

# The Costs of Living

1. To help us understand indices (indexes) we are going to create an index based on gas prices.
  - The average price of gas in 1984 was \$1.13
  - The average price of gas in 1950 was \$0.27
  - The average price of gas in 1972 was \$0.36
  - The average price of gas in 2015 was \$2.45

Compare the cost of gas in each year to the cost in 1984 by expressing the comparison as a ratio of each year's cost to the cost in 1984. This ratio, expressed as a percent without the percent symbol, is the **index number**. Since we are comparing each year to the year 1984, 1984 is called the **base year**.

Year	Ratio	Index Number
1950		
1972		
1984		
2015		

- a. What is the index number in the base year?
- b. How can we use the index we created to compare the cost of gas in 1950 to the cost in 1984?
- c. Is there another way?
- d. Could we use the index to compare the cost of gas in 1972 to the cost in 2015? How?

## How are changes in household costs measured?

Now that we have created an index we would like to understand one of the most commonly used indices, the Consumer Price Index (CPI) created by the federal government. Each month the Bureau of Labor Statistics (BLS) creates several versions of the CPI. We will use the one for urban dwellers, the CPI-U. The BLS uses a "basket of goods" consisting of a variety of items that a typical household might buy each month such as food, housing, transportation and medical care to create the index. The CPI is often used to identify periods of **inflation** and **deflation**. One way to think of the comparison between years is that in the base year the "basket of goods" costs \$100, and if the index number for a later year is greater than 100 then inflation has occurred. Inflation basically means that it takes more money to buy

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the same goods. If the index number for a later year is lower than 100 then deflation has occurred, which means it takes less money to buy the basket of goods.

<b>CPI-U Average for the Years 1930-2015</b>							
<b>Year</b>	<b>Avg</b>	<b>Year</b>	<b>Avg</b>	<b>Year</b>	<b>Avg</b>	<b>Year</b>	<b>Avg</b>
1930	16.7	1950	24.1	1970	38.8	1990	130.7
1931	15.2	1951	26	1971	40.5	1991	136.2
1932	13.7	1952	26.5	1972	41.8	1992	140.3
1933	13	1953	26.7	1973	44.4	1993	144.5
1934	13.4	1954	26.9	1974	49.3	1994	148.2
1935	13.7	1955	26.8	1975	53.8	1995	152.4
1936	13.9	1956	27.2	1976	56.9	1996	156.9
1937	14.4	1957	28.1	1977	60.6	1997	160.5
1938	14.1	1958	28.9	1978	65.2	1998	163
1939	13.9	1959	29.1	1979	72.6	1999	166.6
1940	14	1960	29.6	1980	82.4	2000	172.2
1941	14.7	1961	29.9	1981	90.9	2001	177.1
1942	16.3	1962	30.2	1982	96.5	2002	179.9
1943	17.3	1963	30.6	1983	99.6	2003	184
1944	17.6	1964	31	1984	103.9	2004	188.9
1945	18	1965	31.5	1985	107.6	2005	195.3
1946	19.5	1966	32.4	1986	109.6	2006	201.6
1947	22.3	1967	33.4	1987	113.6	2007	207.3
1948	24.1	1968	34.8	1988	118.3	2008	215.3
1949	23.8	1969	36.7	1989	124	2009	214.5
						2010	218.1
						2011	224.9
						2012	229.6
						2013	233.0
						2014	236.7
						2015	237.0

2. What is the base year of the CPI-U table above?
3. How much did the \$100 basket of goods increase in cost from 1970 to 2010? What was the relative change?

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Use the following table for questions 4 through 6.

<b>Selected Year Comparison of Income and Transportation Costs</b>		
Year	Median Yearly Income in Current* Dollars	Transportation Costs as Percent of Income
1935	\$1,524	8.3%
1950	\$4,237	13.4%
1961	\$6,691	14.7%
1972	\$11,409	19.3%
1984	\$23,464	19.6%
1996	\$38,983	18.7%
2003	\$50,302	19.1%
2015	\$56,516	18.8%

\* Economists use “current dollars” to mean the number of dollars in the given year. So the \$1,524 listed for 1935 Median Income is in 1935 dollars. Another way that “current dollars” are described is as “nominal dollars”. After adjustments are made for inflation, the number of dollars is called “real dollars”.

4. We would like to compare the cost of transportation for a family earning an average income over time.
  - a. Use the table to find when the cost of transportation was the most, relative to median income.
  - b. Take a few minutes and use the table to make a **prediction** of when transportation cost the most in absolute terms for a family earning the median family income, if the median income is adjusted for inflation.
  - c. Now find, by calculation, the year in which the cost of transportation was the most in absolute terms for a family earning the median income if the median income is adjusted for inflation using the CPI-U table.



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7. The table below lists the median family income for select years together with the cost of a gallon of gas in that year. In what year was gas the cheapest? Explain how you arrived at your answer.

Year	Median Yearly Income in Current* Dollars	Cost per Gallon of Gas in Current* Dollars
1935	\$1,524	\$0.19
1950	\$4,237	\$0.27
1961	\$6,691	\$0.31
1972	\$11,409	\$0.36
1984	\$23,464	\$1.13
1996	\$38,983	\$1.23
2003	\$50,302	\$1.59
2015	\$56,516	\$2.45

\* Economists use “current dollars” to mean the number of dollars in the given year. So the \$1,524 listed for 1935 Median Income is in 1935 dollars. Another way that “current dollars” are described is as “nominal dollars”. After adjustments are made for inflation, the number of dollars is called “real dollars”.

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<sup>1</sup> US Bureau of Labor Statistics <https://www.bls.gov/opub/uscs/>