for all

SPRING 2022

THE MAGAZINE OF THE OPPORTUNITY & INCLUSIVE GROWTH INSTITUTE

THE SNOW GLOBE ECONOMY

The pandemic has changed our relationship to work and shaken up the job-matching process.

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CONTENTS

COVER ART BY L.J. DAVIDS

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Changing research for a changing economy

LIKE MOST AMERICANS, I raised my eyebrows more than a few times over the last year while shopping for groceries, ordering from restaurants, or restocking my family's medicine chest. Price inflation was last a topic of household conversation when I was a child, but it has returned as an important issue in the pandemic recovery.

The Institute's mission is to support the Fed in its pursuit of full employment through our research into ways to enhance opportunity and inclusion in the U.S. economy. To do this, we constantly seek new detail on how the full range of U.S. households are faring. This spring, that search has led us to explore the ways inflation puts different pressures on workers and families depending on where they live, what they earn, and how they spend. We devoted a virtual Institute event to understanding the varied impacts of inflation and discussing how policymakers might respond.

The Institute is built on the idea that we need to know more and share more—through efforts like our spring event—to expand participation in our economy and access to its benefits. This premise has caused some to ask whether efforts like ours "distract" the Fed from fighting inflation.

I frankly think that's the wrong question. It supposes that having a narrower sense of context and trade-offs could somehow lead to better decisions.

The U.S. economy is always evolving, sometimes slowly and sometimes very quickly. The result is that our economy now looks very different from earlier, formative periods like the late 1970s. For example, in 1980, the ratio of household income for those just inside the top 20 percent to those just inside the bottom 20 percent was about 4 to 1. On the eve of the pandemic, this was about 5 to 1. The risk of a lasting earnings cut at some point in one's career has risen, and it has become harder to move from one employer to another. Despite these challenging trends, opportunity has in other ways expanded. The likelihood of staying with an employer for a long time (20 years or more) has steadily increased for women. Meanwhile, Black well-being broadly measured has advanced relative to that for Whites, despite a tide of rising income inequality more generally and persistent wealth and earnings gaps. Furthermore, efforts to address inequalities via social programs have provided opportunity that lasts a lifetime for some.

Rather than asking whether the Fed has the bandwidth to focus on inflation and broader opportunity, a better question is: What information do we want our decision-makers to have when they make choices that affect so many? Since its founding five years ago, the Institute has become a focal point for connecting with frontier research into how our economy does, or doesn't, work for all Americans. As such, it is one effort—among others at the Fed—to provide as much context as possible. As our spring event on the different ways that American households experience inflation shows, this approach can complement a traditional concern like inflation and can even provide new motivation for combatting it.

Research does little good if it is not shared—with policymakers, with other researchers, and with business leaders, community activists, technical innovators—everyone who participates in the economy. We hope that *For All* provides a way for you, our readers, to connect with our research in an engaging way. We'd like to hear from you about what you find useful and interesting, and what you'd like to see more of. Please use this QR code to access our short reader survey and tell us what you think. ★

We want to hear from you!

Please take our reader survey.

Growing the conversation

Conferences are an opportunity to cultivate community and research agenda

the Institute is always at work shaping and sharing scholarship on economic opportunity and inclusion. Presentations and discussions at scholarly conferences provide one venue for these efforts. Last fall, the Opportunity & Inclusive Growth Institute held its inaugural research conference. This was not the first Institute conference, but it was the first to showcase the range of frontier-style research that the Institute engages with in pursuit of its mission to conduct and promote scholarship that will increase economic opportunity and inclusive growth for all Americans.

This is a broad goal, one that is served by embracing breadth and diversity in researchers and research topics. Several presentations spoke to the ways monetary policy impacts different dimensions of inequality. Others considered how market competition, laws, and government enforcement actions affect discrimination in specific spheres, research that helps illuminate remedies for racial discrimination.

The conference keynote panel, "Race in Economic Research: From One Dimension to Many," continued the Institute's commitment to examine how researchers can enrich and expand their study of questions related to race in economics. It is a conversation that Institute economists took to the American Economic Association's (AEA) annual meeting in January in a session titled "Incorporating Racial Inequality into Macroeconomic Models." Former visiting scholar Trevon Logan convened the session, which was moderated by Insti-

tute Director Abigail Wozniak and featured Assistant Director Alessandra Fogli and Senior Research Economist Illenin Kondo as panelists. The AEA meeting is the largest annual gathering of academic economists in the U.S., and the session provided an opportunity to discuss best practices in research to better reflect and account for racial economic inequality.

The Institute also supports the work and development of the next generation of researchers. To this end, the fall research conference was preceded by a full-day mentoring workshop to hone projects by seven scholars who recently completed their Ph.D.s. Milena Almagro, a former Institute visiting scholar who presented at the mentoring conference, appreciated the workshop's focus on constructive feedback. "I think this 'en petit comité' [small group] format really encouraged questions, suggestions, and interactions," Almagro said.

Promoting teaching and training within economics is one of the goals of the Midwest Economics Association, which held its annual meeting in March. Wozniak chaired the session "Doing Inclusion in Economics," which drew inspiration from "Reaching Our Full Potential," an Institute report that reflects on broad themes and concrete actions that emerged from last year's "Racism in the Economy: Focus on the Economics Profession" event. Panelists discussed engaging students from a broad range of backgrounds, improving inclusion in journals' editorial processes, and researching pressing questions of economic inclusion.

—*Lisa Camner McKay*

The research community at the Institute includes visiting scholars, consultants, economists, research analysts, and research assistants. These scholars bring a diversity of backgrounds, interests, and expertise to research that deepens our understanding of economic opportunity and inclusion as well as policies that work to improve both. We talked with four of them about their work.

ROB VALLETTA
Senior Vice President and Associate Director of Research, Federal Reserve Bank of San Francisco

FOLLOWING THE DATA ON LABOR INCENTIVES

When he joined the Federal Reserve Bank of San Francisco in 1995, Rob Valletta remembers feeling "on the margins of the conversation"—an applied microeconomist at an institution focused on macroeconomic concerns.

Times have changed. Today, questions about worker and firm behavior that have long fascinated Valletta have moved center stage. "Over the last couple decades there's been a shift in the Fed system to think about how the economy operates on a microeconomic basis," said Valletta, now a key policy advisor to San Francisco Fed President Mary Daly.

"The topics I've focused on in terms of labor market dynamics—things that cause people to change jobs, what they think about when they're deciding to accept a job, how long they stay unemployed—are crucial for understanding how the labor market works and the Fed's maximum employment goal," Valletta said.

Valletta serves on the Institute's System Affiliates Board, where he helps shape the Institute's research and conference agendas. Each member brings a career steeped in topics related to inclusive growth.

For Valletta, that includes critical scrutiny of the notion that government social supports dissuade people from working. From Medicaid expansion under the Affordable Care Act to extended unemployment insurance (UI) benefits amid COVID-19, Valletta's research has found that while such "moral hazard" might feel intuitive and powerful, the effect is often modest or missing in real-world data.

One lesson for economists and pundits: Circumstances matter. "Unemployment insurance might have large disincentive effects in normal times," Valletta said. "By contrast, when the economy is weak, unemployment insurance is likely to have a different impact. It's a way of keeping people alive—bridging them from an economic shock to a labor market recovery."

On the heels of an unprecedented expansion of U.S. jobless benefits, Valletta's ongoing analysis suggests workers were aware that the supports were temporary and that skills could go stale if they stayed out of work for too long. His findings, along with work by others, suggest that the impact of the UI expansions on the labor market was limited. This research offers a needed reminder, Valletta said, that human beings generally want to work—not coast.

"It's common to think about workers as empty vessels, making decisions without any meaningful, forward-looking thinking," Valletta said. "But people are smart. They know to plan for the future."

—*Jeff Horwich*

> **"It's common to think about workers as empty vessels. … But people are smart. They know to plan for the future."**
> —Rob Valletta

RICARDO REYES-HEROLES
Senior Economist, Federal Reserve Board of Governors

HOW TRADE SHOCKS RIPPLE ACROSS GENERATIONS

Most economists agree that, on balance, free trade benefits the U.S. economy. They also agree that it creates winners and losers. Those who gain access to new markets abroad thrive. Those undersold by overseas rivals suffer.

But that's what happens at the *start* of a trade deal, when businesses and workers are still adjusting, according to Ricardo Reyes-Heroles, a senior economist with the Federal Reserve Board of Governors. He wanted to know what happens next. When new workers join the labor force, surely they would look for work in thriving industries and avoid declining ones?

Yes, they would, but inequality among new workers means some adjust faster to trade shocks than others, according to an empirical analysis and an economic model he and two co-authors developed based on trade between the U.S. and China.

Because most U.S. industries that thrive on trade with China require college degrees—education and financial services, for example—young workers are more likely to attend college after seeing how trade affected their parents' generation. But young workers who can't afford tuition will likely end up in low-wage jobs for another generation.

"The wealth of your parents actually matters a lot," said Reyes-Heroles, who presented a paper describing the project at the Institute's fall mentoring workshop.

His model predicts that workers who missed out on college will save so their children can go, allowing that generation to finally gain from trade.

Growing up in Mexico City as the North American Free Trade Agreement (NAFTA) went into effect, Reyes-Heroles said he was exposed to discussions about trade between his economist father and his father's colleagues. One of the inspirations for his latest paper is how NAFTA was initially greeted in Mexico. People complained that only border regions benefited from new factories, while regions farther south lost farm jobs. By the time his generation entered the labor force, though, few thought NAFTA was a bad thing, he said.

It's important to consider these multigenerational transitions, Reyes-Heroles said. Looking at just one generation makes it seem like the benefits of trade will never reach everyone. It also obscures potential policies to limit hardship for those suffering losses. One policy to consider, he said, is subsidizing college tuition for those harmed by trade, which could shorten the transition period by a generation.

—*Tu-Uyen Tran*

MARIANNE BITLER
Professor of Economics, University of California, Davis

VISIBILITY THROUGH POLICY ANALYSIS

As a Ph.D. student in the University of Minnesota's mathematics department in the mid-1990s, Marianne Bitler found herself thinking about politics and policy in addition to math. "I was the person who would be listening to *Fresh Air* while doing my complex analysis homework and thinking, 'I'd rather be studying that,'" she said.

So, she moved first to the Federal Reserve Board as a research assistant and then to the economics department at MIT, where policy-focused economists were talking about the controversial 1996 welfare overhaul. This reform restricted welfare benefits and encouraged low-income parents to work. Three senior Clinton administration officials resigned in protest when it was signed, arguing that the bill would hurt children. "We were getting data, though," Bitler recalled, "that would let us answer questions about whether there were that many more kids in poverty."

Over the last 20 years, Bitler, now a professor of economics at the University of California, Davis, has answered more questions about how welfare reform has and has not succeeded than almost any other researcher. Her work has explored how welfare reform changed marriage, divorce, and living arrangements and hindered women's access to medical care. She has also spotlighted the varied economic experiences of women affected by policy changes. Connecticut's program, for example, increased average income yet made some women poorer. And Bitler has shown how the shift toward safety-net programs available only to people who are working leaves families more vulnerable to recessions, when they may not only lose a job but also many important public benefits.

Bitler's career also mirrors the trend toward visibility and inclusion of LGBTQ+ research and researchers in economics. Bitler, a bisexual woman, recalled when she was a graduate student that "there were queer people in economics...but research was hamstrung by the fact that you couldn't identify someone's sexual orientation or gender identity or sexual behavior or sexual attraction in data." As datasets improved and laws relating to queer families changed, research on economic outcomes for LGBTQ+ people, such as family dynamics, income gaps, and wage/hiring discrimination, grew—and so did the community of queer economists.

The maturation of research and inclusivity in the profession need not go hand in hand, Bitler emphasizes, but they can. Mentoring sessions organized by a new American Economic Association committee and the ability—helped by the necessity of Zoom seminars—to meet regularly with LGBTQ+ economists, Bitler said, "have been huge for community-building."

—*Andrew Goodman-Bacon*

CORINA BOAR
Assistant Professor of Economics, New York University

PARENTAL SAFETY NETS, PLEASURABLE JOBS

As a student in her native Romania, Corina Boar was advised by some of her instructors that a degree in economics was a useful way to secure a job. Her reasons were different.

"During my undergraduate studies, other professors talked about economics with passion and humility," Boar said. "They instilled in me a curiosity that went beyond the practical aspects of economics that are needed to get a job."

Boar's research interests as an economist were influenced by a later conversation with her father. She mentioned that earning a Ph.D. typically takes longer than five years—the amount of time her program offered funding. Her final year would have to be paid out-of-pocket.

"I'll set some money aside," her father said. And that was that.

Recognizing her own freedom to pursue her passion prompted a research question: In what ways do parents affect their children's labor market outcomes? Boar's research demonstrates that people with higher-income parents are literally able to afford jobs that people from lower-income families cannot.

High-income parents tend to beget high-income children. However, there are also nonmonetary benefits of some occupations that children of wealthy parents can trade off against a higher income.

"When you choose your career, you're going to try to balance two things: how much money I make versus how much I like my job," said Boar. With co-author Danial Lashkari, Boar finds children of rich parents are more likely to pursue jobs with high "intrinsic quality." These have higher levels of autonomy, respect, and control, and require less physical effort. Occupations high on intrinsic value include post-secondary teacher, architect, writer, artist, entertainer, and athlete.

With family wealth as a backstop, children have the freedom to make less money but be happier in their work (or to gamble on, say, a long-shot acting career). Children from less privileged backgrounds face a bigger financial risk to follow a passion heedless of the paycheck.

Boar's work takes on a challenge in traditional economics to recognize that utility means more than dollars and cents and to create models in which people respond to nonmonetary incentives.

"People talk a lot about equality of opportunity, but I have an interest in equality of well-being and how that intersects with economic outcomes," said Boar. "Your chances of becoming what you want to become shouldn't depend on how rich your family is."

—Alyssa Augustine

> **"People talk a lot about equality of opportunity, but I have an interest in equality of well-being and how that intersects with economic outcomes."**
>
> —Corina Boar

THE SNOW GLOBE ECONOMY

Two years of COVID-19 have upended our world of work. When—and where—will we come down?

BY LISA CAMNER MCKAY
AND JEFF HORWICH

Big economic moments deserve a proper name. Some have labeled this one "the great reallocation."

Another way to put it: COVID shook up our economy like a snow globe. Workers and businesses are not gliding gently back to their old positions: Work environments, job responsibilities, child care, life priorities—all have been set swirling by the pandemic experience.

Even in the before-times, the process for employees and employers to find the right fit was an ordeal for both sides. Researching, applying, and negotiating take effort and time, oftentimes unfruitful. Unlike most markets, in which just one side of a transaction is

making a choice (consumers care which restaurant they eat at; restaurants do not generally care which consumers eat there), the labor market is complicated by "two-sided differentiation," said University of Minnesota labor economist and former Institute visiting scholar Aaron Sojourner: Employers and workers both size up each other, and either can scuttle the deal if the match isn't right.

The employment process is naturally full of frictions, which Sojourner defines as anything "that gets between you and the best job out there for you." The term "frictional unemployment" refers to the inevitable share of people who are navigating this matchmaking process.

The extreme signals from the data tell us the labor market is in a high-friction moment. Last year saw a record 47 million people quit their jobs, the highest since the Bureau of Labor Statistics started collecting the data in 2000. Meanwhile, the number of people who have taken themselves out of the labor force remains elevated, particularly for people over age 55.

At the same time, there have been an extraordinary number of job openings, nearly 11 million at the end of 2021—more than the number of people looking for work. The Beveridge Curve shifted outward into unknown territory and took on an unfamiliar vertical shape (see

A wild ride for workers along the COVID-19 Beveridge Curve

The Beveridge Curve (named in honor of British labor economist William Beveridge) shows the relationship between the unemployment rate and the job vacancy rate, and how that relationship changes over time. Each dot represents one month. The cluster of blue dots to the left show each month from January 2001 to March 2020, displaying an intuitive, negative relationship: When job openings are high, unemployment is low, and vice-versa. The red line traces the curve since the start of the pandemic, starting with almost 15% unemployment in April 2020. The COVID-era curve has moved into territory unseen in modern times. And in 2021, it turned nearly vertical as job openings soared to the highest level in decades, but workers declined to fill them—or added to vacancies by quitting in record numbers.
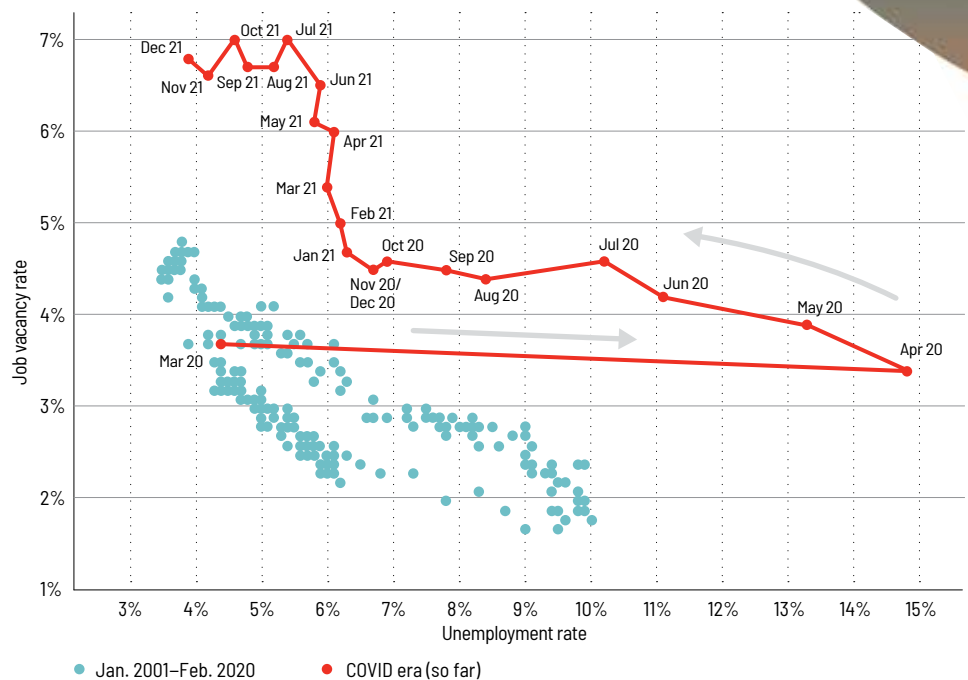
Source: U.S. Bureau of Labor Statistics

> People appear to gain valuable new information about employment options when colleagues quit to look for a new job. As a result, quitting seems to beget more quitting.

figure): Unemployment stopped falling while openings continued to rise. This imbalance is driving up wages, particularly for lower-wage jobs. That there are so many job openings and so many job seekers implies there are matches to be made. That they aren't happening, or aren't happening quickly, suggests that frictions, old and new, are getting in the way.

What do these unusual trends say about how the labor market itself has changed? What do they say about us, as workers? What is the endgame of the great reallocation? Understanding is critical for the Federal Reserve as it sets policy to support the conditions for reaching maximum employment. Yet

with labor demand and labor supply adapting to the COVID economic shake-up, one with no recent precedent, it can be tricky to answer that eternal, nagging question: Are we there yet?

You can't fire me—I quit!
Quitting has been having a moment.

Quits tend to naturally rise with tight job markets. But "they're not just high," said economist Steven Davis of the University of Chicago Booth School of Business. "They're higher than any period in the history of the data."

The reasons for this churn are likely both structural—*where* will the swirling snowflakes fall?—and informational—*how long* will it take them to land? Structurally, the pandemic introduced major health concerns, changed consumer

spending patterns, and altered firms' use of technology, all of which have impacted which businesses are more and less productive—AMC Theatres versus Netflix, say, or a restaurant with a large dining room versus a takeout counter. As a result, "there's another firm out there now that is more productive and can make better offers" to prospective employees, Sojourner said.

But how people learn about these new opportunities depends upon "information frictions"—the fact that information about job openings, employer quality, and even wages is not easily or equally available. Research by Institute visiting scholar and University of California, Berkeley economist Benjamin Schoefer shows that people don't seem to have a good sense about how their compensation compares to workers in similar jobs at other employers—whether you are paid well or poorly compared to your peers, you likely think you're close to the middle.

"If you get stuck in a low-wage job, you might think *all* jobs are low-wage jobs and therefore you never switch," Schoefer said. But if these workers are

pushed to search for new jobs—as many who were laid off or left their jobs during the COVID recession did—they learn, which may lead them to seek out and obtain higher wages in the future.

In addition, Schoefer's research suggests, people appear to gain valuable new information about employment options when colleagues quit to look for a new job. As a result, in the near term at least, quitting seems to beget more quitting—a kind of multiplier effect. "One of the top things in the news—and in everyday conversation—is people talking about, 'Oh, wow, employers are really bidding up wages and a lot of people are quitting their jobs,'" said Nick Bunker, director of economic research for the Indeed Hiring Lab. "People might sort of say, 'Wait a minute—let me think about this.'"

Power to the people?

In the quits-rate and other aspects of the tight, post-pandemic labor market, it is tempting to see a shift in power from employers to employees. "I do think what we're seeing right now is a tilting of the bargaining table more toward workers," said Bunker. "There's more power for job-seekers because of the kind of outside options they have. If you're an employed person...you can go to your current employer and say, 'Hey, look, there's all this demand out there and all these people are quitting their jobs. It'd be a shame if I left!'"

Household savings surged during the pandemic, thanks to government stimulus and lower household spending. The feeling of extra money in the bank could provide a temporary wealth effect, empowering and emboldening workers.

The increased bargaining power of workers may be short-lived, however, especially where automation (essentially, substituting capital for people) is an option. Ironically, the pandemic itself—

and the higher wages that resulted—will tip the scales in favor of automation, predicts economist Andra Ghent of the University of Utah's David Eccles School of Business.

"This technology was available prior to the pandemic, but for firms it wasn't cost-effective to invest in it. And now it is," Ghent said. "Long term, this is not good news" for many lower-wage workers.

Rethinking our relationship to work

Wages are not the only piece of our work lives that the pandemic put in relief.

Most obviously, the pandemic caused a newfound awareness of health risks on the job. "It turns out to be hard to fill a number of jobs that require daily or intensive contact with others," said

economist Arie Kapteyn of the Center for Economic and Social Research at the University of Southern California, which runs the ongoing Understanding Coronavirus in America survey. Health risk is mediated not only by interaction with others but also by employer decisions: Have they put a mask mandate or a vaccine mandate in place? These concerns add to the criteria that job seekers and prospective employers must match on, increasing job search frictions.

But health concerns are not the only driver of new expectations, Kapteyn noted. "Another story is that people are reevaluating their lives: Is this really what you want to do?"
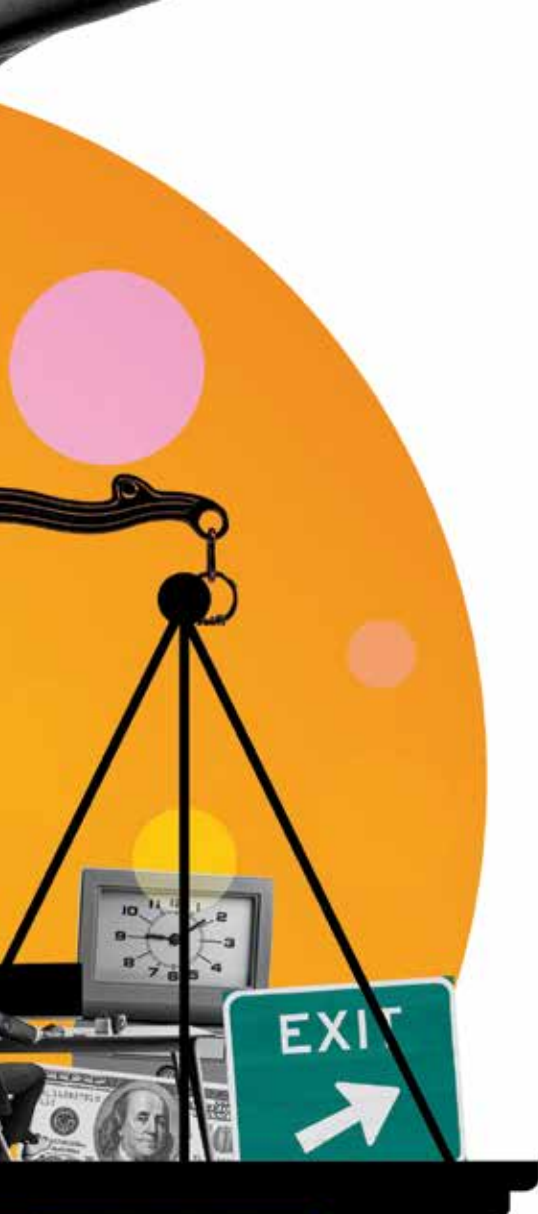
Health concerns are not the only driver of new expectations, Kapteyn noted. "Another story is that people are reevaluating their lives: Is this really what you want to do?"

of it might give you a new perspective on alternatives that life has to offer—possibly with one alternative being idle or unemployed."

Loewenstein worries about a darker effect of pandemic unemployment, with long-term consequences for the job market: "I suspect that there is a massive mental health crisis that we're not fully aware of." Even before the pandemic, Loewenstein said, going back to work after an extended absence "was a very daunting prospect for a lot of people—a lot of insecurity about whether they had the right skills. The pandemic has led to this re-entry issue on a mass scale."

For some, living through the pandemic has shifted the place of work and earnings in our priorities. By introducing more family time and life without a commute, the pandemic could have altered the value people place on leisure, said Ghent, who studies work-from-home trends. We are more willing to step onto a different path, "willing to say, long-term, maybe this isn't going to increase my wages as much, but I won't put myself on the same trajectory to have the big increase in productivity later on [in my career]."

Commuting and cubicles?
No, thank you.

People did more than change their minds during the pandemic. They changed ZIP codes.

Some workers moved to an entirely different metro area—leaving Califor-

nia's Bay Area, for example, in hopes of a remote-working life in Boise. A more substantial shift was the movement away from city centers into the suburbs. While renters are more mobile than homeowners, physical moves are not quickly undone, leaving a sticky situation where jobs and workers are not in the same places as office work returns.

"What might have looked like an attractive job when I only had a 20-minute commute, now doesn't look so attractive if it's a 75-minute commute," noted Davis of the University of Chicago. He says the "spatial mismatch" works both ways, with employees in the suburbs who don't want to go into the city and city-dwellers finding that service jobs have followed white-collar workers into the suburbs.

For jobs with a remote-work potential, the dance between employers and workers is far from over. The pandemic was a historic inflection point—similar, said the University of Utah's Ghent, to the telephone or email reaching critical mass. "These technologies have this characteristic of a network externality, where the benefit of them depends upon how many other people are using them," Ghent said. "Zoom was not invented in 2020. But it wasn't appropriate for an accountant to say to a client, 'Hey, you want to just meet over Zoom?'"

Ghent believes the productivity gains from crossing this threshold—including eliminating hours of nonproductive commuting time—will be a "win-win" for workers and employers overall. The

Many already-tough jobs were made more unpleasant by the pandemic, said RAND economist Kathryn Anne Edwards. Hospitality workers have had to enforce mask mandates. Retail workers do more cleaning. Restaurant staff spend time bagging take-out orders (for lower tips) and contend with surly customers. Nurses, bus drivers, substitute teachers … the altered nature of many jobs may lead workers to hold out for alternatives.

In addition, a "status quo" effect may be at work among the historically large number of people who have been out of work for an extended time, explained behavioral economist George Loewenstein of Carnegie Mellon. "Continuing to work in an occupation is very different from re-entering it," he said. "Being out

> While renters are more mobile than homeowners, physical moves are not quickly undone, leaving a sticky situation where jobs and workers are not in the same places as office work returns.

University of Minnesota's Aaron Sojourner points out that it could also reduce job search frictions, allowing both workers and companies to search nationally, not just locally, which should increase the quality of employee-employer matches.

But for this to happen, employees and employers must strike a truce on the right amount of work-from-home. Davis' ongoing Survey of Working Arrangements and Attitudes finds employee and employer expectations are converging, but workers still expect a nearly full day more at home each week, on average, than employers. Nearly 40 percent of recent, college-educated job-quitters, surveyed in the fall, said they did so to obtain greater time working from home.

One economic diagnosis for the mismatch in expectations: Some diffuse and long-term benefits to office-time for the organization—innovation, collaboration, mentoring—do not factor into workers' day-to-day calculations of costs and benefits. Loewenstein, the behavioral economist, suggests workers might also be ignoring long-term benefits to themselves, which he labels an "internality" problem.

"These kinds of changes occur slowly within organizations," Davis said. "It requires a profound shift in how you manage the organization, how you cultivate cultural values, how you transmit knowledge from more-experienced to less-experienced workers." We are still in the thick of experimenting, bargaining, and self-sorting our way to a new equilibrium around remote work.

A hard(er) bargain

With workers dreading a commute and eager to preserve newfound work-life balance, negotiating a pay and benefits package just got more complicated. Wage bargaining is already prone to frictions caused by asymmetric information; by the fact that negotiation typically happens only annually; and by the practical reality that wages are hard to adjust downward.

Now the pandemic has introduced a new element into the compensation picture. Employees and job seekers want flexibility; but at what cost? Davis' ongoing Survey of Working Arrangements and Attitudes finds employees now working from home part of the week would require a raise of more than 8 percent to compensate them for returning to the office full time.

Post-COVID inflation adds another wrinkle—but also a possible solution to the stickiness of wage decreases. "Smart employers can probably get away for the next couple of years with offering lower wage increases than they might otherwise offer," said Davis. "It'll be a lot easier to get away with a wage hike below the inflation rate, if you at the same time allow workers to work from home part of the week."

Remote work is not an option for all jobs, of course. In particular, many lower-wage jobs in retail, hospitality, and manufacturing must be done on site. These are jobs at which workers traditionally have little negotiating power over wages; they have also experienced anemic wage growth over the past 20 years. Now, however, wages in a number of low-wage sectors are the fastest-growing in the economy. These jobs cannot

be compensated with greater flexibility, and in many cases the job responsibilities carry both new risks and burdens. By not accepting the old, low rates of pay, workers are exerting influence to increase wages.

The child care challenge

Flexible hours and hybrid work help keep parents in the labor force. But trying to juggle work and children during the pandemic has proven they are no substitute for reliable child care.

Child care has long been a friction for parents of young children, especially mothers, affecting both *whether* and *how much* they work, RAND's Edwards said. With limited access to paid family leave, subsidized child care, or part-time work schedules, "We haven't made it easy for mothers of young children to work in the formal labor market," said Elizabeth Cascio, an economics professor at Dartmouth College.

When the pandemic sent not just young children but *all* children home, "in terms of the time parents had to devote to these child care needs, it was almost like having another newborn," observed Gema Zamarro, professor of economics and education reform at the University of Arkansas. Mothers were far more likely than fathers to provide this care, even when both parents were employed, according to Zamarro's analysis of survey data: In the spring of 2020, one in three working moms reported being the sole provider of child care for their children, compared to one in 10 working dads. And this imbalance had grown even larger by fall 2020.

But the days didn't get any longer. "Being the only one providing child care in the spring of 2020 is associated with a 20 percentage-point increase in respondents saying, 'I had to reduce working hours,'" Zamarro reported, and sole providers were also more likely to transition out of employment entirely. Research by Edwards shows that the more kids there are in a household, the larger the decline in mothers' labor force participation.

Unfortunately, child care frictions stoked by the pandemic remain elevated. The child care sector is roughly 10 percent smaller than it was before, Cascio reports—and as many parents can attest, availability was a challenge even in 2019. Lower supply, compounded with post-COVID approaches to cleaning and crowding, will tend to make child care even more expensive than the $15,000-$20,000 that quality centers typically cost before the pandemic. Schools have reopened, but children are still subject to unpredictable quarantines and closures.

And while most working parents feel a child care crunch, the burden doesn't fall evenly. Ultimately, parents with greater resources are better able to solve their child care needs, stay in the labor force, be more productive, earn more money, and invest more in their children, U.S. Census Bureau economist Misty Heggeness explained, making affordable, accessible child care an equality issue. (See "The Great Balancing Act," page 26.)

With some 10 million open jobs, it's also a matter of economic growth. Speaking to CBS's "Face the Nation" about the challenge of finding child care, Minneapolis Fed President Neel Kashkari said, "It does have an effect on women's participation in the labor force and how high our labor force participation is as a whole."

Like the tug-of-war over remote work, workers' willingness to quit, and our shifting relationship to our jobs, "These [child care] challenges have been exacerbated in the pandemic," Kashkari said. "Long term, this is an important economic growth issue and competitiveness issue for the country." ★

SOCIAL POLICY
IN THE AGE OF ALGORITHMS

Institute advisor Jon Kleinberg on engaging
in dialogue with our technology to confront
hidden bias and make smarter choices

BY JEFF HORWICH
PHOTOS BY HEATHER AINSWORTH

YOU MIGHT THINK JON KLEINBERG,

as one of the world's leading authorities on computer algorithms, would only surf the web in "incognito" mode.

"I have colleagues who turn all that stuff off, and that's a very reasonable decision," said Kleinberg. "But I personally found it was simply hard to navigate the world online if I had everything switched off." And of course, each click is an opportunity for a prolific researcher. "I tend to try to figure out why I'm seeing what I'm seeing. What am I going to see in the future as a result of taking a given step?"

Use the technology; learn from the experience; adapt and repeat. Kleinberg brings the same philosophy to his wide-ranging professional work—and a certain amount of faith: With all he knows about the risks and promise of advanced computing, he believes we can ultimately employ it as a force for good.

Kleinberg is the Tisch university professor of computer science at Cornell University. Some of his earliest research in the late '90s laid the conceptual groundwork for the now-dominant Google search engine. He helped establish the modern study of networks—the science of interconnectedness and spread, whether of ideas, illnesses, or financial panics. Along the way, his career has traced the rise of the internet, social media, and the unseen strings of ones and zeros that now permeate many aspects of life.

Kleinberg is in familiar territory as an advisor to the Opportunity & Inclusive Growth Institute, having partnered often with economists—as well as sociologists, doctors, and legal scholars. He dove deep with *For All* into a potent research focus: the potential for modern computing to reinforce our biases, but also to reveal them. This can help us make smarter economic and social policy—if we are willing to truly listen to what our computers are telling us.

ALGORITHMS: A GATEWAY TO OUR HIDDEN BIASES

Thanks in large part to Facebook and the last two U.S. presidential elections, the word "algorithm" has become a household term. What do you like to give people as a general, working definition?

I think of an algorithm as any procedure that's structured and that can be followed to solve a problem. Your GPS, when it wants to find the shortest drive to your destination, uses an algorithm to do that. Addition is an algorithm. Long division is an algorithm. There are a lot of analogies between algorithms and recipes that we use in cooking.

We've had algorithms for much longer than we've had computers. I think that's important because these terms have a way of isolating the concept, making it seem somehow weird and distinct from the rest of our lives, but it's really blended through our lives. Any time a person, an organization, or a machine carries out a structure or procedure to solve a problem, they're running an algorithm.

You've done a lot of thinking about how algorithms—which have no soul or opinions of their own, as far as I'm aware—can be biased. What's an example of how that happens?

The simplest way would be that you have a procedure that was made up by people who had a bias that they were trying to act on. And now, all the algorithm is doing is formalizing that bias procedure.

But I think the more subtle way this happens is with a large, emerging category of algorithms that have become quite powerful over the past 20 to 30 years, called "machine learning algorithms." The idea with machine learning algorithms is that there are a lot of problems that we want to solve that we don't actually know how to write down the rules for. We, as humans, can solve them. But we don't really know *how* we solve them.

WE'VE HAD ALGORITHMS FOR MUCH LONGER THAN WE'VE HAD COMPUTERS. ANY TIME A PERSON, AN ORGANIZATION, OR A MACHINE CARRIES OUT A STRUCTURE OR PROCEDURE TO SOLVE A PROBLEM, THEY'RE RUNNING AN ALGORITHM.

The problem comes in when the rule that it's learning may have our own biases encoded into it. For example, people who read résumés make decisions about which ones look like strong résumés and which ones don't. We wouldn't know how to write down a step-by-step procedure for that, but we can feed the results to a machine learning-styled algorithm. The algorithm will now try to learn a rule that distinguishes the résumés that look strong from the other ones.

This is where bias sneaks in. We have several decades of research from behavioral sciences that when people look at a résumé, a huge amount of their own implicit bias comes into the process. The algorithm—which knows nothing about the world—now just knows, "These are the strong résumés and these aren't." It's just trying to tell you a rule that faithfully describes your behavior, but your behavior was biased. It finds exactly the ways in which you're biased, and it reproduces them.

So, we think that we are removing the human element, perhaps, by using a machine learning algorithm. But that algorithm is learning things that we didn't even know about ourselves—and formalizing them.

Right. In addition to thinking of the algorithm as producing a tool, it is also producing a diagnostic.

The algorithm almost becomes like an experiment, which I can probe. I can create synthetic job applicants. I can run them through the algorithm. I can say, "Okay, what if I change it slightly this way? What happens?"

With a human being, if I ask them, "Would you still have hired this person if they had gone to school X instead of school Y?" the person might make their best effort to give you an answer to that. But they can't really know what they would've done in that situation. With an algorithm, we can change the input from Y to X—what school the applicant went to, for

instance—and we can just feed it back through. And we'll learn something.

There is a sense in which we have a much better chance of understanding the pipeline of decision-making when it's passed to an algorithm than when it's a human being.

COMPLEXITY, TRANSPARENCY, AND DEMOCRACY

You recently authored a paper with one of your computer science grad students looking at how the government could use algorithms to more fairly and efficiently allocate stimulus checks. That's a very timely question, and I will freely admit that—not being in the field—I could not begin to understand the findings!

The complexity of it made me wonder about how we bridge the gap between making smarter, more efficient policy decisions, and still having the voting public understand and have faith in what's going on. How do you see that balance being achieved?

Those are great questions and big challenges. The question of making policy decisions that are informed by complex models and large amounts of data—that's a problem that began before the widespread use of computing and algorithms, with the introduction of large-scale mathematical and statistical models into policymaking.

But the introduction of machine learning algorithms in computing takes us one step further because it allows us to deal with models that are, in some sense, inscrutable even to their developers. We can actually be looking at the answer, right in front of us—we have this computer code that is doing this thing that we don't know how to do, and we can't say how it's doing it. It's a profound challenge, and it's still a very new area—the area of interpretability and explainability of machine learning algorithms.

Sticking with the example of stimulus checks: A simple solution everybody can understand is to give everyone the same amount of money—maybe subject to some basic rules and cutoffs. I believe your paper's point is that complex algorithms could help target the assistance better, which would be a more efficient use of taxpayer money. But that runs into problems in a democracy. How can we make things more efficient, without just saying, "We just have to trust the robots to get it right"?

It's a great example to work through because the first question you come to is one you can't derive using an algorithm: What

are we trying to achieve through the allocation of a stimulus? We could have some aggregate measure of economic activity that we're trying to promote. We could try to maximize the number of people that we bring above some threshold that we've defined.

Those are human decisions that, in a democratic society, the policy process has to actually arrive at a conclusion on. I almost think of the role of the algorithm, or of mathematical models, as a counterparty in a dialogue about how to set objectives, how to set thresholds.

You go to your model and you run a counterfactual simulation. You say, "What if we tried this, what would happen?" And then you see what happens, at least within your model. There's this back-and-forth dialogue, where, in a sense, the computational model is giving you some clarity on the downstream consequences of choices that you might make.

The algorithm is telling us things that are very, very hard to figure out. Like, when I allocate [financial] assistance to a particular part of the system, everything is connected in some kind of network of transactions. It's like I poke this spiderweb of transactions and the whole thing ripples and it spreads out in all sorts of different directions. Algorithms are very good at helping you figure out what all those ripples will look like. But then it's up to you to decide what it is you're actually trying to accomplish.

And going through that process of querying the model, calibrating it—that itself is potentially a way to build public, transparent faith that you are meeting whatever goals society sets out.

That's how we hope the process works. The algorithm's computational models are one participant in that process—and it's a process with many participants.

In research with economist Sendhil Mullainathan, you make the point that when it comes to algorithms, simplicity and fairness can be fundamentally inconsistent with one another. That sounds like a very frustrating finding. What are we supposed to do with that knowledge?

We know that, as humans, if we're operating under conditions of low information or rapid decision-making, that is when people are prone to fall back on stereotypes—and often pernicious stereotypes that work to the detriment of people who are already at a disadvantage.

If we take a complex model—let's say there are thousands of pieces of information we might have about a person, and

we could simplify it by using only a few pieces of information. What we found in this work was that when you start removing the information available to an algorithm, it begins to do things that resemble the human process of falling back on stereotypes.

What this tells us is that we should be alert to opportunities to strategically "un-simplify" our models in certain targeted ways. There are many reasons to prefer simple models: [More complex algorithms] are inscrutable; they are not really amenable to collaborative decision-making or refining. But the question sometimes is: Are there ways in which, in a limited, targeted way, we can expand the models in ways that deliberately address the dimensions where it seems to be falling back on stereotype-like heuristics?

THE ARGUMENT FOR DIVERSITY...OF ALGORITHMS

Here's another term for us—it's kind of a mouthful: "algorithmic monoculture." What is that, and what is the danger it can pose?

The term monoculture comes from agriculture, where if you plant the same plant species across all of your fields, it's at risk to being eliminated by a single pathogen that can sweep through the whole thing, or by a single change in weather conditions.

Suppose that we begin introducing algorithms for some problem that is very complicated and that humans struggle with: medical diagnosis, evaluating loan applications, evaluating résumés. Maybe we could even demonstrate that we have made the system more accurate, or we have reduced the amount of bias or disparity in the system.

We're now in a new kind of situation that becomes slightly precarious. Let's say all the different firms in an area are all doing a first-pass screening of résumés using the same algorithm. First, if the algorithm just doesn't like your résumé for some reason, you no longer have a chance for recourse or a second opinion. If one doesn't like you, then they're all not going to like you.

Second, if conditions change, then we could all suddenly start making the same set of mistakes. For example, maybe this is an algorithm that's evaluating loan applications, and the underlying economic conditions change. Maybe this model was trained pre-pandemic, when the meanings of certain things in your financial history just look different. Then, all of a sudden, all of these algorithms are now making mistakes in the same way because they're operating in an environment that they weren't trained on.

These are things that become much more acute risks now that we have the ability to really replicate our decisions through computing.

COMPUTER SCIENCE MEETS ECONOMICS

You have research examining the power of algorithms to improve the way that we distribute welfare payments, or to improve intergenerational mobility. You get into one of the staples of behavioral economics, looking at sunk cost bias. As a computer scientist, what are you and your field bringing to these economic and social questions—and to the Institute?

I've gotten a huge amount of benefit, over my whole career, from working with economists and social scientists. What

struck me through all of this collaboration is how many of the complex problems that we're dealing with involve systems that sit at the boundary of computational, economic, and social concerns. We're increasingly creating systems where people come together and they interact, and that interaction is often mediated by algorithms.

The interface by which we engage with each other in commerce, for example, or exchange information on something like a social media platform—all of these have algorithms as intermediaries. For people thinking about human behavior and human society, this role of algorithms as mediators of so much of our activity means that you really have to take into account what these algorithms are doing.

Conversely, the design of algorithms is going to need to take into account the ways in which human beings are going to interact with the algorithms. You bring up the example of, say, sunk cost bias, or similar examples like time-inconsistency or present-bias—this interplay between humans with all of their behavioral biases and the algorithms that they interact with has really become a very rich topic for questions.

The allocation of resources in financial systems, the dynamics of the labor market, the ways in which policy decisions get arrived at through a synthesis of viewpoints from many different stakeholders—I think all of these are places where there's a productive interaction to be had between economics and the social sciences and computing.

SOCIAL MEDIA AND SEEING THE MATRIX

You've been at this long enough that we can track your career alongside the growth of social networks. We can go back to 2006, when you gave presentations speculating about whether people were becoming too exposed on MySpace. You were talking at least 10 years ago about the implications of personalized news feeds driven by algorithms and our "filter bubbles." Do you feel like you had tried to warn us all about the risks of social media, and should we have done something different at some point?

I didn't think of myself as trying to warn people. When I or my students or co-authors gave talks about this, I think we were trying to draw attention to social media as a topic and saying, "This is serious. This has the potential to have a major impact on society." In 2006, this was a bit of a hard sell because social media was this sort of frivolous activity where we went online and we shared photos, and we talked about things in our social media lives, while meanwhile our everyday lives went their own way.

I think the argument that we tried to make in 2006—and in 2010, and in 2012—is that there's really less and less daylight between our online lives and our sort of "real lives" in the offline world, that these are really merging. Similarly, that you eventually won't be able to separate social media from the political process. So, we should sort of treat this with the gravity that it needs.

Maybe that was a warning. On the other hand, I think it's very hard to predict how these systems turn out. And even now, I would say about social media what I say about algorithms: Algorithms are a tool, and tools can be used both constructively and destructively. They can do both a lot of good and a lot of bad.

We think about social media perhaps in enabling a group of people intent on causing harm to get together. And we say, "Why do we have this thing that lets people intent on causing harm to coordinate and form a group and operate more efficiently?" But that same social media platform also lets people who have a particular disease, who are not necessarily getting the help they need, to find other people online with that same condition and form patient support groups and discuss strategies and remedies that can be enormously helpful in their lives.

A powerful tool can be used for many different things. I think that's the sense in which we've been trying to approach

WHEN YOU START REMOVING THE INFORMATION AVAILABLE TO AN ALGORITHM, IT BEGINS TO DO THINGS THAT RESEMBLE THE HUMAN PROCESS OF FALLING BACK ON STEREOTYPES.

this, even now, even after all that's happened. But yes, I think one of our messages all along is that, at minimum, this is going to seriously intersect with your life, it's going to seriously intersect with society, with the political process, and with many other things.

I'm thinking again about machine learning algorithms teaching us about ourselves, revealing things about ourselves that we didn't know. And then, as a society, interrogating that and changing course. We're perhaps going through that very painful process right now with social media—understanding the effects that it has on us, and then tying that back to our values.

I think that's absolutely the case. It has also accelerated something that I think that we've seen even prior to the internet, which is the way media in general can be a powerful mechanism for polarization, depending how it's used.

One paper that I find fascinating in this domain is a paper by three economists (Matt Gentzkow, Jesse Shapiro, and Matt Taddy) looking at the evolution of partisan language in political speeches over two centuries. They looked at whether people from different political parties are essentially using different language when they address the same topic—"disjoint vocabularies." They asked the question: Given one minute of a politician speaking, how accurately can you predict which political party they're from? They plot this curve over 200 years, and the curve suddenly jumps up quite sharply—not in 2004 or 2005 with the introduction of social media, but in 1994, roughly around the consequential midterm elections during Bill Clinton's first presidential term. If you go back, you see that there were some very deliberate strategies taken with respect to the media, [and] the vocabularies of the two parties began to diverge. It's a reminder that it's been happening at all different points through our recent history, enabled by all different forms of media and communication technologies. Social media is the most recent step in that progression.

It's noteworthy that their paper uses the modern tools of machine learning to look back over that history, and that it's enabled us to actually go back and see things in our past—potentially more sharply than we saw them at the time.

I don't know how hard most of us think about the consequences when we play something on Netflix or follow our nose to a news article that Google serves up for us in our

feed. On the other hand, I wonder if you feel a little like Neo in "The Matrix": Everywhere you look, you see lines of code manipulating us.

Right—it is something I think about. I think there are a few questions you should ask yourself when you encounter things. Why am I seeing this? Is this tailored to me? Who is learning from what I'm doing right now? Do different platforms owned by the same company mean that data you're generating here are informing decisions over there? Maybe there's some actual economic relationship between them, maybe there's a data-sharing relationship.

In elementary school, I'm sure both of us learned some basic things like the difference between nonfiction and fiction; between an objective viewpoint and a subjective viewpoint; between a primary source and a secondary source. There's a whole new set of things that we need to be learning today that are just that basic, which I think we're having to figure out as we go along: the difference between personalized and non-personalized content; between a page that was populated by a human author, versus something that was created by machine learning; between content that is basically fixed and static, and content that is being dynamically populated and changes each time you go back to the page.

All of these are phenomena of the internet, based on the algorithms that are powering these systems, that are as fundamental as those things we learned as kids about the difference between fiction and nonfiction, or subjective and objective.

For somebody who understands the capabilities of algorithms and the power of technology, for good or ill, you seem to retain a lot of faith that by aggressively using it—by iterating and listening to the feedback—we will make progress. The answer is not to retreat.

Yes. I certainly feel very keenly the difficulties and challenges that we face, the ways in which things can easily go wrong. But I do feel that to work in this area, it is important to believe that there is potential to bring about improvements and benefits. Not to think that naively, to be falsely optimistic, or to think that solutions here are easy—but to think that solutions are possible and that this is a goal worthy of all our energy and our creativity. ★

This interview has been edited for length and clarity.

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

ILLUSTRATIONS BY KLAUS KREMMERZ

The long coattails of economic inequality

Losing a job hurts earnings for all workers, but those with poorer parents are hurt more

BY ANDREW GOODMAN-BACON AND LISA CAMNER MCKAY

apink slip. A plant closure. Then what?

Decades of economic research have shown that "displaced workers" affected by mass layoffs face a steep climb back to stable jobs and healthy earnings. Starting again at the bottom of the job ladder takes energy to seek out new opportunities and time to apply for them, and carries the risk that the next job may not be as good as the last. This process is slow, it is painful, and the scars can last for decades.

But does job loss affect all people in the same way? People born into families at the bottom of the income distribution face many more obstacles on the road to success than those born at the top. Obtaining a stable job is one way these individuals achieve upward mobility as adults. Do these workers experience the upheaval of a job loss in the same way as their colleagues who grew up in wealthier families?

New research by Institute visiting scholar Emily Nix and coauthors Martti Kaila and Krista Riukula shows that the path back to economic stability is much more difficult for workers from lower-income backgrounds. By linking adults in Finland to their parents' earnings, the economists track employment and earnings around large layoff events for workers who appear similar but grew up in households with different income levels. The striking differences in the post-layoff experience of these groups shed new light on why job loss is so harmful and why economic status is so stub-

bornly persistent across generations. The coattails of one's parents' socioeconomic status are long.

Frictions and scars

Some amount of job loss is an inherent part of modern economies. The traditional view among economists holds that unproductive firms *should* fail. These models of the economy often imply that new jobs will be immediately available at the prevailing wage: no waiting, no wage cut, no matter who.

That approach is useful for analyzing long-run economic outcomes, but as unemployed workers know, in the short run, new jobs are not usually immediately available in the real world. Frictions in the labor market, like the time and effort it takes to get a new offer or the costs of moving to a city with more openings, mean that finding a new job is anything but immediate. It's well-known in economics that people who lose their jobs usually remain unemployed for a spell while they search for new employment and that they earn less even after they get a new job, a phenomenon known as "scarring." And while some workers bounce back quickly,

others face consequences that are much worse than the average. But who are the worst-off workers?

Kaila, Nix, and Riukula tackle this question using a large and unique dataset of Finnish workers linked to their parents' earnings. They look at workers who were laid off from their jobs due to firm downsizing and closures—in other words, people who lost their jobs through no fault of their own. They then measure how the earnings and employment of those displaced workers changed relative to the earnings and employment of similar workers who were not laid off.

The researchers make these comparisons separately for workers whose parents were in the top 20 percent and bottom 20 percent of the Finnish earnings distribution—the first time economists have studied how job scarring varies with parental income. This makes it possible to ask whether the scarring effects of job loss are related to parental economic status.

The answer is a clear yes. Two years after the layoff, the earnings of workers with lower-earning parents had fallen 18 percent compared to their previous earnings, whereas workers with higher-earning parents had lost about 9 percent. And despite similar earnings before the layoff, the earnings of those with less well-off parents remain markedly below that of their peers with wealthier parents for at least six years, as shown in the accompanying figure.
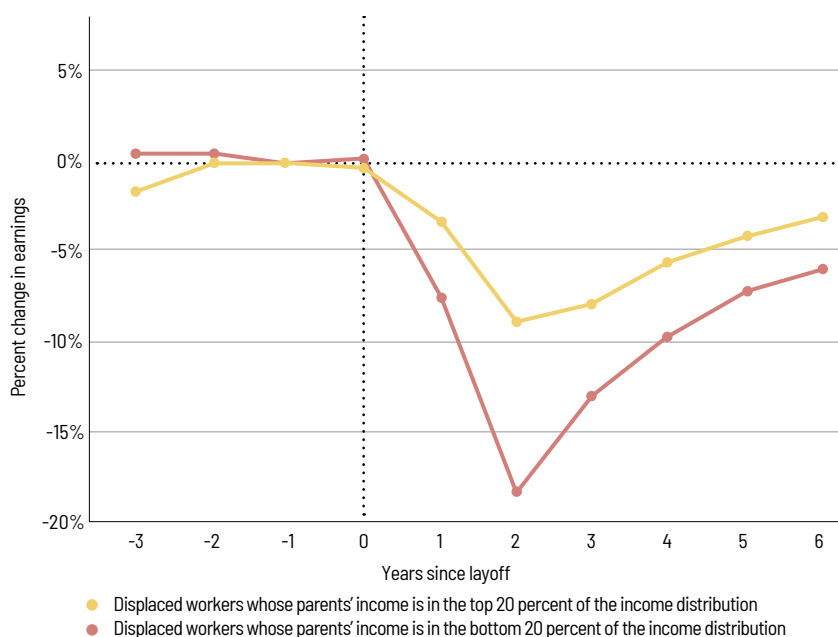
A key reason this happens is that workers with lower-income parents are only half as likely to hold a new job as workers with higher-income parents. This not only leaves them with fewer hours in which to earn, but previous research shows that unstable employment means displaced workers spend more time in lower-wage, entry-level jobs rather than reaping the benefits of experience at a new firm. "Even after entering the labor force, adult children of low-income parents have a more precarious perch on the job ladder compared with children of high-income parents," the economists write.

Why parental income matters

The striking differences between workers whose parents earn different amounts raises a range of new questions about how labor markets work. "What exactly is it that those from poor families do not have (and those from rich families have) that affects their post-displacement outcomes?" asked Pawel Krolikowski, an economist at the Federal Reserve Bank of Cleveland who has studied how displaced workers reenter employment and what factors facilitate their return. Does the advantage occur in childhood, adulthood, or both?

One potential explanation is that compared to lower-income parents, higher-income parents are able to better equip their children to withstand labor market shocks through more education.

STUDY AUTHORS

MARTTI KAILA, University of Helsinki; EMILY NIX, Marshall School of Business, University of Southern California; KRISTA RIUKULA, Etla Economic Research

Earnings of displaced workers over time

Source: Martti Kaila, Emily Nix, and Krista Riukula, "Disparate Impacts of Job Loss by Parental Income and Implications for Intergenerational Mobility," Institute Working Paper 53, Federal Reserve Bank of Minneapolis.

Higher-educated workers have smaller earnings losses than lower-educated workers, and the children of higher-earning parents tend to get more education. The economists show that differences in education—a "baked-in advantage"—can account for about half of the difference in post-layoff earnings losses.

But parental income matters outside of education, too. The authors find that workers with higher-income parents are *not* more likely to be hired into the same firm or industry as their fathers, but other forms of assistance are possible: cash gifts or loans, for instance, or leveraging professional networks.

The importance of parental income in determining the cost of job loss fits with other research showing a key role for families in shaping workers' responses to tough economic times. Krolikowski's research (with Patrick Coate and Mike Zabek) shows that living near one's parents greatly mitigates the harms of job loss, and University of Chicago economist and Institute advisor Greg Kaplan documents how parents help their unemployed children by letting them move back home.

The notion that families matter for how workers respond to job loss has the potential to shift both policy and economic thinking on this issue. Retraining, job search, and income-support policies could be targeted to workers with lower-earning parents who are hurt the most by mass layoffs. Moreover, economic theories about how workers navigate labor markets after a mass layoff need to explain what parental income does and why it plays a role.

Kaila, Nix, and Riukula's findings go beyond the economics of job loss, though. They also open the black box of one of the hottest topics in economics today: intergenerational economic mobility.

Inheriting resilience

Many countries view themselves as lands of opportunity—places where people who work hard can climb the ladder, no matter the rung they started

After a layoff, the economic status of workers with higher- versus lower-earning parents drifts further apart.

on. However, extensive and compelling evidence suggests that boosting intergenerational mobility is much harder than we'd like to believe.

Kaila, Nix, and Riukula's findings show that the disparate impact of job loss is an important factor undermining economic mobility across generations. After all, the groups they study were all doing well prior to losing their jobs when their firms laid off workers: The vast majority of those with parents in the bottom 20 percent of the income distribution had moved into the top 60 percent—a way of saying that this group had achieved economic mobility.

But after a layoff, the economic status of workers with higher- versus lower-earning parents drifts further apart. One way economists measure intergenerational mobility is to look at how closely correlated a parent's and child's places in the income distribution are: When the children of rich parents become rich as adults and the children of poorer parents remain poor as adults, intergenerational mobility is lower. The economists find that that this correlation increases about 4 percent because of the disparate impact of job loss. This is true both because workers with lower-earning parents are more likely to be laid off than

workers with higher-earning parents and because they work and earn less for years after a layoff. Both factors contribute to widening inequality.

Job loss in the age of COVID

Compared to the United States, Finland has more generous social benefits and higher levels of intergenerational mobility. There is reason then to suspect that the connection between parental income and the pain of job loss would be even stronger in the United States.

That impact is likely to reverberate even more during the age of COVID, when workers at low-wage jobs were far more likely to lose their jobs than workers earning higher wages. If people whose parents earn low wages face larger earnings losses for years to come, then the impact of the COVID recession on economic mobility and inequality could be substantial.

And job loss is just one feature of a labor market that workers experience, as Nix points out. Parental income might impact other features as well, such as the effect of entering the job market in a recession, the time it takes to find a job, or the impact of job loss on health. Studying these impacts will provide a more complete picture of just how long the coattails of parental socioeconomic status are. ★

TAKEAWAYS ↗ ↗

· After being laid off, workers with less-well-off parents have lower earnings and higher unemployment than similar laid-off workers with wealthier parents

· Higher levels of education among workers with wealthier parents explains about half the difference in earnings and employment outcomes

· The disparate impact of job loss reduces intergenerational mobility

The great balancing act

Analysis of mothers' work decisions during the pandemic points to importance of affordable, accessible child care

BY LISA CAMNER MCKAY

Over the past 18 months, newspapers have devoted many column inches to the challenges mothers have faced during the pandemic. While there are many estimates of the number of mothers who exited the labor force during the pandemic, those simple statistics can't say much about *why*. How much of the decline was due to changes in labor demand—a result of women's disproportionate presence in sectors most hurt by the pandemic, such as retail? How much was due to labor supply—a result of health fears or the child care crunch imposed by school and daycare closures?

Former Institute visiting scholar Misty Heggeness, a research economist at the U.S. Census Bureau, has long been interested in using big data to study public policy and how gender affects economic outcomes. As we stare down year three of life in the shadow of COVID-19, Heggeness has sought to understand how the rocky road parents have traveled has impacted their decisions about work.

By analyzing data from the Current Population Survey, Heggeness and her co-author, Palak Suri, find evidence that there is a labor supply story at work, as they explain in the Institute Working Paper "Telework, Child Care, and Mothers' Labor Supply." In the first nine months of the pandemic, the labor force participation of mothers of school-age children fell 1.5 percentage points more than that of women without dependent children and 1.7 percentage points more than fathers.

To better understand which mothers were affected and why, Heggeness and Suri compare how work decisions of mothers in different work environments compare to women without

children and to fathers. Their findings showcase both the advantages as well as the limits of flexible work arrangements—and the reasons to think deeply as a society about how to make child care affordable and accessible for all.

The limits of multitasking

Conventional wisdom has long held that flexible work, particularly telework, helps mothers maintain paid employment. "I think a lot of us had the perception going into the pandemic that this forced mass conversion to remote work was really going to help parents manage the child care crisis," Heggeness said. To test this idea, Heggeness and Suri track the labor force status of mothers, women without children, and fathers who work (or worked) in "telework compatible" or "on-site" occupations. Because the option to work remotely often depends on education level, the economists make comparisons separately for workers with and without a college degree. They also account for whether there is another adult living in the household as well as the county and state of residence, as these variables all plausibly affect labor decisions.

To develop a nuanced understand-

ing of mothers' decisions about work, the economists consider several possible work statuses. "Labor force participation" captures whether someone is attached to the labor force either by holding a job or actively searching. But it's a broad category, so they also look at whether someone is working, is on leave, or is unemployed and searching.

By comparing moms in different types of occupations and with different levels of education, the economists find patterns in the data that suggest several takeaways about mothers' experiences with work and child care during the pandemic. For on-site occupations, mothers with less than a college degree were more likely to take leave than women without children. Mothers with a college degree working on-site, however, did not differ in their work status

from women without children. Mothers with less than a college degree were less likely to be able to afford child care or have another household member who could watch the children, and so they could not continue to work at the same rates, the economists theorize. Mothers with a college degree, many of them "essential" workers, such as ER doctors, were better able to find and afford child care or had another household member who could watch the children, and so they continued to work.

Interestingly, the pattern switches for mothers in telework-compatible occupations: For mothers with less education, their work patterns do not look different from those of women without children. Their income is likely critical to their household, and because they were home with their children, it was possible

STUDY AUTHORS

MISTY HEGGENESS, U.S. Census Bureau; PALAK SURI, University of Maryland

"When you're trying to work from home and everybody else is in your home... you're playing the role of employee, boss, colleague—and then you're also playing the role of mother, spouse, adult child. And that is really just exhausting."

to continue to work despite the significant challenges. Mothers with a college degree in telework-compatible occupations, meanwhile, were more likely to take leave from work or leave the labor force entirely than women with college degrees or than fathers with college degrees.

"When you're trying to work from home and everybody else is in your home, you're playing multiple roles," Heggeness explained. "You're playing the role of employee, boss, colleague, whatever it might be—and then you're also playing the role of mother, spouse, adult child, if you have elder parents living with you. And that is really just exhausting. One of the things our paper showed was that for moms who actually had to leave their home for work, like go to the hospital or

go on duty as a police officer—somehow they found a way to calibrate child care and they were able to work in a way that didn't disproportionally affect them relative to their workmates."

Rethinking child care

Heggeness and Suri's research tells two stories. It is a story of resiliency: That so many mothers stayed in the labor force in the face of the health risks and child care demands during the pandemic points to the importance of mothers' income for many households' economic survival. In addition, at a time when more women attain higher education than ever before, it's also the case that many are deeply attached to their professional identity, Heggeness says. So, many mothers continued to work—inside the home and out, while caring for children or worrying about schools' quarantine calls—but doing so likely took a toll on their mental health.

Which is why the labor force participation story of mothers during the pandemic is also a child care story—a story that has not alleviated as the pandemic wears on and on and on. In fact, the gap in labor force participation between mothers and fathers that is attributable to the pandemic's child care challenges has increased: In September 2020, mothers' labor force participation had declined 1.5 percentage points more than fathers; by September 2021, the economists calcu-

late that gap had grown to 2 percentage points, a 33 percent increase.

While Heggeness and Suri focused on parents of school-aged children, their research has implications for the child care challenges parents of younger children faced long before the pandemic began and will face after. In the United States, child care is a labor market friction—"a barrier to the optimal allocation of labor," as Dartmouth economics professor Elizabeth Cascio puts it. The cost of child care is a major reason for the barrier, with high-quality centers costing between $15,000 and $20,000 a year per child on average, Cascio reports.

"I think we would all be better off if we thought about child care as a public good," Heggeness says. "It has lots of benefits to the broad society. It frees up able-bodied, working age adults to be able to be productive in the economy. It also provides a basic level of developmentally appropriate care and education for young humans who, eventually, after they finish all of their education and become adults at the age of 18, will be the next generation of workers in our society."

The consequences of the pandemic's child care shock—and the lack of affordable, accessible child care in the United States more broadly—matter because economic research shows that earnings remain depressed for years, even decades, after periods of non-employment, particularly long periods. For mothers, this means less money to live on, less to invest in their children or their retirement down the road.

But even mothers who stayed in the labor force could have been harmed by the pandemic, Cascio points out. Mothers have been—continue to be—stretched thin as they seek to balance parenting and paid employment under new, challenging work conditions.

And while understanding the full impact of the pandemic will likely take decades, society doesn't need to wait that long to start making the incredible balancing act mothers face a little bit easier. ★

TAKEAWAYS ↗ ↗

· Mothers reduced labor force participation more than both women without children and fathers during the pandemic

· Telework did not keep all mothers in the workforce, indicating challenges of parenting while working

· Rethinking how to make child care affordable, accessible could improve mothers' labor market outcomes

Unemployment now cuts deeper and lasts longer

College-educated, higher-skilled workers suffer increasing earnings shocks and volatility **BY JEFF HORWICH**

a s the pandemic recession took hold in northern California, Xavier Williams was abruptly laid off from his tech-sector job selling business-to-business security software—alongside 90 percent of his co-workers.

Nobody was hiring for the type of job he just lost. "I filed for unemployment, but that wasn't coming through for four or five months" given state backlogs, Williams said. Over the next six months, he borrowed more than $20,000 from friends and family to pay rent, stay afloat, and invest in plan B: launching as a real estate agent.

"I went from having a $60K salary to having zero salary and having to depend on generating that income myself," he said. "If I had not tried to transition to a different industry, I might still be trying to collect unemployment or back
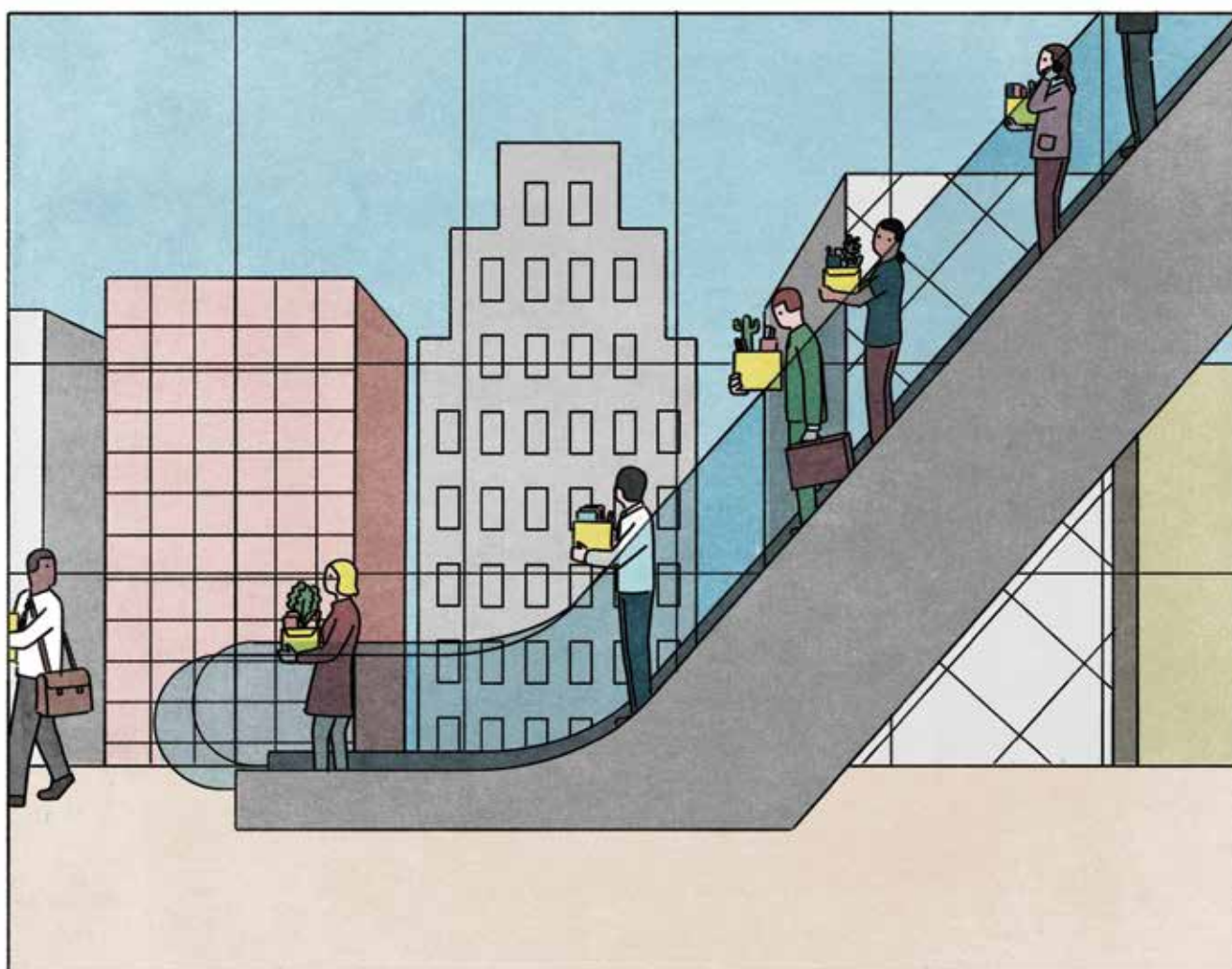
STUDY AUTHORS

J. CARTER BRAXTON, University of Wisconsin; KYLE HERKENHOFF, Federal Reserve Bank of Minneapolis and University of Minnesota; JONATHAN ROTHBAUM, U.S. Census Bureau; LAWRENCE SCHMIDT, MIT

on my mom's couch." Two years on, Williams' income has largely recovered. But the episode took a financial toll.

"Failing forward" not the reality for most

Some charmed people seem to bound up the ladder with every job switch. Maybe an unexpected layoff turns out to be a blessing in disguise.

However, an unprecedented dive into 40 years of U.S. earnings data finds that today, on the whole, bouts of unemployment last longer and strike a deeper blow to long-term income than they used to. Notably, this increase in "income risk" is primarily a problem for college-educated people, according to a recent Institute working paper.

The likelihood of suffering a job loss hasn't changed much over the years, said Minneapolis Fed senior economist Kyle Herkenhoff. "But when you do fall off the ladder," he said, "how far do you fall? How persistent is it? Those have really increased. When you get back to

the labor market, some people come back with much lower wages."

Herkenhoff and his co-authors identify these trends by applying advanced statistical techniques and heavy computing power to data on 1.2 million Americans, going back to 1982—pulling back for a view much wider than the current pandemic job market. Their unprecedented access, part of a wider partnership with the U.S. Census Bureau, lets them link individual census survey responses to that same person's earnings history (all anonymized) from the Social Security Administration.

They also use novel statistical methods to include data that seem like a no-brainer for studying income risk: stretches of unemployment. "In the past, researchers have thrown out long spells of zero earnings," Herkenhoff said. "People who lose their job—who fall off the ladder and stay down—can't be incorporated in existing methods. That's where we make a methodological contribution."

A bumpier ride, a steeper slide

An aggregate measure of income risk for U.S. workers doesn't tell us much because it obscures multiple underlying trends.

For example, an earnings shock can last a month or two, or it can alter the path of earnings for a lifetime. The researchers find that temporary shocks have actually decreased slightly—our paychecks are more stable day to day. However, the size of persistent shocks has been on the rise for the employed and unemployed. These shocks can be positive (a big raise or promotion) or negative (a salary cut, layoff, or switching to a lower-paying job). Over time, it's becoming a bumpier ride for American workers.

This volatility leads people to over-insure, setting aside excess savings to cushion against these future bumps. On a smoother road, they'd spend that money on other things that improve their lives or make them happy.

The negative effect of one year of unemployment on long-term earnings has grown worse over time
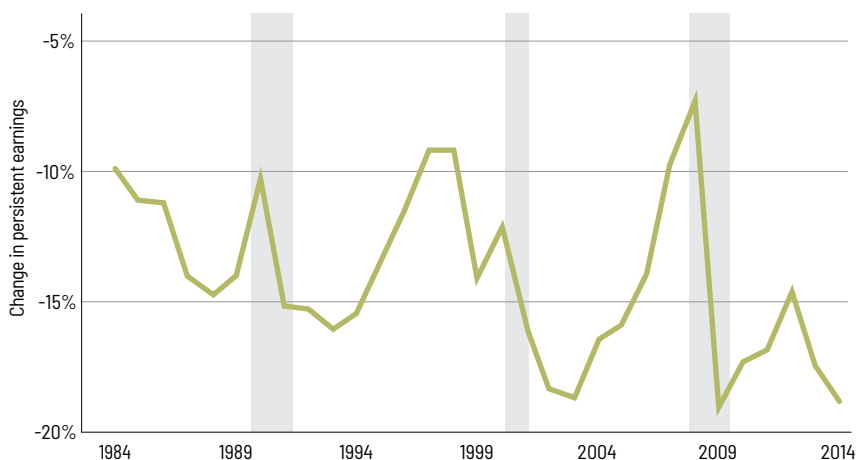
Note: Gray bars indicate recessions
Sources: Current Population Survey Annual Social and Economic Supplement and Social Security Administration Detailed Earnings Records

Not surprisingly, the earnings risk of being unemployed is about 40 percent larger than the risk while employed—the bumps are bigger. And losing a job today means a steeper slide backward than it used to (see figure). In 1985, one year of unemployment meant an average 11 percent decline in long-term earnings. By 2013, that had risen by more than half, to 17 percent.

The authors calculate huge costs to society from these trends. The findings have direct implications for how we think about retraining and unemployment insurance. The "scarring effect" of unemployment also matters for people who leave the workforce to care for children or elderly parents.

"Unemployment has become *non*-employment—long spells with large wage losses," Herkenhoff said. "If income shocks are becoming more persistent over time, we need to be rethinking the way we insure workers."

Higher skills, greater risk

Probing for a source of these trends, a reasonable instinct is to consider low-skilled workers. Or perhaps it's linked to the decline in manufacturing since the 1980s, especially in the hard-hit Rust Belt states.

The data eliminate these hypotheses. Instead, the authors find that increasing income risk is driven by college-educated workers. Unemployed people with a college degree face over 50 percent greater earnings volatility than those without a college degree. The long-term income shock from unemployment is also growing faster for higher-educated workers.

There is intuition here: Higher-educated workers make more money. Their income swings will be wider, and they will have more to lose when they hit a setback. Existing unemployment insurance programs are also more effective at smoothing income for workers who make less to begin with.

This finding does not conflict with the array of costs imposed by rising income inequality, nor the daily struggles faced by people with lower education and economic opportunity. Yet the lens of income risk reveals that workers with more education face increasing volatility, posing its own economic harm.

The role of changing technology

Herkenhoff and his co-authors classified the jobs of workers in their data by skill level and by the degree to which computer skills are integral to the job. Both factors were statistically significant for unemployed workers. "Those occupations where we measure very high technology requirements were the ones that had the greatest increases in income risk," Herkenhoff said. He offers the example of computer programmers, who build up expertise in languages that can become obsolete.

For Herkenhoff, the next stage of the work involves even more data. By integrating data from the IRS, his team plans to compile a work history for every person who has worked or paid taxes in the United States going back to the 1970s.

"We can point to a person, in a time period, and tell you what shock that person has—was it large, small, persistent, temporary?" Herkenhoff said. "We'll figure out who had layoffs, when, and why. And did we take care of them—or not?" ★
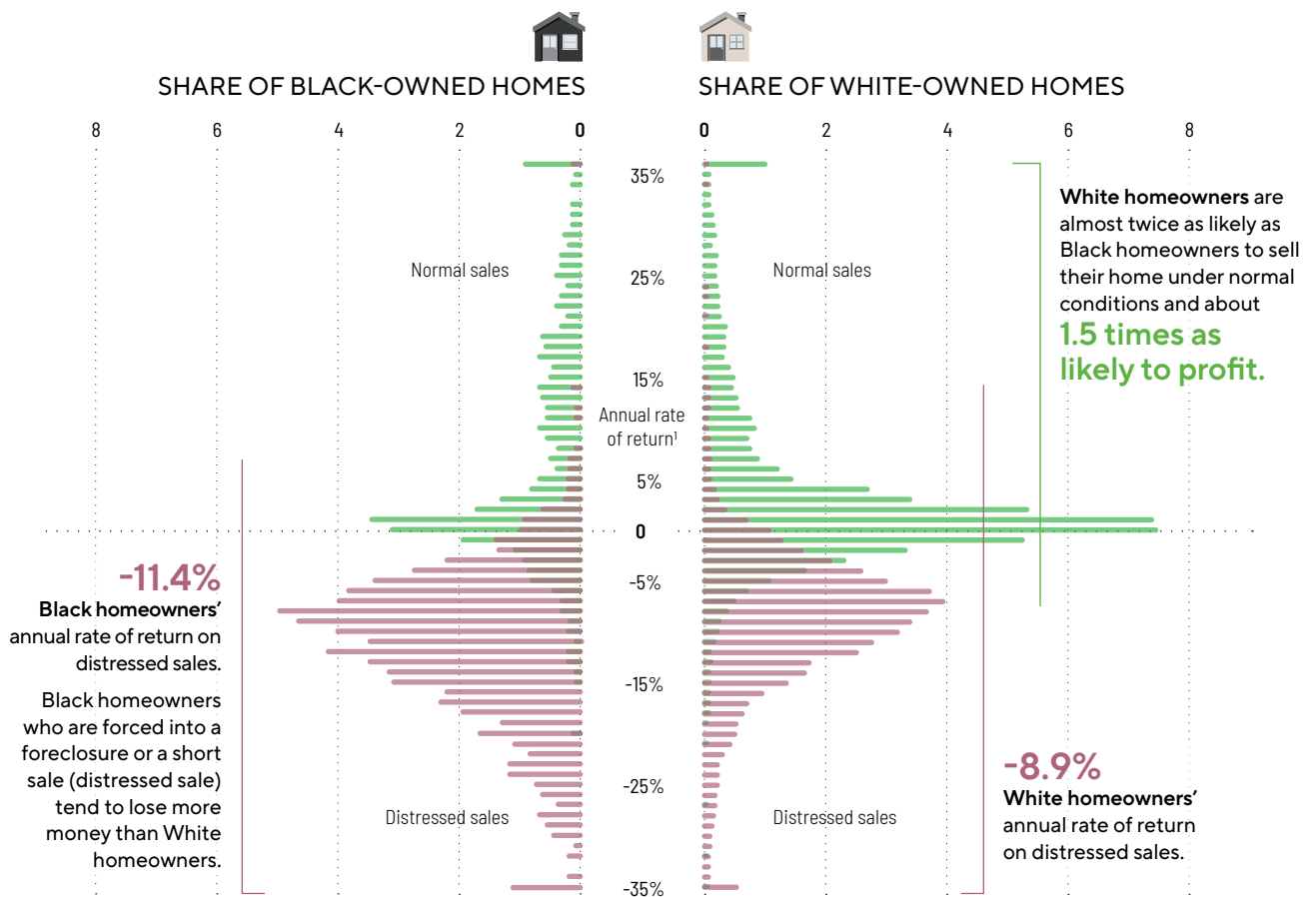
Temporary shocks have actually decreased slightly—our paychecks are more stable day to day. However, the size of persistent shocks has been on the rise for the employed and unemployed. Over time, it's becoming a bumpier ride for American workers.

TAKEAWAYS ↗ ↗

· Researchers apply new statistical methods to 40 years of earnings data on 1.2 million Americans

· One year of unemployment today causes 50 percent greater hit to long-term earnings than in 1985

· Findings hold policy implications for size and duration of unemployment insurance benefits

# ECONOMIC UNCERTAINTY HITS HOME...OWNERSHIP

Buy a home, build equity, and watch your wealth grow. This long-held formula is how middle-class Americans have generated wealth for decades. When families are able to sell their homes voluntarily, both Black and White households gain financially. But new research by Amir Kermani and Francis Wong presented at the fall Institute research conference highlights that differences in the likelihood of adverse economic events make it harder on average for Black homeowners than White homeowners to build housing wealth.

To illustrate how Black and White homeowners fare in the housing market, we examine the annualized returns for families who bought homes in the same year and in the same county.

SHARE OF BLACK-OWNED HOMES

SHARE OF WHITE-OWNED HOMES

White homeowners are almost twice as likely as Black homeowners to sell their home under normal conditions and about **1.5 times as likely to profit.**

-11.4%
Black homeowners' annual rate of return on distressed sales.

Black homeowners who are forced into a foreclosure or a short sale (distressed sale) tend to lose more money than White homeowners.

-8.9%
White homeowners' annual rate of return on distressed sales.

INCOME INSTABILITY CHANGES THE EQUATION.

Homeownership can be complex and riskier for Black families. They profit from normal sales but are more economically vulnerable and therefore more likely to lose their homes. Black homeownership is more fragile partly because Black workers are more likely to be laid off and to fall behind on mortgages.[2]
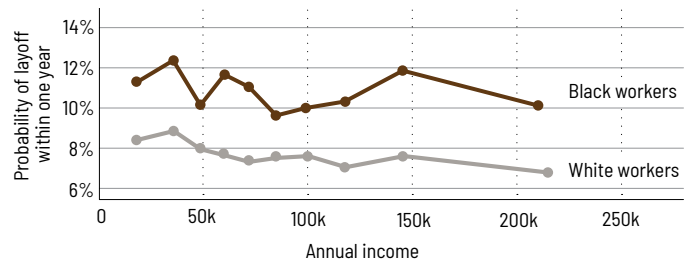
EASING THE STRESS. Conditions that make incomes more certain (like a strong economy) or keep people in their homes even when they are struggling (like loan modifications) lower the number of distressed sales and shrink racial gaps in housing returns. See more online at minneapolisfed.org/article/2022/economic-uncertainty-hits-home-ownership.

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[1] Financial returns calculated from data collected under the Home Mortgage Disclosure Act (HMDA) combined with sales price information from ATTOM (a private data provider).
[2] Survey of Income and Program Participation (SIPP).

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Mariacristina De Nardi
Thomas Sargent Professor of Economics, University of Minnesota

> **"**Normally we ask, what's happening in the macro economy, and how does that affect the well-being of individual social groups? But we rarely think about how the structure of relations between social groups might affect macroeconomic performance.**"**

William A. ("Sandy") Darity Jr., Samuel DuBois Cook Professor of Public Policy, African and African American Studies, and Economics, Duke University, speaking at the Fall 2021 Institute Research Conference

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