Living Paycheck-to-Paycheck: Empirical Analysis and Macroconomic Implications

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June 2023

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Common Usage

- ***BankRate.com***

  Living paycheck-to-paycheck is the common term for those who don't have enough money to pay for future expenses until their next paycheck arrives…57% of Americans don't have enough savings to cover a $1,000 emergency expense.

- ***Investopedia.com***

  Living paycheck-to-paycheck can occur at all different income levels. Many Americans live paycheck-to-paycheck because the cost of living has not increased in proportion to salaries.

Media Coverage

CNBC YOUR MONEY

With inflation stubbornly high, 58% of Americans are living paycheck to paycheck: CNBC survey

PUBLISHED TUE, APR 11 2023•6:00 AM EDT | UPDATED TUE, APR 11 2023•1:40 PM EDT

THE WALL STREET JOURNAL.

FORTUNE

CBS NEWS

BY KHRISTOPHER J. BROOKS

APRIL 28, 2023 / 5:35 PM / MONEYWATCH

Nearly three-quarters U.S. millennials live paycheck to paycheck, survey shows

Bloomberg

MarketWatch

npr

December 16, 2020 · 5:07 AM ET

Heard on Morning Edition

Alina Selyukh

Paycheck-To-Paycheck Nation: Why Even Americans With Higher Income Struggle With Bills

THE HILL

Structural Macro Models

- **Structural macro models should have micro foundations, especially when used for analyzing alternative policies (Lucas 1976).**
- **First-generation New Keynesian models were formulated using a "representative agent", i.e., all households are homogeneous, and consumer spending behavior is represented by a single Euler equation (the NK IS curve).**
- **RANK models have been useful for analytical purposes but obviously abstract from some key dimensions of reality.**

Heterogeneous-Agent Models

- **A burgeoning literature is now analyzing macro models with heterogeneous agents,** building on seminal work of Bilbiie (2004), Gali, Lopez-Salido, and Valles (2007), and Kaplan, Violante, and Weidner (2014).
- **In HANK models, "hand-to-mouth" households simply consume their current income due to borrowing constraints and lack of liquidity.**
- **This literature has focused on characterizing heterogeneity in assets and consumer spending while maintaining homogeneity in labor markets.**
- **In these models, aggregate demand is not directly affected by movements in real wages.**

Our Empirical Analysis

- We use the 2017 and 2019 waves of PSID to analyze heterogeneity in income sources and employment as well as asset holdings.
- We identify several distinct types of households:
  - Fixed Income: at least 90% of total income from transfer payments (excl. unemployment insurance) and interest from bonds & trusts.
  - Liquid: more than one month of liquid assets
  - Illiquid: less than one month of liquid assets (net of credit card debt)
- We further disaggregate illiquid households into hourly-wage vs. salaried workers.

Our Key Empirical Findings

- **About 60% of U.S. adults are reasonably characterized as living paycheck-to-paycheck, consistent with results from opinion surveys.**
- **Nearly 20% of adults live on fixed incomes:**
  - **Two-thirds are older adults (ages 62+) receiving social security & pension income**
  - **One-third are younger adults (ages 18-61) receiving SSDI, welfare, and other transfers**
- **About 40% of adults live in households for whom labor is practically their only source of income. These households have practically no assets other than home equity and/or vehicles.**

Our Modelling Analysis

- **In light of our empirical analysis, we formulate a HANK model with four types of households:**
  - **Fixed Income: these households receive a deterministic stream of transfers, funded by lump-sum payments from other households.**
  - **Wage Workers: rely solely on labor income, with hours and employment determined by staggered nominal wage contracts.**
  - **Salaried Workers: rely solely on labor income, where remitted wages may deviate from the allocative wage that determines hours of work.**
  - **Executives: own all businesses and receive all residual income net of labor compensation.**

Our Key Modelling Results

This specification of heterogeneity has first-order effects on macro dynamics:

- **Real wages enter directly in the NK IS curve, and hence aggregate demand is dampened by a cyclical decline in real wages.**
- **Aggregate demand is affected symmetrically by remitted wages of hourly & salaried workers even though their labor contracts differ.**
- **The aggregate marginal propensity to consume (MPC) of about 0.5 is broadly consistent with the findings of Parker et al. (AER 2013).**

Overview of the PSID

- **The PSID sampling design focuses on collecting data for a family unit (not including any unrelated individuals who may be living in that home).**
- **Detailed data is collected about the primary respondent (PR) and their spouse/partner (SP); summary information is collected about any other adults and children in the family.**
- **Longitudinal analysis can be conducted by linking the PR in consecutive biannual waves but can be complicated by changes in family composition (new members, separations, etc.).**

Categorizing Sources of Income

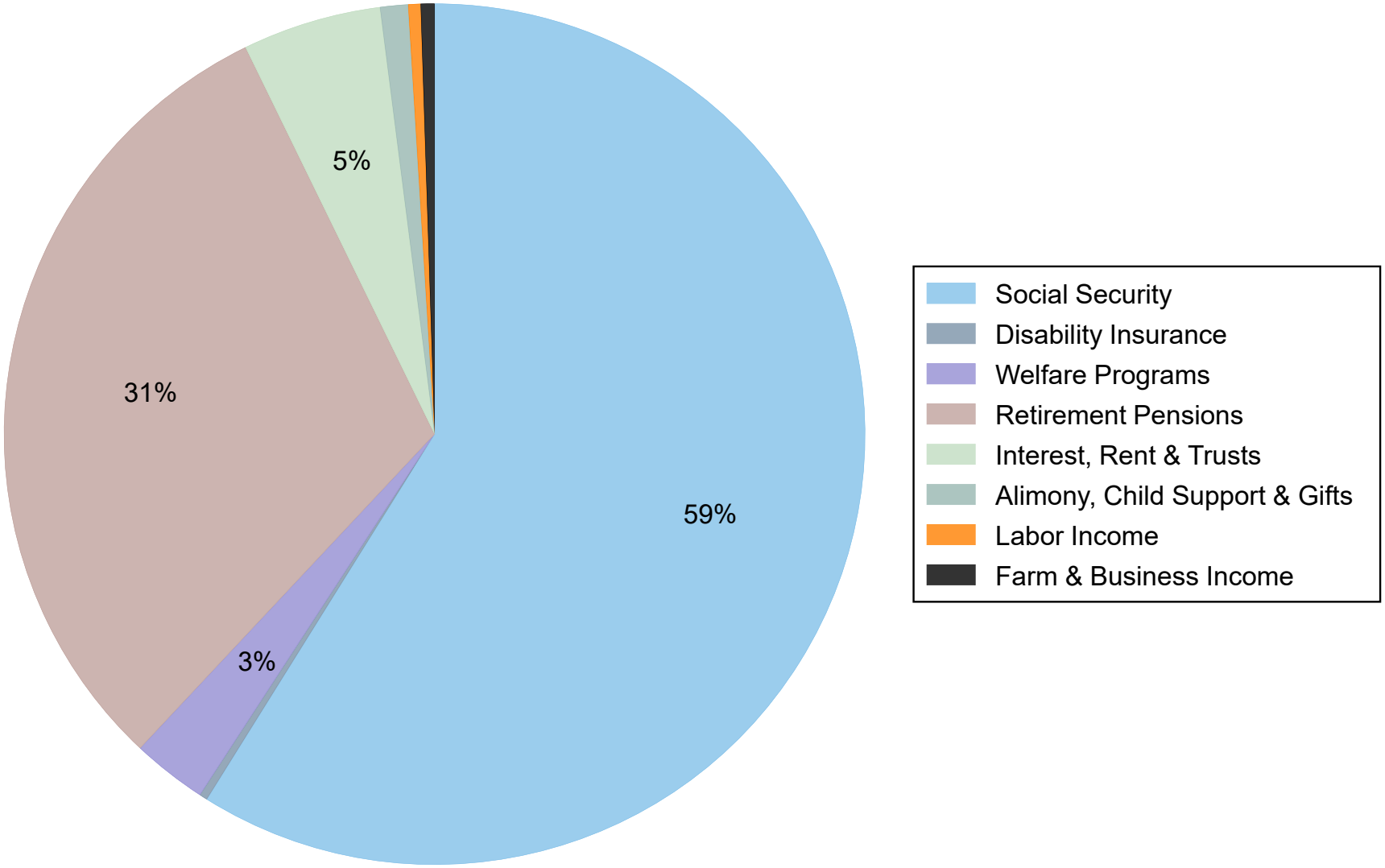
- **Labor Income** ***(including details about employment status, type of pay, etc.; note that we include unemployment compensation in this category)***
- **Farm and Business Income** ***(including details on assets, debts, shares of stock, dividends, etc.)***
- **Taxable Fixed Income** ***(including trusts, income from rental properties, interest on CDs & bonds)***
- **Transfer Income**
  - ***Social Security*** ***(retirement benefits & SSDI)***
  - ***Pensions & Annuities***
  - ***Public Welfare*** ***(TANF)***
  - ***Private Transfers*** ***(alimony, child support, gifts)***

Fixed-Income Families

- **We classify a family as "fixed-income" if *transfers* + *taxable fixed income* comprise at least 90% of its total income.**
- **Our findings are robust to alternative thresholds of 80% or 85%, because most families in this category have practically no other income.**
- **The specific sources of income differ markedly depending on the age of the primary respondent:**
  - ***Older adults*: social security & pensions**
  - ***Younger adults*: SSDI & welfare**

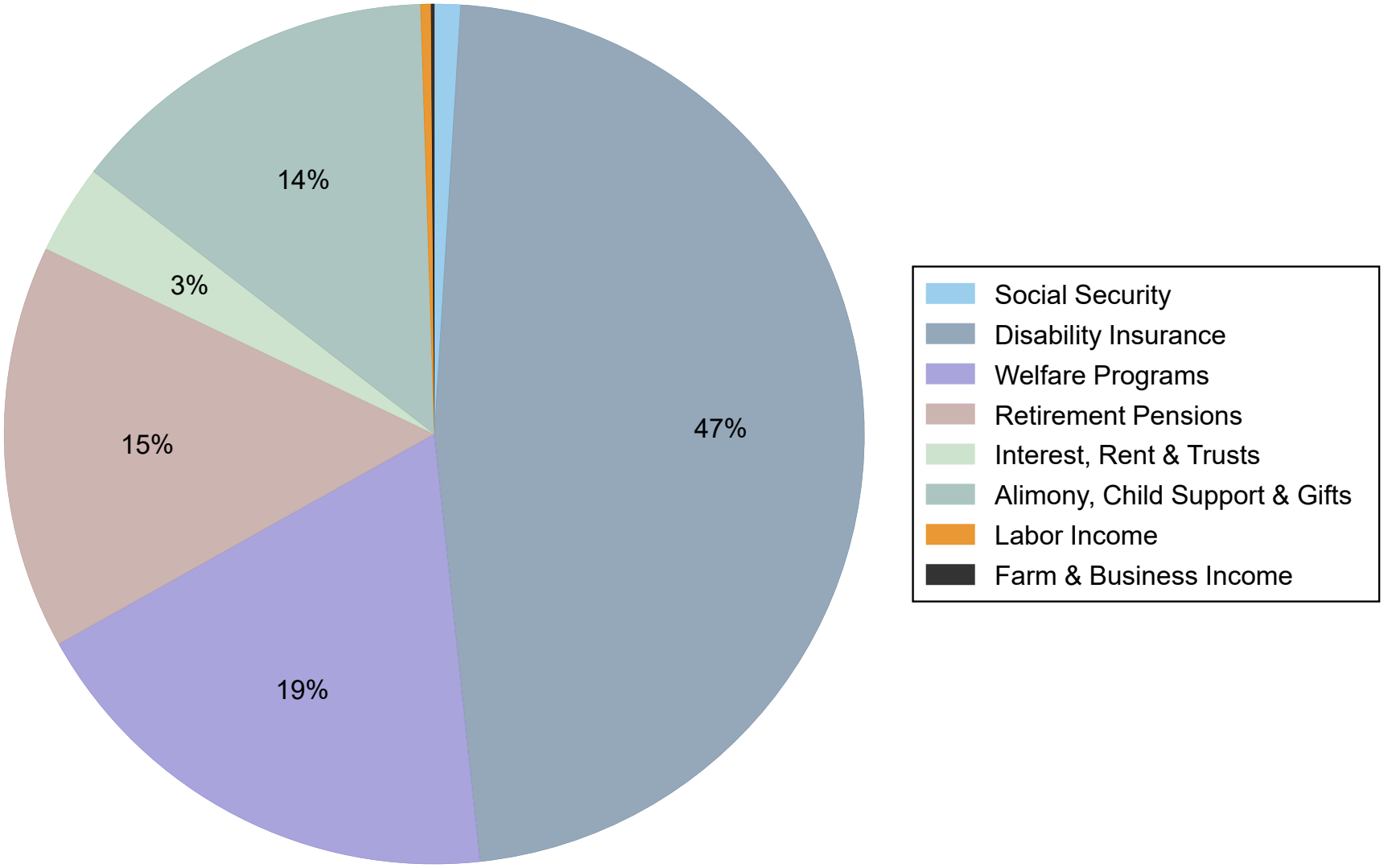
Income Sources for Older Fixed-Income Families

(age of primary respondent >= 62 years)

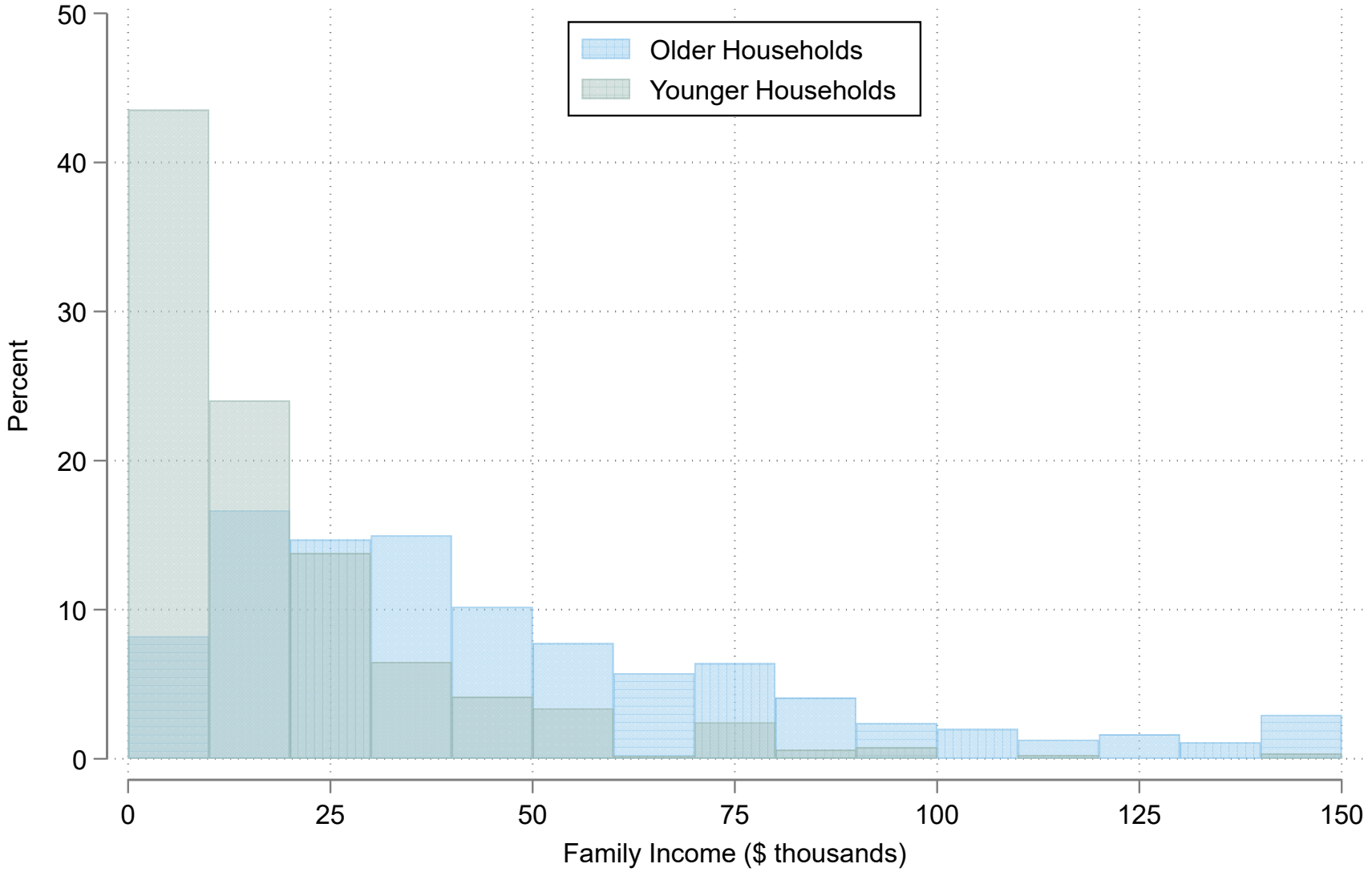


Income Sources for Younger Fixed-Income Families

(age of primary respondent < 62 years)



The Income Distribution of Fixed-Income Families



Categorizing Assets & Liabilities

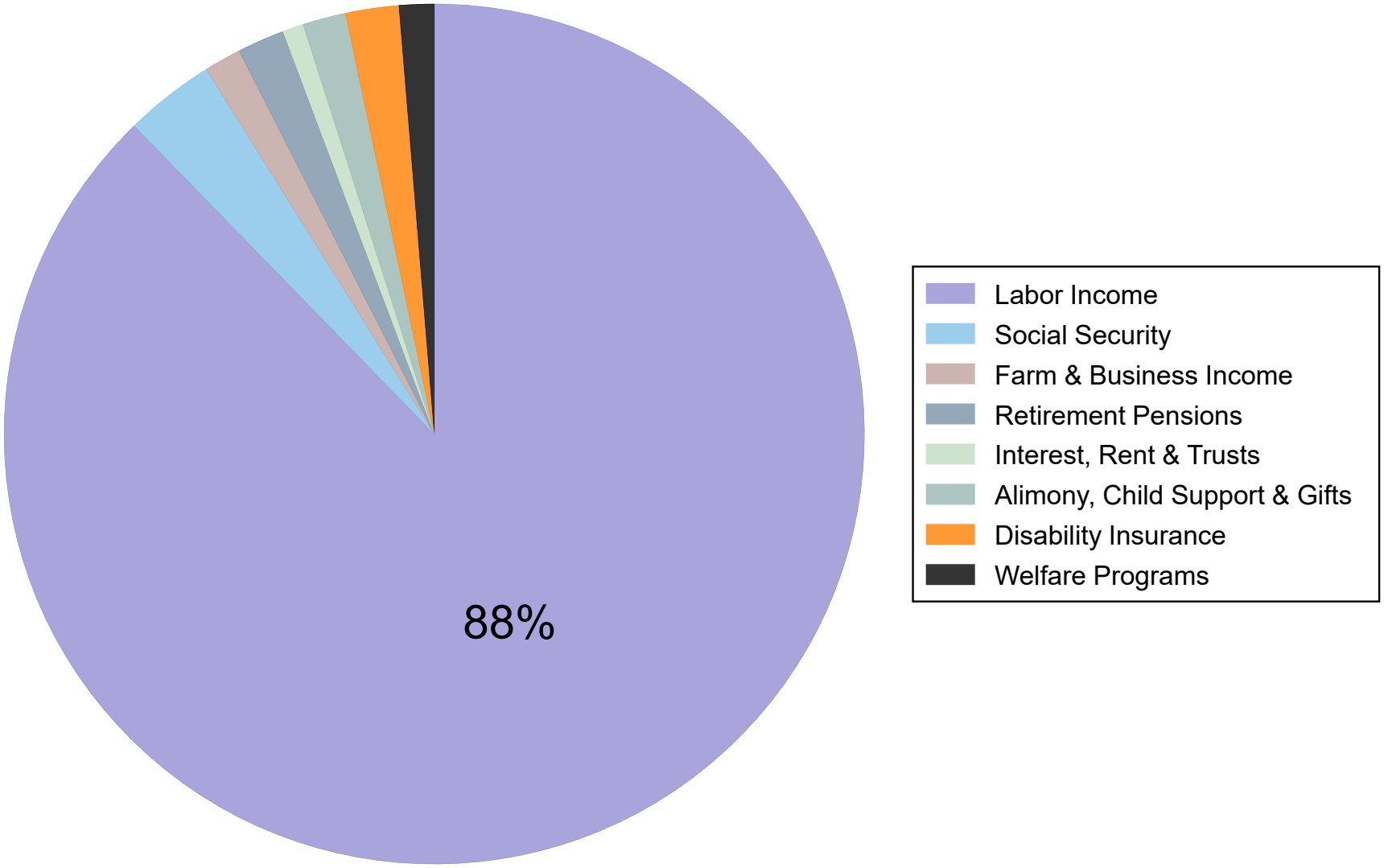
- **Personal Assets & Liabilities**
  - ***Home Equity*** ***(value net of mortgages & HELOCs)***
  - ***Personal Vehicles*** ***(value net of car loans)***
- **Illiquid Assets & Liabilities**
  - ***Farm / Business*** ***(value net of business loans)***
  - ***Other Real Estate*** ***(value net of mortgages)***
  - ***IRAs***
  - ***Longer-Term Debt*** ***(education, legal, medical)***
- **Liquid Assets & Liabilities**
  - ***Transaction Accounts*** ***(checking, saving, CDs)***
  - ***Marketable Securities*** ***(stocks, bonds)***
  - ***Revolving Debt*** ***(credit card balances)***

Liquid vs. Illiquid Families

- For non-fixed-income families, we classify a family as "illiquid" if its liquid assets comprise less than a single month of its total spending.
- Our findings are reasonably robust to variations in the definition of liquid assets, because most families in this category hold practically no assets other than a primary residence and/or personal vehicle.
- We have also explored alternative specifications of the liquidity threshold, i.e., transaction account balances less than 2 or 3 months of total spending.

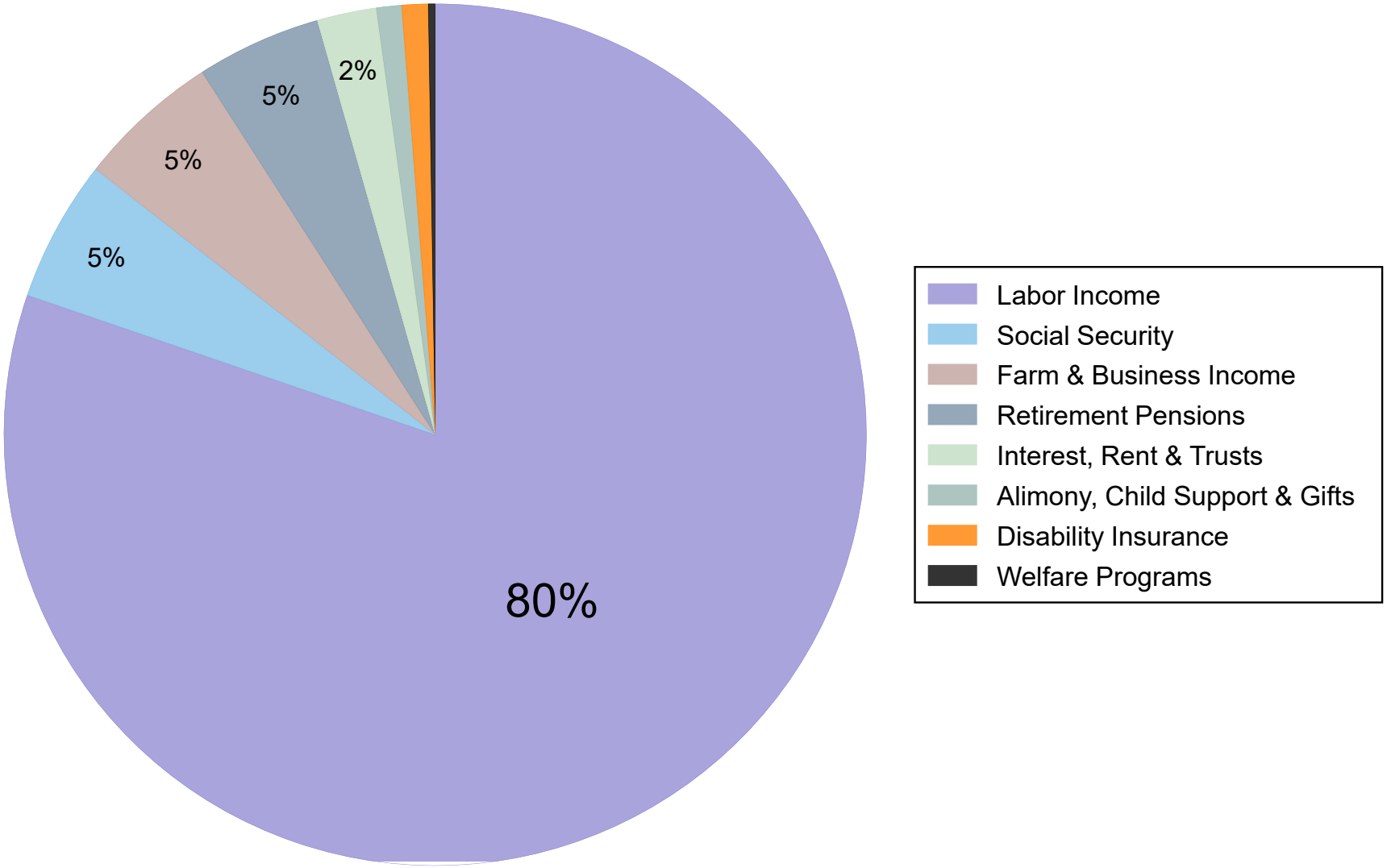
Income Sources for Illiquid Families

(liquid assets <= 1 month of total spending)



Income Sources for Liquid Families

(liquid assets > 1 month of total spending)



Occupations of Hourly vs. Salaried Workers in the PSID

Census Classification	Labor Force (%)	Hourly Workers (%)	Salaried Workers%
Computer & Mathematical	3.3	21.4	78.6
Management	10.2	26.9	73.1
Legal	1.1	28.2	71.8
Life, Physical, & Social Science	1.5	29.9	70.1
Education, Training, & Library	6.0	32.3	67.7
Business & Financial Operations	5.3	32.8	67.2
Architecture & Engineering	2.1	39.8	60.2
Community & Social Service	2.2	42.3	57.7
Sales & Related	8.2	62.6	37.4
Protective Service	2.2	65.2	34.8
Healthcare Pract. &Technical	5.3	67.7	32.3
Arts, Design, Ent.,Sports, Media	2.9	69.7	30.3
Office & Administrative Support	12.6	71.3	28.7
Farming, Fishing, & Forestry	0.9	76.5	23.5
Material Moving	2.7	76.7	23.3
Installation, Maintenance, & Repair	3.3	79.8	20.2
Construction & Extraction	5.3	83.4	16.6
Personal Care & Service	3.4	85.7	14.3
Building, Grounds Cleaning, Maint.	4.2	85.7	14.3
Production	5.8	87.2	12.8
Food Prep & Serving Related	4.3	88.5	11.5
Transportation	4.5	88.6	11.4
Healthcare Support	2.6	96.1	3.9

Classification of Families

Household type	Share in 2017 (%)		Share in 2019 (%)	
	Adult Pop	Spending	Adult	Spending
Benchmark definitions				
Fixed Income	18.5	10.4	18.6	11.0
	(0.6)	(0.5)	(0.6)	(0.5)
Illiquid : Hourly	24.5	21.8	27.0	23.4
	(0.7)	(1.0)	(0.7)	(0.8)
Illiquid : Salaried	15.4	16.9	20.6	23.4
	(0.6)	(0.8)	(0.7)	(1.0)
Liquid	41.6	50.9	33.8	42.3
	(0.8)	(1.4)	(0.8)	(1.4)
Alternative Thresholds for Liquidity				
Fixed Income	18.5	10.4%	18.6	11.0
	(0.6)	(0.5)	(0.6)	(0.5)
Illiquid : Hourly	22.3	19.6%	21.6	18.4
	(0.6)	(0.9)	(0.6)	(0.7)
Illiquid : Salaried	14.5	16.0%	14.6	16.5
	(0.6)	(0.8)	(0.6)	(0.9)
Liquid	44.8	53.9%	45.3	54.2
	(0.8)	(1.5)	(0.8)	(1.5)

Our Modelling Analysis

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Compensation of Salaried Workers

- **Allocative wage determines labor hours**

$$\omega_t^p = \eta \hat{h}_t^p + \sigma \hat{c}_t^p + \hat{\mu}_t^w$$

- **Remitted real wage is inertial**

$$\omega_t^r = (1 - \beta(1 - \psi))\,\hat{\omega}_t^p + \beta(1 - \psi)\,\mathrm{E}_t \hat{\omega}_{t+1}^r$$

- **Remitted nominal wage is paid to the worker**

$$\hat{w}_t^r = (1 - \beta(1 - \psi))\,\hat{w}_t^p + \beta(1 - \psi)\,\mathrm{E}_t\left(\hat{w}_{t+1}^r - \pi_{t+1}\right)$$

Other Dimensions of Aggregate Supply

- **Hourly-wage workers have conventional staggered nominal contracts**

$$\pi^w_{w,t} = \beta \mathrm{E}_t \pi^w_{w,t+1} + \kappa^w_w \left(\eta \hat{h}^w_t + \sigma^w \hat{c}^w_t + \hat{\mu}^w_t - \hat{\omega}^w_t \right).$$

- **Staggered price contracts reflect average allocative wage rate**

$$\pi_t = \mathrm{E}_t \pi_{t+1} + \kappa_p \left(\hat{\omega}_t - \hat{z}_t + a \hat{h}_t + \hat{\mu}^p_t \right)$$

$$\hat{\omega}_t = N^p \hat{\omega}^p_t + N^w \hat{\omega}^w_t$$

Aggregate Demand

- **The NK IS curve is given as follows:**

$$\hat{y}_t = \mathrm{E}_t \hat{y}_{t+1} - \mathcal{M} \frac{1}{\tilde{\sigma}} \left(\hat{\imath}_t - \mathrm{E}_t \pi_{t+1} - r_t^* \right) - \mathcal{M} \left(\mathrm{E}_t \tilde{\omega}_{t+1} - \tilde{\omega}_t \right)$$

- **The interest elasticity depends on the consumption share of executives:**

$$\tilde{\sigma} \equiv \sigma \left(\frac{Y}{C^e} \right)$$

- **The NK spending multiplier and the aggregate MPC depend on the consumption share of illiquid workers:**

$$\mathcal{M} \equiv \frac{1}{1-\lambda} \qquad \lambda \equiv \left(\frac{C^p + C^w}{Y} \right) \left(\frac{1}{1-a} \right)$$

Real Wages and Aggregate Demand

- **By recursion, the NK IS curve can be expressed as follows:**

$$\hat{y}_t = \mathcal{M}\tilde{\omega}_t - \mathcal{M}\left(\frac{C^e}{Y}\right)\frac{1}{\sigma}\sum_{i=0}\left(\hat{\imath}_{t+i} - \mathrm{E}_t\pi_{t+i+1} - r^*_{t+i}\right),$$

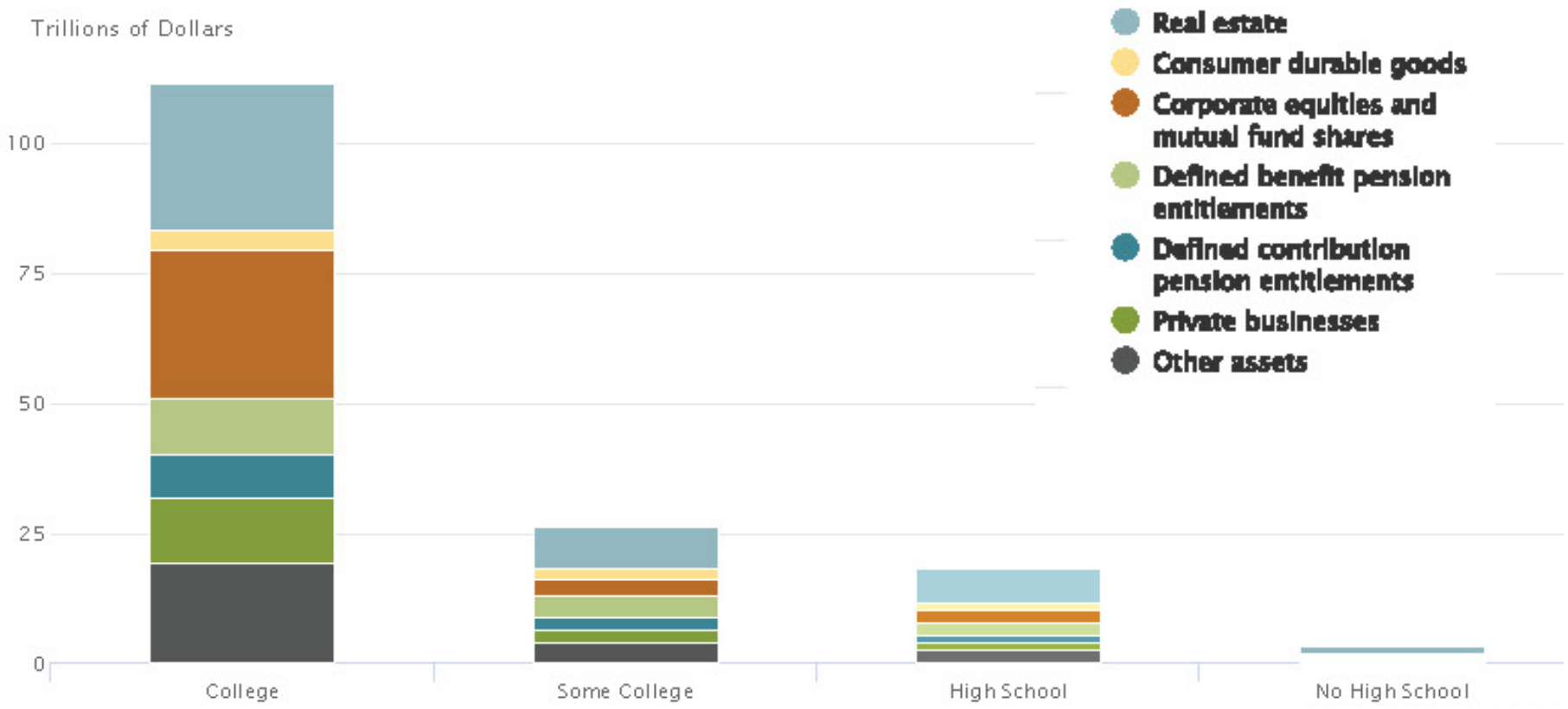
- **Changes in the average real wage have direct effects on aggregate demand.**

- **This channel may be crucial for understanding how the recent pickup in inflation has affected consumer spending of working families.**

Directions for Further Research

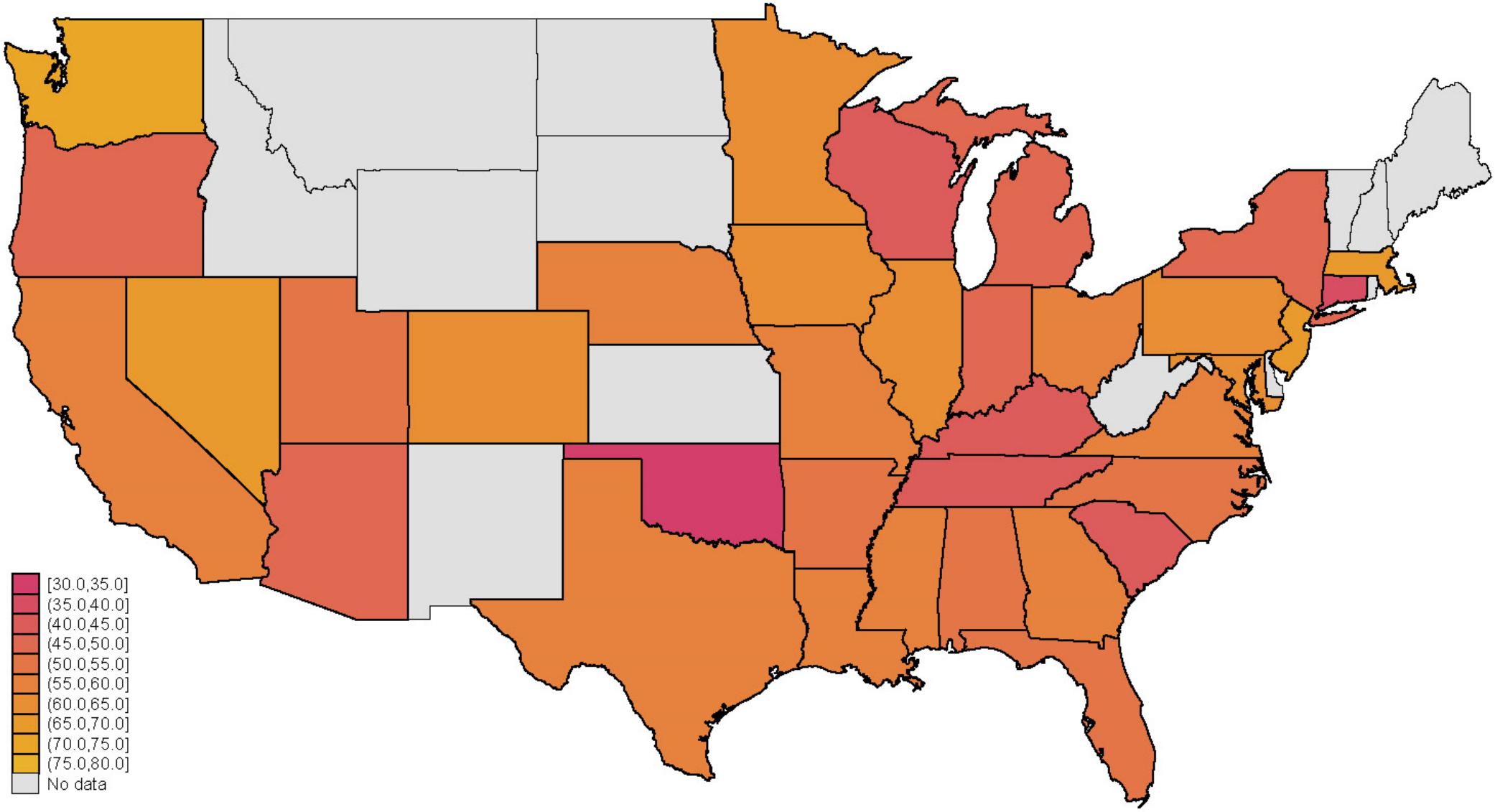
- **Reconsider the underlying reasons for heterogeneity in household savings based on education, financial literacy, disability status, and intergenerational mobility (instead of focusing on heterogeneity in preferences).**
- **Consider how demographic & structural changes affect the macro dynamics over time and across countries (aging populations, dependency ratios, wealth accumulation).**

Asset Holdings by Education



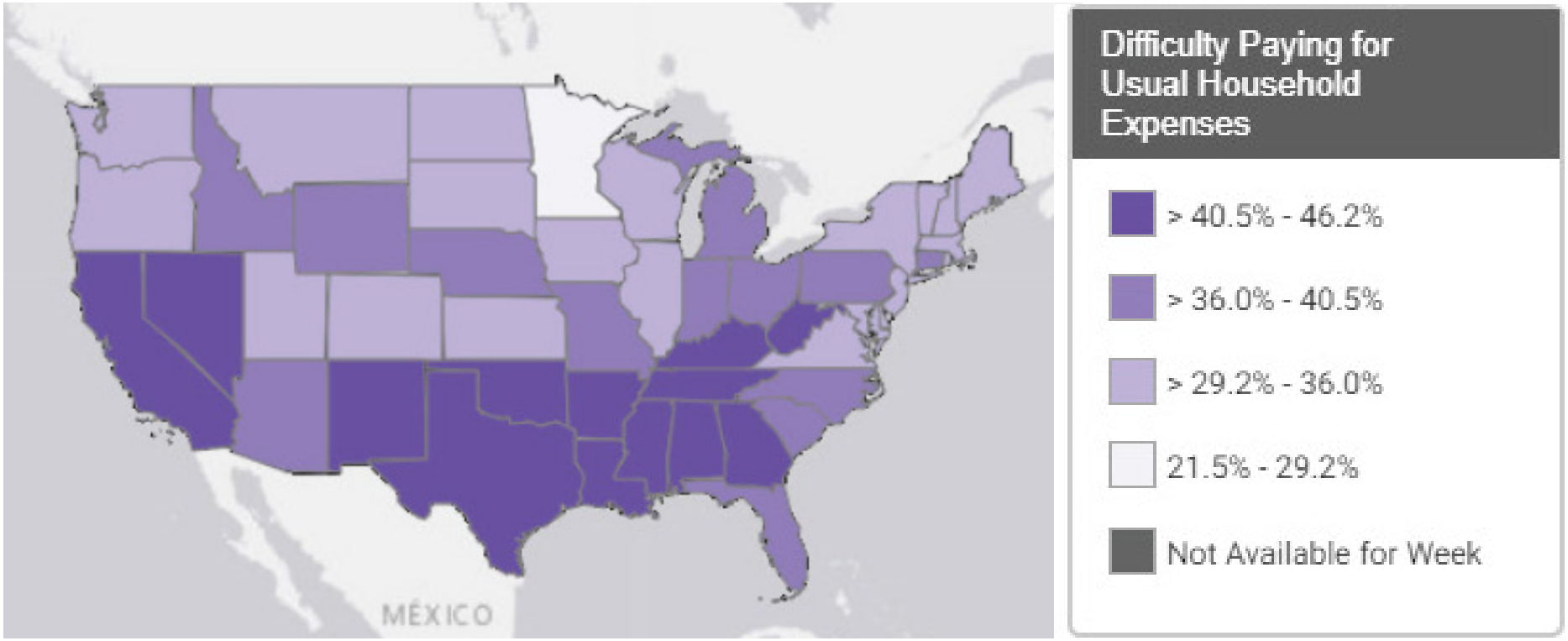
Source: Distributional Financial Accounts, Federal Reserve Board.

Illiquidity by State



Financial Difficulties by State

(Census Household Pulse, April 26-May 8, 2023)



Source: U.S. Census Bureau.