for all

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THE MAGAZINE OF THE OPPORTUNITY & INCLUSIVE GROWTH INSTITUTE

Beyond the paycheck

Who has nonwage income, where does it come from, and what is its role in the economic well-being of Americans?

FEDERAL RESERVE BANK OF MINNEAPOLIS

CONTENTS

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COVER ILLUSTRATION BY BRETT RYDER

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The magazine of the Opportunity & Inclusive Growth Institute

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FROM THE DIRECTOR

BY ABIGAIL WOZNIAK

Putting research in your hands

Our goal with *For All* is to shorten the distance from scholars who produce rigorous, cutting-edge research to those relying on research to make decisions. In this issue, we're introducing several updates to improve this flow of ideas.

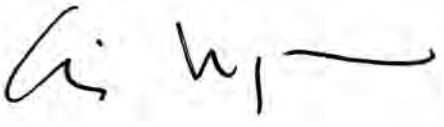
First and foremost, we're aiming to make *For All* a source of research—a place you can turn to for new facts and new evidence-based perspectives on the U.S. economy. You'll notice this in a new orientation for our feature articles. These will tackle the same big topics *For All* covered in its first five years but now bring a clear expert perspective.

Reading new research can be hard work, so you'll see other changes to the layout that make it easier to pull key points from the features and the issue overall. These include a one-page overview of the issue's insights ("The Abstract"), figures that tell their own story for quick reading, and prominent takeaways in our Research Digests.

After these changes, what's stayed? You'll still find many ways to learn about innovative research on opportunity and inclusive growth in every issue of *For All*. These include in-depth interviews with experts, profiles of researchers and their paths in our Scholar Spotlights, summaries of the latest study findings in our Research Digests, and a visual story in the Data Dive.

Above all, we remain committed to sharing research the Institute engages with and produces. The aim of that work is always to help the Federal Reserve achieve maximum employment, by understanding what drives economic opportunity and inclusive growth. If you participate in that economy, you deserve access to these insights. Our goal is for everyone who'd like to know more about our mission topics to find something useful in the pages of *For All*.

On behalf of our researchers, writers, and designers, thank you for reading. I hope you'll share what you learn here with others. ★



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

KAREEM HAGGAG

Associate Professor, UCLA Anderson School of Management

STUDYING NEW FRONTIERS IN MICROFINANCE

Kareem Haggag likes to describe his research as lying at "the intersections of economics, psychology, and political science."

In college, he found inspiration in all these fields and couldn't decide on just one. "I changed my major every single year of undergrad," Haggag said.

Eventually, economics won out. "I just tend to have scattered and diverse interests, and there seems to be a little bit more tolerance for economists to dabble across areas," he said.

This intellectual wanderlust has led Haggag to topics ranging from the effects of flexible pay schedules on Uber drivers to how much an extra point on the ACT exam affects attendance at four-year colleges.

Haggag's latest research, involving equity financing for livestock farmers, or herders, touches on human behavior and economic development.

In the developing world, microbusinesses have long had access to microloans. But many business owners consider loans too risky, and among Muslims (of whom there are many in developing countries), there are religious concerns over interest rates.

Microequity—very small investments—may sidestep those concerns and create opportunities for debt-averse people.

For banks, equity leads to new concerns, which may be why microequity investments are not widely available, according to Haggag. With loans, a borrower risks losing their own investment if their business venture fails. With microequity investments, banks share the risk. This could be a problem for banks if the relative safety of equity attracts less productive businesses or those that take bad risks. Economists call this "adverse selection."

Microequity—very small investments—may sidestep concerns and create opportunities for debt-averse people.

One of Haggag's goals was to test how likely adverse selection was by working with an Egyptian nonprofit's microequity program. He found that in this context, risk-sharing actually attracted herders who are *more* productive. The program showed enough promise that Haggag and his co-author are now consulting with a national bank to scale up.

There may be a role for microequity even in the U.S., where there is widespread acceptance of credit cards, mortgages, and other forms of debt, according to Haggag. Economists have found that many Americans do have an aversion toward certain forms of debt, such as student loans.

While Haggag's research leaps from one topic to another, it often involves questions about poverty and inequality. He said he's had these questions for as long as he can remember: Why is there so much poverty in Egypt, his parents' homeland? Why did disparities exist among his grade school classmates in Tennessee?

"Economics provides a broad toolkit that could allow you to study the causes," Haggag said.

—Tu-Uyen Tran

OKSANA LEUKHINA

Senior Economic Policy Advisor, Federal Reserve Bank of St. Louis

A HIGHER PURPOSE FOR HIGHER ED ACCESS

At first glance, Oksana Leukhina's interests look a lot like political science: How do we design the right policies to ensure people have good lives? But beneath the surface is curiosity about where economic growth comes from.

Leukhina attributes this curiosity to her childhood in the former Soviet Union. "I had to actually live through all those economic shock therapies of the 1990s," Leukhina said. "Basically, we had to transition from a planned economy to a free market economy—from a totalitarian regime to a democratic regime—and it wasn't a smooth ride."

After the Soviet Union dissolved, Leukhina came to the U.S. as part of an exchange program. While attending the College of Charleston, she discovered that economics wasn't just about prices and inflation. It also offered her tools to study welfare and economic growth. With this sharpened focus, she made the leap to a Ph.D. program at the University of Minnesota.

Now Leukhina's research agenda investigates access to high-quality post-secondary education and the role it plays in upward mobility.

A 2024 working paper examined the "quality undermatch" gap. The quality undermatch phenomenon refers to data showing that as many as 40 percent of students in the top quartile of aptitude testing don't attend high-quality universities (think flagship state schools). The gap is even bigger for low-income students.

Leukhina's ongoing research also measures how societal outcomes are affected if additional public investment expands capacity at these schools.

What Leukhina has found so far is that the cost is worth it. "It's welfare-improving and pays for itself," Leukhina said. "The kids are going to do better and generate the extra tax revenue needed to offset the initial investment."

Another recent research strand explores lowering admissions criteria for lower-income students at high-quality colleges. Could this kind of intervention improve upward mobility for low-income students without causing a large loss in aggregate earnings? "I was shocked," Leukhina said of the results. "It works really well in terms of improving upward mobility, and at almost no cost to aggregate earnings."

While Leukhina's analysis used a model simulation, several states are exploring related policies, adding relevance to her research and her work on the Institute's System Affiliates Board.

"Policies related to ensuring that we have equality of opportunity have been at the center of my research. I feel like my vision is quite aligned with the Institute's vision," Leukhina said.

—Danielle Cabot

> Public investment to expand capacity at flagship state schools is "welfare improving and pays for itself. The kids are going to do better and generate the extra tax revenue needed to offset the initial investment."
>
> OKSANA LEUKHINA

DAN HARTLEY

Senior Economist and Economic Advisor, Federal Reserve Bank of Chicago

"BEATING UP" ASSUMPTIONS

Economists can have peculiar ideas of "fun." For Institute System affiliate Dan Hartley, it includes watching his causal identification strategy fall apart.

"When the data start telling us that things we think should be random don't look like they're random, there is a lot of fun in trying to think what could be going wrong," Hartley said. He means it sincerely, taking joy in working with co-authors to develop an approach rigorous enough to survive expert journal reviewers. "Through data and mental gymnastics, we're trying to beat up that assumption of randomness as much as we can."

That sounds a bit like debugging code—an evolution from Hartley's pre-econ background as an electrical and software engineer. His pivot to economics locked in during an MBA at the University of Chicago, with "the idea that I could study social issues and policy in a quantitative manner."

First at the Cleveland Fed, Hartley launched a stream of work on the aftermath of natural disasters. From hurricanes to floods to tornadoes, he has studied how insurance and aid programs affect household finances. In a study spanning 614 recent disasters, Hartley and co-authors use an arbitrary debt-to-income cutoff to assess the benefits of a federal disaster loan program. "At this moment when families really need liquidity, it seems like these loans can be really helpful in staving off a debt spiral," Hartley said.

> "Through data and mental gymnastics, we're trying to beat up that assumption of randomness as much as we can."
>
> DAN HARTLEY

Hartley joined the Chicago Fed in 2015, just as colleagues were digging into freshly digitized "residential security" maps from the 1930s. This launched his body of research on the effects—intended and unintended—of historic housing policies and practices. By looking for quasi-random variation, Hartley has documented how race-based redlining via residential security maps hurt children's lifetime outcomes and still shapes the daily movement of people among neighborhoods. Another recent paper studies how a 1960s insurance policy reform ostensibly intended to boost low-income neighborhoods led instead to landlords neglecting and possibly even encouraging arson for profit.

Hartley is also investigating the long-term effects of "blockbusting," in which midcentury realtors frightened White homeowners in targeted neighborhoods with the specter of integration, then scooped up those properties at a discount. They resold them at a steep markup—often with predatory financing—to Black families desperate for housing.

Despite being outlawed in 1968, the practice still marks our communities. Surveying the 60 largest cities, Hartley finds that neighborhoods targeted by blockbusting suffered depressed housing values in subsequent decades. One possible factor: much higher rates of foreclosure.

—Jeff Horwich

A tour of this issue's insights and highlights

FEATURE ARTICLE

Beyond the paycheck p. 6

Americans received $11 trillion in nonwage income in 2025, but it was not distributed evenly in the population. Two groups uniquely rely on it: high-income Americans and older Americans. Explore their sources of nonwage income and how nonwage income evolves in relation to wage and salary income.

INTERVIEW

Jesse Rothstein wants to say yes p. 14

From Washington, D.C., to the California Policy Lab, the Berkeley labor economist translates evidence into actions to improve opportunity for American children and workers. Read about his research into the childhood roots of labor market outcomes and proven policies to promote intergenerational mobility.

How much of your job will AI take over? p. 19

↗ Automation transforms the tasks required for different jobs.

↗ As job tasks change, some workers switch occupations to best use their skills.

→ Features research by Institute visiting scholars **Lukas Freund** (Boston College) and **Lukas Mann** (Arizona State University).

Why do some people pay loans on time? p. 22

↗ Credit score gaps by race, education, and class persist throughout life, even controlling for income.

↗ Repayment patterns vary strongly by geography, suggesting childhood neighborhoods shape lifelong habits.

→ Features research by Institute advisor **Nathaniel Hendren** (MIT).

What's in a median? p. 25

↗ Median household income can remain deceptively stable even when economic or social conditions change.

↗ Growing numbers of one-adult households and rising inequality aren't fully captured by median household income.

→ Features research by Institute economist **Andrew Goodman-Bacon** and research associate **Richard Liu**.

Beyond

IN 2025, personal income in the United States totaled around $26 trillion, according to the Bureau of Economic Analysis. Strikingly, only about 60 percent of that income came from wages, salaries, and benefits workers receive from employers. The other 40 percent came from the myriad sources that make up nonwage income.

At $11 trillion, nonwage income likely contributes importantly to household finances and the overall economy. But wage and salary income tends to be the star of the show when it comes to assessing Americans' economic well-being. Nonwage income, a more eclectic category, receives less discussion.

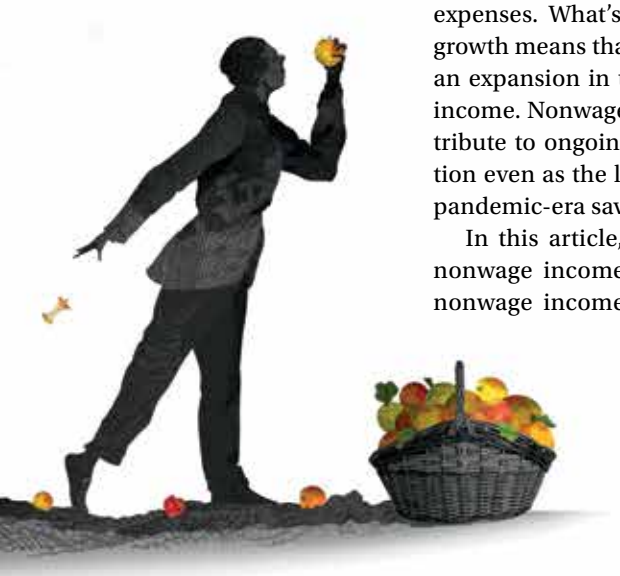
This lower profile may stem from the fact that nonwage income is harder to measure and classify than wage income, especially in the case of gig workers, contractors, or self-employed individuals. Salary tends to be top-of-mind for survey respondents and is often neatly recorded on W-2 forms and paystubs. In contrast, nonwage income values may be less salient

ILLUSTRATION BY
BRETT RYDER

Who has nonwage income, where does it come from, and what is its role in the economic well-being of Americans?

BY LISA CAMNER MCKAY, ILLENIN KONDO, AND RICHARD LIU

the paycheck



and less easily calculated due to the variety of sources that contribute to it.

Despite these challenges, this is an opportune time to examine the basics of nonwage income in the U.S. economy. As the population ages, increasing numbers of Americans are shifting toward nonwage income, including Social Security, retirement account withdrawals, and pensions, to cover purchases and expenses. What's more, recent stock market growth means that equity gains have powered an expansion in this component of nonwage income. Nonwage income sources could contribute to ongoing strength in U.S. consumption even as the labor market has cooled and pandemic-era savings have been depleted.

In this article, we survey key facts about nonwage income in the U.S. We show how nonwage income is distributed in the population, which groups have relatively large shares of nonwage income, and what factors shape nonwage income for two groups that uniquely rely on it: higher-income Americans and older Americans.

Who has nonwage income?

As a starting point, Figure 1 shows the distribution of nonwage income and the distribution of wage and salary income among U.S. tax filers. These data come from the Opportunity & Inclusive Growth Institute's Income Distributions and Dynamics in America (IDDA) resource. In 2023, the median value of nonwage income was about $3,000. This value reflects total household nonwage income divided by the number of adults in the household. So half of adults had a per-capita nonwage income that was less than or equal to this amount.

What is nonwage income and how is it measured?

Nonwage income is a broad category that captures income from sources other than employer-paid wages and salaries. These sources include Social Security payments, retirement account disbursements, capital gains (or losses), self-employment income, business income, unemployment insurance, alimony, gambling winnings, and more.

Income Distributions and Dynamics in America combines income data from the universe of IRS forms 1040 and W-2 with demographic information from the U.S. Census Bureau to provide summary statistics on wage and salary income and taxable nonwage income across demographic groups in the United States. Nonwage income is calculated by subtracting wages and salaries from adjusted gross income.

Health and Retirement Study is a nationally representative longitudinal panel survey of approximately 20,000 Americans over the age of 50 conducted by the University of Michigan. The core survey asks respondents about their income and wealth, health and use of health services, employment, and family connection.

For most Americans, then, the amount of nonwage income they receive is small. In contrast, the median value of the wage and salary distribution was $37,550, about 12 times higher than the median value of nonwage income. Comparing the two distributions shows wage and salary income is a more important resource than nonwage income for most households.

The low value of median nonwage income suggests that self-employment and business income, two types of nonwage income, may not be as prevalent as headlines about the "gig economy" might lead one to expect. Indeed, the IRS's Statistics of Income provide evidence that a significant majority of individual tax returns in 2022—around 80 percent—reported no business or self-employment income.

So which households do have nonwage income? There are two key groups.

First, nonwage income is concentrated at the top of the distribution. Figure 1 shows a large increase in the values of nonwage income at the highest percentiles of the distribution, reaching almost $46 million at the 99.999th percentile, or the top 0.001 percent by nonwage income.

Another way to see this concentration is to compare the top percentiles with the median in the two distributions. The top 1 percent of nonwage income earners bring in more than 90 times the median nonwage income. For wage and salary income, the same ratio is eight times. This indicates that nonwage income in the economy is more concentrated among a high-income group of households than wage and salary income.

A second group that has substantial nonwage income is older households. Figure 2 shows that while median nonwage income for all households was around $3,000, for households with individuals ages 65 and older it was $28,340. Indeed, at low, middle, and high percentiles of the distribution, older households have higher levels of nonwage income than all households.

Nonwage income at the top: Sources, shares, and relationship to wage and salary income

Figure 1 presents the distributions of nonwage incomes and wage incomes separately. In practice, households receive varying amounts of both income types. Using a joint distribution of wage and nonwage income, we can examine their relationship. Are top-income households more or less dependent on wage and salary income? And, what income sources contribute the most to high nonwage incomes?

Overall, for the highest-earning households, a larger share of their total income comes from nonwage income. For other households, a larger share comes from wage and salary income. Nonwage income accounts for about 66 percent of total adjusted gross income of the

1 / DISTRIBUTED DIFFERENTLY

Wage and salary income is a more important resource for most people, while nonwage income is more concentrated at the top.

Percentile of nonwage distribution	Nonwage income value
10th	-$346
25th	$0
50th (median)	$2,972
75th	$20,930
90th	$58,090
95th	$92,560
98th	$168,000
99th	$274,600
99.9th	$1,646,000
99.99th	$8,976,000
99.999th	$45,910,000

Percentile of wage and salary distribution	Wage and salary income value
10th	$0
25th	$13,800
50th (median)	$37,550
75th	$64,430
90th	$102,200
95th	$139,900
98th	$211,200
99th	$289,100
99.9th	$856,200
99.99th	$3,317,000
99.999th	$12,770,000

Note: Data are from 2023. Nonwage income is calculated as the difference between adjusted gross income and wage and salary income at the household level from Form 1040 and divided by the number of adult-age household members. Percentiles are computed across individuals. Because these are separate distributions, a given household's rank in the distribution of wage and salary income is not the same as its rank in the distribution of nonwage incomes. Source: Income Distributions and Dynamics in America, Federal Reserve Bank of Minneapolis.

Nonwage income makes up approximately 40 percent of total personal income in the U.S. economy and differs in important ways from wage and salary income.

top 1 percent (IRS Statistics of Income 2022). Across all households, this ratio is flipped—nonwage income is 35 percent.

The joint distribution of nonwage incomes and wage and salary incomes suggests a U-shaped relationship. Both bottom and top wage earners are more likely to have top nonwage incomes relative to households in the middle of the wage distribution. Figure 3 shows that around 20 percent of households in the bottom quartile of wage income are in the top decile of nonwage income. Among the highest wage income households, around 15 percent are also in the top decile of nonwage income. In contrast, only 6 percent of middle wage and salary income households are in the top decile of nonwage incomes. A similar U-shaped pattern holds for the relationship between wage income and the share with nonwage income between the 75th and 90th percentiles of the nonwage distribution.

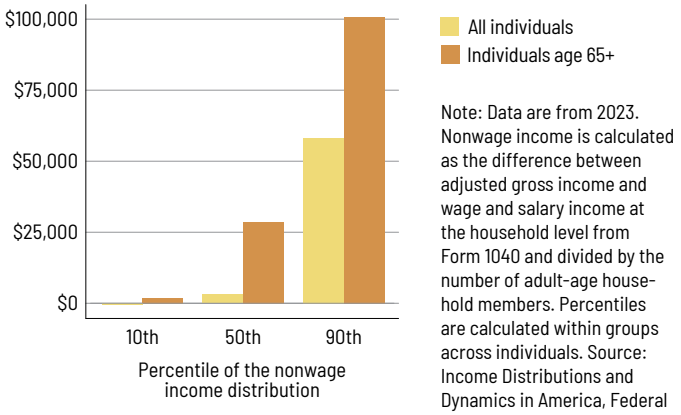
That 45 percent of low wage earners have high nonwage income may at first seem surprising, but it makes sense in light of who typically has low wage income in the population of tax filers: older households who have retired from the labor force and business owners who claim profits instead of wages.

Examining the various sources of nonwage incomes offers another lens for understanding top nonwage incomes. Figure 4 shows the contribution of various sources to the nonwage income of all households and of the top 1 percent of households. Some clear differences emerge. Pensions and retirement account distributions account for 25 percent in the overall population, but less than 3 percent of the nonwage income of the top 1 percent. Instead, capital gains and S corporation income (called "pass through" income because it passes to the owner's personal tax return) account for 75 percent of nonwage incomes at the top, compared with around 45 percent in the overall population.

The larger share of pass-through income in the nonwage income of the top 1 percent of households

2 AGING INTO NONWAGE INCOME

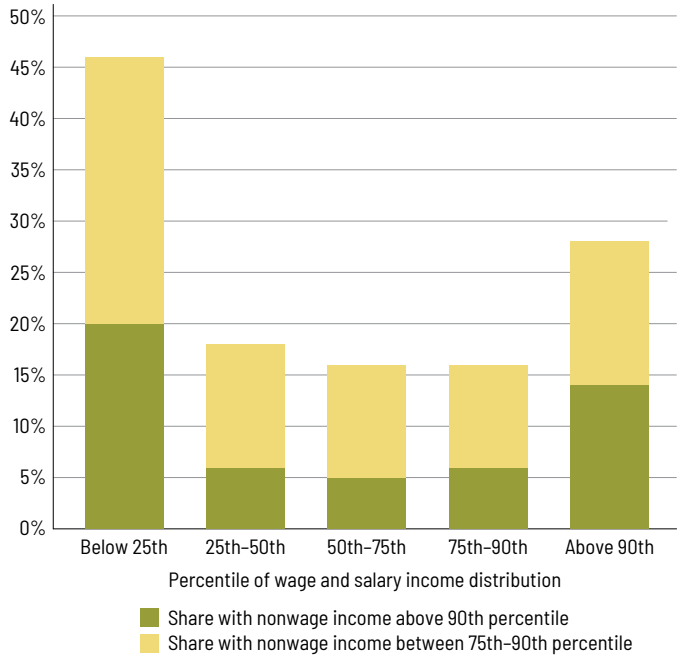
Individuals ages 65 and over have more nonwage income than the full population at the bottom, middle, and top of the distribution.



Note: Data are from 2023. Nonwage income is calculated as the difference between adjusted gross income and wage and salary income at the household level from Form 1040 and divided by the number of adult-age household members. Percentiles are calculated within groups across individuals. Source: Income Distributions and Dynamics in America, Federal Reserve Bank of Minneapolis.

3 SURPRISING "U"?

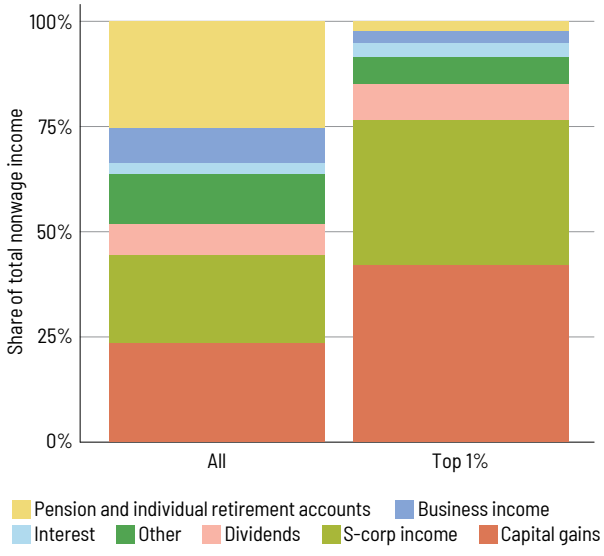
Individuals with high and low wage income both have large shares of nonwage income.



Note: The reported shares are computed as the average of the yearly shares from 1998 to 2019. Source: Income Distributions and Dynamics in America, Federal Reserve Bank of Minneapolis

4 NONWAGE INCOME LOOKS DIFFERENT AT THE TOP

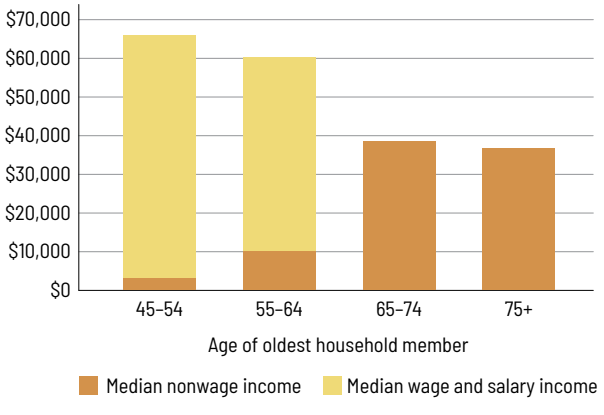
The majority of nonwage income is from dividends, S corporations, and capital gains, especially for the rich.



Note: Data are calculated from all U.S. tax filers with positive adjusted gross income. Top 1 percent refers to adjusted gross income. Source: Internal Revenue Service, 2022 Statistics of Income.

5 HOW WAGES FALL WITH AGE

Median household wage and salary income falls to $0 after age 65.



Note: Nonwage income refers to taxable nonwage components and is calculated at the household level. Age refers to oldest household member. Data are pooled from 2000 to 2022 and normalized to 2022 dollars. Source: Health and Retirement Study, University of Michigan and RAND.

highlights classification issues surrounding nonwage income for business owners, due to accounting incentives to collect compensation as profit rather than as wages. In other words, nonwage income may be a form of labor income in an economic sense. Research on pass-through business income supports this idea: Unlike returns to traditional financial assets, pass-through business profits fall by 75 to 80 percent after their initial owners prematurely die or retire even when the business continues (Smith et al. 2019; Bhandari and McGrattan 2021).

Older households rely on nonwage income but labor income is increasingly important

Older households are a second group for which nonwage income is important, as shown in Figure 2. Not only do older households have higher levels of nonwage income, they also rely on nonwage income because they typically have little wage and salary income. That reliance makes it particularly meaningful to investigate patterns in nonwage income and labor force participation across older households.

As people age and exit the workforce, their wage and salary income often goes to zero. Figure 5 confirms that nonwage income becomes the majority component of total household income after age 65. In fact, median wage and salary income drops from $50,000 among households ages 55–64 to $0 among households ages 65 and above. This means at least half of households have no wage and salary income after this point.

Figure 5 also shows that nonwage income increases as household members reach retirement age and their labor market earnings fall. The median value is $3,300 for ages 45–54, triples for ages 55–64, then nearly quadruples for ages 65–74.

Even among older households, reliance on nonwage income varies with total income. For older households in the lowest quartile by income, almost all household income comes from nonwage sources. For the top quartile, it is 70 percent (Health and Retirement Study). So reliance on nonwage income is high across the distribution of older households, but for households at the top, around 30 percent of total income comes from wages and salaries.

This contrasts with the pattern for the overall population, discussed earlier, in which the highest-income households had lower shares of wage and salary income. This suggests that, among older households, those with the most nonwage income are also most able to continue working into later years. The share of household income coming from different sources may be relevant when thinking about households' resilience or response in the face of different types of economic shocks.

That higher-income older households engage more in the labor market is supported by survey evidence. Even though the members of many older households are retired and rely on nonwage income, a meaningful number—especially among higher-income households—still actively participate in labor markets. The likelihood that older households earned any positive amount of wage and salary income increased between 2000 and 2022 (Figure 6). For the highest-income quartile of households, the share with positive wages grew from 42 percent in

2000 to 58 percent in 2022. Among the lowest-income quartile of households, the share receiving positive wages was much lower, just 4 percent in 2000. But the share more than doubled by 2022, a smaller but steeper increase than among top-income households.

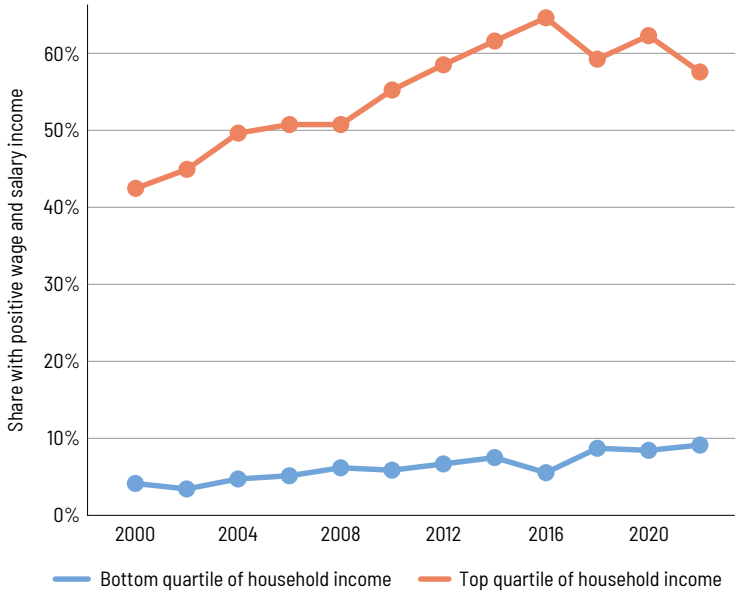
The increase in the likelihood of earning wages by older households could be due to multiple factors. It may reflect affordability concerns, if the nonwage income growth they experienced fell short of the growing cost of households' needs. For instance, analysis suggests that recent inflation experienced by older Americans was slightly higher than average inflation for all Americans (Horwich 2024). Another possibility is that people may be more able to work into older ages, due to improved health or the availability of less physically demanding work.

Differences in nonwage income later in life have origins in labor market outcomes earlier in life

The Data Dive in this issue (p. 13) shows that nonwage income received by the top third of older households is about four times larger than the nonwage income received by the bottom third. What contributes to these differences in nonwage income when households reach retirement age? One possibility is that working-age differences partly drive retirement-age outcomes across households.

6 WORKING AFTER 65

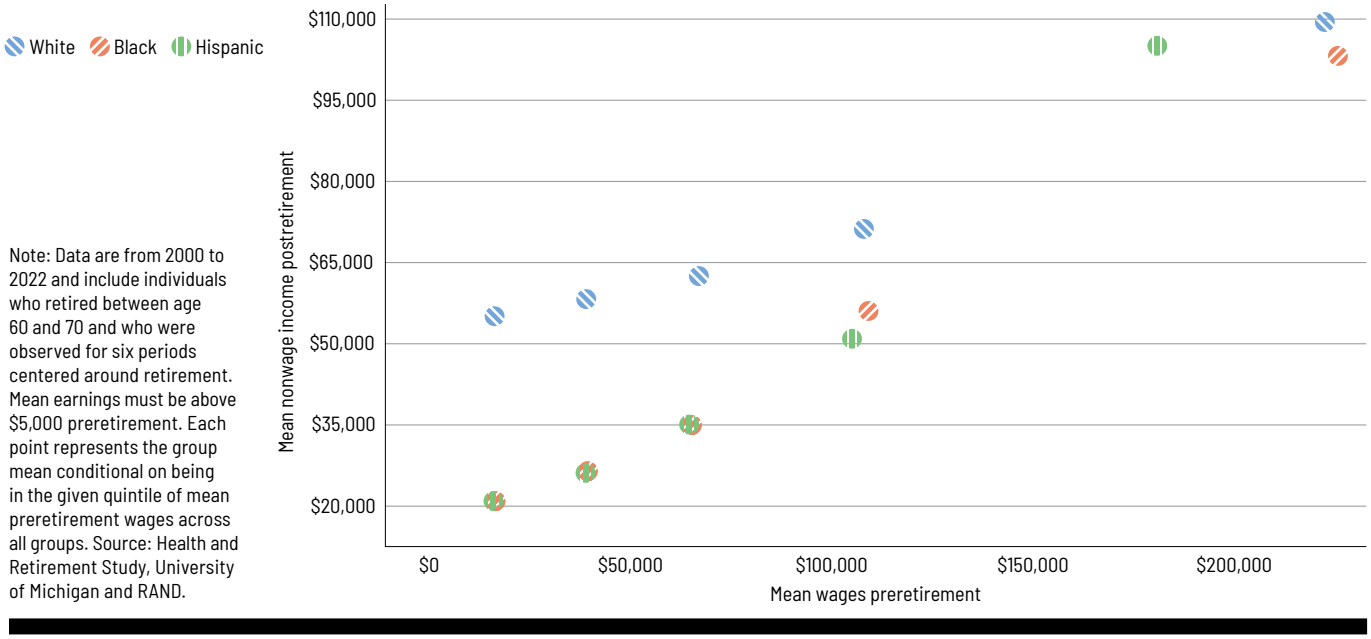
Older households at the bottom and top of the income distribution were more likely to work in 2022 than in 2020, but the share is much higher among high-income households.



Note: Data are pooled from 2000 to 2022. Includes households where the oldest member is 65 or older. Source: Health and Retirement Study, University of Michigan and RAND.

7 INCOME BEFORE AND AFTER RETIREMENT

White retirees receive more household nonwage income after retiring than Black or Hispanic retirees even when household preretirement wages were similar.



Note: Data are from 2000 to 2022 and include individuals who retired between age 60 and 70 and who were observed for six periods centered around retirement. Mean earnings must be above $5,000 preretirement. Each point represents the group mean conditional on being in the given quintile of mean preretirement wages across all groups. Source: Health and Retirement Study, University of Michigan and RAND.

Nonwage income in the economy is more concentrated at the top than wage and salary income.

For example, the largest components of nonwage income after age 65 are Social Security payments and disbursements from pensions and individual retirement accounts. These sources of nonwage income are typically a function of the household's own past labor earnings. Social Security benefits, for instance, are a mandated percentage of average inflation-adjusted monthly earnings.

As a result, nonwage income after retirement is correlated with wage and salary earnings prior to retirement. Figure 7 shows that households with higher wages preretirement also have higher nonwage incomes postretirement.

However, the relationship between wages before retirement and nonwage income after retirement looks different for different racial and ethnic groups. Figure 7 also shows that even when Black and Hispanic households earn similar wages to White households preretirement, they tend to receive less nonwage income postretirement. In the chart, this is shown by the fact that the dots representing Black and Hispanic households are below the dots representing White households on the y-axis.

Research shows that Black and Hispanic households accumulate retirement savings at a lower contribution rate than White households (Choukhmane et al. 2024). Because Black and Hispanic workers are more likely to be on the lower end of the wage and salary income distribution, precisely where racial income gaps are larger, overall gaps in nonwage incomes in older age are all the more magnified (Kondo et al. 2024).

This suggests there are factors during the working years of lower-income Black and Hispanic individuals that impede the growth of seeds that yield nonwage income later in life. (See "Saving for retirement in America" in the spring 2025 issue of *For All* for a discussion of some of these factors.)

The value of keeping nonwage income in view

Nonwage income makes up approximately 40 percent of total personal income in the economy. In this article, we have shown that it differs in important ways from wage and salary income, its more familiar counterpart.

Nonwage income is more unequally distributed than wages and salaries, partly reflecting more dispersed entrepreneurial and financial success at the top. Two groups, older Americans and high-income Americans, uniquely rely on nonwage sources for the majority of their overall income. Both groups secure more than 60 percent of their household earnings from nonwage sources, but the sources of that income differ. While business income drives nonwage income among rich households, working-age labor market experiences shape future nonwage incomes among older Americans. And while older, typically retired Americans derive the bulk of their income from nonwage sources, there is a clear upward trend in the share that also supply labor.

Both monetary and fiscal policies are likely to have uneven effects across different income sources, and thereby across different groups. Policymakers may want to know which groups are likely to experience these effects and the extent to which they have other resources they can rely on. Fed policymakers, for example, may be able to better forecast the effects of a rate cut or a rate increase on total household incomes and labor force participation, say among retirement-age Americans. Similarly, with a richer classification of income sources, fiscal policymakers will better understand who may or may not respond to changes in different kinds of policies. ★

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Nonwage income: What is it made of?

Disability or unemployment insurance

Social Security

Pension and IRA disbursements

Other

Self-employment and business income

Financial and rental income

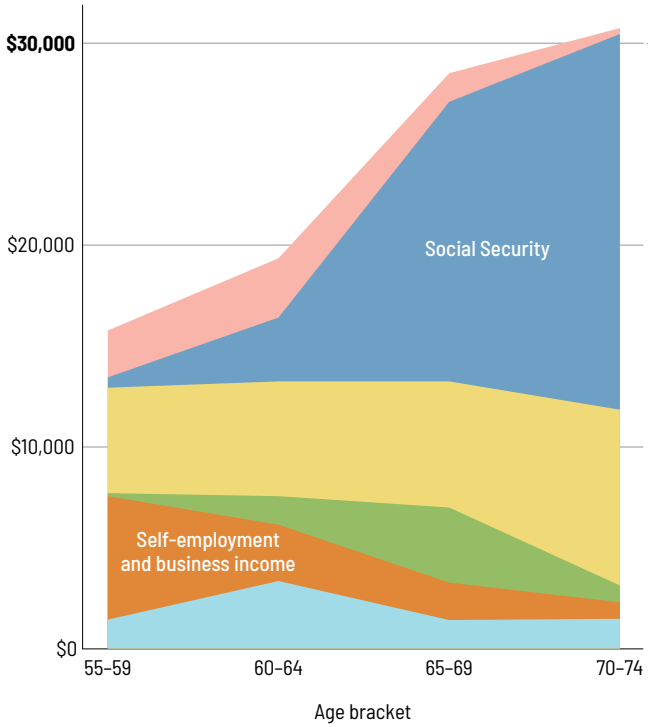
When we open the lid on the box of nonwage income for older adults, what do we find inside? The contents look different for households at the top and bottom of the income distribution.

Consider a lower-income couple, Chris and Taylor. At age 55, Chris earned around $6,100 from a house painting business while Taylor received $2,400 in unemployment insurance. They withdrew around $5,300 a year from retirement saving accounts. By 65, they were receiving Social Security payments that came to $14,000 a year and made up half their income. Chris and Taylor's situation is reflected in Figure 1, which shows the average amounts of nonwage income across households in the bottom third of the income distribution.

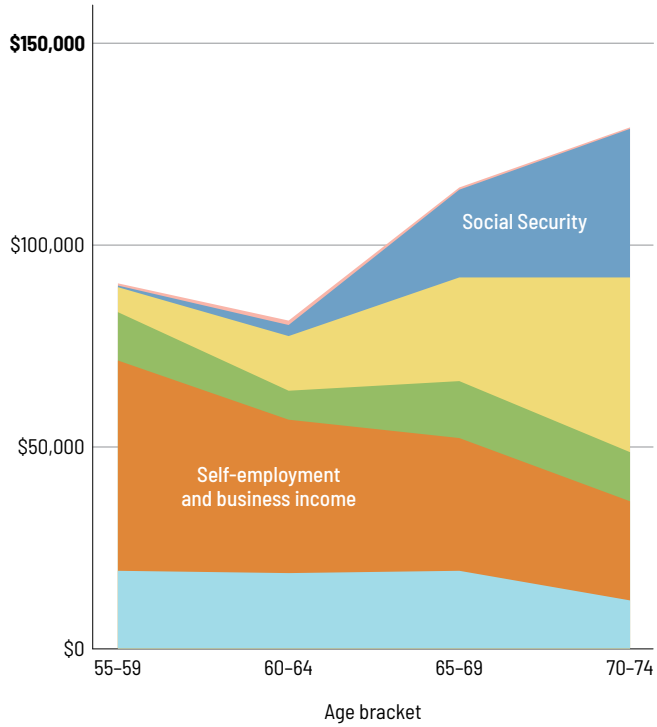
For households in the bottom third of the distribution, nonwage income starts around $16,000 at age 55. This increases to around $31,000 at age 70. It's a big increase, but a small amount to support a household.

Figure 2 shows the average amounts of nonwage income across households in the top third of the income distribution. Consider the high-income household of Alex and Jordan. At 60 they are still running their small tax-preparation company that brings in $38,000 a year. They get another $19,000 in dividends and rent from a second property, plus $6,700 from a legal settlement. Ten years later, they still get $24,000 from consulting for the tax prep firm. Retirement accounts bring in $43,000 and Social Security another $37,000. All told, their nonwage income comes to $130,000 a year.

1 BOTTOM THIRD OF HOUSEHOLDS BY INCOME



2 TOP THIRD OF HOUSEHOLDS BY INCOME



Note: Nonwage income amounts are the average for the given tercile. Income terciles are based on total household income at ages 53–54. Data are from the cohort born in 1945–1950 who are observed continuously between 2000 and 2022. Values are in 2022 dollars. Source: Health and Retirement Study, University of Michigan and RAND.

LISA CAMNER MCKAY AND RICHARD LIU

JESSE ROTHSTEIN WANTS TO SAY YES

A PRESIDENTIAL ADMINISTRATION CALLS TO OFFER a stint in public service. State officials want to make a food aid program work better. A journalist needs a smart take on today's jobs numbers. The diverse résumé and research interests of Berkeley economist and Institute advisor Jesse Rothstein suggest he will pick up the phone, answer the email, open his office door—and do what he can.

But demand waxes and wanes for what Rothstein has to offer—namely, objective evidence on public policies intended to spread the benefits of growth and create a fair playing field for future generations. Lately, Rothstein said, "it's been challenging to figure out how you do policy-relevant research when research evidence just isn't the metric that matters" to many people in power. "There's just less interest in, 'How do we design complicated but well-functioning policy?'"

The former chief economist for the U.S. Department of Labor directs his copious energy where it can make a difference. This includes the University of California's California Policy Lab, which Rothstein co-founded 10 years ago out of a desire to say yes more often when policymakers seek academic help. It includes a stream of research with Nobel laureate David Card that is reshaping our understanding of the labor market. It includes advising his Berkeley students as they step into an uncertain job market.

And on the side, he's preparing a book he hopes will motivate the wider American public to face and to fix the uneven investment in the futures of our children. "We have to figure out ways to make sure the opportunities available to children from low-income families and high-income families aren't too different," Rothstein said. "There are talented kids who grow up in families that don't have the resources to cultivate that. If we don't give them a path out, then we're losing out on that talent."

Rothstein holds the Carmel P. Friesen Chair in Public Policy and the David Pierpont Gardner Chair in Higher Education at the University of California, Berkeley, where he is also professor of economics, director of the Center for Studies in Higher Education, and faculty director of the California Policy Lab. This interview has been edited for length and clarity.

Linking data for better government

10 YEARS OF THE CALIFORNIA POLICY LAB

There's been plenty of focus lately on the quality and availability of federal economic data. But at the state level, the California Policy Lab has made some big strides in recent years. What have you been able to accomplish?

When I worked in the Obama administration, I was part of a big interagency initiative to try to do more program evaluation—to use the data that was coming in from federal programs to find out what was working. But ultimately most programs are run by the states. Even when the federal government pays for them, it's usually not the federal government that has information about who's being served or whether it's working.

California has not been at the forefront of evidence-based policy over time. We saw an opportunity about 10 years ago to try to improve that. State agencies were coming to me and to my academic colleagues saying, "Hey, we'd love your help with figuring out how to make our programs work better." The academics would say, "Yes, we'd love to help with that." And then both sides would come to this gradual realization that what was involved was two years of negotiating a data-use agreement and setting up a process to allow for that

BY JEFF HORWICH

PHOTO BY
MARC OLIVIER LE BLANC

collaboration. I saw myself saying no to things I would've liked to help with, just because I didn't have the capacity to do the administrative work.

The California Policy Lab was a way to set up that administrative infrastructure—to negotiate agreements, to build relationships, to build computing infrastructure that could support collaborations between researchers and programs and agencies. We have now negotiated agreements with dozens of agencies, and many researchers throughout the University of California and beyond are working with those agencies. Researchers are taking on projects they might have otherwise passed on, and our government partners get the insights they need to improve programs and policies. This is also helping shift how policymaking happens in California, since we're able to generate evidence about what works and what doesn't.

Any wins you are especially proud of?

A common problem that agencies face is they have a program, but the people whom the program should benefit don't know about it, or it's harder than it should be to get signed up. So, we've done a number of "nudge" experiments and studies where we test interventions to make it easier for people to navigate the programs and to get the benefits that they're eligible for.

Through this, thousands of people were able to access tax credit payments or Cal Grants (for higher education) or SNAP benefits (food assistance) that they were eligible for, but they didn't know how to navigate the process. We think that's just basic "good government" work. If the government is going to tell people about a benefit they're eligible for, you'd much rather have them do it in clear language than in bureaucratese.

We've done a number of influential studies of criminal justice policies. There is an innovative program that gives people who have been arrested access to public defenders before their arraignments so that they have time to think about what the strategy should be. In the normal system, you often meet your public defender on the way into the room.

We showed that this change alone led to better outcomes for the defendants, that many of them were never prosecuted in the first place or were found not guilty when they would have otherwise been found guilty. These are people who shouldn't have been convicted and shouldn't have been forced into plea deals. After we published our evaluation, other counties reached out because they wanted to start their own programs, and state legislation was also introduced that would replicate the model in other counties. I think this is a win.

You have a lot of recent work about accessing the CalFresh program (the name for SNAP benefits in California) and in particular, access by college students. What's the impetus for all the activity your team has devoted to that question?

College students increasingly are coming from nontraditional backgrounds. They're struggling to eat while they're in school, and that hurts their outcomes. Higher education institutions, as well as legislators and the Department of Social Services, were interested in, "How many students are we actually serving? How many students are we not serving who would be eligible?"

Nobody had linked the data on SNAP participation with college enrollment records. We were able to come in and say, "Well, that's what we're set up to do." And we built this enormous linkage and have been studying this question ever since—again, because this is what the policymakers needed.

Firm quality and labor frictions

BREAKING NEW GROUND WITH DAVID CARD

You've written many papers in the last couple of years with David Card (Nobel laureate and Berkeley economist). What have you learned from working closely with him?

He was my graduate school advisor, so I learned everything I know about how to do research from him. I don't think this interview's long enough to cover all of it!

The recent papers are with him and with Moises Yi, who's actually an Institute visiting scholar this spring. There's been a trend in labor economics in the last few years of more of the research focusing on Scandinavia, because they've put together better data systems than the United States. But one of the ways that we're catching up is that the Census Bureau has put together something called the "Longitudinal Employer-Household Dynamics" database, which allows you to follow workers over time as they move from job to job.

We've been able to use that data to understand how jobs differ from each other, which is important to a realistic understanding of the labor market. In a traditional, standard economic model, it doesn't really matter what job you have. There's a set of jobs at which you'll be productive—you'll take one of them and they'll all offer you the same pay. But, in fact, what you see in the data is that people who work for some firms earn a lot more than people who work for the other firms. It's not because it's different people. The same person earns more if they work for a high-wage-paying firm than a low-paying firm.

One of our papers shows that firms in some regions of the country pay more than firms in others. If you move from one region to another, your wages go way up or way down even though you have the same skills. That's important: It suggests it's something about firm productivity that is driving it, not just idiosyncratic differences across firms.

Similarly, another paper looked across industries and found that some industries reliably pay more than others,

even to the same workers. If you move to a high-wage industry, you predictably get a big raise. These regional and industry pieces seem to be separate—you have high-wage industries and low-wage industries, and high-wage places and low-wage places, and they both vary within each other. That helps us get towards a fuller understanding of what's driving these firm differences in pay policies, which I think are an important part of understanding how we improve worker outcomes.

How people end up in the jobs they do is so nuanced and complex—a matter of values and attachments, as well as location and people's willingness to move. It seems like your papers are using the conventional tools of economics to try to untangle the sorts of path-dependence that are so important to outcomes in the real world.

And our new work shows there is path-dependence across generations, too. We're getting close to a paper on the intergenerational transmission of job outcomes—whether growing up in a family where your dad or mom has a good job translates into the child having a good job as an adult. Also, if you live in a neighborhood where the other parents have good jobs, does that help you get a better job? We are working on disentangling the mechanisms by which advantage is transmitted from generation to generation.

Having a parent who worked at a good firm or having neighbors who work at good firms raises the chance that the child winds up with a job at a good firm. And it doesn't do that by raising the child's human capital. It seems to operate specifically through *access to good firms.* It suggests that there's something about networks that really matters.

Something I've heard lately from talking with people who've been unemployed for a while is that they're struggling with how much it matters "who you know." That's a different stage in life, a different situation than kids and their neighbors. But both kinds of networks represent frictions and inefficiencies in the labor market.

I'll give another example. In a market economy, there are going to be some businesses that do well and some that don't. And when the workers at those businesses lose their jobs, there's growing evidence that losing your job is just really bad for you. In a frictionless world, it wouldn't be—you'd just go find another job. But in the real world, it has long-term consequences for your earnings, for your health, for your general life outcomes.

We're never going to get rid of the risk that some jobs go away. But we need to be thinking about how we do a better job of cushioning people against those risks and helping them not be so negatively affected. Unemployment insurance is one example. We now have clear evidence that the difficulty of finding a new job changes over the course of the business cycle—that it's just much harder to find a new job in recessions. That's an argument for having more generous unemployment benefits in recessions than we do at good times.

It's a painful irony that the longer you're out of work, the harder it is to find work. Beyond the personal cost, that's a lot of lost potential for the economy.

Yes, it is. We don't totally know how to help, but that ought to make it a high priority to figure it out. We ought to be experimenting with different programs to try to help people rather than just leaving people on their own.

Going big

INTERGENERATIONAL POVERTY AND A STRONGER SAFETY NET

You wrote an article a few years ago with Sandra Black, one of your fellow advisors to the Institute. You explored potential expansions of the U.S. safety net and social policies: universal child care, first two years of college free, widespread public provision of health and long-term care insurance. There's a moral component to all of these, but you wanted to make the economic argument. What is the economist's argument for expanding social programs?

Let's start with child care and the first two years of college. Right now, we provide public K–12 education, and nobody really thinks we shouldn't do that. We don't tell somebody, you can't go to high school if your parents can't afford it. But over time, the education expectations of modern society have grown. Now we think that it's not great for kids to just show up in kindergarten without having had any education before that. We also think it's not great for kids to graduate high school and be told, "You have to find a job. There are no other options."

The same arguments that led to us providing public K–12 school mean we should also be providing child care and college. It's just historical path-dependence that we offer one and not the other. There's good reason to think that if you don't offer it publicly, parents will underprovide it and inequitably provide it, that some parents will be able to afford child care and college and other parents won't. There will be kids who, it would be efficient for them to go to college, but they won't go if their parents have to pay for it. That's an economic argument for why it would be better for college to be freely available.

The counterargument that's often offered is, well, we can just offer student loans and students can borrow to pay for their college. But we've seen in the last few years how that can go very wrong. It's a big risk that students are taking on and the government is much better able to bear that risk.

Do you see market failures in each of these cases—underprovision of a public good, basically, by the private market—so that folks may be better off if government solves these?

Yes. Long-term care is another example—this enormous risk that we all face. There's almost nothing that anybody can do to be ready for or to guard against needing care in our last years. There's nothing efficient about making people cover it themselves—there's nothing I can do to avoid the risk. There's no moral hazard. There's no adverse selection. It's driven by your health needs, not by your choices, and nobody can predict who's going to need it.

What ends up happening is some people build up giant retirement accounts that they probably will never end up using, but that they might need if they go into long-term care. And the standard advice to almost all middle-class families who wind up needing long-term care is to spend down all your assets so you can go onto Medicaid.

That's a terrible thing to do to people, and there's no need to do that. The only way to handle this is as a societal expense. It is expensive, there's no question about it. But it's not any less expensive when we force people to bankrupt themselves before they go on public benefits.

You were a part of the committee that produced a 500-page report from the National Academies in 2023, the consensus study on *Reducing Intergenerational Poverty*. This was requested by Congress to render some judgments on what policies work. What are your feelings on what that group accomplished?

We're not right now at a moment where Congress seems poised to act on it. But when Congress decides it wants to do something about a problem, you'd rather have them pick a solution that works rather than one that doesn't. I am hopeful that there will be a moment in the not-too-distant future when we really do want to rebuild American institutions and American opportunity, and the kinds of evidence in that report will be helpful for that.

The report is a reminder that many people have done a lot of research on these topics. We don't have to throw up our hands and say, "We don't really know what works." There is a lot of evidence out there.

I think that's right—we know a lot. We should act on that and build out the evidence for the missing pieces. I think there's a particularly powerful argument that kids shouldn't be held responsible for their parents' circumstances. We do know that growing up in poverty is a clear cause of winding up in poverty as an adult. And that is a failure of our ability to provide equal opportunity.

There were certain categories where you found there was no convincing evidence. For example, "family structure." That doesn't mean, as I understand it, that this is not a meaningful mechanism. It's just that there's no research that provides any compelling evidence of what works.

I would say there's research that provides evidence that kids who grow up in stable, two-parent families do better than kids who grow up in single-parent households. But we don't have any policies that have been demonstrated to move kids from one category to the other. We couldn't find any evidence.

What is the role of the Opportunity & Inclusive Growth Institute at this moment?

One important role is to recognize something that's become clearer over time, that a single number like GDP growth does not capture how the economy is performing for Americans. As inequality gets higher, you can have GDP growth and still most people doing worse. It's really important to understand whether people are included in that growth or not.

The Fed's mandate is still about full employment and low inflation, and that's as it should be. But it also needs to understand how GDP growth translates into those things. It's not necessarily the case that GDP growth translates into full employment, for example, particularly in a world of AI coming in. It's important for the Fed to be trying to understand these distributional effects.

You're alluding to the "K-shaped economy": increasing concentration of economic growth in AI, wealth growth for a smaller group of Americans. How do recent developments compare to the general progression of inequality over the past few decades?

I would say for 50 years we've had an environment where the economy was growing but median workers were getting little if any benefit from that. Real wages were falling quite short of economic growth. There have been a couple of periods during that 50 years when that wasn't true—the couple years after COVID actually turned out to be one of them. But overall, there's been this widening gap.

In the data, it's hard to find objective evidence that things are so much more wrong now than they were a year or two ago. But it's possible we've hit a tipping point where people are starting to realize all of these trends have been going on for 50 years, and are starting to incorporate that into their sentiment.

I think the long-run trend is a big problem. People have to have faith that we're all in this together. When the economy is producing billions of dollars of wealth for some people and not making other people's lives any better, it's hard to have that faith. It's important that we figure out ways to make sure that the growth is more broadly shared. ★

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

How much of your job will AI take over?

The AI revolution is changing how workers spend their time, which affects who will see their wages go up or down

BY LISA CAMNER MCKAY

ILLUSTRATIONS BY LUKE BEST

STUDY AUTHORS

LUKAS FREUND, Boston College;
LUKAS MANN, Arizona State University

Fun fact: Economists spend a lot of time writing code. They use code to organize datasets with millions of observations and make calculations. They use code to solve complex equations describing how actors in the economy behave in economic models.

Now, thanks to generative artificial intelligence, they have help.

"I spend a lot less time writing code, and a lot more time checking code. I spend less time doing algebraic derivations, especially if they are easy to verify," said former Institute visiting scholar Lukas Mann, a professor of economics at the W. P. Carey School of Business at Arizona State University.

Economists have long sought to understand how automation of work processes affects workers. Automation isn't new, after all. Hundreds of years ago, plows transformed agricultural production; the steam engine transformed manufacturing. Today, AI is transforming a host of analytical tasks, including coding.

How will this new wave of automation affect the tasks workers do, the jobs they choose, and the wages they earn? An Institute working paper by Mann and current Institute visiting scholar Lukas Freund, professor of economics at Boston College, provides a framework to analyze the labor market's response to these changes.

> "The idea that people are differently skilled at different types of things is very relevant in the context of AI in terms of assessing who wins and who loses."
>
> LUKAS MANN

A job is a bundle of tasks, a worker has a bundle of skills

"The current discourse around AI mostly centers on the notion of jobs disappearing," Freund said. "But that seems to capture only part of the picture." To study how the effects of automation ripple through the economy, Freund and Mann begin with two simple observations: Most jobs involve multiple tasks, and most workers have multiple skills.

"I teach first- and second-year Ph.D. students, and they're sometimes frustrated with how much math they have to do," Freund said. "If the more tedious elements of math become less important, I think that would then tend to attract more people who are very good at coming up with ideas. That skill becomes more valuable if the implementation of ideas becomes easier to do."

The job of medical radiologist has recently captured headlines for its potential to be transformed by AI. Nine years ago, a prominent physicist predicted the job would be entirely replaced by AI. Only time will tell, but so far, radiologists have harnessed AI to help sharpen images, identify medical abnormalities, and predict disease. Radiologists continue to talk to patients, take medical histories, write reports, and analyze medical records.

From a worker's perspective, this change to the importance of different tasks in their job changes the importance of different skills. "The idea that people are differently skilled at different types of things is very relevant in the context of AI in terms of assessing who wins and who loses," Mann said.

From tasks to skills to wages

Freund and Mann use an economic model to project how wages in different occupations and wages of different workers will change after automation due to large language models (LLMs), such as ChatGPT or Claude. To do this, the economists need to know what tasks workers perform, which jobs involve those tasks, and what skills are associated with those tasks.

Freund and Mann use LLMs to organize 20,000 occupation-specific tasks listed in the U.S. Department of Labor's O*NET database into 38 "task clusters" that have similar skill requirements. Jobs differ in which tasks are required and how much time is spent on each task. Using research from other economists, Freund and Mann estimate that "processing and analyzing records" is the task most likely to be automated by LLMs. This task is a significant part of the responsibilities for occupations such as financial analysts and information and record analysts.

Next, Freund and Mann estimate the effect on wages if the task "process and analyze records" were completely automated. Their analysis finds that occupations that involve a lot of this task experience wage *gains*, on average. This might seem surprising: LLMs are taking over crucial tasks in these occupations and yet average wages are going up. Why?

Well, because automation frees up time for workers to spend on the other tasks that their job requires. As information-processing tasks are automated, cus-

tomer-facing tasks, such as coordination, communication, and negotiation, rise in significance. Workers who are particularly skilled at these other tasks will see their productivity go up (and their wages rise with their productivity). Workers who are particularly skilled at information processing and not customer-facing tasks will switch to different jobs. And workers in other jobs who are skilled at coordination and communication but not analyzing records will move in.

As this explanation suggests, automation results in a fair amount of labor market churn. As the mix of tasks at different jobs changes, workers will move to jobs that make the best use of their skill set.

What this churn means for individuals' wages depends on that skill set. Workers who are skilled at processing and analyzing records but not the customer-facing tasks that gain in relevance are likely to switch jobs and see their wages fall. In contrast, their former colleagues who were less skilled at processing and analyzing records are more likely to stay in their job and experience wage increases as their work content shifts. The biggest winners are workers who switch *into* exposed occupations because they are good at customer service and coordination, but their lack of skill at information processing had previously kept them out of the occupation.

The age of AI automation

The role of LLMs in the economy continues to evolve rapidly. As of late 2024, 40 percent of the U.S. population aged 18 to 64 reported using generative AI (which includes LLMs), and 23 percent of employed respondents used it for work, according to survey results analyzed by Alexander Bick, Adam Blandin, and David Deming. These numbers are likely to increase.

Freund and Mann hope the framework they built can be used to analyze automation events past, present, and future. "In principle, we can connect our model to many other technologies," Freund said. "As long as we have a mapping between a technology and the set of tasks it automates, we can feed that technology into our model."

One way in which the wave of LLM automation differs from past automation events is that the tasks that are being automated now are associated with skills that vary a lot from person to person. The skill to analyze records is more dispersed in the population than skill with routine physical tasks, for instance, a conclusion Freund and Mann draw from an analysis of worker wages. This means that LLM automation could affect the labor market differently than previous automation waves. In particular, Mann said, "People may move around occupations a lot more because the returns to moving are generally higher" when the automated skill varies so much person to person.

> "The current discourse around AI mostly centers on the notion of jobs disappearing. But that seems to capture only part of the picture."
>
> LUKAS FREUND

One reason information-processing skills vary so much across people is they generally take years of education, training, or on-the-job experience to do well. This is another much-commented-on feature of automation: It is affecting workers who have invested a lot—of time, of money—to gain their expertise.

What this means for worker welfare is yet to be seen. On the one hand, specialized skills may not easily transfer to a different job. On the other hand, Freund said, "If we think that people select into these jobs partly because they involve a lot of learning and they're good at learning, maybe for them it's not so hard to transition."

Ultimately, where automation leads may depend on how we use the time we get back. It's a decision Mann and Freund face themselves. "I can basically feel the paper playing out in my own life in real time," Mann said. ★

TAKEAWAYS ↗↗

- Automation transforms the tasks required for different jobs
- As job tasks change, some workers switch occupations to best use their skills
- On average, wages in occupations with automated tasks go up

This article summarizes the September 2025 version of "Job Transformation, Specialization, and the Labor Market Effects of AI" posted to the Institute Working Paper series. A newer version of the paper is now available.

Why do some people pay loans on time?

Massive new dataset reveals parents and hometowns could make the difference

BY JEFF HORWICH

Access to credit can be a doorway to economic mobility. But credit scores have not been easy to study; private-sector and proprietary, they are a black box by design. In new research, MIT economist and Institute advisor Nathaniel Hendren and co-authors make significant strides via an unprecedented sample that combines credit score and payment delinquency data with Census Bureau and IRS records for more than 25 million Americans—including, in some cases, linked data for parents and adult children. The credit score in question is VantageScore 4.0, a product of the three major consumer credit bureaus that claims to cover 94 percent of U.S. adults.

In "Credit Access in the United States," the researchers examine credit score disparities for the first time "at a population scale, to really unpack the mechanisms of the determinants of access," said Hendren, speaking at the Institute's

2025 research conference. The results they report are extensive:

- There are stark credit score gaps by race, education, parental income, and geography—even after controlling for income.
- These gaps exist at the start of adulthood and shrink only modestly as people get older.
- The divergence in repayment history for young adults typically begins with delinquencies on small items like phone or utility bills sent to collections.
- Credit scores appear to suffer from two distinct forms of bias:
  - Borrowers from groups with lower credit scores (including Black and Hispanic) receive *higher* scores than are borne out by future repayment activity.
  - However, Black and Hispanic consumers with pristine past and future repayment history receive lower credit scores than White consumers with similar records.
- Credit scores of adults appear strongly related to the credit scores of their parents and the location where they grew up.

The new research is a product of the Opportunity Insights research initiative, which first formed around findings that a child's neighborhood can affect lifetime financial and health outcomes. So it is, it would appear, with credit scores and repayment habits. "The credit differences that we observe in adulthood," said Hendren, "we think have their roots in childhood."

Persistent credit gaps and algorithmic biases

Age—and the accumulation of credit history—do not eliminate credit score disparities. At age 30, for example, the average credit score difference between White and Black individuals is 97 points. At age 60, the groups are still 92 points apart (Figure 1).

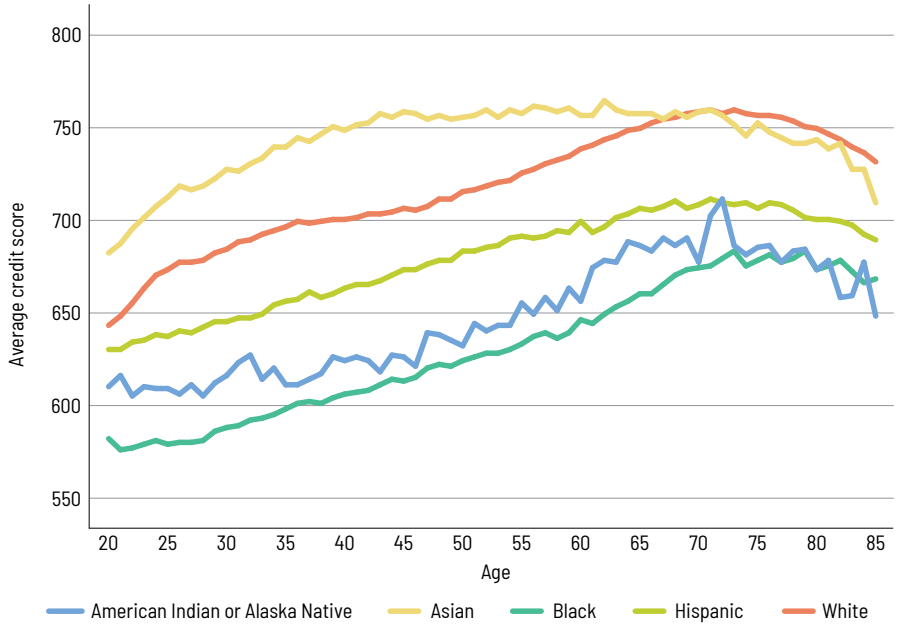
The gaps are similarly persistent between individuals whose parents had high and low incomes or different levels of education. There are also lasting differences between individuals who grew up in places with higher and lower average credit scores.

The researchers do not know the algorithm behind VantageScore. But knowing prior and future repayment histories of each person in the sample allows them to examine whether their credit scores accurately reflect the realized risk: how often the consumer becomes delinquent. This investigation reveals two common forms of "algorithmic bias."

A "calibration bias" appears to favor consumers in groups that are more likely to become delinquent. Consider two consumers with the same midrange credit score of 650: One had low-income parents, and the other comes from a high-income family. On average, the consumer from a low-income background

1 AMERICAN CREDIT SCORE GAPS BY RACE

Differences emerge early and do not close much over time.



Note: Credit score measured in 2020. VantageScore 4.0 aims to predict the likelihood of an individual falling at least 90 days delinquent on a line of credit within two years. The researchers' analysis uses credit report information pulled at four-year intervals between 2004 and 2020. Credit, tax, and demographic data are anonymized and linked by the researchers at the individual level. Source: Bakker et al., "Credit Access in the United States," July 2025, using anonymized Census Bureau, IRS, and credit bureau data.

STUDY AUTHORS

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TAKEAWAYS ↗↗

- Credit score gaps by race, education, and class persist throughout life, even controlling for income
- Scores appear to understate actual delinquency risk for some groups but disadvantage those with perfect repayment
- Repayment patterns vary strongly by geography, suggesting childhood neighborhoods shape lifelong habits

"The credit differences that we observe in adulthood, we think have their roots in childhood." NATHANIEL HENDREN

is 13 percentage points more likely to become at least 90 days delinquent on a line of credit within four years. Between Black and White consumers with the same 650 credit score, there is a 14 point gap in subsequent delinquency outcomes; Hispanic individuals with a 650 score are about 5 points more likely than White individuals to become delinquent.

"The credit score itself is understating the true differences in the delinquencies that it is trying to predict," Hendren said. They found similar patterns by parental education and geography.

Groups that are advantaged by this calibration bias, however, are disadvantaged by a different type, or "balance bias." This perspective focuses solely on consumers with spotless past and future repayment records. In this case, 25-year-old Black consumers are assigned an average credit score more than 30 points lower than scores of 25-year-old White consumers; Hispanic scores are 13 points lower than White scores, while Asian scores are 10 points higher. For Black consumers who maintain no delinquencies, the gap shrinks by more than half by middle age but remains meaningful. A comparison by parental income shows a similar trend.

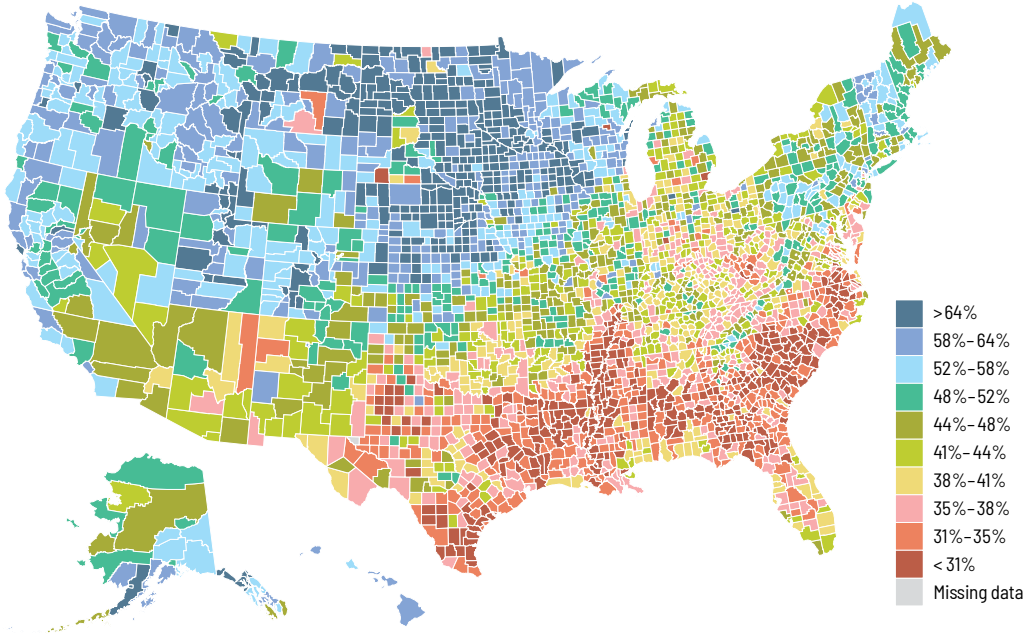
The researchers conduct additional exercises to demonstrate that the biases they find are not intrinsic to VantageScore "or any other particular scoring method, but rather reflect a fundamental property of the information contained in the credit file."[1]

Payment patterns and the power of place

Financial circumstances do help explain differences in repayment behavior across groups, but far from fully. Moreover, the researchers' array of financial controls do not resolve two observations from the data. First, parental credit history is one of the strongest predictors of grown children's repayment patterns, even when controlling for the child's credit score, income, and wealth. This suggests, they write, "a channel of intergenerational transmission of repayment propensity that operates within the family," such as

2 SIMILAR INCOMES, DIFFERENT CREDIT HISTORY

Low-income households show large geographic variation in share with no delinquencies.



Note: Map shows share of individuals with low-income parents (25th percentile of national household income) who had no reported credit delinquencies as of 2020. Source: Bakker et al., "Credit Access in the United States," July 2025, using anonymized Census Bureau, IRS, and credit bureau data.

children observing how parents handle the family finances.

Second, consumers with similar financial profiles—but from different hometowns—have different credit scores and repayment tendencies, on average (Figure 2).

To estimate the causal effect of location on repayment, Hendren and his co-authors revive a technique from their well-known Moving to Opportunity research. They exploit the variation in outcomes between siblings who make a family move at the same time, but at different ages. "Children who spend more time growing up in a place where other people repay their debts are themselves more likely to repay," they find, "even conditional on their income in adulthood." They estimate, for example, that growing up in a low-credit-score area like Baltimore, Maryland, and the highest-credit-score county of Bergen County, New Jersey, (just across the Hudson from New York) amounts to a 10 percentage point difference in the likelihood of having no delinquencies as an adult.

Why does place matter? A deeper explanation is left to future research. Initial investigations by Hendren and his co-authors do not find clear evidence of distinct causal effects from financial literacy or economic instability, though these are strongly correlated with credit habits. They suggest there is more potential in various mechanisms related to "social capital": social networks, sharing of financial knowledge, and direct exposure to neighbors and friends with higher socioeconomic status. "Because these habits form early and are reinforced by parents and social networks," the economists write, "policies that cultivate sound credit practices during childhood and young adulthood appear to be promising policy pathways." ★

1 VantageScore has published its own findings of a lack of statistical bias against protected classes in its 4.0 model, using ZIP code data as a proxy for ethnicity.

What's in a median?

Breaking down a flagship economic statistic: Real median household income

BY ANDREW GOODMAN-BACON AND RICHARD LIU

The first two statistics in the Census Bureau's annual *Income in the United States* report are median household income and its change from the previous year. Every three years, when the Federal Reserve releases the Survey of Consumer Finances, the first summary bullet point reports how much median family income has grown. When organizations like the Pew Research Center discuss topics such as the "hollowing out of the American middle class," they define these groups based on the national median household income.

But what does "real median household income" mean? For example, which Americans benefit when median household income rises? If households do better, do people do better?

Figure 1 plots real median household income from the Current Population Survey starting in 1947 and running through 2024. One clear takeaway is that median household income has grown tremendously—more than double—since 1947. Yet there are also periods of stagnation and, especially around large recessions such as in 1981 and 2008, times when median household income fell.

While economic analyses of the income distribution can be complex, understanding what real median household income means and, perhaps more importantly, what it does not mean, requires just a few simple concepts. In this piece we break down the nuances of this pivotal and common measure.

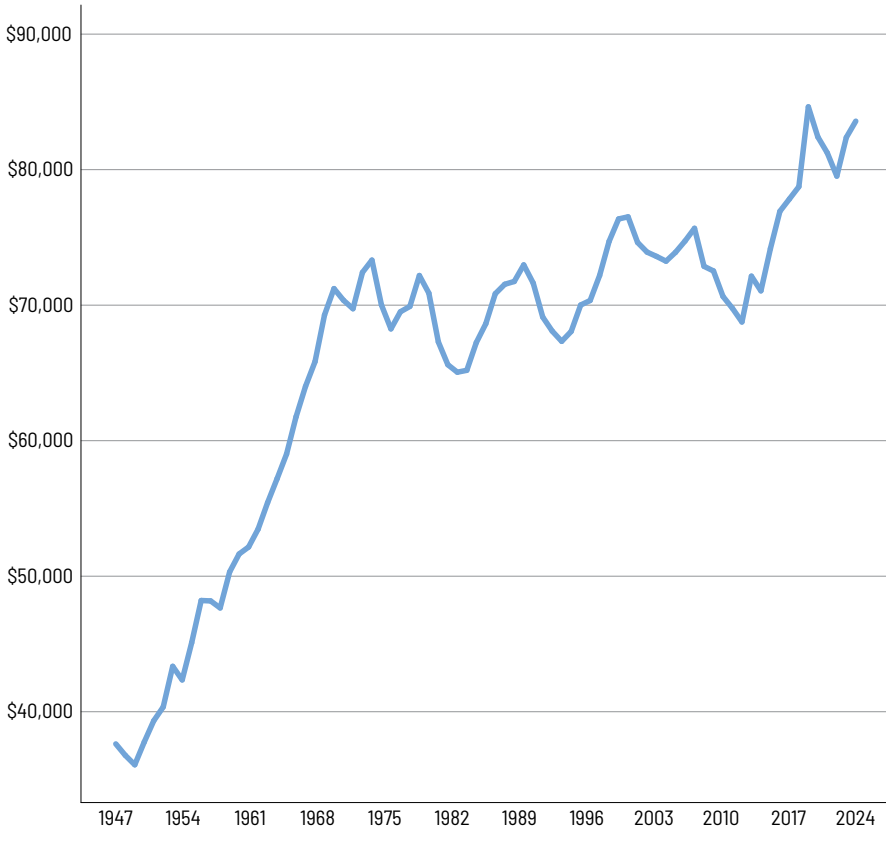
First, the **"real"** part. Income grows, especially over long periods, partly because prices change. But a higher income can't actually buy any more goods or services if they have also become more expensive. In the 1970s, for example, reported median income rose by 103 percent, but prices rose by 112 percent. Income statistics have to adjust for this, and the data in the figure do: They reflect the value of a dollar in 2024, factoring in inflation.

Second, the word **"household"** plays a central role in shaping the trends we see. For statistical agencies, a household is a group of people who live together and share expenses, like a family or roommates. Household income equals the income earned by all household members. Therefore, median household income reflects not only how much each person earns but also how many earners each household has. When a household breaks up, for instance because of a divorce, one higher-income household becomes two lower-income households, which can lower median household income.

Changes in households have a huge effect on the trends in the figure between the 1970s and 1990s, when the share of new parents living together dwindled and divorces increased. The share of people ages 25–34 in households that contained just one adult rose from 8 percent in 1970 to 15 percent in 1990. This change meant more households with fewer earners and thus lower median *household* income. Median household income still provides a useful measure of economic well-being, since households, by definition, share resources and a household

1 / (UN)STEADY RISE

Real median household income has grown over the last 70 years, but has also seen periods of decline.



Note: Values deflated by Minneapolis Fed inflation calculator CPI values (1913-present). Source: U.S. Census Bureau. Data for 1947 through 1967 are from Consumer Income (P60) Publication Series. Data for 1968 through 2024 are from the Current Population Survey Annual Social and Economic Supplement.

with fewer earners has fewer resources. As an indication of how much people can earn, however, median household income cannot say that much.

We can also combine data on changes to household structure and the income of different kinds of households to measure approximately how much change in median income came from shifts in household size versus shifts in income. For example, between 1970 and 1990, real median household income barely changed, but it grew by $8,493 for one-adult households and $9,010 for households with multiple adults. How can that be? It's largely because the share of one-adult households doubled. Had the share of one-adult households remained steady at its 1970 level, real median household income may have increased by as much as $8,968.

On the other hand, had the range of real incomes among one- and multi-adult households stayed as they were in 1970, the shift in household size would have led to a *reduction* in overall median income of several thousand dollars. (Decomposing income changes into a within-group component and a compositional component works exactly for averages but is only an approximation for medians.) Therefore, even though incomes for each type of household grew fairly strongly during these 20 years, the composition of households offset that. Stagnant median household income in the latter 20th century is partly an artifact of the rise of one-adult households.

Next comes the meaning of **"median."** Median household income is the level of income that divides households in half: Half of households have more income and half have less. But this means that changes in income among households in the bottom or top halves of the distribution do not affect the median at all. A recession that causes unemployment primarily among workers in low-income households might leave median income largely unchanged, even though it clearly has large effects on economic well-being. In fact, this is almost exactly what happened to hourly wages in the 1970s and 1980s.

Economists who have looked closely at median wages (including Juhn, Murphy, and Pierce in 1993; Autor, Katz, and Kearney in 2008; and Lemieux in 2010) have found that while the median wage dropped just slightly from the early 1970s to the late 1980s, wages at the bottom of the distribution fell much more. The result: a sharp rise in income inequality on top of roughly flat median household income.

Stagnant median household income in the latter 20th century is partly an artifact of the rise of one-adult households.

Therefore, median income only really reflects how households in the middle are doing, and this provides one reason to look beyond the median. One in four households make less than the 25th percentile of income, for example, so this statistic is more relevant than the median for measuring the resources of lower-income households. At the other end of the distribution, economic inequality is often summarized by the 99th percentile (or higher), the minimum income earned by the richest 1 percent of households.

It can be hard to get enough data to paint an accurate picture of these extremes, however. The Institute's Income Distributions and Dynamics in America resource, which calculates these kinds of statistics using millions of data points from U.S. tax records, provides one easy-access way to do so. Changes in median income will tend to reflect the experience of a broad group of households when all the percentiles are moving together, but not when incomes at the top or the bottom of the distribution are behaving differently.

Finally, one must understand what counts as **"income."** Most American households get their income from wage and salary earnings, but not everyone. The feature article in this issue looks at nonwage income, who gets it, and how much they get. Trends in real median household income therefore come not only from changes in the labor market but also income support programs, financial markets, and even real estate markets.

In September 2026, the Census Bureau will report how much real median household income changed from its 2024 level of $83,730. What that says about economic well-being in America depends on much more than just one number. ★

TAKEAWAYS ↗↗

- Real median household income is a useful summary of overall economic well-being
- Median household income can remain deceptively stable even when economic or social conditions change
- Growing numbers of one-adult households and rising household inequality aren't fully captured by median household income

Honoring the legacy of Bill Spriggs

Friends, colleagues, and mentees reflect on Spriggs' accomplishments and example

BY LISA CAMNER MCKAY

Over nearly four decades as a professional economist, Bill Spriggs made significant contributions to labor economics, economic policy, and the practice of economics research and training. At the time of his death in June 2023, he was in his sixth year as a member of the Institute's advisory board while also actively continuing his work as a labor economist, a public policy advisor, a professor of economics, an academic advisor, and a mentor.

To recognize Spriggs' many meaningful contributions and achievements, a program committee drawn from his professional connections organized three sessions at the Allied Social Science Associations annual meeting in January.

Institute Director Abigail Wozniak moderated a plenary luncheon to memorialize Spriggs' career and introduce his work to the next generation of economists. The panelists included several of Spriggs' oldest colleagues and students, people who knew him from interactions around specific policy issues, and people who knew him mainly through his academic example.

The panelists described Spriggs' distinctive approach to economics. Larry Mishel, who met Spriggs in 1977 in graduate school, recalled how Spriggs was the only Black graduate student in the University of Wisconsin economics department at the time and for years before and after. Spriggs was passionate about bringing his own lived experiences, his love of history, and his belief that institutions matter to his approach to economics.

"We thought of economics as if people mattered. We weren't interested in solving problems brought up by *economics*. We were interested in solving problems brought up by the *economy*, and those are two different things," Mishel said.

It was a perspective that policymakers found valuable. "His was a view that I wanted to get, because it was informed by experiences that most others didn't have," Minneapolis Fed President Neel Kashkari said. "It had a lot of solid economic reasoning behind it, and I found that uniquely valuable."

CAROLINE YANG

Bill Spriggs at the 2022 Institute Research Conference.

Kashkari and Spriggs used to speak about the trade-off between inflation and unemployment, a tension that resonates with today's economic environment. "Bill would say, 'We've got to avoid a recession because recessions are very, very painful for low-income communities and minority communities especially,'" Kashkari said.

As Spriggs' career developed, he expanded his contributions to many domains. These included research into drivers of labor market outcomes and economic disparities and the role of monetary policy in the labor market. Two paper sessions provided an opportunity to showcase new research in the Spriggs research and policy tradition.

The panelists admired Spriggs for how effortlessly he wore many hats. "He provided a model of an economist that I had not yet seen in the fact that he could successfully move between policy and academia," said Robynn Cox, economics professor at University of California, Riverside. "He had a tremendous impact on economic thought, policy, and in the profession through mentorship. He was a beacon of light for so many of us, and he's tremendously missed." ★

FEDERAL RESERVE BANK OF MINNEAPOLIS

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

2025–26 Institute Visiting Scholars

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

David E. Altig
Executive Vice President and Chief Economic Adviser, Federal Reserve Bank of Atlanta

Shifrah Aron-Dine
Assistant Professor of Agricultural and Resource Economics, University of California, Berkeley

Barbara Biasi
Assistant Professor of Economics, Yale School of Management

Florin Bilbiie
Professor of Macroeconomics, University of Cambridge

Laura Castillo-Martínez
Assistant Professor of Economics, Duke University

Jacelly Cespedes
Assistant Professor of Finance, University of Minnesota Carlson School of Management

Lukas Freund
Assistant Professor of Economics, Boston College

Pamela Giustinelli
Associate Professor of Economics, University of Padova

Kareem Haggag
Associate Professor of Behavioral Economics, UCLA Anderson School of Management

Christian Hellwig
Professor of Economics, Toulouse School of Economics

Agustin Hurtado
Assistant Professor of Finance, University of Maryland Smith School of Business

Annamaria Lusardi
Senior Fellow, Stanford Institute for Economic Policy Research

Cedomir Malgieri
Assistant Professor of Economics, Arizona State University W. P. Carey School of Business

Olivia S. Mitchell
Professor of Business Economics and Public Policy, University of Pennsylvania Wharton School

Cormac O'Dea
Assistant Professor of Economics, Yale University

Claudia Olivetti
George J. Records 1956 Professor of Economics, Dartmouth College

Mark Ponder
Senior Consultant, NERA

Katherine Richard
Assistant Professor of Poverty and Public Policy (Fall 2026), University of Wisconsin–Madison La Follette School of Public Affairs

Moises Yi
Senior Economist, U.S. Census Bureau

Samuel Young
Assistant Professor of Economics, Arizona State University

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FINAL THOUGHT

"Kids shouldn't be held responsible for their parents' circumstances. ... Growing up in poverty is a clear cause of winding up in poverty as an adult. And that is a failure of our ability to provide equal opportunity."

University of California, Berkeley, economist and Institute advisor **Jesse Rothstein**. Read our interview with Rothstein on page 14 of this issue.

MARC OLIVIER LE BLANC