# United States Inflation Experience across the Income Distribution

Bureau of Labor Statistics: Consumer Price Index

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Presentation for the Federal Committee on
Statistical Methods
October 26, 2022



### **CPI Family of Indexes a.**

CPI-U

• Timely, Broad-Based



#### **CPI Family of Indexes b.**

CPI-U

• Timely, Broad-Based

Chained CPI-U

• Best measure of cost-of-living index



### **CPI Family of Indexes c.**

CPI-U

• Timely, Broad-Based

• Best measure of cost-of-living index

CPI-W, R-CPI-E

• Disaggregated by household characteristics



#### **CPI Family of Indexes d.**

CPI-U

• Timely, Broad-Based

**Chained CPI-U** 

Best measure of cost-of-living index

CPI-W, R-CPI-E

Disaggregated by household characteristics

R-CPI-Income & R-Chained CPI-Income

Disaggregated statistics by household income



#### **Outline**

- 1. Household income subpopulations:
  - A. Methodology
  - B. Demographics
  - C. Expenditures
  - D. Quality of elementary cell coverage
- 2. R-CPI-Income and R-Chained CPI-Income
- 3. Analysis
- 4. Conclusion and next steps



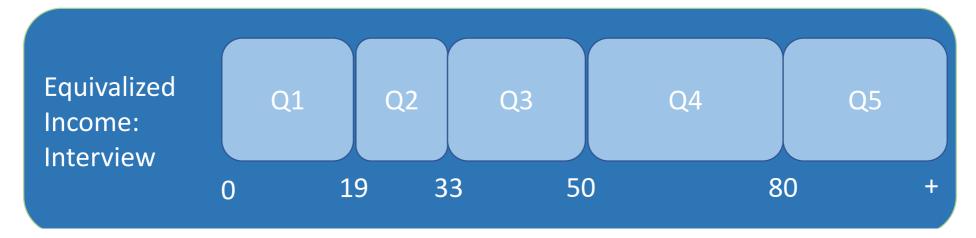
### Household income subpopulations Methodology-1

- Baseline: Working Paper 537-
  - Unweighted ranking of income quartiles
  - ► Issue-weights not evenly distributed
- Improvements:
  - 1. Household weighted ranking
  - 2. Income equivalized square root of family size
  - 3. Weights smoothed



# Household income subpopulations Methodology-2a

**2020 income & expenditures (\$10,000s)** 

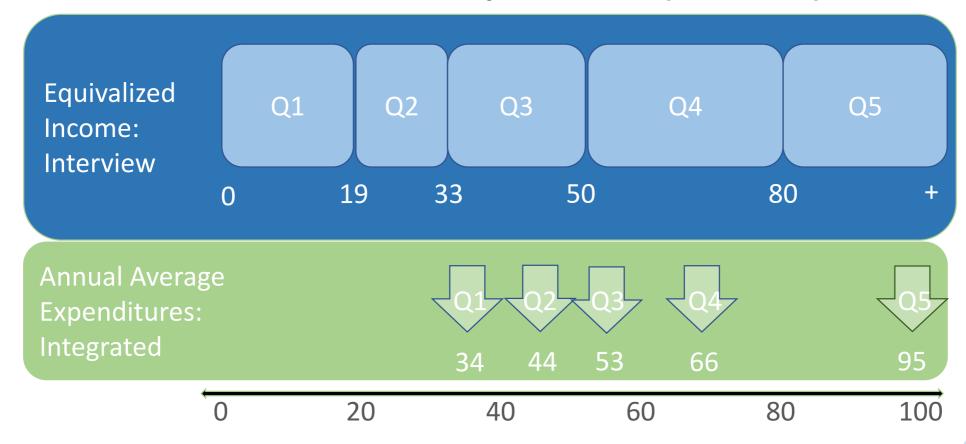




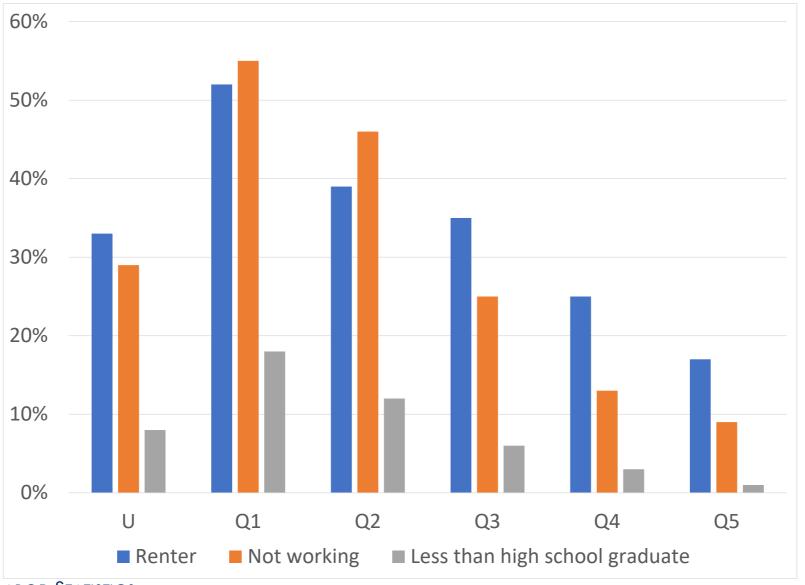


## Household income subpopulations Methodology-2b

**2020 income & expenditures (\$10,000s)** 

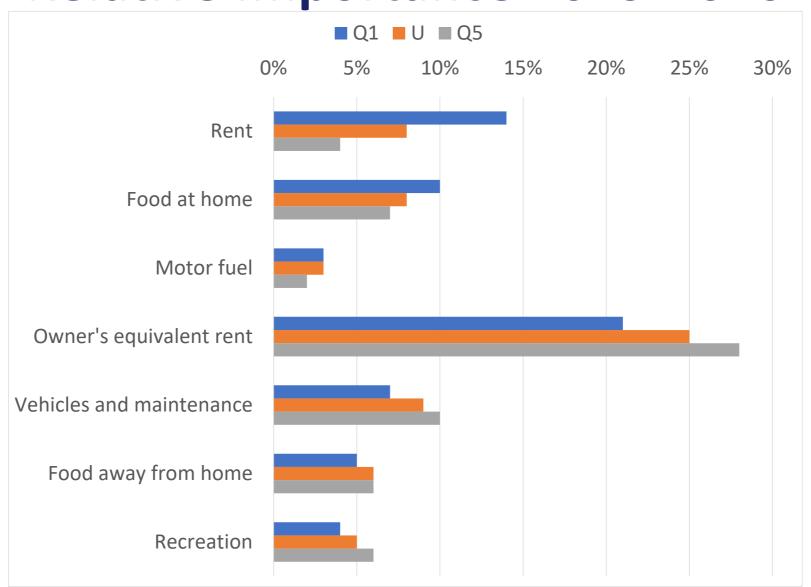


#### **Demographics 2020**





#### Relative Importance 2019-2020

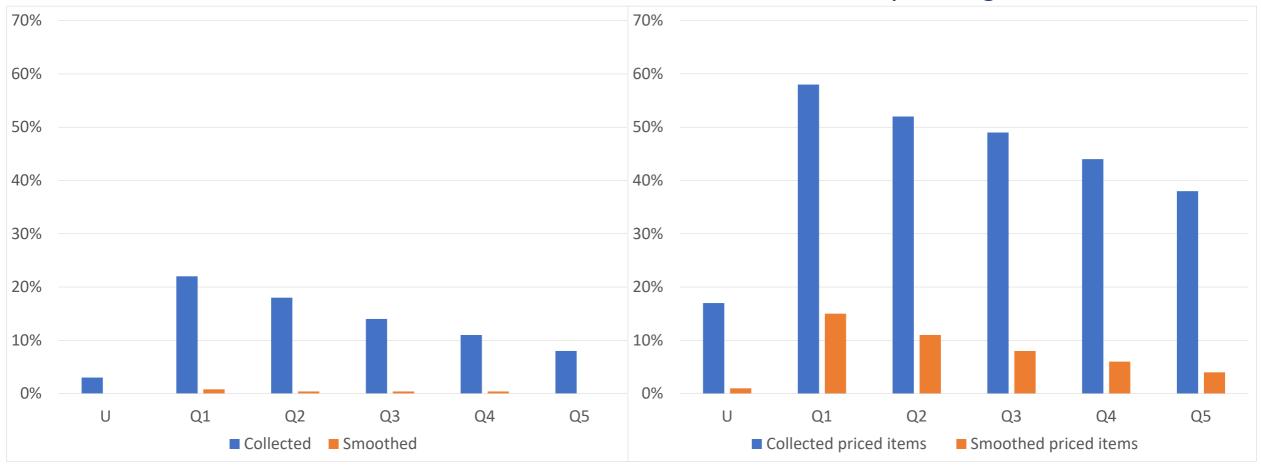




### Elementary cell coverage as proportion missing

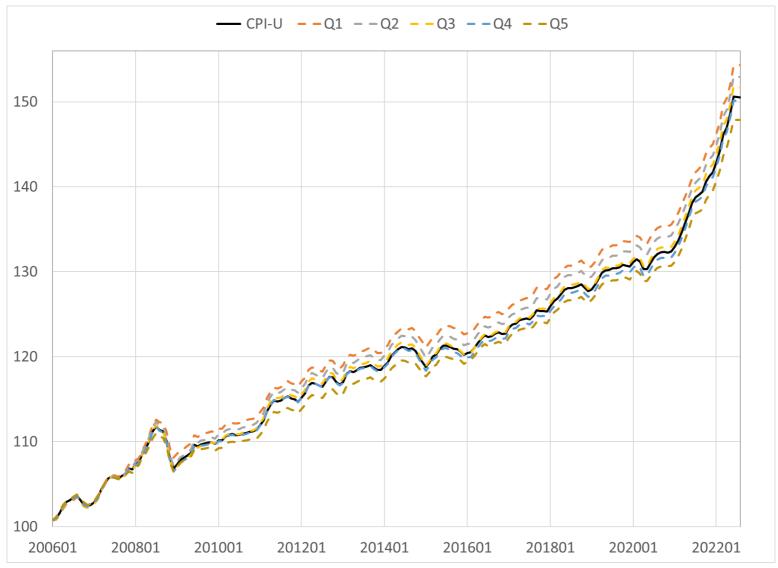


#### Monthly average 2020





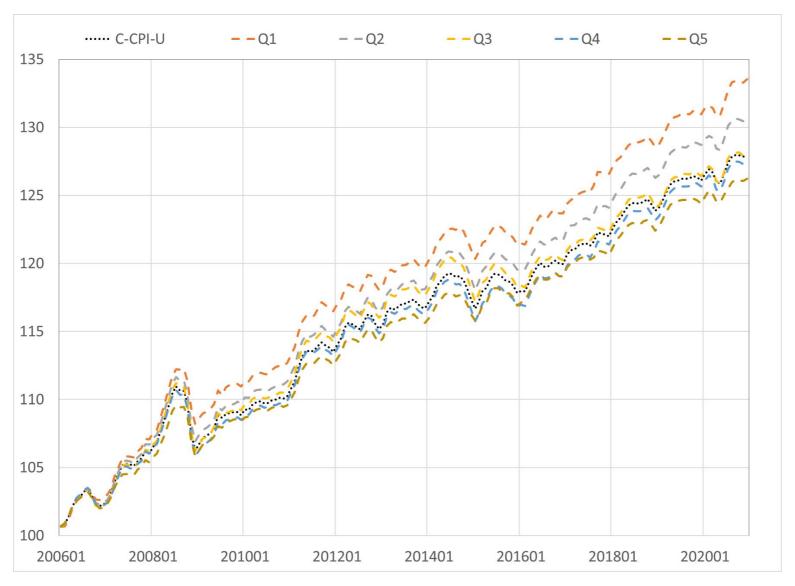
#### **CPI-U & R-CPI-Income to August 2022**



	<b>Growth Rate</b>
CPI-U	2.47%
Q1	2.62%
Q2	2.57%
Q3	2.52%
Q4	2.45%
Q5	2.36%



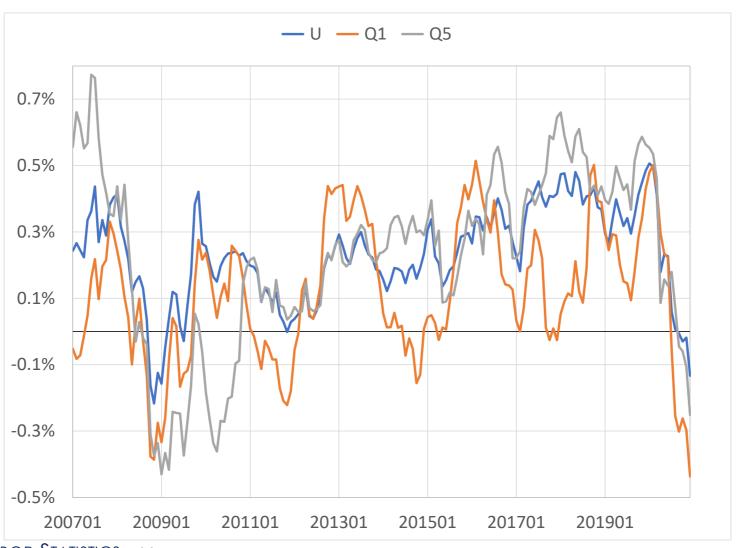
#### C-CPI-U & R-C-CPI-Income to 2020



	<b>Growth Rate</b>
C-CPI-U	1.65%
Q1	1.94%
Q2	1.79%
Q3	1.65%
Q4	1.62%
Q5	1.56%



#### **Analysis 1. 12 Month Change of CPI less C-CPI**



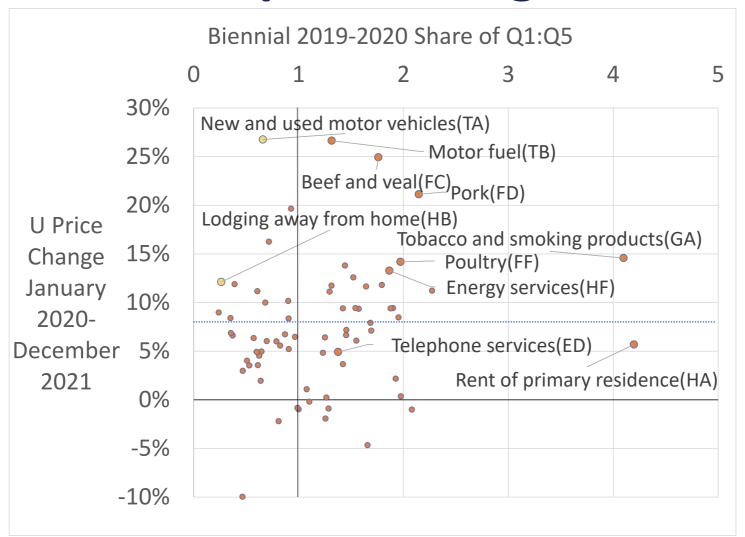


### Analysis 2. 12 month change CPI less C-CPI 2005-2020 Annual Growth Rate (%)

	U	Q1	Q5	Q1 less Q5	N1	N5	N1 less N5
CPI	1.88	2.04	1.79	0.25	2.08	1.78	0.30
C-CPI	1.65	1.94	1.56	0.38	1.98	1.56	0.42
Substitution Bias	0.23	0.10	0.23	X	0.10	0.22	X



# Analysis 3. CPI 2019-2020 Weight Ratio (Q1:Q5) vs. price change





### Analysis 4. 2021 Year over year change Q1 less Q5 CPI contribution & effects

	All Items		-5	0	5	10	15	
U	4.70%	Rent primary residence(HA01) Gasoline (all types)(TB01)						
Q1	4.72%	Electricity(HF01) Cigarettes(GA01)			ı			Top 10
Q5	4.43%	Utility (piped) gas service(HF02) Limited service meals/snacks(FV02)						Items:
Q1 Less Q5	0.29%	Cable & satellite tv/radio(RA02) Motor vehicle insurance(TE01)		_				
∑ Q1 > Q5	1.2%	Land-line telephone services(ED04) Chicken(FF01)		-				Q1>Q5
∑ Q1 < Q5	-0.9%	Pet services including veterinary(RB02) Living/dining/kitchen furniture(HJ02)						Q1 <q5< td=""></q5<>
		Child care & nursery school(EB03)  Domestic services(HP01)  Car and truck rental(TA04)  Full service meals and snacks(FV01)  Used cars and trucks(TA02)  Owners' rent primary residence(HC01)						
		Lodging away from home(HB02) New vehicles(TA01)						

### **Conclusion and next steps**

- R-CPI-Income and & R-Chained CPI-Income as quintile subpopulations
- Income methods improved:
  - ► Household weighted ranking
  - Equivalized income
  - ► Weight smoothing comparable to production
- Request feedback before moving to BLS site as a research series.



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