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A T A G L A N C E

“Short” Falls: Who’s Most Likely to Come up Short in Retirement, and When? *by Jack VanDerhei, Ph.D., EBRI*

- This *Notes* article provides new results showing how many years into retirement Baby Boomer and Gen Xer households are simulated to run short of money, by preretirement income quartile.
- Under a variety of simulated post-retirement expense scenarios, the lowest preretirement income quartile is the cohort where the vast majority of the retirement readiness shortfall occurs, and the soonest. When nursing home and home health-care expenses are factored in, the number of households in the lowest-income quartile that is projected to run short of money within 20 years of retirement is considerably larger than those in the other three income quartiles combined.
- Extending the results to a maximum of 35 years in retirement (age 100, assuming retirement at age 65), 83 percent of the lowest-income quartile households would run short of money and almost half (47 percent) of those in the second-income quartile would face a similar situation. Only 28 percent of those in the third-income quartile and 13 percent of those in the highest income quartile are simulated to run short of money eventually.

Consumer Engagement Among HSA and HRA Enrollees: Findings from the 2013 EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey, *By Paul Fronstin, Ph.D., EBRI*

- Health reimbursement arrangements (HRAs) and health savings accounts (HSAs) are very similar, though there are some key differences that may produce different incentives related to using health care services, and thus, different consumer engagement experiences.
- Adults with an HSA were more likely than those with an HRA to exhibit a number of cost-conscious behaviors related to use of health care services. Those with an HSA were more likely than those with an HRA to report that they asked for a generic drug instead of a brand name; checked the price of a service before getting care; asked a doctor to recommend less costly prescriptions; developed a budget to manage health care expenses; and used an online cost-tracking tool provided by the health plan. Adults with an HSA were also more likely than those with an HRA to be engaged in their choice of health plan. Individuals with an HSA were more likely than individuals with an HRA to report that they had participated in a health-risk assessment, health-promotion program, or biometric screening program when it was available.

“Short” Falls: Who’s Most Likely to Come up Short in Retirement, and When?

By Jack VanDerhei, Ph.D., Employee Benefit Research Institute

Introduction

Will Americans have enough to live on when they retire? As the pace of Baby Boomers¹ crossing the traditional threshold age of retirement accelerates, so has the frequency with which this question is posed. Unfortunately, the answers provided are as diverse, and sometimes disparate, as the projection models that produce those results.

One explanation for the disparity among the results from the various models lies in the different age cohorts examined. For example, some models limit their analysis to households already retired, while others focus on households still working, but old enough that reasonably accurate projections regarding their future wages and prospects for accumulating retirement wealth are obtainable. Other models attempt to analyze the prospects for all working households, including those whose relative youth makes accurate, long-term predictions somewhat problematic. Another explanation for the wide range of results lies in the basic objective of the particular model used for the analysis.

This *Notes* article begins with a brief introduction of the various methods of quantifying retirement income adequacy, along with a description of EBRI’s Retirement Security Projection Model[®] (RSPM). This is followed by a series of results from the RSPM focusing on the percentage of Baby-Boomer and Gen-Xer² households simulated to run short of money in retirement, as well as an estimate of how soon after retirement this is expected to take place. In that there are different perspectives on the flexibility of individuals in retirement to adjust lifestyle and/or spending, results are presented under three separate thresholds of deterministic expense (80, 90 and 100 percent of average expenses), as well as with and without nursing home and home health-care expenses.

Quantifying Retirement Income Adequacy

Several different approaches have been used to quantify and model retirement income adequacy. Some either (1) model only the accumulation side of the equation and then rely on some type of preretirement income replacement rate measure as a threshold for success, or (2) make use of a so-called “life-cycle” model that attempts to smooth/spread some type of consumption-based utility over the decision-maker’s lifetime.

EBRI’s Retirement Security Projection Model[®] takes a different—and arguably unique—perspective, drawn from the objective of its original applications.³ Rather than focusing on an individual’s projected ability to achieve a designated percentage of his or her preretirement income as a proxy for retirement income adequacy, RSPM grew out of a multi-year project to analyze the future economic well-being of the retired population at the state level, focused on identifying the point at which individuals would run short of money and perhaps become a financial obligation of the state. EBRI and the Milbank Memorial Fund, working with the office of the governor of Oregon, set out in the late 1990s to see if this situation could be evaluated for the state.⁴ The resulting analysis focused primarily on simulated retirement wealth with a comparison to ad hoc thresholds for retirement expenditures.⁵

With the assistance of the Kansas Insurance Department, the Employee Benefit Research Institute (EBRI) was able to create the EBRI Retirement Readiness Rating[™] (RRR) based on a full stochastic decumulation model that takes into account the household’s longevity risk, post-retirement investment risk, and exposure to long-term nursing-home and home health-care risks. The first state-level RSPM results were presented to the Kansas Long-Term Care Services Task Force on July 11, 2002, and the results of a separate study for the state of Massachusetts were presented on Dec. 1, 2002. Thereafter, RSPM was expanded to a national model, with the initial results presented at the EBRI-ERF Policy Forum in December 2003.⁶

In that the initial stakeholders of the model were interested in determining what percentage of future retirement cohorts would run short of money in retirement and when, EBRI specifically chose not to rely on a replacement-rate target as a measure of success in RSPM, for several reasons:

- Because very few households annuitize all (or even most) of their individual accounts in retirement, a replacement-rate focus would overlook the potential risk of outliving their income (longevity risk).
- While the annuity purchase price relied upon in a replacement-rate target does depend on an implicit assumption with respect to (at least some) future market returns, it does not typically account for the potential investment risk associated with “risky” asset allocations (investment risk).
- Previous EBRI research⁷ has demonstrated that one of the biggest financial obstacles in terms of maintaining retirement income adequacy for households who might otherwise have sufficient financial resources at retirement age is the risk of long-term care costs for a prolonged period. As with the annuitization experience cited above, in the real world few retirees have long-term care insurance policies in place that would cover the potentially catastrophic financial impact of this exposure. Therefore, any attempt to simply add the cost of long-term care insurance into a replacement-rate methodology will vastly underestimate the potential severity of this exposure.

In a similar vein, a life-cycle smoothing model was rejected for the development of RSPM, given the extraordinarily low levels of “optimal” savings that approach provides for low-income individuals at retirement. While there is little doubt that some households may be able to subsist at low-income levels in retirement as a result of the support from means-tested programs (including early eligibility for Medicaid), from a public policy perspective EBRI chose to establish a threshold that would allow households to afford average expenditures throughout their retirement, while at the same time accounting for the potential impact of uninsured long-term care costs.

Results

One of the primary outputs of RSPM is the production of RRRs for various subgroups of the population. The RRR is defined as the percentage of simulated life-paths that do *not* run short of money in retirement. A previous EBRI publication used the 2014 version of RSPM to show that the RRRs for Baby Boomer and Gen Xer households ranged between 56.7 and 58.5 percent, depending on age cohort.⁸ When the results were analyzed by preretirement wage quartile, the RRR varied from 16.8 percent for the lowest income quartile to 86.4 percent for the highest income quartile.

This *Notes* article provides new results showing how many years into retirement Baby Boomer and Gen Xer households are simulated to run short of money, by preretirement income quartile. Figures 1, 3 and 5 include nursing home and home health-care expenses in the simulation, whereas Figures 2, 4 and 6 provide results if the impact of these potentially catastrophic expenses is ignored.

First-Year Shortfalls

Figure 1 shows the results assuming that 100 percent of the simulated deterministic expenses are met; in other words, 100 percent of the average expenses (based on post-retirement income) for components likely to be encountered on a regular basis (e.g., food, housing, transportation). In addition to these relatively predictable expenses, the stochastic costs arising from nursing home and home health-care expenses are assumed to be covered in years when the model simulates their existence.

Note that in Figure 1, while 5 percent or less of those in the second-, third-, and highest-income quartiles would run short of money in the first year of retirement, more than 2 in 5 (43 percent) of those in the lowest-income quartile would, based on deterministic and stochastic costs. Moreover, by the 10th year in retirement (assuming retirement at age 65), nearly 3 in 4 (72 percent) of the lowest-income quartile households would run short of money, while fewer

than 1 in 5 (19 percent) of those in the second-income quartile would face a similar situation. Only 7 percent of those in the third-income quartile and 2 percent of those in the highest-income quartile are simulated to run short of money within a decade.

By the 20th year in retirement (again, assuming retirement at age 65), more than 4 in 5 (81 percent) of the lowest-income quartile households would run short of money, compared with 38 percent of those in the second-income quartile that would face a similar situation. Only 19 percent of those in the third-income quartile and 8 percent of those in the highest-income quartile are simulated to run short of money by the twentieth year.

These values continue to increase until all households either run short of money or there are no surviving retirees. By the 35th year in retirement (age 100, assuming retirement at age 65), 83 percent of the lowest-income quartile households would run short of money and almost half (47 percent) of those in the second-income quartile would face a similar situation. Only 28 percent of those in the third-income quartile and 13 percent of those in the highest-income quartile are simulated to run short of money eventually.

The Impact of Nursing Home and Home Health-Care Expenses

Figure 2 simulates the same scenario as Figure 1 in terms of deterministic expenses, but this time the model assumes that any cost of nursing home or home health-care expenses are not borne by the household. As expected, the percentage of households in any income quartile that run short of money within a particular time period is smaller in Figure 2 than in Figure 1, where those costs are contemplated. Moreover, the differences illustrate the significance that ignoring these important costs makes in any accurate simulation of retirement income adequacy.

Although 4 percent or less of those in the second, third-, and highest-income quartiles are simulated to run short of money in the first year of retirement in Figure 2, 38 percent of those in the lowest-income quartile would have a deficit based on deterministic and stochastic costs alone. By the 10th year in retirement, 64 percent of lowest-income quartile households would run short of money, but only 11 percent of those in the second-income quartile would face a similar situation. Only 3 percent of those in the third-income quartile and 1 percent of those in the highest-income quartile are simulated to run short of money by the 10th year.

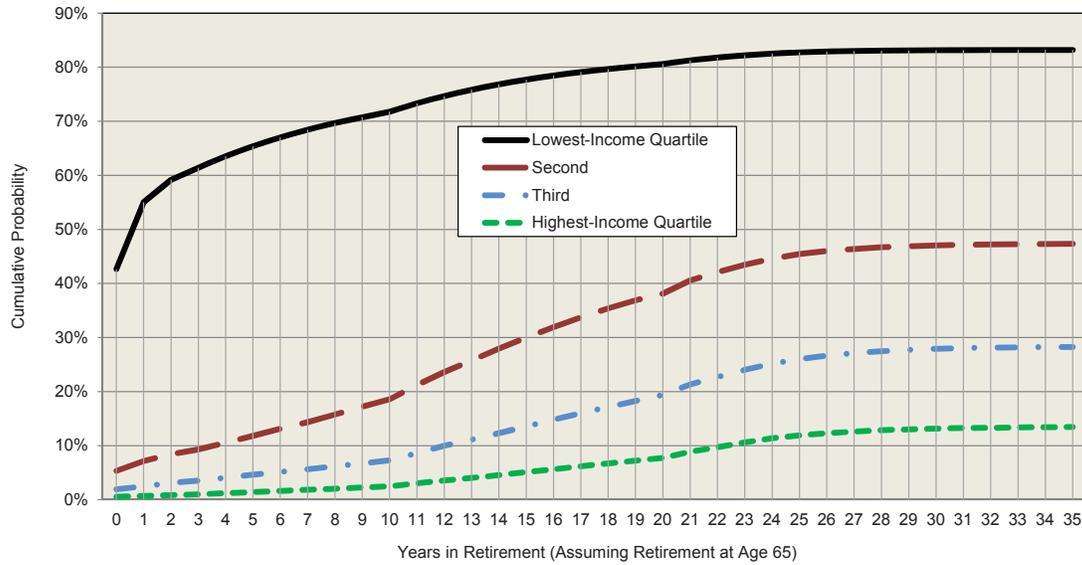
Even ignoring the cost of nursing home or home health-care expenses, by the 20th year in retirement, more than two-thirds (69 percent) of the lowest-income quartile households would run short of money. On the other hand, only 17 percent of those in the second-income quartile would face a similar situation, as would 5 percent of those in the third-income quartile and 1 percent of those in the highest-income quartile. By the 35th year in retirement, 70 percent of the lowest-income quartile households would run short of money and 20 percent of those in the second-income quartile would face a similar situation. Only 6 percent of those in the third-income quartile and 1 percent of those in the highest-income quartile are simulated to run short of money eventually.

90 Percent of Deterministic Expenses, 100 Percent of Stochastic Health Costs

Figure 3 provides the results of a simulation where only 90 percent of the average deterministic expenses are paid by the household, but 100 percent of the stochastic health care costs are met.⁹ In this case, a comparison with Figure 1 (100 percent of deterministic and stochastic costs) shows the impact of assuming a 10 percent reduction in the deterministic costs.

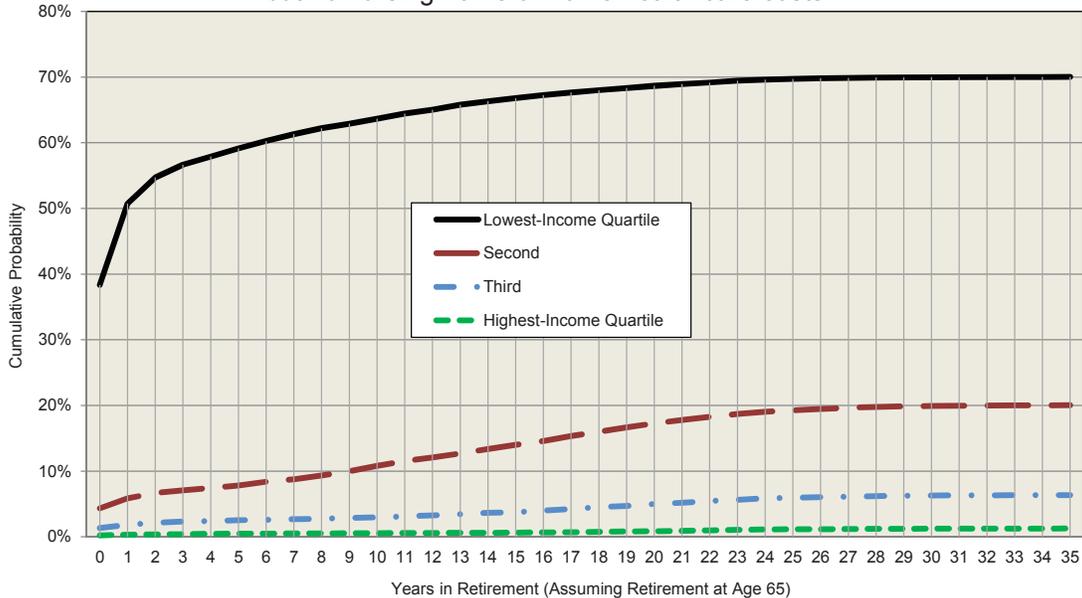
Although 5 percent or less of those in the second-, third-, and highest-income quartiles are simulated to run short of money in the first year of retirement (Figure 1), 40 percent of those in the lowest-income quartile would have a deficit based on deterministic and stochastic costs. By the 10th year in retirement, 63 percent of lowest-income quartile households would run short of money, but only 15 percent of those in the second-income quartile would face a similar situation. Only 6 percent of those in the third-income quartile and 2 percent of those in the highest-income quartile are simulated to run short of money by the 10th year.

Figure 1
Years in Retirement Before Baby Boomers and Gen Xers
Run Short of Money, by Preretirement Income Quartile
 Scenario: 100% of deterministic retirement expenses,
 100% of nursing home or home health care costs



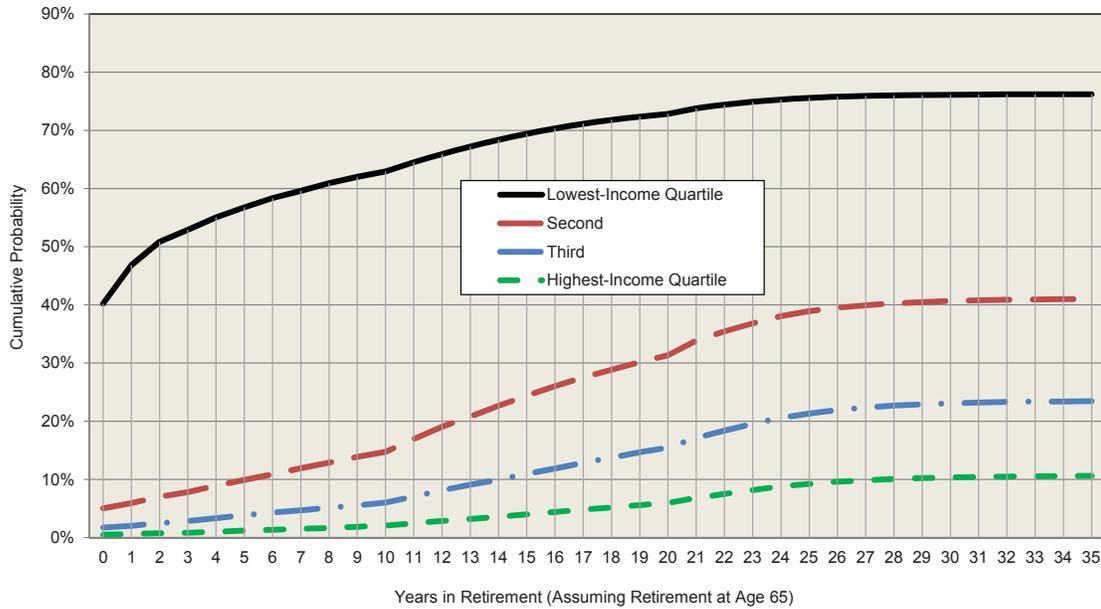
Source: EBRI Retirement Security Projection Model® version 2030.

Figure 2
Years in Retirement Before Boomers and Gen Xers
Run Short of Money, by Preretirement Income Quartile
 Scenario: 100% of deterministic retirement expenses
 but no nursing home or home health care costs



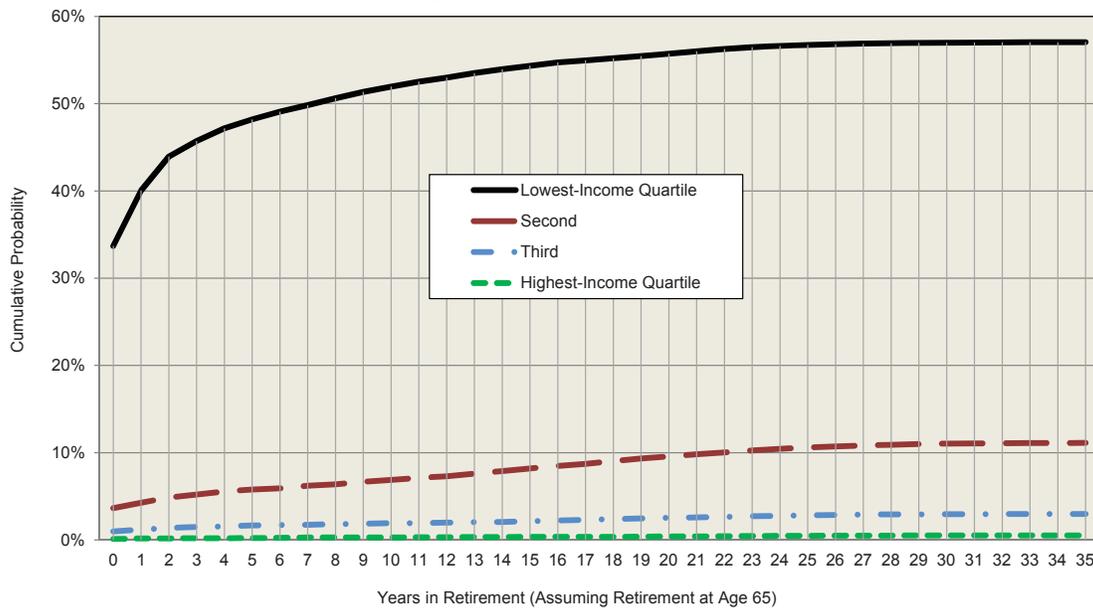
Source: EBRI Retirement Security Projection Model® version 2030.

Figure 3
Years in Retirement Before Baby Boomers and Gen Xers
Run Short of Money, by Preretirement Income Quartile
 Scenario: 90% of deterministic retirement expenses,
 100% of nursing home or home health care costs



Source: EBRI Retirement Security Projection Model® version 2030.

Figure 4
Years in Retirement Before Baby Boomers and Gen Xers
Run Short of Money, by Preretirement Income Quartile
 Scenario: 90% of deterministic retirement expenses
 but no nursing home or home health care costs



Source: EBRI Retirement Security Projection Model® version 2030.

By the 20th year in retirement, 73 percent of the lowest-income quartile households would have run short of money, but only 31 percent of those in the second-income quartile would face a similar situation. Only 15 percent of those in the third-income quartile and 6 percent of those in the highest-income quartile are simulated to run short of money by the 20th year. By the 35th year in retirement, 76 percent of the lowest-income quartile households would have run short of money, and 41 percent of those in the second-income quartile would face a similar situation. Only 23 percent of those in the third-income quartile and 11 percent of those in the highest-income quartile are simulated to run short of money eventually.

90 Percent of Deterministic Expenses, No Stochastic Health Costs

Figure 4 provides the results of a simulation where only 90 percent of the average deterministic expenses are paid but none of the stochastic health care costs are paid by the household. In this case, a comparison with Figure 3 shows the impact of ignoring the stochastic costs when there is a 10 percent reduction in the deterministic costs.

Although 4 percent or less of those in the second-, third-, and highest-income quartiles are simulated to run short of money in the first year of retirement, 34 percent of those in the lowest-income quartile would have a deficit based on deterministic and stochastic costs, as illustrated in Figure 4. By the 10th year in retirement, just over half (52 percent) of the lowest-income quartile households would run short of money, but only 7 percent of those in the second-income quartile would face a similar situation, and only 2 percent of those in the third-income quartile and less than 1 percent of those in the highest-income quartile are simulated to run short of money by the 10th year.

By the 20th year in retirement, 56 percent of the lowest-income quartile households would have run short of money. However, only 10 percent of those in the second-income quartile, 3 percent in the third-income quartile, and fewer than 1 percent of those in the highest-income quartile would face a similar situation at that point. By the 35th year in retirement, 57 percent of the lowest-income quartile households would have run short of money, compared with just 11 percent of those in the second-income quartile, 3 percent of those in the third-income quartile, and 1 percent of those in the highest-income quartile.

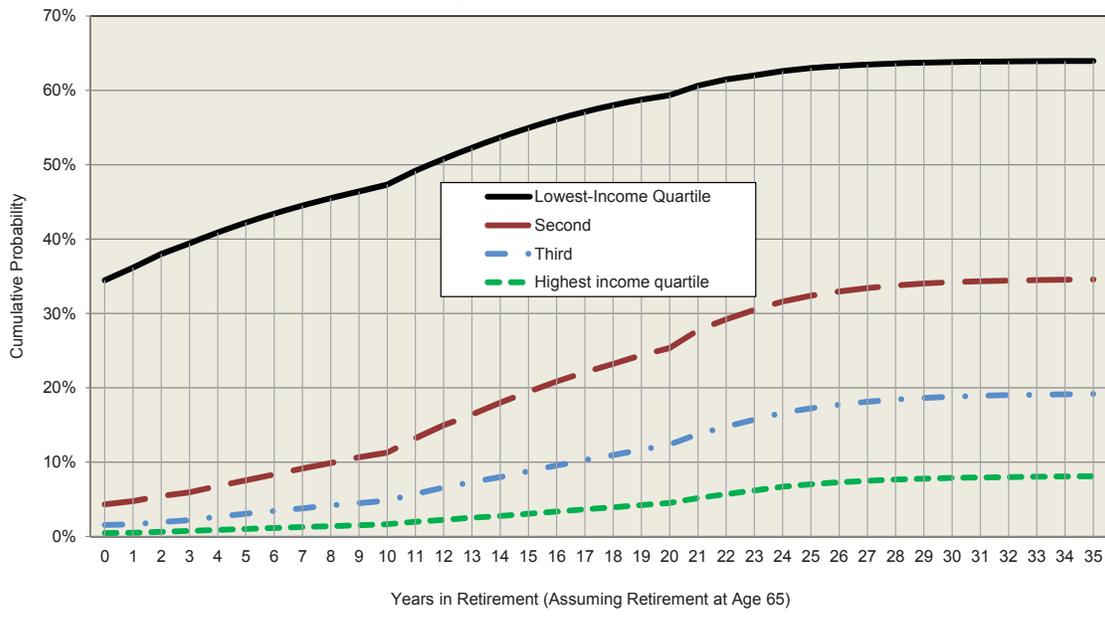
80 Percent of Deterministic Expenses, 100 Percent of Stochastic Health Costs

Figure 5 provides the results of a simulation where only 80 percent of the average deterministic expenses are paid by the household, but 100 percent of the stochastic health care costs are met. In this case, a comparison with Figure 1 (100 percent of deterministic and stochastic costs) shows the impact of assuming a 20 percent reduction in the deterministic costs.

Although 4 percent or less of those in the second-, third-, and highest-income quartiles are simulated to run short of money in the first year of retirement (Figure 5), 34 percent of those in the lowest-income quartile would have a deficit based on deterministic and stochastic costs in the first year of retirement (assuming retirement at age 65). By the 10th year in retirement, 47 percent of lowest-income quartile households would run short of money but only 11 percent of those in the second-income quartile would face a similar situation. Only 5 percent of those in the third-income quartile and 2 percent of those in the highest-income quartile are simulated to run short of money by the 10th year.

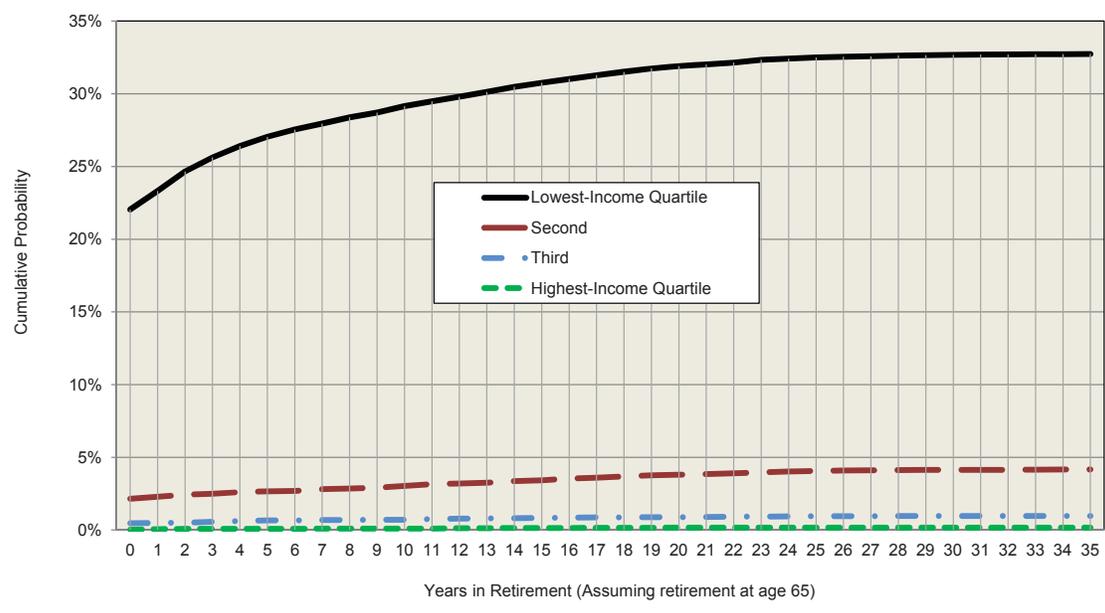
By the 20th year in retirement, 59 percent of the lowest-income quartile households would have run short of money but only 25 percent of those in the second-income quartile would face a similar situation, as would 12 percent of those in the third-income quartile and 5 percent of those in the highest-income quartile. By the 35th year in retirement, 64 percent of the lowest-income quartile households would have run short of money and 35 percent of those in the second-income quartile would face a similar situation. Once again, the upper-income quartiles are less affected: Only 19 percent of those in the third-income quartile and 8 percent of those in the highest-income quartile are simulated to run short of money eventually.

Figure 5
Years in Retirement Before Baby Boomers and Gen Xers Run Short of Money, by Preretirement Income Quartile
 Scenario: 80% of deterministic retirement expenses, 100% of nursing home or home health care costs



Source: EBRI Retirement Security Projection Model® version 2030.

Figure 6
Years in Retirement Before Baby Boomers and Gen Xers Run Short of Money, by Preretirement Income Quartile
 Scenario: 80% of deterministic retirement expenses but no nursing home or home health care costs



Source: EBRI Retirement Security Projection Model® version 2030.

80 Percent of Deterministic Expenses, No Stochastic Health Costs

Finally, Figure 6 provides the results of a simulation where only 80 percent of the average deterministic expenses are paid, but none of the stochastic health care costs are paid by the household. In this case, a comparison with Figure 5 shows the impact of ignoring the stochastic costs when there is a 20 percent reduction in the deterministic costs.

Although 2 percent or less of those in the second-, third- and highest-income quartiles are simulated to run short of money in the first year of retirement, 22 percent of those in the lowest-income quartile would have a deficit based on deterministic and stochastic costs. By the 10th year in retirement, 29 percent of lowest-income quartile households would run short of money but only 3 percent of those in the second-income quartile, only 1 percent of those in the third-income quartile, and less than 1 percent of those in the highest-income quartile are simulated to run short of money.

By the 20th year in retirement, 32 percent of the lowest-income quartile households would have run short of money. In contrast, only 4 percent of those in the second-income quartile would face a similar situation, and only 1 percent of those in the third-income quartile and less than 1 percent of those in the highest-income quartile are simulated to run short of money by that point. By the 35th year in retirement, a third of the lowest-income quartile households would have run short of money, while only 4 percent of those in the second-income quartile, 1 percent of those in the third-income quartile, and less than 1 percent of those in the highest-income quartile are simulated to run short of money eventually.

Summary

The results presented in Figures 1 through 6 show that the years of retirement before Baby Boomer and Gen Xer households run short of money vary tremendously by:

- Preretirement-income quartile.
- The percentage of average deterministic costs assumed paid by the household.
- Whether or not nursing home and home health-care expenses are included in the simulation.

However, even when 100 percent of average deterministic costs are paid by the household and nursing home and home health-care expenses are included (Figure 1), only the households in the lowest-income quartile eventually end up with a majority of the households running short of money during retirement.

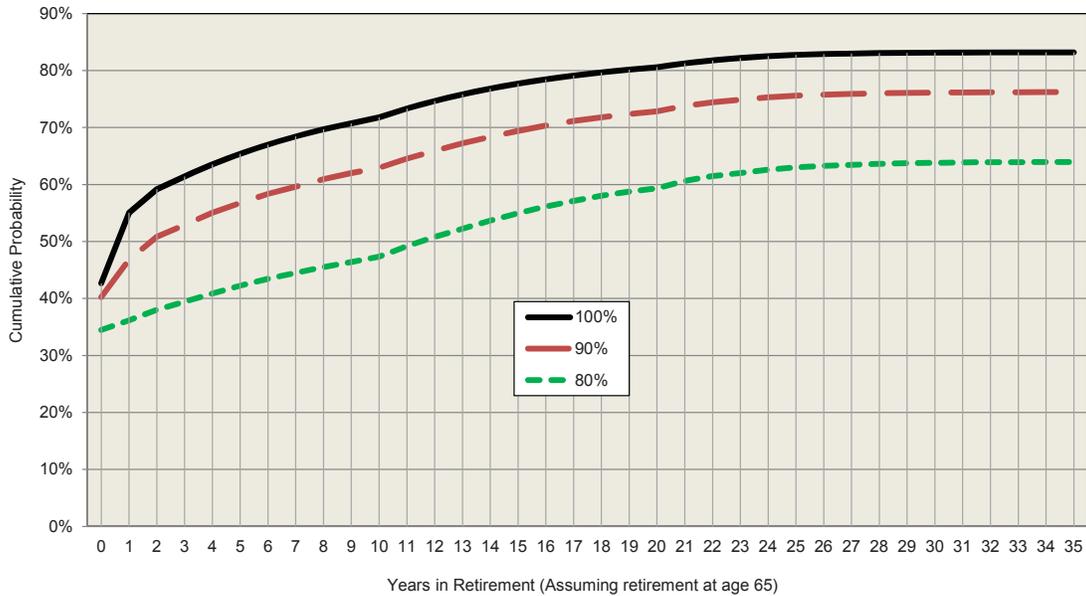
Figure 7 summarizes the results for the households in the lowest-income quartile from Figures 1, 3 and 5. The results show that even if this cohort were able to sustain a lifestyle assuming a 20 percent reduction in average deterministic costs, the percentage of households that would run short of money by the 35th year of retirement would only decrease from 83 percent to 64 percent. Figure 8 summarizes the results for the households in the lowest-income quartile from Figures 2, 4 and 6. The results show that if this cohort were able to sustain a 20 percent reduction in average deterministic costs, and if the financial implications from nursing home and home health-care costs are ignored, the percentage of households who are projected to run short of money in retirement would decrease substantially: from 70 percent to 33 percent by the 35th year of retirement.

Each of the six analyses with results presented in Figures 1 through 6 show the same stark conclusion: The lowest preretirement income quartile is the cohort where the vast majority of the shortfall occurs, and the soonest. When nursing home and home health-care expenses are factored in (Figures 1, 3 and 5), the number of households in the lowest-income quartile that is projected to run short of money within 20 years of retirement is considerably larger than those in the other three income quartiles combined. Indeed, as the results across multiple scenarios and

assumptions show, the lowest-income quartile is the most vulnerable, while longevity and long-term care are the biggest risk factors across the entire income spectrum.¹⁰

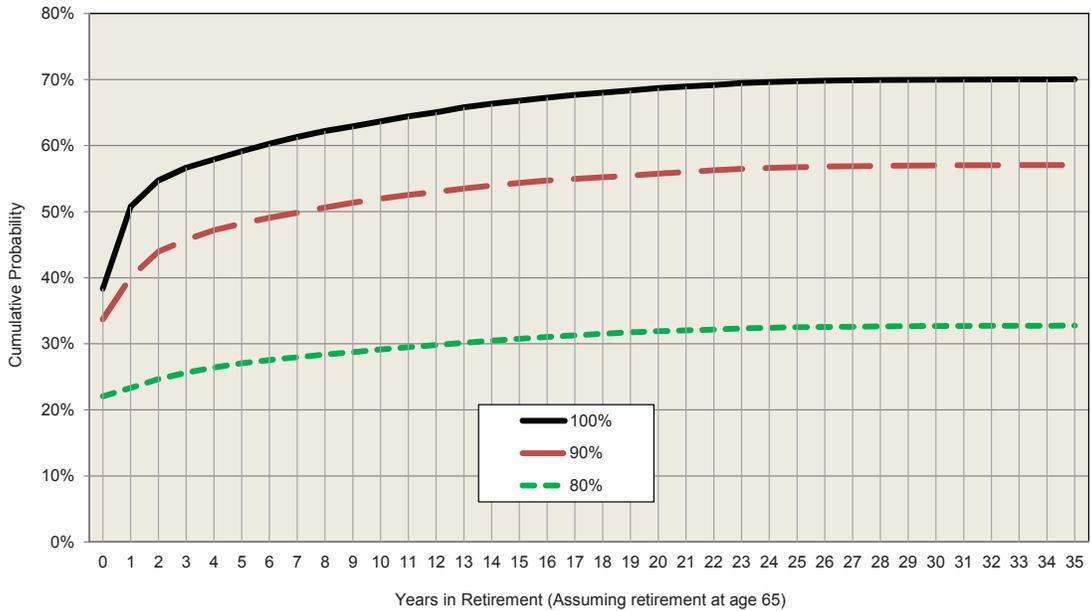
In presenting these results, EBRI does not favor or oppose any specific modification to the current retirement system. Rather, EBRI's mission remains to provide objective analysis that can inform decision making by others. As the various design and program modification alternatives are debated (both reforms and status quo), it is instructive to keep in mind who's most likely to come up short in retirement, when, and why.

Figure 7
Years in Retirement Before Baby Boomers and Gen Xers Run Short of Money, by Various Percentages of Deterministic Retirement Expenses
 (100% of nursing home or home-health-care costs in each case):
 Lowest Preretirement Income Quartile



Source: EBRI Retirement Security Projection Model[®] version 2030.

Figure 8
Years in Retirement Before Baby Boomers and Gen Xers Run Short of Money, by Percentage of Deterministic Retirement Expenses
 (No nursing home or home health care costs in each case):
 Lowest preretirement income quartile



Source: EBRI Retirement Security Projection Model[®] version 2030.

Appendix A: Brief Description of EBRI's Retirement Security Projection Model[®]

One of the basic objectives of the Retirement Security Projection Model[®] (RSPM) is to simulate the percentage of the population at risk of not having retirement income adequate to cover average expenses and uninsured health care costs (including long-term-care costs) at age 65 or older throughout retirement in specific income groupings. RSPM also provides information on the distribution of the likely number of years before those at risk run short of money as well as the percentage of preretirement compensation they would need in terms of additional savings in order to have a 50, 70, or 90 percent probability of retirement income adequacy.

VanDerhei and Copeland (2010) describe how households are tracked through retirement age and how their retirement income/wealth is simulated for the following components:

- Social Security.
- Defined contribution (DC) balances.
- Individual retirement account (IRA) balances.
- Defined benefit (DB) annuities and/or lump-sum distributions.
- Net housing equity.

A household is considered to run short of money in this model if aggregate resources in retirement are not sufficient to meet average retirement expenditures, defined as a combination of deterministic expenses from the Consumer Expenditure Survey (as a function of income and marital status) and some health insurance and out-of-pocket, health-related expenses, plus stochastic expenses from nursing home and home health care (at least until the point such expenses are covered by Medicaid). This version of the model is constructed to simulate retirement income adequacy, as noted above. Alternative versions of the model allow similar analysis for replacement rates, standard-of-living calculations, and other ad-hoc thresholds.

The baseline version of the model used for this analysis assumes all workers retire at age 65, that they immediately begin drawing benefits from Social Security and defined benefit plans (if any), and, to the extent that the sum of their expenses and uninsured medical expenses exceed the projected, after-tax annual income from those sources, immediately begin to withdraw money from their individual accounts (defined contribution and cash balance plans, as well as IRAs). If there is sufficient money to pay expenses without tapping into the tax-qualified individual accounts, those balances are assumed to be invested in a non-tax-advantaged account where the investment income is taxed as ordinary income. Individual accounts are tracked until the point at which they are depleted. At that point, any net housing equity is assumed to be added to retirement savings in the form of a lump-sum distribution (not a reverse annuity mortgage (RAM)). If all the retirement savings are exhausted and if the Social Security and defined benefit payments are not sufficient to pay expenses, the individual is designated as having run short of money at that point.

Appendix B: Brief Chronology of the EBRI Retirement Security Projection Model[®]

- The Retirement Security Projection Model[®] (RSPM) grew out of a multi-year project to analyze the future economic well-being of the retired population at the state level. The Employee Benefit Research Institute (EBRI) and the Milbank Memorial Fund, working with the office of the governor of Oregon, set out in the late 1990s to see if this situation could be evaluated for the state. The resulting analysis (VanDerhei and Copeland, September 2001) focused primarily on simulated retirement wealth with a comparison to ad hoc thresholds for retirement expenditures.
- The April 2001 *EBRI Issue Brief* (VanDerhei and Copeland, April 2001) highlighted the changes in private pension plan participation for defined benefit (DB) and defined contribution (DC) plans and used the model to quantify how much the importance of individual-account plans was expected to increase because of these changes.
- With the assistance of the Kansas Insurance Department, EBRI was able to create the EBRI Retirement Readiness Rating[™] (RRR) based on a full stochastic decumulation model that took into account the household's longevity risk, post-retirement investment risk, and exposure to potentially catastrophic nursing home and home health-care risks. The first state-level RSPM results were presented to the Kansas Long-Term Care Services Task Force on July 11, 2002 (VanDerhei and Copeland, July 2002), and the results of the Massachusetts study were presented on Dec. 1, 2002 (VanDerhei and Copeland, December 2002).
- RSPM was expanded to a national model—the first national, micro-simulation, retirement-income-adequacy model, built in part from administrative 401(k) data. The initial results were presented at the EBRI December 2003 policy forum (VanDerhei and Copeland, 2003).
- The basic model was subsequently modified for testimony for the Senate Special Committee on Aging to quantify the beneficial impact of a mandatory contribution of 5 percent of compensation (VanDerhei, 2004).
- The model was enhanced to allow an analysis of the impact of annuitizing defined contribution and individual retirement account (IRA) balances at retirement age (VanDerhei and Copeland, 2004).
- Additional refinements were introduced to evaluate the impact of purchasing long-term care insurance on retirement income adequacy (VanDerhei, 2005).
- The model was used to evaluate the impact of defined benefit freezes on participants by simulating the minimum employer-contribution rate that would be needed to financially indemnify the employees for the reduction in their expected retirement income under various rate-of-return assumptions (VanDerhei, March 2006).
- Later that year, an updated version of the model was developed to enhance the EBRI interactive Ballpark E\$timate[®] by providing Monte Carlo simulations of the replacement rates needed for specific probabilities of retirement-income adequacy under alternative-risk-management treatments (VanDerhei, September 2006).
- RSPM was significantly enhanced for the May 2008 EBRI policy forum by allowing automatic enrollment of 401(k) participants with the potential for automatic escalation of contributions to be included (VanDerhei and Copeland, 2008).
- Additional modifications were added for a Pension Research Council presentation that involved a “winners/losers” analysis of defined benefit freezes and the enhanced employer contributions provided to defined contribution plans at the time the defined benefit plans were frozen (Copeland and VanDerhei, 2010).
- Also in 2009, a new subroutine was added to allow simulations of various styles of target-date funds for a comparison with participant-directed investments (VanDerhei, June 2009).
- In April 2010, the model was completely re-parameterized with 401(k)-plan design parameters for sponsors that had adopted automatic-enrollment provisions (VanDerhei, April 2010).
- A completely updated version of the national model was produced for the May 2010 EBRI policy forum and used in the July 2010 *EBRI Issue Brief* (VanDerhei and Copeland, 2010).

- The new model was used to analyze how eligibility for participation in a defined contribution plan impacts retirement income adequacy in September 2010 (VanDerhei, September 2010), and was later used to compute Retirement Savings Shortfalls (RSS) for Baby Boomers and Generation Xers in October 2010 (VanDerhei, October 2010a).
- In October 2010 testimony before the Senate Health, Education, Labor and Pensions Committee on “The Wobbly Stool: Retirement (In)security in America,” the model was used to analyze the relative importance of employer-provided retirement benefits and Social Security (VanDerhei, October 2010b).
- The November 2010 *EBRI Issue Brief* expanded upon earlier work by EBRI to provide the first results of a new simulation model that estimated the impact of changing 401(k) plan design variables and assumptions on retirement income adequacy. Until recently however, there was extremely limited evidence on the impact of automatic contribution escalation (VanDerhei and Lucas, 2010).
- In February 2011, the model was used to analyze the impact of the 2008–2009 crisis in the financial and real estate markets on retirement income adequacy (VanDerhei, February 2011).
- An April 2011 article introduced a new method of analyzing the results from RSPM (VanDerhei, April 2011). Rather than simply computing an overall percentage of the simulated life paths in a particular cohort that would not have sufficient retirement income to pay for the simulated expenses, the new method computed the percentage of households that would meet that requirement more than a specified percentage of times in the simulation.
- As explored in the June 2011 *EBRI Issue Brief*, the RSPM allowed retirement-income adequacy to be assessed at retirement ages later than 65 (VanDerhei and Copeland, June 2011).
- In a July 2011 *EBRI Notes* article (VanDerhei, July 2011), RSPM was used to provide preliminary evidence of the impact of the “20/20 caps” on projected retirement accumulations proposed by the National Commission on Fiscal Responsibility and Reform.
- The August 2011 *EBRI Notes* article (VanDerhei, August 2011) used RSPM to analyze the impact of defined benefit plans in achieving retirement income adequacy for Baby Boomers and Gen Xers.
- In September, it was used to support testimony before the Senate Finance Committee (VanDerhei, September 2011) in analyzing the potential impact of various types of tax-reform options on retirement income. This was expanded in the November 2011 *EBRI Issue Brief* (VanDerhei, November 2011).
- A March 2012 *EBRI Notes* article (VanDerhei, March 2012) used new survey results to update the analysis of the potential impact of various types of tax-reform options on retirement income.
- The May 2012 *EBRI Notes* article (VanDerhei, May 2012) provided 2012 updates for the previously published RRRs as well as the RSS.
- The June 2012 *EBRI Notes* article (VanDerhei, June 2012) introduced severity categories in the RSS projections for Gen Xers.
- The August 2012 *EBRI Notes* article (VanDerhei, August 2012) provided additional evidence on whether deferring retirement to age 70 would provide retirement income adequacy for the vast majority of Baby Boomers and Gen Xers.
- The September 2012 *EBRI Notes* article (VanDerhei, September 2012) analyzed the impact of increasing the default-contribution rate for automatic enrollment 401(k) plans with automatic escalation of contributions.
- The November 2012 *EBRI Notes* article (VanDerhei, November 2012) reclassified the RRRs to provide additional information on those substantially above the threshold; close to the threshold; and substantially below the threshold.
- The March 2013 *EBRI Notes* article (VanDerhei and Adams, March 2013) used a modified version of RSPM to assess the probability that respondent households would not run short of money in retirement if they did, in fact, accumulate the amount they said would be required in the 2013 Retirement Confidence Survey.

- The June 2013 *EBRI Issue Brief* (VanDerhei, June 2013a) used RSPM to provide a direct comparison of the likely benefits under specific types of DC and DB retirement plans.
- The June 2013 *EBRI Notes* article (VanDerhei, June 2013b) used RSPM to show that 25–27 percent of Baby Boomers and Gen Xers who would have had adequate retirement income under return assumptions based on historical averages were simulated to end up running short of money in retirement if today’s historically low interest rates were assumed to be a permanent condition.
- The August 2013 *EBRI Issue Brief* (VanDerhei, August 2013) used RSPM to analyze the Obama administration’s fiscal year (FY) 2014 budget proposal to include a cap on tax-deferred retirement savings that would limit the amounts accumulated in specified retirement accounts to that necessary to provide the maximum annuity permitted for a tax-qualified defined benefit plan under current law.
- The December 2013 *EBRI Notes* article (VanDerhei, December 2013) used RSPM to expand the analysis in the June 2013 *EBRI Issue Brief*. Rather than trying to reflect the real-world variation in DB accruals, the baseline analysis in the previous analysis used the median accrual rate in the sample (1.5 percent of final compensation per year of participation) as the stylized value for the baseline counterfactual simulations. The new research computed the actual final-average DB accrual that would be required to provide an equal amount of retirement income at age 65 as would be produced by the annuitized value of the projected sum of the 401(k) and IRA rollover balances.
- The January 2014 *EBRI Notes* article (VanDerhei, January 2014) used RSPM to model the likelihood that 401(k) participants currently ages 25–29 would have sufficient 401(k) accumulations that, when combined with Social Security benefits, could replace 60, 70 or 80 percent of their preretirement income on an inflation-adjusted basis.
- The February 2014 *EBRI Issue Brief* (VanDerhei, February 2014) focused on how the probability of not running short of money in retirement varies with respect to longevity, investment return, and potential long-term health care costs in retirement (e.g., nursing home costs).

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Endnotes

¹ The generation born between 1948–1964.

² The generation born between 1965–1974.

³ See Appendix A for a brief technical description of RSPM. Additional detail is provided in VanDerhei and Copeland (2010).

⁴ A brief chronology of RSPM is contained in Appendix B.

⁵ VanDerhei and Copeland (April 2001) used the early version of the model to highlight the changes in private-pension-plan participation for defined benefit (DB) and defined contribution (DC) plans and used the model to quantify how much the importance of individual-account plans was expected to increase because of these changes.

⁶ VanDerhei and Copeland (2003).

⁷ See VanDerhei (June 2012) for details.

⁸ VanDerhei (February 2014).

⁹ This a different set of scenarios than those modeled in Appendix B of VanDerhei (February 2014). In that case, a consistent 10 or 20 percent reduction was taken across both categories of expenditures. In this *Notes* article, it was decided to only take the reductions for the component the household is likely to have a fair amount of control over (i.e., the deterministic expenses).

¹⁰ See VanDerhei (February 2014) for additional detail on the impact of longevity risk and long-term care costs.

Consumer Engagement Among HSA and HRA Enrollees: Findings from the 2013 EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey

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Introduction

In 2001, a handful of employers started offering health reimbursement arrangements (HRAs)—a then-new type of health plan. The most prevalent HRA plan design then had a deductible of at least \$1,000 for employee-only coverage and a tax-preferred account that could be tapped by workers and their families to pay out-of-pocket health care expenses. The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 included a provision to allow individuals with certain high-deductible health plans to contribute to a health savings account (HSA). Overall, 26.1 million individuals with private insurance, representing 15 percent of the market, were either in an HRA or an HSA-eligible plan (Fronstin, 2013).

HRAs and HSAs are very similar, though there are some key differences that may provide different incentives related to using health care services, and thus, different consumer engagement experiences. An HSA is owned by the individual with the high-deductible health plan and is completely portable. There is no annual use-it-or-lose-it rule associated with an HSA, as any money left in the account at the end of the year automatically rolls over and is available for future use. Both individuals and employers are allowed to contribute to an HSA. Distributions from an HSA can be made at any time. An individual need not be covered by a high-deductible health plan to withdraw money from the HSA. This means that individuals who do not use all the money in their HSA during their working years can use it to pay out-of-pocket expenses when they are retired.

In contrast, an HRA is an employer-funded health plan that reimburses employees for qualified medical expenses. HRAs are typically set up as notional arrangements. Leftover funds at the end of each year can be carried over for future use (at the employer's discretion), allowing employees to accumulate funds over time. In principle, at least, this provides an incentive for individuals to make health care purchases responsibly. However, an employer is not required to make the unused balance available to a worker when he or she leaves.

Ultimately, an HSA creates a stronger financial incentive than an HRA for workers to be more engaged in their health care because the account is owned by the worker and completely portable upon job change. Haviland, et al. (2011) and citations within it found that HSA plans have a greater effect than HRA plans on the use of health care services and the cost per episode.

This article examines how consumer engagement varies for individuals enrolled in HSA-eligible plans and HRAs. The HSA sample includes only individuals who have an HSA. Data from the 2013 EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey (CEHCS) are used for the analysis.¹ Factors affecting use of health care services, choice of health plan, use of cost information, and participation in wellness programs are examined.

Cost-Conscious Use of Health Care Services

The 2013 CEHCS found evidence that adults with an HSA were more likely than those with an HRA to exhibit a number of cost-conscious behaviors related to use of health care services. Specifically, those with an HSA were more likely than those with an HRA to report that they asked for a generic drug instead of a brand name (52 percent HSA vs. 49 percent HRA); checked the price of a service before getting care (41 percent HSA vs. 34 percent HRA); asked a doctor to recommend less-costly prescriptions (40 percent HSA vs. 38 percent HRA); developed a budget to manage health care expenses (32 percent HSA vs. 22 percent HRA); and used an online, cost-tracking tool provided by the health plan (27 percent HSA vs. 21 percent HRA) (Figure 1).

Health Plan Choice Decisions

The 2013 CEHCS found that adults with an HSA were more likely than those with an HRA to be engaged in their choice of health plan, when they had a choice. Specifically, those with an HSA were more likely than those with an HRA to report that they had talked to friends, family, and colleagues about the plans (44 percent HSA vs. 32 percent HRA); used other websites to learn about health plan choices (41 percent HSA vs. 32 percent HRA); consulted with their employer's HR staff (39 percent HSA vs. 26 percent HRA); consulted with an insurance broker to understand plan choices (31 percent HSA vs. 11 percent HRA); asked health plans to send information in the mail (28 percent HSA vs. 10 percent HRA); and talked to their doctor or other health professional about the plan options (19 percent HSA vs. 5 percent HRA) (Figure 2). While individuals with an HSA were more likely than those with an HRA to have visited health plans' websites to learn about their plans or attended a meeting where health plan choices were explained, the differences were not statistically significant.

Availability and Use of Cost Information

Consumer-driven health plans (CDHPs) are designed to promote heightened sensitivity to cost in people's decisions about their health care. Yet the ability of people to make informed decisions is highly dependent on the extent to which they have access to useful information.

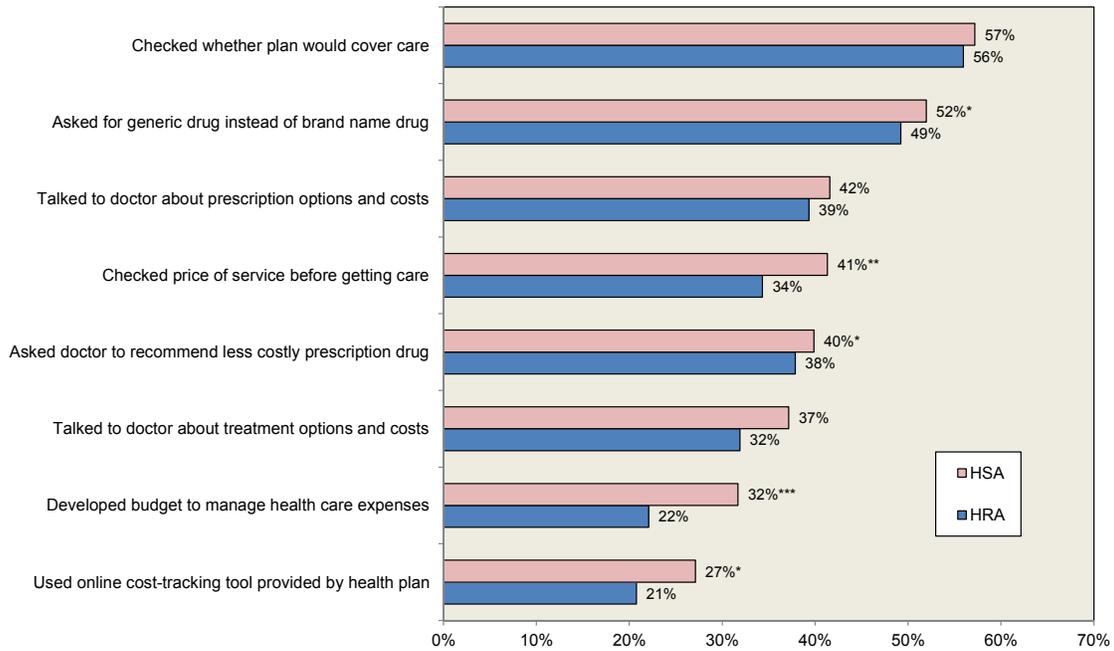
The 2013 CEHCS asked if an individual tried to find the cost of health care services before getting care. Individuals with an HSA were more likely than those with an HRA to report that they tried to find cost information. Forty-four percent of individuals with an HSA reported that they tried to find the cost of health care services before getting care, compared with 37 percent among individuals with an HRA (Figure 3). Similarly, individuals with an HSA were more likely than those with an HRA to report that they found the information they were looking for. Nearly 80 percent of individuals with an HSA found the information they were seeking, compared with 67 percent among individuals with an HRA.

Participation in Wellness Programs

Employers and insurers offer a number of different types of wellness benefits—programs designed to promote health and to prevent disease. The 2013 CEHCS examined availability and participation in three types of wellness programs: a health-risk assessment, a health-promotion program that included a number of different types of benefits, and a biometric screening.²

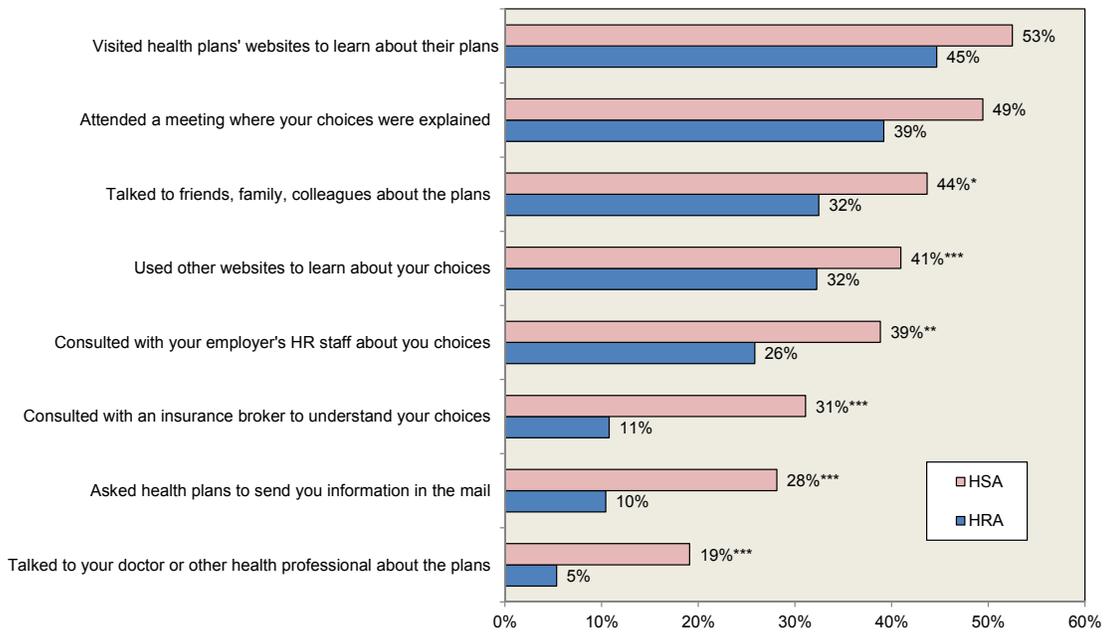
The survey found that individuals with an HSA were more likely than individuals with an HRA to report that they had participated in a health-risk assessment, health-promotion program, or biometric screening program when it was available. Four-fifths (81 percent) of individuals with an HSA participated in a health-risk assessment, compared with 66 percent of individuals with an HRA (Figure 4). Nearly two-thirds (63 percent) of individuals with an HSA participated in a health-promotion program, compared with 48 percent of individuals with an HRA. Over four-fifths (83 percent) of individuals with an HSA participated in biometric screening, compared with 72 percent of individuals with an HRA.

Figure 1
Cost-Conscious Decision Making, by Type of Health Plan, 2013



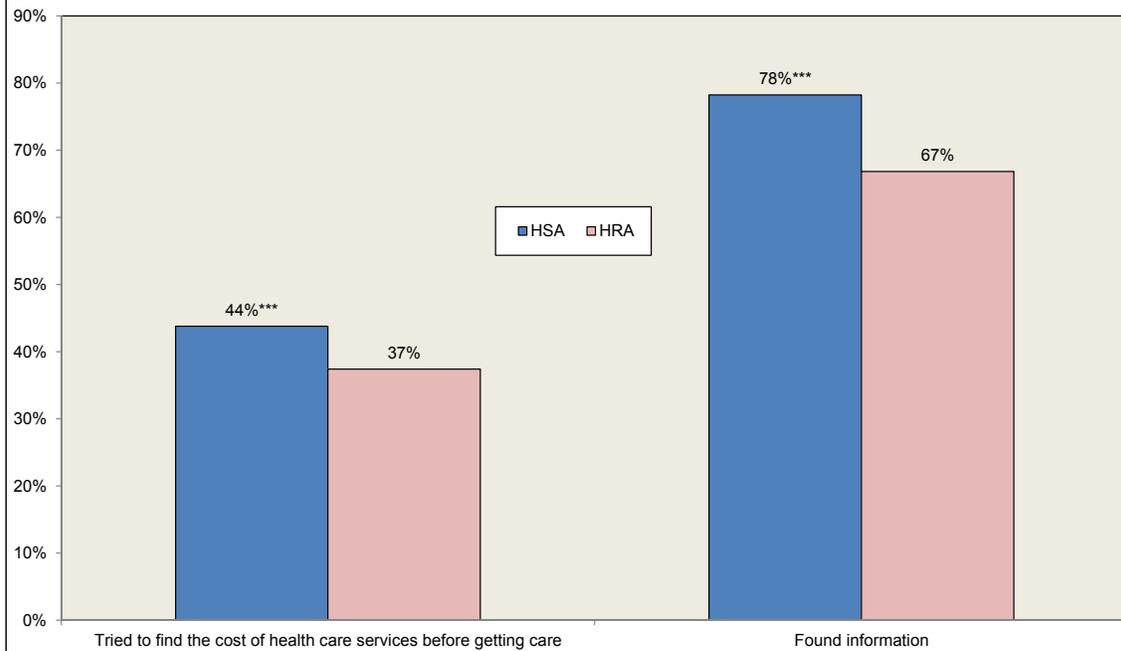
Source: EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey, 2013.
 Difference between HSA and HRA is statistically significant at *** p<0.01; ** p<0.05; * p<0.10.

Figure 2
Informed Decision Making for Health Plan Choice, by Type of Health Plan, among Individuals With a Choice of Health Plan, 2013



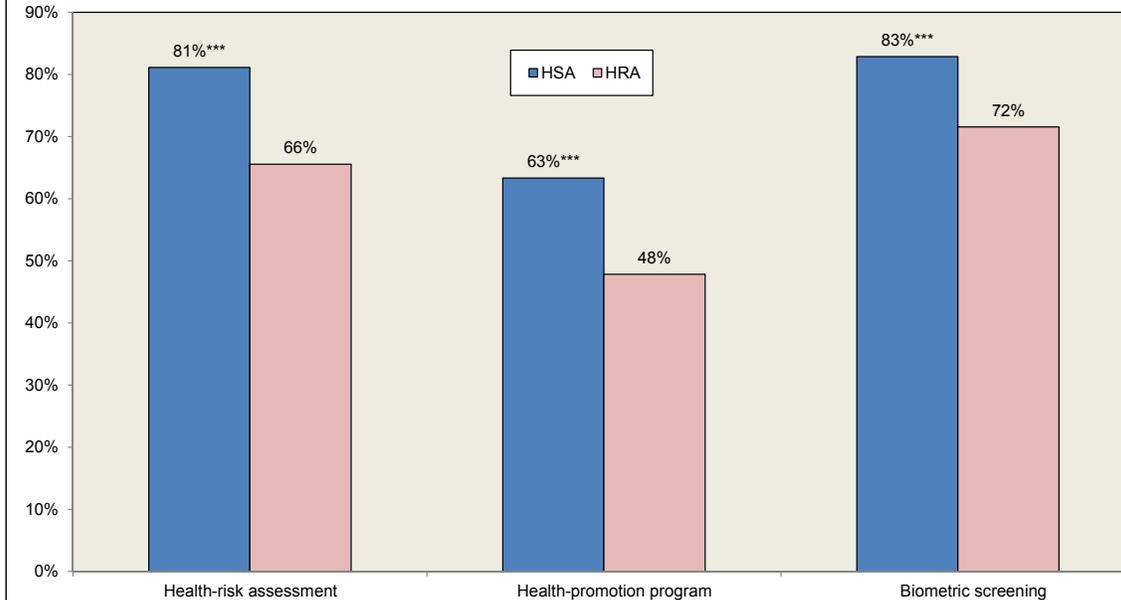
Source: EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey, 2013.
 Difference between HSA and HRA is statistically significant at *** p<0.01; ** p<0.05; * p<0.10.

Figure 3
Availability and Use of Cost Information, 2013



Source: EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey, 2013.
 Difference between HSA and HRA is statistically significant at *** p<0.01; ** p<0.05; * p<0.10.

Figure 4
Individual Participates in Wellness Program Offered by Employer, among Those Offered a Wellness Program, by Type of Health Plan, 2013



Source: EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey, 2013.
 Difference between HSA and HRA is statistically significant at *** p<0.01; ** p<0.05; * p<0.10.

Demographic Differences

Demographics may explain some of the difference in consumer engagement between individuals with an HSA and an HRA. Individuals with an HSA were more likely than those with an HRA to be male: One-half (52 percent) of individuals with an HSA were male, compared with 39 percent of individuals with an HRA (Figure 5).

Differences in the age composition of individuals with an HSA and HRA were found. Specifically, individuals with an HSA were more likely than those with an HRA to be in the 21–34-year-old age group, while individuals with an HRA were more likely than those with an HSA to be in the 35–44 age group. There were no differences in the percentage that were in either the 45–54 age cohort or the 55–64 age cohort. There were also no differences by marital status.

Individuals with an HSA were more likely than those with an HRA to be Hispanic or Asian. Specifically, 13 percent of individuals with an HSA were Hispanic and 8 percent were Asian, compared with 6 percent Hispanic and 4 percent Asian among individuals with an HRA.

Individuals with an HSA were more likely than those with an HRA to be highly educated. One quarter (26 percent) of individuals with an HSA had a graduate degree, compared with one-fifth (19 percent) of individuals with an HRA.

Finally, individuals with an HSA were more likely than those with an HRA to be in the highest-income group. One-quarter (27 percent) of those with an HSA had household income of \$150,000 or more, compared with 16 percent among individuals with an HRA.

Health Status and Healthy Behaviors

An individual's health status may also influence how engaged he or she is in health insurance and health-care-use decisions. The 2013 CEHCS found that individuals with an HSA were more likely than those with an HRA to report that they were in excellent or very good health and that they exercise at least four days per week (Figure 6). Individuals with an HSA were also less likely than those with an HRA to be obese, though they were more likely to smoke cigarettes.

Appendix

About the 2013 EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey

The Employee Benefit Research Institute (EBRI) and Greenwald & Associates created the EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey (CEHCS) to examine issues surrounding consumer-directed health care, including the cost of insurance, the cost of care, satisfaction with health care, satisfaction with a health care plan, reasons for choosing a plan, and sources of health information. The 2013 CEHCS is comparable with findings from the 2005–2007 EBRI/Commonwealth Fund Consumerism in Health Care Surveys and the 2008–2012 CEHCS.

The 2013 survey was conducted within the United States between August 8 and August 20, 2013, through a 13-minute Internet survey. The national or base sample was drawn from Ipsos's online panel of Internet users who have agreed to participate in research surveys.³ Two thousand adults ages 21–64 who had health insurance through an employer or purchased directly from a carrier were drawn randomly from the Ipsos sample for this base sample. This sample was stratified by gender, age, region, income, and race. The response rate was 37.2 percent (32 percent for the base sample or national sample, and 44 percent for the oversample). As a nonprobability sample, traditional survey-margin-of-error estimates do not apply. However, had the survey used a probability sample, the margin of error for the national sample would have been ± 2.2 percent.

The sample was divided into three groups: those with a consumer-driven health plan (CDHP), those with a high-deductible health plan (HDHP), and those with traditional health coverage. Individuals were assigned to the CDHP or HDHP group if they had a deductible of at least \$1,000 for individual coverage or \$2,000 for family coverage. To be

assigned to the CDHP group, they must also have had an account, such as a health savings account (HSA) or health reimbursement arrangement (HRA), with a rollover provision that they could use to pay for medical expenses or the ability to take their account with them should they change jobs. Individuals with only a flexible spending account (FSA) were not included in the CDHP group.

Because the base sample (national sample) included only 180 individuals in a CDHP and 397 individuals with an HDHP, an oversample of individuals with a CDHP or HDHP was added. The oversample included 1,062 individuals with a CDHP. In addition to being stratified, the base sample was also weighted by gender, age, education, region, income, and race/ethnicity to reflect the actual proportions in the population ages 21–64 with private health insurance coverage.⁴ The CDHP oversample was weighted by gender, age, income, and race/ethnicity. More information can be found in Fronstin (2013).

While panel Internet surveys are nonrandom, studies have demonstrated that such surveys, when carefully designed, obtain results comparable with random-digit-dial telephone surveys. Taylor, (2003), for example, provides the results from a number of surveys that were conducted at the same time using the same questionnaires both via telephone and online. He found that the use of demographic weighting alone was sufficient to bring almost all of the results from the online survey close to the replies from the parallel telephone survey. He also found that in some cases, propensity weighting (meaning the propensity for a certain type of person to be online) reduced the remaining gaps, but in other cases it did not. Perhaps the most striking difference in demographics between telephone and online surveys was the under-representation of minorities in online samples.

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Endnotes

¹ More information about the data can be found in the appendix and in Fronstin, 2013.

² The specific question was as follows: Does your employer offer any of the following wellness programs?

- Health-risk assessment, where you answer a questionnaire and then a medical professional examines your health history to identify any conditions you may have or that you might be at risk of developing.
- Programs for improving your health, like for weight loss, walking or other exercise, nutrition, stress management, smoking cessation, and so on.
- Biometric screenings, which are measurements or blood work to determine your health status including blood pressure, cholesterol, weight, height, etc.

³ See www.globalopinionpanels.com/home

⁴ In theory, a random sample of 2,000 yields a statistical precision of plus or minus 2.2 percentage points (with 95 percent confidence) of what the results would be if the entire population ages 21–64 with private health insurance coverage was surveyed with complete accuracy. There are also other possible sources of error in all surveys that may be more serious than theoretical calculations of sampling error. These include refusals to be interviewed and other forms of nonresponse, the effects of question wording and question order, and screening. While attempts are made to minimize these factors, it is impossible to quantify the errors that may result from them.

Figure 5
Demographics, by Type of Health Plan, 2013

	HSA	HRA
Gender		
Female	48%	61%
Male	52	39
Age		
21–34	27	16
35–44	22	34
45–54	31	29
55–64	21	21
Marital Status		
Not married	20	20
Married	80	80
Race/Ethnicity		
White	74	80
Black	4	5
Hispanic	13	6
Asian	8	4
Other	1	6
Education		
High school graduate	23	33
College graduate	51	47
Graduate degree	26	19
Household Income		
Less than \$30,000	4	2
\$30,000–\$49,999	9	14
\$50,000–\$99,999	33	36
\$100,000–\$149,999	24	26
\$150,000 or more	27	16
Declined to answer	3	6

Source: EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey, 2013.

Figure 6
Health Status and Healthy Behaviors,
by Type of Health Plan, 2013

	HSA	HRA
Health Status		
Excellent	21%	13%
Very good	50	43
Good	25	35
Fair or Poor	3	10
Smokes Cigarettes		
Yes	18	9
No	82	91
Exercises		
Never	12	20
1 day per week, on average	16	16
2–3 days per week, on average	34	35
4–5 days per week, on average	25	17
More than 5 days, on average	13	12
BMI		
Underweight	4	3
Normal	36	34
Overweight	33	31
Obese	19	24
Don't know	7	9

Source: EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey, 2013.

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