

Consumer prices indices. Basket, weight structure and survey updates Year 2020

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.

In 2020, the most important news is the extension to other channels of the modern distribution (discounts, small sales areas and specialist drug besides hypermarkets and supermarkets for which scanner data are used since 2018) of the use of scanner data concerning grocery products (processed food, products for house maintenance and personal care) to estimate Italian inflation.

The 2020 basket for the Italian consumer price indices for the whole nation (NIC) and for blue and white-collar households (FOI) is made up of 1,681 elementary products (1,507 in 2019), which are grouped into 993 products and 410 product aggregates.

The 2020 basket for the Italian harmonized index of consumer prices (HICP) is made up of 1,700 elementary products (1,524 in 2019), grouped into 1.012 products and 414 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.

For 2020, *Electric and electric hybrids cars, Electric kick scooter, Sushi take away, Food delivery, Beard and mustache service, Hearing aids, Beauty treatments for men, Washing and ironing of shirt, Semi-permanent nail polish application* have been added to the basket.

In 2020 no product leaves the basket since all those already present do not show signs of obsolescence such as to justify their exclusion.

In total over 30 million price quotations are used each month to estimate Italian inflation. They come from different sources: 384,000 of them are collected locally by the Municipal Offices of Statistics (MOS); 121,000 are collected directly by Istat and about 30 million come from scanner data. In addition, almost 72,000 quotes are collected from automotive fuels prices database of the Ministry of Economic Development.

Data coming from 80 municipalities are processed to estimate monthly inflation; the coverage of territorial survey, with reference to provincial population, is equal to 83.2%.

An additional group of 12 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 5.6% and the territorial coverage is 90.3%.

In the municipalities, prices are collected in about 43,000 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 22.7%.

Price quotes collected through scanner data come from a sample of 3,962 outlets including hypermarkets, supermarkets, discounts, small sales areas and specialist drugs, which are representative of the whole Italian national territory and of 25 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 around 13,500 petrol stations (62.5% of which are present in the data base).

With regard to expenditure divisions in the updated 2020 NIC basket, the weight for *Transport* increases, while at the opposite the weight for *Housing, water, electricity, gas and other fuels* decreases.

The expenditure division *Food and non-alcoholic beverages* continues to be the most representative in terms of weight (16.21%), followed by *Transport* (14.96%), *Restaurants and hotels* (11.95%) and *Housing, water, electricity, gas and other fuels* (9.95%).

The update of the basket of goods and services for 2020

The 2020 basket for the Italian consumer price index for the whole nation (NIC) and for blue and white-collar households (FOI) is made up of 1,681 elementary products, which are grouped into 993 products and into 410 product aggregates (they were 1,507 in 2019, grouped into 922 products and 407 product aggregates).

The 2020 basket for the Italian harmonized index of consumer prices (HICP) is made up of 1,700 elementary products, which are grouped into 1.012 products and then into 414 product aggregates (they were 1,524 in 2019, grouped into 914 products and 411 product aggregates)¹.

TABLE 1. CLASSIFICATION STRUCTURE FOR NIC AND FOI INDICES. YEAR 2020

Year 2020
12 expenditure divisions
43 product groups
102 product classes
231 product sub-classes
309 consumption segments
410 product aggregates
993 products
1,681 elementary products

As usual, the revisions made to the basket in 2020 are due to different reasons 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.

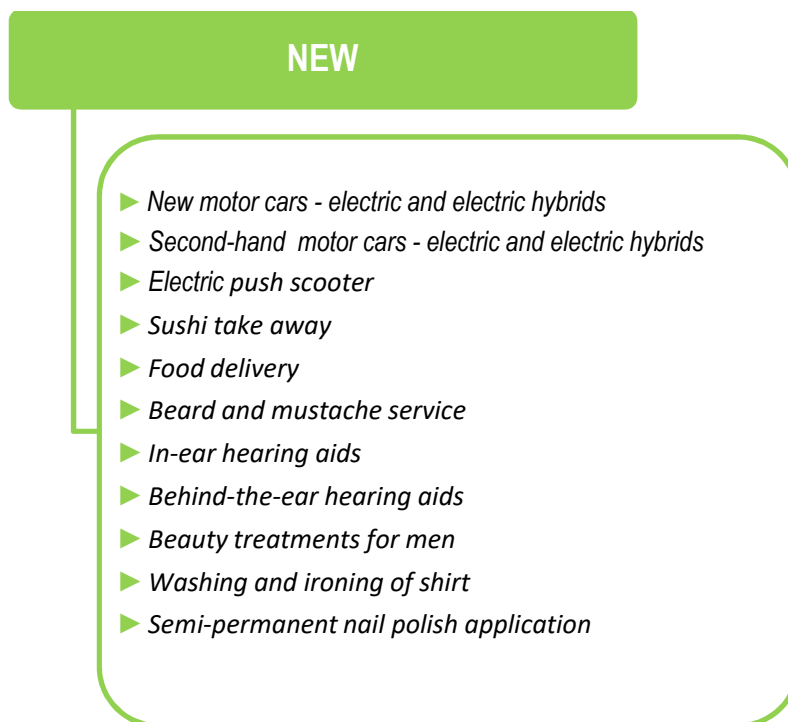
As far as products representing the evolution in spending habits are concerned, in 2020 the following new products are added to the basket (Table 2): *Electric and electric hybrids cars*, *Electric kick scooter*, *Sushi take away*, *Food delivery*, *Beard and mustache service*, *Hearing aids*, *Beauty treatments for men*.

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: *Washing and ironing of shirt*, *Semi-permanent nail polish application*.

In 2020 no product leaves the basket since all those already present in 2019 do not show signs of obsolescence such as to justify their exclusion.

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 2020: NEW PRODUCTS



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 Accounts². 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, 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 2019), household final consumption data, referred to the year 2018, are price-updated using the price changes measured between the year 2018 and December 2019.

Table 3 shows the 2020 weighting structures by expenditure division of NIC, HICP and FOI indices and their differences. By 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.

² Starting from 23 September 2019, the time series of national accounts, based on the new European System of Accounts (ESA 2010), have been subjected to an extraordinary revision, exploiting advances in methods and sources available. The revision took place in coordination with other European countries. The previously disseminated series are available in I.Stat in the sections "Annual accounts in the 2014 version" and "Annual accounts in the 2011 and 2005 versions" of this same site.

³ In Italy, as in the other European countries for HICP, items in the expenditure division *Housing, water, electricity, gas and other fuels* exclude dwelling purchase, as it is an investment and not a consumer item. This expenditure division includes 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 life tenants or free of charge).

TABLE 3. WEIGHTS USED TO CALCULATE CONSUMER PRICE INDICES BY EXPENDITURE DIVISION
2020, percentage values

EXPENDITURE DIVISIONS	WEIGHTS		
	NIC	HICP	FOI
Food and non-alcoholic beverages	16.2085	17.2583	14.8971
Alcoholic beverages. tobacco	3.0742	3.2726	3.1649
Clothing and footwear	7.0425	8.164	7.6826
Housing, water, electricity, gas and other fuels	9.9537	10.6004	10.2483
Furnishings, household equipment and routine household maintenance	7.1792	7.6607	6.6511
Health	8.7672	4.3328	7.1032
Transport	14.956	15.9074	16.805
Communication	2.3522	2.5035	2.7312
Recreation and culture	7.83	6.1687	7.9988
Education	1.0401	1.107	1.2751
Restaurants and hotels	11.9468	12.7236	12.1129
Miscellaneous goods and services	9.6496	10.301	9.3298
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 this expenditure is excluded from the calculation of the HICP. Therefore the weight of *Health* in the basket of the harmonised index of consumer prices (4.33%) is significantly lower than the weight calculated for the national indices (8.77).

With regard to changes in the weighting structure of the NIC index between 2019 and 2020 the highest increase in absolute terms concerns the expenditure division *Transport* (+0.5441 percentage points), which is entirely due to the "Total expenditure effect" (where the effect of the revision of national accounts plays a crucial role). Analogously, the increase of the weight of *Miscellaneous goods and services* (+0.3472 percentage points) is essentially determined by the increase of expenditure and in particular of the "revision effect" whereas the increase of the weight of *Health* (+0.2388) reflects both the expenditure and revaluation effects (Table 4).

Looking at the expenditure divisions with reduced weight, in the 2020 NIC basket the largest decreases concern the weights of *Housing, water, electricity, gas and other fuels* (-1.0775 percentage points), largely due to the spending effect in which the revision of spending data has a main part and is strengthened by the decrease of prices. Finally, the decline of the weight of *Food and non-alcoholic beverages* (-0.1236 percentage points) is affected by the "total expenditure effect" whereas the decline of weight of *Communication* is determined by the "revaluation effect".

TABLE 4. NIC INDEX: WEIGHTING STRUCTURE BY EXPENDITURE DIVISION
2019 and 2020, percentage values and absolute differences

EXPENDITURE DIVISIONS	2019	2020	Absolute difference	Total spending effect	Spending effect	Revision effect	Revaluation effect
Food and non-alcoholic beverages	16.3321	16.2085	-0.1236	-0.1661	-0.1559	-0.0102	0.0425
Alcoholic beverages, tobacco	3.0573	3.0742	0.0169	0.0249	-0.0536	0.0785	-0.0080
Clothing and footwear	7.0421	7.0425	0.0004	-0.0789	0.0445	-0.1234	0.0793
Housing, water, electricity, gas and other fuels	11.0312	9.9537	-1.0775	-0.7054	-0.0306	-0.6748	-0.3721
Furnishings, household equipment and routine household maintenance	7.1823	7.1792	-0.0031	-0.0648	0.0078	-0.0726	0.0617
Health	8.5284	8.7672	0.2388	0.1193	0.0763	0.0430	0.1195
Transport	14.4119	14.9560	0.5441	0.6495	0.2210	0.4285	-0.1054
Communication	2.4676	2.3522	-0.1154	-0.0033	-0.1104	0.1071	-0.1121
Recreation and culture	7.7936	7.8300	0.0364	-0.0074	0.0284	-0.0358	0.0438
Education	1.0102	1.0401	0.0299	-0.1076	-0.1034	-0.0042	0.1375
Restaurants and hotels	11.8409	11.9468	0.1059	0.0289	-0.0091	0.0380	0.0770
Miscellaneous goods and services	9.3024	9.6496	0.3472	0.3109	0.0850	0.2259	0.0363
ALL ITEMS	100,0000	100,0000					

Looking at the classification by type of products, concerning goods, in 2020 the weight of *Energy* slightly decreases (8.73%, from 8.87% in 2019). This dynamics is the result on one side of the decrease of the component of *Regulated energy products* (which is affected by the reduction both of expenditure and prices), and on the other side of the increase of the component of *Non-regulated energy products*, on which the "total spending effect" has a large impact, although mitigated by price reductions.

As for the other typologies of goods: *Food including alcohol* records a slight reduction in the weight (17.21% from 17.34%) which is essentially due to the total spending effect; *Tobacco* products are substantially unchanged in the weight (2.07% from 2.05%); finally, *Non-energy industrial goods* increase to 25.58% from 25.27%) reflecting both the expenditure and revaluation effects.

As for services, the largest increase concerns the weight of *Services–miscellaneous* (12.00% from 11.59%), due to the combination of expenditure and price effects. *Services related to recreation, including repair and personal care* increase their weights (18.14% from 17.97%) mainly for the rise of prices (revaluation effect).

At the opposite, decreases of the weights of both *Services related to housing* (7.20% from 7.44%) and those of *Services related to transport* (7.32%, from 7.53%) are affected by the "Total expenditure effect " and in particular by the "revision effect ". The reduction of the weight of the *Services related to communication* (1.75% from 1.94%) is instead due to both the "total spending effect" and the "revaluation effect".

In 2020, the weight of All items index excluding energy and unprocessed food (Core inflation) has registered a slight increase (84.58% from 84.39%).

TABLE 5. NIC INDEX: WEIGHTING STRUCTURE BY TYPE OF PRODUCT
2019 and 2020, percentage values and absolute differences

SPECIAL AGGREGATES	2019	2020	Absolute difference	Total spending effect	Spending effect	Revision effect	Revaluation effect
Food including alcohol:	17.3403	17.2097	-0.1306	-0.1446	-0.1833	0.0387	0.0140
Processed food including alcohol	10.6055	10.5225	-0.0830	-0.0456	-0.1345	0.0889	-0.0374
Unprocessed food	6.7348	6.6872	-0.0476	-0.0990	-0.0488	-0.0502	0.0514
Energy:	8.8734	8.7308	-0.1426	0.4593	0.2865	0.1728	-0.6019
Regulated energy products	3.6169	2.8674	-0.7495	-0.3661	-0.0366	-0.3295	-0.3834
Non-regulated energy products	5.2565	5.8634	0.6069	0.8254	0.3231	0.5023	-0.2185
Tobacco	2.0491	2.0730	0.0239	0.0034	-0.0262	0.0296	0.0205
Non energy industrial goods:	25.2656	25.5811	0.3155	0.0876	0.0120	0.0756	0.2279
Durable goods	8.8052	9.0385	0.2333	0.1833	0.0412	0.1421	0.0500
Non-durable goods	6.3972	6.3871	-0.0101	-0.1066	-0.0735	-0.0331	0.0965
Semi-durable goods	10.0632	10.1555	0.0923	0.0109	0.0443	-0.0334	0.0814
Goods	53.5284	53.5946	0.0662	0.4057	0.0890	0.3167	-0.3395
Services related to housing	7.4389	7.1957	-0.2432	-0.3141	-0.0765	-0.2376	0.0709
Services related to communication	1.9372	1.7464	-0.1908	-0.0999	-0.1129	0.0130	-0.0909
Services related to recreation, including repair and personal care	17.9708	18.1401	0.1693	0.0060	-0.0196	0.0256	0.1633
Services related to transport	7.5307	7.3198	-0.2109	-0.2277	-0.0059	-0.2218	0.0168
Services – miscellaneous	11.5940	12.0034	0.4094	0.2300	0.1259	0.1041	0.1794
Services	46.4716	46.4054	-0.0662	-0.4057	-0.0890	-0.3167	0.3395
ALL ITEMS	100.0000	100.0000					
All items excluding energy and unprocessed food (Core inflation)	84.3918	84.5820	0.1902	-0.3603	-0.2377	-0.1226	0.5505
All items excluding energy, food, alcohol and tobacco	71.7372	71.9865	0.2493	-0.3181	-0.0770	-0.2411	0.5674
All items excluding energy	91.1266	91.2692	0.1426	-0.4593	-0.2865	-0.1728	0.6019
Grocery and unprocessed food	19.6354	19.5117	-0.1237	-0.1513	-0.2010	0.0497	0.0276

With regard to regulated and non-regulated products, the weight of *Regulated goods* show a decrease (5.07% from 5.85%); also the weight of *Regulated services* declines (6.40% from 6.58%) (Table 6).

TABLE 6. NIC INDEX: WEIGHTING STRUCTURE BY REGULATED AND NON-REGULATED PRODUCTS
2019 and 2020, percentage values and absolute differences

REGULATED AND NON-REGULATED PRODUCTS	2019	2020	Absolute difference
Non-regulated goods	47.6784	48.5294	0.8510
Regulated goods	5.8500	5.0652	-0.7848
Goods	53.5284	53.5946	0.0662
Non-regulated services	39.8870	40.0056	0.1186
Regulated services	6.5846	6.3998	-0.1848
Services	46.4716	46.4054	-0.0662
ALL ITEMS	100.0000	100.0000	

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

TABLE 7. NIC INDEX: WEIGHTING STRUCTURE BY PURCHASE FREQUENCY

2019 and 2020, percentage values and absolute differences

PURCHASE FREQUENCY	2019	2020	Absolute difference
High-frequency purchases	39.7557	40.4465	0.6908
Medium-frequency purchases	42.2953	41.2733	-1.0220
Low-frequency purchases	17.9490	18.2802	0.3312
ALL ITEMS	100.0000	100.0000	

Geographical basis and coverage rate

In 2020, the geographical basis of the survey is made up of 80 municipalities, which contribute to the indices calculation of all the product aggregates included in the basket. Other 12 municipalities⁴ participate 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 (47.8%) and Sardinia (56.3%).

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 5.6% - taking into account the participation of the other 12 municipalities, the coverage of the survey, in terms of provincial resident population, rises to 90.3%. The participation becomes total for 12 regions and it is stable in other seven and declines in Marche (65.1% from 76.5% in 2019) and in Campania (81.1% from 100% in 2019).

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 2020, the weight of the products exclusively collected through the local survey is equal to 58.6% and that of products collected through the central survey is 22.7%. In addition to these two ways the acquisition of elementary prices (for grocery products) is carried out through scanner data with regard to the retail trade modern distribution channels that are hypermarkets, supermarkets, discounts, small sales areas and specialist drug (for 10.5% in terms of weight), where traditional data collection is no longer carried out. For some products (weighing 3.9%), prices are collected in a mixed way. Finally, an administrative source is used: the database of fuel prices of Ministry of Economic Development whose weight is equal to 4.3%.

⁴ Asti, Chieti, Foggia, Frosinone, l'Aquila, Matera, Monza, Prato, Ragusa, Savona, Verbania and Vibo Valentia. Fermo, Salerno and Vasto no longer participate in the survey

Local survey

In the 92 municipalities (80 for the full basket and 12 for a subset of products) taking part in the 2020 survey, prices are collected in about 43,000 statistical units (including outlets, enterprises and institutions) and rents are collected for about 8,000 dwellings. 384,000 price quotes are sent by Municipal Offices of Statistics to Istat each month (458,000 in 2019; the decrease is due to the switch of prices collection to the acquisition of scanner data for discounts, small sales areas and specialist drug).

Following the annual update of the municipal survey plans, 9.4% of the current price quotes are new (2.5% in 2019): of these, 1.6% are price quotes of new products, while the remaining 7.8% refers to products already in 2019 basket.

Central survey

In 2020, prices/quotes collected each month directly by Istat are more than 121,000, thereof:

- ✓ about 120,000 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;
 - ▶ Insurance companies, for the prices of home-related insurance services;
 - ▶ Italian Association of Concessionaries Highways and Tunnels (Aiscat) and ASTM 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 700 collected using internal sources.

Scanner data

In 2018, Istat introduced scanner data of grocery products (excluding fresh food), coming from hypermarkets and supermarkets, in the production process of the consumer price indices.

Starting from January 2020, Istat introduces two innovations:

1. The enlargement of the sample of outlets to include other retail trade channels (discounts, small sales areas between 100 and 400 s.m. and specialist drug);
2. The adoption of the dynamic approach to the selection of the elementary items.

At present, scanner data feed the calculation of 79 sub-indices (“aggregate of products”) belonging to five ECOICOP Divisions (01, 02, 05, 09, 12).

In agreement with retail trade chains (RTCs) and with the fruitful collaboration of the Association of Modern Distribution and Nielsen, Istat receives scanner data for 3,962 outlets (2,146 in 2019), including 511 hypermarkets, 1,504 supermarkets, 516 discounts, 1,000 outlets with surface between 100 and 400 s.m. and 431 specialist drug. These outlets belong to the main 25 RTCs and they cover the entire national territory. Istat receives scanner data on a weekly basis at item code level. The sample of outlets is stratified by provinces (107) and retail trade channels (5).

More than 17 million price quotes are collected each week to estimate inflation. For each barcode (GTIN), prices are calculated taking into account turnover and quantities (weekly price=weekly turnover/weekly quantities). Monthly prices are calculated as the arithmetic mean of weekly prices weighted with quantities.

Concerning the selection of the sample of items, a dynamic approach has been adopted. Specifically, in each month a sample of GTINs is selected within each outlet and ECR⁵ market (representative of elementary aggregates). A set of filters have been implemented to select the matched sample each month comparing the current month with the preceding month. In January, the sample includes more than 10 million references thereof about 30 million elementary prices enter the indices compilation.

Scanner data indices of ECR market are calculated at outlet level as unweighted Jevons index (geometric mean) of GTINs elementary indices. The ECR market indices are then linked to the base period (December of the previous year). In turn, provincial indices of ECR market are calculated as the weighted arithmetic means using sampling weights of outlets and turnover by retail trade channel. Finally, provincial indices of aggregate of products are calculated as the weighted arithmetic mean of ECR markets using expenditure shares (referred to one year before) for the weights.

Administrative sources

Starting from 2017 automotive fuels price indices are calculated using the data base supplied by the Ministry of Economic Development that collects prices for these products. In 2020, almost 72,000 price quotes are monthly used to estimate inflation and they come from about 13,500 fuel stations on the territory, that is 62.5% of the ones present in Ministry database.

The sample of fuel stations covers the geographical areas of country. Specifically: around 3,300 are located in the North-West; more than 3,000 in the North-East; about 2,900 in the Centre; more than 2,600 in the South and more than 1,500 in the Islands

For more details please refer to the Italian version

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⁵ ECR markets are the lowest level of the ECR classification (classification shared by industrial and distribution companies) and they have been linked to the aggregates of products of ECOICOP classification.