

Do Accumulating HSA Balances Affect Use of Health Care Services and Spending?

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AT A GLANCE

This study examines whether and how HSA balances impact use of and spending on health care services. Most account holders will build up an HSA balance (to the degree that contributions are made) because most people are healthy and do not use a lot of health care services in any given year. Over time, growing HSA balances may mitigate the impact of the deductible. We find that as individuals build up balances in HSAs, they use more health care services than they otherwise would. In essence, HSA balances may blunt the cost-reducing effect of high-deductible health plans over time. The implication is that employers may want to consider the impact of the size of the plan's deductible. Another approach is to explore education around the long-term benefits of saving the HSA balance for health care expenses in retirement.

The health insurance eligibility and claims data for this study, which come from an employer with approximately 120,000 employees, were matched to HSA balance, contribution, distribution, and investment data from the EBRI HSA Database. A subset of about 6,500 policyholders was used in the study. Data from 2014–2016 were analyzed.

Key findings:

- In general, we find that larger beginning-of-year HSA balances result in increased use of health care services. Use of the following services increased: emergency department visits, primary care physicians (PCP) and specialist visits, chiropractic services, physical therapy, psychotherapy, blood tests, X-ray, CT scan, MRI, and musculoskeletal surgery.
 - Individuals with \$3,000 or more in their HSA at the beginning of the year visited PCPs and specialists on average one-half visit more per year than individuals with HSA balances under \$3,000.
 - Spending was \$19.52 higher for primary care office visits and \$28.06 higher for specialist visits. Overall spending was \$496.40 higher for every \$1,000 in HSA balances, though the finding was not statistically significant. Spending associated with other outpatient services was \$550.96 higher among individuals with an HSA balance of at least \$3,000 and was statistically significant.
- Balances in HSAs more than doubled between 2014 and 2016. Among enrollees with employee-only coverage, balances increased from \$1,131 at the beginning of 2014 to \$2,861 at the beginning of 2016. Similarly, balances more than doubled among enrollees with family coverage. The average balance was \$3,312 at the beginning of 2016.
- The percentage of accounts with a zero balance at the beginning of the year fell to nearly nothing after two years of contributions. Only 2 percent of HSAs started 2016 with a zero balance. At the beginning of 2014, 20 percent of those with employee-only coverage and 17 percent of those with family coverage had a zero balance. The percentage of accounts with balances between \$1,500 and \$2,999, and \$3,000 or more nearly tripled between the beginning of 2014 and 2016 among those with employee-only coverage. Among those with family coverage, the percentage of accounts with balances between \$1,500 and \$2,999 more than doubled, while the percentage of accounts with balances of \$3,000 or more quadrupled between the beginning of 2014 and 2016.

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Suggested Citation: Paul Fronstin and M. Christopher Roebuck. “Do Accumulating HSA Balances Affect Use of Health Care Services and Spending?” *EBRI Issue Brief*, no. 482 (Employee Benefit Research Institute, May 23, 2019).

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Report Availability: This report is available on the internet at www.ebri.org

This study was conducted through the EBRI Center for Research on Health Benefits Innovation (EBRI CRHBI), with the funding support of the following organizations: Aon Hewitt, Blue Cross Blue Shield Association, ICUBA, JP Morgan Chase, Milliman, Pfizer, and PhRMA.

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Introduction

Both enrollment in HSA-eligible health plans and the number of HSAs have grown significantly since their first becoming available in 2004. In 2018, enrollment in HSA-eligible health plans ranged from 23 million to 36.8 million policyholders and their dependents (Fronstin, 2019). According to one survey, the number of people enrolled in an HSA-eligible health plan increased from 4.9 million to 26.1 million between 2006 and 2018 (Figure 1). And, the number of HSAs reached 25.1 million at the end of 2018, containing \$53.8 billion (Figure 2).¹

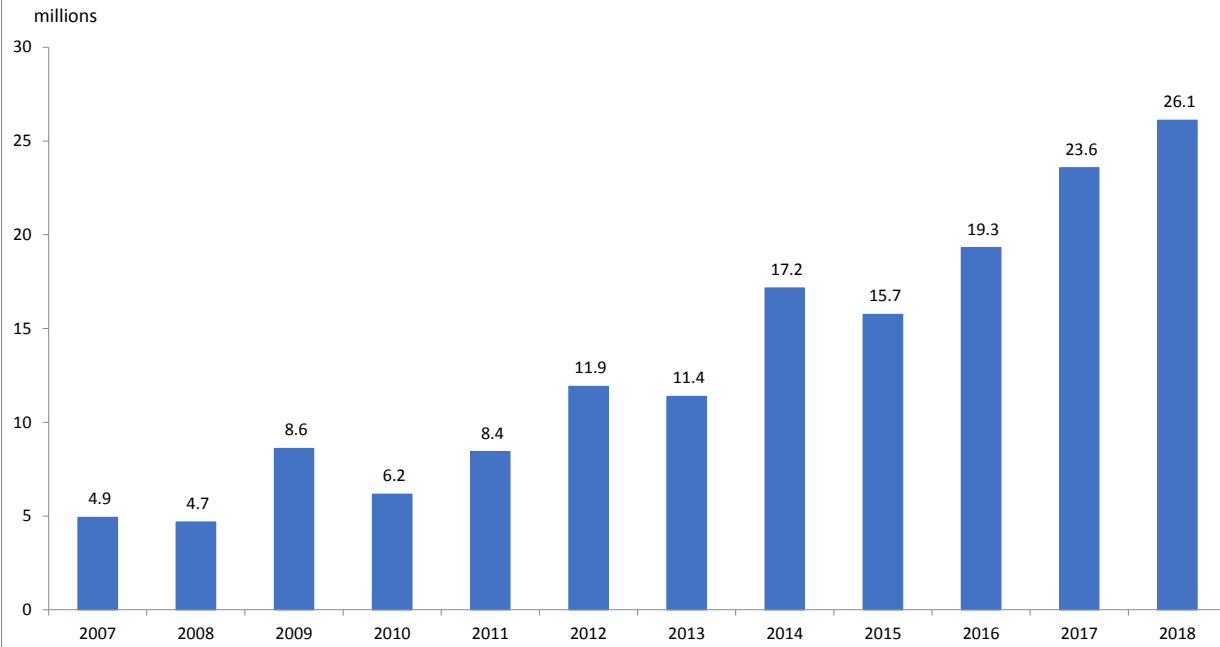
Employers have adopted HSA-eligible health plans as a way to manage the cost of providing health benefits to workers and their families. HSA-eligible health plans are expected to make health plan members more cost conscious because they are paying more out of pocket than in traditional health plans. In theory, health plan members will use less unnecessary care and will be more cost conscious about the health care services that they use.

In 2003, the Medicare Prescription Drug, Improvement, and Modernization Act (MMA) included a provision that created Health savings account (HSA)-eligible health plans. HSA-eligible health plans have deductibles that are higher than what individuals are used to seeing in more traditional types of health insurance. In 2019, HSA-eligible health plans were required to have deductibles of at least \$1,350 for employee-only coverage and \$2,700 for family coverage. In addition, maximum out-of-pocket amounts cannot exceed \$6,750 for employee-only coverage and \$13,500 for family coverage. Certain primary preventive services — typically those deemed to prevent the onset of disease — can be and often are exempt from the deductible and covered in full. Otherwise, all health care services must be subject to the plan deductible.

The MMA also included a provision that allows individuals enrolled in HSA-eligible health plans to open and fund HSAs, which are tax-exempt trust or custodial accounts funded with contributions and assets that individuals can use to pay for health care expenses. Individuals with 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 HSA build up tax free, and distributions for qualified medical expenses from the HSA are excluded from taxable income to the employee.

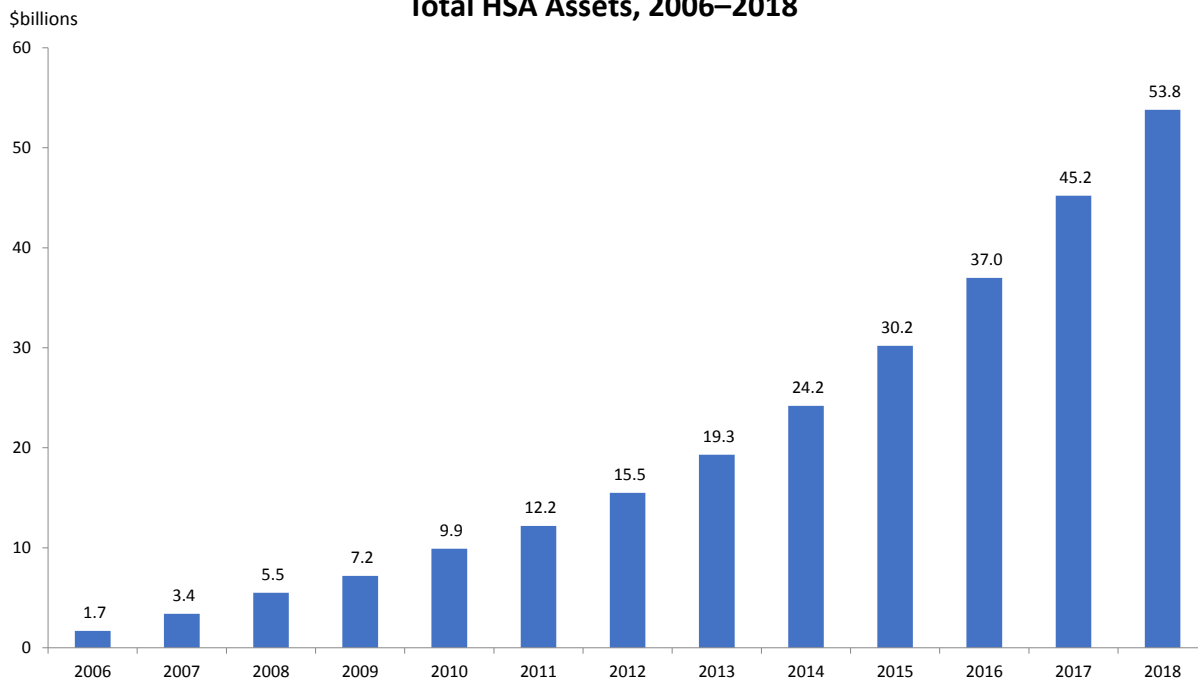
Much research has been done to understand the impact that the deductible in HSA-eligible health plans, and high-deductible health plans (HDHPs) more generally, has had on use of health care services and spending.² The initial studies tended to focus on broad questions like who enrolls in an HDHP, how enrollees differ from non-enrollees, risk selection, and the impact of HDHPs on overall use of services and spending. Recent studies examined more targeted questions, such as medication adherence for individuals with chronic conditions (Fronstin, Sepulveda, and Roebuck, 2013a); generic drug use (Fronstin and Roebuck, 2014a); whether individuals with an HDHP are likely to price shop (Brot-Goldberg, et al., 2015); quality of health care received (Fronstin and Roebuck, 2014b); use of specialty medications (Fronstin and Roebuck, 2018); delays in breast cancer screening (Wharam, et al., 2019); and the combination of deductible size, presence of an HSA or HRA, and type of HDHP (Haviland, et al., 2011b). Recent studies are also examining more current data and plan enrollees' behaviors over longer time periods. While there are differences in results across the studies, the consistent finding is that HDHPs reduce use of health care services.

Figure 1
HSA-Eligible Health Plan Enrollment, 2007–2018



Source: EBRI calculations from the National Health Interview Survey.

Figure 2
Total HSA Assets, 2006–2018



Source: <http://devenir.com/wp-content/uploads/2018-Year-End-Devenir-HSA-Research-Report-Executive-Summary.pdf>

There has been a lot of research conducted on HSAs as well. The number of HSAs is being tracked annually,³ and information on trends in balances, individual and employer contributions, distributions, and investments is also being tracked (Fronstin, 2018). The research has found that HSA balances tend to build up over time. Furthermore, the longer someone has had an HSA, the higher their personal contributions, the more likely they are to invest, and the more likely they are to take a distribution.

There is a question as to whether HSAs blunt the impact of the high deductible. Consumers may view the account as earmarked for current spending, especially any employer contributions to the HSA, and therefore may feel that there is no need to be cost conscious. We have found only two studies that examine the impact that HSAs have on use of services and spending. Both studies examined the impact of contributions to HSAs on use of health care services and spending. Leive (2018) found that switching to HSA-eligible health plans did not lower costs, as employees offset the higher deductibles with HSA contributions. Similarly, Haviland, et al. (2011a) examined variation in employer contributions to HSAs (and HRAs) and found that higher employer contributions tempered the effect of the high deductible on use of health care services. These two studies examined how contributions affect use of health care services. They did not examine how balances might affect use of health care services. In addition to these studies, Buntin, et al. (2006) found that accounts may offset the reduction in spending from HDHPs by 2–7 percent, but based the conclusion on studies published between 1996 and 2002, which was prior to the introduction of HSAs.

HSA balances may affect use of health care services independently from contributions for a number of reasons. Contributions are capped by annual statutory limits. In contrast, balances build up over time. Larger balances may induce use of health care services to a larger degree than contributions. Most account holders will build up an account balance (to the degree that contributions are made) because most people are healthy and do not use a lot of health care services in any given year.⁴ Ultimately, large HSA balances may offset the effects of the high deductible.

The purpose of this *Issue Brief* is to examine whether and how HSA balances impact use of and spending on health care services. We expect balances will affect discretionary services more than non-discretionary services. If higher HSA balances are associated with higher use of health care services, over time, the deductible in the HSA-eligible health plan will become a less effective tool in engaging individuals in their use of health care services.

Data

This study makes use of two data sources — the EBRI HSA Database and health insurance and medical claims data from a large employer with employees residing throughout the United States.

The EBRI HSA Database is a representative repository of information, developed to facilitate analyses on the state of, and individual behavior in, HSAs. The HSA database contained 5.9 million accounts with total assets of \$13.4 billion as of Dec. 31, 2017. Included in the dataset is detailed, yet de-identified, person-level information on individual and employer contributions, beginning- and end-of-year account balances, annual distributions, investments, and account-owner demographics.

Health insurance eligibility and medical claims data from an employer with approximately 120,000 employees were matched to the EBRI HSA Database. Because the employer offered a choice of health plans, including health maintenance organizations (HMOs), preferred provider organizations (PPOs), exclusive provider organizations (EPOs), and HSA-eligible health plans, a subset of about 6,500 policyholders was used in the study. This sample is smaller than the total number of enrollees in the HSA-eligible health plan in any given year for a number of reasons. Individuals were included only if they were continuously enrolled in the HSA-eligible health plan over the 2014–2016 period. For each year, the datasets were matched by gender, birth year, zip code (5 digit), health plan deductible, employer contribution to the HSA, and an indicator for employee-only vs. family coverage. A unique, encrypted ID was used to track people over time as well.

Variables

We examined a number of dependent variables to better understand the role that HSA balance has on use of health care services. Inpatient, outpatient, and prescription drug services were examined. Inpatient services included the numbers of inpatient hospital admissions and inpatient days. Outpatient services included the numbers of emergency department visits, primary care and specialist office visits, chiropractor visits, physical therapy visits, and psychotherapy visits. Other outpatient outcomes analyzed were counts of lab and radiology services — such as electrocardiograms (EKG), echocardiograms, stress tests, X-rays, computerized tomography (CT) scans, and magnetic resonance imaging (MRI). We also examined if and how overall spending, and spending for these specific services, was affected by HSA balance. For policyholders with family coverage, the use of health care services variables were aggregated across all individuals covered by the policyholder's health plan. We did not include preventive services as they are covered in full, and use of those services should not be expected to be affected by HSA balances.

The key independent variable was the policyholder's HSA balance at the beginning of the year. While we conducted analyses using HSA balance as a continuous measure, we also examined potential non-linearities in the functional form of the relationship by instead using a dichotomous measure indicating whether or not the HSA balance was at least \$3,000. While somewhat arbitrary, this value represented the highest prevailing annual deductible in the sample, a level above which individuals may be more likely to consume discretionary care.

Also included in the analyses were the following member characteristics: age, gender, geographic region, annual salary, an indicator for individual vs. family coverage, and the number of covered dependents. Finally, to control for health status, the Charlson Comorbidity Index (CCI), which is widely used in the extant literature as a gauge of general health status, was derived annually from medical claims for every member covered under the policy (Charlson, et al., 1987) (Deyo, Cherkin, and Ciol, 1992) (Quan, et al., 2005). For families, we retained the maximum score among all members linked to the policyholder.

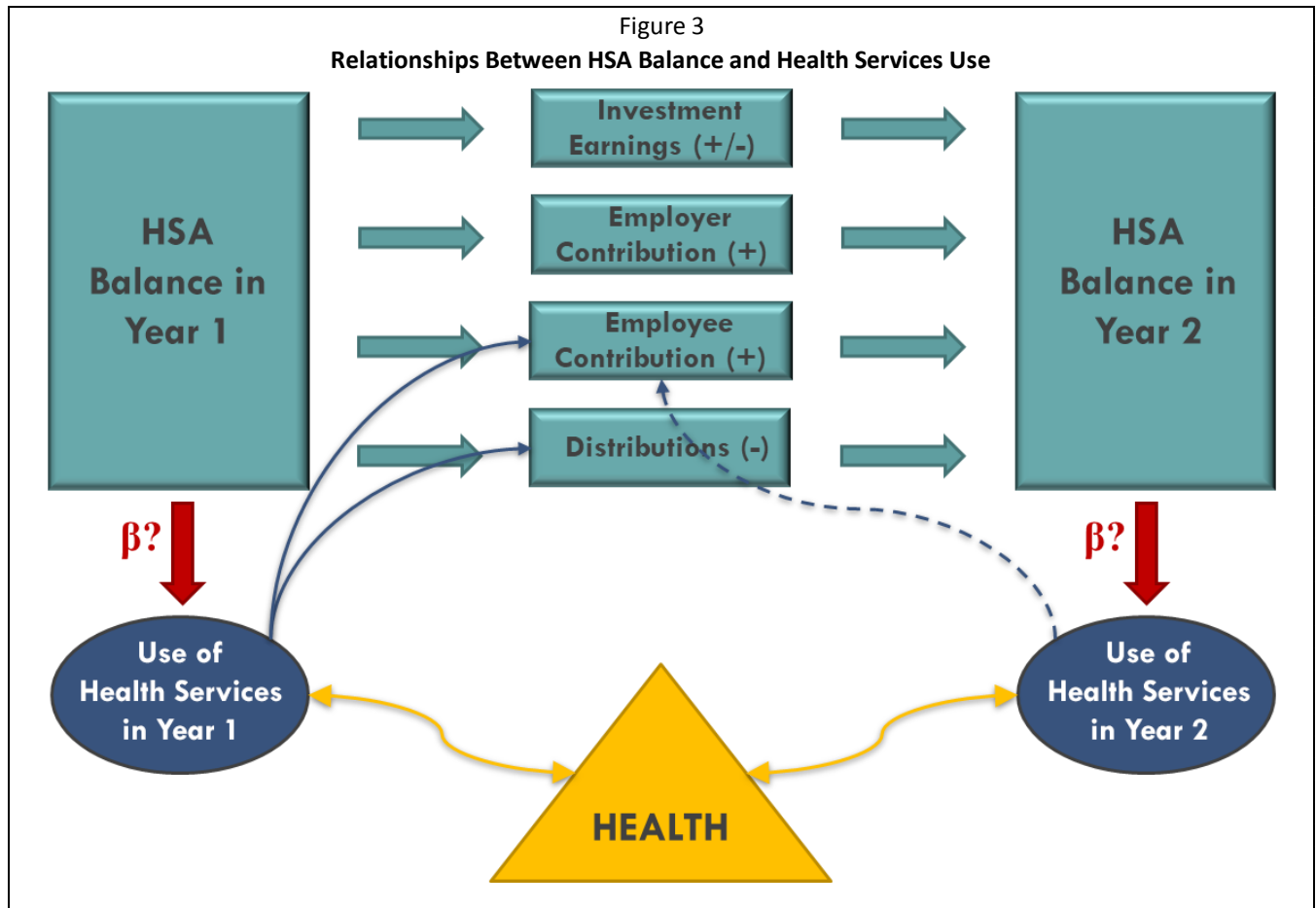
Methods

The research objective of the present study was to estimate the effect of HSA balance on use of health care services and spending. As in most observational data analyses, inferring causality was challenging due to potential endogeneity or confounding. A diagram can be helpful in uncovering reasons why a naïve analysis might lead to biased estimates in a specific context.

Figure 3 depicts the relationships between HSA balance and use of health care services over two years. By construction, HSA balances are affected by four mechanisms: 1) employer contributions to the HSA on behalf of employees, which would increase balances; 2) employee contributions to his or her HSA, which would also increase balances; 3) distributions that the employee elects to take to pay for or reimburse themselves for current or past out-of-pocket health care, which would decrease balances; and 4) capital appreciation or depreciation that may occur if the account holder has elected to invest their savings.

In Figure 3, the relationships of interest are the red arrows. Namely, the goal is to obtain an unbiased estimate of the direct effect (β ; assumed to be constant over time) of HSA balance on use of health care services and spending. Plaguing the analysis, however, are the other relationships that exist between these two variables. Namely, use of health care services and costs in each year are determined by underlying health status — which may or may not be observable—and will depend on both chronic and acute conditions. Furthermore, two indirect relationships (depicted as solid blue lines) might also confound the analysis. First, prior use of health care services may result in employees increasing their subsequent contributions in order to later reimburse themselves (causing an increase in HSA balance). Second, distributions may be taken to pay for prior use of health care services (causing a decrease in HSA balance). Stated differently, since use of health care services is correlated within individual over time, a naïve (cross-sectional) analysis will yield a negative estimate for β because individuals who use less health care (i.e., healthy) will tend to have higher HSA balances, and individuals who use a lot of health care (i.e., unhealthy) will tend to have lower HSA balances. Indeed, we estimated pooled cross-sectional ordinary least squares (OLS) models and found negative and

statistically significant relationships between HSA balances and use of health care services in about two-thirds of our models.



To address the potential endogeneity of HSA balance in analyses of use of health care services and spending, we employed linear fixed effects modeling. This econometric technique controls for all time-invariant characteristics (both observed and unobserved), removing their potential confounding effect. In the context of the present analysis, inclusion of person-specific fixed effects eliminates underlying health status (yellow triangle) — as long as it is persistent over the three-year study period — as a source of endogeneity (i.e., it breaks the links through the two solid blue lines). Time-varying health (e.g., acute conditions and other health shocks), however, can still lead to biased results.

The other problematic relationship that exists between HSA balance and use of health care services and spending is depicted in Figure 3 as the dotted blue arrow from health services use in Year 2 and employee contribution at the beginning of the same year. This refers to the possibility that individuals who anticipate future health care consumption may be more likely to contribute to their HSA. In this case, it is not HSA balance that is leading to health services use but the opposite: use of health care services is affecting HSA balances. Unfortunately, reverse causality is difficult to both assess and correct for, but we undertook several exercises to delve deeper into this issue.

Robustness Checks

We undertook several auxiliary analyses to evaluate the robustness of our results. As mentioned above, reverse causality is a key threat. Since foreseeable health services utilization is arguably more likely to be for chronic conditions (i.e., acute health shocks are far less predictable), we re-estimated our models on the subset of our sample (about two-thirds) for which the Charlson Comorbidity Index was equal to zero throughout the entire study period. By removing individuals and families with chronic conditions, we reduced the likelihood for reverse causality to be an alternate

explanation of results. Differences in coefficient estimates between models on the full dataset and the healthier subsample might be evidence of expected health services use driving prior HSA contributions.

We also employed a novel econometric technique that allows for the inclusion of fixed effects while also addressing the direction of causality (Williams, Allison, and Moral-Benito, 2018). Briefly, this relatively new modeling approach includes person-level fixed effects to control for time-invariant unobserved confounders (as we did in our main analysis), but also uses lagged endogenous regressors, which helps identify whether reverse causality is at play. This solves an estimation efficiency problem in dynamic panel data models by incorporating structural equation modeling methods. A re-estimation of our analyses using this technique helped us to further assess whether or not HSA balance was a cause or effect (or both) of health services use and costs.

Findings

Trends in HSAs

Balances in HSAs more than doubled between 2014 and 2016. Among enrollees with employee-only coverage, balances increased from \$1,131 at the beginning of 2014 to \$2,861 at the beginning of 2016 (Figure 4). Similarly, balances more than doubled among enrollees with family coverage. The average balance went from \$1,416 in 2014 to \$3,312 at the beginning of 2016. It should come as no surprise that the percentage of accounts with a zero balance at the beginning of the year fell to near zero after two years of contributions. Only 2 percent of HSAs started 2016 with a zero balance, regardless of whether the enrollee had employee-only coverage or family coverage (Figure 5). At the beginning of 2014, 20 percent of those with employee-only coverage and 17 percent of those with family coverage had a zero balance. In contrast, the percentage of accounts with balances between \$1,500 and \$2,999, and \$3,000 or more nearly tripled between the beginning of 2014 and 2016 among those with employee-only coverage (Figure 6). Among those with family coverage, the percentage of accounts with balances between \$3,000 and \$5,999 more than doubled, while the percentage of accounts with balances of \$6,000 or more quadrupled between the beginning of 2014 and 2016 (Figure 7).

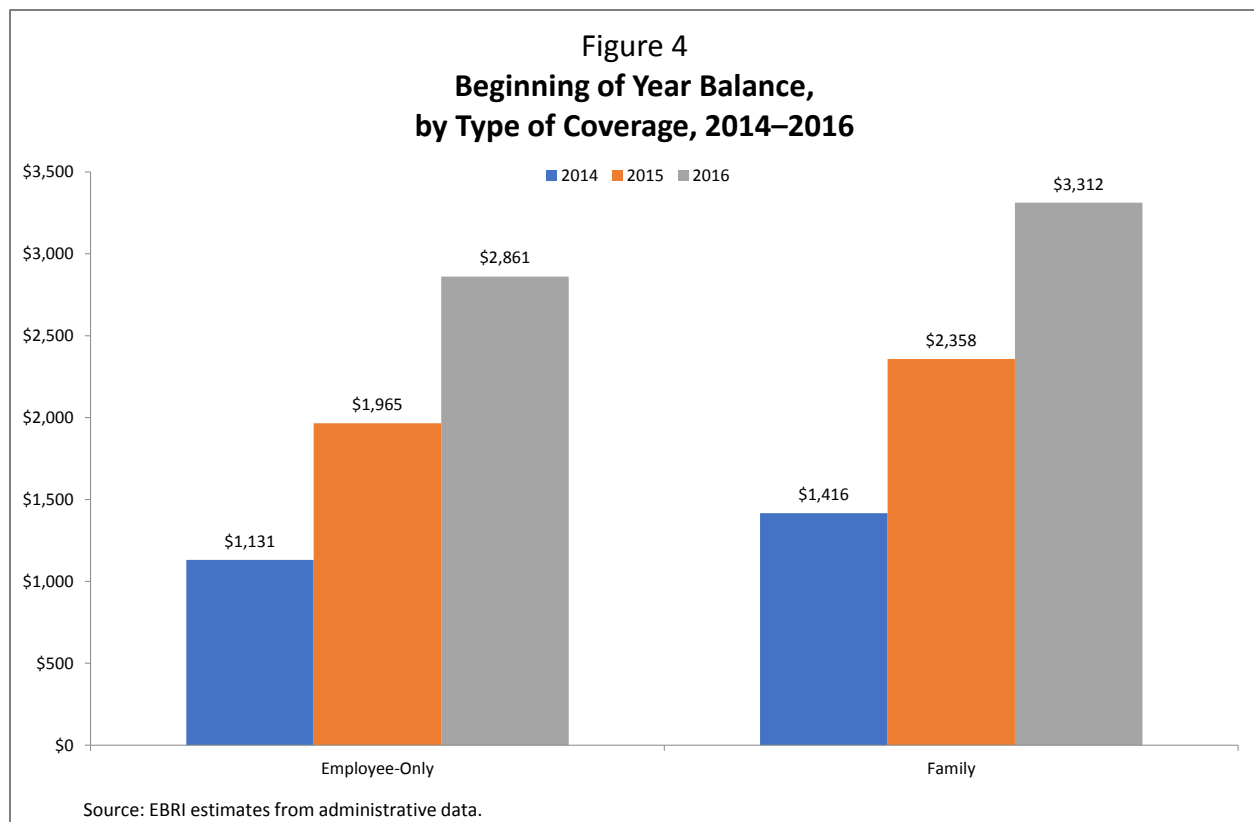
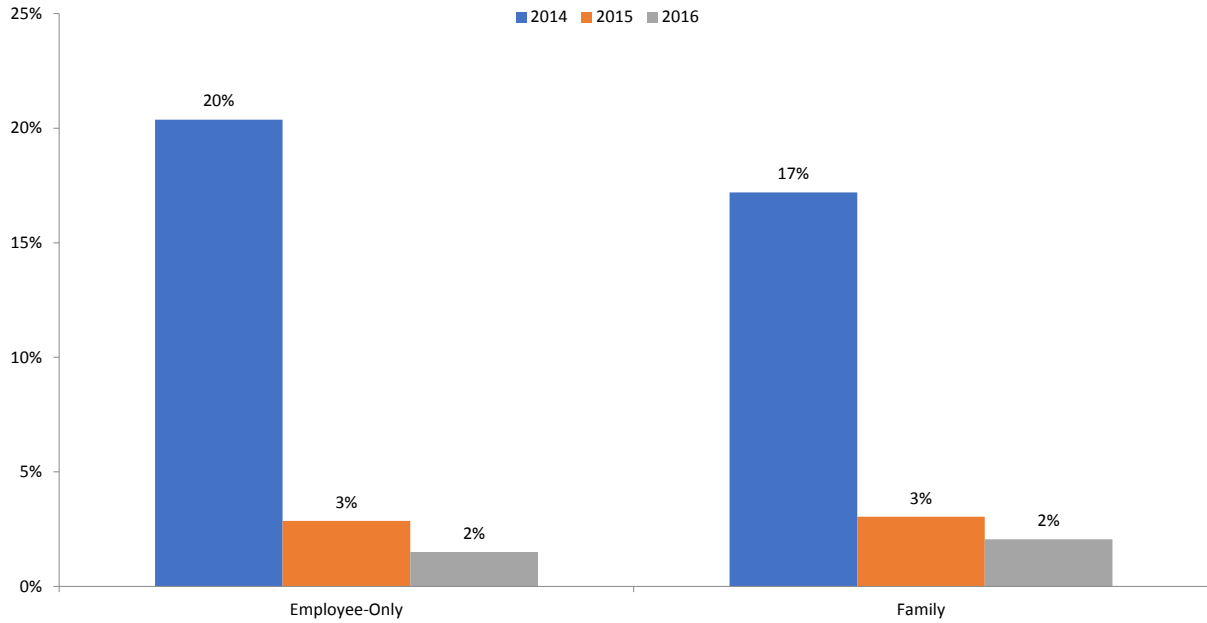
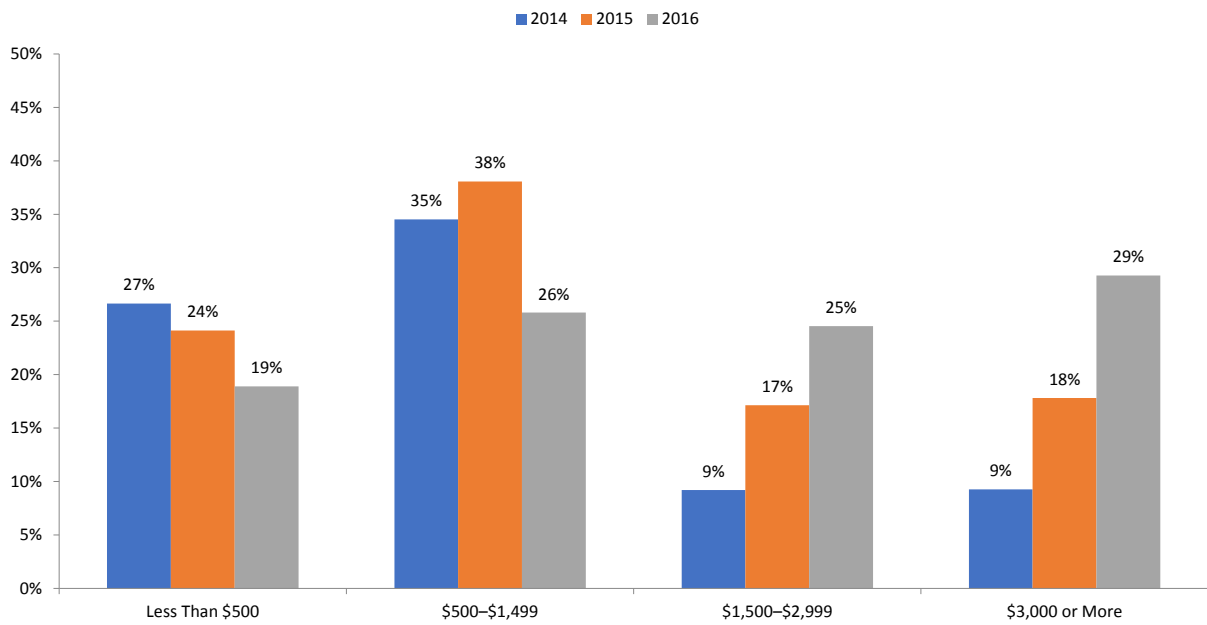


Figure 5
Percentage of HSAs With Zero Balance at Beginning of Year,
by Type of Coverage, 2014–2016



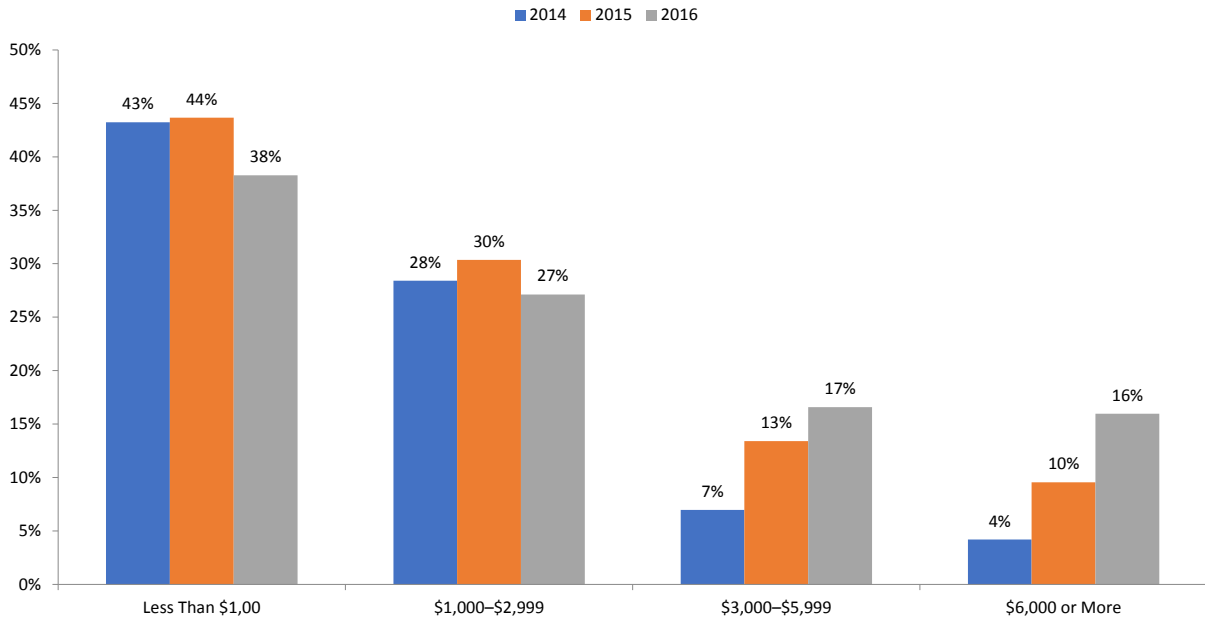
Source: EBRI estimates from administrative data.

Figure 6
Distribution of HSA Balance at Beginning of Year,
Policyholders With Employee-Only Coverage, 2014–2016



Source: EBRI estimates from administrative data.

Figure 7
Distribution of HSA Balance at Beginning of Year,
Policyholders With Family Coverage, 2014–2016



Source: EBRI estimates from administrative data.

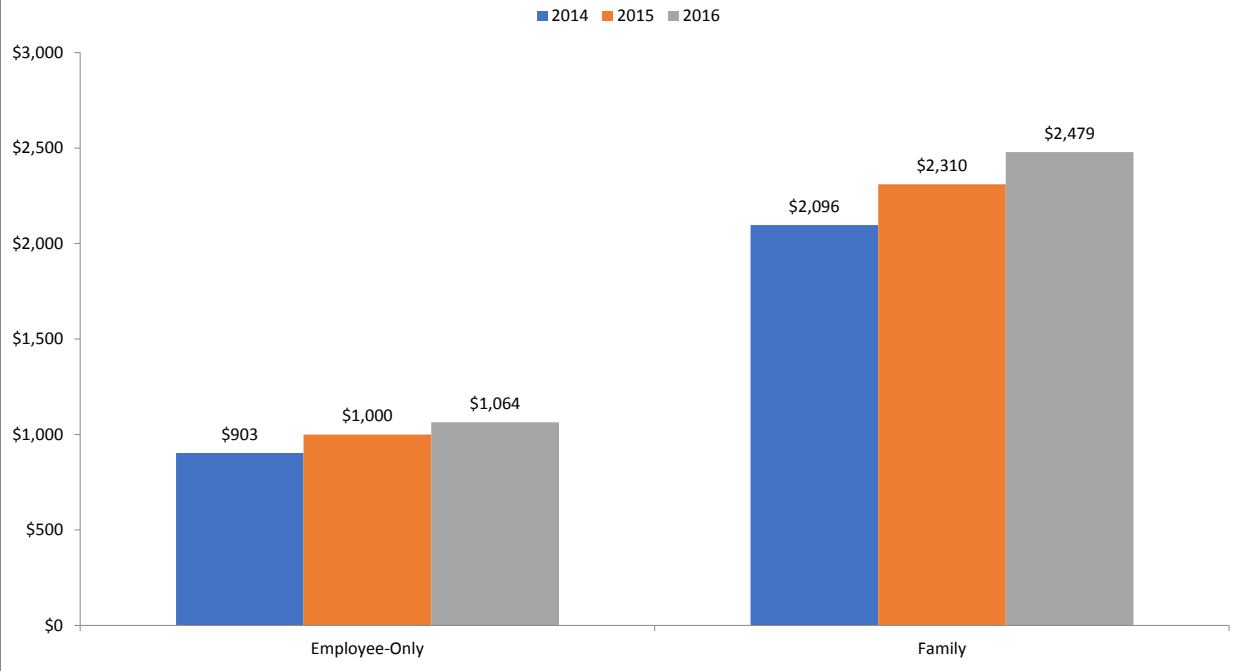
Account owner contributions have been trending up as well. Among those with individual coverage, the average annual contribution increased from \$903 to \$1,064 between 2014 and 2016 (Figure 8). Similarly, among those with family coverage, the average annual contribution increased from \$2,096 to \$2,479. Not all contributions are being saved for the future. Not only do people take distributions for current or past health care expenses, but average annual distributions have been trending higher as well. Between 2014 and 2016, average annual distributions increased from \$697 to \$963 among account holders with employee-only coverage and increased from \$2,384 to \$2,894 among those with family coverage (Figure 9).

While distributions have been increasing, an increasing number of account holders have been investing. The percentage of account holders with investments increased from 6 percent to 13 percent among those with employee-only coverage between 2014 and 2016 (Figure 10). The percentage investing also doubled among those with family coverage.

Trends in Use of Health Care Services

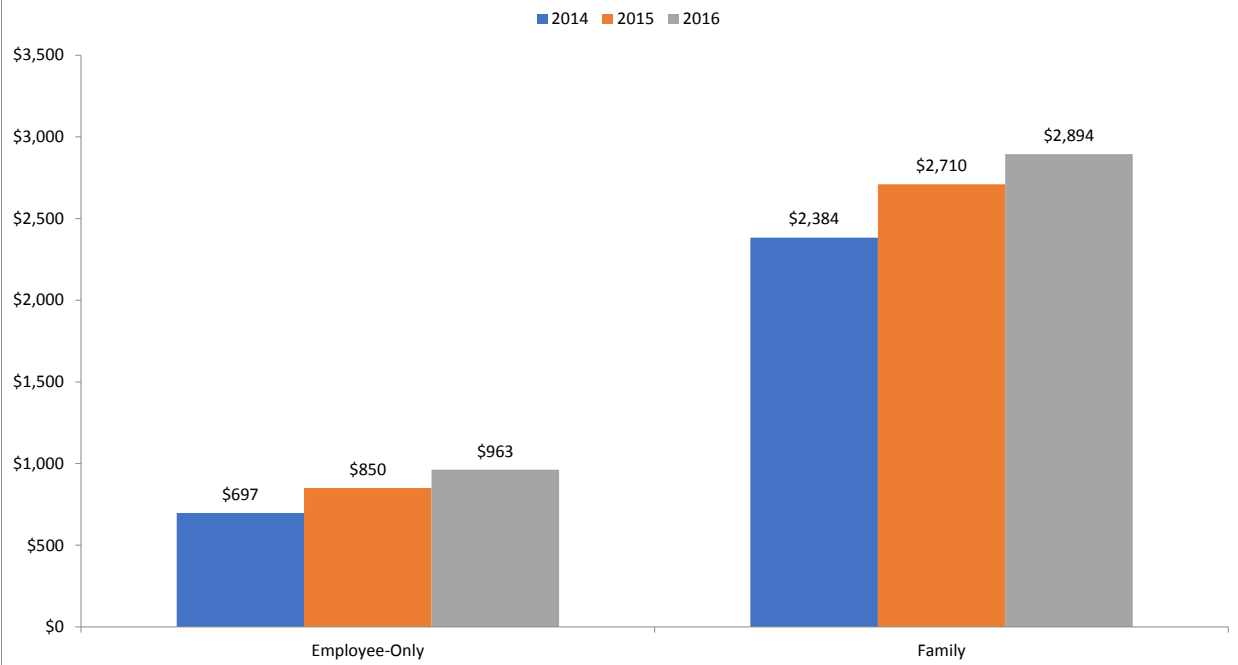
Commensurate with higher beginning-of-year balances, use of health care services has been increasing among HSA-eligible health plan enrollees. Between 2014 and 2016, there was an increase in the number of inpatient hospital admissions, inpatient hospital days, specialist visits, and prescription drug fills (Figure 11). There was also an increase in laboratory services and imaging (Figure 12). Not all health care services experienced an increase in use. There were no changes or mixed findings related to primary care office visits, CT scans, MRI, chiropractic visits, physical therapy, psychotherapy, and musculoskeletal surgery (not shown in figures). These changes may be driven by the simple fact that as this population ages they use more health care services.

Figure 8
Annual Individual Contributions, by Type of Coverage, 2014-2016



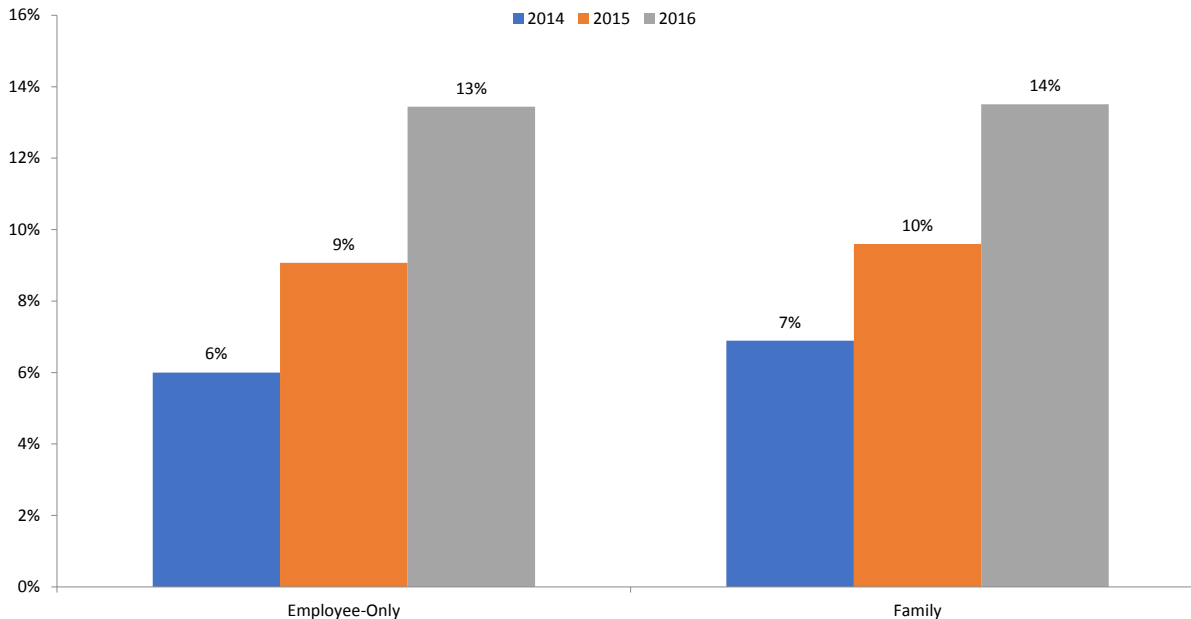
Source: EBRI estimates from administrative data.

Figure 9
Annual Distributions, by Type of Coverage, 2014-2016



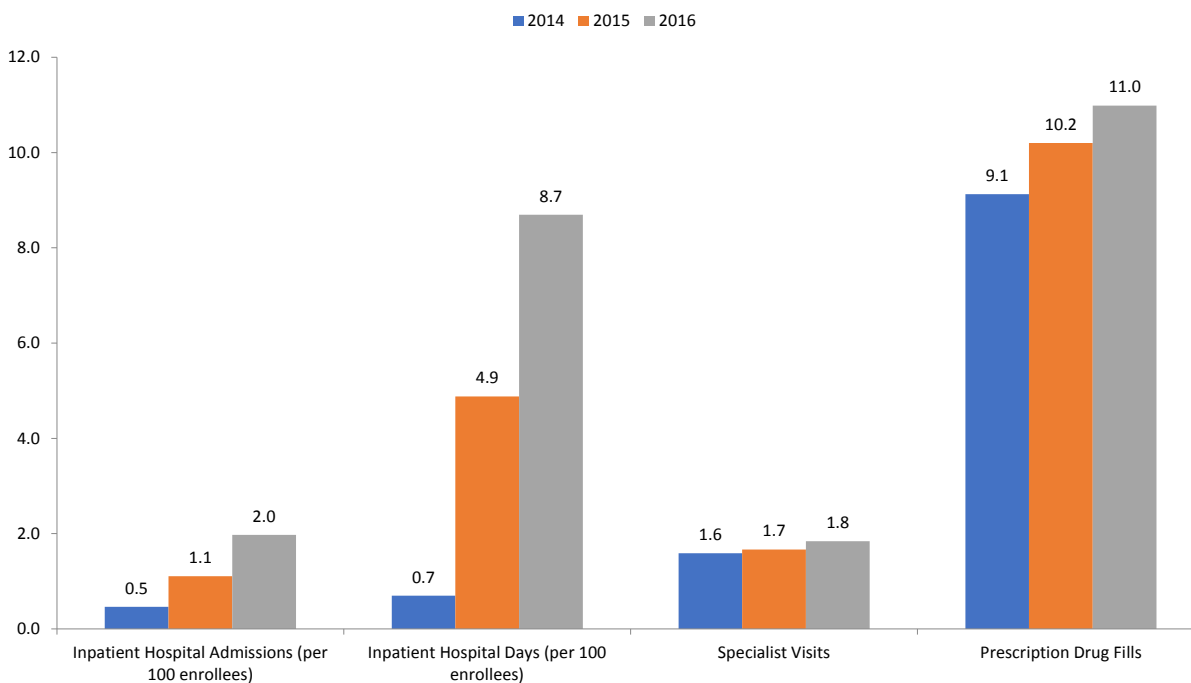
Source: EBRI estimates from administrative data.

Figure 10
Percentage of HSAs Invested,
by Type of Coverage, 2014–2016

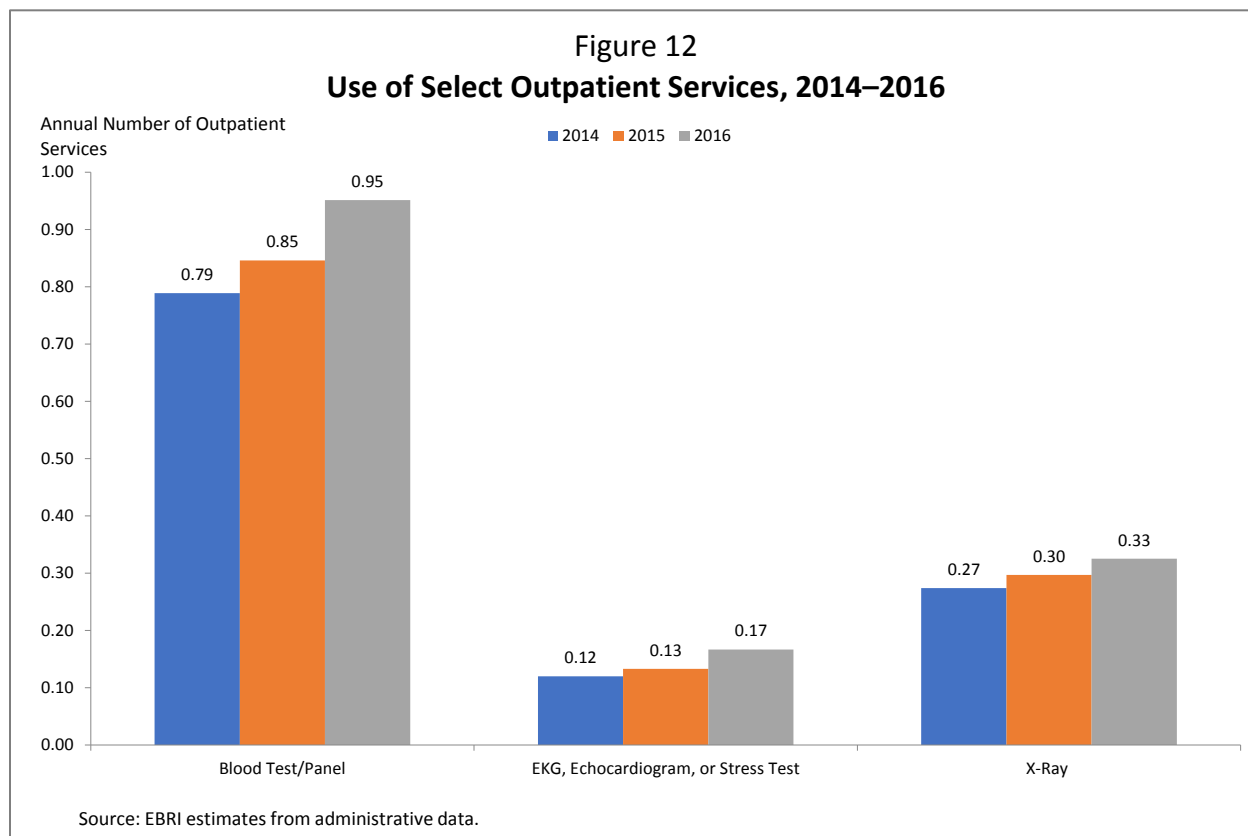


Source: EBRI estimates from administrative data.

Figure 11
Use of Select Health Care Services, 2014–2016



Source: EBRI estimates from administrative data.



Findings from Fixed Effects Regression Equations

Figure 13 shows the results from the multivariate fixed effects regression models of HSA balances on use of health care services. Regression analysis is needed to sort out the effects from aging and other variables from the effect of HSA balances on use of health care services. Only the key coefficients from the regressions related to the impact of HSA balance are presented. Other variables included in the model were age, gender, geographic region, income, individual or family coverage, spousal coverage, children/other dependents, and the Charlson Comorbidity Index. HSA balances were measured two ways: in continuous (thousands of) dollars and as an indicator for balances of at least \$3,000. The results in the two equations were largely comparable with a few exceptions.

In general, we found that larger beginning-of-year HSA balances resulted in increased use of health care services. Use of the following services increased in one or both models: emergency department visits, primary care physicians (PCP) and specialist visits, chiropractic services, physical therapy, psychotherapy, blood tests, X-ray, CT scan, MRI, and musculoskeletal surgery. However, inpatient services, prescription drug fills, and radiology related to cardiovascular disease (EKG, echocardiogram, stress test) were not affected by HSA balances.

The magnitude of the effects was not large. In the equation where we examined whether HSA balances of at least \$3,000 affected use of health care services, the largest effect was related to outpatient visits (a combination of primary care and specialist visits). Our findings suggest that individuals with \$3,000 or more in their HSA at the beginning of the year visited PCPs and specialists on average one-half visit more per year than individuals with HSA balances under \$3,000.

Figure 14 shows the results from the multivariate fixed effects regression models of HSA balances on overall spending and spending by type of health care service. It shows the commensurate increase in spending associated with the increase in use of health care services shown in Figure 13. For instance, spending was \$19.52 higher for primary care office visits and \$28.06 higher for specialist visits. Overall spending was \$496.40 higher, though the finding was not statistically significant. Spending associated with other outpatient services was \$550.96 higher among individuals with an HSA balance of at least \$3,000 and was statistically significant. This category captures many services that were not easily classified into the specific services mentioned, and the largest component of that category was not specific enough to know what the service was for.

Figure 13
Linear Fixed Effects Model Estimates of HSA Balances on Use of Services

Dependent Variable	Model 1	Model 2
	<u>HSA Balance</u> <u>(\$thousands)</u>	<u>HSA Balance</u> <u>(≥\$3,000)</u>
Inpatient hospital admissions	0.001	0.01
Inpatient hospital days	-0.004	0.05
Emergency department visits	0.01 *	0.05 **
Outpatient physician's office visits	0.10 ***	0.50 ***
Primary care physician visits	0.05 ***	0.21 ***
Specialist visits	0.06 ***	0.29 ***
Chiropractic	0.04	0.29 **
Physical therapy	0.10 **	0.43
Psychotherapy	0.05 *	-0.10
Prescription drug fills	0.01	-0.08
Blood test, panel	0.03 ***	0.09
EKG, echocardiogram, stress test	0.01	0.02
X-ray	0.03 ***	0.11 ***
CT scan	0.01 ***	0.03 ***
MRI	0.005 *	0.02
Musculoskeletal surgery	0.004 ***	0.01 *

Statistical significance denoted as follows: ***p<0.01; **p<0.05; *p<0.10.

Figure 14
Linear Fixed Effects Model Estimates of HSA Balances on Spending

Dependent Variable	Model 1	Model 2
	<u>HSA Balance</u> <u>(\$thousands)</u>	<u>HSA Balance</u> <u>(≥\$3,000)</u>
Inpatient hospital	-\$46.01	-\$157.35
Emergency department	\$5.20	\$49.50 **
Primary care physician visits	\$5.16 ***	\$19.52 **
Specialist visits	\$5.14 **	\$28.06 **
Chiropractic visits	\$2.75 *	\$19.96 ***
Physical therapy	\$4.05	\$19.95
Psychotherapy	\$1.17	-\$23.87
Other outpatient costs	\$133.53 ***	\$550.96 ***
Prescription drug	-\$34.54	-\$161.04
Blood test, panel	-\$0.89	-\$1.28
EKG, echocardiogram, stress test	\$1.72	\$8.00
X-ray	\$4.57 ***	\$8.99
CT scan	\$2.41	\$16.89
MRI	\$7.67 ***	\$35.01 **
Musculoskeletal surgery	\$4.98	\$83.10 *
Overall spending	\$96.90	\$496.40

Statistical significance denoted as follows: ***p<0.01; **p<0.05; *p<0.10.

Results of Robustness Checks

As noted above, our estimates may be affected by the endogeneity of HSA balance. For example, the anticipation of use of health care services may induce people to contribute to their account in advance of receiving such services. To explore this issue, we ran a number of alternative specifications. In one exercise, we re-estimated all models on the subsample of individuals with a Charlson Comorbidity Index (CCI) of zero. This eliminated those with any of the chronic conditions that comprise the CCI — about 36 percent of the total sample. Since these people are more likely than those without chronic conditions to anticipate their future health care costs, they are most prone to pre-fund their HSA. We found no material differences between the results of these models and the results from the full sample regressions.

As mentioned above, we also employed a novel econometric technique that allows for the inclusion of fixed effects while also addressing the direction of causality. This modeling approach adds lagged endogenous regressors to our model, which helps identify whether reverse causality is at play. In general, the results from this exercise largely rule out reverse causality. In fact, in many cases, our original results (positive relationships) were more pronounced using this econometric approach.

Conclusion and Limitations

At the outset of our analysis, we expected that larger HSA balances might result in increased use of health care services, effectively offsetting the effect of the high deductible. And indeed, we found evidence that higher HSA balances resulted in increased use of health care services and higher spending. However, while the increases in use of health care services were statistically significant, the magnitudes were quite small.

One area to explore is related to the size of the deductible. In large part, employers have taken a “set it and forget it” attitude with the deductible level in HSA-eligible health plans. Between 2007 and 2018, deductibles in PPOs have increased an average of 8.3 percent per year, while they have only increased an average of 2.5 percent in HSA-eligible health plans.⁵ It is possible that introducing larger HSA-eligible health plan deductible options over time may cause individuals to enroll in those options. To the degree that HSA balances were not large enough to cover the newer, higher deductibles, those balances would not result in higher use of health care.

Another approach to explore relates to education around the long-term benefits of the HSA. HSA balances can be saved for health care expenses in retirement on a tax-preferred basis. However, few individuals are doing so, and even fewer are investing their HSA.⁶ Education could result in more efficient use of HSAs.

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Endnotes

- ¹ See <http://devenir.com/wp-content/uploads/2018-Year-End-Devenir-HSA-Research-Report-Executive-Summary.pdf>
- ² See Buchmueller (2009), Bundorf (2012), Buntin, et al. (2011), Fronstin and Roebuck (2013), and Fronstin, Sepulveda, and Roebuck (2013b).
- ³ See <http://devenir.com/wp-content/uploads/2018-Year-End-Devenir-HSA-Research-Report-Executive-Summary.pdf>
- ⁴ In 2015, 15 percent of the population accounted for 67 percent of health care spending among the commercially insured population. In other words, 85 percent of the population accounted for only 33 percent of health care spending. See <https://www.healthcostinstitute.org/research/publications/hcci-research/entry/top-spenders-among-the-commercially-insured-increased-spending-concentration-and-consistent-turnover-from-2013-to-2015>
- ⁵ EBRI calculations from data in <https://www.kff.org/health-costs/report/2018-employer-health-benefits-survey/>
- ⁶ See <https://www.ebri.org/health/publications/fast-facts/content/a-possible-disconnect-between-perception-and-utilization-of-hsas>