# for all

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THE MAGAZINE OF THE OPPORTUNITY & INCLUSIVE GROWTH INSTITUTE




# SAVING FOR RETIREMENT IN AMERICA


FEDERAL RESERVE BANK OF MINNEAPOLIS

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The magazine of the Opportunity & Inclusive Growth Institute

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FROM THE DIRECTOR

BY ABIGAIL WOZNIAK

# Opportunity, inclusion, and the Fed's mission

Since 2017, the Opportunity & Inclusive Growth Institute has worked to deepen understanding of how opportunity arises and where the benefits of economic growth go. These questions are important to Americans. However, it's reasonable to ask, Why are they important to the Fed?

To answer that, consider the key words in our name: *opportunity* and *inclusive growth*.

Maximum, sustainable employment—or full employment—is one of the dual goals Congress set for the Fed in law. It is also a form of inclusive growth. This mandate instructs the Fed to allow the economy to grow in order to keep as many people working as possible, moderating only when that expansion happens so fast that there is a danger of rapid price increases.

Full employment is also a vehicle for opportunity. The historical record shows that in testimony to Congress in the 1970s, the word "opportunity" is used to describe the chance to improve one's economic situation through employment. The idea is that jobs should enable workers to raise living standards for themselves and their families over time.

Higher standards of living in turn mean buying more goods and services and making investments of all kinds. This brings us full circle to the other part of the dual mandate. The additional economic activity driven by full employment potentially pushes up prices, which necessitates further Fed action. It's worth noting that these dual forces always exist in the economy to some degree. The dual mandate simply instructs the Fed to consider them.

Balancing these two very desirable but sometimes contradictory goals is a task the Fed is privileged to do on behalf of all Americans. The Institute contributes to this mission by supporting rigorous investigation into how opportunity works and where growth goes. No single research paper can answer these questions once and for all. But with careful study and attention to these topics, the Institute helps monetary policymakers and others understand how to better support opportunity and inclusive growth in an ever-changing economic environment.

We will continue to share lessons from our research widely—with our Fed System colleagues through our conferences and other communications, with a global group of scholars through our Visiting Scholars program, and with you, our broad set of *For All* readers.

What questions do you think are most important to answer on our way to understanding opportunity and inclusive growth in the U.S.? I invite you to share ideas and questions with us at Mpls.ForAllEditor@mpls.frb.org. ★

UPDATE

# Build community, accelerate knowledge

## Institute research conferences foster connections with in-person gatherings

**BY LISA CAMNER MCKAY**

The fifth annual Institute Research Conference will be held in Minneapolis on November 13, 2025. The keynote speaker is David Card, the 2021 winner of the Nobel prize in economics for his pioneering work using natural experiments to identify and measure causal effects in labor markets.

The goal of the Institute Research Conference is to showcase research related to the Institute's main mission areas. While this could be accomplished without gathering in person, "we have a second goal in mind," Institute Director Abigail Wozniak said in her opening remarks at last year's event. "We want to accelerate the knowledge-building around how to foster opportunity and inclusive growth. To do that, we need to build more connections, and faster, across scholars who produce and use work under the big tent of those topics."

Last year's conference successfully served both goals. The in-person gathering fostered meaningful connections among the 100-plus Fed and academic researchers, current and past visiting scholars, and emerging scholars in attendance. The presentations looked deeply at a range of topics that have implications for economic opportunity and growth in local communities.

For instance, Atlanta Fed economist Veronika Penciakova's presentation drew on the observation that levels of entrepreneurial activity vary across the country. To better understand potential sources of this variation, she and her co-authors distinguish between two stages of business formation: the "idea" phase and the "transition to business" phase. Their analysis identifies a number of local characteristics that are associated with each phase. For instance, the share of the local population that is Black or that is foreign-born is associated with more ideas but fewer transitions per capita, pointing to potential frictions in the transition process.

Another paper, presented by Atlanta Fed economist David Wiczer and co-authored by Institute economist Amanda Michaud, looks at geographic differences in the take-up of Social Security Disability Insurance (SSDI), which makes up about 10 percent of the Social Security budget. The analysis shows that places where people apply for SSDI and are awarded benefits at high rates are associated with low average income, poor health outcomes, and a low cost of living.

Burcu Duygan-Bump (Board of Governors), Lucie Lebeau (Federal Reserve Bank of Dallas), Michael Keane (Johns Hopkins University), and Pinghui Wu (Federal Reserve Bank of Boston) at the 2023 Institute Research Conference.

The three other papers presented consider the variation in the quality and accessibility of medical services, bonus pay structures and their impact on the business cycle, and retirement savings incentives (discussed in "Saving for retirement in America," page 6).

In his keynote address, Atlanta Fed President Raphael Bostic spoke about another source of economic opportunity in communities: sustainable, maximum employment. The Fed has a dual mandate to promote price stability and maximum employment. "A household's economic mobility and resilience begins with a job," Bostic said. "And it continues and strengthens when a householder keeps a job." One way to achieve that, Bostic said, is by investing in human capital, so that not only can everyone who wants a job find a job, but they can find one that "allows them to use their talents and training to the fullest." ★

The research community at the Institute includes visiting scholars, consultants, economists, research analysts, and research assistants. These scholars bring varied backgrounds, interests, and expertise to research that deepens our understanding of economic opportunity and inclusion as well as policies that work to improve both.

# Remembering Natalie Gubbay

Natalie Gubbay first came to the Institute to work as a research assistant in 2022. On paper, she was a boon to our mission: a stand-out Colorado College economics major, a Fulbright scholar, and a seasoned data analyst. How lucky that we could attract someone with the well-honed skills to advance some of our most important ongoing projects! In fact, we were much luckier than we realized to not only work with Natalie, but to come to know her.

Natalie did, of course, make major contributions to the Institute's work. As the lead research assistant on the Income Distributions and Dynamics in America (IDDA) project, she spent day after day in a restricted Census Bureau data center planning and executing millions of calculations. Natalie's scrutiny and wisdom helped us settle on the right choices, which is why she is a formal co-author on the IDDA dataset, the project's first academic paper, a recent *For All* feature, and several articles analyzing IDDA statistics. She also stepped into the Institute's evaluation of Minneapolis' basic income program with an eye for small but pivotal details and for the broader research landscape in which the project is situated. Neither effort would have been possible without Natalie.

Natalie with fellow Minneapolis Fed research assistants in the summer of 2024.

Adding to the remarkability of Natalie's work was the inclusiveness with which she accomplished it. Natalie mastered the nuances of large administrative data even as she trained, welcomed, and nurtured new research assistants to the Institute and the IDDA project. She was a creative and energetic force for inclusion in the Research Division, and she solidified connections between the community of research assistants and visiting scholars. She consumed and critiqued research with a unique combination of boldness, rigor, and solidly held values of openness, fairness, and justice.

Natalie also put together a research proposal of her own. Her application for graduate school funding from the National Science Foundation laid out a plan to study how laws that strengthen rights for tenants could affect their economic lives more generally. This work drew from her own history: She had been part of a group of tenants who collectively sought to purchase their building. Natalie's beautifully crafted and well-argued piece also reflected her growing expertise with the powerful but complex data she used with IDDA and statistical methods gleaned during her time at the Institute. It was the work of a thoughtful researcher confident in her values and growing into her abilities.

On October 23, 2024, Natalie was killed by an allegedly drunken driver. Her loss rippled immediately through the Institute, the Minneapolis Fed, and all the communities she touched and built. We do not just miss Natalie because of her intellect, we miss the compassionate and wise person who used that intellect well and for good.

*—Andrew Goodman-Bacon*

**CHI HYUN KIM**
**Postdoctoral Researcher, University of Bonn**

## HOW HISTORY SHAPES OUR RELATIONSHIP TO RISK

Culture, history, uncertainty—all affect how we invest our money. How we invest determines our returns. And those returns can expand or erode the wealth gaps in society.

This chain runs though the work of Institute visiting scholar Chi Hyun Kim, whose globe-spanning childhood inspires her research at the intersection of culture, history, and finance. In her birth country of South Korea, for example, Kim says investors have a taste for speculative investments like Bitcoin. But in Germany, her home from age 15, Kim's research shows how a national investing "trauma"—the crash of shares of Deutsche Telekom that had been heavily touted to the public—still makes investors wary of stocks a quarter century later.

"When I started my Ph.D., I was trying to understand the role of heterogeneity and transmission mechanisms of monetary policy," Kim said. This led to "thinking about heterogeneous portfolio choices—people making different decisions based on their socioeconomic backgrounds." An early project looked at women and men, finding that women are more reluctant to enter the stock market after a monetary contraction.

During her time at the Institute, Kim launched her latest research on the sources of investment decisions: Do regional differences in housing markets—say, the relative stability of Minneapolis versus the volatility of Phoenix—affect investors' risk appetites?

Kim also continues to add to her stream of research into the Black-White wealth gap in the U.S. Her latest Institute working paper explores the kind of investing puzzle that fascinates her: Why are Black Americans seemingly underinvested in stocks?

"The stock market has been flourishing since the 1980s, and Black households have been missing out on capital gains," Kim said. Kim and her co-authors find Black investors make rational decisions to take less risk in the stock market given their higher level of risk in the labor market. "You have a high exposure to risk of losing your job and your wealth at the same time," Kim said. One implication: Until we address underlying labor market discrepancies, "just increasing financial inclusion is not enough."

The paper extends Kim's ongoing collaboration with co-authors to assemble historical data on the racial wealth gap. They have unveiled the narrowing of the gap after the Civil War, the stalled progress since the 1970s, and how we still reckon today with the enormous gap at the end of slavery.

They are now at work on their fourth paper together. "Since we are covering 150 years of data," Kim said, "we've had so many ideas we want to address."

*—Jeff Horwich*

**LUKAS MANN**
**Assistant Professor, W. P. Carey School of Business, Arizona State University (Fall 2025)**

## MESSY REALITIES, MACROECONOMIC CONSEQUENCES

Institute visitor Lukas Mann entered college in 2014 with memories of the Great Recession still fresh. Workers in his hometown of Konstanz, Germany, did not experience severe consequences from the global economic meltdown, but Mann saw that workers elsewhere clearly had—and still were. Why?

Mann originally planned to study two areas related to why the Great Recession occurred: macroeconomics and finance. But the methods, he said, "were too abstract, and not very realistic." During a year-long visit to the Berkeley economics department, Mann was drawn to research that was more relevant to the consequences of the Great Recession. Many workers lost jobs and faced a rocky search for their next stable employment. Real-life job transitions can be much messier than economic models often presume.

So Mann has pursued research that develops realistic models of how workers search for jobs. One paper builds a model in which people slowly learn how in demand their skills are in the labor market. This learning process can explain many labor market patterns, such as the fact that people often misperceive their likelihood of finding a new job, which traditional theories do not account for. In Mann's model, an individual who is still learning about the potential success of her current job search might accept a job that underpays her without knowing it.

Another paper adds a new level of realism to analyses of how artificial intelligence (AI) might affect workers by acknowledging that workers have a wide range of useful skills. A coder who is also an effective communicator might pivot to a position managing teams if AI automates her job, while her co-worker without those communication skills may not be so resilient. Mann's work not only models these diverse skills but shows how to measure them.

Mann's recent work turns back toward his original question about Konstanz: Why are some regions more productive than others? This is a hard question because a region's earnings come from both the kinds of firms that operate there and the kinds of workers they employ. Mann develops methods to separate the interrelated location choices of firms and workers, finding that regional prosperity comes mainly from the location choices of companies rather than workers. The closer alignment between theory and reality creates insights about inequality and guidance about how to address it.

*—Andrew Goodman-Bacon*

## KAREN KOPECKY

**Economic and Policy Advisor, Federal Reserve Bank of Cleveland**

# UNPACKING DYSFUNCTION IN LONG-TERM CARE INSURANCE

Nursing homes are prohibitively expensive, to the point that many Americans 65 and over end up spending down their assets and becoming impoverished enough to qualify for government insurance. Yet, 90 percent of older adults don't buy long-term care insurance (LTCI) to avoid this risk.

Economist Karen Kopecky and her collaborators sought to explain this puzzle in a recent paper. What they found, she said, was a "dysfunctional" market with high premiums, limited coverage, and mismatched incentives.

Kopecky, the Institute's System affiliate from the Cleveland Fed, has long been interested in health inequality, such as how some people are more vulnerable to addiction or age-related diseases. "Economists often understate the importance of health inequality for economic outcomes," she said. "That's part of the reason I work on it."

These economic outcomes affect not just people with health vulnerabilities; they can shape the labor supply of those around them as well. For example, older people requiring long-term care often receive it from relatives, such as adult children, who may have to reduce working hours or forego careers.

Health inequality is present in the long-term care market, too. Care is expensive, and insurers have a hard time assessing how much care policyholders will need. Kopecky has shown that insurers respond by charging high premiums, providing only partial coverage, and denying coverage to the applicants with the worst health vulnerabilities.

Dysfunction in the LTCI market especially hurts middle-income older adults. Those with lower incomes already qualify for Medicaid, the government's health insurance program, while those with higher incomes can afford to self-insure. But high premiums and limited coverage cause many middle-income older adults to risk impoverishment from care expenses.

A potentially useful policy, Kopecky found, is to ease Medicaid asset requirements for those paying for LTCI to make that option more attractive. Older people benefit by not having to spend down as much of their assets to qualify for Medicaid. Insurers benefit from more customers. And the government benefits by not being the sole payer for Medicaid recipients.

"A lot of people think economics is just about economic indicators, or something along those lines. But economics is incredibly broad," Kopecky said.

*—Tu-Uyen Tran*

> **"Economists often understate the importance of health inequality for economic outcomes."**
>
> —Karen Kopecky

### 2024–25 Institute Visiting Scholars

The Institute annually invites selected scholars from many disciplines to pursue research while in residence at the Minneapolis Fed.

**Orazio Attanasio**
Cowles Professor of Economics
Yale University

**Kristy Buzard**
Associate Professor of Economics
Syracuse University

**Pauline Carry**
Assistant Professor
Princeton University

**Taha Choukhmane**
Assistant Professor of Finance
Massachusetts Institute of Technology
Sloan School of Management

**Angela Crema**
Postdoctoral Associate
Broad Center at Yale School of Management

**Eduardo Dávila**
Assistant Professor of Economics
Yale University

**Laura Gee**
Associate Professor of Economics
Tufts University

**Matthew Harvey**
Assistant Professor of Economics
University of Washington Tacoma

**Chi Hyun Kim**
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**Yewande Olapade**
Economist in Supervision, Regulation,
and Credit
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**Fatou Thioune**
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Dickinson College

**Brenden Timpe**
Assistant Professor of Economics
University of Nebraska–Lincoln

# SAVING FOR RETIREMENT IN AMERICA

WHAT DOES RESEARCH TELL US ABOUT THE COMPLEX LANDSCAPE OF INCENTIVES, PENALTIES, AND NUDGES THAT SHAPE HOW AMERICANS SAVE?

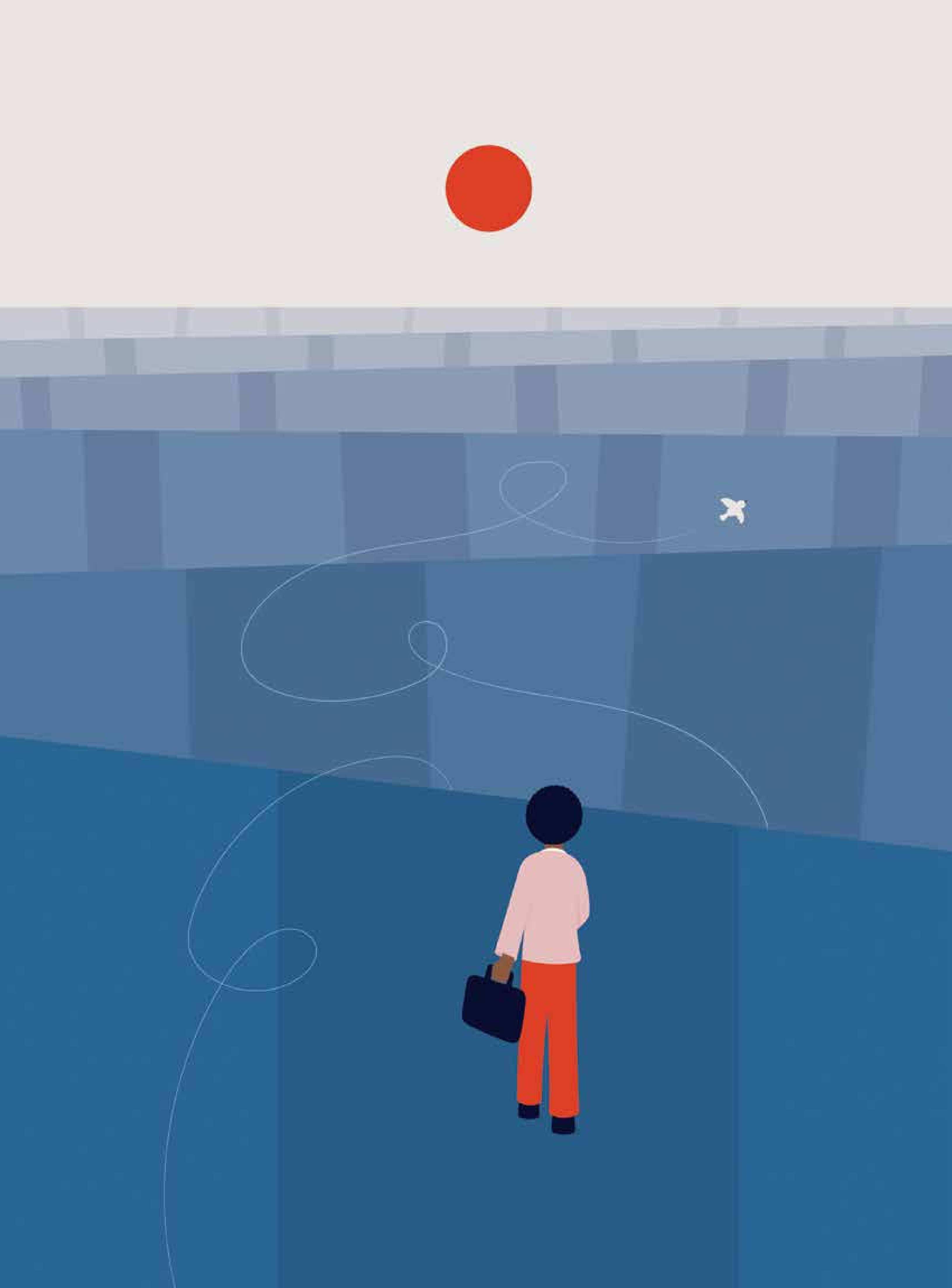
**By Lisa Camner McKay**

ILLUSTRATIONS BY FRANCESCO CICCOLELLA

In 2025, a record-setting 4.2 million Americans will turn 65, the conventional age of retirement. It's encouraging, then, that "retirement savings is probably behavioral economists' greatest success story," according to Nobel-winning economist Richard Thaler. Every year, employees and employers deposit $500 billion into employer-sponsored retirement accounts, and recent analysis has found that matches from employers who offer them have become more generous over time. The total value of assets held in all types of retirement accounts came to $37.8 trillion in 2022.

And yet, Americans aren't feeling particularly optimistic. According to a recent Gallup poll, only 45 percent of non-retirees expect to be financially comfortable in retirement.

That number starts to make sense in the context of who has retirement savings. Economists at Boston College's Center for Retirement Research estimate that 40 percent of the U.S. working population aren't saving enough to maintain their lifestyle after they stop working. And other research estimates that 33 percent of private-sector workers do not have access to an employer-sponsored retirement account at all.



**“A POLICY THAT INCREASES SAVING BY 10 PERCENT MAY BE GOOD OR MAY BE BAD. What really matters is, *whose* contribution did you increase? Did you increase the contribution of people who are under-saving for retirement? Or did you increase the contribution of people who save a lot already?”**

TAHA CHOUKHMANE

So there may be good reason that a substantial number of American workers feel anxious. Not surprisingly, the $500 billion flowing into retirement accounts isn't distributed evenly across the workforce. Hispanic workers, workers with less formal education, workers at smaller employers, and workers with lower incomes are all less likely to be covered by a workplace retirement plan, according to analysis by Brookings economist John Sabelhaus.

People may also be understandably overwhelmed when confronted with the complex set of tax incentives, investment vehicles, penalties, and fees that characterize the retirement savings landscape in the U.S. “There are so many rules and so much variation in retirement plans,” said MIT economist and Institute visiting scholar Taha Choukhmane, who studies household finances and behavioral economics. “And the stakes are incredibly high. People are making decisions about thousands of dollars, and they need to adjust those decisions over time as their situation changes.”

No one doubts the benefits of building a nest egg. But who should save more and how to help them do so is murkier. How do the carrots and sticks in the system affect savings? Whose savings do they affect? And could simple changes meaningfully affect the number of Americans who feel prepared to live well in retirement?

## Signing people up to save

Traditionally, economics assumes rational decision-makers optimize their choices, no matter how those choices are presented. Behavioral economics offers a more realistic view: People can be “nudged” to change their behavior by the way choices are offered or framed, even when the choices themselves are not restricted and no incentives are offered.

In the context of workplace retirement savings, one celebrated nudge is changing the default participation option: New hires are automatically enrolled in a plan unless they actively choose to opt out, rather than having to actively opt in.

The research on automatic enrollment has documented impressive results. A recent meta-analysis of 19 different studies by Harvard Business School economist John Beshears and his colleagues found that automatic enrollment increased plan participation rates by 26 to 91 percentage points after one year. “There is a growing body of evidence that workers overwhelmingly perceive themselves as saving too little and welcome mechanisms that help them save more,” the authors of one of the early studies on automatic enrollment concluded.

Both firms and government took notice. When these studies first started appearing in the early 2000s, around 2 to 3 percent of firms auto-enrolled their workers in retirement savings. By 2017, the share was 41 percent. The government also stepped in with the SECURE Act 2.0 of 2022, which passed both the House and Senate by large margins. Among its provisions to help Americans contribute to retirement accounts is a requirement that most 401(k) plans established after 2022 auto-enroll new employees and auto-escalate their contribution rate beginning in 2025.

But that initial enthusiasm has recently been tempered, as new research points to more modest conclusions about the effect of automatic enrollment over the long term. Ultimately, plan participation matters only to the extent it increases savings at retirement. In a recent paper titled “Smaller than We Thought? The Effect of Automatic Savings Policies,” Beshears and his co-authors analyze the long-term outcomes of automatic enrollment and escalation. They estimate the average effect of being introduced to auto-enrollment and auto-escalation simultaneously is equivalent to a 0.8 percentage point increase in a person's saving rate over their working years (that is, an extra $8 of savings for every $1,000 of income)—a positive amount, but not as much as previously believed.

“There's nothing to take away from the initial research's

findings that the short-run impact from automatic enrollment or automatic escalation is very large," Beshears said. "What we're increasingly accounting for in a lot of subsequent research, including my own, is that there are other elements of the decision-making environment, which might be related to later points in time, more distant from the moment when you're automatically enrolled, or related to other parts of households' vast set of financial decisions that they're engaging in on a regular basis."

So what are the behaviors that undermine the initial impact of automatic enrollment and escalation?

## For whom savings accumulate

Accumulating savings over the long term generally requires adding to savings, allowing the employer's matching contributions to vest, earning a good return, and avoiding early withdrawals. But research has identified places in this process that are leaky.

To start, over time, more and more employees opt out of subsequent automatic escalation, Beshears and his co-authors have found. This action limits their savings accumulation.

Perhaps the biggest issue, however, is that many people leave their jobs after a relatively short tenure. As a result, their employer's matching contributions may not have fully vested. In addition, leaving a job is a moment when a large fraction of balances (42 percent in Beshears' sample) are withdrawn from 401(k) accounts, either because individuals choose to make withdrawals or because their employer compels them to, a practice allowed by law for account balances under $1,000. "Once you incorporate the fact that employees leave employers pretty frequently, that has a number of important implications for how automatic policies impact their retirement savings outcomes," Beshears said.

Choukhmane's research on the long-term effects of automatic savings policies finds similarly modest results. He also finds no evidence that auto-enrollment creates long-lasting saving habits: When a person moves from an employer with automatic enrollment to one without, they are not more likely to opt in. In fact, they are *less* likely to contribute than someone whose previous employer did not auto-enroll them.

But average effects can mask important variation across groups. "A policy that increases saving by 10 percent may be good or may be bad," Choukhmane said. "What really matters is, *whose* contribution did you increase? Did you increase the contribution of people who are under-saving for retirement? Or did you increase the contribution of people who save a lot already?"

In this case, economists have found that automatic savings policies do create longer-lasting gains for a group that might

mutual funds. That wasn't the case before, and it's not the case in all countries. And I think that's really a success." The U.S. stock market has enjoyed a high rate of return over the past 50 years, making it a key driver of wealth accumulation.

While employer automatic savings policies might not be enough to reshape Americans' financial security at retirement, they don't hurt—and they might help groups that have low savings rates, even though the bulk of employer contribution dollars go to the top.

### Who benefits from retirement savings incentives?

The U.S. government does more than nudge people to save, however. In 2019, the exclusions from income and payroll taxes for pensions and retirement accounts totaled around $275 billion, an amount equivalent to 8 percent of federal tax revenues that fiscal year. Add in the retirement contributions from employers, and about 1.5 percent of U.S. GDP is dedicated to incentivizing contributions to retirement savings plans.

Choukhmane has been studying who receives these retirement savings incentives. Intuitively, those who make the most are likely to have the ability to save the most, which means they will receive the most employer dollars. The data back this up: In an analysis of 1,300 employer-sponsored plans, Choukhmane and his co-authors found that 44 percent of employer-contributed dollars went to the top 20 percent of earners.

Choukhmane has also studied if there are differences in retirement contributions among employees who are otherwise similar to each other. In research that Choukhmane presented at the 2024 Institute Research Conference, he and his co-authors document differences in retirement contributions by race and by parental income even among employees

benefit most: Those at the bottom of the income distribution. In a study of the thrift savings plan for federal employees, Justin Falk and Nadia Karamcheva conclude, "Both matching and automatic enrollment increased participation and contribution rates the most for workers least likely to participate in their absence—those who have low earnings and less education." And a model by Choukhmane of a universal automatic enrollment policy predicts it would meaningfully increase wealth at retirement for those in the bottom 10 percent of the income distribution—by up to 26 percent, in fact, if all employers auto-enrolled employees with a 6 percent default contribution rate.

Automatic savings policies have another advantage, Choukhmane pointed out: "Most American workers with access to these plans are putting money in low-fee, well-diversified

**IT'S HARD TO KNOW WHAT AN "ADEQUATE" AMOUNT OF RETIREMENT SAVINGS IS. How long will we live? What health conditions will we face? What will be the rate of return in the stock market? How much will we receive from Social Security?**

who are the same age, have the same education, have been working at their firm for the same amount of time, and have similar incomes.

"Black and Hispanic workers with access to a 401(k) or a 403(b) plan contribute approximately 40% less than White workers," the economists write. "These saving differences mean that median White earners receive more than double the matching benefits of their Black and Hispanic counterparts." The gap is even larger when it comes to tax benefits: Black workers get $0.31 of tax benefit for every $1 that White workers get, according to the analysis.

### Obstacles to saving

With all these pushes to save—nudges, tax breaks, employer matches—why don't people save more?

Many simply can't. It's hard to save money when money is tight. In economic terms, many people face a "liquidity constraint."

There's also a human tendency to value the present over the future. It's a tendency many of us recognize in ourselves, and research shows that people often desire a form of commitment as an antidote, whether it's to complete homework, eat healthier, or save more.

The benefit of spending today can not only hinder accumulating savings but lead people to draw down savings from retirement accounts. Despite the typical 10 percent penalty, early withdrawals are quite common: Approximately 13 percent of individuals aged 25 to 55 take a penalized withdrawal each year, Choukhmane's analysis found. The magnitudes are meaningful, too. One analysis found that early withdrawals out of retirement accounts in a year were equal to almost a quarter of the deposits into accounts in that year.

Just as retirement savings incentives affect different groups differently, the rates of early withdrawals vary across groups. In Choukhmane and his colleagues' research, they find that Black workers with at least $1,000 in contributions are about twice as likely to make an early withdrawal as White workers are and 1.5 times as likely as Hispanic workers are. Workers whose parents have lower incomes are also more likely to make early withdrawals than workers with parents with higher incomes are.

Choukhmane concludes that making early withdrawals despite a hefty penalty suggests Black workers and workers with lower-income parents have a greater need for liquidity or less access to other sources of liquidity. Research suggests that Black workers are also more likely to provide financial assistance to family and friends. A study by sociologist Rourke O'Brien found that while lower-income White and Black households provide financial assistance to others at similar rates, higher-income Black households are two to three times as likely to as higher-income White households.

There are a number of factors, then, that make it hard to save adequately for retirement. It's also worth pointing out, however, that it's hard to know what an "adequate" amount is. How long will we live? What health conditions will we face? What will be the rate of return in the stock market? How much will we receive from Social Security?

"Sometimes, especially in policy circles, we're too quick to conclude that people are not saving enough," Choukhmane said. "And I think from working in this field, my takeaway is that this is a much harder question and it's not obvious who is saving enough and who's not saving enough."

### Innovative ideas to support savings

The system may not be broken. But given the large sums spent by employers and governments to spur savings, it is worth thinking innovatively. "Is this the most efficient way to spend this money? Can we change these formulas in ways that we can create better outcomes for retirees, better distributional outcomes?" Choukhmane asked.

One challenge is balancing the benefit of saving for tomorrow with the benefit of spending today. Early withdrawals are "a double-edged sword," in the phrase of Brookings'

**Economists have found that AUTOMATIC SAVINGS POLICIES DO CREATE LONGER-LASTING GAINS for a group that might benefit most: Those at the bottom of the income distribution.**

Sabelhaus. They reduce savings in retirement, but they provide much-needed cash during a difficult time, such as job loss or a health need. "If you don't have these provisions [for early withdrawals], people won't put money in in the first place," Sabelhaus said. Research by Sabelhaus and colleagues concludes that withdrawals often follow times of hardship: People are more likely to take early withdrawals in the year after their income falls by 10 percent or more or the year after they get divorced.

One option, then, is to take a closer look at the list of allowed withdrawals. "Right now, if you want to finance your kid's education, you're exempt from the penalty. If you take money from an IRA to buy your first home, you're not subject to the penalty. This is saying, okay, this is good behavior. But losing your job or a medical emergency for a non-dependent relative, that's going to be penalized. And so having a hard look at these lists I think is very important," Choukhmane said.

Another influential set of rules are those that come into play when people leave their job, a time when retirement savings are particularly leaky. A 2024 report from Vanguard found that between the ages of 25 and 64, U.S. workers have an average of nine employers. "You might think, oh, the employer wants you to keep the money in the plan, but in fact they don't," Sabelhaus said. "It's hard for them, for the plan sponsors, to keep these small accounts around." It could make a difference to savings if employers cannot compel withdrawals, if compelled withdrawals are not subject to penalties, or if there is a stronger framework to encourage moving the money to another retirement savings account.

In addition, "the median job switcher sees a 10 percent increase in pay but a 0.7 percentage point decline in their retirement saving rate when they switch employers," the Vanguard report concluded. Changing how employers set contribution rates could address this. "A very common structure is that when an employee first joins a company, they're automatically enrolled at a 3 percent contribution rate," Beshears said. "It's actually sort of puzzling from an economic theory perspective why it's linked to employee tenure as opposed to something like employee age. Ideally you also want to think about employee family structure and what the demands on their income are."

Employers could also change their matching schedules so that savings are distributed more evenly. Right now, matches are usually tied to how much the employee saves. Instead, Choukhmane and his co-authors propose, employers could contribute the same amount they do now, but instead make contributions proportional to employees' income, not how much they save. The economists estimate this change would help to meaningfully close the savings gaps between Black and White workers, Hispanic and White workers, and those with the richest and poorest parents.

More broadly, incentives could be better targeted to those who would or could not save otherwise. Right now, Choukhmane pointed out, a majority of employer matching money goes to people who are saving above their employer's match cap, suggesting they would have saved just as much without the match. It might be more effective to target those who are less able or inclined to save. How might a 200 percent match for up to 3 percent of earnings change savings outcomes for workers, for instance? Incentives could be an important complement to nudges.

Employers, too, could be affected by stronger incentives. Brown University economist John Friedman suggests replacing tax incentives for individuals based on the amount they save with tax incentives for employers based on the number of their employees who are contributing to retirement plans. Firms are more knowledgeable of and responsive to tax incentives than individuals are, Friedman argues, and this would provide good reason for firms to get creative about how to encourage employee saving.

## Why save, anyway?

The personal saving rate in the U.S. was above 10 percent from 1960 to 1975. It then began a descent, and while the last 10 years have seen ups and downs, it was only 4.7 percent in 2023. Collectively, we are saving less, even while life expectancy has increased by almost 10 years.

And some people are working later in life, but not everyone can. For those without a college degree, both objective and self-reported measures of health have worsened over the past two decades, which can push people out of the labor force before their intended retirement.

In the absence of sufficient resources from retirees and the government, the burden of caring for older relatives often falls on adult children, which can meaningfully affect their economic outcomes. A study of Social Security's early years found that adult children whose parents were likely to receive Social Security benefits were able to move to job markets that were a better match for their skills, and as a result, they earned more.

Retirement savings, then, is an issue not just for retirees but for the next generations, too. And where do things stand for the next generation? Economists Richard W. Johnson and Karen E. Smith summarize several factors that will influence where retirement savings are headed. First, the good news. Educational attainment, which is correlated with higher earnings, is rising. Higher average wages are contributing to higher Social Security payments, providing funding to an important source of retirement for many. And the authors project that the median retirement income for millennials will be higher than that of earlier generations.

But there are worrying trends as well. Homeownership rates are down and debt levels are up, which reduce the resources available to retirees. "If we think about what is the retirement saving crisis, there is a group that has to pay rent for the rest of their life. They're not going to have a paid-off house and they're not going to have the insurance value of being able to sell their house if something happens," Sabelhaus said.

In addition, the labor force participation rate of middle-aged men has declined while health care costs have increased, two additional factors pointing to less economic certainty in retirement.

Saving for retirement is hard. The benefits of doing so are large. It is a space where carrots and sticks and nudges, private employers and government can work together to create conditions that make it just a little easier. ★

For additional sources for the information cited in this article, please see the online version.

# How HEALTH ECONOMICS can help people get back to school, work, and family

While the opioid crisis has slipped from the headlines, Institute advisor **Kosali Simon** has kept her focus

BY JEFF HORWICH

Kosali Simon thought she had her life's work figured out. "The first career I can remember wanting to explore as a very young child was being a doctor," Simon said. In a child's limited universe of job options, this was how she would build a professional life focused on helping people.

"Then I became queasy at the sight of blood—this was really not the career for me!" After Simon moved from a childhood in Sri Lanka and Zambia to the United States for college, the old interest found a new calling. "I learned in graduate school that people can be part of studying health care in order to improve health in ways that don't involve actual clinical care," said Simon. So began the career of a leading U.S. health economist.

This interview occurred over three occasions in late November 2024. It has been edited for length, continuity, and clarity.

JAMES BROSHER

Simon's research explores the many ways modern health care is so much bigger than doctor and patient—from health insurance policy to public health messaging to the pharmaceutical industry. "Everyone knows what doctors do, but you don't realize how complicated the health care system is," said Simon, a distinguished professor at Indiana University. "That means there is great need for studying the intricacies of the health care system and how people and organizations respond to incentives." And from there, "how can we use that background to know what solutions help people?"

Simon's instinct to help keeps her focused on the opioid crisis, which has morphed over time but remains a major threat to American labor supply and life expectancy. We talked recently with Simon, a member of the Institute's advisory board, about this ongoing public health crisis that may have faded from the front pages, but not from her research agenda.

**How would you characterize the economic cost of the opioid epidemic so far?**

The Joint Economic Committee of Congress is a good citation for this—they put the economic cost in 2020 at $1.5 trillion a year. Economists use basic economic tools to think about the counterfactual [if the opioid epidemic had not happened] and how we value all the things that are intangibles, like quality of life. And then you come up with numbers.

One of the things that really impacts the way opioid crisis costs are calculated is the average age of the people who are affected. With Alzheimer's disease, for example, even though numbers-wise it's very large, when you think about the years of economic activity that are affected, those are not large because the average age of dementia onset is in the 80s. Of course, there are large economic activity losses for dementia caregivers who exit the labor force early to care for loved ones.

With calculations for the opioid crisis, on the other hand, it's really affecting lots of people in their prime ages of working and generating taxes for provision of society's public goods. There's a lot of impact on family formation, on young kids—all of these ways amplify the economic costs of opioid addiction.

**The epidemic has been with us many years now. There's been a certain exhaustion that set in with the news cycle, but you have kept your focus on it. What would you say is the state of the crisis today?**

Overdose rates are still very high. In 2023, for the first time, there was a slight drop in overdose deaths—a 3 percent reduction, although in some states rates continued to climb. Now is a good time to examine which policies could have led to that small but important decline.

It is possible that the reduction was due to supply-side issues in the illicit fentanyl market. But the reduction could also have been due to policies that expanded treatment with methadone and buprenorphine, or increased access to naloxone, which is a medication that reverses overdoses.

People describe four "waves" of the opioid crisis, and we are now in the fourth wave [see sidebar]. But there has been exhaustion, as you said. And how much have we been paying attention to it? In March 2020 we stopped hearing about opioids, as the 24-hour news cycle shifted entirely to the COVID pandemic. I kept thinking at that time, How come the opioid crisis stories disappeared from the news? Was this no longer a problem?

Estimates show that in 2020, some parts of the U.S. lost far more years of potential life to opioid deaths than to COVID-19 deaths. We took our eyes off the opioid crisis in 2020 at the point where it was rapidly becoming worse.

**Do we have a good sense by now of what policies work to combat opioid deaths?**

States enacted policies making it harder to prescribe opioids for chronic pain. At the same time, doctors became less willing to prescribe these medications once they learned of the addiction risks. So, the number of people initiated onto opioid medications dropped.

That is a good thing. But tragically, many of the people who were already undergoing opioid pain treatment were dropped from treatment, too, without management of addiction. A substantial fraction of those people may have switched to heroin and eventually illicit fentanyl.

[From this it] is clear that we cannot rely on regulating opioid supply alone, because the supply balloon shifts to other sources as we squeeze on one side. Addressing the demand side requires effective treatment-aimed policy. For example, federal policies recently made it easier for clinicians to prescribe buprenorphine. That medication cuts the risk of overdose death by 50 percent among people with opi-

**"Estimates show that in 2020, some parts of the U.S. lost far more years of potential life to opioid deaths than to COVID-19 deaths. We took our eyes off the opioid crisis in 2020 at the point where it was rapidly becoming worse."**

oid addiction. Insurance coverage has expanded, including Medicaid coverage of buprenorphine and Medicare coverage of methadone. Both of those activate opioid receptors in the brain, preventing cravings and withdrawal symptoms, without causing euphoria.

Harm reduction programs have also become more common, like syringe service programs that connect people to treatment and distribute naloxone. Diversion programs, like drug courts, are being expanded, since incarcerating people for addiction-related crimes has not proven effective at preventing relapse and recidivism.

**You have been researching how to effectively get people into treatment. From an economic angle, what are we doing well and what can we do better?**

Getting providers to be comfortable with prescribing buprenorphine is part of a longstanding challenge in public health. We expect that if there is a potential solution to help people when their lives are in crisis, the health care system would create many ways to connect patients with the solution. But it is surprising how low the access to buprenorphine and other treatments seems to be. Among the prescribers who appear comfortable prescribing buprenorphine, you

## Waves of the opioid epidemic in America

Scholars identify distinct but overlapping phases of opioid-related deaths. One such breakdown:

**1999–2017**: Abuse of prescription opioids

**2010–2019**: Heroin-related overdoses

**2014–present**: Rise of synthetic opioids, including fentanyl

**2021–present**: High mortality from use of stimulants (methamphetamine and cocaine) in combination with synthetic opioids

Source: Daniel Ciccarone, "The rise of illicit fentanyls, stimulants and the fourth wave of the opioid overdose crisis," July 2021.

Deb Schmill sits at the grave of her daughter, Becca, in the Newton Cemetery in Newton, Massachusetts. Becca died in 2020 at the age of 18 from an accidental drug overdose due to fentanyl poisoning.

JOHN TLUMACKI/THE BOSTON GLOBE VIA GETTY IMAGES

**“Addiction is compulsive engagement in an activity despite negative consequences. Economic tools like taxes, incarceration, and fines that work in standard markets, governed by more rationality assumptions, don’t necessarily work for addiction.”**

Simon joined the O’Neill School of Public and Environmental Affairs as a professor in 2010. In 2016, she was named a Herman B Wells Endowed Professor, becoming only the third recipient of this honor at Indiana University. She is the president-elect of the Association for Public Policy Analysis and Management and a past president of the American Society of Health Economists.
JAMES BROSHER

see very few who have been going up to the limit of the number of patients they are allowed to see.

Stigma has been suggested as a potential cause of under-prescribing of buprenorphine and low referrals to methadone treatment. People with addiction are often unfairly perceived as difficult or dangerous patients. In fact, many clinicians who start treating addiction realize that it is among the most fulfilling activities, because the entire lives of their patients transform. Patients renew relationships with family members, reenter the work force, and leave the justice system.

Medical training may be a solution. There are very few physicians who are addiction-trained specialists. Many clinicians may simply not know how to treat addiction. Until recently it was rarely taught in medical school. Physicians may often feel that this is very specialized care.

Policies enabling addiction treatment by nurse practitioners and physician assistants have helped expand access, particularly in rural areas with few physicians. Telehealth has also changed things, making it easier for people to start and be retained in buprenorphine treatment. The Drug Enforcement Administration recently extended telehealth flexibilities from the COVID-19 era and might make them permanent soon.

**When it comes to the economic factors that are driving supply, are you seeing improvement?**

Even though it took this much time, there is finally recognition about many of the issues that should have happened 10 or 20 years ago: Access to treatment, harm reduction, the importance of prescribing.

But when the solutions came, it was too little, too late. We began slowing the prescribing of opioids so late into the game—after the demand had already created this illicit market. And the supply from the illicit market took hold in countries and places that it’s just hard to go and address. But that came from the marketing that happened and the prescribing that happened in the legal market. And some people also say we have swung the pendulum too far. We’ve made opioids very difficult to obtain legally, for those with a genuine medical need, and pushed them to the illicit market.

Our challenge now is, how do we even track where the illicit market is? What are the policies that are useful for stopping fentanyl trade? There are just not many papers yet on that. And we continue to write papers on prescription drug monitoring policies.

**What does the economic research tell us about treatment versus criminal enforcement?**

I think economics is very useful as a framework for this. People point out how difficult the fentanyl trade is to police, that

it is coming in in ways that are so hard to detect, and the high amount of investment it would take to really clamp down on supply. For example, a tiny amount of fentanyl—resembling a few grains of salt—is sufficient to cause an overdose death. How can border agents possibly entirely stop a product from entering that is so tiny and easy to hide?

Once fentanyl enters the U.S., many low-level drug dealers are simply selling their drugs to support their own addiction. So, treating the underlying addiction makes a lot of sense. Again, addiction is compulsive engagement in an activity despite negative consequences. Economic tools like taxes, incarceration, and fines that work in standard markets, governed by more rationality assumptions, don't necessarily work for addiction.

**You are a highly prolific author—your Google Scholar page for 2024 is a mile long. You have six children and your husband is also an academic, presumably very busy. Do you have any advice for us mere mortals on how that all is feasible?**

Oh no, don't look to me—I see people doing way more than me!

I think of how mothers' lives must have been a hundred years ago, or even today for some who are less fortunate. I think about how many people bear a greater burden than we do. And I try to prioritize my energy towards things I can change, and not get frustrated by things I can't change.

As long as the research, service, and teaching priorities we focus on in academia won't wear us down, as long as we get strength from whatever we take on, I figure it will be OK. And there is plenty around us to draw inspiration from while we work on improving things we want to change.

So, I don't have any particular wisdom except to draw strength from people who have figured out, in tougher situations, how to make good. ★

World-class research can be lengthy and complex. Here, we present key findings from several studies by Opportunity & Inclusive Growth Institute scholars. These examples represent a fraction of the Institute's growing body of research. For our full library, visit minneapolisfed.org/institute/publications/working-papers.

# How higher property taxes could *increase* home affordability

## Economists find raising property taxes can boost homeownership for young families

**BY JEFF HORWICH**

America's two biggest states are having two very different housing debates.

In Eagle Rock, California, 35-year-old Brianna Mercado is making things work in a small apartment. No yard, tight quarters, no separate bedrooms for the kids. But Mercado told LAist public radio she and her husband hold out little hope of buying a home given California's median home price of $695,400.

Meanwhile, Texas lawmakers have been on a multiyear mission to lower some of the nation's highest property taxes—and especially to lessen the burden on older adults. Property taxes that neared an average of 2 percent between 2016 and 2021 make homeownership in Texas a more expensive ongoing proposition compared with California, where property tax increases have been heavily restricted by a 1978 amendment to the state constitution. On the other hand, getting into a home in Texas is much cheaper, given the median home price of only $260,400.

A new Institute working paper connects these dots in an intriguing way: Could Texas' relatively high property taxes be a factor keeping housing prices in check? Are California's low rates keeping a home purchase out of reach for young families like Mercado's?

In the paper, economists Joshua Coven, Sebastian Golder, Arpit Gupta, and former Institute visiting scholar Abdoulaye Ndiaye find this property-tax/home-price connection is indeed meaningful, with property taxes shaping housing choices across the life cycle in ways that could affect labor mobility and overall social welfare.

ILLUSTRATIONS BY LUISA JUNG

### More expensive tomorrow, more affordable today

Given that higher property taxes raise the cost of owning a home, how can they simultaneously make housing more affordable? The reason is that higher expected property taxes get factored into lower home prices today. For young households especial-

ly, this "capitalization" of property taxes into a lower purchase price can make all the difference. Although their expected earnings might be more than enough to cover taxes down the road, many struggle right now to muster the cash for a starter home due to hefty down payments.

"Property taxes effectively act like a forced mortgage and shift the burden" of housing costs, said Ndiaye, assistant professor of economics at the NYU Stern School of Business.

For older homeowners, low property taxes make it financially advantageous to sit tight, even if the nest has long been empty—a powerful "lock-in" effect. Higher property taxes, by contrast, raise the motivation to downsize, which puts more homes on the market for young families who will make use of those empty bedrooms.

Along with other equity and efficiency justifications for property taxes, Ndiaye and his co-authors have added a new one to consider: reallocation of housing from smaller, older households to larger, younger ones.

## Empty bedrooms

National statistics visualized in the working paper show what the authors call "the age-biased character of homeownership." Most bedrooms in the U.S. are owned by people between 50 and 70 years old. Many of these bedrooms are less than fully occupied, especially once owners enter their 60s.

Raw U.S. data on property taxes and home prices support the economists' theory connecting the two. Controlling for factors like house characteristics and location, they find a doubling of property tax rates is associated with a 20 percent drop in housing prices and lower home-price-to-rent ratios. Higher property tax rates are also associated with a younger-skewing population.

The economists compare owning and renting in the two states they use for their analysis. At younger ages, the homeownership rate is similar in high-tax Texas and low-tax California (see figure). But around age 50, the rates strikingly diverge. Homeownership rates plateau

**STUDY AUTHORS**

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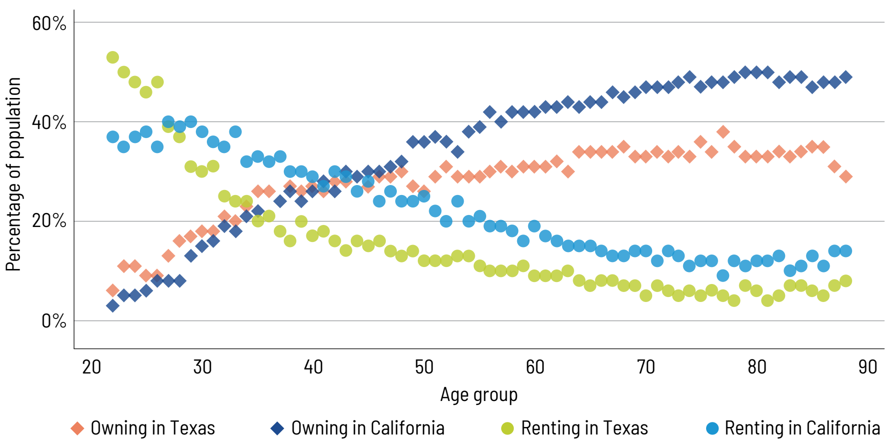
**TEXAS AND CALIFORNIA SHOW DIFFERENT HOUSING PATTERNS OVER THE LIFE CYCLE**




Source: Coven, Golder, Gupta, and Ndiaye, "Property Taxes and Housing Allocation Under Financial Constraints," July 2024. Authors apply data from U.S. Census Bureau and Verisk.

Property taxes shift the total cost of housing into the future. For young households especially, this "capitalization" of property taxes into a lower purchase price can make all the difference.

among older Texans, while homeownership in California keeps growing even through age 80. Although friends or grandkids may come to visit, that's a lot of often-empty bedrooms.

## Treating California with Texas-level taxes

The economists build a model in which overlapping generations of households choose to live in one of two states with varying house prices, property tax rates, and earnings climates. They calibrate the model to match the characteristics of California and Texas. Households are financially constrained and must come up with 20 percent for a down payment to buy a house.

In the model, the economists raise California property tax rates (0.8 percent) to the level of Texas (2 percent). The effects are large: House prices in California fall 18 percent. Homeownership in California rises 4.6 percent overall and 7.4 percent among homeowners ages 25 to 44. In this counterfactual scenario with higher property taxes, homeownership in California is higher than the status quo at every age until the late 50s. After this point, it falls below the baseline as higher ongoing expenses motivate more older adults to sell.

In the model, higher property taxes and lower housing prices in California also result in increased migration from Texas, especially among younger and more financially constrained people. These migration flows have effects beyond the housing market, because more young households from Texas can now afford housing in higher-income California. "Financially constrained households are able, with higher property taxes, to own houses in California at a lower purchase price and thereby gain access to superior job markets," the economists write.

Although more older homeowners choose to sell, the greater net number of homeowners means that housing wealth increases (as does overall wealth). The economists hypothesize that there may be further societal benefits far downstream via the children whose parents can now purchase a home at a younger age.

## Harmed in the transition

So far, this all sounds like a win-win-win—and it does appear to be, from a societal standpoint. But there are losers, of course, when property taxes go up.

One important effect is the shifting of welfare from later in the life cycle to earlier. While households are better off over their lifetime, raising property taxes sacrifices well-being many years later (enjoying a spacious, paid-off house with low taxes and leaving this house to heirs) for well-being in the present day (affording a house with a young family and enjoying this house for longer).

And there are existing homeowners to consider. Ndiaye emphasizes that the economists' current model compares two alternate versions of the world, side by side—it does not model the one-time impacts of a transition from one to the other. "For the young to afford more housing, the older households have to downsize and lose," Ndiaye said. He adds that this is a feature of many reforms that have varying effects for people at different phases of life. But for states where property taxes are already relatively high—or, in the case of California, held arbitrarily low—the research from Ndiaye and his co-authors highlights an essential connection with affordability. ★

**TAKEAWAYS ↗↗**

- Higher property taxes raise ongoing financial burden of homeownership but consequently lower initial home prices
- Model finds raising property taxes shifts homeownership toward younger families, motivates older adults to downsize
- Although welfare-improving, burden on older adults and low-income households would surely figure into policy debate

# Who decides?

## How algorithms and humans interact in judges' decisions about bail

**BY LISA CAMNER MCKAY**

Every day, judges across the country must decide how people awaiting trial should spend that time. Judges can choose to let defendants wait at home, require that they wait in jail, or require that certain conditions be met in order to be released before trial, such as paying money bail. It's a decision with weighty consequences, for defendants and the community.

### Algorithms are all around

The decision about whether to set money bail is, at its heart, a prediction about what a defendant is likely to do in the future. This is a space where algorithms, which provide instructions to solve a problem or predict an outcome, can be useful because they can be trained on thousands, even millions, of past events. As a result, algorithmic predictions can outperform human predictions.

While algorithmic-based rules have replaced human discretion in some settings, there are a number of environments where algorithmic predictions interact with human decision-makers. In a new Institute working paper, Institute economist Alex Albright describes four different types of decision-making environments: No algorithmic information is given to humans; algorithmic predictions are given to humans; algorithmic predictions and recommendations are given to humans; and algorithm-based rules dictate outcomes.

While the first and fourth scenarios get the lion's share of the scrutiny, the second and third scenarios occur often—and in high-stakes environments. For instance, lenders decide every day whether to grant or deny loan applications. Algorithms may predict how likely an applicant is to default, and the firm may recommend denying applications below a certain threshold, but employees often make the final call. In the criminal legal system, algorithms have been in use since at least the 1970s to assess a defendant's risk before trial. This risk is communicated to the judge, who decides whether to set money bail or allow the defendant to be released (no money bail).

These decision-making environments share another feature: For the decision-

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The decision about whether to set money bail is, at its heart, a prediction about what a defendant is likely to do in the future.

maker, mistakes are visible only if they choose the "lenient" action and something bad happens (for example, if a loan is not repaid or a defendant does not appear for trial). On the other hand, mistakes are impossible to observe when a "harsh" action is selected instead. Would the applicant who was denied a loan have repaid it? Would the defendant held on bail have appeared for trial? This lopsidedness may push decision-makers to act more harshly, in ways that are harmful to individuals and society. Loans to responsible applicants boost the economy. Releasing low-risk defendants saves resources and can build trust in criminal legal institutions.

In these complex decision-making environments, what effect do algorithms have? "The conventional wisdom is that algorithms impact human decisions because they provide predictions, but algorithms can also inform recommendations," Albright said. "To understand the effects of algorithms, we need to understand how both algorithmic predictions and recommendations *independently* change human decisions."

Might these recommendations change the cost-benefit calculation of the decision-maker? Albright studies this question in the context of a natural experiment that arose when recommendations were introduced to Kentucky's pretrial detention system, a setting where algorithms were already in use.

## How recommendations changed bail decisions

Kentucky has used algorithms to assess a defendant's risk before trial since 1976. This assessment formalizes the relevance of specific defendant characteristics and produces a "risk score" for that defendant. Scores of 0–5 were categorized as "low risk," scores of 6–13 were categorized as "moderate risk," and scores of 14–24 were categorized as "high risk." Judges were told a defendant's risk category, and then the judge decided on bail.

Then in June 2011, the Kentucky state legislature passed a law that recommended judges set no money bail for defendants with low- and moderate-risk scores, an attempt to reduce the financial burden of the state's jail population. The legislation did not provide any recommendation for defendants deemed high risk.

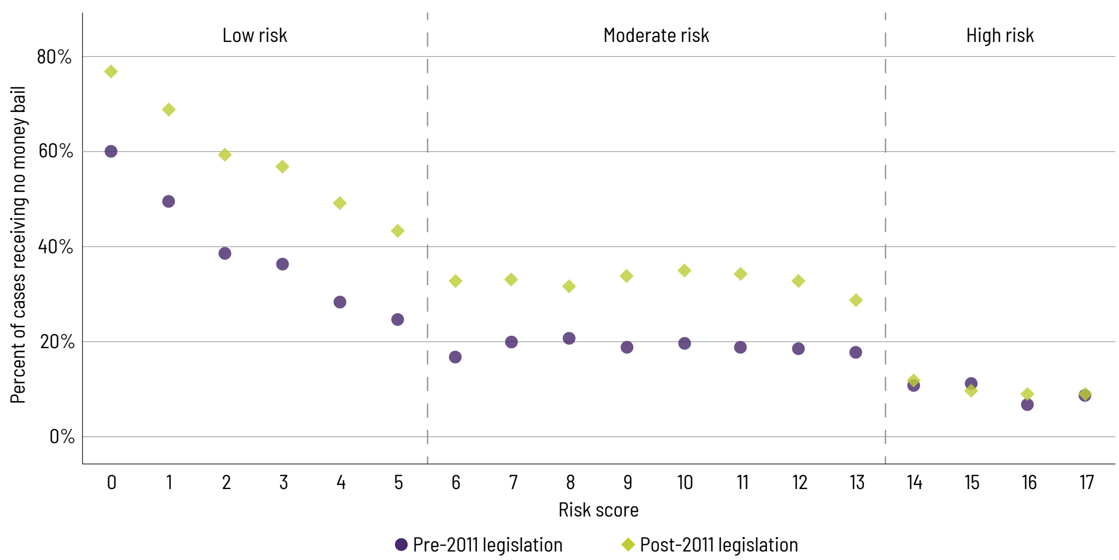
In March through June 2011, just before the law passed, 90 percent of cases received a low- or moderate-risk score. However, judges allowed the defendants in only 32 percent of these cases to be released from pretrial detention with no money bail.

To estimate the effect of the new recommendation, Albright made use of the fact that defendants with scores on either side of the cut-off between moderate and high risk received different recommendations. Defendants with a score of 13, the highest moderate-risk score, received a recommendation of no money bail. Defendants with a score of 14, the lowest high-risk score, received no recommendation. The figure shows that defen-

**HOW BAIL DECISIONS CHANGED AFTER KENTUCKY'S 2011 LEGISLATION**

Prior to the 2011 legislation, judges did not receive any bail recommendations. The legislation recommended that in cases with a "low risk" or "moderate risk" score, the judge set no money bail. Risk scores above 17 are omitted due to the small number of observations.

Source: Albright, "The Hidden Effects of Algorithmic Recommendations," September 2024.



dants with scores just below the cut-off received no money bail more frequently after the policy. In contrast, there was no change for defendants with scores just above the cut-off.

Overall, the legislation increased lenient bail decisions by 50 percent for defendants with scores just below the cut-off.

Albright interprets these findings as evidence that the recommendation changed how judges perceived the cost of a "mistake"—that is, releasing a defendant without money bail who then fails to appear or commits a crime. "After the legislation, some of the blame for a lenient choice may go to the legislature, which established the recommendation, rather than the judge," Albright said. "The algorithm's predictions do not explain the observed changes in judges' behavior. Rather, the new recommendation changed judges' incentives."

This suggests algorithmic recommendations may be particularly important in situations where the goals of policymakers and the incentives of the front-line decision-makers are not aligned. In Kentucky, new recommendations reduced the use of money bail, but in a different context, recommendations might have a different effect. Changing algorithmic recommendations can change outcomes in economically meaningful ways, even if the underlying assessment of risk stays the same. ★

**TAKEAWAYS**

- Many states use algorithms to predict a defendant's risk of misconduct before trial
- Judges use algorithmic predictions of risk, bail recommendations, and their discretion to set bail
- Adding recommendations changed judges' bail decisions even when algorithmic predictions did not change

# Credit supply, housing demand, and rising home prices

## A change in veteran home loans can help explain home price dynamics

BY KENNETH COWLES

Homebuyers and economists alike closely watch indicators for changes in home prices. For homebuyers, a change in prices can make the difference between purchasing their dream home or no home at all. For economists, home prices and rent prices together make up the cost of shelter, an important driver of inflation. In fact, a large proportion of the persistent post-pandemic inflation has been driven by the rising cost of shelter.

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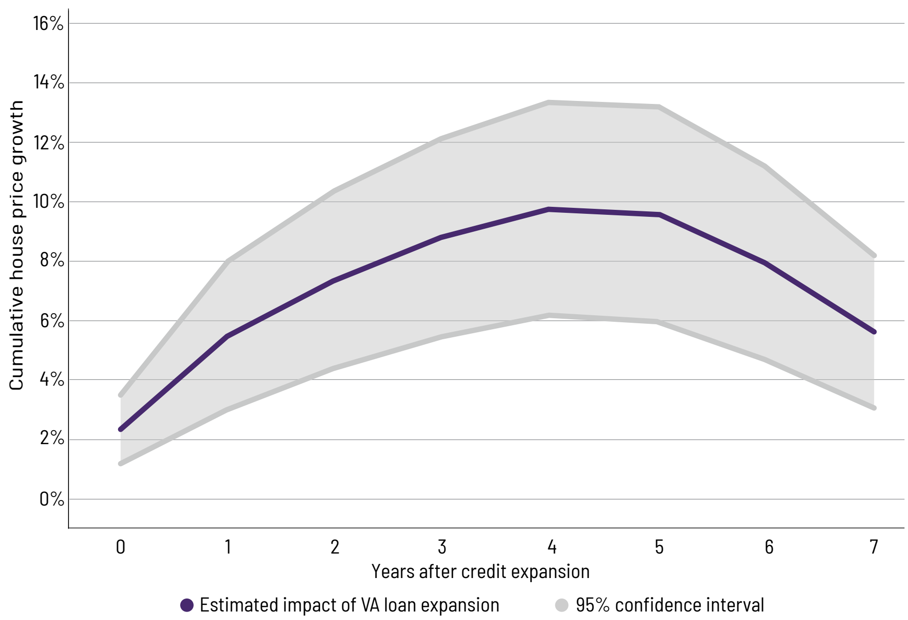
But what determines changes in home prices, and why does the source of these changes matter? Recent media commentary and research has pointed to the influence of housing supply. A new Institute working paper from Tobias Herbst, Moritz Kuhn, and Farzad Saidi examines another angle: How does the supply of credit shape home prices? In the context of housing markets, the supply of credit can be thought of as how easy or difficult it is for a homebuyer to receive a loan, or how generous the conditions of the loan are. A greater supply of credit means buyers can more easily borrow the money they need to purchase a home. This increase in demand, driven by expanding credit, can then put upward pressure on home prices.

Policymakers have at times considered policies to expand access to credit to support homeownership for groups that have limited access. Given the conversations around these policies, both policymakers and potential buyers have an interest in understanding how expanding credit can affect home prices.

EFFECT OF VA LOANS ON HOUSE PRICE GROWTH OVER TIME




This figure plots the estimated impact on cumulative house price growth over time when the share of generous Veterans Affairs (VA) loans per 100,000 loans is doubled from 12.5 to 25 within a county. The shaded region marks the 95% confidence interval.

Source: Herbst, Kuhn, and Saidi, "Army of Mortgagors: Long-Run Evidence on Credit Externalities and the Housing Market," April 2024.

## Why the supply of credit is difficult to study

What makes the effect of credit on home prices difficult to study is that lending institutions may alter their expectations as demand for housing increases. If they anticipate that rising demand will cause a rise in prices, then the collateral—the home itself—becomes a safer investment, which would encourage more lending. This feedback loop could then further increase housing demand and prices. While anecdotal, this story demonstrates how both the increase in lending and changing expectations can shape the trajectory of home prices. But economists can observe only the overall increase in prices, not the change from each effect.

To get around this challenge, Herbst, Kuhn, and Saidi study the Veterans Affairs (VA) home loan program, which offers eligible veterans the option to receive generous loans that, for example, require no down payment. The VA loans make up a meaningful share of total loans in the market—between 2 and 10 percent of mortgages each year from 1980 to 2017 were guaranteed by the VA loan program. So, an increase in demand among veterans could drive home prices throughout the entire market. For many veterans, these loans are essential to have the option to buy a house earlier in life, and their generous conditions often allow veterans to purchase higher-priced homes than they could with a loan from the conventional market.

## The solution: A natural experiment with VA loans

On April 6, 1991, the criteria determining who was eligible for a home loan from the VA were relaxed so that all veterans who served in the Gulf War became eligible for what the economists classify as "generous" VA home loans. These loans feature a no-down-payment option or extend higher levels of credit relative to a buyer's income than would be available in the conventional market. This change granted eligibility for over 700,000 ser-

A greater supply of credit means buyers can more easily borrow the money they need to purchase a home. This increase in demand can then put upward pressure on home prices.

vice members who deployed in support of operations Desert Shield and Desert Storm between August 1990 and February 1991. Since this expansion of credit was driven by geopolitical decisions around the Gulf War, it was not related to future expectations of home prices or other economic conditions.

For their study, the economists rely on novel data on all loans under the VA loan program.

They find that if the share of generous VA loans within an average county is doubled from 12.5 to 25 homes per 100,000 people, county home prices would increase by an estimated 2.6 percent. For context, the S&P Case-Shiller U.S National Home Price Index increased by an average of 3 percent each year between 1990 and 2000. These results confirm that expanding credit had a meaningful effect on house prices.

The effects also prove to be persistent, though they dwindle over time. The figure shows the estimated cumulative percent increase in house prices across time if the average share of generous VA loans within a county is doubled. For four years, home prices steadily increase, peaking at prices that on average are 9.8 percent higher than they were before the VA loan expansion. Prices then start to decline, and by year seven they are just slightly higher than where they started.

However, the economists also show that the increase in home prices after an expansion of credit varies across geography. Specifically, the growth in home prices depends on how responsive local housing supply is to price changes. In fact, for the average U.S. county, upward of two-thirds of the increase in prices is mitigated by a county's ability to provide new housing to meet the increase in demand after the credit eligibility expansion. On the flip side, this means that local housing markets that cannot react by expanding housing supply will see stronger increases in house prices after credit expansions.

## Expectations and prices

The results show how an expansion of credit in the form of expanded eligibility for VA loans helps drive increases in home prices. But what about the second mechanism, the role of changing expectations? If lending institutions believe that home prices are going to go up, then the value of their collateral goes up, too. This makes houses a better investment, and lenders should want to increase their lending. This expansion of lending should further increase demand and prices.

To test this theory, the economists combined their data with data from the Home Mortgage Disclosure Act and with additional information on the characteristics of both lenders and borrowers. This allowed them to account for factors that are specific to individual applicants, lenders, and regions across time. They found that the estimated 2.6 percent growth in home prices resulting from the credit expansion would lead to an estimated 1 percentage point increase in mortgage approval rates in the conventional loan market. Furthermore, the growth of the number of loans was larger in the conventional market than the VA market and lasted for a longer period.

In short, the VA home loan eligibility expansion had large effects not only for veteran household homebuyers, but also for non-veteran households in those same communities due to increased lending. This suggests that the expansion of credit does indeed increase home prices via a feedback loop.

## How is this relevant today?

While much has changed since the Gulf War, this research can help to assess the complex effects of policy proposals to tackle post-pandemic cost-of-living increases. These policies often include mechanisms such as down payment assistance to low-income or first-generation homebuyers, similar to the VA loan expansion. This study shows how such credit expansions could increase home prices not only in the targeted communities but more broadly as well. The economists also identify a factor that mediates the effect on home prices: the ability of local markets to increase their housing supply. These findings contribute further insights around the dynamics of housing prices and potential tools for policymakers to help address housing affordability challenges faced today. ★

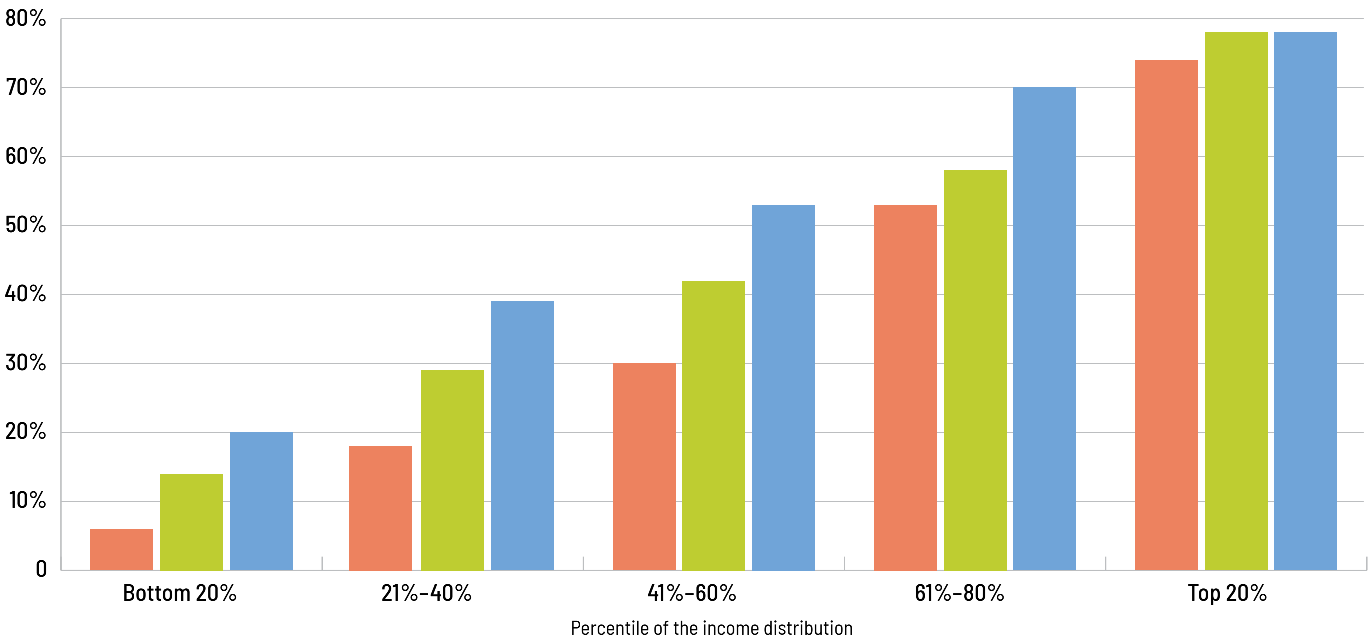
**TAKEAWAYS ↗↗**

- Increasing access to generous VA home loans after Gulf War raised home prices
- Price increases were driven by increasing credit supply and changing lender expectations
- Price changes were mitigated in counties that could readily expand housing supply

# THE RETIREMENT SAVINGS OF IMMIGRANTS IN AMERICA

Retirement savings plans such as 401(k)s and individual retirement accounts (IRAs) are the primary tools Americans use to build wealth for their retirement years. However, the ability to access and contribute to these accounts—which also enjoy tax advantages—is not the same for the U.S.-born and foreign-born populations. The latest data from the Current Population Survey show that among the bottom 80 percent of earners, the share of foreign-born earners who own a defined contribution account is significantly lower than the share of the U.S.-born earners who do. However, these differences largely disappear among the highest-earning workers.

**SHARE OF WORKERS WITH A DEFINED CONTRIBUTION ACCOUNT**




It also appears to matter whether foreign-born workers are U.S. citizens. Among other factors, a higher level of English and civic literacy among naturalized citizens could affect knowledge of more complex financial instruments.

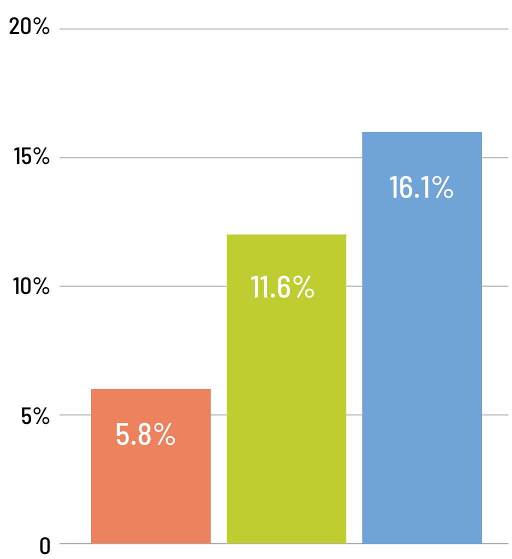
Note: Individuals aged 65 or more who reported "retirement" as a reason they worked at least one but fewer than 52 weeks in 2023 are described as "retired in previous survey period" in the chart at right.

Noncitizen

Naturalized citizen

U.S.-born

**RETIRED IN THE PRIOR SURVEY PERIOD (AGE 65+)**




Retirement itself is not a privilege shared equally by all. The census data reveal that in 2023, older U.S.-born workers retired at almost 1.5 times the rate of foreign-born citizens and almost three times the rate of noncitizen workers. Along with lower usage of private retirement accounts, some foreign-born workers might lack the work history or legal eligibility to make use of Social Security to the same extent U.S.-born workers can. The rate of out-migration and the age distribution may also differ among these groups, possibly contributing to retirement age variation.

ERICK GARCIA LUNA

Source: U.S. Census Bureau, CPS Annual Social and Economic Supplement (March 2024); author's calculations.

## FEDERAL RESERVE BANK OF MINNEAPOLIS

The Federal Reserve Bank of Minneapolis is home to the Opportunity & Inclusive Growth Institute and *For All* magazine. The Minneapolis Fed has a long history of research designed to inform policymakers. Some of the hallmark policy initiatives driven by pioneering research are studies around banks that are too big to fail and the powerful return on public investment in early childhood education. One of 12 Federal Reserve Banks, the Minneapolis Fed monitors the Federal Reserve's Ninth District economy to help determine the nation's monetary policy and strives to promote economic well-being.

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90 Hennepin Avenue
Minneapolis, MN 55401-1804

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FINAL THOUGHT

"To what extent can we position every person so that they are their best self, that they are doing the best work of their life, the best productivity of their life? If that happens, then our economy is stronger, our economy is bigger, our economy is more resilient, and our job actually gets a whole lot easier."

**Raphael Bostic**, president and CEO, Federal Reserve Bank of Atlanta, delivered these remarks at the 2024 Institute Research Conference. Photo from a public event in Miami, Florida.

STEPHEN NOWLAND/FEDERAL RESERVE BANK OF ATLANTA

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