Expanding the family of U.S. Consumer Price Indexes

Thesia I. Garner,
Bill Johnson, Joshua Klick, Paul Liegey, Robert Martin, Anya Stockburger
U.S. Bureau of Labor Statistics

UNECE Group of Experts on Measuring Poverty and Inequality
November 28, 2023
Outline

- Introduction and Motivation
- Income-based indexes
- Household Cost Indexes
- Next steps
CPI Family of Indexes

Official Indexes

- CPI-U
- Chained CPI-U
- CPI-W

Research Indexes - https://www.bls.gov/cpi/research-series/

- R-CPI-U-RS
- R-HICP
  - R-COICOP
- R-CPI-Income
  - R-C-CPI-Income
- R-CPI-E
  - Household Cost Index?
Motivation

- Headline consumer price indexes summarize a range of household experiences
- Increased need for data granularity pertaining to demographic groups in particular
  - Recent recommendations by Committee on National Statistics, interest from Federal Reserve Bank, data users, and media
- Interest in inflation from the household perspective rather than the “macro” perspective
  - Inspired by the United Kingdom, New Zealand, and Australia
## Methods Overview

<table>
<thead>
<tr>
<th>Index</th>
<th>Prices / Rents</th>
<th>Expenditure Weights</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI-U, C-CPI-U (official)</td>
<td>- Outlets and items selected to represent urban households</td>
<td>- Consumer Expenditure Surveys (CE) Diary and Interview: sum expenditures for urban households</td>
</tr>
<tr>
<td></td>
<td>- Owned housing is measured using owner equivalent rent (OER)</td>
<td></td>
</tr>
<tr>
<td>CPIs by Income</td>
<td>- Same as CPI-U and C-CPI-U</td>
<td>- Group CE respondents by quintile of equivalized income, sum expenditures separately for each group</td>
</tr>
<tr>
<td>HCI-U</td>
<td>- Same as CPI-U except owned housing is measured using payments approach</td>
<td>- Create weights for each CE respondent and average equally (“democratic”) over urban population.</td>
</tr>
</tbody>
</table>
Key Results

- CPIs by equivalized income quintiles: Over 2005-2022, average annual inflation for the lowest quintile was about 0.3 percentage points higher than for the highest quintile.

- Household cost index: using a payments approach and household-weighted (“democratic”) aggregation, average annual inflation for the urban population was about 0.35 percentage lower than the CPI.
Snapshot of spending weights by population, 2019-2020 biennial expenditure weight share, equivalized income

- Rent
- Food at home
- Motor fuel
- Owner’s equivalent rent
- Vehicles and maintenance
- Food away from home
- Recreation

Q1 U Q5
Annualized Inflation Rates by Income Quintile
Based on CPIs Lowe Formula, December 2005 - December 2022

Q1: 2.60
Q2: 2.54
Q3: 2.47
Q4: 2.41
Q5: 2.33

Income Quintiles
Urban: 2.43
Items contributing to inflation gap (2022)
CPI-U 8%; Q1 8.2%; Q5 7.7%

Rent primary residence (HA01)
Gasoline (all types) (TB01)
Electricity (HF01)
Utility (piped) gas service (HF02)
Cigarettes (GA01)
Motor vehicle insurance (TE01)
Limited service meals/snacks (FV02)
Juices and drinks (FN03)
Cable & satellite tv/radio (RA02)
Chicken (FF01)
Club membership (RB02)
Child care & nursery school (EB03)
Owners' rent secondary res. (HC09)
Leased cars and trucks (TA03)
Full service meals and snacks (FV01)
Commercial Health Insurance (ME01)
Owners' rent primary residence (HC01)
Lodging away from home (HB02)
Airline fare (TG01)
New vehicles (TA01)

Q1 > Q5
Q1 < Q5
Average 12-month % change

<table>
<thead>
<tr>
<th>Index Description</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPI-U</td>
<td>1.86%</td>
</tr>
<tr>
<td>HCI-U (Payments Approach + Household-weighted Aggregation)</td>
<td>1.51%</td>
</tr>
<tr>
<td>HCI-U (Payments Approach Only)</td>
<td>1.46%</td>
</tr>
</tbody>
</table>
December 2020 relative importance

**HCI-U (2019 weights)**

- Food & Bev. 6.8%
- Housing: Rent 3.8%
- Housing: Mortgage 6.6%
- Housing: OER 11.1%
- Housing: Prop. Tax 14.2%
- Housing: Other 16.0%
- Apparel 16.0%
- Medical 4.3%
- Recreation 4.7%
- Transportation 6.6%
- Educ. & Comm. 6.8%
- Other 7.9%
- HCI-U (2019 weights)

**CPI-U (2017-18 weights)**

- Food & Bev. 6.8%
- Housing: Rent 3.2%
- Housing: Mortgage 5.8%
- Housing: OER 15.2%
- Housing: Prop. Tax 15.2%
- Apparel 10.3%
- Medical 10.3%
- Recreation 2.7%
- Transportation 7.9%
- Educ. & Comm. 6.8%
- Other 24.3%
- CPI-U (2017-18 weights)
HCl-U housing components versus OER

- Owner's Payments (HR, HS, HT)
- Mortgage Interest (HS)
- Owner's Equiv. Rent (HC)
- Property Tax (HR)
- Other Owner Payments (HT)
Limitations and Future Research

- Data does not reflect lower-level heterogeneity (e.g. specific prices paid by households or groups)
- Ongoing discussions on payments approach methods for HCI
  - e.g., should mortgage payments reflect principal as well as interest?
- Continued refinement of methods
- What is the impact on poverty measurement?
Further Reading

- **CPI by Income**
  - Publications: [Initial working paper](https://www.bls.gov/cpi/research-series/r-cpi-i.htm), [Spotlight on Statistics](https://www.bls.gov/cpi/research-series/r-cpi-i.htm)
  - Home page: [https://www.bls.gov/cpi/research-series/r-cpi-i.htm](https://www.bls.gov/cpi/research-series/r-cpi-i.htm)

- **Household Cost Index**
  - Working paper
Thank you!

Thesia I. Garner
Chief Researcher, Office of Prices and Living Conditions
U.S. Bureau of Labor Statistics
garner.thesia@bls.gov