

Identical results could be obtained for pork by multiplying prices each period by the implied physical quantities included in the market basket, as illustrated below:

Sample Item	Implied quantity (pounds)	September price	September cost weight	October price	October cost weight
Pork chops - - - - -	20	\$0.75	\$15.00	\$0.77½	\$15.45
Ham - - - - -	10	.80	8.00	.82	8.20
Bacon - - - - -	10	1.00	<u>10.00</u>	1.02	<u>10.20</u>
			\$33.00		\$33.85

The average change in pork prices is computed by comparing the sum of the cost weights in October with the comparable sum for September, as follows:

$$\frac{\text{October cost weight } \$33.85}{\text{September cost weight } \$33.00} \times 100 = 102.6$$

This means that pork prices in October were 102.6 percent of (or 2.6 percent higher than) pork prices in September.

Although the second method may appear simpler, in reality it is not. Deriving the implied quantity weights is an extra operation. Furthermore, the second formulation greatly complicates the handling of the numerous substitutions of reporters and items which occur constantly in repetitive index work. Consequently, the first method is the one actually used for the CPI. The second illustration, however, may assist the user to understand the meaning of the index mechanism.

After the cost weights for each of the items has been calculated, they are added to area totals for commodity groups and all items. The U.S. totals are obtained by combining area totals, with each area total weighted according to the proportion of the total wage-earner and clerical-worker population which it represents in the index based on 1960 Census figures.⁸ In this process, it is necessary to make estimates for cities in which price data are not collected in a given month. Finally, the U.S. totals for the current and previous months are compared to compute the average price change.

Limitations of the Index

The Consumer Price Index is not an exact measurement of price changes. It is subject to sampling errors which cause it to deviate somewhat from the results which would be obtained if actual records of all retail purchases by wage earners and clerical workers could be used to compile the index. These estimating or sampling errors are not mistakes in the index calculation. They are unavoidable. They could be reduced by using much larger samples, but the cost is prohibitive. Furthermore, the index is believed to be sufficiently accurate for most of the practical uses made of it.

Another kind of error occurs because people who give information do not always report accurately. The Bureau makes every effort to keep these errors to a minimum, and corrects them whenever they are discovered subsequently. Precautions are taken to guard against errors in pricing, which would affect the index most seriously. The field representatives who collect the price data and the commodity specialists

⁸Table 1 shows the cities included in the CPI as of January 1967, their population weights, and their pricing schedules.