

# The Consumer Price Index - Data quality, concepts and methodology

## Definition

The Consumer Price Index (CPI) is an indicator of the changes in consumer prices experienced by the target population. The CPI measures price change by comparing, through time, the cost of a fixed basket of commodities. This basket is based on the expenditures of the target population in a certain reference period, currently 2005. Since the basket contains commodities of unchanging or equivalent quantity and quality, the index reflects only pure price movements.

Separate CPIs are published for Canada, the ten provinces, Whitehorse, Yellowknife and Iqaluit. Some CPI information is also available for an additional sixteen urban centres. Since the CPI is a measure of price change from one time period to another, it cannot be used to indicate differences in price levels between provinces or urban centres.

## Population coverage

The population targeted by the Consumer Price Index consists of families and individuals living in urban and rural private households. For practical reasons, residents of the Territories outside Whitehorse, Yellowknife and Iqaluit are not represented by the index. Prior to February 1995, the target population consisted of private households in Canadian urban centres with a population of 30,000 or more.

## Time reference

The CPI compares, in percentage terms, prices in any given time period to prices in the official base period which, at present, is 2002=100. The official time base was changed from 1992=100 to 2002=100 starting with the CPI for May 2007. The change is strictly an arithmetic conversion which alters the index levels but leaves the percentage changes between any two periods intact, except for differences in rounding.

## Percent versus index point changes

The movements of the indexes from one month to another are expressed as percent changes rather than changes in index points. Index point changes are affected by the level of the index which, in turn, depends on the time base of the particular index. The percentage change between any two time periods can be readily calculated by dividing the index point difference between the two time periods by the index for the earlier period and multiplying the result by one hundred.

## Price coverage

The prices used in the CPI calculation are final prices, inclusive of excise and other indirect taxes paid by consumers. In particular, they include the Goods and Services Tax (GST), as well as provincial retail sales taxes wherever applicable. In regions where the GST and provincial retail sales taxes have been combined, the Harmonized Sales Tax (HST) is included. It follows that the CPI can change as a result of modifications to any of these taxes.

The selection of commodities and the outlets from which prices are collected is judgmental, other than for rents and traveler accommodation. The number of prices required for a given commodity depends on the importance and the nature of the commodity. The samples are designed to represent volume selling commodities and outlets. The principal objective of the sample design is to ensure an informative, reliable and impartial picture of consumer inflation at the national and provincial levels.

Price collection for a given month's index is carried out during the first three weeks of the month. Although prices for most CPI commodities are collected monthly, prices for commodities having less frequent price changes (e.g. property taxes and electricity rates) are collected at intervals longer than one month. Special pricings are carried out where there is evidence that significant price changes have occurred between scheduled pricing periods.

## Weights and linking

The CPI maintains fixed quantitative proportions (weights) between commodities during the life of a given basket. The baskets are updated periodically to take into account changes in consumer expenditure patterns. In May 2007, the basket reflecting the 2005 expenditure patterns replaced the 2001 basket. The continuity of the CPI series is maintained by “linking” the corresponding indexes obtained from consecutive baskets.

The CPI is calculated as a weighted average of specified commodity price indexes. The weights are derived from Survey of Household Spending data. **Text table 1** compares the expenditure shares of the two most recent CPI baskets, i.e. the 2005 basket as it was reflected in the CPI in May 2007 and the 2001 basket. Because both sets of weights are expressed in April 2007 or “link month” prices, the differences reflect the shifts in the relative quantities purchased between the two baskets.

When reconstructing or re-aggregating published CPI series, the changes in weights and the linking procedures must be taken into account. For a description of the methodology required to reconstruct or re-aggregate CPI series, see **The**

**Consumer Price Index Reference Paper** catalogue no. 62-553-X (Occasional)  
or contact Prices Division.

**Text table 1**

**Comparison of the 2005 and 2001 distribution<sup>1</sup> of expenditures used in the Consumer Price Index, by major component, for Canada**

	2005 Expenditures		2001 Expenditures
	Expressed in 2005 prices	Expressed in April 2007 prices	Expressed in April 2007 prices
	percent		
<b>Major Components</b>			
<b>All-items</b>	<b>100.00</b>	<b>100.00</b>	<b>100.00</b>
Food	16.9	17.0	17.1
Shelter	25.7	26.6	27.7
Household operations, furnishings and equipment	11.4	11.1	10.2
Clothing and footwear	5.6	5.4	5.1
Transportation	19.6	19.9	20.2
Health and personal care	4.8	4.7	4.4
Recreation, education and reading	13.0	12.2	11.2
Alcoholic beverages and tobacco products	3.1	3.1	4.2

1. Figures may not add to 100% due to rounding

Starting with the October 2006 Consumer Price Index (CPI), Statistics Canada produces and disseminates the Core CPI as defined by the Bank of Canada.

The measure of Core CPI excludes from the all-items CPI the effect of changes in indirect taxes and eight of the most volatile components identified by the Bank of Canada: fruit, fruit preparations and nuts; vegetables and vegetable preparations; mortgage interest cost; natural gas; fuel oil and other fuels; gasoline; inter-city transportation; and tobacco products and smokers' supplies. For additional information on Core CPI, please consult the Bank of Canada Web site. <http://www.bankofcanada.ca/en/inflation/index.htm>.

Statistics Canada also calculates, on behalf of the Bank of Canada, a seasonally adjusted Core CPI. This series is available through CANSIM, Statistics Canada's official database, or by contacting us through the means mentioned on the inside cover of this publication.

## Whitehorse, Yellowknife and Iqaluit indexes

The relatively small size of the housing market in these three cities makes it difficult to construct reliable price indexes for new houses. To compensate, the price movements of rental accommodation are used to approximate the price movements of new houses. The rent information itself is collected using different pricing frequencies and collection methods than in the rest of the country. Because of these problems, the indexes for Rented Accommodation and Owned Accommodation are not published for these three cities. Further, the all-items indexes published for these three cities are not strictly comparable with the same indexes for the provinces or the other sixteen cities.

## Calculation of urban centre indexes

With the introduction of the 1992 basket, emphasis was shifted from urban centre data to provincial data. Urban Centre all-items series were continued since many users had come to rely on this service, but the method of calculation was changed. Shelter indexes are calculated for each urban centre. This recognizes the importance of Shelter in the basket, the significant and persistent differences in price movements between urban centres, and the availability of local data. For the other seven major components, the movement of the provincial counterpart (or, in the cases of Montréal, Toronto, and Vancouver, a sub-provincial counterpart) is used. The major components are aggregated using the urban centre's expenditure pattern to arrive at each urban centre's all-items index.

## Seasonal adjustment

A seasonally adjusted series is one from which seasonal movements have been eliminated. Seasonal movements are defined as those which are caused by regular annual events such as variations in climate and regular institutional events such as vacations and statutory holidays. Seasonally adjusted series are calculated using Statistics Canada's X-11 ARIMA program. Time series with no detectable seasonal movements remain unchanged from the official series. The official unadjusted series for all-items index, core consumer price index, each of the eight major component indexes and three special aggregates (all-items excluding food, all-items excluding food and energy and all-items excluding 8 of the most volatile components (Bank of Canada definition)) are seasonally adjusted independently.

Each month, the previous month's seasonally adjusted index is subject to revision. On an annual basis, the seasonally adjusted values for the last three years are revised with the January data release. Since these revisions can lead to changes in both the levels and movements of the indexes, users employing the CPI for indexation purposes are advised to use the unadjusted indexes.