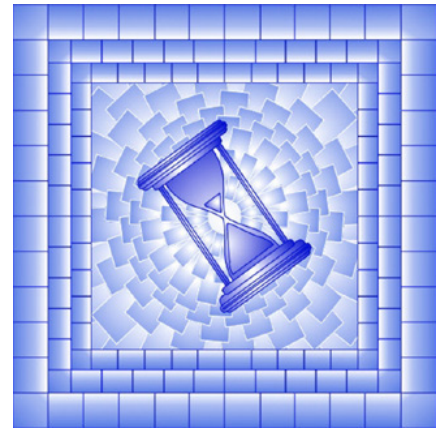


Catalogue no. 62F0014M
ISBN 978-0-660-30192-1

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Release date: April 30, 2019



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Published by authority of the Minister responsible for Statistics Canada

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New approach for estimating the Telephone Services Index of the Consumer Price Index

Overview

The telephone services index is part of the household operations, furnishings and equipment component, one of the eight major components of the Consumer Price Index (CPI), and is comprised of three (not published) components: local telephone services, long distances telephone rate, and cellular services.

The methodology of the cellular services component was modified with the release of the November 2018 CPI (published on December 19, 2018). This document will focus on outlining the methodology of the cellular services component and explaining the recent change in methodology.

Scope of the Cellular Services Component

Under the cellular services component, the product being priced is all cost associated with the services of a cellular device in a given period. The services include local and long distance voice calls, text messaging, and in some cases, internet access on a cellular device. It is important to note that over the years, the services included in the cellular services component have been evolving with the consumption patterns of Canadians.

Expenditure Weight in CPI Fixed Basket

The telephone services index represents 2.292% of the 2017 CPI basket. The expenditure weights are estimated primarily from data obtained from Statistics Canada's Survey of Household Spending (SHS).

The cellular services component accounts for approximately 78% of the weight for the telephone services index.

Sampling Strategy

For Canadian consumers, there are a few wireless service providers (WSP) to select from, and each WSP offers a limited number of cellular service plans. Existing cellular plans are seldom modified but are instead discontinued and replaced with new plans. Therefore rather than tracking price changes by following specific rate plans or packages, the usage profile approach is taken, where prices for several representative consumer profiles (i.e. packages of specific telephone services or plans, varying in amount of minutes, long distance allowances, data, etc.) are tracked through time. The method of pricing the same profiles through time ensures that the quantity and quality of services are constant, and that the index reflects pure price change.

The set of profiles selected are aimed to best reflect cellular services usage patterns of Canadian households. Table 1 displays examples of two representative consumer profiles.

Table 1
Examples of two representative consumer profiles

| | Profile A | Profile B |
|--------------------------------|---------------------------------|---------------------------------|
| Anytime Minutes | 400 | 1,000 |
| National Long Distance Minutes | 20 | 100 |
| Off Peak Minutes | Unlimited Weekends and Evenings | Unlimited Weekends and Evenings |
| SMS | 200 | 1,000 |
| Features | Voice mail | Voice mail |
| | Caller ID | Caller ID |
| Data (GB) | 0 | 5 |
| Device Subsidy | No | Yes |

Source: Statistics Canada, Consumer Prices Division.

In each province, the largest WSPs by revenue share are sampled. Within each province, WSPs are weighted by their provincial market shares, calculated in terms of revenue. Weighting the WSPs by their market shares aims at improving the representativeness of the index. The revenue is obtained from the Annual Survey of Telecommunications, administered jointly by Statistics Canada and Canadian Radio-Television and Telecommunications Commission. The WSPs' weights at provincial level are regularly updated to reflect their latest market shares.

Price Collection

Each consumer profile is matched with a package offered by a WSP in a given province. Package prices are collected each month from the websites of WSPs. The package must be available from the provider within the specified province. Only packages containing a post-paid rate-plan may be considered.

Price Aggregation

Once prices for all packages have been collected, current period prices are directly compared with the preceding period's prices in order to construct price relatives. Price relatives will then be aggregated using the geometric mean within a WSP.

The aggregation at the provincial level is then calculated by multiplying the weighted geometric mean of the relatives for all WSP in a given province by the change in the provincial tax.

Quality Change and Update

Minimal to no adjustments to back prices are made due to the usage profile approach mentioned above.

The profiles are updated regularly in order to ensure that they remain relevant. New profiles can be added based on market share shift and/or technological change in the telecommunication industry.

Methodology Update on Device Subsidies

Under the previous methodology, to obtain the final price of a cellular service plan, a device subsidy was calculated and subtracted from the price of a cellular service package.

Previously, a device subsidy was one of the required characteristics of some consumer profiles as illustrated in Profile B of Table 1 above. This means that packages priced for Profile B must include a service plan that provides a subsidized smartphone for customers entering into a two-year contract. For such packages, both the on contract and off contract prices of the smartphone hardware were collected. From these two prices, the monthly subsidy of the smartphone hardware was calculated as:

$$\text{monthly subsidy} = \frac{\text{off contract price} - \text{on contract price}}{24}$$

The monthly subsidy is volatile as WSPs frequently change the on and off contract prices of the smartphone hardware, which consequently created movement in the cellular services component of the telephone services index. **Effective November 2018 reference month, this subsidy is no longer calculated and subtracted from the price of the cellular service plans.** As a result, the price movement in the cellular service plan is now a direct measure of the price change of the cellular services component.