

# Notes

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## A T A G L A N C E

**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 2011, 30–40 percent of respondents, depending on the question, reported some type of health care access issue for either themselves or family members. Individuals in high-deductible health plans (HDHPs) were more likely than those with traditional coverage to report access issues.
- Individuals with health problems are more likely than those without health problems to report access issues.
- Individuals in households with less than \$50,000 in annual income are more likely than those in households with \$50,000 or more in annual income to report access issues.
- Length of time individuals had been with consumer-driven health plans (CDHPs) had an impact on access issues in 2011.
- Among individuals with CDHPs for less than a year, 42 percent reported access issues, compared with 33 percent of those with CDHPs for one to two years, and 32 percent among those with CDHPs for three or more years.

**Retirement Readiness Ratings and Retirement Savings Shortfalls for Gen Xers: The Impact of Eligibility for Participation in a 401(k) Plan**, by Jack VanDerhei, Ph.D., EBRI

- The dollar value of retirement savings shortfalls for Gen Xers varies considerably with the number of future years of eligibility for 401(k) plans, particularly for those in the highest severity category (simulated to have a shortfall of \$200,000 or more): 13 percent of those with no future years of 401(k) eligibility have shortfalls in this range vs. only 3 percent for those with 20 or more years.
- Future eligibility for 401(k) plans makes a significant difference in reducing the percentage of households with shortfalls of \$200,000 or more for all gender/family status combinations, but single females experience the largest absolute reduction in the percentage of those with shortfalls in this range.

# 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., Employee Benefit Research Institute*

## Introduction

In 2001, a handful of large, self-insured employers started offering health reimbursement arrangements (HRAs)—a then-new type of health plan. In 2004, individuals with certain high-deductible health plans (HDHPs) were allowed to contribute to health savings accounts (HSAs). Collectively, HRAs and HSA-eligible plans are known as consumer-driven health plans (CDHPs).

Advocates of CDHPs claimed that they simultaneously provided consumers with broader choices than were currently available, while their 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 successfully navigate an increasingly complex health care system and understand what care is truly necessary. They saw the initiative as an opportunity for employers to transfer a growing portion of rising costs to employees (Jaffe 2002).

This report examines the impact of plan type, health status, and income on the 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 2008-2011 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 full-replacement CDHPs.<sup>1</sup> It found that every one of the preventive measures or screenings had a decrease in at least one firm, but these decreases were never seen in the same preventive service across all four firms, and none of the firms experienced a decrease in all preventive services and screening measures. The decreases were found despite the fact that these services were covered 100 percent by all four employers in the study.

Other studies have found similarities between HRA-based enrollees and preferred provider organization (PPO) enrollees regarding the use of preventive, cancer-screening services and diabetic-monitoring services over the 2003–2005 period,<sup>2</sup> including moderate reductions in use of preventive services,<sup>3</sup> fewer office visits, fewer emergency room visits, reduced breast-cancer and cervical-cancer screening,<sup>4</sup> and reductions in inpatient care and visits to specialists.<sup>5</sup>

There also are mixed findings about the impact of CDHPs on prescription drug use. One study found that CDHP enrollees continued to use brand-name and fewer generic drugs in the second year of program, but the generic-drug use reductions did not persist. CDHP enrollees with chronic conditions did not use more drugs than those in other plan designs. CDHP enrollees used more mail-order drugs than PPO enrollees in all three years. There was no difference between CDHP and point-of-service (POS) enrollees in mail-order use.<sup>6</sup>

Another study found that use of prescription drugs to treat hypertension and cholesterol fell, whereas there was no change in the use of 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 CDHPs, there was no observed reduction in adherence.<sup>7</sup>

A third study examined adherence to maintenance drugs for cardiac conditions and cholesterol and found that prescription drug refills decreased in both CDHPs and traditional plans, but declined more for the CDHP population. The study also found poorer CDHP drug compliance for asthma, cardiac, and cholesterol, and it found that CDHP enrollees terminated the drug supply earlier than traditional-plan patients. Adherence was consistently and significantly lower for CDHP patients by all measures.<sup>8</sup>

Most recently, a study found that CDHPs resulted in reductions in the use of non-generic prescription drugs.<sup>9</sup>

## Health Care Use and Access Issues by Plan Type

The 2011 EBRI/MGA Consumer Engagement in Health Care Survey, along with results from prior years, can be used to examine plan participants' reporting of health care access issues for themselves and their family members. The survey includes questions on medication adherence and delays/avoidance of health care.

To examine health care access issues, the sample was divided into three groups: those with CDHPs, those with HDHPs, and those with traditional health coverage. Individuals were assigned to the CDHP and HDHP groups if they had deductibles 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 accounts, such as HSAs or HRAs with a rollover provision that the individuals could use to pay for medical expenses or the ability to take their accounts 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 includes individuals with HSA-eligible health plans but may also include individuals with high deductibles who are not eligible to contribute to HSAs. Traditional health coverage includes 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 are that members either have no deductibles or deductibles that are below current qualification thresholds for HSA tax preference and that members do not have HRA-based plans.

In 2011, about 30–40 percent of respondents reported some type of access issue for either themselves or a family member. Findings from the survey indicate that individuals in HDHPs were more likely than individuals with traditional coverage to report that they or a family member did not fill prescriptions, skipped doses to make the medication last longer, or delayed or avoided getting health care due to cost. Overall, 42 percent of those in HDHPs reported some type of access issue, compared with 31 percent among those with traditional coverage (Figure 1). Just over one-third (36 percent) of those with CDHPs reported some type of access issue, but the difference between individuals with CDHPs and those with traditional coverage was not statistically significant. In some prior years, the difference between CDHP enrollees and those with traditional coverage was statistically significant.

Over time, HDHP enrollees did not experience a decline in access issues. However, HDHP enrollees were more likely in 2011 than in 2010 to report access issues with prescription drugs: Those reporting prescription-drug access issues increased from 28 percent to 31 percent. CDHP enrollees did not experience any statistically significant increase in access issues over time. In fact, in a number of years, they experienced a decline in the percentage reporting access issues. The overall percentage of CDHP enrollees reporting access issues was nearly 50 percent in 2005 and 2006, and by 2011 this was down to 36 percent. In contrast, individuals with traditional coverage were more likely in 2011 than in 2010 to report some type of access issue.

## Health Status Differences

Figure 2 shows the percentage of individuals reporting access issues by plan type over time for those with, and without, health problems.<sup>10</sup> In every year for every plan type, individuals with health problems are always statistically

significantly more likely than those without health problems to report that they or their family members did not fill prescriptions, skipped doses to make the medication last longer, or delayed or avoided getting health care due to cost. (Statistical significance tests across health status are not shown in the table because every difference by health status was statistically significant.)

**Figure 1**  
**Access Issues, by Type of Health Plan, 2005–2011**

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

Source: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005–2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008–2011.

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

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

<sup>c</sup>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.

<sup>^</sup> Estimate is statistically different from the prior year shown at the  $p \leq 0.05$  or better.

The same plan-type differences exist when the data are not broken out by health status—individuals with HDHPs are *nearly always* more likely than individuals with traditional coverage to have access issues, and, while CDHP enrollees are *sometimes* more likely than those with traditional coverage to have access issues, the differences between them were not statistically significant in 2011. Over time, among individuals with health problems, CDHP enrollees have experienced declines in reporting of access problems, whereas HDHP enrollees and those with traditional coverage have experienced no change or an increase in some years.

## Income Differences

Figure 3 shows the percentage of individuals reporting access issues by plan type over time for those above and below \$50,000 of annual household income. Just like the findings by health status, in every year for every plan type, individuals in households with less than \$50,000 in annual income are 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 across income are not shown in the table.)

Among CDHP enrollees there was no change in the percentage reporting access issues for the lower-income group, but the higher-income group reported declines in a number of years, most recently for prescription drugs in 2011. Among lower-income HDHP enrollees, reporting of access issues increased in 2011 and was unchanged in the higher-income group.

**Figure 2**  
**Access Issues, by Type of Health Plan and Health Status, 2005–2011**

	Health Problem**					No Health Problem**								
	2005	2006	2007	2008	2009	2010	2011	2005	2006	2007	2008	2009	2010	2011
Not filled a prescription due to cost or skipped doses to make medication last longer Delayed or avoided getting health care due to cost Either of the above	Traditional <sup>a</sup>													
	29%	27%	29%	28%	29%	28%	30%	14%	0	16%	13% <sup>^</sup>	14%	18% <sup>^</sup>	16%
	20	23	18 <sup>^</sup>	23 <sup>^</sup>	17 <sup>^</sup>	16	22	13	16	14	21 <sup>^</sup>	12 <sup>^</sup>	9 <sup>^</sup>	15 <sup>^</sup>
	35	34	33	37	35	34	37 <sup>^</sup>	20	25	23	29 <sup>^</sup>	21 <sup>^</sup>	22	24
Not filled a prescription due to cost or skipped doses to make medication last longer Delayed or avoided getting health care due to cost Either of the above	HDHP <sup>b</sup>													
	40	35*	35	38*	36*	35*	38 <sup>^</sup>	22	22	21	21*	15	20	21*
	31*	37*	35	34*	34*	32*	31*	31*	28*	27	26	20*	19*	20*
	48	50*	49	49*	49*	46*	48*	39	38*	37	35	31*	32*	34*
Not filled a prescription due to cost or skipped doses to make medication last longer Delayed or avoided getting health care due to cost Either of the above	CDHP <sup>c</sup>													
	39	38*	34	32	40*	36	31 <sup>^</sup>	20	25*	16 <sup>^</sup>	16	24*	21	19
	44*	42*	32 <sup>^</sup>	32	29*	28*	27	31*	35*	26 <sup>^</sup>	22	15	19*	16
	58	55*	46 <sup>^</sup>	44	49*	48*	42 <sup>^</sup>	39	44*	32 <sup>^</sup>	29	32*	30	29

Source: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005–2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008–2011.

<sup>a</sup> Traditional = health plan with no deductible or <\$1,000 (individual), <\$2,000 (family).  
<sup>b</sup> HDHP = high-deductible health plan with deductible \$1,000+ (individual), \$2,000+ (family), no account.  
<sup>c</sup> CDHP = consumer-driven health plan with deductible \$1,000+ (individual), \$2,000+ (family), with account.  
<sup>\*</sup> Difference between HDHP/CDHP and Traditional is statistically significant at p ≤ 0.05 or better.  
<sup>\*\*</sup> Health problem defined as fair or poor health or one of eight chronic health conditions.  
<sup>^</sup> Estimate is statistically different from the prior year shown at the p ≤ 0.05 or better.

**Figure 3**  
**Access Issues, by Type of Health Plan and Household Income, 2005–2011**

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

Source: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005–2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008–2011.

<sup>a</sup> Traditional = health plan with no deductible or <\$1,000 (individual), <\$2,000 (family).  
<sup>b</sup> HDHP = high-deductible health plan with deductible \$1,000+ (individual), \$2,000+ (family), no account.  
<sup>c</sup> CDHP = consumer-driven health plan with deductible \$1,000+ (individual), \$2,000+ (family), with account.  
<sup>\*</sup> Difference between HDHP/CDHP and Traditional is statistically significant at p ≤ 0.05 or better.  
<sup>^</sup> Estimate is statistically different from the prior year shown at the p ≤ 0.05 or better.

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, both employer contributions to HRAs or HSAs and the length of time the individuals had owned the accounts were examined. Very few differences in access issues were found between individuals whose employers contributed to the accounts and those whose employers did not. In 2011, 41 percent of individuals whose employers did not contribute to the accounts reported access issues, compared with 34 percent of individuals whose employers did contribute to the accounts (Figure 4). Otherwise, in most years of the survey, there were no statistically significant differences between the two groups.

Among individuals whose employers contribute to the account, in most years of the survey the contribution level had no impact on access issues. However, in 2011, individuals whose employers contributed less than \$1,000 were more likely than those with employer contributions of at least \$1,000 to report access issues (Figure 5).

The length of time individuals had held the accounts had a statistically significant impact on access issues in 2011. Among individuals with accounts for less than a year, 42 percent reported that they or a family member did not fill prescriptions, skipped doses to make medications last longer, or delayed or avoided getting health care due to cost (Figure 6). However, among those with the accounts for one to two years, 33 percent reported some type of access issue, and among those with the accounts for three or more years, 32 percent reported some type of access issue. Access issues appear to have fallen over time regardless of the number of years with an account, but year-to-year changes were statistically significant only for those with the accounts for three or more years.

## **Conclusion**

There is a growing volume of literature that nonetheless draws mixed conclusions when it comes to the impact of CDHPs on preventive and screening services, although this research finds that access to health care services is an issue across the board. When it comes to plan type, differences were found between individuals in HDHPs and those with traditional coverage. The survey has found differences between those with traditional coverage and CDHP enrollees in the past, but no statistically significant difference was found in 2011.

Regardless of health plan type, individuals with health problems are more likely than those without health problems to report access issues, and individuals in households with less than \$50,000 in annual income are more likely than those in households with \$50,000 or more in annual income to report access issues.

Among individuals with HRAs or HSAs, very few differences in access issues were found by whether employers contributed to the account or not or by the level of contribution. However, the length of time individuals had owned the account had an impact on access issues in 2011. Furthermore, access issues appear to have fallen over time for those holding the accounts for one to two years and three or more years, but not for those with accounts for less than a year.

## **Appendix**

This study is based on data from the 2005-2007 EBRI/Commonwealth Fund Consumerism in Health Care Survey and the 2008-2011 EBRI/MGA Consumer Engagement in Health Care Survey. These 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. More information about the 2011 EBRI/MGA Consumer Engagement in Health Care Survey can be found in the December 2011 *EBRI Notes* (Fronstin 2011).

**Figure 4**  
**Access Issues Among Individuals With CDHP,<sup>a</sup>**  
**by Employer Contribution to Account, 2006–2011**

	2006	2007	2008	2009	2010	2011
<b>Employer Contributes to Account</b>						
Not filled a prescription due to cost or skipped doses to make medication last longer	35%	28%	23%	32%	31%	26%
Delayed or avoided getting health care due to cost	41	29	26	20	23	20
<i>Either of the above</i>	53	38	35	40	39	34
<b>Employer Does Not Contribute to Account</b>						
Not filled a prescription due to cost or skipped doses to make medication last longer	26*	28	26	36	27	26
Delayed or avoided getting health care due to cost	37	32	23	24	23	24*
<i>Either of the above</i>	47	44*	34	43	38	41*

Source: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2006-2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008-2011.  
<sup>a</sup> 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  $p \leq 0.05$  or better.

**Figure 5**  
**Access Issues Among Individuals With CDHP,<sup>a</sup>**  
**by Level of Employer Contribution to Account, 2006–2011**

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

Source: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005-2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008-2011.  
<sup>a</sup> 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  $p \leq 0.05$  or better.

**Figure 6**  
**Access Issues Among Individuals With CDHP,<sup>a</sup> by Length of Time With Account, 2006–2011**

	2006	2007	2008	2009	2010	2011
<b>Had account &lt;1 year</b>						
Not filled a prescription due to cost or skipped doses to make medication last longer	28	27	25	33	30	27
Delayed or avoided getting health care due to cost	38	26	29	20	26	28
<i>Either of the above</i>	48	38	38	42	39	42
<b>Had account 1–2 years</b>						
Not filled a prescription due to cost or skipped doses to make medication last longer	35*	24	23	29	27	24
Delayed or avoided getting health care due to cost	42	30	24*	22	22	19*
<i>Either of the above</i>	54	41	35	40	39	33*
<b>Had account 3 or more years</b>						
Not filled a prescription due to cost or skipped doses to make medication last longer	28	20 <sup>^</sup>	20	32	29	24
Delayed or avoided getting health care due to cost	33	33	24	23	23	18 <sup>^</sup>
<i>Either of the above</i>	43	36	32 <sup>^</sup>	39	37	32 <sup>^</sup>

Source: EBRI/Commonwealth Fund Consumerism in Health Care Survey, 2005-2007; EBRI/MGA Consumer Engagement in Health Care Survey, 2008-2011.  
<sup>a</sup> 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  $p \leq 0.05$  or better.  
<sup>^</sup> Difference between Had Account <1 Year and Had Account 3+ Years is statistically significant at  $p \leq 0.05$  or better.  
<sup>#</sup> Difference between Had Account 1–2 Years and Had Account 3+ Years is statistically significant at  $p \leq 0.05$  or better.

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## Endnotes

- <sup>1</sup> See Parente, Feldman, and Xu (2010).
- <sup>2</sup> See Rowe, Brown-Stevenson, Downey, and Newhouse (2008).
- <sup>3</sup> See Buntin, Haviland, McDevitt, and Sood (2011).
- <sup>4</sup> See Charlton, Levy, High, Schneider, and Brooks (2011).
- <sup>5</sup> See Haviland, Sood, McDevitt, and Marquis (2011).
- <sup>6</sup> See Parente, Feldman, and Chen (2008).
- <sup>7</sup> See Greene, Hibbard, Murray, Teutsch, and Berger (2008).
- <sup>8</sup> See Chen, Levin, and Gartner (2010).
- <sup>9</sup> See Haviland, Sood, McDevitt, and Marquis (2011).
- <sup>10</sup> People were defined as having health problems if they said they were in fair or poor health or had one of eight chronic health conditions (arthritis, asthma, emphysema or lung disease, cancer, depression, diabetes, heart attack or other heart disease, high cholesterol or hypertension, high blood pressure, or stroke).

# Retirement Readiness Ratings and Retirement Savings Shortfalls for Gen Xers: The Impact of Eligibility for Participation in a 401(k) Plan

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

## Introduction

Measuring retirement security—or retirement income adequacy—is an extremely important topic. The May 2012 *EBRI Notes* article provided updates for the previously published EBRI Retirement Readiness Ratings™,<sup>1</sup> as well as the average Retirement Savings Shortfalls (RSS).<sup>2</sup>

This *Notes* article provides sensitivity analysis on the Retirement Readiness Ratings™ by giving additional information on the percentage of the at-risk population that is relatively close to having adequate financial resources for retirement income adequacy. It also provides more detailed analysis on the distribution of the RSS. Unlike previous analyses, this article focuses on the Gen Xer cohort (born between 1965–1974) in an attempt to assess the impact that eligibility for participation in a 401(k) plan has on these values.

The article also provides a comparative analysis of the importance of nursing home and home health care costs on retirement income adequacy. Figures 1–6 below are based on the EBRI Retirement Security Projection Model® (RSPM) which simulates 1,000 alternative retirement paths for each household to explicitly model investment, longevity and stochastic health care risks (i.e., nursing home and home health care costs). Figure 7 below modifies RSPM by completely eliminating the nursing home and home health care risks to illustrate the extent of the errors introduced in models that ignore these risks.

## Retirement Readiness Ratings™

VanDerhei (May 2012) provides updated information on the percentage of households simulated to be at-risk of having insufficient retirement income and assets to cover retirement expenses (based on the average expenses of those age 65 or older throughout retirement in specific income and age groupings determined by a proxy for the household's retirement income) and uninsured medical costs for the duration of their retirement. The Retirement Readiness Ratings™ were presented by age cohort, income quartile and future years of 401(k) eligibility.

Approximately 44 percent of the Baby Boomer and Gen Xer households were simulated to be at-risk assuming they retired at age 65 and retained any net housing equity in retirement until other financial resources were depleted.<sup>3</sup>

The following sensitivity analysis on the baseline RSPM by age cohort displays the percentage of households expected to be below the percentage of deemed adequate income. The percentage of deemed adequate income for those households at risk is defined as:  $1 - (\text{accumulated value of deficits generated at the time all members of the household have died, divided by the accumulated value of the total retirement expenditures for the household})$ .

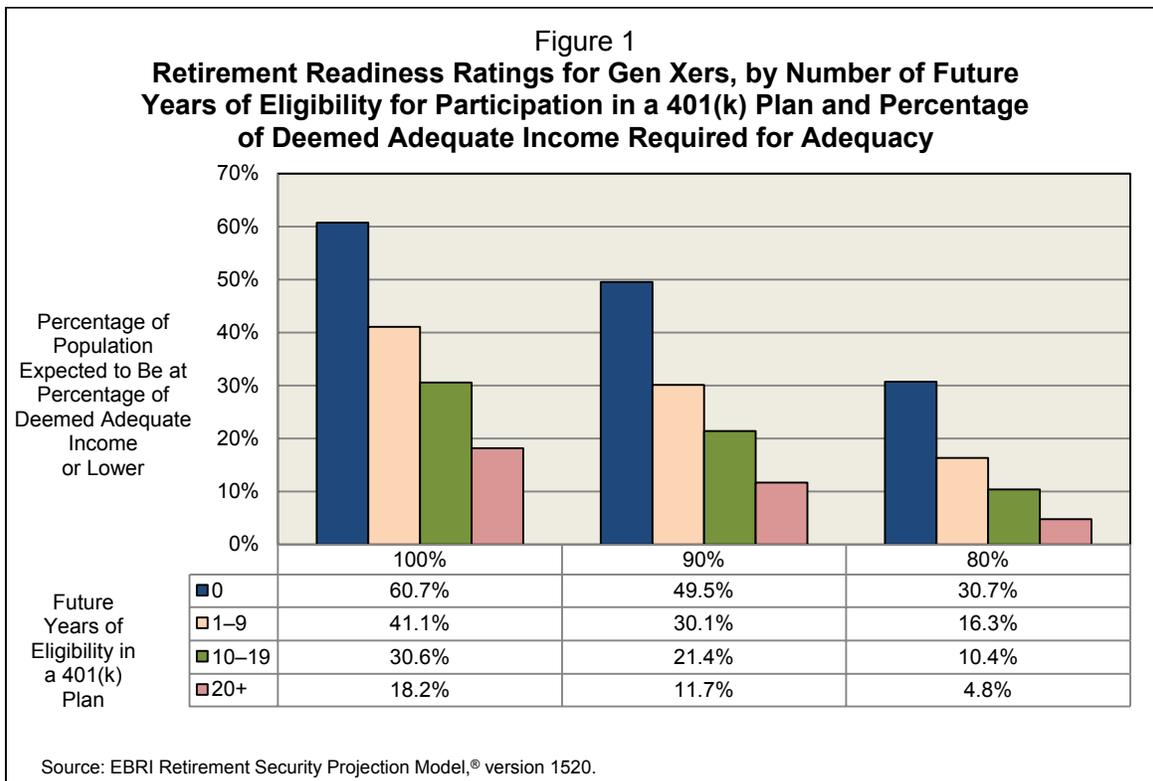
This formulation provides a relatively simple way of determining what percentage of households are close to the threshold:

### Those “At Risk,” by Age Cohort

	Early Boomers (born between 1948–1954)	Late Boomers (born between 1955–1964)	Gen Xers (born between 1965–1974)
Percentage of Deemed Adequate Income			
100%	44.3%	43.3%	43.9%
90%	33.0%	31.8%	33.8%
80%	18.0%	17.2%	19.4%

Thus, while nearly one-half (44 percent) of the Early Boomers are considered to be “at risk” using the 100 percent threshold, approximately one-third (33 percent) have less than 90 percent of the financial resources necessary to cover the retirement expenses and uninsured health care costs. The number drops to 18 percent if the threshold is relaxed to 80 percent.

Figure 1 provides a similar type of analysis but focuses exclusively on the Gen Xer cohort. The population was filtered in this manner to allow additional analysis on the impact of future years of 401(k) eligibility on the at-risk ratings. The 100 percent of deemed adequate income threshold shows that more than 60 percent of Gen Xers without future 401(k) eligibility are simulated to be at risk; however this drops to 18 percent for those with 20 or more years of eligibility. When the threshold for adequacy is relaxed from 100 percent of the deemed adequate income to only 90 percent, the at-risk ratings drop for all groups but the impact of 401(k) eligibility is still quite pronounced: Now those without any years of future 401(k) eligibility are simulated be at risk approximately 50 percent of the time, while those with 20 or more years have an at-risk rating of approximately 12 percent. Approximately 30 percent of Gen Xer households with no future years of 401(k) eligibility are simulated to be at risk at an 80 percent threshold, while less than 5 percent of those with 20 or more years of 401(k) eligibility are simulated to be at risk.



## Retirement Savings Shortfalls

VanDerhei (May 2012) depicts Retirement Savings Shortfalls by age cohort, as well as marital status and gender, for both Baby Boomers and Gen Xers. The RSS values provide information on average individual retirement income deficits. These numbers are present values at age 65, and represent the additional amount that individuals would have to save by age 65 to eliminate their expected deficits in retirement (which, depending on the simulated lifepath, could be a relatively short period or could last decades). The additional savings required for Gen Xers vary from approximately \$25,000 (per individual) for married households, increasing to \$42,000 for single males and \$76,000 for single females.<sup>4</sup>

While these RSS values may appear to be relatively small considering they represent the sum of present values that may include decades of deficits, it is important to remember that only a portion of the simulated lifepaths modeled were considered to be “at risk.” In other words, the average RSS values are reduced by the inclusion of simulated retirement lifepaths that will *not* run short of money. Figure 2 provides a more detailed way of looking at the same results by showing the distribution of RSS (per individual) for Gen Xers by gender and family status. For example, 67.9 percent of simulated retirement paths for single male Gen Xers do not generate deficits. However, of the 32.1 percent of simulated retirement paths for single male Gen Xers that do generate deficits, approximately 1 in 4 generate an RSS of less than \$50,000. This represents 8.4 percent of all simulated retirement paths for single male Gen Xers. Another 5.7 percent of this group generates an RSS between \$50,000–\$100,000, while 11.5 percent have an RSS between \$100,000–\$200,000. Only 6.5 percent of all simulated retirement paths for single male Gen Xers produce an RSS greater than \$200,000.

Comparing the results for Gen Xer single females with single males in Figure 2 shows that females are more likely to experience a retirement deficit (56.9 percent of the simulated lifepaths for single females vs. the 32.1 percent for single males), but the conditional likelihood of having a large RSS is essentially the same as for single males. For example, 20 percent of the simulated retirement paths for single males that produce deficits have an RSS value greater than \$200,000. The same value for single females is 23 percent.

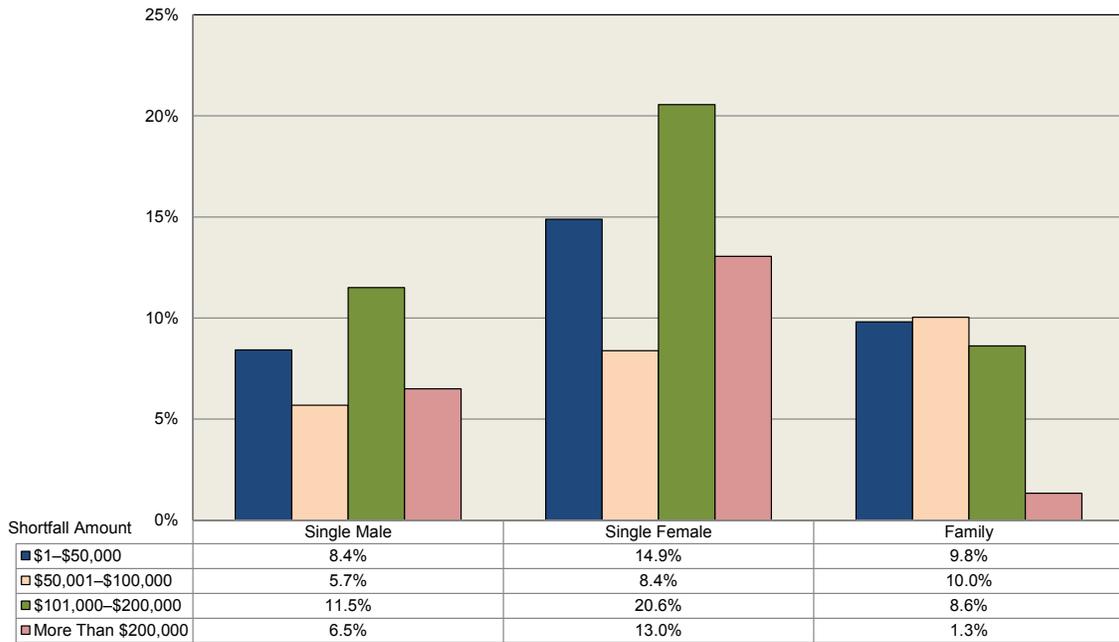
The distribution of RSS values per individual for married households in Figure 2 appears to be quite different from that of single males and single females, but that is to be expected given the implicit diversification existing in a two-person household. In this case, 70.2 percent of simulated retirement paths for families have no deficits. Focusing on families with RSS values in excess of \$200,000, only 4 percent of family simulated retirement paths with a deficit (or 1.3 percent of all family simulated retirement paths) generate a value this large. However, given that these are per-individual RSS values, a \$200,000 family RSS would involve a sum of at least \$400,000 between the two family members.

## The Impact on Retirement Savings Shortfalls of Eligibility in a Defined Contribution Retirement Plan

As noted in VanDerhei (May 2012), eligibility for participation in a defined contribution plan can have a significantly positive impact on reducing these savings shortfalls. The deficit values for those assumed to have no future years of eligibility (as if they were never simulated to be employed in the future by an organization that provides access to those plans) is approximately \$78,000 per individual. That shortfall decreases substantially for those with between one and nine years of future eligibility, to \$55,000 and even further to about \$39,000 for those with 10–19 years of future eligibility. Gen Xers fortunate enough to have at least 20 years of future eligibility in those programs could find their average shortfall at retirement reduced to only \$23,000.

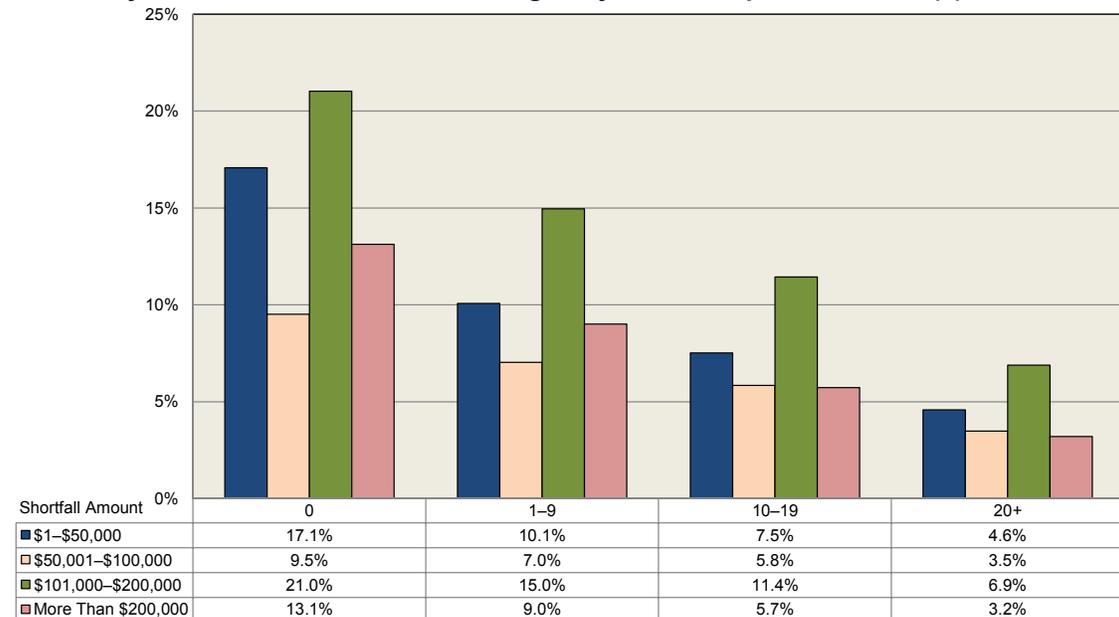
Figure 3 provides the distribution of RSS for Gen Xers categorized by the number of future years of eligibility for participating in a 401(k) plan. Approximately 39 percent of Gen Xers with no future years of 401(k) eligibility are simulated to have no shortfalls, but 13 percent of this group is simulated to have shortfalls of more than \$200,000. In

**Figure 2**  
**Distribution of Retirement Savings Shortfalls**  
**(per Individual) for Gen Xers, by Gender and Family Status**



Source: EBRI Retirement Security Projection Model,® version 1514. Note the percentages in each column do not add to 100 percent because individuals *without* shortfalls are not displayed. For example, 67.9 percent of single male Gen Xers are simulated to have no shortfalls. This number is 43.1 percent for single female Gen Xers and 70.2 percent for families.

**Figure 3**  
**Distribution of Retirement Savings Shortfalls for Gen Xers,**  
**by Number of Future Years of Eligibility for Participation in a 401(k) Plan**



Source: EBRI Retirement Security Projection Model,® version 1514. The percentages in each column do not add to 100 percent because individuals *without* shortfalls are not displayed. For example, 39.3 percent of Gen Xers with no future years of eligibility for participation in a 401(k) plan are simulated to have no shortfalls. This increases to 58.9 percent for those with one to nine years of future eligibility and 69.5 percent for those with 10–19 years. For those with 20 or more years of future eligibility, 81.8 percent have no simulated deficits.

contrast, approximately 82 percent of those with 20 or more years of future eligibility are simulated to have no deficits, while only 3 percent have shortfalls of \$200,000 or more.

Figure 4 provides the same analysis as Figure 3, although limited to only single male Gen Xers. Figure 5 provides results for single female Gen Xers and Figure 6 provides the (per-individual) results for married Gen Xers. Although each figure shows a tremendous impact from future years of 401(k) eligibility on RSS, single female Gen Xers experience the largest absolute reduction in the percentage of those with shortfalls of more than \$200,000. Approximately 18 percent of those with no future years of 401(k) eligibility would experience a shortfall of this magnitude compared with approximately 5 percent of those with 20 or more years of future eligibility.

## **The Impact of Nursing Home and Home Health Care Costs on Retirement Savings Shortfalls**

EBRI has gone to great lengths to model the major risks to retirement income adequacy since the initial introduction of RSPM<sup>®</sup> in 2003, including stochastic health care risks such as nursing home and home health care costs. Even though these events will not be experienced by all retired households, or experienced to the same extent, they can have catastrophic financial consequences for the future retirement income adequacy of the household. Many attempts to model retirement income adequacy either ignore this risk or make the assumption that all households purchase long-term care insurance at retirement.

Figure 7 provides the distribution of RSS (per individual) for Gen Xers by gender and family status similar to Figure 2; however, in this case all nursing home and home health costs in retirement are assumed to disappear or at least be borne by another entity. Comparing Figure 7 to Figure 2 provides a vivid illustration of how important the correct assumptions are. For example, with nursing home and home health care expenses modeled, 68 percent of single male Gen Xers are projected to have no financial shortfall in retirement. On the other hand, if these expenses are ignored, more than 90 percent of this group is now simulated to have no shortfalls. Similar results are produced for single female and married Gen Xers. Phrased another way, ignoring the impact of nursing home and home health care costs in retirement significantly exaggerates the likelihood of achieving retirement income adequacy.

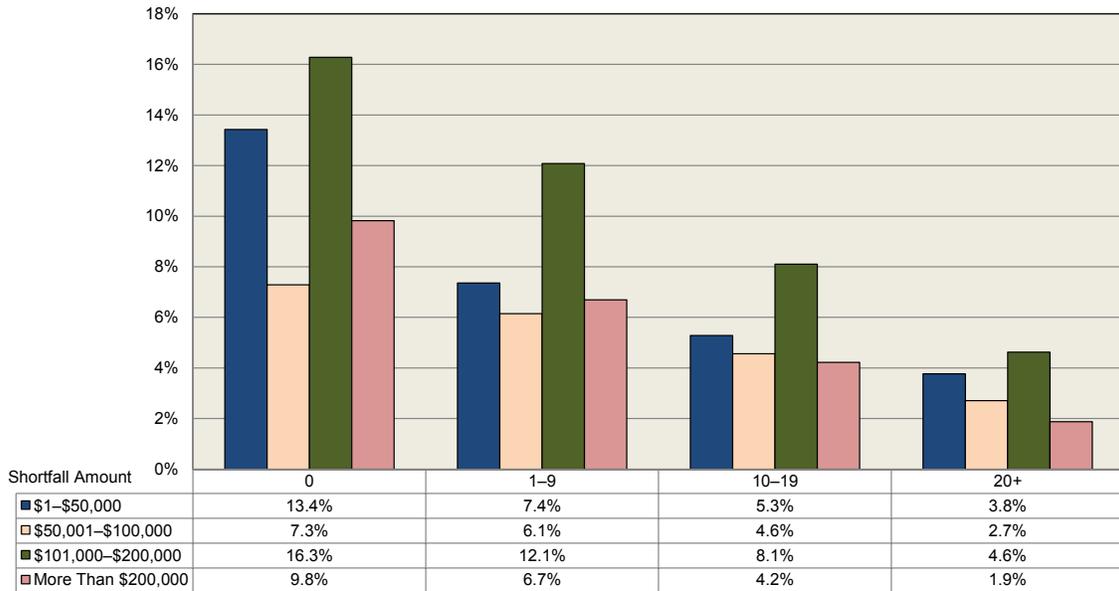
The error of ignoring nursing home and home health care costs is even more noticeable if one focuses on the percentage of individuals with shortfalls (RSS values) in excess of \$100,000. Ignoring nursing home and home health care costs, fewer than 1 percent of single male or married Gen Xers have shortfalls this large; however with those assumptions included in the model, approximately 18 percent of single males and 10 percent of families are now in this range. The results are even more pronounced for single females. Ignoring nursing home and home health care expenses, fewer than 5 percent of are likely to experience shortfalls of more than \$100,000, compared with approximately 34 percent when this reality is modeled.

## **Conclusion**

Recent updates to the EBRI RSPM<sup>®</sup> show that the percentage of Gen Xer and Baby Boom households in 2012 simulated to have adequate retirement income has increased by 5 to 8 percentage points since 2003. However, there is still a significant percentage of households that are simulated to be at risk of not being able to cover retirement expenses and uninsured medical costs through the entire duration of their retirement years (for example, 43.9 percent of the Gen Xer households are at risk under the baseline assumptions for RSPM<sup>®</sup>).

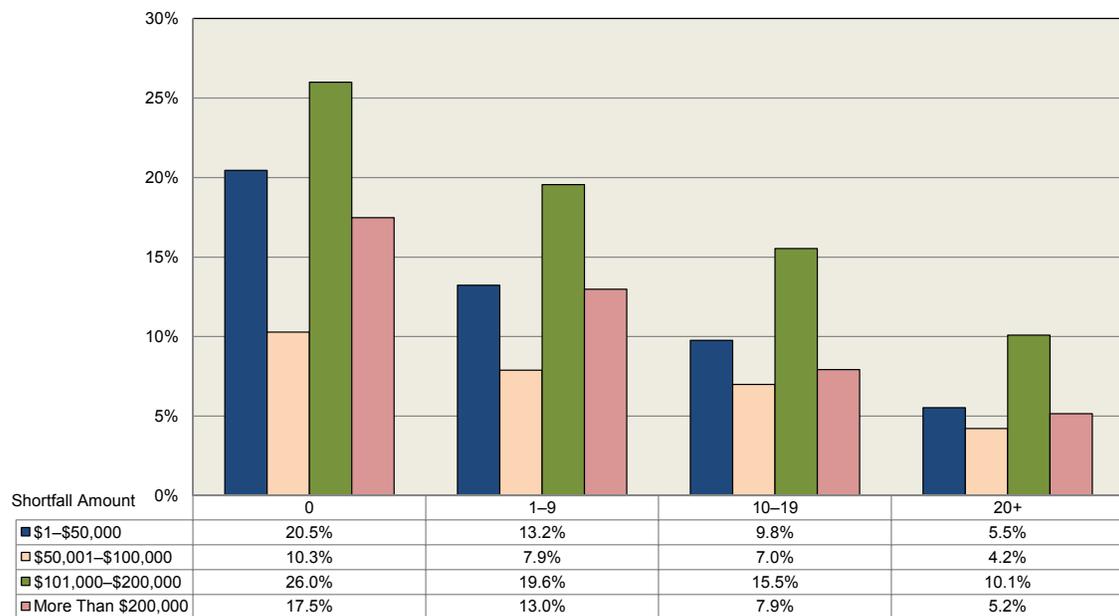
A problem with simply classifying a household as “at risk” or not is that some households may be missing the threshold by a relatively small amount. When the threshold is relaxed to only 90 percent of the simulated expenses for example, the percentage of Gen Xer households simulated to be at risk drops to approximately one-third (33.8 percent). Reducing the threshold further to only 80 percent of the simulated expenses decreases the at risk rating to less than 1 in 5 (19.4 percent).

**Figure 4**  
**Distribution of Retirement Savings Shortfalls for Single Male Gen Xers,**  
**by Number of Future Years of Eligibility for Participation in a 401(k) Plan**



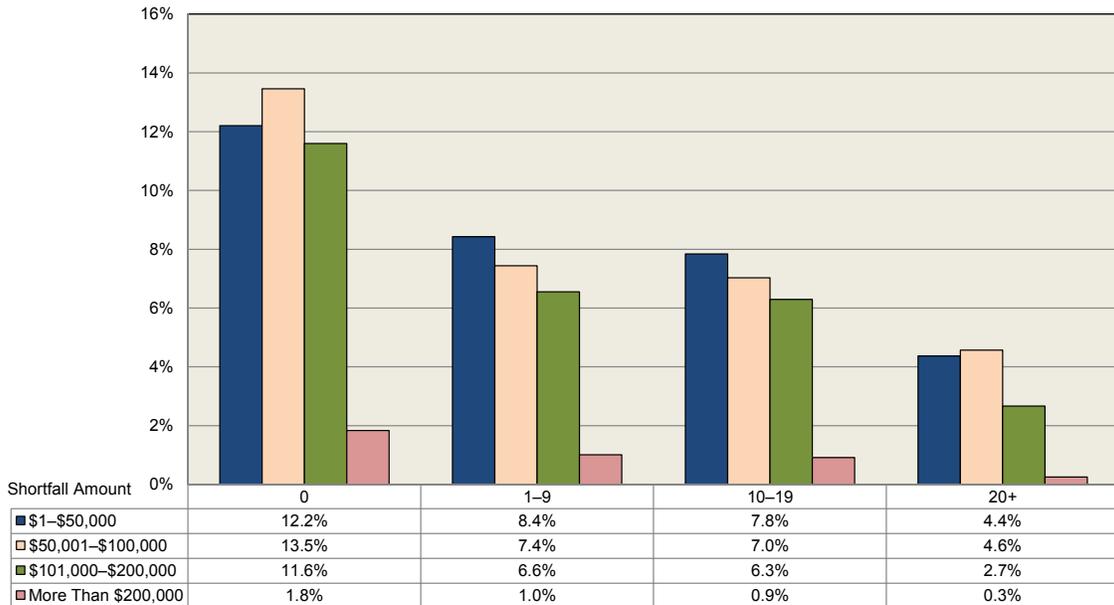
Source: EBRI Retirement Security Projection Model,® version 1514. Note the percentages in each column do not add to 100 percent because individuals *without* shortfalls are not displayed. For example 53.2 percent of single male Gen Xers with no future years of eligibility for participation in a 401(k) plan are simulated to have no shortfalls. This increases to 67.7 percent for those with one to nine years of future eligibility and 77.8 percent for those with 10-19 years. For those with 20 or more years of future eligibility, 87.0 percent have no simulated deficits.

**Figure 5**  
**Distribution of Retirement Savings Shortfalls for Single Female Gen Xers,**  
**by Number of Future Years of Eligibility for Participation in a 401(k) Plan**



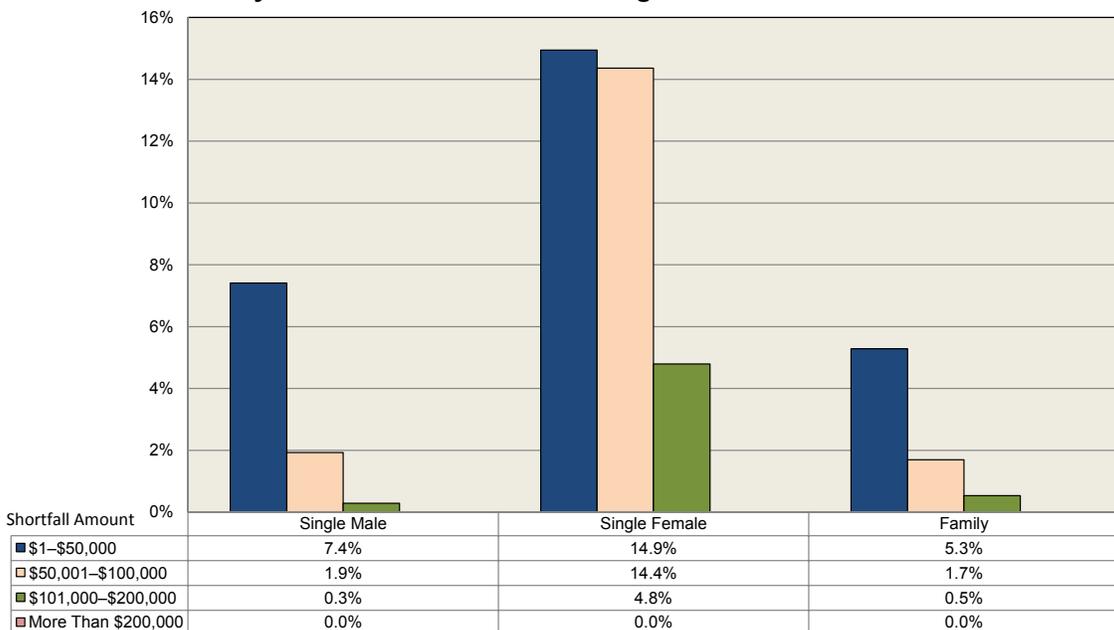
Source: EBRI Retirement Security Projection Model,® version 1514. Note the percentages in each column do not add to 100 percent because individuals *without* shortfalls are not displayed. For example, 25.8 percent of single female Gen Xers with no future years of eligibility for participation in a 401(k) plan are simulated to have no shortfalls. This increases to 46.3 percent for those with one to nine years of future eligibility and 59.8 percent for those with 10-19 years. For those with 20 or more years of future eligibility, 75.0 percent have no simulated deficits.

**Figure 6**  
**Per-individual Distribution of Retirement Savings Shortfalls for Married Gen Xers, by Number of Future Years of Eligibility for Participation in a 401(k) Plan**



Source: EBRI Retirement Security Projection Model,® version 1514. Note the percentages in each column do not add to 100 percent because individuals *without* shortfalls are not displayed. For example 60.9 percent of married Gen Xer households with no future years of eligibility for participation in a 401(k) plan are simulated to have no shortfalls. This increases to 76.6 percent for those with one to nine years of future eligibility and 77.9 percent for those with 10-19 years. For those with 20 or more years of future eligibility, 88.1 percent have no simulated deficits.

**Figure 7**  
**Distribution of Retirement Savings Shortfalls (per Individual) for Gen Xers, by Gender and Family Status: Assumes No Nursing Home or Home Health Care Costs**



Source: EBRI Retirement Security Projection Model,® version 1518. Note the percentages in each column do not add to 100 percent because individuals *without* shortfalls are not displayed. For example, 90.4 percent of single male Gen Xers are simulated to have no shortfalls. This number is 65.9 percent for single female Gen Xers and 92.5 percent for families.

The dollar value of shortfalls for Gen Xers varies considerably with the number of future years of eligibility for 401(k) plans. This is particularly true for those in the highest severity category (\$200,000 or more): 13 percent of those with no future years of 401(k) eligibility have shortfalls in this range vs. only 3 percent for those with 20 or more years. Future eligibility for 401(k) plans makes a significant difference in reducing the percentage of households with shortfalls of \$200,000 or more for all gender/family status combinations, but single females experience the largest absolute reduction in the percentage of those with shortfalls in this range.

## **Appendix A: Brief Description of RSPM<sup>5</sup>**

One of the basic objectives of RSPM is to simulate the percentage of the population that will be “at risk” of having retirement income that is inadequate to cover basic expenses and pay for uninsured health care costs for the remainder of their lives once they retire.<sup>6</sup> However, the EBRI Retirement Readiness Rating™ 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 compensation they would need in terms of additional savings to have a 50, 70, or 90 percent probability of retirement income adequacy.

VanDerhei (February 2011) describes how households (whose heads are currently ages 36–62) are tracked through retirement age, and how their retirement income/wealth is simulated for the following components:

- Social Security.
- Defined contribution balances.
- 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 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 picked up by Medicaid). This version of the model is constructed to simulate retirement income adequacy based upon meeting the average expenses of those age 65 or older throughout retirement in specific income and age groupings determined by a proxy for the household’s retirement income plus uninsured medical costs for the duration of their retirement; however, 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 after-tax<sup>7</sup> 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,<sup>8</sup> the excess is assumed to be invested in a non-tax-advantaged account where the investment income is taxed as ordinary income.<sup>9</sup> The 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 basic expenses, the entity is designated as having “run short of money” at that time.

## Appendix B: Brief Chronology of RSPM

EBRI launched a major project to provide this type of retirement income security measurement in the late 1990s for several states concerned whether their residents would have sufficient income when they reached retirement age. After conducting studies for Oregon, Kansas, and Massachusetts, a national model—the EBRI Retirement Security Projection Model<sup>®</sup> (RSPM)—was developed in 2003, and in 2010 it was updated to incorporate several significant changes, including the impacts of defined benefit plan freezes, automatic enrollment provisions for 401(k) plans, and the recent crises in the financial and housing markets.<sup>10</sup> EBRI has recently updated RSPM for changes in financial and real estate market conditions as well as underlying demographic changes and changes in 401(k) participant behavior since January 1, 2010 (based on a database of 23 million 401(k) participants).

The original version of RSPM was used to analyze the future economic well-being of the retired population at the state level. EBRI and the Milbank Memorial Fund, working with the governor of Oregon, set out in the late 1990s to see if this situation could be addressed for the state. That analysis<sup>11</sup> focused primarily on simulated retirement wealth with a comparison to ad hoc thresholds for retirement expenditures.

Subsequent to the release of the Oregon study, it was decided that the approach could be applied to other states as well. Kansas and Massachusetts were chosen as the next states for analysis. Results of the Kansas study were presented to the state's Long-Term Care Services Task Force on July 11, 2002,<sup>12</sup> and the results of the Massachusetts study were presented on Dec. 1, 2002.<sup>13</sup> With the assistance of the Kansas Insurance Department, EBRI was able to create Retirement Readiness Ratings<sup>™</sup> 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. This was followed by the expansion of RSPM and the Retirement Readiness Ratings<sup>™</sup> to a national model and the presentation of the first micro-simulation retirement-income-adequacy model, built in part from administrative 401(k) data at the EBRI December 2003 policy forum.<sup>14</sup> The basic model was subsequently modified for testimony for the Senate Special Committee on Aging in 2004 to quantify the beneficial impact of a mandatory contribution of 5 percent of compensation.<sup>15</sup>

In an analysis to determine the impact of annuitizing defined contribution and IRA balances at retirement age, VanDerhei and Copeland, 2004, were able to demonstrate that for a household seeking a 75 percent probability of retirement income adequacy, the additional savings that would otherwise need to be set aside each year until retirement to achieve this objective would decrease by a median amount of 30 percent. Additional refinements were introduced in 2005 to evaluate the impact of purchasing long-term care insurance on retirement income adequacy.<sup>16</sup>

The model was next used in March of 2006 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.<sup>17</sup> Later that year, an updated version of the model was developed to enhance the EBRI interactive Ballpark E\$estimate<sup>®</sup> worksheet by providing Monte Carlo simulations of the necessary replacement rates needed for specific probabilities of retirement-income adequacy under alternative-risk-management treatments.<sup>18</sup>

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.<sup>19</sup> Additional modifications were added in 2009 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.<sup>20</sup>

Also in 2009 a new subroutine was added to the model to allow simulations of various styles of target-date funds for a comparison with participant-directed investments.<sup>21</sup> In April 2010, the model was completely re-parameterized with 401(k) plan-design parameters for sponsors that had adopted automatic-enrollment provisions.<sup>22</sup> A completely

updated version of the national model was produced for the May 2010 EBRI policy forum and used in the July 2010 Issue Brief.<sup>23</sup>

The new model was used to analyze how eligibility for participation in a defined contribution plan impacts retirement income adequacy in September 2010.<sup>24</sup> It was also used to compute Retirement Savings Shortfalls for Baby Boomers and Generation Xers in October 2010.<sup>25</sup>

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.<sup>26</sup>

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.<sup>27</sup>

An April 2011 article introduced a new method of analyzing the results from the RSPM.<sup>28</sup> Instead of 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.<sup>29</sup>

In a July 2011 *EBRI Notes* article,<sup>30</sup> it provided 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<sup>31</sup> evaluated the importance of defined benefit plans for households, assuming individuals retire at age 65, while demonstrating the impact of defined benefit plans in achieving retirement income adequacy for Baby Boomers and Gen Xers.

EBRI’s September 2011 Senate Finance testimony<sup>32</sup> analyzed the potential impact of various types of tax-reform options on retirement income adequacy. This was expanded in the November 2011 *EBRI Issue Brief*<sup>33</sup> and a new set of survey results were added to the model in the March 2012 *EBRI Notes* article.<sup>34</sup>

Finally, the May 2012 *EBRI Notes* article<sup>35</sup> provided 2012 updates for the previously published EBRI Retirement Readiness Ratings<sup>TM</sup> as well as the Retirement Savings Shortfalls.

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## Endnotes

- <sup>1</sup> See VanDerhei and Copeland (July 2010) for more detail.
- <sup>2</sup> See VanDerhei (October 2010) for more detail.
- <sup>3</sup> At that point it was assumed that the house would be sold, the retirees would move to an apartment and any net proceeds would be used as a lump sum (as opposed to annuitizing the proceeds).
- <sup>4</sup> It should be noted that these values are present values at age 65, expressed in 2012 dollars. If inflation were included in these values, they would be increased (on an individual basis) by 70–122 percent.
- <sup>5</sup> This material first appeared in VanDerhei and Copeland (July 2010).
- <sup>6</sup> The nominal cost of these expenditures increases with component-specific inflation assumptions. See the appendix for more details.
- <sup>7</sup> IRS tax tables from 2009 are used to compute the tax owed on the amounts received from defined benefit plans and Social Security (with the percentage of Social Security benefits subject to federal income tax proxied as a function of the various retirement income components) as well as the individual account withdrawals.
- <sup>8</sup> Roth IRA and 401(k) accounts are not used in this version of the model but will be incorporated into a forthcoming EBRI publication.
- <sup>9</sup> Capital gains treatment is not used in this version of the model.

<sup>10</sup> A brief description of the EBRI Retirement Security Projection Model<sup>®</sup> (RSPM) is provided in Appendix A followed by a chronology of its development and utilization in Appendix B. See VanDerhei (February 2011) for additional detail on the impact of the 2008–2009 crises in the financial and real estate markets on retirement income adequacy.

<sup>11</sup> VanDerhei and Copeland (2001).

<sup>12</sup> VanDerhei and Copeland (July 2002).

<sup>13</sup> VanDerhei and Copeland (December 2002).

<sup>14</sup> VanDerhei and Copeland (2003)

<sup>15</sup> VanDerhei (January 2004).

<sup>16</sup> VanDerhei (2005).

<sup>17</sup> VanDerhei (March 2006).

<sup>18</sup> VanDerhei (September 2006)

<sup>19</sup> VanDerhei and Copeland (2008).

<sup>20</sup> Copeland and VanDerhei (2010).

<sup>21</sup> VanDerhei (2009).

<sup>22</sup> VanDerhei (April 2010).

<sup>23</sup> VanDerhei and Copeland (2010).

<sup>24</sup> VanDerhei (September 2010).

<sup>25</sup> VanDerhei (October 2010a).

<sup>26</sup> VanDerhei (October 2010b).

<sup>27</sup> VanDerhei (February 2011).

<sup>28</sup> VanDerhei (April 2011).

<sup>29</sup> VanDerhei and Copeland (June 2011).

<sup>30</sup> VanDerhei (July 2011).

<sup>31</sup> VanDerhei (August 2011).

<sup>32</sup> VanDerhei (September 2011).

<sup>33</sup> VanDerhei (November 2011)

<sup>34</sup> VanDerhei (March 2012).

<sup>35</sup> VanDerhei (May 2012).

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