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Consumer Price Index, San Francisco Area — April 2019
Area prices were up 1.2 percent over the past two months, up 4.0 percent from a year ago

Prices in the San Francisco area, as measured by the Consumer Price Index for All Urban Consumers (CPI-U), advanced 1.2 percent for the two months ending in April 2019, the U.S. Bureau of Labor Statistics reported today. (See table A.) Assistant Commissioner for Regional Operations Richard Holden noted that the April increase was influenced by higher prices for gasoline and shelter. (Data in this report are not seasonally adjusted. Accordingly, month-to-month changes may reflect seasonal influences.)

Over the last 12 months, the CPI-U rose 4.0 percent. (See chart 1 and table A.) Energy prices increased 6.8 percent, largely the result of an increase in the price of gasoline. The index for all items less food and energy increased 3.8 percent over the year. (See table 1.)

Chart 1. Over-the-year percent change in CPI-U, San Francisco-Oakland-Hayward, CA, April 2016–April 2019
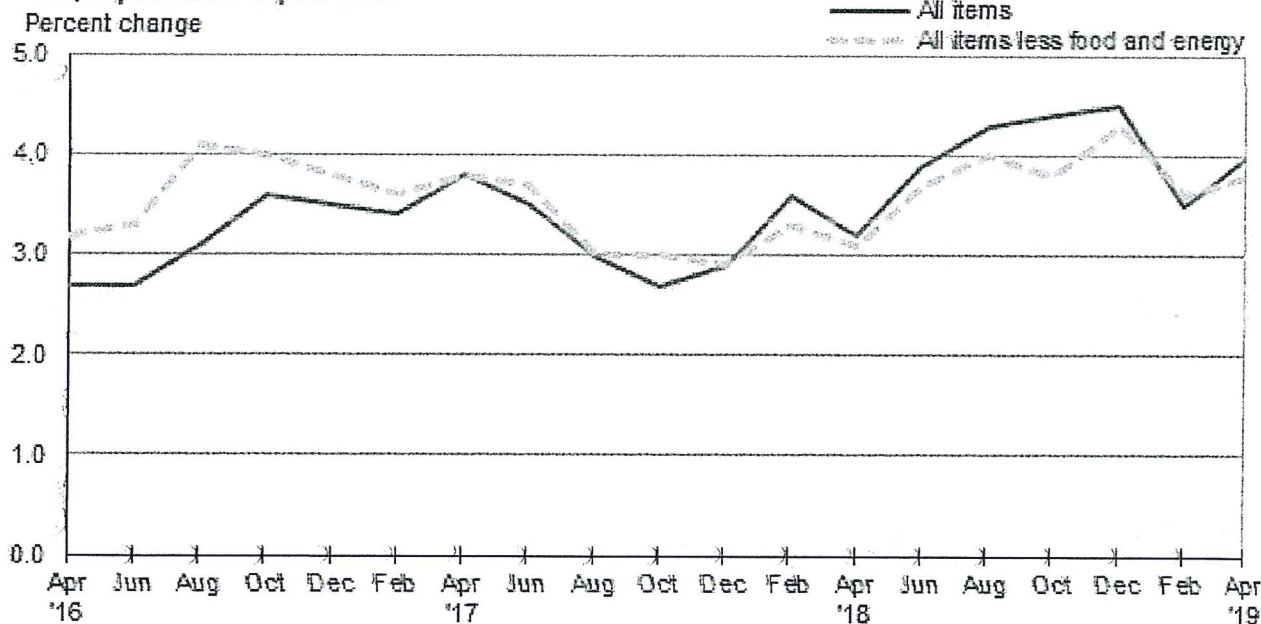
Source: U.S. Bureau of Labor Statistics.

Food

Food prices advanced 0.7 percent for the two months ending in April. (See table 1.) Prices for food away from home increased 1.8 percent, but prices for food at home decreased 0.6 percent for the same period.

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

Table 1. Consumer Price Index for All Urban Consumers (CPI-U): U.S. city average, by expenditure category, June 2019
[1982-84=100, unless otherwise noted]

Expenditure category	Relative importance May 2019	Unadjusted indexes			Unadjusted percent change		Seasonally adjusted percent change		
		Jun. 2018	May 2019	Jun. 2019	Jun. 2018- Jun. 2019	May 2019- Jun. 2019	Mar. 2019- Apr. 2019	Apr. 2019- May 2019	May 2019- Jun. 2019
All items	100.000	251.989	256.092	256.143	1.6	0.0	0.3	0.1	0.1
Food	13.237	253.231	258.110	258.064	1.9	0.0	-0.1	0.3	0.0
Food at home	7.212	239.158	242.145	241.407	0.9	-0.3	-0.5	0.3	-0.2
Cereals and bakery products	0.955	273.682	277.795	276.891	1.2	-0.3	-0.1	0.4	-0.6
Meats, poultry, fish, and eggs	1.586	248.609	250.356	249.231	0.3	-0.4	-0.2	0.8	-0.7
Dairy and related products	0.719	216.126	217.841	217.433	0.6	-0.2	0.1	0.7	0.3
Fruits and vegetables	1.278	295.523	302.352	298.611	1.0	-1.2	-0.9	-0.8	-0.5
Nonalcoholic beverages and beverage materials	0.867	166.431	171.260	170.230	2.3	-0.6	-0.9	1.2	-0.6
Other food at home	1.807	210.259	210.815	212.056	0.9	0.6	-0.6	0.0	0.7
Food away from home[1]	6.024	275.808	283.394	284.316	3.1	0.3	0.3	0.2	0.3
Energy	7.903	229.137	225.773	221.373	-3.4	-1.9	2.9	-0.6	-2.3
Energy commodities	4.595	260.848	259.310	246.818	-5.4	-4.8	5.4	-0.4	-3.5
Fuel oil	0.113	293.685	289.711	277.244	-5.6	-4.3	1.3	-0.3	-2.3
Motor fuel	4.411	257.041	255.584	243.163	-5.4	-4.9	5.6	-0.5	-3.6
Gasoline (all types)	4.321	255.885	254.551	242.043	-5.4	-4.9	5.7	-0.5	-3.6
Energy services	3.308	207.631	202.101	206.219	-0.7	2.0	-0.1	-0.8	-0.7
Electricity	2.578	218.591	212.326	217.947	-0.3	2.6	0.0	-0.8	-0.8
Utility (piped) gas service	0.730	172.167	168.826	168.628	-2.1	-0.1	-0.8	-1.0	-0.3
All items less food and energy	78.860	257.697	262.590	263.177	2.1	0.2	0.1	0.1	0.3
Commodities less food and energy commodities	19.350	144.237	144.457	144.461	0.2	0.0	-0.3	-0.1	0.4
Apparel	2.997	125.382	124.429	123.749	-1.3	-0.5	-0.8	0.0	1.1
New vehicles	3.691	146.562	147.659	147.417	0.6	-0.2	0.1	0.1	0.1
Used cars and trucks	2.359	139.090	138.888	140.823	1.2	1.4	-1.3	-1.4	1.6
Medical care commodities	1.687	385.121	381.066	379.462	-1.5	-0.4	0.9	-0.4	-0.2
Alcoholic beverages	0.958	248.844	252.101	252.538	1.5	0.2	-0.2	0.4	0.3
Tobacco and smoking products	0.664	1,060.067	1,108.299	1,109.099	4.6	0.1	-0.1	0.4	0.1
Services less energy services	59.511	328.068	336.204	337.197	2.8	0.3	0.3	0.2	0.3
Shelter	33.208	307.521	317.188	318.300	3.5	0.4	0.4	0.2	0.3
Rent of primary residence	7.901	318.318	329.333	330.648	3.9	0.4	0.4	0.2	0.4
Owners' equivalent rent of residences[2]	23.900	314.472	324.143	325.189	3.4	0.3	0.3	0.3	0.3
Medical care services	6.961	518.307	531.566	532.956	2.8	0.3	0.2	0.5	0.4
Physicians' services	1.710	380.991	382.436	382.702	0.4	0.1	0.2	0.1	0.1
Hospital services[3]	2.302	333.408	335.966	335.078	0.5	-0.3	-0.5	0.5	-0.1
Transportation services	5.936	323.646	326.397	326.667	0.9	0.1	0.1	0.1	0.0
Motor vehicle maintenance and repair[1]	1.125	285.753	294.586	295.670	3.5	0.4	0.4	-0.2	0.4
Motor vehicle insurance	2.350	565.284	568.301	569.079	0.7	0.1	-0.2	-0.4	0.3
Airline fares	0.739	278.937	283.275	283.001	1.5	-0.1	-0.1	2.0	-0.9

Footnotes
(1) Not seasonally adjusted.
(2) Indexes on a December 1982=100 base.
(3) Indexes on a December 1996=100 base.

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How the CPI measures price change of
Owners' equivalent rent of primary residence (OER) and *Rent of primary residence (Rent)*

Shelter, the service that housing units provide their occupants, is a major part of the CPI *market basket* — the goods and services that people need for day-to-day living. Two CPI indexes, *Owners' equivalent rent of primary residence (OER)* and *Rent of primary residence (Rent)*, measure the change in the shelter cost consumers receive from their primary residences.

Housing units are not in the CPI market basket. Like most other economic series, the CPI views housing units as capital (or investment) goods and not as consumption items. Spending to purchase and improve houses and other housing units is investment and not consumption. *Shelter*, the service the housing units provide, is the relevant consumption item for the CPI. The cost of shelter for renter-occupied housing is rent. For an owner-occupied unit, the cost of shelter is the implicit rent that owner occupants would have to pay if they were renting their homes.

Weights for *OER* and *Rent*

The expenditure weight in the CPI market basket for *Owners' equivalent rent of primary residence (OER)* is based on the following question that the Consumer Expenditure Survey asks of consumers who <u>own</u> their primary residence:

> "If someone were to rent your home today, how much do you think it would rent for monthly, unfurnished and without utilities?"

The following questions, asked of consumers who <u>rent</u> their primary residence, are the basis of the weight for *Rent*:

> "What is the rental charge to your [household] for this unit including any extra charges for garage and parking facilities? Do not include direct payments by local, state or federal agencies. What period of time does this cover?"

From the responses to these questions, the CPI estimates the total shelter cost to all consumers living in each index area of the urban United States. (The weights of CPI item categories are consumers' spending on them during the weighting period, 2005-06 as of January 2008.) The *OER* and *Rent* indexes have the largest weights of

the 211 item categories (*item strata*) that comprise the CPI market basket. As of December 2008 their shares of the total weight (their *relative importances*) in the CPI for All Urban Consumers (CPI-U), were 24.433 percent and 5.957 percent, respectively.

The CPI Housing Survey

Because rents change rather infrequently, the CPI program collects rent data from each sampled unit every six months. (Price collection is monthly or bimonthly for most other CPI items.) Collecting rent data less frequently allows a much larger sample. The CPI divides each area's rent sample into six sub-samples called *panels*. The rents for panel 1 are collected in January and July; panel 2, in February and August, etc.

The sample design of the Housing Survey is fairly complex, but the underlying principle is that the units are selected in proportion to their share of total spending on rent. Total spending on rent includes the total spending on rent of primary residence plus the implicit spending on owners' equivalent rent. Using data from the 1990 Decennial Census of Population and Housing, the CPI defined small geographic areas, called *segments*, within each of the 87 CPI pricing areas. Segments are one or more Census blocks. The Census provided the numbers of renter and owner housing units in each segment and the average rent of the renter units in each segment; BLS estimated the average implicit rent of the owner units in the segment, enabling the CPI to calculate the total spending (rent plus implicit rent) for each segment. The CPI selected a sample of segments in each pricing area using stratified sampling in proportion to total shelter value. CPI agents visited the segments and selected a small number (usually 5) of renter-occupied housing units in each one to represent the segment. For segments that contain largely owner-occupied housing units, rental units from segments close to the selected segment to help represent the segment.

The Housing sample design generates a weight for each housing unit in the sample. The unit weights are denoted $U_{a,i}$, (not to be confused with the biennial weights for the item strata in the index areas). A unit's weight is its segment's share of the renter and owner spending divided equally among the segment's sample units, so a unit's weight is relative to all housing — owner and renter. Part of each unit weight represents renter housing and the rest represents owner housing. Owner-occupied units are not priced in the CPI Housing Survey. To make the unit weights specific to the renter universe a factor, denoted $\alpha_{i,a}$, which is equal to the renter share of total (owner and renter) in the unit's segment, is applied to the sampling weight of each unit. To make the weights specific to the owner universe, $(1- \alpha_{i,a})$, the complement

of the rent factor, is applied to $U_{a,i}$. Thus each unit's weight is allocated between renter housing and owner housing.

Price Change for *OER* and for *Rent*

Using the sample of rental units, the CPI calculates a measure of price change for each CPI index area for the *Rent* index and for the *OER* index. The first step is standardizing the collected (market) rents, putting them on a monthly basis, and adjusting them for a number of circumstances that should not affect the CPI. These include adjusting for any changes to the structure, such as changes in the number of rooms or bathrooms or in the type of heating and cooling equipment, or changes in the number of pets. These standardized rents are called normalized rents.

In addition the CPI adjusts the rent for the effect of aging of the rental units over time. The Housing sample collects the rents from the same housing units every six months. Consequently, each time the CPI observes the rent of a sample unit it is six months older. To account for this aging, an age-bias factor[1] is applied to the current rent; this raises the rent slightly because the older unit is slightly less desirable. For example, a unit with a rent of $900 might have the rent adjusted to $901.

The CPI assumes that sample units reported to be vacant are transitioning to new tenants. Experience with rent data has shown that units tend to experience rent change when the tenant changes. To avoid missing this rent change for vacant units, the CPI performs a *class-mean imputation* to estimate their rents. The estimated current rent of a vacant unit is its previous rent times the average rent change of newly-occupied units. For example, if the average rent increase for new tenants in an area was 5 percent, a currently-vacant unit that rented six months earlier for $1000 would have a current estimated rent of $1050.

To calculate the relatives of change for the *Owners' equivalent rent* index, the CPI calculates what it calls the *pure rent* from the normalized rent, removing the value of any utilities included in the rent. Owner-occupants pay for their own utilities and the CPI accounts for them outside of *Shelter*.

The CPI uses the following formula to calculate the monthly relative of price change for the *OER* index for area *a*:

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1 Ptacek and Baskin, "Revision of the CPI Housing Sample and Estimators," Monthly Labor Review, December 1996, pp.38-39, available at: http://stats.bls.gov/opub/mlr/1996/12/art5full.pdf.