

# Overpaying and undersaving: Correlated mistakes in retirement saving and health insurance choices

Leora Friedberg,  
Department of Economics,  
University of Virginia  
TIAA Institute Fellow

Adam Leive,  
Batten School of Leadership  
and Public Policy,  
University of Virginia

## 1. Mistakes in employee benefit choices

Decisions about retirement saving and health plans are among the most important financial decisions people make in the workplace. Non-wage benefits have accounted for an increasing share of employee compensation in recent decades (Anand 2017), but the complexity of benefits choices and tax incentives makes it difficult to make optimal decisions or even follow rules of thumb that approximate optimal decisions. An extensive literature documents information frictions and behavioral biases in the choice of retirement saving that lead to sub-optimal choices (Madrian and Shea 2001, Benartzi and Thaler 2004, 2007, Choi, Laibson, and Madrian 2011). A separate literature shows that people often make mistakes in choosing health insurance plans (Handel 2013, Loewenstein et al. 2013, Handel and Kolstad 2015, Bhargava, Loewenstein, and Sydnor 2017, Ericson and Sydnor 2017).

To date, that research has proceeded on two independent tracks, each looking separately at mistakes in a single domain. In this paper, we unite the two strands by testing whether people who make mistakes in choosing a health insurance plan also make mistakes in retirement saving decisions. Understanding correlations in mistakes across domains may offer guidance on how to target assistance across multiple types of decisions, as well as how to evaluate the consequences of offering employee choices in benefits for different types of employees within firms.

We thank Wenqiang (Robin) Cai, Jiafeng Wu, and Yutong Chen for excellent research assistance. This project received funding from the TIAA Institute and the Wharton School's Pension Research Council/Boettner Center, and from the UVA Bankard Fund for Political Economy. The content is solely the responsibility of the authors and does not represent official views of the above-named institutions.

Any opinions expressed herein are those of the authors, and do not necessarily represent the views of TIAA, the TIAA Institute or any other organization with which the authors are affiliated.

We use four years of administrative data from a large university to study the frequency of mistakes across domains. In this setting, we can identify health insurance choices that are clear mistakes and that are large in magnitude for many, and perhaps most, employees. This involves failing to choose a low coverage health insurance plan, formulated as a high-deductible health savings account (HDHP/HSA) plan, as studied in Leive (2020). It is considerably cheaper than the other two options—and that a small minority of employees choose. Notably, we document that this formulation of plan offerings is common among peer universities and, among a broader set of firms, about half offer a plan that is a mistake for employees to choose (Liu and Sydnor 2018). We can also identify some retirement plan choices that are almost certainly mistakes, and some choices that are likely mistakes. The almost-certain mistake is not making voluntary contributions and therefore forgoing employer matching contributions, especially for the approximately half of employees who are offered a substantial match. The second likely mistake is saving below target levels recommended for consumption smoothing over the life cycle (Munnell, Golub-Sass, Webb 2011).

We find evidence that large mistakes made by many employees are correlated across domains.

- First, we document that mistakes are very common in health insurance choices.
  - A large majority picks one of two more expensive plans, even when, for all possible spending realizations, lower costs are more likely in the cheapest plan.
  - Employees who do not choose the low-cost plan overpay for health insurance by nearly \$1,700 in expectation.
- Second, we find similarly that choices that are likely to be mistakes are common in the retirement plan.
  - About one-third of employees forgo matching contributions, and a large majority saves below reasonable benchmarks.

- Both health insurance and retirement plan mistakes are higher as a fraction of salary for lower-earning employees.
- Third, we document a significant and substantial positive correlation in mistakes across both domains.
  - People who spend too much on health insurance are 23% more likely to forgo matching contributions than are people who choose the low-cost plan.
  - Employees with lower salaries and longer tenure have higher rates of shared mistakes, and employees who are younger and have shorter tenure and higher salaries are less likely to make mistakes in either domain.

## 2. Measuring mistakes in health insurance choices

The university that we study began to offer three health insurance options in 2014, when we begin our analysis. All three have been relatively generous, covering around 80% of total spending on average.<sup>1</sup> The major differences across plans are in premiums and, for the low-coverage HDHP/HSA plan, the high deductible together with the employer contribution to the HSA. For example, annual premiums were \$2,904, \$1,092, and \$360 for the high, medium, and low coverage plans in 2015, for employee plus spouse coverage. While the deductible was \$500, \$1,000, and \$4,000, respectively, the employer made an HSA contribution of \$1,500 that year for the low-coverage plan, unconditional on any contribution by employees. The annual out-of-pocket maximum was also similar across plans, at \$10,000, \$11,000, and \$12,000 in 2015 for the high, medium, and low coverage plans.

It is worth noting that the structure of the health insurance plans that we study are common in many peer institutions. We collected information on the public and private universities that the university we study has designated as its peer group. Fourteen out of 19 have an HDHP/HSA plan, and among those 14, nine make substantial contributions (of between \$600 and \$2,000

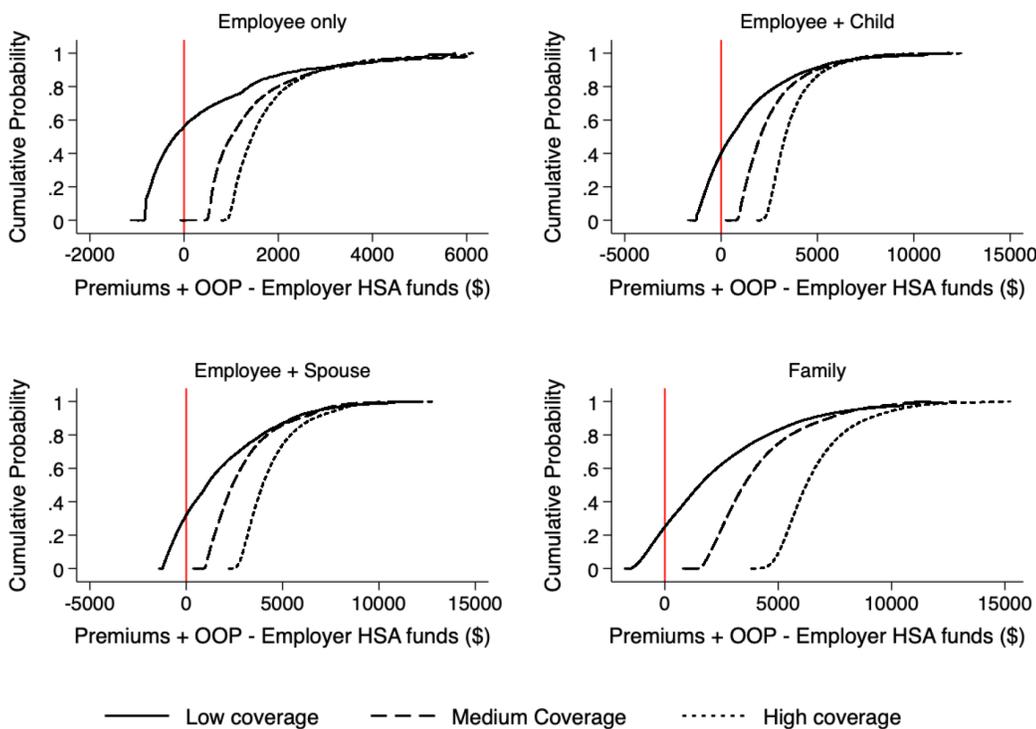
<sup>1</sup> On average, total health care spending equals \$9,879 and employer premiums equal \$8,080.

for family plans) to the HSA. Similarly, the premium difference between the low- and high-coverage plans is often quite large.

In order to evaluate employee choices, we use individual-level claims data to project likely out-of-pocket costs for employees under each plan. We find that, for over 99.8% of our sample, the low-coverage plan should be chosen because lower spending outcomes are always more likely than under the other two plans. To illustrate these concepts, Figure 1 presents expected cumulative health care costs for the three plans in 2017, separately by the four different types of family coverage. The differences in possible spending outcomes between the three plans is stark. The low-coverage plan almost always has the

lowest costs, followed by the medium coverage plan, and the high-coverage plan has the highest costs. Due to the employer's HSA contribution, employees often end up earning rather than spending money out-of-pocket on health insurance. Notably, the greatest spending differences are at low levels of health care costs; this may be contrary to people's intuition, as they may believe that, in case of catastrophic spending outcomes, they would pay much more under the low-coverage plan. But in fact, because the high deductible would get exhausted in this eventuality and the OOP maximum is similar under all three plans, spending outcomes are quite similar under all three plans when high health care costs are incurred.

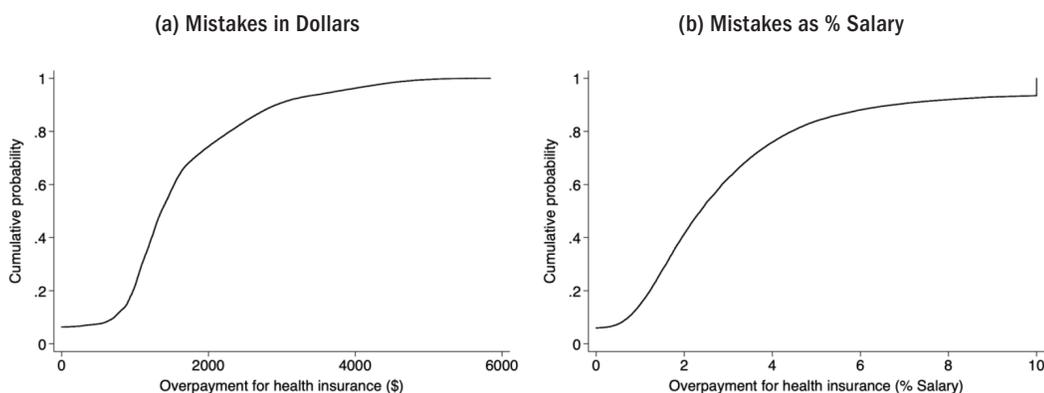
**Figure 1. Cumulative expected health care costs in 2017, in each health insurance plan**



Given these costs, mistakes in health insurance choices are quite large, since a majority picks the high-coverage plan and a small minority picks the low-coverage plan. Figure 2 shows the distribution of overpayments for health insurance, defining overpayments as the sum of premiums and expected out-of-pocket payments net of employer HSA contributions in the chosen plan relative

to the optimal plan. A full half of the sample makes mistakes costing at least \$1,350 a year, and 25% makes mistakes costing over \$2,000, in expectation (Figure 2a). The mistakes exceed 2% of pretax salary for over half of the sample (Figure 2b), 3% of pretax salary for a third, and 4% for a fifth.

**Figure 2. Cumulative overpayments for health insurance**



### 3. Measuring mistakes in retirement saving choices

The main retirement outcome we examine involves contributions to available defined contribution (DC) plans, which include the tax-deferred and Roth versions of the 403(b) and 457 plans, as described in Friedberg, Leive, and Cai (2020). Choosing how much to save has first-order implications for lifetime wealth and consumption.

As our narrow definition, we classify employees who forgo matching employer retirement contributions as making a mistake. We view failing to obtain the 50% match (for up to 4% of salary for some employees and for up to \$960 per year for others) as a mistake because people can immediately borrow against their voluntary contributions, and if they left employment immediately after getting the match, they would still come out ahead, given that the penalty for early withdrawals is 10%.

Our second, broader definition of a mistake is contributing less in voluntary saving than the amount of retirement saving needed to reach 15% of salary each year. This amount is often recommended as a rule of thumb online, even though Munnell, Golub-Sass, and Webb (2011) show that it is conservative for many individuals. It is reasonable to expect the assets to be saved in the employer retirement plan, moreover, because of the substantial tax preferences, low expenses, and easy loan terms, all of which overcome the penalty for early withdrawal well before age 59½. To reach this threshold, we count voluntary, mandatory, and matching contributions, along with the equivalent accounting of defined benefit (DB) plan accruals.

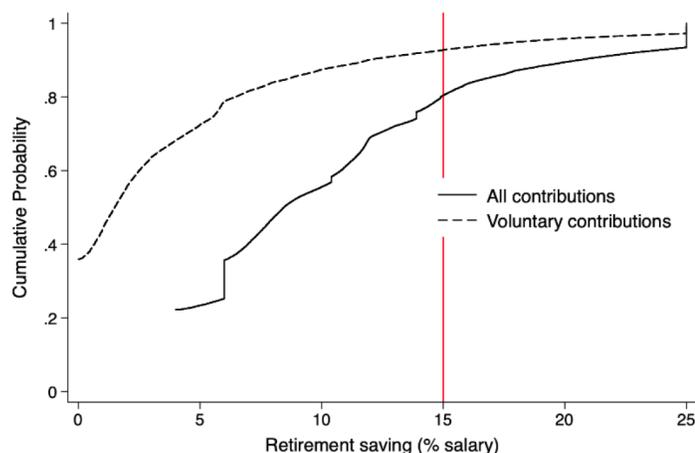
We demonstrate that mistakes in retirement saving are also common, as Figure 3 shows. Figure 3 displays voluntary contributions (dashed line), since our narrow definition of mistakes involves employees making no contributions and forgoing any match. It also displays

total contributions (solid line), since our broad definition of mistakes involves failing to meet the 15% total contribution benchmark.

Over one-third of employees across both divisions do not participate in any voluntary plan, thus forgoing

matching contributions. This share declined a little, from 37.4% in 2014 to 35.7% in 2017. In addition, over 80% of employees did not save enough in voluntary plans to reach a total of 15% of salary in retirement plans. This share declined from 82.1% in 2014 to 79.2% in 2017.

**Figure 3. Cumulative total contribution rates for retirement**



#### 4. The prevalence of mistakes across both domains

Figure 4 classifies four types of employees based on their choices in retirement and health insurance domains: (1) made mistakes in both domains; (2) made mistakes in health insurance only; (3) made mistakes in retirement only; (4) did not make mistakes in either domain. We separate these results by our two definitions of mistakes. In considering our narrow

definition of mistakes for retirement saving (Figure 4a), the most common type are those who make mistakes only in the health insurance domain (59%). The least common type are those who only make mistakes in the retirement domain (2%). Just over one-third of employees make mistakes in both domains, while 5% do not make mistakes in either domain. Since choosing the low-coverage health plan is rare, most employees are classified as two of the four types.

**Figure 4. Proportions of types based on mistakes in health and retirement choices**

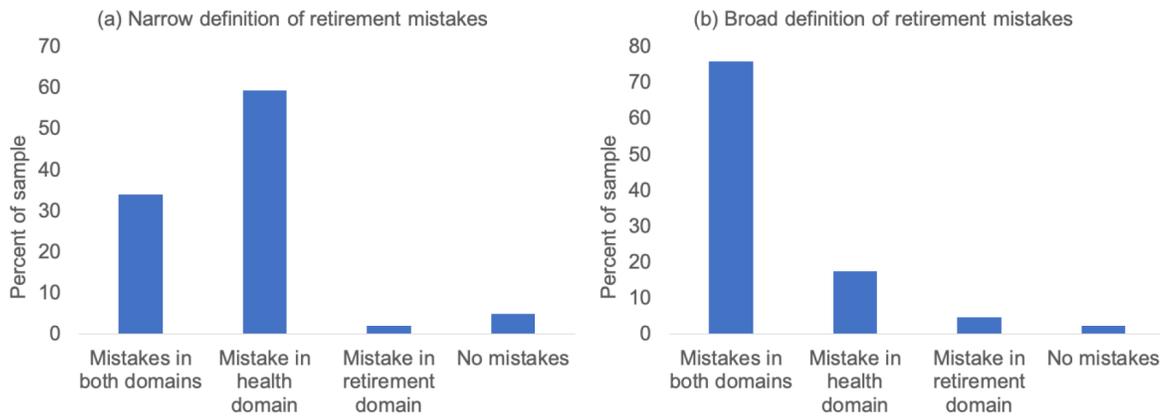


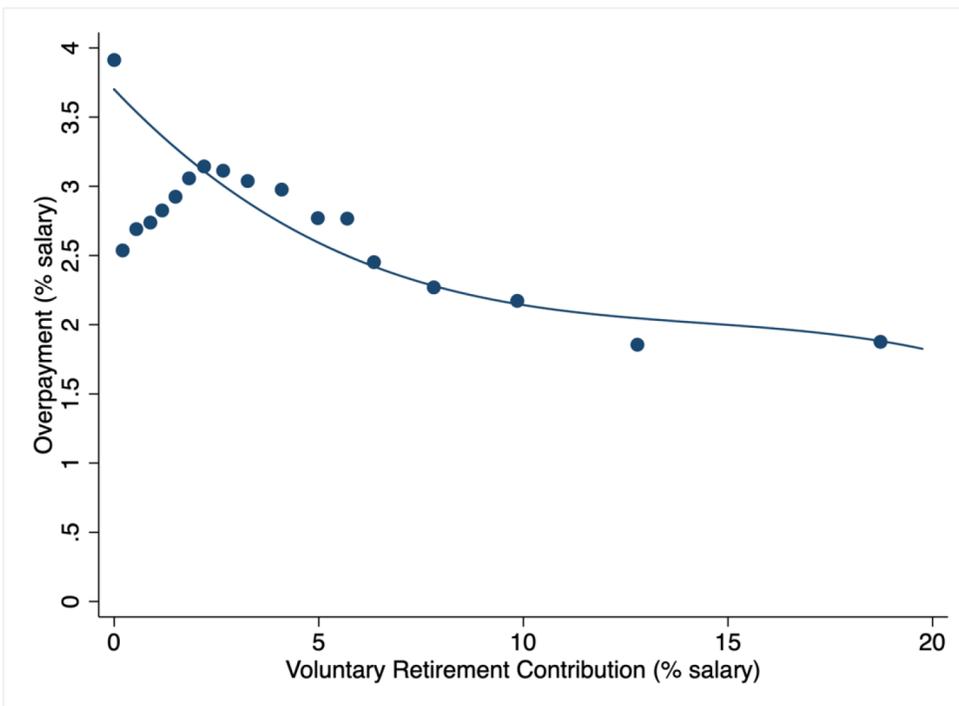
Figure 4b presents the distribution of types based on the broader definition of mistakes in retirement saving. The most common type are now those who make mistakes in both domains (76%). Those who make mistakes only in the health plan choice amount to 17%. Slightly below 5% of employees choose the low-coverage plan but save below 15% of salary for retirement. Only 2.1% do not err in either choice.

We find a strong positive correlation in mistakes across domains. Not choosing the low-coverage plan is associated with a 6.9 percentage point higher probability of not contributing anything to retirement plans (equal to a 23% increase from the baseline rate of 29.6% of those who choose the low-coverage plan). Regarding

our broader definition of retirement mistakes, not choosing the low-coverage plan is associated with a 13.1 percentage point higher probability of failing to save 15% of salary for retirement (equal to a 19.2% increase from the control mean of 68.1%). Both correlations are highly statistically significant.

To examine the magnitudes of the decision errors, Figure 5 presents a scatterplot of overpayments for health insurance (where higher is a bigger mistake) against voluntary retirement contributions (where lower is a bigger mistake), both expressed as a fraction of salary. The negative relationship between them is clear.

**Figure 5. Overpayment for health insurance vs. voluntary retirement contributions**



When considering the characteristics of employees in each of the four groups, we establish several patterns. Compared to lowest-salaried workers, higher salaries are associated with a significantly greater share of ‘No mistake’ types and a smaller share of ‘mistake in both’ or ‘mistake in retirement only’ types. Higher-salaried employees are significantly more likely to make a mistake only in health insurance, since a greater proportion of high-salaried employees choose the high-coverage plan. Age follows similar pattern to income, with differences more pronounced the older that employees are. Conditional on age and income, employment tenure is negatively associated with not making any mistakes and positively associated with mistakes in both domains. The finding for tenure may reflect the role of inertia.<sup>2</sup>

## 5. Discussion

The upshot of correlated mistakes that we observe is that it creates the scope for improvements on both dimensions, particularly concentrated at the lower end of salary distribution. With many employees overpaying for health insurance while undersaving for retirement, it creates an opportunity to shift resources and improve employee well-being. Consider the finding that employees who make zero voluntary retirement contributions make, on average, errors in health insurance choices *worth almost 4.0%* of their salary. In other words, they could make substantial retirement plan contributions and, in the medical division, get a 50% match if they used their savings from choosing the low-coverage plan to stock their retirement accounts. Similarly, those making

<sup>2</sup> It is often observed that existing employees continue to make the same choices as in past years, even if those plans become mistakes (Handel 2013). This behavior might be driven by several factors, such as switching costs, search costs, or behavioral factors.

retirement contributions of 5% or less still make health insurance mistakes costing over 2.5% of salary and sometimes above 3% of salary. Finally, those with fairly high voluntary contributions make errors around 2.0% of salary. Policies that can steer consumers to use premium savings from lower health insurance payments to fund retirement accounts have the potential to produce sizable welfare gains to workers.

It is worth emphasizing that many employers, including the one we study, provide copious information designed to assist employees in making choices about both health insurance and retirement plan accounts.<sup>3</sup> Yet considerable research, for example related to consumer protection (Bubb and Pildes 2014), demonstrates that simply providing information does not help solve the problem. Our results suggest that employers explore targeted assistance and decision aids for particular subsets of employees.

A natural question is what mechanisms explain these choice patterns. In terms of neoclassical explanations, neither rational inattention, by which employees choose not to invest the effort to avoid mistakes, nor liquidity constraints seem fully plausible. Our finding that longer-tenured employees are more likely to make mistakes in both domains and less likely to make correct choices in each suggests a partial role for inertia. It does not explain the mistaken choices of many new employees, however. A number of other information frictions,

behavioral biases, or lack of financial literacy (Lusardi and Mitchell 2014) could, in principle, explain these choices. We view survey evidence (e.g., Handel and Kolstad 2015) as an important direction to pursue to better understand the micro-foundations of such patterns.

Our findings highlight the importance of finding ways to target assistance to employees prone to mistakes, and to develop other strategies to improve consumer decision making in complex financial choices. The capacity for well-targeted policies to steer people toward better choices (e.g., through interventions during open enrollment each year) offers an opportunity to improve financial outcomes over time. Our results suggest that the same people need to be targeted with assistance across multiple types of decisions, perhaps emphasizing a mental accounting approach (Thaler 1985, 1990) in which benefits choices are viewed jointly, so that dollars saved in one domain might be readily shifted to another.

How such assistance is best structured is an important implementation question for employers. For example, one concern may be that people could be flooded with too much information if this targeting is done independently—thus failing to solve, and perhaps even compounding, the initial problems in each domain. Studying which policies work best, and how such policies influence premiums and saving behavior in the medium to long term, is important for future research.

<sup>3</sup> For example, employers often provide side-by-side comparisons of the main features of health insurance and retirement plans, and instructional videos on plan rules, tax benefits, and other plan features to aid decision-making.

## References

- Benartzi, S., Thaler, R. 2007. "Heuristics and Biases in Retirement Savings Behavior." *Journal of Economic Perspectives*, 21(3): 81-104.
- Bhargava, S., Loewenstein, G., Sydnor J., 2017, "Choose to Lose: Health Plan Choices from a Menu with Dominated Options." *Quarterly Journal of Economics*, Vol 132:3, 1319-1372.
- Bubb, R., and Pildes, R. 2014. "How Behavioral Economics Trims Its Sails and Why." *Harvard Law Review*, Vol. 127, 1593-1678.
- Choi, J., Laibson, D., Madrian, B. 2011. "\$100 Bills on the Sidewalk: Suboptimal Investment in 401(k) Plans." *Review of Economic Statistics*, 93(3): 748-763.
- Ericson, K., Sydnor, J. 2017. "The Questionable Value of Having a Choice of Levels of Health Insurance Coverage." *Journal of Economic Perspectives*, 31(4)51-72.
- Ericson, K., Sydnor, J. 2018. "Liquidity Constraints and the Value of Insurance." NBER Working Paper 24993.
- Friedberg, L., Leive, A., Cai, R. 2020. "Do Mandatory Retirement Contributions Crowd Out Voluntary Contributions?" TIAA Institute Report. *Research Dialogue*: Issue no. 161.
- Handel, B. 2013. "Adverse Selection and Inertia in Health Insurance Markets: When Nudging Hurts." *American Economic Review*, 103(7): 2643-2682.
- Handel, B., Kolstad, J. 2015. "Health Insurance for "Humans": Information Frictions, Plan Choice, and Consumer Welfare." *American Economic Review*, 105(8): 2449-2500.
- Leive, A. 2020. "Health Insurance Design Meets Saving Incentives: Consumer Responses Complex Contracts" Mimeo.
- Liu, C., Sydnor, J. 2018. "Dominated Options in Health-Insurance Plans." NBER Working Paper 24392.
- Loewenstein, G., Friedman, J.F., McGill, B., Ahmad, S., Beshears, J., Choi, J., Kolstad, J.,
- Laibson, D., Madrian, B., List, J., & Volpp, K.G. 2013. "Consumer Misunderstanding of Health Insurance." *Journal of Health Economics*, 32(5):850– 862.
- Lusardi, A., Michell, O. 2014. "The Economic Importance of Financial Literacy: Theory and Evidence." *Journal of Economic Literature*, 52(1): 5-44.
- Madrian, B., Shea, D. 2001a. "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior." *Quarterly Journal of Economics*, 116(4): 1149 –1525.
- Munnell, A., Golub-Sass, F., Webb, A. 2011. "How Much to Save for a Secure Retirement." Center for Retirement Research at Boston College. Issue in Brief. Number 11-13.
- Thaler, R. 1985. "Mental Accounting and Consumer Choice." *Marketing Science*, 4(3): 199-214.
- Thaler, R. 1990. "Anomalies: Saving, Fungibility, and Mental Accounts." *Journal of Economic Perspectives*, 4(1): 193-205.

## About the authors

**Leora Friedberg** is an Associate Professor of Economics and Public Policy at the University of Virginia. She is also Co-Chair of the Retirement Income Institute, and is an affiliated researcher of the Michigan Retirement and Disability Research Center and a Research Fellow of the TIAA Institute. She is a member of the Editorial Board of the Journal of Pension Economics and Finance and previously served on the Board of Trustees of the Southern Economic Association and as a member of the Retirement Security Advisory Panel for the U.S. Government Accountability Office.

Friedberg's fields of interest are public and labor economics. Her research focuses on retirement and saving behavior of older Americans, including the Social Security earnings test, the design of employer pension benefits, and the interaction between Medicaid long-term care benefits and household saving and insurance decisions. Additional research studies marriage and divorce in response to bargaining theory, family law, and the U.S. tax code. Her research has been funded by the National Institute on Aging, the U.S. Social Security Administration, and the TIAA Institute.

Friedberg received her Ph.D. in Economics from the Massachusetts Institute of Technology.

**Adam Leive** is an Assistant Professor of Public Policy and Economics at the University of Virginia. In 2019-2020, he is also a Visiting Scholar in the Department of Health Policy and Management at Columbia University's Mailman School of Public Health. Leive's research interests are in health, public, and labor economics. His work studies consumer decision-making in health insurance and retirement saving, with a focus on Health Savings Accounts. Additional research projects study the labor market effects of means-tested benefits and social insurance programs. His research has been funded by the National Science Foundation, National Institutes of Health, and J-PAL.

Leive earned his Ph.D. from the University of Pennsylvania's Wharton School and his B.A. from Princeton University's Woodrow Wilson School.