

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF WATER SERVICE)	
CORPORATION OF KENTUCKY FOR A GENERAL)	CASE NO.
ADJUSTMENT IN EXISTING RATES AND A CERTIFICATE)	2022-00147
OF PUBLIC CONVENIENCE AND NECESSITY TO)	
DEPLOY ADVANCED METERING INFRASTRUCTURE)	

**THE ATTORNEY GENERAL AND THE CITY OF CLINTON'S
RESPONSE TO WATER SERVICE CORPORATION OF KENTUCKY'S
FIRST REQUEST FOR INFORMATION**

The Intervenors, the Attorney General of the Commonwealth of Kentucky, through his Office of Rate Intervention (“Attorney General”), and the city of Clinton (“Clinton”), by counsel, submits the following response to Water Service Corporation of Kentucky’s (“Water Service Kentucky” or “the Company”) First Request for Information in the above-styled matter.

Respectfully submitted,

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ATTORNEY GENERAL



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Certificate of Service and Filing

Pursuant to the Commission's Orders and in accord with all other applicable law, Counsel certifies that the foregoing electronic filing was transmitted to the Commission on November 9, 2022, and there are currently no parties that the Commission has excused from participation by electronic means in this proceeding.

This 9th day of November, 2022.

Angela M. Aoad

Assistant Attorney General

Electronic Application of Water Service Corporation of Kentucky for a General Adjustment in Existing Rates and a
Certificate of Public Convenience and Necessity to Deploy Advanced Metering Infrastructure
Case No. 2022-00147
The Attorney General and the City of Clinton's Response to
Water Service Kentucky's First Request for Information

WITNESS RESPONSIBLE:
RICHARD A. BAUDINO

QUESTION NO. 1
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Please provide the electronic workpapers and source documents that support Exhibits RAB-2 through RAB-4 in Excel format with all formulae intact. (WSCK notes that some or all of these electronic workpapers have already been provided by the Attorney General to WSCK.).

RESPONSE:

Please refer to the attached documents, as well as the excel spreadsheets filed contemporaneously with this discovery response. Value Line reports are available through subscription.

Kroll Increases U.S. Normalized Risk-Free Rate from 3.0% to 3.5%, but Spot 20-Year U.S. Treasury Yield Preferred When Higher

Executive Summary:

Kroll regularly reviews fluctuations in global economic and financial market conditions that may warrant changes to our equity risk premium (ERP) and accompanying risk-free rate recommendations. The risk-free rate and ERP are key inputs used to calculate the cost of equity capital in the context of the Capital Asset Pricing Model (CAPM) and other models used to develop discount rates.

Based on market conditions prevailing in mid-June 2022, **Kroll is increasing the U.S. normalized risk-free rate from 3.0% to 3.5% but recommends using the spot 20-year U.S. Treasury yield, if it is higher than 3.5%, when developing USD-denominated discount rates as of June 16, 2022 and thereafter, until further guidance is issued.**

Background

Based on more recent long-term U.S. inflation expectations, **we are increasing the U.S. normalized risk-free rate from 3.0% to 3.5% when developing USD-denominated discount rates as of June 16, 2022, and thereafter**, until further guidance is issued. For the underlying data supporting this guidance, [click here](#).

Previously, the long-term average of 20-year U.S. Treasury yields was an important input in developing our normalized risk-free rate conclusion. We believe that giving some weight to long-term averages was appropriate when the Federal Reserve Bank's (Fed) monetary policy was ultra-accommodative and inflation was below or close to the Fed's inflation target of 2.0%, which kept interest rates at artificially low levels.

For perspective, the annual U.S. consumer price inflation had averaged 1.8% in the 2010s, on a rolling 12-month basis. By contrast, in recent months inflation has continued to surprise on the upside—reaching 40-year highs—with the recent Russia-Ukraine war exacerbating inflationary pressures. This precipitated a significant shift in the Fed's monetary policy stance relative to December 2021. This more restrictive stance entails: (i) more and/or larger policy interest rate hikes, and (ii) an end to the Fed's quantitative easing policies that expanded its balance sheet to near \$9 trillion (instead, the Fed will initiate a quantitative tightening process). The Fed's goal is to contain inflation and normalize the size of its balance sheet.

These recent trends have led to a significant and very rapid rise in U.S. interest rates, with no signs of abating any time soon. For example, the spot 20-year U.S. Treasury yield increased from 1.9% on December 31, 2021 to 3.7% on June 15, 2022, the latter being above our new normalized risk-free rate of 3.5%. Long-term interest rates may finally be reverting to levels considered to be "normal," as attested by the rapid *acceleration* in the rise in yields over the last month and the dramatic change in Fed's projected trajectory for policy interest rate hikes as announced on June 15, 2022.

Therefore, **we recommend using the spot 20-year U.S. Treasury yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended U.S. normalized risk-free rate of 3.5%. This guidance is effective when developing USD-denominated discount rates as of June 16, 2022 and thereafter.**

This hybrid risk-free rate recommendation is to be used with our U.S. recommended ERP (reaffirmed at 5.5%), implying a base U.S. cost of equity capital of at least 9.0% (= the *higher* of the normalized 3.5% risk-free rate OR the U.S. 20-year U.S. Treasury yield + 5.5%).

The adoption of this hybrid methodology in selecting risk-free rates, which was previously used during 2009-2011, is designed to give analysts the flexibility to adjust to potential rapid changes in yields that may outpace any changes indicated by our risk-free rate normalization models.

Please contact the costofcapital.support@kroll.com with any questions.

Kroll Cost of Capital Inputs

Data as of June 16, 2022

	U.S. (in USD)	Eurozone ** (in EUR)	U.K. (in GBP)	Canada (in CAD)
Normalized Risk-Free Rate	Higher of 3.5% or Spot*	2.0%	3.0%	3.0%
Kroll Recommended Equity Risk Premium	5.5%	5.5% to 6.0%	n/a	n/a

* We recommend using the spot 20-year U.S. Treasury yield as the proxy for the risk-free rate, if the prevailing yield as of the valuation date is higher than our recommended U.S. normalized risk-free rate of 3.5%. This guidance is effective when developing USD-denominated discount rates as of June 16, 2022, and thereafter.

** German normalized risk-free rate and Eurozone equity risk premium (ERP) for use in EUR-denominated discount rates from a German investor perspective. Additional country risk adjustments may be warranted when estimating discount rates for other countries in the Eurozone.



**Transmission of material in this release is embargoed until
 8:30 a.m. (ET) Tuesday, September 13, 2022**

USDL-22-1834

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CONSUMER PRICE INDEX – AUGUST 2022

The Consumer Price Index for All Urban Consumers (CPI-U) rose 0.1 percent in August on a seasonally adjusted basis after being unchanged in July, the U.S. Bureau of Labor Statistics reported today. Over the last 12 months, the all items index increased 8.3 percent before seasonal adjustment.

Increases in the shelter, food, and medical care indexes were the largest of many contributors to the broad-based monthly all items increase. These increases were mostly offset by a 10.6-percent decline in the gasoline index. The food index continued to rise, increasing 0.8 percent over the month as the food at home index rose 0.7 percent. The energy index fell 5.0 percent over the month as the gasoline index declined, but the electricity and natural gas indexes increased.

The index for all items less food and energy rose 0.6 percent in August, a larger increase than in July. The indexes for shelter, medical care, household furnishings and operations, new vehicles, motor vehicle insurance, and education were among those that increased over the month. There were some indexes that declined in August, including those for airline fares, communication, and used cars and trucks.

The all items index increased 8.3 percent for the 12 months ending August, a smaller figure than the 8.5-percent increase for the period ending July. The all items less food and energy index rose 6.3 percent over the last 12 months. The energy index increased 23.8 percent for the 12 months ending August, a smaller increase than the 32.9-percent increase for the period ending July. The food index increased 11.4 percent over the last year, the largest 12-month increase since the period ending May 1979.

Chart 1. One-month percent change in CPI for All Urban Consumers (CPI-U), seasonally adjusted, Aug. 2021 - Aug. 2022
 Percent change

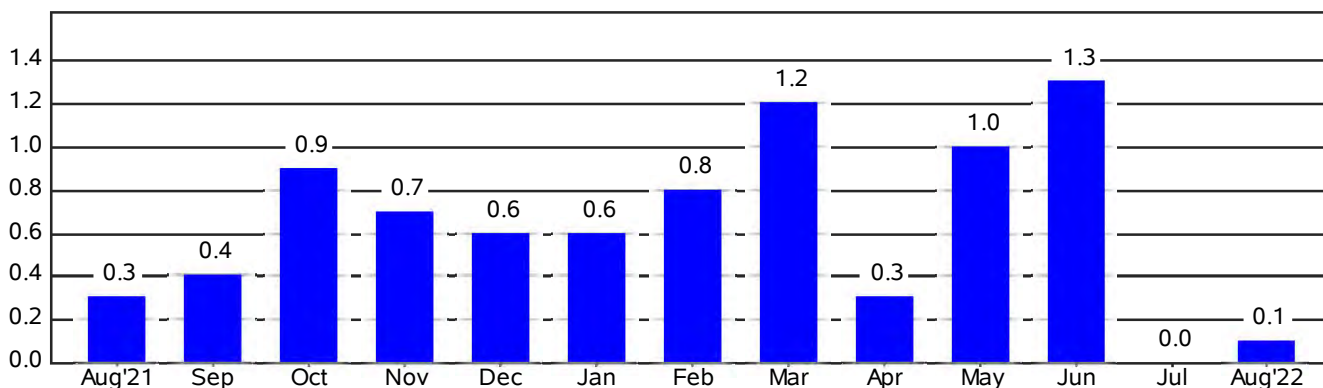


Chart 2. 12-month percent change in CPI for All Urban Consumers (CPI-U), not seasonally adjusted, Aug. 2021 - Aug. 2022

Percent change

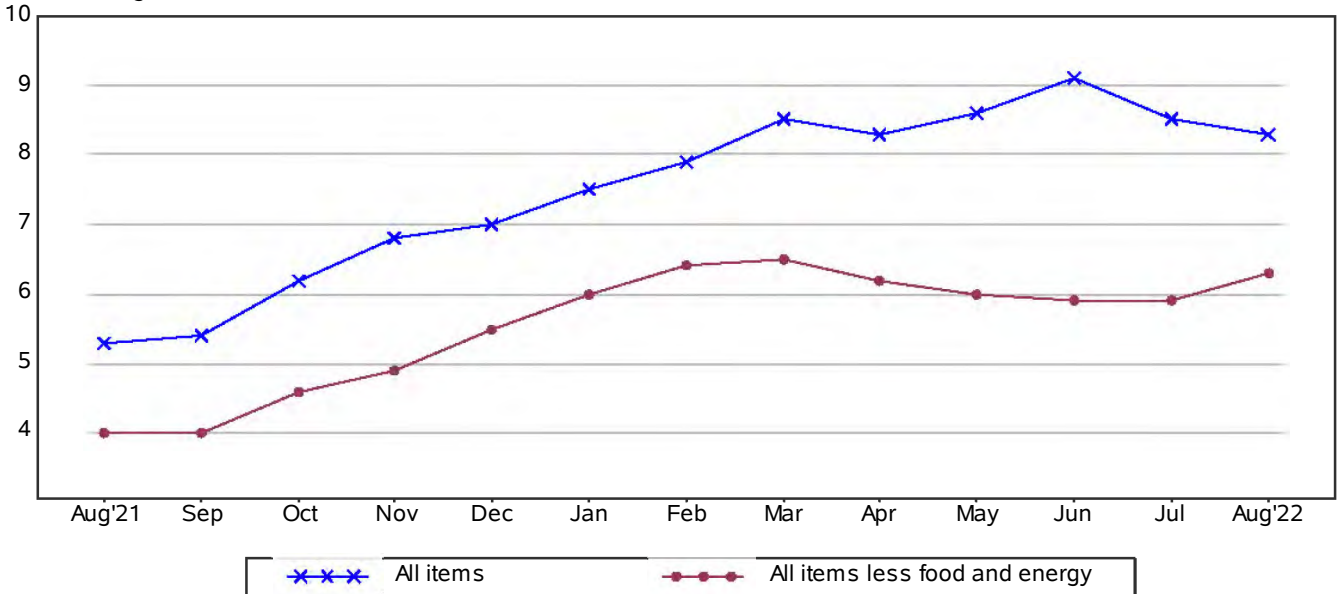


Table A. Percent changes in CPI for All Urban Consumers (CPI-U): U.S. city average

	Seasonally adjusted changes from preceding month							Un-adjusted 12-mos. ended Aug. 2022
	Feb. 2022	Mar. 2022	Apr. 2022	May 2022	Jun. 2022	Jul. 2022	Aug. 2022	
All items.....	0.8	1.2	0.3	1.0	1.3	0.0	0.1	8.3
Food.....	1.0	1.0	0.9	1.2	1.0	1.1	0.8	11.4
Food at home.....	1.4	1.5	1.0	1.4	1.0	1.3	0.7	13.5
Food away from home ¹	0.4	0.3	0.6	0.7	0.9	0.7	0.9	8.0
Energy.....	3.5	11.0	-2.7	3.9	7.5	-4.6	-5.0	23.8
Energy commodities.....	6.7	18.1	-5.4	4.5	10.4	-7.6	-10.1	27.1
Gasoline (all types).....	6.6	18.3	-6.1	4.1	11.2	-7.7	-10.6	25.6
Fuel oil ¹	7.7	22.3	2.7	16.9	-1.2	-11.0	-5.9	68.8
Energy services.....	-0.4	1.8	1.3	3.0	3.5	0.1	2.1	19.8
Electricity.....	-1.1	2.2	0.7	1.3	1.7	1.6	1.5	15.8
Utility (piped) gas service.....	1.5	0.6	3.1	8.0	8.2	-3.6	3.5	33.0
All items less food and energy.....	0.5	0.3	0.6	0.6	0.7	0.3	0.6	6.3
Commodities less food and energy commodities.....	0.4	-0.4	0.2	0.7	0.8	0.2	0.5	7.1
New vehicles.....	0.3	0.2	1.1	1.0	0.7	0.6	0.8	10.1
Used cars and trucks.....	-0.2	-3.8	-0.4	1.8	1.6	-0.4	-0.1	7.8
Apparel.....	0.7	0.6	-0.8	0.7	0.8	-0.1	0.2	5.1
Medical care commodities ¹	0.3	0.2	0.1	0.3	0.4	0.6	0.2	4.1
Services less energy services.....	0.5	0.6	0.7	0.6	0.7	0.4	0.6	6.1
Shelter.....	0.5	0.5	0.5	0.6	0.6	0.5	0.7	6.2
Transportation services.....	1.4	2.0	3.1	1.3	2.1	-0.5	0.5	11.3
Medical care services.....	0.1	0.6	0.5	0.4	0.7	0.4	0.8	5.6

¹ Not seasonally adjusted.

Food

The food index increased 0.8 percent in August, the smallest monthly increase in that index since December 2021. The food at home index rose 0.7 percent in August as all six major grocery store food group indexes increased. The index for other food at home rose 1.1 percent, while the index for cereals and bakery products rose 1.2 percent over the month. The meats, poultry, fish, and eggs index; the fruits and vegetables index; and the nonalcoholic beverages index all increased 0.5 percent in August. The index for dairy and related products increased 0.3 percent over the month, the smallest increase in that index since November 2021.

The food away from home index rose 0.9 percent in August after rising 0.7 percent in July. The index for full service meals increased 0.8 percent and the index for limited service meals increased 0.7 percent over the month.

The food at home index rose 13.5 percent over the last 12 months, the largest 12-month increase since the period ending March 1979. The index for other food at home rose 16.7 percent and the index for cereals and bakery products increased 16.4 percent over the year. The remaining major grocery store food groups posted increases ranging from 9.4 percent (fruits and vegetables) to 16.2 percent (dairy and related products).

The index for food away from home rose 8.0 percent over the last year. The index for full service meals rose 9.0 percent over the last 12 months, and the index for limited service meals rose 7.2 percent over the last year.

Energy

The energy index fell 5.0 percent in August after declining 4.6 percent in July. The gasoline index fell 10.6 percent over the month following a 7.7-percent decrease in July. (Before seasonal adjustment, gasoline prices fell 12.2 percent in August.) However, the electricity index increased in August, rising 1.5 percent, its fourth consecutive monthly increase of at least 1.3 percent. The index for natural gas also increased over the month, rising 3.5 percent after declining 3.6 percent in July.

The energy index rose 23.8 percent over the past 12 months. The gasoline index increased 25.6 percent over the span and the fuel oil index rose 68.8 percent. The index for electricity rose 15.8 percent, the largest 12-month increase since the period ending August 1981. The index for natural gas increased 33.0 percent over the last 12 months.

All items less food and energy

The index for all items less food and energy rose 0.6 percent in August after increasing 0.3 percent in July. The shelter index continued to rise, increasing 0.7 percent in August compared to 0.5 percent in July. The rent index rose 0.7 percent in August as did the owners' equivalent rent index. The index for lodging away from home rose 0.1 percent over the month after declining in June and July.

The medical care index rose 0.7 percent in August after rising 0.4 percent in July as major medical care component indexes continued to increase. The index for hospital services increased 0.7 percent over the month, while the index for prescription drugs increased 0.4 percent. The index for physicians' services rose 0.2 percent in August.

The index for household furnishings and operations continued to rise, increasing 1.0 percent in August after rising 0.6 percent in July. The new vehicles index increased 0.8 percent over the month, and the motor vehicle insurance index rose 1.3 percent in August. Other indexes that increased in August include personal care (+0.6 percent), education (+0.5 percent), recreation (+0.2 percent), and apparel (+0.2 percent).

The index for airline fares continued to decline in August, decreasing 4.6 percent after falling 7.8 percent in July. The communication index fell 0.2 percent in August following a 0.4-percent decline in July. The index for used cars and trucks also declined over the month, falling 0.1 percent.

The index for all items less food and energy rose 6.3 percent over the past 12 months, a larger increase than the 5.9-percent increase for the 12 months ending in July. The shelter index rose 6.2 percent over the last year, accounting for about 40 percent of the total increase in all items less food and energy. Other indexes with notable increases over the last year include household furnishings and operations (+9.9 percent), medical care (+5.4 percent), new vehicles (+10.1 percent), and used cars and trucks (+7.8 percent).

Not seasonally adjusted CPI measures

The Consumer Price Index for All Urban Consumers (CPI-U) increased 8.3 percent over the last 12 months to an index level of 296.171 (1982-84=100). For the month, the index was unchanged prior to seasonal adjustment.

The Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W) increased 8.7 percent over the last 12 months to an index level of 291.629 (1982-84=100). For the month, the index declined 0.2 percent prior to seasonal adjustment.

The Chained Consumer Price Index for All Urban Consumers (C-CPI-U) increased 8.0 percent over the last 12 months. For the month, the index increased 0.1 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 September 2022 is scheduled to be released on Thursday, October 13, 2022, at 8:30 a.m. (ET).

January 2023 Consumer Price Index Weight Update

Starting with January 2023 data, BLS plans to update weights annually for the Consumer Price Index based on a single calendar year of data, using consumer expenditure data from 2021. This reflects a change from prior practice of updating weights biennially using two years of expenditure data.

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 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 37 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, or web 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 population group. Local data 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 level 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 1-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, because 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	$9.0/112.500 \times 100 = 8.0$	$18.0/225.000 \times 100 = 8.0$	$18.0/110.000 \times 100 = 16.4$

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 years 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 changeovers, 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 return to normal 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 Census 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 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 aggregation of the dependent 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.

If you are deaf, hard of hearing, or have a speech disability, please dial 7-1-1 to access telecommunications relay services.

Table 1. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Unadjusted indexes			Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021	Jul. 2022	Aug. 2022	Aug. 2021-Aug. 2022	Jul. 2022-Aug. 2022	May 2022-Jun. 2022	Jun. 2022-Jul. 2022	Jul. 2022-Aug. 2022
All items.....	100.000	273.567	296.276	296.171	8.3	0.0	1.3	0.0	0.1
Food.....	13.527	279.135	308.532	310.875	11.4	0.8	1.0	1.1	0.8
Food at home.....	8.414	259.825	292.972	295.007	13.5	0.7	1.0	1.3	0.7
Cereals and bakery products.....	1.086	288.990	332.968	336.399	16.4	1.0	2.1	1.8	1.2
Meats, poultry, fish, and eggs.....	1.900	288.367	318.141	318.867	10.6	0.2	-0.4	0.5	0.5
Dairy and related products.....	0.798	230.145	265.638	267.461	16.2	0.7	1.7	1.7	0.3
Fruits and vegetables.....	1.407	313.672	341.839	343.221	9.4	0.4	0.7	0.5	0.5
Nonalcoholic beverages and beverage materials.....	0.964	182.277	204.944	206.693	13.4	0.9	0.8	2.3	0.5
Other food at home.....	2.259	222.863	257.295	259.976	16.7	1.0	1.8	1.8	1.1
Food away from home ¹	5.113	309.336	331.342	334.212	8.0	0.9	0.9	0.7	0.9
Energy.....	8.782	246.639	325.407	305.372	23.8	-6.2	7.5	-4.6	-5.0
Energy commodities.....	5.170	281.730	405.676	358.038	27.1	-11.7	10.4	-7.6	-10.1
Fuel oil ¹	0.165	276.557	495.910	466.755	68.8	-5.9	-1.2	-11.0	-5.9
Motor fuel.....	4.931	278.461	399.682	351.315	26.2	-12.1	11.0	-7.6	-10.5
Gasoline (all types).....	4.824	277.448	396.952	348.593	25.6	-12.2	11.2	-7.7	-10.6
Energy services.....	3.612	223.272	262.731	267.564	19.8	1.8	3.5	0.1	2.1
Electricity.....	2.658	229.088	262.347	265.191	15.8	1.1	1.7	1.6	1.5
Utility (piped) gas service.....	0.954	202.140	258.666	268.866	33.0	3.9	8.2	-3.6	3.5
All items less food and energy.....	77.691	279.507	295.646	297.178	6.3	0.5	0.7	0.3	0.6
Commodities less food and energy commodities.....	21.168	156.581	166.746	167.637	7.1	0.5	0.8	0.2	0.5
Apparel.....	2.391	121.194	125.188	127.328	5.1	1.7	0.8	-0.1	0.2
New vehicles.....	4.024	158.652	173.618	174.598	10.1	0.6	0.7	0.6	0.8
Used cars and trucks.....	4.021	197.535	213.683	212.895	7.8	-0.4	1.6	-0.4	-0.1
Medical care commodities ¹	1.474	375.685	390.077	391.032	4.1	0.2	0.4	0.6	0.2
Alcoholic beverages.....	0.865	264.315	274.344	275.627	4.3	0.5	0.4	0.5	0.4
Tobacco and smoking products ¹	0.511	1,254.492	1,349.636	1,364.765	8.8	1.1	0.6	0.3	1.1
Services less energy services.....	56.523	355.423	375.060	376.980	6.1	0.5	0.7	0.4	0.6
Shelter.....	32.247	336.284	354.935	357.264	6.2	0.7	0.6	0.5	0.7
Rent of primary residence.....	7.246	349.710	370.448	373.283	6.7	0.8	0.8	0.7	0.7
Owners' equivalent rent of residences ²	23.654	344.327	363.311	365.993	6.3	0.7	0.7	0.6	0.7
Medical care services.....	6.807	573.500	601.056	605.883	5.6	0.8	0.7	0.4	0.8
Physicians' services ¹	1.802	408.490	411.846	412.828	1.1	0.2	0.1	0.3	0.2
Hospital services ³	2.129	365.843	377.415	380.339	4.0	0.8	0.3	0.5	0.7
Transportation services.....	5.872	325.652	363.389	362.511	11.3	-0.2	2.1	-0.5	0.5
Motor vehicle maintenance and repair ¹	1.034	320.504	343.678	349.539	9.1	1.7	2.0	1.1	1.7
Motor vehicle insurance.....	2.407	566.183	609.585	615.559	8.7	1.0	1.9	1.3	1.3
Airline fares.....	0.673	212.882	311.205	283.911	33.4	-8.8	-1.8	-7.8	-4.6

¹ Not seasonally adjusted.

² Indexes on a December 1982=100 base.

³ Indexes on a December 1996=100 base.

Table 2. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by detailed expenditure category, August 2022

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021-Aug. 2022	Jul. 2022-Aug. 2022	May 2022-Jun. 2022	Jun. 2022-Jul. 2022	Jul. 2022-Aug. 2022
All items.....	100.000	8.3	0.0	1.3	0.0	0.1
Food.....	13.527	11.4	0.8	1.0	1.1	0.8
Food at home.....	8.414	13.5	0.7	1.0	1.3	0.7
Cereals and bakery products.....	1.086	16.4	1.0	2.1	1.8	1.2
Cereals and cereal products.....	0.353	17.4	0.5	2.1	1.9	0.8
Flour and prepared flour mixes.....	0.058	23.3	1.9	5.3	3.2	2.2
Breakfast cereal ¹	0.149	16.4	0.0	2.5	2.0	0.0
Rice, pasta, cornmeal.....	0.146	15.7	0.5	0.7	0.9	0.7
Rice ^{1, 2, 3}		13.0	0.6	-1.1	1.4	0.6
Bakery products ¹	0.733	16.0	1.3	1.8	2.0	1.3
Bread ^{1, 2}	0.205	16.2	2.2	1.6	2.8	2.2
White bread ^{1, 3}		16.4	2.6	1.8	2.0	2.6
Bread other than white ^{1, 3}		16.1	1.7	1.3	3.5	1.7
Fresh biscuits, rolls, muffins ²	0.110	17.1	1.4	3.5	1.6	1.2
Cakes, cupcakes, and cookies ¹	0.181	14.4	0.4	1.8	1.7	0.4
Cookies ^{1, 3}		14.3	0.0	1.3	1.7	0.0
Fresh cakes and cupcakes ^{1, 3}		12.9	-0.1	2.9	1.2	-0.1
Other bakery products.....	0.237	16.5	1.2	1.2	1.9	1.3
Fresh sweetrolls, coffeecakes, doughnuts ^{1, 3}		14.1	2.0	1.7	0.5	2.0
Crackers, bread, and cracker products ³		17.7	0.3	0.9	3.3	0.1
Frozen and refrigerated bakery products, pies, tarts, turnovers ^{1, 3}		18.1	1.4	2.9	0.7	1.4
Meats, poultry, fish, and eggs.....	1.900	10.6	0.2	-0.4	0.5	0.5
Meats, poultry, and fish.....	1.768	8.8	0.0	-0.4	0.2	0.3
Meats.....	1.113	6.7	-0.2	-1.3	0.0	0.3
Beef and veal.....	0.511	2.5	-0.3	-2.3	0.0	0.8
Uncooked ground beef ¹	0.189	7.8	0.5	-0.1	0.8	0.5
Uncooked beef roasts ^{1, 2}	0.075	3.3	1.3	-2.0	-1.3	1.3
Uncooked beef steaks ²	0.197	-3.0	-1.7	-1.6	-1.1	0.0
Uncooked other beef and veal ^{1, 2}	0.050	4.9	0.2	-1.9	1.8	0.2
Pork.....	0.360	6.8	-0.1	-1.6	-0.2	0.3
Bacon, breakfast sausage, and related products ²	0.161	9.0	-0.3	-1.7	1.0	0.1
Bacon and related products ³		5.7	-0.7	-1.9	0.2	-0.5
Breakfast sausage and related products ^{2, 3}		14.4	0.2	-1.0	2.6	0.7
Ham.....	0.064	9.2	2.5	1.1	-1.0	1.3
Ham, excluding canned ³		8.8	2.8	1.2	-1.6	1.6
Pork chops ¹	0.051	5.2	0.4	-1.4	2.3	0.4
Other pork including roasts, steaks, and ribs ²	0.083	2.3	-1.9	-1.2	-0.5	-1.9
Other meats.....	0.242	16.6	-0.1	1.5	0.3	-0.6
Frankfurters ³		18.3	5.3	4.5	-6.1	4.9
Lunchmeats ^{1, 2, 3}		18.2	-0.3	0.6	1.1	-0.3
Poultry ¹	0.367	15.9	0.8	1.5	1.2	0.8
Chicken ^{1, 2}	0.299	16.6	0.5	1.7	1.4	0.5
Fresh whole chicken ^{1, 3}		14.8	0.0	1.2	1.9	0.0
Fresh and frozen chicken parts ^{1, 3}		17.8	0.8	1.7	1.1	0.8
Other uncooked poultry including turkey ²	0.068	12.8	2.3	0.4	1.2	2.2
Fish and seafood.....	0.287	8.7	-0.2	0.5	-0.1	-0.2
Fresh fish and seafood ^{1, 2}	0.147	7.8	-0.6	-0.4	0.1	-0.6
Processed fish and seafood ²	0.141	9.7	0.3	1.6	-1.2	0.0
Shelf stable fish and seafood ³		8.1	1.5	2.0	-3.3	2.4
Frozen fish and seafood ³		11.7	-0.5	2.2	-0.6	-0.6
Eggs ¹	0.132	39.8	2.9	0.3	4.3	2.9

See footnotes at end of table.

Table 2. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by detailed expenditure category, August 2022 — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021- Aug. 2022	Jul. 2022- Aug. 2022	May 2022- Jun. 2022	Jun. 2022- Jul. 2022	Jul. 2022- Aug. 2022
Dairy and related products.....	0.798	16.2	0.7	1.7	1.7	0.3
Milk ²	0.205	17.0	0.5	0.8	0.1	0.2
Fresh whole milk ³		16.1	0.5	0.1	-1.4	0.7
Fresh milk other than whole ^{2, 3}		17.7	0.6	1.2	0.6	0.2
Cheese and related products ¹	0.260	13.5	0.8	1.0	2.0	0.8
Ice cream and related products.....	0.115	14.0	2.0	4.0	0.7	1.2
Other dairy and related products ^{1, 2}	0.218	20.0	0.0	1.9	3.7	0.0
Fruits and vegetables.....	1.407	9.4	0.4	0.7	0.5	0.5
Fresh fruits and vegetables.....	1.069	7.9	0.1	0.5	0.1	0.1
Fresh fruits.....	0.574	8.3	-0.6	0.2	0.2	-0.7
Apples.....	0.077	3.8	-0.6	0.8	-1.0	-2.3
Bananas ¹	0.079	8.3	-0.2	0.5	0.9	-0.2
Citrus fruits ²	0.166	8.6	-0.4	-4.5	-3.2	-1.6
Oranges, including tangerines ³		14.4	1.6	-3.0	-2.1	1.5
Other fresh fruits ²	0.252	9.2	-0.9	2.4	2.4	0.3
Fresh vegetables.....	0.495	7.6	1.0	0.8	0.1	1.2
Potatoes.....	0.083	15.2	3.1	1.5	3.3	2.5
Lettuce ¹	0.057	10.7	0.8	0.3	-1.0	0.8
Tomatoes.....	0.075	-0.2	2.5	-0.9	-2.5	2.3
Other fresh vegetables.....	0.278	7.0	0.0	0.7	1.2	-0.3
Processed fruits and vegetables ²	0.338	14.2	1.3	1.2	1.6	1.7
Canned fruits and vegetables ²	0.174	16.6	1.9	1.4	1.6	1.8
Canned fruits ^{2, 3}		16.6	3.0	0.1	1.2	3.4
Canned vegetables ^{2, 3}		16.1	1.3	2.1	1.5	1.3
Frozen fruits and vegetables ²	0.099	11.4	1.1	0.4	0.9	1.4
Frozen vegetables ³		11.9	1.4	0.9	1.0	1.7
Other processed fruits and vegetables including dried ²	0.065	12.7	0.3	1.1	2.7	0.8
Dried beans, peas, and lentils ^{1, 2, 3}		11.6	0.2	-1.0	1.7	0.2
Nonalcoholic beverages and beverage materials.....	0.964	13.4	0.9	0.8	2.3	0.5
Juices and nonalcoholic drinks ²	0.675	13.1	1.4	0.6	2.0	1.1
Carbonated drinks.....	0.281	12.9	2.2	-0.4	2.7	1.0
Frozen noncarbonated juices and drinks ^{1, 2}	0.007	5.7	-3.1	2.4	-1.1	-3.1
Nonfrozen noncarbonated juices and drinks ²	0.387	13.4	0.8	1.6	1.5	1.1
Beverage materials including coffee and tea ²	0.289	14.0	-0.3	0.7	3.1	-0.8
Coffee.....	0.188	17.6	-0.6	0.4	3.5	-1.0
Roasted coffee ³		18.7	-0.4	0.7	3.2	-0.7
Instant coffee ^{1, 3}		13.0	-0.6	1.0	2.3	-0.6
Other beverage materials including tea ^{1, 2}	0.101	7.7	0.2	1.0	2.4	0.2
Other food at home.....	2.259	16.7	1.0	1.8	1.8	1.1
Sugar and sweets ¹	0.281	12.7	1.5	1.1	2.0	1.5
Sugar and sugar substitutes.....	0.042	15.9	1.8	2.1	2.1	2.4
Candy and chewing gum ^{1, 2}	0.176	10.9	1.9	0.7	2.0	1.9
Other sweets ²	0.063	15.8	0.2	1.5	2.0	0.5
Fats and oils.....	0.254	21.5	1.7	2.6	2.2	1.9
Butter and margarine ²	0.080	29.3	3.2	5.0	0.2	2.7
Butter ³		24.6	2.7	4.8	0.2	1.9
Margarine ^{1, 3}		38.3	7.3	6.8	-0.8	7.3
Salad dressing ²	0.057	11.8	-0.5	3.3	1.6	-0.4
Other fats and oils including peanut butter ²	0.116	21.3	1.6	1.1	3.6	2.6
Peanut butter ^{1, 2, 3}		15.2	-1.0	-2.0	3.5	-1.0
Other foods.....	1.724	16.6	0.9	1.8	1.7	0.9
Soups.....	0.106	18.5	0.4	2.0	3.0	0.7
Frozen and freeze dried prepared foods.....	0.280	18.5	0.8	2.8	1.5	1.5

See footnotes at end of table.

Table 2. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by detailed expenditure category, August 2022 — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021-Aug. 2022	Jul. 2022-Aug. 2022	May 2022-Jun. 2022	Jun. 2022-Jul. 2022	Jul. 2022-Aug. 2022
Snacks ¹	0.372	16.7	0.8	1.8	1.8	0.8
Spices, seasonings, condiments, sauces.....	0.329	15.4	1.4	1.1	2.4	0.8
Salt and other seasonings and spices ^{2, 3}		14.8	0.2	0.0	2.0	0.8
Olives, pickles, relishes ^{1, 2, 3}		19.4	4.0	0.9	3.0	4.0
Sauces and gravies ^{2, 3}		17.6	1.6	1.4	3.4	0.9
Other condiments ³		11.1	2.5	2.1	0.5	1.7
Baby food ^{1, 2}	0.044	12.6	-2.0	1.1	2.1	-2.0
Other miscellaneous foods ²	0.592	16.5	1.0	2.1	1.6	1.7
Prepared salads ^{3, 4}		17.3	1.5	3.2	0.2	1.6
Food away from home ¹	5.113	8.0	0.9	0.9	0.7	0.9
Full service meals and snacks ^{1, 2}	2.385	9.0	0.8	0.8	0.6	0.8
Limited service meals and snacks ^{1, 2}	2.479	7.2	0.7	0.7	0.8	0.7
Food at employee sites and schools ^{1, 2}	0.042	23.7	19.3	24.2	0.9	19.3
Food at elementary and secondary schools ^{1, 3, 5}						
Food from vending machines and mobile vendors ^{1, 2}	0.037	6.9	0.1	1.8	0.1	0.1
Other food away from home ^{1, 2}	0.171	6.5	0.1	1.8	0.8	0.1
Energy.....	8.782	23.8	-6.2	7.5	-4.6	-5.0
Energy commodities.....	5.170	27.1	-11.7	10.4	-7.6	-10.1
Fuel oil and other fuels.....	0.239	48.8	-4.3	-0.7	-8.1	-2.4
Fuel oil ¹	0.165	68.8	-5.9	-1.2	-11.0	-5.9
Propane, kerosene, and firewood ⁶	0.074	18.8	-0.9	1.1	-1.0	-0.9
Motor fuel.....	4.931	26.2	-12.1	11.0	-7.6	-10.5
Gasoline (all types).....	4.824	25.6	-12.2	11.2	-7.7	-10.6
Gasoline, unleaded regular ³		25.8	-12.5	11.3	-8.0	-10.8
Gasoline, unleaded midgrade ^{3, 7}		25.5	-11.4	10.4	-6.4	-10.0
Gasoline, unleaded premium ³		24.7	-10.1	9.4	-5.4	-8.8
Other motor fuels ^{1, 2}	0.107	53.0	-8.4	3.9	-2.4	-8.4
Energy services.....	3.612	19.8	1.8	3.5	0.1	2.1
Electricity.....	2.658	15.8	1.1	1.7	1.6	1.5
Utility (piped) gas service.....	0.954	33.0	3.9	8.2	-3.6	3.5
All items less food and energy.....	77.691	6.3	0.5	0.7	0.3	0.6
Commodities less food and energy commodities.....	21.168	7.1	0.5	0.8	0.2	0.5
Household furnishings and supplies ⁸	3.920	10.6	0.7	0.5	0.6	1.1
Window and floor coverings and other linens ^{1, 2}	0.287	6.8	2.3	0.3	-0.2	2.3
Floor coverings ^{1, 2}	0.067	14.8	3.6	1.0	0.1	3.6
Window coverings ^{1, 2}	0.058	6.9	3.7	-3.9	4.0	3.7
Other linens ^{1, 2}	0.163	3.9	1.2	1.6	-1.8	1.2
Furniture and bedding ¹	0.973	12.8	0.5	1.1	0.9	0.5
Bedroom furniture ¹	0.316	8.7	-0.2	1.1	1.2	-0.2
Living room, kitchen, and dining room furniture ^{1, 2}	0.483	17.7	1.1	2.1	2.7	1.1
Other furniture ²	0.165	7.5	-0.1	-1.7	-3.1	0.8
Appliances ²	0.247	3.0	-1.0	0.2	-0.6	-1.2
Major appliances ²	0.081	2.2	-1.7	0.0	-2.2	-1.5
Laundry equipment ^{1, 3}		10.8	6.9	-0.9	1.7	6.9
Other appliances ^{1, 2}	0.163	3.4	-0.6	0.8	-0.8	-0.6
Other household equipment and furnishings ²	0.550	8.3	0.3	1.2	0.3	0.8
Clocks, lamps, and decorator items ¹	0.329	9.0	0.3	0.5	-0.3	0.3
Indoor plants and flowers ⁹	0.097	5.6	0.6	0.8	0.0	1.4
Dishes and flatware ^{1, 2}	0.050	13.7	1.1	0.3	0.3	1.1
Nonelectric cookware and tableware ^{1, 2}	0.075	6.0	-0.3	1.2	-0.7	-0.3
Tools, hardware, outdoor equipment and supplies ²	0.919	11.7	1.2	-0.2	0.4	1.4
Tools, hardware and supplies ^{1, 2}	0.240	9.6	1.6	0.4	-0.1	1.6
Outdoor equipment and supplies ²	0.458	13.1	1.0	-0.3	0.8	1.2

See footnotes at end of table.

Table 2. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by detailed expenditure category, August 2022 — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021- Aug. 2022	Jul. 2022- Aug. 2022	May 2022- Jun. 2022	Jun. 2022- Jul. 2022	Jul. 2022- Aug. 2022
Housekeeping supplies ¹	0.943	11.7	0.4	1.2	1.3	0.4
Household cleaning products ^{1, 2}	0.342	10.5	0.4	0.5	0.5	0.4
Household paper products ^{1, 2}	0.220	14.1	0.6	2.2	3.1	0.6
Miscellaneous household products ^{1, 2}	0.382	11.5	0.4	1.4	1.0	0.4
Apparel.....	2.391	5.1	1.7	0.8	-0.1	0.2
Men's and boys' apparel.....	0.604	5.2	1.7	1.0	-1.2	0.0
Men's apparel.....	0.465	4.8	1.8	0.3	-1.0	-0.1
Men's suits, sport coats, and outerwear.....	0.077	11.0	1.2	1.8	-1.2	-2.3
Men's underwear, nightwear, swimwear, and accessories ¹	0.155	2.3	0.7	0.8	-2.4	0.7
Men's shirts and sweaters ²	0.110	5.6	4.3	-2.0	-0.5	1.3
Men's pants and shorts.....	0.117	3.5	1.4	0.4	1.3	3.0
Boys' apparel.....	0.139	7.4	1.4	1.4	-0.3	0.5
Women's and girls' apparel.....	0.921	5.4	2.8	0.0	0.9	0.8
Women's apparel.....	0.775	5.6	2.5	-0.1	1.2	0.5
Women's outerwear.....	0.057	6.9	2.5	0.6	-1.9	-0.6
Women's dresses.....	0.083	1.6	2.2	0.8	3.0	-4.6
Women's suits and separates ²	0.374	7.5	2.4	0.4	2.7	1.2
Women's underwear, nightwear, swimwear, and accessories ²	0.255	3.6	2.7	-1.5	0.3	2.1
Girls' apparel.....	0.146	4.8	4.3	0.5	-0.8	2.6
Footwear.....	0.594	5.0	0.5	1.6	-0.1	-0.5
Men's footwear ¹	0.199	4.0	0.2	1.7	-1.4	0.2
Boys' and girls' footwear.....	0.115	6.8	0.3	1.2	-1.2	-0.1
Women's footwear.....	0.280	4.9	0.9	0.8	1.3	-0.6
Infants' and toddlers' apparel.....	0.112	8.6	1.9	1.3	-1.3	0.6
Jewelry and watches ⁶	0.160	-0.3	-0.4	1.4	-0.5	0.0
Watches ^{1, 6}	0.030	1.3	-0.1	0.1	1.2	-0.1
Jewelry ⁶	0.130	-1.2	-0.4	1.5	-1.2	0.1
Transportation commodities less motor fuel ⁸	8.559	9.1	0.1	1.1	0.1	0.4
New vehicles.....	4.024	10.1	0.6	0.7	0.6	0.8
New cars ³		10.9	0.4	0.5	0.8	0.7
New trucks ^{3, 10}		9.8	0.6	0.8	0.6	0.9
Used cars and trucks.....	4.021	7.8	-0.4	1.6	-0.4	-0.1
Motor vehicle parts and equipment ¹	0.425	13.4	1.1	0.4	0.4	1.1
Tires ¹	0.269	13.7	1.2	0.7	0.1	1.2
Vehicle accessories other than tires ^{1, 2}	0.156	12.9	0.9	0.0	0.7	0.9
Vehicle parts and equipment other than tires ^{1, 3}		11.5	0.9	-0.7	0.4	0.9
Motor oil, coolant, and fluids ^{1, 3}		13.8	0.3	2.6	0.8	0.3
Medical care commodities ¹	1.474	4.1	0.2	0.4	0.6	0.2
Medicinal drugs ^{1, 8}	1.373	4.0	0.2	0.4	0.6	0.2
Prescription drugs ¹	0.999	3.2	0.4	0.1	0.3	0.4
Nonprescription drugs ^{1, 8}	0.374	6.1	-0.1	1.2	1.3	-0.1
Medical equipment and supplies ^{1, 8}	0.101	6.0	0.3	0.6	0.8	0.3
Recreation commodities ⁸	1.865	3.8	0.8	0.4	0.2	0.6
Video and audio products ⁸	0.279	-9.0	-1.2	-0.2	-0.7	-1.6
Televisions.....	0.126	-19.1	-2.2	-2.3	-0.8	-3.0
Other video equipment ²	0.024	-4.3	2.9	-0.2	-1.4	1.6
Audio equipment ¹	0.072	0.8	-1.3	3.2	-1.4	-1.3
Recorded music and music subscriptions ^{1, 2}	0.051	-0.6	-0.5	0.3	0.6	-0.5
Pets and pet products ¹	0.554	10.7	1.6	1.0	0.6	1.6
Pet food ^{1, 2, 3}		13.1	1.7	1.3	1.2	1.7
Purchase of pets, pet supplies, accessories ^{1, 2, 3}		7.3	1.5	0.9	0.0	1.5
Sporting goods ¹	0.544	3.8	0.9	-0.3	-0.2	0.9

See footnotes at end of table.

Table 2. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by detailed expenditure category, August 2022 — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021-Aug. 2022	Jul. 2022-Aug. 2022	May 2022-Jun. 2022	Jun. 2022-Jul. 2022	Jul. 2022-Aug. 2022
Sports vehicles including bicycles ¹	0.312	2.9	1.0	-0.6	0.4	1.0
Sports equipment ¹	0.222	5.1	0.7	0.1	-1.1	0.7
Photographic equipment and supplies.....	0.021	6.3	1.2	-0.6	4.1	0.4
Photographic equipment ^{2, 3}		5.8	0.7	-0.2	4.1	0.1
Recreational reading materials ¹	0.096	7.0	2.1	3.1	-1.0	2.1
Newspapers and magazines ^{1, 2}	0.057	11.2	2.7	4.2	-0.5	2.7
Recreational books ^{1, 2}	0.039	1.4	1.2	1.6	-1.7	1.2
Other recreational goods ²	0.371	3.3	0.4	0.1	1.2	0.1
Toys.....	0.286	2.8	0.6	0.1	1.5	0.1
Toys, games, hobbies and playground equipment ^{2, 3}		6.9	1.5	0.1	2.1	0.8
Sewing machines, fabric and supplies ^{1, 2}	0.028	8.1	-0.7	1.9	0.4	-0.7
Music instruments and accessories ^{1, 2}	0.041	3.6	0.5	-0.1	0.0	0.5
Education and communication commodities ⁸	0.760	-7.3	-0.4	0.3	-0.8	-0.7
Educational books and supplies ¹	0.086	4.6	0.3	0.0	0.0	0.3
College textbooks ^{1, 3, 11}		5.3	-0.1	0.0	0.0	-0.1
Information technology commodities ⁸	0.674	-8.8	-0.5	0.3	-0.9	-0.9
Computers, peripherals, and smart home assistants ^{1, 4}	0.333	-4.3	-0.6	1.3	-1.8	-0.6
Computer software and accessories ^{1, 2}	0.019	-0.3	1.8	2.3	-1.9	1.8
Telephone hardware, calculators, and other consumer information items ²	0.321	-13.8	-0.5	-0.9	0.1	-1.3
Smartphones ^{1, 3, 12}		-20.4	-0.7	-0.5	0.1	-0.7
Alcoholic beverages.....	0.865	4.3	0.5	0.4	0.5	0.4
Alcoholic beverages at home.....	0.576	3.2	0.5	0.6	0.4	0.5
Beer, ale, and other malt beverages at home.....	0.220	4.9	0.3	0.9	0.5	0.5
Distilled spirits at home ¹	0.105	1.7	0.1	0.1	0.7	0.1
Whiskey at home ^{1, 3}		3.0	0.3	-0.1	0.6	0.3
Distilled spirits, excluding whiskey, at home ^{1, 3}		1.2	0.0	0.1	0.8	0.0
Wine at home ¹	0.252	2.5	0.9	0.5	0.1	0.9
Alcoholic beverages away from home ¹	0.289	5.7	0.4	0.3	0.3	0.4
Beer, ale, and other malt beverages away from home ^{1, 2, 3}		6.4	0.3	0.2	0.9	0.3
Wine away from home ^{1, 2, 3}		7.1	0.8	0.3	0.0	0.8
Distilled spirits away from home ^{1, 2, 3}		4.2	0.2	0.1	-0.1	0.2
Other goods ⁸	1.333	7.6	1.2	0.5	0.3	1.2
Tobacco and smoking products ¹	0.511	8.8	1.1	0.6	0.3	1.1
Cigarettes ^{1, 2}	0.441	9.0	1.1	0.6	0.3	1.1
Tobacco products other than cigarettes ^{1, 2}	0.065	7.0	1.2	0.3	0.3	1.2
Personal care products ¹	0.640	6.0	1.5	0.7	1.0	1.5
Hair, dental, shaving, and miscellaneous personal care products ^{1, 2}	0.332	7.6	0.8	1.2	1.3	0.8
Cosmetics, perfume, bath, nail preparations and implements ¹	0.299	4.2	2.3	0.2	0.8	2.3
Miscellaneous personal goods ^{1, 2}	0.182	8.3	0.0	-0.4	-1.8	0.0
Stationery, stationery supplies, gift wrap ³		9.3	-1.5	-0.6	-1.0	-0.5
Services less energy services.....	56.523	6.1	0.5	0.7	0.4	0.6
Shelter.....	32.247	6.2	0.7	0.6	0.5	0.7
Rent of shelter ¹³	31.884	6.3	0.7	0.6	0.5	0.7
Rent of primary residence.....	7.246	6.7	0.8	0.8	0.7	0.7
Lodging away from home ²	0.984	4.0	-1.8	-2.8	-2.7	0.1
Housing at school, excluding board ¹³	0.122	2.5	1.2	0.2	0.7	0.6
Other lodging away from home including hotels and motels.....	0.862	4.5	-2.3	-3.3	-3.2	0.0
Owners' equivalent rent of residences ¹³	23.654	6.3	0.7	0.7	0.6	0.7

See footnotes at end of table.

Table 2. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by detailed expenditure category, August 2022 — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021-Aug. 2022	Jul. 2022-Aug. 2022	May 2022-Jun. 2022	Jun. 2022-Jul. 2022	Jul. 2022-Aug. 2022
Owners' equivalent rent of primary residence ¹³ ..	22.426	6.3	0.7	0.7	0.6	0.7
Tenants' and household insurance ^{1, 2}	0.363	0.5	-0.1	0.9	0.1	-0.1
Water and sewer and trash collection services ²	1.076	4.6	0.7	0.4	0.4	0.6
Water and sewerage maintenance.....	0.775	4.6	0.9	0.3	0.5	0.8
Garbage and trash collection ^{1, 10}	0.301	4.6	0.1	0.6	0.1	0.1
Household operations ^{1, 2}	0.825	6.6		0.1		
Domestic services ^{1, 2}	0.242	5.9		0.6		
Gardening and lawncare services ^{1, 2}						
Moving, storage, freight expense ^{1, 2}	0.104	3.7	0.0	0.8	1.5	0.0
Repair of household items ^{1, 2}						
Medical care services.....	6.807	5.6	0.8	0.7	0.4	0.8
Professional services.....	3.431	2.4	0.5	0.7	0.0	0.6
Physicians' services ¹	1.802	1.1	0.2	0.1	0.3	0.2
Dental services.....	0.899	4.7	1.3	1.9	-0.2	1.7
Eyeglasses and eye care ^{1, 6}	0.351	1.4	0.0	0.7	-0.8	0.0
Services by other medical professionals ^{1, 6}	0.379	4.4	0.1	0.1	-0.3	0.1
Hospital and related services.....	2.496	4.1	0.7	0.4	0.5	0.6
Hospital services ¹⁴	2.129	4.0	0.8	0.3	0.5	0.7
Inpatient hospital services ^{14, 3}				0.1	0.5	
Outpatient hospital services ^{3, 6}		3.6	0.7	0.1	0.4	0.5
Nursing homes and adult day services ¹⁴	0.205	4.8	0.3	1.4	0.3	0.2
Care of invalids and elderly at home ^{1, 5}	0.162	3.6	0.0	0.1	1.5	0.0
Health insurance ^{1, 5}	0.880	24.3	2.4	2.1	2.2	2.4
Transportation services.....	5.872	11.3	-0.2	2.1	-0.5	0.5
Leased cars and trucks ^{1, 11}					0.6	
Car and truck rental ²	0.155	-6.2	-4.6	-2.2	-9.5	-0.5
Motor vehicle maintenance and repair ¹	1.034	9.1	1.7	2.0	1.1	1.7
Motor vehicle body work ¹	0.052	11.5	-1.2	1.8	0.3	-1.2
Motor vehicle maintenance and servicing ¹	0.566	7.3	0.8	2.0	0.7	0.8
Motor vehicle repair ^{1, 2}	0.372	11.1	3.5	2.1	1.7	3.5
Motor vehicle insurance.....	2.407	8.7	1.0	1.9	1.3	1.3
Motor vehicle fees ^{1, 2}	0.497	2.4	0.5	0.5	0.7	0.5
State motor vehicle registration and license fees ^{1, 2}	0.288	2.6	0.8	0.0	1.4	0.8
Parking and other fees ^{1, 2}	0.194	1.9	0.2	1.1	-0.4	0.2
Parking fees and tolls ^{2, 3}		4.1	0.6	1.5	-0.1	1.1
Public transportation.....	0.962	21.1	-6.3	-0.4	-6.1	-3.2
Airline fares.....	0.673	33.4	-8.8	-1.8	-7.8	-4.6
Other intercity transportation.....	0.091	-2.6	0.0	0.4	-0.3	0.2
Ship fare ^{1, 2, 3}		-7.4	0.4	-2.1	0.0	0.4
Intracity transportation ¹	0.195	2.9	-0.8	0.8	0.4	-0.8
Intracity mass transit ^{1, 3, 8}		0.6	0.1	0.0	-0.2	0.1
Recreation services ⁸	3.108	4.2	0.0	0.3	0.4	0.0
Video and audio services ⁸	1.137	3.2	-0.2	0.1	-0.6	-0.3
Cable and satellite television service ¹⁰	1.043	3.0	-0.3	0.0	-0.8	-0.4
Video discs and other media, including rental of video ^{1, 2}	0.094	4.7	1.2	1.0	1.7	1.2
Video discs and other media ^{1, 2, 3}		8.9	2.7	0.3	2.9	2.7
Rental of video discs and other media ^{1, 2, 3}		5.9	0.1	-0.2	0.0	0.1
Pet services including veterinary ²	0.513	9.6	0.5	0.3	1.2	0.6
Pet services ^{1, 2, 3}		5.7	0.1	-0.7	0.3	0.1
Veterinarian services ^{2, 3}		10.0	0.8	0.6	0.6	0.9
Photographers and photo processing ^{1, 2}	0.029	6.0	1.4	-0.5	-0.7	1.4
Other recreation services ²	1.429	3.2	-0.1	0.4	0.9	-0.1

See footnotes at end of table.

Table 2. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by detailed expenditure category, August 2022 — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021- Aug. 2022	Jul. 2022- Aug. 2022	May 2022- Jun. 2022	Jun. 2022- Jul. 2022	Jul. 2022- Aug. 2022
Club membership for shopping clubs, fraternal, or other organizations, or participant sports fees ^{1, 2, 3}	0.624	3.7	0.4	-0.3	0.4	0.4
Admissions ¹	0.454	2.7	-1.4	1.7	2.1	-1.4
Admission to movies, theaters, and concerts ^{1, 2, 3}		6.2	-0.6	0.9	1.5	-0.6
Admission to sporting events ^{1, 2, 3}		-6.7	-2.8	2.9	4.9	-2.8
Fees for lessons or instructions ^{1, 6}	0.165	2.0	1.8	-0.3	-0.3	1.8
Education and communication services ⁸	5.239	1.5	0.5	0.2	-0.1	0.2
Tuition, other school fees, and childcare.....	2.461	3.0	1.1	0.4	0.1	0.5
College tuition and fees.....	1.410	2.8	1.3	0.3	0.2	0.5
Elementary and high school tuition and fees.....	0.313	3.2	0.7	0.5	0.4	-0.2
Day care and preschool ⁹	0.612	3.7	0.6	0.7	-0.2	0.6
Technical and business school tuition and fees ^{1, 2}	0.038	1.2	0.9	0.3	0.3	0.9
Postage and delivery services ²	0.081	3.9	-0.1	0.3	0.4	0.2
Postage.....	0.073	3.0	0.0	0.4	0.4	0.4
Delivery services ²	0.009	11.5	-1.0	-0.7	0.4	-0.7
Telephone services ^{1, 2}	1.780	-0.1	0.0	-0.1	0.0	0.0
Wireless telephone services ^{1, 2}	1.480	-0.6	0.0	-0.1	0.0	0.0
Residential telephone services ^{1, 8}	0.300	2.4	0.3	0.1	-0.1	0.3
Internet services and electronic information providers ^{1, 2}	0.908	0.6	-0.1	-0.1	-0.8	-0.1
Other personal services ^{1, 8}	1.349	5.8	0.3	0.4	0.4	0.3
Personal care services ¹	0.531	4.4	0.7	0.3	0.2	0.7
Haircuts and other personal care services ^{1, 2}	0.531	4.4	0.7	0.3	0.2	0.7
Miscellaneous personal services ¹	0.817	6.7	0.1	0.5	0.5	0.1
Legal services ^{1, 6}	0.232	9.3	-0.1			-0.1
Funeral expenses ^{1, 6}	0.144	2.6	-0.5	0.1	0.5	-0.5
Laundry and dry cleaning services ^{1, 2}	0.152	7.9	0.0	0.8	0.8	0.0
Apparel services other than laundry and dry cleaning ^{1, 2}	0.018	9.1	-1.0	1.0	1.5	-1.0
Financial services ^{1, 6}	0.189	5.5	0.9	-0.5	0.3	0.9
Checking account and other bank services ^{1, 2, 3}		3.7	0.4	0.0	0.0	0.4
Tax return preparation and other accounting fees ^{1, 2, 3}		8.8	1.9		0.6	1.9

¹ Not seasonally adjusted.

² Indexes on a December 1997=100 base.

³ Special index based on a substantially smaller sample.

⁴ Indexes on a December 2007=100 base.

⁵ Indexes on a December 2005=100 base.

⁶ Indexes on a December 1986=100 base.

⁷ Indexes on a December 1993=100 base.

⁸ Indexes on a December 2009=100 base.

⁹ Indexes on a December 1990=100 base.

¹⁰ Indexes on a December 1983=100 base.

¹¹ Indexes on a December 2001=100 base.

¹² Indexes on a December 2019=100 base.

¹³ Indexes on a December 1982=100 base.

¹⁴ Indexes on a December 1996=100 base.

Table 3. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, special aggregate indexes, August 2022

[1982-84=100, unless otherwise noted]

Special aggregate indexes	Relative importance Jul. 2022	Unadjusted indexes			Unadjusted percent change		Seasonally adjusted percent change		
		Aug. 2021	Jul. 2022	Aug. 2022	Aug. 2021-Aug. 2022	Jul. 2022-Aug. 2022	May 2022-Jun. 2022	Jun. 2022-Jul. 2022	Jul. 2022-Aug. 2022
All items less food.....	86.473	272.680	294.363	293.893	7.8	-0.2	1.4	-0.2	0.0
All items less shelter.....	67.753	252.072	276.416	275.409	9.3	-0.4	1.7	-0.3	-0.2
All items less food and shelter.....	54.226	245.033	268.146	266.417	8.7	-0.6	1.8	-0.6	-0.4
All items less food, shelter, and energy.....	45.444	247.913	262.628	263.732	6.4	0.4	0.8	0.2	0.5
All items less food, shelter, energy, and used cars and trucks.....	41.422	249.078	263.458	264.767	6.3	0.5	0.7	0.2	0.5
All items less medical care.....	91.719	261.479	284.084	283.794	8.5	-0.1	1.4	-0.1	0.1
All items less energy.....	91.218	278.691	296.702	298.346	7.1	0.6	0.7	0.4	0.6
Commodities.....	39.865	202.496	226.110	223.891	10.6	-1.0	2.1	-0.5	-0.8
Commodities less food, energy, and used cars and trucks.....	17.146	150.858	160.175	161.371	7.0	0.7	0.6	0.4	0.6
Commodities less food.....	26.338	168.214	188.836	185.295	10.2	-1.9	2.6	-1.4	-1.6
Commodities less food and beverages.....	25.473	164.825	185.573	181.945	10.4	-2.0	2.7	-1.4	-1.6
Services.....	60.135	343.246	364.465	366.622	6.8	0.6	0.9	0.3	0.7
Services less rent of shelter ¹	28.251	361.047	385.783	387.748	7.4	0.5	1.1	0.1	0.6
Services less medical care services.....	53.328	325.805	346.527	348.484	7.0	0.6	0.8	0.3	0.7
Durables.....	12.688	120.666	129.856	130.123	7.8	0.2	0.7	0.3	0.5
Nondurables.....	27.177	242.338	275.627	271.395	12.0	-1.5	2.8	-0.8	-1.4
Nondurables less food.....	13.650	211.357	247.498	238.068	12.6	-3.8	4.4	-2.7	-3.6
Nondurables less food and beverages.....	12.785	208.085	245.823	235.747	13.3	-4.1	4.7	-2.9	-3.8
Nondurables less food, beverages, and apparel.....	10.394	266.720	325.961	308.244	15.6	-5.4	5.5	-3.7	-4.8
Nondurables less food and apparel.....	11.258	265.155	319.632	303.708	14.5	-5.0	5.1	-3.6	-4.3
Housing.....	41.919	282.391	302.327	304.506	7.8	0.7	0.8	0.4	0.8
Education and communication ²	5.999	143.011	143.150	143.687	0.5	0.4	0.2	-0.2	0.1
Education ²	2.547	275.373	280.974	283.882	3.1	1.0	0.4	0.1	0.5
Communication ²	3.452	76.061	75.061	74.977	-1.4	-0.1	0.0	-0.4	-0.2
Information and information processing ²	3.370	71.831	70.782	70.703	-1.6	-0.1	0.0	-0.4	-0.2
Information technology, hardware and services ³	1.590	7.423	7.201	7.183	-3.2	-0.2	0.1	-0.9	-0.4
Recreation ²	4.974	126.245	131.087	131.437	4.1	0.3	0.3	0.3	0.2
Video and audio ²	1.416	111.756	113.000	112.544	0.7	-0.4	0.0	-0.6	-0.5
Pets, pet products and services ²	1.067	185.437	202.111	204.246	10.1	1.1	0.7	0.9	1.1
Photography ²	0.051	77.624	81.343	82.424	6.2	1.3	-0.5	1.3	1.0
Food and beverages.....	14.392	278.201	306.278	308.550	10.9	0.7	1.0	1.1	0.8
Domestically produced farm food.....	7.083	268.392	303.324	305.505	13.8	0.7	1.1	1.4	0.7
Other services.....	9.696	377.579	387.616	388.767	3.0	0.3	0.2	0.1	0.2
Apparel less footwear.....	1.798	112.577	115.879	118.305	5.1	2.1	0.5	-0.1	0.5
Fuels and utilities.....	4.927	264.303	305.797	309.739	17.2	1.3	2.5	-0.3	1.5
Household energy.....	3.851	218.980	261.643	265.453	21.2	1.5	3.2	-0.4	1.8
Medical care.....	8.281	525.247	549.562	553.429	5.4	0.7	0.7	0.4	0.7
Transportation.....	19.362	238.333	278.958	270.334	13.4	-3.1	3.8	-2.1	-2.3
Private transportation.....	18.400	237.994	277.502	269.389	13.2	-2.9	4.1	-1.9	-2.2
New and used motor vehicles ²	9.106	119.475	131.074	131.226	9.8	0.1	1.6	0.0	0.4
Utilities and public transportation.....	8.473	229.805	254.496	254.797	10.9	0.1	1.3	-0.5	0.7
Household furnishings and operations.....	4.745	132.076	144.291	145.110	9.9	0.6	0.4	0.6	1.0
Other goods and services.....	2.682	479.048	507.204	510.892	6.6	0.7	0.5	0.4	0.7
Personal care.....	2.171	244.968	258.315	259.954	6.1	0.6	0.4	0.4	0.6

¹ Indexes on a December 1982=100 base.

² Indexes on a December 1997=100 base.

³ Indexes on a December 1988=100 base.

Table 4. Consumer Price Index for All Urban Consumers (CPI-U): Selected areas, all items index, August 2022
 [1982-84=100, unless otherwise noted]

Area	Pricing Schedule ¹	Percent change to Aug. 2022 from:			Percent change to Jul. 2022 from:		
		Aug. 2021	Jun. 2022	Jul. 2022	Jul. 2021	May 2022	Jun. 2022
U.S. city average.....	M	8.3	0.0	0.0	8.5	1.4	0.0
Region and area size²							
Northeast.....	M	7.4	0.1	0.3	7.3	1.0	-0.2
Northeast - Size Class A.....	M	7.0	0.0	0.2	6.9	1.0	-0.2
Northeast - Size Class B/C ³	M	8.0	0.3	0.5	7.7	0.9	-0.1
New England ⁴	M	7.3	-0.1	0.2	7.3	0.5	-0.3
Middle Atlantic ⁴	M	7.5	0.2	0.4	7.3	1.2	-0.1
Midwest.....	M	8.1	-0.4	-0.2	8.6	1.4	-0.2
Midwest - Size Class A.....	M	8.4	-0.1	0.0	8.5	1.5	-0.1
Midwest - Size Class B/C ³	M	8.0	-0.6	-0.4	8.6	1.4	-0.3
East North Central ⁴	M	8.4	-0.6	-0.3	8.8	1.5	-0.3
West North Central ⁴	M	7.6	-0.1	-0.1	8.1	1.2	0.1
South.....	M	8.9	-0.1	-0.2	9.4	1.5	0.1
South - Size Class A.....	M	9.4	0.1	0.1	9.7	1.2	0.1
South - Size Class B/C ³	M	8.6	-0.2	-0.3	9.1	1.7	0.0
South Atlantic ⁴	M	9.0	0.1	-0.1	9.5	1.6	0.2
East South Central ⁴	M	7.5	-0.5	-0.5	8.0	1.6	0.0
West South Central ⁴	M	9.4	-0.2	-0.1	9.7	1.3	-0.1
West.....	M	8.1	0.2	0.0	8.3	1.4	0.1
West - Size Class A.....	M	8.0	-0.1	-0.1	8.3	1.4	0.0
West - Size Class B/C ³	M	8.3	0.4	0.1	8.3	1.4	0.3
Mountain ⁴	M	9.6	0.6	0.2	9.6	1.6	0.4
Pacific ⁴	M	7.6	0.0	-0.1	7.8	1.3	0.0
Size classes							
Size Class A ⁵	M	8.2	0.0	0.0	8.4	1.3	0.0
Size Class B/C ³	M	8.3	-0.1	-0.1	8.6	1.4	0.0
Selected local areas							
Chicago-Naperville-Elgin, IL-IN-WI.....	M	8.8	-0.1	0.1	8.8	1.5	-0.2
Los Angeles-Long Beach-Anaheim, CA.....	M	7.6	-0.1	0.1	7.7	0.9	-0.2
New York-Newark-Jersey City, NY-NJ-PA.....	M	6.6	-0.1	0.2	6.5	1.1	-0.3
Atlanta-Sandy Springs-Roswell, GA.....	2	11.7	1.3				
Baltimore-Columbia-Towson, MD ⁶	2	10.2	0.1				
Detroit-Warren-Dearborn, MI.....	2	8.6	-0.5				
Houston-The Woodlands-Sugar Land, TX.....	2	9.5	0.1				
Miami-Fort Lauderdale-West Palm Beach, FL.....	2	10.7	0.4				
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD.....	2	8.1	0.0				
Phoenix-Mesa-Scottsdale, AZ ⁷	2	13.0	0.8				
San Francisco-Oakland-Hayward, CA.....	2	5.7	-0.5				
Seattle-Tacoma-Bellevue, WA.....	2	9.0	0.0				
St. Louis, MO-IL.....	2	7.5	0.2				
Urban Alaska.....	2	7.6	-4.0				
Boston-Cambridge-Newton, MA-NH.....	1				7.0	0.7	
Dallas-Fort Worth-Arlington, TX.....	1				9.4	1.0	
Denver-Aurora-Lakewood, CO.....	1				8.2	1.7	
Minneapolis-St.Paul-Bloomington, MN-WI.....	1				8.2	1.2	
Riverside-San Bernardino-Ontario, CA ⁴	1				9.2	1.1	
San Diego-Carlsbad, CA.....	1				7.3	1.2	
Tampa-St. Petersburg-Clearwater, FL ⁸	1				11.2	1.3	
Urban Hawaii.....	1				6.8	0.6	
Washington-Arlington-Alexandria, DC-VA-MD-WV ⁶	1				7.5	1.1	

¹ Foods, fuels, and several other items are priced every month in all areas. Most other goods and services are priced as indicated: M - Every month. 1 - January, March, May, July, September, and November. 2 - February, April, June, August, October, and December.

² Regions defined as the four Census regions.

³ Indexes on a December 1996=100 base.

⁴ Indexes on a December 2017=100 base.

⁵ Indexes on a December 1986=100 base.

⁶ 1998 - 2017 indexes based on substantially smaller sample.

⁷ Indexes on a December 2001=100 base.

⁸ Indexes on a 1987=100 base.

NOTE: Local area indexes are byproducts of the national CPI program. Each local index has a smaller sample size than the national index and is, therefore, subject to substantially more sampling and other measurement error. As a result, local area indexes show greater volatility than the national index, although their long-term trends are similar. Therefore, the Bureau of Labor Statistics strongly urges users to consider adopting the national average CPI for use in their escalator clauses.

Table 5. Chained Consumer Price Index for All Urban Consumers (C-CPI-U) and the Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, all items index, August 2022
 [Percent changes]

Month Year	Unadjusted 1-month percent change		Unadjusted 12-month percent change	
	C-CPI-U ¹	CPI-U	C-CPI-U ¹	CPI-U
December 2009.....			2.5	2.7
December 2010.....			1.3	1.5
December 2011.....			2.9	3.0
December 2012.....			1.5	1.7
December 2013.....			1.3	1.5
December 2014.....			0.5	0.8
December 2015.....			0.4	0.7
December 2016.....			1.8	2.1
December 2017.....			1.7	2.1
December 2018.....			1.5	1.9
December 2019.....			1.8	2.3
January 2020.....	0.4	0.4	2.0	2.5
February 2020.....	0.3	0.3	1.8	2.3
March 2020.....	-0.2	-0.2	1.1	1.5
April 2020.....	-0.5	-0.7	0.2	0.3
May 2020.....	-0.1	0.0	-0.1	0.1
June 2020.....	0.6	0.5	0.4	0.6
July 2020.....	0.6	0.5	0.9	1.0
August 2020.....	0.4	0.3	1.3	1.3
September 2020.....	0.1	0.1	1.4	1.4
October 2020.....	0.0	0.0	1.2	1.2
November 2020.....	-0.1	-0.1	1.2	1.2
December 2020.....	0.1	0.1	1.5	1.4
January 2021.....	0.5	0.4	1.6	1.4
February 2021.....	0.5	0.5	1.8	1.7
March 2021.....	0.6	0.7	2.6	2.6
April 2021.....	0.8	0.8	4.0	4.2
May 2021.....	0.7	0.8	4.9	5.0
June 2021.....	0.8	0.9	5.1	5.4
July 2021.....	0.5	0.5	5.0	5.4
August 2021.....	0.1	0.2	4.8	5.3
September 2021.....	0.3	0.3	5.0	5.4
October 2021.....	0.8	0.8	5.9	6.2
November 2021.....	0.5	0.5	6.5	6.8
December 2021.....	0.3	0.3	6.6	7.0
January 2022.....	0.8	0.8	7.0	7.5
February 2022.....	0.9	0.9	7.4	7.9
March 2022.....	1.2	1.3	8.0	8.5
April 2022.....	0.6	0.6	7.8	8.3
May 2022.....	1.0	1.1	8.0	8.6
June 2022.....	1.2	1.4	8.4	9.1
July 2022.....	0.1	0.0	8.0	8.5
August 2022.....	0.1	0.0	8.0	8.3

¹ The C-CPI-U is designed to be a closer approximation to a cost-of-living index in that it, in its final form, accounts for any substitution that consumers make across item categories in response to changes in relative prices. Since the expenditure data required for the calculation of the C-CPI-U are available only with a time lag, the C-CPI-U is issued first in preliminary form using the latest available expenditure data at that time and is subject to four revisions.

Indexes are issued as initial estimates. Indexes are revised each quarter with the publication of January, April, July, and October data as updated expenditure estimates become available. The C-CPI-U indexes are updated quarterly until they become final. January-March indexes are final in January of the following year; April-June indexes are final in April of the following year; July-September indexes are final in July of the following year; October-December indexes are final in October of the following year.

Table 6. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 1-month analysis table
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	One Month				
		Seasonally adjusted percent change Jul. 2022-Aug. 2022	Seasonally adjusted effect on All Items Jul. 2022-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) seasonally adjusted change since: ³	
					Date	Percent change
All items.....	100.000	0.1		0.04	L-Jun.2022	1.3
Food.....	13.527	0.8	0.108	0.09	S-Dec.2021	0.5
Food at home.....	8.414	0.7	0.063	0.13	S-Dec.2021	0.4
Cereals and bakery products.....	1.086	1.2	0.013	0.32	S-Apr.2022	1.1
Cereals and cereal products.....	0.353	0.8	0.003	0.38	S-Dec.2021	0.6
Flour and prepared flour mixes.....	0.058	2.2	0.001	0.89	S-May 2022	1.0
Breakfast cereal ⁴	0.149	0.0	0.000	0.68	S-Jan.2022	-1.4
Rice, pasta, cornmeal.....	0.146	0.7	0.001	0.53	S-Jun.2022	0.7
Rice ^{4, 5, 6}		0.6		0.62	S-Jun.2022	-1.1
Bakery products ⁴	0.733	1.3	0.009	0.39	S-Apr.2022	1.0
Bread ^{4, 5}	0.205	2.2	0.004	0.53	S-Jun.2022	1.6
White bread ^{4, 6}		2.6		0.74	L-Apr.2020	3.5
Bread other than white ^{4, 6}		1.7		0.86	S-Jun.2022	1.3
Fresh biscuits, rolls, muffins ⁵	0.110	1.2	0.001	1.00	S-May 2022	0.2
Cakes, cupcakes, and cookies ⁴	0.181	0.4	0.001	0.67	S-Nov.2021	0.1
Cookies ^{4, 6}		0.0		0.77	S-Nov.2021	-0.5
Fresh cakes and cupcakes ^{4, 6}		-0.1		1.06	S-Dec.2021	-0.9
Other bakery products.....	0.237	1.3	0.003	0.67	S-Jun.2022	1.2
Fresh sweetrolls, coffeecakes, doughnuts ^{4, 6}		2.0		1.29	L-Feb.2022	4.1
Crackers, bread, and cracker products ⁶		0.1		1.31	S-Apr.2022	0.0
Frozen and refrigerated bakery products, pies, tarts, turnovers ^{4, 6}		1.4		0.86	L-Jun.2022	2.9
Meats, poultry, fish, and eggs.....	1.900	0.5	0.010	0.25	-	-
Meats, poultry, and fish.....	1.768	0.3	0.006	0.27	L-May 2022	0.9
Meats.....	1.113	0.3	0.004	0.38	L-Apr.2022	0.4
Beef and veal.....	0.511	0.8	0.004	0.55	L-Feb.2022	0.8
Uncooked ground beef ⁴	0.189	0.5	0.001	0.65	S-Jun.2022	-0.1
Uncooked beef roasts ^{4, 5}	0.075	1.3	0.001	1.40	L-Feb.2022	1.6
Uncooked beef steaks ⁵	0.197	0.0	0.000	0.93	L-Feb.2022	0.1
Uncooked other beef and veal ^{4, 5}	0.050	0.2	0.000	1.15	S-Jun.2022	-1.9
Pork.....	0.360	0.3	0.001	0.64	L-Apr.2022	0.6
Bacon, breakfast sausage, and related products ⁵	0.161	0.1	0.000	0.77	S-Jun.2022	-1.7
Bacon and related products ⁶		-0.5		0.86	S-Jun.2022	-1.9
Breakfast sausage and related products ^{5, 6}		0.7		1.20	S-Jun.2022	-1.0
Ham.....	0.064	1.3	0.001	1.86	L-Feb.2022	3.0
Ham, excluding canned ⁶		1.6		2.02	L-Feb.2022	2.9
Pork chops ⁴	0.051	0.4	0.000	1.63	S-Jun.2022	-1.4
Other pork including roasts, steaks, and ribs ⁵	0.083	-1.9	-0.002	1.53	S-Jan.2022	-2.3
Other meats.....	0.242	-0.6	-0.001	0.60	S-Aug.2021	-1.7
Frankfurters ⁶		4.9		1.28	L-Apr.2020	5.1
Lunchmeats ^{4, 5, 6}		-0.3		0.59	S-Aug.2021	-0.5
Poultry ⁴	0.367	0.8	0.003	0.51	S-Jan.2022	0.8
Chicken ^{4, 5}	0.299	0.5	0.002	0.62	S-Jan.2022	-0.3
Fresh whole chicken ^{4, 6}		0.0		0.93	S-Jan.2022	-0.5
Fresh and frozen chicken parts ^{4, 6}		0.8		0.73	S-Jan.2022	-0.2
Other uncooked poultry including turkey ⁵	0.068	2.2	0.001	0.90	L-May 2022	2.9
Fish and seafood.....	0.287	-0.2	-0.001	0.56	S-Aug.2021	-0.2
Fresh fish and seafood ^{4, 5}	0.147	-0.6	-0.001	0.84	S-Feb.2022	-0.7
Processed fish and seafood ⁵	0.141	0.0	0.000	0.71	L-Jun.2022	1.6
Shelf stable fish and seafood ⁶		2.4		0.91	L-Mar.2022	3.0
Frozen fish and seafood ⁶		-0.6		0.96	-	-

See footnotes at end of table.

Table 6. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 1-month analysis table — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	One Month				
		Seasonally adjusted percent change Jul. 2022-Aug. 2022	Seasonally adjusted effect on All Items Jul. 2022-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) seasonally adjusted change since: ³	
					Date	Percent change
Eggs ⁴	0.132	2.9	0.004	0.73	S-Jun.2022	0.3
Dairy and related products.....	0.798	0.3	0.003	0.32	S-Nov.2021	0.3
Milk ⁵	0.205	0.2	0.001	0.43	L-Jun.2022	0.8
Fresh whole milk ⁶		0.7		0.56	L-May 2022	3.9
Fresh milk other than whole ^{5, 6}		0.2		0.65	S-Oct.2021	0.2
Cheese and related products ⁴	0.260	0.8	0.002	0.59	S-Dec.2021	0.2
Ice cream and related products.....	0.115	1.2	0.001	0.94	L-Jun.2022	4.0
Other dairy and related products ^{4, 5}	0.218	0.0	0.000	0.57	S-Nov.2021	-0.2
Fruits and vegetables.....	1.407	0.5	0.007	0.33	—	—
Fresh fruits and vegetables.....	1.069	0.1	0.002	0.40	—	—
Fresh fruits.....	0.574	-0.7	-0.004	0.62	S-Oct.2021	-0.8
Apples.....	0.077	-2.3	-0.002	1.09	S-Jun.2020	-2.3
Bananas ⁴	0.079	-0.2	0.000	0.71	S-Apr.2022	-0.6
Citrus fruits ⁵	0.166	-1.6	-0.003	1.06	L-May 2022	-1.5
Oranges, including tangerines ⁶		1.5		1.43	L-Mar.2022	3.0
Other fresh fruits ⁵	0.252	0.3	0.001	1.07	S-Apr.2022	-1.4
Fresh vegetables.....	0.495	1.2	0.006	0.51	L-Mar.2022	2.6
Potatoes.....	0.083	2.5	0.002	0.77	S-Jun.2022	1.5
Lettuce ⁴	0.057	0.8	0.000	0.92	L-Mar.2022	3.0
Tomatoes.....	0.075	2.3	0.002	1.09	L-May 2022	2.9
Other fresh vegetables.....	0.278	-0.3	-0.001	0.71	S-Feb.2021	-0.5
Processed fruits and vegetables ⁵	0.338	1.7	0.006	0.41	L-Mar.2022	2.4
Canned fruits and vegetables ⁵	0.174	1.8	0.003	0.61	L-May 2022	1.9
Canned fruits ^{5, 6}		3.4		0.69	L-May 2022	3.7
Canned vegetables ^{5, 6}		1.3		0.72	S-May 2022	1.0
Frozen fruits and vegetables ⁵	0.099	1.4	0.001	0.88	L-May 2022	1.5
Frozen vegetables ⁶		1.7		1.04	L-May 2022	1.8
Other processed fruits and vegetables including dried ⁵	0.065	0.8	0.001	0.94	S-May 2022	0.1
Dried beans, peas, and lentils ^{4, 5, 6}		0.2		0.90	S-Jun.2022	-1.0
Nonalcoholic beverages and beverage materials.....	0.964	0.5	0.005	0.40	S-Jan.2022	0.0
Juices and nonalcoholic drinks ⁵	0.675	1.1	0.007	0.49	S-Jun.2022	0.6
Carbonated drinks.....	0.281	1.0	0.003	0.85	S-Jun.2022	-0.4
Frozen noncarbonated juices and drinks ^{4, 5}	0.007	-3.1	0.000	0.66	S-Sep.2017	-3.8
Nonfrozen noncarbonated juices and drinks ⁵	0.387	1.1	0.004	0.59	S-May 2022	1.0
Beverage materials including coffee and tea ⁵	0.289	-0.8	-0.002	0.61	S-Dec.2019	-1.1
Coffee.....	0.188	-1.0	-0.002	0.79	S-Nov.2020	-1.8
Roasted coffee ⁶		-0.7		0.90	S-Nov.2020	-1.3
Instant coffee ^{4, 6}		-0.6		1.86	S-Jul.2021	-2.5
Other beverage materials including tea ^{4, 5}	0.101	0.2	0.000	1.01	S-May 2022	0.1
Other food at home.....	2.259	1.1	0.025	0.25	S-Apr.2022	0.7
Sugar and sweets ⁴	0.281	1.5	0.004	0.68	S-Jun.2022	1.1
Sugar and sugar substitutes.....	0.042	2.4	0.001	0.59	L-Oct.2021	3.0
Candy and chewing gum ^{4, 5}	0.176	1.9	0.003	0.97	S-Jun.2022	0.7
Other sweets ⁵	0.063	0.5	0.000	0.82	S-Jan.2022	0.4
Fats and oils.....	0.254	1.9	0.005	0.59	S-Apr.2022	1.2
Butter and margarine ⁵	0.080	2.7	0.002	1.06	L-Jun.2022	5.0
Butter ⁶		1.9		1.49	L-Jun.2022	4.8
Margarine ^{4, 6}		7.3		1.54	L-EVER	—
Salad dressing ⁵	0.057	-0.4	0.000	0.96	S-Sep.2021	-0.6
Other fats and oils including peanut butter ⁵	0.116	2.6	0.003	0.95	S-Jun.2022	1.1
Peanut butter ^{4, 5, 6}		-1.0		0.58	S-Jun.2022	-2.0
Other foods.....	1.724	0.9	0.016	0.29	S-Apr.2022	0.8

See footnotes at end of table.

Table 6. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 1-month analysis table — Continued

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	One Month				
		Seasonally adjusted percent change Jul. 2022-Aug. 2022	Seasonally adjusted effect on All Items Jul. 2022-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) seasonally adjusted change since: ³	
					Date	Percent change
Soups.....	0.106	0.7	0.001	1.00	S-May 2022	0.4
Frozen and freeze dried prepared foods.....	0.280	1.5	0.004	0.55	—	—
Snacks ⁴	0.372	0.8	0.003	0.58	S-Apr.2022	0.7
Spices, seasonings, condiments, sauces.....	0.329	0.8	0.003	0.48	S-Apr.2022	0.4
Salt and other seasonings and spices ^{5, 6}		0.8		0.73	S-Jun.2022	0.0
Olives, pickles, relishes ^{4, 5, 6}		4.0		0.86	L-Jan.2020	4.0
Sauces and gravies ^{5, 6}		0.9		1.02	S-Dec.2021	0.1
Other condiments ⁶		1.7		0.71	L-Jun.2022	2.1
Baby food ^{4, 5}	0.044	-2.0	-0.001	0.61	S-EVER	—
Other miscellaneous foods ⁵	0.592	1.7	0.010	0.60	L-Jun.2022	2.1
Prepared salads ^{7, 6}		1.6		1.61	L-Jun.2022	3.2
Food away from home ⁴	5.113	0.9	0.044	0.11	L-Jun.2022	0.9
Full service meals and snacks ^{4, 5}	2.385	0.8	0.018	0.14	L-Jun.2022	0.8
Limited service meals and snacks ^{4, 5}	2.479	0.7	0.018	0.15	S-Jun.2022	0.7
Food at employee sites and schools ^{4, 5}	0.042	19.3	0.008	2.22	L-Jun.2022	24.2
Food at elementary and secondary schools ^{4, 8, 6}						
Food from vending machines and mobile vendors ^{4, 5}	0.037	0.1	0.000	0.46	—	—
Other food away from home ^{4, 5}	0.171	0.1	0.000	0.12	S-Apr.2022	0.1
Energy.....	8.782	-5.0	-0.431	0.14	S-Apr.2020	-10.3
Energy commodities.....	5.170	-10.1	-0.504	0.13	S-Apr.2020	-20.0
Fuel oil and other fuels.....	0.239	-2.4	-0.006	0.65	L-Jun.2022	-0.7
Fuel oil ⁴	0.165	-5.9	-0.010	0.67	L-Jun.2022	-1.2
Propane, kerosene, and firewood ⁹	0.074	-0.9	-0.001	0.83	L-Jun.2022	1.1
Motor fuel.....	4.931	-10.5	-0.498	0.13	S-Apr.2020	-20.5
Gasoline (all types).....	4.824	-10.6	-0.492	0.13	S-Apr.2020	-20.8
Gasoline, unleaded regular ⁶		-10.8		0.39	S-Apr.2020	-21.5
Gasoline, unleaded midgrade ^{10, 6}		-10.0		0.36	S-Apr.2020	-16.8
Gasoline, unleaded premium ⁶		-8.8		0.36	S-Apr.2020	-16.0
Other motor fuels ^{4, 5}	0.107	-8.4	-0.009	0.26	S-Jan.2016	-8.5
Energy services.....	3.612	2.1	0.074	0.21	L-Jun.2022	3.5
Electricity.....	2.658	1.5	0.039	0.21	S-May 2022	1.3
Utility (piped) gas service.....	0.954	3.5	0.034	0.37	L-Jun.2022	8.2
All items less food and energy.....	77.691	0.6	0.442	0.04	L-Jun.2022	0.7
Commodities less food and energy commodities.....	21.168	0.5	0.097	0.10	L-Jun.2022	0.8
Household furnishings and supplies ¹¹	3.920	1.1	0.041	0.24	L-Jan.2022	1.6
Window and floor coverings and other linens ^{4, 5}	0.287	2.3	0.007	1.08	L-Sep.2021	3.9
Floor coverings ^{4, 5}	0.067	3.6	0.002	1.03	L-Feb.2022	4.8
Window coverings ^{4, 5}	0.058	3.7	0.002	1.42	S-Jun.2022	-3.9
Other linens ^{4, 5}	0.163	1.2	0.002	1.57	L-Jun.2022	1.6
Furniture and bedding ⁴	0.973	0.5	0.005	0.47	S-May 2022	-0.2
Bedroom furniture ⁴	0.316	-0.2	-0.001	0.72	S-May 2022	-1.6
Living room, kitchen, and dining room furniture ^{4, 5}	0.483	1.1	0.005	0.79	S-May 2022	0.7
Other furniture ⁵	0.165	0.8	0.001	0.83	L-Apr.2022	2.0
Appliances ⁵	0.247	-1.2	-0.003	0.62	S-Sep.2020	-1.7
Major appliances ⁵	0.081	-1.5	-0.001	0.80	L-Jun.2022	0.0
Laundry equipment ^{4, 6}		6.9		1.08	L-Jul.2020	8.7
Other appliances ^{4, 5}	0.163	-0.6	-0.001	0.85	L-Jun.2022	0.8
Other household equipment and furnishings ⁵	0.550	0.8	0.004	0.54	L-Jun.2022	1.2
Clocks, lamps, and decorator items ⁴	0.329	0.3	0.001	0.66	L-Jun.2022	0.5
Indoor plants and flowers ¹²	0.097	1.4	0.001	0.89	L-Nov.2021	1.4
Dishes and flatware ^{4, 5}	0.050	1.1	0.001	1.90	L-Mar.2022	3.1
Nonelectric cookware and tableware ^{4, 5}	0.075	-0.3	0.000	1.17	L-Jun.2022	1.2

See footnotes at end of table.

Table 6. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 1-month analysis table — Continued

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	One Month				
		Seasonally adjusted percent change Jul. 2022-Aug. 2022	Seasonally adjusted effect on All Items Jul. 2022-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) seasonally adjusted change since: ³	
					Date	Percent change
Tools, hardware, outdoor equipment and supplies ⁵ . . .	0.919	1.4	0.013	0.34	L-Jan.2022	2.2
Tools, hardware and supplies ^{4, 5}	0.240	1.6	0.004	0.57	L-Jan.2022	2.4
Outdoor equipment and supplies ⁵	0.458	1.2	0.005	0.43	L-Jan.2022	2.1
Housekeeping supplies ⁴	0.943	0.4	0.004	0.34	S-Nov.2021	0.2
Household cleaning products ^{4, 5}	0.342	0.4	0.001	0.54	S-May 2022	0.3
Household paper products ^{4, 5}	0.220	0.6	0.001	0.45	S-May 2022	-0.1
Miscellaneous household products ^{4, 5}	0.382	0.4	0.001	0.57	S-Mar.2022	-0.3
Apparel	2.391	0.2	0.005	0.37	L-Jun.2022	0.8
Men's and boys' apparel	0.604	0.0	0.000	0.69	L-Jun.2022	1.0
Men's apparel	0.465	-0.1	-0.001	0.83	L-Jun.2022	0.3
Men's suits, sport coats, and outerwear	0.077	-2.3	-0.002	2.00	S-Oct.2020	-4.9
Men's underwear, nightwear, swimwear, and accessories ⁴	0.155	0.7	0.001	1.01	L-Jun.2022	0.8
Men's shirts and sweaters ⁵	0.110	1.3	0.001	1.26	L-May 2022	1.8
Men's pants and shorts	0.117	3.0	0.004	1.42	L-Mar.2022	3.6
Boys' apparel	0.139	0.5	0.001	1.14	L-Jun.2022	1.4
Women's and girls' apparel	0.921	0.8	0.008	0.62	S-Jun.2022	0.0
Women's apparel	0.775	0.5	0.004	0.69	S-Jun.2022	-0.1
Women's outerwear	0.057	-0.6	0.000	1.73	L-Jun.2022	0.6
Women's dresses	0.083	-4.6	-0.004	1.69	S-May 2020	-9.0
Women's suits and separates ⁵	0.374	1.2	0.005	1.10	S-Jun.2022	0.4
Women's underwear, nightwear, swimwear, and accessories ⁵	0.255	2.1	0.005	0.96	L-Feb.2022	3.8
Girls' apparel	0.146	2.6	0.004	1.39	L-Jan.2022	3.6
Footwear	0.594	-0.5	-0.003	0.51	S-Apr.2022	-1.3
Men's footwear ⁴	0.199	0.2	0.000	0.74	L-Jun.2022	1.7
Boys' and girls' footwear	0.115	-0.1	0.000	1.15	L-Jun.2022	1.2
Women's footwear	0.280	-0.6	-0.002	0.73	S-Sep.2021	-0.6
Infants' and toddlers' apparel	0.112	0.6	0.001	1.54	L-Jun.2022	1.3
Jewelry and watches ⁹	0.160	0.0	0.000	1.23	L-Jun.2022	1.4
Watches ^{4, 9}	0.030	-0.1	0.000	1.52	S-May 2022	-0.7
Jewelry ⁹	0.130	0.1	0.000	1.50	L-Jun.2022	1.5
Transportation commodities less motor fuel ¹¹	8.559	0.4	0.034	0.13	L-Jun.2022	1.1
New vehicles	4.024	0.8	0.034	0.24	L-May 2022	1.0
New cars ⁶		0.7		0.36	S-Jun.2022	0.5
New trucks ^{13, 6}		0.9		0.34	L-May 2022	1.0
Used cars and trucks	4.021	-0.1	-0.004	0.02	L-Jun.2022	1.6
Motor vehicle parts and equipment ⁴	0.425	1.1	0.005	0.42	L-May 2022	1.5
Tires ⁴	0.269	1.2	0.003	0.54	L-Feb.2022	1.5
Vehicle accessories other than tires ^{4, 5}	0.156	0.9	0.001	0.55	L-May 2022	2.3
Vehicle parts and equipment other than tires ^{4, 6}		0.9		0.66	L-May 2022	2.6
Motor oil, coolant, and fluids ^{4, 6}		0.3		0.76	S-Mar.2022	-1.2
Medical care commodities ⁴	1.474	0.2	0.004	0.20	S-Apr.2022	0.1
Medicinal drugs ^{4, 11}	1.373	0.2	0.003	0.21	S-May 2022	0.1
Prescription drugs ⁴	0.999	0.4	0.004	0.17	L-Jan.2022	1.3
Nonprescription drugs ^{4, 11}	0.374	-0.1	0.000	0.51	S-Jan.2022	-0.3
Medical equipment and supplies ^{4, 11}	0.101	0.3	0.000	0.49	S-Apr.2022	0.3
Recreation commodities ¹¹	1.865	0.6	0.012	0.24	L-Feb.2022	0.9
Video and audio products ¹¹	0.279	-1.6	-0.005	0.43	S-Mar.2022	-1.8
Televisions	0.126	-3.0	-0.004	0.58	S-May 2022	-3.0
Other video equipment ⁵	0.024	1.6	0.000	1.14	L-Dec.2020	2.4
Audio equipment ⁴	0.072	-1.3	-0.001	1.11	L-Jun.2022	3.2
Recorded music and music subscriptions ^{4, 5}	0.051	-0.5	0.000	0.38	S-May 2022	-0.7

See footnotes at end of table.

Table 6. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 1-month analysis table — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	One Month				
		Seasonally adjusted percent change Jul. 2022-Aug. 2022	Seasonally adjusted effect on All Items Jul. 2022-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) seasonally adjusted change since: ³	
					Date	Percent change
Pets and pet products ⁴	0.554	1.6	0.009	0.36	L-Mar.2022	1.7
Pet food ^{4, 5, 6}		1.7		0.36	L-Mar.2022	2.3
Purchase of pets, pet supplies, accessories ^{4, 5, 6}		1.5		0.75	L-Feb.2022	2.3
Sporting goods ⁴	0.544	0.9	0.005	0.50	L-Apr.2022	0.9
Sports vehicles including bicycles ⁴	0.312	1.0	0.003	0.74	L-Jan.2022	2.9
Sports equipment ⁴	0.222	0.7	0.002	0.48	L-Apr.2022	1.2
Photographic equipment and supplies.....	0.021	0.4	0.000	0.79	S-Jun.2022	-0.6
Photographic equipment ^{5, 6}		0.1		0.75	S-Jun.2022	-0.2
Recreational reading materials ⁴	0.096	2.1	0.002	0.63	L-Jun.2022	3.1
Newspapers and magazines ^{4, 5}	0.057	2.7	0.002	0.82	L-Jun.2022	4.2
Recreational books ^{4, 5}	0.039	1.2	0.000	0.85	L-Jun.2022	1.6
Other recreational goods ⁵	0.371	0.1	0.000	0.56	S-Jun.2022	0.1
Toys.....	0.286	0.1	0.000	0.67	S-Jun.2022	0.1
Toys, games, hobbies and playground equipment ^{1, 6}		0.8		0.90	S-Jun.2022	0.1
Sewing machines, fabric and supplies ^{4, 5}	0.028	-0.7	0.000	1.60	S-Jan.2022	-0.8
Music instruments and accessories ^{4, 5}	0.041	0.5	0.000	0.93	L-Mar.2022	0.8
Education and communication commodities ¹¹	0.760	-0.7	-0.006	0.55	L-Jun.2022	0.3
Educational books and supplies ⁴	0.086	0.3	0.000	0.85	L-May 2022	2.2
College textbooks ^{4, 14, 6}		-0.1		0.73	S-Feb.2022	-0.4
Information technology commodities ¹¹	0.674	-0.9	-0.006	0.70	-	-
Computers, peripherals, and smart home assistants ^{1, 7}	0.333	-0.6	-0.002	0.83	L-Jun.2022	1.3
Computer software and accessories ^{4, 5}	0.019	1.8	0.000	1.40	L-Jun.2022	2.3
Telephone hardware, calculators, and other consumer information items ⁵	0.321	-1.3	-0.004	0.85	S-May 2022	-3.2
Smartphones ^{4, 6, 15}		-0.7		1.16	S-May 2022	-5.0
Alcoholic beverages.....	0.865	0.4	0.003	0.20	S-Jun.2022	0.4
Alcoholic beverages at home.....	0.576	0.5	0.003	0.25	L-Jun.2022	0.6
Beer, ale, and other malt beverages at home.....	0.220	0.5	0.001	0.38	-	-
Distilled spirits at home ⁴	0.105	0.1	0.000	0.34	S-Jun.2022	0.1
Whiskey at home ^{4, 6}		0.3		0.42	S-Jun.2022	-0.1
Distilled spirits, excluding whiskey, at home ^{4, 6}		0.0		0.52	S-Mar.2022	-0.6
Wine at home ⁴	0.252	0.9	0.002	0.39	L-Jan.2022	1.1
Alcoholic beverages away from home ⁴	0.289	0.4	0.001	0.24	L-May 2022	0.8
Beer, ale, and other malt beverages away from home ^{1, 5, 6}		0.3		0.29	S-Jun.2022	0.2
Wine away from home ^{4, 5, 6}		0.8		0.29	L-May 2022	1.4
Distilled spirits away from home ^{4, 5, 6}		0.2		0.31	L-May 2022	0.2
Other goods ¹¹	1.333	1.2	0.015	0.21	L-Oct.2021	1.2
Tobacco and smoking products ⁴	0.511	1.1	0.006	0.20	L-Oct.2021	1.9
Cigarettes ^{4, 5}	0.441	1.1	0.005	0.22	L-Oct.2021	2.1
Tobacco products other than cigarettes ^{4, 5}	0.065	1.2	0.001	0.33	L-Mar.2022	1.6
Personal care products ⁴	0.640	1.5	0.010	0.26	L-Dec.2006	1.9
Hair, dental, shaving, and miscellaneous personal care products ^{4, 5}	0.332	0.8	0.003	0.33	S-May 2022	0.2
Cosmetics, perfume, bath, nail preparations and implements ⁴	0.299	2.3	0.007	0.37	L-Dec.2006	2.8
Miscellaneous personal goods ^{4, 5}	0.182	0.0	0.000	0.88	L-May 2022	2.4
Stationery, stationery supplies, gift wrap ⁶		-0.5		0.71	L-May 2022	1.0
Services less energy services.....	56.523	0.6	0.328	0.05	L-Jun.2022	0.7
Shelter.....	32.247	0.7	0.223	0.06	L-Jan.1991	0.7
Rent of shelter ¹⁶	31.884	0.7	0.227	0.06	L-Jan.1991	0.7
Rent of primary residence.....	7.246	0.7	0.054	0.05	-	-

See footnotes at end of table.

Table 6. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 1-month analysis table — Continued

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	One Month				
		Seasonally adjusted percent change Jul. 2022-Aug. 2022	Seasonally adjusted effect on All Items Jul. 2022-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) seasonally adjusted change since: ³	
					Date	Percent change
Lodging away from home ⁵	0.984	0.1	0.001	1.65	L-May 2022	0.9
Housing at school, excluding board ¹⁶	0.122	0.6	0.001	0.05	S-Jun.2022	0.2
Other lodging away from home including hotels and motels.....	0.862	0.0	0.000	1.90	L-May 2022	1.0
Owners' equivalent rent of residences ¹⁶	23.654	0.7	0.169	0.05	L-Jun.2022	0.7
Owners' equivalent rent of primary residence ¹⁶ ..	22.426	0.7	0.160	0.05	L-Jun.2022	0.7
Tenants' and household insurance ^{4, 5}	0.363	-0.1	0.000	0.12	S-May 2022	-0.1
Water and sewer and trash collection services ⁵	1.076	0.6	0.007	0.10	L-Jan.2022	0.9
Water and sewerage maintenance.....	0.775	0.8	0.006	0.10	L-Jan.2022	1.3
Garbage and trash collection ^{4, 13}	0.301	0.1	0.000	0.26	-	-
Household operations ^{4, 5}	0.825		0.001	0.25	-	-
Domestic services ^{4, 5}	0.242		-0.001	0.38	-	-
Gardening and lawn care services ^{4, 5}						
Moving, storage, freight expense ^{4, 5}	0.104	0.0	0.000	1.45	S-Mar.2022	-0.4
Repair of household items ^{4, 5}						
Medical care services.....	6.807	0.8	0.053	0.13	L-Oct.2019	0.8
Professional services.....	3.431	0.6	0.022	0.20	L-Jun.2022	0.7
Physicians' services ⁴	1.802	0.2	0.004	0.27	S-Jun.2022	0.1
Dental services.....	0.899	1.7	0.015	0.19	L-Jun.2022	1.9
Eyeglasses and eye care ^{4, 9}	0.351	0.0	0.000	0.37	L-Jun.2022	0.7
Services by other medical professionals ^{4, 9}	0.379	0.1	0.000	0.10	L-Jun.2022	0.1
Hospital and related services.....	2.496	0.6	0.015	0.12	L-Aug.2021	0.6
Hospital services ¹⁷	2.129	0.7	0.014	0.13	L-Oct.2019	1.2
Inpatient hospital services ^{17, 6}						
Outpatient hospital services ^{9, 6}		0.5		0.34	L-May 2022	0.6
Nursing homes and adult day services ¹⁷	0.205	0.2	0.000	0.16	S-May 2022	0.0
Care of invalids and elderly at home ^{4, 8}	0.162	0.0	0.000	0.24	S-May 2022	0.0
Health insurance ^{4, 8}	0.880	2.4	0.021	0.15	L-Jan.2022	2.7
Transportation services.....	5.872	0.5	0.030	0.19	L-Jun.2022	2.1
Leased cars and trucks ^{4, 14}						
Car and truck rental ⁵	0.155	-0.5	-0.001	1.79	L-May 2022	1.7
Motor vehicle maintenance and repair ⁴	1.034	1.7	0.018	0.21	L-Jun.2022	2.0
Motor vehicle body work ⁴	0.052	-1.2	-0.001	0.26	S-Feb.1990	-1.6
Motor vehicle maintenance and servicing ⁴	0.566	0.8	0.005	0.25	L-Jun.2022	2.0
Motor vehicle repair ^{4, 5}	0.372	3.5	0.013	0.31	L-Feb.2022	4.3
Motor vehicle insurance.....	2.407	1.3	0.031	0.19	-	-
Motor vehicle fees ^{4, 5}	0.497	0.5	0.003	0.23	S-Jun.2022	0.5
State motor vehicle registration and license fees ^{4, 5}	0.288	0.8	0.002	0.02	S-Jun.2022	0.0
Parking and other fees ^{4, 5}	0.194	0.2	0.000	0.45	L-Jun.2022	1.1
Parking fees and tolls ^{5, 6}		1.1		0.53	L-Jun.2022	1.5
Public transportation.....	0.962	-3.2	-0.030	0.65	L-Jun.2022	-0.4
Airline fares.....	0.673	-4.6	-0.031	0.97	L-Jun.2022	-1.8
Other intercity transportation.....	0.091	0.2	0.000	0.62	L-Jun.2022	0.4
Ship fare ^{4, 5, 6}		0.4		0.82	L-Feb.2022	2.0
Intracity transportation ⁴	0.195	-0.8	-0.001	0.92	S-Sep.2021	-1.9
Intracity mass transit ^{4, 11, 6}		0.1		0.26	L-Nov.2021	1.0
Recreation services ¹¹	3.108	0.0	-0.001	0.21	S-Dec.2021	0.0
Video and audio services ¹¹	1.137	-0.3	-0.003	0.17	L-Jun.2022	0.1
Cable and satellite television service ¹³	1.043	-0.4	-0.004	0.13	L-Jun.2022	0.0
Video djscs and other media, including rental of video ^{4, 5}	0.094	1.2	0.001	1.04	S-Jun.2022	1.0
Video discs and other media ^{4, 5, 6}		2.7		1.84	S-Jun.2022	0.3

See footnotes at end of table.

Table 6. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 1-month analysis table — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	One Month				
		Seasonally adjusted percent change Jul. 2022-Aug. 2022	Seasonally adjusted effect on All Items Jul. 2022-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) seasonally adjusted change since: ³	
					Date	Percent change
Rental of video discs and other media ^{4, 5, 6}		0.1		0.22	L-May 2022	1.0
Pet services including veterinary ⁵	0.513	0.6	0.003	0.32	S-Jun.2022	0.3
Pet services ^{4, 5, 6}		0.1		0.39	S-Jun.2022	-0.7
Veterinarian services ^{5, 6}		0.9		0.60	L-Mar.2022	3.4
Photographers and photo processing ^{4, 5}	0.029	1.4	0.000	0.45	L-Apr.2022	1.8
Other recreation services ⁵	1.429	-0.1	-0.001	0.41	S-Apr.2022	-0.3
Club membership for shopping clubs, fraternal, or other organizations, or participant sports fees ^{4, 5}	0.624	0.4	0.002	0.28	—	—
Admissions ⁴	0.454	-1.4	-0.006	0.87	S-Apr.2022	-1.4
Admission to movies, theaters, and concerts ^{4, 5, 6}		-0.6		0.61	S-Aug.2021	-0.6
Admission to sporting events ^{4, 5, 6}		-2.8		4.15	S-Apr.2022	-8.2
Fees for lessons or instructions ^{4, 9}	0.165	1.8	0.003	0.43	L-Jun.2021	2.8
Education and communication services ¹¹	5.239	0.2	0.012	0.06	L-Jun.2022	0.2
Tuition, other school fees, and childcare.....	2.461	0.5	0.012	0.08	L-Aug.2018	0.7
College tuition and fees.....	1.410	0.5	0.008	0.09	L-Oct.2018	0.6
Elementary and high school tuition and fees.....	0.313	-0.2	-0.001	0.05	S-Sep.2021	-0.3
Day care and preschool ¹²	0.612	0.6	0.004	0.09	L-Jun.2022	0.7
Technical and business school tuition and fees ^{4, 5}	0.038	0.9	0.000	0.11	L-Jul.2021	0.9
Postage and delivery services ⁵	0.081	0.2	0.000	0.06	S-Feb.2022	-1.4
Postage.....	0.073	0.4	0.000	0.01	—	—
Delivery services ⁵	0.009	-0.7	0.000	0.30	S-Jun.2022	-0.7
Telephone services ^{4, 5}	1.780	0.0	0.000	0.07	—	—
Wireless telephone services ^{4, 5}	1.480	0.0	-0.001	0.04	—	—
Residential telephone services ^{4, 11}	0.300	0.3	0.001	0.27	L-Apr.2022	0.7
Internet services and electronic information providers ^{4, 5}	0.908	-0.1	-0.001	0.20	L-Jun.2022	-0.1
Other personal services ^{4, 11}	1.349	0.3	0.004	0.19	S-May 2022	0.1
Personal care services ⁴	0.531	0.7	0.004	0.28	L-Feb.2022	1.1
Haircuts and other personal care services ^{4, 5}	0.531	0.7	0.004	0.28	L-Feb.2022	1.1
Miscellaneous personal services ⁴	0.817	0.1	0.001	0.18	S-May 2022	-0.1
Legal services ^{4, 9}	0.232	-0.1	0.000	0.09	S-Jan.2022	-0.2
Funeral expenses ^{4, 9}	0.144	-0.5	-0.001	0.13	S-Dec.2015	-0.5
Laundry and dry cleaning services ^{4, 5}	0.152	0.0	0.000	0.39	S-Mar.2021	-0.1
Apparel services other than laundry and dry cleaning ^{4, 5}	0.018	-1.0	0.000	0.45	S-May 2022	-2.6
Financial services ^{4, 9}	0.189	0.9	0.002	0.50	L-Mar.2022	2.0
Checking account and other bank services ^{4, 5, 6}		0.4		0.30	L-Apr.2022	2.1
Tax return preparation and other accounting fees ^{4, 5, 6}		1.9		0.51	L-Feb.2022	3.0
Special aggregate indexes						
All items less food.....	86.473	0.0	0.011	0.04	L-Jun.2022	1.4
All items less shelter.....	67.753	-0.2	-0.105	0.05	L-Jun.2022	1.7
All items less food and shelter.....	54.226	-0.4	-0.212	0.05	L-Jun.2022	1.8
All items less food, shelter, and energy.....	45.444	0.5	0.219	0.06	L-Jun.2022	0.8
All items less food, shelter, energy, and used cars and trucks.....	41.422	0.5	0.223	0.06	L-Jun.2022	0.7
All items less medical care.....	91.719	0.1	0.062	0.04	L-Jun.2022	1.4
All items less energy.....	91.218	0.6	0.549	0.04	L-Jun.2022	0.7
Commodities.....	39.865	-0.8	-0.300	0.07	S-Apr.2020	-1.6

See footnotes at end of table.

Table 6. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 1-month analysis table — Continued

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	One Month				
		Seasonally adjusted percent change Jul. 2022-Aug. 2022	Seasonally adjusted effect on All Items Jul. 2022-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) seasonally adjusted change since: ³	
					Date	Percent change
Commodities less food, energy, and used cars and trucks.....	17.146	0.6	0.101	0.12	L-Jun.2022	0.6
Commodities less food.....	26.338	-1.6	-0.407	0.09	S-Apr.2020	-3.3
Commodities less food and beverages.....	25.473	-1.6	-0.410	0.09	S-Apr.2020	-3.5
Services.....	60.135	0.7	0.402	0.05	L-Jun.2022	0.9
Services less rent of shelter ¹⁶	28.251	0.6	0.177	0.06	L-Jun.2022	1.1
Services less medical care services.....	53.328	0.7	0.371	0.05	L-Jun.2022	0.8
Durables.....	12.688	0.5	0.061	0.14	L-Jun.2022	0.7
Nondurables.....	27.177	-1.4	-0.381	0.07	S-Apr.2020	-2.1
Nondurables less food.....	13.650	-3.6	-0.485	0.12	S-Apr.2020	-6.0
Nondurables less food and beverages.....	12.785	-3.8	-0.488	0.13	S-Apr.2020	-6.6
Nondurables less food, beverages, and apparel.....	10.394	-4.8	-0.491	0.11	S-Apr.2020	-7.4
Nondurables less food and apparel.....	11.258	-4.3	-0.476	0.10	S-Apr.2020	-6.7
Housing.....	41.919	0.8	0.344	0.06	L-Jun.2022	0.8
Education and communication ⁵	5.999	0.1	0.007	0.07	L-Jun.2022	0.2
Education ⁵	2.547	0.5	0.013	0.08	L-Aug.2018	0.6
Communication ⁵	3.452	-0.2	-0.006	0.10	L-Jun.2022	0.0
Information and information processing ⁵	3.370	-0.2	-0.006	0.11	L-Jun.2022	0.0
Information technology, hardware and services ¹⁸	1.590	-0.4	-0.007	0.25	L-Jun.2022	0.1
Recreation ⁵	4.974	0.2	0.011	0.17	S-Mar.2022	0.2
Video and audio ⁵	1.416	-0.5	-0.008	0.17	L-Jun.2022	0.0
Pets, pet products and services ⁵	1.067	1.1	0.012	0.29	L-Mar.2022	2.1
Photography ⁵	0.051	1.0	0.001	0.42	S-Jun.2022	-0.5
Food and beverages.....	14.392	0.8	0.111	0.08	S-Apr.2022	0.8
Domestically produced farm food ⁴	7.083	0.7	0.051	0.14	S-Dec.2021	0.4
Other services.....	9.696	0.2	0.015	0.08	L-Jun.2022	0.2
Apparel less footwear.....	1.798	0.5	0.008	0.46	L-Jun.2022	0.5
Fuels and utilities.....	4.927	1.5	0.074	0.16	L-Jun.2022	2.5
Household energy.....	3.851	1.8	0.068	0.20	L-Jun.2022	3.2
Medical care.....	8.281	0.7	0.056	0.12	L-Jun.2022	0.7
Transportation.....	19.362	-2.3	-0.434	0.10	S-Apr.2020	-6.0
Private transportation.....	18.400	-2.2	-0.404	0.09	S-Apr.2020	-5.7
New and used motor vehicles ⁵	9.106	0.4	0.039	0.13	L-Jun.2022	1.6
Utilities and public transportation.....	8.473	0.7	0.057	0.12	L-Jun.2022	1.3
Household furnishings and operations.....	4.745	1.0	0.047	0.20	L-Mar.2022	1.0
Other goods and services.....	2.682	0.7	0.020	0.14	L-Feb.2022	1.1
Personal care ⁴	2.171	0.6	0.014	0.16	L-Feb.2022	1.2

¹ The 'effect' of an item category is a measure of that item's contribution to the All items price change. For example, if the Food index had an effect of 0.40, and the All items index rose 1.2 percent, then the increase in food prices contributed 0.40 / 1.2, or 33.3 percent, to that All items increase. Said another way, had food prices been unchanged for that month the change in the All items index would have been 1.2 percent minus 0.40, or 0.8 percent. Effects can be negative as well. For example, if the effect of food was a negative 0.1, and the All items index rose 0.5 percent, the All items index actually would have been 0.1 percent higher (or 0.6 percent) had food prices been unchanged. Since food prices fell while prices overall were rising, the contribution of food to the All items price change was negative (in this case, -0.1 / 0.5, or minus 20 percent).

² A statistic's margin of error is often expressed as its point estimate plus or minus two standard errors. For example, if a CPI category rose 0.6 percent, and its standard error was 0.15 percent, the margin of error on this item's 1-month percent change would be 0.6 percent, plus or minus 0.3 percent.

³ If the current seasonally adjusted 1-month percent change is greater than the previous published 1-month percent change, then this column identifies the closest prior month with a 1-month percent change as (L)arge as or (L)arger than the current 1-month change. If the current 1-month percent change is smaller than the previous published 1-month percent change, the most recent month with a change as (S)mall or (S)maller than the current month change is identified. If the current and previous published 1-month percent changes are equal, a dash will appear. Standard numerical comparisons are used. For example, 0.8% is greater than 0.6%, -0.4% is less than -0.2%, and -0.2% is less than 0.0%. Note that a (L)arger change can be a smaller decline, for example, a -0.2% change is larger than a -0.4% change, but still represents a decline in the price index. Likewise, (S)maller changes can be increases, for example, a 0.6% change is smaller than 0.8%, but still represents an increase in the price index. In this context, a -0.2% change is considered to be smaller than a 0.0% change.

⁴ Not seasonally adjusted.

⁵ Indexes on a December 1997=100 base.

⁶ Special indexes based on a substantially smaller sample. These series do not contribute to the all items index aggregation and therefore do not have a relative importance or effect.

- ⁷ Indexes on a December 2007=100 base.
- ⁸ Indexes on a December 2005=100 base.
- ⁹ Indexes on a December 1986=100 base.
- ¹⁰ Indexes on a December 1993=100 base.
- ¹¹ Indexes on a December 2009=100 base.
- ¹² Indexes on a December 1990=100 base.
- ¹³ Indexes on a December 1983=100 base.
- ¹⁴ Indexes on a December 2001=100 base.
- ¹⁵ Indexes on a December 2019=100 base.
- ¹⁶ Indexes on a December 1982=100 base.
- ¹⁷ Indexes on a December 1996=100 base.
- ¹⁸ Indexes on a December 1988=100 base.

Table 7. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 12-month analysis table
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Twelve Month				
		Unadjusted percent change Aug. 2021-Aug. 2022	Unadjusted effect on All Items Aug. 2021-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) unadjusted change since: ³	
					Date	Percent change
All items.....	100.000	8.3		0.09	S-Apr.2022	8.3
Food.....	13.527	11.4	1.525	0.19	L-May 1979	11.4
Food at home.....	8.414	13.5	1.081	0.29	L-Mar.1979	13.6
Cereals and bakery products.....	1.086	16.4	0.166	0.54	L-Apr.1975	17.1
Cereals and cereal products.....	0.353	17.4	0.056	0.79	L-EVER	-
Flour and prepared flour mixes.....	0.058	23.3	0.012	1.42	L-EVER	-
Breakfast cereal.....	0.149	16.4	0.023	1.23	-	-
Rice, pasta, cornmeal.....	0.146	15.7	0.021	1.21	L-Mar.2009	15.7
Rice ^{4, 5}		13.0		1.30	L-May 2009	13.6
Bakery products.....	0.733	16.0	0.110	0.71	L-EVER	-
Bread ⁴	0.205	16.2	0.031	1.38	L-Sep.2008	17.4
White bread ⁵		16.4		1.37	L-Jul.2008	16.8
Bread other than white ⁵		16.1		1.36	L-Oct.2008	16.6
Fresh biscuits, rolls, muffins ⁴	0.110	17.1	0.017	1.72	L-EVER	-
Cakes, cupcakes, and cookies.....	0.181	14.4	0.025	1.68	L-Jan.1981	14.4
Cookies ⁵		14.3		1.15	S-May 2022	12.6
Fresh cakes and cupcakes ⁵		12.9		2.20	L-Feb.1981	13.6
Other bakery products.....	0.237	16.5	0.036	1.16	L-EVER	-
Fresh sweetrolls, coffeecakes, doughnuts ⁵		14.1		1.67	L-Jun.2022	14.6
Crackers, bread, and cracker products ⁵		17.7		1.72	L-EVER	-
Frozen and refrigerated bakery products, pies, tarts, turnovers ⁵		18.1		1.90	L-EVER	-
Meats, poultry, fish, and eggs.....	1.900	10.6	0.195	0.71	S-Sep.2021	10.5
Meats, poultry, and fish.....	1.768	8.8	0.154	0.71	S-Aug.2021	7.9
Meats.....	1.113	6.7	0.074	0.92	S-Jul.2021	5.9
Beef and veal.....	0.511	2.5	0.013	0.97	S-Jun.2021	-2.8
Uncooked ground beef.....	0.189	7.8	0.015	1.12	S-Aug.2021	6.9
Uncooked beef roasts ⁴	0.075	3.3	0.003	2.91	L-Jun.2022	3.6
Uncooked beef steaks ⁴	0.197	-3.0	-0.007	1.56	S-Sep.2017	-3.1
Uncooked other beef and veal ⁴	0.050	4.9	0.002	2.50	L-May 2022	12.1
Pork.....	0.360	6.8	0.024	1.71	S-Jun.2021	3.2
Bacon, breakfast sausage, and related products ⁴	0.161	9.0	0.014	1.89	S-Jul.2021	8.1
Bacon and related products ⁵		5.7		2.17	S-Feb.2021	4.4
Breakfast sausage and related products ^{4, 5}		14.4		1.90	S-Jun.2022	13.6
Ham.....	0.064	9.2	0.006	2.87	-	-
Ham, excluding canned ⁵		8.8		3.44	L-Jun.2022	9.3
Pork chops.....	0.051	5.2	0.003	2.62	L-May 2022	11.0
Other pork including roasts, steaks, and ribs ⁴	0.083	2.3	0.002	3.71	L-Jun.2022	7.2
Other meats.....	0.242	16.6	0.037	1.13	L-Jun.2022	16.7
Frankfurters ⁵		18.3		2.39	L-May 1979	19.9
Lunchmeats ^{4, 5}		18.2		1.01	L-EVER	-
Poultry.....	0.367	15.9	0.055	1.24	S-Apr.2022	15.3
Chicken ⁴	0.299	16.6	0.046	1.29	S-Apr.2022	16.4
Fresh whole chicken ⁵		14.8		2.09	S-May 2022	14.7
Fresh and frozen chicken parts ⁵		17.8		1.71	S-Mar.2022	15.1
Other uncooked poultry including turkey ⁴	0.068	12.8	0.009	3.14	L-May 2022	13.1
Fish and seafood.....	0.287	8.7	0.025	0.99	-	-
Fresh fish and seafood ⁴	0.147	7.8	0.011	1.61	S-Jun.2021	6.4
Processed fish and seafood ⁴	0.141	9.7	0.013	1.08	L-Jun.2022	11.4
Shelf stable fish and seafood ⁵		8.1		1.70	L-Feb.2019	9.1
Frozen fish and seafood ⁵		11.7		1.66	L-Jun.2022	14.1
Eggs.....	0.132	39.8	0.041	2.04	L-Oct.2007	42.2

See footnotes at end of table.

Table 7. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 12-month analysis table — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Twelve Month				
		Unadjusted percent change Aug. 2021-Aug. 2022	Unadjusted effect on All Items Aug. 2021-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) unadjusted change since: ³	
					Date	Percent change
Dairy and related products.....	0.798	16.2	0.121	0.49	L-Aug.1974	19.2
Milk ⁴	0.205	17.0	0.033	1.24	L-Jan.2008	17.7
Fresh whole milk ⁵		16.1		1.43	L-Jun.2022	17.1
Fresh milk other than whole ^{4, 5}		17.7		1.15	L-Nov.2007	17.7
Cheese and related products.....	0.260	13.5	0.034	0.84	L-Jul.2008	14.5
Ice cream and related products.....	0.115	14.0	0.015	1.24	L-Apr.1981	14.1
Other dairy and related products ⁴	0.218	20.0	0.039	0.93	L-EVER	—
Fruits and vegetables.....	1.407	9.4	0.129	0.64	L-Sep.2008	10.4
Fresh fruits and vegetables.....	1.069	7.9	0.084	0.74	S-Jun.2022	7.0
Fresh fruits.....	0.574	8.3	0.046	1.20	S-Jun.2022	7.3
Apples.....	0.077	3.8	0.003	2.17	S-May 2021	2.7
Bananas.....	0.079	8.3	0.006	1.54	L-Feb.2009	17.4
Citrus fruits ⁴	0.166	8.6	0.014	2.18	S-Nov.2021	2.6
Oranges, including tangerines ⁵		14.4		2.06	L-May 2022	14.6
Other fresh fruits ⁴	0.252	9.2	0.022	1.94	S-Jun.2022	6.5
Fresh vegetables.....	0.495	7.6	0.038	0.78	L-Mar.2019	7.7
Potatoes.....	0.083	15.2	0.012	1.82	L-Sep.2011	16.2
Lettuce.....	0.057	10.7	0.006	1.66	L-Jun.2022	11.4
Tomatoes.....	0.075	-0.2	0.000	2.02	L-Jun.2022	0.6
Other fresh vegetables.....	0.278	7.0	0.019	0.97	S-Jun.2022	6.5
Processed fruits and vegetables ⁴	0.338	14.2	0.046	0.91	L-Nov.2008	14.9
Canned fruits and vegetables ⁴	0.174	16.6	0.027	1.47	L-Mar.2009	16.8
Canned fruits ^{4, 5}		16.6		1.39	L-EVER	—
Canned vegetables ^{4, 5}		16.1		1.63	L-Mar.2009	20.5
Frozen fruits and vegetables ⁴	0.099	11.4	0.011	1.48	L-EVER	—
Frozen vegetables ⁵		11.9		1.57	L-Apr.1982	12.2
Other processed fruits and vegetables including dried ⁴	0.065	12.7	0.008	1.86	L-Jan.2009	14.0
Dried beans, peas, and lentils ^{4, 5}		11.6		2.73	L-Aug.2012	15.9
Nonalcoholic beverages and beverage materials.....	0.964	13.4	0.124	0.65	S-Jun.2022	11.9
Juices and nonalcoholic drinks ⁴	0.675	13.1	0.086	0.84	L-EVER	—
Carbonated drinks.....	0.281	12.9	0.036	1.76	—	—
Frozen noncarbonated juices and drinks ⁴	0.007	5.7	0.000	1.09	S-May 2022	5.7
Nonfrozen noncarbonated juices and drinks ⁴	0.387	13.4	0.050	0.87	L-EVER	—
Beverage materials including coffee and tea ⁴	0.289	14.0	0.038	0.83	S-Jun.2022	12.4
Coffee.....	0.188	17.6	0.030	1.15	S-Jun.2022	15.8
Roasted coffee ⁵		18.7		1.31	S-Jun.2022	16.8
Instant coffee ⁵		13.0		1.79	S-Jun.2022	11.2
Other beverage materials including tea ⁴	0.101	7.7	0.008	1.65	S-Jun.2022	6.4
Other food at home.....	2.259	16.7	0.346	0.40	L-Jan.1978	17.6
Sugar and sweets.....	0.281	12.7	0.035	0.88	L-Apr.1981	17.7
Sugar and sugar substitutes.....	0.042	15.9	0.006	1.43	L-Apr.1981	24.6
Candy and chewing gum ⁴	0.176	10.9	0.019	1.17	L-EVER	—
Other sweets ⁴	0.063	15.8	0.009	1.37	S-Jun.2022	15.7
Fats and oils.....	0.254	21.5	0.049	1.12	L-Apr.1975	23.6
Butter and margarine ⁴	0.080	29.3	0.020	1.57	L-EVER	—
Butter ⁵		24.6		2.25	L-Nov.2014	27.2
Margarine ⁵		38.3		1.83	L-Feb.1975	47.1
Salad dressing ⁴	0.057	11.8	0.006	1.54	S-Feb.2022	9.4
Other fats and oils including peanut butter ⁴	0.116	21.3	0.022	1.77	L-Oct.2008	21.9
Peanut butter ^{4, 5}		15.2		1.63	L-Nov.2012	21.2
Other foods.....	1.724	16.6	0.262	0.46	L-May 1975	18.2
Soups.....	0.106	18.5	0.018	1.69	S-Jun.2022	16.0
Frozen and freeze dried prepared foods.....	0.280	18.5	0.047	0.86	L-EVER	—

See footnotes at end of table.

Table 7. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 12-month analysis table — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Twelve Month				
		Unadjusted percent change Aug. 2021-Aug. 2022	Unadjusted effect on All Items Aug. 2021-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) unadjusted change since: ³	
					Date	Percent change
Snacks.....	0.372	16.7	0.057	1.02	L-EVER	—
Spices, seasonings, condiments, sauces.....	0.329	15.4	0.047	0.78	L-EVER	—
Salt and other seasonings and spices ^{4, 5}		14.8		1.35	L-EVER	—
Olives, pickles, relishes ^{4, 5}		19.4		1.31	L-EVER	—
Sauces and gravies ^{4, 5}		17.6		1.38	L-EVER	—
Other condiments ⁵		11.1		1.28	S-Jun.2022	10.7
Baby food ⁴	0.044	12.6	0.005	1.33	S-Mar.2022	10.8
Other miscellaneous foods ⁴	0.592	16.5	0.087	0.87	L-EVER	—
Prepared salads ^{6, 5}		17.3		1.72	L-Jun.2022	17.6
Food away from home.....	5.113	8.0	0.444	0.28	L-Nov.1981	8.0
Full service meals and snacks ⁴	2.385	9.0	0.236	0.35	L-May 2022	9.0
Limited service meals and snacks ⁴	2.479	7.2	0.189	0.44	—	—
Food at employee sites and schools ⁴	0.042	23.7	0.005	3.39	L-EVER	—
Food at elementary and secondary schools ^{7, 5}						
Food from vending machines and mobile vendors ⁴	0.037	6.9	0.002	0.99	S-Mar.2022	5.5
Other food away from home ⁴	0.171	6.5	0.011	0.68	S-May 2022	5.0
Energy.....	8.782	23.8	1.720	0.35	S-Jul.2021	23.8
Energy commodities.....	5.170	27.1	1.063	0.65	S-Mar.2021	22.0
Fuel oil and other fuels.....	0.239	48.8	0.080	1.86	S-Feb.2022	33.4
Fuel oil.....	0.165	68.8	0.068	2.71	S-Feb.2022	43.6
Propane, kerosene, and firewood ⁸	0.074	18.8	0.012	2.45	S-Jun.2021	17.7
Motor fuel.....	4.931	26.2	0.982	0.68	S-Mar.2021	22.2
Gasoline (all types).....	4.824	25.6	0.945	0.70	S-Mar.2021	22.5
Gasoline, unleaded regular ⁵		25.8		1.12	S-Mar.2021	23.5
Gasoline, unleaded midgrade ^{9, 5}		25.5		0.96	S-Mar.2021	18.5
Gasoline, unleaded premium ⁵		24.7		0.91	S-Mar.2021	16.6
Other motor fuels ⁴	0.107	53.0	0.038	1.05	S-Feb.2022	40.5
Energy services.....	3.612	19.8	0.657	0.42	L-Jan.2006	21.9
Electricity.....	2.658	15.8	0.396	0.47	L-Aug.1981	16.2
Utility (piped) gas service.....	0.954	33.0	0.261	0.87	L-Jun.2022	38.4
All items less food and energy.....	77.691	6.3	5.018	0.11	L-Mar.2022	6.5
Commodities less food and energy commodities.....	21.168	7.1	1.498	0.22	L-Jun.2022	7.2
Household furnishings and supplies ¹⁰	3.920	10.6	0.404	0.60	S-Jun.2022	10.2
Window and floor coverings and other linens ⁴	0.287	6.8	0.020	2.43	S-Jun.2022	5.6
Floor coverings ⁴	0.067	14.8	0.010	2.37	L-EVER	—
Window coverings ⁴	0.058	6.9	0.004	4.65	S-Sep.2021	6.5
Other linens ⁴	0.163	3.9	0.006	3.39	L-Jan.2022	3.9
Furniture and bedding.....	0.973	12.8	0.122	1.37	S-May 2022	12.7
Bedroom furniture.....	0.316	8.7	0.028	2.10	S-Aug.2021	7.7
Living room, kitchen, and dining room furniture ⁴	0.483	17.7	0.081	2.01	S-Jun.2022	15.4
Other furniture ⁴	0.165	7.5	0.012	2.81	S-Sep.2021	6.6
Appliances ⁴	0.247	3.0	0.007	1.61	S-Jun.2020	2.6
Major appliances ⁴	0.081	2.2	0.002	3.13	S-Jun.2020	1.2
Laundry equipment ⁵		10.8		6.20	L-Feb.2022	11.5
Other appliances ⁴	0.163	3.4	0.006	2.12	S-Aug.2021	2.4
Other household equipment and furnishings ⁴	0.550	8.3	0.045	1.66	L-Mar.2022	9.7
Clocks, lamps, and decorator items.....	0.329	9.0	0.028	2.59	L-Apr.2022	10.3
Indoor plants and flowers ¹¹	0.097	5.6	0.005	2.70	L-Jun.2022	5.6
Dishes and flatware ⁴	0.050	13.7	0.007	4.12	L-EVER	—
Nonelectric cookware and tableware ⁴	0.075	6.0	0.005	2.27	S-May 2022	5.1
Tools, hardware, outdoor equipment and supplies ⁴	0.919	11.7	0.104	0.90	L-EVER	—
Tools, hardware and supplies ⁴	0.240	9.6	0.023	1.19	S-Mar.2022	8.6
Outdoor equipment and supplies ⁴	0.458	13.1	0.057	1.17	L-EVER	—

See footnotes at end of table.

Table 7. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 12-month analysis table — Continued

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Twelve Month				
		Unadjusted percent change Aug. 2021-Aug. 2022	Unadjusted effect on All Items Aug. 2021-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) unadjusted change since: ³	
					Date	Percent change
Housekeeping supplies.....	0.943	11.7	0.107	0.88	L-Feb.1981	11.8
Household cleaning products ⁴	0.342	10.5	0.036	1.24	S-May 2022	9.9
Household paper products ⁴	0.220	14.1	0.030	1.66	L-EVER	—
Miscellaneous household products ⁴	0.382	11.5	0.041	1.51	L-EVER	—
Apparel.....	2.391	5.1	0.127	0.85	—	—
Men's and boys' apparel.....	0.604	5.2	0.033	1.47	S-Sep.2021	4.4
Men's apparel.....	0.465	4.8	0.023	1.65	S-Sep.2021	4.4
Men's suits, sport coats, and outerwear.....	0.077	11.0	0.008	4.72	S-Dec.2021	10.7
Men's underwear, nightwear, swimwear, and accessories.....	0.155	2.3	0.004	2.63	S-Sep.2021	0.3
Men's shirts and sweaters ⁴	0.110	5.6	0.007	2.95	S-Aug.2021	4.4
Men's pants and shorts.....	0.117	3.5	0.004	3.94	L-Mar.2022	3.8
Boys' apparel.....	0.139	7.4	0.010	2.64	L-Feb.2022	9.1
Women's and girls' apparel.....	0.921	5.4	0.053	1.37	L-Mar.2022	6.3
Women's apparel.....	0.775	5.6	0.045	1.51	L-Mar.2022	6.5
Women's outerwear.....	0.057	6.9	0.004	4.67	S-Dec.2021	6.0
Women's dresses.....	0.083	1.6	0.001	3.19	S-Apr.2021	-1.2
Women's suits and separates ⁴	0.374	7.5	0.030	2.25	L-Feb.2007	8.9
Women's underwear, nightwear, swimwear, and accessories ⁴	0.255	3.6	0.010	2.82	L-May 2022	4.7
Girls' apparel.....	0.146	4.8	0.007	4.60	L-Mar.2022	5.0
Footwear.....	0.594	5.0	0.031	1.13	S-May 2022	4.5
Men's footwear.....	0.199	4.0	0.009	1.67	S-May 2022	2.8
Boys' and girls' footwear.....	0.115	6.8	0.008	2.88	S-Jun.2022	6.7
Women's footwear.....	0.280	4.9	0.014	1.75	S-Nov.2021	4.8
Infants' and toddlers' apparel.....	0.112	8.6	0.010	5.09	L-Jun.2022	10.0
Jewelry and watches ⁸	0.160	-0.3	0.000	3.48	S-May 2022	-0.6
Watches ⁸	0.030	1.3	0.000	2.94	L-Feb.2022	5.1
Jewelry ⁸	0.130	-1.2	0.000	4.37	S-May 2022	-1.2
Transportation commodities less motor fuel ¹⁰	8.559	9.1	0.744	0.36	L-Jun.2022	9.5
New vehicles.....	4.024	10.1	0.391	0.65	S-Oct.2021	9.8
New cars ⁵		10.9		0.67	S-Nov.2021	10.9
New trucks ^{12, 5}		9.8		0.78	S-Sep.2021	9.2
Used cars and trucks.....	4.021	7.8	0.284	0.10	L-May 2022	16.1
Motor vehicle parts and equipment.....	0.425	13.4	0.054	0.79	S-Jan.2022	12.6
Tires.....	0.269	13.7	0.035	0.91	S-Dec.2021	12.4
Vehicle accessories other than tires ⁴	0.156	12.9	0.019	1.56	S-Apr.2022	12.5
Vehicle parts and equipment other than tires ⁵		11.5		1.37	L-Jun.2022	11.6
Motor oil, coolant, and fluids ⁵		13.8		2.37	S-Mar.2022	11.5
Medical care commodities.....	1.474	4.1	0.062	0.56	L-Feb.2017	4.1
Medicinal drugs ¹⁰	1.373	4.0	0.057	0.57	L-Mar.2017	4.0
Prescription drugs.....	0.999	3.2	0.034	0.67	L-Jun.2018	3.2
Nonprescription drugs ¹⁰	0.374	6.1	0.023	1.24	L-EVER	—
Medical equipment and supplies ¹⁰	0.101	6.0	0.006	1.33	S-Jun.2022	5.9
Recreation commodities ¹⁰	1.865	3.8	0.075	0.57	S-May 2022	3.8
Video and audio products ¹⁰	0.279	-9.0	-0.027	1.16	S-Feb.2020	-9.7
Televisions.....	0.126	-19.1	-0.025	1.72	S-Feb.2020	-19.9
Other video equipment ⁴	0.024	-4.3	-0.002	2.15	L-May 2022	-4.3
Audio equipment.....	0.072	0.8	0.001	3.21	S-May 2022	-0.7
Recorded music and music subscriptions ⁴	0.051	-0.6	0.000	1.24	S-Jun.2022	-1.7
Pets and pet products.....	0.554	10.7	0.059	0.79	L-Mar.2009	10.9
Pet food ^{4, 5}		13.1		1.21	L-Mar.2009	13.2
Purchase of pets, pet supplies, accessories ^{4, 5}		7.3		1.93	L-Jun.2022	9.3
Sporting goods.....	0.544	3.8	0.022	1.45	S-Jan.2021	2.8

See footnotes at end of table.

Table 7. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 12-month analysis table — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Twelve Month				
		Unadjusted percent change Aug. 2021-Aug. 2022	Unadjusted effect on All Items Aug. 2021-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) unadjusted change since: ³	
					Date	Percent change
Sports vehicles including bicycles.....	0.312	2.9	0.009	2.09	S-Jan.2021	1.0
Sports equipment.....	0.222	5.1	0.012	1.94	S-Jan.2022	4.7
Photographic equipment and supplies.....	0.021	6.3	0.001	2.22	L-May 2020	6.3
Photographic equipment ^{4, 5}		5.8		2.67	S-Jun.2022	1.8
Recreational reading materials.....	0.096	7.0	0.007	1.28	L-Jun.2022	7.4
Newspapers and magazines ⁴	0.057	11.2	0.006	1.67	L-EVER	—
Recreational books ⁴	0.039	1.4	0.001	1.82	L-Jun.2022	2.6
Other recreational goods ⁴	0.371	3.3	0.013	1.36	S-Jun.2022	2.7
Toys.....	0.286	2.8	0.008	1.65	—	—
Toys, games, hobbies and playground equipment ^{1, 5}		6.9		2.20	L-EVER	—
Sewing machines, fabric and supplies ⁴	0.028	8.1	0.003	3.11	L-Jun.2021	13.3
Music instruments and accessories ⁴	0.041	3.6	0.002	2.39	S-Nov.2021	2.9
Education and communication commodities ¹⁰	0.760	-7.3	-0.058	1.66	S-EVER	—
Educational books and supplies.....	0.086	4.6	0.004	2.04	L-Mar.2017	6.0
College textbooks ^{13, 5}		5.3		2.25	L-Mar.2017	7.6
Information technology commodities ¹⁰	0.674	-8.8	-0.062	1.97	S-Aug.2015	-8.8
Computers, peripherals, and smart home assistants ⁶	0.333	-4.3	-0.014	2.76	S-Oct.2020	-4.5
Computer software and accessories ⁴	0.019	-0.3	0.000	3.69	L-Jun.2022	0.1
Telephone hardware, calculators, and other consumer information items ⁴	0.321	-13.8	-0.048	2.38	S-Oct.2021	-15.1
Smartphones ^{5, 14}		-20.4		3.54	S-Oct.2021	-20.7
Alcoholic beverages.....	0.865	4.3	0.039	0.73	L-Dec.2008	4.4
Alcoholic beverages at home.....	0.576	3.2	0.020	0.90	L-Aug.2009	3.2
Beer, ale, and other malt beverages at home.....	0.220	4.9	0.011	1.63	L-Apr.2022	5.0
Distilled spirits at home.....	0.105	1.7	0.002	1.09	S-Jun.2022	1.3
Whiskey at home ⁵		3.0		1.62	S-Jun.2022	2.5
Distilled spirits, excluding whiskey, at home ⁵		1.2		1.55	L-Feb.2022	1.6
Wine at home.....	0.252	2.5	0.007	1.33	L-Dec.2020	2.6
Alcoholic beverages away from home.....	0.289	5.7	0.019	1.13	—	—
Beer, ale, and other malt beverages away from home ^{4, 5}		6.4		1.31	S-Jun.2022	6.0
Wine away from home ^{4, 5}		7.1		0.95	L-Jul.2002	7.5
Distilled spirits away from home ^{4, 5}		4.2		1.44	L-May 2022	5.5
Other goods ¹⁰	1.333	7.6	0.105	0.44	L-EVER	—
Tobacco and smoking products.....	0.511	8.8	0.049	0.77	L-Dec.2021	9.0
Cigarettes ⁴	0.441	9.0	0.044	0.87	L-Dec.2021	9.6
Tobacco products other than cigarettes ⁴	0.065	7.0	0.005	0.75	L-May 2010	8.0
Personal care products.....	0.640	6.0	0.040	0.57	L-Jul.1983	6.0
Hair, dental, shaving, and miscellaneous personal care products ⁴	0.332	7.6	0.026	0.69	L-EVER	—
Cosmetics, perfume, bath, nail preparations and implements.....	0.299	4.2	0.014	1.08	L-Feb.2009	4.7
Miscellaneous personal goods ⁴	0.182	8.3	0.015	1.63	S-Dec.2021	6.2
Stationery, stationery supplies, gift wrap ⁵		9.3		2.75	S-Jan.2022	8.4
Services less energy services.....	56.523	6.1	3.519	0.12	L-Feb.1991	6.5
Shelter.....	32.247	6.2	2.056	0.14	L-Aug.1990	6.2
Rent of shelter ¹⁵	31.884	6.3	2.055	0.14	L-Aug.1990	6.3
Rent of primary residence.....	7.246	6.7	0.503	0.15	L-Apr.1986	6.7
Lodging away from home ⁴	0.984	4.0	0.037	2.60	L-Jun.2022	10.0
Housing at school, excluding board ¹⁵	0.122	2.5	0.003	0.31	L-Aug.2021	2.5
Other lodging away from home including hotels and motels.....	0.862	4.5	0.034	2.99	L-Jun.2022	11.5
Owners' equivalent rent of residences ¹⁵	23.654	6.3	1.515	0.12	L-Apr.1986	6.6

See footnotes at end of table.

Table 7. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 12-month analysis table — Continued

[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Twelve Month				
		Unadjusted percent change Aug. 2021-Aug. 2022	Unadjusted effect on All Items Aug. 2021-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) unadjusted change since: ³	
					Date	Percent change
Owners' equivalent rent of primary residence ¹⁵ . . .	22.426	6.3	1.439	0.12	L-Apr.1986	6.6
Tenants' and household insurance ⁴	0.363	0.5	0.002	0.79	L-Jan.2021	0.8
Water and sewer and trash collection services ⁴	1.076	4.6	0.052	0.30	L-Sep.2015	4.8
Water and sewerage maintenance.....	0.775	4.6	0.037	0.25	L-Jun.2016	4.8
Garbage and trash collection ¹²	0.301	4.6	0.014	0.76	S-Apr.2022	4.6
Household operations ⁴	0.825	6.6	0.057	0.54	L-Nov.2021	8.4
Domestic services ⁴	0.242	5.9	0.015	1.16	L-Apr.2022	7.3
Gardening and lawncare services ⁴						
Moving, storage, freight expense ⁴	0.104	3.7	0.004	2.55	S-Jun.2022	2.7
Repair of household items ⁴						
Medical care services.....	6.807	5.6	0.397	0.34	L-Jul.2020	5.9
Professional services.....	3.431	2.4	0.088	0.43	L-Jun.2022	2.6
Physicians' services.....	1.802	1.1	0.021	0.69	L-May 2022	1.1
Dental services.....	0.899	4.7	0.044	0.74	L-Jun.2022	4.7
Eyeglasses and eye care ⁸	0.351	1.4	0.005	1.04	S-May 2022	1.4
Services by other medical professionals ⁸	0.379	4.4	0.018	0.64	—	—
Hospital and related services.....	2.496	4.1	0.105	0.55	L-Oct.2021	4.1
Hospital services ¹⁶	2.129	4.0	0.088	0.60	L-Oct.2021	4.0
Inpatient hospital services ^{16, 5}						
Outpatient hospital services ^{8, 5}		3.6		0.99	L-Jul.2020	3.6
Nursing homes and adult day services ¹⁶	0.205	4.8	0.009	0.52	L-Dec.2007	4.8
Care of invalids and elderly at home ⁷	0.162	3.6	0.008	1.96	S-Jun.2022	2.0
Health insurance ⁷	0.880	24.3	0.204	0.34	L-EVER	—
Transportation services.....	5.872	11.3	0.644	0.57	L-Nov.1981	11.7
Leased cars and trucks ¹³						
Car and truck rental ⁴	0.155	-6.2	-0.012	3.92	L-May 2022	-0.4
Motor vehicle maintenance and repair.....	1.034	9.1	0.095	0.62	L-Oct.1981	9.2
Motor vehicle body work.....	0.052	11.5	0.006	0.94	S-Jan.2022	10.8
Motor vehicle maintenance and servicing.....	0.566	7.3	0.043	0.77	L-Nov.2008	7.4
Motor vehicle repair ⁴	0.372	11.1	0.042	1.33	L-EVER	—
Motor vehicle insurance.....	2.407	8.7	0.209	0.97	L-Jun.2021	11.3
Motor vehicle fees ⁴	0.497	2.4	0.013	0.75	L-Mar.2020	2.7
State motor vehicle registration and license fees ⁴	0.288	2.6	0.008	0.28	L-Aug.2020	2.7
Parking and other fees ⁴	0.194	1.9	0.004	1.55	L-Jun.2022	2.6
Parking fees and tolls ^{4, 5}		4.1		2.29	L-Dec.2021	5.1
Public transportation.....	0.962	21.1	0.165	1.44	L-Jun.2022	23.7
Airline fares.....	0.673	33.4	0.164	2.32	L-Jun.2022	34.1
Other intercity transportation.....	0.091	-2.6	-0.005	2.93	L-Apr.2022	-2.1
Ship fare ^{4, 5}		-7.4		2.37	L-May 2022	-5.3
Intracity transportation.....	0.195	2.9	0.006	1.51	L-May 2022	3.6
Intracity mass transit ^{10, 5}		0.6		4.43	L-Jun.2022	0.8
Recreation services ¹⁰	3.108	4.2	0.140	0.47	S-Dec.2021	3.3
Video and audio services ¹⁰	1.137	3.2	0.038	0.43	S-Dec.2021	2.6
Cable and satellite television service ¹²	1.043	3.0	0.032	0.44	S-Dec.2021	2.8
Video discs and other media, including rental of video ⁴	0.094	4.7	0.005	4.53	S-Jun.2022	4.7
Video discs and other media ^{4, 5}		8.9		5.35	L-Nov.2018	9.8
Rental of video discs and other media ^{4, 5}		5.9		1.34	S-Apr.2022	5.2
Pet services including veterinary ⁴	0.513	9.6	0.050	0.68	L-EVER	—
Pet services ^{4, 5}		5.7		1.11	L-Jun.2022	6.2
Veterinarian services ^{4, 5}		10.0		1.31	L-EVER	—
Photographers and photo processing ⁴	0.029	6.0	0.002	1.15	L-EVER	—
Other recreation services ⁴	1.429	3.2	0.050	0.92	S-May 2022	3.2

See footnotes at end of table.

Table 7. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 12-month analysis table — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Twelve Month				
		Unadjusted percent change Aug. 2021-Aug. 2022	Unadjusted effect on All Items Aug. 2021-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) unadjusted change since: ³	
					Date	Percent change
Club membership for shopping clubs, fraternal, or other organizations, or participant sports fees ⁴	0.624	3.7	0.024	0.85	L-May 2022	3.7
Admissions.....	0.454	2.7	0.015	1.76	S-May 2022	1.7
Admission to movies, theaters, and concerts ^{4, 5}		6.2		1.65	—	—
Admission to sporting events ^{4, 5}		-6.7		6.53	S-May 2022	-10.8
Fees for lessons or instructions ⁸	0.165	2.0	0.003	1.75	L-May 2022	3.8
Education and communication services ¹⁰	5.239	1.5	0.089	0.22	—	—
Tuition, other school fees, and childcare.....	2.461	3.0	0.082	0.33	L-Jul.2019	3.2
College tuition and fees.....	1.410	2.8	0.042	0.41	L-Jul.2019	2.9
Elementary and high school tuition and fees.....	0.313	3.2	0.010	0.36	L-Jul.2021	3.5
Day care and preschool ¹¹	0.612	3.7	0.025	0.71	L-Jun.2022	3.7
Technical and business school tuition and fees ⁴	0.038	1.2	0.000	0.48	L-Jun.2022	1.2
Postage and delivery services ⁴	0.081	3.9	0.004	0.13	S-Mar.2022	3.8
Postage.....	0.073	3.0	0.003	0.11	—	—
Delivery services ⁴	0.009	11.5	0.001	0.74	S-Mar.2022	11.4
Telephone services ⁴	1.780	-0.1	-0.001	0.30	S-Jun.2022	-0.1
Wireless telephone services ⁴	1.480	-0.6	-0.009	0.38	L-Feb.2022	-0.4
Residential telephone services ¹⁰	0.300	2.4	0.008	0.89	S-Jul.2019	2.3
Internet services and electronic information providers ⁴	0.908	0.6	0.005	0.78	S-Feb.2021	-0.3
Other personal services ¹⁰	1.349	5.8	0.084	0.50	S-Mar.2022	5.7
Personal care services.....	0.531	4.4	0.025	1.02	L-Jun.2022	6.3
Haircuts and other personal care services ⁴	0.531	4.4	0.025	1.02	L-Jun.2022	6.3
Miscellaneous personal services.....	0.817	6.7	0.059	0.37	S-May 2022	6.6
Legal services ⁹	0.232	9.3	0.022	0.43	S-May 2022	7.6
Funeral expenses ⁹	0.144	2.6	0.004	0.52	S-Mar.2022	2.6
Laundry and dry cleaning services ⁴	0.152	7.9	0.014	0.82	S-Nov.2021	7.5
Apparel services other than laundry and dry cleaning ⁴	0.018	9.1	0.002	1.06	S-Jun.2022	8.1
Financial services ⁹	0.189	5.5	0.011	0.78	L-Apr.2022	6.9
Checking account and other bank services ^{4, 5}		3.7		2.34	L-Feb.2022	10.0
Tax return preparation and other accounting fees ^{4, 5}		8.8		1.07	L-Feb.2022	9.8
Special aggregate indexes						
All items less food.....	86.473	7.8	6.738	0.10	S-Jan.2022	7.6
All items less shelter.....	67.753	9.3	6.206	0.10	S-Jan.2022	9.0
All items less food and shelter.....	54.226	8.7	4.681	0.12	S-Oct.2021	8.2
All items less food, shelter, and energy.....	45.444	6.4	2.961	0.14	L-May 2022	6.4
All items less food, shelter, energy, and used cars and trucks.....	41.422	6.3	2.677	0.15	L-Sep.1982	6.4
All items less medical care.....	91.719	8.5	7.803	0.09	S-Feb.2022	8.4
All items less energy.....	91.218	7.1	6.543	0.09	L-Jul.1982	7.1
Commodities.....	39.865	10.6	4.086	0.14	S-Oct.2021	10.5
Commodities less food, energy, and used cars and trucks.....	17.146	7.0	1.214	0.26	S-Dec.2021	6.5
Commodities less food.....	26.338	10.2	2.561	0.20	S-Apr.2021	9.5
Commodities less food and beverages.....	25.473	10.4	2.522	0.22	S-Apr.2021	9.8
Services.....	60.135	6.8	4.177	0.11	L-Oct.1982	6.9
Services less rent of shelter ¹⁵	28.251	7.4	2.122	0.16	L-EVER	—
Services less medical care services.....	53.328	7.0	3.779	0.12	L-Aug.1982	8.3
Durables.....	12.688	7.8	0.955	0.31	S-Apr.2021	7.3
Nondurables.....	27.177	12.0	3.131	0.17	S-Feb.2022	10.7

See footnotes at end of table.

Table 7. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, August 2022, 12-month analysis table — Continued
 [1982-84=100, unless otherwise noted]

Expenditure category	Relative importance Jul. 2022	Twelve Month				
		Unadjusted percent change Aug. 2021-Aug. 2022	Unadjusted effect on All Items Aug. 2021-Aug. 2022 ¹	Standard error, median price change ²	Largest (L) or Smallest (S) unadjusted change since: ³	
					Date	Percent change
Nondurables less food.....	13.650	12.6	1.606	0.28	S-Sep.2021	11.7
Nondurables less food and beverages.....	12.785	13.3	1.567	0.29	S-Sep.2021	12.5
Nondurables less food, beverages, and apparel.....	10.394	15.6	1.441	0.29	S-Sep.2021	15.5
Nondurables less food and apparel.....	11.258	14.5	1.480	0.27	S-Sep.2021	14.1
Housing.....	41.919	7.8	3.307	0.12	L-Jun.1982	8.7
Education and communication ⁴	5.999	0.5	0.031	0.25	—	—
Education ⁴	2.547	3.1	0.086	0.33	L-Jun.2019	3.1
Communication ⁴	3.452	-1.4	-0.054	0.38	S-Jun.2019	-1.5
Information and information processing ⁴	3.370	-1.6	-0.059	0.39	S-Jun.2019	-1.7
Information technology, hardware and services ¹⁷	1.590	-3.2	-0.058	0.88	S-Apr.2018	-3.6
Recreation ⁴	4.974	4.1	0.215	0.38	S-Dec.2021	3.3
Video and audio ⁴	1.416	0.7	0.011	0.45	S-Sep.2019	0.2
Pets, pet products and services ⁴	1.067	10.1	0.109	0.53	L-Feb.2009	10.1
Photography ⁴	0.051	6.2	0.003	1.07	L-EVER	—
Food and beverages.....	14.392	10.9	1.564	0.19	L-May 1979	11.1
Domestically produced farm food.....	7.083	13.8	0.927	0.30	L-Apr.1979	14.1
Other services.....	9.696	3.0	0.313	0.19	S-Dec.2021	2.6
Apparel less footwear.....	1.798	5.1	0.096	1.01	L-Jun.2022	5.1
Fuels and utilities.....	4.927	17.2	0.789	0.29	L-Jun.2022	17.6
Household energy.....	3.851	21.2	0.738	0.41	L-Jun.2022	21.9
Medical care.....	8.281	5.4	0.460	0.29	L-Dec.1993	5.4
Transportation.....	19.362	13.4	2.371	0.28	S-Mar.2021	5.8
Private transportation.....	18.400	13.2	2.206	0.26	S-Mar.2021	7.0
New and used motor vehicles ⁴	9.106	9.8	0.853	0.39	L-May 2022	13.7
Utilities and public transportation.....	8.473	10.9	0.905	0.24	L-Jun.2022	10.9
Household furnishings and operations.....	4.745	9.9	0.461	0.50	S-Jun.2022	9.5
Other goods and services.....	2.682	6.6	0.188	0.36	L-Jun.2022	6.7
Personal care.....	2.171	6.1	0.139	0.37	L-Jun.2022	6.4

¹ The 'effect' of an item category is a measure of that item's contribution to the All items price change. For example, if the Food index had an effect of 0.40, and the All items index rose 1.2 percent, then the increase in food prices contributed 0.40 / 1.2, or 33.3 percent, to that All items increase. Said another way, had food prices been unchanged for that year the change in the All items index would have been 1.2 percent minus 0.40, or 0.8 percent. Effects can be negative as well. For example, if the effect of food was a negative 0.1, and the All items index rose 0.5 percent, the All items index actually would have been 0.1 percent higher (or 0.6 percent) had food prices been unchanged. Since food prices fell while prices overall were rising, the contribution of food to the All items price change was negative (in this case, -0.1 / 0.5, or minus 20 percent).

² A statistic's margin of error is often expressed as its point estimate plus or minus two standard errors. For example, if a CPI category rose 2.6 percent, and its standard error was 0.25 percent, the margin of error on this item's 12-month percent change would be 2.6 percent, plus or minus 0.5 percent.

³ If the current 12-month percent change is greater than the previous published 12-month percent change, then this column identifies the closest prior month with a 12-month percent change as (L)arge as or (L)arger than the current 12-month change. If the current 12-month percent change is smaller than the previous published 12-month percent change, the most recent month with a change as (S)mall or (S)maller than the current month change is identified. If the current and previous published 12-month percent changes are equal, a dash will appear. Standard numerical comparison is used. For example, 2.0% is greater than 0.6%, -4.4% is less than -2.0%, and -2.0% is less than 0.0%. Note that a (L)arger change can be a smaller decline, for example, a -0.2% change is larger than a -0.4% change, but still represents a decline in the price index. Likewise, (S)maller changes can be increases, for example, a 0.6% change is smaller than 0.8%, but still represents an increase in the price index. In this context, a -0.2% change is considered to be smaller than a 0.0% change.

⁴ Indexes on a December 1997=100 base.

⁵ Special indexes based on a substantially smaller sample. These series do not contribute to the all items index aggregation and therefore do not have a relative importance or effect.

⁶ Indexes on a December 2007=100 base.

⁷ Indexes on a December 2005=100 base.

⁸ Indexes on a December 1986=100 base.

⁹ Indexes on a December 1993=100 base.

¹⁰ Indexes on a December 2009=100 base.

¹¹ Indexes on a December 1990=100 base.

¹² Indexes on a December 1983=100 base.

¹³ Indexes on a December 2001=100 base.

¹⁴ Indexes on a December 2019=100 base.

¹⁵ Indexes on a December 1982=100 base.

¹⁶ Indexes on a December 1996=100 base.

¹⁷ Indexes on a December 1988=100 base.



About Teaching Writing Data Tools Blog YouTube



My name is Aswath Damodaran, and I teach corporate finance and valuation at the Stern School of Business at New York University. I am a teacher first, who also happens to love untangling the puzzles of corporate finance and valuation, and writing about my experiences. As a result, I am at the intersection of three businesses, education, publishing and financial services, that are all big, inefficiently run and deserve to be disrupted. I may not have the power to change the status quo in any of these businesses, but I can stir the pot, and this website is my attempt to do so.

Broadly speaking, the website is broken down into four sections. The first, [teaching](#), includes all of my classes, starting with the MBA classes that I teach at Stern and including the shorter (2-day to 3-day) executive sessions I have on corporate finance and valuation. You will find not only the material for the classes (lecture notes, quizzes), but also webcasts of the classes that you can access on different platforms. I also have classes specifically tailored to an online audience on valuation, corporate finance and investment philosophies, as well as my quirky versions of accounting and statistics classes. The second, [writing](#), includes links to almost everything I have written and continue to write, starting with my books and extending to my practitioner papers (on equity risk premiums, cash flows and other things valuation-related). The third, [data](#), contains the annual updates that I provide on industry averages, for US and global companies, on both corporate finance and valuation metrics (including multiples). It is also where I provide my estimates of equity risk premiums and costs of capital. The fourth, [tools](#), incorporates the spreadsheets that I have developed over time to value and analyze companies and short in-practice webcasts on how to analyze companies.

I have been told that my website is ugly, and I apologize for its clunky look and feel. While some of you have offered to make it look better for me, and I thank you for your kindness, I need to be able to tweak, modify and adapt the website as I go along and to do that, I have to work with what I know about website design, which is not much. You can try the search engine below and if that does not work, try this [guide to the site](#).



Other Updates

Teaching: The Spring 2019 Corporate Finance class, now fully archived, can be found [here](#) and the archived

Implied Equity Risk Premium Update

Implied ERP on October 1, 2022= 5.30%
(Trailing 12 month, with adjusted payout);
6.21% (Trailing 12 month cash yield); 5.64%
(Average CF yield last 10 years); 5.91% (Net
cash yield); 4.28% (Normalized Earnings &
Payout)

Implied ERP in previous month = 5.10%
(Trailing 12 month, with adjusted payout);
5.45% (Trailing 12 month cash yield); 5.35%
(Average CF yield last 10 years); 5.18% (Net
cash yield); 3.87% (Normalized Earnings &
Payout)

Downloadable datasets (For more data, [go here](#))

1. [Implied ERP by month for previous months](#)
2. [Implied ERP \(annual\) from 1960 to Current](#)
3. [Implied ERP \(daily\) from February 14, 2020 - December 31, 2020](#)
4. [My annual update paper on ERP \(March 2022\)](#)
5. [My annual update paper on Country Risk \(July 2021\)](#)
6. My data on ERP & CRP by country ([January 2022](#))

Downloadable spreadsheets (For more spreadsheets, [go here](#))

1. [Spreadsheet to compute current ERP for current month](#)
2. [Spreadsheet to value the S&P 500 \(January 1, 2022\)](#)
3. [Valuation Spreadsheet for non-financial service firms \(Corona edition\)](#) with [video guidance](#)

Spring 2019 Valuation class is linked [here](#). The online versions of these classes can be found [here](#) and NYU is offering certificate versions [here](#). I also taught three classes in the spring of 2020, but half the class was taught online, and you can find the links here: [Corporate Finance](#) and [Valuation](#) to the MBAs and [Valuation to the undergraduates](#). In spring 2021, I will be teaching all three classes again and you can find the links to them [here](#). If you need a short brush up on the basics of finance, I have added a class on the [foundations of finance](#) as well as a [minimalist accounting class](#) to my online list. In 2021, I added a [statistics class to the mix](#), again taught from the perspective of someone who uses statistics rather than a statistical expert.

Writing: This paper on [valuing Tesla \(with Brad Cornell\)](#) won readers' award (Bernstein-Levy) in Journal of Portfolio Management. Download the latest version of my annual equity risk premium update by [clicking here](#) and the latest version of my annual country risk update by [clicking here](#). I also have a [paper on valuing users](#), subscribers and members. My book on [Narrative and Numbers](#), from Columbia University Press, should be in bookstores and the third edition of [The Dark Side of Valuation](#) came out in 2018. Finally, Brad and I have written a [new paper on what we call the big market delusion](#), on how the allure of big markets coupled with overconfident entrepreneurs/investors can create over pricing across companies. In 2020, we [added a paper on ESG](#), a concept that has been oversold and overhyped by its proponents, as well as a paper on value investing's travails in the last decade. In 2020, I also wrote a series of fourteen posts on the COVID crisis, with the emphasis on markets, in real time, which I have now put [together as a paper](#) (way too long) on what I learned and unlearned. I just added a paper on the disruption coming to the IPO process.

Data: The latest overall data update was on January 5, 2022; my next one will be in January 2023. My country risk premiums also get updated midyear; [my latest update was on July 1, 2022](#). Check under data for downloads and links, as well as archived data from prior years.

Tools: Check under tools for additions to spreadsheets and webcast. uValue is available at the iTunes store.

American States Water Company (AWR)

NYSE - NYSE Delayed Price. Currency in USD

[Add to watchlist](#)

Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

77.95 -1.79 (-2.24%) **76.22** -1.73 (-2.22%)

At close: September 30 04:00PM EDT

Pre-Market: 04:19AM EDT

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	Currency in USD			
	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Earnings Estimate				
No. of Analysts	2	2	1	2
Avg. Estimate	0.75	0.82	2.55	2.72
Low Estimate	0.74	0.78	2.55	2.72
High Estimate	0.77	0.87	2.55	2.73
Year Ago EPS	0.76	0.55	2.55	2.55
Revenue Estimate				
No. of Analysts	1	1	2	2
Avg. Estimate	143M	138M	512.5M	524.5M
Low Estimate	143M	138M	512M	515M
High Estimate	143M	138M	513M	534M
Year Ago Sales	136.75M	116.62M	498.85M	512.5M
Sales Growth (year/est)	4.60%	18.30%	2.70%	2.30%
Earnings History	9/29/2021	12/30/2021	3/30/2022	6/29/2022
EPS Est.	0.76	0.46	0.53	0.68
EPS Actual	0.76	0.55	0.38	0.64
Difference	0	0.09	-0.15	-0.04
Surprise %	0.00%	19.60%	-28.30%	-5.90%
EPS Trend				
Current Estimate	0.75	0.82	2.55	2.72
7 Days Ago	0.75	0.82	2.55	2.72



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	0.89	0.55	2.59	2.77
30 Days Ago	0.89	0.55	2.59	2.77
60 Days Ago	0.89	0.55	2.6	2.77
90 Days Ago	0.89	0.55	2.6	2.77
EPS Revisions				
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A

Symbol	Last Price	Change	% Change
CWT	52.69	-1.49	-2.75%
California Water Service Group			
SJW	57.60	-1.15	-1.96%
SJW Group			
MSEX	77.20	-1.45	-1.84%
Middlesex Water Company			
NWN	43.38	-1.53	-3.41%
Northwest Natural Holding Company			

Down Last 30 Days	N/A	N/A	N/A	N/A
Growth Estimates	AWR	Industry	Sector(s)	S&P 500
Current Qtr.	-1.30%	N/A	N/A	N/A
Next Qtr.	49.10%	N/A	N/A	N/A
Current Year	N/A	N/A	N/A	N/A
Next Year	6.70%	N/A	N/A	N/A
Next 5 Years (per annum)	4.40%	N/A	N/A	N/A
Past 5 Years (per annum)	8.74%	N/A	N/A	N/A

YORW 38.43 -0.18 -0.47%
The York Water Company

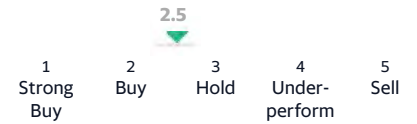
Similar to AWR

Symbol	Last Price	Change	% Change
CWT California Water Service Group	52.69	-1.49	-2.75%
SJW SJW Group	57.60	-1.15	-1.96%
WTRG Essential Utilities, Inc.	41.38	-0.95	-2.24%
AWK American Water Works Company, Inc.	130.16	-3.04	-2.28%
MSEX Middlesex Water Company	77.20	-1.45	-1.84%

Recommendation Trends



Recommendation Rating



Analyst Price Targets (3)



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American Water Works Company, Inc. (AWK)

NYSE - NYSE Delayed Price. Currency in USD

[Add to watchlist](#)

[Visitors trend](#) 2W ↑ 10W ↑ 9M ↑

[Quote Lookup](#)

130.16 **-3.04 (-2.28%)** **129.60** **-0.56 (-0.43%)**

At close: September 30 04:00PM EDT

Pre-Market: 08:06AM EDT



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Currency in USD

Earnings Estimate

	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
No. of Analysts	8	8	13	14
Avg. Estimate	1.53	0.84	4.44	4.82
Low Estimate	1.42	0.76	4.41	4.74
High Estimate	1.63	0.96	4.46	4.94
Year Ago EPS	1.53	0.59	3.98	4.44

Revenue Estimate

	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
No. of Analysts	6	6	10	10
Avg. Estimate	1.08B	921.56M	3.79B	4.04B
Low Estimate	987M	849.94M	3.64B	3.78B
High Estimate	1.24B	998.6M	3.99B	4.22B
Year Ago Sales	1.22B	951M	3.93B	3.79B
Sales Growth (year/est)	-11.40%	-3.10%	-3.50%	6.50%

Earnings History

	9/29/2021	12/30/2021	3/30/2022	6/29/2022
EPS Est.	1.53	0.85	0.77	1.16
EPS Actual	1.53	0.59	0.87	1.2
Difference	0	-0.26	0.1	0.04
Surprise %	0.00%	-30.60%	13.00%	3.40%

EPS Trend

	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Current Estimate	1.53	0.84	4.44	4.82
7 Days Ago	1.53	0.84	4.44	4.82
30 Days Ago	1.53	0.84	4.44	4.82
60 Days Ago	1.55	0.85	4.45	4.83
90 Days Ago	1.55	0.87	4.45	4.84

EPS Revisions

	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A

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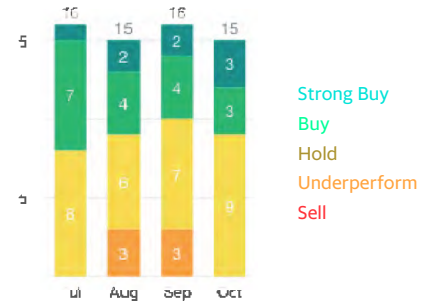
Symbol	Last Price	Change	% Change
AWR American States Water Company	77.95	-1.79	-2.24%
CWT California Water Service Group	52.69	-1.49	-2.75%
XYL Xylem Inc.	87.36	-0.73	-0.83%
NEE NextEra Energy, Inc.	78.41	-1.56	-1.95%
AEP American Electric Power Company, Inc.	86.45	-2.62	-2.94%

Similar to AWK

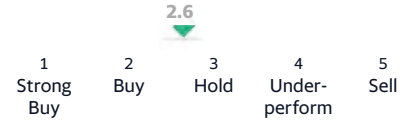
Symbol	Last Price	Change	% Change
AWR American States Water Company	77.95	-1.79	-2.24%
WTRG Essential Utilities, Inc.	41.38	-0.95	-2.24%
CWT California Water Service Group	52.69	-1.49	-2.75%
YORW The York Water Company	38.43	-0.18	-0.47%
SJW SJW Group	57.60	-1.15	-1.96%

Down Last 30 Days	N/A	N/A	N/A	N/A
Growth Estimates	AWK	Industry	Sector(s)	S&P 500
Current Qtr.	N/A	N/A	N/A	N/A
Next Qtr.	42.40%	N/A	N/A	N/A
Current Year	11.60%	N/A	N/A	N/A
Next Year	8.60%	N/A	N/A	N/A
Next 5 Years (per annum)	8.30%	N/A	N/A	N/A
Past 5 Years (per annum)	7.37%	N/A	N/A	N/A

Recommendation Trends >



Recommendation Rating >




Analyst Price Targets (13) >



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California Water Service Group (CWT)

NYSE - NYSE Delayed Price. Currency in USD

[Add to watchlist](#)

[Visitors trend](#) 2W ↓ 10W ↑ 9M ↑

52.69 -1.49 (-2.75%) **54.18** +1.49 (+2.83%)

At close: September 30 04:00PM EDT

Pre-Market: 08:07AM EDT



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	Currency in USD			
Earnings Estimate	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
No. of Analysts	3	3	4	4
Avg. Estimate	1.08	0.38	1.83	2
Low Estimate	1.02	0.27	1.72	1.92
High Estimate	1.19	0.55	1.95	2.08
Year Ago EPS	1.2	0.07	1.96	1.83
Revenue Estimate	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
No. of Analysts	1	1	3	3
Avg. Estimate	255M	180M	828.3M	865.4M
Low Estimate	255M	180M	812M	847M
High Estimate	255M	180M	858.9M	893.2M
Year Ago Sales	256.72M	173.33M	790.91M	828.3M
Sales Growth (year/est)	-0.70%	3.90%	4.70%	4.50%
Earnings History	9/29/2021	12/30/2021	3/30/2022	6/29/2022
EPS Est.	0.86	0.17	0.03	0.57
EPS Actual	1.2	0.07	0.02	0.36
Difference	0.34	-0.1	-0.01	-0.21
Surprise %	39.50%	-58.80%	-33.30%	-36.80%
EPS Trend	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Current Estimate	1.08	0.38	1.83	2
7 Days Ago	1.08	0.38	1.83	2
30 Days Ago	1.08	0.38	1.84	2
60 Days Ago	1.09	0.38	1.87	2.01
90 Days Ago	1.03	0.3	1.86	2.01
EPS Revisions	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A



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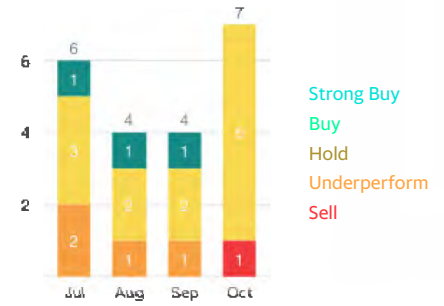
Symbol	Last Price	Change	% Change
AWR	77.95	-1.79	-2.24%
American States Water Company			
SJW	57.60	-1.15	-1.96%
SJW Group			
MSEX	77.20	-1.45	-1.84%
Middlesex Water Company			
YORW	38.43	-0.18	-0.47%
The York Water Company			
ARTNA	48.12	-0.32	-0.66%
Artesian Resources Corporation			

Similar to CWT

Symbol	Last Price	Change	% Change
SJW	57.60	-1.15	-1.96%
SJW Group			
AWR	77.95	-1.79	-2.24%
American States Water Company			
MSEX	77.20	-1.45	-1.84%
Middlesex Water Company			
YORW	38.43	-0.18	-0.47%
The York Water Company			
ARTNA	48.12	-0.32	-0.66%
Artesian Resources Corporation			

Down Last 30 Days	N/A	N/A	N/A	N/A
Growth Estimates	CWT	Industry	Sector(s)	S&P 500
Current Qtr.	-10.00%	N/A	N/A	N/A
Next Qtr.	442.90%	N/A	N/A	N/A
Current Year	-6.60%	N/A	N/A	N/A
Next Year	9.30%	N/A	N/A	N/A
Next 5 Years (per annum)	11.70%	N/A	N/A	N/A
Past 5 Years (per annum)	-16.62%	N/A	N/A	N/A

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (3) >

Average 61.67

Low 58.00 High 66.00
Current 52.69

Upgrades & Downgrades >

Upgrade	Seaport Global: Sell to Neutral	1/25/2022
Maintains	Wells Fargo: to Underweight	12/1/2021
Downgrade	Seaport Global: Neutral to Sell	4/16/2021
Downgrade	Wells Fargo: Equal-Weight to Underweight	3/4/2021
Initiated	Seaport Global: to Neutral	5/20/2020
Maintains	Wells Fargo: to Equal-Weight	5/1/2020

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Essential Utilities, Inc. (WTRG)

NYSE - NYSE Delayed Price. Currency in USD

☆ Add to watchlist

👤 Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

41.38 -0.95 (-2.24%)

41.26 -0.12 (-0.29%)

At close: September 30 04:00PM EDT

Pre-Market: 08:00AM EDT



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	Currency in USD			
	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Earnings Estimate				
No. of Analysts	6	6	12	13
Avg. Estimate	0.22	0.48	1.78	1.91
Low Estimate	0.18	0.44	1.77	1.87
High Estimate	0.25	0.54	1.8	1.95
Year Ago EPS	0.19	0.44	1.67	1.78
Revenue Estimate				
No. of Analysts	4	4	7	7
Avg. Estimate	391.36M	569.35M	2.08B	2.16B
Low Estimate	376M	556M	1.99B	2B
High Estimate	398.05M	589.26M	2.14B	2.22B
Year Ago Sales	N/A	535.69M	1.88B	2.08B
Sales Growth (year/est)	N/A	6.30%	10.90%	3.80%
Earnings History				
	9/29/2021	12/30/2021	3/30/2022	6/29/2022
EPS Est.	0.21	0.43	0.74	0.31
EPS Actual	0.19	0.44	0.76	0.31
Difference	-0.02	0.01	0.02	0
Surprise %	-9.50%	2.30%	2.70%	0.00%
EPS Trend				
	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Current Estimate	0.22	0.48	1.78	1.91
7 Days Ago	0.22	0.48	1.78	1.91
30 Days Ago	0.23	0.48	1.78	1.91
60 Days Ago	0.23	0.48	1.78	1.91
90 Days Ago	0.22	0.47	1.78	1.91
EPS Revisions				
	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A



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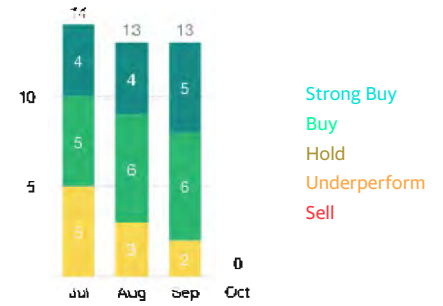
Symbol	Last Price	Change	% Change
YORW	38.43	-0.18	-0.47%
The York Water Company			
MSEX	77.20	-1.45	-1.84%
Middlesex Water Company			
CWT	52.69	-1.49	-2.75%
California Water Service Group			
AWR	77.95	-1.79	-2.24%
American States Water Company			
SJW	57.60	-1.15	-1.96%
SJW Group			

Similar to WTRG

Symbol	Last Price	Change	% Change
AWR	77.95	-1.79	-2.24%
American States Water Company			
AWK	130.16	-3.04	-2.28%
American Water Works Company, Inc.			
CWT	52.69	-1.49	-2.75%
California Water Service Group			
YORW	38.43	-0.18	-0.47%
The York Water Company			
SJW	57.60	-1.15	-1.96%
SJW Group			

Down Last 30 Days	N/A	N/A	N/A	N/A
Growth Estimates	WTRG	Industry	Sector(s)	S&P 500
Current Qtr.	15.80%	N/A	N/A	N/A
Next Qtr.	9.10%	N/A	N/A	N/A
Current Year	6.60%	N/A	N/A	N/A
Next Year	7.30%	N/A	N/A	N/A
Next 5 Years (per annum)	6.80%	N/A	N/A	N/A
Past 5 Years (per annum)	3.22%	N/A	N/A	N/A

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (11) >

Average 55.00

Low 51.00 High 70.00
Current 41.38

Upgrades & Downgrades >

- Downgrade** B of A Securities: Buy to Neutral 9/9/2022
- Upgrade** HSBC: Hold to Buy 8/18/2022
- Maintains** Baird: to Outperform 8/5/2022
- Maintains** Barclays: to Overweight 7/18/2022
- Maintains** Baird: to Outperform 5/10/2022
- Maintains** Wells Fargo: to Overweight 4/19/2022

[More Upgrades & Downgrades](#)



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Middlesex Water Company (MSEX)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

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77.20 **-1.45 (-1.84%)** **77.20** **0.00 (0.00%)**

At close: September 30 04:00PM EDT

After hours: 04:49PM EDT



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	Currency in USD			
Earnings Estimate	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
No. of Analysts	2	2	1	2
Avg. Estimate	0.88	0.54	2.65	2.74
Low Estimate	0.88	0.51	2.65	2.64
High Estimate	0.88	0.58	2.65	2.85
Year Ago EPS	0.65	0.41	2.07	2.65
Revenue Estimate	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
No. of Analysts	1	1	2	2
Avg. Estimate	47M	39M	162.9M	181.3M
Low Estimate	47M	39M	161M	169M
High Estimate	47M	39M	164.8M	193.6M
Year Ago Sales	41M	34.02M	143.14M	162.9M
Sales Growth (year/est)	14.60%	14.60%	13.80%	11.30%
Earnings History	9/29/2021	12/30/2021	3/30/2022	6/29/2022
EPS Est.	0.79	0.52	0.52	0.7
EPS Actual	0.65	0.41	0.68	0.5
Difference	-0.14	-0.11	0.16	-0.2
Surprise %	-17.70%	-21.20%	30.80%	-28.60%
EPS Trend	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Current Estimate	0.88	0.54	2.65	2.74
7 Days Ago	0.88	0.54	2.65	2.74
30 Days Ago	0.88	0.54	2.65	2.74
60 Days Ago	0.86	0.57	2.73	2.88
90 Days Ago	0.86	0.57	2.72	2.88
EPS Revisions	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A



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Symbol	Last Price	Change	% Change
SJW	57.60	-1.15	-1.96%
SJW Group			
ARTNA	48.12	-0.32	-0.66%
Artesian Resources Corporation			
YORW	38.43	-0.18	-0.47%
The York Water Company			
CWT	52.69	-1.49	-2.75%
California Water Service Group			
AWR	77.95	-1.79	-2.24%
American States Water Company			

Similar to MSEX

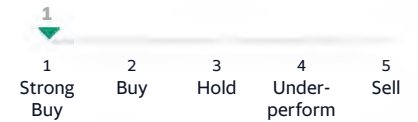
Symbol	Last Price	Change	% Change
SJW	57.60	-1.15	-1.96%
SJW Group			
ARTNA	48.12	-0.32	-0.66%
Artesian Resources Corporation			
CWT	52.69	-1.49	-2.75%
California Water Service Group			
YORW	38.43	-0.18	-0.47%
The York Water Company			
AWR	77.95	-1.79	-2.24%
American States Water Company			

Down Last 30 Days	N/A	N/A	N/A	N/A
Growth Estimates	MSEX	Industry	Sector(s)	S&P 500
Current Qtr.	35.40%	N/A	N/A	N/A
Next Qtr.	31.70%	N/A	N/A	N/A
Current Year	28.00%	N/A	N/A	N/A
Next Year	3.40%	N/A	N/A	N/A
Next 5 Years (per annum)	2.70%	N/A	N/A	N/A
Past 5 Years (per annum)	8.48%	N/A	N/A	N/A

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (2) >

Average 97.50

Low 97.00 High 98.00
Current 77.20

Upgrades & Downgrades >


- Upgrade** Janney Montgomery Scott: Neutral to Buy 6/24/2022
- Downgrade** Janney Montgomery Scott: Buy to Neutral 4/14/2021
- Upgrade** Janney Capital: Neutral to Buy 3/2/2021
- Initiated** Baird: to Outperform 12/4/2019
- Upgrade** Janney Capital: Neutral to Buy 5/8/2019
- Upgrade** Janney Capital: Neutral to Buy 11/5/2018

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SJW Group (SJW)

NYSE - NYSE Delayed Price. Currency in USD

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👥 Visitors trend 2W ↑ 10W ↑ 9M ↑

Quote Lookup

57.60 -1.15 (-1.96%) **57.60** 0.00 (0.00%)

At close: September 30 04:00PM EDT

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	Currency in USD			
	Current Qtr. (Sep 2022)	Next Qtr. (Dec 2022)	Current Year (2022)	Next Year (2023)
Earnings Estimate				
No. of Analysts	2	2	4	4
Avg. Estimate	0.73	1.1	2.35	2.53
Low Estimate	0.61	0.98	2.33	2.44
High Estimate	0.85	1.23	2.36	2.59
Year Ago EPS	0.64	0.6	2.03	2.35
Revenue Estimate				
No. of Analysts	2	2	2	2
Avg. Estimate	172M	162.5M	608M	619M
Low Estimate	171M	156M	602M	607M
High Estimate	173M	169M	614M	631M
Year Ago Sales	N/A	139.74M	573.69M	608M
Sales Growth (year/est)	N/A	16.30%	6.00%	1.80%
Earnings History	9/29/2021	12/30/2021	3/30/2022	6/29/2022
EPS Est.	0.73	0.48	0.09	0.66
EPS Actual	0.64	0.6	0.12	0.38
Difference	-0.09	0.12	0.03	-0.28
Surprise %	-12.30%	25.00%	33.30%	-42.40%
EPS Trend				
Current Estimate	0.73	1.1	2.35	2.53
7 Days Ago	0.73	1.1	2.35	2.53
30 Days Ago	0.92	0.63	2.36	2.55
60 Days Ago	0.92	0.63	2.36	2.55
90 Days Ago	0.92	0.62	2.36	2.55
EPS Revisions				
Up Last 7 Days	N/A	N/A	N/A	N/A
Up Last 30 Days	N/A	N/A	N/A	N/A
Down Last 7 Days	N/A	N/A	N/A	N/A



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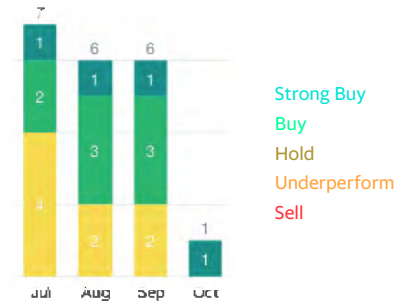
Symbol	Last Price	Change	% Change
CWT California Water Service Group	52.69	-1.49	-2.75%
MSEX Middlesex Water Company	77.20	-1.45	-1.84%
AWR American States Water Company	77.95	-1.79	-2.24%
ARTNA Artesian Resources Corporation	48.12	-0.32	-0.66%
YORW The York Water Company	38.43	-0.18	-0.47%

Similar to SJW

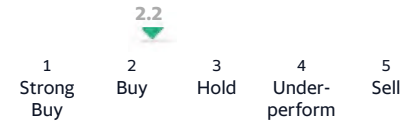
Symbol	Last Price	Change	% Change
CWT California Water Service Group	52.69	-1.49	-2.75%
MSEX Middlesex Water Company	77.20	-1.45	-1.84%
YORW The York Water Company	38.43	-0.18	-0.47%
AWR American States Water Company	77.95	-1.79	-2.24%
ARTNA Artesian Resources Corporation	48.12	-0.32	-0.66%

Down Last 30 Days	N/A	N/A	N/A	N/A
Growth Estimates	SJW	Industry	Sector(s)	S&P 500
Current Qtr.	14.10%	N/A	N/A	N/A
Next Qtr.	83.30%	N/A	N/A	N/A
Current Year	15.80%	N/A	N/A	N/A
Next Year	7.70%	N/A	N/A	N/A
Next 5 Years (per annum)	9.80%	N/A	N/A	N/A
Past 5 Years (per annum)	-5.42%	N/A	N/A	N/A

Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (5) >

Average 72.20

Low 65.00 High 77.00
Current 57.60


Upgrades & Downgrades >

- Maintains** Barclays: to Equal-Weight 7/18/2022
- Downgrade** Wells Fargo: Overweight to Equal-Weight 6/2/2022
- Upgrade** JP Morgan: Neutral to Overweight 5/2/2022
- Maintains** Wells Fargo: to Overweight 4/27/2022
- Maintains** Barclays: to Equal-Weight 3/15/2022
- Upgrade** Seaport Global: Neutral to Buy 1/25/2022

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American States Water Company (AWR)

NYSE - Nasdaq Real Time Price. Currency in USD

77.95 **-1.79** **(-2.24%)** **81.79** **+3.84** **(+4.93%)**

At close: September 30 04:00PM EDT

After hours: Sep 30, 05:10PM EDT

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Time Period: [Oct 01, 2021 - Oct 01, 2022](#)

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Currency in USD

Date	Open	High	Low	Close*	Adj Close**	Volume
Oct 01, 2022	-	-	-	-	-	-
Sep 01, 2022	82.94	89.64	77.91	77.95	77.95	4,836,400
Aug 12, 2022	0.398 Dividend					
Aug 01, 2022	87.12	91.02	82.64	82.97	82.59	3,102,800
Jul 01, 2022	81.52	88.09	79.85	87.17	86.77	3,079,800
Jun 01, 2022	79.52	81.74	71.22	81.51	81.14	3,653,700
May 13, 2022	0.365 Dividend					
May 01, 2022	79.09	80.68	74.77	79.25	78.52	4,037,000
Apr 01, 2022	89.18	92.80	78.35	78.66	77.93	4,281,500
Mar 01, 2022	84.52	90.49	82.84	89.02	88.20	4,258,800
Feb 14, 2022	0.365 Dividend					
Feb 01, 2022	92.58	93.14	81.26	84.16	83.03	3,417,700
Jan 01, 2022	103.44	103.44	88.37	92.23	90.99	3,851,800
Dec 01, 2021	94.67	103.77	94.03	103.44	102.05	3,579,900
Nov 12, 2021	0.365 Dividend					
Nov 01, 2021	89.55	97.37	87.71	94.18	92.55	3,320,000
Oct 01, 2021	85.76	91.91	84.93	90.84	89.27	3,054,400

*Close price adjusted for splits.

**Adjusted close price adjusted for splits and dividend and/or capital gain distributions.



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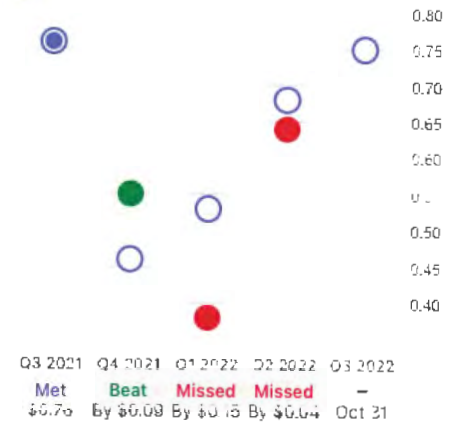
Symbol	Last Price	Change	% Change
CWT California Water Service Group	52.69	-1.49	-2.75%
SJW SJW Group	57.60	-1.15	-1.96%
MSEX Middlesex Water Company	77.20	-1.45	-1.84%
NWN Northwest Natural Holding Company	43.38	-1.53	-3.41%
YORW The York Water Company	38.43	-0.18	-0.47%

Similar to AWR

Symbol	Last Price	Change	% Change
CWT California Water Service Group	52.69	-1.49	-2.75%
SJW SJW Group	57.60	-1.15	-1.96%
AWK American Water Works Company, Inc.	130.16	-3.04	-2.28%
WTRG Essential Utilities, Inc.	41.38	-0.95	-2.24%
MSEX Middlesex Water Company	77.20	-1.45	-1.84%

Earnings >

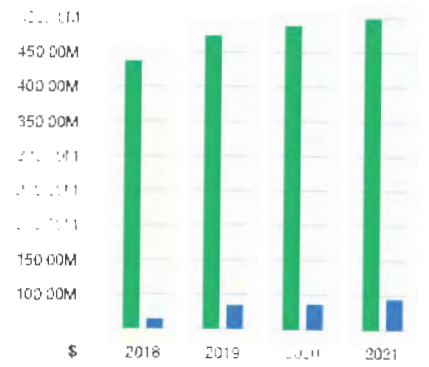
Consensus EPS



Financials >

Annual Quarterly

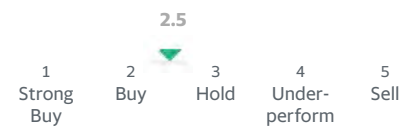
Revenue Earnings



Recommendation Trends >



Recommendation Rating >



Analyst Price Targets (3) >

Average 89.00

Low 80.00 High 97.00
Current 77.95

Upgrades & Downgrades >

Maintains	Wells Fargo: to Equal-Weight	8/3/2022
Maintains	Barclays: to Underweight	7/18/2022
Maintains	Barclays: to Underweight	3/15/2022
Maintains	Wells Fargo: to Equal-Weight	2/24/2022
Maintains	Barclays: to Underweight	2/9/2022
Downgrade	Barclays: Equal-Weight to Underweight	12/8/2021

Company Profile >

630 East Foothill
Boulevard
San Dimas, CA 91773-
1207

United States

909 394 3600

<https://www.aswater.com>


Sector(s): **Utilities**

Industry: **Utilities—Regulated Water**

Full Time Employees: **808**

American States Water Company, through its subsidiaries, provides water and electric services to residential, commercial, industrial, and other customers in the United States. It operates through three segments: Water, Electric, and Contracted Services. The company purchases, produces, distributes, and sells water, as well as distributes electricity. As of December 31, 2021, American States Water Company provided water service to 262,770 customers located throughout 10 counties in the State of California; and distributed electricity to 24,656 customers in San Bernardino County mountain communities in California. The company also provides water and/or wastewater services, including the operation, maintenance, and construction of facilities at the water and/or wastewater systems at various military installations. American States Water Company was incorporated in 1929 and is based in San Dimas, California.

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American Water Works Company, Inc. (AWK)

NYSE - Nasdaq Real Time Price. Currency in USD

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Quote Lookup

130.16 -3.04 (-2.28%)
 At close: September 30, 04:00PM EDT

129.37 -0.79 (-0.61%)
 After hours: Sep 30, 07:35PM EDT

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Time Period: Oct 01, 2021 - Oct 01, 2022

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Currency in USD

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Date	Open	High	Low	Close*	Adj Close**	Volume
Oct 01, 2022	-	-	-	-	-	-
Sep 01, 2022	148.45	157.10	129.91	130.16	130.16	15,992,800
Aug 08, 2022	0.655 Dividend					
Aug 01, 2022	154.74	159.95	148.31	148.45	147.83	14,111,400
Jul 01, 2022	149.52	157.37	143.32	155.44	154.79	15,175,500
Jun 01, 2022	151.75	157.27	129.45	148.77	148.14	19,768,100
May 09, 2022	0.655 Dividend					
May 01, 2022	154.84	154.93	142.36	151.25	149.95	21,401,200
Apr 01, 2022	165.73	173.87	153.73	154.08	152.76	16,169,100
Mar 01, 2022	151.29	167.47	148.68	165.53	164.11	21,602,400
Feb 07, 2022	0.603 Dividend					
Feb 01, 2022	161.00	161.44	144.20	151.09	149.21	24,894,700
Jan 01, 2022	188.97	189.25	153.36	160.80	158.80	20,907,100
Dec 01, 2021	168.08	189.65	166.56	188.86	186.51	15,330,200
Nov 09, 2021	0.603 Dividend					
Nov 01, 2021	174.29	176.84	165.67	168.57	165.88	15,710,400
Oct 01, 2021	168.70	176.99	167.50	174.18	171.40	12,485,700

*Close price adjusted for splits. **Adjusted close price adjusted for splits and dividend and/or capital gain distributions.

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Symbol	Last Price	Change	% Change
AWR	77.95	-1.79	-2.24%
American States Water Company			
CWT	52.69	-1.49	-2.75%
California Water Service Group			
XYL	87.36	-0.73	-0.83%
Xylem Inc.			
NEE	78.41	-1.56	-1.95%
NextEra Energy, Inc.			
AEP	86.45	-2.62	-2.94%
American Electric Power Company, Inc.			

Similar to AWK

Symbol	Last Price	Change	% Change
AWR	77.95	-1.79	-2.24%
American States Water Company			
WTRG	41.38	-0.95	-2.24%
Essential Utilities, Inc.			
CWT	52.69	-1.49	-2.75%
California Water Service Group			
YORW	38.43	-0.18	-0.47%
The York Water Company			
MSEX	77.20	-1.45	-1.84%
Middlesex Water Company			

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California Water Service Group (CWT)

NYSE - Nasdaq Real Time Price. Currency in USD

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Visitors trend 2W 10W 9M

Quote Lookup

52.69 -1.49 (-2.75%) **52.69** 0.00 (0.00%)

At close: September 30 04:00PM EDT

After hours: Sep 30, 04:49PM EDT



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Frequency: [Monthly](#)

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Date	Open	High	Low	Close*	Adj Close**	Volume
Oct 01, 2022	-	-	-	-	-	-
Sep 01, 2022	58.27	61.54	52.69	52.69	52.69	6,024,900
Aug 05, 2022	0.25 Dividend					
Aug 01, 2022	59.81	63.81	58.12	58.53	58.29	4,124,900
Jul 01, 2022	55.37	60.47	54.20	60.08	59.84	4,535,000
Jun 01, 2022	53.82	55.74	48.46	55.55	55.32	5,373,600
May 06, 2022	0.25 Dividend					
May 01, 2022	51.78	55.10	49.84	53.67	53.19	5,956,900
Apr 01, 2022	59.53	61.75	51.62	51.87	51.40	6,875,000
Mar 01, 2022	57.34	60.55	55.98	59.28	58.75	5,318,600
Feb 04, 2022	0.25 Dividend					
Feb 01, 2022	62.33	62.51	52.81	56.93	56.19	4,674,600
Jan 01, 2022	71.96	71.96	59.07	62.09	61.28	4,460,500
Dec 01, 2021	63.68	72.08	63.45	71.86	70.92	5,166,800
Nov 05, 2021	0.23 Dividend					
Nov 01, 2021	60.99	68.40	59.75	63.01	61.96	5,327,100
Oct 01, 2021	59.03	62.22	57.32	60.88	59.86	4,337,900

*Close price adjusted for splits. **Adjusted close price adjusted for splits and dividend and/or capital gain distributions.

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Symbol	Last Price	Change	% Change
AWR	77.95	-1.79	-2.24%
American States Water Company			
SJW	57.60	-1.15	-1.96%
SJW Group			
MSEX	77.20	-1.45	-1.84%
Middlesex Water Company			
YORW	38.43	-0.18	-0.47%
The York Water Company			
ARTNA	48.12	-0.32	-0.66%
Artesian Resources Corporation			

Similar to CWT

Symbol	Last Price	Change	% Change
SJW	57.60	-1.15	-1.96%
SJW Group			
AWR	77.95	-1.79	-2.24%
American States Water Company			
MSEX	77.20	-1.45	-1.84%
Middlesex Water Company			
YORW	38.43	-0.18	-0.47%
The York Water Company			
ARTNA	48.12	-0.32	-0.66%
Artesian Resources Corporation			

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Essential Utilities, Inc. (WTRG)

NYSE -- NYSE Delayed Price. Currency in USD

☆ Add to watchlist

👤 Visitors trend 2W ↓ 10W ↑ 9M ↑

Quote Lookup

44.21

+0.39 (+0.89%)

44.00 -0.21 (-0.48%)

At close: November 4 04:00PM EDT

After hours: Nov 4, 04:30PM EDT

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Time Period: Nov 05, 2021 - Nov 05, 2022

Show: Historical Prices

Frequency: Monthly

Apply

Currency in USD

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Date	Open	High	Low	Close*	Adj Close**	Volume
Nov 04, 2022	43.95	45.01	43.66	44.21	44.21	1,121,994
Nov 01, 2022	44.36	45.01	42.85	44.21	44.21	3,951,900
Oct 01, 2022	42.16	44.63	38.50	44.22	44.22	27,639,500
Sep 01, 2022	49.12	50.35	41.32	41.38	41.38	28,333,700
Aug 11, 2022	0.287 Dividend					
Aug 01, 2022	51.63	52.43	49.08	49.15	48.88	20,196,900
Jul 01, 2022	46.22	51.99	45.12	51.94	51.65	18,619,100
Jun 01, 2022	46.47	47.72	40.97	45.85	45.59	22,461,900
May 12, 2022	0.268 Dividend					
May 01, 2022	45.04	46.77	42.03	46.26	45.72	28,816,300
Apr 01, 2022	51.05	52.62	44.66	44.76	44.23	21,519,200
Mar 01, 2022	47.04	52.21	46.19	51.13	50.53	25,456,200
Feb 10, 2022	0.268 Dividend					
Feb 01, 2022	48.91	48.93	44.71	47.11	46.29	26,272,100
Jan 01, 2022	53.66	53.66	46.32	48.74	47.89	22,470,900
Dec 01, 2021	47.70	53.93	47.17	53.69	52.76	24,435,000
Nov 10, 2021	0.268 Dividend					

*Close price adjusted for splits.

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Symbol	Last Price	Change	% Change
YORW The York Water Company	44.45	+2.18	+5.16%
MSEX Middlesex Water Company	87.88	+2.40	+2.81%
CWT California Water Service Group	59.81	+1.33	+2.27%
AWR American States Water Company	88.92	+1.25	+1.43%
SJW SJW Group	70.37	+1.49	+2.16%

Similar to WTRG

Symbol	Last Price	Change	% Change
CWT California Water Service Group	59.81	+1.33	+2.27%
AWR American States Water Company	88.92	+1.25	+1.43%
MSEX Middlesex Water Company	87.88	+2.40	+2.81%
SJW SJW Group	70.37	+1.49	+2.16%
YORW The York Water Company	44.45	+2.18	+5.16%

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Middlesex Water Company (MSEX)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

Add to watchlist

Visitors trend 2W 10W 9M

Quote Lookup

77.20 **-1.45 (-1.84%)** **77.20** **0.00 (0.00%)**

At close: September 30 04:00PM EDT

After hours: Sep 30, 04:49PM EDT

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Time Period: [Oct 01, 2021 - Oct 01, 2022](#)

Show: [Historical Prices](#)

Frequency: [Monthly](#)

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Currency in USD

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Date	Open	High	Low	Close*	Adj Close**	Volume
Oct 01, 2022	-	-	-	-	-	-
Sep 01, 2022	88.50	93.74	77.08	77.20	77.20	2,113,900
Aug 11, 2022	0.29 Dividend					
Aug 01, 2022	94.06	96.19	88.16	88.77	88.49	1,837,900
Jul 01, 2022	87.74	95.74	86.12	95.11	94.81	1,532,800
Jun 01, 2022	86.88	89.66	75.77	87.68	87.41	2,607,800
May 12, 2022	0.29 Dividend					
May 01, 2022	87.80	91.68	83.61	85.03	84.49	2,115,900
Apr 01, 2022	105.10	109.51	87.70	88.95	88.38	1,977,500
Mar 01, 2022	100.23	107.32	97.33	105.17	104.50	2,155,600
Feb 11, 2022	0.29 Dividend					
Feb 01, 2022	101.04	102.44	94.56	99.99	99.05	1,997,600
Jan 01, 2022	120.10	121.10	95.74	101.24	100.29	4,245,600
Dec 01, 2021	104.10	121.43	98.12	120.30	119.17	2,780,300
Nov 15, 2021	0.29 Dividend					
Nov 10, 2021	0.29 Dividend					
Nov 01, 2021	107.26	114.09	99.02	103.04	101.51	1,802,000
Oct 01, 2021	102.90	110.68	100.74	110.12	108.48	1,499,400

*Close price adjusted for splits.

**Adjusted close price adjusted for splits and dividend and/or capital gain distributions.

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Symbol	Last Price	Change	% Change
SJW	57.60	-1.15	-1.96%
SJW Group			
ARTNA	48.12	-0.32	-0.66%
Artesian Resources Corporation			
YORW	38.43	-0.18	-0.47%
The York Water Company			
CWT	52.69	-1.49	-2.75%
California Water Service Group			
AWR	77.95	-1.79	-2.24%
American States Water Company			

Similar to MSEX

Symbol	Last Price	Change	% Change
SJW	57.60	-1.15	-1.96%
SJW Group			
ARTNA	48.12	-0.32	-0.66%
Artesian Resources Corporation			
CWT	52.69	-1.49	-2.75%
California Water Service Group			
YORW	38.43	-0.18	-0.47%
The York Water Company			
AWR	77.95	-1.79	-2.24%
American States Water Company			

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SJW Group (SJW)

NYSE - Nasdaq Real Time Price. Currency in USD

Add to watchlist

Visitors trend 2W 10W 9M

Quote Lookup

70.37 +1.49 (+2.16%)

At close: November 4 04:00PM EDT

66.86 -3.51 (-4.99%)

After hours: Nov 4, 06:40PM EDT



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Time Period: [Nov 05, 2021 - Nov 05, 2022](#)

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Date	Open	High	Low	Close*	Adj Close**	Volume
Nov 04, 2022	68.83	70.60	68.93	70.37	70.37	110,151
Nov 04, 2022	0.36 Dividend					
Nov 01, 2022	71.00	71.19	67.19	70.37	70.00	639,400
Oct 01, 2022	58.46	71.27	58.22	70.68	70.31	3,334,200
Sep 01, 2022	64.27	67.29	57.51	57.60	57.30	2,979,700
Aug 05, 2022	0.36 Dividend					
Aug 01, 2022	65.47	68.24	64.07	64.30	63.62	2,033,300
Jul 01, 2022	62.43	66.14	61.36	65.66	64.97	1,715,500
Jun 01, 2022	62.16	63.90	55.74	62.41	61.75	2,728,800
May 06, 2022	0.36 Dividend					
May 01, 2022	60.82	62.49	57.17	61.85	60.82	2,988,900
Apr 01, 2022	69.62	71.70	58.50	59.00	58.02	2,249,700
Mar 01, 2022	65.36	70.64	63.58	69.58	68.42	2,934,000
Feb 04, 2022	0.36 Dividend					
Feb 01, 2022	68.73	69.00	61.30	65.22	63.79	2,136,700
Jan 01, 2022	73.21	73.41	66.30	68.86	67.35	1,846,800
Dec 01, 2021	68.39	73.47	67.56	73.20	71.60	2,891,900
Nov 05, 2021	0.34 Dividend					

*Close price adjusted for splits.

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Symbol	Last Price	Change	% Change
CWT California Water Service Group	59.81	+1.33	+2.27%
MSEX Middlesex Water Company	87.88	+2.40	+2.81%
AWR American States Water Company	88.92	+1.25	+1.43%
ARTNA Artesian Resources Corporation	52.27	+2.00	+3.98%
YORW The York Water Company	44.45	+2.18	+5.16%

Similar to SJW

Symbol	Last Price	Change	% Change
CWT California Water Service Group	59.81	+1.33	+2.27%
AWR American States Water Company	88.92	+1.25	+1.43%
ARTNA Artesian Resources Corporation	52.27	+2.00	+3.98%
MSEX Middlesex Water Company	87.88	+2.40	+2.81%
YORW The York Water Company	44.45	+2.18	+5.16%

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American Water Works (AWK)

(Delayed Data from NYSE)

\$130.16 USD

-3.04 (-0.56%)

Updated Sep 30, 2022 04:00 PM ET

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Zacks Rank: 2 2-Buy

Style Scores: D Value I F Growth I F Momentum I F VGM

Industry Rank: Top 20% (49 out of 251)

Industry: [Utility - Water Supply](#)

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Quote Overview

Enter Symbol

Stock Activity

Open	134.46
Day Low	129.91
Day High	134.63
52 Wk Low	129.45
52 Wk High	189.65
Avg. Volume	733,816
Market Cap	23.66 B
Dividend	2.62 (2.01%)
Beta	0.50

Key Earnings Data

Earnings ESP	0.00%
Most Accurate Est	1.14
Current Qtr Est	1.14
Current Yr Est	4.45
Exp Earnings Date	11/1/22
Prior Year EPS	4.25
Exp EPS Growth (3-5yr)	8.08%
Forward PE	29.28
PEG Ratio	3.62

[Utilities](#) » [Utility - Water Supply](#)

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American Water's (AWK) Pennsylvania Arm to Invest in Upgrades
09/30/22-7:33AM EST Zacks

American Water (AWK) Illinois Unit Acquires Assets for \$11M
09/26/22-6:12AM EST Zacks

AWK: What are Zacks experts saying now?
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American Water's (AWK) New Jersey Arm to Invest in Upgrades
09/16/22-10:17AM EST Zacks

Zacks Industry Outlook Highlights American Water Works Essential Utilities, SJW Group and The York Water Company
09/07/22-6:54AM EST Zacks

4 Water Utility Stocks to Watch in a Prospering Industry
09/05/22-9:21AM EST Zacks

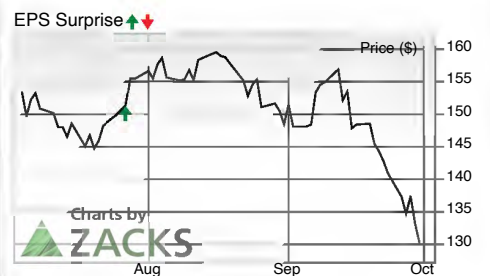
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Price and EPS Surprise Chart

1 Month | 3 Months | YTD



Interactive Chart | Fundamental Chart

Billion Dollar Secret

Premium Research for AWK

Zacks Rank ▲ Buy **2**

Zacks Industry Rank Top 20% (49 out of 251)

Zacks Sector Rank Top 19% (3 out of 16)

Style Scores D Value | F Growth | F Momentum | F VGM

Earnings ESP 0.00%

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(▲▼) = Change in last 30 days

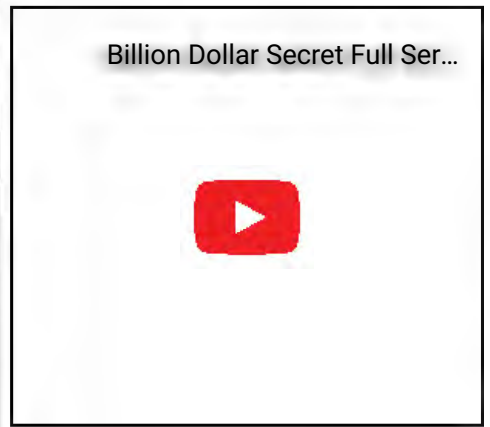
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Premium Research: Industry Analysis

Top Peers	Symbol	Zacks Rank
American Water Works	AWK	
Consolidated Water	CWCO	
Primo Water	PRMW	
SJW Group	SJW	
The York Water Company	YORW	
American States Water	AWR	
Artesian Resources	ARTNA	

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Company Summary

Water supply and wastewater service provider American Water Works Company was founded in 1886. The company provides essential water services to over 15 million customers in 47 states, the District of Columbia and Ontario, Canada. It has employee strength of 6,800. The company also intermittently acquires small water service providers to expand its customer base. In 2020, the company added 37,800 water and wastewater customer connections through acquisitions.

American Water Works operates a large water and wastewater infrastructure to efficiently serve the expanding customer base in the United States. It operates 79 surface water treatment plants; 609 groundwater treatment plants; 150 wastewater treatment ...

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Essential Utilities (WTRG)

(Delayed Data from NYSE)

\$41.38 USD

-0.95 (-2.24%)

Updated Sep 30, 2022 04:00 PM ET

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Zacks Rank: 1 2 3 4 5 **3-Hold**

Style Scores: Value I Growth I Momentum I VGM

Industry Rank: Top 20% (49 out of 251)

Industry: [Utility - Water Supply](#)

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Quote Overview

Enter Symbol

Stock Activity		Key Earnings Data	
Open	42.67	Earnings ESP	0.00%
Day Low	41.32	Most Accurate Est	0.31
Day High	42.80	Current Qtr Est	0.31
52 Wk Low	40.97	Current Yr Est	1.78
52 Wk High	53.93	Exp Earnings Date	11/7/22
Avg. Volume	1,333,018	Prior Year EPS	1.67
Market Cap	10.85 B	Exp EPS Growth (3-5yr)	6.14%
Dividend	1.15 (2.77%)	Forward PE	23.25
Beta	0.77	PEG Ratio	3.79

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American Water's (AWK) Pennsylvania Arm to Invest in Upgrades
09/30/22-7:33AM EST Zacks

Essential Utilities (WTRG) to Gain From Investment, Buyouts
09/29/22-1:19PM EST Zacks

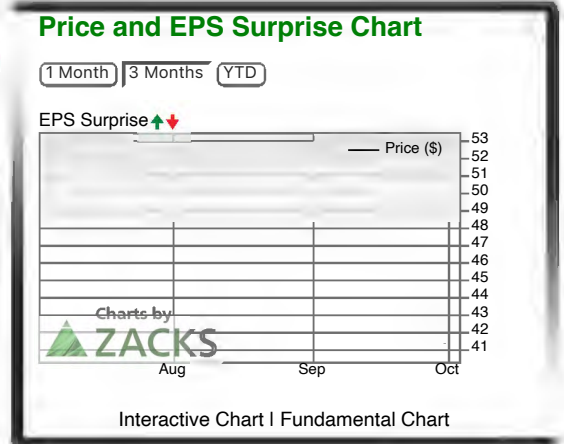
WTRG: What are Zacks experts saying now?
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American Water (AWK) Illinois Unit Acquires Assets for \$11M
09/26/22-6:12AM EST Zacks

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09/16/22-10:17AM EST Zacks

Zacks Industry Outlook Highlights American Water Works Essential Utilities, SJW Group and The York Water Company
09/07/22-6:54AM EST Zacks

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Billion Dollar Secret

Premium Research for WTRG

Zacks Rank	Hold	3
Zacks Industry Rank	Top 20% (49 out of 251)	
Zacks Sector Rank	Top 19% (3 out of 16)	
Style Scores	D Value D Growth B Momentum D VGM	
Earnings ESP	0.00%	
Research Reports for WTRG	Analyst Snapshot	
(▲▼) = Change in last 30 days View All Zacks Rank #1 Strong Buys		
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Premium Research: Industry Analysis

Top Peers	Symbol	Zacks Rank
Essential Utilities	WTRG	
American Water Works	AWK	
Consolidated Water	CWCO	
Primo Water	PRMW	
SJW Group	SJW	
The York Water Company	YORW	
American States Water	AWR	

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Company Summary

Bryn Mawr, PA-based Essential Utilities, Inc. — through its subsidiaries — operates regulated utilities that provide water, wastewater and natural gas services in the United States. The company provides utility services to nearly five million people in the United States. Essential Utilities completed the acquisition of Peoples Gas on Mar 16, 2020 and began to provide natural gas services, in addition to water and wastewater services. Prior to its name change on Feb 3, 2020, Essential Utilities was known as Aqua America, Inc.

Essential Utilities has identified 12 operating segments and two reportable segments, namely Regulated ...

[Read Full Company Summary for WTRG here](#)

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Electronic Application of Water Service Corporation of Kentucky for a General Adjustment in Existing Rates and a
Certificate of Public Convenience and Necessity to Deploy Advanced Metering Infrastructure
Case No. 2022-00147
The Attorney General and the City of Clinton's Response to
Water Service Kentucky's First Request for Information

WITNESS RESPONSIBLE:
RICHARD A. BAUDINO

QUESTION NO. 2
Page 1 of 1

Please provide the Value Line Investment Analyzer (September 29, 2022) Excel workpaper that supports Mr. Baudino's Value Line Market Return Data on RAB-4.

RESPONSE:

Please refer to the above response to 1-1.

Electronic Application of Water Service Corporation of Kentucky for a General Adjustment in Existing Rates and a Certificate of Public Convenience and Necessity to Deploy Advanced Metering Infrastructure
Case No. 2022-00147
The Attorney General and the City of Clinton's Response to
Water Service Kentucky's First Request for Information

WITNESS RESPONSIBLE:
RICHARD A. BAUDINO

QUESTION NO. 3
Page 1 of 1

Please provide any cited materials within the body of Mr. Baudino's direct testimony. If the cited item is an article, please provide the entire article. If it is a cite from a textbook, please provide the relevant section from that textbook.

RESPONSE:

Please note that the materials cited in footnotes 1, 2, 3, 6, 12, and 13 may be accessed and downloaded using the links provided in the footnotes. The Value Line quote on pages 12 and 13 is available through subscription to Value Line. The material cited in footnotes 4, 5, 8, 9, 10, 11, 16, 17, and 18 are attached. The material from Kroll discussed by Mr. Baudino regarding the size adjustment and average betas on pages 33 and 34 of his testimony are available through subscription to Kroll's *Cost of Capital Navigator* service.



SURVEY OF PROFESSIONAL FORECASTERS

Release Date: August 12, 2022

THIRD QUARTER 2022

Forecasters See Slower Growth

The U.S. economy looks weaker now than it did three months ago, according to 35 forecasters surveyed by the Federal Reserve Bank of Philadelphia. The panel predicts real GDP will grow at an annual rate of 1.4 percent this quarter, down from the prediction of 2.5 percent in the last survey. Over the next three quarters, the panelists also see slower output growth than they predicted previously. Using the annual-average over annual-average computation, the forecasters expect real GDP to grow at an annual rate of 1.6 percent in 2022 and 1.3 percent in 2023. These annual projections are lower than the estimates of three months ago.

Upward revisions beginning from the fourth quarter of this year to the projections for the unemployment rate accompany the outlook for growth. On an annual-average basis, the forecasters predict the unemployment rate will increase from 3.7 percent in 2022 to 3.9 percent in 2023 and remain at the same rate over the following two years.

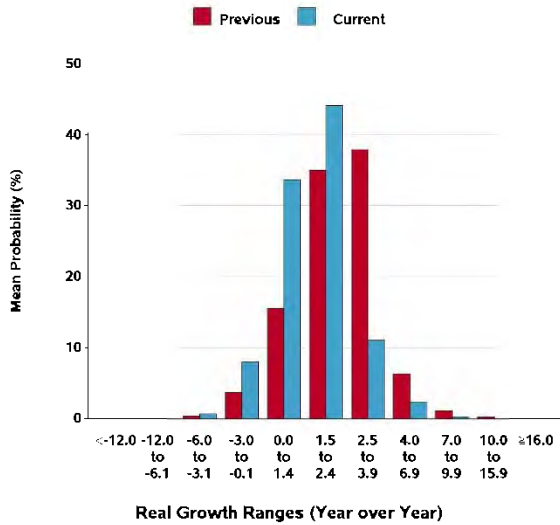
On the employment front, the forecasters revised upward their estimate for job growth for the current quarter but revised downward their estimates for the next two quarters. The projections for the annual-average level of nonfarm payroll employment suggest job gains at a monthly rate of 487,500 in 2022 and 167,600 in 2023. (These annual-average projections are computed as the year-to-year change in the annual-average level of nonfarm payroll employment, converted to a monthly rate.)

Median Forecasts for Selected Variables in the Current and Previous Surveys

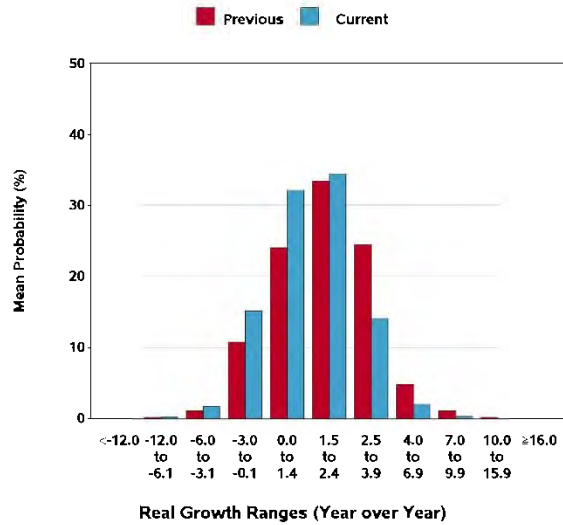
	Real GDP (%)		Unemployment Rate (%)		Payrolls (000s/month)	
	Previous	New	Previous	New	Previous	New
Quarterly data:						
2022:Q3	2.5	1.4	3.5	3.5	293.7	342.5
2022:Q4	2.3	1.2	3.5	3.7	193.2	167.9
2023:Q1	2.1	1.1	3.5	3.8	158.8	89.0
2023:Q2	2.3	1.5	3.5	3.9	61.3	96.6
2023:Q3	N.A.	1.5	N.A.	4.0	N.A.	80.7
Annual data (projections are based on annual-average levels):						
2022	2.5	1.6	3.6	3.7	479.7	487.5
2023	2.3	1.3	3.6	3.9	172.7	167.6
2024	2.0	2.3	3.8	3.9	N.A.	N.A.
2025	2.3	2.1	3.8	3.9	N.A.	N.A.

The charts below provide some insight into the degree of uncertainty the forecasters have about their projections for the rate of growth in the annual-average level of real GDP. Each chart presents the forecasters' previous and current estimates of the probability that growth will fall into each of 11 ranges. The forecasters expect a lower probability than they predicted in the last survey that growth will be 2.5 percent or higher in 2022 and 2023.

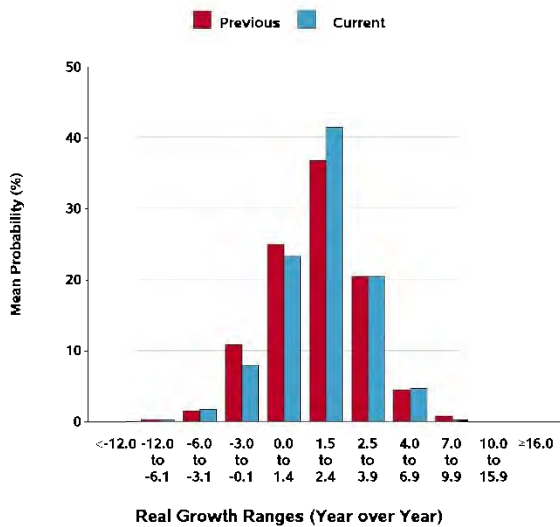
Mean Probabilities for Real GDP Growth in 2022



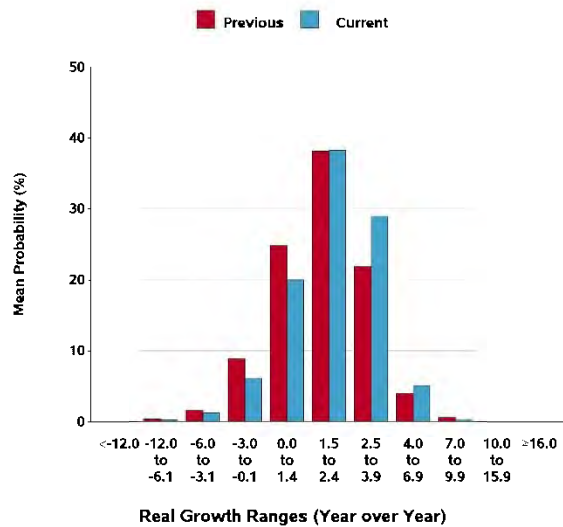
Mean Probabilities for Real GDP Growth in 2023



Mean Probabilities for Real GDP Growth in 2024

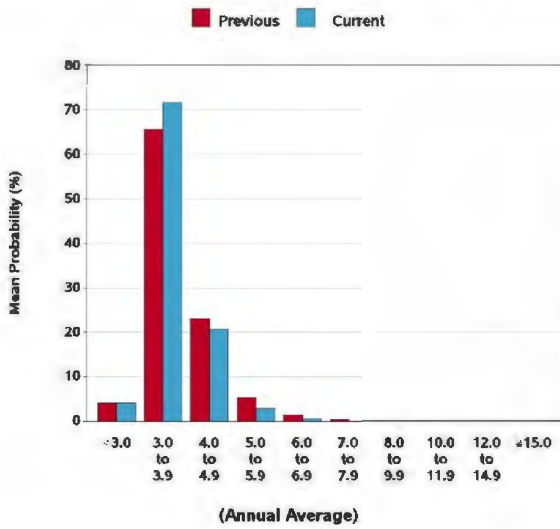


Mean Probabilities for Real GDP Growth in 2025

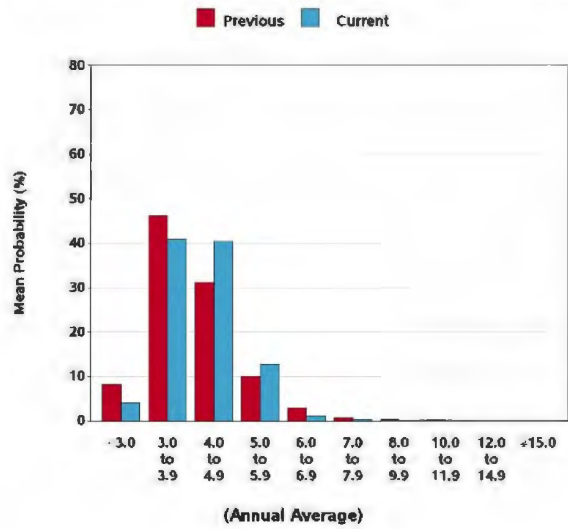


The forecasters' density projections for unemployment, shown below, shed light on uncertainty about the labor market over the next four years. Each chart presents the forecasters' current and previous estimates of the probability that unemployment will fall into each of 10 ranges. For 2022, the forecasters are increasing their probability estimates from the last survey for an unemployment rate in the range of 3.0 to 3.9 percent. Over each of the following three years, from 2023 to 2025, the forecasters see a higher probability than they predicted three months ago that unemployment will fall into the ranges of 4.0 percent or higher.

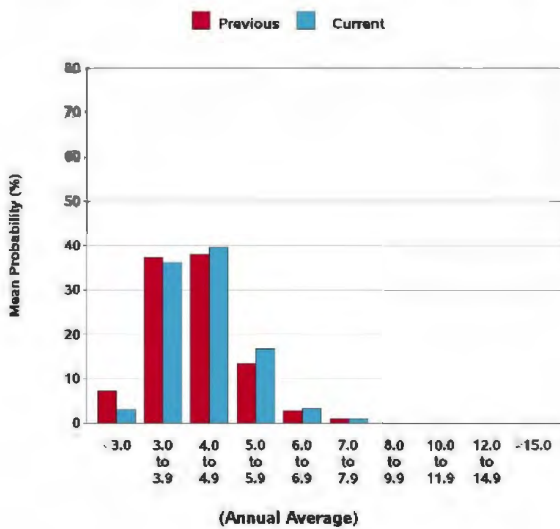
Mean Probabilities for Unemployment Rate in 2022



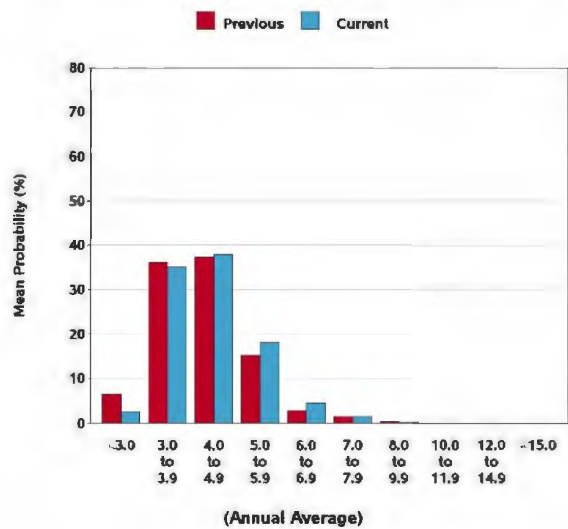
Mean Probabilities for Unemployment Rate in 2023



Mean Probabilities for Unemployment Rate in 2024



Mean Probabilities for Unemployment Rate in 2025



Forecasters Raise Their Projections for Inflation

The forecasters expect current-quarter headline CPI inflation will average 6.7 percent at an annual rate, up from the prediction of 4.5 percent in the previous survey. Headline PCE inflation over the current quarter will also be higher at an annual rate of 5.3 percent, up from the last estimate of 4.1 percent.

Projections for headline and core CPI and PCE inflation at most other forecast horizons have been revised upward, compared with those of the previous survey.

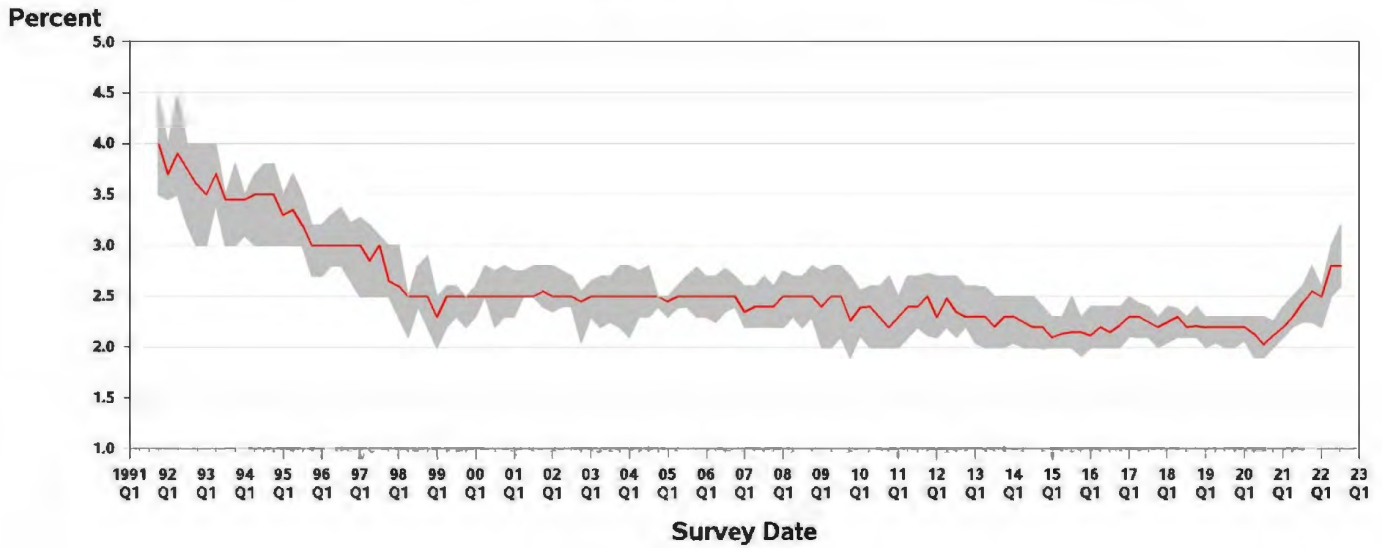
Over the next 10 years, 2022 to 2031, the forecasters predict headline CPI inflation will remain unchanged from their previous estimate, at an annual-average rate of 2.80 percent. The corresponding estimate for 10-year annual-average PCE inflation is 2.45 percent, slightly higher than the previous estimate.

Median Short-Run and Long-Run Projections for Inflation (Annualized Percentage Points)

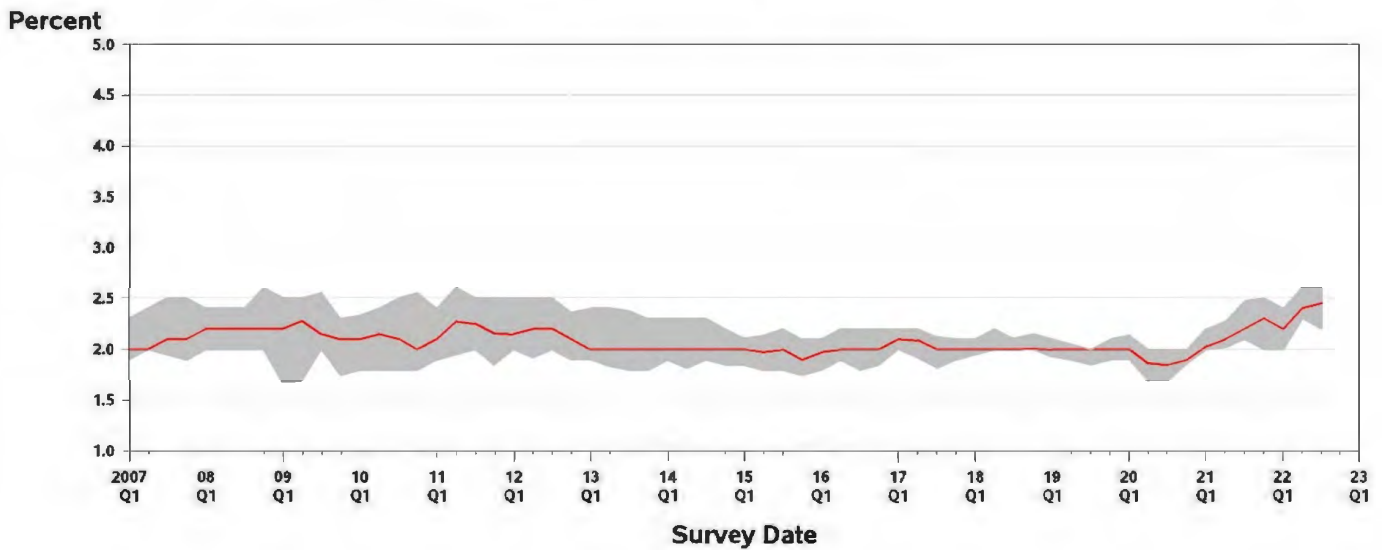
	Headline CPI		Core CPI		Headline PCE		Core PCE	
	Previous	Current	Previous	Current	Previous	Current	Previous	Current
Quarterly								
2022:Q3	4.5	6.7	4.1	5.8	4.1	5.3	3.8	4.6
2022:Q4	3.7	4.3	3.5	4.6	3.0	3.7	3.2	3.5
2023:Q1	3.1	3.6	3.1	3.7	2.7	2.9	2.8	3.1
2023:Q2	3.0	3.4	2.9	3.2	2.6	2.8	2.7	2.8
2023:Q3	N.A.	3.0	N.A.	2.8	N.A.	2.5	N.A.	2.6
Q4/Q4 Annual Averages								
2022	6.1	7.5	4.8	5.9	5.0	5.8	4.1	4.5
2023	2.9	3.2	2.9	3.1	2.5	2.8	2.5	2.8
2024	2.3	2.5	2.5	2.5	2.2	2.3	2.2	2.2
Long-Term Annual Averages								
2022-2026	3.40	3.50	N.A.	N.A.	2.90	3.00	N.A.	N.A.
2022-2031	2.80	2.80	N.A.	N.A.	2.40	2.45	N.A.	N.A.

The charts below show the median projections (the red line) and the associated interquartile ranges (gray areas around the red line) for 10-year annual-average CPI and PCE inflation. The charts provide perspective on the upward trend in 10-year inflation expectations in recent surveys.

**Projections for the 10-Year Annual-Average Rate of CPI Inflation
(Median and Interquartile Range)**

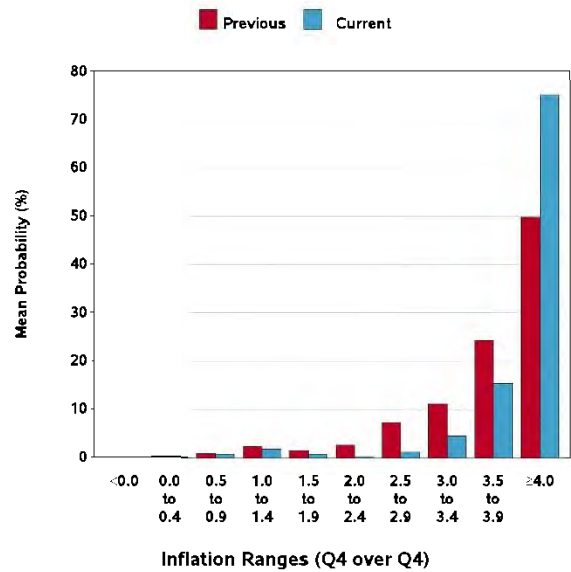


**Projections for the 10-Year Annual-Average Rate of PCE Inflation
(Median and Interquartile Range)**

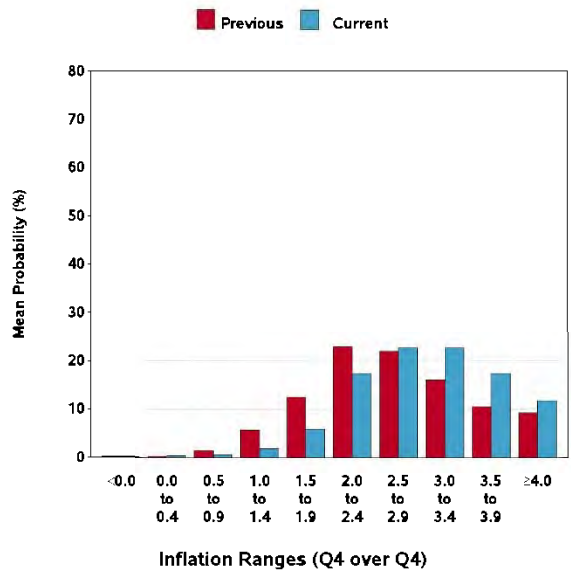


The figures below show the probabilities that the forecasters are assigning to each of 10 possible ranges for fourth-quarter over fourth-quarter core PCE inflation in 2022 and 2023. Notably, the forecasters have significantly increased their estimates for the probability that core PCE inflation in 2022 will be 4.0 percent or more, compared with their prediction in the previous survey.

Mean Probabilities for Core PCE Inflation in 2022



Mean Probabilities for Core PCE Inflation in 2023



Higher Risk of a Decrease in Real GDP

The forecasters see about a one-in-three chance of a contraction in real GDP in any of the next five quarters. The forecasters have increased their estimate of the risk of a downturn this quarter to 33.9 percent, compared with 19.7 percent in the survey of three months ago. The panelists have also raised their probability estimates for the following three quarters.

*Risk of a Negative Quarter (%)
Survey Means*

Quarterly data:	Previous	New
2022:Q3	19.7	33.9
2022:Q4	22.2	36.0
2023:Q1	28.2	38.0
2023:Q2	25.5	36.5
2023:Q3	N.A.	34.1

Natural Rate of Unemployment Estimated at 4.10 Percent

In third-quarter surveys, we ask the forecasters to provide their estimates of the natural rate of unemployment — the rate of unemployment that occurs when the economy reaches equilibrium. The forecasters peg this rate at 4.10 percent. The table below shows, for each third-quarter survey since 1996, the percentage of respondents who use the natural rate in their forecasts and, for those who use it, the median estimate and the lowest and highest estimates. Thirty percent of the 27 forecasters who answered the question report that they use the natural rate in their forecasts. The lowest estimate is 3.50 percent, and the highest estimate is 4.50 percent.

Median Estimates of the Natural Rate of Unemployment

Survey Date	Percentage Who Use the Natural Rate	Median Estimate (%)	Low (%)	High (%)
1996:Q3	62	5.65	5.00	6.00
1997:Q3	59	5.25	4.50	5.88
1998:Q3	45	5.30	4.50	5.80
1999:Q3	43	5.00	4.13	5.60
2000:Q3	48	4.50	4.00	5.00
2001:Q3	34	4.88	3.50	5.50
2002:Q3	50	5.10	3.80	5.50
2003:Q3	41	5.00	4.31	5.40
2004:Q3	46	5.00	4.00	5.50
2005:Q3	50	5.00	4.25	5.50
2006:Q3	53	4.95	4.00	5.50
2007:Q3	52	4.65	4.20	5.50
2008:Q3	48	5.00	4.00	5.50
2009:Q3	45	5.00	4.00	6.00
2010:Q3	50	5.78	4.50	6.80
2011:Q3	42	6.00	4.75	7.00
2012:Q3	49	6.00	4.75	7.00
2013:Q3	63	6.00	4.75	7.00
2014:Q3	65	5.50	4.50	6.70
2015:Q3	62	5.00	4.25	5.80
2016:Q3	56	4.80	4.50	5.50
2017:Q3	44	4.50	3.50	5.00
2018:Q3	34	4.30	3.80	4.60
2019:Q3	33	4.10	3.88	4.60
2020:Q3	48	4.10	3.50	6.00
2021:Q3	37	3.78	3.00	4.25
2022:Q3	30	4.10	3.50	4.50

Technical Notes

Moody's Aaa and Baa Historical Rates

The historical values of Moody's Aaa and Baa rates are proprietary and, therefore, not available in the data files on the Bank's website or on the tables that accompany the survey's complete write-up in the PDF.

The Federal Reserve Bank of Philadelphia thanks the following forecasters for their participation in recent surveys:

Ed Al-Hussainy and **Anwiti Bahuguna**, Columbia Threadneedle Investments; **Scott Anderson**, Bank of the West (BNP Paribas Group); **Robert J. Barbera**, Johns Hopkins University Center for Financial Economics; **Peter Bernstein**, RCF Economic and Financial Consulting, Inc.; **Wayne Best** and **Michael Brown**, Visa, Inc.; **Kathy Bostjancic**, Oxford Economics USA, Inc.; **Jay Bryson**, Wells Fargo; **Christine Chmura, Ph.D.**, and **Xiaobing Shuai, Ph.D.**, Chmura Economics & Analytics; **Gary Ciminero, CFA**, GLC Financial Economics; **Rajeev Dhawan**, Georgia State University; **Bill Diviney**, ABN AMRO Bank NV; **Gabriel Ehrlich**, **Daniil Manaenkov**, and **Tereza Ranosova**, RSQE, University of Michigan; **Michael R. Englund**, Action Economics, LLC; **Sacha Gelfer**, Bentley University; **James Glassman**, JPMorgan Chase & Co.; **Jan Hatzius**, Goldman Sachs; **Sam Kahan**, Kahan Consulting Ltd. (ACT Research LLC); **N. Karp**, BBVA Research USA; **Steve Kihm**, Citizens Utility Board of Wisconsin; **Jack Kleinhenz**, Kleinhenz & Associates, Inc.; **Yaniv Konchitchki**, University of California, Berkeley; **Thomas Lam**, Sim Kee Boon Institute, Singapore Management University; **Robert McNab**, Old Dominion University; **R. Anthony Metz**, Pareto Optimal Economics; **R. M. Monaco**, TitanRM; **Michael Moran**, Daiwa Capital Markets America; **Joel L. Naroff**, Naroff Economic Advisors; **Nomura Securities International**; **Brendon Ogmundson**, BC Real Estate Association; **Perc Pineda, Ph.D.**, Plastics Industry Association; **Joel Prakken** and **Chris Varvares**, S&P Global Market Intelligence; **Jason Prole**, Capital Risk Management; **Philip Rothman**, East Carolina University; **Allen Sinai** and **Lu Yu**, Decision Economics, Inc.; **Stephen Stanley**, Amherst Pierpont Securities; **Charles Steindel**, Editor, NABE *Business Economics*; **Susan M. Sterne**, Economic Analysis Associates, Inc.; **James Sweeney**, Credit Suisse; **Maira Trimble** and **Jordan Vickers**, Eaton Corporation; **Mark Zandi**, Moody's Analytics; **Ellen Zentner**, Morgan Stanley.

This is a partial list of participants. We also thank those who wish to remain anonymous.

SUMMARY TABLE
SURVEY OF PROFESSIONAL FORECASTERS
MAJOR MACROECONOMIC INDICATORS

	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2022	2023 (YEAR-OVER-YEAR)	2024	2025
PERCENT GROWTH AT ANNUAL RATES									
1. REAL GDP (BILLIONS, CHAIN WEIGHTED)	1.4	1.2	1.1	1.5	1.5	1.6	1.3	2.3	2.1
2. GDP PRICE INDEX (PERCENT CHANGE)	4.6	3.7	3.2	2.7	2.6	6.9	3.7	N.A.	N.A.
3. NOMINAL GDP (\$ BILLIONS)	6.7	5.0	5.3	3.9	4.4	8.7	5.2	N.A.	N.A.
4. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE)	2.7	1.3	0.7	0.8	0.6	4.0	1.3	N.A.	N.A.
(AVG MONTHLY CHANGE)	342.5	167.9	89.0	96.6	80.7	487.5	167.6	N.A.	N.A.
VARIABLES IN LEVELS									
5. UNEMPLOYMENT RATE (PERCENT)	3.5	3.7	3.8	3.9	4.0	3.7	3.9	3.9	3.9
6. 3-MONTH TREASURY BILL (PERCENT)	2.5	3.1	3.4	3.4	3.3	1.7	3.3	3.0	2.8
7. 10-YEAR TREASURY BOND (PERCENT)	3.0	3.3	3.3	3.3	3.4	2.8	3.4	3.5	3.6
	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2022	2023 (Q4-OVER-Q4)	2024	
INFLATION INDICATORS									
8. CPI (ANNUAL RATE)	6.7	4.3	3.6	3.4	3.0	7.5	3.2	2.5	
9. CORE CPI (ANNUAL RATE)	5.8	4.6	3.7	3.2	2.8	5.9	3.1	2.5	
10. PCE (ANNUAL RATE)	5.3	3.7	2.9	2.8	2.5	5.8	2.8	2.3	
11. CORE PCE (ANNUAL RATE)	4.6	3.5	3.1	2.8	2.6	4.5	2.8	2.2	

Note: The figures on each line are medians of 35 forecasters.

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, Third Quarter 2022.

SURVEY OF PROFESSIONAL FORECASTERS

Third Quarter 2022

Tables

Note: Data in these tables listed as "actual" are the data that were available to the forecasters when they were sent the survey questionnaire on July 28, 2022; the tables do not reflect subsequent revisions to the data. All forecasts were received on or before August 9, 2022.

TABLE ONE
MAJOR MACROECONOMIC INDICATORS
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL		FORECAST				ACTUAL		FORECAST		
		2022 Q2	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2021 ANNUAL	2022 ANNUAL	2023 ANNUAL	2024 ANNUAL	2025 ANNUAL
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	34	24852	25257	25568	25900	26148	26434	22996	25004	26299	N.A.	N.A.
2. GDP PRICE INDEX (2012=100)	34	126.37	127.79	128.96	129.99	130.86	131.69	118.49	126.70	131.36	N.A.	N.A.
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	18	N.A.	2451.2	2464.7	2475.5	2477.0	2474.4	2424.6	2439.2	2479.0	N.A.	N.A.
4. UNEMPLOYMENT RATE (PERCENT)	33	3.6	3.5	3.7	3.8	3.9	4.0	5.4	3.7	3.9	3.9	3.9
5. NONFARM PAYROLL EMPLOYMENT (THOUSANDS)	27	151604	152641	153145	153412	153702	153944	146102	151952	153963	N.A.	N.A.
6. INDUSTRIAL PRODUCTION (2017=100)	27	104.5	105.0	105.5	105.9	106.2	106.5	100.0	104.5	106.2	N.A.	N.A.
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	27	1.65	1.59	1.55	1.53	1.55	1.53	1.61	1.63	1.55	N.A.	N.A.
8. 3-MONTH TREASURY BILL RATE (PERCENT)	33	1.08	2.50	3.08	3.35	3.35	3.34	0.04	1.74	3.33	3.00	2.80
9. MOODY'S AAA CORP BOND YIELD * (PERCENT)	21	N.A.	4.10	4.44	4.60	4.70	4.75	N.A.	3.98	4.85	N.A.	N.A.
10. MOODY'S BAA CORP BOND YIELD * (PERCENT)	20	N.A.	5.23	5.62	5.71	5.82	5.84	N.A.	4.98	5.84	N.A.	N.A.
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	33	2.93	3.01	3.26	3.32	3.33	3.36	1.44	2.79	3.42	3.50	3.56
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	34	19682	19750	19811	19866	19938	20012	19427	19740	19996	20452	20874
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	31	13916.9	13976.7	14033.1	14097.4	14167.4	14224.0	13624.8	13948.2	14165.6	N.A.	N.A.
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	29	2974.9	3002.7	3027.7	3043.1	3052.1	3073.5	2868.5	2995.8	3070.7	N.A.	N.A.
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	30	672.9	659.0	646.3	640.2	641.3	646.2	707.7	669.1	645.7	N.A.	N.A.
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	30	1290.7	1290.7	1292.7	1298.8	1300.4	1306.9	1348.8	1294.8	1306.0	N.A.	N.A.
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	31	2025.7	2032.8	2038.3	2045.4	2051.7	2058.6	2027.8	2031.9	2055.6	N.A.	N.A.
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	30	81.6	81.4	79.5	75.5	63.2	59.3	-32.6	107.6	61.4	N.A.	N.A.
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	30	-1474.7	-1468.9	-1460.0	-1458.8	-1474.9	-1461.4	-1284.3	-1486.7	-1460.7	N.A.	N.A.

* The historical values of Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, Third Quarter 2022.

TABLE TWO
MAJOR MACROECONOMIC INDICATORS
PERCENTAGE CHANGES AT ANNUAL RATES

	NUMBER OF FORECASTERS	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	2021	2022	2023	2024
		TO Q3 2022	TO Q4 2022	TO Q1 2023	TO Q2 2023	TO Q3 2023	TO 2022	TO 2023	TO 2024	TO 2025
1. GROSS DOMESTIC PRODUCT (GDP) (\$ BILLIONS)	34	6.7	5.0	5.3	3.9	4.4	8.7	5.2	N.A.	N.A.
2. GDP PRICE INDEX (2012=100)	34	4.6	3.7	3.2	2.7	2.6	6.9	3.7	N.A.	N.A.
3. CORPORATE PROFITS AFTER TAXES (\$ BILLIONS)	18	-0.9	2.2	1.8	0.2	-0.4	0.6	1.6	N.A.	N.A.
4. UNEMPLOYMENT RATE (PERCENT)	33	-0.1	0.2	0.1	0.1	0.1	-1.7	0.3	0.0	-0.1
5. NONFARM PAYROLL EMPLOYMENT (PERCENT CHANGE) (AVG MONTHLY CHANGE)	27 27	2.7 342.5	1.3 167.9	0.7 89.0	0.8 96.6	0.6 80.7	4.0 487.5	1.3 167.6	N.A. N.A.	N.A. N.A.
6. INDUSTRIAL PRODUCTION (2017=100)	27	2.1	1.7	1.7	0.9	1.1	4.5	1.7	N.A.	N.A.
7. NEW PRIVATE HOUSING STARTS (ANNUAL RATE, MILLIONS)	27	-14.2	-9.7	-6.2	5.2	-4.3	1.6	-5.0	N.A.	N.A.
8. 3-MONTH TREASURY BILL RATE (PERCENT)	33	1.42	0.58	0.27	0.00	-0.01	1.70	1.59	-0.33	-0.20
9. MOODY'S AAA CORP BOND YIELD * (PERCENT)	21	N.A.	0.34	0.16	0.10	0.05	N.A.	0.87	N.A.	N.A.
10. MOODY'S BAA CORP BOND YIELD * (PERCENT)	20	N.A.	0.39	0.09	0.10	0.02	N.A.	0.87	N.A.	N.A.
11. 10-YEAR TREASURY BOND YIELD (PERCENT)	33	0.08	0.25	0.05	0.01	0.02	1.35	0.63	0.08	0.06
12. REAL GDP (BILLIONS, CHAIN WEIGHTED)	34	1.4	1.2	1.1	1.5	1.5	1.6	1.3	2.3	2.1
13. TOTAL CONSUMPTION EXPENDITURE (BILLIONS, CHAIN WEIGHTED)	31	1.7	1.6	1.8	2.0	1.6	2.4	1.6	N.A.	N.A.
14. NONRESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	29	3.8	3.4	2.1	1.2	2.8	4.4	2.5	N.A.	N.A.
15. RESIDENTIAL FIXED INVESTMENT (BILLIONS, CHAIN WEIGHTED)	30	-8.0	-7.5	-3.7	0.7	3.1	-5.5	-3.5	N.A.	N.A.
16. FEDERAL GOVERNMENT C & I (BILLIONS, CHAIN WEIGHTED)	30	0.0	0.6	1.9	0.5	2.0	-4.0	0.9	N.A.	N.A.
17. STATE AND LOCAL GOVT C & I (BILLIONS, CHAIN WEIGHTED)	31	1.4	1.1	1.4	1.2	1.4	0.2	1.2	N.A.	N.A.
18. CHANGE IN PRIVATE INVENTORIES (BILLIONS, CHAIN WEIGHTED)	30	-0.2	-1.9	-4.0	-12.4	-3.9	140.2	-46.2	N.A.	N.A.
19. NET EXPORTS (BILLIONS, CHAIN WEIGHTED)	30	5.8	8.9	1.2	-16.1	13.5	-202.4	25.9	N.A.	N.A.

* The historical values of Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Note: Figures for unemployment rate, 3-month Treasury bill rate, Moody's Aaa corporate bond yield, Moody's Baa corporate bond yield, and 10-year Treasury bond yield are changes in these rates, in percentage points. Figures for change in private inventories and net exports are changes in billions of chain-weighted dollars. All others are percentage changes at annual rates.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, Third Quarter 2022.

TABLE THREE
 MAJOR PRICE INDICATORS
 MEDIANS OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL		FORECAST (Q/Q)			ACTUAL	FORECAST (Q4/Q4)			
		2022 Q2	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2021 ANNUAL	2022 ANNUAL	2023 ANNUAL	2024 ANNUAL
1. CONSUMER PRICE INDEX (ANNUAL RATE)	34	10.5	6.7	4.3	3.6	3.4	3.0	6.7	7.5	3.2	2.5
2. CORE CONSUMER PRICE INDEX (ANNUAL RATE)	33	6.6	5.8	4.6	3.7	3.2	2.8	5.0	5.9	3.1	2.5
3. PCE PRICE INDEX (ANNUAL RATE)	33	7.1	5.3	3.7	2.9	2.8	2.5	5.5	5.8	2.8	2.3
4. CORE PCE PRICE INDEX (ANNUAL RATE)	33	4.4	4.6	3.5	3.1	2.8	2.6	4.6	4.5	2.8	2.2

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, Third Quarter 2022.

TABLE FOUR
YIELD SPREADS
MEDIAN OF FORECASTER PREDICTIONS

	NUMBER OF FORECASTERS	ACTUAL	FORECAST					ACTUAL	FORECAST				
		2022 Q2	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2021 ANNUAL	2022 ANNUAL	2023 ANNUAL	2024 ANNUAL	2025 ANNUAL	
1. TBOND MINUS TBILL (PERCENTAGE POINTS)	32	1.85	0.42	0.19	0.02	0.05	0.10	1.40	1.02	0.10	0.36	0.60	
2. AAA MINUS TBOND (PERCENTAGE POINTS)	21	N.A.	1.20	1.20	1.22	1.22	1.20	N.A.	1.20	1.21	N.A.	N.A.	
3. BAA MINUS TBOND (PERCENTAGE POINTS)	20	N.A.	2.30	2.30	2.39	2.34	2.31	N.A.	2.18	2.31	N.A.	N.A.	
4. BAA MINUS AAA (PERCENTAGE POINTS)	20	N.A.	1.10	1.10	1.09	1.06	1.08	N.A.	0.98	1.09	N.A.	N.A.	

Notes:

TBOND is the rate on 10-year Treasury bonds.
TBILL is the rate on 3-month Treasury bills.
AAA is the rate on Moody's Aaa corporate bonds.
BAA is the rate on Moody's Baa corporate bonds.

The historical values for interest rate spreads for Moody's Aaa and Baa rates are proprietary and therefore not available to the general public.

Each interest rate spread is computed as the median value of the forecasters' spreads. These median values may differ from those computed as the difference between the median values of each interest rate in the spread.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, Third Quarter 2022.

TABLE FIVE
ESTIMATED PROBABILITY OF DECLINE IN REAL GDP

ESTIMATED PROBABILITY (CHANCES IN 100)	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023
	TO	TO	TO	TO	TO
	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023
NUMBER OF FORECASTERS					
10 OR LESS	3	2	1	2	3
11 TO 20	6	5	6	3	2
21 TO 30	7	7	4	9	11
31 TO 40	6	7	9	7	5
41 TO 50	3	3	2	2	3
51 TO 60	1	0	4	3	3
61 TO 70	0	1	0	0	0
71 TO 80	1	3	1	1	0
81 TO 90	0	0	1	1	1
91 AND OVER	1	0	0	0	0
NOT REPORTING	7	7	7	7	7
MEAN AND MEDIAN					
MEDIAN PROBABILITY	30.00	31.50	38.00	34.00	30.00
MEAN PROBABILITY	33.90	36.03	38.00	36.51	34.13

Note: Total number of forecasters reporting is 28.

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, Third Quarter 2022.

TABLE SIX
MEAN PROBABILITIES

MEAN PROBABILITY ATTACHED TO POSSIBLE
CIVILIAN UNEMPLOYMENT RATES:
(ANNUAL AVERAGE)

	2022	2023	2024	2025
15.0 PERCENT OR MORE	0.00	0.00	0.00	0.00
12.0 TO 14.9 PERCENT	0.00	0.01	0.00	0.00
10.0 TO 11.9 PERCENT	0.00	0.02	0.00	0.05
8.0 TO 9.9 PERCENT	0.04	0.11	0.06	0.29
7.0 TO 7.9 PERCENT	0.11	0.36	1.11	1.50
6.0 TO 6.9 PERCENT	0.52	1.24	3.33	4.59
5.0 TO 5.9 PERCENT	2.85	12.76	16.73	18.14
4.0 TO 4.9 PERCENT	20.75	40.39	39.54	37.83
3.0 TO 3.9 PERCENT	71.58	40.93	36.10	35.02
LESS THAN 3.0 PERCENT	4.15	4.18	3.13	2.61

MEAN PROBABILITY ATTACHED TO POSSIBLE
PERCENT CHANGES IN REAL GDP:
(ANNUAL-AVERAGE OVER ANNUAL-AVERAGE)

	2021-2022	2022-2023	2023-2024	2024-2025
16.0 PERCENT OR MORE	0.00	0.00	0.00	0.00
10.0 TO 15.9 PERCENT	0.04	0.04	0.05	0.00
7.0 TO 9.9 PERCENT	0.21	0.32	0.27	0.29
4.0 TO 6.9 PERCENT	2.36	2.04	4.72	5.14
2.5 TO 3.9 PERCENT	11.01	14.07	20.42	28.85
1.5 TO 2.4 PERCENT	44.05	34.39	41.33	38.19
0.0 TO 1.4 PERCENT	33.58	32.02	23.23	19.94
-3.0 TO -0.1 PERCENT	8.00	15.12	7.93	6.12
-6.0 TO -3.1 PERCENT	0.68	1.75	1.73	1.21
-12.0 TO -6.1 PERCENT	0.07	0.25	0.27	0.26
LESS THAN -12.0 PERCENT	0.00	0.00	0.05	0.00

MEAN PROBABILITY ATTACHED TO POSSIBLE
PERCENT CHANGES IN GDP PRICE INDEX:
(ANNUAL-AVERAGE OVER ANNUAL-AVERAGE)

	2021-2022	2022-2023
4.0 PERCENT OR MORE	82.42	23.23
3.5 TO 3.9 PERCENT	10.65	22.67
3.0 TO 3.4 PERCENT	2.46	20.33
2.5 TO 2.9 PERCENT	0.96	16.96
2.0 TO 2.4 PERCENT	1.58	9.23
1.5 TO 1.9 PERCENT	1.73	5.84
1.0 TO 1.4 PERCENT	0.19	0.97
0.5 TO 0.9 PERCENT	0.00	0.46
0.0 TO 0.4 PERCENT	0.00	0.14
LESS THAN 0.0 PERCENT	0.00	0.14

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, Third Quarter 2022.

TABLE SEVEN
MEAN PROBABILITY OF CORE CPI AND CORE PCE INFLATION (Q4/Q4)

MEAN PROBABILITY ATTACHED TO CORE CPI INFLATION:

	21Q4 TO 22Q4	22Q4 TO 23Q4
4.0 PERCENT OR MORE	83.22	13.66
3.5 TO 3.9 PERCENT	10.14	22.91
3.0 TO 3.4 PERCENT	2.64	25.19
2.5 TO 2.9 PERCENT	0.25	22.79
2.0 TO 2.4 PERCENT	1.25	9.45
1.5 TO 1.9 PERCENT	0.71	3.75
1.0 TO 1.4 PERCENT	1.25	1.63
0.5 TO 0.9 PERCENT	0.36	0.36
0.0 TO 0.4 PERCENT	0.18	0.22
LESS THAN 0.0 PERCENT	0.00	0.05

MEAN PROBABILITY ATTACHED TO CORE PCE INFLATION:

	21Q4 TO 22Q4	22Q4 TO 23Q4
4.0 PERCENT OR MORE	75.05	11.62
3.5 TO 3.9 PERCENT	15.44	17.33
3.0 TO 3.4 PERCENT	4.49	22.54
2.5 TO 2.9 PERCENT	1.20	22.62
2.0 TO 2.4 PERCENT	0.30	17.26
1.5 TO 1.9 PERCENT	0.74	5.84
1.0 TO 1.4 PERCENT	1.85	1.78
0.5 TO 0.9 PERCENT	0.74	0.53
0.0 TO 0.4 PERCENT	0.19	0.32
LESS THAN 0.0 PERCENT	0.00	0.17

Source: Research Department, Federal Reserve Bank of Philadelphia.
Survey of Professional Forecasters, Third Quarter 2022.

TABLE EIGHT
LONG-TERM (5-YEAR AND 10-YEAR) INFLATION FORECASTS

ANNUAL AVERAGE OVER THE NEXT 5 YEARS: 2022-2026

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	2.00	MINIMUM	1.50
LOWER QUARTILE	3.30	LOWER QUARTILE	2.70
MEDIAN	3.50	MEDIAN	3.00
UPPER QUARTILE	3.89	UPPER QUARTILE	3.21
MAXIMUM	6.80	MAXIMUM	4.90
MEAN	3.62	MEAN	2.97
STD. DEVIATION	0.84	STD. DEVIATION	0.64
N	28	N	28
MISSING	7	MISSING	7

ANNUAL AVERAGE OVER THE FOLLOWING 5 YEARS: 2027-2031

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	1.27	MINIMUM	0.96
LOWER QUARTILE	1.96	LOWER QUARTILE	1.70
MEDIAN	2.12	MEDIAN	2.04
UPPER QUARTILE	2.50	UPPER QUARTILE	2.11
MAXIMUM	2.93	MAXIMUM	3.00
MEAN	2.12	MEAN	1.96
STD. DEVIATION	0.40	STD. DEVIATION	0.38
N	27	N	27
MISSING	8	MISSING	8

ANNUAL AVERAGE OVER THE NEXT 10 YEARS: 2022-2031

CPI INFLATION RATE		PCE INFLATION RATE	
MINIMUM	2.10	MINIMUM	1.80
LOWER QUARTILE	2.60	LOWER QUARTILE	2.20
MEDIAN	2.80	MEDIAN	2.45
UPPER QUARTILE	3.20	UPPER QUARTILE	2.60
MAXIMUM	4.50	MAXIMUM	3.60
MEAN	2.89	MEAN	2.48
STD. DEVIATION	0.49	STD. DEVIATION	0.42
N	27	N	27
MISSING	8	MISSING	8

Note: The summary statistics for each forecast horizon are computed on a sample of panelists that may differ from one horizon to the next. The usual identity linking the 10-year horizon to the two underlying five-year horizons may not hold in the results.

Source: Research Department, Federal Reserve Bank of Philadelphia. Survey of Professional Forecasters, Third Quarter 2022.

Summary of Economic Projections

In conjunction with the Federal Open Market Committee (FOMC) meeting held on September 20–21, 2022, meeting participants submitted their projections of the most likely outcomes for real gross domestic product (GDP) growth, the unemployment rate, and inflation for each year from 2022 to 2025 and over the longer run. Each participant’s projections were based on information available at the time of the meeting, together with her or his assessment of appropriate monetary policy—including a path for the federal funds rate and its longer-run value—and assumptions about other factors likely to affect economic outcomes. The longer-run projections represent each participant’s assessment of the value to which each variable would be expected to converge, over time, under appropriate monetary policy and in the absence of further shocks to the economy. “Appropriate monetary policy” is defined as the future path of policy that each participant deems most likely to foster outcomes for economic activity and inflation that best satisfy his or her individual interpretation of the statutory mandate to promote maximum employment and price stability.

Table 1. Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents, under their individual assumptions of projected appropriate monetary policy, September 2022

Percent

Variable	Median ¹					Central Tendency ²					Range ³				
	2022	2023	2024	2025	Longer run	2022	2023	2024	2025	Longer run	2022	2023	2024	2025	Longer run
Change in real GDP	0.2	1.2	1.7	1.8	1.8	0.1–0.3	0.5–1.5	1.4–2.0	1.6–2.0	1.7–2.0	0.0–0.5	-0.3–1.9	1.0–2.6	1.4–2.4	1.6–2.2
June projection	1.7	1.7	1.9		1.8	1.5–1.9	1.3–2.0	1.5–2.0		1.8–2.0	1.0–2.0	0.8–2.5	1.0–2.2		1.6–2.2
Unemployment rate	3.8	4.4	4.4	4.3	4.0	3.8–3.9	4.1–4.5	4.0–4.6	4.0–4.5	3.8–4.3	3.7–4.0	3.7–5.0	3.7–4.7	3.7–4.6	3.5–4.5
June projection	3.7	3.9	4.1		4.0	3.6–3.8	3.8–4.1	3.9–4.1		3.5–4.2	3.2–4.0	3.2–4.5	3.2–4.3		3.5–4.3
PCE inflation	5.4	2.8	2.3	2.0	2.0	5.3–5.7	2.6–3.5	2.1–2.6	2.0–2.2	2.0	5.0–6.2	2.4–4.1	2.0–3.0	2.0–2.5	2.0
June projection	5.2	2.6	2.2		2.0	5.0–5.3	2.4–3.0	2.0–2.5		2.0	4.8–6.2	2.3–4.0	2.0–3.0		2.0
Core PCE inflation ⁴	4.5	3.1	2.3	2.1		4.4–4.6	3.0–3.4	2.2–2.5	2.0–2.2		4.3–4.8	2.8–3.5	2.0–2.8	2.0–2.5	
June projection	4.3	2.7	2.3			4.2–4.5	2.5–3.2	2.1–2.5			4.1–5.0	2.5–3.5	2.0–2.8		
Memo: Projected appropriate policy path															
Federal funds rate	4.4	4.6	3.9	2.9	2.5	4.1–4.4	4.4–4.9	3.4–4.4	2.4–3.4	2.3–2.5	3.9–4.6	3.9–4.9	2.6–4.6	2.4–4.6	2.3–3.0
June projection	3.4	3.8	3.4		2.5	3.1–3.6	3.6–4.1	2.9–3.6		2.3–2.5	3.1–3.9	2.9–4.4	2.1–4.1		2.0–3.0

NOTE: Projections of change in real gross domestic product (GDP) and projections for both measures of inflation are percent changes from the fourth quarter of the previous year to the fourth quarter of the year indicated. PCE inflation and core PCE inflation are the percentage rates of change in, respectively, the price index for personal consumption expenditures (PCE) and the price index for PCE excluding food and energy. Projections for the unemployment rate are for the average civilian unemployment rate in the fourth quarter of the year indicated. Each participant's projections are based on his or her assessment of appropriate monetary policy. Longer-run projections represent each participant's assessment of the rate to which each variable would be expected to converge under appropriate monetary policy and in the absence of further shocks to the economy. The projections for the federal funds rate are the value of the midpoint of the projected appropriate target range for the federal funds rate or the projected appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. The June projections were made in conjunction with the meeting of the Federal Open Market Committee on June 14–15, 2022. One participant did not submit longer-run projections for the change in real GDP, the unemployment rate, or the federal funds rate in conjunction with the June 14–15, 2022, meeting, and one participant did not submit such projections in conjunction with the September 20–21, 2022, meeting.

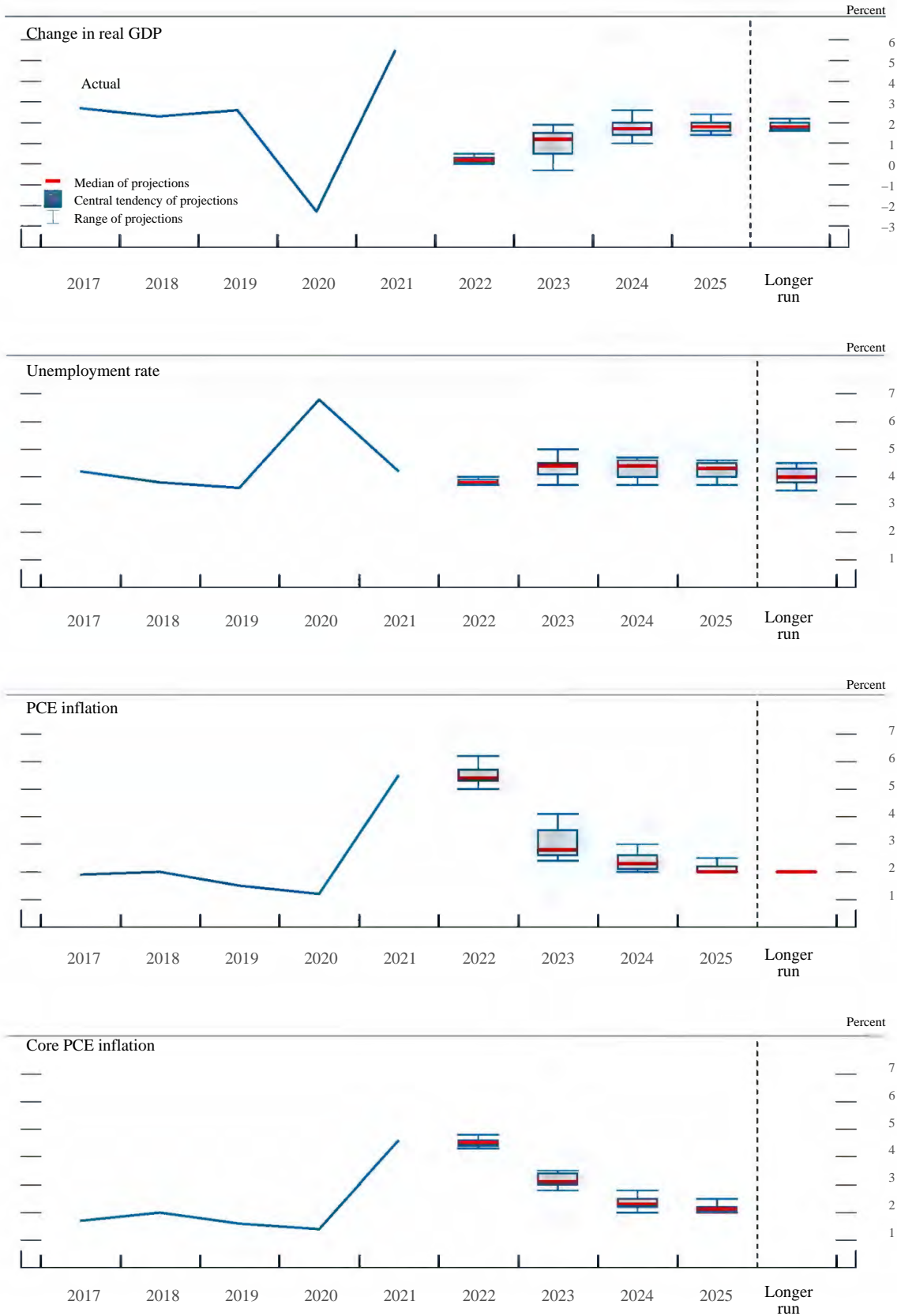
1. For each period, the median is the middle projection when the projections are arranged from lowest to highest. When the number of projections is even, the median is the average of the two middle projections.

2. The central tendency excludes the three highest and three lowest projections for each variable in each year.

3. The range for a variable in a given year includes all participants' projections, from lowest to highest, for that variable in that year.

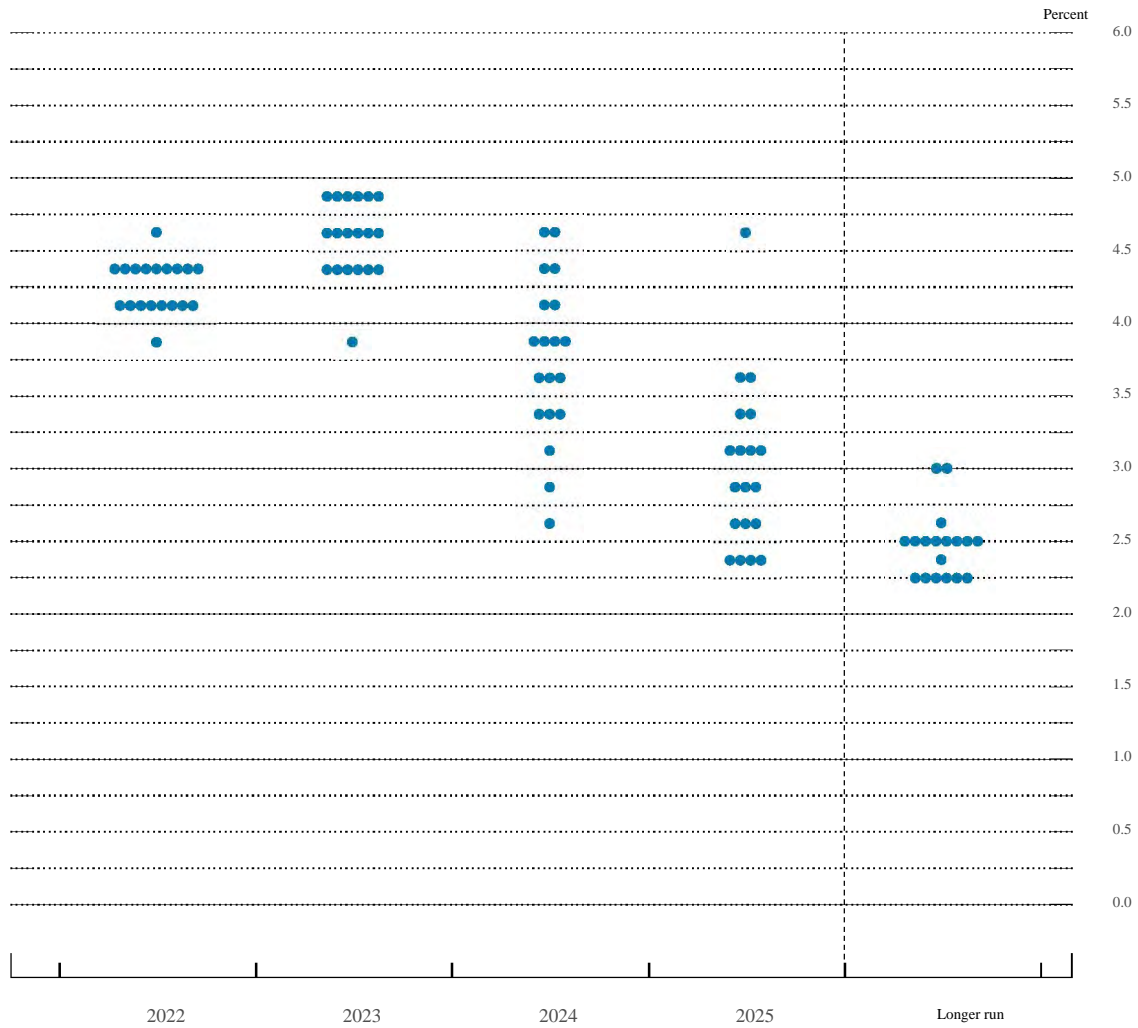
4. Longer-run projections for core PCE inflation are not collected.

Figure 1. Medians, central tendencies, and ranges of economic projections, 2022–25 and over the longer run



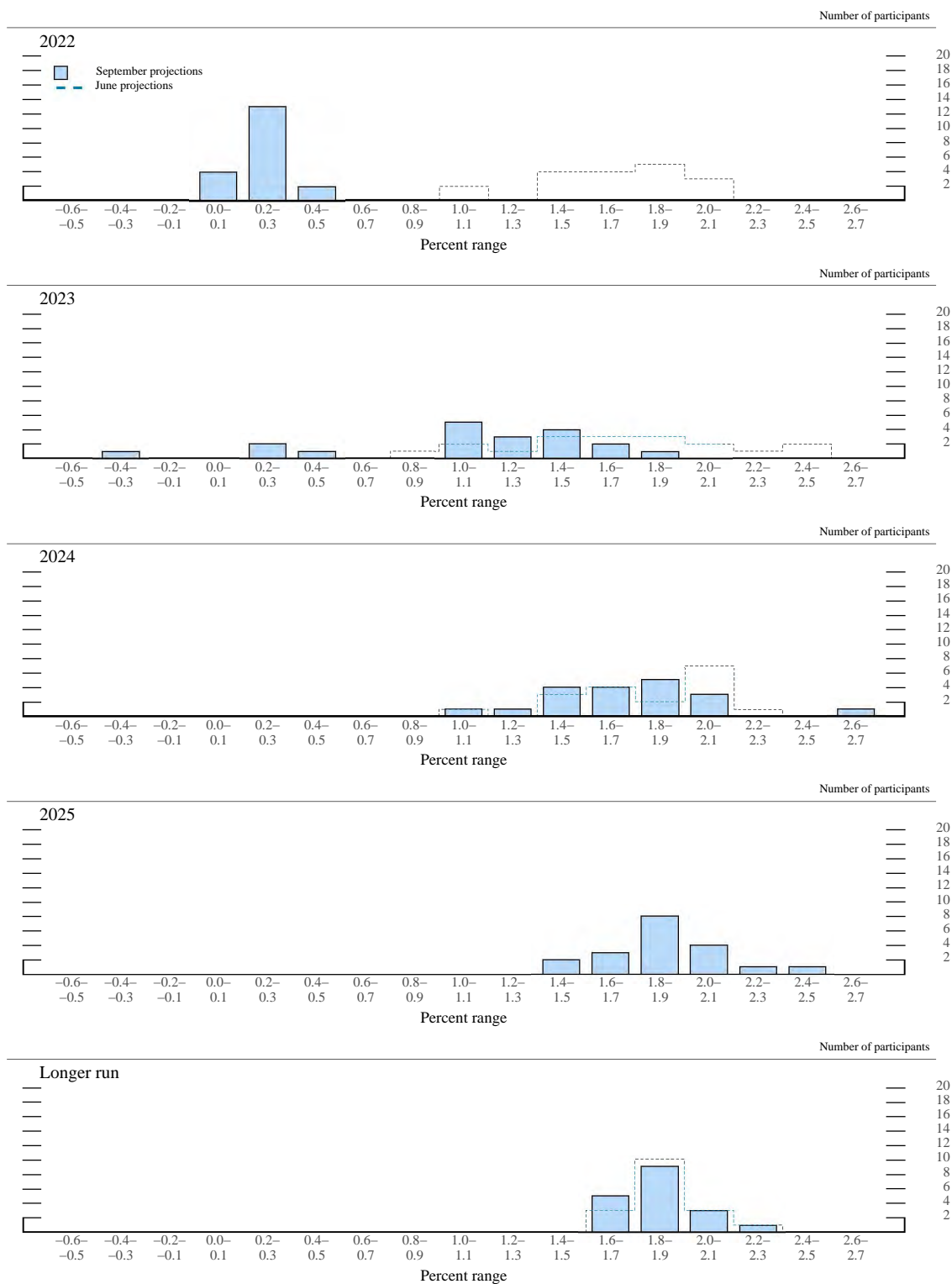
NOTE: Definitions of variables and other explanations are in the notes to table 1. The data for the actual values of the variables are annual.

Figure 2. FOMC participants' assessments of appropriate monetary policy: Midpoint of target range or target level for the federal funds rate



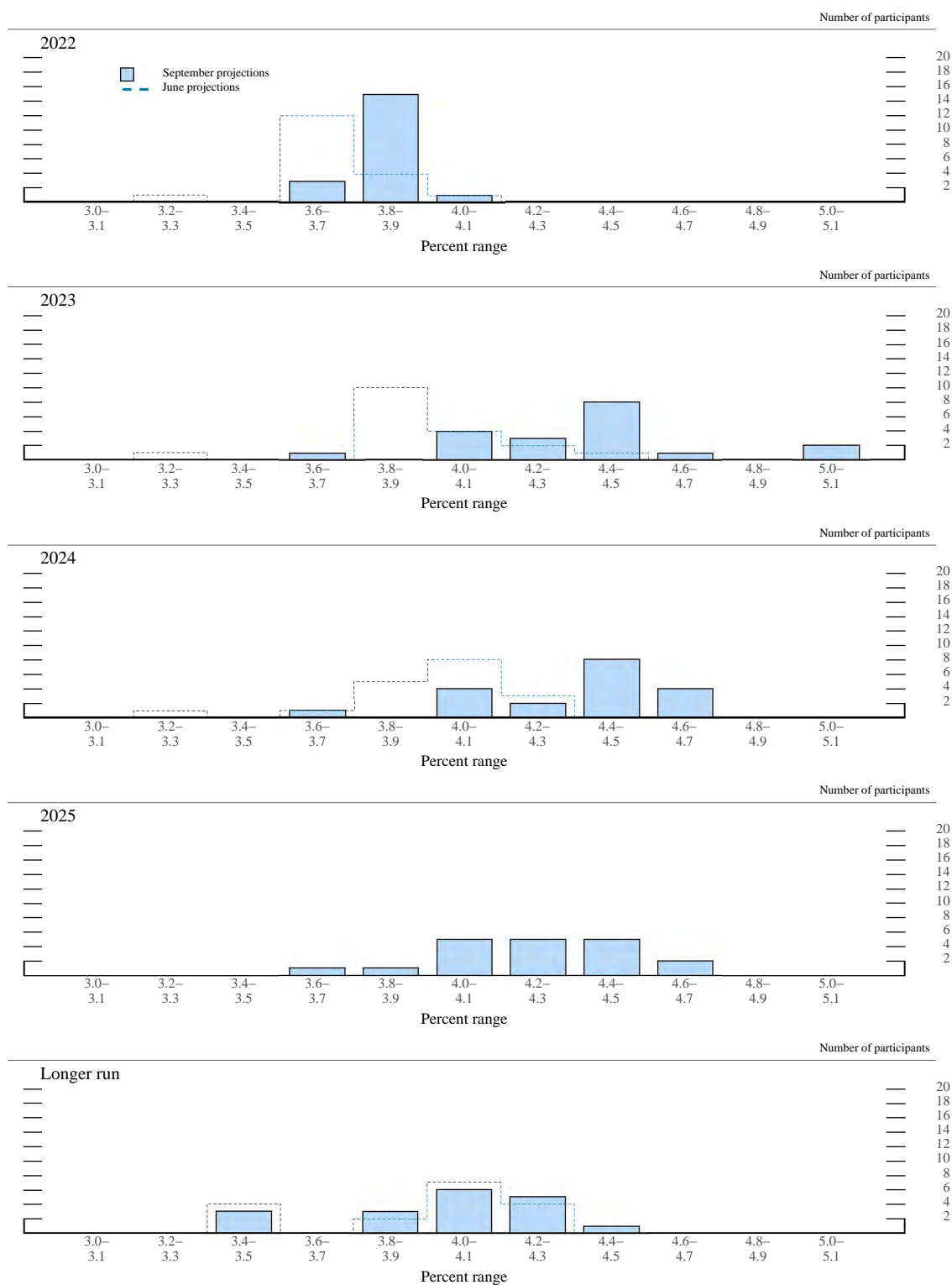
NOTE: Each shaded circle indicates the value (rounded to the nearest 1/8 percentage point) of an individual participant's judgment of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate at the end of the specified calendar year or over the longer run. One participant did not submit longer-run projections for the federal funds rate.

Figure 3.A. Distribution of participants' projections for the change in real GDP, 2022–25 and over the longer run



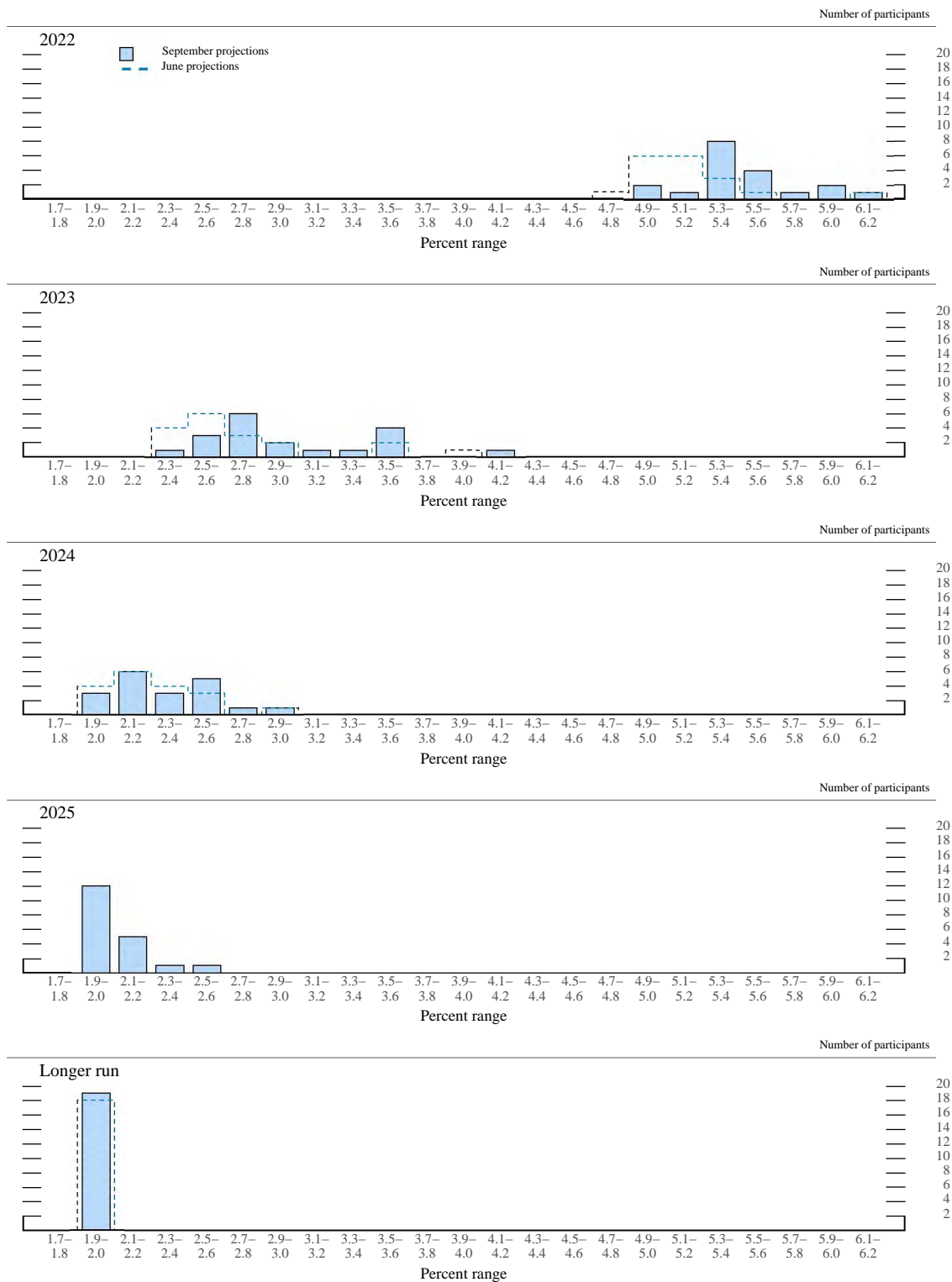
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.B. Distribution of participants' projections for the unemployment rate, 2022–25 and over the longer run



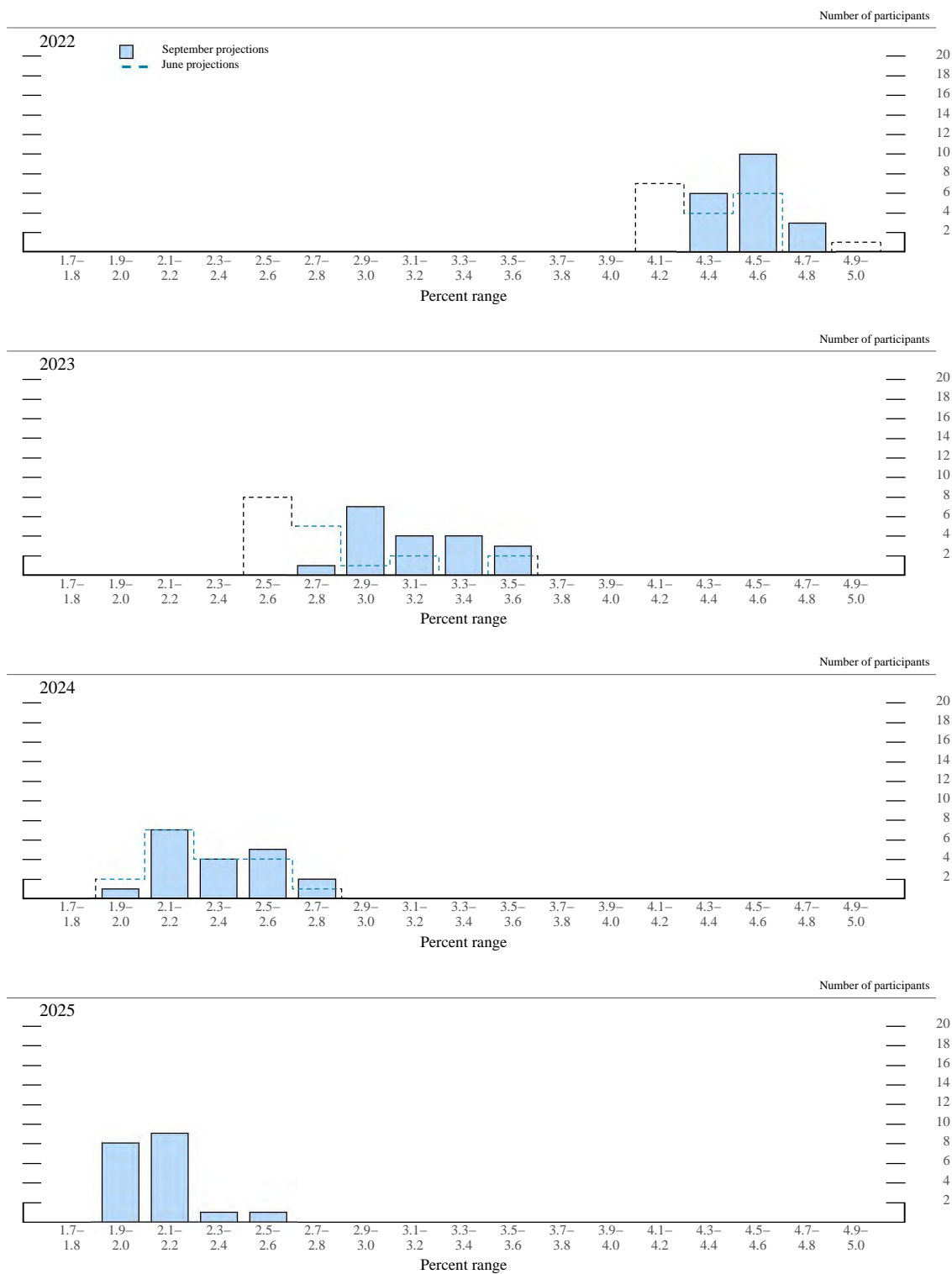
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.C. Distribution of participants' projections for PCE inflation, 2022–25 and over the longer run



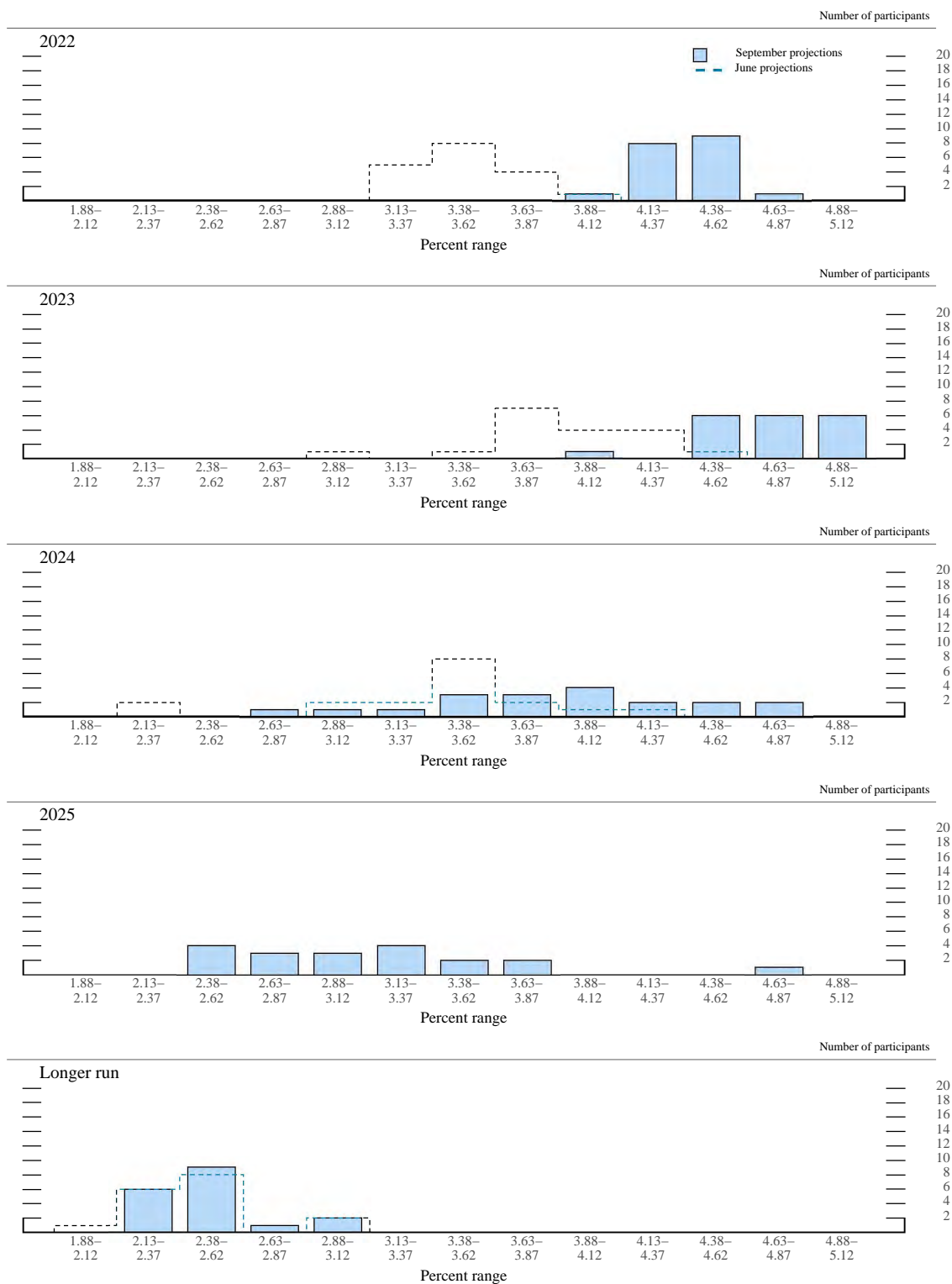
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 3.D. Distribution of participants' projections for core PCE inflation, 2022–25



NOTE: Definitions of variables and other explanations are in the notes to table 1.

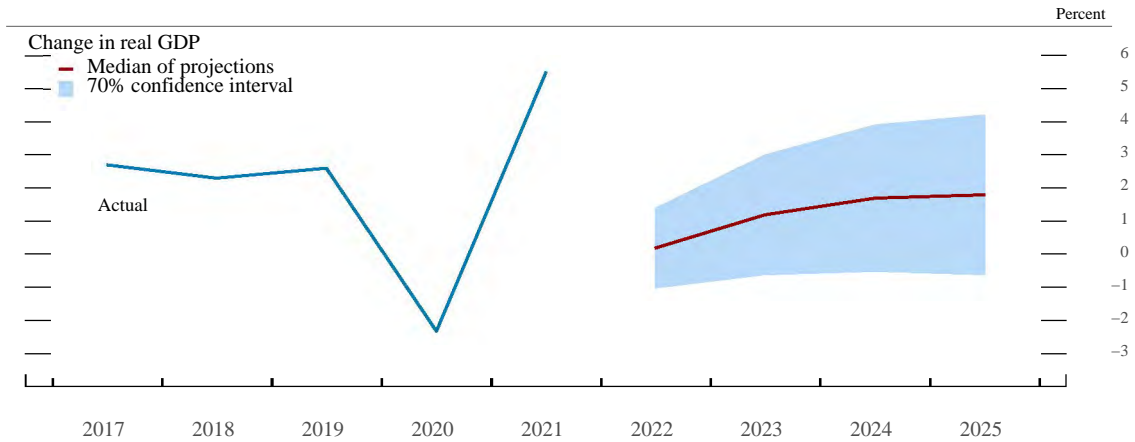
Figure 3.E. Distribution of participants' judgments of the midpoint of the appropriate target range for the federal funds rate or the appropriate target level for the federal funds rate, 2022–25 and over the longer run



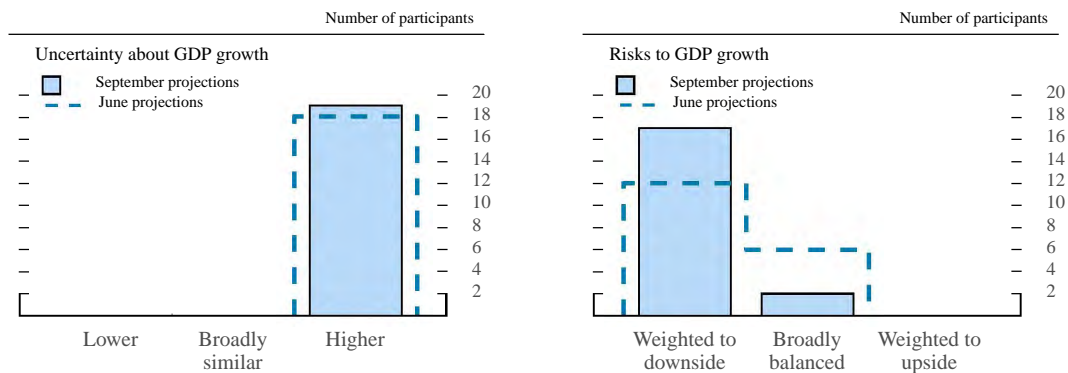
NOTE: Definitions of variables and other explanations are in the notes to table 1.

Figure 4.A. Uncertainty and risks in projections of GDP growth

Median projection and confidence interval based on historical forecast errors



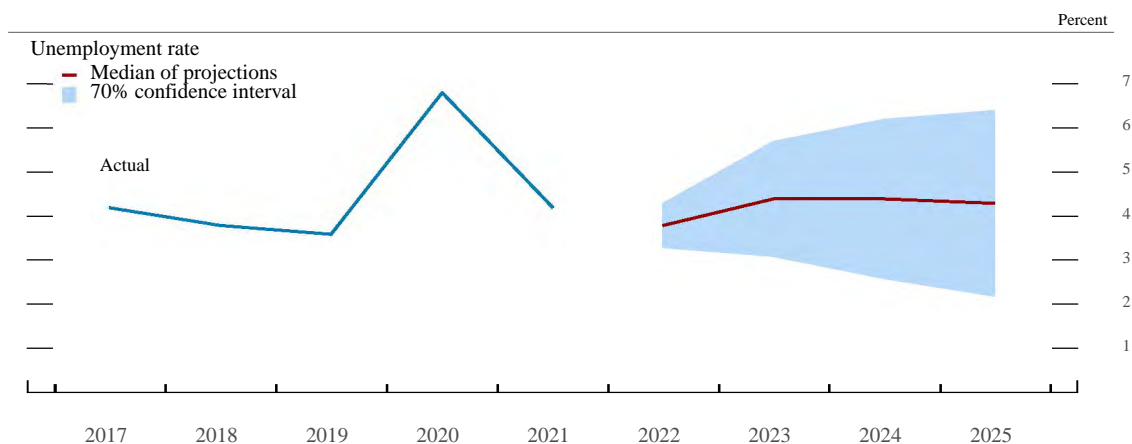
FOMC participants' assessments of uncertainty and risks around their economic projections



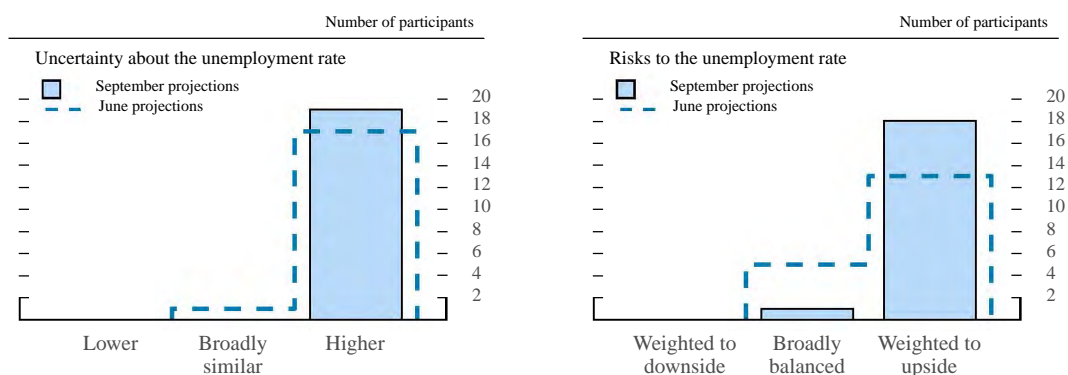
NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in real gross domestic product (GDP) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.B. Uncertainty and risks in projections of the unemployment rate

Median projection and confidence interval based on historical forecast errors



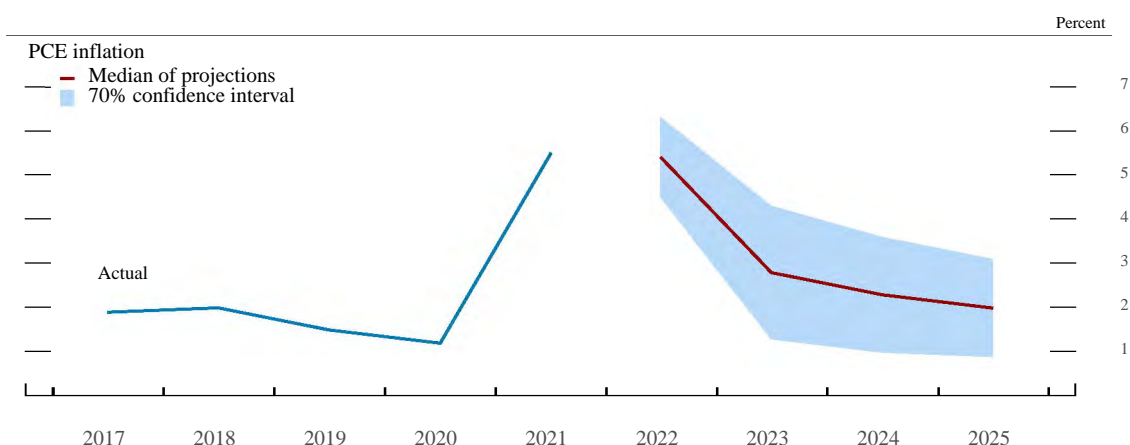
FOMC participants' assessments of uncertainty and risks around their economic projections



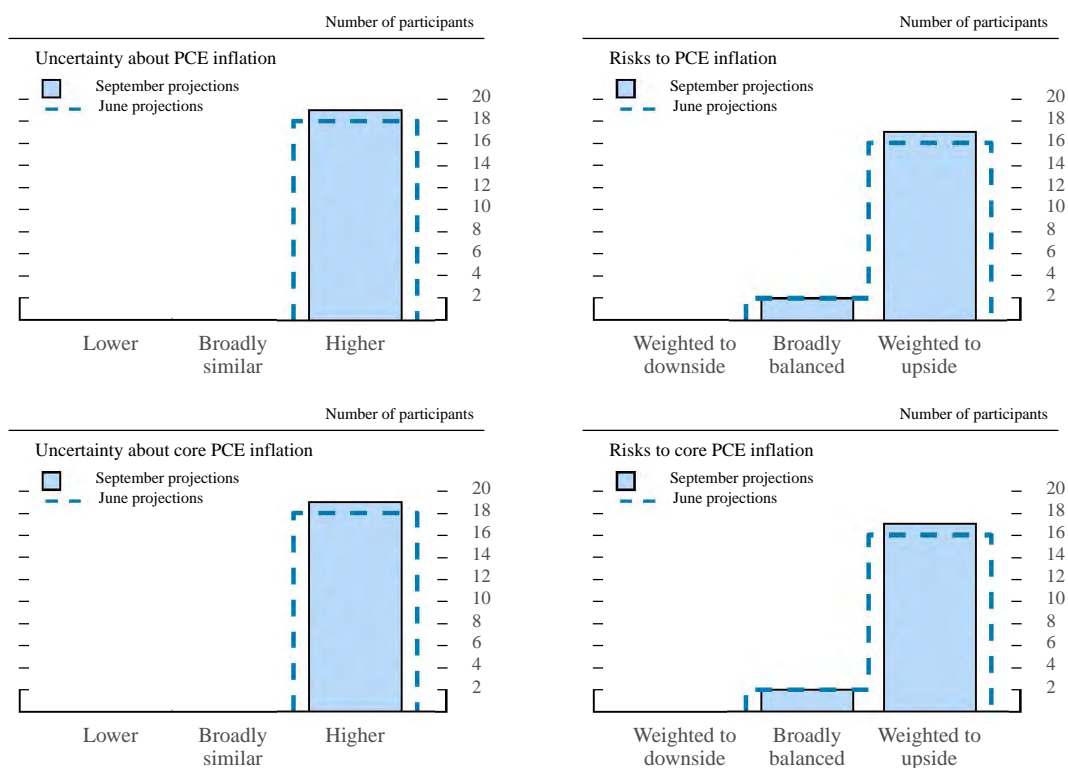
NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the average civilian unemployment rate in the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as "broadly similar" to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as "broadly balanced" would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box "Forecast Uncertainty."

Figure 4.C. Uncertainty and risks in projections of PCE inflation

Median projection and confidence interval based on historical forecast errors

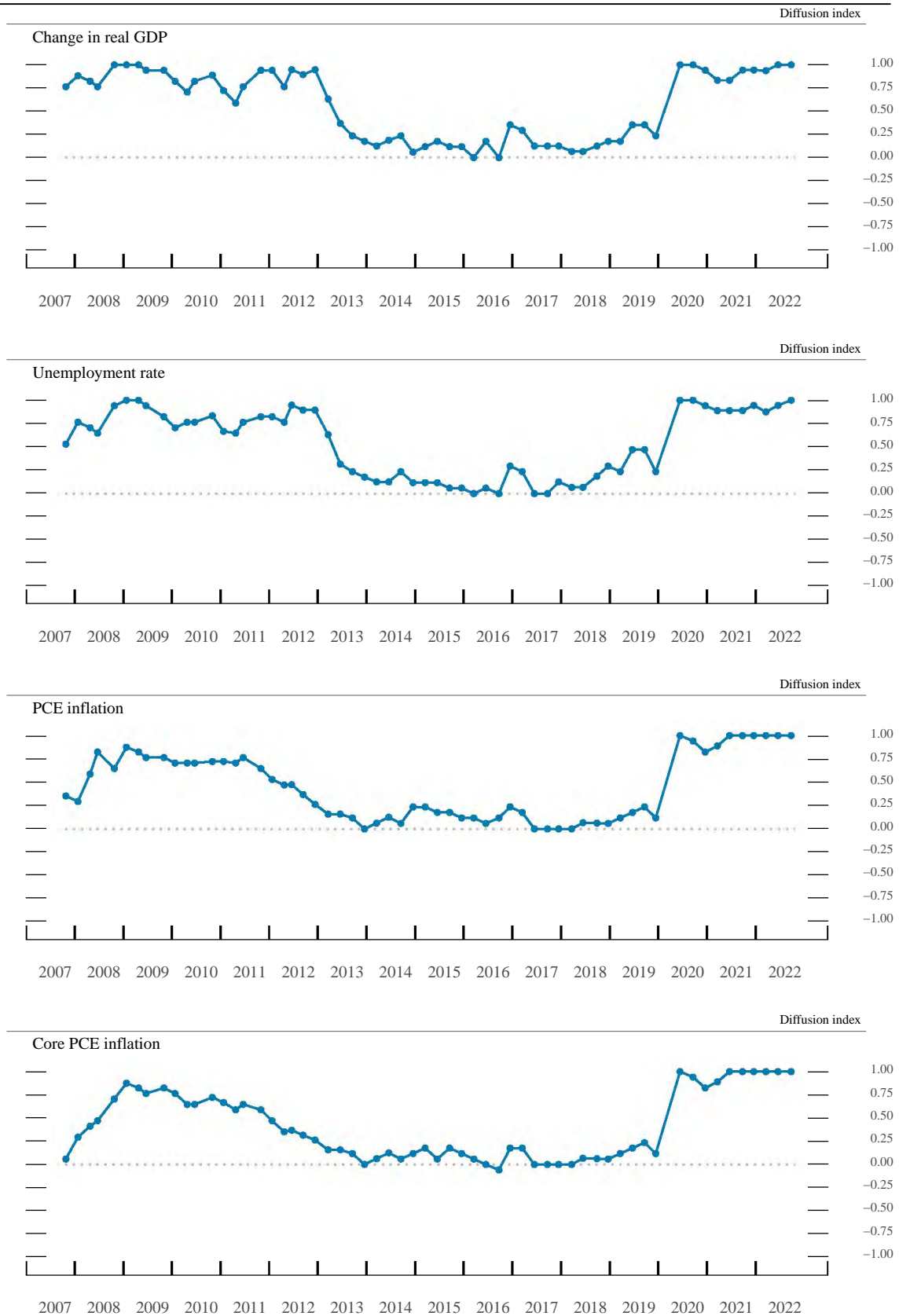


FOMC participants' assessments of uncertainty and risks around their economic projections



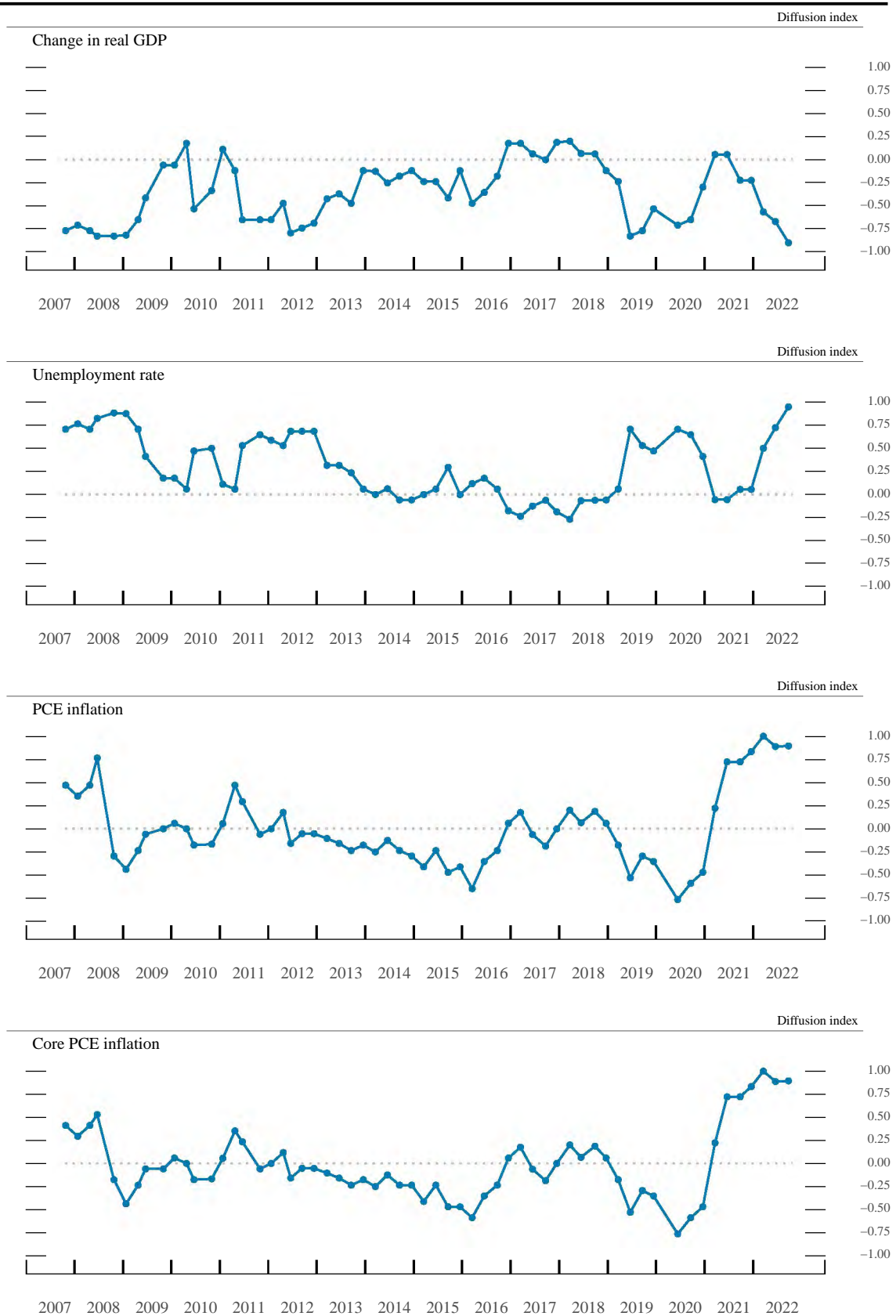
NOTE: The blue and red lines in the top panel show actual values and median projected values, respectively, of the percent change in the price index for personal consumption expenditures (PCE) from the fourth quarter of the previous year to the fourth quarter of the year indicated. The confidence interval around the median projected values is assumed to be symmetric and is based on root mean squared errors of various private and government forecasts made over the previous 20 years; more information about these data is available in table 2. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants' current assessments of the uncertainty and risks around their projections; these current assessments are summarized in the lower panels. Generally speaking, participants who judge the uncertainty about their projections as “broadly similar” to the average levels of the past 20 years would view the width of the confidence interval shown in the historical fan chart as largely consistent with their assessments of the uncertainty about their projections. Likewise, participants who judge the risks to their projections as “broadly balanced” would view the confidence interval around their projections as approximately symmetric. For definitions of uncertainty and risks in economic projections, see the box “Forecast Uncertainty.”

Figure 4.D. Diffusion indexes of participants' uncertainty assessments



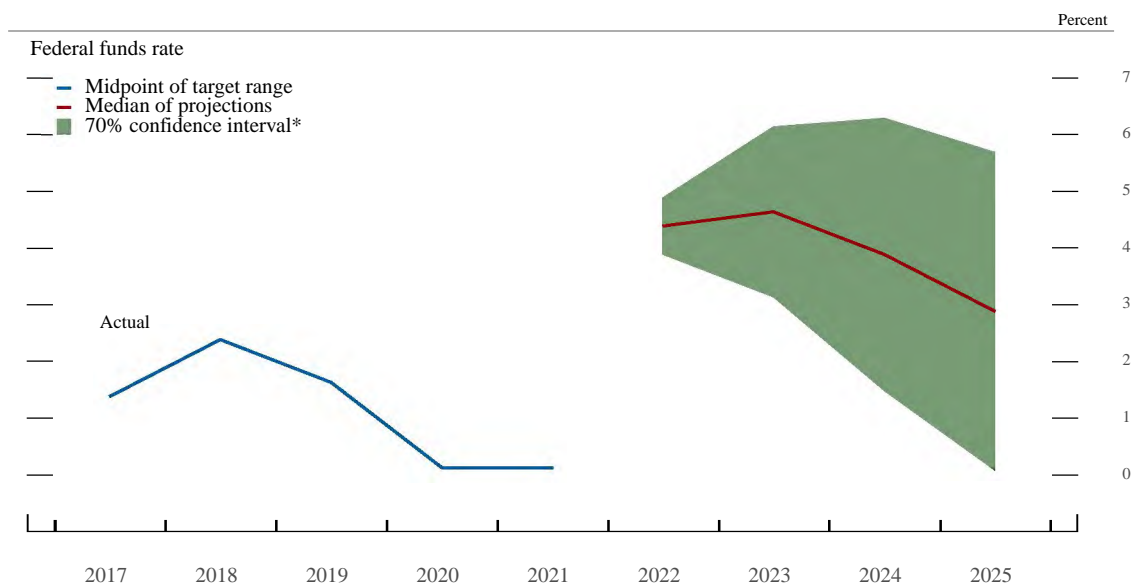
NOTE: For each SEP, participants provided responses to the question “Please indicate your judgment of the uncertainty attached to your projections relative to the levels of uncertainty over the past 20 years.” Each point in the diffusion indexes represents the number of participants who responded “Higher” minus the number who responded “Lower,” divided by the total number of participants. Figure excludes March 2020 when no projections were submitted.

Figure 4.E. Diffusion indexes of participants' risk weightings



NOTE: For each SEP, participants provided responses to the question “Please indicate your judgment of the risk weighting around your projections.” Each point in the diffusion indexes represents the number of participants who responded “Weighted to the Upside” minus the number who responded “Weighted to the Downside,” divided by the total number of participants. Figure excludes March 2020 when no projections were submitted.

Figure 5. Uncertainty and risks in projections of the federal funds rate



NOTE: The blue and red lines are based on actual values and median projected values, respectively, of the Committee’s target for the federal funds rate at the end of the year indicated. The actual values are the midpoint of the target range; the median projected values are based on either the midpoint of the target range or the target level. The confidence interval around the median projected values is based on root mean squared errors of various private and government forecasts made over the previous 20 years. The confidence interval is not strictly consistent with the projections for the federal funds rate, primarily because these projections are not forecasts of the likeliest outcomes for the federal funds rate, but rather projections of participants’ individual assessments of appropriate monetary policy. Still, historical forecast errors provide a broad sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that may be appropriate to offset the effects of shocks to the economy.

The confidence interval is assumed to be symmetric except when it is truncated at zero - the bottom of the lowest target range for the federal funds rate that has been adopted in the past by the Committee. This truncation would not be intended to indicate the likelihood of the use of negative interest rates to provide additional monetary policy accommodation if doing so was judged appropriate. In such situations, the Committee could also employ other tools, including forward guidance and large-scale asset purchases, to provide additional accommodation. Because current conditions may differ from those that prevailed, on average, over the previous 20 years, the width and shape of the confidence interval estimated on the basis of the historical forecast errors may not reflect FOMC participants’ current assessments of the uncertainty and risks around their projections.

* The confidence interval is derived from forecasts of the average level of short-term interest rates in the fourth quarter of the year indicated; more information about these data is available in table 2. The shaded area encompasses less than a 70 percent confidence interval if the confidence interval has been truncated at zero.

**Table 2. Average Historical Projection Error Ranges
(Percentage points)**

Variable	2022	2023	2024	2025
Change in real GDP ¹	±1.2	±1.8	±2.2	±2.4
Unemployment rate ¹	±0.5	±1.3	±1.8	±2.1
Total consumer prices ²	±0.9	±1.5	±1.3	±1.1
Short-term interest rates ³	±0.5	±1.5	±2.4	±2.8

NOTE: Error ranges shown are measured as plus or minus the root mean squared error of projections for 2002 through 2021 that were released in the fall by various private and government forecasters. As described in the box “Forecast Uncertainty,” under certain assumptions, there is about a 70 percent probability that actual outcomes for real GDP, unemployment, consumer prices, and the federal funds rate will be in ranges implied by the average size of projection errors made in the past. For more information, see David Reifschneider and Peter Tulip (2017), “Gauging the Uncertainty of the Economic Outlook Using Historical Forecasting Errors: The Federal Reserve’s Approach,” Finance and Economics Discussion Series 2017-020 (Washington: Board of Governors of the Federal Reserve System, February), <https://dx.doi.org/10.17016/FEDS.2017.020>.

1. Definitions of variables are in the general note to table 1.

2. Measure is the overall consumer price index, the price measure that has been most widely used in government and private economic forecasts. Projections are percent changes on a fourth quarter to fourth quarter basis.

3. For Federal Reserve staff forecasts, measure is the federal funds rate. For other forecasts, measure is the rate on 3-month Treasury bills. Projection errors are calculated using average levels, in percent, in the fourth quarter.

Forecast Uncertainty

The economic projections provided by the members of the Board of Governors and the presidents of the Federal Reserve Banks inform discussions of monetary policy among policymakers and can aid public understanding of the basis for policy actions. Considerable uncertainty attends these projections, however. The economic and statistical models and relationships used to help produce economic forecasts are necessarily imperfect descriptions of the real world, and the future path of the economy can be affected by myriad unforeseen developments and events. Thus, in setting the stance of monetary policy, participants consider not only what appears to be the most likely economic outcome as embodied in their projections, but also the range of alternative possibilities, the likelihood of their occurring, and the potential costs to the economy should they occur.

Table 2 summarizes the average historical accuracy of a range of forecasts, including those reported in past *Monetary Policy Reports* and those prepared by the Federal Reserve Board's staff in advance of meetings of the Federal Open Market Committee (FOMC). The projection error ranges shown in the table illustrate the considerable uncertainty associated with economic forecasts. For example, suppose a participant projects that real gross domestic product (GDP) and total consumer prices will rise steadily at annual rates of, respectively, 3 percent and 2 percent. If the uncertainty attending those projections is similar to that experienced in the past and the risks around the projections are broadly balanced, the numbers reported in table 2 would imply a probability of about 70 percent that actual GDP would expand within a range of 1.8 to 4.2 percent in the current year, 1.2 to 4.8 percent in the second year, 0.8 to 5.2 percent in the third year, and 0.6 to 5.4 percent in the fourth year. The corresponding 70 percent confidence intervals for overall inflation would be 1.1 to 2.9 percent in the current year, 0.5 to 3.5 percent in the second year, 0.7 to 3.3 percent in the third year, and 0.9 to 3.1 percent in the fourth year. Figures 4.A through 4.C illustrate these confidence bounds in "fan charts" that are symmetric and centered on the medians of FOMC participants' projections for GDP growth, the unemployment rate, and inflation. However, in some instances, the risks around the projections may not be symmetric. In particular, the unemployment rate cannot be negative; furthermore, the risks around a particular projection might be tilted to either the upside or the downside, in which case the corresponding fan chart would be asymmetrically positioned around the median projection.

Because current conditions may differ from those that prevailed, on average, over history, participants provide judgments as to whether the uncertainty attached to their projections of each economic variable is greater than, smaller than, or broadly similar to typical levels of forecast uncertainty seen in the past 20 years, as presented in table 2 and reflected in the widths of the confidence intervals shown in the top panels of figures 4.A through 4.C. Participants' cur-

rent assessments of the uncertainty surrounding their projections are summarized in the bottom-left panels of those figures. Participants also provide judgments as to whether the risks to their projections are weighted to the upside, are weighted to the downside, or are broadly balanced. That is, while the symmetric historical fan charts shown in the top panels of figures 4.A through 4.C imply that the risks to participants' projections are balanced, participants may judge that there is a greater risk that a given variable will be above rather than below their projections. These judgments are summarized in the lower-right panels of figures 4.A through 4.C.

As with real activity and inflation, the outlook for the future path of the federal funds rate is subject to considerable uncertainty. This uncertainty arises primarily because each participant's assessment of the appropriate stance of monetary policy depends importantly on the evolution of real activity and inflation over time. If economic conditions evolve in an unexpected manner, then assessments of the appropriate setting of the federal funds rate would change from that point forward. The final line in table 2 shows the error ranges for forecasts of short-term interest rates. They suggest that the historical confidence intervals associated with projections of the federal funds rate are quite wide. It should be noted, however, that these confidence intervals are not strictly consistent with the projections for the federal funds rate, as these projections are not forecasts of the most likely quarterly outcomes but rather are projections of participants' individual assessments of appropriate monetary policy and are on an end-of-year basis. However, the forecast errors should provide a sense of the uncertainty around the future path of the federal funds rate generated by the uncertainty about the macroeconomic variables as well as additional adjustments to monetary policy that would be appropriate to offset the effects of shocks to the economy.

If at some point in the future the confidence interval around the federal funds rate were to extend below zero, it would be truncated at zero for purposes of the fan chart shown in figure 5; zero is the bottom of the lowest target range for the federal funds rate that has been adopted by the Committee in the past. This approach to the construction of the federal funds rate fan chart would be merely a convention; it would not have any implications for possible future policy decisions regarding the use of negative interest rates to provide additional monetary policy accommodation if doing so were appropriate. In such situations, the Committee could also employ other tools, including forward guidance and asset purchases, to provide additional accommodation.

While figures 4.A through 4.C provide information on the uncertainty around the economic projections, figure 1 provides information on the range of views across FOMC participants. A comparison of figure 1 with figures 4.A through 4.C shows that the dispersion of the projections across participants is much smaller than the average forecast errors over the past 20 years.

**A RANDOM WALK
DOWN WALL STREET**

The Time-Tested Strategy for
Successful Investing

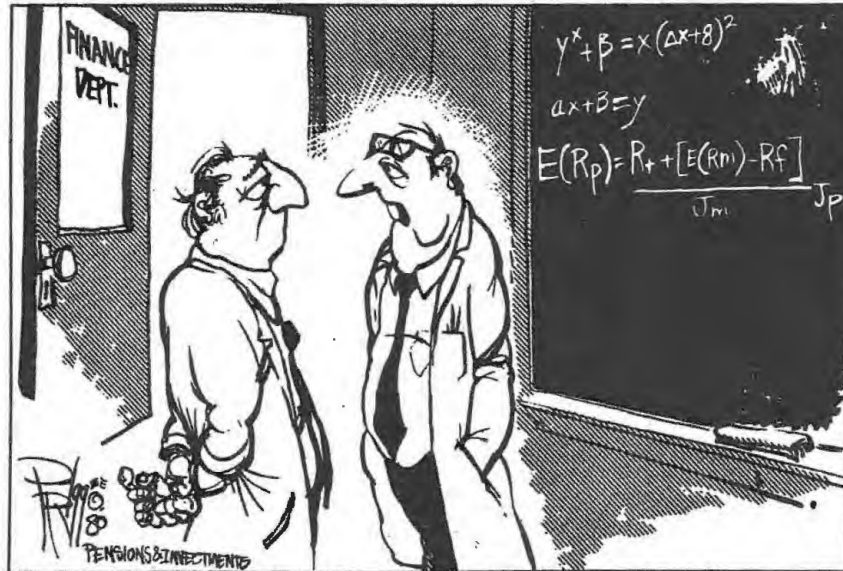
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Second, as Professor Richard Roll of UCLA has argued, we must keep in mind that it is very difficult (indeed probably impossible) to measure beta with any degree of precision. The S&P 500 Index is not "the market." The Total Stock Market contains many thousands of additional stocks in the United States and thousands more in foreign countries. Moreover, the total market includes bonds, real estate, commodities, and assets of all sorts, including one of the most important assets any of us has—the human capital built up by education, work, and life experiences. Depending on exactly how you measure the "market," you can obtain very different beta values. One's conclusions about the capital-asset pricing model and beta as a measure of risk depend very much on how you measure beta. Two economists from the University of Minnesota, Ravi Jagannathan and Zhenyu Wang, find that when the market index (against which we measure beta) is redefined to include human capital and when betas are allowed to vary with cyclical

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Cost of Capital

Applications and Examples

Fifth Edition

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Criticism of CAPM and Beta versus Other Risk Measures¹

Introduction
CAPM Assumptions and Beta as a Risk Measure
Problems with CAPM Assumptions
Testing Asset Pricing Models
Testing Risk Factors Priced by the Market
Risk Measures beyond Beta
Total Risk
Adjusted Beta for Company Size and Company-specific Risk
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Value at Risk
Scenario-based Approach
Duration
Yield Spreads
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Summary
Appendix 13A: Example of Computing Downside Beta Estimates

INTRODUCTION

Even though the capital asset pricing model (CAPM) is the most widely used method of estimating the cost of equity capital, the accuracy and predictive power of beta as the sole measure of risk have increasingly come under attack. As a result, alternative measures of risk have been proposed and tested. That is, despite its wide adoption, academics and practitioners alike have questioned the usefulness of CAPM in accurately estimating the cost of equity capital and the use of beta as a reliable measure of risk.

While the CAPM explains how investors should act and price risk, empirical research has shown that investors often act differently than predicted by CAPM. This chapter explores these criticisms, alternative measures of risk, and the other methods used to estimate the cost of equity capital.

¹The authors want to thank Niel Patel of Duff & Phelps LLC for preparing material for this chapter.

following the discrete projection period. Many analysts assume capital expenditures to equal depreciation when estimating the terminal value, which results in overestimation of expected net cash flow and overvaluation, where real growth in excess of inflation is expected.⁸

USING AN UNATTAINABLE GROWTH RATE IN CALCULATING THE TERMINAL VALUE

The growth rate assumed in calculating the terminal value is a compound growth rate *in perpetuity*, which is a very long time. At a growth rate of 20% compounded annually, the company's revenues would soon exceed the gross domestic product (GDP) of the United States and eventually that of the world. Long-term growth rates exceeding the real growth in GDP plus inflation are generally not sustainable. Most analysts use more conservative growth rates in calculating the terminal value. Generally, the long-term growth rate only applies to the existing enterprise or core business net cash flows, consistent with the net cash flow projections in the discounted cash flow method (see discussion in Chapter 34).

Using Market Multiples without Adjusting for Differences in Growth

Some practitioners use a market multiple, such as the industry average multiple of earnings before interest, income taxes, depreciation, and amortization (EBITDA) to estimate a terminal value.

As we discussed in Chapter 4, the authors believe that use of a market-derived multiple for calculation of the terminal value is not appropriate, as it mixes elements of the market and income approaches and does not represent a true income approach.

In addition to mixing valuation approaches, it is not clear that a current average industry multiple reflects a long-term estimate of growth consistent with the sustainable long-term growth rate in net cash flows of the existing enterprise or core business. If the growth rate embedded in the multiple is inconsistent, utilizing this method will either overvalue or undervalue the business.

As an example, current multiples in an industry reflect the consensus growth estimates of the market, which are built upon analysts' estimates of earnings. Analysts include both the earnings of the company expected from the existing business and the earnings expected from reinvestment of retained net cash flows and reinvestment of those retained net cash flows in investments that are unspecified. Typically, the net cash flow estimates used in the DCF method valuation are based on the core business

⁸For a good discussion of this common error, see Gilbert E. Matthews, "Cap X = Depreciation Is Unrealistic Assumption for Most Terminal Values," *Shannon Pratt's Business Valuation Update* (March 2002): 1-3. See also Gilbert E. Matthews, "Errors and Omissions in DCF Calculations: A Critique of Delaware's Dr. Pepper Appraisal," *Business Valuation Update* (October 2007): 1-5. In this article, the author states: "In a perpetuity model with a 3% growth rate and assuming a 10-year average life for fixed assets, capital expenditures would exceed depreciation by 15.5% using straight-line depreciation and 11.6% using double-declining method."

rounding). We will call this the “WWII Interest Rate Bias.” We use 1.06% as the adjustment below to indicate the extent of the possible bias created by this period in the indicated ERP estimates we display.

We are not questioning the accuracy of the realized risk premiums reported using the former Morningstar SBBI[®] data. Rather, we believe that if one were using the realized return data as a basis for forecasting ERP, demonstrated biases should be removed where possible. Removing the data from 1942–1951 from the sample allows the valuation analyst to make the data more representative of what might be expected in future years. We believe that valuation analysts should at least consider the WWII Interest Rate Bias when estimating ERP using realized risk premium data.^{3.94}

“Market” rates subject to control are really not market rates reflective of real interest rates plus the market’s expectations of inflation. This was true during the 1942–1951 period and is true as we are writing this book due to the actions of the Fed through quantitative easing measures.

Comparing Investor Expectations to Realized Risk Premiums

Much has been written comparing the realized risk premiums as reported in sources – such as past editions of the *Ibbotson[®] SBBI[®] Valuation Yearbooks* – and the ERP that must have been expected by investors, given the underlying economics of publicly traded companies (e.g., expected growth in earnings or expected growth in dividends) and the underlying indicators for the economy (e.g., expected growth in gross domestic product or GDP). Such studies conclude that investors could not have expected as large an ERP as the risk premiums actually realized historically.^{3.95}

Ibbotson and Chen report on a study in which they estimated forward-looking long-term sustainable equity returns and expected ERPs since 1926. They first analyzed realized equity returns by decomposing returns into factors including inflation, earnings, dividends, price-to-earnings ratios, dividend payout ratios, book values, returns on equity, and GDP per capita (the fundamental building blocks of equity returns being “supplied” by companies).

They forecasted the ERP through supply-side models built from historical data by removing the price-to-earnings ratio inflation (a top-down approach for estimating the market’s re-pricing due to the underlying economic changes in aggregate). Those authors determined that the long-term ERP that could have been expected, given the underlying economics, was less than the realized premium.^{3.96}

^{3.94} Some disagree with our conclusion. See for example, Kevin Piccolo, “The Dangers of Normalization: An Interest-Rate Perspective,” *The Value Examiner* (March/April 2012): 23–32.

^{3.95} Several of those studies are summarized in Pratt and Grabowski, op.cit., Chapter 8A, “Deriving ERP Estimates”: 147–153.

^{3.96} Roger G. Ibbotson and Peng Chen, “Long-Run Stock Market Returns: Participating in the Real Economy” *Financial Analysts Journal* (January February 2003): 88–98; see also Charles P. Jones and Jack W. Wilson, “Using the Supply Side Approach to Understand and Estimate Stock Returns,” Working paper, June 6, 2006.

We updated the “supply side” ERP over the 1926–2018 for the 2019 data year in the Cost of Capital Navigator. The supply-side ERP estimate is 4.19% (on a geometric basis), and 6.14% (on an arithmetic basis), as shown in Exhibit 3.20. In comparison, the realized (historical) 1926–2018 ERP was 4.82% (on a geometric basis), and 6.91% (on an arithmetic basis).^{3.97}

We are using the methodology consistent with that used in the discontinued *SBI® Valuation Yearbook*. We examined the compound annual growth in price-to-earnings ratios from 1926 to the current year where the current year's price-to-earnings ratio is calculated using a three-year average of earnings. Using the three-year average allows the adjustment to smooth out the volatility of extraordinary events and allows earnings to better reflect a normalized trend.

In order to keep the measurement of the three-year average earnings consistent with the price of the S&P 500 Index at the time that the supply side adjustment is calculated (e.g., the price of the S&P 500 at December 31, 2018, for the supply-side long-term ERP estimate as of the end of 2018), we used the three-year average based on the prior-year's earnings, the current year's earnings estimated at year-end, and the forecast earnings in the following year.^{3.98}

For example, the adjustment is based on the S&P 500 Index price at December 31, 2018, divided by the average of the earnings for the S&P 500 companies in 2017, which are known, 2018, which are estimated, and 2019, which are forecasted.^{3.99} Obviously since the actual 2018 earnings will not be known until 2019, and the forecast 2019 earnings will not be known until 2020, the adjustment as of the end of 2018 will change in the Cost of Capital Navigator (and in future updates to this chapter) as of the end of 2019 and 2020.^{3.100} We then adjusted the realized risk premiums from 1926 to the current year by removing this observed growth in price-to-earnings ratios, which has occurred primarily in the past 30 years.

^{3.97} The long-term 1926–present “historical” and “supply-side” ERPs were published on the “back page” (i.e., “Key Variables in Estimating the Cost of Capital”) of the Ibbotson Associates/Morningstar *SBI® Valuation Yearbook* from 1999–2013 and 2004–2013, respectively. The long-term 1926–present historical and supply-side ERPs, calculated using the same data and methodology as were used in the former *SBI® Valuation Yearbook*, were found in Appendix 3, “CRSP Deciles Size Premia Study: Key Variables” in the 2014–2018 editions of the *Valuation Handbook – U.S. Guide to Cost of Capital*. This data is now only available online through a subscription to the Duff & Phelps' Cost of Capital Navigator. For more information, visit: dpcostofcapital.com.

^{3.98} The choice in using a three-year average is an exercise in judgement. See Magdalena Mroczek, “Unraveling the Supply-Side Equity Risk Premium,” *The Value Examiner* (January/February 2012): 19–24.

^{3.99} The estimated top-down earnings estimate for the S&P 500 for the calendar year (in the analysis herein, 2019) following the most recently completed calendar year (in the analyses herein, 2018) used in the supply side ERP estimate is provided by Standard & Poor's at <http://us.spindices.com/indices/equity/sp-500>.

^{3.100} The geometric average supply-side ERP of 4.19% (see Exhibit 3.20) was converted into an (estimated) arithmetic average using the standard deviation of the annual returns of the S&P 500 total returns index, as measured over the period 1926–2018 (19.8%), which resulted in a supply-side arithmetic average ERP of 6.14%. The extra return attributable to the price-to-earnings multiple expansion was 0.6% per annum, when calculating the supply side ERP based on the three-year averaging convention. The extra return due to the price-to-earnings multiple expansion through 2018 was 0.61% per annum using 1-year periods.

William Goetzmann and Roger Ibbotson, commenting on the supply side approach of estimating expected risk premiums, note:^{3.101}

"These forecasts tend to give somewhat lower forecasts than historical risk premiums, primarily because part of the total returns of the stock market have come from price-earnings ratio expansion. This expansion is not predicted to continue indefinitely and should logically be removed from the expected risk premium."

Peng Chen estimated the ERP as of early 2011 relying on the supply side model exclusively.^{3.102} To the authors of this book, this certainly indicates his preference of the supply side estimate to the straight historical average estimate.

Since this adjustment for the growth in price-to-earnings ratios reflects primarily changes observed during the past 30 years and the supply side analysis (as we have implemented it) makes no other adjustments to the realized returns, one might interpret that a forward estimate of the long-term ERP derived from data through December 31, 2018 should be 6.14% (supply-side model on an arithmetic average basis) minus the 1.06% WWII Interest Rate Bias discussed earlier, or 5.08% (differences, due to rounding) for one-year holding period returns.

Unconditional ERP Estimates

The following summarizes the long-term unconditional ERP estimates as of 2018:

Exhibit 3.20: Long-term Realized Risk Premiums Measured Relative to Long-term U.S. Government Bonds

<u>Adjusted Realized Risk Premium</u>	<u>Period</u>	<u>Arithmetic Average (%)</u>	<u>Geometric Average (%)</u>
Long-term "Historical" ERP	1926–2018	6.91	4.82
Long-term "Supply-side" ERP	1926–2018	6.14	4.19
"Supply-side" minus WWII Interest Rate Bias ERP	1926–2018	5.08	n/a

Source of underlying data: Morningstar, Inc. Used with permission. All rights reserved. Calculations by Duff & Phelps.

The analyses summarized in Exhibit 3.20 are estimates of ERP measured relative to U.S. government bonds and that, with the exception of periods of governmental intervention in U.S. government long-term bonds (i.e., the period resulting in the WWII Interest Rate Bias (1942–1951) as discussed previously), the returns on bonds generally reflected a market based pricing of yields, not impacted by actions by the Fed to suppress yields on long-term U.S. government bonds.

^{3.101} William N. Goetzmann and Roger G. Ibbotson, "History and the Equity Risk Premium," Chapter 12 in *Handbook of the Equity Risk Premium*, ed. Rajnish Mehra (Amsterdam: Elsevier, 2008): 522–523.

^{3.102} Peng Chen, "Will Bonds Outperform Stocks over the Long Run? Not Likely," in *Rethinking the Equity Risk Premium*, ed. P. Brett Hammond, Jr., Martin L. Leibowitz, and Lawrence B. Siegel (The Research Foundation of CFA Institute, 2011): 117–129.

HANDBOOK OF THE EQUITY RISK PREMIUM

By

Rajnish Mehra



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income return for the S&P stocks. The authors also used CRSP government bond data to include U.S. Treasury bond and bill indexes. They also included a corporate bond index constructed from bond yields, as well as inflation rates. Besides displaying total returns across all yearly hold periods, the paper was unique in that it explicitly measured historical risk premiums, not only for equities, but also including the horizon (maturity premium, the default premium, and real interest rate. All results were presented in real (inflation-adjusted) terms as well. In Ibbotson Associates Yearbooks, they later added the small stock premium, the value premium, as well as various other data. These historical premiums came to be used as the risk premium input into the CAPM model, as well as for other models.

Later in 1976, Ibbotson and Sinquefeld showed how historical data can be used to simulate probability distributions of future returns. They started with the then-current yield curve, with its implicit forward interest-rate structure. They added the various historical premiums using bootstrapping methods that retained the correlation structure among the asset classes. They used a historical equity risk premium that was measured during the previous half-century to be 6.3 percent geometrically relative to U.S. Treasury bills, but a lesser number relative to longer-term bonds that contained horizon risk premiums.

Interestingly, 1976 was also the year that Vanguard launched its market index trust, a passive, value-weighted portfolio of large-cap U.S. stocks designed to match the performance of the S&P500. The excellent excess performance of stocks from 1926 to 1974 reported in Ibbotson and Sinquefeld may have helped build demand for a passive portfolio that sought to capture these historical returns. Just as the empirical study by Edgar Lawrence Smith demonstrated to investors in the 1920s the superiority of stocks over bonds and motivated a move toward equities, indexation made a lot of sense to investors in the 1970s when they had five decades of historical performance upon which to base their expectations for the future.

An important historical note is that the decade of the 1970s was one of the worst periods in U.S. capital market history for stocks. The crash of 1973–1974, the experience of double-digit inflation, and the erosion of capital were fresh in the public imagination in 1976. Equity returns had not exceeded debt returns over nearly the entire preceding decade. Thus, the historical equity premium appeared to most as a wildly optimistic forecast of the future expected return of stocks over T-bills. In fact it was not—the equity risk premium since 1976 has nearly matched the estimate made at the time.

There are several ways in which one might estimate an expected risk premium used for forecasting. One way is to extrapolate historical risk premiums, as did Ibbotson and Sinquefeld. Another is to use investor demand models based upon investor risk aversion, as did Mehra and Precott. A third way is to look at the type of returns that the corporate sector supplies. Diermeir, Ibbotson, and Siegel (1984) and later Ibbotson and Chen (2003) used this supply approach. They extrapolated the cash flows and earnings growth generated by companies themselves. These forecasts tend to give somewhat lower historical risk premiums, primarily because part of the total return of the stock market has come from price-to-earnings ratio expansion. This expansion

is not predicated to continue on indefinitely, and is removed from the expected risk premium.

4. HISTORY AS WRITTEN BY THE WINNERS?

A major conceptual problem with equating the *ex post* historical realization of the equity premium with its *ex ante* expectation is that history could simply have turned out better than people expected. Recall that in 1938, J. B. Williams calculated the market forecast of the equity risk premium as a mere 1 1/2 percent. He might have been shocked to see the realized premium over the following five decades exceed his forecast by a multiple of four. A more subtle problem is that historical records of successful markets tend to get preserved, but it is difficult to dig up the records of failed markets. To study these issues, Brown, Goetzmann, and Ross (1995) built a model of stock market performance that examined the *ex post* historical return conditional upon survival. Their analytical results showed that when a market is confronted with the continued possibility of failure (modeled statistically as an absorbing lower bound), the *ex post* realized growth can be substantially higher than the unconditional mean. The fact that the U.S. survived two world wars and periods of global political unrest that caused other major markets to fail would suggest that the mean return of the U.S. market is an overestimate of its true historical mean.

It is important to point out that this view of the equity risk premium is quite different than the critique of the equity premium puzzle posed by University of Iowa economist Thomas Rietz. Rietz (1988) theorized that a high *ex ante* equity premium could be justified by a fear of a huge crash. An equity premium of 6 percent would thus reflect the potential for an event that may not have been realized in America's financial history but that nevertheless was a possibility in people's minds. One limitation of the Rietz critique is that it conflicts with historical expectations of stock returns—most notably the J. B. Williams's forward-looking premium in 1938 of 1 1/2 percent. The survivorship story, on the other hand, is entirely consistent with low historical expectations of the future, although it would be unlikely to reduce the equity risk premium to such a low number.

In order to estimate the potential scale of the survival bias, and to look for empirical evidence that the U.S. market was an unusual performer in the global economy, Jorion and Goetzmann (1999) collected capital appreciation and inflation data for a large sample of the world's equity markets from 1921 forward. They found that the U.S. was the top performer out of 39 markets, in terms of real capital appreciation of stocks. Studying this effect subsequently with a smaller but richer sample, Dimson, Marsh, and Staunton (2002) collect total real returns for 12 countries over the entire century and find that the U.S. was in the top quartile of performers in real terms—inched out by Sweden and Australia over the first couple of decades of the century.¹³ The Jorion and Goetzmann

¹³Dimson, Marsh, and Staunton (2002).

Summary Statistics of Annual Total Returns, Income Returns, and Capital Appreciation Returns of Basic U.S. Asset Classes

1926–2021	Geometric Mean Returns (%)	Arithmetic Mean Returns (%)	Standard Deviation of Returns (%)
Large Company Stocks			
Total Return	10.5	12.3	19.6
Income Return	3.9	3.9	1.6
Capital Appreciation Return	6.4	8.2	19.0
Small Company Stocks			
Total Return	12.1	16.3	31.2
Mid-cap Stocks (Decile 3-5)			
Total Return	11.2	13.9	23.9
Income Return	3.6	3.7	1.8
Capital Appreciation Return	7.4	10.0	23.3
Low-cap Stocks (Decile 6-8)			
Total Return	11.6	15.2	28.1
Income Return	3.3	3.3	2.0
Capital Appreciation Return	8.1	11.7	27.5
Micro-cap Stocks (Decile 9-10)			
Total Return	12.3	17.9	37.9
Income Return	2.4	2.4	1.7
Capital Appreciation Return	9.8	15.4	37.1
Long-term Corporate Bonds			
Total Return	6.1	6.4	8.5
Long-term Government Bonds			
Total Return	5.5	6.0	9.8
Income Return	4.8	4.9	2.6
Capital Appreciation Return	0.5	0.9	8.9
Intermediate-term Government Bonds			
Total Return	5.0	5.2	5.6
Income Return	4.3	4.3	2.9
Capital Appreciation Return	0.6	0.7	4.4
US Treasury Bills			
Total Return	3.3	3.3	3.1
Inflation			
	2.9	3.0	4.0



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Thus a fall from 10 percent to 9 percent in the required return leads to a 50 percent rise in the stock price. If we include this price rise in our measures of past returns, we will be doubly wrong in our estimate of the risk premium. First, we will overestimate the return that investors required in the past. Second, we will fail to recognize that the return investors require in the future is lower than they needed in the past.

An Alternative Measure of the Risk Premium

We can check our measure of the risk premium by going back to the constant-growth model that we introduced in Chapter 4. One might expect that in the long run stock prices should keep pace with the growth in dividends. In this case an alternative measure of the expected market return is the average dividend yield plus the average long-term growth in dividends. Since 1900 dividend yields in the United States have averaged 4.7 percent and the annual growth in dividends has likewise been 4.7 percent. It seems that the *expected* market return over this period was 9.4 percent, or about 5.3 percent above the risk-free interest rate. This is 2.3 percent lower than the *realized* risk premium reported in Table 7.1.¹⁵

Fama and French have pointed out that much of this difference is due to the second half of the twentieth century, when dividend yields fell sharply.¹⁶ Since 1950 dividend yields have averaged under 3.9 percent and the annual growth in dividends has been 5.4 percent.

This suggests that the expected market return during this period was $3.9 + 5.4 = 9.3$ percent, or 4 percent above the average risk-free interest rate since 1950.

Out of this debate only one firm conclusion emerges: Do not trust anyone who claims to *know* what returns investors expect. History contains some clues, but ultimately we have to judge whether investors on average have received what they expected. Many financial economists rely on the evidence of history and therefore work with a risk premium of about 7.5 percent. The remainder generally use a somewhat lower figure. Brealey, Myers, and Allen have no official position on the issue, but we believe that a range of 5 to 8 percent is reasonable for the risk premium in the United States.

7.2 MEASURING PORTFOLIO RISK

You now have a couple of benchmarks. You know the discount rate for safe projects, and you have an estimate of the rate for average-risk projects. But you *don't* know yet how to estimate discount rates for assets that do not fit these simple

¹⁵Note, however, that depending on your forecasts of dividend growth, the constant-growth model can come up with estimates of the expected risk premium that are either higher or lower than the realized premium. In Chapter 4 we described a study by Marston and Harris, which used the constant-growth model to estimate the market risk premium. The study, which employed analysts' forecasts of long-term earnings growth, estimated that the expected risk-premium was 9.3 percent. However, we also noted in Chapter 4 that analysts tend to be unduly optimistic in their earnings forecasts.

¹⁶See E. F. Fama and K. R. French, "The Equity Premium," *Journal of Finance* 57 (April 2002), pp. 637-659. Fama and French quote even lower estimates of the risk premium. The difference largely reflects the fact that they define the risk premium as the difference between market returns and the commercial paper rate. Except for the years 1900-1918, the interest rates used in Table 7.1 are the rates on U.S. Treasury bills.

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Certificate of Public Convenience and Necessity to Deploy Advanced Metering Infrastructure
Case No. 2022-00147
The Attorney General and the City of Clinton's Response to
Water Service Kentucky's First Request for Information

WITNESS RESPONSIBLE:
RANDY A. FUTRAL

QUESTION NO. 4
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On page 29 of Mr. Futral's testimony, he identifies an account called "the liability bad debt reserve balance." Please confirm that this referenced account is the same as NARUC Account 143 – Accumulated Provision for Uncollectible Accounts.

RESPONSE:

Confirmed with one minor distinction. The account description for NARUC Account 143 for water companies is *Accumulated Provision for Uncollectible Accounts--Cr.*

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WITNESS RESPONSIBLE:

RANDY A. FUTRAL

QUESTION NO. 5

Page 1 of 1

Citing page 16 of Mr. Futral's testimony, does his recommended revenue requirement adjustment to remove the AMI project include an offset allowing for replacements of meters in the normal course during the Forecast Period with equipment noted in response to AG DR 1-12?

RESPONSE:

No. Mr. Futral's recommendation does not include any offsets for the manual-read Neptune meters currently being installed as referenced in the response to AG DR 1-12. Mr. Futral was unable to determine that a reduction in meter expenditures was made by the Company in its application, or in workpapers provided in response to discovery, related to non-AMI meters that would no longer need to be installed starting in 2023. Refer to Exhibit 10 in the Company's application, which reflects virtually no change in the amount of normal recurring capital expenditures from 2022 to 2023, or going forward. Refer also to the Excel attachment to STAFF 1-49 named PSC_DR_1-49_Exhibits_10-20-28_-_Schedule_A_-_Rate_Base_Components and further to worksheet tab Pro-Forma UPIS-AD-ADIT at cell row 61, which provides the monthly 2022 and 2023 expenditures for meters in account 141234. The monthly expenditures projected for 2022 was \$2,377 in most months and the monthly expenditures projected for 2023 was \$2,342 in all months. Finally, refer to the same referenced Excel file attachment at worksheet tab GL Spend at cell row 20, which reflects total 2021 expenditures for meters in account 141234 to have been \$31,158, or \$2,597 per month. The projected 2022 and 2023 monthly amounts for meter expenditures were very similar to the amounts expended in 2021.

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WITNESS RESPONSIBLE:

RANDY A. FUTRAL

QUESTION NO. 6

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Has Mr. Futral ever conducted a utility Total Compensation Study, such as the one supplied by Mr. Watkins with WSCK's application? If so, please provide a list of all dockets for which such a study was supplied, noting the subject utility, state or states (and cities/regions if applicable) used to represent the "market," what market data sources were used, and a summary of the results and any recommendations.

RESPONSE:

No. Such studies are normally prepared on behalf of utilities. Mr. Futral does not perform services on behalf of utilities.

WITNESS RESPONSIBLE:

RANDY A. FUTRAL

QUESTION NO. 7

Page 1 of 1

On page 42 of Mr. Futral's testimony, he states, regarding positions currently held outside of Kentucky, "Base wage comparisons made for employees in Chicago, IL and Cleveland, OH would certainly be higher than if the comparisons were made to market positions within the Company's Kentucky service territories." Please supply all data used to make this conclusion, including studies, articles, research papers, publications, or other publicly available information.

RESPONSE:

Mr. Futral considers it a well-known fact that base wages for similar positions would be higher in the Chicago, IL and Cleveland, OH labor markets than compared to the Kentucky labor markets from which the Company draws its local employees. However, the Bureau of Labor Statistics' ("BLS") occupational employment and wage estimates supports the above-referenced assertion.

Middlesboro is in Bell County, which is in southeastern Kentucky. It is Mr. Futral's understanding that Middlesboro would fall under BLS' East Kentucky nonmetropolitan area designation. According to the most recent BLS averages for the East Kentucky nonmetropolitan area for "All Occupations," the median hourly wage is \$16.18, the mean hourly wage is \$19.98, and the annual mean wage is \$41,560. https://www.bls.gov/oes/current/oes_2100004.htm

Clinton is in Hickman County, which is in western Kentucky. It is Mr. Futral's understanding that Clinton would fall under BLS' West Kentucky nonmetropolitan area designation. According to the most recent BLS averages for the West Kentucky nonmetropolitan area for "All Occupations," the median hourly wage is \$17.39, the mean hourly wage is \$20.73, and the annual mean wage is \$43,120. https://www.bls.gov/oes/current/oes_2100001.htm

According to the most recent BLS averages for the Cleveland, Ohio area for "All Occupations," the median hourly wage is \$22.47, the mean hourly wage is \$26.86, and the annual mean wage is \$55,860. https://www.bls.gov/oes/current/oes_17460.htm

According to the most recent BLS averages for the Chicago, Illinois area for "All Occupations," the median hourly wage is \$22.74, the mean hourly wage is \$29.74, and the annual mean wage is \$61,860. https://www.bls.gov/oes/current/oes_16980.htm

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WITNESS RESPONSIBLE:

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QUESTION NO. 8

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On page 51 of Mr. Futral's testimony, he states that the Bureau of Labor Statistics' 2021 averages for single and family company-paid health insurance premium coverages are 78% and 66%, respectively. Please supply documentation supporting these figures, identifying the industry and region these figures represent.

RESPONSE:

On page 51 of his testimony, Mr. Futral cited to the source of the percentages in question as being obtained from a recent Commission Order. Refer to footnote 103, on page 51 of Mr. Futral's testimony citing to the Commission's June 30, 2022 Order in Case No. 2021-00407.¹ A link to that Order is provided below:

https://psc.ky.gov/pscscf/2021%20Cases/2021-00407//20220630_PSC_ORDER.pdf

Footnote 28 on page 9 of the above-referenced Order cites to South Kentucky Rural Electric Cooperative Corporation's response to Commission Staff's Third Request for Information, Item 5. A link to the pertinent Staff discovery question is provided below:

https://psc.ky.gov/pscscf/2021%20Cases/2021-00407//20220216_DATA_REQUEST.pdf

Footnote 2 on page 3 of the Commission Staff's discovery request named the source of the data as the following and provided a link to access the information, which can be found on page 227 of 568.

Bureau of Labor Statistics, Healthcare Benefits, March 2021, Table 11, private industry workers, <https://www.bls.gov/ncs/ebs/benefits/2021/employee-benefits-in-the-united-states-march-2021.pdf>

¹ Case No. 2021-00407, *Electronic Application of South Kentucky Rural Electric Cooperative Corporation for a General Adjustment of Rates, Approval of Depreciation Study, and Other General Relief* (Ky. PSC June 30, 2022), Order at 9.

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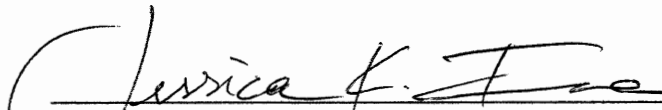
STATE OF GEORGIA)

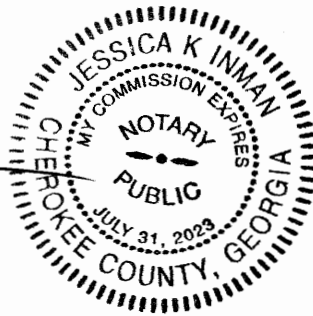
COUNTY OF FULTON)

RICHARD A. BAUDINO, being duly sworn, deposes and states: that the attached is his sworn testimony and that the statements contained are true and correct to the best of his knowledge, information and belief.


Richard A. Baudino

Sworn to and subscribed before me on this
9th day of November 2022.


Notary Public

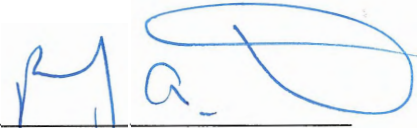


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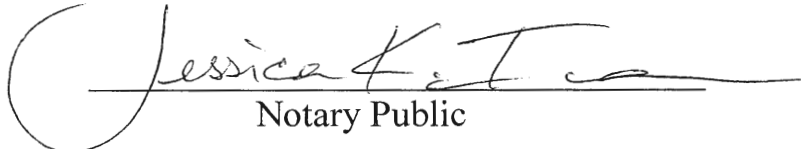
COUNTY OF FULTON)

RANDY A. FUTRAL, being duly sworn, deposes and states: that the attached is his sworn testimony and that the statements contained are true and correct to the best of his knowledge, information and belief.



Randy A. Futral

Sworn to and subscribed before me on this
9th day of November 2022.



Notary Public

