

Building a Consumption Poverty Measure: Initial Results Following Recommendations of a Federal Interagency Working Group

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Bureau of Labor Statistics

Session: **New Approaches for Measuring Poverty and Income**

Paper Session: Saturday, January 8, 2022. 3:45 PM - 5:45 PM (EST)

Hosted By: American Economic Association and Committee on Economic Statistics

Chair: David Johnson, University of Michigan
Discussant: Rich Burkhauser, Cornell University
Virtual presentation

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Motivation and Goal

■ Motivation

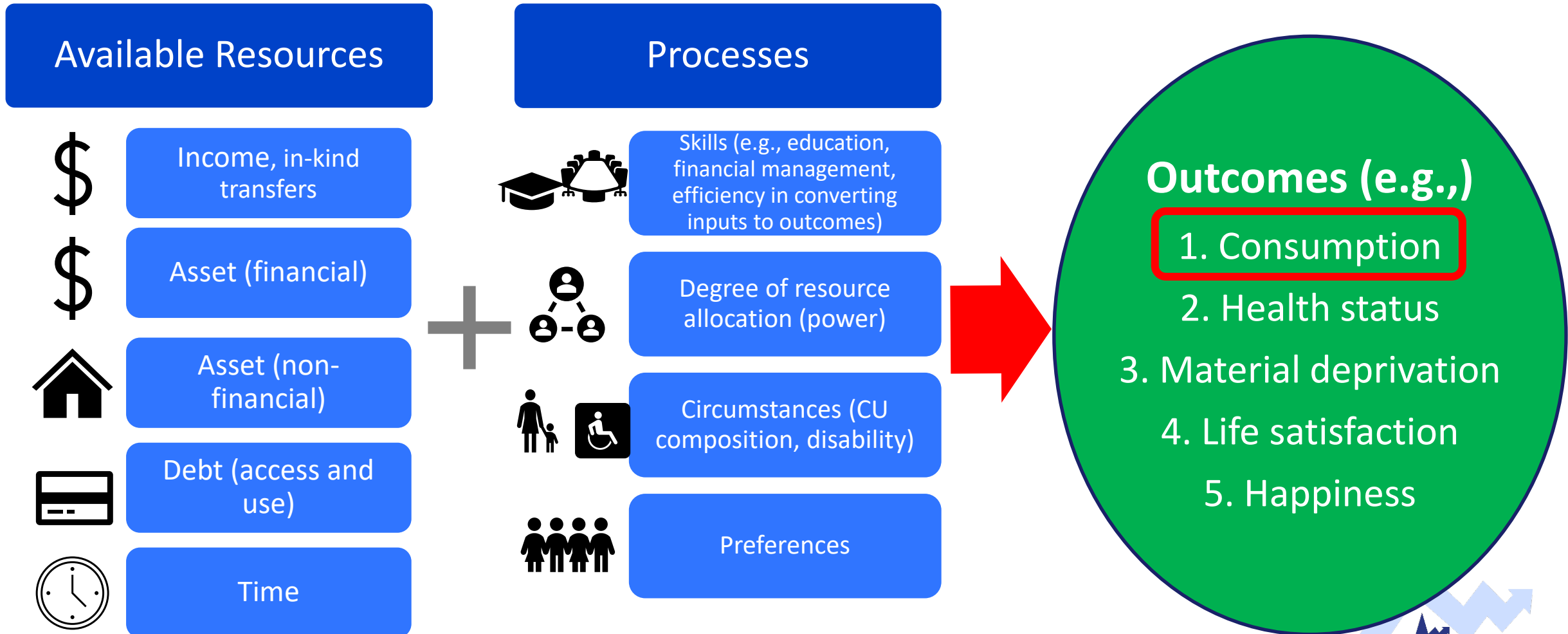
- ▶ Bureau of Labor Statistics long term interest in producing a consumption measure
- ▶ Interagency Working Group (ITWG) on Evaluating Alternative Poverty Measures Recommendations
 - Production of a consumption measure of poverty
 - Not to replace OPM or SPM but to serve as an additional measure

■ Goal

- ▶ To go through the process of producing a consumption measure with what is currently available to us at BLS
- ▶ Provide initial results of poverty analysis based on various measures of spending and consumption using both relative and absolute thresholds



Consumption as a Well-being Outcome: A Function of Resources and Processes



New BLS Initiative to Produce a Comprehensive Consumption Measure

- Designed to reflect how consumer units (CUs) use resources (e.g., income, wealth, time, in-kind benefits) to meet their consumption/material “needs”
- Key data sources: Consumer Expenditure Surveys and American Time Use Survey
- In-house research: imputation of government provided in-kind benefits and flow of services from stock of owned vehicles
- Outside research: contract on valuing home production for own consumption



BLS Comprehensive Consumption Measure Target

■ Expenditures for own consumption



■ In-kind benefits public and private



■ Flow of services



■ Home production



■ Health
■ Education



ITWG Recommendation: What to Include in Consumption

■ Expenditures for own consumption



■ In-kind benefits public and private



■ Flow of services



■ Health insurance

- ▶ Measure with
- ▶ Measure without



Other ITWG Recommendations for Consumption Poverty Measure and BLS

- Engage with stakeholders and other experts throughout development
- Two measures
 - ▶ Without health insurance
 - ▶ With health insurance
- What source?
 - ▶ Consumer Expenditure Survey Interview
 - ▶ Use administrative data when available, modeling otherwise
- Who is to produce/ where to produce? Bureau of Labor Statistics (*with funding*)
- When? as soon as possible
- How often? annually
- At what level? State

- Additional charge for BLS: to conduct a study of price indexes appropriate for use in updating



ITWG Discussions Related to Poverty Measurement but No Specific Recommendations

- Determine how best to set the threshold based on research as well as input from stakeholders and experts
- Conduct a study of price index appropriate for use in updating thresholds
- Consult experts on whether and, if so, how to implement geographic adjustment
- Conduct a study that will provide a recommendation regarding which equivalence scales are most appropriate



This Study: Data Sources

CE Data: 2015Q2-2021Q1

- Quarterly out-of-pocket spending (acquisitions value) with the exception of the following:
 - ▶ Owner-occupied housing
 - ▶ Purchase and financing of vehicles
 - ▶ Cash contributions, purchases of life and other personal insurance, allocations to retirement plans, pensions, annuities, Social Security
- Reported rental equivalence (owned housing)
- Cars and trucks: make, model, year & new or used
- Rental unit: public housing, govt assist, rent control
- Consumer unit demographic variables

NOTE: Data collected in each of 4 quarters representative of a year (e.g., data collected in 2015Q2-2016Q1 represents 2015)

Other

- CPS-ASEC (reference: 2015-2020): household data regarding receipt of government provided in-kind benefits
 - ▶ Receipt of National School Lunch Program (NSLP) benefits
 - ▶ Receipt of Supplementary Nutrition Program for Women, Infants, and Children (WIC) benefits
 - ▶ Amount of Low-Income Home Energy Assistance Program (LIHEAP) benefits
- USDA:
 - ▶ NSLP per meal rate
 - ▶ WIC benefit
 - Average monetary benefit per person
 - Average infant formula rebate per infant



This Study: Measures Considered

- Spending/Consumption (for previous 3 months, quarterly; details at end of slides)
 - ▶ Total expenditures as defined by CE (ZTOTAL, with miscellaneous from only last scheduled interview ZMISCEL2=0))
 - ▶ Subtract cash contributions, purchase of life insurance, allocations to pensions, annuities, Social Security, etc. (Spending_consump)
 - ▶ Subtract expenditures for primary dwelling and vacation homes; add rental equivalence of primary dwelling (Consumption_1)
 - ▶ Subtract expenditures for health and education; add rental equivalence of vacation home not available for rent (Consumption_2)
 - ▶ Add model-based imputed flow of services from cars and trucks (Consumption_3)
 - ▶ Add model-based imputed in-kind benefits (Consumption_4)
 - LIHEAP
 - NSLP
 - WIC (assume WIC monetary benefit already in food expenditures for CUs in states with WIC Electronic Benefit Transfer (EBT) implementation; includes value of infant rebates)
 - Rental assistance (if renter and GOVTCOST=1 or PUBLHOUS =1 or RENTCONT=1)
- NOTE: Poverty rates and gaps are based on nominal dollars while medians for 2A+2C consumer units are converted to 2015 dollars using the Chained CPI-U (C-CPI-U)

Consumption Measure Construction Comparison

	Consumtion_4	Meyer and Sullivan (2012)	Fisher, Johnson, and Smeeding (2015)
Base	Total Expenditures as measured by CE (ZTOTAL; does not include miscellaneous collected only in last scheduled interview)	Total Expenditures as defined in PUMD (TOTEXPCQ+TOTEXPCQ; does not include miscellaneous collected only in last scheduled interview)	Total Outlays (Total expenditures in CE plus: mortgage/home equity principal payments; adjustment for vehicles and entertainment to out-of-pocket; all miscellaneous)
Subtract	Cash contributions	Cash contributions	Cash contributions
	Life, endowment, annuities, other personal insurance, Social Security contributions	Life, endowment, annuities, other personal insurance, Social Security contributions	Life, endowment, annuities, other personal insurance, Social Security contributions
	Retirement, pensions, and social security	Retirement, pensions, and social security	Retirement, pensions, and social security
	Owner expenses for primary residence and vacation home	Owner expenses for primary residence	For owners, all shelter expenses for primary residence, vacation homes and other lodging, mortgage/home equity and finance charges and principal payment
	Purchases of stoves, refrigerator/freezer, dishwasher, clothing washer or dryer, AC window units		
	Healthcare expenditures	Healthcare expenditures	
	Education expenditures	Education expenditures	
	Housing while away at school		
	Daycare centers, nursery, pre-school		
	All vehicle purchases	Car and truck purchases	Car and truck purchases
	All vehicle finance charges	All vehicle finance charges	All vehicle finance charges
	Motorized vehicles for entertainment		

Comparison of Consumption Measure Construction

	Consumtion_4	Meyer and Sullivan (2012)	Fisher, Johnson, and Smeeding (2015)
Add	Rental equivalence of primary residence	Rental equivalence of primary residence	Rental equivalence of primary residence
	Rental equivalence of vacation home not available for rent to others (not time shares)		
	Imputed flow of services from cars and trucks (depreciation and opportunity cost)	Imputed flow of services from all vehicles (depreciation only)	Imputed flow of services from cars and trucks (depreciation and opportunity cost)
	Imputed In-kind transfers (LIHEAP, NSLP, WIC, government rental assistance for govtcost=1, publhous=1, rentcont=1)	Imputed rents for govtcost=1, publhous=1	government rental assistance for govtcost=1, publhous=1



This Study: Income Comparison Measure

- CE defined after-tax income + study-based in-kind benefits
 - ▶ Converted annual incomes to quarterly values for comparison to other measures
 - ▶ In-kind benefits defined the same as for consumption measures for LIHEAP, NSLP, and rental assistance; WIC includes full WIC benefit (voucher and EBT) with infant formula rebate
- CE defined after-tax income*
 - ▶ Includes cash value of SNAP benefits
 - ▶ Includes the value of meals and rent as pay
- CE defined subtractions from before tax income to derive after-tax income
 - ▶ Imputed federal and state income taxes based on TAXSIM
 - ▶ Personal property taxes

*See CE webpage for definition of income <https://stats.bls.gov/cex/csxgloss.htm#inc>

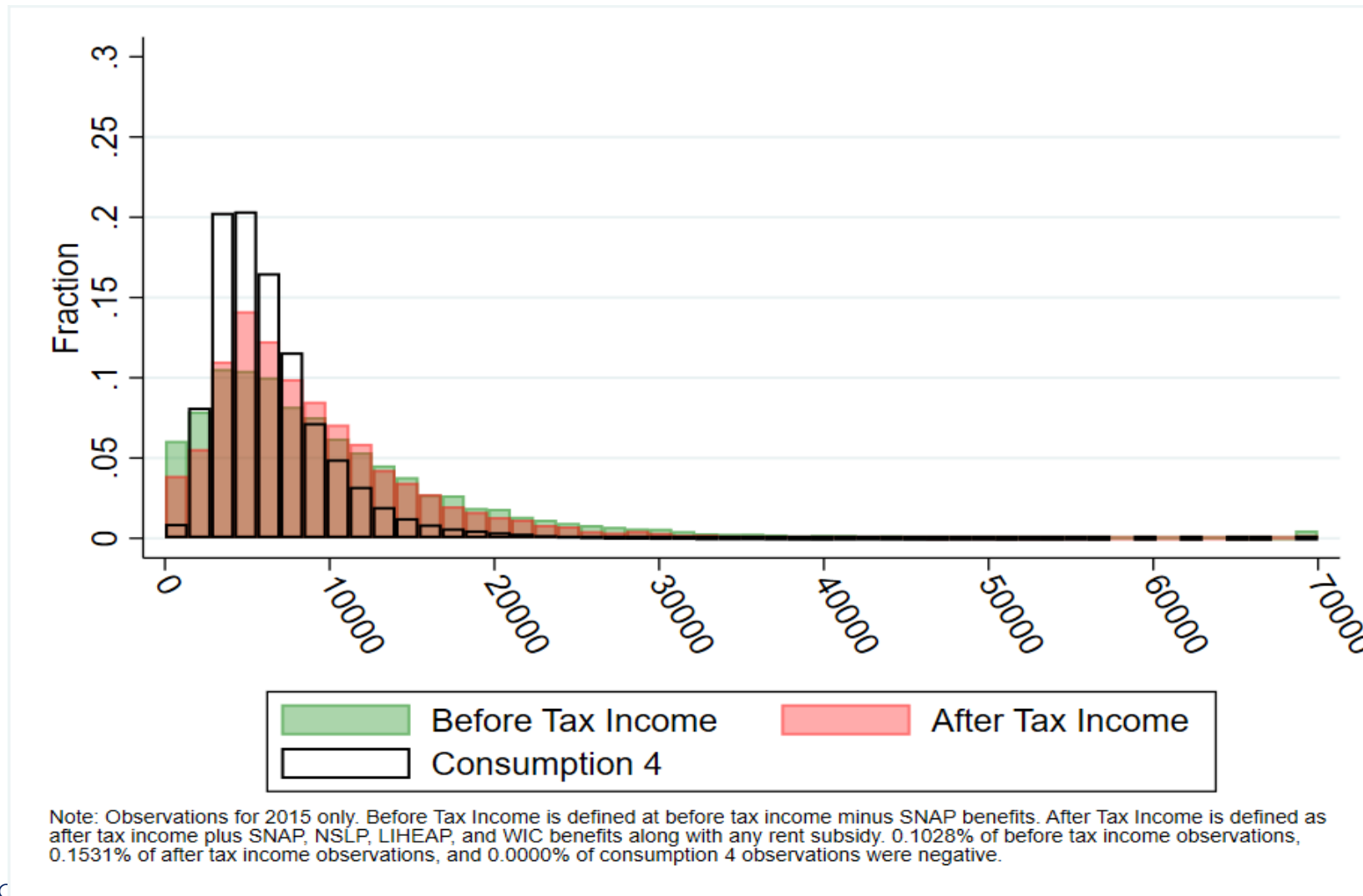


This Study: Thresholds

- Thresholds defined in 3 different ways
 1. Purely relative as 60% of median (i.e., threshold is a function of the same “resource”)
 2. Absolute thresholds for all measures anchored to the threshold for 2015 based on consumption_4
 3. Absolute thresholds for all measures set at values such that poverty rates for all measures anchored to be the same in 2015 as rate for consumption_4 poor (i.e., 16.7% in 2015)
- Absolute thresholds adjusted by C-CPI-U for 2016-2020
- Three-parameter equivalence scale
- No geographic adjustment



Frequency Distribution of Quarterly Before Tax Income, After Tax Income, and Consumption_4



Distribution Statistics of Quarterly Before Tax Income, After Tax Income, and Consumption_4

	Before Tax Income	After Tax Income	Consumption_4
Mean	10,640.37	9,368.96	6,609.83
Median	7,801.06	7,434.40	5,616.23
SD	11,364.74	8,183.7	4,49.16
Skewness	5.27	4.27	4.98
Kurtosis	60.44	50.86	79.30

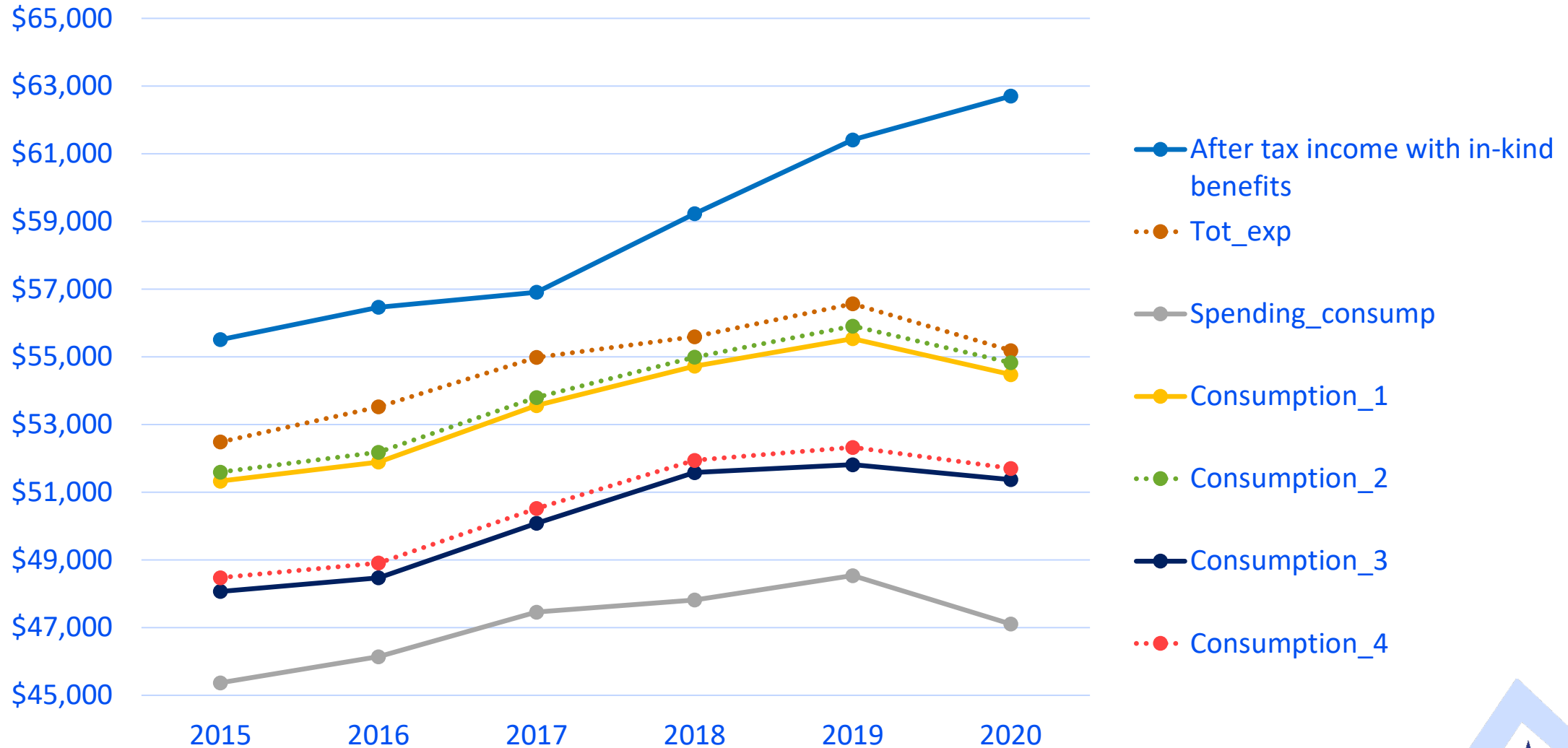
Distribution Statistics of Quarterly Before Tax Income*, After Tax Income*, and Consumption_4*

	Before Tax Income	After Tax Income	Consumption_4
Mean	10,477.65	9,342.93	6,604.00
Median	7,801.06	7,434.40	5,616.23
SD	9,824.32	7,613.69	4,358.51
Skewness	2.61	2.90	3.55
Kurtosis	12.96	17.41	30.41

*Values are Winzorized to between 0 and 70,000.

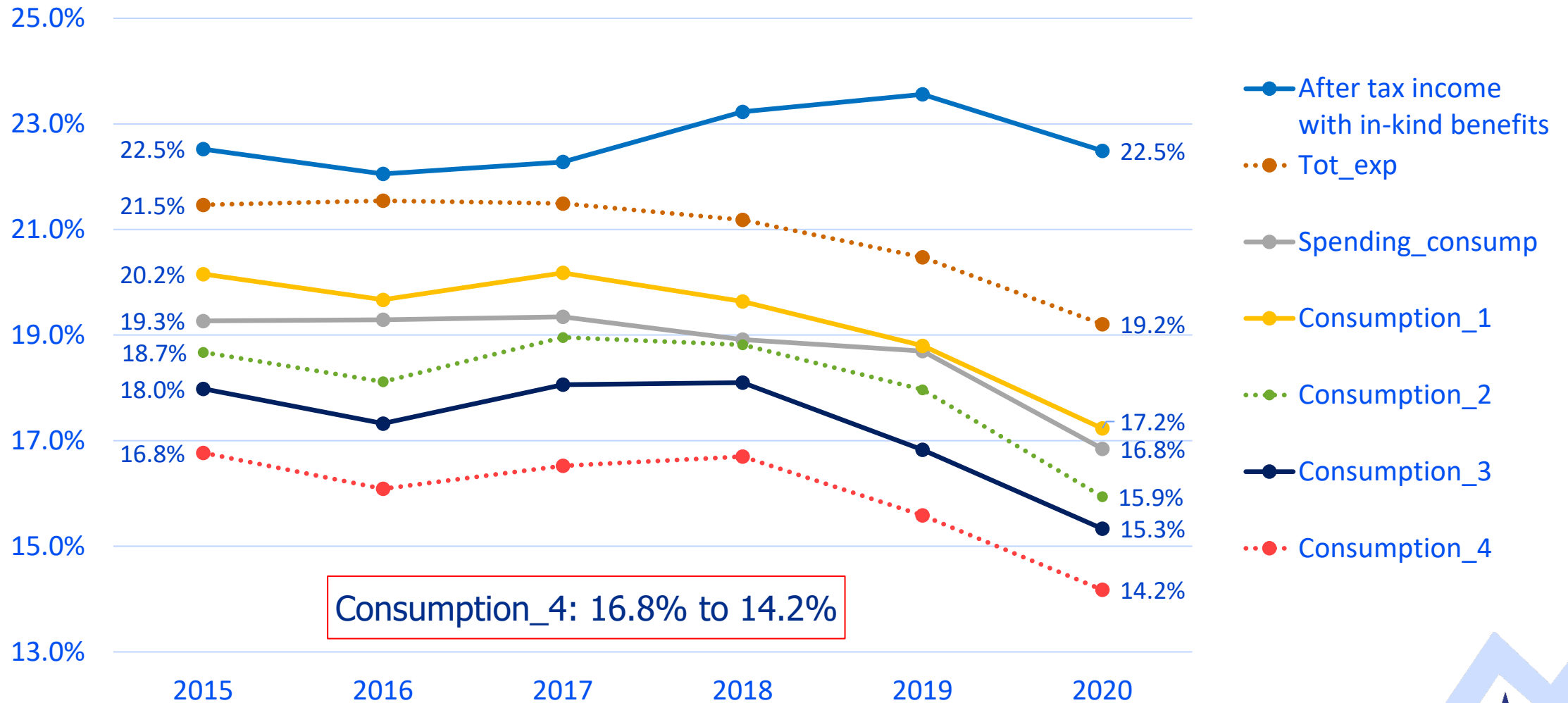


Annualized Medians in Real 2015 Dollars for All Consumers Units Equivalized to CUs with 2 Adults+2 Children (2A+2C)

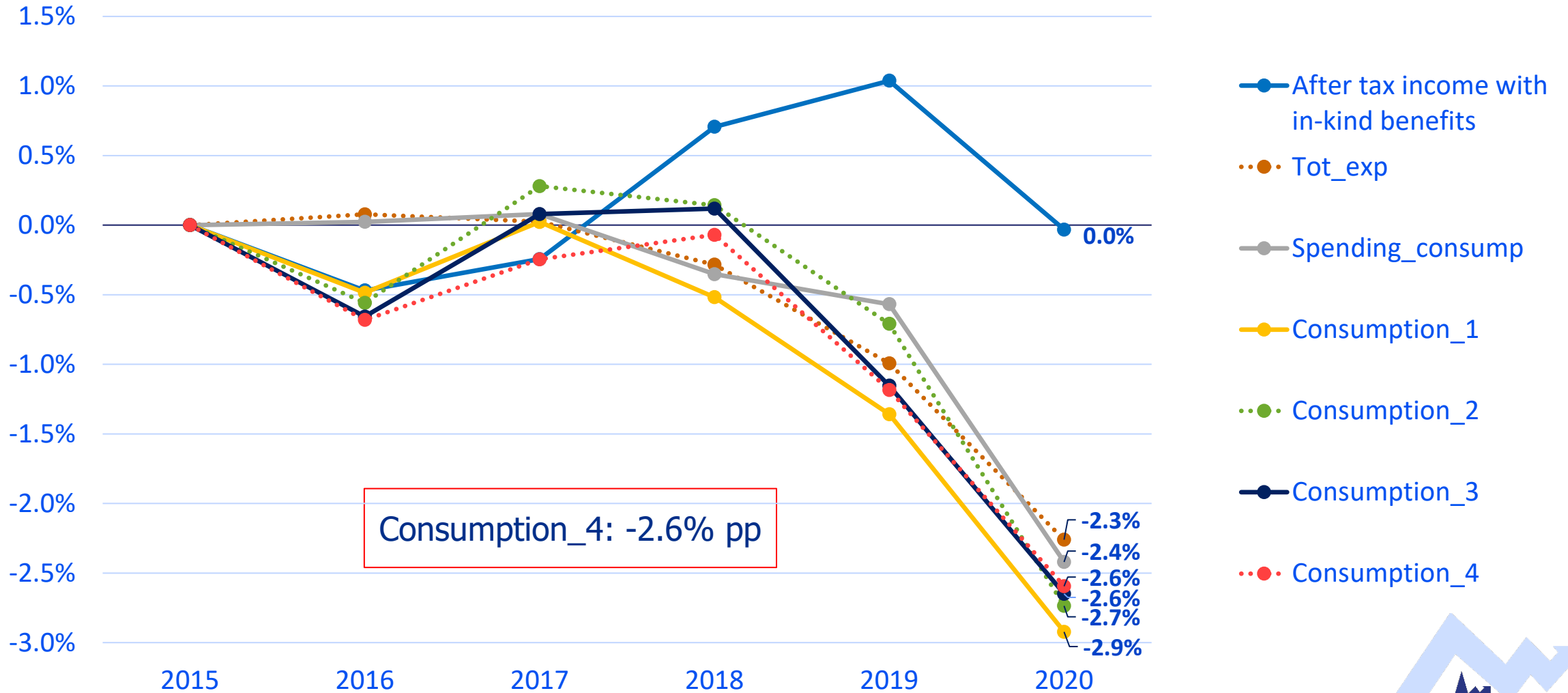


Poverty Rates

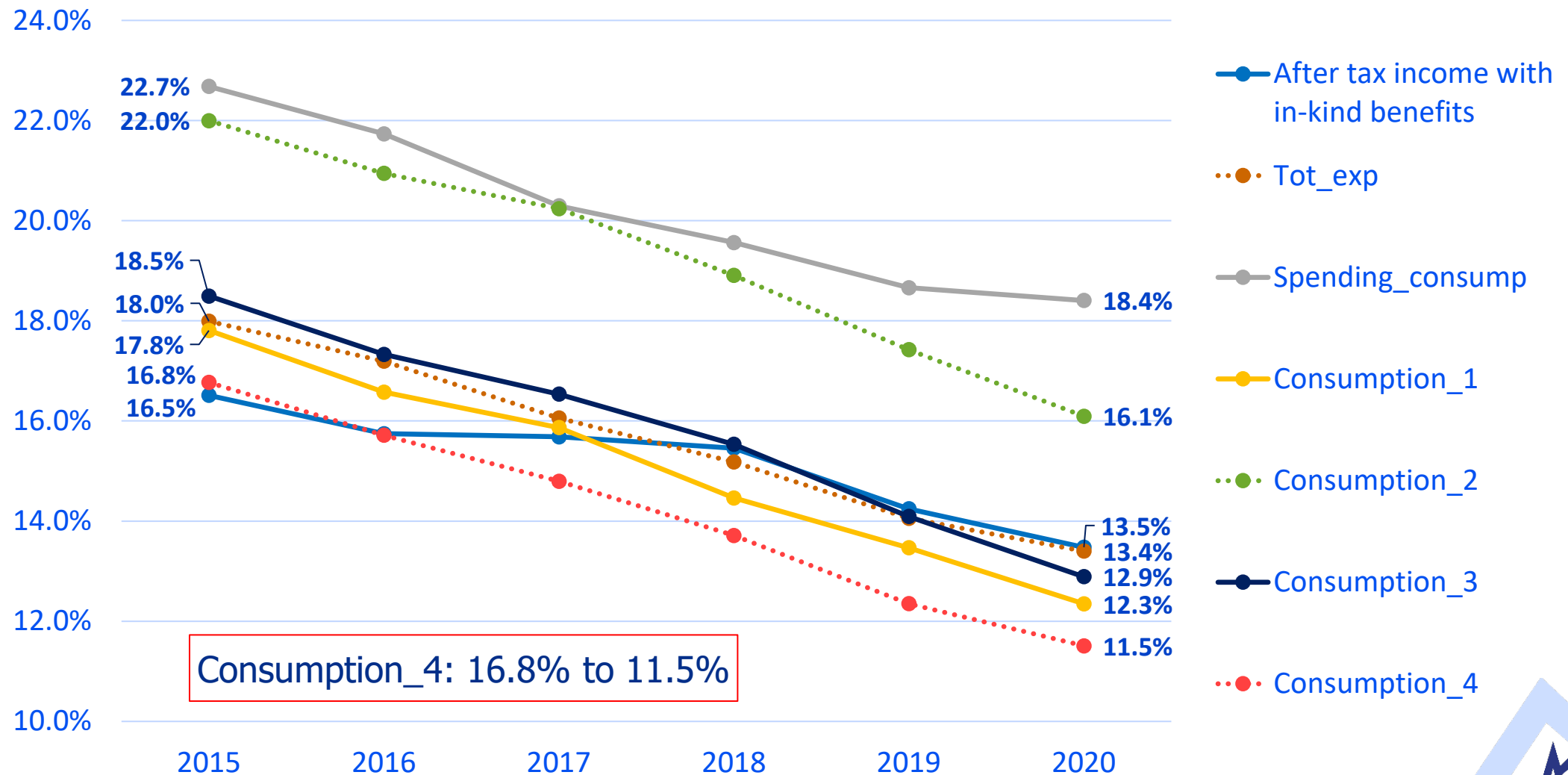
Based on Purely Relative Thresholds: 2015-2020



Change in Poverty Rates Based on Purely Relative Thresholds: 2015-2020



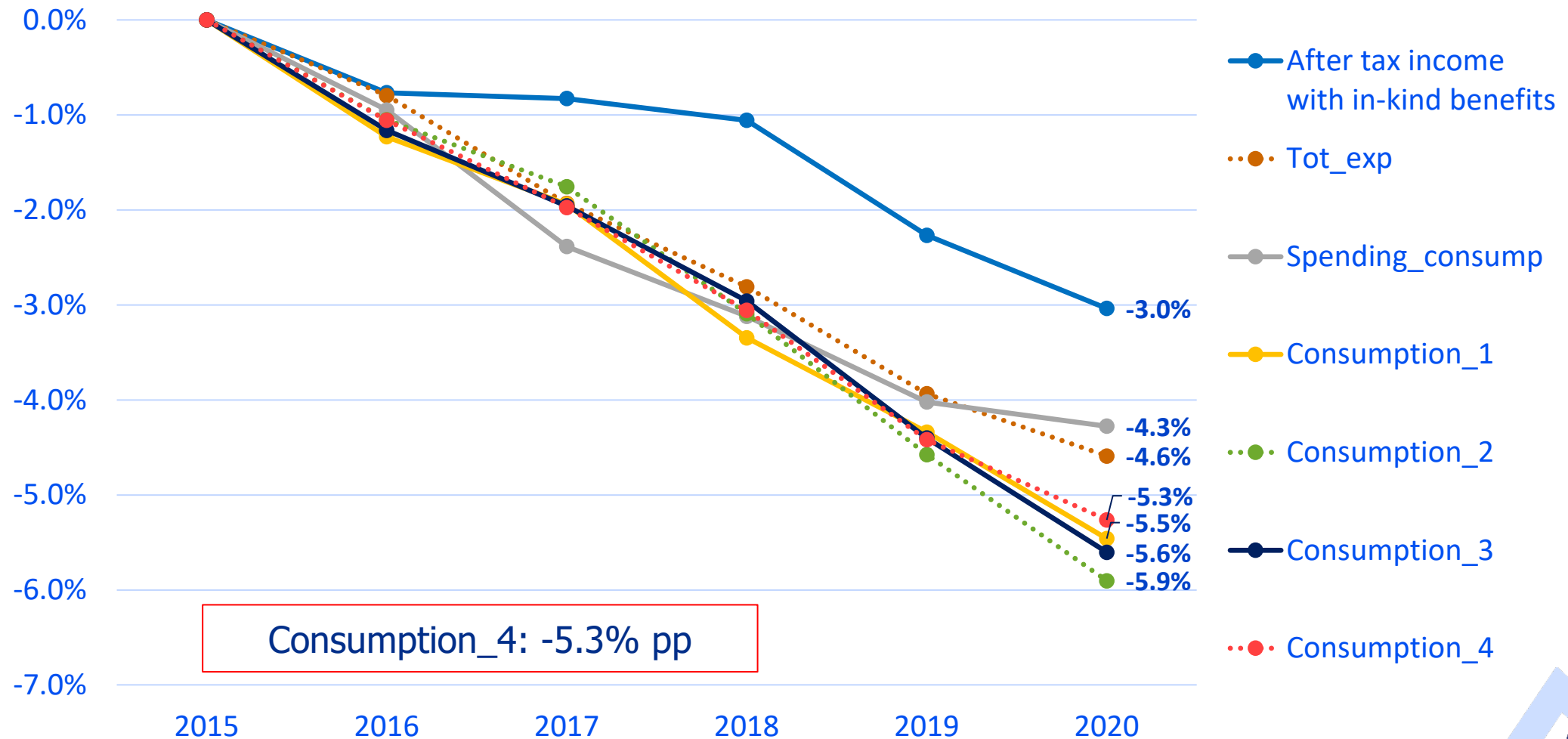
Poverty Rates Based on Absolute Thresholds that Equal 2015 Threshold for Consumption_4 Updated by C-CPI-U: 2015-2020



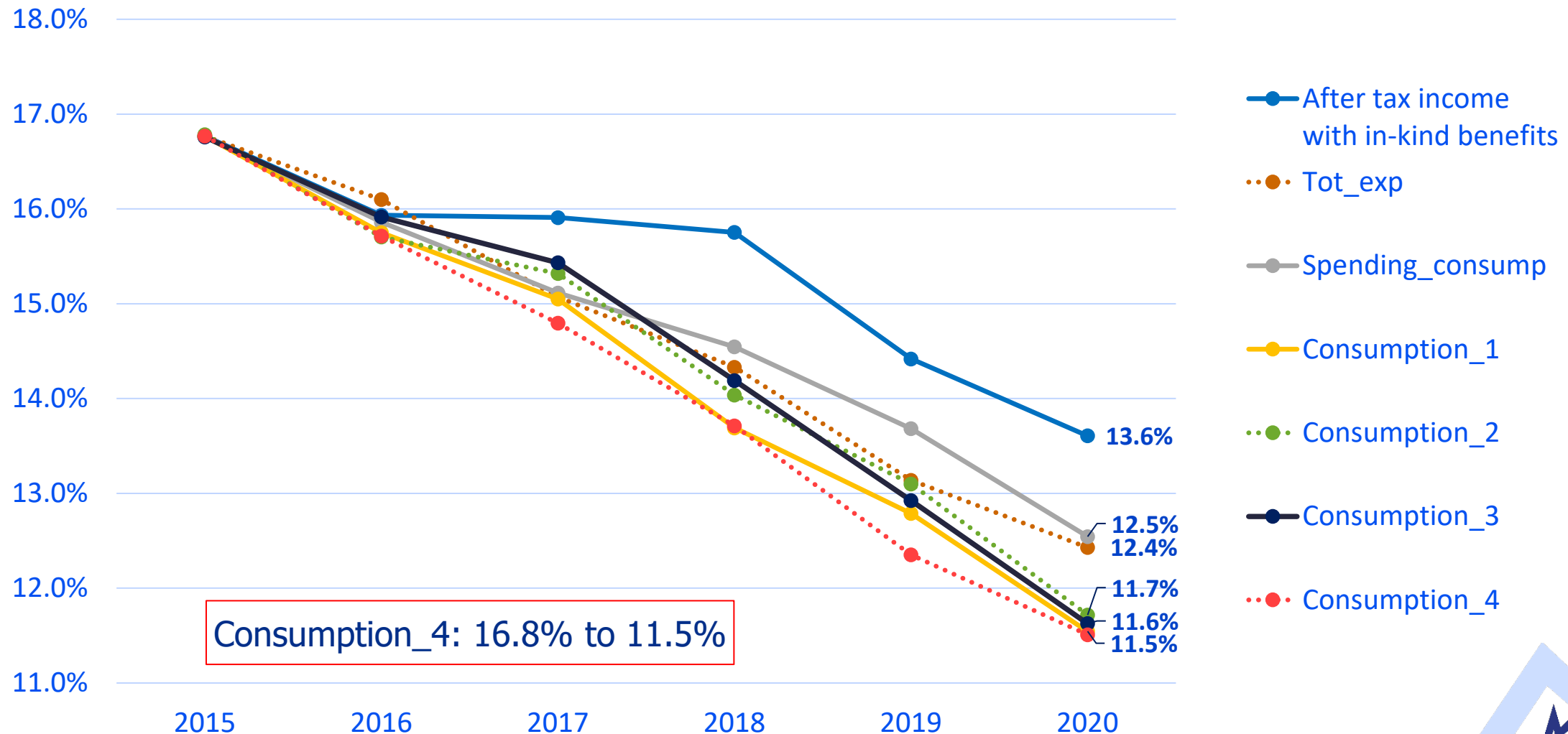
Consumption_4: 16.8% to 11.5%



Change in Poverty Rates for Absolute Thresholds Anchored to 2015 Threshold for Consumption_4 Updated by C-CPI-U: 2015-2020



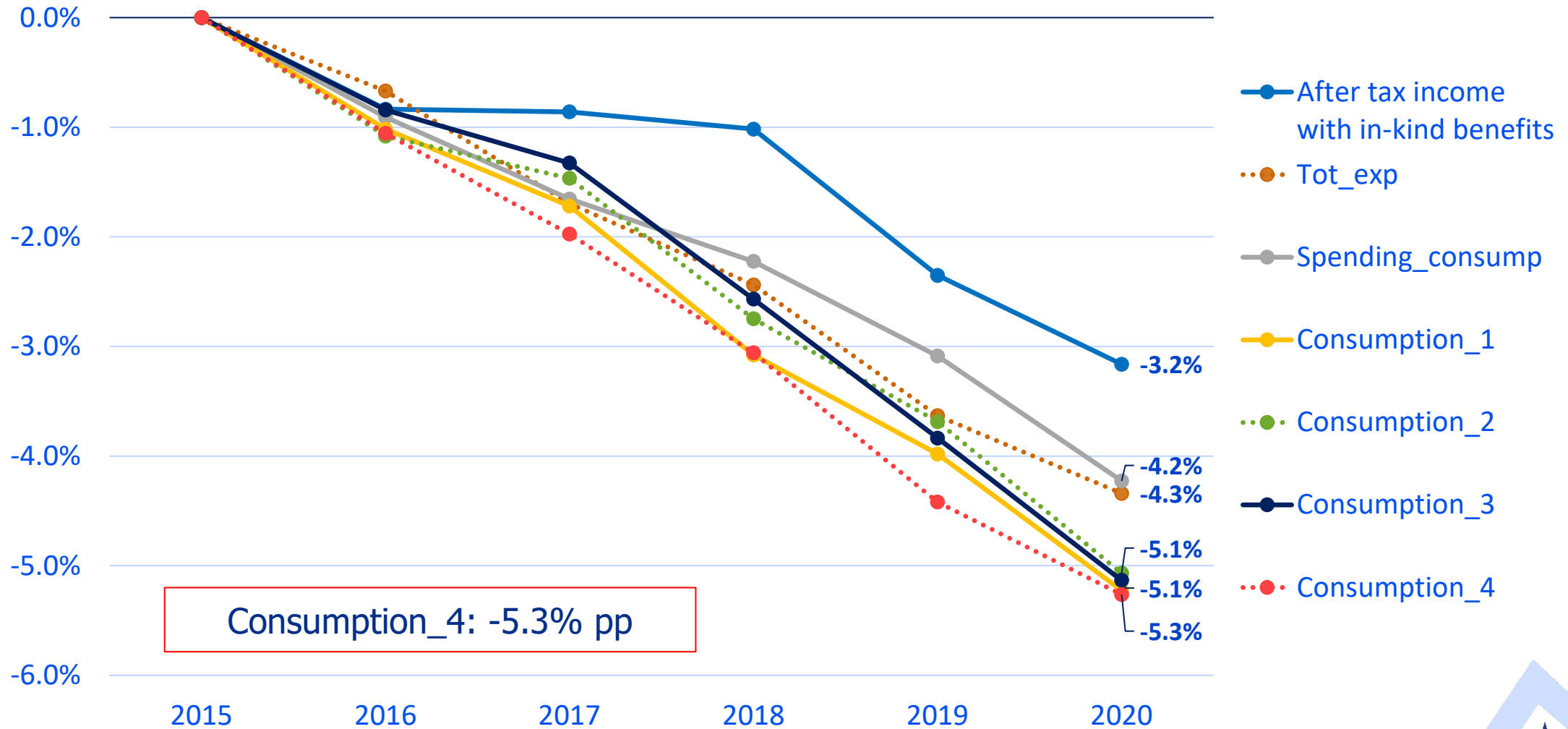
Poverty Rates Based on Absolute Thresholds for 2015 Set to Levels that Result in Same Poverty Rates as for 2015 Consumption_4 Rate (16.8%): 2015-2020



Consumption_4: 16.8% to 11.5%



Change in Poverty Rates Based on Absolute Thresholds Set to Levels that Result in Same Rates as 2015 Consumption_4 Poverty Rate (16.8%): 2015-2020



Income Poor, Consumption Poor, or Both?

Rates Based on Thresholds Set to Levels that Result in Same Rates as 2015 Consumption_4 Rate (16.8%)

2015

		After Tax Income Poor	
		Yes	No
Consumption_4 Poor	Yes	7.9%	8.9%
	No	8.9%	74.3%

Income Poverty Rate 16.7%

Consumption Poverty Rate
16.8%

2020

		After Tax Income Poor	
		Yes	No
Consumption_4 Poor	Yes	4.7%	6.8%
	No	8.9%	79.6%

Income Poverty Rate 13.6%

Consumption Poverty Rate
11.5%



Demographic Characteristics of the U.S. Population Compared to Study-defined Poor: 2015

Characteristics	U.S. Population	Below Consumption_4 Threshold	Below After-Tax Income with In-kind Benefits Threshold	Below Both Income and Consumption Thresholds
<i>Race</i>				
White non-Hispanic	64.7%	47.7%	49.6%	45.9%
Black non-Hispanic	12.5%	20.9%	19.4%	21.7%
Hispanic	16.3%	25.5%	24.2%	26.8%
Other	6.5%	5.7%	6.9%	5.6%
<i>Degree of Urbanization</i>				
Central City	34.4%	42.4%	41.2%	43.1%
Other Urban Areas	46.5%	33.7%	39.8%	35.3%
Rural Areas	19.2%	23.9%	19.1%	21.7%
<i>Education</i>				
Less than High School Graduate	13.0%	31.6%	28.4%	37.2%
High School Graduate	23.4%	32.2%	29.3%	30.8%
Some College	21.6%	21.7%	23.2%	20.9%
Associates Degree or Higher	42.0%	14.5%	19.1%	11.0%

Demographic Characteristics of the U.S. Population Compared to Poor: 2015

Characteristics	U.S. Population	Below Consumption_4 Threshold	Below After-Tax Income with In-kind Benefits Threshold	Below Both Income and Consumption Thresholds
<i>CU Member in Age Group</i>				
0-17 years old	51.2%	64.6%	53.5%	62.3%
<i>Marital Status</i>				
Single Mother	5.8%	11.4%	13.4%	14.6%
Married Couple Only	17.8%	4.7%	8.8%	4.3%
Married Couple with Others	44.0%	42.4%	30.0%	32.5%
<i>CU Earner Composition</i>				
Reference Person OR Spouse Only	27.9%	31.4%	37.0%	36.4%
Reference Person AND Spouse Only	26.2%	10.4%	5.7%	4.2%
No Earners	14.7%	20.6%	34.5%	33.3%



Material Standards of Living for the U.S. Population Compared to Poor: 2015

Characteristics	U.S. Population	Below Consumption_4 Threshold	Below After-Tax Income with In-kind Benefits Threshold	Below Both Income and Consumption Thresholds
<i>Housing Tenure</i>				
Owner with Mortgage	41.5%	17.4%	17.3%	10.3%
Owner without Mortgage	23.9%	17.9%	23.5%	17.3%
Renter	34.7%	64.6%	59.3%	72.4%
<i>Vehicle Ownership</i>				
Own Any Vehicle	89.3%	72.3%	71.5%	61.1%
Own a Car or Truck	87.5%	67.9%	69.6%	58.0%
<i>Health Insurance</i>				
Private Insurance Only	50.1%	23.6%	18.2%	14.3%
Medicare Only	3.5%	3.7%	4.7%	3.7%
Medicaid Only	8.5%	23.1%	22.7%	28.7%
Private and Public	26.5%	29.0%	30.1%	27.2%
Medicare and Medicaid Only	3.0%	7.5%	9.9%	10.9%
No Insurance	8.3%	13.1%	14.4%	15.1%

In-kind Transfer and Poverty Gap Characteristics of the U.S. Population Compared to Poor: 2015

Characteristics	U.S. Population	Below Consumption_4 Threshold	Below After-Tax Income with In-kind Benefits Threshold	Below Both Income and Consumption Thresholds
<i>Presence of In-kind Benefits</i>				
LIHEAP	3.5%	9.2%	13.0%	15.7%
NSLP	30.9%	49.1%	42.1%	50.5%
WIC	4.6%	11.1%	9.8%	12.1%
Rental Assistance	4.2%	10.2%	13.8%	16.3%
<i>Poverty Gap (difference in Threshold and Resource)</i>				
Consumption	NA	\$783	\$441	\$939
Income	NA	\$626	\$1,305	\$1,334

Summary and Conclusions

- Present broader consumption measure that is more in-line with the theoretical measurement objective than measures based on household expenditures or consumption spending alone
- Median total expenditures and consumption follow similar trends
- Relative poverty, in general, decreases as the consumption measure becomes more comprehensive
- For anchored poverty rate thresholds, poverty rate for the income poor decreases by less than the poverty rate for the Consumption_4 poor
 - ▶ Surprising result, given that median income increased faster than median Consumption_4
 - ▶ Possibly explained by the relative size of the poverty gaps for each measure: poverty gap for income poor is larger than poverty gap for consumption_4 poor
 - ▶ Thus, a larger level change in median income may not lead to a larger reduction in income poverty



Future Work

- For consumption measure
 - ▶ Impute market rents for housing units that are occupied without payment of cash rent (cutenure=5)
 - ▶ Produce a consumption measure that includes health insurance
 - ▶ Expand back to 2009 (same year for which imputed in-kind benefits are being imputed for production of SPM thresholds)
 - ▶ Incorporate data from CE Diary Survey
- For income measure: expand back to at least 2014 when BLS fully implemented the use of TAXSIM to estimate federal and state income taxes imputed with TAXSIM
- Compare to the consumption measures created by others



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BLS Consumption Measure for Poverty: Details

Spending/Consumption Measure	Variable Name	Base	Subtraction	Addition
Total Expenditures	tot_exp	Total Expenditures CE Publication Definition		-
Consumption Expenditures	spending_consump	tot_exp	Cash contributions; life, endowment, annuities, and other personal insurance; retirement, pensions, and Social Security.	
Consumption with Rental Equivalence of Primary Residence	consumption_1	spending_consump	Owner expenses for primary residence; Purchases of stoves, refrigerator/freezer, dishwasher, clothes washer/dryer AC window units for all; all expenses associated with vacation homes including utilities	Rental equivalence of primary residence
Consumption with All Rental Equivalences	consumption_1V	consumption_1		rental equivalence of vacation homes (but not time shares) and vacation home utilities
Consumption with All Rental Equivalence minus Health and Education	consumption_2	consumption_1V	Expenditures for: health; education; housing while away at school; daycare centers, nursery, pre-school	
Consumption with Primary Residence and Vacation Home Rental Equivalence, Flow of Services from Cars and Trucks, minus Health, Education, Vehicle Purchases and Vehicle Finance Charges	consumption_3	consumption_2	All vehicle purchases; vehicle finance charges; motorized vehicles for entertainment	Flow of services from cars and trucks
Consumption with Primary Residence and Vacation Home Rental Equivalence, Flow of Services from Cars and Trucks, In-kind Benefits minus Health, Education, Vehicle Purchases and Vehicle Finance Charges	consumption_4	consumption_3		LIHEAP, NSLP, rental assistance, WIC In-kind transfers