



UNIVERSITY OF KENTUCKY
CENTER FOR POVERTY RESEARCH

Poverty Measurement

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Outline

- ▶ Discuss need for poverty measurement
- ▶ Define the poverty rate
 - how to measure thresholds and resources
 - the Orshansky measure used in the U.S.
- ▶ Trends in poverty rates by age, race, marriage, region
- ▶ Criticisms and Alternatives to the Orshansky Measure
- ▶ Challenges to Poverty Measurement
 - Focus on the U.S., though many of the issues are salient to other countries



Why Measure Poverty?

- ▶ We are interested in tracking the well being of individuals, families, and households across time and space
- ▶ We also wish to understand the effects of economic growth and various public policies on well being
- ▶ Poverty is but one measure of well being, but it is important
- ▶ The U.S. spends over \$2 trillion annually on social insurance and means-tested transfer programs. Are they reducing poverty?



The Poverty Rate

- ▶ The poverty rate in year t is the percentage of the population with resources below a socially determined threshold

$$\hat{P}_t = \frac{1}{N} \sum_{i=1}^N I(y_{it} < z_{it})$$

- ▶ where $N = \#$ of people, y is resources, z is the threshold, and $I(.)$ takes on value of 1 if poor (i.e. $y < z$) and a value of 0 if not poor (i.e. $y \geq z$)
- ▶ The challenge is how to define z and y



Choosing Thresholds

- ▶ **Absolute Measures**
 - Define poverty with respect to a given, minimum subsistence level of consumption of goods and services.
 - e.g. World Bank's \$2 a day
 - Generally implies that the standard of living of the poor remains constant, or with periodic updates



Choosing Thresholds

▶ Relative Measures

- Define poverty as a condition of comparative disadvantage
 - e.g. as a fraction of the median
- Implies that the standard of living of the poor changes with changes in the overall standard of living



Choosing Thresholds

- ▶ **Subjective Measures**
 - Define poverty as a subjective assessment of whether you have enough to “make ends meet”
 - Standard of living of the poor can change from changes in both economic and non-economic factors such as mental and physical health, and perceptions of need



Poverty Thresholds in America

- ▶ We adopted an absolute poverty measure in the 1960s, the so-called Orshansky Measure, named after Mollie Orshansky

- ▶ Poverty thresholds were constructed by “scaling-up” family-size specific food expenditures
 - Scale factor based on 1955 USDA survey. Since food accounted for 1/3 of the total budget, the scale factor was set at 3
 - Reference family is two adult, two children
 - Use equivalence scales to assign thresholds for other family types

- ▶ Each year the threshold is updated by the Consumer Price Index to keep up with inflation



Choosing Resources

- ▶ **Income**
 - point-in-time measure of resources

- ▶ **Consumption**
 - consumption involves both expenditures and time
 - often reflects more long-term economic status
 - affected by both current income, as well as past saving and current debt

- ▶ **Net Worth**
 - assets (liquid and illiquid) less liabilities
 - stock measure rather than a flow, thus a culmination of all prior income, consumption, and saving decisions

- ▶ The U.S. adopted income for its measure



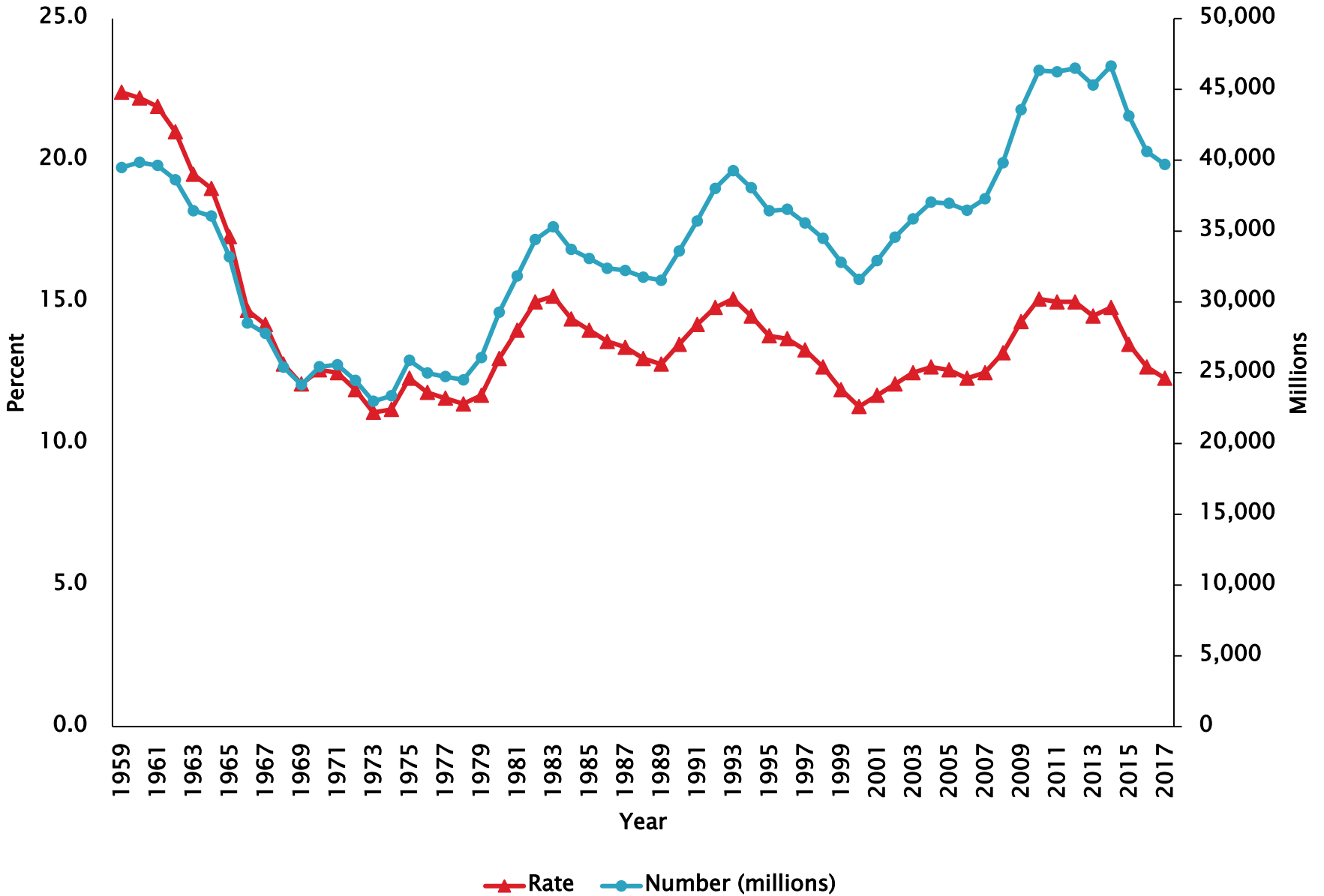
Measuring Income

- ▶ **How is income data collected?**
 - Survey of 90,000 households conducted in March of each year
 - Annual Social and Economic Supplement (ASEC) of the Current Population Survey (CPS)

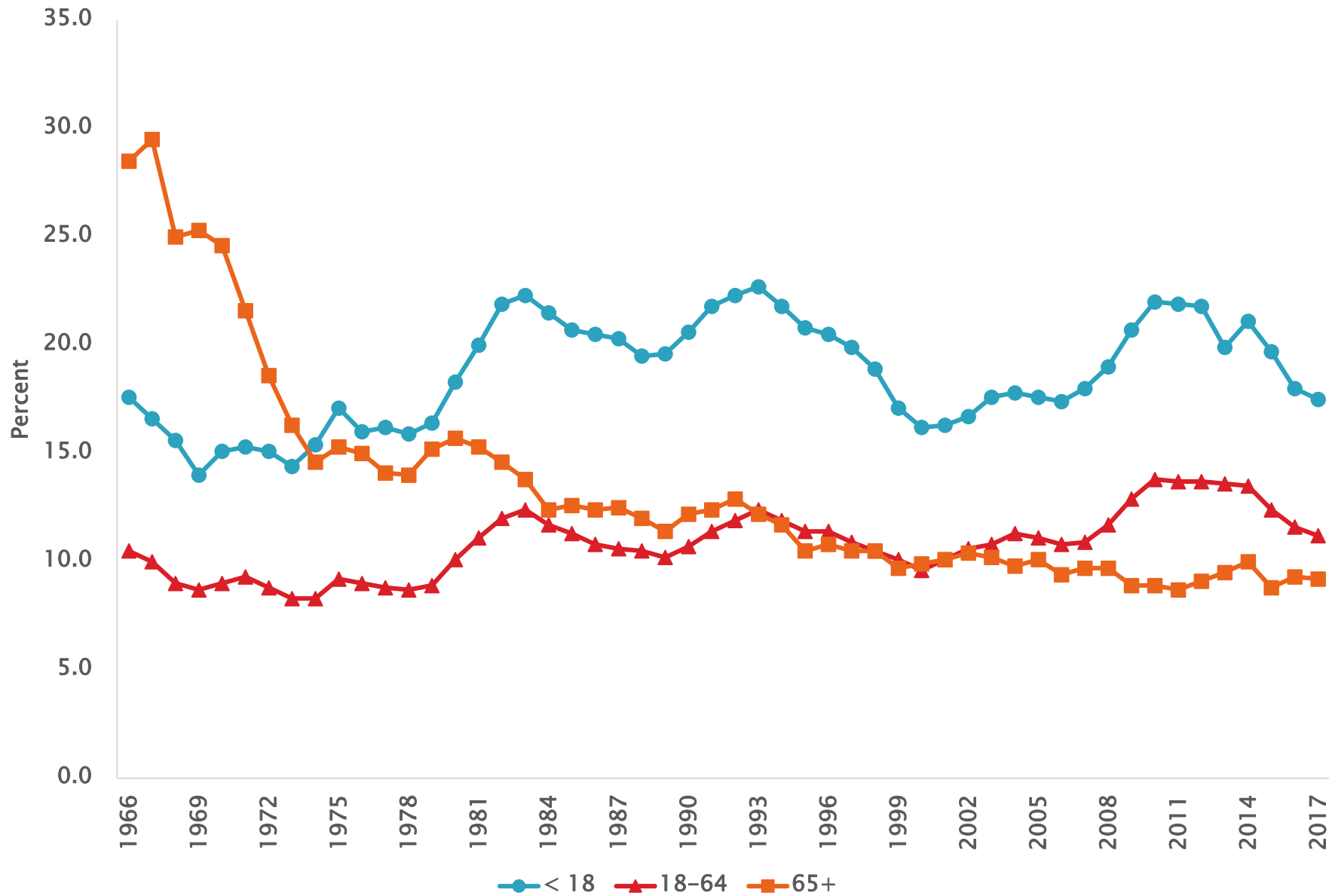
- ▶ **What is included in income?**
 - Private income (e.g. earnings, retirement, rent/interest/dividend)
 - Government cash income (e.g. UI, SS, SSDI, SSI, TANF)
 - Non-government cash income (e.g. parents, friends)

- ▶ **How is income counted?**
 - If a person lives with a family, add up the income of all family members
 - Related subfamilies assigned income of main family
 - Non-relatives, such as cohabiting partners, housemates, etc...do not count as part of the family

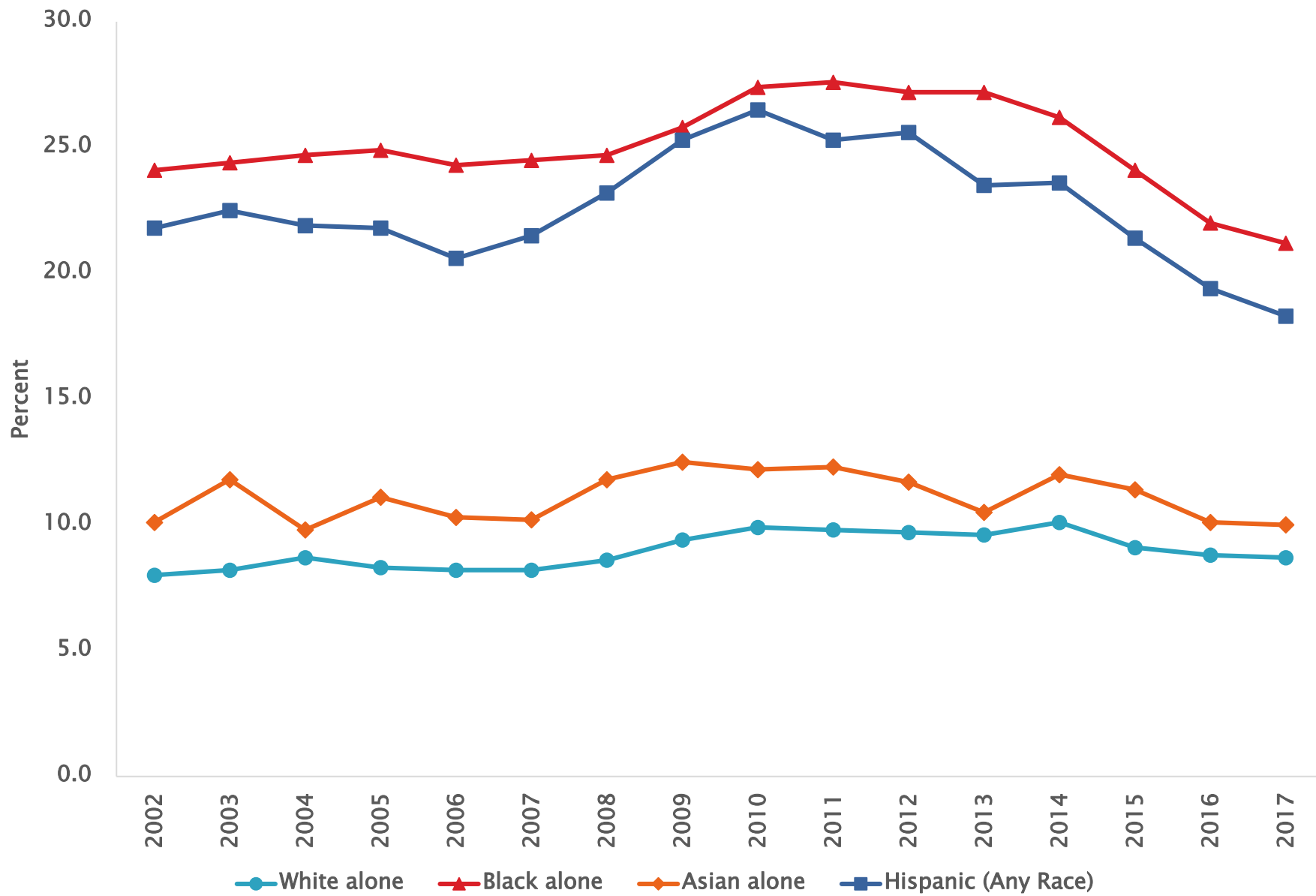
Trends in the Number and Fraction of Poor Persons in the United States



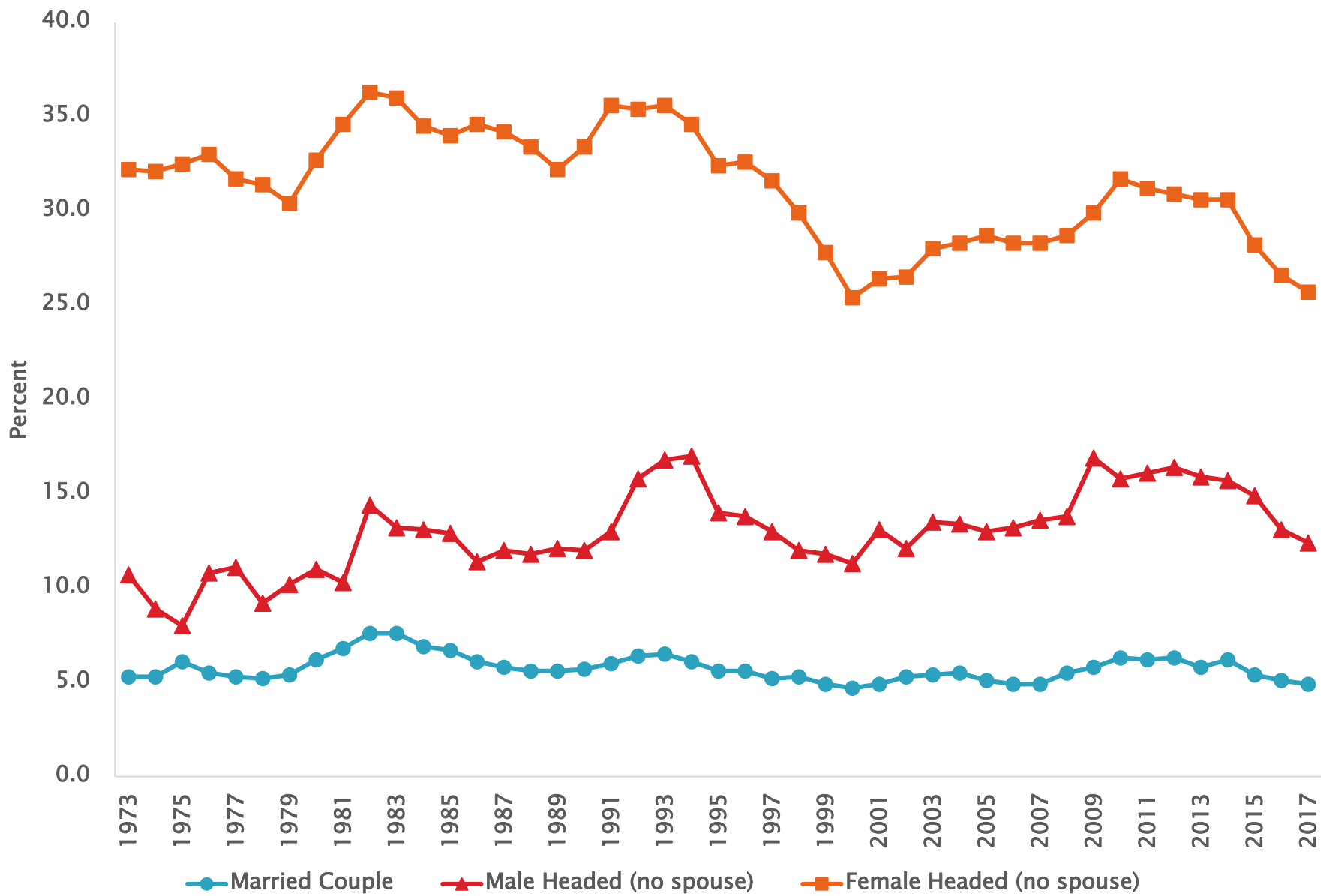
Trends in Poverty Rates by Age



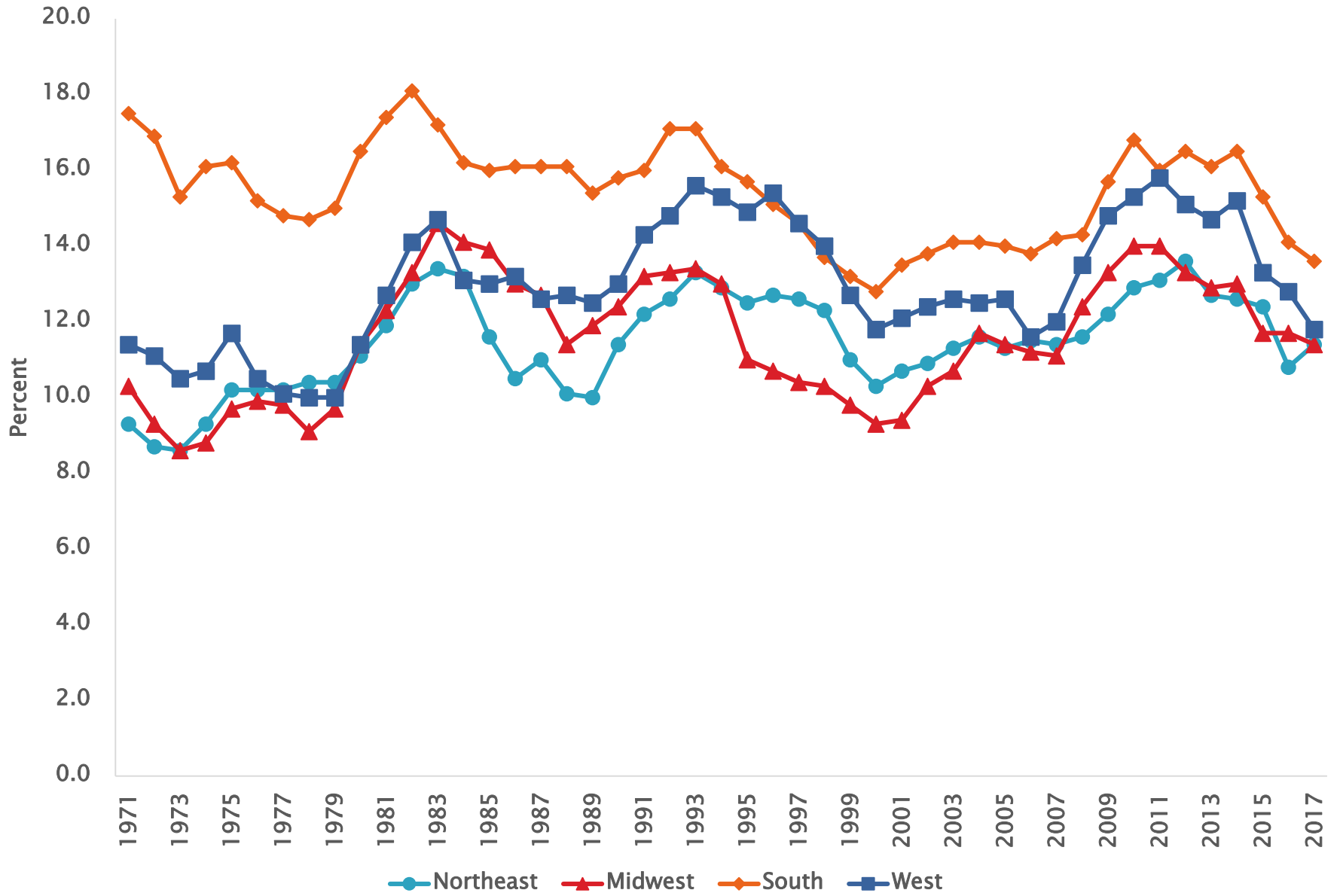
Trends in Poverty Rates by Race and Ethnicity



Trends in Poverty Rates by Marital Status



Trends in Poverty Rates by Region



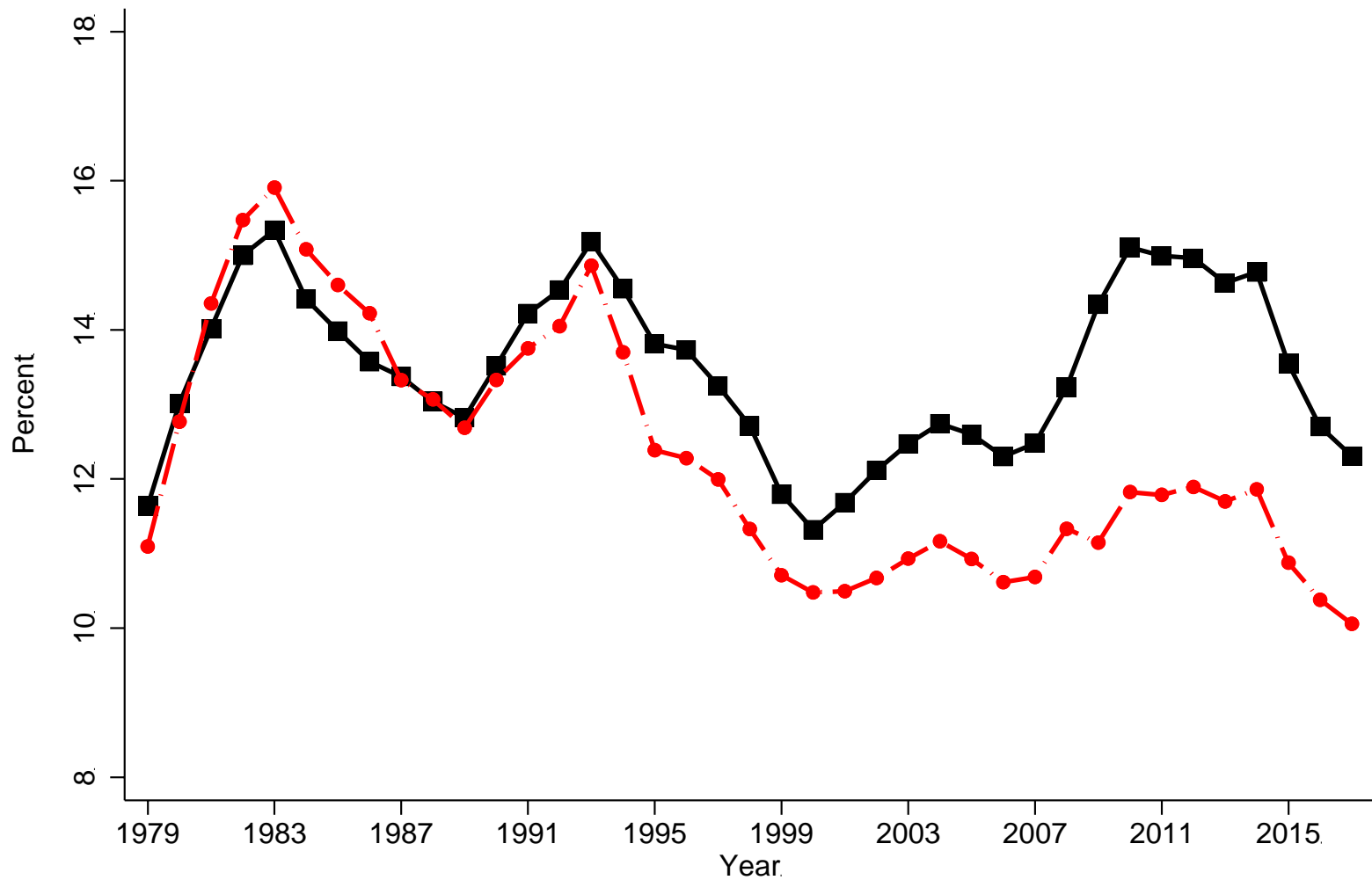


Criticisms of Poverty Measure

- ▶ Excludes important sources of income, expenditures, and taxes
 - in-kind transfers
 - Supplemental Nutrition Assistance Program (SNAP), Medicaid, Medicare
 - tax payments and credits
 - Earned Income Tax Credit (EITC), Child Tax Credit
 - capital gains and losses
 - out of pocket work and medical expenses

- ▶ See Ruggles (1991), Citro and Michael (1995), Hoynes, Page, and Stevens (2006), Ziliak (2006) for details

Poverty Trends with Alternative Income



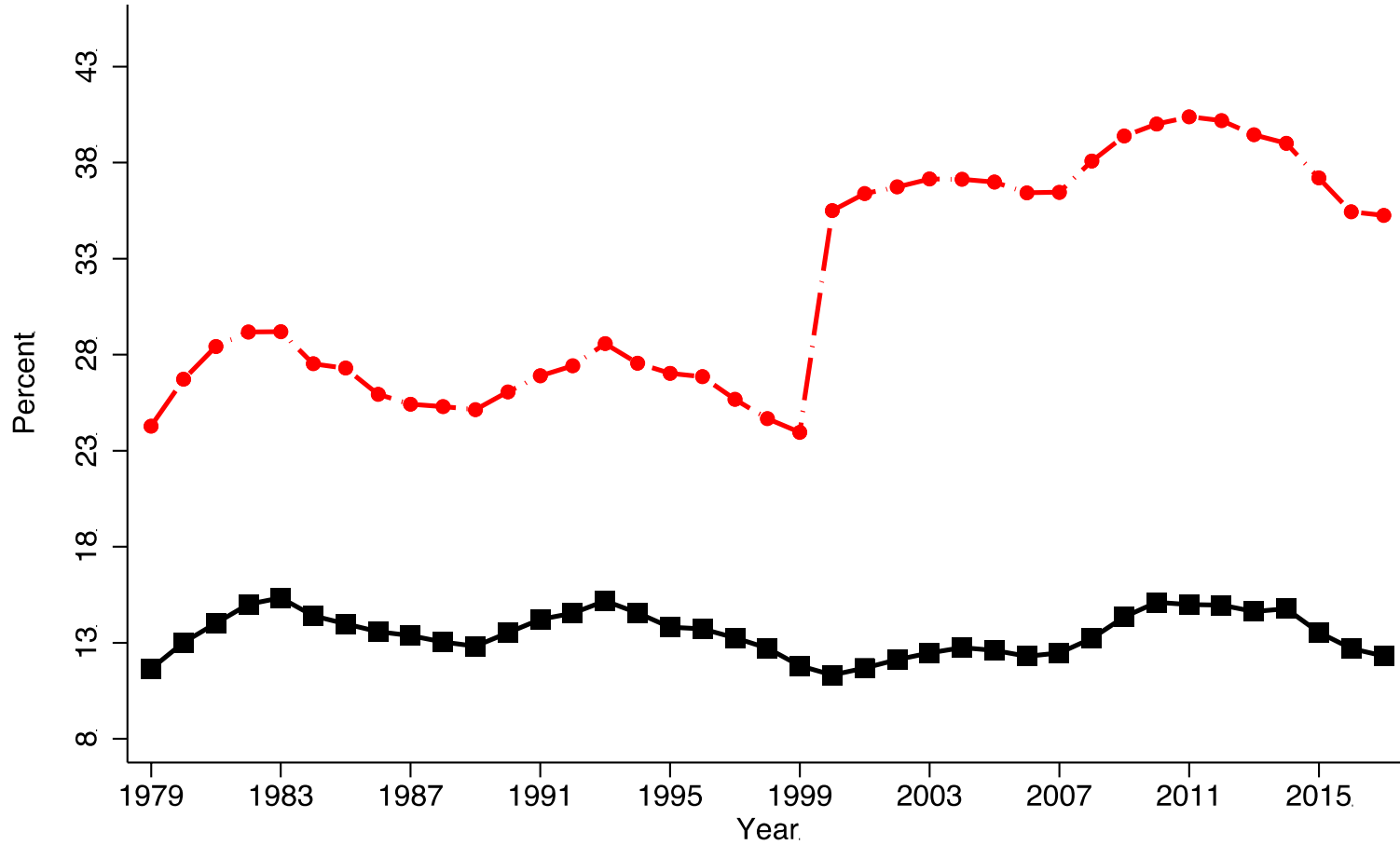
—■— Census Income. -·-●-·- After Tax and SNAP income.



Criticisms of Poverty Measure

- ▶ Uses outdated budget surveys
- ▶ Orshansky thresholds based on 1955 survey when $1/3$ of after-tax income was spent on food in typical family
- ▶ Today it is closer to $1/7$
- ▶ Suggests threshold is understated

A Thought Exercise: Updating Orshansky to Align with Food as a Share of Budgets



—■— Orshansky threshold.
—●— Updated Orshansky threshold (1/5th food share 1979–1999; 1/7th 2000–2017).



Criticisms of Poverty Measure

- ▶ Does not account changes in standard of living, including geographic differences
- ▶ 1995 National Academy of Sciences (NAS) Report recommended replacing Orshansky threshold with a consumption based measure periodically updated
 - food, clothing, shelter, utilities, and “a little extra”
 - And to account for cross-state differences in housing
- ▶ Census Supplemental Poverty Measure (SPM)



2017 OPM and SPM

	OPM	SPM
Overall	12.3	13.9
Under age 18	17.5	15.6
Ages 18–64	11.2	13.2
Ages 65+	9.2	14.1
California (3 yr ave)	13.4	19.0
Kentucky (3 yr ave)	16.3	13.7



Criticisms of Poverty Measure

- ▶ Only measures extent, but not intensity or depth of poverty
- ▶ Alternative measures of poverty:

- Intensity

- Aggregate poverty gap

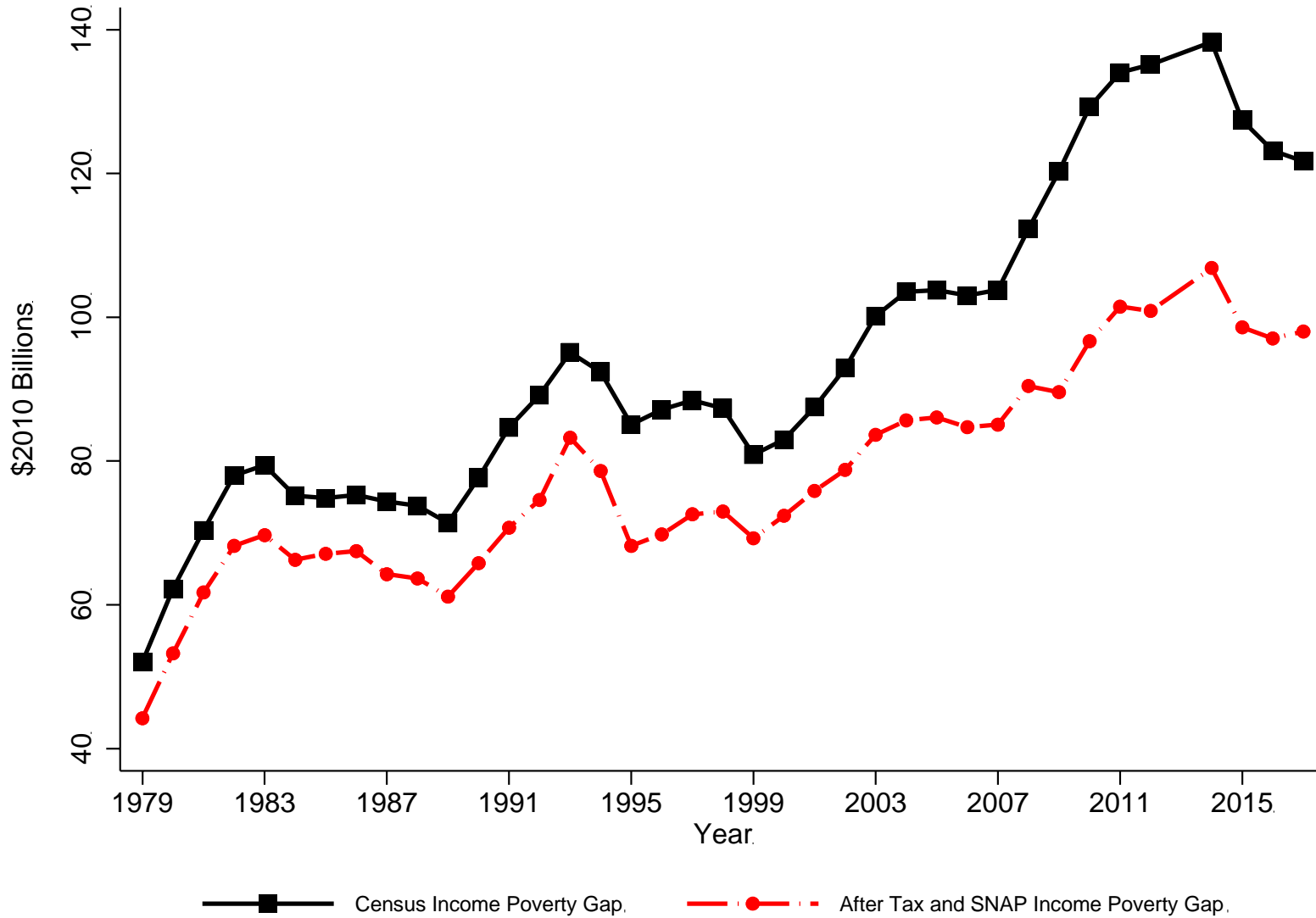
$$\hat{P}_t = \sum_{j=1}^J \sum_{i=1}^{n_j} \max(z_{jt} - y_{ijt}, 0)$$

- Depth

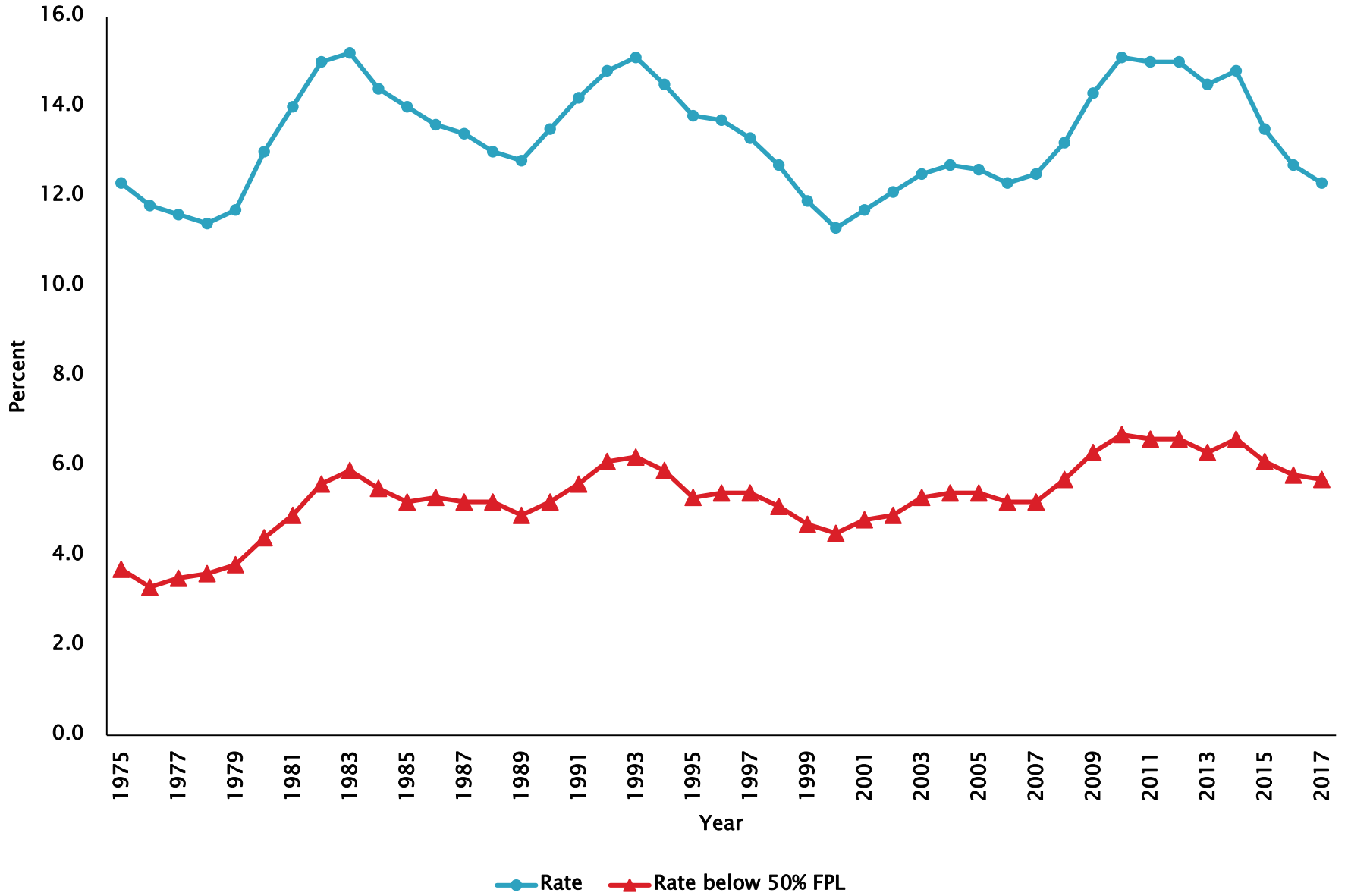
- Percent below 50% of poverty line

$$\hat{P}_t = \frac{1}{N_t} \sum_{i=1}^{N_t} I(y_{it} < 0.5 * z_{jt})$$

Estimates of Aggregate Poverty Gap



Trends in Deep Poverty Rates

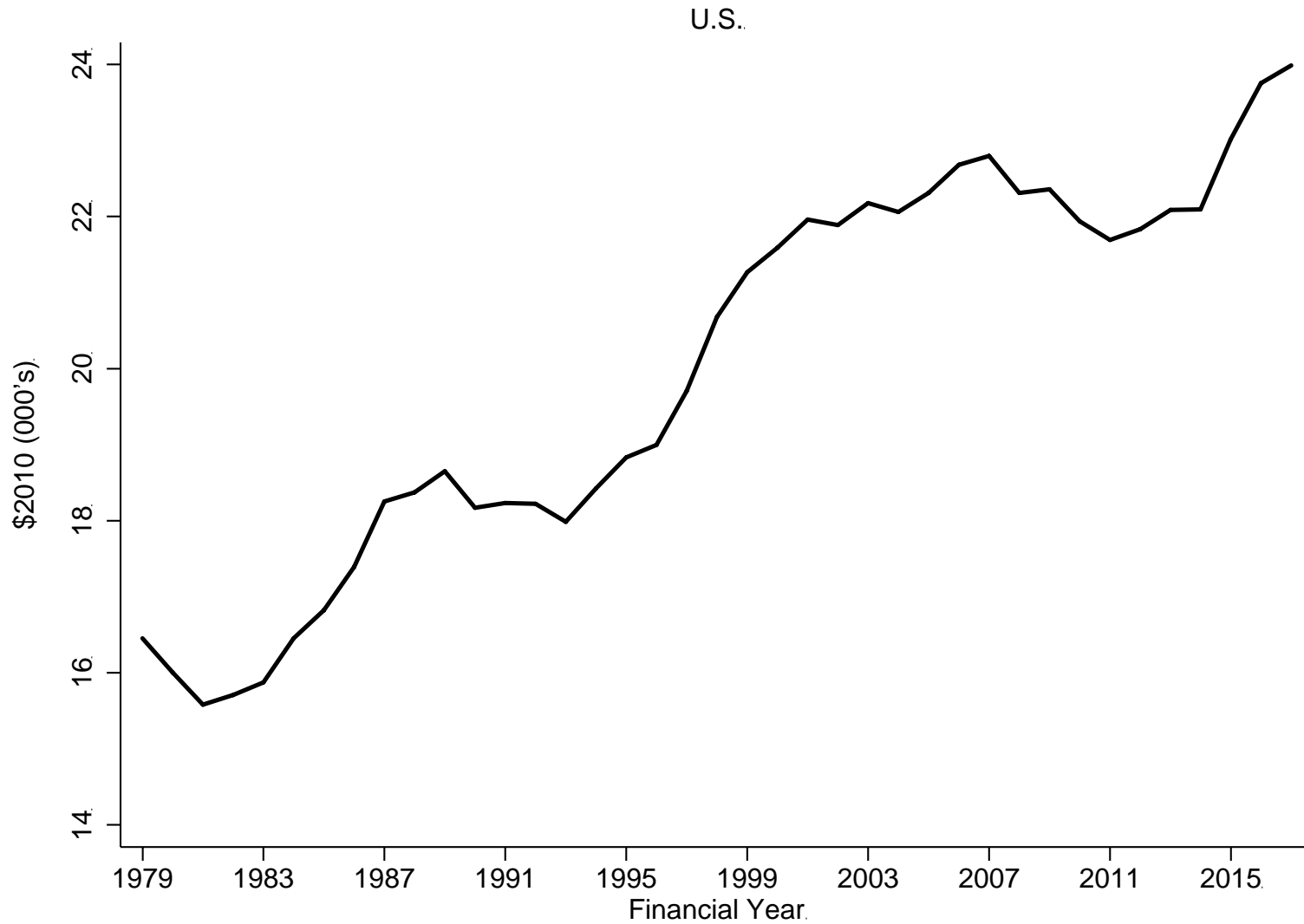




What if the U.S. Adopted a European-Style Relative Measure

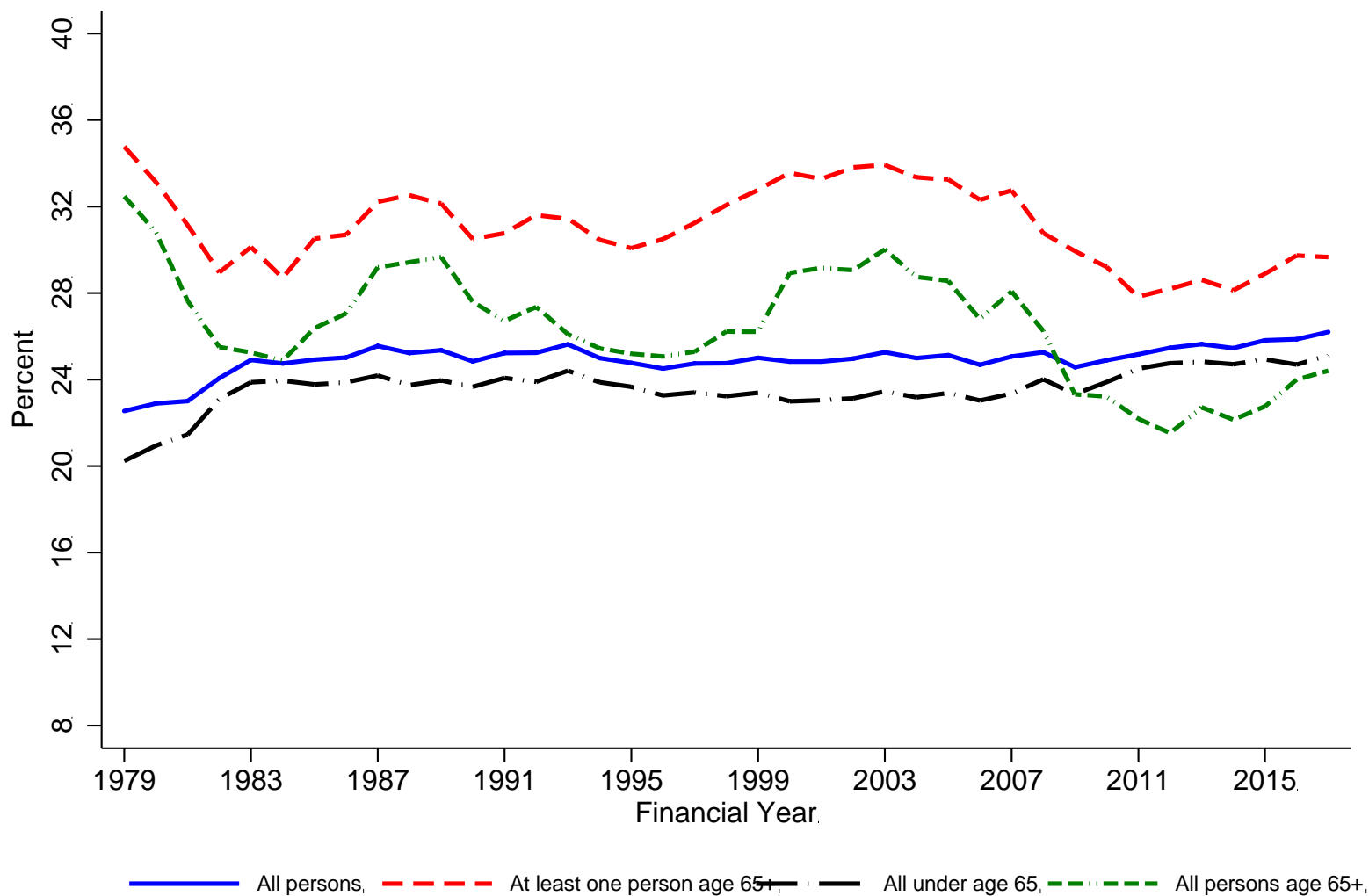
- ▶ A typical OECD poverty measure is to draw the line at some fraction of the equivalized after-tax and transfer income
 - 60% of median income is used in the United Kingdom

Equivalized Poverty Line, 60% Household After-Tax and Transfer Income



Trends in after-tax and transfer relative poverty

U.S.

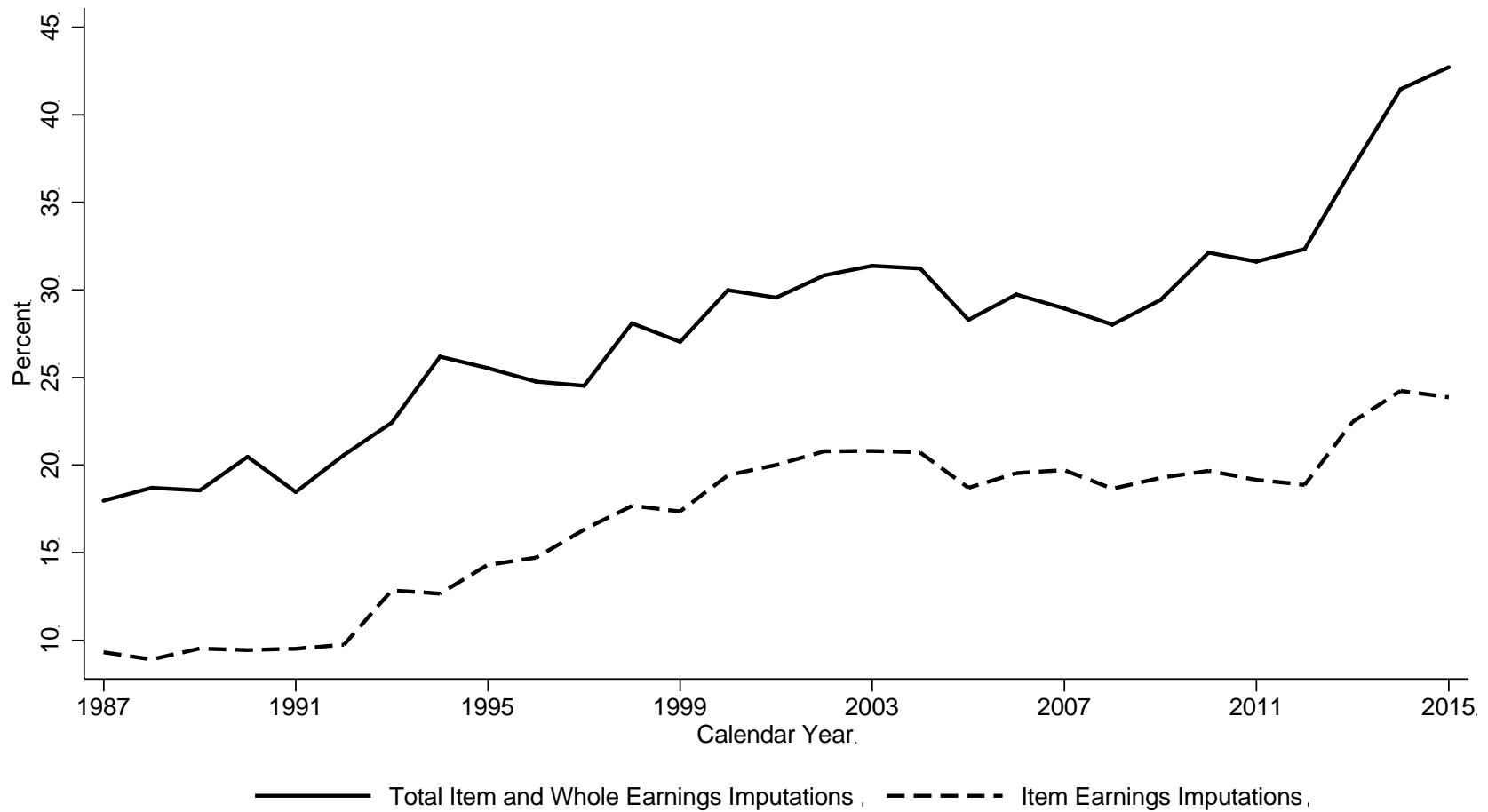




Challenges with Current Measure

- ▶ Survey nonresponse in the CPS ASEC is on the rise, especially earnings
 - Hokayem, Bollinger, and Ziliak (2015)
 - Bollinger, Hirsch, Hokayem, and Ziliak (2019)

Trends in Whole and Item Earnings Nonresponse in CPS ASEC





Challenges with Current Measure

- ▶ Survey nonresponse in the CPS ASEC is on the rise, especially earnings
 - Hokayem, Bollinger, and Ziliak (2015) estimate that the official poverty rate is biased downward 1 percentage point on average between 1998-2008



Challenges with Current Measure

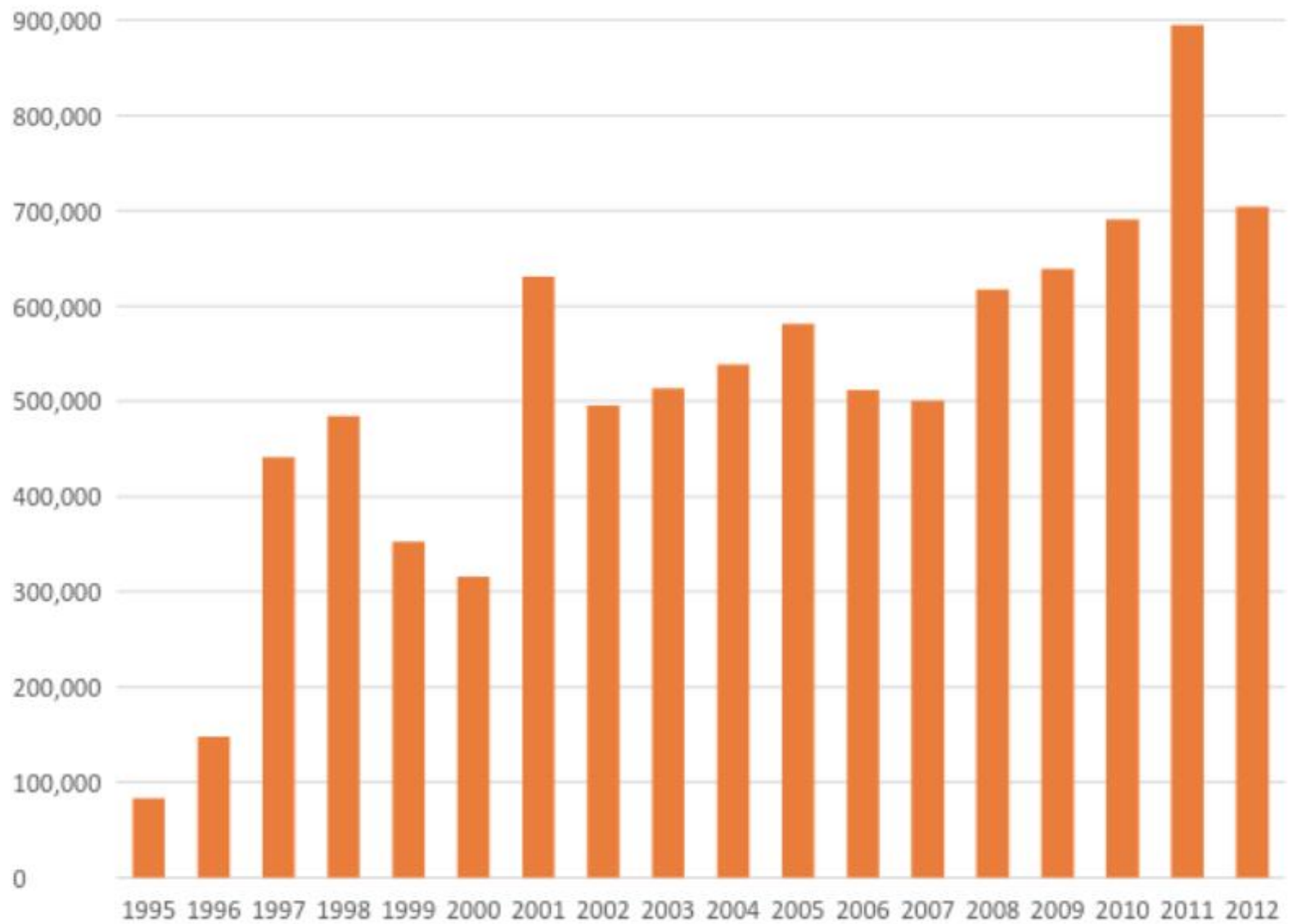
- ▶ Survey misreporting of transfer income is on the rise, as well as interest income among the elderly
 - Meyer, Mok, and Sullivan (2015)



\$2 a day Poverty in the U.S.

- ▶ Edin and Shaefer (2015) recently presented provocative evidence of a substantial increase in the number of Americans living on less than \$2/day after the 1996 welfare reform
 - Particularly acute among children in single mother households

Number of Children in Female Headed Households in Annual \$2-a-Day Poverty in TRIM Data





\$2 a day Poverty in the U.S.

- ▶ Meyer, Wu, Mooers, and Medalia (2019) challenge the Edin and Shaefer estimates, arguing that they are severely upward biased by misreporting of income
 - They link the CPS and SIPP to administrative tax and transfer data to “fill in” missing data and to “correct” survey reports
 - This is not without controversy
 - The fraction of extreme poor households in 2011 falls from 2.08% to 0.18% in the ASEC when all adjustments are made



Conclusion

- ▶ The measurement of poverty has and continues to be of high importance to both the research and policy communities
- ▶ There is general consensus that the Orshansky measure is no longer adequate, but there is less consensus on how to proceed forward
- ▶ Many favor the SPM, but it has potentially broad political economy implications if it becomes the official measure and intergovernmental transfers get tied to it



Selected Readings

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