Consumer prices indices.
Basket, weight structure and survey updates
Year 2019

As every year, Istat reviews the list of items included in the consumer price index basket, and updates as well the survey techniques and the weights of each item to compile inflation.

The 2019 basket for the Italian consumer price indices for the whole nation (NIC) and for blue and white-collar households (FOI) is made up of 1,507 elementary products (1,489 in 2018), which are grouped into 922 products and 407 product aggregates.

The 2019 basket for the Italian harmonized index of consumer prices (HICP) is made up of 1,524 elementary products (1,506 in 2018), grouped into 914 products and 411 product aggregates.

The review of the basket of products takes into account the changes in the household spending patterns and enriches, in some cases, the range of products which represent consolidated consumption.

In 2019, *Wild berries*, *Ginger*, *Electric bicycles*, *Scooter sharing*, *Headset with microphone*, *Hoverboard*, *Web TV*, *Garden Furniture (table*, *chair*, o*utdoor storage)*, *Adult diapers*, *Bed crosspiece* are added to the basket.

Moreover, for the compilation of the index of Electricity (ECOICOP 04.5.1) prices are collected on the liberalized market in addition to the regulated market.

On the other hand, *Unrecorded recording media* and *Energy saving light bulb* are removed from the basket.

In total about 6,000,000 price quotations are collected each month, from different sources: 458,000 of them are collected locally by the Municipal Offices of Statistics (MOS); 238,000 are collected directly by Istat and about 5,200,000 come from scanner data. In addition, about 86,000 quotes are collected from automotive fuels prices database of the Ministry of Economic Development.

Data coming from 79 municipalities are processed to estimate monthly inflation; the coverage of the territorial survey, with reference to provincial population, is equal to 83.2%.

An additional group of 15 municipalities participate in the territorial survey with regard to a subset of products (local tariffs and some services). The weight of this subset on the NIC basket is 6.3% and the territorial coverage is 92.3%.

In the municipalities, prices are collected in about 41,900 statistical units (including outlets, enterprises and institutions) and rents are collected for about 8,000 dwellings.

The central survey carried out by Istat concerns a subset of products, whose weight on the NIC basket is 25.9%.

Price quotes collected through scanner data come from a sample of 2,146 hypermarkets and supermarkets, which are representative of the whole Italian national territory and 16 large retail chains.

The consumer prices of automotive/motor fuels (petrol, gas oil, LPG and methane) for the whole national territory are collected through the data base of the Ministry of Economic Development. Istat uses information provided by 15,261 petrol stations (68.4% of those which are present in the data base).

With regard to expenditure divisions in the updated 2019 NIC basket, the weight for *Housing, water, electricity, gas and other fuels* increases, while at the opposite the weight for *Transport* decreases.

The division *Food and non-alcoholic beverages* continues to be the most representative in terms of weight (16.33%), followed by *Transport* (14.41%), *Restaurants and hotels* (11.84%) and *Housing, water, electricity, gas and other fuels* (11.03%).

The update of the basket of goods and services for 2019

The 2019 basket for the Italian consumer price index for the whole nation (NIC) and for blue and white-collar households (FOI) is made up of 1,507 elementary products, which are grouped into 922 products and into 407 product aggregates (they were 1,489 in 2018, grouped into 920 products and 404 product aggregates).

The 2019 basket for the Italian harmonized index of consumer prices (HICP) is made up of 1,524 elementary products, which are grouped into 914 products and then into 411 product aggregates (they were 1,506 in 2018, grouped into 923 products and 408 product aggregates)[1].

TABLE 1. CLASSIFICATION STRUCTURE FOR NIC AND FOI INDICES. YEAR 2019

Year 2019
12 expenditure divisions
43 product groups
102 product classes
230 product sub-classes
304 consumption segments
407 product aggregates
922 products
1,507 elementary products

As usual, the revisions made to the basket in 2019 are different in nature and designed to capture the evolution of the consumer spending habits, considering that the basket of consumer prices is by now so complete and detailed that the number of products entering and leaving the price collection each year is limited.

As far as products representing the evolution in spending habits are concerned, in 2019 the following new products are added to the basket (Table 2): *Wild berries, Ginger, Electric bicycles, Scooter sharing, Headset with microphone, Hoverboard, Web TV.*

In order to expand the range of items covering expenditure aggregates already represented in the basket of the consumer price indices, the following products are included: *Garden Furniture (table*, *chair*, o*utdoor storage)*, *Adult diapers* and *Bed crosspiece, Electricity – liberalized market.*

Unrecorded recording media and *Energy saving light bulb* are, on the contrary, dropped from the basket 2019.

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[1] The difference between the two baskets is due to two elements: on one hand in the HICP basket (but not in the NIC/FOI one), contributions to the NHS for pharmaceutical products, specialist practices and services of medical analysis (six items) are included; on the other hand in the NIC/FOI basket (but not in the HICP one), Games of chance are included.

TABLE 2. CONSUMER PRICE INDICES BASKET 2019: NEW AND REMOVED PRODUCTS

NEW

- ► *Wild berries*
- ► *Ginger*
- ► *Electric bicycles*
- ► *Scooter sharing*
- ► *Headset with microphone*
- ► *Hoverboard*
- ► *Web TV*
- ► *Garden table*
- ► *Garden chair*
- ► *Outdoor storage*
- ► *Adult diapers*
- ► *Bed crosspiece*
- ► *Electicity - liberalized market*

REMOVED

- ◄ *Unrecorded recording media*
- ◄ *Energy saving lamp*
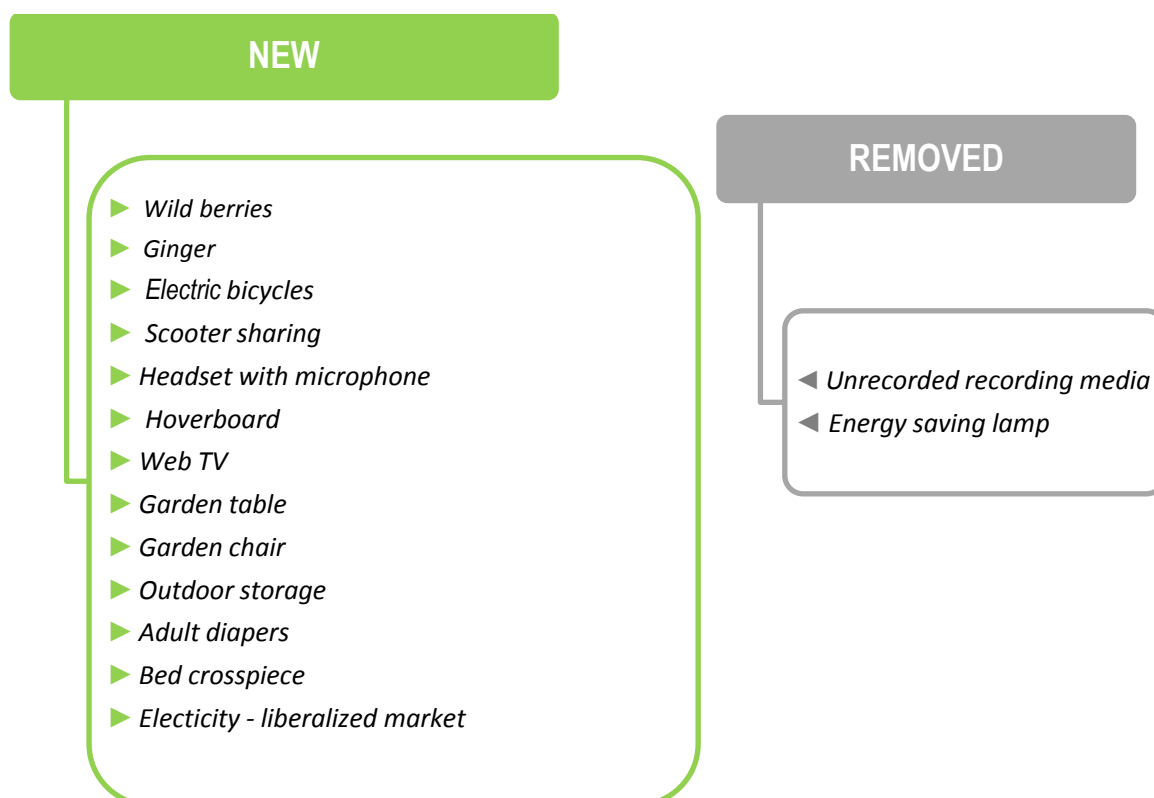
The weighting structure

The weighting coefficients of indices are determined on the basis of the values of the household final consumption expenditure and of the household final monetary consumption expenditure (for HICP), as derived from National Accounts. Additional information used to define weights is originated from the Household Budget Survey, from other Istat surveys and from external sources, which have an auxiliary function[2], such as Ac Nielsen and GfK Italia S.r.l.

Price changes of goods and services included in the basket contribute to the calculation of the All-item index with their own weight in terms of the expenditure share sustained by households to purchase them. However, in order to measure the expenditure shares with reference to the value of the computation base period of indices (December 2018), household final consumption data, referred to the year 2017, are price-updated using the price changes measured between the year 2017 and December 2018 ("price updating effect").

Table 3 shows the 2019 weighting structures by expenditure division of NIC, HICP and FOI indices and their differences. Ordering expenditure divisions according to their relative weights, the three indices, with the exception of *Health*, show relatively small differences. For all the indices the expenditure divisions with a comparatively higher weight are those of *Food and non-alcoholic beverages, Transport, Restaurants and hotels* and *Housing, water, electricity gas and other fuels*[3].

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[2] It should be noted that, due to the unavailability of sufficiently robust estimates of provincial consumption, in the first stage of indices aggregation the consumer price indices, chief towns of provinces contribute to the calculation of regional indices taking into account the relative importance of the province in the region in terms of population. For the calculation of this set of weights, which are based on provincial population data, in 2019, data coming from demographic balance - resident population of 2017, December, 31, have been used.

[3] It is pointed out that, in Italy, as in Europe, items in the division *Housing*, *water*, *electricity*, *gas and other fuels* exclude dwelling purchase, as it is an investment and not a consumer item, while they consider actual rentals for housing, regarding about 16.5% of Italian households according to 2011 Census data (the remaining 83.5% of households own their dwellings, or occupy them as usufructuary or free of charge).

TABLE 3. WEIGHTS USED TO CALCULATE CONSUMER PRICE INDICES BY EXPENDITURE DIVISION
2019, percentage values

EXPENDITURE DIVISIONS	WEIGHTS		
	NIC	HICP	FOI
Food and non-alcoholic beverages	16.3321	17.3257	14.8427
Alcoholic beverages. tobacco	3.0573	3.2419	3.1118
Clothing and footwear	7.0421	8.1483	7.8039
Housing, water, electricity, gas and other fuels	11.0312	11.7221	11.1341
Furnishings, household equipment and routine household maintenance	7.1823	7.6564	6.6568
Health	8.5284	4.3377	6.7596
Transport	14.4119	15.2947	16.3683
Communication	2.4676	2.6228	2.8105
Recreation and culture	7.7936	6.0987	7.9862
Education	1.0102	1.0737	1.3176
Restaurants and hotels	11.8409	12.5647	11.966
Miscellaneous goods and services	9.3024	9.9133	9.2425
ALL ITEMS	**100.0000**	**100.0000**	**100.0000**

The differences among the weighting structures of NIC, FOI and HICP indices are largely due to the different definition of the reference economic aggregate for the three indices. This issue has relevant consequences for determining the weight of the expenditure division *Health* and in particular the weight of pharmaceutical products. The NIC and FOI indices include expenditure incurred by public administration for the household consumption of pharmaceutical products and health services, whereas it is excluded from the calculation of the HICP. Therefore the weight of *Health* in the basket of the harmonised index of consumer prices (4.34%) is significantly lower than the weight calculated for the national indices.

With regard to changes in the weighting structure of the NIC index between 2018 and 2019 the highest increase in absolute terms concerns the expenditure division *Housing, water, electricity, gas and other fuels* (+0. 2323 percentage points), which is entirely due to the to the "price updating effect". Analogously, the increase of the weight of *Miscellaneous goods and services* (+0.1682 percentage points) is essentially determined by the price updating. On the other hand, the increase of the weight of *Restaurants and hotels* (+0.1018 percentage points) is primarily affected by the "expenditure effect" (Table 4).

TABLE 4. NIC INDEX: WEIGHTING STRUCTURE BY EXPENDITURE DIVISION
2018 and 2019, percentage values and absolute differences

EXPENDITURE DIVISIONS	2018	2019	Absolute difference	Spending effect	Price updating effect
Food and non-alcoholic beverages	16.5103	16.3321	-0.1782	-0.0138	-0.1644
Alcoholic beverages, tobacco	3.0965	3.0573	-0.0392	-0.1076	0.0684
Clothing and footwear	7.2048	7.0421	-0.1627	-0.1605	-0.0022
Housing, water, electricity, gas and other fuels	10.7989	11.0312	0.2323	-0.0604	0.2927
Furnishings, household equipment and routine household maintenance	7.139	7.1823	0.0433	0.0267	0.0166
Health	8.4906	8.5284	0.0378	0.0010	0.0368
Transport	14.6713	14.4119	-0.2594	0.0682	-0.3276
Communication	2.5318	2.4676	-0.0642	0.0213	-0.0855
Recreation and culture	7.7042	7.7936	0.0894	0.1118	-0.0224
Education	0.9793	1.0102	0.0309	-0.0254	0.0563
Restaurants and hotels	11.7391	11.8409	0.1018	0.1229	-0.0211
Miscellaneous goods and services	9.1342	9.3024	0.1682	0.0158	0.1524
ALL ITEMS	**100.0000**	**100.0000**			

Looking at the divisions with reduced weight, in the 2019 NIC basket the largest decreases concern the weights of *Transport* (-0.2594 percentage points) and of *Food and non-alcoholic beverages* (-0.1782 percentage points), both due to the "price updating effect". On the contrary, for the decline of the weight of *Clothing and footwear*, equal to -0.1627, the change is mainly affected by the "expenditure effect".

Considering the weighting structure by type of product, in 2019 the weight of *Goods* declines to 53.53% from 53.98%, while the weight of *Services* increases to 46.47% from 46.02% (Table 5).

Concerning goods, in 2019 the weight of *Energy* is unchanged (8.87%) because of the counterbalancing expenditure and price updating effects, *Food including alcohol* slightly reduces its weight *(*17.34% from 17.52%) essentially for the updating effect, *Tobacco* products also show a slight decline in the weight (2.05% from 2.08%), which is primarily affected by the expenditure effect and finally *Non-energy industrial goods* has a small decrease (25.27% from 25.50%) which reflects both the expenditure and price updating effects.

Concerning services, the largest increase concerns the weight of *Services–miscellaneous* (11.59% from 11.11%), due to the combination of expenditure and price updating effects. *Services related to recreation, including repair and personal care* and *Services related to communication* increase their weights (respectively 17.97% from 17.81% and 1.94% from 1.92%) which are principally caused by the rise of the corresponding expenditures. At the opposite, *Services related to transport* and *Services related to housing* show a decline in weights (7.53% from 7.70% and 7,44% from 7,48%): the former is mainly due to the price updating effect, while the latter reflects the reduction of the corresponding expenditure.

In 2019 the weight of All items index excluding energy and unprocessed food (Core inflation) register a slight increase (84.39% from 84.14%).

TABLE 5. NIC INDEX: WEIGHTING STRUCTURE BY TYPE OF PRODUCT
2018 and 2019, percentage values and absolute differences

SPECIAL AGGREGATES	2018	2019	Absolute difference	Spending effect	Revaluation effect
Food including alcohol:	17.5233	17.3403	-0.1830	-0.0442	-0.1388
Processed food including alcohol	10.5414	10.6055	0.0641	0.0564	0.0077
Unprocessed food	6.9819	6.7348	-0.2471	-0.1006	-0.1465
Energy:	8.8748	8.8734	-0.0014	-0.1573	0.1559
Regulated energy products	4.3394	3.6169	-0.7225	-0.9498	0.2273
Non-regulated energy products	4.5354	5.2565	0.7211	0.7925	-0.0714
Tobacco	2.0835	2.0491	-0.0344	-0.0772	0.0428
Non energy industrial goods:	25.5011	25.2656	-0.2355	-0.1112	-0.1243
Durable goods	8.8207	8.8052	-0.0155	0.1271	-0.1426
Non-durable goods	6.4568	6.3972	-0.0596	-0.0709	0.0113
Semi-durable goods	10.2236	10.0632	-0.1604	-0.1674	0.0070
Goods	**53.9827**	**53.5284**	**-0.4543**	**-0.3899**	**-0.0644**
Services related to housing	7.4769	7.4389	-0.0380	-0.0363	-0.0017
Services related to communication	1.9222	1.9372	0.0150	0.0200	-0.0050
Services related to recreation, including repair and personal care	17.8091	17.9708	0.1617	0.1550	0.0067
Services related to transport	7.7036	7.5307	-0.1729	0.0055	-0.1784
Services – miscellaneous	11.1055	11.5940	0.4885	0.2457	0.2428
Services	**46.0173**	**46.4716**	**0.4543**	**0.3899**	**0.0644**
ALL ITEMS	100.0000	100.0000			
All items excluding energy and unprocessed food (Core inflation)	84.1433	84.3918	0.2485	0.2579	-0.0094
All items excluding energy, food, alcohol and tobacco	71.5184	71.7372	0.2188	0.2787	-0.0599
All items excluding energy	91.1252	91.1266	0.0014	0.1573	-0.1559
Grocery and unprocessed food	19.7832	19.6354	-0.1478	-0.0099	-0.1379

With regard to regulated and non-regulated products, the weight of *Regulated goods* decreases (from 6.63% to 5.85%); on the other hand the weight of *Regulated services* has increases (6.58% from 6.39%) (Table 6).

TABLE 6. NIC INDEX: WEIGHTING STRUCTURE BY REGULATED AND NON-REGULATED PRODUCTS
2018 and 2019, percentage values and absolute differences

REGULATED AND NON-REGULATED PRODUCTS	2018	2019	Absolute difference
Non-regulated goods	47.3540	47.6784	0.3244
Regulated goods	6.6287	5.8500	-0.7787
Goods	**53.9827**	**53.5284**	**-0.4543**
Non-regulated services	39.6279	39.8870	0.2591
Regulated services	6.3894	6.5846	0.1952
Services	**46.0173**	**46.4716**	**0.4543**
ALL ITEMS	**100.0000**	**100.0000**	

Finally, concerning products by purchase frequency (Table 7), the weights of *Medium-frequency* and *Low-frequency purchases* increase, while that one of *High-frequency purchases* exhibits a decline.

TABLE 7. NIC INDEX: WEIGHTING STRUCTURE BY PURCHASE FREQUENCY
2018 and 2019, percentage values and absolute differences

PURCHASE FREQUENCY	2018	2019	Absolute difference
High-frequency purchases	40.0756	39.7557	-0.3199
Medium-frequency purchases	42.1334	42.2953	0.1619
Low-frequency purchases	17.7910	17.9490	0.1580
ALL ITEMS	**100.0000**	**100.0000**	

Geographical basis and coverage rate

In 2019 the geographical basis of the survey is made up of 79 municipalities which contribute to the indices calculation of all the product aggregates included in the basket - and of other 15 municipalities[4] participating in the survey for a subset of products which includes local tariffs (water supply, solid waste, sewerage collection, gas for domestic use, urban transport, taxi, car transfer ownership, canteens in schools, public day nursery, etc.) and some local services (sport events, cinemas, theatre shows, secondary school education, canteens in universities, etc.).

For the whole basket, the coverage of the index in terms of resident population in the provinces whose chief towns take part in the survey is 83.2%. The participation of provincial chief towns is total for six regions (Valle D'Aosta, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna and Umbria) but it is still incomplete for the others, in particular in Puglia (40.8%), Abruzzo (47.7%) and Sardinia (56.1%).

At the macro-area level, coverage is total in the North-East; it is equal to 89.4% in the North-West, 83.3% in the Centre, 65.7% in the South and 75.3% in the Islands.

Concerning the basket subset including local tariffs and some local services - whose weight on the NIC basket is equal to 6.3% - with the participation of the other 15 municipalities the coverage of the survey, measured in terms of provincial resident population rises to 92.3%. The participation becomes total for 12 regions and it is stable in other seven and declines in Molise (72.4% from 100% in 2018).

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[4] Asti, Chieti, Fermo, Foggia, Frosinone, l'Aquila, Matera, Monza, Prato, Ragusa, Salerno, Savona, Vasto, Verbania and Vibo Valentia.

Price survey methods

Data contributing to the calculation of monthly consumer price indices are traditionally collected using different sources: the *local survey*, carried out by municipal statistics offices, under Istat supervision and coordination; the *central survey* carried out directly by Istat or through different data providers; the *scanner data*; the *administrative sources*.

In 2019 the weight of the products exclusively collected in the local survey is equal to 59.6% and that of those products which are collected in the central survey is 25.9%. In addition to these two ways the acquisition of scanner data with regard to the distribution channel of hypermarkets and supermarkets (for 55%), and local survey with regard to other types of points of sale (for the remaining 45% of grocery) is used for grocery products (that weigh 10.8%).

Finally, an administrative source is used: the database of fuel prices of Ministry of Economic Development whose weight is equal to 3.7%.

Local survey

In the 94 municipalities (79 for the full basket and 15 for a subset of products) taking part in the 2019 survey, prices are collected in more than 41,900 statistical units (including outlets, enterprises and institutions) and rents are collected for about 8,000 dwellings. Municipal Offices of Statistics send 458,000 quotes on a monthly basis to Istat each month (461,000 in 2018).

Following the annual update of the municipal survey plans, 2.5% of the current price quotes are new (18.2% in 2018) thereof 1.0% are price quotes of new products, while the remaining 1.5% refer to the product already in 2018 basket.

Central survey

In 2019 prices/quotes collected each month directly by Istat are more than 238,000, of which:

✓ 237,000 via web, also using *web scraping techniques,* or collecting data from different providers. The main data providers for the central price data collection are the following:

▶ Italian Customs Agency, for Tobacco products and games of chance;

▶ Italian Association of Concessionaries Highways and Tunnels (Aiscat), for motorway tolls;

▶ Farmadati, for pharmaceutical products;

▶ Italian Association of Publishers (AIE), for prices of school books;

▶ Specialized magazine "Quattroruote" for prices quotes of cars and second hand cars;

▶ Sanguinetti Editore, for prices of cars, motorcycles and motorbikes, caravans and motorhomes;

▶ GfK Italia S.r.l., for information on a large sub-set of technical consumer goods;

✓ about 400 quotes directly provided by insurance companies which refer to protection against most risks connected to property, such as fire, theft and other damages and are used for the Housing insurance services price index compilation;

✓ more than 600 collected using internal sources.

From 2019, Istat starts to collect prices of electricity in the liberalized market (in addition to the collection of prices in the regulated market). Prices are directly collected by Istat through web scraping procedures: to this aim the main regional providers are considered.

Eight profiles are defined according to the following three variables:

- Type of household: residential/non-residential;
- Type of rate: mono/dual hourly rate;
- Type of contract: fix/variable rate.

As a whole, about 2,300 price quotations are monthly collected.

Scanner data

In 2018 Istat introduced scanner data of grocery products (excluding fresh food) in the production process of estimation of inflation.

This innovation concerns 79 indices of aggregate of products belonging to five ECOICOP Divisions (01, 02, 05, 09 and 12).

In agreement with retail trade chains (RTCs) and with the collaboration of the Association of modern distribution and Nielsen, scanner data for 2,146 outlets (1,781 in 2018), including 534 hypermarkets and 1,612 supermarkets of the main 16 RTCs covering the entire national territory are monthly collected by Istat on a weekly basis at item code level.

Concerning the selection of the sample of items, a static approach that mimics traditional price collection method has been adopted. Specifically, a cut off sample of barcodes (GTINs) has been selected within each outlet/aggregate of products (covering 40% of turnover but selecting no more than the first 30 GTINs in terms of turnover). The GTINs selected in December are kept fixed during the following year.

About 1,800,000 price quotes are collected each week to estimate inflation. For each GTIN, prices are calculated taking into account turnover and quantities (weekly price=weekly turnover/weekly quantities). Monthly prices are calculated with arithmetic mean of weekly prices weighted with quantities.

Scanner data (SD) indices of aggregate of products are calculated at outlet level as unweighted Jevons index (geometric mean) of GTINs elementary indices. Provincial SD indices of aggregate of products are calculated with weighted arithmetic mean of outlet indices using sampling weights. Finally, for each aggregate of products, SD indices and indices referred to other channels of retail trade distribution are aggregated with weighted arithmetic mean using expenditure weights.

Administrative sources

Starting from 2017 automotive fuels price indices are calculated using exclusively the data base supplied by the Ministry of Economic Development that collects prices for these products. In 2019, more than 86,000 price quotes are monthly used to estimate inflation and they come from about 15,261 fuel stations on the territory, that is 68.4% of the ones present in Ministry database.

The sample of fuel stations covers all the geographical areas of country. Specifically: more than 3,900 are located in the North-West; more than 3,500 in the North-East; about 3,300 in the Centre; almost 2,900 in the South and little less than 1,500 in the Islands

For more details please refer to the Italian version

Contact person:

Federico Polidoro
Istat – National Institute of Statistics
Integrated system on economic conditions and consumer prices
Via C. Balbo. 16 – 00184 Rome. Italy
polidoro@istat.it
ph. +39.06.46732307