

How to compute a Consumer Price Index in the context of the Covid-19 crisis ?

Provisional estimate-July 2020

The health crisis and the lockdown measures in the context of the Covid-19 crisis have important impacts on the measures of short term statistics such as the Consumer Price Index (CPI).

On the one hand, **in order to preserve price collectors but also consumers and salesmen, INSEE adjourned the collection of prices by INSEE collectors in physical outlets from March the 16th to June the 15th.** These prices collected on the field are only one data source among others used to compute the CPI; however, they represent more than four tenth of the CPI, in terms of consumption share.

On the other hand, CPI aims to describe an average measure of price changes for all the purchased items. The basket of products is renewed yearly but it remains fixed during a year; the slow changes in the consumption structure ensure that this basket fixity is globally neutral on the inflation measure. **The current health crisis disrupted deeply and suddenly the household consumption structure during the lockdown** either because the consumption was prevented by the impossible move of households (transport, tourism), or because outlets were closed (the implementing order of 15 March 2020 related to measures for the struggle against the Covid-19 spreading defines the first necessary outlets that were allowed to remain opened during the lockdown), or because confronted to the crisis, the households decided to adapt their consumption habits (food, for instance). Since the end of the lockdown, the 11th of May, outlets have reopened only progressively and some services were still unavailable in July (some transport services, tourism or some cultural services).

In compliance with [Eurostat guidelines](#), shared with the different European countries, INSEE carried out new collection methods and adapted imputation methods.

This note aims to explain to users to which extent the Covid19-crisis still impacts the quality of the inflation measure for July 2020.

1 – INSEE price collectors have resumed the price collection in the outlets since the 15th of June 2020

Usually, about 160 000 prices are collected each month by INSEE's price collectors in physical outlets. This on-the-field collection represents more than four tenth of the CPI basket. It was adjourned from the 16th of March to the 15th of June, because of the Covid-19 crisis and INSEE tried to mitigate this adjournment by developing alternative data collection (online price collection, collection by phone, more use of scanner data). This change in methodology as well as the more limited number of collected prices may have had an impact on the precision of the consumer price indices from April to June 2020 (and to a lesser extent in March 2020).

In July 2020, these 160 000 prices were collected by price collectors on the field again (except in Guyana). This getting back to normal enables to measure with the usual precision the annual change in prices in July

or the change in prices between March and July 2020. The monthly change in prices between June and July 2020 is, however, impacted because of the lower precision of the index in June. The change in the data sources (from online, phone collection and scanner data to on-the-field collection in July) may have also impacted the measure of the monthly change in prices between June and July 2020. However, it was treated symmetrically¹ to what was done in April 2020 when these alternative price collections were implemented first. It has therefore no impact on the annual change in prices in July 2020 or on the change in prices between March and July 2020.

This on-the-field price collection is particularly important for fresh food produces, food sold in other outlets than super and hypermarkets, clothing and footwear, furniture, sustainable goods, other manufactured products (except cleaning and maintenance products and articles for personal hygiene and beauty products), other services (hotel and restaurant, services provided by craftsmen, cleaning services, hairdressing, mechanic...). For the other segments of consumption, other data sources are usually used and were not impacted by the Covid-19 crisis (scanner data, online price collection, mandatory declarations or official tariffs...)

2 – The postponement of sales due to the Covid-19 crisis impacts the annual change in prices in July 2020

The Consumer price index tracks averaged changes in the prices over a given month. However, depending on the products, the price collection does not occur usually every day of the month. It is carried out according to different collection calendars defined in order to take into account different constraints. For instance, in order to collect a price in a given outlet, the opening days have to be taken into account; or in order to reflect properly the shift in the calendar of the sales² or of the holidays, the collection calendar is adapted.

Because of these issues, prices taken into account for the July index that came from scanner data or from on-the-field price collection occurred from the 22nd of June to the 17th of July; prices for tourism were collected from the 21st of June to the 17th of July. Contrariwise, price collection for transport, health services or fuel was carried out during the whole month.

Summer sales, previously planned from the 24th of June to the 21st of July, were postponed because of the health crisis to the 15th of July up to the 11th of August. This postponement has an upward impact on the annual change in prices in July 2020 because price collection calendar included only 3 days of sales in July 2020 against 18 days in July 2019. In August 2020, it will include 12 days of sales against 7 in August 2019.

3 – Product offers are closer to what was observed before the lockdown

During the lockdown, some consumption segments simply disappeared (shows, tourism, restaurants, hairdresser, cars, guiding lessons...) either because these activities were not allowed according to the implementing order of 15 March 2020 related to measures for the struggle against the Covid-19 spreading, or because households adapted their consumption. Since the end of the lockdown, the 11th of May,

1 In particular, similar rules for quality adjustment were implemented in April and July such that if the change in data sources has an impact on the measure of the price change in April, it has a similar but opposite impact on July.

2 See https://www.insee.fr/en/statistiques/documentation/IPC_op%C3%A9rations%20changement%20ann%C3%A9e%202020_EN.pdf for a description of how the CPI calendar takes into account sales in 2020 and before

reopening of outlets has been progressively authorized and the structure of the consumption has got closer to what it was before the lockdown.

The consumer price index which is a fixed-basket index (a Laspeyres-type index) uses a fixed consumption structure, updated each year. The assumption is that this structure slowly evolves and is usually true. But it does not fit the huge shock that occurred on consumption structure during the health crisis³.

In compliance with [the methodological guidance note of the compilation of the HICP in the context of the Covid-19 crisis](#) by Eurostat,

- The CPI remains a fixed-basket index and the weights for each consumption segments remain unchanged (that is to say the one observed for the year 2019): for instance, whereas the household food expenditures increased with the lockdown, the food weight remained the one observed before the health crisis.
- When a consumption segment is not transacted any more, its price cannot be observed; the sub-index is consequently imputed (i) either with the price changes of similar product or of the nearest higher aggregate (ii) or with the all-item index, (iii) or scarcely, in duly justified circumstances, by carrying forward the last observed price. Moreover, when the price of a product follows a highly seasonal pattern, the imputation reproduces the past seasonality. The three methods were used.

Finally, the share of imputation due to the Covid-19 is only 1% in the July all-item index after one quarter in June 2020; these imputations include both missing data due to the still ongoing adjournment of the price collection in Guyana (due to the health measures) and the remaining unavailability of some services (transport services, tourism, in particular). They did not take into account (i) the usual imputation made for a provisional estimate (because some information are not available yet), (ii) or due to usual closure of outlets or products out of stocks.

Figure 1 : imputation rate due to the Covid-19 crisis, in terms of consumption share, according to the type of products, in %

	March	April	May	June	July
Food	12.3	43.2	40.0	27.3	0.2
Fresh food	21.1	57.3	58.7	45.0	0.1
Other food	10.8	40.8	36.8	24.3	0.2
Tobacco	0.5	1.3	1.0	0.4	0.1
Manufactured products	11.9	56.9	47.3	32.6	0.4
Energy	0.9	6.7	5.5	2.8	0.0
Services	9.6	44.7	41.7	23.6	1.6
All-item CPI	9.7	43.5	39.1	24.3	0.9
All-item HICP	10.5	47.1	42.0	25.9	1.0

Note: Here are only registered the imputations linked to missing data due to (i) a non-observation of prices because of the adjournment of the price collection in the physical outlets, because of the lockdown, (ii) the lack of transaction for some consumption segments in the context of the Covid-19 crisis (extraordinary closure of some outlets, for instance).

³ INSEE published with the definitive Index release of April, May and June an alternative index that uses the consumption structure observed during the health crisis.

