Consumer prices indices.
Basket, weight structure and survey updates
Year 2021

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 changes made in 2021, with reference to both the weights and the basket, reflect the constant evolution of household spending behaviours but also the impact of events, such as the pandemic still ongoing, which affect purchasing decisions and structure of consumer spending.

The 2021 basket for the Italian consumer price indices for the whole nation (NIC) and for blue and white-collar households (FOI) is made up of 1,731 elementary products (1,681 in 2020), which are grouped into 1,014 products and 418 product aggregates.

The 2021 basket for the Italian harmonized index of consumer prices (HICP) is made up of 1,751 elementary products (1,700 in 2020), grouped into 1,033 products and 422 product aggregates.

The review of the basket of products takes into account the changes in the household spending patterns (also due to legal provisions) and enriches, in some cases, the range of products representing consolidated consumption.

For 2021, the main products added to the basket (and that represent the changes in the household spending patterns) are: *Nutritional supplements*, *Helmet for two-wheeled vehicles*, *Surgical masks*, *FFP2 face masks*, *Hand sanitizer gel*, *Electric car charging*, *Electric scooter sharing*, *Certified email services* and *Anti-abandonment device*.

In 2021 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: 390,000 of them are collected locally by the Municipal Offices of Statistics (MOS) and concern 56.2% of the basket in terms of weight; 100,000 are collected directly by Istat (22.8% of the basket) and about 30 million come from scanner data (12.8% of the basket). In addition, more than 80,000 quotes are collected from automotive fuels prices database of the Ministry of Economic Development (3.7% of the basket). For the remaining 4.5% of the basket price quotations are collected using by mixed techniques.

Data coming from 80 municipalities are processed to estimate monthly inflation; the coverage of territorial survey, with reference to provincial population, is equal to 83.3%.

An additional group of 12 municipalities participate in the territorial survey with regard to a subset of products (local tariffs and some services) and for this subset, the territorial coverage is up to 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.

Price quotes collected through scanner data come from a sample of about 4 thousand outlets including hypermarkets, supermarkets, discounts, small sales areas and specialist drugs, which are representative of the whole Italian national territory and of 21 large retail chains. The weight of scanner data on the NIC basket is 12.8%.

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 t Ministry of Economic Development. Istat uses information provided by around 14,200 petrol stations (67.1% of those in the data base).

With regard to expenditure divisions in the updated 2021 NIC basket, the weight for *Food and non-alcoholic beverages* increases, while at the opposite the weight for *Restaurants and hotels* and for *Transport* decreases.

The expenditure division *Food and non-alcoholic beverages* continues to be the most representative in terms of weight (19.34%), followed by *Transport* (12.73%), *Housing, water, electricity, gas and other fuels* (11.20%) and *Miscellaneous goods and services* (10.05%).

The update of the basket of goods and services for 2021

The 2021 basket for the Italian consumer price index for the whole nation (NIC) and for blue and white-collar households (FOI) is made up of 1,731 elementary products, which are grouped into 1.014 products and into 418 product aggregates (they were 1,681 in 2020, grouped into 923 products and 410 product aggregates).

The 2021 basket for the Italian harmonized index of consumer prices (HICP) is made up of 1,751 elementary products, which are grouped into 1,033 products and then into 422 product aggregates (they were 1,700 in 2020, grouped into 1,012 products and 414 product aggregates)[1] (Table 1).

TABLE 1. CLASSIFICATION STRUCTURE FOR NIC AND FOI INDICES. YEAR 2021

Year 2021

12 expenditure divisions
43 product groups
102 product classes
231 product sub-classes
310 consumption segments
418 product aggregates
1,014 products
1,731 elementary products

The revisions made to the basket, in 2021, are mainly aimed at capturing the evolution of consumer spending habits, as usual. This year, the revisions are affected also by the effect of the health crisis underway since March 2020, which has directly or indirectly influenced consumer spending habits.

As far as products representing the evolution in spending habits are concerned, in 2021 the following new products are added to the basket (Table 2):

Nutritional supplements, Helmet for two-wheeled vehicles, Hand sanitizing gel, Surgical mask, FFP2 mask, Electric car charging, Electric scooter sharing, Certified email services, Anti-abandonment device.

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:

Edible offal, Beefsteak salad tomatoes, Shallot, T-shirt children, Men's sports shoes, Men's trekking shoes, Men's home footwear, Women's home shoes, Women's sports shoes, Women's trekking shoes, Kneading machine, Thermal bottle, Anti-abandonment device.

In 2021 no product leaves the basket since all those already present in 2020 do not show signs of obsolescence such as to justify their exclusion.

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[1] The difference between the two baskets is mainly 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

NEW

- ► Edible offal
- ► Beefsteak salad tomatoes
- ► Shallot
- ► Nutritional supplements
- ► T-shirt children
- ► Helmet for two-wheeled vehicles
- ► Men's sports shoes
- ► Men's trekking shoes
- ► Men's home footwear
- ► Women's home shoes
- ► Women's sports shoes
- ► Women's trekking shoes
- ► Kneading machine
- ► Thermal bottle
- ► Hand sanitizing gel
- ► Surgical mask
- ► FFP2 mask
- ► Electricic car charging
- ► Electric scooter sharing
- ► Certified email services
- ► Anti-abandonment device

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, such as Ac Nielsen and GfK Italia S.r.l.

The COVID-19 pandemic had a significant impact on the consumption expenditure of households who are adjusting their consumption habits to the new circumstances. Therefore, for the estimation of the weighting coefficients, it was decided, also in accordance with the guidelines drawn up by Eurostat, to use the most recent National Accounts data available, i.e. the data relating to year 2020.

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 2020), household final consumption data, are price-updated using the price changes measured between the average of year 2020 and December 2020.

Table 3 shows the 2021 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, Housing, water, electricity gas and other fuels*[2] and *Miscellaneous goods and services*.

TABLE 3. WEIGHTS USED TO CALCULATE CONSUMER PRICE INDICES BY EXPENDITURE DIVISION
2021, percentage values

EXPENDITURE DIVISIONS	WEIGHTS		
	NIC	HICP	FOI
Food and non-alcoholic beverages	19.3405	20.5912	18.0901
Alcoholic beverages. Tobacco	3.6133	3.8497	3.7285
Clothing and footwear	6.5355	7.4901	7.2411
Housing, water, electricity, gas and other fuels	11.1952	11.9319	11.0419
Furnishings, household equipment and routine household maintenance	7.7224	8.2531	6.5411
Health	9.5512	4.6813	8.2569
Transport	12.7341	13.5505	14.8666
Communication	2.7883	2.9718	3.2205
Recreation and culture	7.1028	5.9715	7.2241
Education	1.0766	1.1475	1.3037
Restaurants and hotels	8.294	8.8378	8.7148
Miscellaneous goods and services	10.0461	10.7236	9.7707
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 (4.68%) is significantly lower than the weight calculated for the national indices (9.55%).

The measures adopted to contrast the pandemic had a strong impact on consumption decisions. Therefore, some expenditure divisions recorded significant changes in weight, compared to the values measured for 2020 basket. Conversely, the "revaluation effect" of the expenditure is not very significant.

With regard to changes in the weighting structure of the NIC index between 2020 and 2021, the highest increase in absolute terms concerns the expenditure division *Food and non-alcoholic beverages* (+3.1320 percentage points), which is entirely due to the "spending effect" slightly mitigated by the "revaluation effect". The increase of the weight of *Housing, water, electricity, gas and other fuels* (+1.2415 percentage points), of *Health* (+0.7840 percentage points) and of *Alcoholic beverages, tobacco* (+0.5391 percentage points) is essentially determined by the increase of expenditure (Table 4).

Looking at the expenditure divisions with reduced weight, in the 2021 NIC basket the largest decreases concern the weights of *Restaurants and hotels* (-3.6528 percentage points), largely due to the spending effect.

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[2] 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).

Also the decline of the weight of *Transport* (-2.2219) is due to the reduction of expenditure and minimally by the "revaluation effect". The decrease in the weight of *Recreation and culture* (-0.7272 percentage points) and that of *Clothing and footwear* (-0.5070 percentage points) are both affected by the reduction of expenditure, slightly mitigated by the "revaluations effect".

TABLE 4. NIC INDEX: WEIGHTING STRUCTURE BY EXPENDITURE DIVISION
2020 and 2021, percentage values and absolute differences

EXPENDITURE DIVISIONS	2020	2021	Absolute difference	Spending effect	Revaluation effect
Food and non-alcoholic beverages	16.2085	19.3405	3.132	3.2811	-0.1491
Alcoholic beverages, tobacco	3.0742	3.6133	0.5391	0.6052	-0.0661
Clothing and footwear	7.0425	6.5355	-0.5070	0.5162	0.0092
Housing, water, electricity, gas and other fuels	9.9537	11.1952	1.2415	1.1588	0.0827
Furnishings, household equipment and routine household maintenance	7.1792	7.7224	0.5432	0.5177	0.0255
Health	8.7672	9.5512	0.7840	0.7686	0.0154
Transport	14.956	12.7341	-2.2219	2.1246	-0.0973
Communication	2.3522	2.7883	0.4361	0.2115	0.2246
Recreation and culture	7.83	7.1028	-0.7272	0.8270	0.0998
Education	1.0401	1.0766	0.0365	0.0772	-0.0407
Restaurants and hotels	11.9468	8.2940	-3.6528	3.6551	0.0023
Miscellaneous goods and services	9.6496	10.0461	0.3965	0.5028	-0.1063
ALL ITEMS	**100.0000**	**100.0000**			

Looking at the classification by type of products (Table 5), concerning goods, in 2021 the weight of *Energy* slightly decreases (8.35%, from 8.73% in 2020). This dynamic is the result on one side of the decrease of the component of *Non-regulated energy products* (which is affected largely by the reduction of expenditure), and on the other side of the slight increase of the component of *Regulated energy products,* on which the "revaluation effect" has a large impact.

As for the other typologies of goods: *Food including alcohol* records a substantial increase in the weight (20.61% from 17.21%) which is essentially due to the "spending effect"; *Tobacco* products rises in the weight (2.34% from 2.07%) because the expenditure rises; finally, *Non-energy industrial goods* increase to 26.75% (from 25.58%) reflecting both the expenditure and the "revaluation effect".

As for services, the largest increase concerns the weight of *Services related to housing* (8.06% from 7.20%) entirely due to the expenditure effects. Also the rise of the weight of *Services–miscellaneous* (12.48% from 12.00%), is due to the expenditure effects, while the increase of the weight of *Services related to communication* (1.97% from 1.75%) is due mainly to "price effect".

At the opposite, there is a decrease in the weights of *Services related to recreation, including repair and personal care* (12.98% from 18.14%) and those of *Services related to transport* (6.45%, from 7.32%) largely due to the decline of expenditure .

In 2021, the weight of all item index excluding energy and unprocessed food (Core inflation) registers a decline (83.79% from 84.58%).

TABLE 5. NIC INDEX: WEIGHTING STRUCTURE BY TYPE OF PRODUCT
2020 and 2021, percentage values and absolute differences

SPECIAL AGGREGATES	2020	2021	Absolute difference	Spending effect	Revaluation effect
Food including alcohol:	17.2097	20.6108	3.4011	3.5687	-0.1676
Processed food including alcohol	10.5225	12.7445	2.2220	2.2660	-0.0440
Unprocessed food	6.6872	7.8663	1.1791	1.3027	-0.1236
Energy:	8.7308	8.3480	-0.3828	-0.4609	0.0781
Regulated energy products	2.8674	3.0130	0.1456	0.0252	0.1204
Non-regulated energy products	5.8634	5.3350	-0.5284	-0.4861	-0.0423
Tobacco	2.0730	2.3430	0.2700	0.3176	-0.0476
Non energy industrial goods:	25.5811	26.7520	1.1709	0.9187	0.2522
Durable goods	9.0385	9.7748	0.7363	0.5346	0.2017
Non-durable goods	6.3871	7.1239	0.7368	0.7295	0.0073
Semi-durable goods	10.1555	9.8533	-0.3022	-0.3454	0.0432
Goods	**53.5946**	**58.0538**	**4.4592**	**4.3441**	**0.1151**
Services related to housing	7.1957	8.0612	0.8655	0.8657	-0.0002
Services related to communication	1.7464	1.9708	0.2244	0.0806	0.1438
Services related to recreation, including repair and personal care	18.1401	12.9835	-5.1566	-5.1254	-0.0312
Services related to transport	7.3198	6.4525	-0.8673	-0.7877	-0.0796
Services – miscellaneous	12.0034	12.4782	0.4748	0.6227	-0.1479
Services	**46.4054**	**41.9462**	**-4.4592**	**-4.3441**	**-0.1151**
ALL ITEMS	**100.0000**	**100.0000**			
All items excluding energy and unprocessed food (Core inflation)	84.5820	83.7857	-0.7963	-0.8418	0.0455
All items excluding energy, food, alcohol and tobacco	71.9865	68.6982	-3.2883	-3.4254	0.1371
All items excluding energy	91.2692	91.6520	0.3828	0.4609	-0.0781
Grocery and unprocessed food	19.5117	23.1976	3.6859	3.8431	-0.1572

With regard to regulated and non-regulated products, the weight of *Regulated goods* shows an increase (5.60% from 5.07%); instead, the weight of *Regulated services* declines (5.40% from 6.40%) (Table 6).

TABLE 6. NIC INDEX: WEIGHTING STRUCTURE BY REGULATED AND NON-REGULATED PRODUCTS
2020 and 2021, percentage values and absolute differences

REGULATED AND NON-REGULATED PRODUCTS	2020	2021	Absolute difference
Non-regulated goods	48.5294	52.4504	3.9210
Regulated goods	5.0652	5.6034	0.5382
Goods	**53.5946**	**58.0538**	**4.4592**
Non-regulated services	40.0056	36.5498	-3.4558
Regulated services	6.3998	5.3964	-1.0034
Services	**46.4054**	**41.9462**	**-4.4592**
ALL ITEMS	**100.0000**	**100.0000**	

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

TABLE 7. NIC INDEX: WEIGHTING STRUCTURE BY PURCHASE FREQUENCY

2020 and 2021, percentage values and absolute differences

PURCHASE FREQUENCY	2020	2021	Absolute difference
High-frequency purchases	40.4465	41.3974	0.9509
Medium-frequency purchases	41.2733	39.6313	-1.6420
Low-frequency purchases	18.2802	18.9713	0.6911
ALL ITEMS	**100.0000**	**100.0000**	

Geographical basis and coverage rate

In 2021, 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 municipalities[3] 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 83.3%. 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 (40.9%), Abruzzo (47.9%) 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, 65.9% 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 the others.

Price data sources and 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 2021, the weight of the products exclusively collected through the local survey is equal to 56.2% and that of products collected through the central survey is 22.8%. In addition to these two ways the acquisition of elementary prices (for grocery products) is carried out through scanner data with regard to the large scale retail trade distribution channels that are hypermarkets, supermarkets, discounts, small sales areas and specialist drug (for 12.8% in terms of weight), where traditional data collection is no longer carried out. For some products (weighing 4.5%), 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 3.7%.

Local survey

In the 92 municipalities (80 for the full basket and 12 for a subset of products) taking part in the 2021 survey, prices are collected in about 43,000 statistical units (including outlets, enterprises and institutions) and rents are collected for about 8,000 dwellings. 390,000 price quotes are sent by Municipal Offices of Statistics to Istat each month (384,000 in 2020).

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

Following the annual update of the municipal survey plans, 6.7% of the current price quotes are new (9.7% in 2020): of these, 3.0% are price quotes of new products, while the remaining 3.7% refers to products already in 2020 basket.

Central survey

In 2021, prices/quotes collected each month directly by Istat are more than 100,000, thereof:

✓ Almost 100,000 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) 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

Since 2018, Istat has been using scanner data of grocery products (excluding fresh food) in the production process of the consumer price indices.

A probabilistic sampling is used for the selection of outlets and the dynamic approach has been implemented to the selection of the elementary items.

At present, scanner data feed the calculation of 82 sub-indices ("aggregate of products") belonging to six ECOICOP Divisions (01, 02, 05, 06, 09, 12).

In agreement with large scale retail trade chains (RTCs) and with the fruitful collaboration of the Association of Modern Distribution and Nielsen, Istat receives scanner data for 4,003 outlets, including 472 hypermarkets, 1,452 supermarkets, 560 discounts, 1,023 outlets with surface between 100 and 400 s.m. and 496 specialist drug. These outlets belong to the main 21 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 18 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 ECR[4] 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 11 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.

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[4] 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 product of ECOICOP classification.

Administrative sources

Starting from 2017 automotive fuels price indices are calculated using the database supplied by the Ministry of Economic Development that collects prices for these products. In 2021, more than 80,000 price quotes are monthly used to estimate inflation and they come from about 14,200 fuel stations on the territory that is 67.1% of the ones present in Ministry database.

The sample of fuel stations covers the geographical areas of country. Specifically: around 3,600 are located in the North-West; more than 3,000 in the North-East and in the Centre; around 2,700 in the South and more than 1,400 in the Islands.

For more details please refer to the Italian version

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