Using the American Community Survey (ACS) to Implement a Supplemental Poverty Measure (SPM)

Liana Fox, José Pacas, Brian Glassman
Social, Economic and Housing Statistics Division
ACS Data Users Conference
May 11, 2017

The views expressed in this research, including those related to statistical, methodological, technical, or operational issues, are solely those of the author and do not necessarily reflect the official positions or policies of the Census Bureau. The author accepts responsibility for all errors.
This presentation is released to inform interested parties of ongoing research and to encourage discussion of work in progress. This presentation reports the results of research and analysis undertaken by Census Bureau staff. It has undergone more limited review than official publications.

United States Census Bureau | U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

Why Try to Implement the SPM in the ACS?

- Current Population Survey (CPS) ASEC sample not large enough for
  - Single year state level poverty estimates
  - Substate poverty estimates, e.g. metro area
- Researchers across country using the ACS to estimate SPM-like measures
  - New York City, Wisconsin, Urban Institute, New York State, Philadelphia, San Francisco, California, Virginia
  - Interest in production of comparable estimates
  - Provide estimates for jurisdictions not able to fund their own research operations

Contribution of Paper

- This paper builds off of previous research at Census (Renwick, et al. 2012 and Renwick 2015) regarding implementing the SPM in the ACS.
  - Tests imputation models for another year of comparison: 2014
  - Double-coding for accuracy

Implementation Challenges: Using the ACS

- Unit of analysis – ACS does not identify unrelated subfamilies
- Thresholds
  - Inflation adjustment
  - Geographic unit for cost of living adjustment
- Resources
  - Noncash benefits
  - Necessary expenditures
    - Taxes
    - Childcare and other work-related expenses
    - Medical out-of-pocket expenses

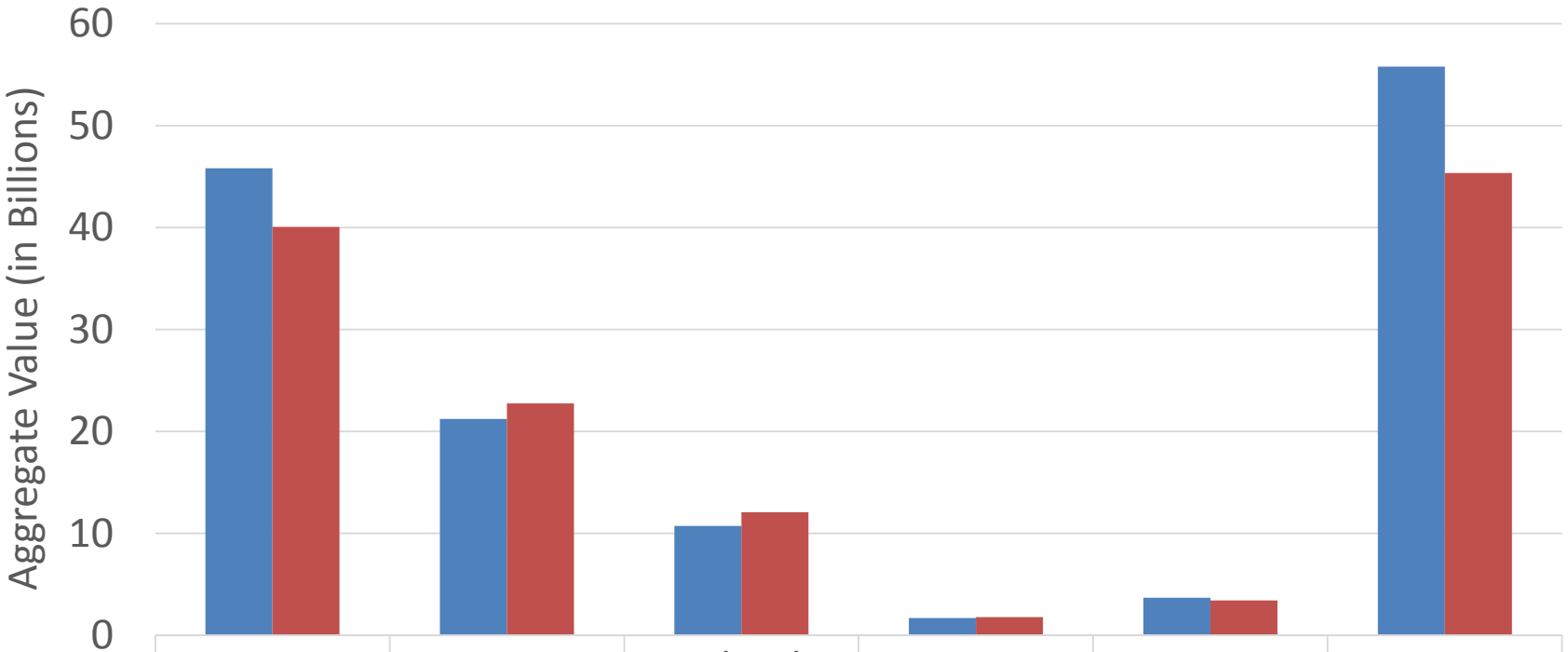
Challenges (cont.)

- **Unit of Analysis**
  - IPUMS rules used to assign relationship codes to unrelated individuals
    - Uses age, marital status, and the order to assign pointers
    - Reduces the number of unrelated individuals from 51.6 million to about 47 million
- **Thresholds**
  - Translated MSAs to PUMA level to adjust for geographic differences in the cost of living
  - Used an average calendar year threshold and adjusted income

Data on Noncash Benefits: CPS vs. ACS

Noncash Benefits	CPS ASEC		ACS	
	Receipt	Amount	Receipt	Amount
SNAP – Supplemental Nutrition Assistance Program	YES	YES	YES	NO
WIC - Women, Infants and Children Nutrition Program	YES	NO	NO	NO
Regular School Lunch	YES	NO	NO	NO
Free or Reduced Price School Lunch	YES	NO	NO	NO
Housing Assistance	YES	NO	NO	NO
LIHEAP – Low Income Home Energy Assistance Program	YES	YES	NO	NO

Aggregate Amounts Added To Resources

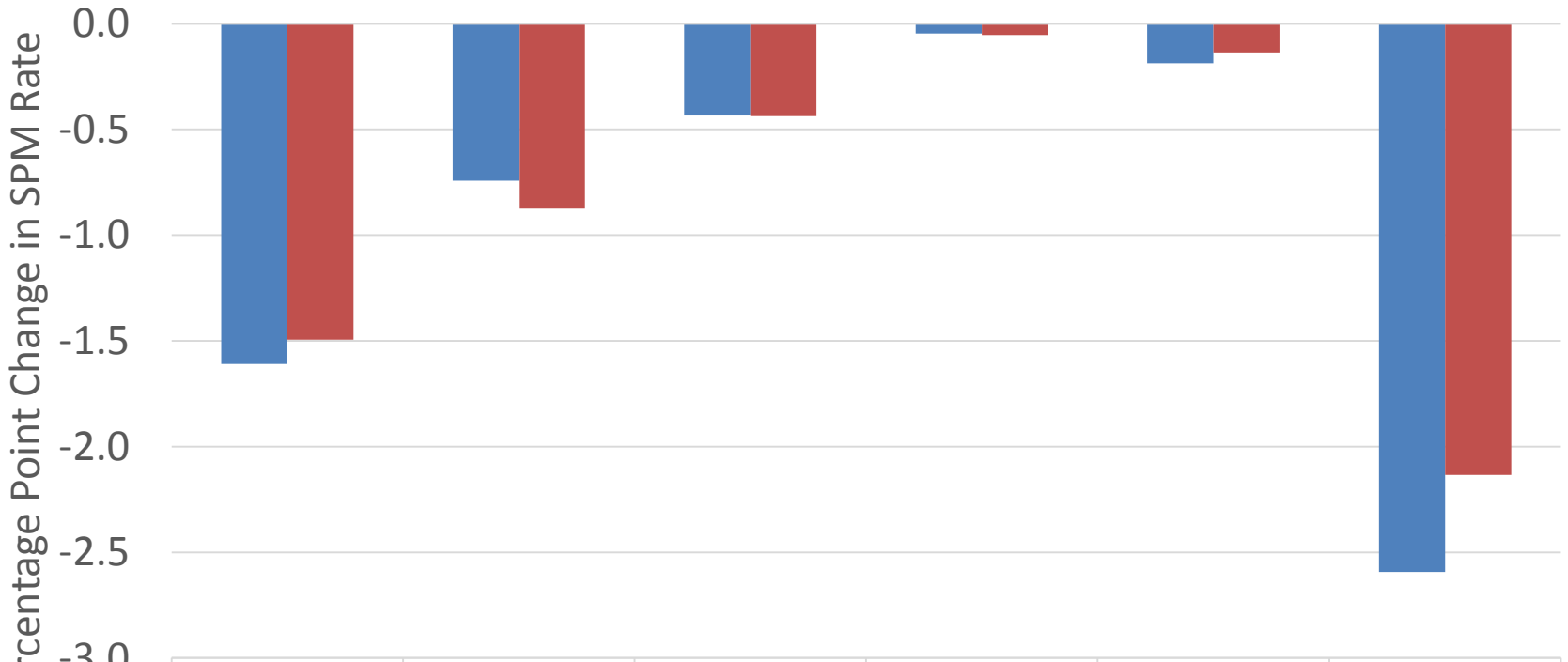


	SNAP*	Housing Subsidies*	School Lunch*	LIHEAP	WIC*	EITC*
ACS	45.8	21.2	10.7	1.7	3.7	55.8
CPS	40.0	22.7	12.1	1.8	3.4	45.3

Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

* Differences statistically significant

Marginal Impact on SPM Rates



	SNAP*	Housing Subsidies*	School Lunch	LIHEAP	WIC*	EITC*
ACS	-1.61	-0.74	-0.43	-0.05	-0.19	-2.59
CPS	-1.49	-0.87	-0.44	-0.05	-0.14	-2.13

Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

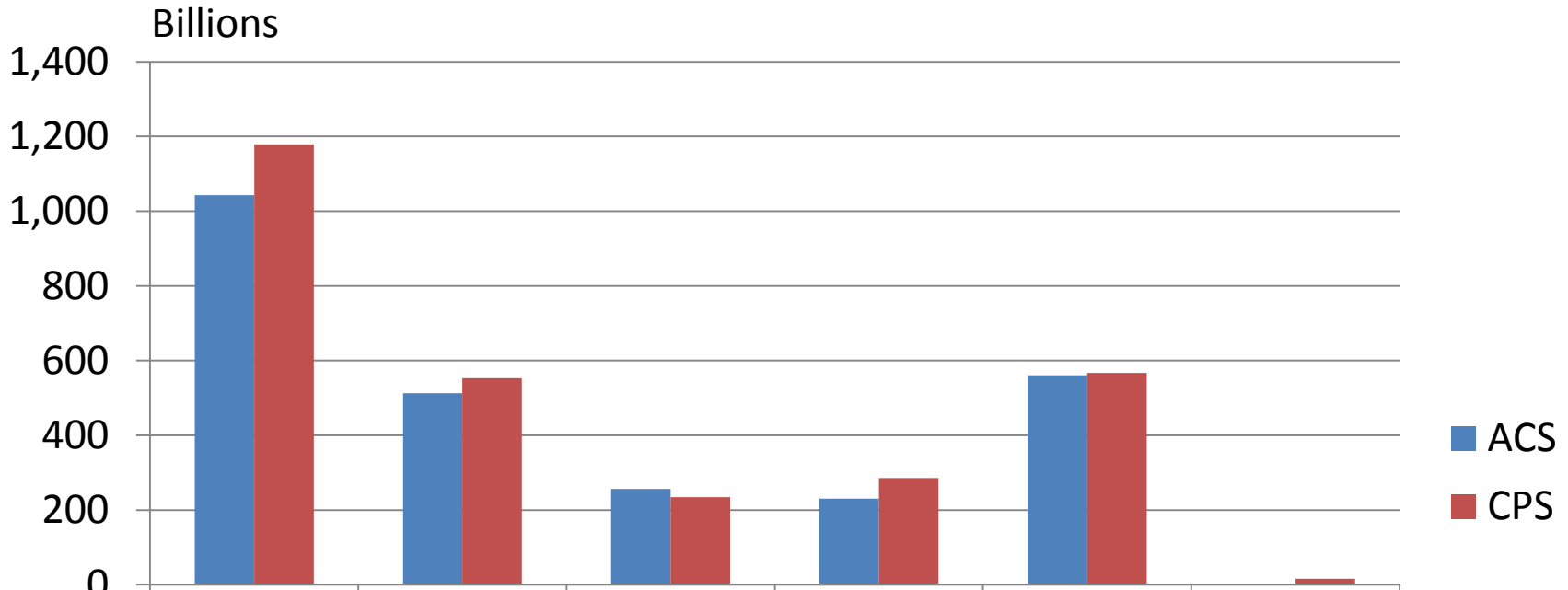
United States Census Bureau | U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

* Difference statistically significant

Data on Necessary Expenditures

Necessary Expenditures	CPS ASEC	ACS
Taxes	NO	NO
Childcare	YES	NO
Medical Out of Pocket (MOOP)	YES	NO
Child Support Paid	YES	NO

Aggregate Amounts Subtracted From Resources

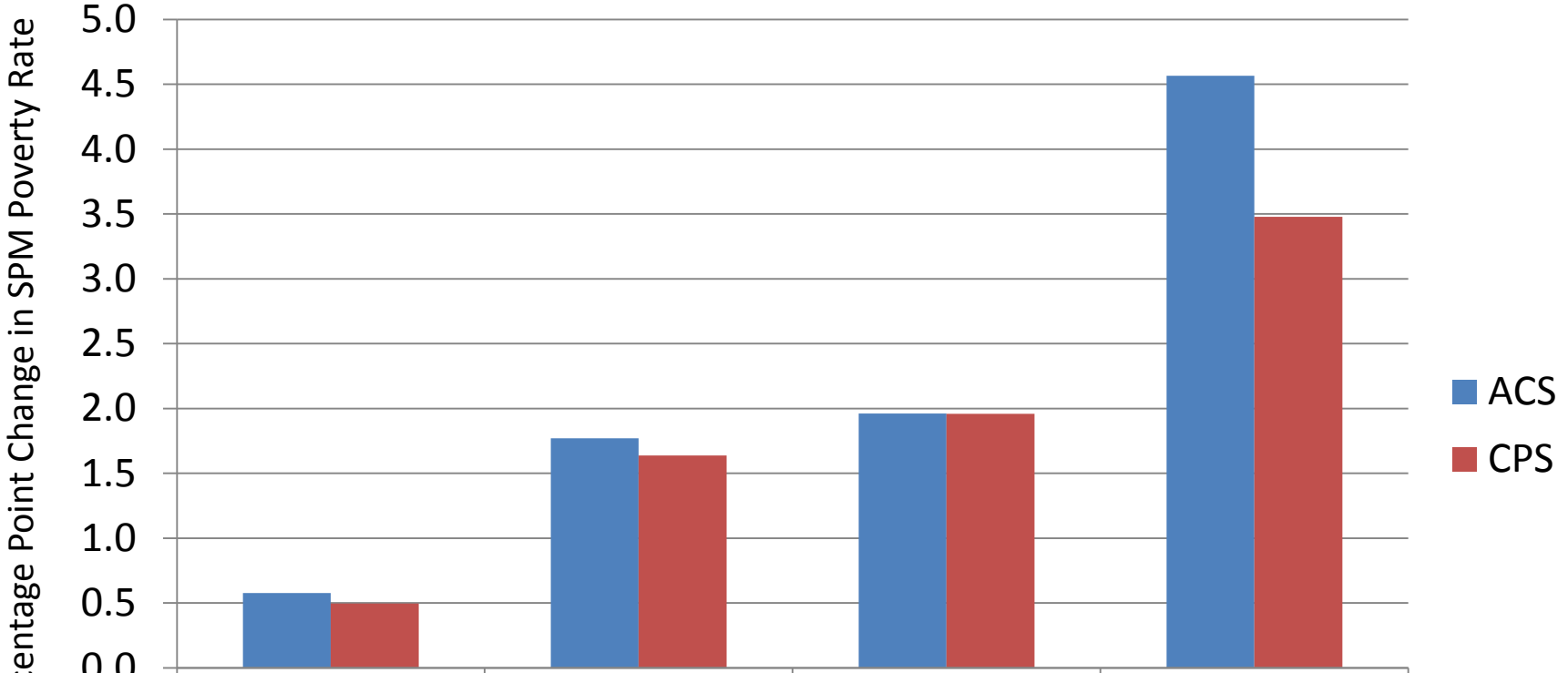


	Federal Taxes*	FICA*	State Taxes*	Work and Child Care*	Medical*	Child Support*
ACS	1,042.4	512.6	256.5	230.2	560.9	N/A
CPS	1,179.4	552.6	234.3	285.6	567.3	15.8

Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

* Differences statistically significant

Marginal Impact on SPM Rates



	Federal Taxes*	FICA*	Work Expenses	Medical*
ACS	0.58	1.77	1.96	4.57
CPS	0.50	1.64	1.96	3.48

Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

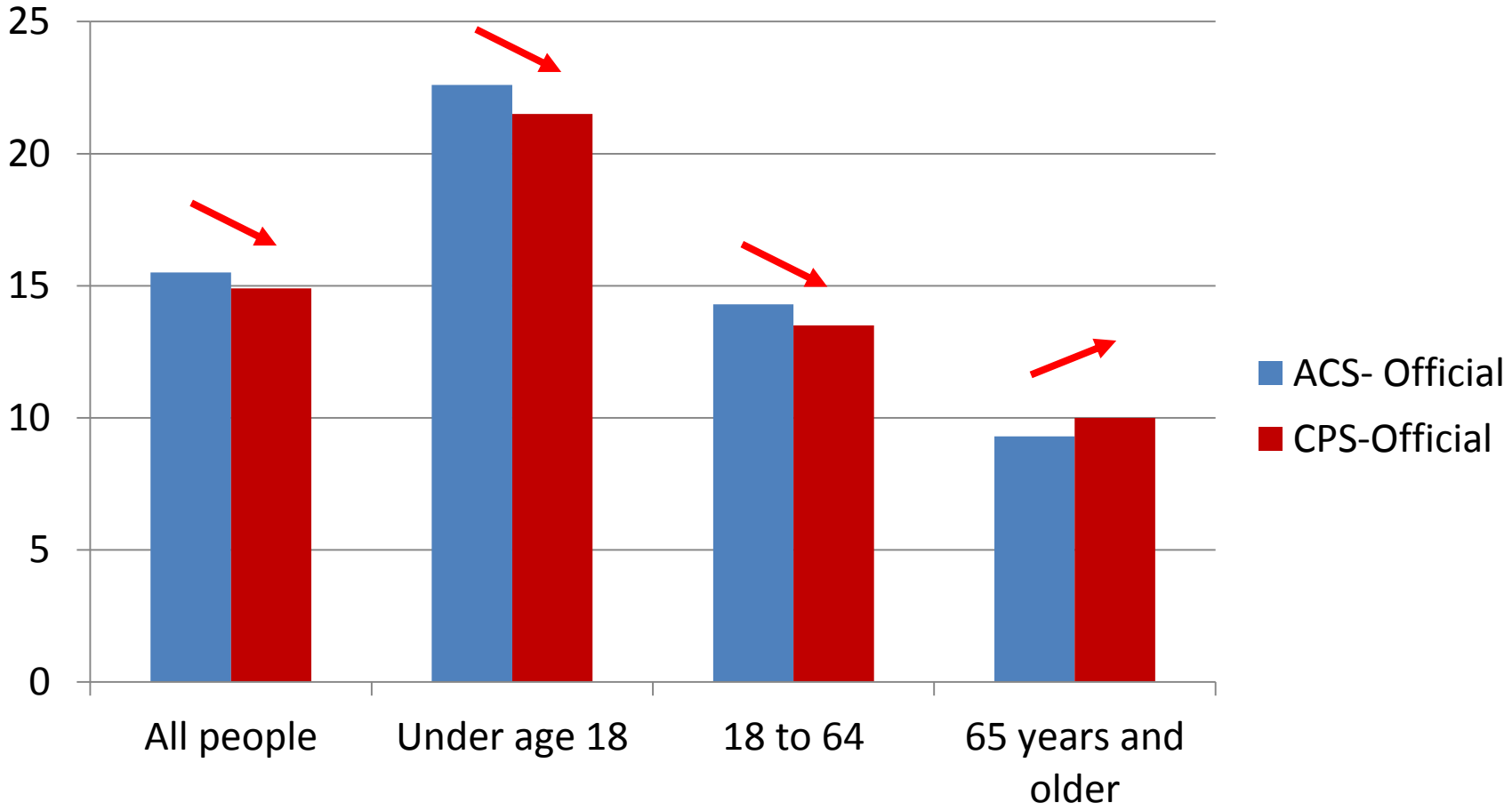
* Difference statistically significant

Comparing CPS and ACS Poverty Estimates

- Official* poverty estimates from the two sources are not identical
  - Different reference periods
  - ACS less detailed income reporting
- SPM poverty estimates also impacted by
  - Lack of relationship pointers
  - Imprecise imputations
- Poverty rates shown here are preliminary

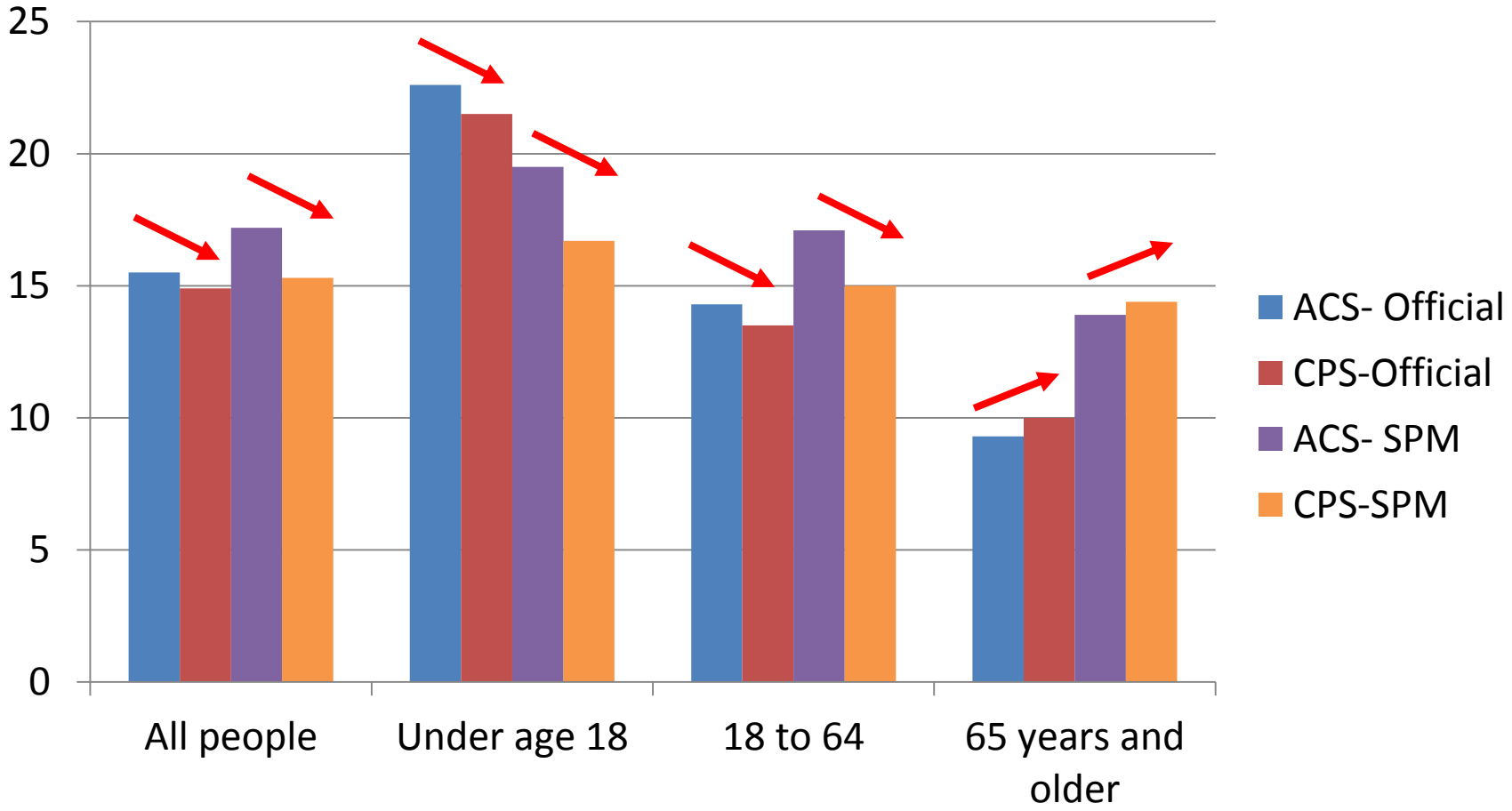
*The CPS ASEC is the source of official poverty estimates for the nation.

2014 Official Poverty Rates: CPS vs ACS



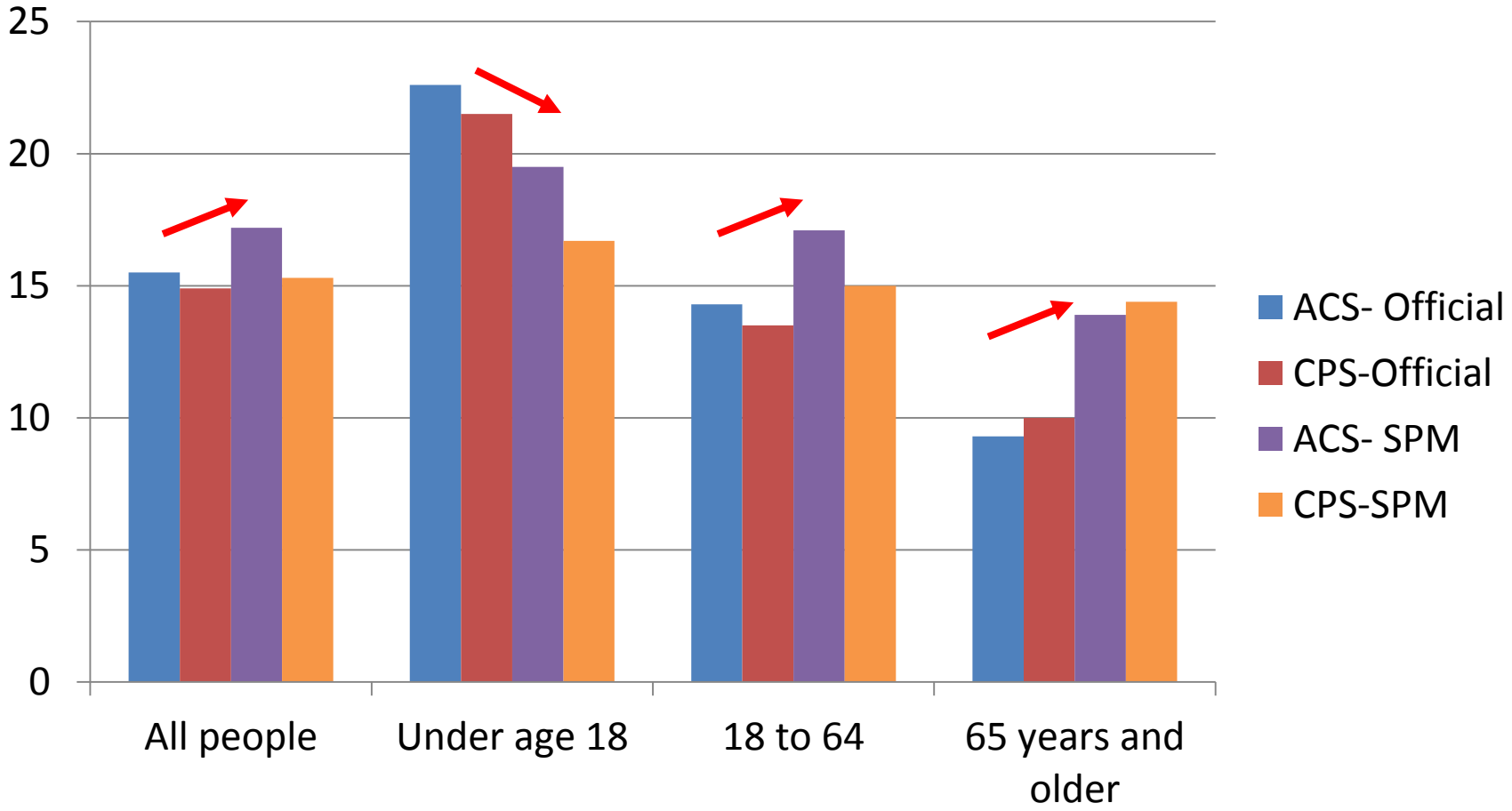
Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement
Note: The CPS ASEC is the source of official poverty estimates for the nation.

2014 SPM Poverty Rates: CPS vs ACS



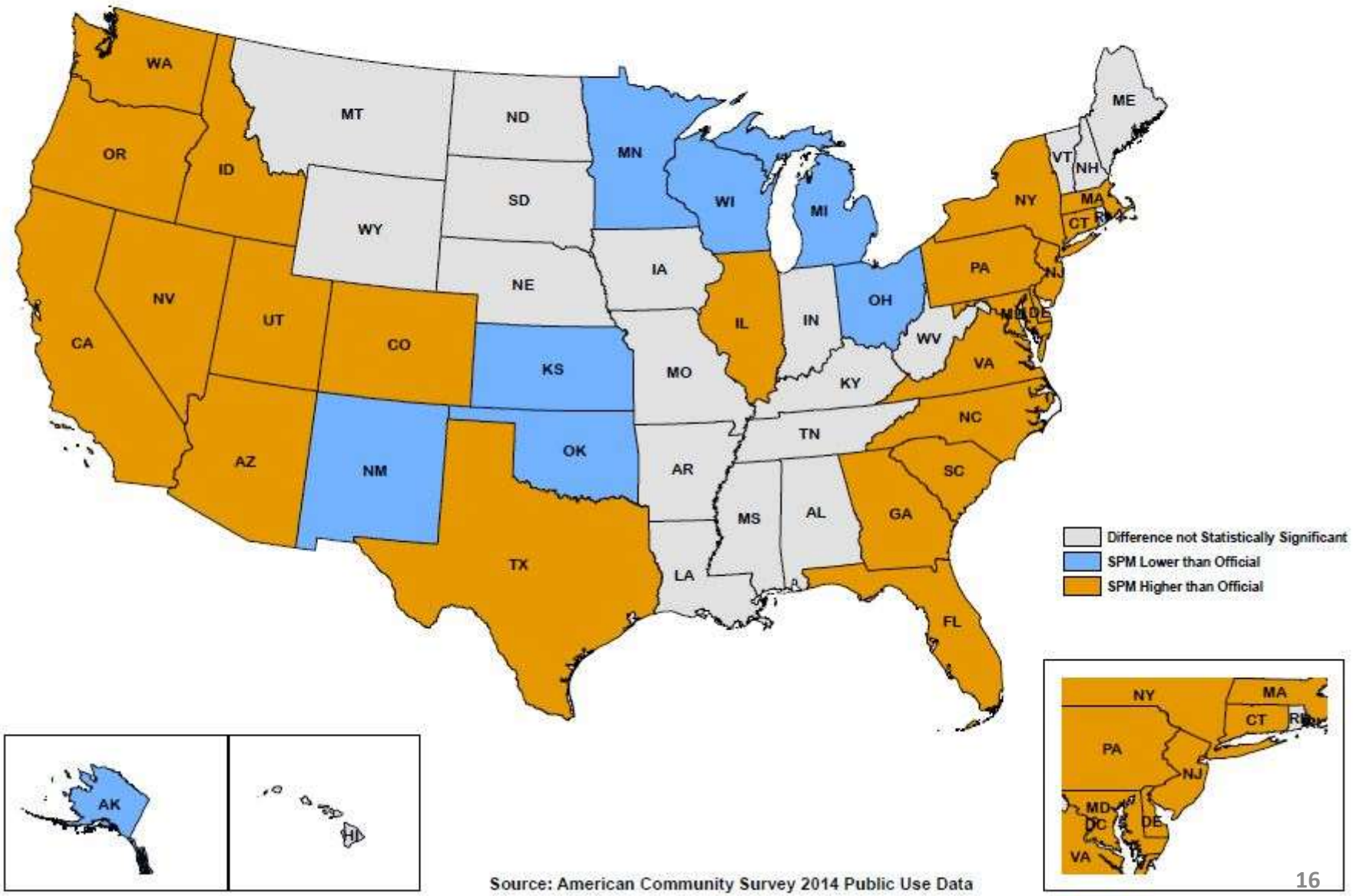
Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement
Note: The CPS ASEC is the source of official poverty estimates for the nation.

2014 SPM Poverty Rates: CPS vs ACS

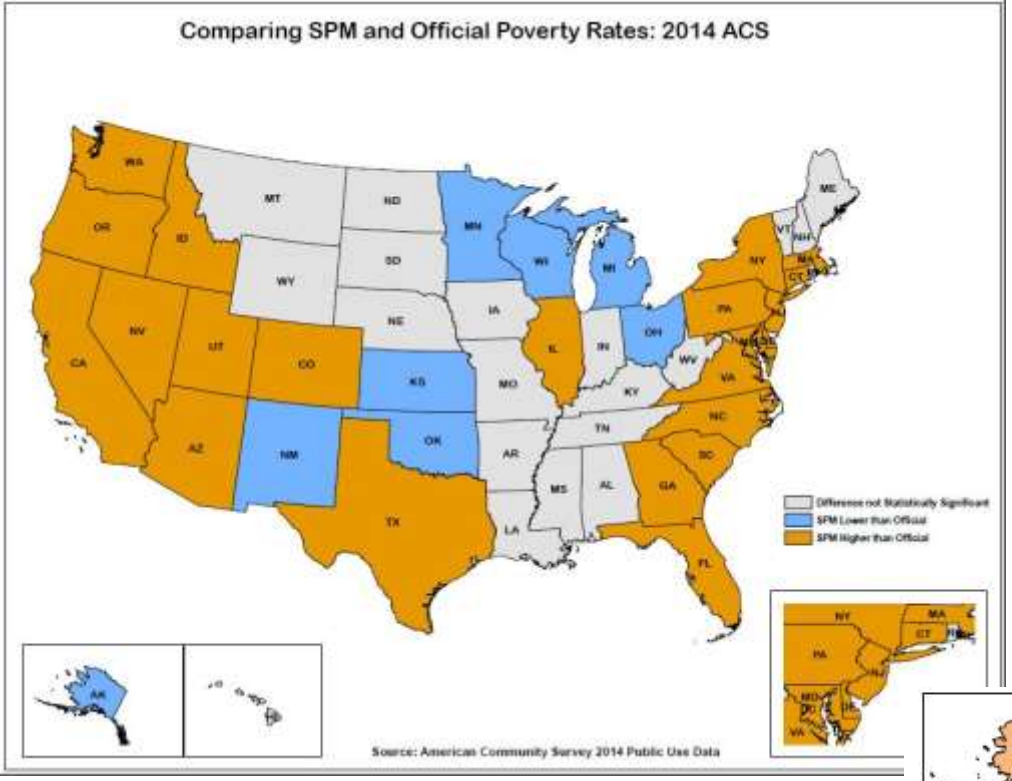


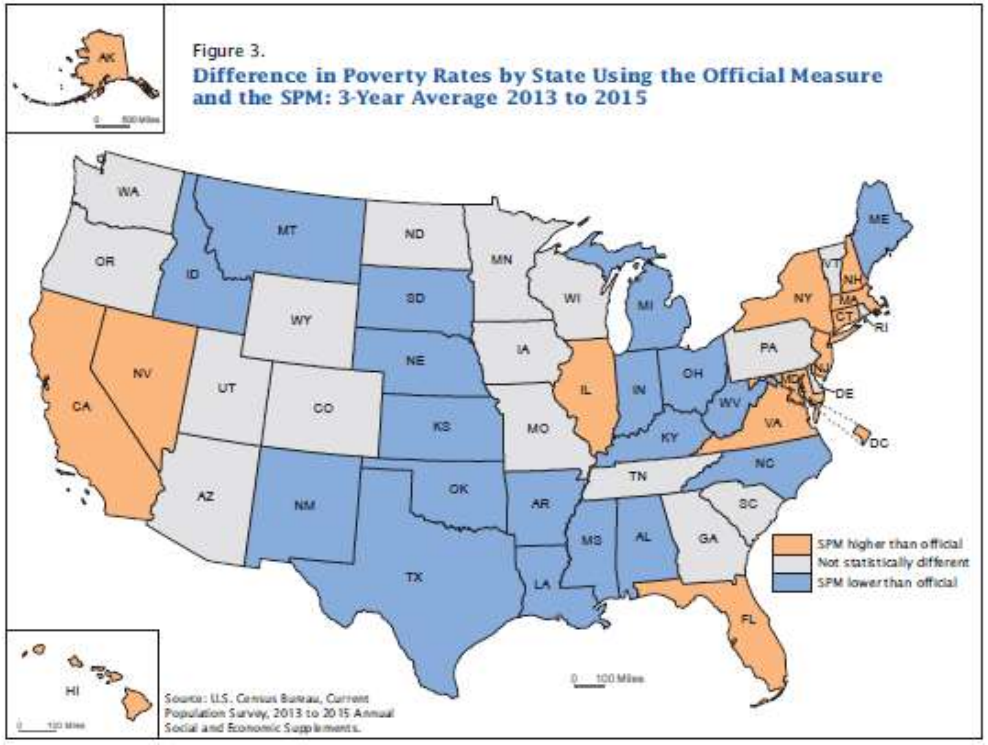
Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement
Note: The CPS ASEC is the source of official poverty estimates for the nation.

Comparing SPM and Official Poverty Rates: 2014 ACS



Source: American Community Survey 2014 Public Use Data

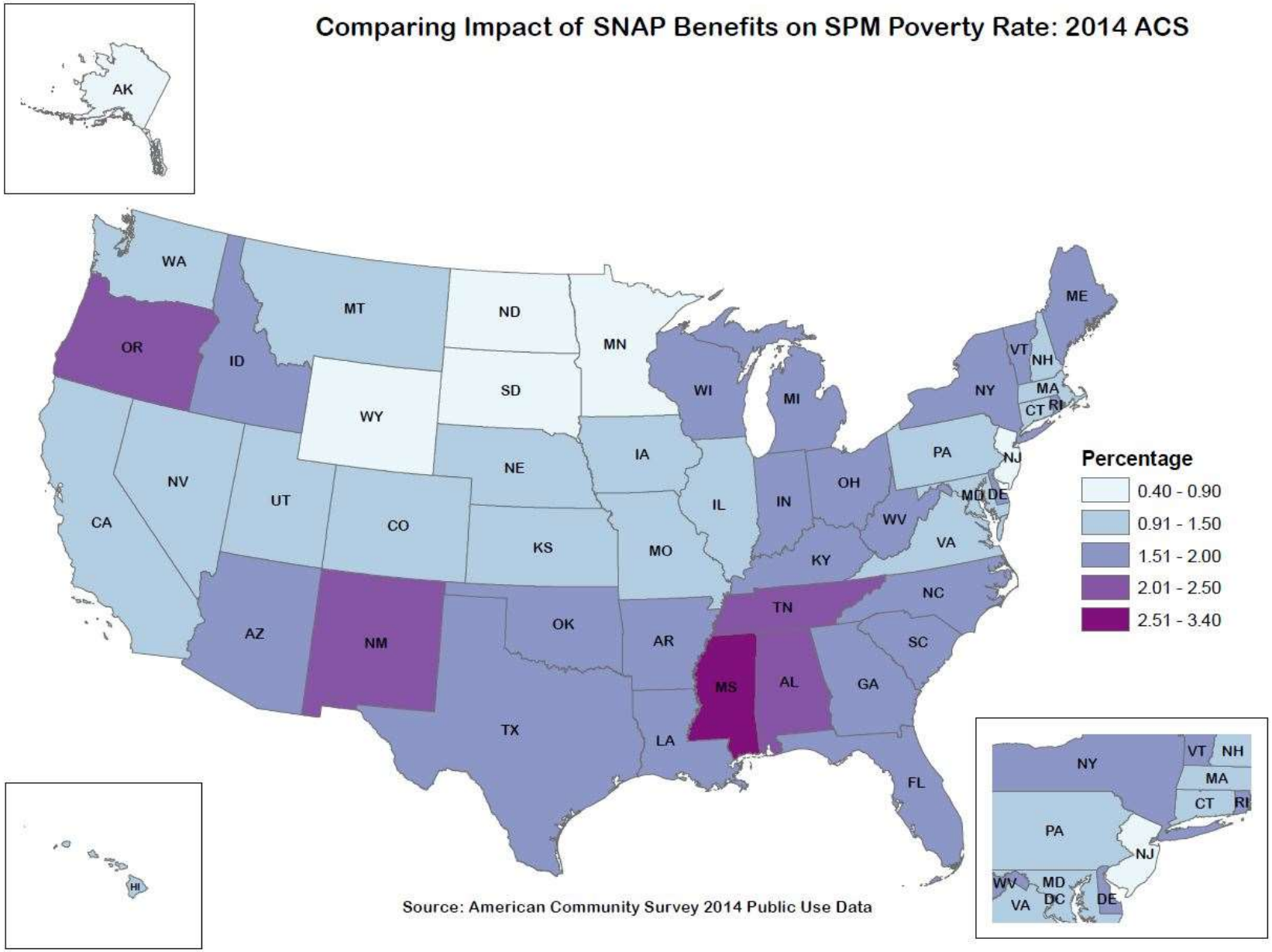




United States Census Bureau

U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

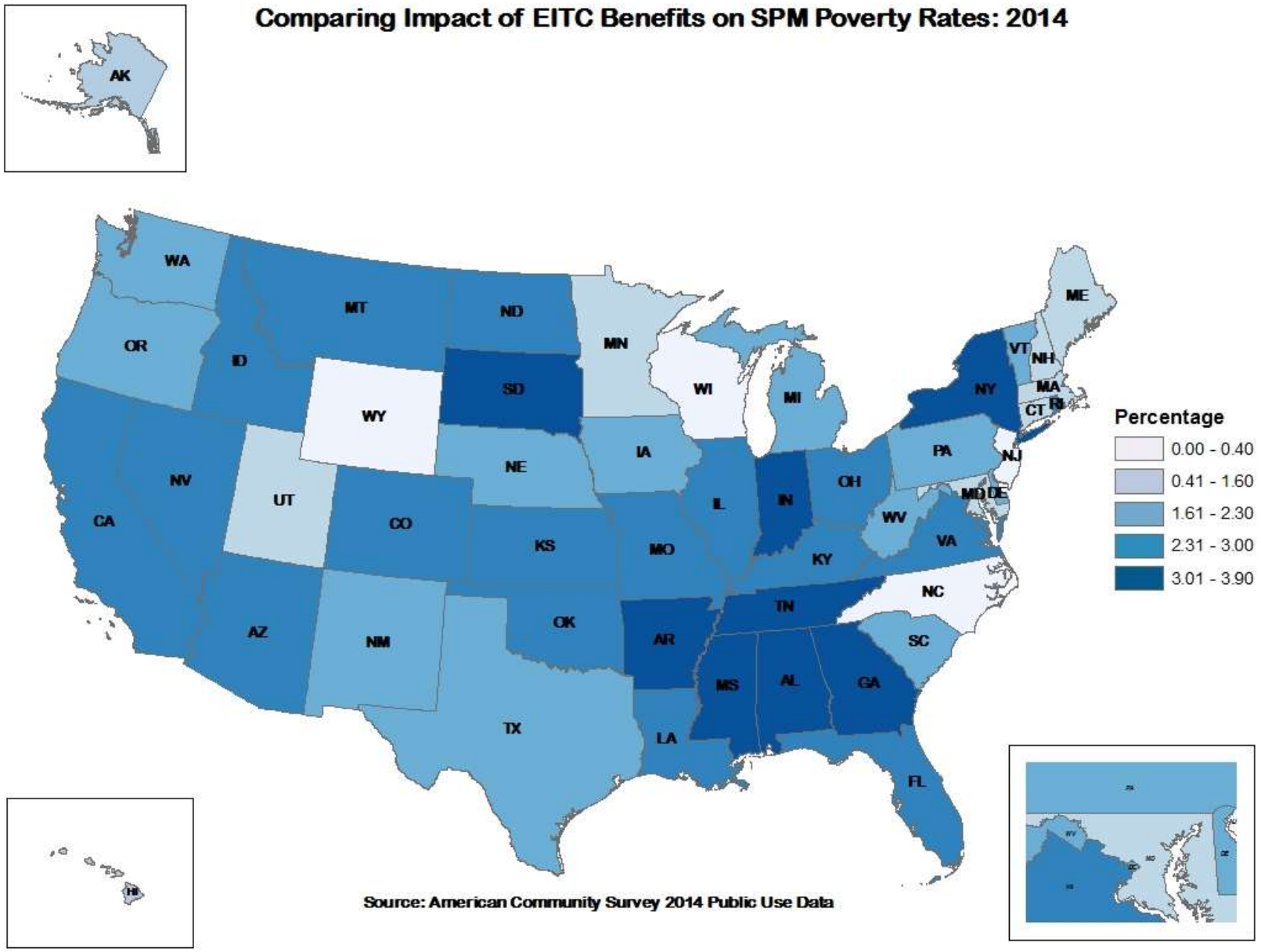
Comparing Impact of SNAP Benefits on SPM Poverty Rate: 2014 ACS



Source: American Community Survey 2014 Public Use Data

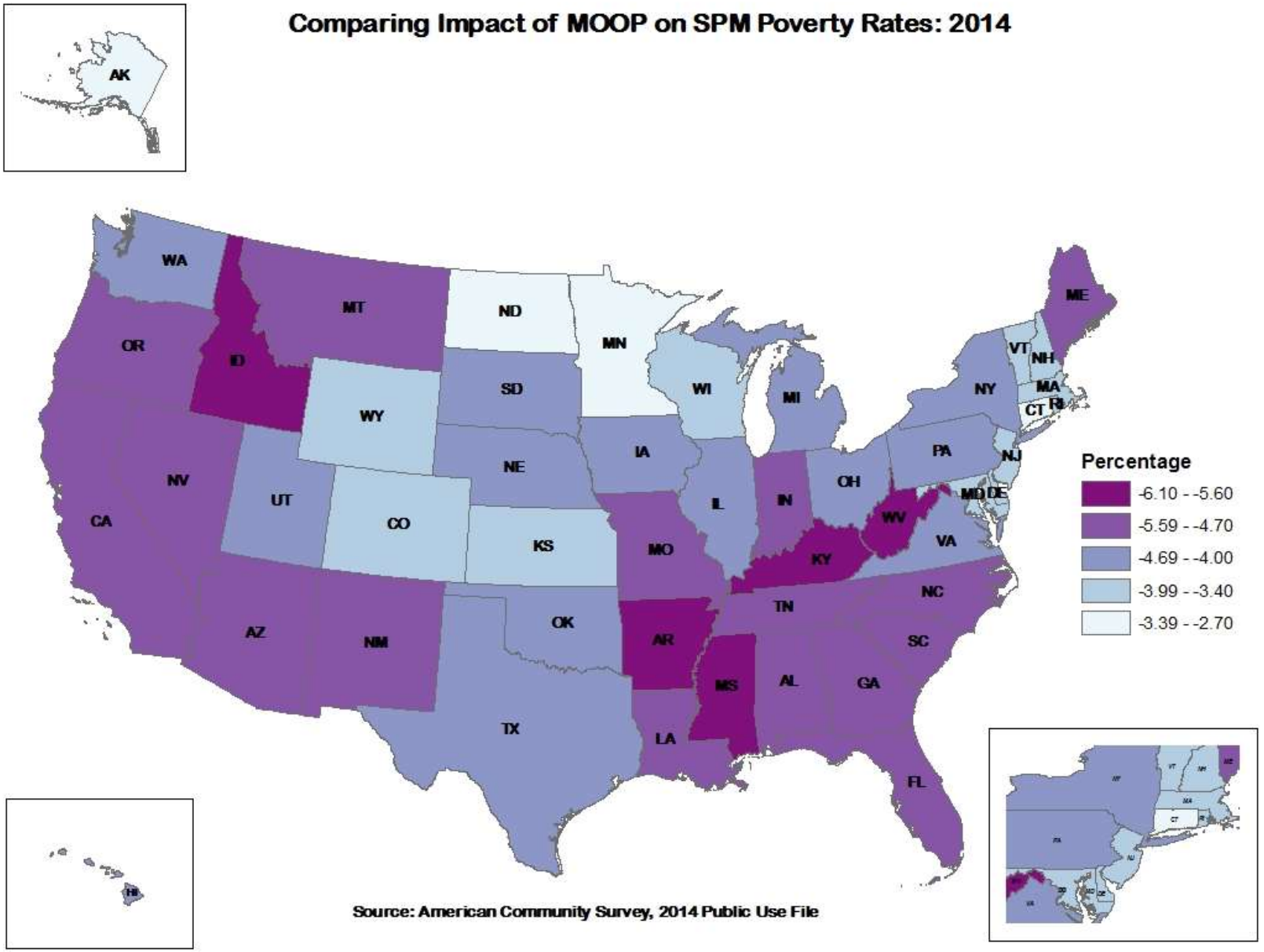
United States Census Bureau | U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

Comparing Impact of EITC Benefits on SPM Poverty Rates: 2014



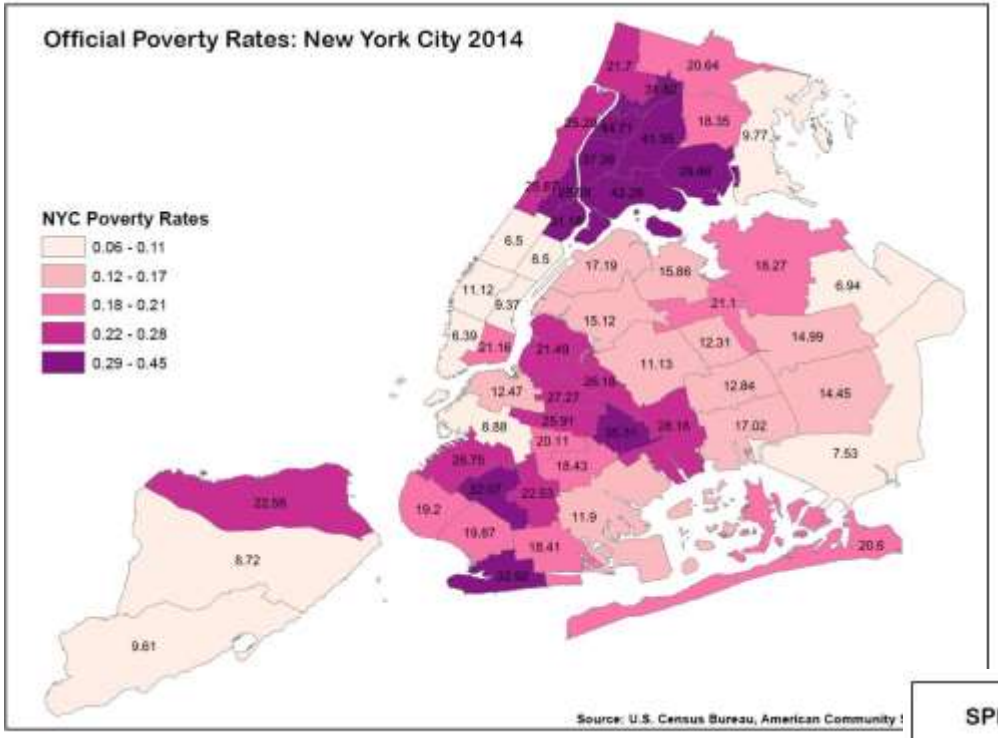
Source: American Community Survey 2014 Public Use Data

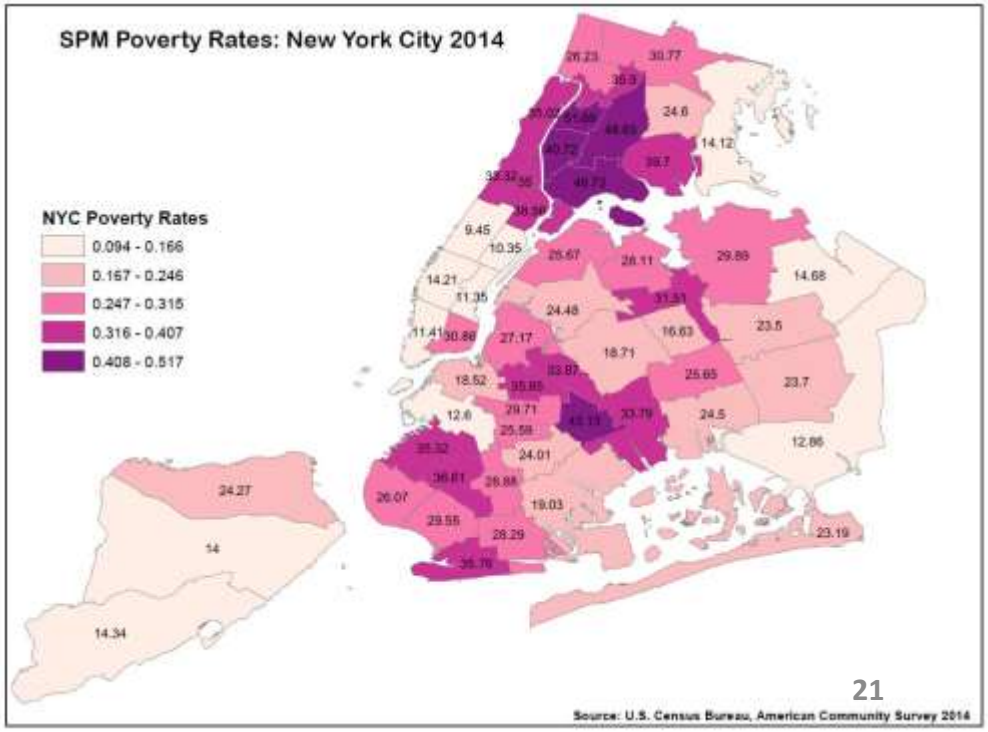
Comparing Impact of MOOP on SPM Poverty Rates: 2014



Source: American Community Survey, 2014 Public Use File

United States Census Bureau | U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov





United States Census Bureau | U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

Next Steps

- Improve Imputation Models and Methods
- Release Public Use Research File
  - Solicit feedback from data users
- Extend to Additional Years

Contact Information

Liana Fox

Social, Economic and Housing Statistics Division
Bureau of the Census
Department of Commerce
liana.e.fox@census.gov
(301) 763-2676

Extra Slides

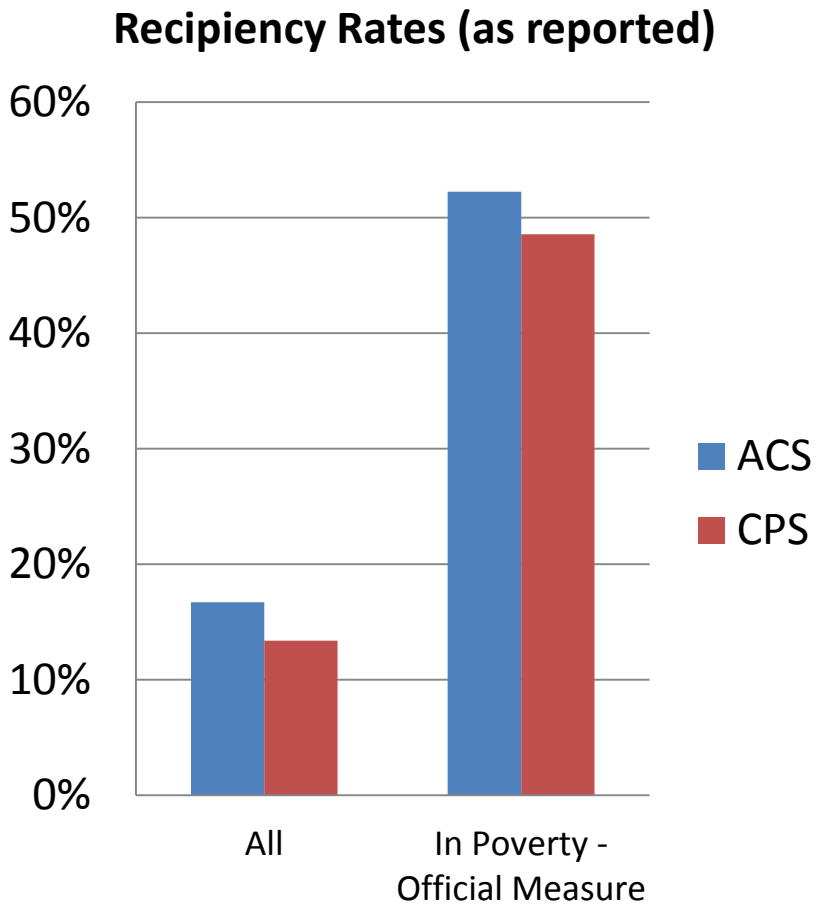
Imputation Strategy

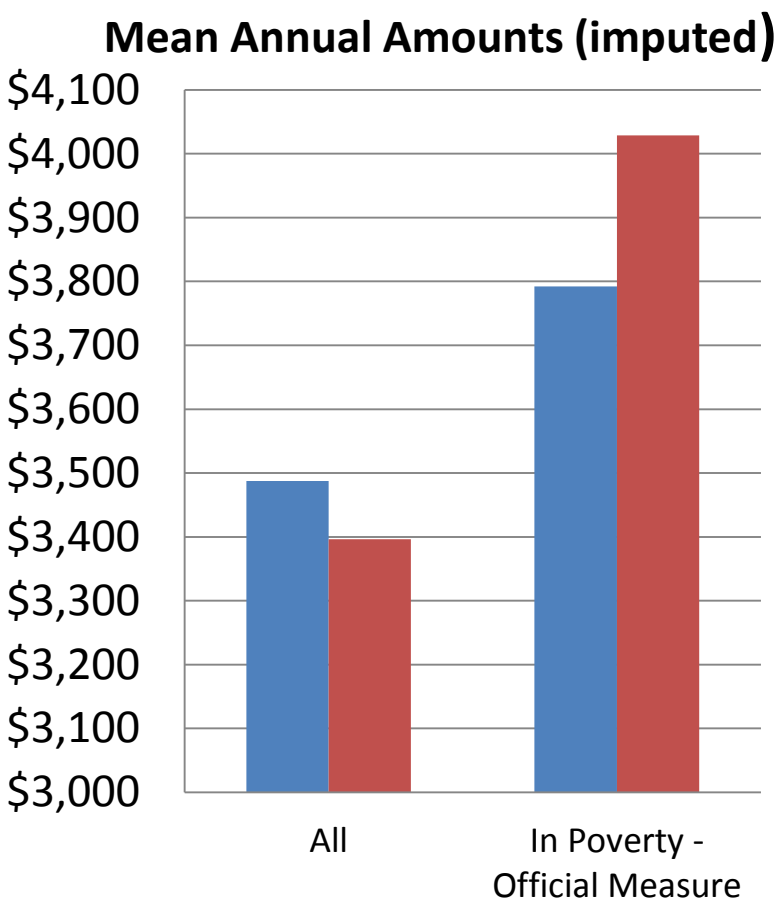
- Use data from the CPS ASEC to
  - Model program participation for WIC, school lunch, housing assistance and LIHEAP – using logistic regression model
  - Model benefit amounts for SNAP and LIHEAP – using predicted means match
- Use administrative data to assign values to WIC, school lunch and housing assistance

Imputation Strategy

- Taxes – use TAXSIM
  - Limited relationship data to model tax units
  - Less specific data on income sources
- Childcare
  - Logistic regression to model whether unit pays for child care
  - Predicted means match to set weekly amount from CPS ASEC
  - Use reports of weeks worked
- MOOP
  - Eight groups
  - Predicted means match to model premium amounts for those reporting private insurance
  - Model other MOOP for different groups by insurance status using predicted means match

SNAP Benefits



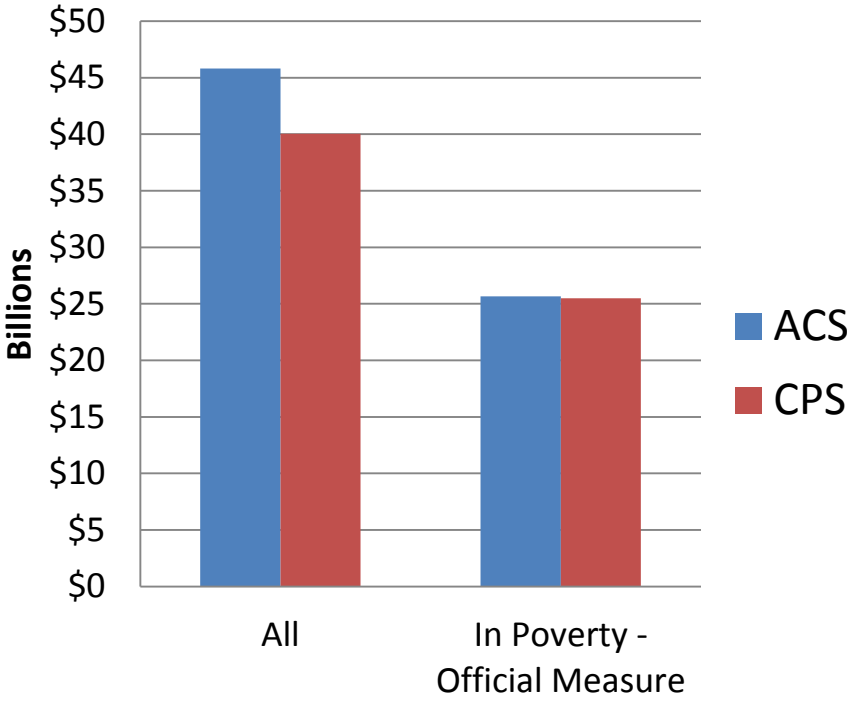


Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

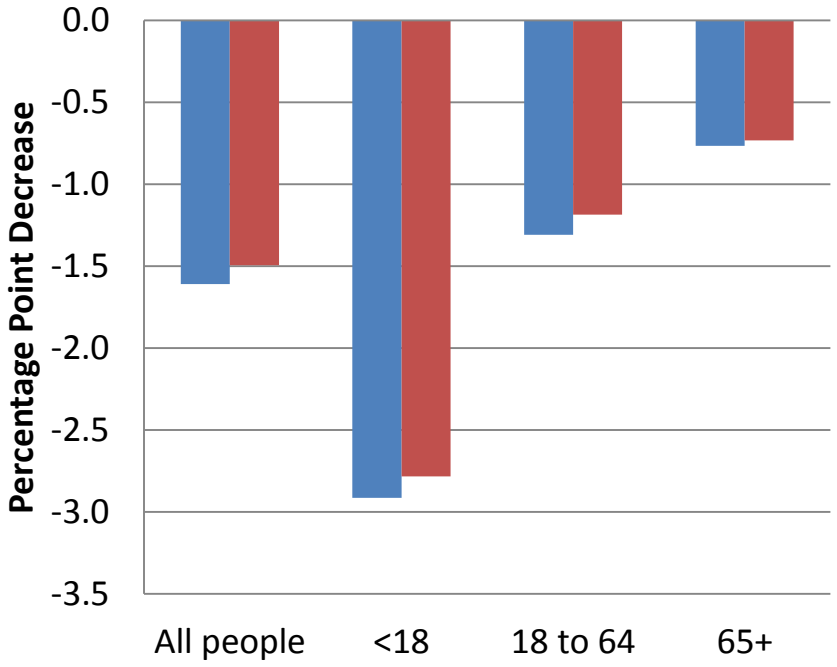
Kernel Density Plot Comparing SNAP Amount: ACS Imputed vs. CPS Reported

SNAP Benefits

Aggregate Amount Added to Resources

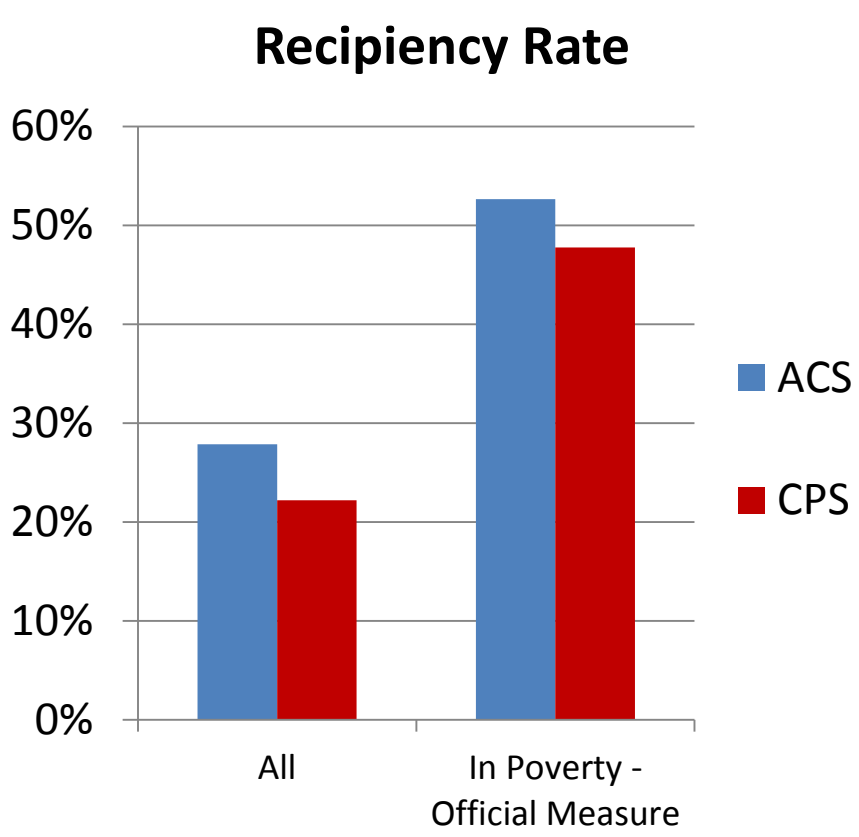


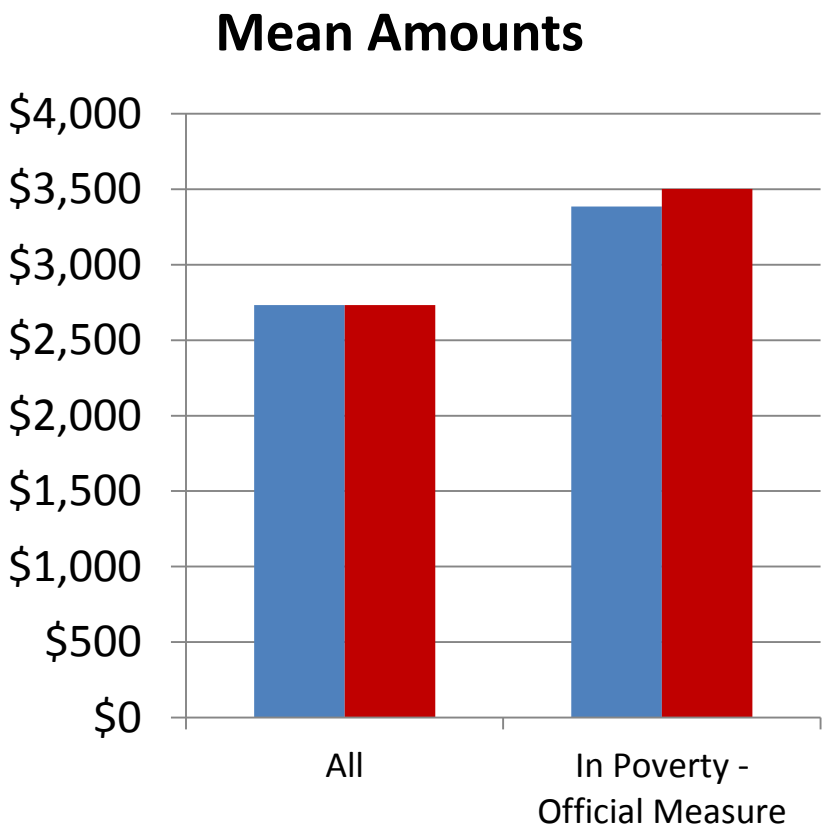
Impact on SPM Poverty Rates



Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

Earned Income Tax Credit

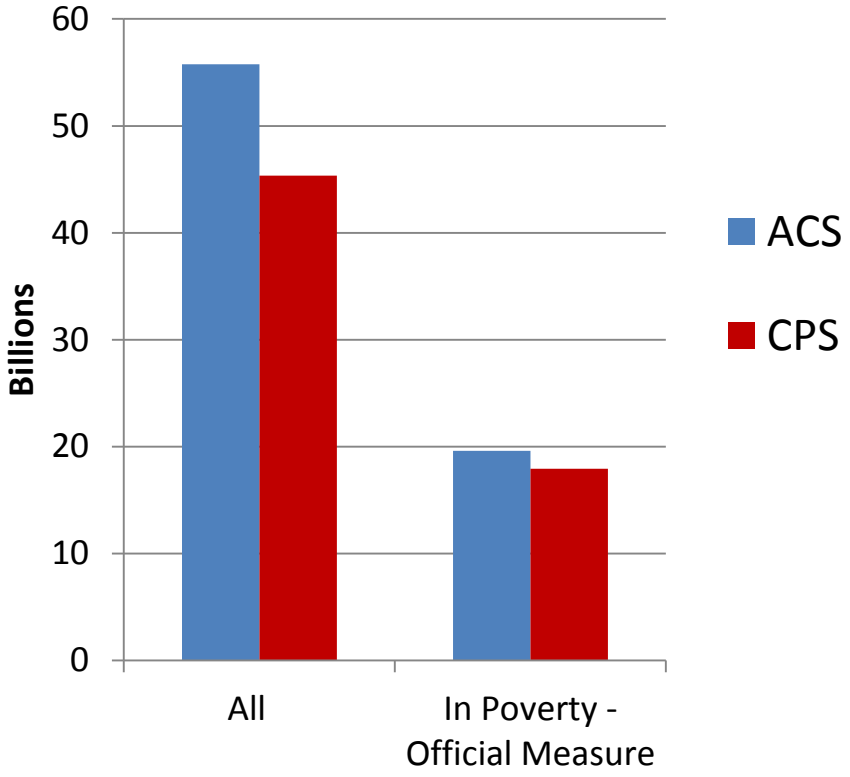




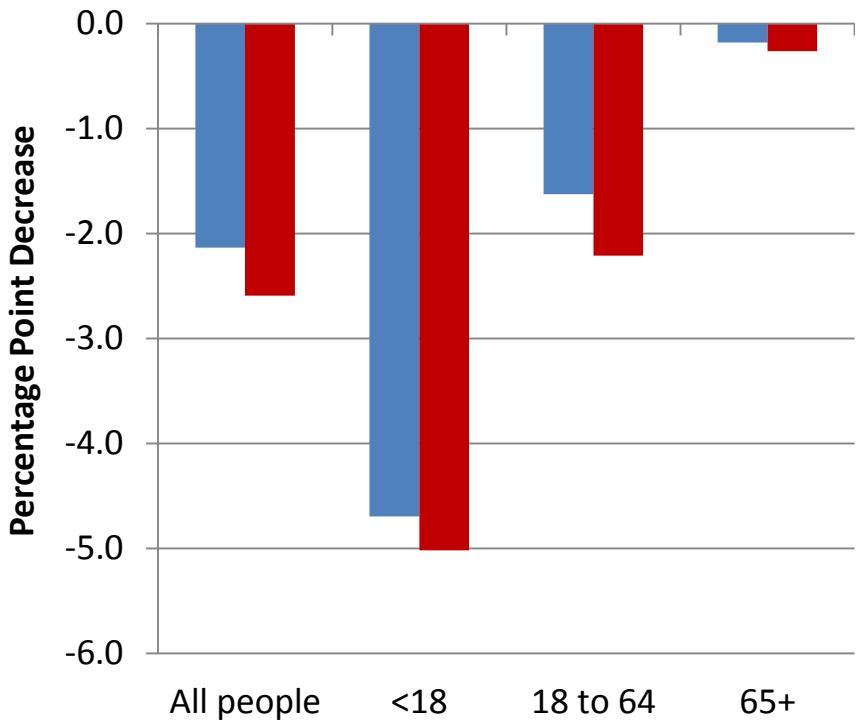
Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

Earned Income Tax Credit

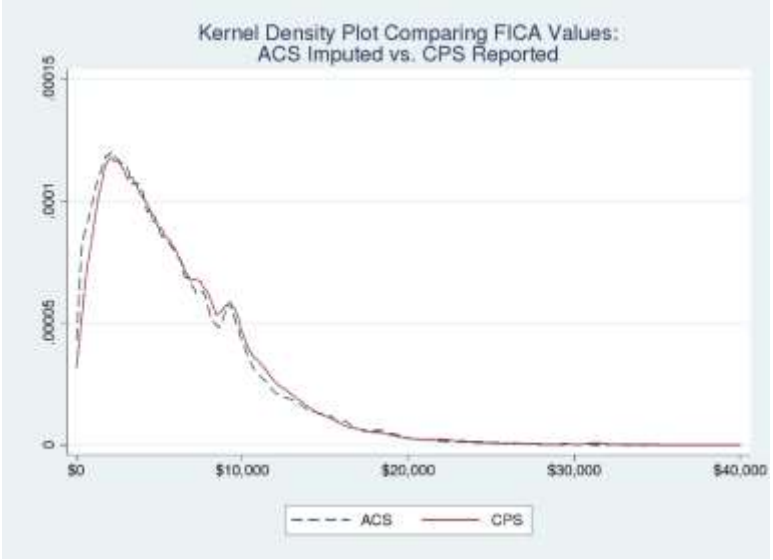
Aggregate Amount Added to Resources

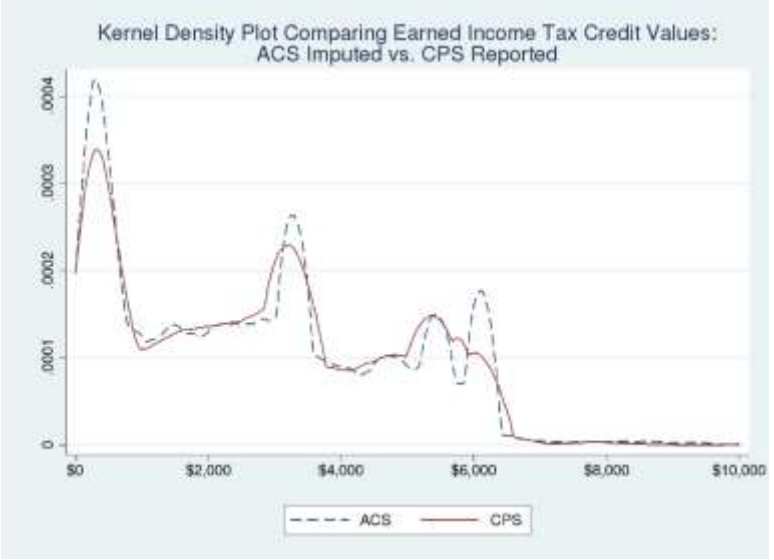


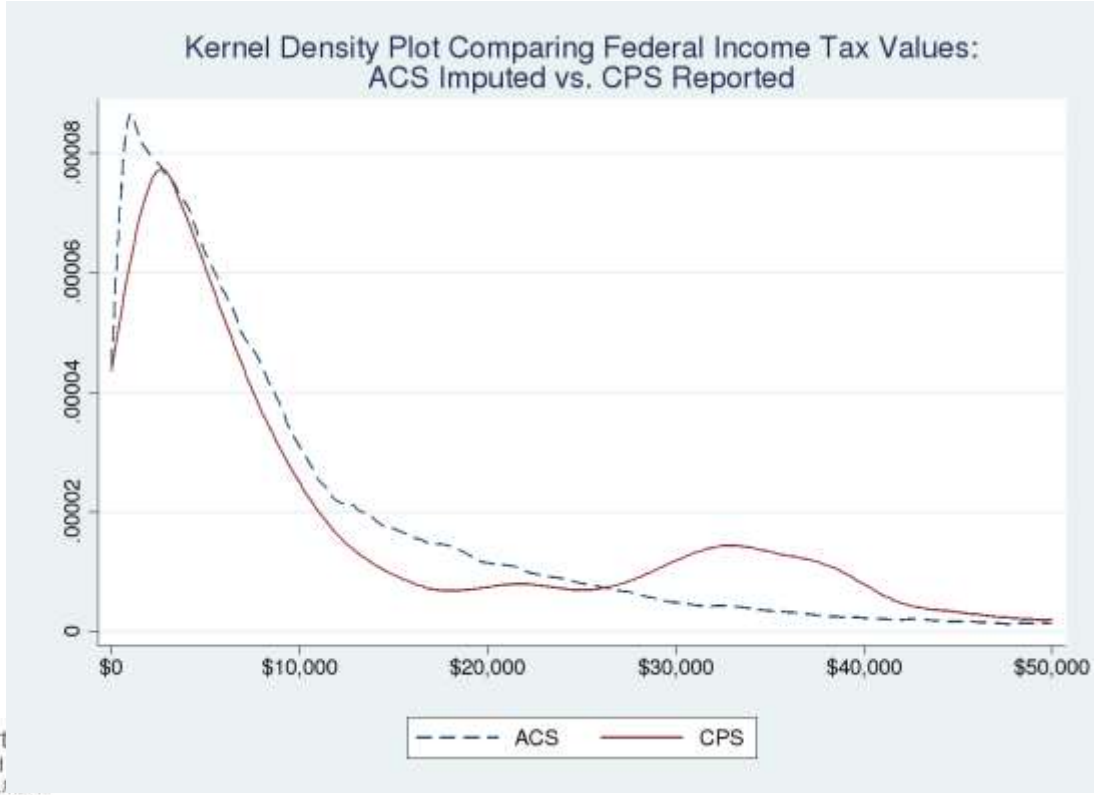
Impact on SPM Poverty Rates



Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

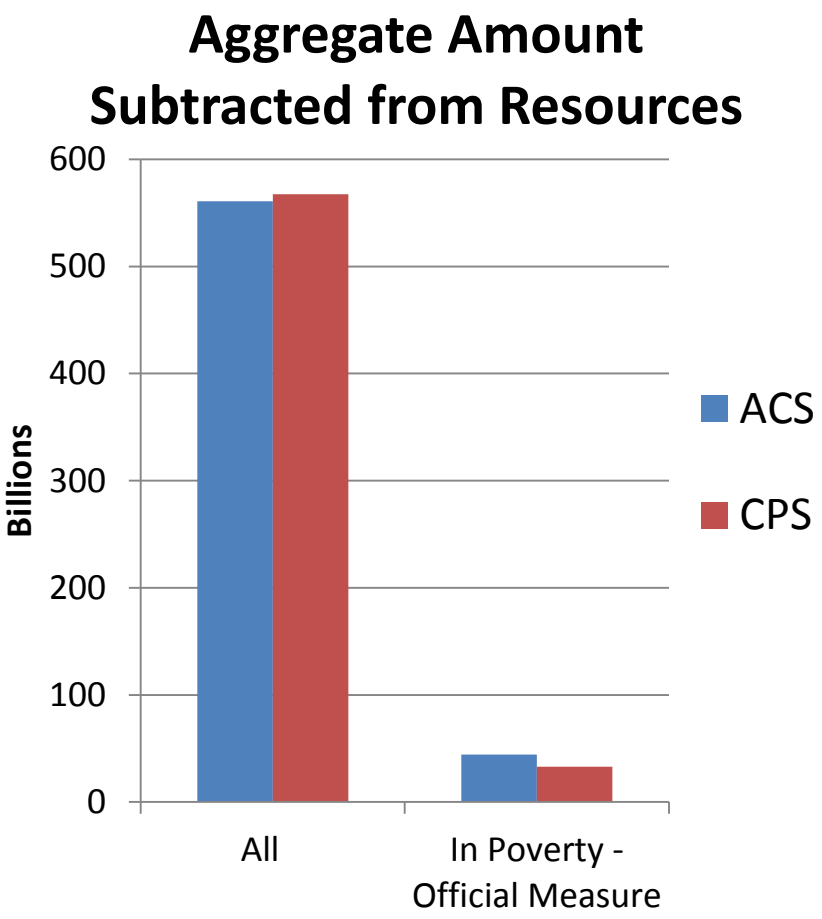


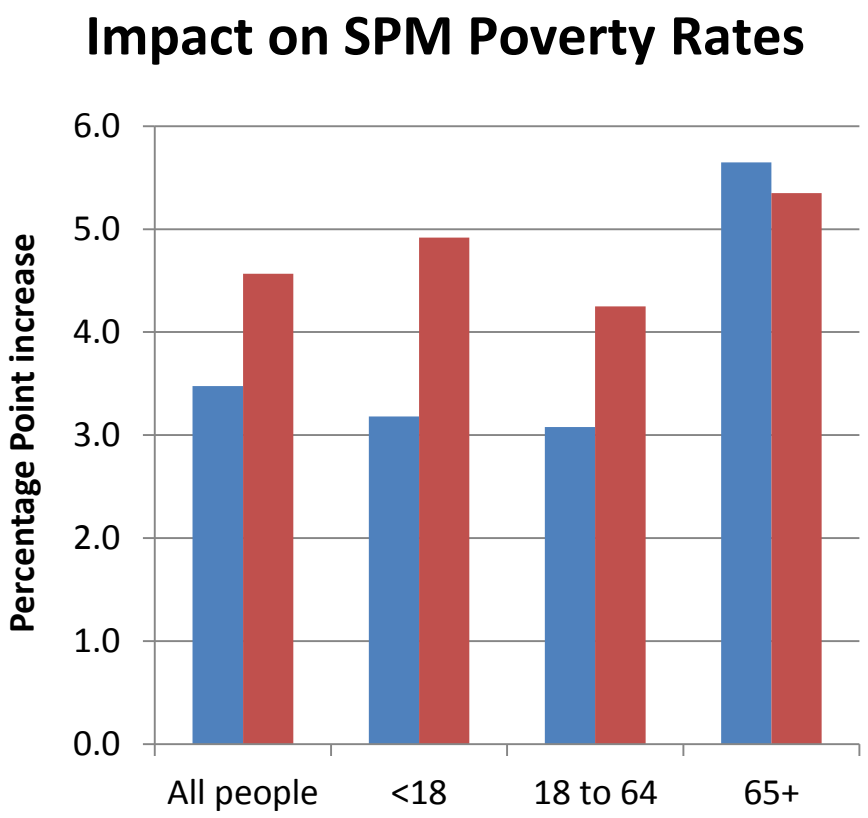




United States Census Bureau | U.S. Depart
Economics and
U.S. CENSUS BU
census.gov

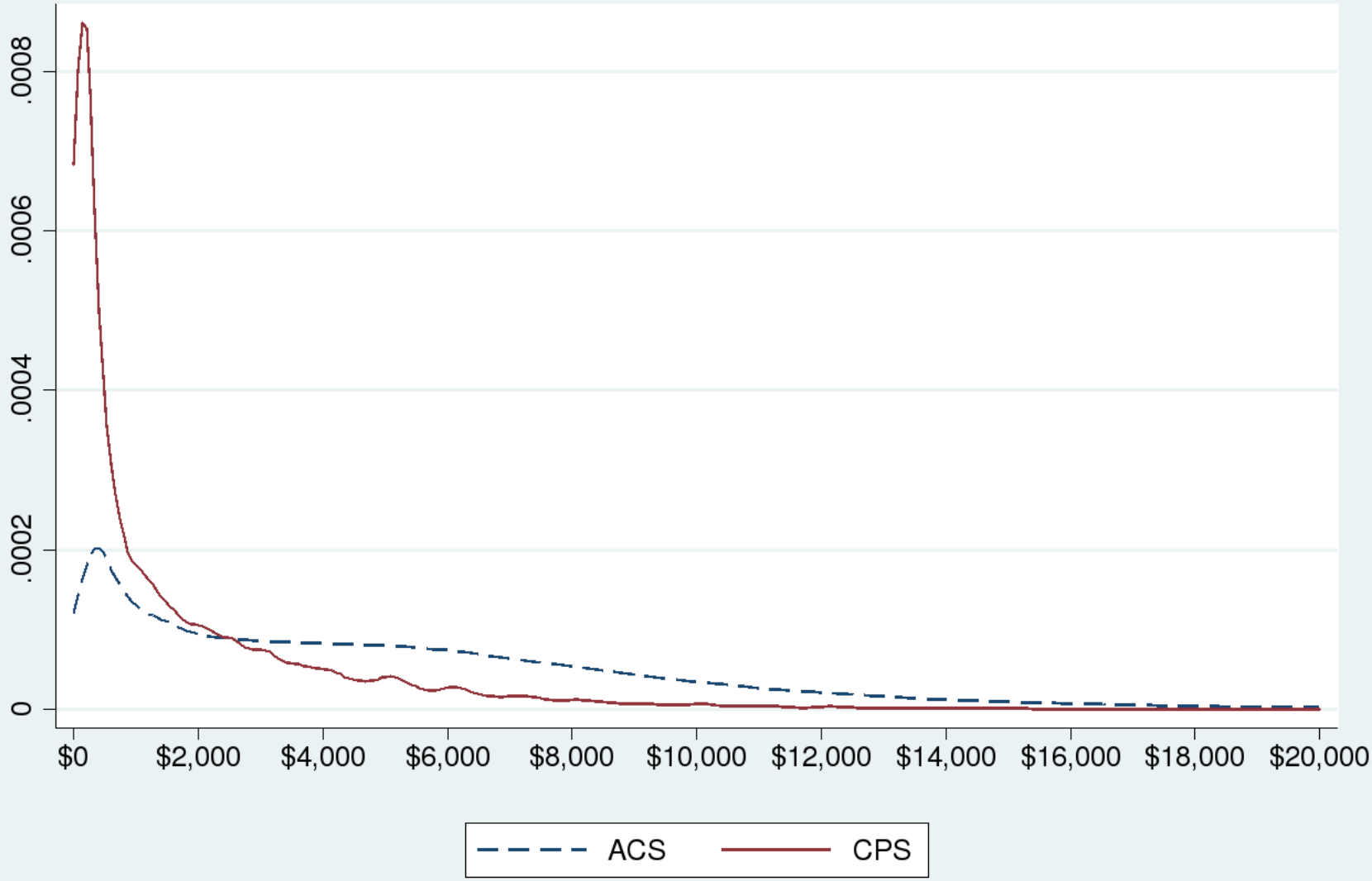
Medical Out of Pocket Expenditures: MOOP



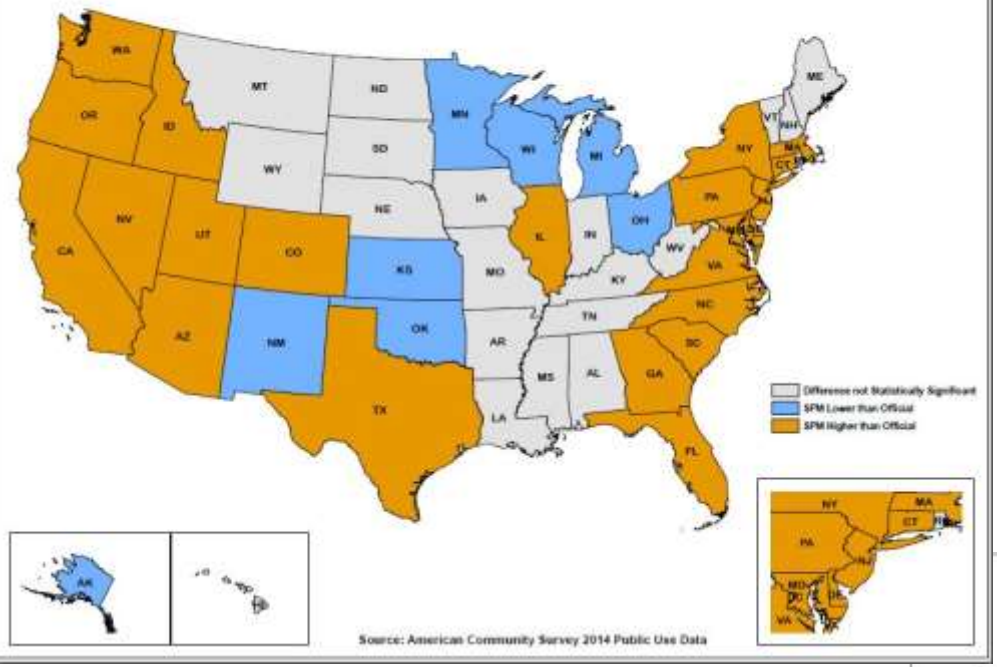


Sources: 2014 American Community Survey and 2015 Current Population Survey Annual Social and Economic Supplement

Kernel Density Plot Comparing Medical Out of Pocket Amount: ACS Imputed vs. CPS Reported



Comparing SPM and Official Poverty Rates: 2014 ACS



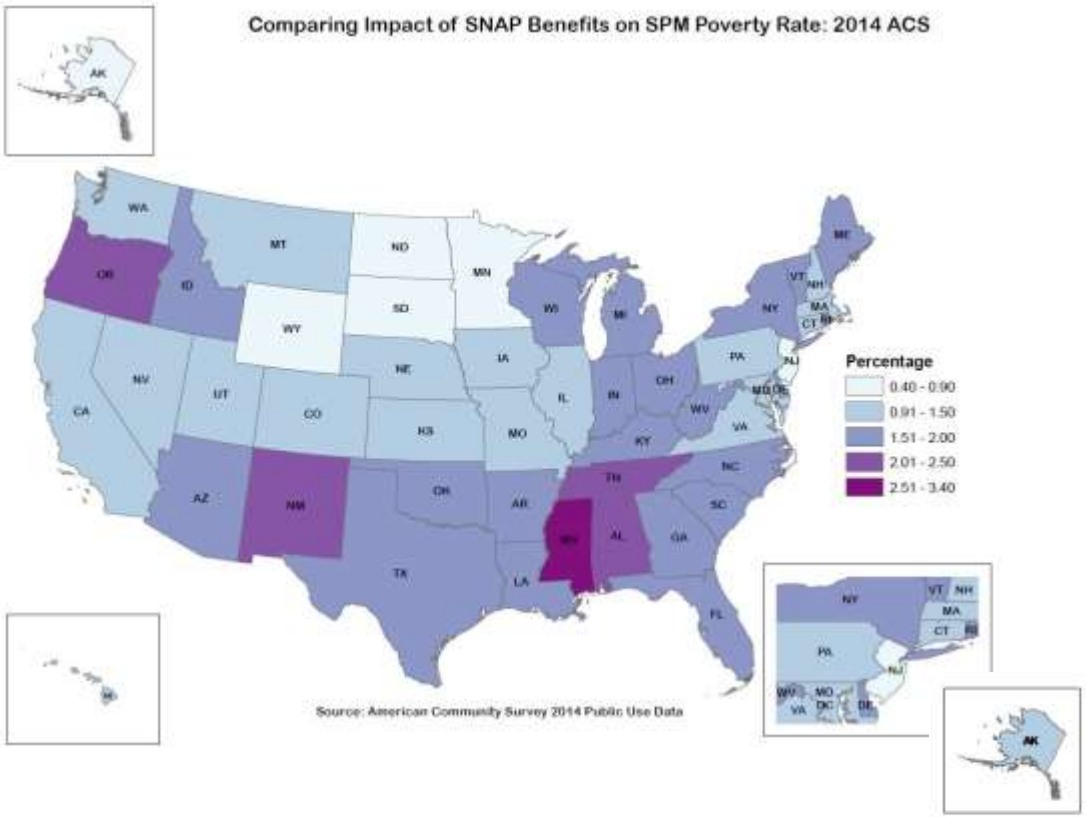
Source: American Community Survey 2014 Public Use Data

Comparing SPM and Official Poverty Rates: 2014 CPS ASEC

Source: 2015 Current Population Survey Annual Social and Economic Supplement

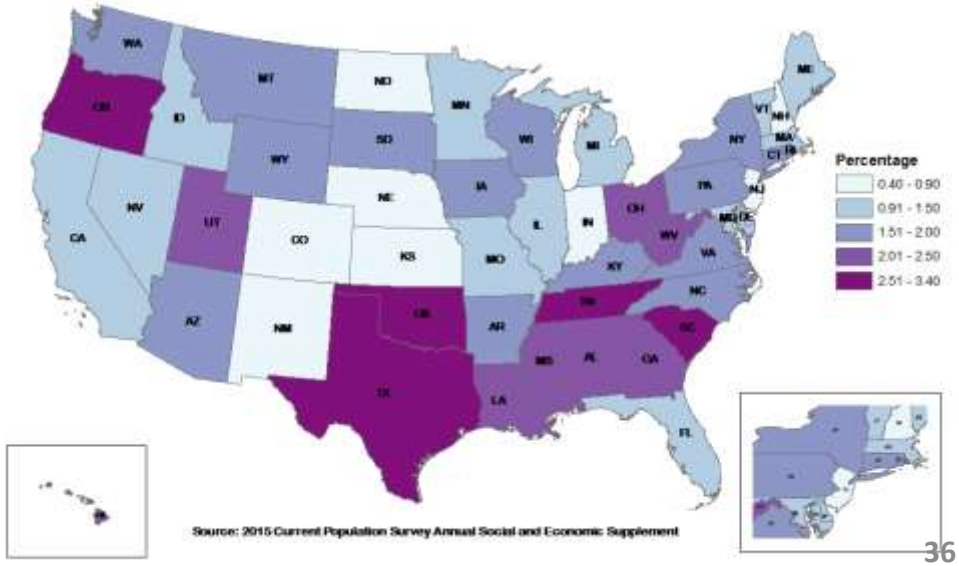
United States Census Bureau | U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov

Comparing Impact of SNAP Benefits on SPM Poverty Rate: 2014 ACS



Source: American Community Survey 2014 Public Use Data

Comparing Impact of SNAP Benefits on SPM Poverty Rates: 2014 CPS ASEC



Source: 2015 Current Population Survey Annual Social and Economic Supplement

United States Census Bureau | U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov