

Notes

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A T A G L A N C E

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by Jack VanDerhei, Ph.D., EBRI

- Overall, 25–27 percent of Baby Boomers and Gen Xers who would have had adequate retirement income under return assumptions based on historical averages are simulated to end up running short of money in retirement if today's historically low interest rates are assumed to be a permanent condition, assuming retirement income/wealth covers 100 percent of simulated retirement expense.
- A low-yield-rate environment may have an extremely large impact on retirement-income failure rates when viewed in isolation. However, the impact is muted somewhat when included as part of the entire retirement portfolio (e.g., Social Security benefits, possible defined benefit accruals, and net housing equity).
- There appears to be a very limited impact of a low-yield-rate environment on retirement income adequacy for those in the lowest- (pre-retirement) income quartile, given the relatively small level of defined contribution and IRA assets and the relatively large contribution of Social Security benefits for this group. However, there is a very significant impact for the top three income quartiles.

Use of Health Care Services and Access Issues by Type of Health Plan: Findings from the EBRI/MGA Consumer Engagement in Health Care Survey, *by Paul Fronstin, Ph.D., EBRI*

- In 2012, 26–40 percent of respondents reported some type of access-to-health-care issue for either themselves or family members. Individuals in consumer-driven health plans (CDHPs) and high-deductible health plans (HDHPs) were more likely than individuals with traditional coverage to report access issues
- Individuals in households with less than \$50,000 in annual income were more likely than those in households with \$50,000 or more in annual income to report access issues.
- Very few differences in access issues were found by whether employers contributed to the account, but access issues were found by the level of contribution.
- Length of time with the account had an impact on access issues, with 2012 being the first year where it was found that more years with the account were more likely to be associated with access issues.

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

Introduction

While several sectors of the economy have benefitted from the U.S. Federal Reserve holding short-term interest rates near zero to support an economic recovery, current bond yields are at historical lows, and the potential impact on retirement income adequacy has been of growing concern.¹ Recently, Finke, Pfau and Blanchett (2013) analyzed failure rates (in essence, retirement savings being depleted before the end of the assumed 30-year period) for 4-percent, inflation-adjusted withdrawals over 30 years with a 50/50 stock/bond asset allocation for three different asset-return assumptions:

- *Historical averages:* an arithmetic mean of 8.6 percent real returns for stocks and 2.6 percent real returns for bonds.
- *Zero-real-returns bond returns:* 6.0 percent real for stocks and 0 percent real for bonds
- *Real bond returns equal five-year TIPS² yield at the start of 2013:* 4.6 percent real for stocks and -1.4 percent real for bonds.

They found a 6 percent failure rate for their Monte Carlo simulation when they applied the historical averages. The failure rate jumped dramatically to 33 percent for real bond returns that equaled zero and 57 percent for those that equaled negative 1.4 percent.

While this provides dramatic evidence of how sensitive the failure rate on *this portion* of the retirement portfolio may be to bond-return assumptions, the fact that most of today's households will have other components (such as Social Security, defined benefit accruals and net housing equity) that will have little, if any, sensitivity to these assumptions leaves many public-policy analysts wondering what a sustained, low-yield-rate environment would mean for retirement income adequacy for future cohorts of retirees.

This analysis attempts to provide a first set of answers to this question by using the EBRI Retirement Security Projection Model[®] (RSPM) to determine the impact on the EBRI Retirement Readiness Rating[™] (RRR) for Early Baby Boomers, Late Boomers, and Generation Xers³ based on the different return scenarios used in Finke, Pfau and Blanchett (2013), assuming a permanent shift in the distribution of the expected returns. The analysis also shows how this varies by (preretirement) income quartile and years of future eligibility for a defined contribution plan, as well as by selection of a specific adequacy threshold (e.g., sufficient retirement resources to cover 100 percent of simulated expenses, as opposed to 80 or 90 percent). Finally, an intermediate scenario is simulated for situations where the zero-real-bond-return scenario lasts for either five or 10 years, and then reverts to historical averages.

EBRI Retirement Security Projection Model[®]

One of the basic objectives of the RSPM is to simulate the percentage of the population that will be 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 and age groupings. The 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.⁴

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 balances.
- Individual retirement account (IRA) balances.
- Defined benefit 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 minimum retirement expenditures, defined as a combination of deterministic expenses from the Consumer Expenditure Survey (as a function of age and income) 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 and immediately begin to withdraw money from their individual accounts (defined contribution and cash balance plans, as well as IRAs) whenever the sum of their expenses and uninsured medical expenses exceed the projected, after-tax annual income from Social Security and defined benefit plans (if any). 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). If all the retirement savings are exhausted and if the Social Security and defined benefit payments are not sufficient to pay expenses, the entity is designated as having run short of money at that point.

One of the primary outputs of the 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. In this article, the RRRs are supplemented with metrics on those with sufficient retirement resources to cover 80 or 90 percent of simulated expenses.

Consistent with the Finke, Pfau and Blanchett study return assumptions, the version of the RSPM used in this *Notes* article does not incorporate the impact of investment or management fees and uses three different distributions for real bond returns (arithmetic means of 2.6 percent, 0 percent, and -1.4 percent). Similar to their study, an equity premium of 6 percent for all three return scenarios is used.⁵

Results Under a Permanent, Low-Yield-Rate Scenario

Figure 1 analyzes the impact of permanent, low-yield-rate scenarios on RRRs by age cohort. At the historical-return assumptions⁶ (denoted as 8.6/2.6 in the figure), 55 percent of the Early Boomers are estimated to have sufficient retirement resources to cover 100 percent of the simulated retirement expenses. This increases to 57 percent for the Late Boomers and Gen Xers, whose projected retirements occur later.

However, if the real bond returns are assumed to be zero permanently and the equity premium is assumed to be 6 percent (denoted as 6/0 in the figure), these numbers drop by 10 percentage points (just 45 percent of the Early Boomers would be able to cover 100 percent of simulated retirement expenses, while 47 percent of Late Boomers and Gen Xers would meet this level of retirement income adequacy). Moreover, if real bond returns permanently drop to the five-year TIPS yield that held at the start of 2013 and the equity premium is still assumed to be 6 percent (denoted as 4.6/–1.4 in the figure), these numbers drop by another 4–5 percentage points; 40 percent of the Early Boomers would be able to cover 100 percent of simulated retirement expenses, while 42 percent of Late Boomers and 43 percent of the Gen Xers would meet this level of retirement income adequacy.

In previous Employee Benefit Research Institute (EBRI) publications (e.g., VanDerhei June 2012), the concept of RRR was expanded to show the percentage of simulated life paths that would have adequate retirement resources to cover either 80 or 90 percent of the simulated retirement expenses. Lowering the threshold for retirement readiness from 100 percent to 90 percent of simulated retirement expenses obviously increases the RRR. Applying historical-return assumptions to the case of Early Boomers, the RRR increases from 55 percent to 66 percent, while redefining the threshold to only 80 percent of the simulated retirement expenses provides an additional increase to 81 percent.

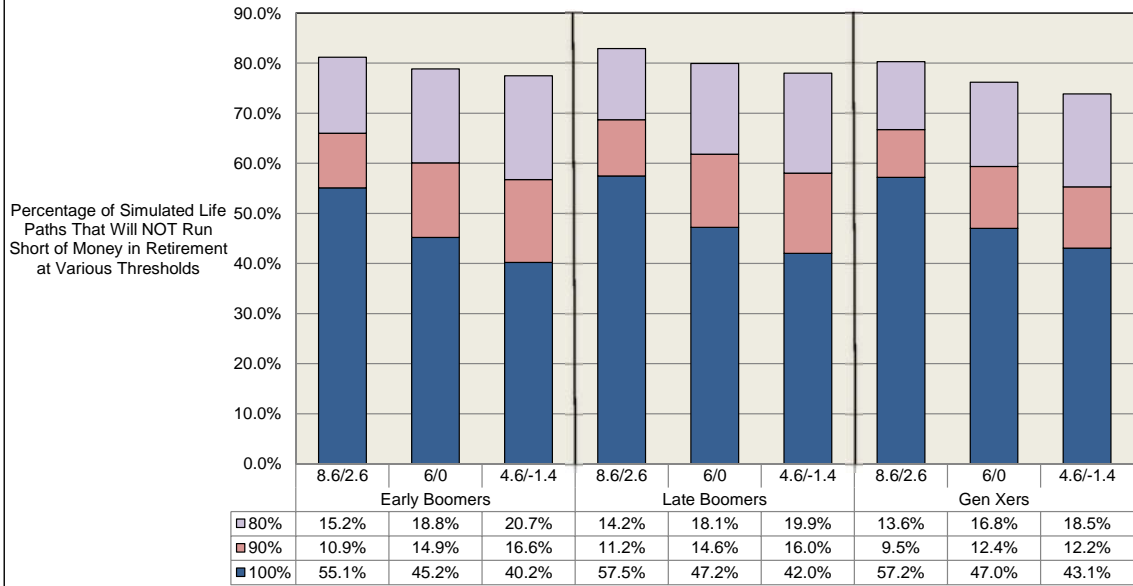
Figure 1 shows that the overall impact of a permanent, low-yield-rate scenario on RRRs depends on the level of simulated retirement expenses used as a threshold, and that a lower threshold mitigates that impact. For example, if the 100-percent threshold is used for Early Boomers, the RRR decreases from 55 percent at historical returns to only 40 percent at the level based on current TIPS yields. This drop of 15 percentage points is larger than the similar comparison at a 90 percent threshold (a 9 percentage point drop) and much larger than the difference at an 80 percent threshold (a 4 percentage point drop).

Figure 2 illustrates the impact of permanent, low-yield-rate scenarios on RRRs by preretirement wage quartile. The impact of changing from the historical-return assumptions to the two lower-interest-rate scenarios is negligible for the lowest-income quartile even at the 100-percent-expense threshold: the RRR decreases only 0.4 percentage points (from 16.4 percent to 16.0 percent) when the bond return is assumed to decrease from historical levels to zero.

However, the decrease is much more substantial for the other three income quartiles: 8 percentage points for the second-income quartile and double-digits for both the third- and fourth-income quartiles (12 and 10 percentage points, respectively). A similar outcome occurs when comparing the historical return scenarios with those based on the current, five-year TIPS returns: The RRR decrease for the lowest-income quartile is only 0.5 percentage points, but the decrease widens to 11 percentage points for the second-income quartile and 17 percentage points for both the third- and fourth-income quartiles. In sum, the lower interest-rate scenario has a progressively larger impact on simulated retirement readiness as income rises.

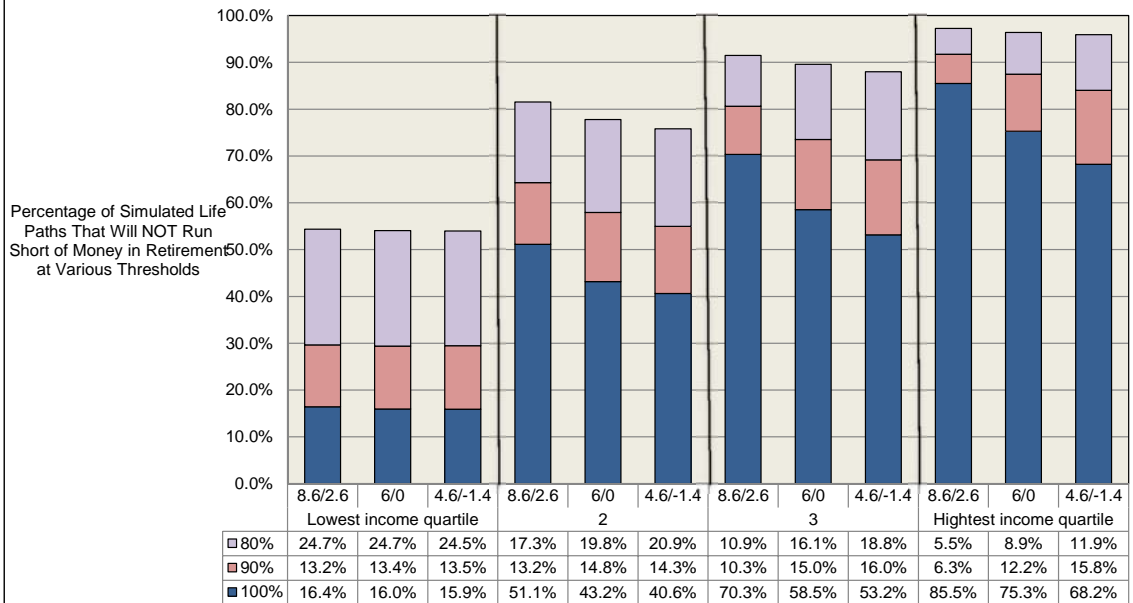
Figure 3 analyzes the impact of permanent, low-yield-rate scenarios on RRRs by future years of eligibility for a defined contribution plan. Given the relatively short durations remaining until retirement age for the two Baby Boomer cohorts, this analysis is limited to just Gen Xers. Those in the first eligibility classification (zero years of future eligibility) experience only a small decrease in the RRR going from the historical returns to the zero real returns for bonds even at the 100-percent-expense threshold (a 6 percentage-point decrease, from 39 percent to 33 percent). However, as one moves right on the horizontal axis with more years of future eligibility (and hence a higher likelihood of more years of future participation), the influence of a lower interest rate scenario increases. For example, moving from the historical-return assumption to a zero-real-interest-rate assumption results in an 11 percentage-point decrease in simulated retirement readiness for Gen Xers with one to nine years of future eligibility, and a 15 percentage-point decrease for those with 10 or more years of future

Figure 1
Impact of Low-Interest-Rate Scenarios on Retirement Readiness Ratings,TM by Age Cohort



Source: EBRI Retirement Security Projection Model[®] Versions 1750, 1755 and 1760.
 Return assumptions are presented as arithmetic means for equities and bonds as real returns. Investment expenses are not incorporated in this version of the model.

Figure 2
Impact of Low-Interest-Rate Scenarios on Retirement Readiness Ratings,TM by Preetirement Wage Quartile



Source: EBRI Retirement Security Projection Model[®] Versions 1750, 1755 and 1760.
 Return assumptions are presented as arithmetic means for equities and bonds as real returns. Investment expenses are not incorporated in this version of the model.

eligibility. These phenomena are even more pronounced when moving from the historical-return assumptions to real bond returns based on current five-year TIPS returns: an 8 percentage-point decrease in the RRR for those with no years of future eligibility, 15 percentage-point decrease for those with one–nine years, a 21 percentage point decrease for those with 10–19 years, and a 22 percentage-point decrease for those with 20 or more years.

Results Under Temporary Low-Yield-Rate Scenarios

The previous results assumed a permanent shift to one of the alternative-investment-rate scenarios. While this provides a convenient approximation, what if this is only a temporary phenomenon, as many analysts predict?⁷ To assess the impact of a temporary, low-yield-rate scenario, Figure 4 illustrates the impact of the analysis shown in Figure 3, but under two alternative scenarios. Under the first, the zero-real-bond rate is assumed to last exactly five years after retirement age; thereafter, the historical-return assumptions are restored. The second scenario adopts the same approach, but this time the zero-real-bond assumptions are assumed to last through the first 10 years after retirement.⁸

Figure 4 shows that, at the 100-percent-expense threshold, as expected, the overall impact of a temporary, low-yield-rate scenario on RRRs is significantly less than the impact of a permanent, low-yield-rate scenario. For example, when the 100-percent threshold is used, the RRR for those with no future years of eligibility decreases from 39 percent at historical returns to 36 percent if the zero-real-bond-return assumption is expected to last for the first five years after retirement and to 35 percent if expected to last 10 years. This RRR decrease of 3 and 4 percentage points is less than the 6 percentage point decrease from that illustrated in Figure 3 when the decrease was projected to be permanent.

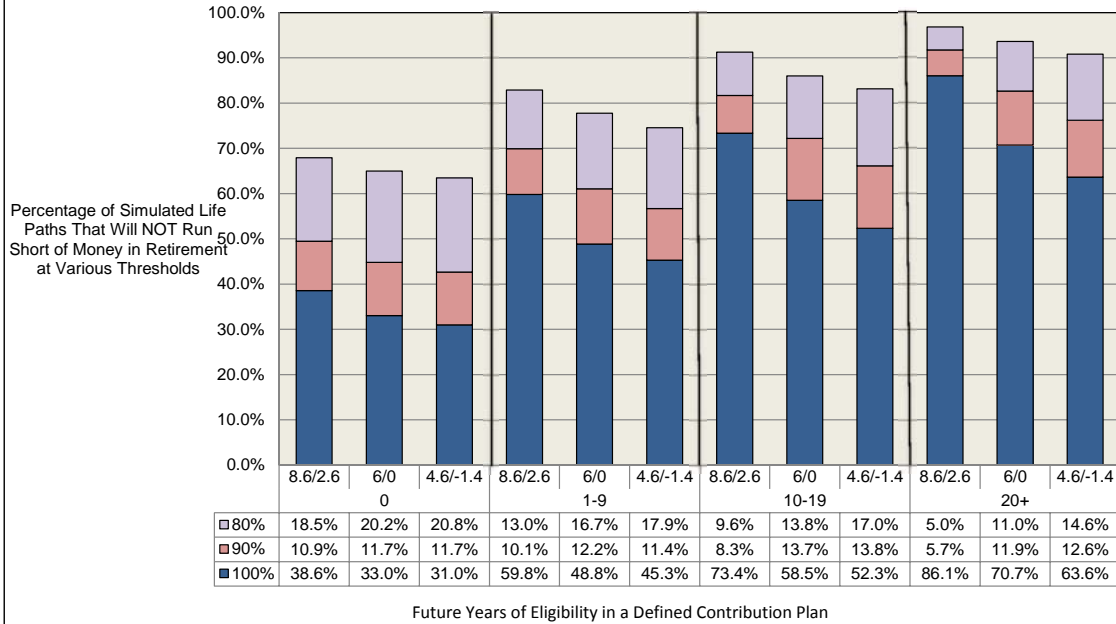
Similar results are seen for Gen Xers with future years of defined-contribution-plan eligibility. For those with one to nine years, a five-year, low-yield-rate environment after retirement would result in a 4 percentage-point decrease in the RRR, while a 10-year scenario would decrease the RRR by 7 percentage points (compared to 11 percentage points if that yield environment was permanent). For those with more than 10 years of future eligibility, the RRR would decrease 4–5 percentage points under a five-year scenario and 8 percentage points assuming a 10-year scenario (compared with a 15 percentage-point decrease for a five-year scenario if it was permanent).

Conclusion

As shown in previous research,⁹ a low-yield-rate environment may have an extremely large impact on retirement income failure rates, viewed in isolation. However, the impact is muted somewhat when considered as part of the entire retirement portfolio (e.g., Social Security benefits, possible defined benefit accruals, and net housing equity). The analysis in this article shows that, overall, 25–27 percent of Baby Boomers and Gen Xers who would have had adequate retirement income under return assumptions based on historical averages are simulated to end up running short of money in retirement if today's historically low interest rates are assumed to be a permanent condition, assuming retirement income/wealth must cover 100 percent of simulated retirement expense. However, the impact is significantly reduced at less stringent thresholds. For example, when only 80 percent of simulated retirement expenses must be covered, only 5–8 percent are projected to run short of money.

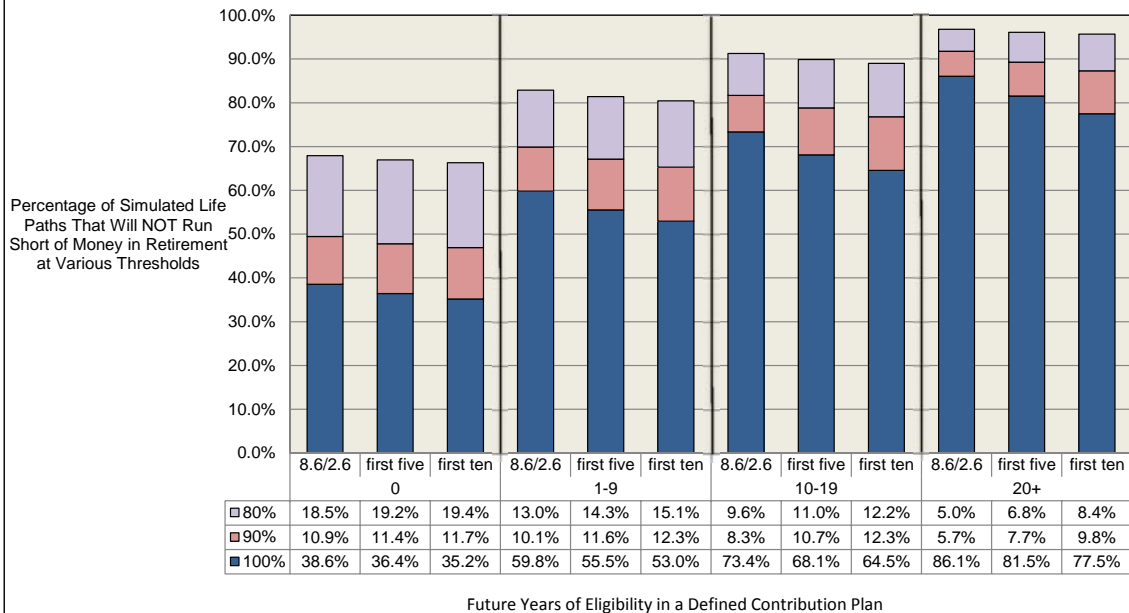
Not surprisingly, there appears to be a very limited impact of a low-yield-rate environment on retirement income adequacy for those in the lowest- (preretirement) income quartile, given the relatively small level of defined contribution and IRA assets and the relatively large contribution of Social Security benefits for this group. However, there is a very significant impact for the top three income quartiles.

Figure 3
Impact of Low-Interest-Rate Scenarios on Gen Xers' Retirement Readiness Ratings,TM by Future Years of Eligibility for a Defined Contribution Plan



Source: EBRI Retirement Security Projection Model[®] Versions 1750, 1755 and 1760. Return assumptions are presented as arithmetic means for equities and bonds as real returns. Investment expenses are not incorporated in this version of the model.

Figure 4
Impact of Low-Interest-Rate Scenarios on Gen Xers During the First 5/10 Years of Retirement on Retirement Readiness Ratings,TM by Future Years of Eligibility for a Defined Contribution Plan



Source: EBRI Retirement Security Projection Model[®] Versions 1750 and 1762. Return assumptions are presented as arithmetic means for equities and bonds as real returns. Investment expenses are not incorporated in this version of the model.

Finally, while it is helpful from a public-policy perspective to have quantification by various household categories as to the likely impact of a sustained, low-yield return environment on retirement income adequacy, this begs the question of what individual households should do to increase their probabilities of successful retirement outcomes.

In 2004, EBRI¹⁰ demonstrated the potential advantage of annuitizing defined contribution and IRA account balances at retirement for some cohorts of future retirees. However, given the millions of simulated life paths being modeled, this analysis did not attempt to optimize the degree of annuitization (in essence, it was an all-or-nothing proposition). Subsequent EBRI research¹¹ constructed a building block approach in which all three of the major retirement risks (investment risk, longevity risk and catastrophic long-term-care risks) were simultaneously simulated and optimal annuitization rates were determined for various asset allocations and household-risk preferences. A future EBRI publication will update these results for both historical- and lower-return assumptions.

Appendix A: Brief Chronology of EBRI-ERF Retirement Security Projection Model[®]

2001	The EBRI-ERF 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. 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, 2001a) focused primarily on simulated retirement wealth with a comparison to ad hoc thresholds for retirement expenditures.
2002	<p>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.</p> <p>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).</p>
2003	The 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 to quantify the beneficial impact of a mandatory contribution of 5 percent of compensation for testimony for the Senate Special Committee on Aging (VanDerhei, January 2004).
2004	The model was enhanced to allow an analysis of the impact of annuitizing defined contribution and IRA balances at retirement age (VanDerhei and Copeland, 2004).
2005	Additional refinements were introduced to evaluate the impact of purchasing long-term-care insurance on retirement income adequacy (VanDerhei, 2005).
2006	<p>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).</p> <p>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).</p>
2008	The 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).
2009	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).
2010	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 <i>Issue Brief</i> (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 RSSs for Baby Boomers and Generation Xers in October 2010 (VanDerhei, October 2010a).
	In October 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).
2011	In February 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 the 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 <i>EBRI Issue Brief</i> , the RSPM allowed retirement-income adequacy to be assessed at retirement ages later than 65 (VanDerhei and Copeland, June 2011).
	In a July 2011 <i>EBRI Notes</i> article (VanDerhei, July 2011), the 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 <i>EBRI Notes</i> article (VanDerhei, August 2011) used the RSPM to demonstrate 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 <i>EBRI Issue Brief</i> (VanDerhei, November 2011).
2012	A March 2012 <i>EBRI Notes</i> 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 <i>EBRI Notes</i> article (VanDerhei, May 2012) provided 2012 updates for the previously published RRRs as well as the RSS.
	The June 2012 <i>EBRI Notes</i> article (VanDerhei, June 2012) introduced severity categories in the RSS projections for Gen Xers.
	The August 2012 <i>EBRI Notes</i> 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 <i>EBRI Notes</i> 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 <i>EBRI Notes</i> 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.
2013	The March 2013 <i>EBRI Notes</i> article (VanDerhei and Adams, March 2013) used a modified version of the 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.

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Endnotes

¹ See Whitehouse (2010) for an example.

² Treasury Inflation-Protected Securities.

³ In this analysis, Early Boomers are defined as those born between 1948 and 1954; Late Boomers as born between 1955 and 1964; and Generation Xers as born between 1965 and 1974.

⁴ Appendix A provides a brief chronology of the Retirement Security Projection Model.[®]

⁵ Returns are assumed to follow a log-normal distribution.

⁶ Throughout this *Notes* article, the various return scenarios are referred to by the means of their arithmetic real returns. This should not be interpreted as a deterministic return simulation.

⁷ Whether households should rely on rising bond rates for their retirement planning is of course an open question. Finke, Pfau and Blanchett (2013) review the extant literature and conclude that there is little evidence to support the assumption that the higher real interest rate will return in the medium-term horizon.

⁸ Finke, Pfau and Blanchett (2013) performed a similar analysis for reversion to the historical bond returns after the first five or 10 years of retirement but used the current, five-year TIPS return instead of the zero real return used in this *Notes* article. It is also important to note that their study started the simulation at retirement, whereas the Baby Boomers and Gen Xers in this study will have a period of time before they reach retirement age. Similar to their analysis, this *Notes* article did not attempt to model short-term capital losses on the bond portfolio that may result from increase in yields.

⁹ Finke, Pfau and Blanchett (2013).

¹⁰ VanDerhei and Copeland (2004).

¹¹ VanDerhei (September 2006).

Use of Health Care Services and Access Issues by Type of Health Plan: Findings from the EBRI/MGA Consumer Engagement in Health Care Survey

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Introduction

In 2001, a handful of large, self-insured employers began offering health reimbursement arrangements (HRAs)—a then-new type of health plan. In 2004, individuals with certain high-deductible health plans were allowed by the Medicare Prescription Drug, Improvement, and Modernization Act of 2003 to contribute to a health savings account (HSA). Collectively, HRAs and HSA-eligible plans are known as consumer-driven health plans (CDHPs).

Advocates of CDHPs claimed that the programs simultaneously provided consumers with broader choices than were currently available, while the consumers' aggregate decisions would cap costs more effectively than top-down, conventionally managed care plans had done. But some analysts warned that consumers lacked the discipline and sophistication to understand what care is truly necessary, much less successfully navigate an increasingly complex health care system. Those analysts saw the initiative as an opportunity for employers to transfer a growing portion of rising costs to employees.¹

This report examines the impact of plan type, medical homes, and income on use of health care services. It also examines differences in the use of health services within the CDHP population. Data from the 2005-2007 EBRI/Commonwealth Fund Consumerism in Health Care Survey and the 2008-2012 EBRI/MGA Consumer Engagement in Health Care Survey are used for the analysis.

Prior Research

The literature is mixed when it comes to the impact of CDHPs on preventive and screening services.

One study examined four employers that adopted a full-replacement CDHP.² It found that with every one of the preventive measures, at least one firm experienced a decrease in prevention or screening, three of the four measures decreased for all firms, but none of the firms experienced decreases in all preventive services and screening measures. Decreases were found despite the fact that the costs for these services were covered 100 percent by all four employers in the study.

Other studies have found similar levels of use of preventive, cancer-screening services and diabetic-monitoring services between HRA-based enrollees and preferred-provider-organization (PPO) enrollees over a three-year period,³ moderate reductions in the use of preventive services,⁴ fewer office visits, fewer emergency-department visits, and reductions in breast-cancer screening, cervical-cancer screening,⁵ as well as in inpatient care and visits to specialists.⁶ Most recently, it was found that after four years under a full-replacement HSA plan, there were fewer office visits, and recommended cancer screenings were lower.⁷

There are also mixed findings with respect to the impact of CDHPs on prescription-drug use. One study found that CDHP enrollees continued to use brand names and fewer generic drugs in the second year of the program, but the reductions in generic drug use did not persist. CDHP enrollees with chronic conditions did not use more drugs than those in other plan designs, although CDHP enrollees used more mail-order drugs than PPO enrollees in all three years. There was no difference between the CDHP and point-of-service (POS) enrollees in mail-order use.⁸

Another study found that under the CDHP, use of prescription drugs to treat hypertension and cholesterol fell, whereas there was no change for asthma, depression, or ulcer medications. The study found that 17 percent of the

higher-deductible CDHP enrollees taking medicine to treat hypertension in late 2003 were no longer taking the medication in 2004. Among individuals who continued to take medications after moving to a CDHP, there was no observed reduction in adherence.⁹

A third study examined adherence to maintenance drugs and found that drug refills for cardiac conditions and utilization of cholesterol prescription drugs decreased in both the CDHP and the traditional plan, but declined more for the CDHP population. The study also found that the CDHP population had poorer drug compliance for asthma, cardiac, and cholesterol conditions, and that the CDHP population terminated the drug supply earlier than traditional plan patients. Adherence was consistently and significantly lower for CDHP patients by all measures.¹⁰

Most recently, a study found that the CDHP resulted in reductions in the use of non-generic prescription drugs,¹¹ while another study found reductions in prescription drugs four years after the adoption of a full-replacement HSA.¹²

Health Care Use and Access Issues by Plan Type

The 2012 EBRI/MGA Consumer Engagement in Health Care Survey, along with results from past years, can be used to examine plan-participant reporting of health care access issues for themselves and their family members. The survey included questions on medication adherence and delay/avoidance of health care.

To examine health care access issues, the sample was divided into three groups: those with a CDHP, those with a high-deductible health plan (HDHP), and those with traditional health coverage. Individuals were assigned to either the CDHP or the 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 an HSA or HRA with a rollover provision that they could use to pay for medical expenses or 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.

Individuals were assigned to the HDHP group if they did not have an account used for health care expenses with a rollover provision or portability if they changed jobs. This group included individuals with HSA-eligible health plans but may also have included individuals with a high deductible who are not eligible to contribute to an HSA. Individuals with traditional health coverage were participants in a broad range of plan types, including health maintenance organizations (HMOs), PPOs, other managed-care plans, and plans with a broad variety of cost-sharing arrangements. The shared characteristics of this group were that they either had no deductible or a deductible that was below current thresholds that would qualify for HSA tax preference, and that they did not have an HRA-based plan.

In 2012, 26–40 percent of respondents reported some type of access issue for either themselves or family members. Findings from the survey indicate that individuals in HDHPs were more likely than individuals with traditional coverage to report that they or family members did not fill prescriptions or skipped doses to make medication last longer or that they delayed or avoided getting health care due to cost. Overall, 40 percent of those in an HDHP reported some type of access issue, compared with 26 percent among those with traditional coverage (Figure 1). Nearly 4 in 10 (38 percent) of those with a CDHP reported some type of access issue, statistically higher than those with traditional coverage.

Over time, CDHP enrollees experienced a decline in access issues, HDHP enrollees did not experience such a decline, and traditional plan enrollees did not see longer term declines, but did experience a decline in delaying or avoiding getting health care due to cost between 2011 and 2012. The overall percentage of CDHP enrollees reporting access issues was nearly 50 percent in 2005 and 2006, dropped to 38 percent in 2007, remained between 35 percent and 41 percent since then, and by 2011 was down to 36 percent and 38 percent in 2012. The decline in access issues in 2007 was due to both reductions in enrollees who reported not filling prescriptions due to cost or skipping doses to make medication last longer, and in those who reported delaying or avoiding getting health care due to cost. The percentage reporting that they did not fill prescriptions due to cost or skipped doses to make medication last longer

fell again between 2010 and 2011, and the percentage reporting they delayed or avoided health care due to cost increased between 2011 and 2012.

Medical Homes

Figure 2 shows the percentage of individuals who reported access issues by plan type for those with and without medical homes.¹³ Having a medical home did not reduce access issues, with one exception: Among individuals with traditional coverage, those with medical homes were statistically less likely than those without medical homes to report that they delayed or avoided getting health care due to cost. And while the difference was statistically significant, it was not a large difference, with 13 percent of those with medical homes reporting the issue, compared with percent of those without medical homes. Furthermore, one situation was found where the likelihood of reporting access issues was higher among those with medical homes than those without them. Specifically, among CDHP enrollees, 33 percent of those with medical homes reported not filling prescriptions due to cost, or skipping doses to make medication last longer, while 22 percent of those without medical homes reported that issue.

Overall, individuals in HDHPs and CDHPs were more likely than those with traditional coverage to report access issues, both for those with and without medical homes.

Income Differences

Figure 3 shows the percentage of individuals reporting access issues by plan type and over time for those above and below \$50,000 of annual household income. In every year between 2005 and 2011 for every plan type, individuals in households with less than \$50,000 in annual income were always statistically significantly more likely than those in households with \$50,000 or more in annual income to report that they or a family member did not fill a prescription, skipped doses to make the medication last longer, or delayed or avoided getting health care due to cost. (Statistical significance tests are not shown in the table.)

However, in 2012, while differences among traditional plan enrollees and HDHP enrollees remained statistically significant, among CDHP enrollees, individuals in households with less than \$50,000 of annual household income were not statistically more likely to report not filling prescriptions due to cost or skipping doses to make medication last longer. Furthermore, the difference by income in the percentage reporting that they delayed or avoided getting health care due to cost was no longer statistically significant. However, when the two variables were combined, the difference in the aggregate continued to be statistically significant.

Over time, there was no change in the percent reporting access issues for the lower-income group among CDHP enrollees, but the higher-income group reported declines in a number of years, most recently for prescription drugs in 2011, and an increase in 2012 in delaying or avoiding getting health care due to cost. Lower-income HDHP enrollees reported an increase in access issues in 2011, which dropped in 2012. HDHP behaviors were unchanged in the higher-income group.

Among the lower income group, CDHP enrollees were no more likely than those with traditional coverage to report access issues in most years of the survey. However, in the higher income group, CDHP enrollees were more likely to report access issues in most years of the survey.

CDHP Enrollees

Among CDHP enrollees, employer contributions to the HRA or HSA as well as length of time with the account were examined. Very few differences in access issues were found between individuals whose employers contributed to the account and those whose employers did not. For example, in 2012, 38 percent of individuals whose employers did not contribute to the account reported access issues compared with 37 percent among individuals whose employers did

Figure 1
Access Issues, by Type of Health Plan, 2005–2012

	2005	2006	2007	2008	2009	2010	2011	2012
Traditional^a								
Not filled a prescription due to cost or skipped doses to make medication last longer	22	22	23	21	22	23	23	21
Delayed or avoided getting health care due to cost	17	19	16 [^]	22 [^]	15 [^]	12 [^]	19 [^]	14 [^]
<i>Either of the above</i>	29	30	28	33 [^]	29 [^]	28	31 [^]	26 [^]
HDHP^b								
Not filled a prescription due to cost or skipped doses to make medication last longer	32	29*	29*	31*	28*	28*	31 [^] *	26 [^] *
Delayed or avoided getting health care due to cost	31*	33*	32*	30*	28*	26*	26*	27*
<i>Either of the above</i>	44	44*	43*	43*	41*	39*	42*	40*
CDHP^c								
Not filled a prescription due to cost or skipped doses to make medication last longer	30	31*	24 [^]	23	31 [^] *	28	25 [^]	27*
Delayed or avoided getting health care due to cost	37*	38*	29 [^] *	26	22*	23*	21	25 [^] *
<i>Either of the above</i>	48	49*	38 [^] *	35	41*	38*	36	38*

Sources: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005-2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008-2012.

^a Traditional = health plan with no deductible or <\$1,000 (individual), <\$2,000 (family).

^b HDHP = high-deductible health plan with deductible \$1,000+ (individual), \$2,000+ (family), no account.

^c CDHP = consumer-driven health plan with deductible \$1,000+ (individual), \$2,000+ (family), with account.

* Difference between HDHP/CDHP and Traditional is statistically significant at $p \leq 0.05$ or better.

[^] Estimate is statistically different from the prior year shown at the $p \leq 0.05$ or better.

Figure 2
Access Issues, by Type of Health Plan and Medical Home, 2012

	Has a Medical Home**	Does Not Have a Medical Home**
Traditional^a		
Not filled a prescription due to cost or skipped doses to make medication last longer	21	21
Delayed or avoided getting health care due to cost	13	15#
<i>Either of the above</i>	26	27
HDHP^b		
Not filled a prescription due to cost or skipped doses to make medication last longer	25	27*
Delayed or avoided getting health care due to cost	26*	28*
<i>Either of the above</i>	38*	42*
CDHP^c		
Not filled a prescription due to cost or skipped doses to make medication last longer	33*	22#
Delayed or avoided getting health care due to cost	25*	25*
<i>Either of the above</i>	40*	36*

Sources: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005–2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008–2012.

^a Traditional = health plan with no deductible or <\$1,000 (individual), <\$2,000 (family).

^b HDHP = high-deductible health plan with deductible \$1,000+ (individual), \$2,000+ (family), no account.

^c CDHP = consumer-driven health plan with deductible \$1,000+ (individual), \$2,000+ (family), with account.

* Difference between HDHP/CDHP and Traditional is statistically significant at $p \leq 0.05$ or better.

** To have a medical home, the respondent must have indicated that he or she had a personal/family doctor; had timely access to care; had a doctor who knows medical history; had a provider who knew him or her as a person; and had a provider who was coordinating care.

Difference between Medical Home and Does not have a Medical Home is statistically significant at $p \leq 0.05$ or better.

Figure 3

	Access Issues, by Type of Health Plan and Household Income, 2005-2012															
	Less Than \$50,000 Yearly Household Income						\$50,000 or More Yearly Household Income									
	2005	2006	2007	2008	2009	2010	2011	2012	2005	2006	2007	2008	2009	2010	2011	2012
	Traditional ^a															
Not filled a prescription due to cost or skipped doses to make medication last longer	31	29	33	28	29	30	32	33	18	19	18	17	21 [^]	20	20	17 [^]
Delayed or avoided getting health care due to cost	24	29	26	35 [^]	18 [^]	18	27 [^]	24	13	14	12 [^]	16 [^]	14	10 [^]	15 [^]	12 [^]
Either of the above	39	42	41	47 [^]	36 [^]	38	41	39	24	25	23	26 [^]	27	24 [^]	27 [^]	23 [^]
	HDHP ^b															
Not filled a prescription due to cost or skipped doses to make medication last longer	38	31	36	35	33	31	38 [^]	30 [^]	30	27 [^]	27	28 [^]	27 [^]	27 [^]	28 [^]	25 [^]
Delayed or avoided getting health care due to cost	41	36	40	37	39 [^]	33 [^]	36 [^]	34 [^]	28 [^]	30 [^]	29	28 [^]	25 [^]	24 [^]	22 [^]	24 [^]
Either of the above	53	48	53	51	50 [^]	46	53 [^]	46 [^]	40	41 [^]	40	40 [^]	38 [^]	38 [^]	37 [^]	39 [^]
	CDHP ^c															
Not filled a prescription due to cost or skipped doses to make medication last longer	36	33	32	28	35	28	32	29	28	29 [^]	22 [^]	22	31 [^]	29 [^]	24 [^]	27 [^]
Delayed or avoided getting health care due to cost	49 [*]	40	34	33	38 [*]	30	33	30	31 [*]	37 [*]	29 [^]	25 [^]	20 [*]	23 [*]	20 [*]	24 [^]
Either of the above	56	53	48	45	50 [*]	44	48	43	45	47 [*]	36 [^]	33	40 [*]	38 [*]	34 [^]	36 [*]

Sources: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005-2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008-2012.

^a Traditional = health plan with no deductible or <\$1,000 (individual), <\$2,000 (family).

^b HDHP = high-deductible health plan with deductible \$1,000+ (individual), \$2,000+ (family), no account.

^c CDHP = consumer-driven health plan with deductible \$1,000+ (individual), \$2,000+ (family), with account.

* Difference between HDHP/CDHP and Traditional is statistically significant at p ≤ 0.05 or better.

[^] Estimate is statistically different from the prior year shown at the p ≤ 0.05 or better.

Figure 4

	Access Issues Among Individuals With CDHP, ^a by Employer Contribution to Account, 2006-2012						
	2006	2007	2008	2009	2010	2011	2012
Employer Contributes to Account							
Not filled a prescription due to cost or skipped doses to make medication last longer	35	28 [^]	23 [^]	32 [^]	31	26 [^]	29
Delayed or avoided getting health care due to cost	41	29 [^]	26	20 [^]	23	20	26 [^]
Either of the above	53	38 [^]	35	40	39	34 [^]	37
Employer Does Not Contribute to Account							
Not filled a prescription due to cost or skipped doses to make medication last longer	26 [*]	28	26	36 [^]	27 [^]	26	24 [*]
Delayed or avoided getting health care due to cost	37	32	23 [^]	24	23	24 [*]	23
Either of the above	47	44 [*]	34 [^]	43 [^]	38	41 [*]	38

Sources: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2006-2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008-2012.

^a CDHP = consumer-driven health plan with deductible \$1,000+ (individual), \$2,000+ (family), with account.

* Difference between Employer Contributes to Account and Employer Does Not Contribute to Account is statistically significant at p ≤ 0.05 or better.

[^] Estimate is statistically different from the prior year shown at the p ≤ 0.05 or better.

contribute to the account (Figure 4). In fact, there were no statistically significant differences between the two groups in most years of the survey.

Among individuals whose employers contributed to the account, in most years of the survey, the contribution level had no impact on access issues. In 2011, individuals whose employer contributed less than \$1,000 were more likely than those with an employer contribution of at least \$1,000 to report an access issue (Figure 5). In contrast, individuals whose employers contributed less than \$1,000 were less likely than those with employer contributions of at least \$1,000 to report access issues in 2012, and access issues increased statistically among those with employer contributions of at least \$1,000 between 2011 and 2012.

Length of time with the account had a statistically significant impact on access issues in most years. In 2011, those with the account longer had fewer access issues. Among individuals with an account for less than a year, 42 percent reported that they or family members did not fill prescriptions or skipped doses to make the medication last longer or that they delayed or avoided getting health care due to cost (Figure 6). In contrast, among those with the account for one to two years, 33 percent reported some type of access issue, and among those with the account for three or more years, 32 percent reported some type of access issue. In 2012, the picture changed: Those with an account at least three years were more likely than those with an account for less than one year to experience access issues. This reversal is due to the fact that between 2011 and 2012, access issues declined for those with an account less than one year, while they increased for those with an account three or more years.

Conclusion

There is a growing body of literature that draws mixed conclusions when it comes to the impact of consumer-driven health plans (CDHPs) on preventive and screening services. This research finds that access to health care services is an issue across the board. By health plan type, differences were found among individuals in CDHPs, high-deductible health plans (HDHPs), and those with traditional coverage. Unlike in 2011, the survey found statistically significant differences between those with traditional coverage and CDHP enrollees in 2012.

Regardless of health plan type, individuals in households with less than \$50,000 in annual income were more likely than those in households with \$50,000 or more in annual income to report access issues.

Having a medical home did not reduce access issues, with one exception: Among individuals with traditional coverage, those with medical homes were statistically less likely than those without medical homes to report that they delayed or avoided getting health care due to cost. Furthermore, among CDHP enrollees the likelihood of reporting access issues was higher among those with medical homes than those without them.

Among individuals with an HRA or HSA, very few differences in access issues were found according to whether or not employers contributed to the account, although differences by the level of contribution were found in 2012. Finally, length of time with the account did appear to have an impact on access issues in 2012.

Appendix

This study is based on data from the 2005-2007 EBRI/Commonwealth Fund Consumerism in Health Care Survey and the 2008-2012 EBRI/MGA Consumer Engagement in Health Care Survey. They are online surveys of privately insured adults ages 21-64, fielded in August of each year. The surveys were conducted to provide nationally representative data regarding the growth of CDHPs and HDHPs and the impact of these plans and consumer engagement more generally on the behavior and attitudes of adults with private health insurance coverage.¹⁴

Figure 5
Access Issues Among Individuals With CDHP,^a by Level of Employer Contribution to Account, 2006–2012

	2006	2007	2008	2009	2010	2011	2012
Employer Contribution Below \$1,000							
Not filled a prescription due to cost or skipped doses to make medication last longer	29	24 [^]	23	31 [^]	26 [^]	25	25
Delayed or avoided getting health care due to cost	37	30 [^]	27	22 [^]	23	23	22
<i>Either of the above</i>	48	40 [^]	36	41 [^]	37	38	37
Employer Contribution \$1,000 or More							
Not filled a prescription due to cost or skipped doses to make medication last longer	32	25	25	33 [^]	35 [*]	26 [^]	32 [^] [^]
Delayed or avoided getting health care due to cost	39	26 [^]	27	22	25	20	32 [^] [^]
<i>Either of the above</i>	51	34 [^]	36	40	42	33 [^] [^]	41 [^]

Sources: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005-2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008-2012.
^a CDHP = consumer-driven health plan with deductible \$1,000+ (individual), \$2,000+ (family), with account.
^{*} Difference between Employer Contribution Below \$1,000 and Employer Contribution \$1,000 or More is statistically significant at p ≤ 0.05 or better.
[^] Estimate is statistically different from the prior year shown at the p ≤ 0.05 or better.

Figure 6
Access Issues Among Individuals with CDHP,^a by Length of Time With Account, 2006–2012

	2006	2007	2008	2009	2010	2011	2012
Had Account < 1 Year							
Not filled a prescription due to cost or skipped doses to make medication last longer	28	27	25	33 [^]	30	27	21 [^]
Delayed or avoided getting health care due to cost	38	26 [^]	29	20 [^]	26	28	22 [^]
<i>Either of the above</i>	48	38 [^]	38	42	39	42	33 [^]
Had Account 1–2 Years							
Not filled a prescription due to cost or skipped doses to make medication last longer	35 [*]	24 [^]	23	29 [^]	27	24	26
Delayed or avoided getting health care due to cost	42	30 [^]	24 [^] [^]	22	22	19 [*]	25 [^]
<i>Either of the above</i>	54	41 [^]	35 [^]	40 [^]	39	33 [*]	38
Had Account 3 or More Years							
Not filled a prescription due to cost or skipped doses to make medication last longer	28	20 ^{&}	20	32 [^]	29	24 [^]	31 ^{&} [^] [^]
Delayed or avoided getting health care due to cost	33	33	24 [^]	23	23	18 ^{&} [^]	27 ^{&} [^]
<i>Either of the above</i>	43	36	32 ^{&}	39 [^]	37	32 ^{&}	40 ^{&} [^]

Sources: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005-2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008-2012.
^a CDHP = consumer-driven health plan with deductible \$1,000+ (individual), \$2,000+ (family), with account.
^{*} Difference between Had Account < 1 Year and Had Account 1-2 Years is statistically significant at p ≤ 0.05 or better.
[&] Difference between Had Account < 1 Year and Had Account 3+ Years is statistically significant at p ≤ 0.05 or better.
[#] Difference between Had Account 1-2 Years and Had Account 3+ Years is statistically significant at p ≤ 0.05 or better.
[^] Estimate is statistically different from the prior year shown at the p ≤ 0.05 or better.

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Endnotes

- ¹ See Jaffe (2002).
- ² See Parente, Feldman, and Xu (2010).
- ³ See Rowe, Brown-Stevenson, Downey, and Newhouse (2008).
- ⁴ See Buntin, Haviland, McDevitt, and Sood (2011).
- ⁵ See Charlton, Levy, High, Schneider, and Brooks (2011).
- ⁶ See Haviland, Sood, McDevitt, and Marquis (2011).
- ⁷ See Fronstin, Sepulveda, and Roebuck (2013).
- ⁸ See Parente, Feldman, and Chen (2008).
- ⁹ See Greene, Hibbard, Murray, Teutsch, and Berger (2008).
- ¹⁰ See Chen, Levin, and Gartner (2010).
- ¹¹ See Haviland, Sood, McDevitt, and Marquis (2011).
- ¹² See Fronstin, Sepulveda, and Roebuck (2013).
- ¹³ To have a medical home, the respondent must have indicated that he or she had a personal/family doctor; had timely access to care; had a doctor who knew medical history; had a provider who knew him or her as a person; and had a provider who was coordinating care.
- ¹⁴ More information about the 2012 EBRI/MGA Consumer Engagement in Health Care Survey can be found in Fronstin (2012).

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