

Economic News Release

Consumer Price Index Summary

Transmission of material in this release is embargoed until 8:30 a.m. (ET) Thursday, October 12, 2023 USDL-23-2185

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CONSUMER PRICE INDEX – SEPTEMBER 2023

The Consumer Price Index for All Urban Consumers (CPI-U) rose 0.4 percent in September on a seasonally adjusted basis, after increasing 0.6 percent in August, the U.S. Bureau of Labor Statistics reported today. Over the last 12 months, the all items index increased 3.7 percent before seasonal adjustment.

The index for shelter was the largest contributor to the monthly all items increase, accounting for over half of the increase. An increase in the gasoline index was also a major contributor to the all items monthly rise, while the major energy component indexes were mixed in September, the energy index rose 1.5 percent over the month. The food index increased 0.2 percent in September, as it did in the previous two months. The index for food at home increased 0.1 percent over the month while the index for food away from home rose 0.4 percent.

The index for all items less food and energy rose 0.3 percent in September, the same increase as in August. Indexes which increased in September include rent, owners' equivalent rent, lodging away from home, motor vehicle insurance, recreation, personal care, and new vehicles. The indexes for used cars and trucks and for apparel were among those that decreased over the month.

The all items index increased 3.7 percent for the 12 months ending September, the same increase as the 12 months ending in August. The all items less food and energy index rose 4.1 percent over the last 12 months. The energy index decreased 0.5 percent for the 12 months ending September, and the food index increased 3.7 percent over the last year.

Table A. Percent changes in CPI for All Urban Consumers (CPI-U): U.S. city average

	Seasonally adjusted changes from preceding month							Un-adjusted 12-mos. ended Sep. 2023
	Mar. 2023	Apr. 2023	May 2023	Jun. 2023	Jul. 2023	Aug. 2023	Sep. 2023	
All items	0.1	0.4	0.1	0.2	0.2	0.6	0.4	3.7
Food	0.0	0.0	0.2	0.1	0.2	0.2	0.2	3.7
Food at home	-0.3	-0.2	0.1	0.0	0.3	0.2	0.1	2.4
Food away from home(1)	0.6	0.4	0.5	0.4	0.2	0.3	0.4	6.0
Energy	-3.5	0.6	-3.6	0.6	0.1	5.6	1.5	-0.5
Energy commodities	-4.6	2.7	-5.6	0.8	0.3	10.5	2.3	2.2
Gasoline (all types)	-4.6	3.0	-5.6	1.0	0.2	10.6	2.1	3.0
Fuel oil(1)	-4.0	-4.5	-7.7	-0.4	3.0	9.1	8.5	-5.1
Energy services	-2.3	-1.7	-1.4	0.4	-0.1	0.2	0.6	-3.3
Electricity	-0.7	-0.7	-1.0	0.9	-0.7	0.2	1.3	2.6
Utility (piped) gas service	-7.1	-4.9	-2.6	-1.7	2.0	0.1	-1.9	-19.9
All items less food and energy	0.4	0.4	0.4	0.2	0.2	0.3	0.3	4.1
Commodities less food and energy commodities	0.2	0.6	0.6	-0.1	-0.3	-0.1	-0.4	0.0
Used vehicles	0.4	-0.2	-0.1	0.0	-0.1	0.3	0.3	2.5
Used cars and trucks	-0.9	4.4	4.4	-0.5	-1.3	-1.2	-2.5	-8.0
Apparel	0.3	0.3	0.3	0.3	0.0	0.2	-0.8	2.3
Medical care commodities(1)	0.6	0.5	0.6	0.2	0.5	0.6	-0.3	4.2
Services less energy services	0.4	0.4	0.4	0.3	0.4	0.4	0.6	5.7
Shelter	0.6	0.4	0.6	0.4	0.4	0.3	0.6	7.2
Transportation services	1.4	-0.2	0.8	0.1	0.3	2.0	0.7	9.1
Medical care services	-0.5	-0.1	-0.1	0.0	-0.4	0.1	0.3	-2.6

Footnotes (1) Not seasonally adjusted.

Food
The food index rose 0.2 percent in September, as it did in the previous two months. The index for food at home increased 0.1 percent over the month, after rising 0.2 percent in August. Three of the six major grocery store food group indexes increased over the month. The index for meats, poultry, and fish rose 0.5 percent in September as the index for pork increased 1.6 percent. The index for other food at home increased 0.3 percent over the month and the index for dairy and related products rose 0.1 percent.

The index for cereals and bakery products decreased 0.4 percent in September, the first decline in that index since June 2021. The fruits and vegetables index was unchanged over the month, as was the nonalcoholic beverages index.

The food away from home index rose 0.4 percent in September. The index for limited service meals and the index for full service meals each increased 0.4 percent.

The food at home index rose 2.4 percent over the last 12 months. The index for cereals and bakery products rose 1.8 percent over the 12 months ending in September. The dairy and related products index decreased 0.2 percent over the year. The remaining major grocery store food groups posted increases ranging from 0.2 percent (meat, poultry, fish, and eggs) to 4.2 percent (other food at home).

The index for food away from home rose 6.0 percent over the last year. The index for limited service meals rose 6.4 percent over the last 12 months, and the index for full service meals rose 5.1 percent over the same period.

Energy
The energy index rose 1.5 percent in September after increasing 5.6 percent in August. The gasoline index increased 2.1 percent in September, following a 10.6-percent increase in the previous month. (Before seasonal adjustment, gasoline prices rose 0.6 percent in September.)

The index for electricity rose 1.3 percent in September, after increasing 0.2 percent in August. The index for fuel oil also rose in September, increasing 8.5 percent. The natural gas index decreased 1.9 percent over the month, following a 0.1-percent increase in August.

Despite the September monthly increases, the energy index fell 0.5 percent over the past 12 months, with its components mixed. The natural gas index fell 19.9 percent, and the fuel oil index fell 5.1 percent over the span. The gasoline index increased 3.0 percent over the last 12 months, while the index for electricity rose 2.6 percent over the last year.

All items less food and energy
The index for all items less food and energy rose 0.3 percent in September, as it did in August. The shelter index increased 0.6 percent in September, after rising 0.3 percent the previous month. The index for rent rose 0.5 percent in September, and the index for owners' equivalent rent increased 0.6 percent over the month. The lodging away from home index increased 3.7 percent in September, ending a string of 3 consecutive monthly decreases.

The shelter index was the largest factor in the monthly increase in the index for all items less food and energy. Among the other indexes that rose in September was the index for motor vehicle insurance, which increased 1.3 percent after rising 2.4 percent the preceding month. The indexes for recreation, personal care, new vehicles, and household furnishings and operations also increased in September.

The medical care index rose 0.2 percent in September, as it did in August. The index for hospital services increased 1.5 percent over the month, and the index for physicians' services was unchanged. The prescription drugs index fell 0.7 percent in September.

The index for used cars and trucks fell 2.5 percent in September, after decreasing 1.2 percent in August. The apparel index declined 0.8 percent over the month, and the communication index was unchanged.

The index for all items less food and energy rose 4.1 percent over the past 12 months. The shelter index increased 7.2 percent over the last year, accounting for over 70 percent of the total increase in all items less food and energy. Other indexes with notable increases over the last year include motor vehicle insurance (+18.9 percent), recreation (+3.9 percent), personal care (+6.1 percent), and new vehicles (+2.5 percent).

Not seasonally adjusted CPI measures

The Consumer Price Index for All Urban Consumers (CPI-U) increased 3.7 percent over the last 12 months to an index level of 307.789 (1982=84=100). For the month, the index increased 0.2 percent prior to seasonal adjustment.

The Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) increased 3.6 percent over the last 12 months to an index level of 302.257 (1982=84=100). For the month, the index increased 0.2 percent prior to seasonal adjustment.

The Chained Consumer Price Index for All Urban Consumers (C-CPI-U) increased 3.7 percent over the last 12 months. For the month, the index increased 0.2 percent on a not seasonally adjusted basis. Please note that the indexes for the past 10 to 12 months are subject to revision.

The Consumer Price Index for October 2023 is scheduled to be released on Tuesday, November 14, 2023, at 8:30 a.m. (ET).

Seeking Feedback on News Release Format Changes

The Bureau of Labor Statistics (BLS) is implementing a substantial change to the format of our news releases over the next few years. Our objective is to improve readability, accessibility, and consistency while maintaining our high standard of accuracy. Changes include easy-to-read bullets and interactive charts. News release tables will be published with the release in Excel format only.

The Consumer Price Index news release prototype is currently available for feedback on the Redesigned News Releases beta webpage at www.bls.gov/beta/redesigned-news-releases.htm.

Technical Note

Brief Explanation of the CPI
The Consumer Price Index (CPI) measures the change in prices paid by consumers for goods and services. The CPI reflects the spending patterns for each of two population groups: all urban consumers and urban wage earners and clerical workers. The all urban consumer group represents about 93 percent of the total U.S. population. It is based on the expenditures of almost all residents of urban or metropolitan areas, including professionals, the self-employed, the poor, the unemployed, and retired people, as well as urban wage earners and clerical workers. Not included in the CPI are the spending patterns of people living in rural nonmetropolitan areas, farming families, people in the Armed Forces, and those in institutions, such as prisons and mental hospitals. Consumer inflation for all urban consumers is measured by two indexes, namely, the Consumer Price Index for All Urban Consumers (CPI-U) and the Chained Consumer Price Index for All Urban Consumers (C-CPI-U). The Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) is based on the expenditures of households included in the CPI-U definition that meet two requirements: more than one-half of the household's income must come from clerical or wage occupations, and at least one of the household's earners must have been employed for at least six weeks during the previous 12 months. The CPI-W population represents about 29 percent of the total U.S. population and is a subset of the CPI-U population.

The CPIs are based on prices of food, clothing, shelter, fuels, transportation, doctors' and dentists' services, drugs, and other goods and services that people buy for day-to-day living. Prices are collected each month in 75 urban areas across the country from about 6,000 housing units and approximately 22,000 retail establishments (department stores, supermarkets, hospitals, filling stations, and other types of stores and service establishments) all taxes directly associated with the purchase and use of items are included in the index. Prices of fuels and a few other items are obtained every month in all 75 locations. Prices of most other commodities and services are collected every month in the three largest geographic areas and every other month in other areas. Prices of most goods and services are obtained by personal visit, telephone call, web, or app collection by the Bureau's trained representatives.

In calculating the index, price changes for the various items in each location are aggregated using weights, which represent their importance in the spending of the appropriate local area and are then combined to obtain a U.S. city average. For the CPI-U and CPI-W, separate indexes are also published by size of city, by region of the country, for cross-classifications of regions and population-size classes, and for 23 selected local areas. Area indexes do not measure differences in the levels of prices among cities; they only measure the average change in prices for each area since the base period. For the C-CPI-U, data are issued only at the national level. The CPI-U and CPI-W are considered final when released, but the C-CPI-U is issued in preliminary form and subject to three subsequent quarterly revisions.

The index measures price change from a designed reference date. For most of the CPI-U and the CPI-W, the reference base is 1982=84 equals 100. The reference base for the C-CPI-U is December 1999 equals 100. An increase of 7 percent from the reference base, for example, is shown as 107.000. Alternatively, that relationship can also be expressed as the price of a base period market basket of goods and services rising from \$100 to \$107.

Sampling Error in the CPI

The CPI is a statistical estimate that is subject to sampling error because it is based upon a sample of retail prices and not the complete universe of all prices. BLS calculates and publishes estimates of the 1-month, 2-month, 6-month, and 12-month percent change standard errors annually for the CPI-U. These standard error estimates can be used to construct confidence intervals for hypothesis testing. For example, the estimated standard error of the month percent change is 0.03 percent for the U.S. all items CPI. This means that if we repeatedly sample from the universe of all retail prices using the same methodology, and estimate a percentage change for each sample, then 95 percent of these estimates will be within 0.06 percent of the 1-month percentage change based on all retail prices. For example, for a 1-month change of 0.2 percent in the all items CPI-U, we are 95 percent confident that the actual percent change based on all retail prices would fall between 0.14 and 0.26 percent. For the latest data, including information on how to use the estimates of standard error, see www.bls.gov/cpi/tables/variance-estimates/home.htm.

Calculating Index Changes

Movements of the indexes from 1 month to another are usually expressed as percent changes rather than changes in index points. These index point changes are affected by the level of the index in relation to its base period, while percent changes are not. The following table shows an example of using index values to calculate percent changes:

	Item A	Item B	Item C
Year I	112,500	225,000	110,000
Year II	121,500	243,000	128,000
Change in index points	9,000	18,000	18,000
Percent change	9,0/112,500 x 100 = 8.0	18,0/225,000 x 100 = 8.0	18,0/110,000 x 100 = 16.4

Use of Seasonally Adjusted and Unadjusted Data

The Consumer Price Index (CPI) produces both unadjusted and seasonally adjusted data. Seasonally adjusted data are computed using seasonal factors derived by the X-13ARIMA-SEATS seasonal adjustment method. These factors are updated each February, and the new factors are used to revise the previous 5 year of seasonally adjusted data. The factors are available at www.bls.gov/cpi/tables/seasonal-adjustment/seasonal-factors-2022.xlsx. For more information on data revision scheduling, please see the Factsheet on Seasonal Adjustment at www.bls.gov/cpi/seasonal-adjustment/questions-and-answers.htm and the Timeline of Seasonal Adjustment Methodological Changes at www.bls.gov/cpi/seasonal-adjustment/timeline-seasonal-adjustment-methodology-changes.htm.

For analyzing short-term price trends in the economy, seasonally adjusted changes are usually preferred since they eliminate the effect of changes that normally occur at the same time and in about the same magnitude every year—such as price movements resulting from weather events, production cycles, model changes, holidays, and sales. This allows data users to focus on changes that are not typical for the time of year. The unadjusted data are of primary interest to consumers concerned about the prices they actually pay. Unadjusted data are also used extensively for escalation purposes. Many collective bargaining contract agreements and pension plans, for example, tie compensation changes to the Consumer Price Index before adjustment for seasonal variation. BLS advises against the use of seasonally adjusted data in escalation agreements because seasonally adjusted series are revised annually.

Intervention Analysis

The Bureau of Labor Statistics uses intervention analysis seasonal adjustment (IASA) for some CPI series. Sometimes extreme values or sharp movements can distort the underlying seasonal pattern of price change. Intervention analysis seasonal adjustment is a process by which the distortions caused by such unusual events are estimated and removed from the data prior to calculation of seasonal factors. The resulting seasonal factors, which more accurately represent the seasonal pattern, are then applied to the unadjusted data.

For example, this procedure was used for the motor fuel series to offset the effects of the 2009 closure to major pricing after the worldwide economic downturn in 2008. Retaining this outlier data during seasonal factor calculation would distort the computation of the seasonal portion of the time series data for motor fuel, so it was estimated and removed from the data prior to seasonal adjustment. Following that, seasonal factors were calculated based on this "prior adjusted" data. These seasonal factors represent a clearer picture of the seasonal pattern in the data. The last step is for motor fuel seasonal factors to be applied to the unadjusted data.

For the seasonal factors introduced for January 2022, BLS adjusted 72 series using intervention analysis seasonal adjustment, including selected food and beverage items, motor fuels, electricity, and vehicles.

Revision of Seasonally Adjusted Indexes

Seasonally adjusted data, including the U.S. city average all items index levels, are subject to revision for up to 5 years after their original release. Every year, economists in the CPI calculate new seasonal factors for seasonally adjusted series and apply them to the last 5 years of data. Seasonally adjusted indexes beyond the last 5 years of data are considered to be final and not subject to revision. For January 2022, revised seasonal factors and seasonally adjusted indexes for 2017 to 2021 were calculated and published. For series which are directly adjusted using the X-13ARIMA-SEATS seasonal adjustment software, the seasonal factors for 2021 will be applied to data for 2022 to produce the seasonally adjusted 2022 indexes. Series which are indirectly seasonally adjusted by summing seasonally adjusted component series have seasonal factors which are derived and are therefore not available in advance.

Determining Seasonal Status

Each year the seasonal status of every series is reevaluated based upon certain statistical criteria. Using these criteria, BLS economists determine whether a series should change its status from "not seasonally adjusted" to "seasonally adjusted" or vice versa. If any one of the 81 components of the U.S. city average all items index change their seasonal adjustment status from seasonally adjusted to not seasonally adjusted, not seasonally adjusted data will be used in the computation of the segment series for the last 5 years, but the seasonally adjusted indexes before that period will not be changed. For 2022, 22 of the 81 components of the U.S. city average all items index are seasonally adjusted.

Contact Information

For additional information about the CPI visit www.bls.gov/cpi or contact the CPI Information and Analysis Section at 202-691-7000 or cpi_info@bls.gov.

For additional information on seasonal adjustment in the CPI visit www.bls.gov/cpi/seasonal-adjustment/home.htm or contact the CPI seasonal adjustment section at 202-691-6968 or cpiseas@bls.gov.

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