

Student Price Index (SPI): Improved and Expanded Methodology

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What is a Price Index?



- **Measures Price Changes**
 - Price indexes are created with a "market basket" of goods. Their prices are tracked over time to measure change.
- **Cost of Living Metric**
 - Price index data can be used to track changes in cost of living, with individual indexes being catered to specific markets.
- **Inflation Tracking**
 - The data collected from price indexes over time can be used to track inflation. For localized price indexes this allows for more accurate results based on locality.

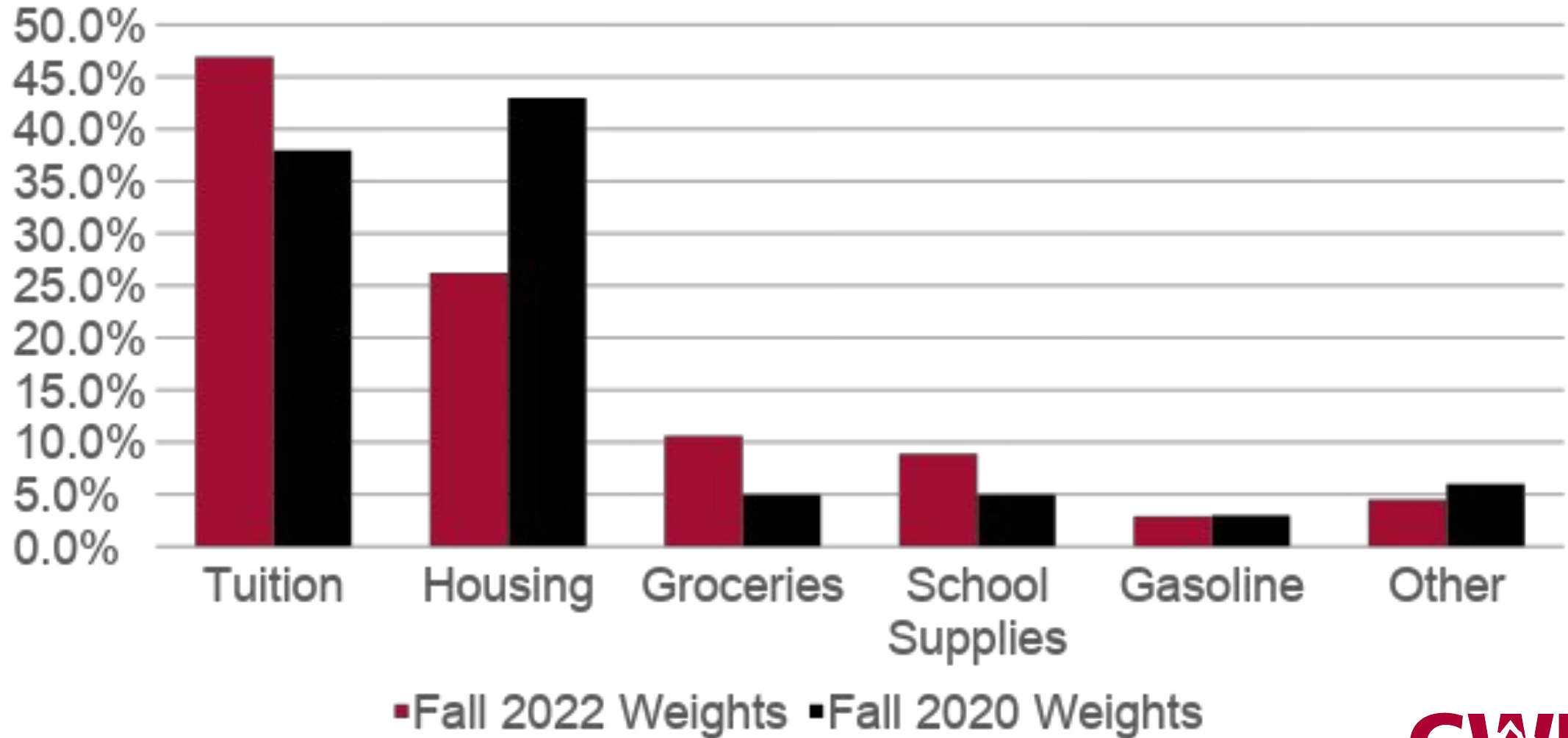
Why have a Student Price Index?



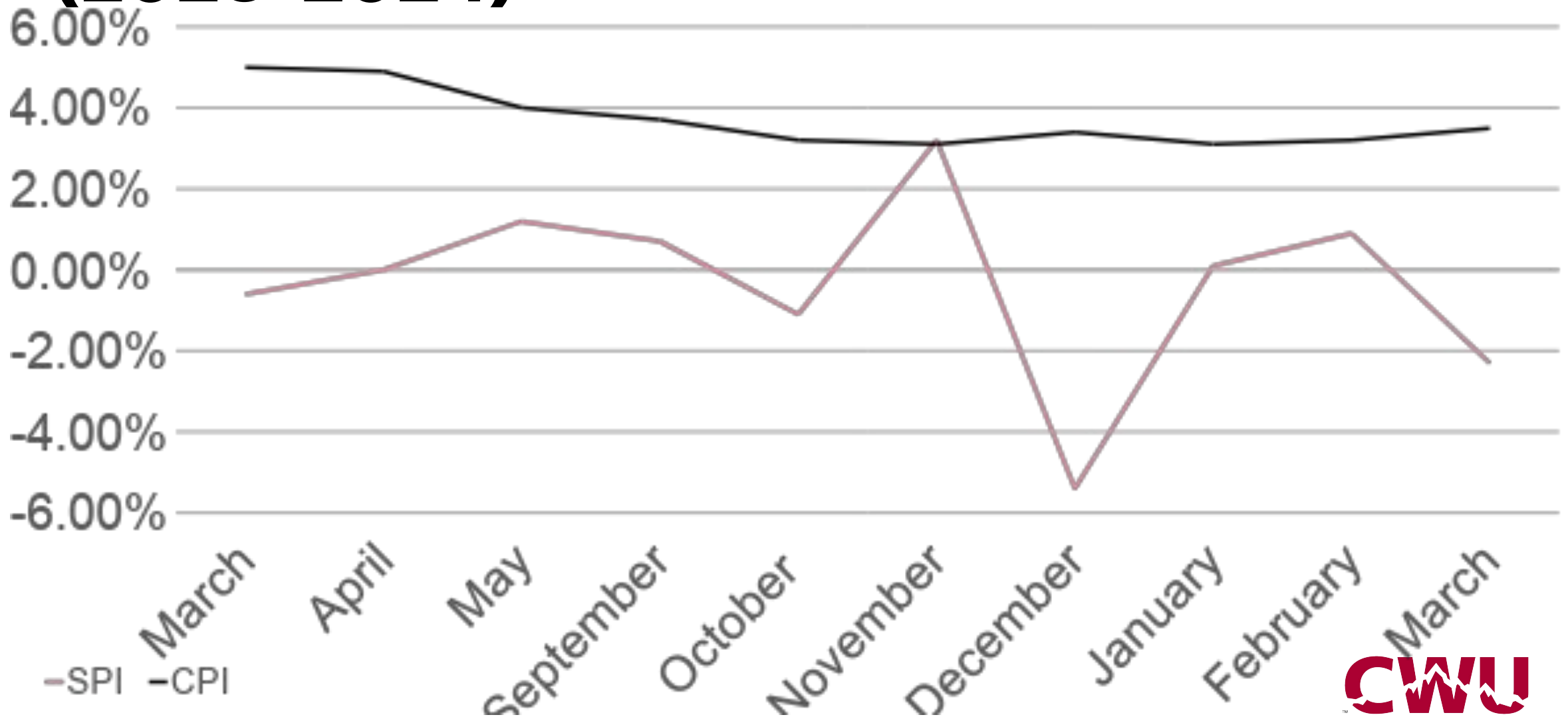
Creating a customized price index targeting CWU students has benefits

- More relatable to student expenditure habits.
- Estimates cost of living customized to CWU students.
- Findings can be used by the university and county alike.
- Washington State only has a price index for the Seattle-Bellevue-Tacoma area

Fall 2022 Weights vs Fall 2020 Weights



Annual Inflation of the SPI and CPI (2023-2024)



Bureau of Labor Statistics

Methodology

- BLS uses the following equation to calculate the price relative for an "item strata" using price relatives from item-area combinations.
- Item-area combinations consist of 243 categories in 32 urban areas.

$${}_{i,a}R^G_{[t;t-1]} = \prod_{j \in (i,a)} \left[\frac{P_{j,t}}{P_{j,t-1}} \right]^{W_{j,b} / \sum_{j \in (i,a)} W_{j,b}}$$

- ${}_{i,a}R^G_{[t;t-1]}$ = Price relative for the item-area combination i,a between time t and time $t-1$.
- $P_{j,t}$ = Price of item j at time t .
- $W_{j,b}$ = Weight of item j .

Original Methodology for Price Index

- The original methodology used arithmetic mean, as follows, to calculate a price index for each month.

$$I_t = \sum_{j \in D} w_j p_{j,t}$$

I_t = Price index at time t

w_j = Weight of item j

$p_{j,t}$ = Price of item j at time t

D = Set of all items used in the index

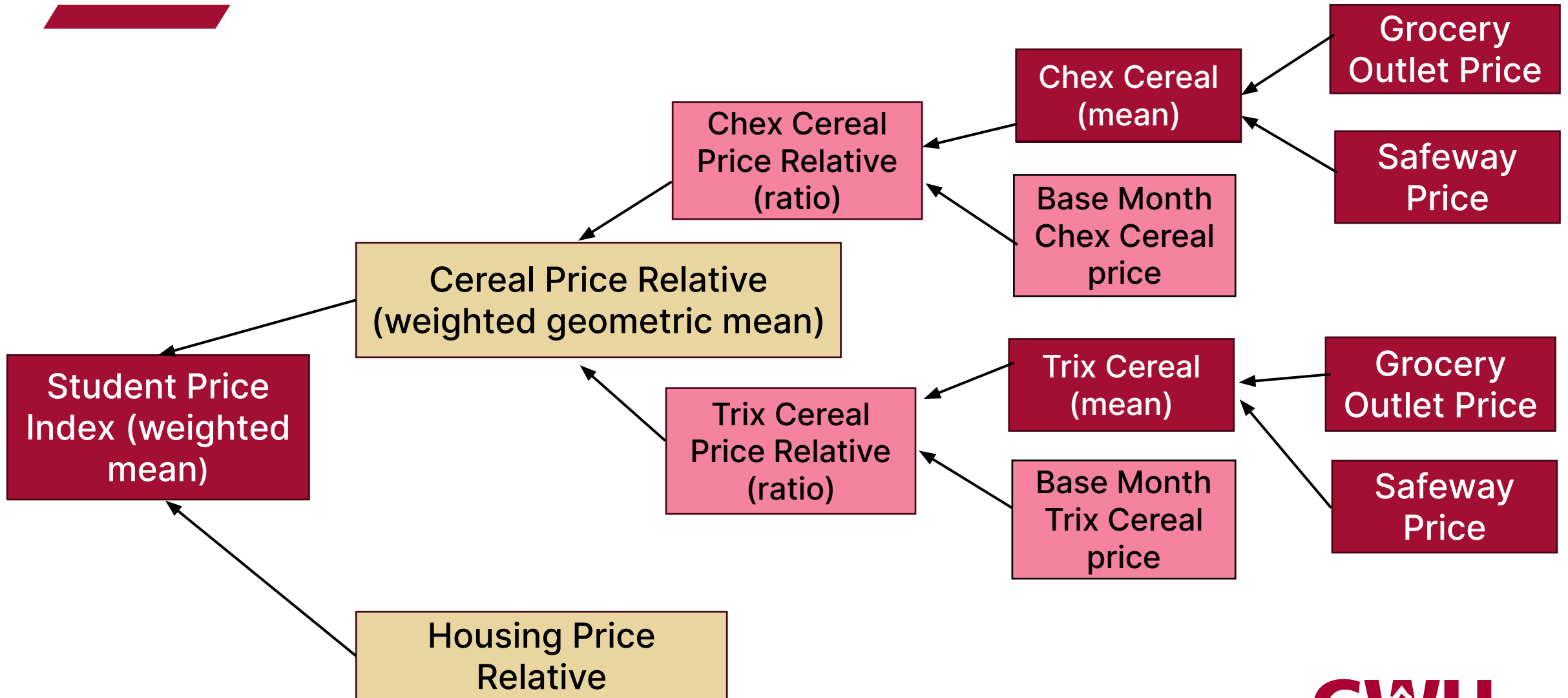
j = A particular item in the index

Importance of Price Relatives

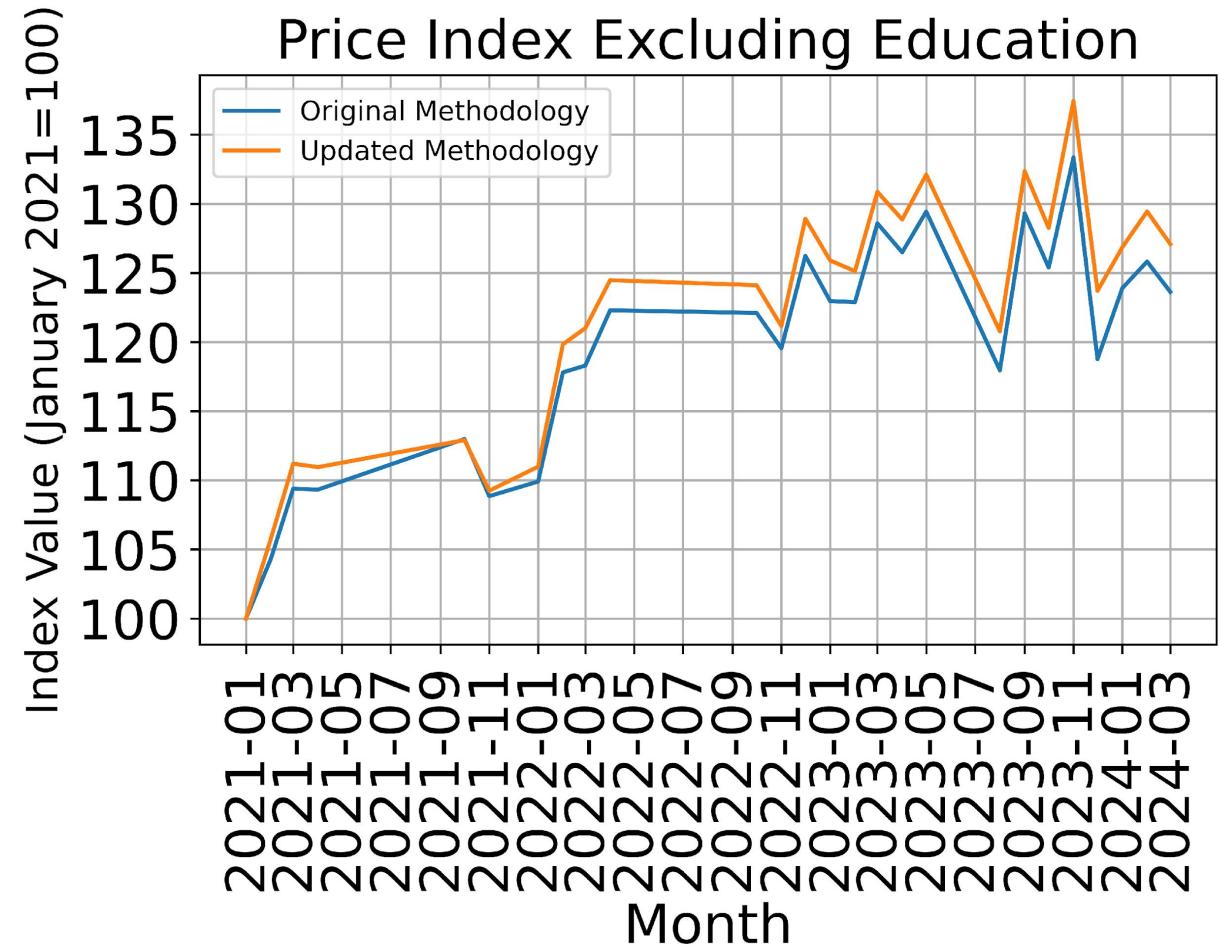
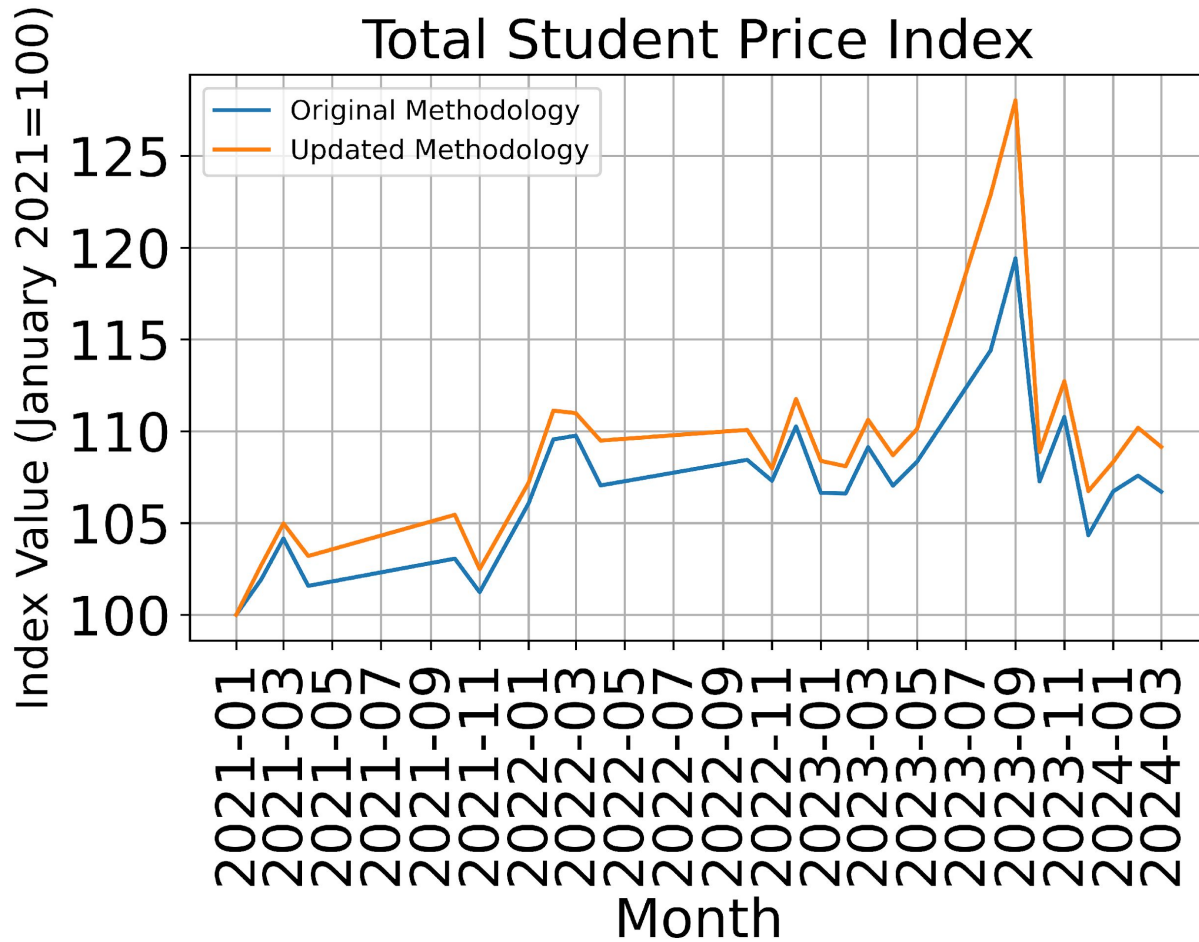
Item	Weight	Old Price	New Price	% Change
Housing	0.70	\$900	\$900	
Groceries	0.30	\$5	\$10	
Total Weight * Price		631.5	633	0.24%

Item	Weight	Old Relative Price	New Relative Price	% Change
Housing	0.70	1	1	
Groceries	0.30	1	2	
Total Weight * Price		1	1.3	30%

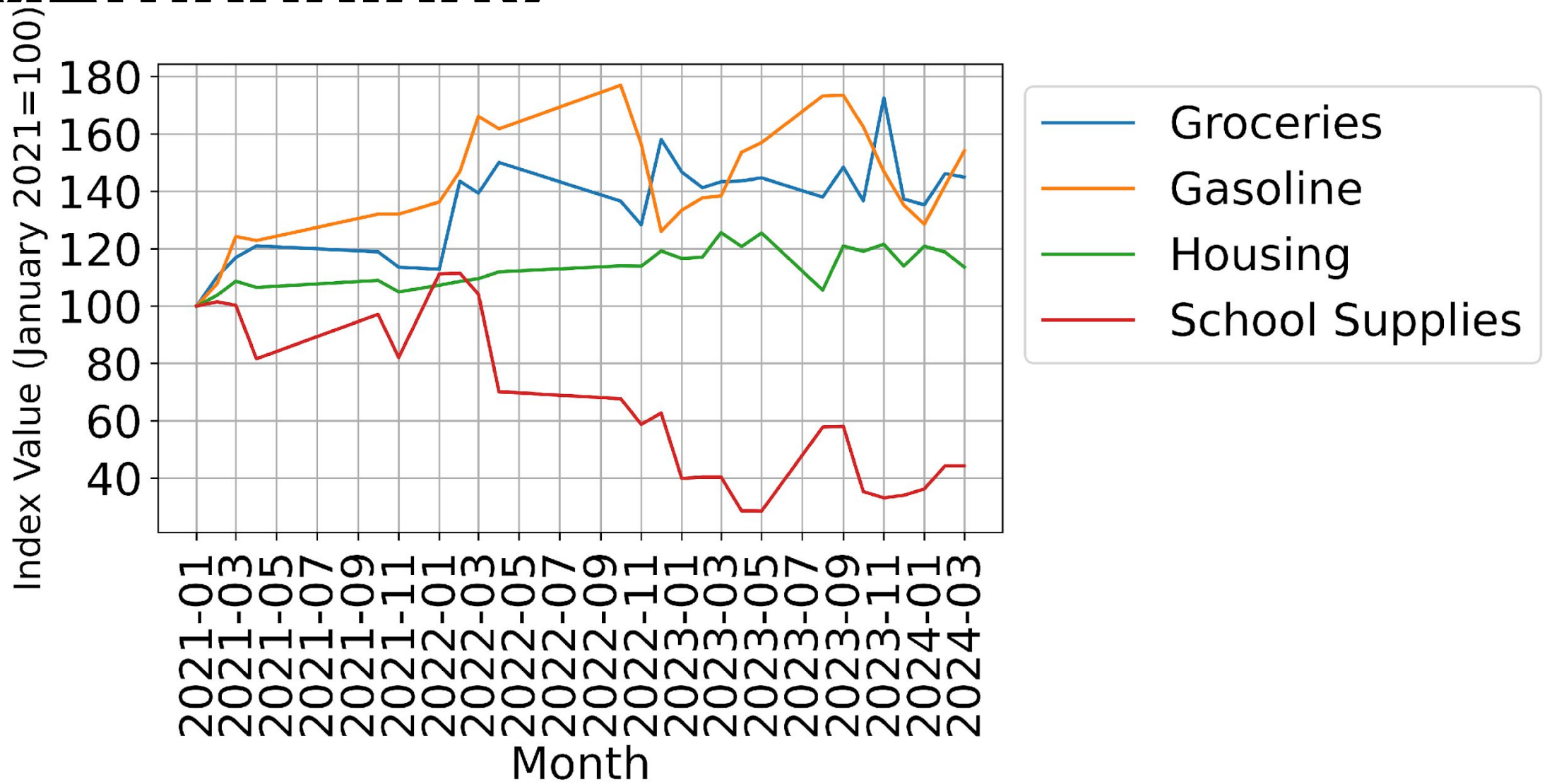
Updated Methodology Example



Methodology Comparison

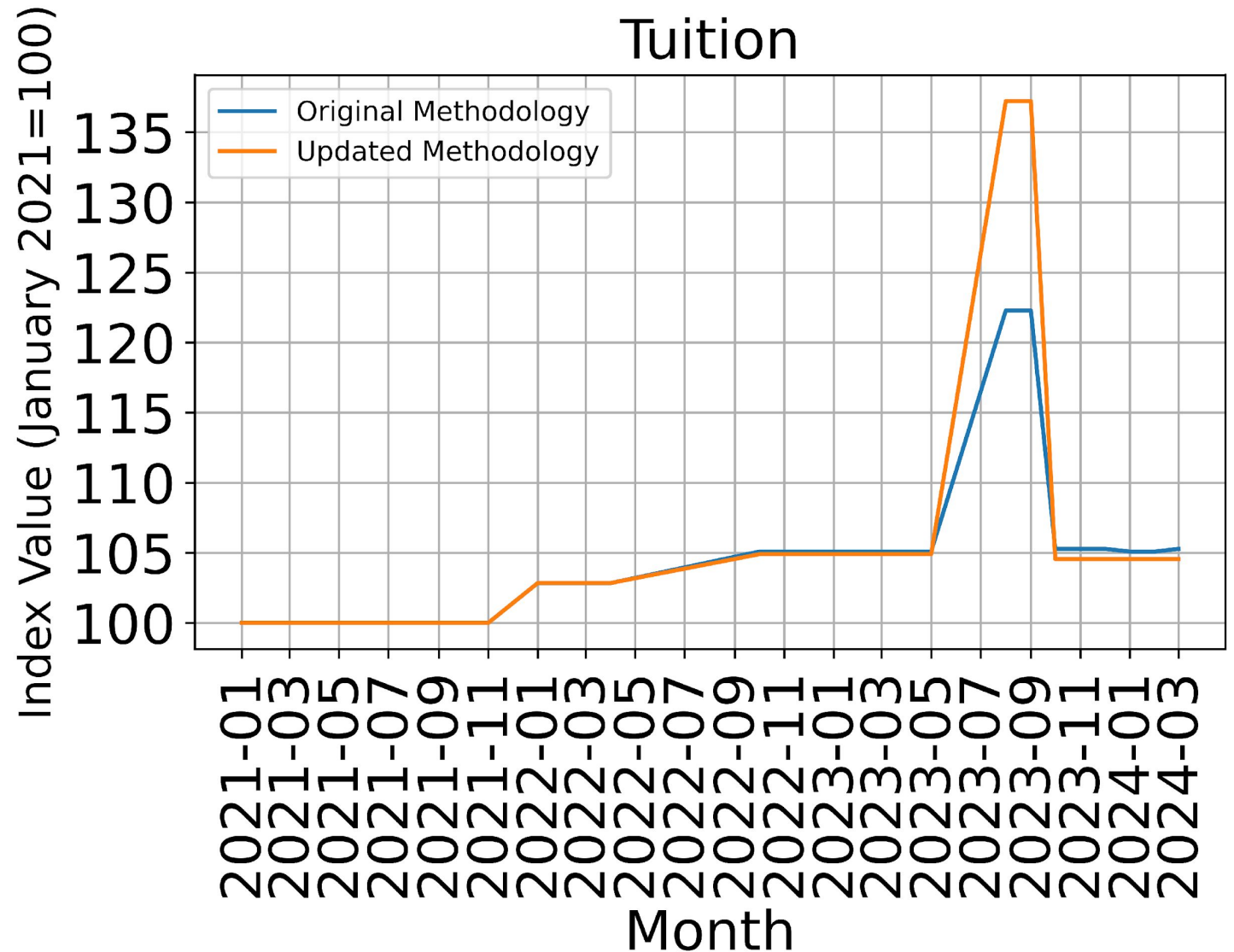


Inflation by Category, New Methodology



Seasonal Effects

- Estimates for textbook prices fell sharply in April 2021, March 2022, January 2023, and April 2023.
- Pricing for tuition changes during summer, decreasing out-of-state costs while increasing in-state costs.



Other Improvements & Final Thoughts

- We have updated our weights to better reflect student spending.
- We will be rolling out a new survey in Fall 2024.
- Monthly updates are circulated to the public.
- Data from the SPI can be used to influence university policy decision.

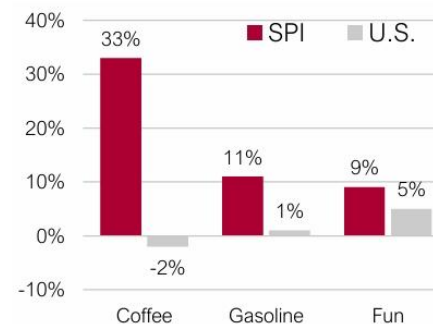
STUDENT PRICE INDEX (SPI) UPDATE

The March 2024 Central Washington University Student Price Index shows a 2.3 percent decrease in the cost of living compared to March 2023, with the most significant increases being in coffee, gasoline, and fun, which includes the prices of movie tickets and internet costs. Coffee prices continue to be one of our largest annual contributors to inflation with high increases year over year. The SPI estimate this month is lower than the estimated price increases for the Pacific Northwest and the CPI (the average American), which saw increases of 4.0 percent, and 3.5 percent, respectively.

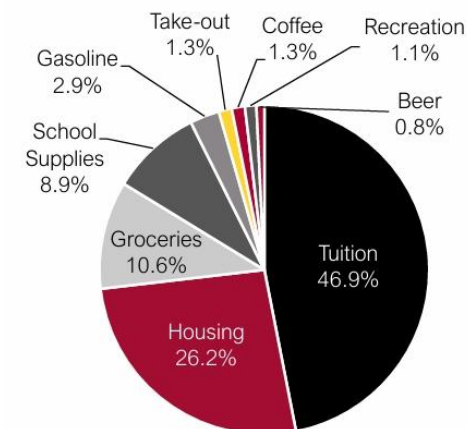
INFLATION RATES

	ANNUAL	MONTHLY
Central Washington University Student Price Index (SPI)	-2.3 %	Central Washington University Student Price Index (SPI) -0.8 %
Pacific Region (CPI) ¹	4.0 %	Pacific Region (CPI) ¹ 0.9 %
United States (CPI) ²	3.5 %	United States (CPI) ² 0.4 %

MAIN CONTRIBUTORS (Annual)



CATEGORIES AND WEIGHTS



Last update: Fall 2022

1. Source: Bureau of Labor Statistics, Consumer Price Index, Pacific Division (AK, CA, HI, OR, WA).
2. Source: Bureau of Labor Statistics, Consumer Price Index, All Urban Consumers.

THE SPI PROJECT

This project, led jointly by the Economics Association and the Department of Economics at CWU, develops a price index of the cost of college living in Ellensburg, Washington. Based on the campus-wide survey, each month the members of the Economic Association collect prices of items typically consumed by CWU students from various stores in Ellensburg to calculate the SPI index and inflation rates. This index's strength lies in identifying the change in prices students in Ellensburg face.

Questions?



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CWU

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