

## Are HSA Investors Born or Made?

By Jake Spiegel, Employee Benefit Research Institute

### AT A GLANCE

Health savings accounts (HSAs) are a useful way for people covered by high-deductible health plans (HDHPs) to save for current and future health care expenditures. One of the largest strengths of HSAs — the ability to invest assets saved in the account — remains seldom used, as only 6 percent of accountholders invest at least some portion of their HSAs. This study uses the EBRI HSA Database to examine trends and patterns in who invests their account and, in particular, what factors are associated with an increased likelihood to invest. More specifically, it explores to what extent the decision to invest is endogenous to the accountholder. Investors might have systematically different attitudes from non-investors, and even given the same set of circumstances, such as deductible level and account balance, an accountholder predisposed to invest may make different choices from an accountholder predisposed to not invest. Or, accountholders may wait to hit specific benchmarks — perhaps having enough saved in their HSAs to cover deductibles or out-of-pocket maximums — before deciding to invest. In short: Are HSA investors born, or are they made?

### Key Findings

- **Few HSA accountholders invest.** HSAs offer generous tax benefits, making investing an attractive option for long-term health care saving, yet only 6 percent of accountholders avail themselves of the opportunity.
- **Those who do invest tend to invest right away.** Most HSA investors — 63 percent — invested their HSA balances the first year EBRI observed them in our database. Of the accountholders who did not immediately invest, 62 percent did so within the first three years of account ownership.
- **Longer account tenures and higher account balances are associated with an increased probability of investing.** Our analysis shows that a one-year increase in account tenure has the same positive impact on likelihood of investing as an account balance being roughly \$3,250 larger.
- **There is only weak evidence to support the hypothesis that accountholders wait to accumulate a specific amount of money before investing.** When plotting the distribution of account balances when accountholders transitioned to investing, there are spikes around \$1,000, \$3,000, and \$6,000, likely signifying thresholds that at least some investors are targeting, such as required balance thresholds for investing or health plan deductibles. However, there was a great deal of variance in account balances at the time of investing, suggesting that this only describes a small share of investors.
- **Large distributions are associated with a decrease in the likelihood of transitioning to investing.** Taking a large distribution — defined as at least 50 percent of the account balance — was associated with a reduced likelihood of transitioning to investing.

These findings have important implications for employers and plan sponsors that want to nudge their workers to use their HSAs for longer-term savings needs. We find that plan deductibles do not serve as a strong signal to accountholders that they should save that much before investing and that account tenure and account balance are strongly associated with an increased likelihood of investing. This suggests a familiarity effect, which means educational outreach efforts could be helpful in encouraging employees to invest. Also, giving employees seed money in their HSAs could nudge more to invest their balances more quickly.

Jake Spiegel is a Research Associate at the Employee Benefit Research Institute (EBRI). This *Issue Brief* was written with assistance from the Institute’s research and editorial staffs. Any views expressed in this report are those of the author and should not be ascribed to the officers, trustees, or other sponsors of EBRI, Employee Benefit Research Institute-Education and Research Fund (EBRI-ERF), or their staffs. Neither EBRI nor EBRI-ERF lobbies or takes positions on specific policy proposals. EBRI invites comment on this research.

**Suggested Citation:** Jake Spiegel, “Are HSA Investors Born or Made?,” *EBRI Issue Brief*, no. 504 (Employee Benefit Research Institute, April 2, 2020).

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## Table of Contents

Introduction .....	3
Data and Methodology .....	4
About the EBRI HSA Database.....	5
Are HSA Investors Born or Made? .....	5
Large Distributions Could Be an Impediment .....	10
Conclusion .....	11
Appendix .....	13

## Figures

Figure 1, Share of Accounts With Investments, by Years of Tenure .....	4
Figure 2, Health Savings Accounts, by Year Account Was Opened .....	5
Figure 3, Balance at Time of Transitioning to Investing .....	6
Figure 4, Years of Tenure When Non-Immediate Investors Transitioned to Investing.....	7
Figure 5, Mean and Median Deductible of Account Holders, by Year in Which They Started Investing .....	8
Figure 6, Density of Balances at Time of Investment, by Deductible Level.....	9
Figure 7, Change in Probability of Transitioning to Investing .....	10
Figure 8, Change in Probability of Transitioning to Investing .....	11
Table 1, Odds Ratios and Cluster-Robust Standard Errors for Baseline Model .....	13
Table 2, Odds Ratios and Cluster-Robust Standard Errors for Tenure Model.....	13
Table 3, Odds Ratios and Cluster-Robust Standard Errors for Large Distribution Model .....	13

# Are HSA Investors Born or Made?

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## Introduction

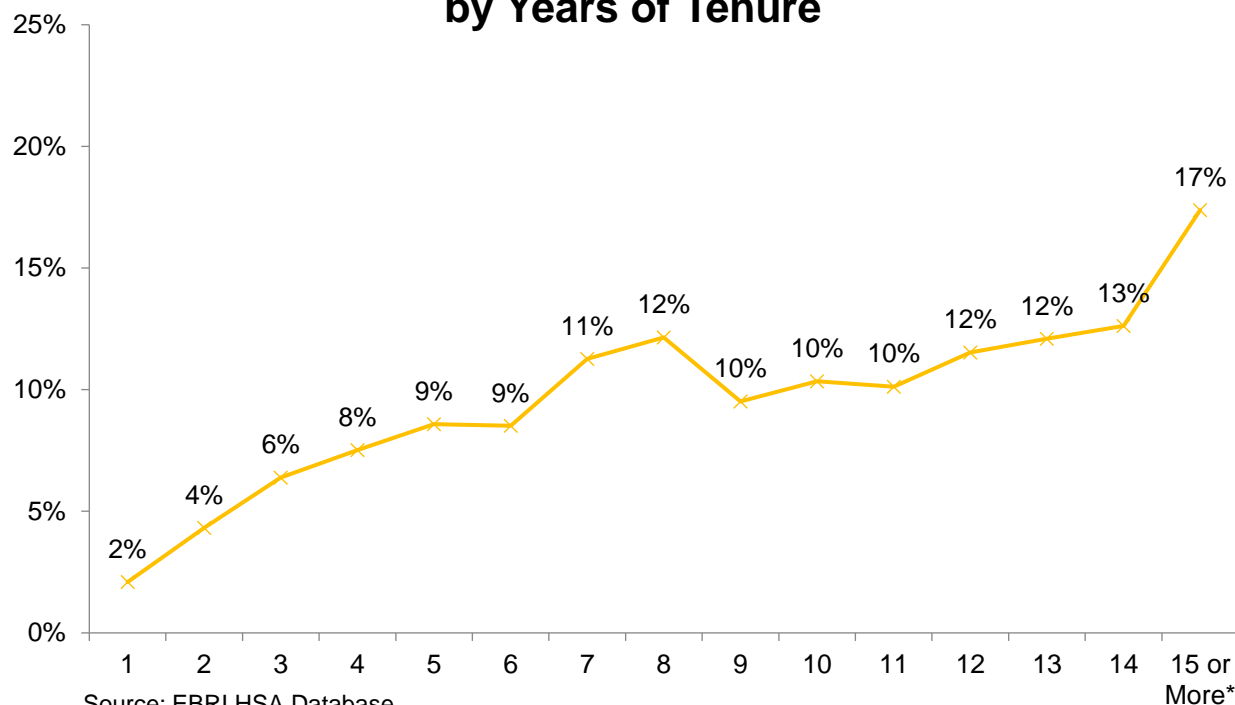
Tax-advantaged health savings accounts (HSAs) that are paired with high-deductible health plans (HDHPs) have become increasingly popular as a means to help households manage health care costs. Just 15 years ago, about 9 percent of workers were covered by an HDHP through their employer. Today, 27 percent are covered by an HDHP at work.<sup>1</sup> It comes as little surprise, then, that HSAs have enjoyed similarly stratospheric growth rates.

Health savings accounts (HSAs) have unique tax benefits that can benefit accountholders in the present as well as the future. Much like flexible spending accounts (FSAs), contributions to HSAs are made on a tax-free basis, and distributions are also untaxed, provided they are spent on qualified medical expenditures. However, unlike FSAs, there is no limit to how much can be rolled over from year to year in an HSA, and since HSAs are owned by the employee, they can follow workers as they change jobs.<sup>2</sup> Health savings accounts also have a much higher annual contribution limit along with a catch-up contribution provision for accountholders 55 and older. And perhaps the largest differentiator from FSAs is that HSA balances can be invested, and investment gains are untaxed. HSA balances can also be used to pay for medical expenses in retirement, which is a significant benefit considering the size of health care expenses many households will likely face in retirement. For instance, EBRI has estimated that a couple will need \$301,000 in savings to have a 90 percent chance of meeting health care needs, such as Medicare premiums, in retirement.<sup>3</sup>

One strategy in particular can unlock the long-term saving potential of HSAs. The strategy dictates that accountholders should contribute the statutory maximum to their HSAs, invest their balance, and pay for medical expenses out of pocket. This approach allows the balance to compound on a tax-free basis over time, thereby resulting in a higher net wealth over a sufficiently long time horizon. Furthermore, balances can be used in retirement to pay for health care expenditures and Medicare premiums. Additionally, accountholders can take distributions at any time from the HSA for previously incurred medical expenses that were paid out of pocket. This approach — assuming one has the liquidity to execute it — calls for accountholders to invest their HSA savings, pay for medical expenses out of pocket as incurred, and then take distributions for these medical expenditures when money is needed later in life, such as in retirement.

The reality, however, is that relatively few HSA accountholders avail themselves of these opportunities. An analysis using the EBRI HSA Database found that only 6 percent of accountholders invested their HSA balances in 2018, up from 2 percent in 2011.<sup>4</sup> This proportion increased the longer an accountholder had their HSA. Only 2 percent of accounts open for only one year invested, rising to 10 percent for accounts open 10 years and to 17 percent for accounts at least 15 years old (Figure 1).<sup>5</sup> Some of the reluctance for newer accountholders to invest could be chalked up to risk aversion. If an accountholder anticipates a large medical expenditure in the near-term — say, dental braces for a dependent, or a medical procedure to manage a chronic condition, for example — then exposing HSA balances to the uncertainty of equity markets could very well be undesirable. Others may not invest since some HSA providers require a certain threshold before balances can be invested. Still others may struggle with complexities or inertia when it comes to investing. Finally, HSA accountholders may not fully understand the generous tax benefits bestowed by HSAs. Given that many health care consumers are not aware of the differences between HSAs and flexible spending accounts (FSAs), this last explanation seems plausible and could account for at least some of the documented reluctance to invest.<sup>6</sup> Regardless of accountholders' motivations for investing, there appears to be a strong relationship between account tenure and the propensity to invest HSA funds.

**Figure 1**  
**Share of Accounts With Investments,**  
**by Years of Tenure**



Source: EBRI HSA Database.

\*Includes Archer Medical Savings Account (MSA) rollovers.

But much of the reasoning behind the decision to invest remains unclear. The decision to invest may be completely endogenous to the accountholder. Investors might have systematically different attitudes from non-investors, and even given the same set of circumstances, such as deductible level and account balance, an accountholder predisposed to invest may make different choices from an accountholder predisposed to not invest. Or, accountholders may wait to hit specific benchmarks — perhaps having enough saved in their HSAs to cover deductibles or out-of-pocket maximums — before deciding to invest. In short: Are HSA investors born, or are they made?

To understand more about the factors that affect the decision to invest HSA balances, we analyzed the Employee Benefit Research Institute (EBRI) HSA Database to search for systematic patterns among accountholders who transitioned from not investing to investing their balances. The longitudinal data collected in the EBRI HSA Database enables us to see, for example, if investors tended to wait to accumulate a certain amount of money before deciding to invest. The database also allows us to see if accountholders with larger deductibles were less likely to choose to invest their balances.

## Data and Methodology

Our analysis relies on the EBRI HSA Database, which contains data on nearly 10 million HSAs and accounts for \$22.8 billion in assets. This represents about 40 percent of the total market of HSAs, and we consider it to be a reasonable representation of the whole HSA market. Furthermore, the EBRI HSA Database has robust historical data: It contains data on HSAs opened as early as 2004, when HSAs were first legislated into existence by the Medicare Modernization Act.

Our analysis consists of HSA accountholders who appear in at least two consecutive years of data and who invested their HSA balance at some point during the time we observed them in our database. We consider accountholders who had investment account balances of zero in one year and nonzero in the next year to have transitioned to being investors. That is, an accountholder with a zero balance in year  $t - 1$  and a nonzero balance in year  $t$  is considered to have transitioned to investing in year  $t$ . We consider the years in which their investment account balances turned nonzero to be the years in which they transitioned to investors.

## About the EBRI HSA Database

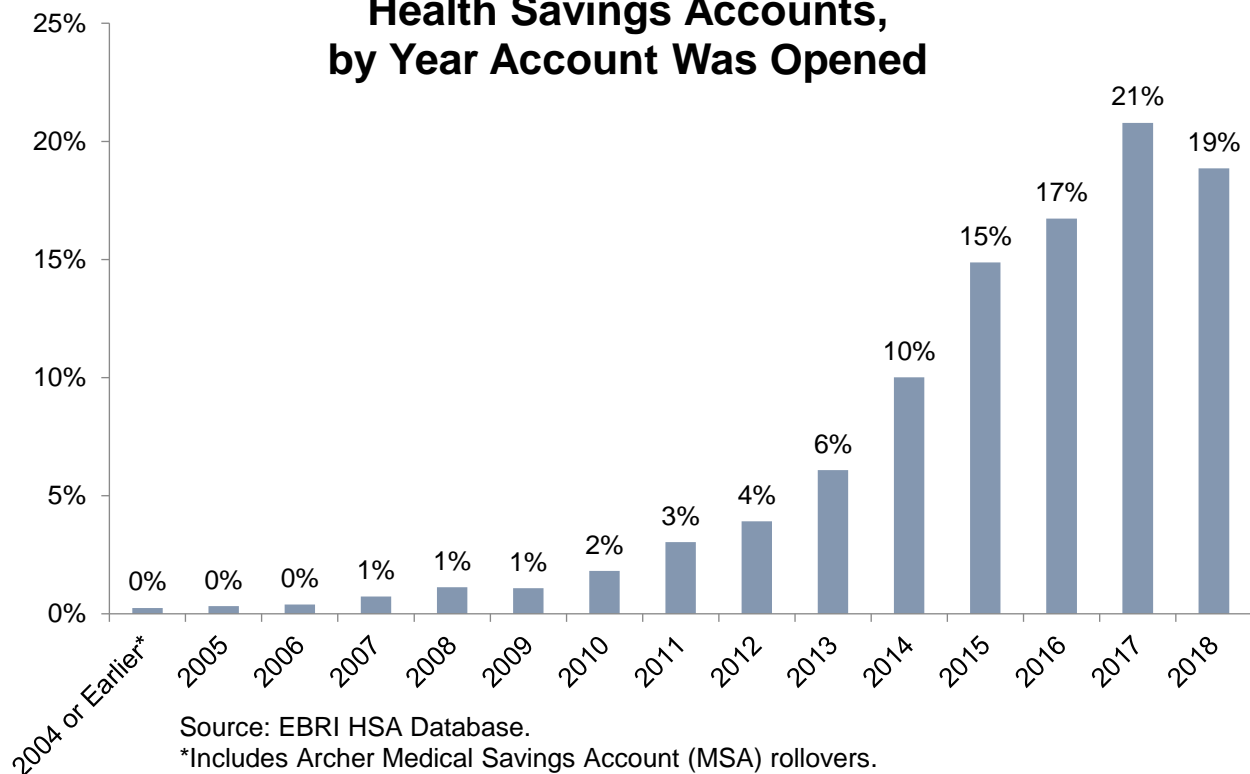
To improve on the existing data limitations around HSA utilization, EBRI created the EBRI HSA Database, a large, representative repository of administrative information from recordkeepers about HSAs and account owners. The database is unique because it includes data provided by a wide variety of account recordkeepers and, therefore, represents the characteristics and activity of a broad range of HSA owners.<sup>7</sup>

As of Dec. 31, 2018, the EBRI Database includes:

- 9.8 million health savings accounts.
- \$22.8 billion in assets.

The 2018 data cover 39 percent of the universe of HSAs and 42 percent of HSA assets.<sup>8</sup> Figure 2 shows that most HSAs in the EBRI HSA Database were initially opened within the past few years.

Figure 2  
**Health Savings Accounts,  
by Year Account Was Opened**



## Are HSA Investors Born or Made?

That so few accountholders invest prompts a question about whether there is something unique about accountholders who choose to invest or if the decision to invest is shaped by outside forces. Are HSA investors born intending to invest as quickly as possible? Or are they made into investors, shaped by external forces such as their own health care spending needs or developing a familiarity with HSAs?

Our analysis suggests, somewhat unsatisfyingly, that HSA investors are both born *and* made. A large portion of the HSA investors in our dataset invested their balances in their first year of HSA ownership: roughly 63 percent. This suggests that the lion's share of HSA investors is immediately engaged and intentionally invest their balances as quickly as possible. This strategy is made easier by HSA providers that allow for first-dollar investing, particularly for

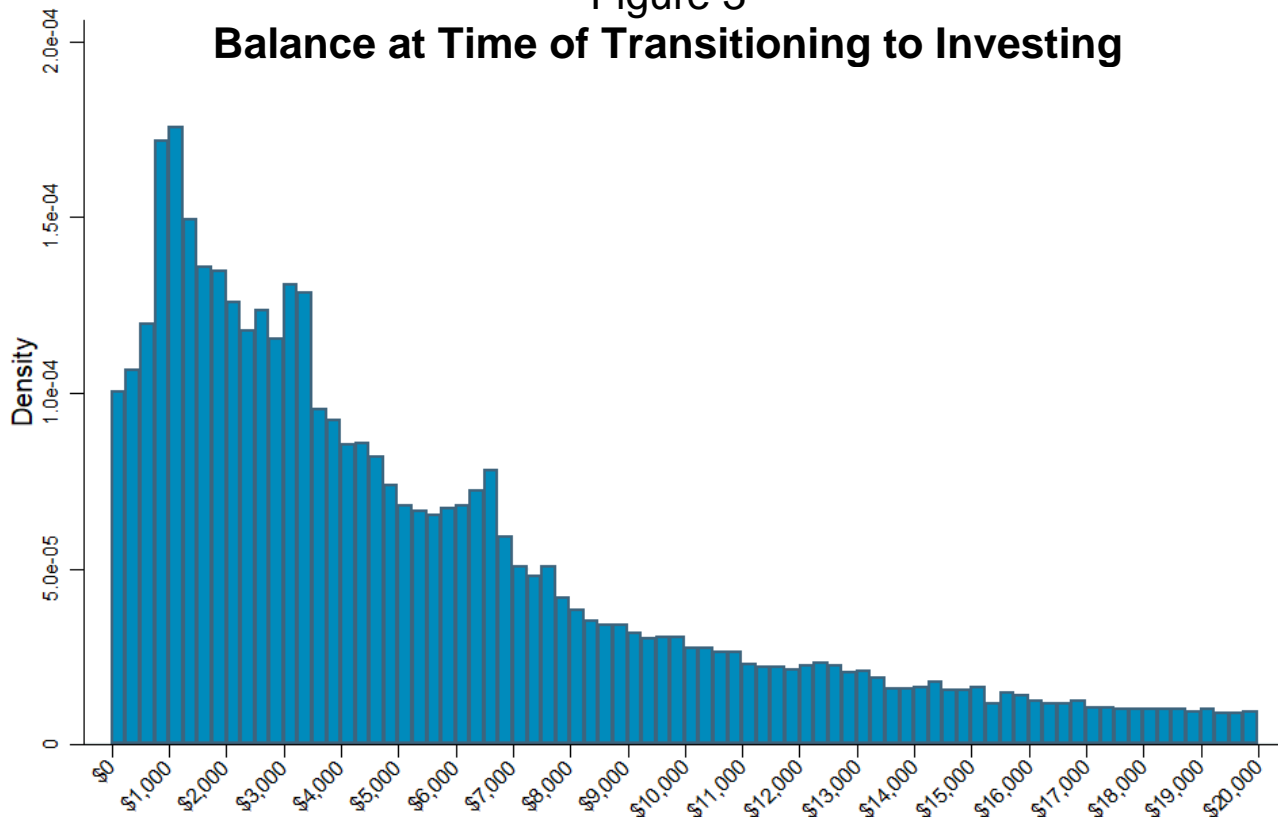
accountholders who intend to invest their HSA balance but may not have the liquid funds necessary to immediately contribute sizable funds to their accounts to begin investing as soon as possible.

However, this does not describe reality for some HSA accountholders, namely the other 37 percent of accountholders who were investors at some point in our dataset but did not start out that way. Some HSA providers require a certain threshold before balances can be invested. In these instances, accountholders must first build up their balances to the threshold, and then overcome inertia to invest their balances. This multi-step process requires a level of engagement that might be unfamiliar for some, especially if they are a first-time HSA accountholder. And, for accountholders who cannot immediately — or, even over the course of a year — contribute the minimum required amount to their account to invest, investing must necessarily take a back seat to building up a balance.

For accountholders who do not immediately invest their balances, we might expect to see some patterns in their savings behavior or account balances prior to investing. Some accountholders may want to hold off on investing until they have reached certain thresholds unrelated to the limitations imposed on them by HSA providers. For example, some may wait to invest until they have saved as much as their deductible so they can cover most medical expenses they could expect to face in a given year. Others might anticipate medical expenditures and plan to use their HSAs to pay for them and so will wait to pass some other threshold before taking the plunge.

Our analysis finds limited evidence to support the theory that HSA accountholders wait to accumulate a *specific* balance in their accounts before investing. When graphing HSA balances, the year the accountholder transitioned to investing reveals slight peaks around \$1,000, \$2,000, and \$6,000, shown below in Figure 3. These peaks are meaningful: Some HSA providers require \$1,000 before balances can be invested, and others require \$2,000. The spike around \$6,000 is meaningful, since that represents a common out-of-pocket maximum for single-coverage HDHPs as well as a deductible for some family-coverage plans.<sup>8</sup> However, the graph below visually demonstrates that there is a great deal of variation in the balances at which accountholders decided to invest.

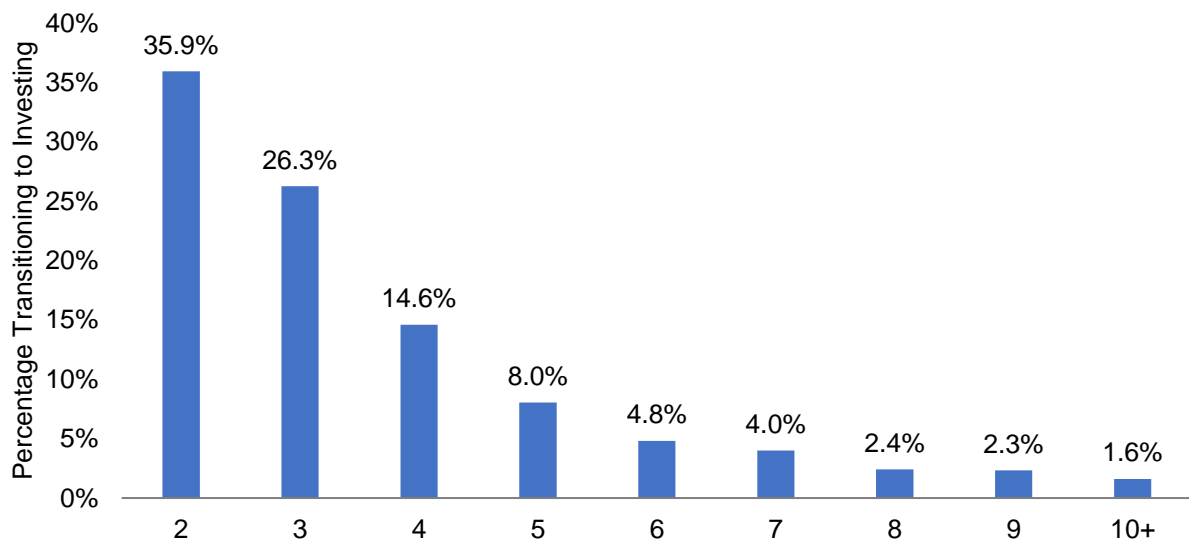
**Figure 3**  
**Balance at Time of Transitioning to Investing**



Source: EBRI HSA Database.

Among accountholders who transitioned to investing, the majority made the transition within the first three years. Just over 62 percent of accountholders who did not start out as investors transitioned to investing within the first three years of account ownership, as shown below in Figure 4. Most commonly, however, accountholders transitioned to investing sooner than that: 36 percent invested during their second year of HSA ownership. Meanwhile, only 15 percent of accountholders who had not yet invested by their fifth year of account ownership eventually transitioned to investing.

Figure 4  
Years of Tenure When Non-Immediate Investors  
Transitioned to Investing

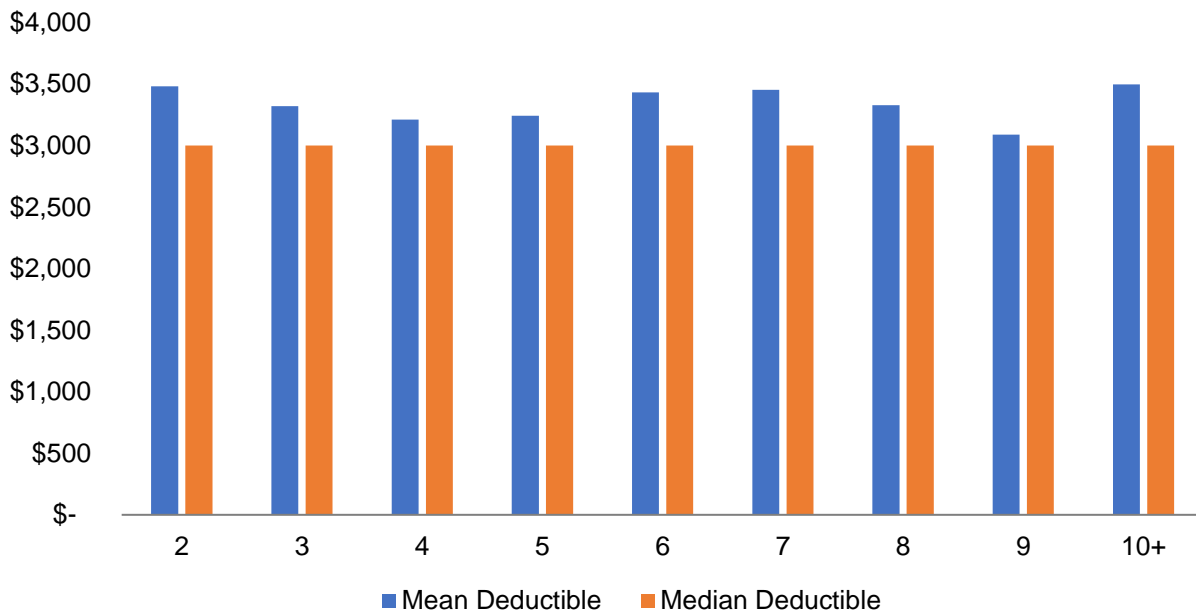


Source: EBRI HSA Database.

That so few accountholders transitioned after more than five years of account ownership is suggestive of two conclusions. One, long-tenured non-investors intentionally do not invest: Perhaps they view their HSA as a spending vehicle, instead preferring to stretch their dollars for current health care expenditures, or do not have much of an appetite for risk. And two, since at least *some* long-tenured accountholders transition to investing at some point, then some external force is driving them to invest. This could be due to any number of external forces: employers' educational outreach efforts, personal research, or building up a sufficient cash buffer to cover short-term medical expenses. Unfortunately, using the data on hand, we cannot test any of these theories.

We can, however, examine the relationship between the size of an HSA holder's HDHP deductible and the number of years until their initial investment. All accountholders actively contributing to HSAs are, by definition, enrolled in HDHPs. However, even within HDHPs, there is considerable variation in deductible levels; in our sample they ranged from \$1,200 to \$13,300.<sup>9</sup> If deductibles had an effect on the decision to invest — perhaps accountholders with higher deductibles wanted to accumulate higher balances before investing — then we would expect to see accountholders with higher deductibles waiting longer to invest. However, the data do not bear this out. In Figure 5, we find that the mean and median deductibles of accountholders did not vary much relative to the timing of HSA holders' initial investment: The median deductible at time of investing remained constant throughout, at \$3,000.<sup>10</sup>

**Figure 5**  
**Mean and Median Deductible of Accountholders, by**  
**Year in Which They Started Investing**

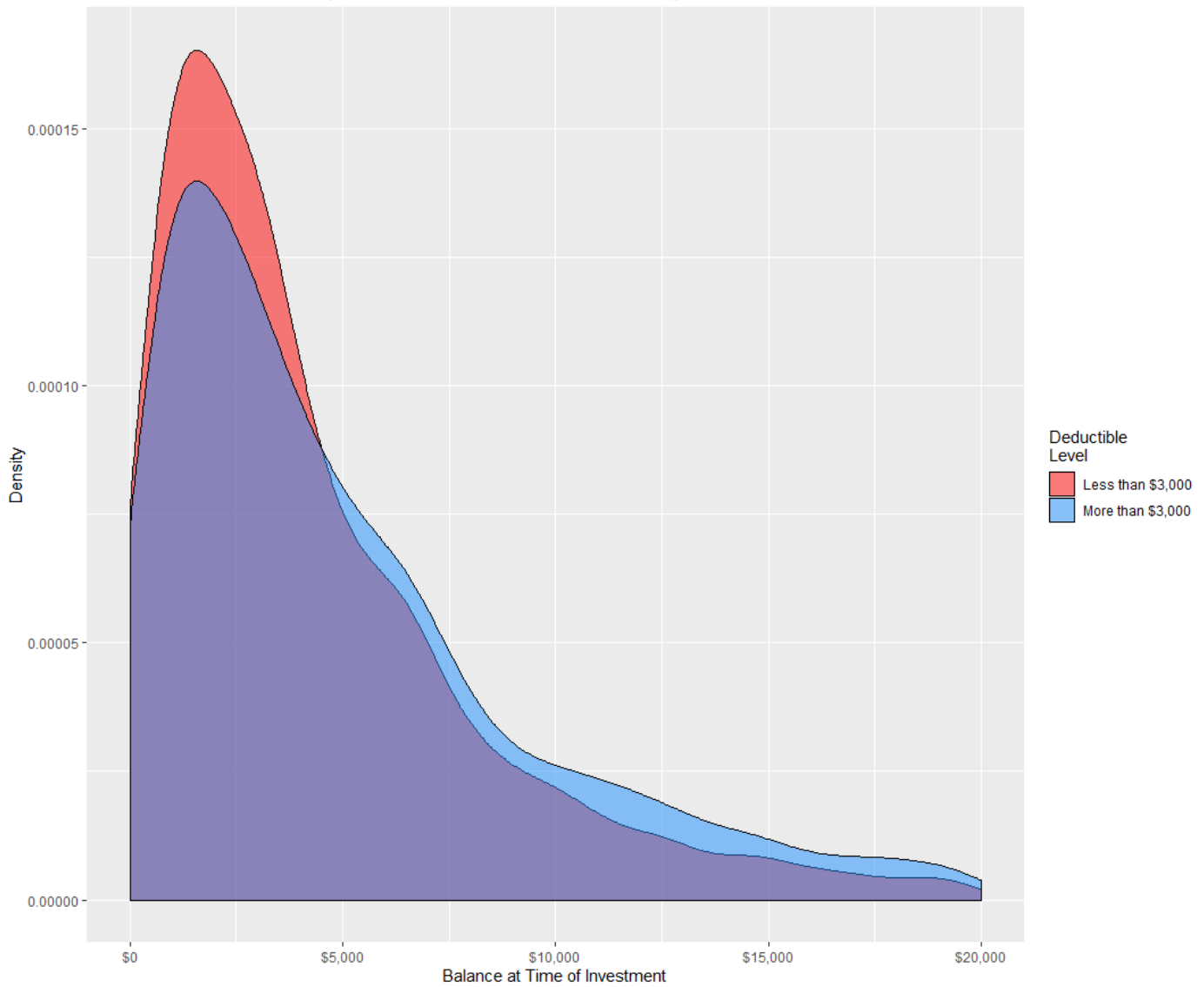


Source: EBRI HSA Database.

Similarly, evidence that accountholders with lower deductibles decide to invest with smaller balances than investors with higher balances is limited. In Figure 6 we overlay the balance at time of investment for accountholders with lower vs. higher deductibles. Relatively more accountholders with balances of less than \$5,000 transitioned to investing when they had below-median deductibles (less than \$3,000). In contrast, somewhat more accountholders with above-median deductibles (above \$3,000) made the switch to investing at higher balances, namely from \$5,000 to \$20,000 and above. Still, deductibles do not seem to be a significant impediment to accountholders investing their HSAs, nor do they appear to serve as a strong signal to accountholders that they should save that much before starting to invest their balances.



**Figure 6**  
**Density of Balances at Time of Investment,**  
**by Deductible Level**

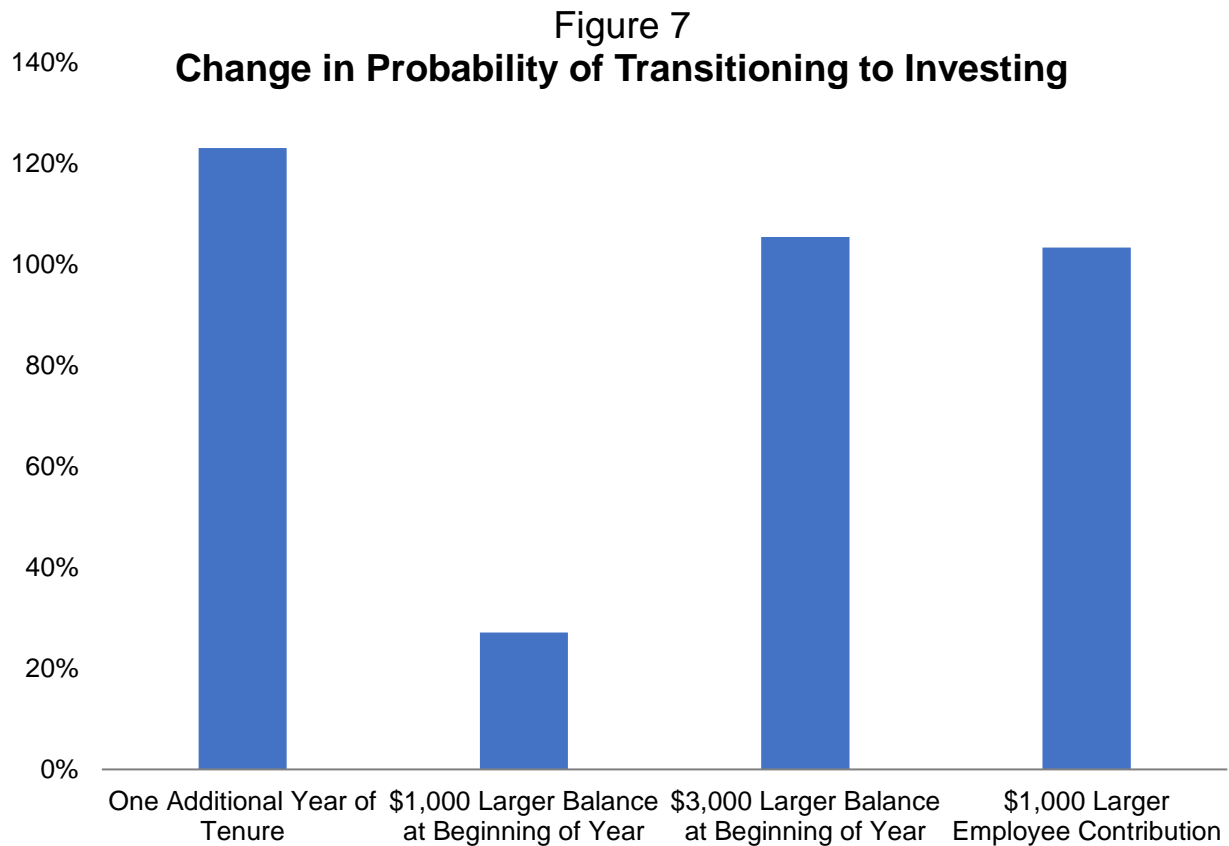


Source: EBRI HSA Database.

Both account tenure and balance are associated with an increased propensity to invest, and to test which effects dominate, we built a logistic regression model. This model evaluates transitioned-to-investing status as a function of HSA balance, tenure, and contributions.<sup>11</sup>

Both account tenure and balances were statistically significantly associated with a higher probability of transitioning to investing, as were employee contributions. These results make intuitive sense given our preconceptions about HSA investors, namely that an accountholder with a higher balance might feel more comfortable investing, or that a longer-tenured investor might be more familiar with the role HSAs play in their personal finances. And, all else equal, an accountholder actively making contributions will be more likely to start investing than an accountholder who does not make contributions to their HSA (full results are reported in Table 1 in the appendix). It is important to clarify that our analysis does not allow us to make causal inference claims about more years of tenure *causing* an accountholder to

invest or higher balances *causing* an accountholder to invest. Rather, all else equal, we find that a longer account tenure and a higher account balance were both associated with an increased likelihood of transitioning to investing. In particular, as shown below in Figure 7, an additional year of tenure appeared to be more strongly associated with the propensity to transition to investor status than an additional \$1,000 — or even \$3,000 — in account balance. Roughly an additional \$3,250 in account balance, meanwhile, was associated with a similar increase in the probability of transitioning to investing as an additional year of account tenure.



Source: EBRI HSA Database.

In an alternative specification, we test the hypothesis that an accountholder’s deductible is associated with their decision to invest. The sign in front of the *deductible* coefficient is negative — the direction we might intuitively expect, implying that a larger deductible was associated with a lower probability of transitioning to investing. However, the effect was not statistically significant, and so we cannot conclude that smaller deductibles were associated with an increased likelihood of investing. The main findings from earlier remain robust across this alternative specification: Both the balance and the tenure variables were statistically significantly associated with an increase in the likelihood of transitioning from not investing to investing (reported in full in Table 2 in the appendix). In particular, our analysis shows that a one-year increase in account tenure had the same positive impact on likelihood of investing as an account balance being roughly \$3,250 larger.

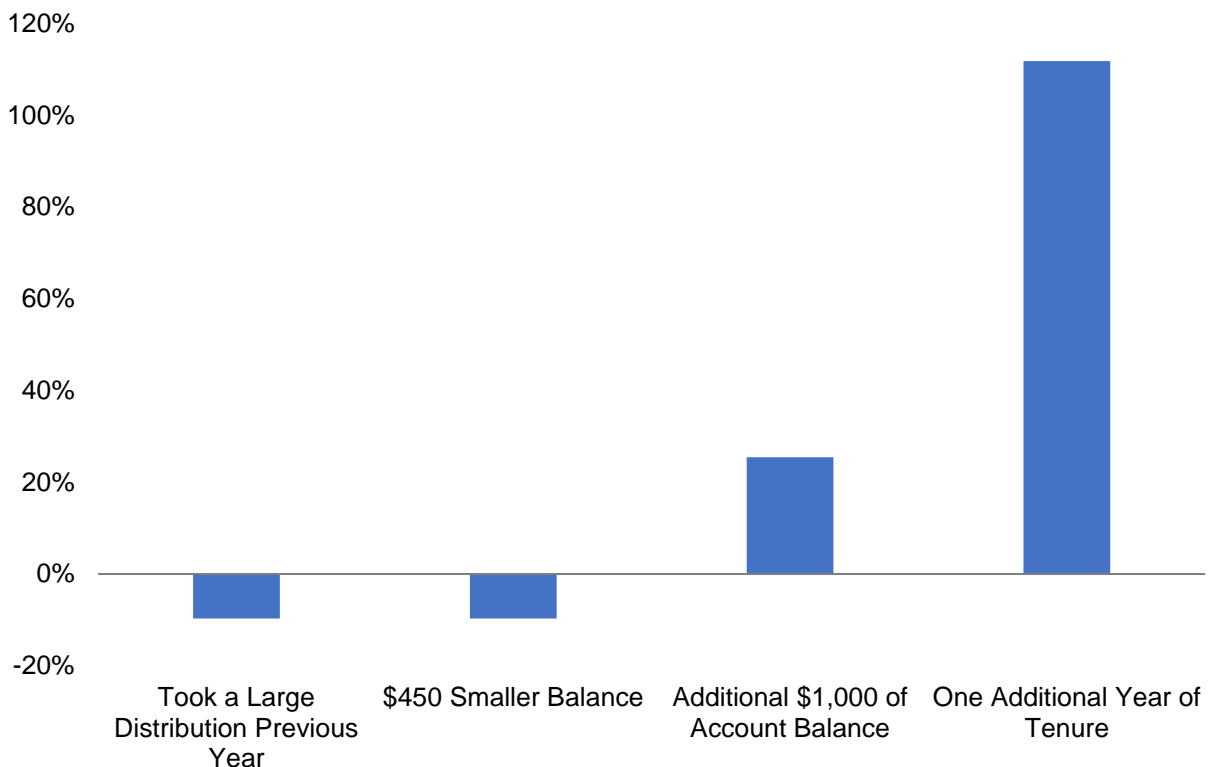
### Large Distributions Could Be an Impediment

Some accountholders may be hesitant to invest because they plan to take a distribution in the short term or recently took a distribution and wish to build their account balance back up before investing. To determine the extent to which distributions might affect an accountholder’s decision to invest, we look at accountholders who have transitioned to investing and observe whether they had taken a large distribution the year prior. We find that among accountholders

who transitioned to investing in a given year, only 7 percent had taken a large distribution the year before, defined as a distribution greater than or equal to 50 percent of the beginning account balance.

Adding a large distributions indicator to the previous regression model indicates that large distributions were correlated with a reduced likelihood of transitioning to investing. Shown below in Figure 8, we see that the presence of a large distribution the year prior was associated with and had a statistically significant effect on reducing the likelihood of transitioning to investing the next year. More specifically, the reduction in the probability of investing associated with taking a large distribution the year prior was roughly the same as the reduction in the probability of investing associated with a \$450 smaller account balance. Full results are reported in Table 3 in the appendix.

**Figure 8**  
**Change in Probability of Transitioning to Investing**



Source: EBRI HSA Database.

Large distributions may well be unavoidable for some accountholders. If an accountholder encounters unexpected medical expenditures and does not have sufficient liquid funds to pay for it out of pocket, it would be better to pay for it using their HSA rather than revolving credit. However, effective communication around the benefits of investing HSAs may nudge some accountholders to earmark their HSA funds for longer-term savings needs.

## Conclusion

Health savings accounts offer a unique tax benefit to people with HDHPs. This strategy can significantly increase net wealth at retirement. However, relatively few accountholders avail themselves to this opportunity. Only about 6 percent of accountholders invest their HSA funds, though this percentage tends to increase the longer an accountholder has owned their HSA. This raises an interesting question: Are HSA investors systematically different from non-investors, and if so, how?

Most HSA investors choose to invest their balances during the first year they open their account. These HSA investors are born; there is some quality intrinsic to them that prompts them to invest their balances immediately, and some of whom may be nudged in that direction by engaged employers and providers. Of the HSA investors who do not immediately start out as investors, the majority transition to investing within the first three years of account ownership. These HSA investors are made; there could be some external force that prompts them to invest their balances. This could stem from developing a familiarity with HSAs, the result of an effective benefits education campaign, or having accumulated a balance that they feel comfortable investing.

Of HSA investors who are made, the two most important characteristics that are associated with transitioning to investing are account tenure and balance. In particular, our analysis shows that a one-year increase in account tenure is associated with a similar increase in the likelihood of investing as an account balance roughly \$3,250 larger. Additionally, employee contributions also increase the likelihood of investing, likely signaling that engagement is an important determinant in transitioning to investing. Finally, taking a large distribution is associated with a reduced likelihood of transitioning to investing, which may indicate that accountholders try to build their balances back up after withdrawing money from their HSAs before investing.

This analysis has important implications for plan sponsors and HSA providers. Of the accountholders who do not immediately invest, most choose to do so within the first several years of account ownership, though some longer-tenured accountholders do eventually transition to investing. Furthermore, account tenure and balance are both strongly associated with the propensity to invest HSA funds. Employers that want to encourage their workers to use their HSAs as longer-term savings vehicles may wish to consider implementing two strategies. First, since account tenure is closely linked to the decision to invest, this suggests that accountholders invest because they become more familiar with their HSAs, they learn more about the benefits of investing, or both. Therefore, an education strategy could be effective in encouraging accountholders to invest. Second, since account balance seems to be closely linked with the decision to invest, employers could consider contributing some seed money to new accountholders, particularly those with very high deductibles.

## Appendix

Table 1  
**Odds Ratios and Cluster-Robust Standard Errors for Baseline Model**

Beginning Balance	1.0002** (0.0000045)	1.0002** (0.0000015)
Tenure	2.1154** (0.019983)	2.2307** (0.005217)
Employee Contribution	1.0007** (0.0000182)	1.0007** (0.0000046)
Employer Contribution	--	1.0006** (-0.00000123)
Constant	2.1219E-07** (0.02829)	8.7700E-08** (0.02894)

\*\* Denotes statistical significance at a 1 percent level.

Table 2  
**Odds Ratios and Cluster-Robust Standard Errors for Tenure Model**

Beginning Balance	1.0004** (0.00000211)	1.0005** (0.0000026)
Deductible	1 (1.04E-10)	1 (1.13E-10)
Tenure	2.7594** (0.007059)	3.4082** (0.008205)
Employee Contribution	1.0008** (0.0000055)	1.0009** (0.000064)
Employer Contribution	--	1.0004** (.0000139)
Constant	5.3349E-10** (0.032212)	2.0353E-12** (.036451)

\*\* Denotes statistical significance at a 1 percent level.

Table 3  
**Odds Ratios and Cluster-Robust Standard Errors for Large Distribution Model**

Beginning Balance	1.0002** (0.0000015)	1.0003** (0.0000015)
Tenure	2.1179** (0.0052171)	4.6576** (0.02985)
Employee Contribution	1.0007** (0.0000046)	1.0006** (0.0000033)
Employer Contribution	--	1.0005** (0.0000073)
Previous Year Large Distribution	0.9032** (0.0277053)	.7942** (0.01339)
Constant	2.22E-07** (0.02894)	2.02E-12** (0.03781)

\*\* Denotes statistical significance at a 1 percent level.

## Endnotes

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<sup>1</sup> Employee Benefit Research Institute and Greenwald & Associates, "[The 2019 EBRI/Greenwald & Associates Consumer Engagement in Health Care Survey](#)" (Employee Benefit Research Institute, December 19, 2019).

<sup>2</sup> However, contributions to HSAs are allowed only if the employee is currently enrolled in an HDHP.

<sup>3</sup> Paul Fronstin and Jack VanDerhei, "Savings Medicare Beneficiaries Need for Health Expenses in 2019: Some Couples Could Need as Much as \$363,000," *EBRI Issue Brief*, no. 481 (Employee Benefit Research Institute, May 16, 2019).

<sup>4</sup> Paul Fronstin and Jake Spiegel, "Trends in Health Savings Account Balances, Contributions, Distributions, and Investments, 2011–2018: Estimates From the EBRI HSA Database," *EBRI Issue Brief*, no. 497 (Employee Benefit Research Institute, January 9, 2020).

<sup>5</sup> *Ibid.* Archer Medical Savings Accounts (MSAs) are included in accounts opened at least 15 years ago.

<sup>6</sup> According to a survey conducted by Fidelity, more than half of survey respondents did not know how HSAs differed from FSAs ([https://sponsor.fidelity.com/pspublic/pca/psw/public/library/engageemployees/misconceptions\\_hsa.html](https://sponsor.fidelity.com/pspublic/pca/psw/public/library/engageemployees/misconceptions_hsa.html)).

<sup>7</sup> Several recordkeeping organizations have provided de-identified data on HSA owners as of year-end 2018. Records are de-identified prior to inclusion in the database to conceal the identity of account owners, but the data are coded so that account owners can be tracked over time, a unique aspect of the EBRI HSA Database. At no time has any nonpublic personal information that is personally identifiable, such as Social Security numbers, been transferred to or shared with EBRI. A unique aspect of the de-identified coding is that the EBRI HSA Database can link the accounts of each individual with more than one account in the database while still preventing the identification of the individual, thus permitting the aggregation of the HSA balances of individuals with multiple accounts, within or across recordkeepers contributing to the database, providing a more complete picture of the number of individuals with accounts and their HSA balances. Moreover, the EBRI HSA Database contains information about the year of birth of account owners, individual and employer contributions, beginning- and end-of-year account balances, and the month and year the HSA was opened. A very small percentage (less than 0.5 percent) of accounts have an account-opening date prior to 2004. An HSA that was funded by amounts rolled over from an Archer Medical Savings Account (MSA) was considered established on the date the MSA was established.

<sup>8</sup> According to the Kaiser Family Foundation Employer Benefits Survey 2018, 23 percent of family-coverage plans had a deductible of at least \$6,000.

<sup>9</sup> Currently, an HDHP must have a minimum deductible of \$1,350 for single coverage and \$2,700 for family coverage and a maximum out-of-pocket limit of \$8,200 for single coverage and \$13,300 for family coverage. These amounts are indexed to inflation and updated yearly in the Internal Revenue Code. The EBRI HSA Database contains data on deductibles going back to 2010, when deductibles and out-of-pocket maximums were lower.

<sup>10</sup> It should be noted, though, that not all providers in our database report health plan deductibles. About 17.7 percent of accountholders in this dataset have reported deductibles.

<sup>11</sup> The logistic regression modeling the transitioned status for person  $i$  in period  $t$  is given below:

$$Pr(\text{Transitioned}_{it} = 1 | X_{it}, \beta, \alpha_i) = X'_{it}\beta + \alpha_i + \epsilon_{it}$$

where  $X_{it}$  is a vector of explanatory variables,  $\alpha_i$  is individual-level random effects, and  $\epsilon_{it}$  contains the error terms.