

# BEA Distribution of Personal Income Statistics

*June 10, 2022*



# Outline

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- Measurement Objectives and Challenges
- Data and Methodology
- Results and Insights
- Additional Projects and Next Steps

- A successful measure of the distribution of income should be
  - **Valid:** minimal measurement error and subsequent revisions
  - **Informative:** provide non-noisy information on the income distribution, capturing business cycle fluctuation appropriately
  - **Transparent:** replicable methodology with minimal opaque assumptions
- Need to distribute the most appropriate national accounts (NIPA) measure of income for households with the least amount of assumptions
- BEA distributes **personal income**, which is the income received by persons from
  - participation in production
  - government and business transfers
  - service flows from homeownership
  - holding interest-bearing securities and corporate stock
- Also distribute **disposable personal income** (personal income less taxes) which is closest to the measure of economic resources available to households to purchase goods and services

- Construct a distribution of personal income from publicly available data to provide insight to the income distribution
- Strategy ([Technical document](#) and [working paper](#) on BEA web landing page provide details)
  1. Identify a NIPA total to be distributed (over 70 components of PI)
  2. Identify CPS variable (s) (+ outside data) to allocate component
  3. Sum all household components to subtotals of interest, PI, and DPI.
    - [Adjusted Money Income \(AMI\)](#) (e.g., wages and business income allocated using CPS var with SOI tail adj.)
    - [Financial \(F\)](#) (e.g., imputed interest allocated using information from SCF)
    - [Health \(H\)](#) (e.g., Medicare using CPS var; Medicaid using machine learning algorithm)
    - [Other Transfers \(net\) \(T\)](#) (e.g., WIC using CPS; SNAP using machine learning algorithm)

Household Income = AMI + F + H + T

Personal Income = Household Income - *Household Current Transfer Receipts from Nonprofits - Nonprofit Institution Transfer Receipts from Households* + *Nonprofit Institution Income*

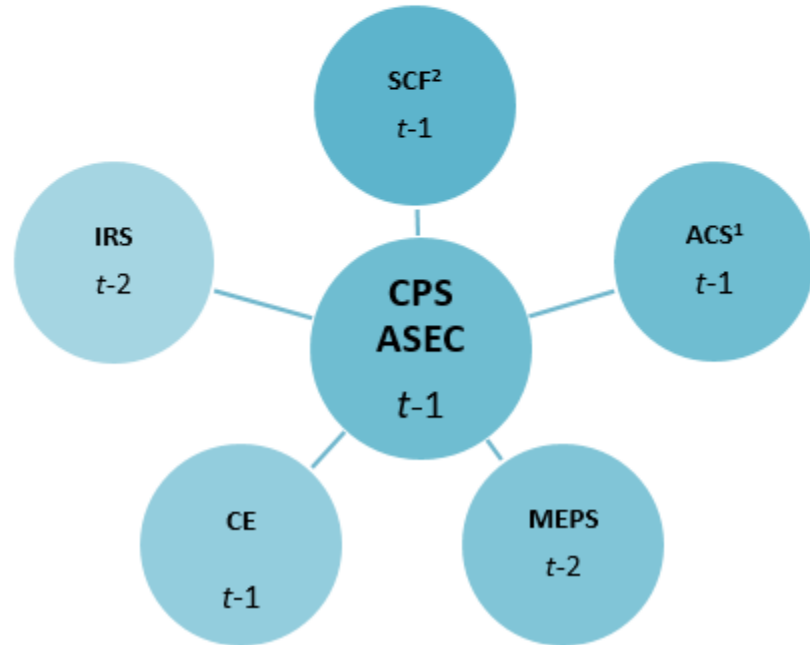
4. Equalize (divide by  $\sqrt{\text{household size}}$ ) and rank households to compare households of different sizes to each other

# Source Data and Flow Timeline

To produce an income distribution, we have the following data sources available:

- CPS ASEC: Current Population Survey, Annual Supplement conducted every March (Census Bureau/BLS)
- IRS SOI: Public use distributional summary tables by the Statistics of Income program (IRS)
- SCF: Survey of Consumer Finances conducted every 3 years (Federal Reserve)
- ACS: American Community Survey conducted every year (Census Bureau)
- CE: Consumer Expenditure Survey conducted every year (BLS)
- MEPS: Medical Expenditure Panel Survey, household sample conducted in rounds annually (AHRQ)

The graphic on the left shows how each source feeds into the CPS ASEC, while the table on the right summarizes the available data for each dataset in December of year  $t$ .



	Availability	Reference Period
CPS ASEC	Fall $t$	$t-1$
IRS	Fall $t$	$t-2$
ACS <sup>1</sup>	Fall $t$	$t-1$
MEPS	Fall $t$	$t-2$
SCF <sup>2</sup>	Fall $t$	$t-1$
CE	Fall $t$	$t-1$

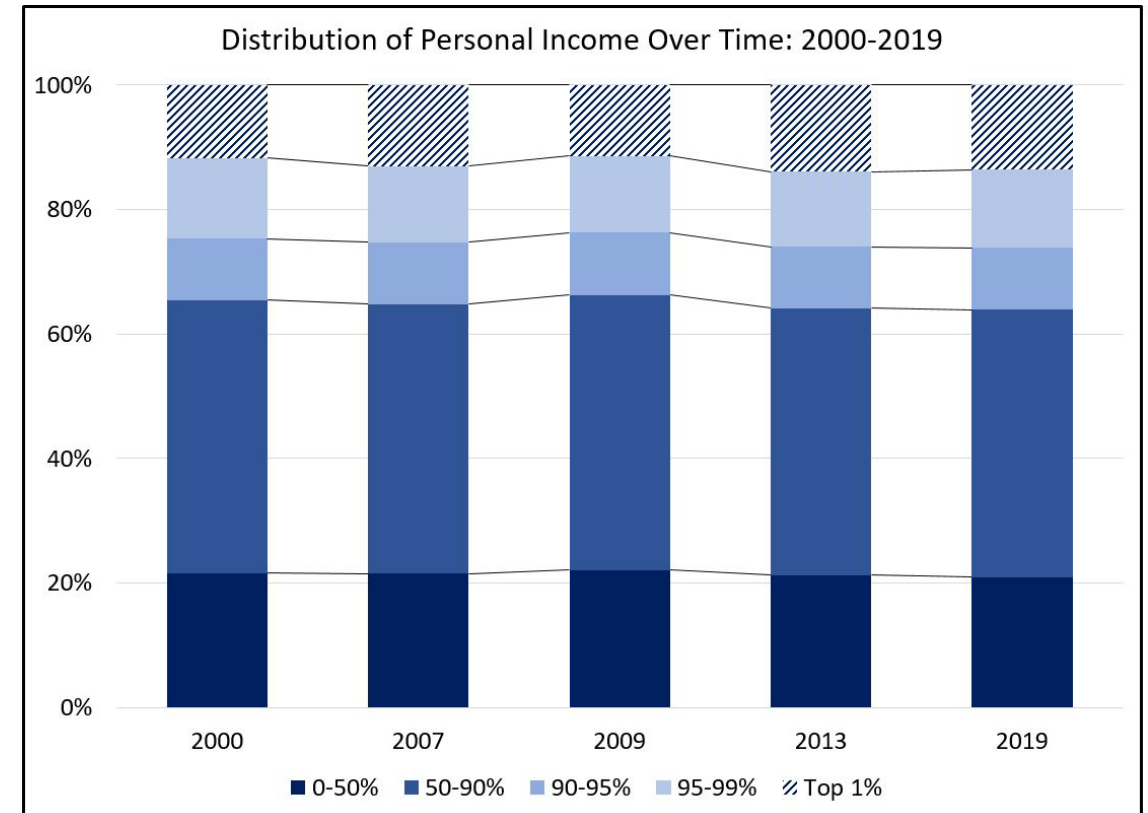
<sup>1</sup>Release rescheduled due to delays with COVID data collection.

<sup>2</sup>Conducted every 3 years.

- Distribution of Personal Income (PI) and Disposable Personal Income (DPI)
  - March 2020 release: 2007-2016
    - Levels of PI, real growth, and distributional statistics for households
  - December 2020 release: 2007-2018
    - Updated methodology and documentation based on feedback received from experts and data users. All items from previous release and DPI
  - December 2021 release: 2000-2019
    - Updated methodology and documentation based on feedback received from experts and data users. Additional years (2000-2006)
- Inequality metrics
  - Income deciles of PI and DPI overall and their components
  - Top 1%, Top 5%, Bottom 5%
  - Gini, 90/10 ratio, 80/20 ratio

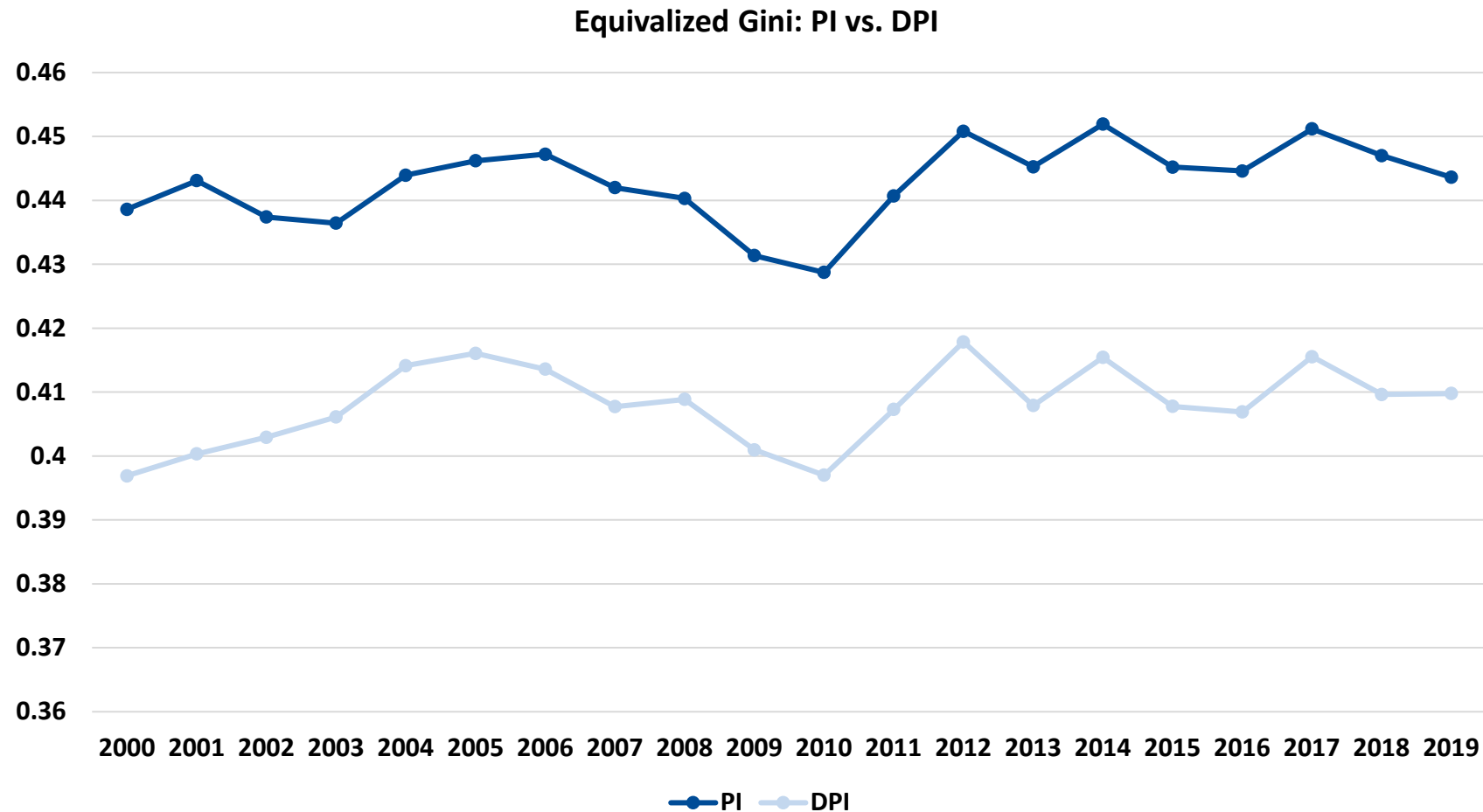
# Overall Results

- Total PI and DPI grew 26% from 2000-2019
  - Equivalized median DPI grew (25.9%) vs. median PI (24.0%)
  - Top 1% share of PI (DPI) increased 11.7%→13.6% (9.9%→11.8%)
- Growth was unequal throughout distribution
  - 53% of growth in PI and DPI went to top 20%\* (cannot follow individuals over time, but group is relatively sticky in this time period)
  - Share of top quintile of PI (DPI) went up 1.3pp (2pp)
  - Share of bottom quintile went down 0.4pp (0.7pp)



# Equivalized Gini of PI & DPI

- Very similar trend for PI & DPI over time
- Falling inequality during Great Recession as transfers increased and asset returns decreased; fairly stable afterwards





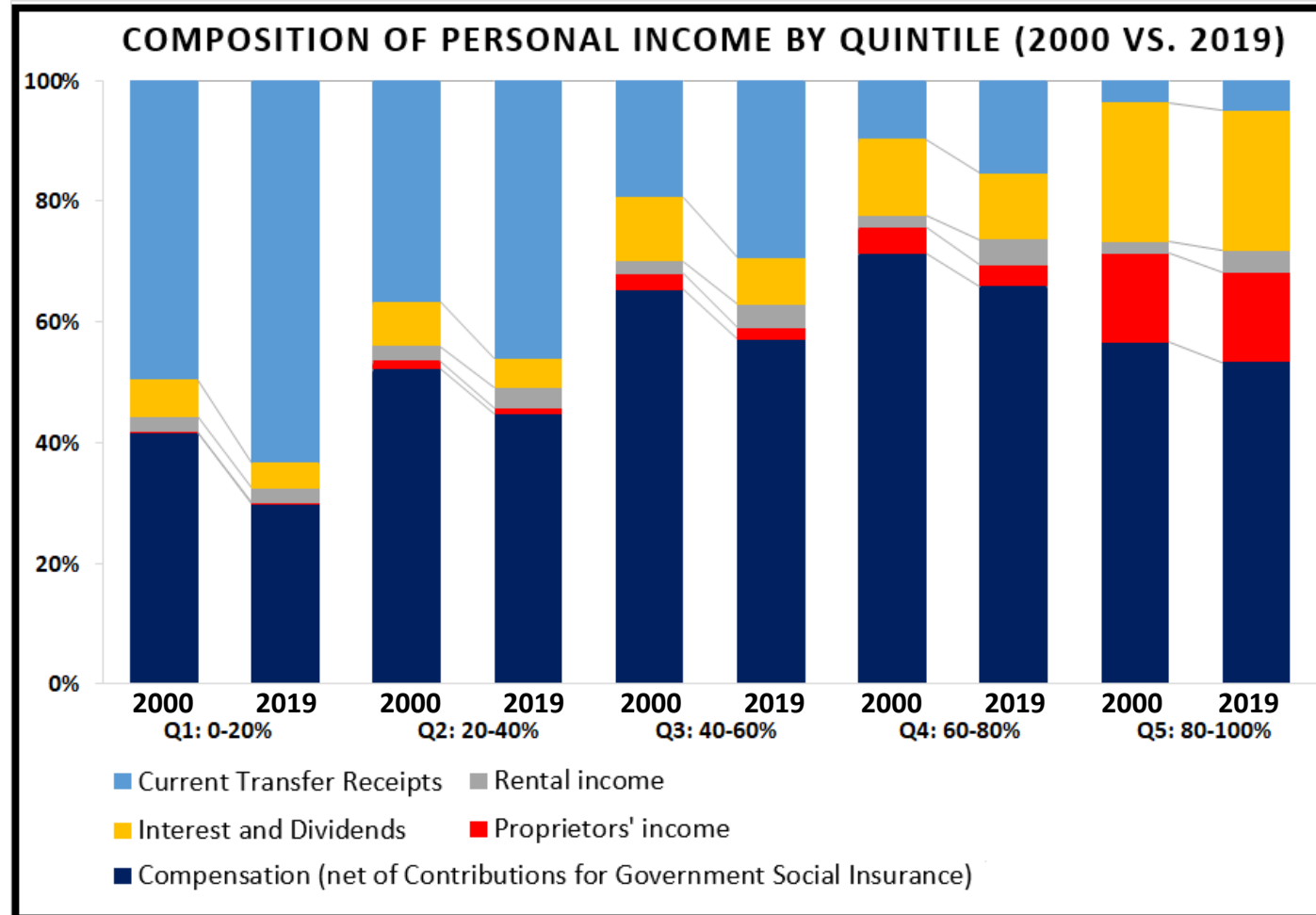
# Income Components in Release: NIPA Table 2.9

- From NIPA Table 2.9, these are the aggregated components of PI
- The distribution of each is released by decile

<b>Income Sources</b>
Compensation of employees
Proprietors' income with inventory valuation
Rental income of households with capital consumption adjustment
Household income receipts on assets
Household interest income
Household dividend income
Household current transfer receipts
Government social benefits
From business (net)
From nonprofit institutions
Less: Contributions for government social insurance, domestic
<b>Household income</b>
<b>Personal income</b>
Less: Taxes
<b>Disposable personal income</b>

# Composition of PI

- Compensation has fallen as a share of income for all quintiles, while transfers have risen
- Income for the top quintile is driven much more by assets and proprietors' income

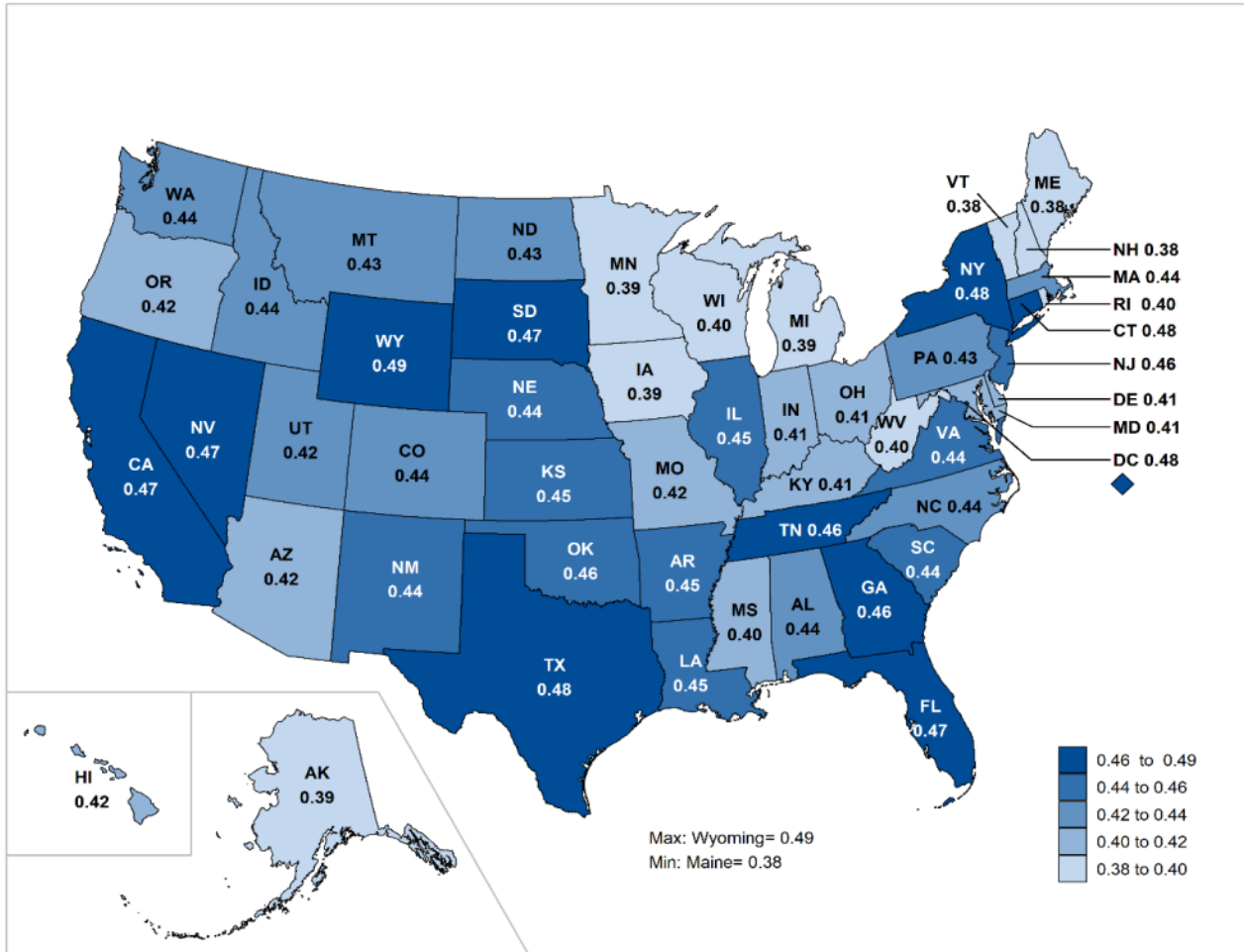


- Data challenges (and our approach)
  - No access to micro tax data: use IRS (SOI) public tables to approximate top tail
  - Availability of source data – time lag: exploring extrapolation and machine learning techniques to reduce this
  - No corresponding microdata for some macro concepts (e.g., imputed interest): match on income and observables to impute
- Measurement challenges (and our approach)
  - Designing allocation algorithm for each source: best possible approximation with help from experts
  - Extent of underreporting in CPS differs by income source and income group – intensive and extensive margins: exploring extrapolation and machine learning techniques to impute values
  - Consistency of variable definitions over time: do our best to indicate breaks and explain their impacts
- Solicit feedback and explore new data sources

- No one-size-fits-all solution
  - Every imputation strategy has its advantages and disadvantages
  - No single dataset captures the whole distribution fully
- Results can be sensitive to imputations for major components of PI, such as earnings
  - Should devote most resources to accurately measuring labor income, including imputing zeros
  - Health care spending is large and important, but less sensitive
- A suite of inequality statistics is best
  - Focusing on one metric is less useful to data users
  - Data users are very interested in the bottom of the distribution
- Report on feasibility of quarterly distributional estimates (2021)
- Distribution of state personal income (2022)

- Recent study conducted to assess feasibility and merits of producing higher-frequency statistics (quarterly)
  - Results indicate that it is possible to interpolate a noisy quarterly income distribution in which annual results = quarterly average
  - An in-sample forecasting exercise to extrapolate quarterly statistics beyond available data yields large errors during economically volatile periods and smaller errors during stable periods
- No quarterly income microdata source
  - Many sources of data considered to improve model fit
  - Available data sources are incomplete and usually also available with a lag
- Personal income has many components which are interdependent
- High level of noise may lead to significant revisions

Figure 1. Gini Coefficients, 2018



- New working [paper](#) by van Duym and Awuku-Budu (May 2022)
- Methodology mostly follows that of national release of December 2020, but uses 3 years of pooled CPS data to ensure sufficient sample size in smaller states
- Provides preliminary estimates of inequality of personal income by state
- Also provides price-adjusted state inequality statistics

- Continuing to improve methodology
  - Looking at additional information to distribute transfers
  - Next release planned for December 2022
  - Ongoing research to reduce 2-year lag
- Collaboration with BLS to produce distribution of consumption expenditures tied to PCE (2022)