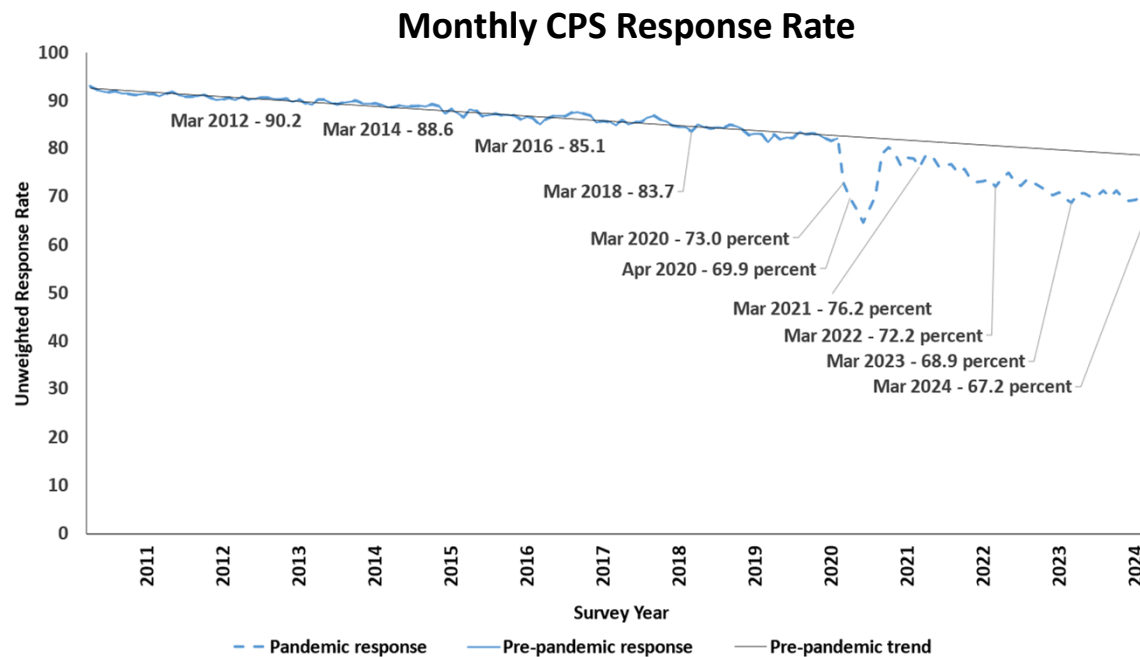# Discussion of:
Challenges in Measuring Income and Poverty: Why Is It So Hard? Why Is It So Important?

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United States® **Census** Bureau

Challenges to Measuring Income and Poverty

- Nonresponse is increasing
  - Tripled in Current Population Survey from 2013 to 2024

Monthly CPS Response Rate

Source: Bureau of Labor Statistics website: https://www.bls.gov/osmr/response-rates/

# Challenges to Measuring Income and Poverty

- For those that respond to the survey, many do not answer income questions
  - Almost 45% of income in official poverty estimate imputed for nonresponse

Share of Income that Is Imputed
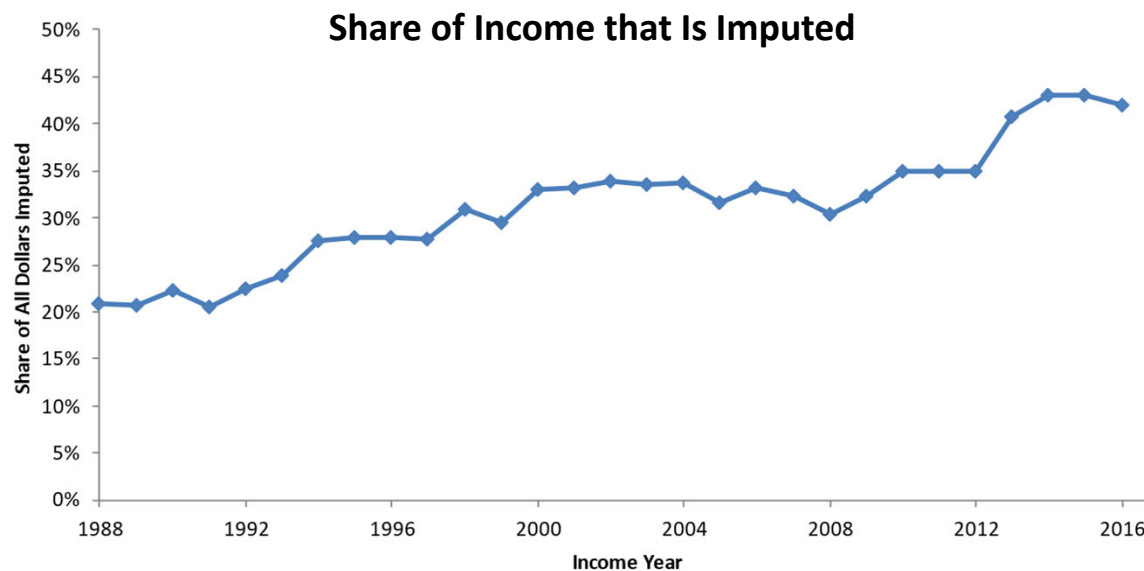
Source: 1989-2017 Current Population Survey Annual Social and Economic Supplement.

Challenges to Measuring Income and Poverty

- For those that answer income questions, many underreport
  - We estimate 9.4 percent fewer people in poverty (~3.5 million people) than official estimates
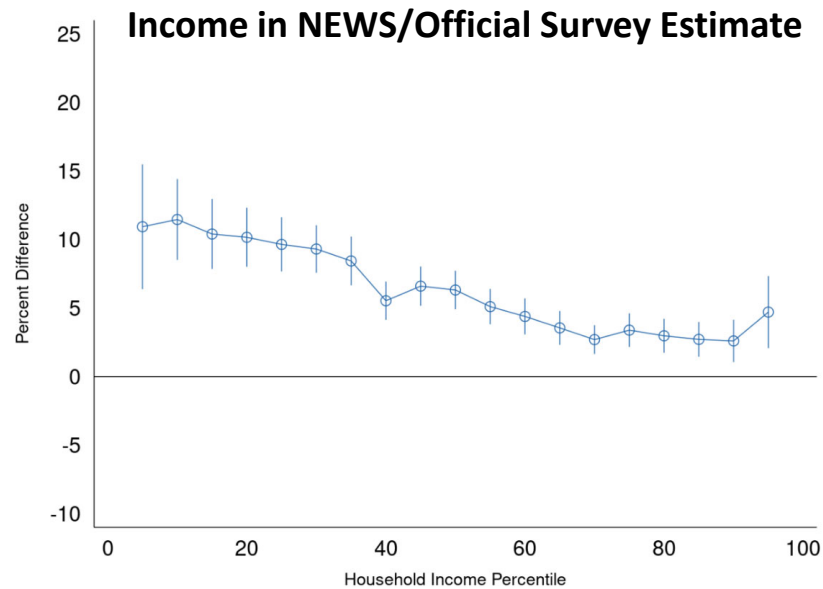
Income in NEWS/Official Survey Estimate

Source: 2019 Current Population Survey Annual Social and Economic Supplement linked to administrative, decennial census, and third-party data.

National Experimental Wellbeing Statistics (NEWS) Project

- What is NEWS?
  - Rethink how we produce income and resource statistics
    - What is the best possible estimate given all the data currently available at Census for a given income/resource statistic?
  - Address multiple sources of bias simultaneously
    - Apply research on addressing each

How Does NEWS Do This?

- Pull together all available data: survey, census, administrative records, commercial (third-party) data
  - Often need *linked* data to address bias correctly
- Do everything in a transparent, replicable, evidence-based manner
- Engage research community
  - Will create linked microdata and code database for access in FSRDCs
  - Code will be shared publicly (subject to disclosure constraints)

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What Have We Done?

- Version 1 Release – February 14, 2023
  - Proof of concept
    - 1 year
    - Mirror income and poverty releases – money income (no taxes, credits, in-kind benefits)
    - Present methods and approach for feedback
  - Paper and estimates available at
    - https://www.census.gov/data/experimental-data-products/national-experimental-wellbeing-statistics.html

What Are We Planning?

- Release by the end of this calendar year
  - More income/resource concepts - taxes, credits, and in-kind transfers, Supplemental Poverty Measure
  - Improved methods
    - Better – integrate machine learning models into imputation, more flexible weighting algorithm, better model to combine survey and administrative earnings
    - Faster – to move toward a goal of rapid releases with incomplete data

Measurement Challenges
Survey Data

1. Unit Nonresponse Bias
   - Not answering the survey
   - Poverty biased **down** by 0.3-0.5 percentage points during the pandemic (Bee and Rothbaum, 2022)

2. Item Nonresponse Bias
   - Not answering income questions (~45 percent of income in the CPS ASEC is imputed!)
   - Poverty biased **down** by 0.5-1 percentage points (Bollinger et al., 2019; Hokayem et al., 2022)

3. Mis- and underreporting
   - Not answering accurately
   - Poverty biased **up** by 2.5 percentage points for individuals 65+ (Bee and Mitchell, 2017)

Biases can have different signs and magnitudes which can vary by group

Measurement Challenges
Administrative Data

1. Selection into administrative data
   - Not everyone has to file taxes or gets a W-2 or other information return

2. Administrative data "nonresponse"
   - Some information not reported that should have been
   - Under-the-table jobs without a W-2, for example – 5% of adults in CPS ASEC report wage and salary earnings on the survey with no W-2

3. Administrative mis- and underreporting
   - Not always 100% accurate
   - Unreported tips, underreported self-employment earnings (refer to IRS tax gap analyses)

Measurement Challenges Administrative Data

4. Conceptual misalignment
   - Administrative not always measuring what we want
   - W-2s historically do not have earnings used to pay for health insurance premiums – understate true earnings (Census also doesn't get this information when it's available)

5. Incomplete data coverage
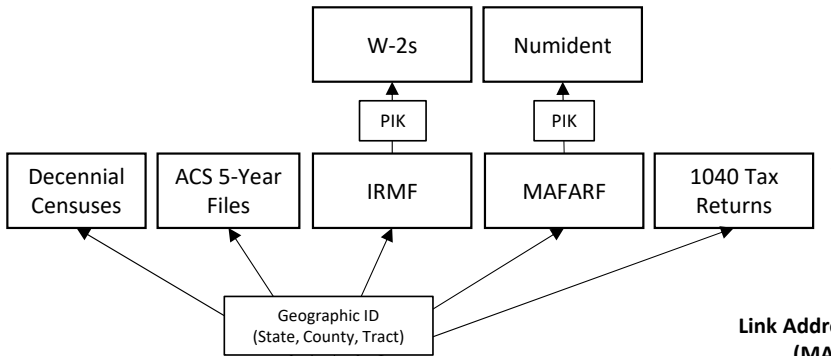   - Data not available for individuals or places

6. Selection into linkage
   - Not all individuals can be linked across data sources (refer to Bond et al., 2014)

Addressing the Measurement Challenges

Step	Description	Measurement Challenge	Related Work
Weighting	Use address-level data for all occupied housing units to weight respondent, linked sample to be representative of the target universe of households	Survey unit nonresponse Selection into administrative data Administrative data "nonresponse" Selection into linkage	Rothbaum et al. (2021) Rothbaum and Bee (2022)
Imputation			
Survey earnings	Impute survey earnings conditional on survey and administrative information	Survey item nonresponse	Hokayem et al. (2022)
Admin gross earnings	Impute gross earnings when missing in administrative data	Administrative data "nonresponse" Conceptual misalignment Incomplete data coverage	
Means-tested program data	Impute means-tested program data for states for which administrative data is not available	Incomplete data coverage	Fox et al. (2022)
Nonfiler income	Impute unemployment insurance compensation, interest, and dividends for nonfilers	Selection into administrative data Incomplete data coverage	Rothbaum (2023)
Estimation			
Combine survey and admin earnings	Combine survey and administrative wage and salary earnings according to the NEWS earnings measurement error model	Survey mis- and underreporting Administrative mis- and underreporting	Bee et al. (2023)
Income replacement	Use survey and administrative data, imputed income, and earnings from the measurement error model to construct household and family income	Survey mis- and underreporting Administrative mis- and underreporting	Bee and Mitchell (2017)

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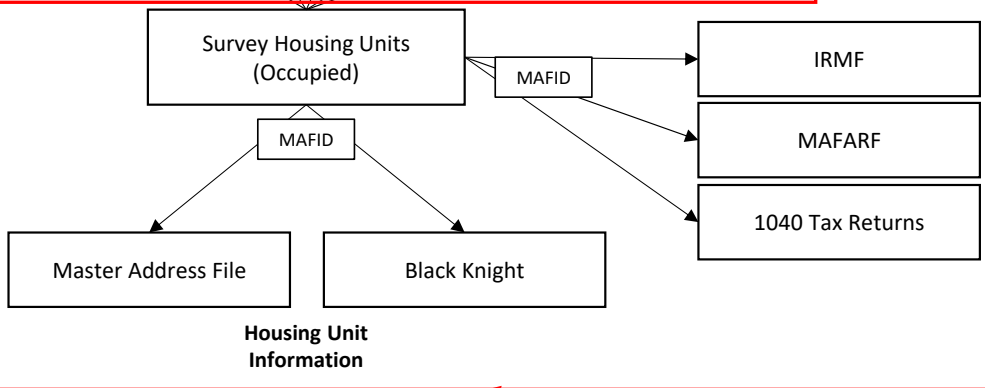
Address-Linked Data (Weighting)

Geographic Summaries of Characteristics

- W-2s
- Numident
- PIK
- PIK
- Decennial Censuses
- ACS 5-Year Files
- IRMF
- MAFARF
- 1040 Tax Returns
- Geographic ID (State, County, Tract)

Links by Geography

Link Addresses to People (MAFID→PIK)

- Survey Housing Units (Occupied)
- MAFID
- IRMF
- MAFARF
- 1040 Tax Returns
- Master Address File
- Black Knight

Housing Unit Information

Links by Address

Links to People in Adrecs at the Addresses

- Decennial Censuses

SSA Data
- Social Security/OASDI Payments (PHUS)
- SSI Payments (SSR)
- Numident
- PIK

- Linked Individuals at Occupied Units
- PIK
- LEHD
- PIK

State Data (from partner states)

IRS Data
- W-2s
- 1040 Tax Returns
- Information Returns (IRMF)
- 1099-Rs

- EIN
- Firm Data (LBD)
- EIN
- EIN
- EIN
- EIN
- Job-Level Match
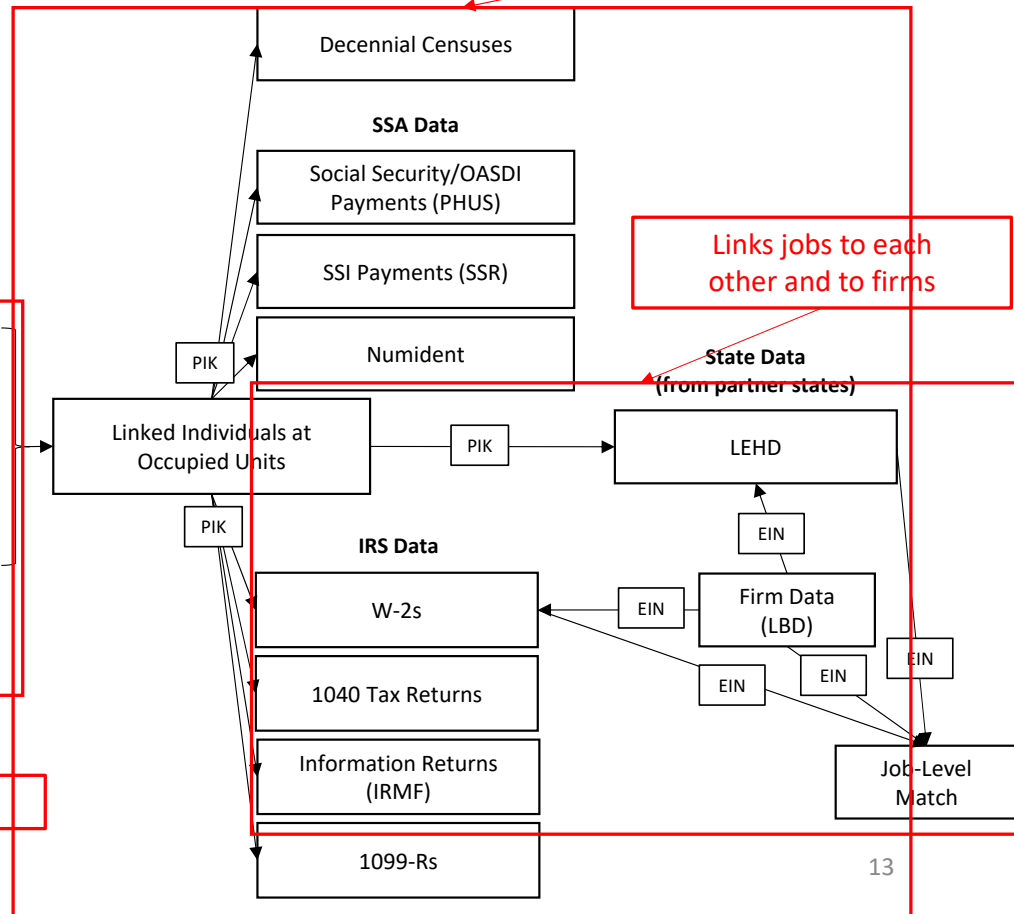
Links jobs to each other and to firms

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13

Estimation
Combining Survey and Admin Earnings

- Five sources of wage and salary earnings information
    1. Survey
    2. W-2s
    3. Detailed Earnings Records
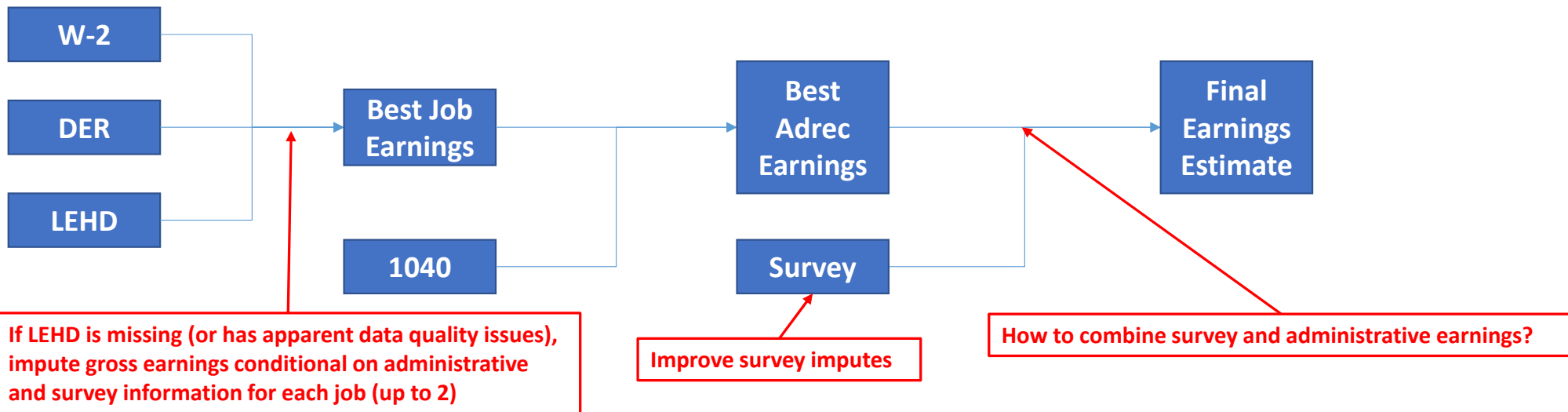   4. LEHD
    5. 1040 wage and salary

The Full Picture – Wage and Salary Earnings

1. Use job-level Information to get "best possible" administrative job-level earnings

2. Compare to 1040 to check for missing earnings (at tax-unit level)

3. Compare to survey and decide for which individuals to use adrec or survey earnings

4. Final "best" estimate of earnings for each individual/household

W-2

DER

LEHD

Best Job Earnings

1040

Best Adrec Earnings

Survey

Final Earnings Estimate

If LEHD is missing (or has apparent data quality issues), impute gross earnings conditional on administrative and survey information for each job (up to 2)

Improve survey imputes

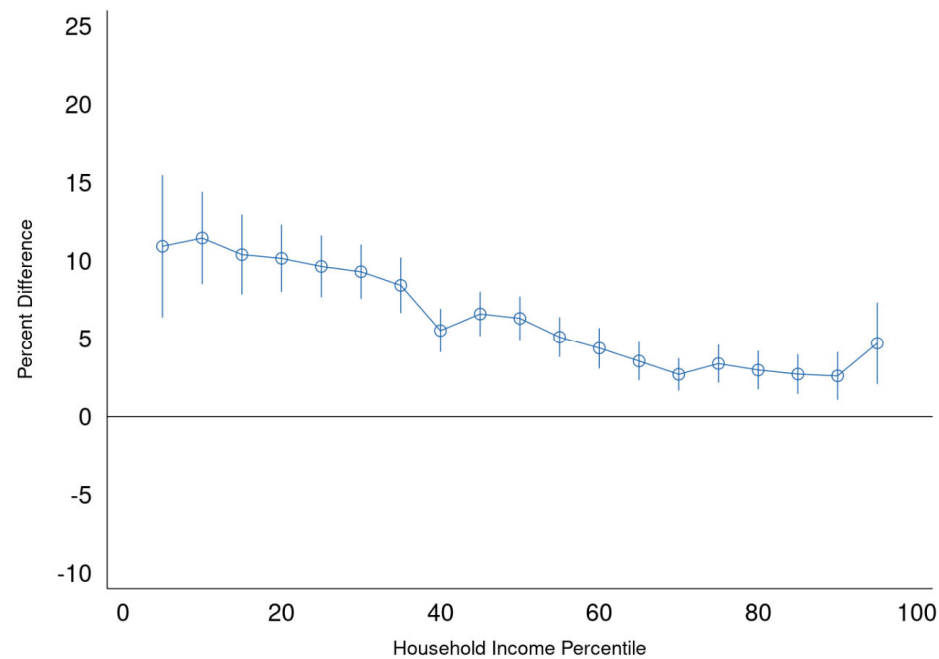How to combine survey and administrative earnings?

Survey Earnings Use

- 21 percent of individuals
- More often for
  - Workers in real estate and construction
  - Younger workers (25-44 year-olds)
- Less often for
  - Workers in retail, education, management, and health care
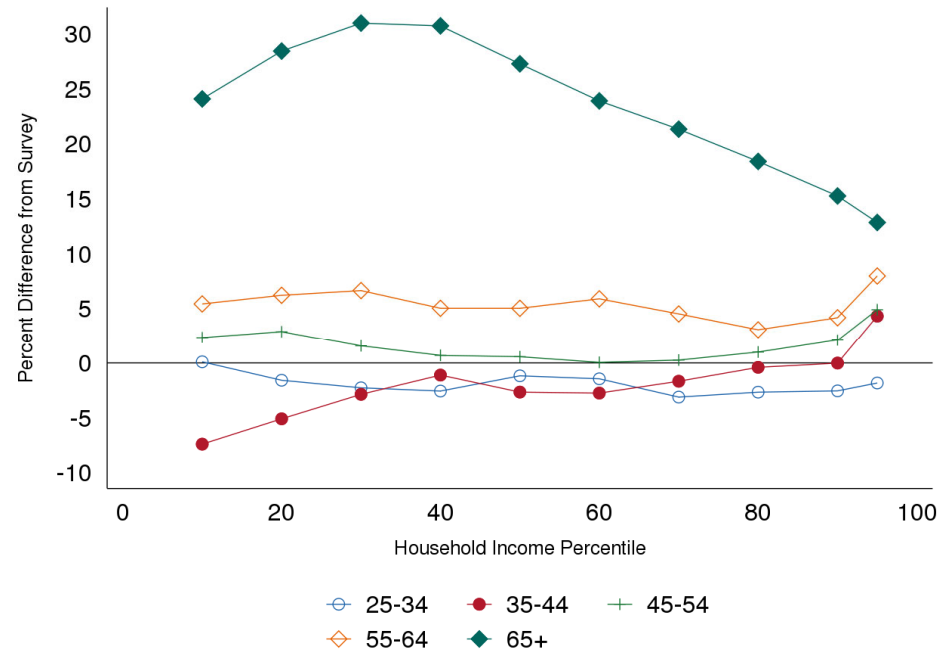 - Older workers (65+)
  - Black workers

Results
Household Income Relative to 2019 CPS ASEC

Source: 2019 Current Population Survey Annual Social and Economic Supplement linked to administrative, decennial census, and third-party data.

Household Income Relative to Survey By Age

Source: 2019 Current Population Survey Annual Social and Economic Supplement linked to administrative, decennial census, and third-party data.

Future Plans

- Prepare for more years
  - Handle incomplete administrative data
  - Either because not available in the past or not yet available for timely estimates

- Finer geographies
  - Integrate American Community Survey data (~33x as large a sample as CPS ASEC)
  - Better use full universe administrative data

Feedback

Paper and estimates available at:

https://www.census.gov/data/experimental-data-products/national-experimental-wellbeing-statistics.html

Please e-mail any comments, concerns, suggestions, and feedback to:

census.newsproject@census.gov