

An Analysis of Poverty Through a Consumption Lens: Research from the U.S. Bureau of Labor Statistics

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Co-authored with Brett Matsumoto and Jake Schild

2024 APPAM Fall Research Conference

November 21, 2024

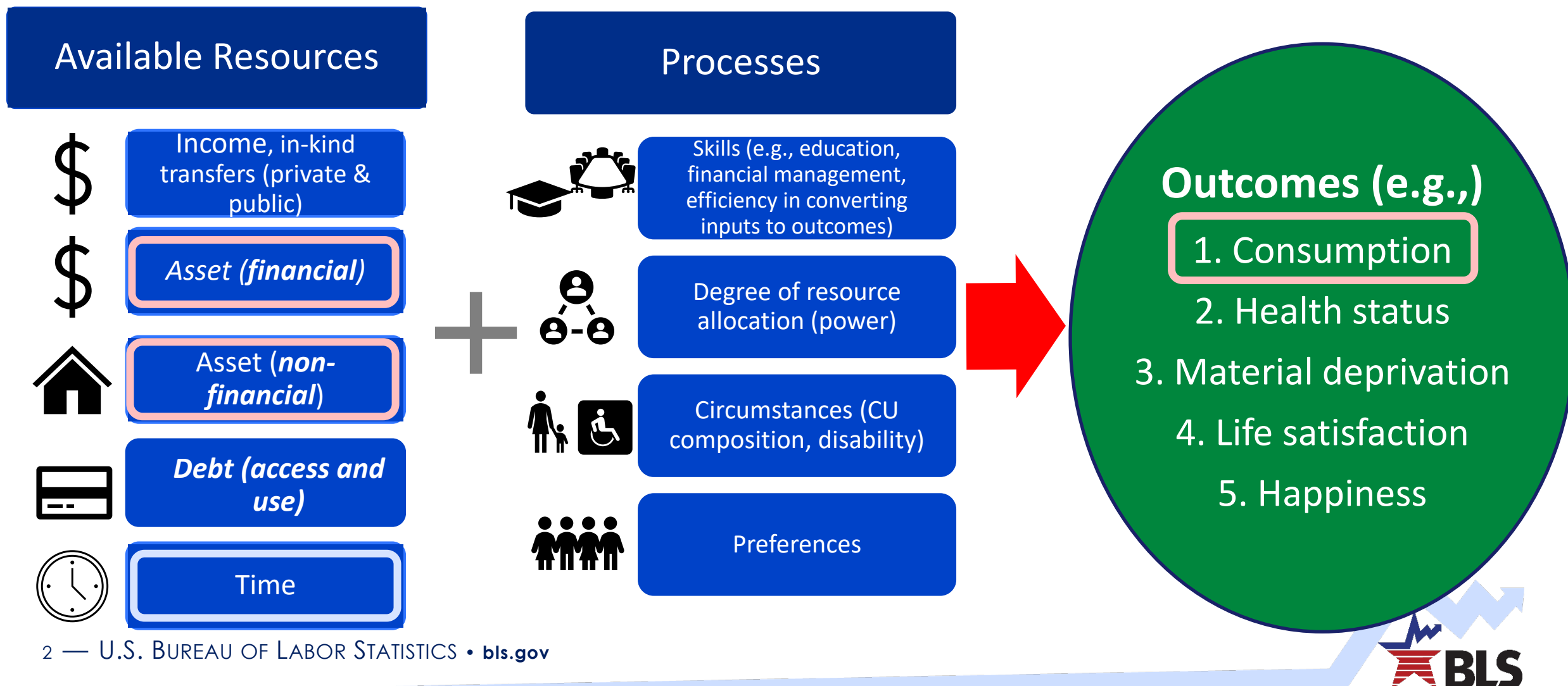
On Poverty and Economic Hardships in the United States

3:30 – 5:00 p.m.

Discussant: Lauren Toppenberg



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

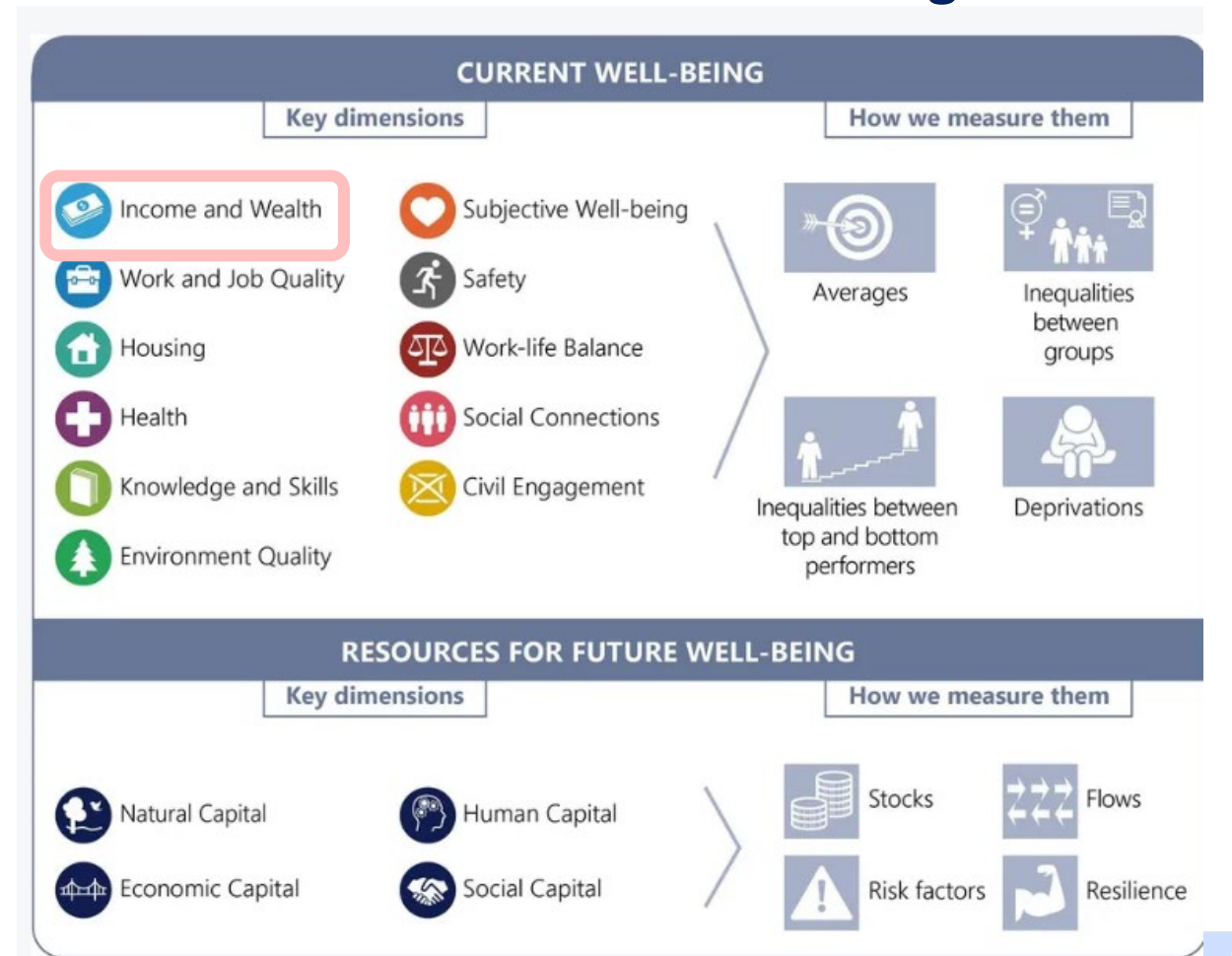


Consumption is Only Part of the Puzzle

Inconsistency Across Measures

- Consumption > expenditures
 - ▶ Own home without debt
- Consumption > income
 - ▶ Fund with debt (credit cards, loans)
 - ▶ Liquidate savings
 - ▶ Borrow from own savings or home equity
- Consumption high but
 - ▶ Low economic security
 - ▶ Difficulty meeting expenses
- ❖ Joint distributions: Distributional national accounts, Material Conditions Index, etc.

OECD Multidimensional Well-being



<https://www.oecd.org/en/topics/well-being-and-beyond-gdp.html>

Why Produce Consumption Measures?

■ Alternative measure of well-being based on outcomes

- ▶ Supports work and recommendations on OECD joint distributions of income, consumption, and wealth (micro and macro groups)
- ▶ Allows us to go beyond expenditures to consumption and ultimately to include the value of home production (time allocation) for own consumption

■ Poverty and inequality measurement

- ▶ Supports the work of the Interagency Technical Working Group (ITWG) on Evaluating Alternative Measures of Poverty (2020)
- ▶ Follows along with the CNSTAT panel (2023) focus on consumption needs as does the proposed Principal Poverty Measure
- ▶ In-development Luxembourg Consumption Study (LCS) – international
- ▶ Related to Meyer, Han, and Sullivan (2024), Fisher et al. (2015, 2022) but different assumptions; and Bahk, Fitzgerald, and Moffitt (SEA 2024)

❖ Presented at professional meetings (e.g., APPAM 2023), published in Monthly Labor Review & BLS Working Paper Series



Consumption Expenditures vs Consumption

Consumption Expenditures=

- What is spent or obligated for consumption

Consumption=

- The value of what is consumed

Implications for...

- | | |
|---|---|
| ■ Owned shelter | ■ Problem categories (investment vs consumption) |
| ■ Durables | ▶ Education |
| ■ In-kind transfers | ▶ Health |
| ■ Household Production | |
| ■ Gifts and barter of goods and services received | ■ Allocations to pensions, savings, life insurance – deferred consumption |

Data

- Base is U.S. Consumer Expenditure Survey Interview, 2019Q2 through 2024Q1 to represent 2019 through 2023
 - ▶ Approximately 20,000 consumer units (CUs) per quarter (21,280 to 18,871)
- Reference periods define what we refer to as a “year,” e.g., year 2023
 - ▶ Collection period: 2023Q2-2024Q1
 - ▶ Reference period: January 2023-February 2024 defines “2023”
- Assume quarterly data are independent (not restriction based on number of interviews)
- Include imputations based on CE Interview and Diary and other sources
- All results based on population weighting (consumer unit weighting and CU size)



Starting Point for Our Consumption Measure

Flow of Services or Outlays

- Owner's equivalent rent
 - ▶ Primary residence
 - ▶ Second and vacation homes
- Flow of services from stock of cars and trucks owned
- Outlays*
 - ▶ Other transport vehicles (e.g., motorcycles, bicycles, airplanes)
 - ▶ Recreational motorized and non-motorized vehicles (e.g., RVs, boats)

Expenditures

- Food
- Apparel
- Rent and associated expenses
- Other shelter
- Utilities
- Health insurance premiums
- Other transportation
- Other entertainment
- Diary only categories*

*introduced since April 2023

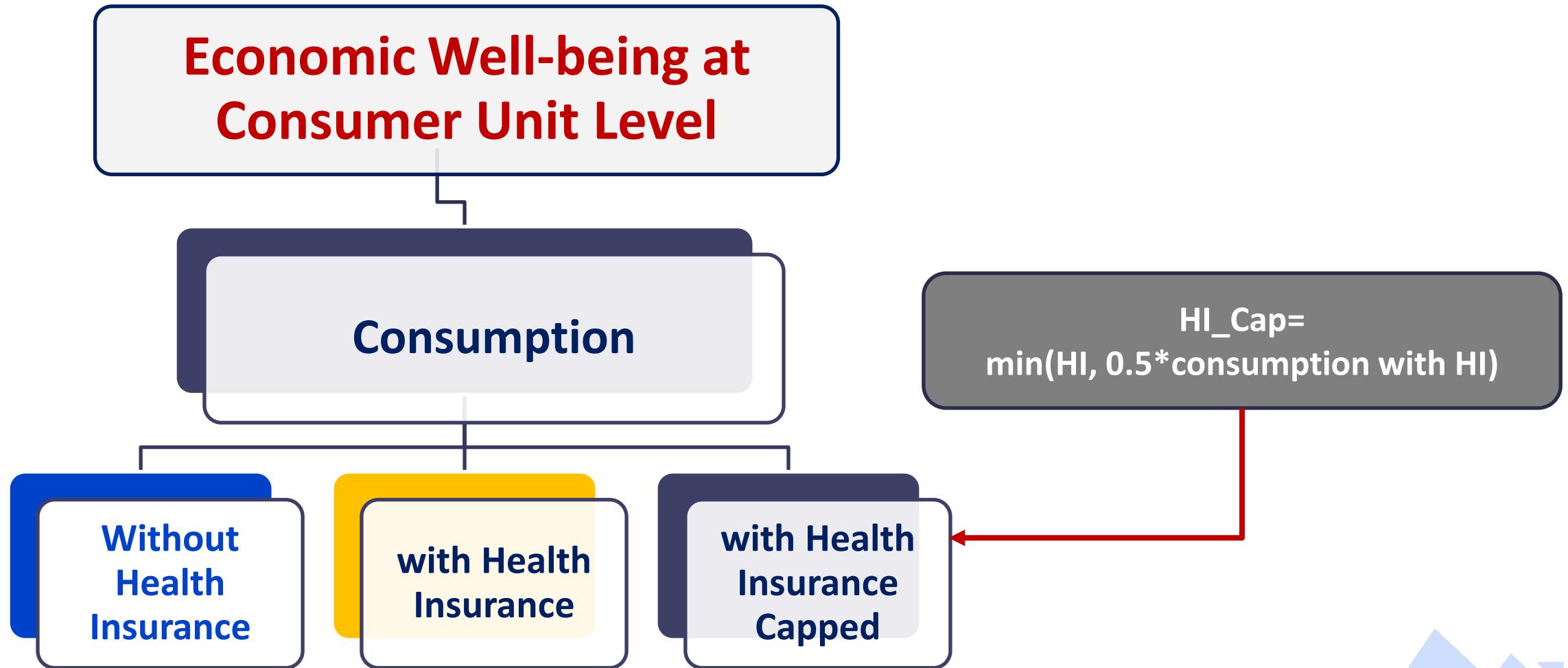


Imputations

- Based on Interview data alone
 - ▶ Rental subsidies - Interview data
 - ▶ Flow of services from stock of owned cars and trucks
 - Estimate depreciation and fixed rate for opportunity costs
 - ▶ 2023Q2-2024Q1: Food at home as 80% of global grocery expenditures (CE Program recommendation)*
- Based on Diary data*
 - ▶ Diary only expenditures (e.g., postage stamps, non-prescription vitamins, newsletters)
- Use of additional data
 - ▶ Value of health insurance – Interview data for reported premiums and
 - MEPS Insurance Component & CMS National Health Expenditure Database
 - ▶ In-kind benefits – broadband (2022&2023), LIHEAP, NSLP, WIC (if EBT=\$0, + infant formula)
 - CPS-ASEC and USDA Administrative Data
 - ▶ College dorm-based room and board - National Center for Education Statistics
 - ▶ Tenants portion of owner shelter insurance – National Association of Insurance Commissioners



Concepts of Consumption for Poverty Analysis



NOTE: None of these measures include "Education"

Poverty Measurement and Analysis

■ Thresholds

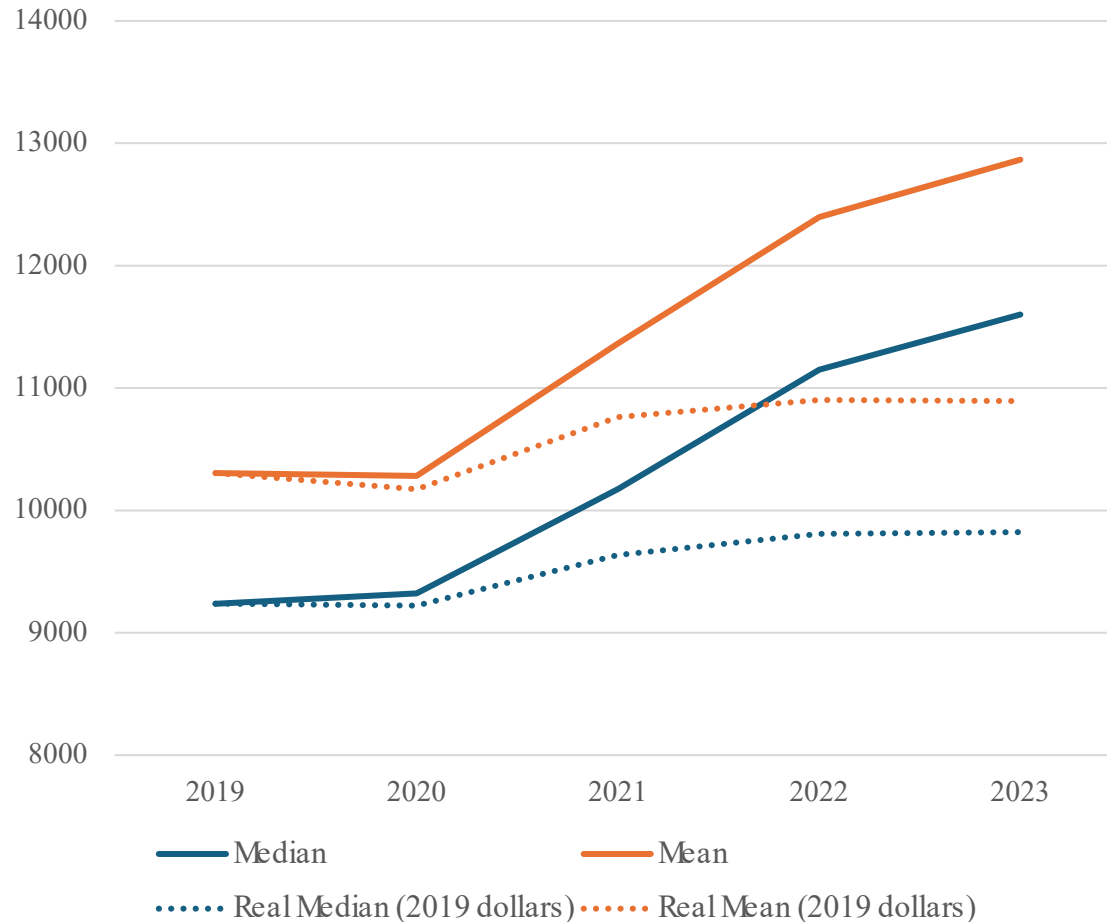
- ▶ Relative threshold based on 60% of median equivalized (3-parameter) consumption with health insurance capped
- ▶ Anchored relative threshold, anchored to 2019 relative threshold and updated using Chained CPI-U

■ Poverty Statistics (Foster-Greer-Thorbecke, 1984)

- ▶ Headcount rates: percent of individuals below the poverty line
- ▶ Average poverty intensity: average poverty gap relative to the threshold (only for poor)
- ▶ Poverty severity: how poor the poorest is relative to the average poor

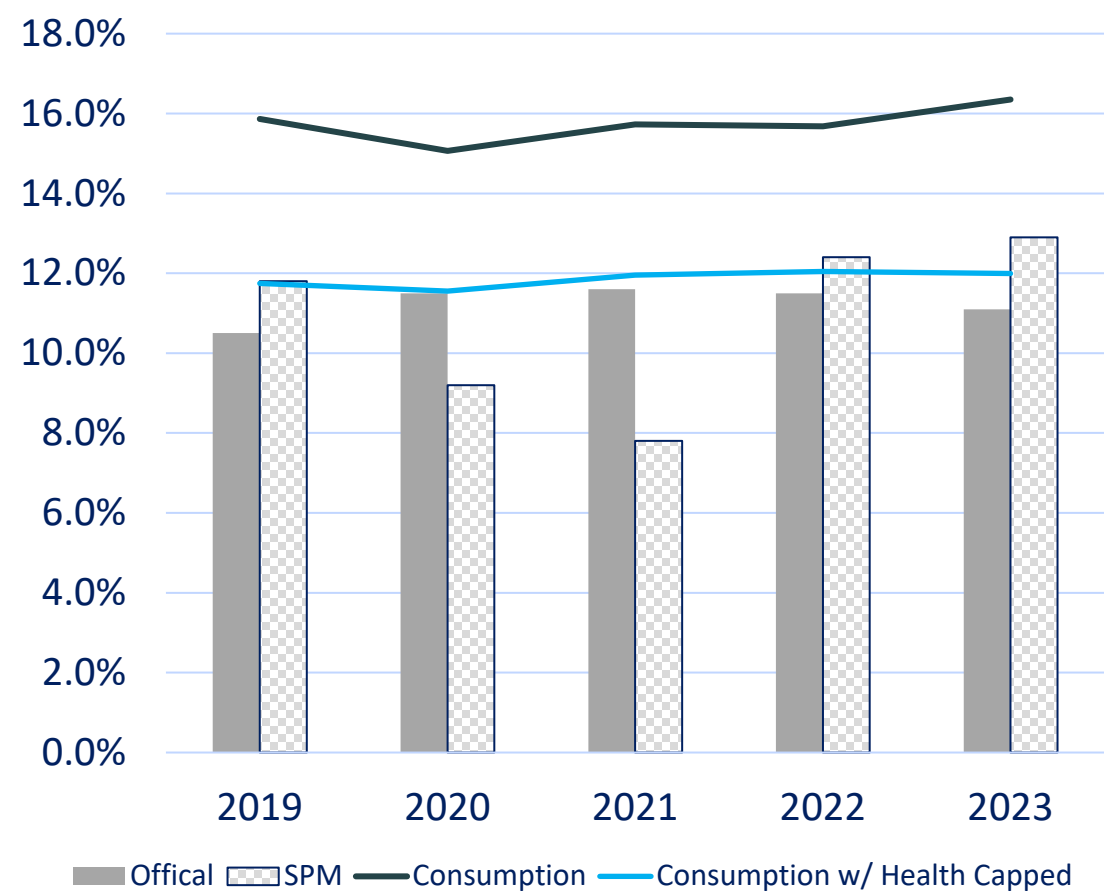
■ Oaxaca-Blinder decomposition of poverty rate

Over Time: Quarterly Equivalized Means and Medians



- Small declines in real mean and median consumption with health insurance capped in 2020.
- Large impact of inflation on 2021-2023 nominal values.

Poverty Rates Using Yearly Relative Threshold for Total Population: Consumption without vs Consumption with Health Capped



2019

		Con w/ HI Poor	
		No	Yes
Con Poor	No	81.1%	3.0%
	Yes	7.2%	8.7%

2023

		Con w/ HI Poor	
		No	Yes
Con Poor	No	80.9%	2.8%
	Yes	7.1%	9.2%

NOTE: Thresholds based on quarterly adult equivalized values; population weighted (FINLWT21*Csiz); consumption with health insurance capped at 50% of total; measures do not include education



Crosstabulation Demographics, 2023: Consumption without vs Consumption with Health Capped

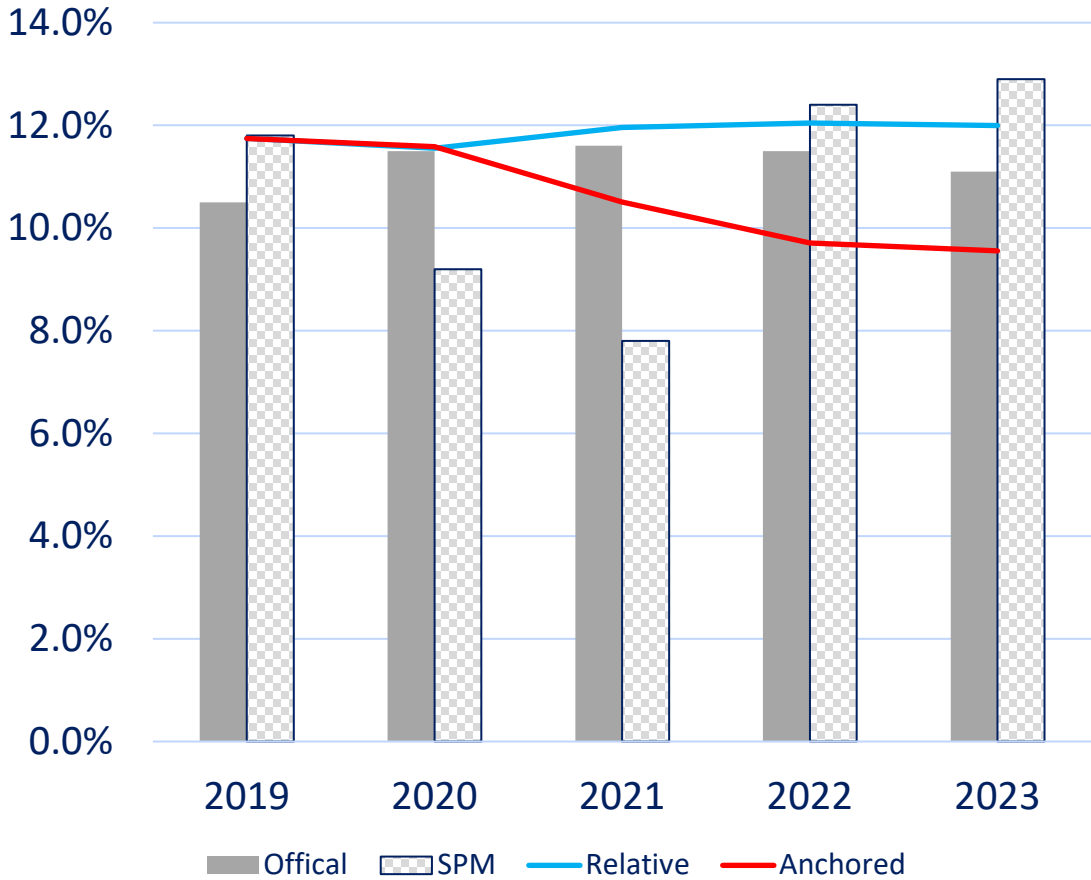
■ Age

Under 18				18 to 64				Over 64			
		Con w/ HI Poor				Con w/ HI Poor				Con w/ HI Poor	
		No	Yes			No	Yes			No	Yes
Con Poor	No	75.8%	3.3%	Con Poor	No	81.2%	3.3%	Con Poor	No	86.3%	0.5%
	Yes	9.8%	11.2%		Yes	5.7%	9.8%		Yes	8.5%	4.8%

■ Work Status

Employed				Retired				Unemployed or Not Working			
		Con w/ HI Poor				Con w/ HI Poor				Con w/ HI Poor	
		No	Yes			No	Yes			No	Yes
Con Poor	No	82.4%	3.3%	Con Poor	No	83.7%	0.5%	Con Poor	No	45.4%	0.9%
	Yes	5.6%	8.8%		Yes	10.5%	5.4%		Yes	24.3%	29.3%

Consumption with Health Insurance Capped Poverty Rates for Total Population: Relative vs Anchored Thresholds



2022			
		Anchored	
		No	Yes
Relative	No	88.0%	0.0%
	Yes	2.3%	9.7%

2023			
		Anchored	
		No	Yes
Relative	No	88.0%	0.0%
	Yes	2.4%	9.6%

NOTE: Thresholds based on quarterly adult equivalized values; population weighted (FINLWT21**Cusize*); consumption with health insurance capped at 50% of total; measures do not include education



Consumption with Health Insurance Capped

Poverty Statistics for Total Population

(using Anchored Thresholds)

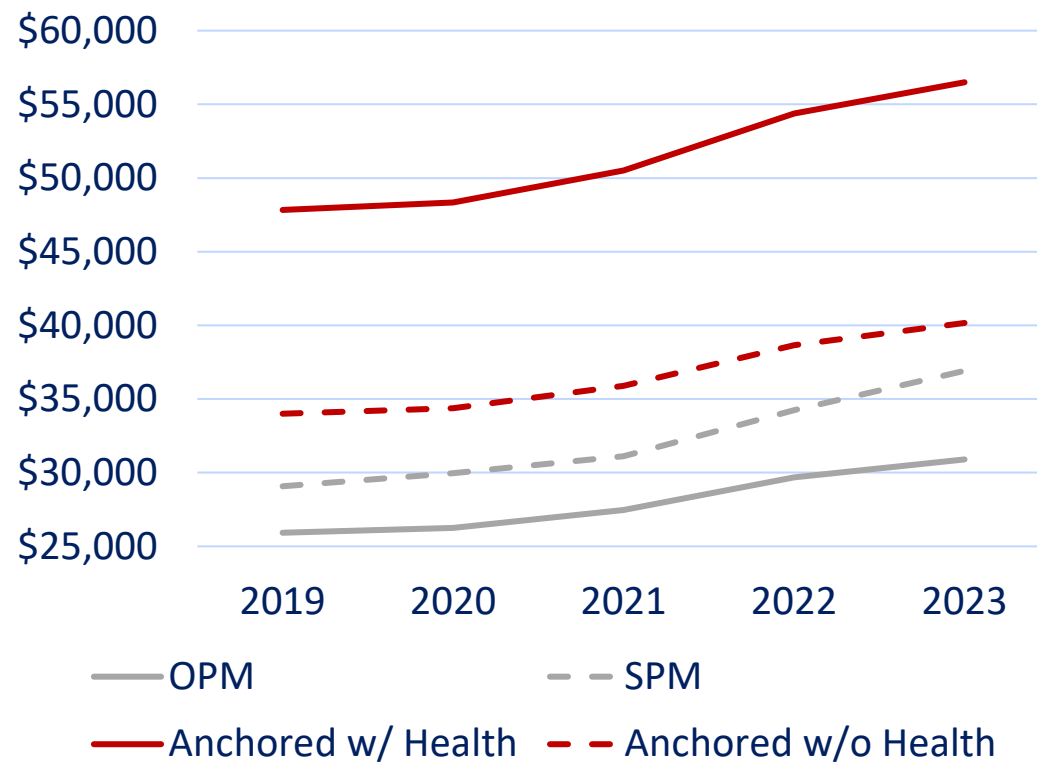
Year	Head Count	Intensity	Severity
2019	11.7%	2.5%	0.9%
2020	11.6%	2.5%	0.9%
2021	10.5%	2.2%	0.7%
2022	9.7%	2.0%	0.6%
2023	9.6%	2.0%	0.7%

NOTE: Thresholds based on quarterly adult equivalized values; population weighted (FINLWT21*Cusize); consumption with health insurance capped at 50% of total; measures do not include education

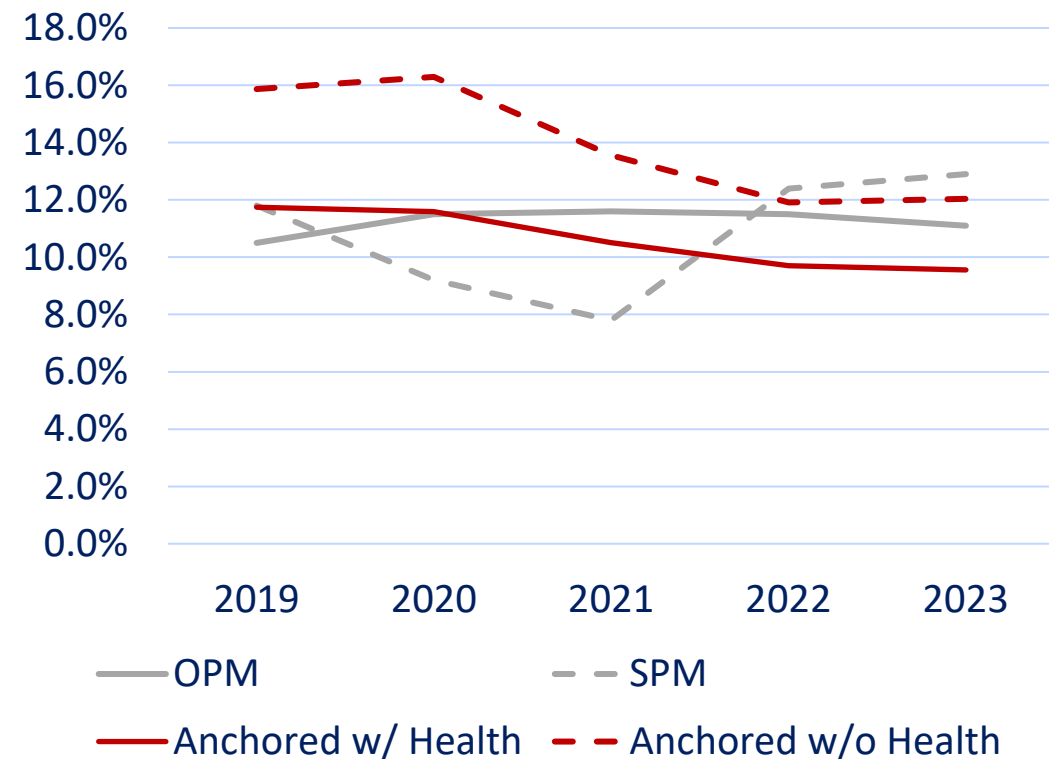


Comparative Thresholds and Poverty Rates

2 Adults with 2 Children Thresholds



Population Poverty Rates



NOTE: SPM thresholds not geographically adjusted



Decomposition of Poverty Rate (using Anchored Threshold)



Oaxaca-Blinder Decomposition

- Regress poverty status (0,1) in each year on a set of demographic variables to estimate β_t^k :

$$Poverty_{i,t} = \sum_k \beta_t^k X_{i,t}^k + \epsilon_{i,t}$$

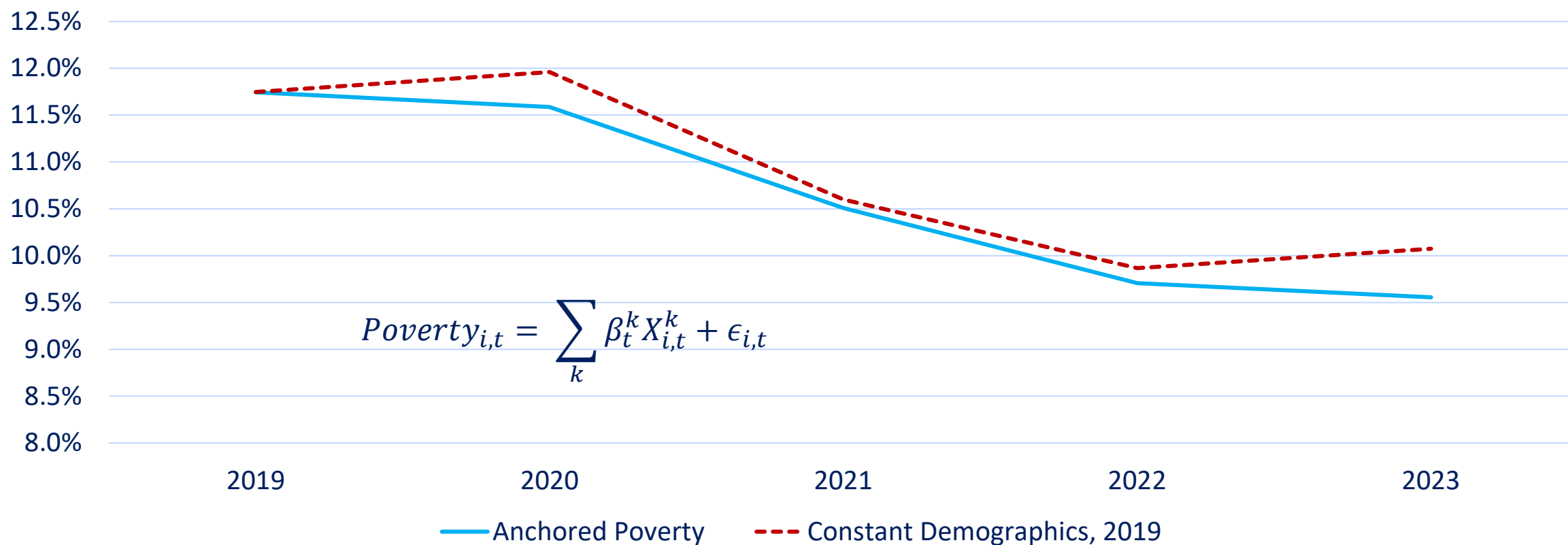
- Change in average poverty status (=rate) decomposed into changes due to demographics and changes in the coefficients:

$$\overline{Poverty}_{t+1} - \overline{Poverty}_t = \sum_k \beta_{t+1}^k (\bar{X}_{t+1}^k - \bar{X}_t^k) + \sum_k \bar{X}_t^k (\beta_{t+1}^k - \beta_t^k)$$

Oaxaca-Blinder Decomposition

- Decomposition for anchored poverty for consumption with health insurance capped
- Live in a CU with characteristics $X_{i,t}^k$ defined in terms of
 - ▶ Reference person characteristics
 - Race/ethnicity, gender, work status, education, and marital status
 - ▶ CU characteristics
 - Housing tenure, consumer unit size, presence of child by age of children, over 65 indicator, urban/rural, and 9 geographic divisions (and for state level COVID response)

Impact Over Time holding Demographic Constant: Difference in Rates Due to Changes in X's



Impact of Education on Poverty Incidence Over Time: Regression Coefficients

Category	2019	2020	2021	2022	2023
Less than HS	-	-	-	-	-
HS grad	-0.129***	-0.100***	-0.099***	-0.114***	-0.091***
Some college or Associates	-0.165***	-0.144***	-0.143***	-0.150***	-0.141***
Bachelor's degree	-0.194***	-0.161***	-0.155***	-0.167***	-0.157***
Advanced degree	-0.194***	-0.163***	-0.152***	-0.157***	-0.146***

B=marginal impact on the likelihood of being poor for demographic groups. e.g. Holding other characteristics constant, Living in a CU with high school graduate ref person reduces the probability of a person being poor by 12.9 % relative to living in a CU with less than hs graduate reference person.

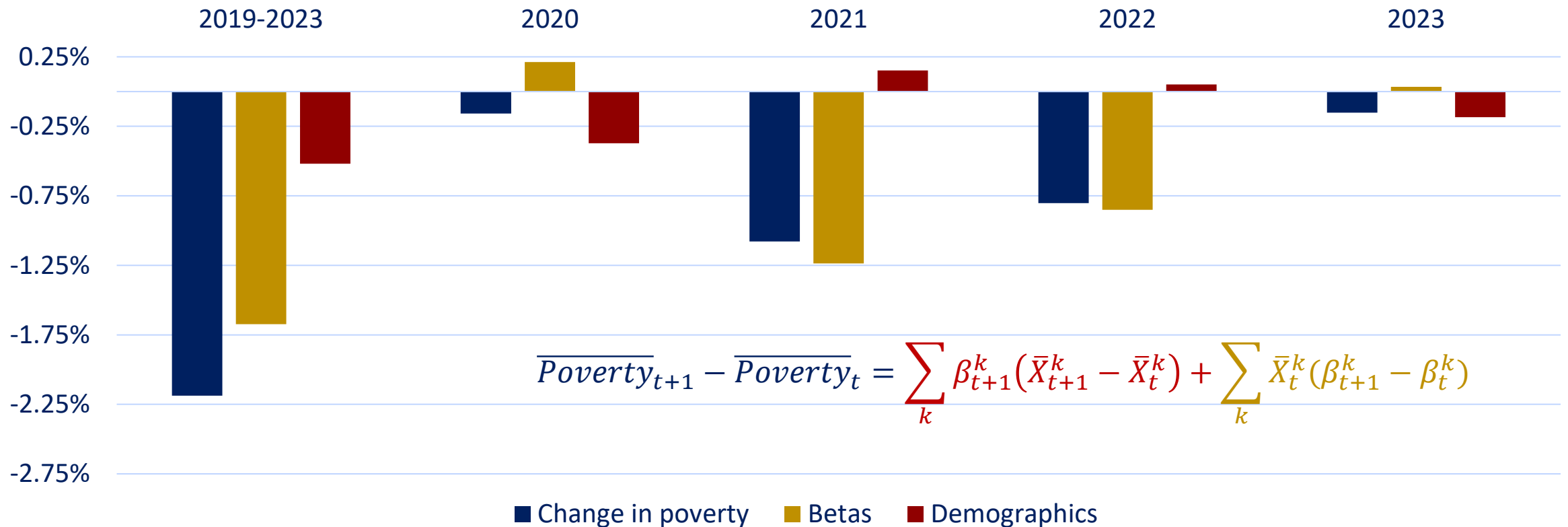
Impact of Children on Poverty Incidence: Regression Coefficients

Category	2019	2020	2021	2022	2023
No Children	-	-	-	-	-
At least 1 child under 6	-0.054***	-0.030*	-0.074***	-0.045***	-0.040**
At least 1 child 6-13, none under 6	-0.064***	-0.035**	-0.087***	-0.030*	-0.051***
At least 1 child 14-17, none under 14	-0.030*	-0.036*	-0.070***	-0.043**	-0.045***

NOTE: Coefficients estimated using population weight (FINLWT21*Cusize); consumption with health insurance capped at 50% of total; measures do not include education; ***p-value < 0.001, **p-value < 0.01, *p-value < 0.05

Decomposition of the Change in Poverty

Percentage Point Contribution to Change in Poverty Relative to Previous Year



$$\overline{Poverty}_{t+1} - \overline{Poverty}_t = \sum_k \beta_{t+1}^k (\bar{X}_{t+1}^k - \bar{X}_t^k) + \sum_k \bar{X}_t^k (\beta_{t+1}^k - \beta_t^k)$$

Gold bars: Greater impact of change in the likelihood of being poor (associated with characteristics) on change in poverty

Next Steps

■ Data improvements

- ▶ Add value of time in home production for own consumption
- ▶ Consider the treatment of education
- ▶ Continuing research on health insurance

■ Research

- ▶ Impact of COVID specific benefits on our measure
- ▶ Add analysis to focus on components of consumption
 - Impact of changes in net worth (use of credit and withdrawals from savings)
- ▶ Expand analysis to other subpopulations impacted by COVID
- ▶ Add comparison of consumption measure to a resource measure that is more consistently defined
 - $\text{Income resources} = \text{After Tax Income} + \text{In-kind Transfers} + \text{Net Implicit Rental Income} + \text{NetHIns(?)}$
 - $\text{Net Implicit Rental Income} = \text{OER} - \text{M\&R} - \text{Property Tax} - \text{Insurance} - \text{ConspFixCap}$



Contact

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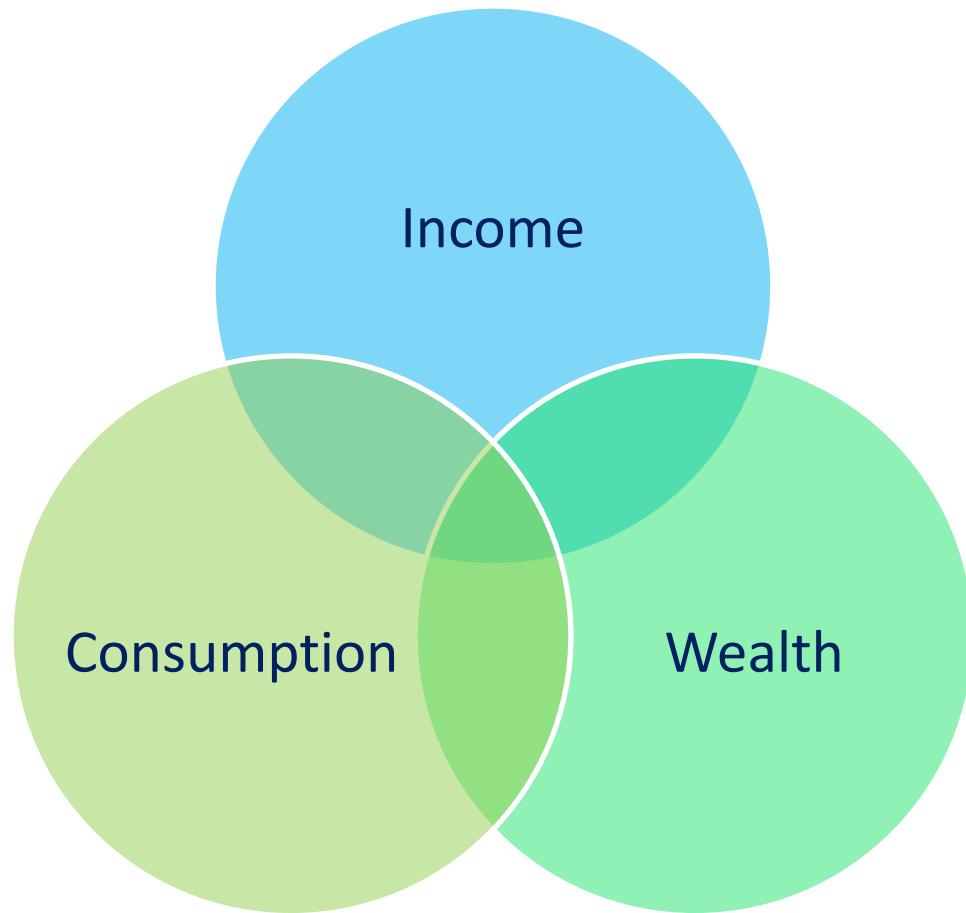
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EXTRA SLIDES



Joint Distributions



- National Accounts framework using distributional PCE and PI to derive distribution savings (Gindelsky and Martin (2024))
- Model-based multidimensional inequality using household level I, C, and W (Fisher et al. 2022)
- Material Conditions Index (MCI) mapping I, C, and W into a single index based on achievements, central tendency, and dispersion (Ruiz 2011; Garner and Short 2013)

Previous Work on BLS Consumption Measure

■ Publications

- ▶ Garner, Thesia I., Brett Matsumoto, Jake Schild, Scott Curtin, and Adam Safir, "Developing a consumption measure, with examples of use for poverty and inequality analysis: a new research product from BLS," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, April 2023, [Developing a consumption measure, with examples of use for poverty and inequality analysis - Monthly Labor Review](#)
- ▶ Cho, Caleb, Brett Matsumoto, and Dominic Smith, "A consumption measure for automobiles," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, January 2024, [A consumption measure for automobiles - Monthly Labor Review](#)
- ▶ Garner, Thesia I., Brett Matsumoto, Jake Schild Consumption Inequality During and After the COVID-19 Pandemic, BLS Working Paper 573 March 2024, [Consumption Inequality During and After the COVID-19 Pandemic - BLS Working Paper](#) --



Data Sources for *Current Consumption Measure*

For Most Goods and Services:

U.S. Consumer Expenditure Survey Interview

- Time period: (T)Q2 to (T+1)Q1 to represent T year
- Interviewed up to 4 times, 3-month recall
- Consumer unit (CU)
- Out-of-pocket spending for most goods and services
- Rental equivalence for owned shelter
- Rent paid & characteristics to impute market rents when in-kind rental assistance
- Stock of cars and trucks to produce flow of services

In-kind Employer Health Insurance Benefits

- Medical Expenditure Panel Survey (MEPS-IC) from the Agency for Healthcare Research and Quality

College Room and Board

- U.S. Department of Education Statistics

Other In-kind Federal Government Benefits

- CPS-ASEC (households/members): reported receipt of government provided in-kind benefits
 - ▶ School meals (NSLP)
 - ▶ Women, infants, and children (WIC)
 - ▶ LIHEAP (receipt and values)
- USDA: food assistance programs
- Center for Medicare and Medicaid Services (CMS) National Health Expenditure (NHE)
 - ▶ Medicare
 - ▶ Medicaid
- National Health Expenditure Tables



Foster-Greer-Thorbecke (1984)

$$FGT_{\alpha} = \frac{1}{N} \sum_{i=1}^N \left(\frac{z - y_i}{z} \right)^{\alpha} \delta\{y_i \leq z\}$$

- z is the poverty threshold
- N is the total number of people
- H is the number of poor (those with a measure at or below z)
- y_i is the measure of each individual i
- δ is an indicator function that assigns 1 if $y_i \leq z$ and 0 otherwise
- α is a non-negative constant

Consumption Expenditures vs Consumption: Key differences

- Durables – expenditure vs flow of services
- In-kind transfers
- Household Production
- Gifts and barter
- Problem categories (investment vs consumption):
 - ▶ Education
 - ▶ Health
- See Monthly Labor Review article for additional info

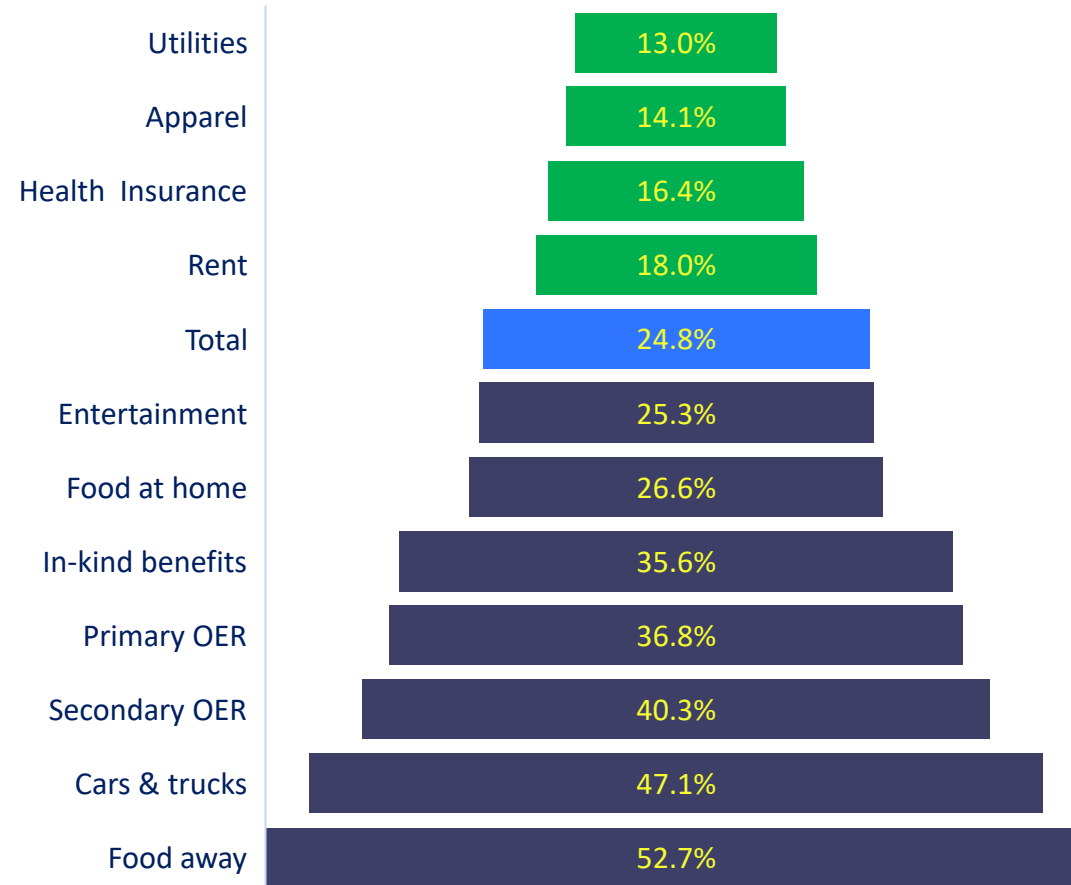
Results

- Basic statistics

- Poverty

- ▶ Consumption with and without health insurance
- ▶ Relative versus anchored thresholds
- ▶ Poverty rate decomposition

Percent Change in Mean Nominal Consumption with Health Insurance Capped: 2019 to 2023



Poverty Statistics

(Foster-Greer-Thorbecke, 1984)

■ Headcount rates

$$FGT_0 = \frac{H}{N}$$

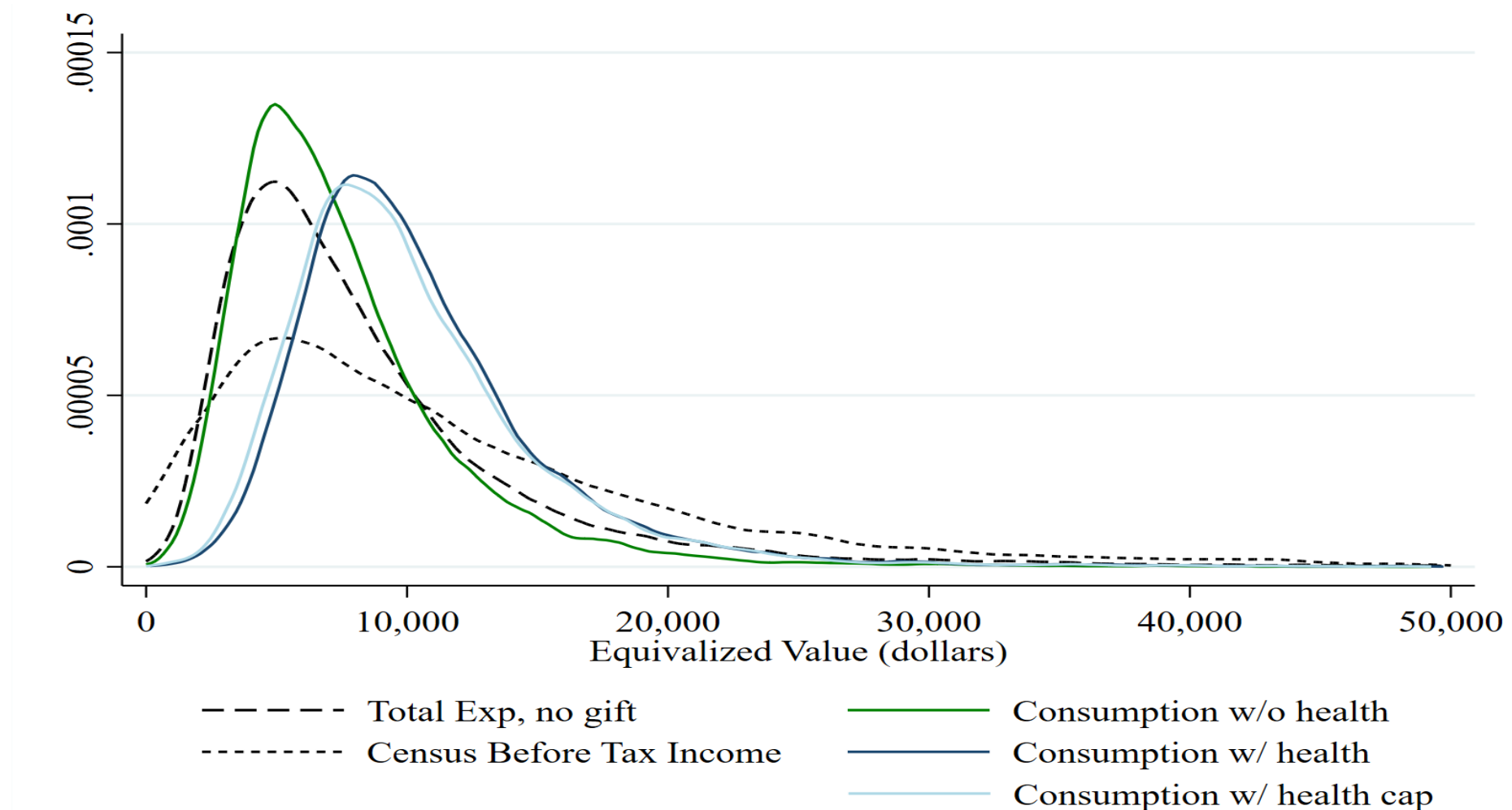
■ Poverty intensity

$$FGT_1 = \frac{1}{N} \sum_{i=1}^H \left(\frac{z - y_i}{z} \right)$$

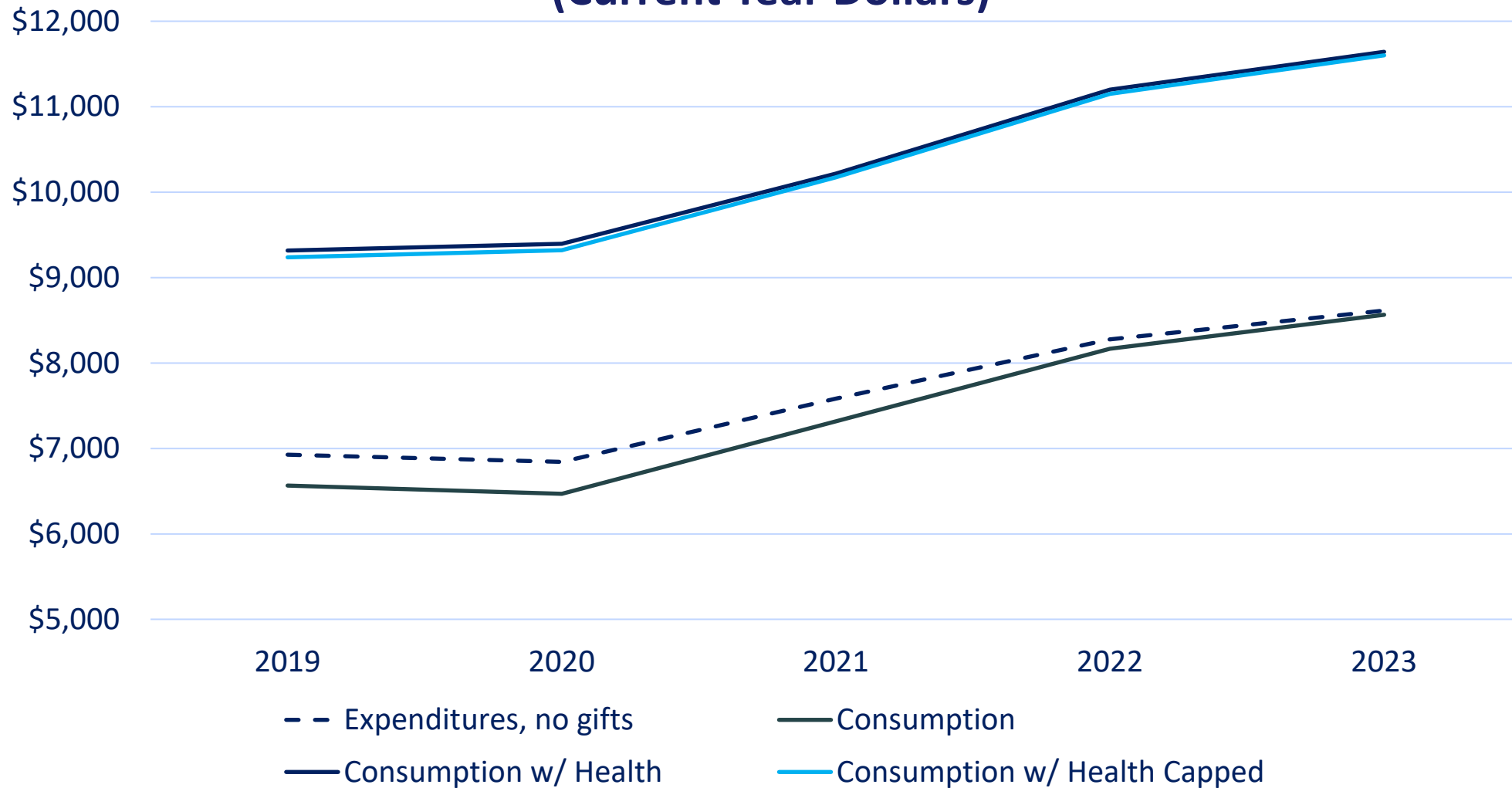
■ Poverty severity

$$FGT_2 = \frac{1}{N} \sum_{i=1}^H \left(\frac{z - y_i}{z} \right)^2$$

Quarterly Equivalized Consumption, Spending, and Income for 2019



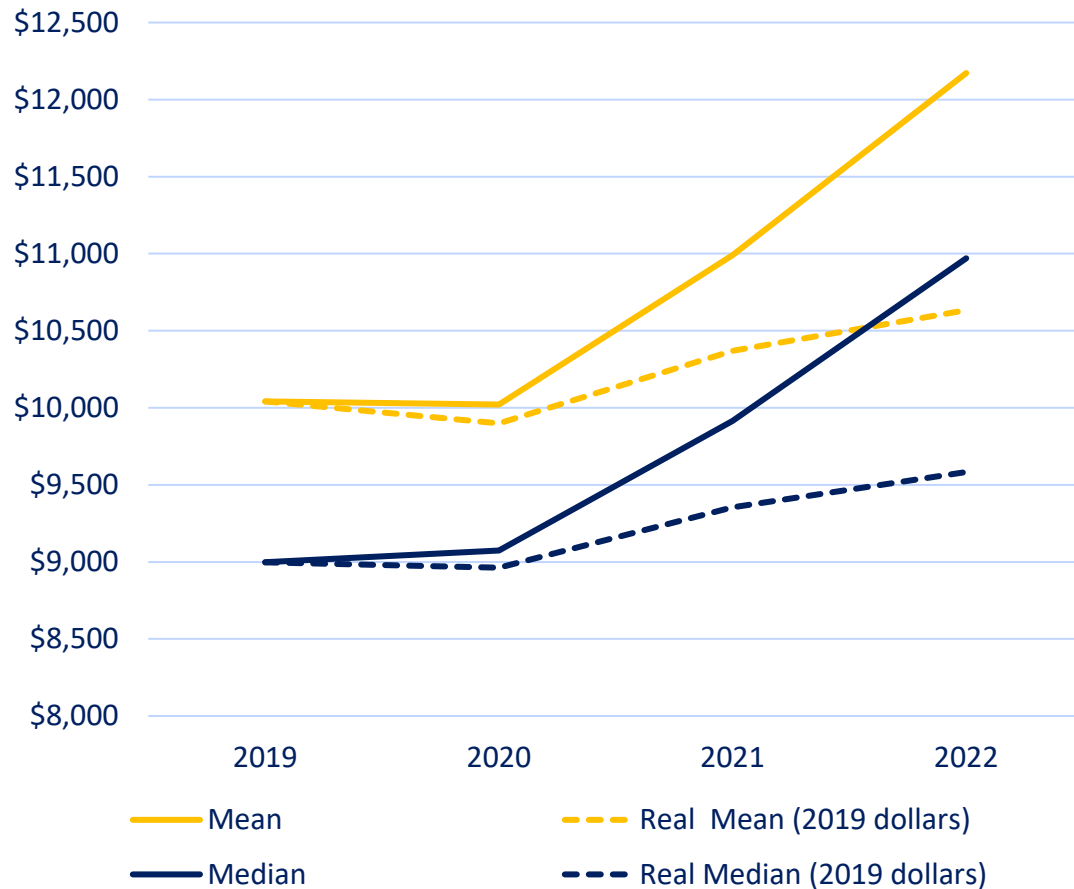
Over Time: Quarterly Equivalized Medians (Current Year Dollars)



NOTE: Population weighted (FINLW21); consumption does not include education.

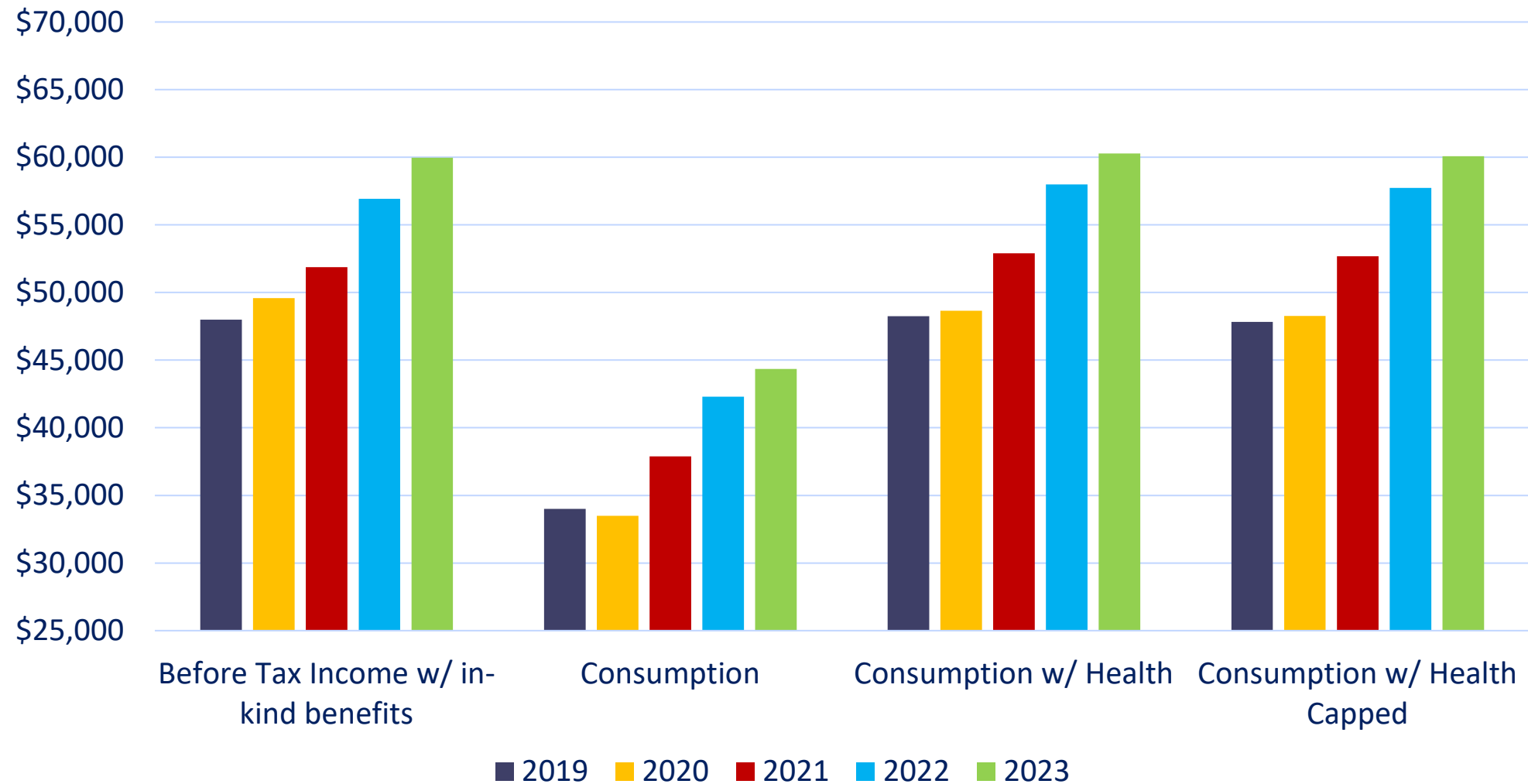


Quarterly Equivalized Consumption Means and Medians



- Small declines in real mean and median consumption in 2020.
- Large impact of inflation on 2021 and 2022 nominal values.

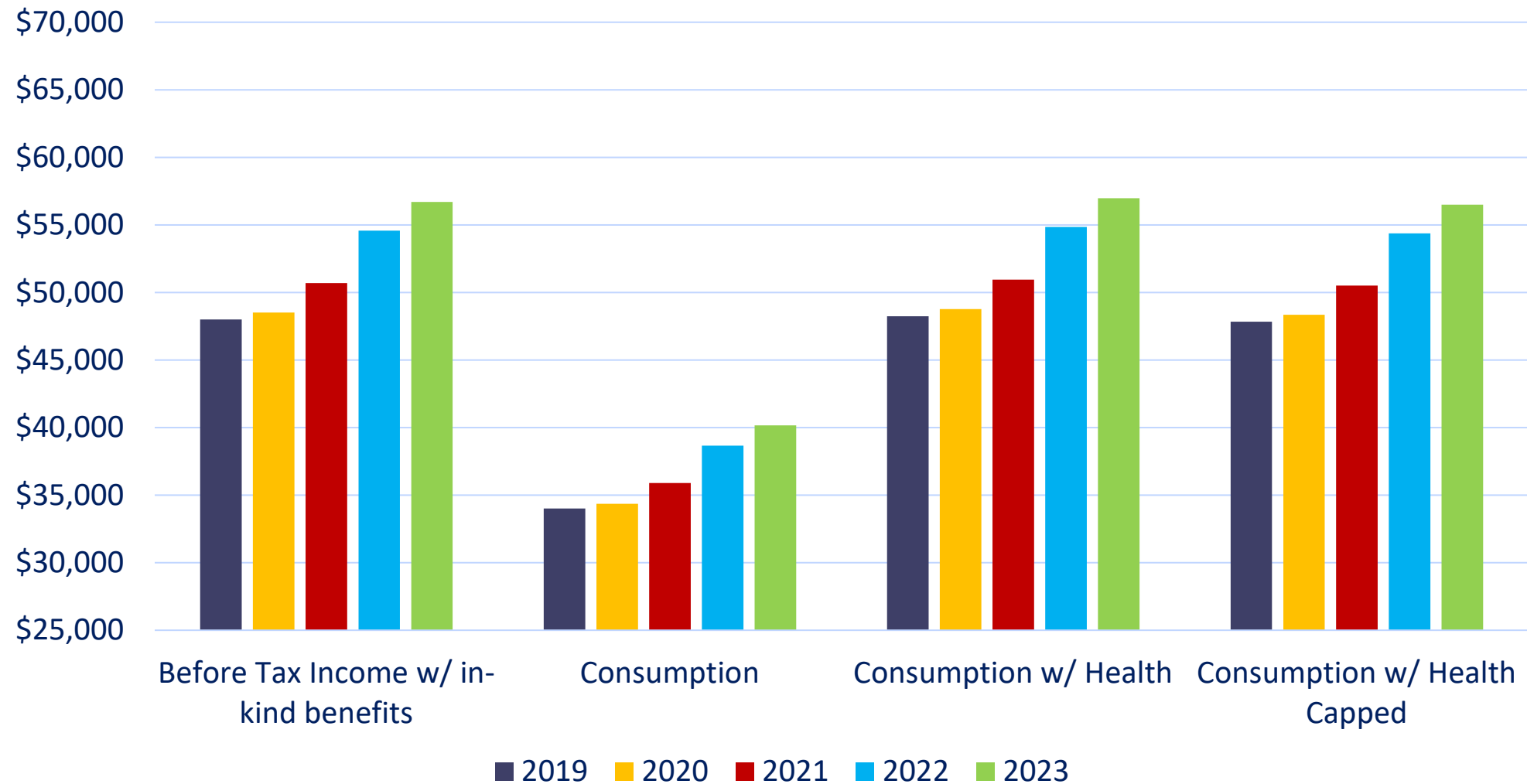
2A+2C Relative Thresholds



NOTE: Based on 60% of median; population weighted (FINLWT21*Cusize); consumption with health insurance capped at 50% of total; measures do not include education



2A+2C Anchored Relative Thresholds



NOTE: Anchored to 2019 relative threshold; updated using Chained CPI-U; population weighted (FINLWT21*Cusize); consumption with health insurance capped at 50% of total; measures do not include education



Crosstabulation Demographics, 2023

■ Age

Under 18				18 to 64				Over 64			
		Anchored				Anchored				Anchored	
		No	Yes			No	Yes			No	Yes
Relative	No	85.6%	0.0%	Relative	No	86.9%	0.0%	Relative	No	94.8%	0.0%
	Yes	2.9%	11.5%		Yes	2.6%	10.5%		Yes	1.2%	4.0%

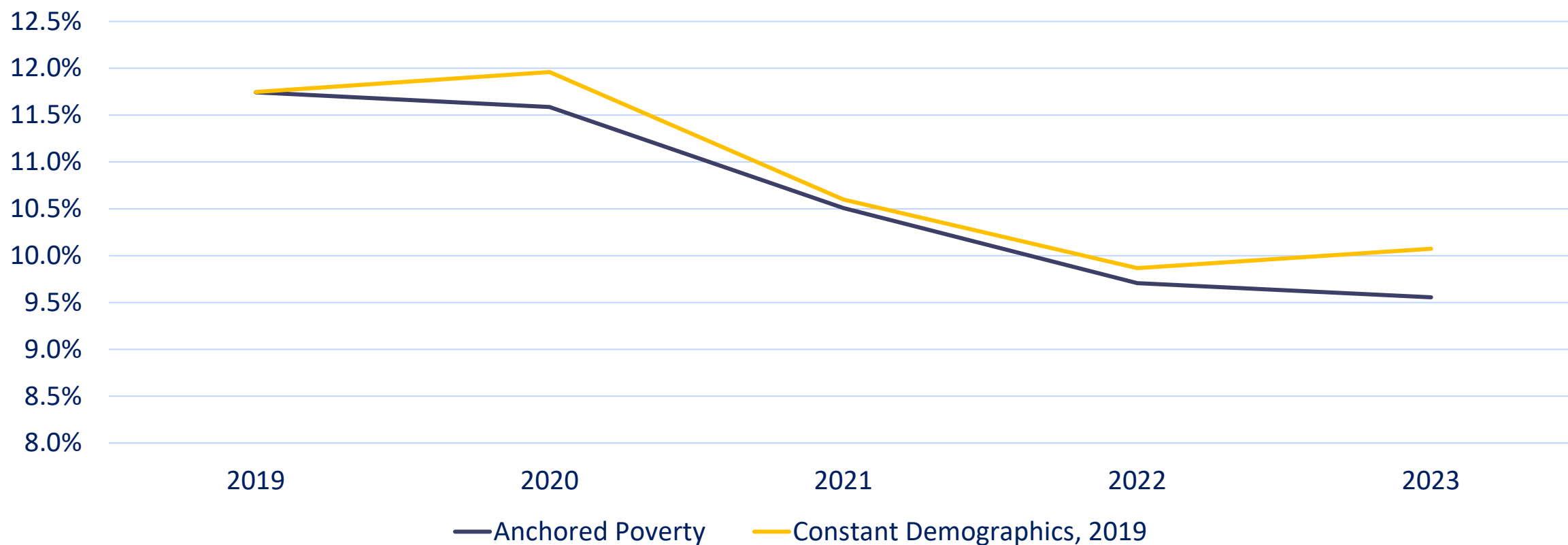
■ Work Status

Employed				Retired				Unemployed or Not Working			
		Anchored				Anchored				Anchored	
		No	Yes			No	Yes			No	Yes
Relative	No	88.0%	0.0%	Relative	No	94.2%	0.0%	Relative	No	69.7%	0.0%
	Yes	2.5%	9.5%		Yes	1.4%	4.4%		Yes	4.9%	25.4%

NOTE: Thresholds based on quarterly adult equivalized values; population weighted (FINLWT21*Csuzise); consumption with health insurance capped at 50% of total; measures do not include education



Impact Over Time holding Demographic Constant: Difference in Rates Due to Changes in X's



Imputing from Diary to Interview

UCC	DESC
190924	CATERED AFF AT EMPLOYER/SCHOOL
330110	Soaps and detergents
330210	Other laundry cleaning products
330310	Cleansing and toilet tissue, paper towels and napkins
340110	Postage
340120	Delivery services
550210	Nonprescription drugs
550310	Topicals and dressings
550410	Nonprescription vitamins
550900	Recreational Drugs
590900	Newsletters
600130	POWERED SPORTS VEHICLES
600315	Scooters, and other single rider transportation (new UCC Q20191)
600903	Global positioning system devices (new UCC Q20051)
610220	Other photographic supplies
610310	Pet food
610901	Fireworks

UCC	DESC
610902	Souvenirs
610903	Visual goods
620913	Pinball, electronic video games
620925	Miscellaneous fees (new UCC Q20011)
630220	Smoking accessories
630900	Marijuana
640110	Hair care products
640120	Nonelectric articles for the hair
640210	Oral hygiene products, articles
640220	Shaving needs
640310	Cosmetics, perfume, bath preparations
640410	Deodorants, feminine hygiene, miscellaneous personal care
650900	Repair of personal care appliances
330410	Stationery, stationery supplies, giftwrap
330510	Miscellaneous household products
330610	Lawn and garden supplies
620911	Miscellaneous fees, pari-mutuel losses

Regression Coefficient: State COVID response

Category	2019	2020	2021	2022	2023
1 st quintile	-	-	-	-	-
2 nd quintile	-0.025*	-0.017	-0.009	-0.009	-0.060***
3 rd quintile	-0.011	0.003	-0.003	-0.025*	-0.064***
4 th quintile	0.004	-0.003	-0.027	-0.037**	-0.065***
5 th quintile	-0.003	-0.027	-0.046**	-0.076***	-0.102***

NOTE: Coefficients estimated using population weight (FINLWT21*Cusize); consumption with health insurance capped at 50% of total; measures do not include education; ***p-value < 0.001, **p-value < 0.01, *p-value < 0.05

