

# Age-Specific Consumer Price Indices and Generational Inflation Gaps in South Korea

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## Abstract

This study constructs the first generationally disaggregated Consumer Price Index (CPI) for South Korea to examine age-specific inflation pressures. Using household expenditure data from the Korea Statistical Information Service, expenditure shares were derived for households headed by individuals under 50 (U50) and over 50 (O50), normalized, and applied to official CPI categories to build subgroup indices. Independent-samples t-tests revealed significant differences in budget allocation, with O50 households spending more on essentials and health, while U50 households allocated more to education and discretionary services. The resulting indices show that from 2022 to 2025, U50 households consistently experienced higher effective inflation, with the gap widening above three index points by 2024–2025. Decomposition of the aggregate gap highlights that food, health, and housing drove O50 burdens, whereas education, restaurants, and entertainment disproportionately affected U50 households. These findings demonstrate that aggregate CPI masks important generational disparities and underscore the need for policymakers to incorporate age-sensitive inflation measures.

## Introduction

South Korea is undergoing a significant demographic shift: by 2042, 36.9 percent of the population is projected to be constituted by individuals aged 60 and over, while the child population falls to 8.1 percent (Statistics Korea, 2024). Concurrently, households headed by individuals under 50 increased spending on digital services and home-meal replacements at twice the rate of those headed by individuals over 60 between 2018 and 2023 (Chun, Kwon, & Yang, 2024). Yet Korea's official Consumer Price Index (CPI) aggregates expenditure weights across all households, potentially obscuring age-specific inflation experiences and real-income erosion.

Therefore, this paper aims to address the question: how does the CPI constructed with expenditure weights from households that may include Generation Z and Generation Alpha (households headed by individuals under 50) differ from the CPI constructed with weights from households that may not include these cohorts (heads aged 50 and above), and what does this imply about age-specific cost-of-living pressures in Korea? To answer this, this study reconstructs two CPIs using Statistics Korea data on average monthly household expenditure by age of household head and applies independent-samples t-tests to compare mean expenditure between the two groups.

By reconstructing Korea's CPI with age-specific expenditure weights and applying statistical tests of cohort income and spending gaps, this study delivers the first generationally disaggregated CPI for Korea and uncovers its policy implications.

## Literature Review

Early research on Korea's CPI focused on aggregate-level biases. Chung et al. (2010) used a Hamilton–Engel curve framework with Korean Labor & Income Panel Study panel data (2000–2005) and found that the official CPI overstated annual inflation by around 0.7 percentage points. They attributed this to substitution and quality-change effects—products swapped out too slowly, upgrades reflected too late. Building on this, Nahm (2015) used chained indices with updated weights and found that substitution bias alone added 0.51 points per year, with new-goods bias contributing another 0.13–0.17. Yet despite these refinements, neither study considered how these distortions might vary by age.

More recent work has looked at life-cycle consumption patterns without linking them to CPI weighting. For instance, Kim & Lee (2021) used National Transfer Accounts to show Korean households shift from surplus to

deficit at age 61, leaving only thirty-four surplus years—one of the shortest spans among The Organisation for Economic Co-operation and Development economies. Park and Cho (2023) analyzed card transactions during COVID-19, noting a 5-point jump in online spending among 20–34-year-old heads, while older consumers' channel preferences barely shifted. These findings suggest generational gaps in effective prices, but stop short of constructing separate indices to reflect them.

International research on CPI demonstrates that demographic reweighting can reveal substantial differences. For example, Jaravel (2024) constructed U.S. CPIs reweighted the income quintile and found that real-expenditure inequality grew forty-five percent faster between 2002 and 2019 when subgroup baskets replaced the headline index. This evidences how official measures can understate cost pressures on lower-income consumers. Similarly, the U.S. experimental Consumer Price Index for the Elderly (CPI-E), a reweighted CPI for those aged sixty-two and over, records annual inflation rates 0.2–0.4 percentage points above the all-items CPI due to heavier weighting on medical-care services (Stewart, 2008). These examples underscore how a single aggregate index can misrepresent certain demographic groups who get hit differently by inflation.

European studies, such as Kiss & Strasser (2024) who used scanner-data analysis, further revealed that roughly half of household-level inflation differences stem from what people buy within categories, not just where they shop or live. Collectively, these studies highlight the importance of capturing variation not only across income, age, or consumption preference but also within spending behavior itself.

Despite analyses of aggregate CPI biases and descriptive evidence of age-driven consumption shifts, no study has reconstructed Korea's CPI using age-specific expenditure weights. Therefore, by generating separate indices for households headed by individuals under 50 versus those 50 and above and applying independent-samples t-tests to cohort income and expenditure disparities, this paper aims to fill a key gap in the existing research through delivering the first generationally disaggregated CPI for Korea and revealing the policy implications of inflation measurement tailored to diverse demographic realities.

## Methodology

### Data Collection

The data for this study was obtained from the Korea Statistical Information Service (KOSIS). The main datasets used were *Average Monthly Income & Expenditure (Whole Households)*, *Households by Age of Household Head and Number of Household Members (General Households) – by City/County/District*, and the monthly *Consumer Price Index (CPI)* reports. The monthly CPI indices were collected for the twelve expenditure categories spanning from December 2021 to June 2025. This period was chosen because it aligns with the updated CPI where the base year is set to 2020, and best reflects current trends in spending patterns. The data collected were remodeled and organized in Google Sheets for the analysis of two groups: households headed by individuals Under 50 (U50) and Over 50 (O50).

Expenditure shares were derived from quarterly household expenditure data disaggregated by age of household head. For each group, category-level spending was divided by total household spending, yielding raw shares. These were normalized so that the sum of category shares equaled one, ensuring comparability across groups. To account for demographic weighting, population data by age of household head were used to calculate population shares, which weighted group-level measures by their relative size in the population.

To link these expenditure patterns to price dynamics, category-level CPI indices were aggregated using subgroup-specific expenditure weights to construct subgroup indices. Through this method, the consumption baskets of U50 and O50 households remain fixed, while official CPI category indices trace price changes over time. This approach follows established methodological precedents in the literature. For instance, subgroup CPI research conducted by Cage, Garner, and Ruiz-Castillo (2002) used demographic expenditure weights to construct alternative price indices, and Jaravel (2024) introduced Distributional Consumer Price Indices (D-CPIs) that combine public CPI price data and subgroup expenditure shares by age, income, and other demographic factors. Similarly,

McGranahan & Anna Paulson (2006) examined the U.S. Bureau of Labor Statistics (BLS)'s experimental CPI-E, which reweights the CPI for all urban consumers (CPI-U) component categories using expenditure shares of the consumers aged 62 and older.

### Data Analysis

For the data analysis, I first used t-tests to see whether expenditure shares differed systematically between U50 and O50 households. Quarterly expenditure data disaggregated by category was adjusted for population shares to account for demographic weighting. For each of the twelve CPI categories, I ran two-sample t-tests on the expenditure shares and the t-statistics and p-values determined whether observed differences were statistically significant, with the direction of the test statistics indicating which group allocated more of their budget to a category.

Second, I constructed subgroup-specific Consumer Price Indices. Rather than multiplying raw index values by shares, I aggregated category-level CPI indices using subgroup expenditure shares to generate indices for both U50 and O50 households. This produced two weighted CPI series, tracing how inflation was experienced by each group. I then computed the inflation gap (U50 CPI minus O50 CPI) to measure divergence over time.

Finally, to identify which categories drove generational inflation gaps, I multiplied the difference in expenditure shares between U50 and O50 households by the corresponding category-specific year-over-year inflation rates. This produced category-level contributions that, when summed, matched the overall U50–O50 divergence in inflation and highlighted whether price pressures in a given category disproportionately affected younger or older households.

### Results and Discussion

T-tests show clear generational differences in spending. As shown in Figure 1, O50 households allocate more to essentials and healthcare, including food, housing, household equipment, health, communication, and miscellaneous goods, with most differences highly significant ( $p < 0.01$ ). Table 1 indicates that these differences are also economically meaningful: the health category shows by far the largest gap, with O50 households spending nearly twice as much as U50. Housing and food likewise exhibit large and significant disparities, underscoring the older group's heavier burden in covering core needs. In contrast, education is the only category where U50 households clearly outspend O50, reflecting younger households' focus on schooling and child development. By comparison, categories such as clothing, entertainment, restaurants, and transportation show only minor and statistically insignificant differences. Overall, O50 budgets tilt toward necessities and health, whereas U50 emphasizes education and discretionary services.

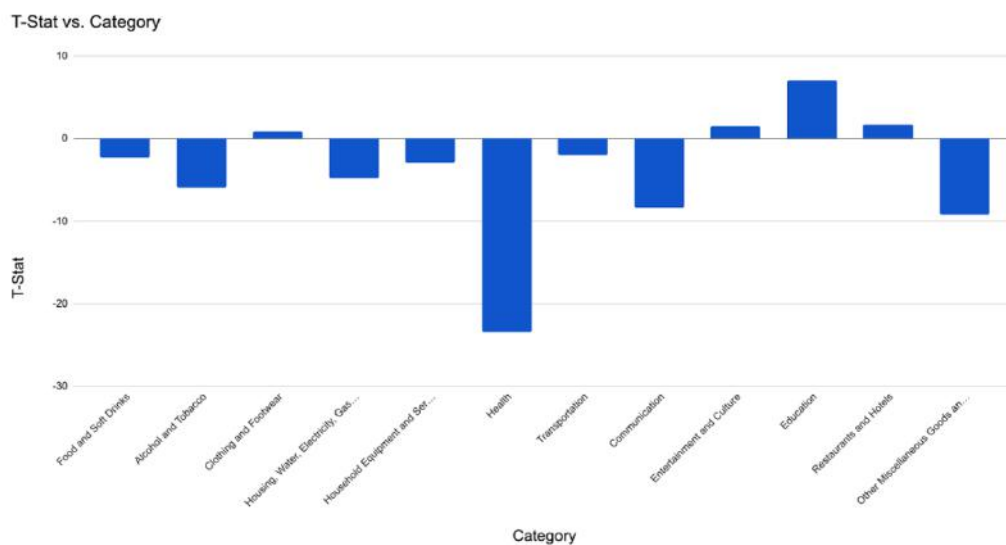


Figure 1: *t*-Statistics of Expenditure Share Differences Across 12 Categories (U50 vs. O50 Households)

*Note.* This figure plots the t-statistics for expenditure share differences across 12 categories. Negative bars indicate categories where O50 households spend significantly more of their budget (e.g., food, housing, health), while positive bars indicate categories where U50 households spend more (notably education).

**Table 1:** Mean Expenditures, Differences, and T-Statistics by Age Group, 2022–2024

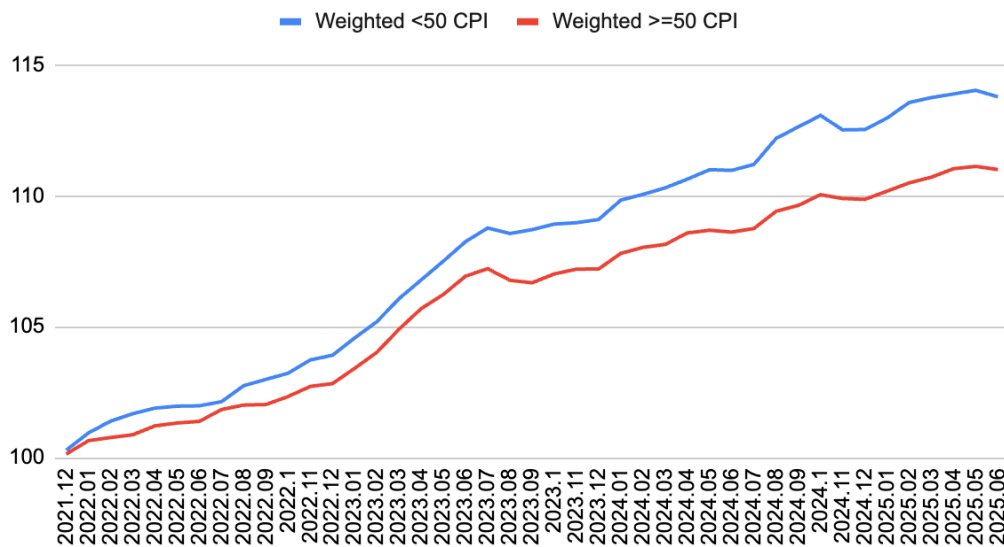
Category	Mean (U50)	Mean (O50)	Difference (U50 – O50)	T-statistic
Food & Soft Drinks (1)	179,093	251,166	-72,073	-2.296*
Alcohol & Tobacco (2)	17,911	20,249	-2,338	-5.896***
Clothing & Footwear (3)	70,323	66,472	3,851	0.846
Housing, Water, Electricity, Gas, & Other Fuels (4)	143,920	182,422	-38,502	-4.764***
Household Equipment & Services (5)	57,066	62,158	-5,092	-2.896**
Health (6)	82,362	159,847	-77,484	-23.432***
Transportation (7)	156,689	169,497	-12,808	-1.944
Communication (8)	58,357	67,555	-9,198	-8.377***
Entertainment & Culture (9)	100,150	92,394	7,756	1.527
Education (10)	130,601	71,839	58,762	7.036***
Restaurants & Hotels (11)	215,156	202,928	12,227	1.677
Other Misc. Goods & Services (12)	96,192	122,681	-26,489	-9.167***

*Note.* Table reports mean quarterly expenditures (₹) for each consumption category, averaged across 2022–2024, separately for households under 50 and over 50. “Difference” is calculated as Under-50 minus Over-50. T-statistics are from independent two-sample t-tests of mean differences across quarters. Statistical significance is denoted as: \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001. No stars indicate results not significant at the 5% level. Negative

differences imply higher average spending among Over-50 households; positive differences imply higher spending among Under-50 households.

The generationally weighted CPIs show that both groups experienced steady inflation from December 2021 through June 2025. However, Figure 2 reveals that the O50 index consistently remained below the U50 index. The inflation gap widened from near zero in early 2022 to 1–2 points by late 2022 and 2023, and exceeded 2 points and peaked above 3 in 2024–2025. This indicates that younger households systematically faced higher effective inflation than older households.

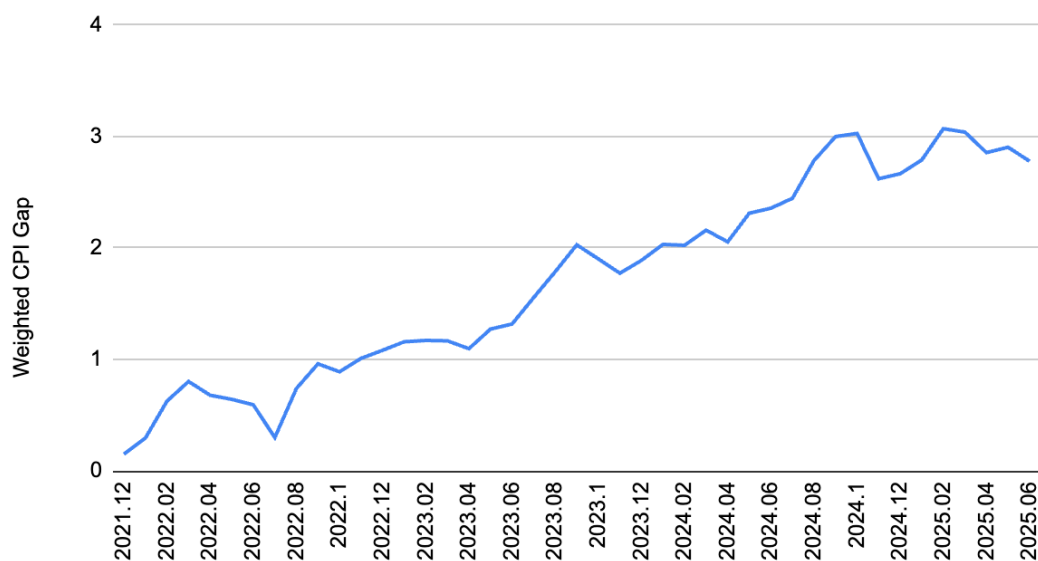
### Weighted <50 CPI vs. Weighted $\geq$ 50 CPI



**Figure 2:** Weighted CPI Indices for U50 and O50 Households, December 2021–June 2025

*Note.* This figure shows the subgroup-weighted CPI indices for U50 and O50 households. Both groups faced steady inflation, but the U50 line remains above the O50 line, illustrating that younger households consistently experienced higher effective inflation.

### Weighted CPI Gap



**Figure 3:** CPI Inflation Gap Between U50 and O50 Households, December 2021–June 2025

*Note.* This figure plots the difference between the U50 and O50 CPIs over time. The gap is positive throughout, widening from near zero in early 2022 to over 3 points by 2024–2025, showing that U50 households were more exposed to inflationary pressures.

The category-level decomposition clarifies the sources of the generational divergence. As shown in Table 2, inflation in food and soft drinks (−0.3030), health (−0.0499), housing (−0.0491), and miscellaneous goods and services (−0.0872) disproportionately burdened O50 households, reflecting their heavier budget allocations to essentials, housing, and medical expenses. Conversely, inflation in education (+0.1032), restaurants and hotels (+0.1228), and entertainment and culture (+0.0533) placed greater strain on U50 households, consistent with their higher relative spending in lifestyle and developmental categories. Although numerically small, these contributions sum to the overall U50–O50 CPI divergence and demonstrate that generational differences in inflation reflect structural divergences in household expenditure baskets.

**Table 2:** *Category-Specific Divergence in Inflation Impact (U50 vs. O50, Dec 2021–Jun 2025)*

Category	Divergence Value (percentage points)
Food & Soft Drinks (1)	-0.3030
Alcohol & Tobacco (2)	-0.0003
Clothing & Footwear (3)	+0.0301
Housing, Water, Electricity, Gas & Other Fuels (4)	-0.0491
Household Equipment & Services (5)	+0.0066
Health (6)	-0.0499
Transportation (7)	+0.0248
Communication (8)	-0.0024
Entertainment & Culture (9)	+0.0533
Education (10)	+0.1032
Restaurants & Hotels (11)	+0.1228
Other Miscellaneous Goods & Services (12)	-0.0872

*Note.* This table reports the average contribution of each CPI category to the U50–O50 inflation gap, expressed in percentage points. Negative values indicate categories that placed a greater burden on O50 households (e.g.,

food, health, housing), while positive values indicate categories that placed a greater burden on U50 households (e.g., education, restaurants, entertainment).

### **Implications**

This study carries several significant implications for policymakers concerned with generational equity in economic policy. First, the research demonstrates that reliance on a single, aggregate CPI risks obscuring the lived experiences of different demographic groups. By showing that younger households consistently faced higher effective inflation than older households, the analysis reveals that headline inflation figures may understate the cost-of-living pressures on cohorts with higher education, restaurant, and discretionary spending. This suggests that policymakers who design monetary or fiscal policies solely based on the aggregate CPI may overlook the vulnerabilities of younger households.

Furthermore, the findings underscore the important methodological implications for statistical agencies and researchers. The construction of generationally disaggregated CPIs demonstrate the value of reweighting official indices to reflect subgroup expenditure patterns. Just as the U.S. BLS created the CPI-E for the elderly, Korean statistical agencies could refine headline measures to better represent the lived experiences of diverse demographic groups.

### **Limitations**

Several methodological limitations must be considered when interpreting these results. First, the division of groups into U50 and O50 was based on the assumption that U50 would likely include Generation Z and Generation Alpha compared to O50 who are more likely to have older children. This division also looks over the fact that many households may have no children at all. Multigenerational households may therefore dilute generational spending signals.

Second, the analysis relied on twelve broad CPI categories which mask within-category variation. For instance, younger households may disproportionately consume digital education services, while older households may emphasize traditional medical care; both are aggregated into “education” or “health” categories. Scanner-level or microdata would allow a more precise decomposition of generational differences.

Finally, quarterly household data were used to construct weights for monthly CPI series. This may introduce approximation error as households may adjust spending more quickly than quarterly surveys capture. As a result the expenditure shares used in this study may lag behind real-world behavior, potentially underestimating the speed and magnitude of inflationary pressures.

### **Conclusion**

By reconstructing Korea’s CPI with age-specific expenditure weights, this study provides the first generationally disaggregated measure of inflation. The results demonstrate that younger households consistently faced higher effective inflation than older households from 2022 to 2025, with the gap widening sharply during periods of accelerating price growth. Category-level analysis revealed that education, restaurants, and entertainment disproportionately drove U50 burdens, while food and health remained dominant for O50 households.

These findings underscore that generational inflation gaps are structural. They reflect differences in how households allocate their budgets, which in turn shape how official price movements translate into lived cost-of-living pressures. For policymakers, the implication is that inflation cannot be treated as a uniform experience. Generationally sensitive inflation measures should be incorporated into Korea’s statistical measurement system to capture intergenerational inequality more accurately.

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