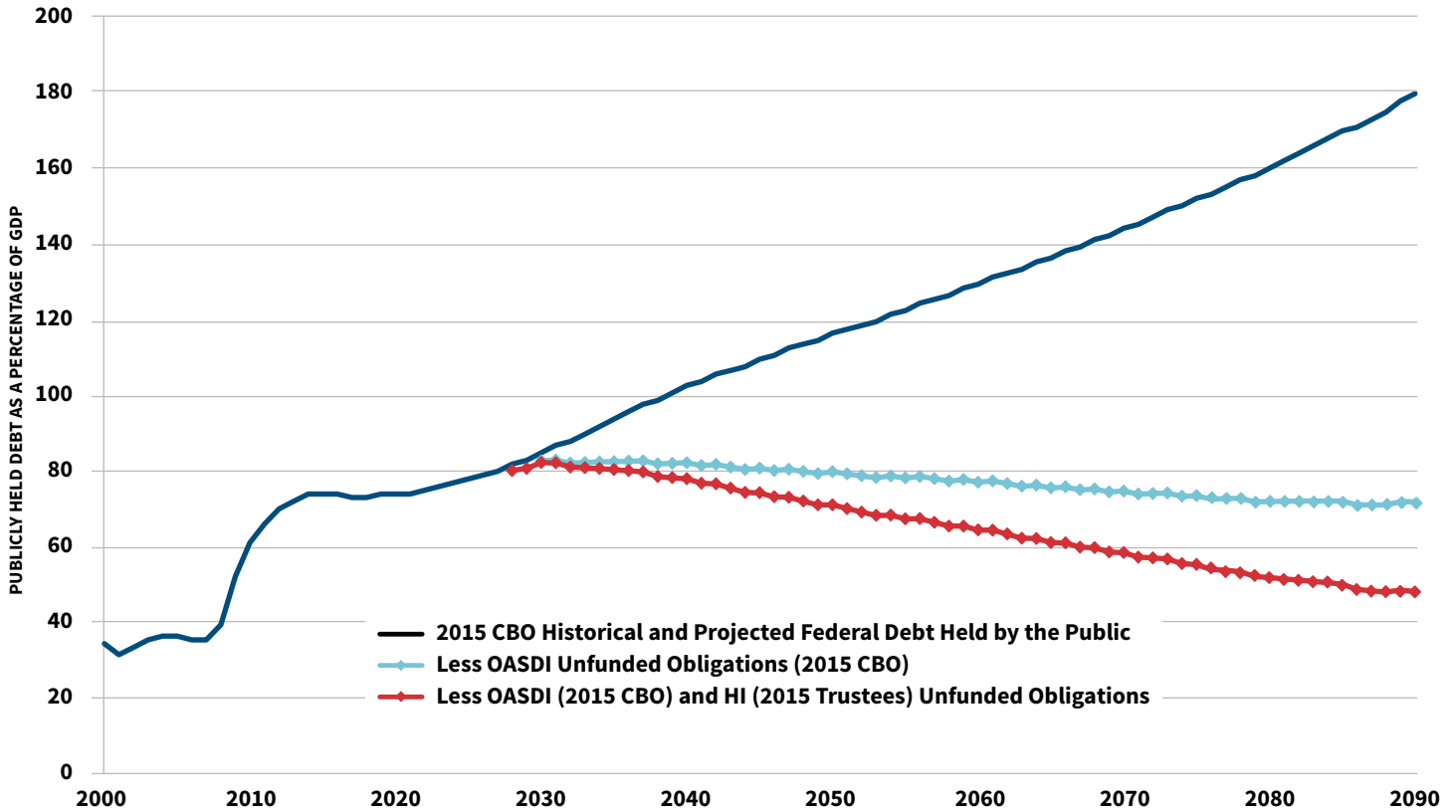


Source: 2010 OASDI Trustees Report Intermediate Projections



FIGURE 9

PROJECTED FEDERAL DEBT HELD BY THE PUBLIC: 2015 CBO BASELINE, ASSUMING OASDI AND HI UNFUNDED OBLIGATIONS ARE PAID BY BORROWING FROM THE PUBLIC VERSUS ASSUMING CURRENT LAW



Sources: 2015 Congressional Office Budget, 2015 OASDI Trustees Report

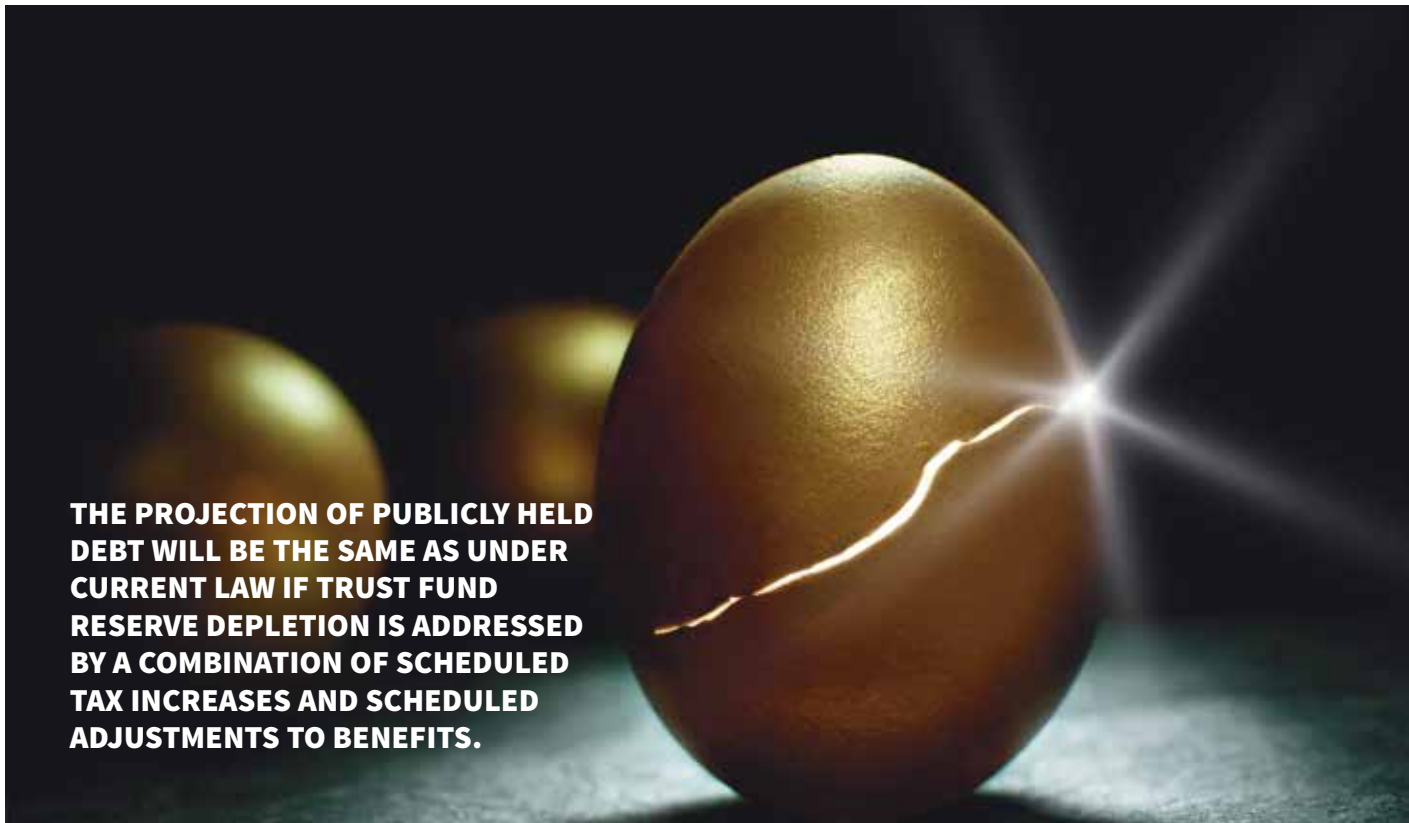
depleted its reserves. If the combined OASI and DI reserves were to deplete in 2034, then expenditures would be limited to continuing tax revenues for the program. This means that the trust funds cannot exert any pressure on unified budget balances after reserve depletion.

This is a critical point, because under the budget scoring convention used by the Congressional Budget Office (CBO) and the President's Budget, the OASDI program and the Medicare Hospital Insurance (HI) program are presumed to continue paying full scheduled benefits after reserve depletion, through transfers from the general fund of the Treasury

(see **FIGURE 8**). These presumed transfers are not permissible under the law, and there is no precedent in the history of these programs for addressing imbalances with transfers from general revenue. Any presentations of projected federal deficits and federal debt held by the public should be accompanied with a presentation showing what will happen under current law and what is consistent with all past experience—where shortfalls after trust fund reserve depletion have been eliminated with changes in scheduled tax rates and benefit levels. In either case, the trust fund has no effect on publicly held debt after reserve depletion.

For this purpose, **FIGURE 9** shows:

- The projected long-term level of federal publicly held debt in the 2015 CBO long-term baseline under the standard budget scoring convention;
- The projected level of publicly held debt, adjusted to not presume a change in law allowing automatic general revenue transfers to OASDI after reserve depletion; and
- The projected level of publicly held debt, adjusted to not presume a change in law allowing automatic general revenue transfers to OASDI and HI after reserve depletion.



The adjusted levels remove from the projection of publicly held debt the shortfalls for OASDI and HI after reserve depletion. This is an extremely important distinction, as the standard depiction of publicly held debt (shown in **FIGURE 9** from CBO) makes an implicit assumption that any OASDI or HI shortfall will be met by a *change in law* that would finance the shortfall with general revenue transfers, requiring massive additional borrowing from the public. This depiction is misleading because OASDI and HI shortfalls have *always* been met with changes in taxes or scheduled benefits that have not required general revenue transfers. Given that current law does not permit the general revenue financing presumed in the budget scoring convention, and that there is no precedent in the 80-year history of these programs for such funding, any

illustrations using the budget scoring convention should be qualified clearly.

We based the shortfalls for OASDI on data publicly available from CBO on its 2015 long-term projections. We based the shortfalls for HI on the Trustees' 2015 projections. By removing the presumed increases in publicly held debt for OASDI and HI after reserve depletion, we see that the projected publicly held debt, reflecting assumed operations of the rest of the federal government, actually declines substantially after 2030 and never reaches 100 percent of gross domestic product (GDP). The overall declining level of debt is notable. This means that the projected operations of the federal government—other than OASDI and HI—are projected to be in balance, or even surplus.

Members of Congress and the public should understand that

projected federal debt and budget deficits will not continue to increase under these assumptions, and will in fact decline if current law is followed for OASDI and HI. In addition, the projection of publicly held debt will be the same as under current law if, as has always occurred in the past, trust fund reserve depletion is addressed by a combination of scheduled tax increases and scheduled adjustments to benefits—and not by providing general revenue transfers that would necessitate large amounts of borrowing from the public. ■

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PRESERVING RESERVES

LEGISLATIVE OPTIONS TO CHANGE THE U.S. SOCIAL SECURITY PROGRAM IN ORDER TO MAKE THE PROGRAM SUSTAINABLE

BY KAREN P. GLENN

Editor's note: A summary of the provisions and financial effects discussed in this article can be found on the U.S. Social Security Administration's Office of the Chief Actuary website at bit.ly/SSPChanges.

The most recent actuarial valuation of the U.S. Social Security program shows that it faces financial shortfalls over the next 75 years.

The program's trust fund reserves are projected to begin declining in nominal dollars in 2020 and become depleted in 2034. Congress must make changes to the program before trust fund reserves are depleted in order to avoid sharp and immediate cuts in benefits to millions of Americans. Making adjustments sooner rather

than later would allow necessary changes to be phased in gradually, and would give workers and beneficiaries time to adjust to them.

The last time major legislative changes were made to the Social Security program was in 1983. At that time, a combination of revenue increases and benefit adjustments was used to close the projected financing gap. Most notably, the 1983 law:

- Expanded Social Security coverage to new federal employees, employees of tax-exempt non-profit organizations and certain other groups;
- Advanced scheduled increases in payroll tax rates and increased tax rates for self-employment income;

- Subjected the Social Security benefits of beneficiaries with income above specified levels to federal income tax; and
- Raised the normal retirement age (NRA) beginning with workers reaching age 62 in 2000.

Many policymakers have developed proposals and options to address the current long-range shortfall. These proposals cover a broad range of policy options that focus on both trust fund solvency and benefit adequacy. Each year, the U.S. Social Security Administration's Office of the Chief Actuary (OCACT) publishes a summary of these provisions and their financial effects on its website. Visit bit.ly/SSPChanges to view the summary.

SOCIAL SECURITY

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TRUST FUND RESERVES DEPLETED
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CONGRESS MUST MAKE CHANGES TO THE SOCIAL SECURITY PROGRAM BEFORE TRUST FUND RESERVES ARE DEPLETED TO AVOID SHARP AND IMMEDIATE CUTS IN BENEFITS TO MILLIONS OF AMERICANS.

action

DIG DEEPER ONLINE

The 2015 Old-Age, Survivor and Disability Insurance (OASDI) Trustees Report, officially called “The 2015 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds,” presents the current and projected financial status of the trust funds. Visit bit.ly/2015OASDIReport to download a PDF of the report.

Visit bit.ly/SSPChanges for the U.S. Social Security Administration’s Office of the Chief Actuary (OCACT) summary of the provisions and financial effects discussed in this article.

Provisions fall into several broad categories. This article sets out to describe and show the financial effects of selected sample provisions. For each provision, we provide the change in two key financial indicators:

- ❶ The *long-range actuarial balance* measures the financial status of the program over the entire long-range (75-year) period. Based on the intermediate assumptions of the 2015 OASDI Trustees Report, the current-law shortfall in the long-range actuarial balance is *2.68 percent of payroll*.
- ❷ The *annual balance in the 75th year* gives an indication of the yearly net cash flow at the end of the 75-year period. The current-law shortfall in the annual balance in the 75th year is *4.65 percent of payroll*.

FIGURE 1 on page 31 includes numerical results for all of the examples described in this article.

A. PROVISIONS AFFECTING COST-OF-LIVING ADJUSTMENT

These provisions modify the annual cost-of-living adjustment (COLA). Each year, Social Security benefits are increased based on the change in the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W),

calculated by the Bureau of Labor Statistics. There has been some debate in policy circles about the appropriate measure of CPI to use in calculating the COLA, as illustrated by the examples below.

Provision A3

Starting in December 2016, compute the COLA using a chained version of the CPI-W. We estimate this change would reduce the annual COLA by about 0.3 of a percentage point, on average. This provision is projected to decrease the shortfall in the long-range actuarial balance by 21 percent. (See the details for this and the other example provisions in **FIGURE 1** on page 31.)

Provision A6

Starting in December 2017, compute the COLA using the Consumer Price Index for the Elderly (CPI-E). We estimate this change would increase the annual COLA by about 0.2 of a percentage point, on average. This provision is projected to *increase* the shortfall in the long-range actuarial balance by 14 percent. Note that this provision would not help to close the funding shortfall; instead, it addresses concerns about the adequacy of benefits for older Americans.

B. PROVISIONS AFFECTING LEVEL OF MONTHLY BENEFITS

These provisions modify the formula used for calculating the basic Social Security monthly benefit, called the Primary Insurance Amount (PIA), including provisions that:

- Change PIA bend points and factors, or their indexing
- Change computation years, which are the number of years of earnings used in determining benefits
- Increase minimum benefits for targeted individuals, generally those with low earnings and long work careers
- Provide additional benefit increases for older beneficiaries

Provision B2.1

Beginning with those newly eligible for Old-Age and Survivors (OASDI) benefits in 2025, multiply the PIA factors by the ratio of life expectancy at age 67 for 2020 to the life expectancy at age 67 for the fourth year prior to the year of benefit eligibility. Unisex period life expectancies computed by OCACT would be used to determine the ratio. Disabled workers are: (a) not affected prior to NRA; and (b) subject to a proportional reduction in benefits, based on the worker’s years of disability, upon conversion to retired-worker beneficiary status. This provision is projected to decrease the shortfall in the long-range actuarial balance by 19 percent.

Continued on page 30



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Continued from page 28

Provision B6.1

Provide an additional 5 percent increase to the monthly benefit amount of any beneficiary who is 85 or older at the beginning of 2016, or who reaches his or her 85th birthday after the beginning of 2016. This provision is projected to increase the shortfall in the long-range actuarial balance by 4 percent.

C. PROVISIONS AFFECTING RETIREMENT AGE

These provisions modify:

- 1 | The NRA, the age at which individuals can retire and receive their full PIA;
- 2 | The earliest eligibility age (EEA), the age at which individuals can first begin receiving retirement benefits; or
- 3 | Both of the above.

Note that under current law, the NRA is age 66 for those born between 1943 and 1954 and is scheduled to increase gradually to age 67 for those born in 1960 and later. The EEA is age 62.

Provision C1.4

After the NRA reaches age 67, increase the NRA two months per year until it reaches age 69 for individuals attaining age 62 in 2034. Thereafter, increase the NRA one month every two years. This provision is projected to decrease the shortfall in the long-range actuarial balance by 38 percent.

D. PROVISIONS AFFECTING FAMILY MEMBER BENEFITS

These provisions modify the benefit amounts received by widows, widowers, spouses or children based on a worker's Social Security account.

E. PROVISIONS AFFECTING PAYROLL TAXES

Some of these provisions modify the current-law payroll tax rate of 12.4 percent (6.2 percent each for employees and employers). Others modify the contribution and benefit base (CBB), or taxable maximum, which limits the amount of earnings subject to payroll tax and credited for benefit computation.

Provision E1.1

Increase the payroll tax rate (currently 12.4 percent) to 15.3 percent in 2016 and later. This provision is projected to decrease the shortfall in the long-range actuarial balance by 103 percent (i.e., it will lead to a surplus).

Provision E3.1

Increase the taxable maximum so that 90 percent of earnings would be subject to the payroll tax (phased in 2016–2025). Provide benefit credit for earnings up to the revised taxable maximum. This provision is projected to decrease the shortfall in the long-range actuarial balance by 29 percent.

F. PROVISIONS AFFECTING COVERAGE OF EMPLOYMENT OR EARNINGS

These provisions extend or reduce the categories of workers or the amount of earnings covered under the Social Security system.

Provision F1

Starting in 2016, cover newly hired state and local government employees. This provision is projected to decrease the shortfall in the long-range actuarial balance by 6 percent.

G. PROVISIONS AFFECTING TRUST FUND INVESTMENT IN MARKETABLE SECURITIES

These provisions allow for the investing of a portion of the Social Security trust funds in marketable securities (e.g., equities or corporate bonds), rather than in special-issue government bonds, as required under current law.

H. PROVISIONS AFFECTING TAXATION OF BENEFITS

These provisions change the current rules for subjecting Social Security benefits to personal income tax. Under current law, beneficiaries with income above specified levels pay income taxes on their benefits. These taxes are credited to the Social Security and Medicare trust funds.

Provision H2

Starting in 2016, tax Social Security benefits in a manner similar to private pension income. Phase out the lower-income thresholds from 2016–2035. This provision is projected to decrease the shortfall in the long-range actuarial balance by 7 percent.

CONCLUSION

FIGURE 1 summarizes the financial effects of these selected example provisions on a stand-alone basis. These provisions, and the others listed at bit.ly/SSPChanges, may be combined to form a comprehensive proposal to restore trust fund solvency. However, it is important to note that individual provisions may interact with each other. Therefore, the sum of the shortfalls restored under the

FIGURE 1**ESTIMATED FINANCIAL EFFECTS OF SELECTED PROPOSED CHANGES TO THE SOCIAL SECURITY PROGRAM**

Proposed Provision	Provision Description	Change from Current Law as a Percentage of Payroll		Percentage of Shortfall Eliminated	
		Long-Range Actuarial Balance	Annual Balance in 75th Year	Long-Range Actuarial Balance	Annual Balance in 75th Year
A3	Compute the COLA using a chained version of the CPI-W.	0.55%	0.76%	21%	16%
A6	Compute the COLA using the CPI-E.	-0.38%	-0.53%	-14%	-11%
B2.1	For OASI benefits, index the PIA factors by life expectancy.	0.51%	1.69%	19%	36%
B6.1	Provide a 5 percent increase to the monthly benefit amount for those 85 or older.	-0.11%	-0.16%	-4%	-3%
C1.4	After the NRA reaches 67, increase the NRA two months per year until it reaches 69 and by one month every two years thereafter.	1.04%	2.21%	38%	48%
E1.1	Increase the payroll tax rate (currently 12.4 percent) to 15.3 percent.	2.76%	2.87%	103%	62%
E3.1	Increase the taxable maximum so that 90 percent of earnings would be subject to the payroll tax. Provide benefit credit for earnings up to the revised taxable maximum.	0.77%	0.63%	29%	14%
F1	Cover newly hired state and local government employees.	0.15%	-0.16%	6%	-4%
H2	Tax Social Security benefits in a manner similar to private pension income.	0.19%	0.15%	7%	3%

Current-law shortfall in *long-range actuarial balance* is 2.68 percent of payroll and in *annual balance in 75th year* is 4.65 percent of payroll. Estimates are based on the intermediate assumptions of the 2015 OASDI Trustees Report.

individual provisions may be different than the shortfall restored when the provisions are taken together as a whole proposal. As a result, further analysis is required in order to determine whether a proposal combining more than one provision is expected to achieve solvency throughout the 75-year period or beyond. ■

Karen P. Glenn, FSA, EA, MAAA, is acting deputy chief actuary, U.S. Social Security Administration.

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background

A FIVE-MINUTE GUIDE TO SOCIAL SECURITY BENEFITS

If you are unfamiliar with how benefits are calculated under the U.S. Social Security system, you may not understand the potential changes to the scheduled benefits. Here's a quick tutorial. For more detailed information, please visit ssa.gov/retire.

FUNDING OF THE SYSTEM

System benefits are funded primarily by payroll taxes. Employers and employees each pay 6.2 percent of earnings up to the contribution and benefit base (CBB). The CBB for 2016 is US\$118,500.

A smaller portion of the system's financing comes from taxes on Social Security benefits assessed to certain higher-income individuals.

WHO IS COVERED?

Almost all U.S. workers are covered by Social Security. Certain federal, state and local government employees are not covered.

CALCULATION OF BENEFITS

The official name for the system is Old-Age, Survivors and Disability Insurance (OASDI). This summary describes the calculation of the Old-Age benefit only. Rounding of actual benefits may be different than shown in the examples.

Normal Retirement Age (NRA) and Earliest Eligibility Age (EEA)

The NRA is the age at which unreduced retirement benefits are available. For those born before 1938, it is age 65. The NRA increases for those born after 1937, ultimately reaching age 67 for those born after 1959. If you start receiving benefits

before NRA, the benefit is reduced for the rest of your life: by 6.67 percent per year for each of the first three years before NRA, and 5 percent per year thereafter. If you delay starting benefits beyond NRA, benefits are increased by 8 percent per year up to age 70 to reflect the shorter expected payment period.

The EEA is the age at which individuals can begin receiving retirement benefits, currently age 62.

Average Indexed Monthly Earnings (AIME)

Earnings up to age 60 (limited by the CBB) are indexed to changes in the national average wage index (AWI). Earnings after age 60 are not indexed. The AIME is the sum of the 35 highest indexed years of earnings divided by 420. For those with fewer than 35 years of earnings, the AIME still is calculated using a denominator of 420.

Primary Insurance Amount (PIA)

The PIA is the basic monthly benefit that is payable when benefits begin at NRA. PIA is calculated using a three-segment formula. Under this formula a participant receives:

- 90 percent of AIME up to the first "bend point," which is \$856 for those reaching age 62 in 2016;

- 32 percent of AIME in excess of \$856 and up to the second bend point, which is \$5,157 in 2016; and
- 15 percent of AIME in excess of \$5,157.

The formula is designed to be progressive—that is, more favorable to lower earners. Here is an example.

Year of birth: 1954

NRA: Age 66

AIME: \$6,300

$$\begin{aligned} \text{PIA} &= 90\% \times \$856 + 32\% \times (\$5,157 - \$856) + \\ &\quad 15\% \times (\$6,300 - \$5,157) \\ &= \$770.40 + \$1,376.32 + \$171.45 \\ &= \$2,318 \end{aligned}$$

The PIA would be payable for benefits starting at age 66. If the participant elected to begin payment four years earlier at age 62, the PIA would be reduced by 25 percent and the monthly payment would be 75 percent of \$2,318, or \$1,739.

Indexing

The CBB, AIME and bend points are indexed based on the growth in the AWI. Benefits are indexed after retirement by an annual cost-of-living adjustment (COLA), based on changes in the Consumer Price Index.



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For Position 68529, our San Francisco client seeks an enterprise risk management actuary. Must have at least five years of risk management experience. FSA or ASA credentials preferred.

ILLINOIS – LIFE ACTUARY OR ANALYST

Life senior actuarial analyst or ASA actuary is sought by our Chicago client for Position 69290. Must have 2 to 8 years of life actuarial experience, including some modeling experience. Company supports actuarial exam progress.

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For Position 68876, a research and life modeling actuary is needed by a Charlotte, North Carolina organization. FSA or near-FSA with pricing, product development and reinsurance experience ideal.

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Prominent Tennessee actuarial consulting team is searching for a pension actuary for Position 69252. EA/FSA or EA/ASA with 10+ years of experience required. Position open due to anticipated business growth.

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For Position 69330, an Oregon client is searching for a pension actuary at the EA/FSA or EA/ASA level. Must have 8+ years of retirement consulting experience.

MINNESOTA – HEALTH ACTUARY

For Position 69082, a health actuary with pricing and product development experience is needed by our Minnesota client. FSA or ASA with 7 to 15 years of healthcare actuarial experience preferred. Organization will move quickly for stellar actuaries.

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For Position 69027, our Tennessee client seeks a healthcare data scientist with machine learning experience. Ph.D. or Master's degree ideal. Must have at least three years of machine learning hands-on analytics experience. Must have experience with statistical analysis of health data.

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Our New Jersey client has asked Ezra Penland to find a health actuary with pricing experience for Position 80040. FSA/ASA with 4+ years of pricing experience ideal. Medicare experience a plus.

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For Position 69105, a Philadelphia-area practice is looking to hire a health consulting actuary. FSA or ASA with health insurance pricing and reserving experience sought. Must have 8 to 15 years of experience. Consulting experience not required. Compensation up to \$160K.

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For Position 69131, a health and welfare consulting actuary is needed by our Ohio client. FSA or ASA with 10+ years of experience preferred.

ILLINOIS – LIFE AND HEALTH CONSULTING

For Position 69035, a life and health consulting actuary is sought in Chicago. FSA with long term care actuarial experience preferred. Consulting experience is not required.

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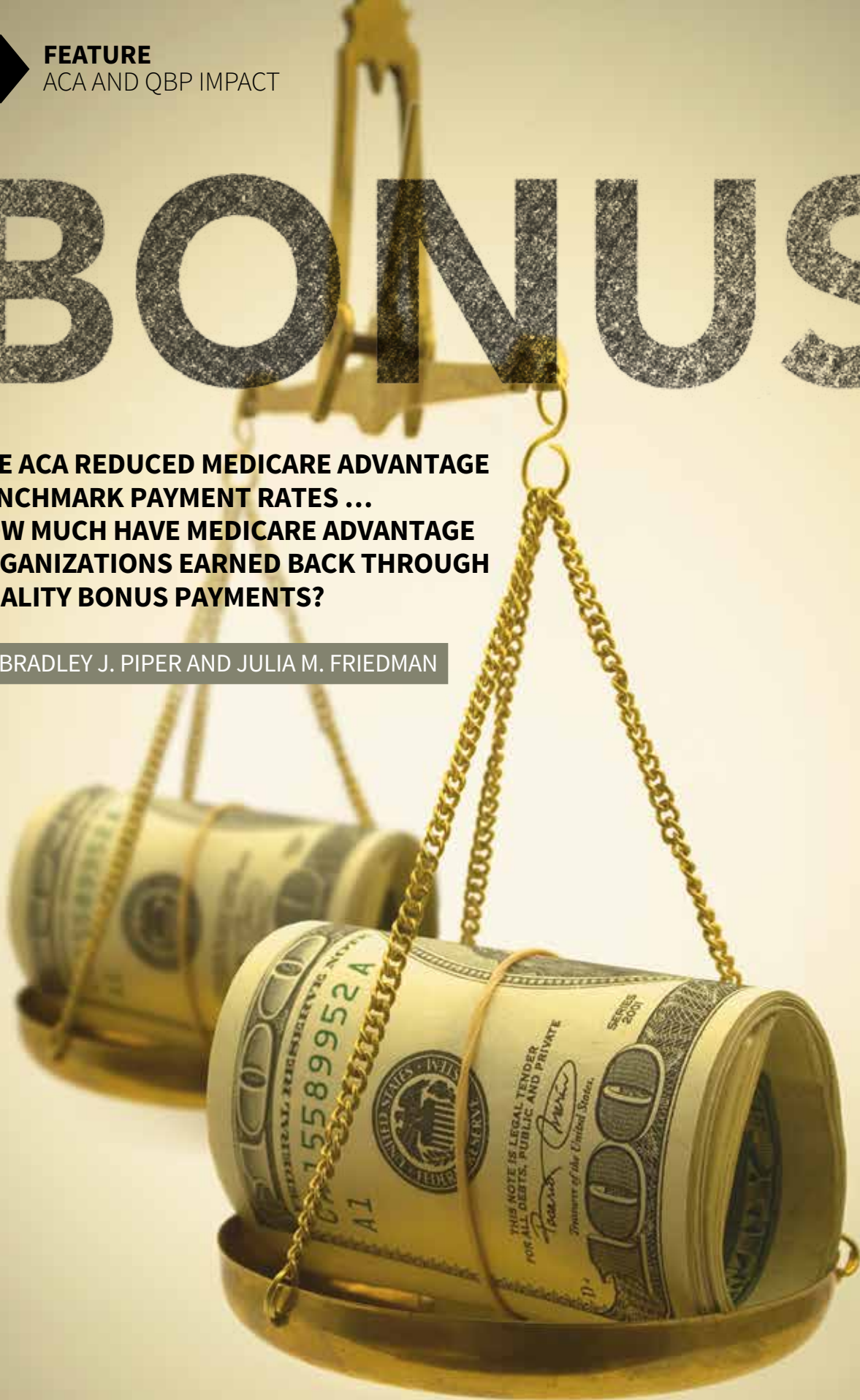
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THE ACA REDUCED MEDICARE ADVANTAGE BENCHMARK PAYMENT RATES ... HOW MUCH HAVE MEDICARE ADVANTAGE ORGANIZATIONS EARNED BACK THROUGH QUALITY BONUS PAYMENTS?

BY BRADLEY J. PIPER AND JULIA M. FRIEDMAN



A

As most are aware, the passage of the Patient Protection and Affordable Care Act (ACA) had a significant impact on the health insurance market in the United States.

The Medicare Advantage market was no exception, as the law reduced benchmark payment rates to health plans sponsoring Medicare Advantage plans. The Medicare Advantage (MA) program allows private insurers (as opposed to the federal government) to provide Medicare-eligible individuals (generally U.S. citizens over age 65, as well as some disabled citizens) with traditional Medicare benefits (and, often, benefits that are better than traditional Medicare benefits) as an alternative to traditional Medicare.

As background, traditional Medicare is a public health care program funded in part by the federal government, payroll taxes and member premiums, whereby Medicare-eligible individuals are provided health insurance coverage. The government created MA to allow for managed care in the Medicare framework and to put the onus on health plans to achieve cost-reducing efficiencies within the Medicare market. The MA program charges the health plans with improving care for members through better management of care, more individualized attention, community supported programs and by offering enhanced benefits that are aligned more closely with their members' health care needs. Most plans also offer pharmaceutical coverage, or Part D.

As a testament to the popularity of the MA program, MA enrollment in 2015 grew by 7 percent compared to 2014 enrollment, and its 16.8 million beneficiaries represented about 31 percent of the total Medicare-eligible population in 2015.¹ This article explores how deeply the ACA reduced the MA benchmark payment rates and quantifies how much of that reduction Medicare Advantage Organizations (MAOs) earned back through quality bonuses.

THE RESULTS

The implementation of the ACA reduced the benchmark payment rate for each county (ignoring annual trend). This began in 2012 and occurred over a two-, four- or six-year

time frame, depending on the size of the reduction (counties receiving the largest reductions are being phased in over a six-year period). Thus, today's 2016 benchmark payment rates include a reduction that is either fully phased in (for two-year and four-year counties), or five-sixths phased in (for six-year counties). As of 2017, the reductions will be fully phased in, and in 2018 and beyond, annual benchmark payment rates are scheduled to trend at the same rate as expected Medicare cost (i.e., revenue trend and cost trend generally are expected to be the same).

The benchmark payment rate is the maximum amount per member per month (PMPM) the Centers for Medicare and Medicaid Services (CMS) is willing to pay an MAO to provide traditional Medicare benefits. By reducing the benchmark payment rate, the ACA reduced the amount of revenue each MAO received. Based on calculations outlined in this article, the nationwide aggregate 2015 benchmark payment rate amount was 9.3 percent lower than the corresponding nationwide aggregate benchmark payment rate amount using 2015 pre-ACA payment rates (i.e., the 2015 payment rates if the ACA had not been implemented). This 9.3 percent reduction corresponds to nearly an \$80 PMPM decrease in the 2015 benchmark payment rate amount (on a nationwide basis, assuming a 1.00 risk score).

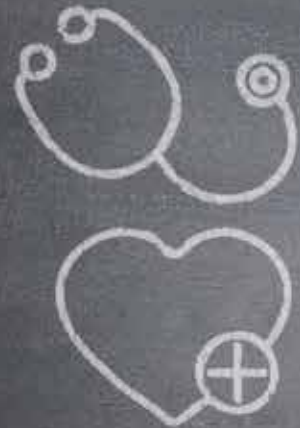
However, at the same time, the ACA also introduced quality bonus payments (QBPs). QBPs are additional bonus payments MAOs can earn if they achieve high scores on a variety of quality metrics (commonly known as the MA star rating). MAOs use these additional bonus payments to offer enhanced benefits to their beneficiaries. For 2015, MAOs achieving a high star rating (4.0 or above) received a 5 percent add-on to the benchmark payment rate for each county. On the other hand, MAOs achieving a lower star rating (3.5 or less) earned no additional revenue bonus in 2015. Organizations that are new to the MA program and organizations with enrollment that is too low to be assessed a star rating are awarded a QBP of 3.5 percent. Based on calculations outlined in this article, the QBPs allowed MAOs to increase the nationwide aggregate 2015 benchmark payment rate amount by roughly 2.5 percent,

“While the ACA did reduce the benchmark payment rates, many MAOs are meeting the criteria in the quality bonus program to recoup some of the lost revenue.”

or about \$21 PMPM, relative to what the benchmark payment rate amount would have been had all MAOs received a 0 percent QBP.

These calculations indicate that while the ACA did reduce the benchmark payment rates, many MAOs are meeting the criteria in the quality bonus program to recoup some of the lost revenue.

FIGURE 1 indicates the distribution of 0 percent, 3.5 percent and 5 percent QBPs.



We also summarized the results by region (**FIGURE 2**) and organization size (**FIGURE 3**) to understand if there were regional and/or size-based differences in the results.

As shown in **FIGURE 2**, Puerto Rico incurred the greatest benchmark payment reduction due to the ACA implementation. Further, Puerto Rico experienced almost no improvement via the QBP program. The results for other regions differ substantially from those for Puerto Rico, but generally are similar to each other.

As **FIGURE 3** illustrates, results do not differ significantly by organization size, though small organizations, on average, realized a modestly smaller

FIGURE 1 DISTRIBUTION OF 0 PERCENT, 3.5 PERCENT AND 5 PERCENT QBPs

Measure	0% Bonus Payment	3.5% Bonus Payment	5% Bonus Payment
Based on contracts	42.1%	28.9%	29.0%
Based on members	45.6%	3.2%	51.2%

FIGURE 2 IMPACT OF ACA AND QBP BY REGION

Region	Benchmark Payment Reduction Due to ACA	Benchmark Payment Earned Back Due to Bonus Payment
Nationwide	9.3% (\$79.21) PMPM	2.5% (\$21.06 PMPM)
South	9.8% (\$86.85) PMPM	1.8% (\$16.03 PMPM)
Midwest	6.7% (\$53.38) PMPM	3.1% (\$24.78 PMPM)
Northeast	9.6% (\$83.13) PMPM	2.5% (\$21.78 PMPM)
West	9.3% (\$80.11) PMPM	3.3% (\$28.21 PMPM)
Puerto Rico	14.8% (\$90.84) PMPM	0.0% (\$0.14 PMPM)



BONUS\$

decrease in the benchmark payment rates and smaller bonus payments.

The Medicare Advantage market experienced terminations and consolidations of health plans year over year due in part to the increased pressure of the reduced MA benchmark payment rates and their effect on the viability of specific health plans. However, health plans also are entering the market each year, so a pure exodus out of MA is not necessarily the case. Health plans are finding ways to improve the cost and revenue relationship through reduction of administrative expenses, increased member premiums, improvement in star ratings and engaging providers to

FIGURE 3 IMPACT OF ACA AND QBP BY ORGANIZATION SIZE

Size	Benchmark Payment Reduction Due to ACA	Benchmark Payment Earned Back Due to Bonus Payment
All	9.3% (\$79.21 PMPM)	2.5% (\$21.06 PMPM)
Jumbo (at least 250,000 members)	9.2% (\$79.25 PMPM)	2.2% (\$19.25 PMPM)
Large (50,000–250,000 members)	9.8% (\$80.26 PMPM)	2.9% (\$24.08 PMPM)
Medium (5,000–50,000 members)	9.1% (\$77.25 PMPM)	3.0% (\$25.52 PMPM)
Small (fewer than 5,000 members)	8.5% (\$71.86 PMPM)	1.6% (\$13.23 PMPM)

enter shared-risk arrangements (such as capitation rates), to name a few ways.

PAYMENT RATES ARE NOT THE ONLY COMPONENT OF MAO REVENUE

To be clear, this article compares various benchmark payment amounts under different scenarios. This article does not comment on the *actual* CMS revenue changes to MAOs because:

- Actual revenue paid to MAOs is not the same as the benchmark revenue amount. As noted earlier, the benchmark revenue amount is the maximum amount CMS is willing to reimburse an MAO for providing traditional Medicare benefits. However, through the Medicare Advantage bidding process, MAOs submit their estimates (i.e., their bids) for how much traditional Medicare benefits would cost to provide. For nearly all MAOs, the bid amount is less than the benchmark revenue amount. In these cases, CMS pays the MAO its bid amount plus a percentage of the difference between the bid and the benchmark. This difference (known as the Part C rebate) then is used by the MAOs to enhance the benefits offered to the member. Because 2015 bid amounts are not public information, we did not evaluate the “true” revenue paid to MAOs, but rather focused only on the benchmark revenue.
- Actual revenue is risk-adjusted, meaning an MAO that enrolled a higher-risk population would, in theory, capture higher member risk scores and thus would receive larger revenue payments. Because MAO-specific risk score information is not publicly available, we also did not attempt to risk-adjust our analysis. Instead, we assumed a 1.00 risk score for all MAOs, given we are measuring benchmark payment rate relativities.
- Many MAOs also provide Part D (pharmacy) coverage and, as a result, receive Part D revenue from CMS. Part D revenue payments were not considered as part of this analysis.

PUBLICLY AVAILABLE CMS DATA WAS USED IN THIS ANALYSIS

Our analysis used information published by CMS. Specifically, we relied on the following:

- September 2015 MA membership by county and MAO contract. For purposes of this analysis, we excluded

enrollment in the following plan types: employer group waiver plans (EGWPs), prescription drug plans (PDPs), cost plans and Medicare-Medicaid plans (MMPs). We also excluded American Samoa, Guam, the Northern Mariana Islands and the Virgin Islands.

- 2014 star ratings (which impact 2015 benchmark payment rates) for each MAO contract.
- Four different 2015 benchmark payment rates for each county:
 - ❶ The pre-ACA rate
 - ❷ The post-ACA rate with a 0 percent quality bonus
 - ❸ The post-ACA rate with a 3.5 percent quality bonus
 - ❹ The post-ACA rate with a 5 percent quality bonus

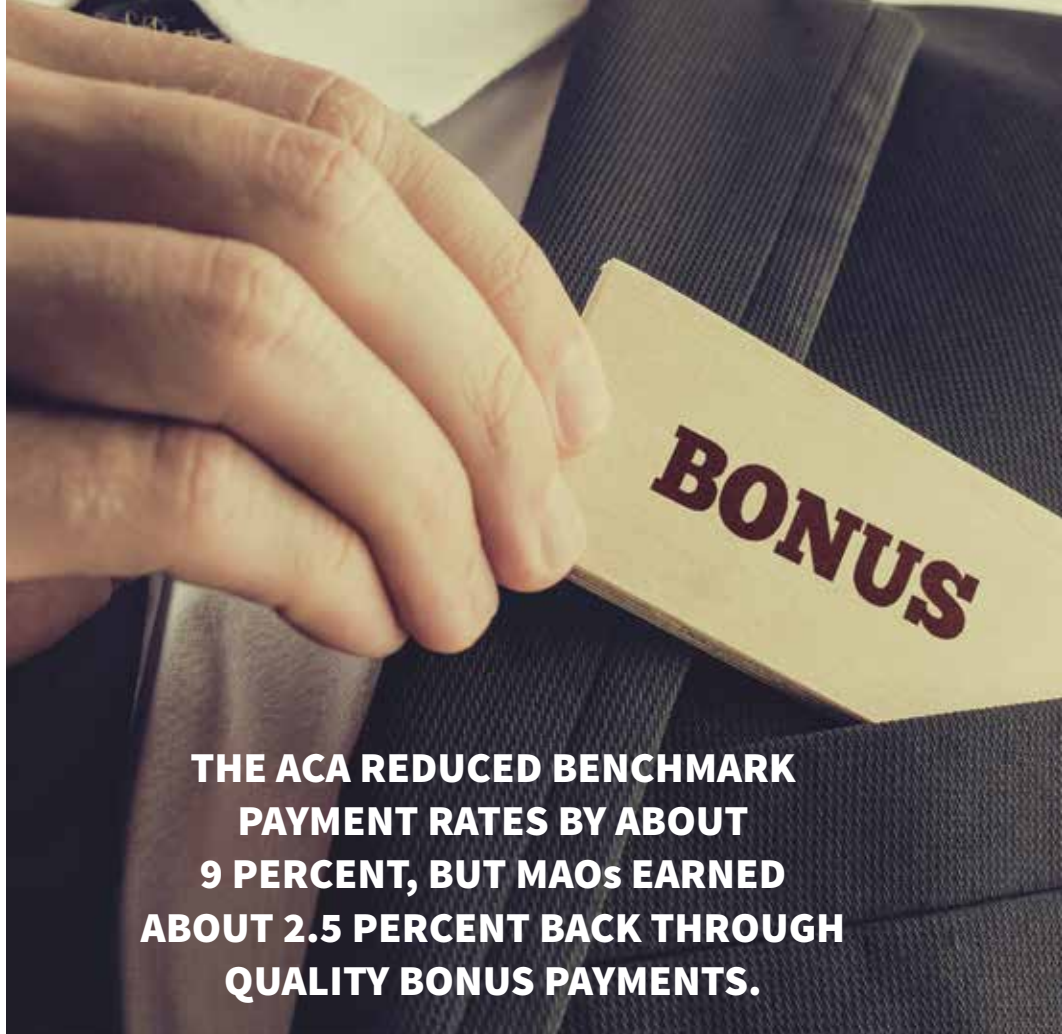
METHODOLOGY

To calculate the magnitude at which the ACA reduced the 2015 benchmark payment rates, we first calculated the aggregate monthly benchmark revenue payment using the pre-ACA rate (i.e., the county-specific benchmark revenue rates if the ACA never had been implemented). This was calculated by multiplying the September 2015 MA membership in each county by each county’s PMPM pre-ACA benchmark payment rate (assuming a 1.00 risk score). We then summed across all counties to achieve a nationwide amount for September 2015.

Next, we calculated the aggregate monthly benchmark revenue payment using the post-ACA rate with a 0 percent quality bonus. This approach is the same as above, but swaps the pre-ACA rate for the post-ACA 0 percent quality bonus rate in each county. This calculation indicates the nationwide aggregate post-ACA benchmark payment rate amount (at a 0 percent QBP) is 9.3 percent lower than the nationwide aggregate pre-ACA benchmark payment rate amount.

We then calculated a third value—the nationwide aggregate post-ACA benchmark payment rate amount, inclusive of the actual QBP each MAO earned. As mentioned earlier, CMS publishes benchmark payment rates at each of the QBP levels (0 percent, 3.5 percent and 5 percent) for each county. These published rates reflect the payment rate limits imposed by the ACA (which can lower, or even entirely eliminate, the QBP depending on the county).

By using published CMS data, we further stratified the MA membership by county and by QBP. That is, for each county, we identified the number of members enrolled in MAOs earning a 0 percent bonus, 3.5 percent bonus and 5 percent bonus. With the membership stratified in this format, we multiplied membership by the benchmark



THE ACA REDUCED BENCHMARK PAYMENT RATES BY ABOUT 9 PERCENT, BUT MAOs EARNED ABOUT 2.5 PERCENT BACK THROUGH QUALITY BONUS PAYMENTS.

payment rates at the three different bonus levels to yield the post-ACA benchmark payment rate inclusive of the QBP's earned. After summing across all counties, this nationwide amount was 2.5 percent higher than the previously calculated amount (i.e., the amount using the post-ACA benchmark payment rate with a 0 percent quality bonus). This indicates the QBP program is responsible for a 2.5 percent increase in benchmark payment rates.

CMS identifies new contracts in one of two ways: new contracts under new parent organizations or new contracts under existing parent organizations. The distinction is important, as new contracts under new parent organizations receive a 3.5 percent QBP, while new contracts under existing parent organizations receive the average star rating of the contract(s) under the parent company and, subsequently, the quality bonus associated with that average star rating. However, the CMS source file used for this analysis did not differentiate between the types of new contracts. Thus, for purposes of this analysis, we assume all new contracts received the 3.5 percent QBP.

CONCLUDING CAVEATS

In performing our analysis, we relied on data published by CMS. We have not audited or verified this data. If the underlying data is inaccurate or incomplete, the results of our analysis likewise may be inaccurate or incomplete.

Guidelines issued by the American Academy of Actuaries require actuaries to include their professional qualifications in all actuarial communications. Brad Piper and Julia Friedman are members of the American Academy of Actuaries and meet the qualification standards for performing the analyses in this article. ■

Reference

¹ <http://kff.org/medicare/issue-brief/medicare-advantage-2015-spotlight-enrollment-market-update>



ONLINE!

Be sure to visit our digital edition at ***theactuary*** magazine.org.

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Q&A

THE POWER OF PREDICTIVE ANALYTICS

Q&A WITH JOHN HOUSTON, ADVANCED ANALYTICS AND PREDICTIVE MODELING PRACTICE LEADER AT DELOITTE

Q: How did your professional experience lead you to a nontraditional career?

A: My experience as an employee benefits underwriter and then as part of Aetna's actuarial rotation program exposed me to a wide range of business issues. I came to see the value in making predictions at a more granular level and also came to appreciate the power of new data sources. My time spent as chief actuary at a mid-sized privately held company taught me about growing a business and was a great way to transition into consulting. I was fortunate to join Deloitte Consulting LLP almost 20 years ago, at a time when we were starting a practice focused on predictive analytics.

Today I lead Deloitte's Advanced Analytics and Predictive Modeling practice and am part of a community of more than 500 data scientists at Deloitte. We help clients in a wide range of industries solve their most complex problems. This typically involves pulling together integrated teams that include strategy and technology specialists, along with data scientists, to collaborate with our clients. While building predictive models is a core skill of the practice I lead, we work with clients from business case development all the way to technical implementation and change management. Lately there has been tremendous client interest in building internal data science teams.

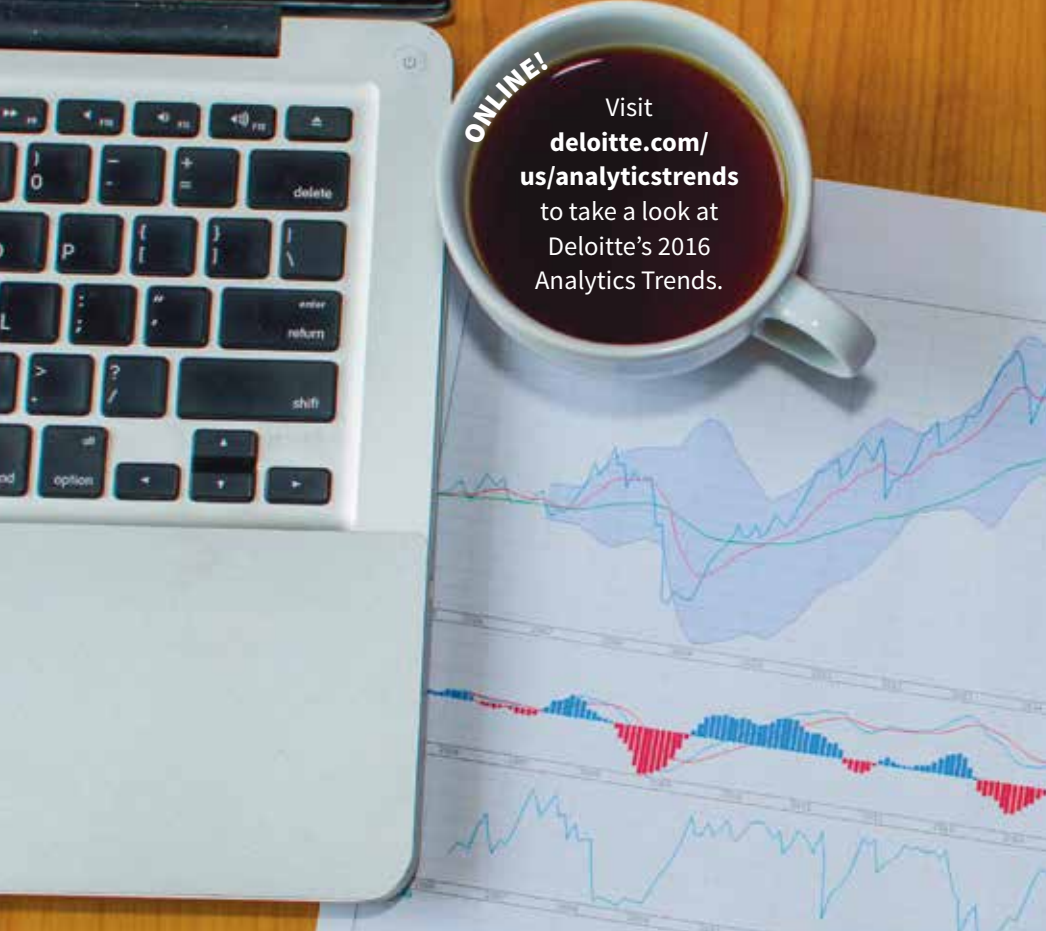


“ It is important to stay connected to what is generating value today, while simultaneously driving new approaches for future impact.”

© JONATHAN KANNAR

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done in the property and casualty (P&C) division using neural networks. I wanted to see how well these techniques would predict future medical claims at the member level. I found a way to get the support needed from the P&C team to build a test model. It was fascinating to see how the model could pull out relationships and signals that traditional actuarial approaches would not have found. After that, I was hooked.

Q: What kinds of problems are you solving using data analytics? How are these different from the issues you would address in the role of a more traditional actuary?

A: The kinds of problems we solve vary widely by industry. In the

insurance industry, for example, there is a natural link between traditional actuarial work and the types of underwriting and claims predictive models we typically build. These models cannot be deployed effectively without considering the current pricing and reserving. However, a difference is the level of granularity and timing, because predictive models tend to be at the customer or claimant level and vary over time based on available data. Another difference is that traditional actuarial work tends to focus on the exposure, while predictive models often will bring to bear behavioral and environmental factors.

Outside of the insurance industry the problems can vary widely, but there are some common themes. Whether the issue is focused on customers, employees or the supply chain, there tends to be an element of finding how to help clients focus their limited resources in the right places at the right time.

Q: What skills positioned you for work in predictive analytics?

A: I think curiosity and creativity are important skills—they definitely helped me get started in predictive analytics. Having an understanding of various types of algorithms and software tools is table stakes today. The ability to find a unique data source, or to frame a complex problem in a new way, is also a differentiator.

Q: How are you using predictive analytics in your job?

A: Although predictive analytics is just one of many approaches, it is certainly one of the more prevalent techniques we use. While each industry in which we work has unique data, regulations and challenges, there are many commonalities. For example, most customer analytics problems involve some form of predicting likely to buy, next best offer, retention or customer lifetime value. Many supply chain analytics problems involve predicting demand and failure rates of parts. Workforce analytics has similarities to both customer and supply chain analytics in terms of employee retention and workforce planning modeling.

Q: How did you learn the tools and techniques of modeling? What sparked your interest in this area?

A: I originally became interested in predictive modeling when I was doing an actuarial rotation in Aetna's managed care product management unit. We were tasked with understanding how people were using new network-based health products and had gotten access to very detailed claims data. I had attended an internal actuarial conference and heard about some cutting-edge work that was being

Q: What skills do you think actuaries bring to analytics that other professionals may not bring to the role?

A: Actuaries generally have a very good sense of risk and how factors compound over time. The ability to look backward and forward in an uncertain and changing environment is a key, transferable skill actuaries develop. Many problems outside of the insurance industry can be solved using actuarial concepts. It always amazes me when we come across a problem that is a classic survival model or is conceptually similar to asset and liability matching.

Q: How do you see the role of predictive analytics in health care changing in the next five to 10 years? Where will actuaries fit into the equation?

A: I think the advancement of biotechnology and individualized medicine will happen faster than many people realize. These advancements will create incredible new data sources that will fuel even more powerful predictive models. As a result, the need for new financing, population wellness management and risk models will increase. This is a need that actuaries are well positioned to develop.

Q: What advice do you have for people who may be interested in positions in predictive analytics?

A: It is likely that the skills and qualities necessary to be effective in your job 10 years from now don't even exist yet. So make sure you are adaptable and well-rounded. Communication skills are essential and will never go out of style. Technical proficiency is important, but be realistic about where you have deep skills and where you know just enough to be dangerous. As data science tools and techniques proliferate and become even more sophisticated, it will take teams of people collaborating to find the best solutions.

Q: What is the most challenging aspect of your work?

A: For me, the human behavioral aspect and organizational adoption of new models present a degree of challenge. The data and tools are changing so quickly that most companies and ecosystems struggle to adapt. This causes a widening

gap between the art of the possible and the reality of the practical. Often the simple model that is easy to explain will drive more value than a sophisticated model that is more challenging to interpret and implement.

Q: What is something many actuaries may not know about the predictive analytics field?

A: The vast majority of the business community still has not adopted even basic predictive models. Large sophisticated companies that you would expect to be optimized with hundreds of examples of predictive models still make the majority of their day-to-day decisions through tribal wisdom and gut instinct. They may have pockets of sophistication in marketing, supply chain or finance, but very few organizations have been able to systemically drive value across all areas with predictive analytics. This presents tremendous opportunities for both actuaries and data scientists.

Q: What are some of your best professional memories/experiences as an actuary that may inspire others to explore different actuarial paths?

A: I still get excited to see the results of a new model. It's always amazing to watch a team make complex data come to life. The real reward goes beyond actuarial and data science. Seeing business leaders realize they now can answer key questions and drive value in new ways is always memorable.

Q: How did you segue into a nontraditional role after starting your career in a traditional actuarial role?

A: My career path was definitely not planned. I was very fortunate to work with some incredible minds and mentors. While I started down a traditional actuarial path, I was always trying out roles or jobs that were on the fringes of traditional work. When advising new hires, I urge them to be open to new opportunities but also be patient. Predictive analytics, data science, big data and now cognitive computing have all generated buzz, but they still need time to realize their full potential. It is important to stay connected to what is generating value today, while simultaneously driving new approaches for future impact. ■

TRICKS OF THE TRADE

PODCAST

HOW TO BE AN ETHICAL LEADER:

Interview with Seletha R. Butler

Seletha Butler is an assistant professor of Business Law and Ethics at Scheller College of Business at Georgia Institute of Technology, the author of *All on Board! Strategies for Constructing Diverse Boards of Directors* and an entrepreneur.

Butler has a Bachelor of Science in Corporate Finance from the University of Alabama, a Juris Doctor from Harvard Law School and a Master of Business Administration from Georgia Institute of Technology.

In the podcast “How to be an Ethical Leader,” Butler explores three components: organizational leadership, ethical decision-making and the art of diversity. This discussion offers actuaries practical advice on how to be an ethical leader.

bit.ly/ButlerEthic



If you know of a tool that might be beneficial to other actuaries, please let us know by sending an email to theactuary@soa.org.

Working to become a better professional is vital to your success. Here are some resources to help you advance your career.

TABLES

NEW VALUATION TABLES ON MORT.SOA.ORG

Mort.SOA.org recently added 2015 Valuation Basic Tables (VBT) and 2017 Commissioner’s Standard Ordinary (CSO) Tables. Access the website for mortality tables and other rate tables.

Mort.SOA.org

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BY R. DALE HALL

INDIVIDUALS FACE MANY CHALLENGES WHEN PLANNING FOR RETIREMENT AND UNEXPECTED SITUATIONS.

RESEARCHING RETIREMENT CONCERNS, LIVING WELL AND MANAGING FINANCES

Financial stress. Living longer. A lack of planning for retirement. Retirement concerns and risks. We all face many challenges when planning for retirement, managing our financial lifestyles in retirement, and planning for unexpected situations. For individuals, we prefer to increase the amount of information on making retirement decisions and managing resources in retirement. From an industry perspective, we also look for opportunities and challenges regarding how services and products—and their future uses—will play out over time.

A survey report from the University of Southern California, *How Americans Manage their Finances*, investigates how the financial lives of Americans have changed with the economic recovery over the past few years. Co-sponsored by the Society of Actuaries (SOA) Committee on Post-Retirement Needs and Risks, our report focuses on major financial stress. Fewer than one-third of respondents could afford to pay an unexpected expense of \$1,000, especially older adults. We also found that existing debt impacts older adults' financial security.

Affording long-term care, dealing with inflation and paying for health

care are the top concerns in retirement, according to an SOA survey of retirees and pre-retirees from ages 45 to 80. These findings are from our Committee on Post-Retirement Needs and Risks report, *2015 Risks and Process of Retirement Survey*. More than 60 percent of pre-retirees are concerned with being able to maintain a reasonable standard of living, compared with 45 percent of retirees. Also, 62 percent of pre-retirees were concerned about depleting savings, compared with 43 percent of retirees.

Fewer Americans are invested in financial growth opportunities such as annuities, stocks and bonds, mutual funds and whole life insurance. This finding is from the data-driven report, *Seeing Our Way to Living Long, Living Well in 21st Century America*, which investigates healthy living, financial security and social engagement. The SOA was one of the sponsors of this report from the Sightlines Project at the Stanford Center on Longevity. The report notes that individuals in the 55 to 64 age group are least likely to interact with family members who do not live with them. The report also highlights the importance of exercise activities and the avoidance of risky behaviors when examining drivers of longevity.

RELATED LINKS

Research-At-A-Glance

bit.ly/At-A-Glance

Research Opportunities

bit.ly/SOAResearchOpportunities

USC Report

bit.ly/USC-FM

2015 Risks and Process of Retirement Survey

bit.ly/RiskProcess

Stanford Center on Longevity

bit.ly/Sightlines

SOA Focus Group

bit.ly/SOARetireResearch



Visit SOA.org/Research for the latest updates on new research opportunities, data requests, experience studies and completed research projects.

The SOA's *2015 Risks and Process of Retirement Survey* says more than half of pre-retirees and retirees estimated their personal life expectancy well below actuarial estimates. A median of pre-retirees predict they will live to age 85; however, 55 percent of pre-retirees said at least one family member lived past age 90. Personal life expectancy is 10 years shorter than the age of their longest-living relative, according to 37 percent of pre-retirees and 28 percent of retirees.

And that leads us to the topic of financial shocks. We released a post-retirement report of 12 focus groups from the United States and Canada. This SOA report looks at shocks on long-term care, home maintenance, divorce, medical costs, widowhood, inflation, taxes, and financial gifts and loans to family. Our findings from the focus groups help us to gain knowledge on financial security in retirement and how individuals can deal with financial shocks reasonably well, depending on the situation.

All of these research reports provide us with a greater understanding on retirement planning, risks in retirement and related challenges. We encourage you to visit *SOA.org* for more research on aging. ■

R. Dale Hall, FSA, CERA, MAAA, is managing director of Research at the Society of Actuaries.

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GOOD RESEARCH READS

MULTIEMPLOYER PENSION PLAN CONTRIBUTION

Learn about new analysis on the funding progress of multiemployer pension plan system contributions. According to the SOA study, the system carries significant unfunded liabilities, and nearly all plans are contributing more than their minimum required contributions. Yet contribution levels of many plans are not enough to prevent their unfunded liabilities from growing. The system's contribution increases over 2009 to 2013 significantly outpaced inflation. In 2013, two-thirds of plans received contributions below the level needed to close the funding gap within 15 years.

bit.ly/MultiemployerPPAnalysis

bit.ly/MultiemployerPPFunding

TAX-DEFERRED RETIREMENT SAVING IN CANADA

The Canadian Institute of Actuaries (CIA) and the SOA jointly released a research report on tax-deferred retirement saving in Canada. The report provides employees and employers with perspectives on tax deferral arrangements such as pension plans and registered retirement savings plans (RRSPs) in a low interest rate environment. The report uses the combined effects of taxes and clawbacks to compare tax deferral arrangements with tax-free savings accounts and non-registered investments in Canada.

bit.ly/Tax-Defer-Canada

2015 ERM SYMPOSIUM MONOGRAPH

The Casualty Actuarial Society/CIA/SOA Joint Risk Management Section, The Actuarial Foundation and the Professional Risk Managers' International Association (PRMIA) have released the 2015 Enterprise Risk Management (ERM) Symposium monograph. The papers cover tail risk, systemic risk, capital risk management, risk modeling and many other ERM topics. Access the monograph at bit.ly/ERMmonograph.

TOP RESEARCH AREAS FOR NEW EXPERIENCE STUDIES

The SOA Experience Studies Executive Committee has released survey findings to identify new areas of interest for 2016 research initiatives. The committee, which now reports directly to the SOA Board of Directors, plans to pursue experience study research on accelerated underwriting life insurance mortality, critical illness experience, fixed annuity experience and private pension plan mortality. The survey findings also helped identify opportunities on international and general insurance topics.

bit.ly/2016SurveySummary



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MEETINGS

Life & Annuity Symposium

May 16–17

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The Life & Annuity Symposium is the world's most comprehensive event for actuaries in the life industry. If you're a technical expert or business professional servicing life insurance products, this seminar was designed with you in mind. The 2016 Life & Annuity Symposium features valuable networking opportunities with peers, colleagues, technical experts and friends—all in one place.

SOA.org/LAS

Health Meeting

June 15–17

Philadelphia

Attend the premier event for actuaries working in the health industry, including those working with the Affordable Care Act, Medicare,

pricing or predictive analytics. Listen to influential keynote speakers: Barbara Corcoran from *Shark Tank* and Vince Papale, former football player for the Philadelphia Eagles.

HealthMeeting.SOA.org

WEBCAST

Federal Income Tax Issues Every Company Must Consider Under Life PBR

June 10

This webcast will explore what issues may arise for federal income tax purposes and what approaches companies—and the IRS—may take as determined by the adoption of Life Principle-Based Reserves.

bit.ly/PBRwebcast



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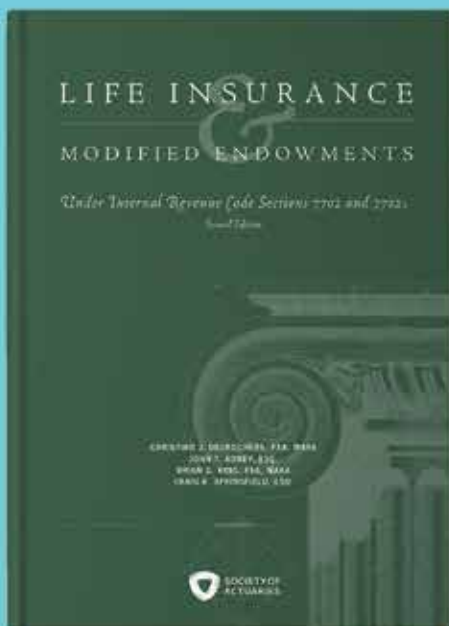
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LIFE INSURANCE & MODIFIED ENDOWMENTS

Under Internal Revenue Code Sections 7702 and 7702A

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 - A new chapter dedicated to the qualification requirements of sections 101(g) and 7702B for accelerated death benefits and long-term care riders
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 - The adoption of the 2001 CSO mortality tables and the relevant IRS guidance relating to the section 7702(c)(3)(B)(i) “reasonable mortality” requirements
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