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The impact of Health Savings Accounts (HSAs) on retirement income adequacy for future retirees

At a glance

This paper examines the impact health savings accounts (HSAs) might have on retirement income adequacy using the Employee Benefit Research Institute's (EBRI's) Retirement Security Projection Model® (RSPM®) combined with data from EBRI's HSA Database. More specifically, this report examines the expected impact of HSAs on retirement income adequacy for U.S. households currently ages 35–64 under baseline assumptions for HSA enrollment, contributions, distributions and investment behavior. HSAs have the potential to play an important role in determining retirement income adequacy for future retirees.

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Key findings of this analysis include:

- The aggregate retirement savings shortfall for all U.S. households ages 35–64 as of December 31, 2020, was $3.66 trillion, excluding HSA adoption. The cumulative baseline deficit decreases by 6.2% to $3.44 trillion when status quo HSA utilization is considered. Similarly, the retirement readiness ratings increase from 59.0% to 60.2% when incorporating the status quo HSA experience.
- Scenario analysis comprised of changing HSA behaviors across factors of enrollment, investing, contributions and distributions indicates that, compared to the baseline with HSA:
  - A moderate improvement in HSA behavior increases retirement readiness by 2.5% to 61.7% and reduces the baseline with HSA deficit by 4.0% to $3.30 trillion.
  - A strong improvement in HSA behavior increases retirement readiness by 7.4% to 64.7% retirement ready and reduces the baseline with HSA deficit by 15.0% to $2.92 trillion.
  - The upper bounds of maxing out four HSA behavioral factors simultaneously increases retirement readiness rating by 36.0% to 81.9%, and reduces the baseline with HSA deficit by 74.5% to $0.88 trillion.
- The status quo adoption of HSAs and subsequent improvements in behaviors appear to have the most positive impact in absolute dollar terms on households led by females, Black/African Americans, or Hispanic Americans; households in a lower income quartile; and households with many years of future defined contribution (DC) eligibility.
- Through isolating the maximum impact of each factor within the scenarios, we find that maximizing HSA enrollment accounts for more than half (60.4%) of the difference in the retirement saving shortfall (RSS) relative to the baseline with HSA, followed by maximizing investing (35.7%). Maximizing contribution and distribution behavior have minor impacts relative to maximum enrollment and investing, potentially due to statutory limitations.

Holding all else constant, increasing access to HSAs and encouraging investment among HSA accountholders may further reduce the cumulative retirement savings shortfall and be more impactful for demographic cohorts who are currently projected to face the largest deficits.

1. Introduction

The adoption of high-deductible health plans (HDHPs) by employers is one of the strongest trends in employment-based health benefits and is driving enrollment into HSA-eligible health insurance plans and HSAs. Today, more than one-half of enrollees in private-sector health plans have coverage with a deductible large enough to qualify for HSA contributions. It has also been estimated that there were nearly 36 million HSAs holding $104 billion in assets as of December 31, 2022. Total HSA assets are expected to reach $149.7 billion in 2025. About 40% of these HSAs received an employer contribution in 2022 (Spiegel & Fronstin, "Trends in Health Savings Account Balances," 2023).

HSAs have received wide attention among policymakers and the retirement industry. They are often promoted as a retirement savings vehicle because of the triple tax advantage. Unlike a 401(k) plan, an employee's contributions to an HSA are deductible from taxable income; an employer's contributions to the account for an employee are excludable from the employee's gross income; and distributions for qualified medical expenses, and certain premiums, from the HSA are excluded from taxable income to the employee. Any interest or other capital earnings on assets in the HSA build up tax free as well.

Yet, retirement adequacy studies have, up to this point, ignored one critically important component of potential retirement wealth—namely, the ability to save for retirement through an HSA. Measuring retirement security—or retirement income adequacy—is extremely important in understanding the efficacy of the current retirement system. The question of whether U.S. households will have adequate retirement income and wealth to cover the costs of their future retirements has received considerable research and sizable industry and public policy attention over the last few decades. EBRI's Retirement Security Projection Model (RSPM) has determined that the aggregate retirement savings shortfall for all U.S. households ages 35–64 as of December 31, 2020, was $3.66 trillion, excluding HSA adoption.

This paper examines the impact HSAs might have on retirement income adequacy using EBRI's RSPM combined with data from EBRI's HSA Database. More specifically, this report examines the expected impact of HSAs on retirement income adequacy for U.S. households currently ages 35–64 under baseline assumptions for HSA utilization, expenditure behavior, and investment allocations. We find that HSAs have the potential to play an important role in determining retirement income adequacy for future retirees.

2. Medical costs in retirement

The connection between retirement income adequacy and HSAs is often made because in retirement healthcare costs can be considerable, which can occur because Medicare was not designed to cover healthcare expenses in full. Deductibles for inpatient and outpatient services were part of the program when it was established in 1965. In addition, when outpatient prescription drugs were added as an optional benefit in 2003, the program included a then-controversial coverage gap known as the "donut hole" in which beneficiaries must pay out of pocket to cover the cost of prescription drugs. While the Patient Protection and Affordable Care Act of 2010 (ACA) included provisions to reduce the size of this coverage gap, the ACA did not eliminate it. In 2023 and 2024, enrollees will pay 25% of the cost of prescription drugs when they are in the "donut hole" for both generic and brand-name drugs, though other forms of cost sharing have increased. Most recently, the Inflation Reduction Act of 2022 included a provision that caps Medicare Part D out-of-pocket spending at $2,000 starting in 2025.

Because out-of-pocket spending can be high and uncertain, most Medicare beneficiaries have some form of supplemental coverage. As a result, out-of-pocket spending is minimized, but Medicare beneficiaries often pay more predictable premiums for supplemental coverage. Yet, expenditures associated with the combination of premiums and out-of-pocket payments when healthcare services are used can be significant as well. EBRI research has found that a 65-year-old man enrolled in a Medigap plan with average premiums will need to have saved $96,000 in order to have a 50% chance of having enough to cover premiums and median prescription drug expenditures, and a woman will need to have saved $116,000 (Spiegel and Fronstin 2023). To have a 90% chance of meeting their healthcare spending needs in retirement, a man will need to have saved $166,000, and a woman will need to have saved $197,000.

Couples enrolled in a Medigap plan with average premiums, meanwhile, will need to have saved $212,000 to have a 50% chance of covering their medical expenditures in retirement and $318,000 to have a 90% chance. Representing an extreme case, a couple with particularly high prescription drug expenditures will need to have saved $383,000 to have a 90% chance of having enough money to cover their healthcare costs in retirement.

Although there is significant individual-level variation, enrollees in Medicare Advantage plans generally have lower savings targets. A man enrolled in Medicare Advantage

who has median drug expenditures and an average usage of healthcare services will need to have saved $56,000 to have a 50% chance of meeting his healthcare spending requirements in retirement, and he would need $96,000 to have a 90% chance. Meanwhile, a woman will need to have saved $67,000 to have a 50% chance and $113,000 to have a 90% chance of having enough to cover her healthcare costs in retirement. Couples will need to have saved $123,000 to have a 50% chance and $184,000 to have a 90% chance of covering their healthcare expenditures in retirement.

3. Using HSAs to save for retirement

The Medicare Prescription Drug, Improvement, and Modernization Act of 2003 (MMA) allows individuals enrolled in HSA-eligible health plans to open and fund HSAs. Unlike 401(k) and individual retirement accounts (IRAs) defined contribution (DC) plans, HSAs benefit from a triple tax advantage: Employee contributions to the account are deductible from taxable income, any interest or other capital earnings on assets in the account build up tax free, *and* distributions for qualified medical expenses from the HSA are excluded from taxable income to the employee. Tax-free distributions are also allowed for certain premium payments in retirement.

Like 401(k) plans and IRAs, contributions to HSAs are limited. In 2023, contributions were limited to $3,850 for people with individual health insurance coverage and $7,750 for those with family coverage. These contribution limits apply to the combination of individual and employer contributions. Individuals who have reached age 55 and are not yet enrolled in Medicare are able to make an additional $1,000 catch-up contribution. In contrast, 401(k) contributions are limited to $22,500, and workers ages 50 and older can make an additional $7,500 catch-up contribution. Total employer and worker contributions cannot exceed $66,000—or $73,500 for workers ages 50 and older.

Over the course of 40 years, an individual has the potential to save about $900,000 in an HSA (Figure 1). This assumes that they make the statutory maximum contribution each year (including catch-up contributions when eligible), do not take any distributions, and invest the funds at a rate of return of 7.5%. If it were not for statutory limitations, HSAs have the potential for even greater savings. However, even when individuals contribute the statutory maximum, because contributions can only be made when an individual is also enrolled in an HDHP, many people with HSAs will not realize the full potential. They will often use the money in the HSA to pay for current medical expenses. Hence, if one-half of the balance is spent and one-half rolled over, an individual will only save about $32,000 over the course of 10 years, instead of $56,000 (Figure 2). Unlike distributions for qualified medical expenses, distributions for nonqualified expenses are not excludable from gross income and, in addition to being taxable, are subject to a 20% penalty, which is waived if the HSA owner dies, becomes disabled, or is eligible for Medicare.

Figure 1. Potential HSA balance after 40 years (hypothetical illustration)

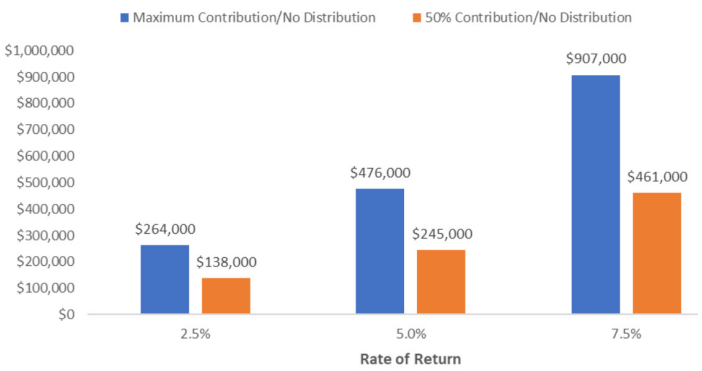
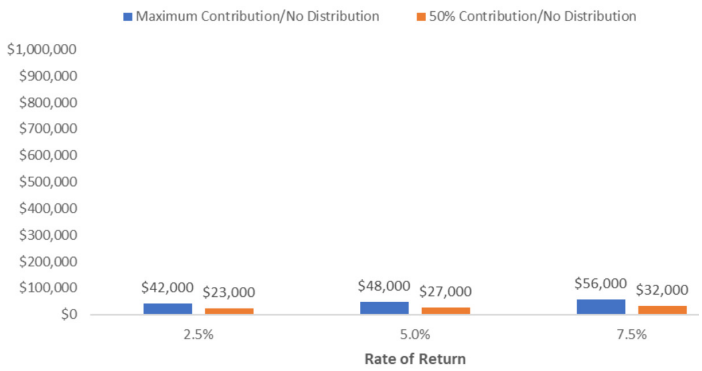


Figure 2. Potential HSA balance after 10 years (hypothetical illustration)



The ability of HSAs to optimize a savings portfolio is further demonstrated through a model of lifecycle savings. If employees optimize their savings decisions, adding HSAs to DC accounts should increase lifetime utility and tax-preferred savings rates overall (Friedberg, et al. 2023). Despite the potential to optimize tax-deferred savings, most employees do not use the HSA as a long-term savings vehicle (Spiegel & Fronstin, "Trends in Health Savings," 2023); and, while employees with high financial literacy and liquidity are more likely to use HSAs, most use the account to pay for current health expenses versus saving for future health expenses (Davis et al., 2023).

The fungibility of HSA dollars, or the ability of HSA dollars to be interchanged with another workplace benefit, such as health insurance premiums or 401(k) savings, has raised questions given the potential for money movement. Evidence from survey-administrative data of university employees shows that employees do not treat HSA dollars as fungible with health insurance premiums (Davis et al., 2023) while administrative data analysis of a large employer further supports that most employees do not treat HSA money as fungible with retirement savings (Leive, 2022). On the other hand, EBRI has found that that workers do contribute to HSAs at the expense of 401(k) contributions, even though the median participant's savings changes are marginal (EBRI, 2021).

4. Research question

The primary research question focuses on a determination of the expected impact of HSAs on retirement income adequacy for U.S. households currently ages 35–64 under a status quo experience for HSA utilization, and across HSA adoption, contribution, distribution and investing behaviors. Beyond this baseline status quo, it is important to understand how behavioral changes across these factors impact retirement income adequacy and which factor has the most impact on outcomes. Importantly, the substitution effect on contributions between HSAs and 401(k) plan contributions needs to be accounted for in any analysis. The results are broken out by age, gender of the head of household, race/ethnicity, income and years of future defined contribution eligibility.

5. Methods

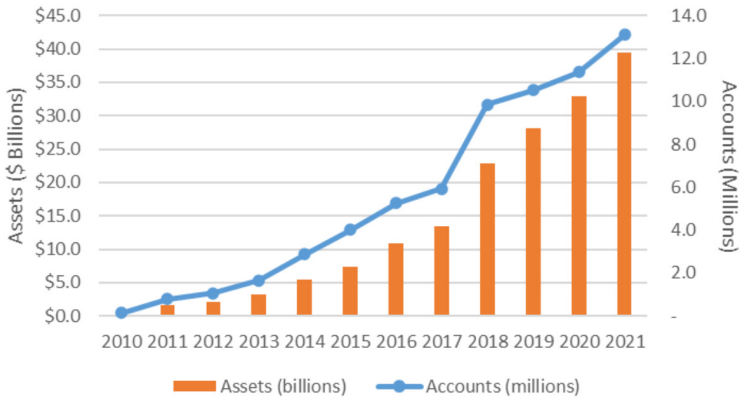
This section reviews the simulation tool used in the study—the RSPM, the behavioral scenarios and base assumptions. First, a brief overview of the RSPM is provided, including its logic and inputs. Next, the behavioral scenarios or status quo, improving behaviors and worsening behaviors are explained, along with their core components of HSA enrollment, investing behavior, contributions and distributions. Third, core assumptions are discussed with respect to investment returns, distribution behavior at retirement, the substitution effect on contributions between 401(k) plan and HSA contributions and future contribution limits.

A. RSPM overview

This analysis used a simulation model called the RSPM to study the impact of HSAs on retirement income adequacy. One of the basic objectives of the RSPM is to simulate the percentage of the population at risk of not having enough retirement income to adequately cover average expenses and out-of-pocket healthcare costs (including long-term care costs) at ages 65 or older throughout retirement in specific income and age groupings and to simulate the present value of deficits for those who do run short of money in retirement. A household is considered to run short of money in this model if aggregate resources in retirement are not sufficient to meet average retirement expenditures. As such, the model is comprised of an accumulation phase and a decumulation phase. In accumulation, the model simulates retirement income/wealth to retirement age for all U.S. households ages 35–64 from DC plans, defined benefit (DB) plans, IRAs, Social Security and housing equity. In decumulation, it simulates 5,000 alternative life paths for each household, starting at 65, and incorporates deterministic modeling of expenses, such as food, apparel and services, transportation, housing and basic health expenditures. The decumulation component also features stochastic modeling of longevity risk, investment risk and long-term care (LTC) costs.

The RSPM draws upon a variety of public and proprietary information to generate its output. Inputs are derived from publicly available sources, such as the Bureau of Labor Statistics' Consumer Expenditure Survey, the Census Bureau's Current Population Survey and the Social Security Administration, among others. EBRI's proprietary data inputs include the real-world behavior of 401(k) participants, IRA accountholders and HSA accountholders. This analysis is the first version of the RSPM to incorporate EBRI's HSA Database as an input. EBRI's HSA Database has grown to include 13.1 million open HSAs in 2021 across $39.5 billion in assets (Figure 3). EBRI's HSA Database is estimated to represent 40% of the HSA universe.

Figure 3. EBRI HSA database: accounts and assets, 2010–2021



B. Scenarios

The simulation set an upper bound on impact and tested four scenarios across working career factors of HSA investor prevalence, enrollment, contributions and distributions. In addition to the upper bound, the behavioral scenarios tested were status quo (continuation of the historical trend, or baseline with HSA), moderate improvement in behavior, strong improvement in behavior and worsening of behavior.

Behavioral modifications commence in 2021 and peak in 2050. The behavioral scenarios are summarized in Figure 4 and the factors are interpreted as follows:

a. *Percentage of HSA account holders who are investors.* The status quo condition for investment is that only 12% of HSA account holders hold securities other than cash, trending to 20% by 2050. Contingent upon investing, 83% of assets are invested in equity and are subject to a stochastic rate of return. The modest improvement in behavior is an increase in the investing population to 30% by 2050, while the strong improvement increases the investing population to 40%. The upper bound is set at 100%, and the worsening behavior relative to the status quo decreases the investing population to 15% of account holders by 2050.

b. *HSA enrollment.* The status quo condition for HSA enrollment is that a stable 25% of the privately-insured population is enrolled in an HSA-eligible health plan and making contributions to an HSA. The modest improvement scenario increases HSA enrollment to 30% by 2050, while the strong improvement increases HSA enrollment to 50%. The upper bound is set at 100%, and the worsening condition decreases enrollment to 20% by 2050.

c. *Annual HSA contributions.* The status quo condition for HSA contributions reflects the median contribution amount, which was $1,250 in 2021. In 2050, the status quo median amount as a percentage of the projected contribution limit stays constant at 35%, or $2,780 in inflation-adjusted dollars. The modest improvement scenario increases median HSA contributions to $3,900 by 2050, while the strong improvement increases median HSA contributions to $5,010. The upper bound is set to the projected 2050 limit of $7,950 for the individual, and the worsening condition decreases median contributions to $1,110 by 2050.

d. *Annual HSA distributions.* The status quo condition for HSA distributions reflects the average amount of assets withdrawn from the account annually, which was 48% in 2021 and remains constant through 2050. The modest improvement scenario decreases average HSA distributions to 40% of the account balance by 2050, while the strong improvement decreases HSA distributions to 30%. The upper bound is set for zero distributions, and the worsening condition increases average distributions to 60% of the account balance by 2050.

Figure 4. HSA behavioral scenarios

	Percentage of Accountholders Who Are Investors		HSA Enrollment		Annual HSA Contributions (Median) During Career		Annual HSA Distributions During Career	
	2021	2050	2021	2050	2021	2050 Current/inflated	2021	2050
Status Quo (Baseline with HSA)	12%	20%	25%	25%	$1,250	$1,250/$2,785	48%	48%
Modest Improvement in Behavior	12%	30%	25%	30%	$1,250	$1,750/$3,900	48%	40%
Strong Improvement in Behavior	12%	40%	25%	50%	$1,250	$2,250/$5,010	48%	30%
Worsening in Behavior	12%	15%	25%	20%	$1,250	$ 750/$1,110	48%	60%
Max/Upper Bound	12%	100%	25%	100%	$1,250	$3,600/$7,300 $7,950/$16,300	48%	0%

As a next step, we isolated which factor had the greatest impact on the cumulative reduction in shortfall between the upper bound and the status quo scenario. We do this by maxing out one factor by 2050 while holding other factors at the status quo forecast (Appendix Figure 1).

C. Assumptions

Core assumptions of the analysis relate to the rate of return, in-retirement HSA distributions, the substitution effect between HSA and 401(k) contributions and projected contribution limits.

a. *Rate of return*. The RSPM uses stochastic rates of return generated using historical rates of return and variance of returns. The generated sequence of the rates of return are used to simulate the capital growth in the DC plans, IRAs and HSAs.

b. *In-retirement HSA distributions*. The model assumes 100% depletion of HSA assets for qualified health and medical expenses and insurance premiums. If HSA assets in retirement exceed cumulative medical/health expenses, they are taxed as ordinary income.

c. *Substitution effect*. Prior EBRI research has shown that among new HSA account holders, 56% of workers reduced their 401(k) contributions the first year they made contributions to their HSA, but the median worker who opened an HSA decreased their 401(k) contribution by just $34 (Employee Benefit Research Institute 2021). The model incorporates the distribution of the dollar change in 401(k) contributions among new HSA account holders.

d. *Contribution limits*. HSA usage contribution limits are projected to 2050, based on 2.8% projected inflation plus rounding to the nearest $50. The RSPM includes a similar projection for the 401(k) contribution limit (2.8% plus rounding to the nearest $500). It is projected that HSA limits in 2050 will be $7,950 for individuals and $16,300 for families (Appendix Figure 2). For comparison, the 2021 limits were $3,600 and $7,300.

6. Results

Results are presented in four components. First, top-line results of the impact of HSAs on retirement income adequacy are presented in the aggregate retirement savings shortfall of all households. Second, another aggregate measure of retirement income adequacy is presented, known as the retirement readiness rating. Third, demographic results of mean retirement savings shortfall and retirement readiness rating are segmented by age, gender, income, race and years of future DC eligibility. The demographic results also feature highlights from the behavioral scenario analysis relative to the baseline with HSA, with full behavioral results available in the appendix. The last component of the results presents the individual impact of HSA enrollment, investing, contributions and distributions on the max/upper bounds scenario as opposed to the combined effect.

A. Cumulative retirement savings shortfall

The cumulative retirement savings shortfall (RSS) is the cumulative present value of simulated retirement deficits at retirement age. In 2020 dollars, the baseline cumulative RSS, without taking status quo HSA utilization into account, represents $3.66 trillion. The cumulative baseline deficit decreases by 6.2% to $3.44 trillion when status quo HSA utilization is considered (Figure 5).

Figure 5. Cumulative retirement savings shortfall: impact of HSAs

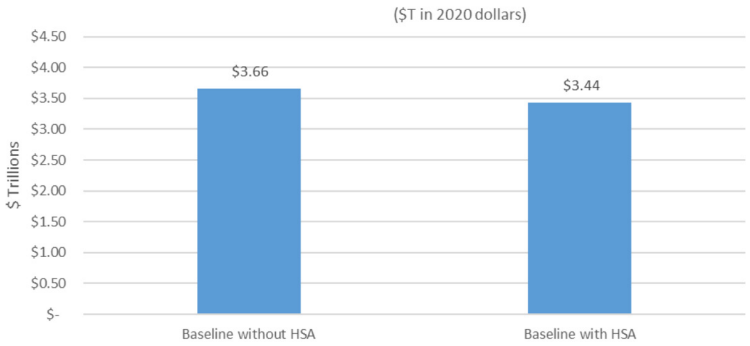
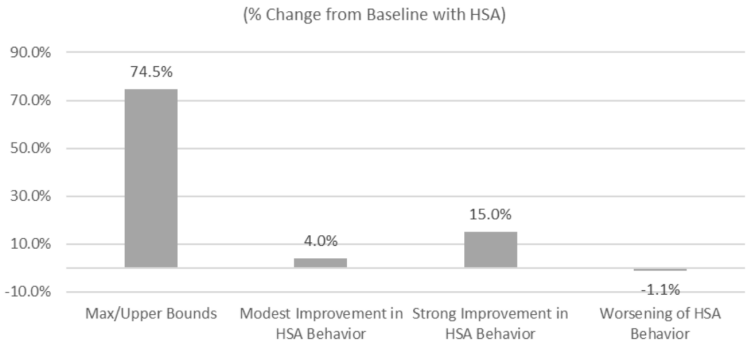


Figure 6. Reduction of baseline with HSA cumulative RSS by scenario



A modest improvement in HSA utilization behaviors reduces the baseline with HSA deficit by 4.0% to $3.30 trillion. A strong improvement in behaviors reduces the baseline with HSA deficit by 15.0% to $2.92 trillion. Maximizing four types of HSA behaviors (coverage, investing, contributions and distributions) at once indicates a total reduction by 74.5% to $0.88 trillion from the baseline with HSA shortfall.

B. Overall retirement readiness rating

The retirement readiness rating (RRR) is the probability that a household will not run short of money in retirement. The baseline RRR increases from 59.0% to 60.2% when incorporating the status quo HSA experience.

Compared with the HSA baseline, a modest improvement in behavior increases retirement readiness by 2.5% to 61.7%. A strong improvement in HSA behavior leads to an increase of 7.4% to 64.7% retirement ready. The upper bounds of retirement readiness by maximizing HSA behavior is 81.9%, an increase of 36.0% from the baseline with HSA.

Figure 7. Retirement readiness rating: impact of HSAs

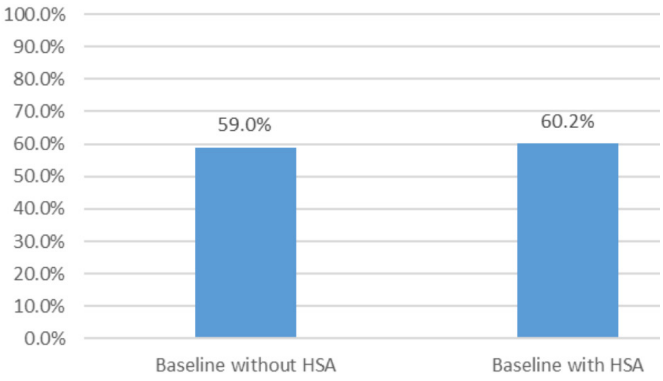
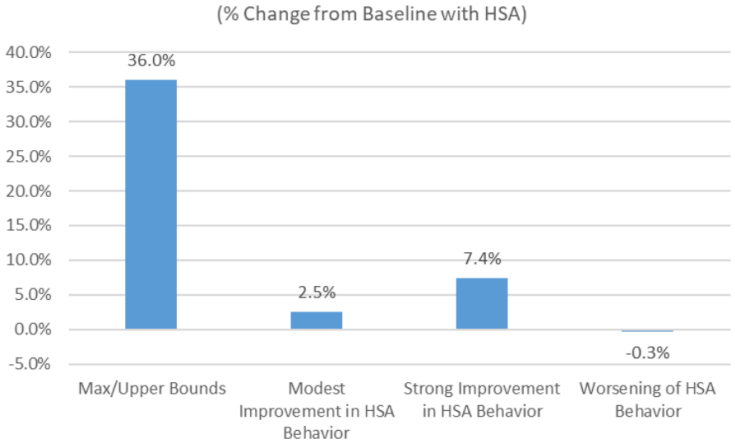


Figure 8. Improvement of baseline with HSA retirement readiness rating by scenario



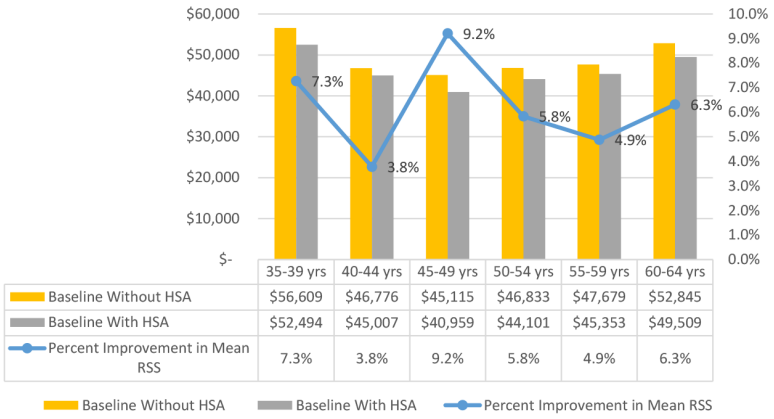
C. Demographic impact

Changes to retirement readiness ratings and mean retirement savings shortfalls are presented by age, gender of head of household, income quartile, race and years of future DC eligibility. Highlights from the behavioral scenario analysis are also provided, while full behavioral results are seen in the appendix.

Age

Retirement income adequacy is analyzed by five-year age cohorts for U.S. households ages 35–64. When viewing retirement income adequacy by age cohort, the youngest households (35–39 years old) face the highest mean RSS of $56,609, excluding HSAs. However, given higher likelihoods of future years of DC eligibility, the youngest households also have higher retirement readiness ratings. Households ages 45–49 experience the highest improvement in mean RSS and RRR relative to other age cohorts. Without HSAs, the baseline mean RSS for households ages 45–49 is $45,115 with an RRR of 59.2%. Incorporating HSAs, the baseline mean RSS for households ages 45–49 decreases by 9.2% to $40,959 while the RRR improves to 61.6%.

Figure 9. Impact of HSA by age: mean RSS



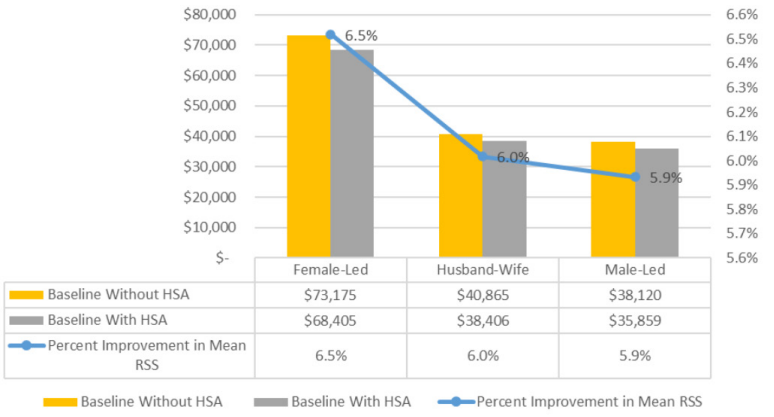
	35-39 yrs	40-44 yrs	45-49 yrs	50-54 yrs	55-59 yrs	60-64 yrs
Baseline Without HSA	$56,609	$46,776	$45,115	$46,833	$47,679	$52,845
Baseline With HSA	$52,494	$45,007	$40,959	$44,101	$45,353	$49,509
Percent Improvement in Mean RSS	7.3%	3.8%	9.2%	5.8%	4.9%	6.3%

The behavioral scenario analysis reveals little variation in RRR by age cohort, where modest improvement beyond the HSA status quo ranges from an improvement of 0.9 percentage points to 2.4 percentage points.

Gender of head of household

The gender of the head of household is analyzed by female-led, male-led, and husband/wife led. When analyzing by gender, female-led households face the largest retirement income challenge, considering they have the highest mean RSS and lowest probability of success as measured by RRR. At the same time, female-led households experience the highest improvement in mean RSS and RRR relative to husband/wife- and male-led households with the incorporation of status quo utilization of HSAs. Without HSAs, the baseline mean RSS for female-led households in 2020 dollars is $73,175 with an RRR of 45.6%. Incorporating HSAs, the baseline mean RSS for female-led households decreases by 6.5% to $68,405, while the RRR improves to 47.1%.

Figure 10. Impact of HSA by gender of head of household: mean RSS



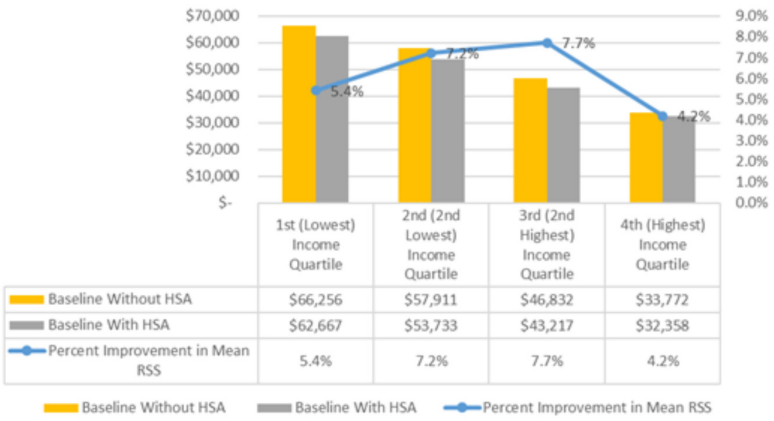
	Female-Led	Husband-Wife	Male-Led
Baseline Without HSA	$73,175	$40,865	$38,120
Baseline With HSA	$68,405	$38,406	$35,859
Percent Improvement in Mean RSS	6.5%	6.0%	5.9%

Behavioral scenario analysis indicates that female-led households experience the highest percentage change from a moderate improvement in HSA utilization behaviors, from the baseline with HSA RRR of 47.1% to 49.3%, an increase of 5%. In addition, female-led households are projected to see the largest improvement (in absolute terms) from baseline HSA mean RSS across the modest, strong, and upper bounds scenarios as compared with husband/wife- and male-led households.

Income quartile

When looking by family income quartile, the families in the lowest income quartile face the largest challenge with retirement income adequacy, considering they have the highest mean RSS of $66,256 and lowest RRR of 49.3% without HSAs. However, it is the middle income quartiles that benefit the most from status quo adoption of HSAs on absolute and relative bases. Incorporating HSAs, the baseline mean RSS for families in the second-lowest income quartile decreases by 7.2% to $53,733, while the baseline mean RSS for families in the second-highest income quartile decreases by 7.7% to $43,217.

Figure 11. Impact of HSA by family income quartile: mean RSS

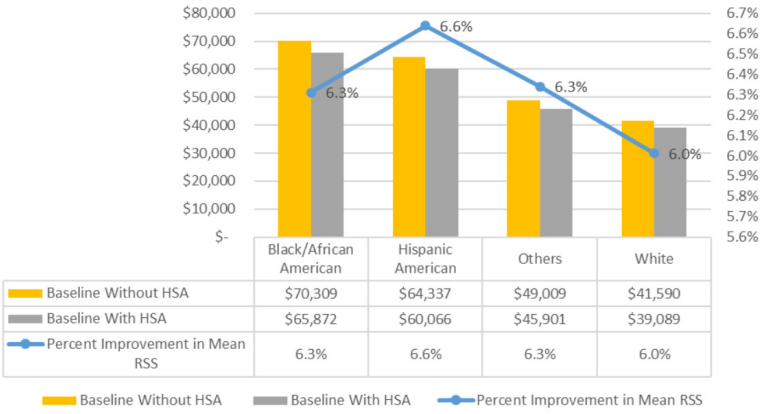


Modest improvements in HSA behavior benefit the families in the second-lowest income quartile, whereby RSS is reduced by an absolute value of $2,640 and RRR is increased by an absolute value of 2.8 percentage points.

Race

Black/African American and Hispanic American households face substantial challenges with retirement income adequacy with respective mean shortfalls, excluding HSAs, of $70,309 and $64,337. Incorporating status quo adoption of HSAs results in Black/African Americans experiencing the largest absolute improvement in RSS, with a reduction of $4,437, while Hispanic Americans experience the largest improvement in RSS on a relative basis of 6.6%. While white households have the lowest RSS both before and after incorporation of HSAs, these households experience the lowest absolute and relative reduction in RSS.

Figure 12. Impact of HSAs by race

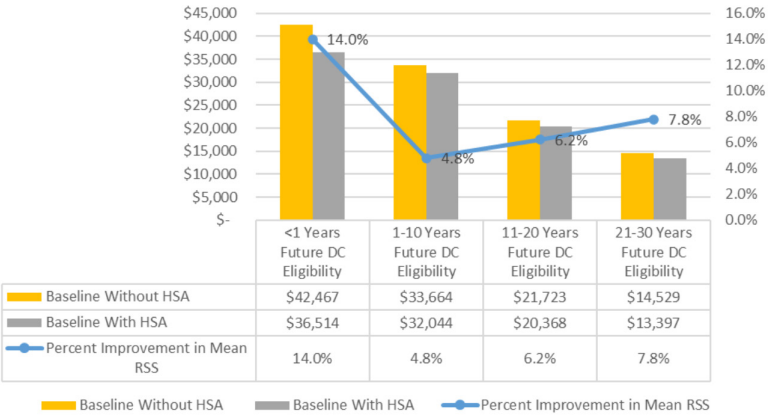


Black/African American and Hispanic American households are projected to see the largest improvement (in absolute terms) from baseline with HSA mean RSS across the modest, strong, and upper bounds scenarios as compared with white households. For Black/African Americans, a modest improvement in HSA utilization behaviors increases RRR from 55.8% to 57.9% and reduces RSS from $65,872 to $63,089. The max/upper bounds scenario decreases the mean RSS by $49,856 for Black/African American households, $44,617 for Hispanic American households and $34,002 for "other" households.

Future years of DC eligibility

Years of future DC eligibility is positively related to retirement income adequacy, meaning that households with more years of future DC eligibility have lower mean shortfalls and higher RRRs. Specifically, households with 21–30 years of future eligibility only have a mean shortfall of $14,529, excluding HSA usage. When incorporating the status quo HSA adoption, the mean RSS drops 7.8% to $13,397. Retirement income adequacy by years of future DC eligibility is not inverse to age, as younger households may not be employed by organizations with employer-sponsored retirement plans.

Figure 13. Impact of HSAs by years of future DC eligibility: mean RSS



Scenario analysis supports that households with more years of DC eligibility will have the highest RRR and lowest mean RSS with improving HSA behaviors. At the same time, a modest improvement in behavior from the status quo HSA experience can reduce the mean RSS among households with just 1–10 years of future DC eligibility by 6%.

D. Behavioral factor impact on max/upper bounds

The simulation set an upper bound on the four HSA behavioral factors of investor prevalence, HSA enrollment, contributions and distributions. We test how much each factor contributes to the upper bounds scenario by maximizing each factor individually while holding the other three factors constant at the HSA baseline. We then divide the difference between the factor's individual max and status quo by the sum of the differences and status quo.

Maximizing HSA enrollment on its own contributes to over half (60.4%) of the difference in RSS relative to the baseline with HSA. The second most significant behavioral factor—when maximized—in reducing the RSS is investing, accounting for 35.7% of the outcome. Maximizing contribution and distribution behavior accounts for 3.9% of the difference between combined relative to the baseline with HSA. Interaction effects roughly double the combined effects of each individual behavioral factor.

7. Discussion

In this paper, we examined the impact of HSAs on retirement income adequacy among future retirees. Our findings provide answers to benefits industry and policymaker questions around the impact of the current state of HSAs on retirement security, as well as how changes in the use of HSAs may improve retirement security. Overall, despite modest tradeoffs between HSA and 401(k) contributions, contributing to HSAs always improves retirement security. Not surprisingly, higher HSA enrollment, higher contributions, fewer distributions and greater investing all improve retirement security for future retirees relative to baseline assumptions that do not include any HSA contributions and relative to the current state of HSAs.

Enrollment in HSA-eligible health plans has been increasing, doubling from 6% to 13% between 2013 and 2020 ("Trends in Cost Sharing," 2021). As a result, the percentage of workers with an HSA has been increasing as well. To the degree workers and employers contribute to their HSAs, retirement security will be enhanced. However, as noted above, how workers use their HSAs with respect to taking distributions for healthcare services and investing their account balances will affect retirement income adequacy as well.

Minimizing distributions from HSAs to maximize retirement income adequacy may mean making some tradeoffs. To contribute to an HSA, an account holder must be enrolled in an HDHP, meaning the deductible cannot be lower than $1,500 for employee-only coverage and $3,000 for family coverage in 2023. As a result, to the degree individuals with HSAs use any healthcare, they may need to take a distribution from the HSA to cover the cost of that care. In other words, they may not be able to both fund the HSA and not take distributions to cover the cost of any out-of-pocket healthcare expenses. However, in any given year, most HSA enrollees will be able to build up an account balance, as many people do not use a lot of healthcare in any given year.

With respect to investing, employers and benefits providers can work collaboratively to reduce inertia on investing. One means of doing so would be to make it easier for HSA enrollees to invest. They can also provide more education around expected use of healthcare services and the benefits of investing, similar to what they have done with 401(k) education programs. In light of lessons learned from choice overload (DiCenzo & Fronstin, 2008), employers may want to consider offering the same lineup of investment options in their 401(k) plans and HSAs to make navigating those options more straightforward for workers.

Statutory limitations on contributions may also have a negative impact on the ability of HSAs to reach their maximum potential in reducing the savings shortfall. Policymakers can revisit the CPI+$50 formula to encourage greater savings. However, it is unlikely that increasing statutory maximums will have much impact on retirement security, as very few HSA enrollees currently make the maximum contribution: Only about 15% of HSA account holders contributed the statutory maximum in 2021 Spiegel & Fronstin, "Trends in Health Savings," 2023).

Prior EBRI research has shown that current use of HSAs aligns with historical racial/gender wealth gaps. Notably, this analysis forecasts the potential of HSAs to close these gaps. The improvement in projected retirement income adequacy among female-led, Black/African American and Hispanic American households can be augmented by broader diversity, equity and inclusion (DEI) measures to close the wealth gaps.

While HSAs are additive to retirement income adequacy, even maximizing HSA behavior still results in an aggregate shortfall, meaning additional policy or benefit design innovation should be studied. As seen in the results on future years of DC eligibility, consistent access to and participation in a retirement savings plan may significantly improve retirement financial outcomes. The combined effects of HSAs and recent retirement savings initiatives, such as those enacted

through the Setting Every Community Up for Retirement Enhancement (SECURE) Acts may have the potential to significantly reduce the retirement savings gap.

8. Limitations

There are several limitations to this analysis with respect to its predictive accuracy. The model logic is based on realized experiences from the Current Population Survey (CPS) and employs dozens of assumptions. In addition to the returns, distribution behavior during retirement, contribution limit and substitution effect assumptions previously described, the model incorporates additional assumptions on future behavior based on historical trends, population forecasts and consumption theory. As with all modeling, this analysis is subject to human error in logic and programming of the simulation model. To limit this error, iterative results were compared with historical RSPM output, and when necessary, a Bayesian calibration function was applied. Limitations of input variables also exist, as the model is constrained to forecasting only tax-deferred accounts in accumulation years and essential spending in retirement years. In addition, the model is limited to testing the impact of modifying one approach to health insurance (participation in an HSA through HDHP enrollment) and does not provide comparative analysis relative to other health insurance systems, e.g., individual coverage health reimbursement arrangements (ICHRAs), preferred provider organizations (PPOs), health maintenance organizations (HMOs), national health insurance and Medicare buy-in. As reflected with the incorporation of the substitution effect and factor analysis of the max/upper bounds scenario results, there are interrelationships between variables. These complex interrelationships, and other unknown interrelationships, also pose a limitation to predictive accuracy. In any model, it is not possible to quantify or incorporate all possible variations of inputs that will affect a system and its outcomes.

9. Conclusion

HSAs have the potential to play an important role in determining retirement income adequacy for future retirees. The aggregate retirement savings shortfall for all U.S. households ages 35–64 as of December 31, 2020, was $3.66 trillion, excluding HSA adoption. The cumulative baseline deficit decreases by 6.2% to $3.44 trillion when status quo HSA utilization is considered.

The status quo adoption of HSAs and subsequent improvements in behaviors appear to have the most positive impact in absolute dollar terms on households led by females, Black/African Americans, or Hispanic Americans; households in a lower income quartile; and households with many years of future DC eligibility.

Through isolating the maximum impact of each factor within the scenarios, we find that maximizing HSA enrollment and HSA investing accounts for most of the improvement in retirement income adequacy. Increasing access to HSAs and encouraging investment among HSA account holders may significantly reduce the cumulative retirement savings shortfall and be more impactful for demographic cohorts who are currently projected to face the largest deficits.

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Endnotes

1 See "2022 Year-End HSA Market Statistics & Trends" (2023). The number of enrollees in HSA-eligible health plans differs from the number of HSAs for various reasons. The number of enrollees is composed of the policyholder and any covered dependents and generally is higher than the number of HSAs because one account is usually associated with a family. Hence, the number of individuals enrolled in an HSA-eligible health plan generally is higher than the number of accounts. However, over time, the number of accounts can grow relative to the number of enrollees, because when an individual or family is no longer covered by an HSA-eligible health plan, they are allowed to keep the HSA open. Furthermore, individuals and families can have more than one account.

2 Koma, Cubanski, and Neuman (2021) found that only 10% of Medicare beneficiaries did not have any form of supplemental coverage in 2018.

3 The EBRI analysis did not factor in the total savings needed to cover long-term care expenses and other health expenses not covered by Medicare, nor did it take into account the fact that many individuals retire before becoming eligible for Medicare.

4 Of course, there are other factors to consider when it comes to choosing a Medicare Advantage plan over traditional Medicare. Medicare Advantage plans often have limited networks or may require approval before certain medications or services are covered.

5 Both employees and employers can contribute to an HSA. While employee contributions to the account are deductible from taxable income, employer contributions to the account for an employee are excludable from the employee's gross income.

6 During working years and in retirement, HSA assets can be used to pay for qualified medical expenses and certain insurance premiums (Internal Revenue Service, 2022). Qualified medical expenses are those expenses that would generally qualify for the medical and dental expenses deduction. These are explained in Internal Revenue Service (2023): "Medical expenses are the costs of diagnosis, cure, mitigation, treatment, or prevention of disease, and for the purpose of affecting any part or function of the body. These expenses include payments for legal medical services rendered by physicians, surgeons, dentists, and other medical practitioners. They include the costs of equipment, supplies, and diagnostic devices needed for these purposes. Medical care expenses must be primarily to alleviate or prevent a physical or mental disability or illness. They don't include expenses that are merely beneficial to general health, such as vitamins or a vacation. Medical expenses include the premiums you pay for insurance that covers the expenses of medical care, and the amounts you pay for transportation to get medical care. Medical expenses also include amounts paid for qualified long-term care services and limited amounts paid for any qualified long-term care insurance contract." Insurance premiums include long-term care insurance, healthcare continuation coverage (such as coverage under COBRA), healthcare coverage while receiving unemployment compensation under federal or state law and Medicare and other healthcare coverage if you were 65 or older (other than premiums for a Medicare supplemental policy, such as Medigap).

7 Author estimates.

8 See "2022 Year-End HSA Market Statistics & Trends" (2023).

9 Race segments are non-overlapping, reflecting non-Hispanic Black/African American, non-Hispanic white, non-Hispanic other, and Hispanic. "Non-Hispanic" is omitted in copy for brevity.

10 In 2021, 20% of the population accounted for 84% of healthcare spending. Hence, 80% of the population accounted for only 16% of healthcare spending. See "High-Cost Health Care Claimants" (2023).

Appendix

Appendix Figure 1. Factor testing of max/upper bound behavioral scenario

	Percentage of Accountholders Who Are Investors		HSA Enrollment		Annual HSA Contributions (Median) During Career		Annual HSA Distributions During Career	
	2021	2050	2021	2050	2021	2050 Current/inflated	2021	2050
Percentage of Accountholders Who Are Investors	12.0%	100.0%	25.0%	25.0%	$ 1,250	$ 1,250/$2,785	48.0%	48.0%
HSA Enrollment	12.0%	20.0%	25.0%	100.0%	$ 1,250	$ 1,250/$2,785	48.0%	48.0%
Annual HSA Contributions (Median) During Career	12.0%	20.0%	25.0%	25.0%	$1,250	$3,600/$7,300 $7,950/$16,300	48.0%	48.0%
Annual HSA Distributions During Career	12.0%	20.0%	25.0%	25.0%	$ 1,250	$ 1,250/$2,785	48.0%	0.0%

Appendix Figure 2. Historical and projected Health Savings Account (HSA) contribution limits, by type of health coverage

Historical and Projected HSA Contribution Limits		
Year	Single	Family
2009	$3,000.00	$5,950.00
2010	$3,050.00	$6,150.00
2011	$3,050.00	$6,150.00
2012	$3,100.00	$6,250.00
2013	$3,250.00	$6,450.00
2014	$3,300.00	$6,550.00
2015	$3,350.00	$6,650.00
2016	$3,350.00	$6,750.00
2017	$3,400.00	$6,750.00
2018	$3,450.00	$6,900.00
2019	$3,500.00	$7,000.00
2020	$3,550.00	$7,100.00
2021	$3,600.00	$7,200.00
2022	$3,650.00	$7,300.00
2023	$3,850.00	$7,750.00
2024	$3,950.00	$7,950.00
2025	$4,050.00	$8,150.00
2026	$4,150.00	$8,400.00
2027	$4,250.00	$8,650.00
2028	$4,350.00	$8,900.00
2029	$4,450.00	$9,150.00
2030	$4,550.00	$9,400.00
2031	$4,700.00	$9,650.00
2032	$4,850.00	$9,900.00
2033	$5,000.00	$10,200.00
2034	$5,150.00	$10,500.00
2035	$5,300.00	$10,750.00
2036	$5,450.00	$11,050.00
2037	$5,600.00	$11,400.00
2038	$5,750.00	$11,700.00
2039	$5,900.00	$12,050.00
2040	$6,050.00	$12,350.00
2041	$6,200.00	$12,700.00
2042	$6,350.00	$13,050.00
2043	$6,550.00	$13,450.00
2044	$6,750.00	$13,800.00
2045	$6,950.00	$14,200.00
2046	$7,150.00	$14,600.00
2047	$7,350.00	$15,000.00
2048	$7,550.00	$15,400.00
2049	$7,750.00	$15,850.00
2050	$7,950.00	$16,300.00

Note: Historical contribution limits through 2023 are provided by IRS.gov. HSA usage contribution limits are projected from 2024 to 2050, based on 2.8% projected inflation plus rounding to the nearest $50. Those 55 or older by the end of the tax year can increase their contribution limit up to $1,000 a year, unchanged since 2009 and projected to remain constant. These projections were made before the IRS recently announced the 2024 contribution limits for HSAs would be $4,150 for single coverage and $8,300 for family coverage.

Appendix Figure 3. Mean RSS by demographic

	Retirement Savings Shortfall (RSS): Baseline and Behavioral Scenarios						Percent Change in RSS from Baseline With HSA				Absolute Dollar Difference in RRR from Baseline With HSA			
	Baseline without HSA	Baseline with HSA	Modest Improvement in HSA Behavior	Strong Improvement in HSA Behavior	Worsening of HSA Behavior	Max/Upper Bounds	Modest Improvement in HSA Behavior	Strong Improvement in HSA Behavior	Worsening of HSA Behavior	Max/Upper Bounds	Modest Improvement in HSA Behavior	Strong Improvement in HSA Behavior	Worsening of HSA Behavior	Max/Upper Bounds
Age														
[35-39]	$ 56,609	$ 52,494	$ 50,855	$ 44,227	$ 53,415	$ 13,517	-3%	-16%	2%	-74%	$ 1,639	$ 8,267	$ (921)	$ 38,978
[40-44]	$ 46,776	$ 45,007	$ 41,714	$ 39,437	$ 44,834	$ 11,629	-7%	-12%	0%	-74%	$ 3,293	$ 5,570	$ 173	$ 33,378
[45-49]	$ 45,115	$ 40,959	$ 41,334	$ 33,594	$ 41,842	$ 10,722	1%	-18%	2%	-74%	$ (375)	$ 7,365	$ (883)	$ 30,237
[50-54]	$ 46,833	$ 44,101	$ 41,439	$ 38,242	$ 45,189	$ 11,426	-6%	-13%	2%	-74%	$ 2,662	$ 5,859	$ (1,089)	$ 32,674
[55-59]	$ 47,679	$ 45,353	$ 43,469	$ 38,487	$ 44,973	$ 11,267	-4%	-15%	-1%	-75%	$ 1,884	$ 6,866	$ 381	$ 34,086
[60-64]	$ 52,845	$ 49,509	$ 47,658	$ 41,757	$ 50,272	$ 11,855	-4%	-16%	2%	-76%	$ 1,851	$ 7,751	$ (763)	$ 37,654
Family Income Quartile														
1st	$ 66,256	$ 62,667	$ 61,539	$ 52,734	$ 62,506	$ 16,870	-2%	-16%	0%	-73%	$ 1,127	$ 9,933	$ 161	$ 45,797
2nd	$ 57,911	$ 53,733	$ 51,093	$ 46,154	$ 54,443	$ 13,692	-5%	-14%	1%	-75%	$ 2,640	$ 7,579	$ (710)	$ 40,041
3rd	$ 46,832	$ 43,217	$ 40,740	$ 37,363	$ 45,211	$ 11,162	-6%	-14%	5%	-74%	$ 2,477	$ 5,854	$ (1,994)	$ 32,055
4th	$ 33,772	$ 32,358	$ 31,189	$ 27,025	$ 31,875	$ 7,527	-4%	-16%	-1%	-77%	$ 1,169	$ 5,333	$ 483	$ 24,831
Family Kind														
Female-Led	$ 73,175	$ 68,405	$ 65,931	$ 58,527	$ 69,939	$ 17,579	-4%	-14%	2%	-74%	$ 2,474	$ 9,878	$ (1,534)	$ 50,826
Husband-Wife	$ 40,865	$ 38,406	$ 36,685	$ 32,550	$ 38,404	$ 9,695	-4%	-15%	0%	-75%	$ 1,721	$ 5,856	$ 2	$ 28,711
Male-Led	$ 38,120	$ 35,859	$ 34,543	$ 30,312	$ 36,263	$ 9,124	-4%	-15%	1%	-75%	$ 1,316	$ 5,547	$ (404)	$ 26,735
Future Years of DC Contribution														
[0-1]	$ 42,467	$ 36,514	$ 41,980	$ 37,557	$ 41,931	$ 8,981	15%	3%	15%	-75%	$ (5,466)	$ (1,043)	$ (5,417)	$ 27,532
[1-10]	$ 33,664	$ 32,044	$ 30,175	$ 25,909	$ 32,551	$ 5,627	-6%	-19%	2%	-82%	$ 1,869	$ 6,135	$ (507)	$ 26,417
[11-20]	$ 21,723	$ 20,368	$ 18,938	$ 16,133	$ 19,479	$ 3,300	-7%	-21%	-4%	-84%	$ 1,430	$ 4,235	$ 888	$ 17,068
[21-30]	$ 14,529	$ 13,397	$ 12,177	$ 12,455	$ 13,411	$ 1,519	-9%	-7%	0%	-89%	$ 1,219	$ 942	$ (14)	$ 11,878
Race														
Black	$ 70,309	$ 65,872	$ 63,089	$ 55,662	$ 66,521	$ 16,016	-4%	-15%	1%	-76%	$ 2,783	$ 10,210	$ (649)	$ 49,856
Hispanic	$ 64,337	$ 60,066	$ 57,799	$ 51,119	$ 60,628	$ 15,449	-4%	-15%	1%	-74%	$ 2,268	$ 8,947	$ (562)	$ 44,617
Others	$ 49,009	$ 45,901	$ 43,870	$ 39,095	$ 46,739	$ 11,899	-4%	-15%	2%	-74%	$ 2,031	$ 6,806	$ (837)	$ 34,002
White	$ 41,590	$ 39,089	$ 37,552	$ 33,295	$ 39,519	$ 10,045	-4%	-15%	1%	-74%	$ 1,538	$ 5,794	$ (429)	$ 29,045

Appendix Figure 4. Mean RRR by demographic

	Retirement Readiness Rating (RR): Baseline and Behavioral Scenarios						Percent Change in RRR from Baseline With HSA				Absolute Percentage Point Difference in RRR from Baseline With HSA			
	Baseline without HSA	Baseline with HSA	Modest Improvement in HSA Behavior	Strong Improvement in HSA Behavior	Worsening of HSA Behavior	Max/Upper Bounds	Modest Improvement in HSA Behavior	Strong Improvement in HSA Behavior	Worsening of HSA Behavior	Max/Upper Bounds	Modest Improvement in HSA Behavior	Strong Improvement in HSA Behavior	Worsening of HSA Behavior	Max/Upper Bounds
Age														
[35-39]	61.8	61.1	63.5	66.0	60.9	81.0	4%	8%	0%	33%	2.4	4.9	-0.2	19.9
[40-44]	61.0	62.7	64.7	66.2	62.9	82.4	3%	6%	0%	32%	2.0	3.6	0.2	19.7
[45-49]	59.2	61.6	62.5	66.9	61.7	82.4	1%	9%	0%	34%	0.9	5.3	0.1	20.8
[50-54]	56.2	58.5	59.6	62.5	57.8	81.4	2%	7%	-1%	39%	1.1	4.0	-0.8	22.9
[55-59]	57.8	58.5	59.4	63.0	59.2	81.7	2%	8%	1%	40%	0.9	4.5	0.8	23.2
[60-64]	57.9	58.7	60.7	63.5	57.1	82.5	3%	8%	-3%	41%	2.0	4.7	-1.6	23.8
Family Income Quartile														
1st	49.3	51.1	52.5	55.4	50.7	74.3	3%	9%	-1%	46%	1.4	4.4	-0.4	23.3
2nd	53.8	54.8	57.6	59.9	55.6	79.2	5%	9%	1%	44%	2.8	5.1	0.8	24.3
3rd	59.5	61.1	62.6	65.0	60.7	82.7	2%	6%	-1%	35%	1.5	3.9	-0.5	21.5
4th	68.1	68.9	69.6	73.5	68.4	87.8	1%	7%	-1%	27%	0.7	4.6	-0.5	18.9
Family Kind														
Female-Led	45.6	47.1	49.3	52.0	46.4	71.7	5%	10%	-1%	52%	2.2	4.9	-0.7	24.7
Husband-Wife	62.4	64.1	65.2	68.3	63.9	84.7	2%	6%	0%	32%	1.1	4.1	-0.2	20.6
Male-Led	67.4	67.3	68.8	72.0	67.7	87.7	2%	7%	1%	30%	1.5	4.7	0.4	20.4
Future Years of DC Contribution														
[0-1]	64.6	65.8	66.2	69.0	64.8	85.1	1%	5%	-2%	29%	0.4	3.2	-1.0	19.3
[1-10]	70.1	71.1	71.8	75.3	70.5	90.2	1%	6%	-1%	27%	0.6	4.2	-0.6	19.0
[11-20]	78.9	79.3	80.9	83.1	80.3	93.8	2%	5%	1%	18%	1.6	3.8	0.9	14.4
[21-30]	86.1	87.2	87.9	86.9	86.0	97.1	1%	0%	-1%	11%	0.7	-0.3	-1.2	9.9
Race														
Black	54.9	55.8	57.9	60.8	54.9	78.2	4%	9%	-2%	40%	2.1	5.0	-0.9	22.4
Hispanic	51.8	53.4	54.5	56.6	53.6	75.8	2%	6%	0%	42%	1.0	3.1	0.2	22.4
Others	62.6	64.8	66.3	68.1	63.6	84.0	2%	5%	-2%	30%	1.5	3.3	-1.2	19.2
White	60.9	62.1	63.5	66.8	62.0	83.7	2%	8%	0%	35%	1.5	4.8	0.0	21.6

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Craig Copeland is Director of Wealth Benefits Research at EBRI. He has been with EBRI since 1997. Initially, his research focused on healthcare, specifically Medicare reform, quality in healthcare and lengths of uninsured spells. Subsequently, he was named the Director of EBRI's Social Security Reform Evaluation Research Program. In this capacity, Dr. Copeland researched the effects under different reform proposals/options on Social Security benefits of cohorts currently in the workforce as well as those who will be in the future. Furthermore, his analysis of Social Security reforms include allowing for varying capital market rates of return and returns consistent with the projected growth in the economy. In addition to his research on Social Security, Dr. Copeland researches contribution behavior in Defined Contribution pension plans and the adequacy of savings for retirement.

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