

## Impact of the corona crisis on the CPI/HICP price collection

Despite the challenges in the current corona crisis, price statistics are working on the reliable provision of the national consumer price index (CPI) and the harmonised consumer price index (HICP) as important economic indicators.

In times of the corona crisis, missing prices are increasing again and again. In general, missing prices in price statistics are not unknown. They often occur seasonally – as for fruit, vegetables or clothing - but also when shops are closed due to holidays or in the event of catastrophes such as floods. The current corona crisis led to an increase in missing prices and in addition to that, the on-site survey in shops is restricted. Despite these restrictions, a large number of goods can still be collected, since they are not affected by the corona crisis.

Since a national and European level approach is essential in this particular situation, there is continuous, close coordination with Eurostat, the statistical office of the European Union, and with the statistical offices of the Länder in Germany. On this basis and to cope with challenges imposed by the Corona crisis, certain regulations for price statistics were set.

In the event of product or reporting unit failures, the update mechanisms, which are also common in “normal” price collection business, take effect. This means, for example, that temporarily unobservable prices are automatically updated with the price development of similar products. If no prices are available for this, there are other options, such as taking over the previous month's prices. This applies above all to price-stable survey positions.

Special update methods are used for seasonal goods, in which the seasonal figure is taken into account. A particular challenge form services for which, on the one hand, no or almost no transactions are currently taking place and which in addition show seasonal price developments, for example package holidays and accommodation services. For these services, Eurostat has stipulated as a requirement for the national statistical offices that the selected update method should not interrupt the usual seasonal pattern, but should largely continue.

For a majority of the survey positions, an online survey takes place in addition to a survey in the stationary retail. If there are problems with the practical on-site survey for these survey positions, the prices of the online survey can be used in some cases. In general, failures in price collection “on site” should be compensated for by the usual or expanded online survey, by surveys by email or telephone, if possible - with the aim of keeping the proportion of the prices actually collected as high as possible.

Further information on the possible procedures can be found in the Eurostat publication "GUIDANCE ON THE COMPILATION OF THE HICP IN THE CONTEXT OF THE COVID-19 CRISIS" (see also direct link under „Additional information“).

The currently valid weighting of goods and services in the CPI basket will not change in the context of the coronavirus crisis. This means that the German national consumer price index continues to be weighted according to the weighting pattern based on 2015. The Harmonised Index of Consumer Prices, the weighting of which is updated annually, is created on the basis of the weighting shares calculated for 2021. In line with Eurostat's recommendations, the HICP weights for 2022 were derived – as already for 2021 – on the basis of preliminary annual results of the national accounts for private consumption expenditure of the previous year. Information on the exact procedure can be found in the methodology paper "[Compilation of the HICP weighting pattern for the year 2022](#)".

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The upcoming publication dates can be found in the [annual release calendar](#) (search item: consumer price index). On the publication date of the final result, additional information on the quality of the price collection for the reporting month will be made available. This includes individual product sectors.

### Additional information

The statistical office of the European Union, Eurostat, has developed recommendations for calculating HICPs in the member states in the context of the corona crisis:

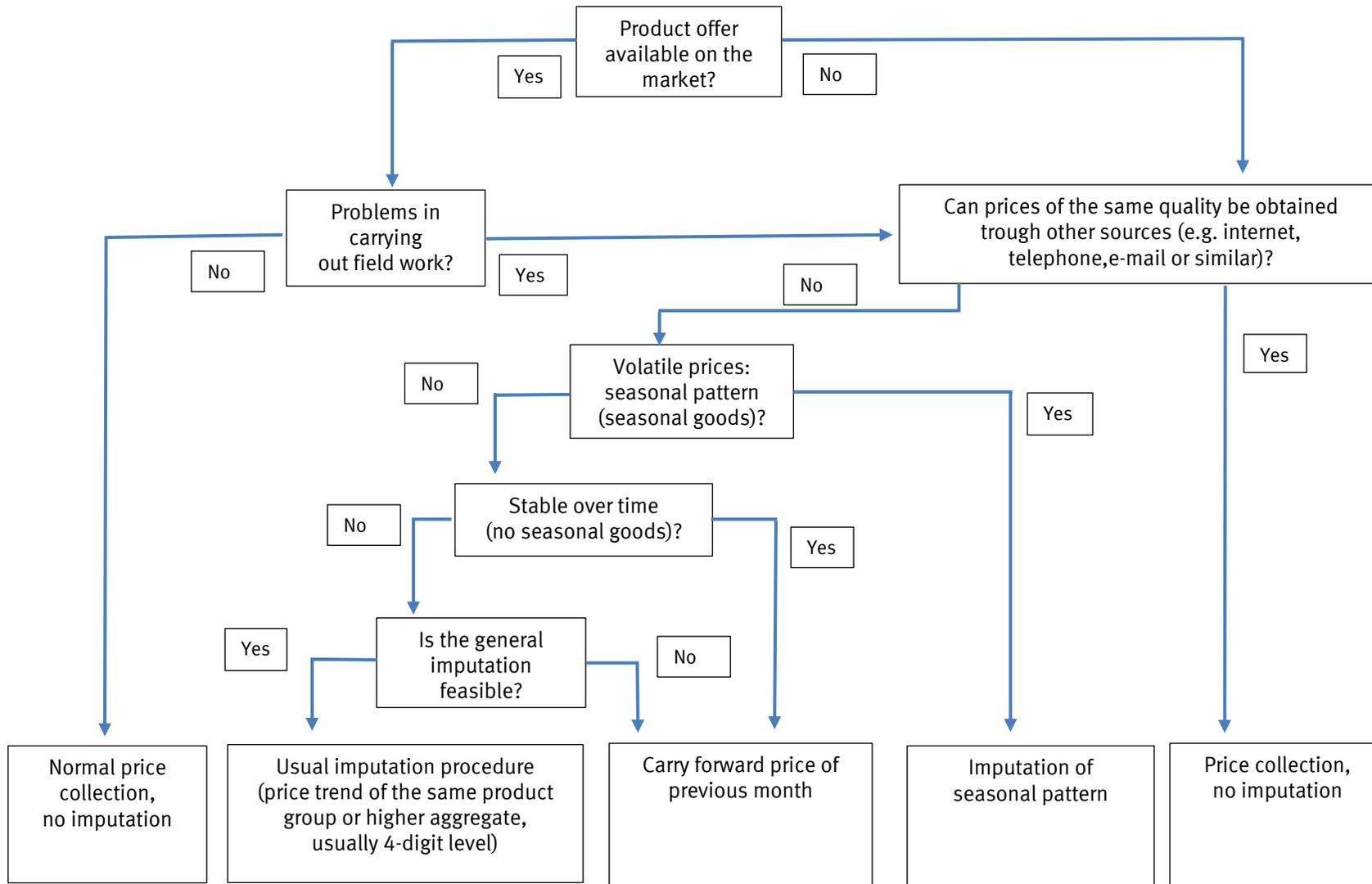
[https://ec.europa.eu/eurostat/documents/10186/10693286/HICP\\_guidance.pdf](https://ec.europa.eu/eurostat/documents/10186/10693286/HICP_guidance.pdf)

Furthermore, Eurostat, in cooperation with the Member States, has developed recommendations on the derivation of the HICP weighting scheme under pandemic conditions:

<https://ec.europa.eu/eurostat/documents/10186/10693286/Guidance-on-the-compilation-of-HICP-weights-in-case-of-large-changes-in-consumer-expenditures.pdf>

<https://ec.europa.eu/eurostat/documents/10186/10693286/Derivation-of-HICP-weights-for-2022.pdf>

Consumer prices: Decision tree for imputations – basing on the Eurostat HICP Guidelines from 3 April 2020



## Approach to price collection in travel services

### Package holidays

Prices for **national package tours** were completely imputed in **April and May 2020** – due to the ban on travel for tourist purposes. From **June to October 2020**, the collected prices were included in the index calculation. The lockdown and the associated renewed ban on tourism travel since November 2020 resulted in the full imputation of all prices in the reference months **November 2020 to April 2021**. From mid-May 2021, tourist trips to German travel regions were again permitted under certain conditions. Therefore, the collected prices have been included in the index calculation again since **May 2021**.

Prices for **international package holidays** were completely imputed in the reporting months of **April, May and June 2020**. From July 2020 to June 2021, only the prices for trips to countries that marked with travel warnings by the Federal Foreign Office were imputed. Travel to countries without travel warning has since been included in the index calculation again.

In **July 2020**, the prices for the destinations Turkey, Egypt and the Dominican Republic were imputed, as well as cruises that were not offered by the organisers. The prices for flight package holidays to the Balearic Islands, Canary Islands and Greece as well as city trips to Rome, Barcelona and London were included again in the index calculation in July.

For trips to Egypt and the Dominican Republic as well as for cruises, the prices were still imputed in the reporting month of **August 2020**. The prices collected for city trips to Barcelona could not be included in August due to the early travel warning. In contrast, prices for flight package holidays to Turkey were included again in the index calculation in August.

In **September and October 2020**, most prices had to be imputed due to travel warnings by the Federal Foreign Office. This concerned the destinations Spain (Canary Islands, Balearic Islands and Barcelona), Egypt and Dominican Republic as well as cruises.

In **November and December 2020**, prices were imputed for almost all destinations. Only the prices for package holidays to the Canary Islands were included in the index calculation. There was no travel warning from the Federal Foreign Office for this destination this phase.

Due to the existing travel warnings for all destinations, the prices were fully imputed in the reference months **January and February 2021**.

Also in **March and April 2021**, prices were imputed for almost all destinations. Only the prices for flight package holidays to the Balearic Islands have been included in the index calculation. The Federal Foreign Office had lifted the existing travel warning for this destination.

The existing travel warning for the Canary Islands by the Federal Foreign Office was lifted in mid-May 2021. Therefore, in **May 2021**, in addition to the Balearic Islands, prices collected for package holidays to the Canary Islands could also be included.

In **June 2021**, there were further openings, so that in addition to the destinations of Balearic Islands and Canary Islands, the prices collected for Greece and Rome could also be taken into account. The prices for all other destinations have been imputed.

Up to and including June 2021, all prices for package holidays to travel countries marked with travel warnings by the Federal Foreign Office were imputed. Since **July 2021**, all collected prices will be included in the

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calculation as far as possible. Reasons for the cancellation of the previous procedure were the high vaccination rate for fully vaccinated persons in Germany (RKI, as of 19 July 2021: 46.4%) and those vaccinated at least once (RKI, as of 19 July 2021: 59.9%) combined with relaxed quarantine rules for returnees from 1.7.2021 and the improved possibility to travel. On the other hand, various sources pointed to higher demand for holidays abroad. For example, the transport service statistics published by the Federal Statistical Office show increasing usage figures for air transport based on the number of newcomers. Package holiday offers for almost all travel countries were also available in July 2021. Only a few prices were collected for cruises. The remaining prices for cruises have been updated for July 2021 in accordance with the imputation rules described below.

From the reporting month **August 2021**, the prices collected for cruises are also included in the index calculation. This means that there are no longer any imputations for international package holidays; all prices are fully included.

Package holidays	2020												2021											
	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
Germany		x	x						x	x	x	x	x	x										
International																								
Towns		x	x	x					x	x	x	x	x	x	x									
Greece		x	x	x					x	x	x	x	x	x	x									
Balearic Islands		x	x	x			x	x	x	x	x	x												
Canary Islands		x	x	x			x	x			x	x	x	x										
Turkey		x	x	x	x				x	x	x	x	x	x	x	x								
Dominican Republic		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x								
Egypt		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x								
Cruises		x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x							

x: Prices were completely imputed.

The **methods for imputation**, the replacement of missing prices, were developed in cooperation with Eurostat. In consultation among national statistical offices, most important stakeholders and Eurostat, it was decided that the method of updating should not interrupt the usual seasonal pattern. Rather, it should largely continue. For package holidays, the monthly price change observed one year ago was initially used for the update. This means that the prices for March 2021 were calculated by updating the prices from February 2021 with the rate of change from February 2020 to March 2020 for the same destination, for example "package holidays to the Dominican Republic". This procedure was applied from April 2020 to March 2021.

Hence, from the reporting month **April 2021** onwards, only updated prices of the year 2020 for the previous month's comparison are available. Therefore, for the month of **April 2021**, the previous month's change from 2019 was used for the update. Thus, the prices for April 2021 for the destination "Package holidays to the Dominican Republic" were calculated by updating the prices from March 2021 with the rate of change from March 2019 to April 2019 for the same destination.

For the reference months of **May and June 2021**, the imputation method had to be adjusted to take into account the location of the Pentecost holidays in 2021. In principle, the location of the two holidays, Easter and Pentecost, which are marked by high prices, is of particular importance. In 2021, Easter fell in the reference month of April and Pentecost in the reference month of May. In the last reporting year used for imputation, 2019, these holidays were in April (Easter) and June (Pentecost). For this reason the previous method of imputing prices was no longer suitable. Instead, the following approach was adopted: The imputation procedure for May 2021 as well as for June 2021 is based on the reference month August 2020. This is the month in which most travel countries were able to be visited during the Corona pandemic and prices collected were included. The price update for destinations still subject to travel warnings was calculated using the price change from August to May

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or August to June of the following year, when Pentecost was also in May. In the current base period, these are the years 2016 and 2018. This means, the prices for May 2021, for example for “flight package holidays to Turkey” were calculated by updating the prices from August 2020 with the rate of change from August 2015 to May 2016 and August 2017 to May 2018 for the same destination. The prices for the month of June 2021 were calculated according to the same method: The prices for June 2021 were calculated by updating the prices from August 2020 with the rate of change from August 2015 to June 2016 and August 2017 to June 2018.

The reference month **July 2021** had to be imputed in a similar manner as in May and June. For this purpose, the prices from October 2019, which is the month for which prices for cruises are last available, have been updated with the rate of change from October 2015 to July 2016 and October 2017 to July 2018.

### Flights

For flights in **March 2020**, most were still operated at an almost normal frequency. Exceptions to this were selected routes to China and a lower number of flights to the USA from mid-March on. For the price monitoring of air tickets, prices are collected at five specified times before the start of the trip: 180, 90, 60, 30 and 15 days before the start of the trip.

Prices previously collected were included in the index calculation as usual. Individual cancellations were imputed by assuming the price development of the other flights of the same aggregate.

In **April and May 2020**, the airlines' flight plans within Germany and internationally significantly thinned out. On the one hand, this affected the frequency in which the destinations were served, and on the other hand, the number of routes offered. Since the remaining flights were still bookable and accessed, considering the entry requirements of the respective destination country, it was decided that the prices charged in advance for these routes should be included in the index calculation for the reporting month of April or rather May. **Since the beginning of June 2020**, more destinations have been served. While this trend continued moderately in **July 2020**, the share of imputed prices remained almost the same in **August, September and October 2020** compared to the previous month. The imputation share increased slightly in **November 2020**. In **December 2020**, the share fell back to the level of October 2020 and remained almost constant until **December 2021**. In **January 2022**, there was again a slight increase in imputed prices. Only in **June 2022**, the imputation share fell below 10 %.

Imputations for failed routes were carried out in accordance with the guidelines agreed between Eurostat and Member States. Domestic flight routes no longer offered were updated with the price development of the other routes within Germany. For target countries that can no longer be booked, the price development of the next higher aggregate (continent or subcontinent) was used. Only in cases where the seasonal development of the canceled flight routes deviates significantly from the other flight routes in the same unit was the previous month's change of 2019 used for imputation.

### Train

Rail traffic had, as of now, no restrictions on the number of routes served. Only the frequency of the trains was reduced. Subsequently, there were no corona-related changes in the calculation of local and long-distance consumer price indices.

### Long-distance coaches

Long-distance coach services were completely discontinued from March 18 until late May. For **March 2020**, the prices previously collected for trips up to March 17 were fully included in the index calculation. The consumer

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price index for long-distance coaches was calculated in the usual way, although the services from March 18 could no longer be included.

In the months of **April and May 2020**, when no long-distance coach trips took place, the imputation rule agreed with Eurostat for products with seasonal price developments was applied analogously to international package holidays. For example, for the index calculation for April 2020, the prices for long-distance coach trips from March 2020 were updated with the rate of change from March to April 2019.

In **June 2020**, long-distance bus services were resumed on some routes, using prices collected for part of the index calculation. For the larger part, the imputation rule agreed with Eurostat continued to apply. In **July 2020**, prices were collected for more than half of the routes, while the remaining part continued to be charged according to the imputation rule agreed with Eurostat. In **August 2020**, the share of imputations decreased further. The share of imputation has again slightly decreased in **September 2020**. This means prices charged for almost 75% of the routes could be included in the index calculation. The share of imputed prices did not change in **October 2020**.

From **November 2020 to April 2021**, the prices for long-distance coach services had been completely imputed. Although some routes in the network of providers were already served again in March, the number of collected prices was still too small to calculate a reliable price development for these routes. Since **May 2021**, prices have again been collected for a sufficient number of days per month and a sufficient number of advance booking periods. This made it possible for parts of the route network to move from imputing to genuinely collected prices. This affected about one third of the connections included in the index in May. In **June 2021**, prices collected for almost half (46%) of the routes could already be used for the index calculation. The share of routes for which prices could be collected in **July 2021** continued to increase, reaching just over 60%. For the remaining part, the imputation rule agreed with Eurostat was still applied. Between **August 2021 and April 2022**, the share of prices that could be collected to calculate the consumer price index for long-distance coaches was always over 80%. Since **May 2022**, the share has been over 90%.

## Further information on the quality of consumer prices

### Explanation of the imputation

In addition to the use of digital data sources, more than 300,000 separate prices in trade and service enterprises are collected manually every month to measure the price development of the different goods in the consumer basket. The regular price survey consists of two parts. Firstly, decentralised price collection by price collectors in shops throughout Germany and, secondly, centralised price collection, which takes place mainly as an Internet survey. Price collection on site in shops was particularly disrupted. To correctly representing the development of consumer prices, the prices missing in the survey are imputed to clearly agreed specifications (see page 1). Regarding goods and services for which a survey was barely possible or impossible altogether, prices were updated according to these different methods or - for goods with stable prices- prices from the previous month were adopted.

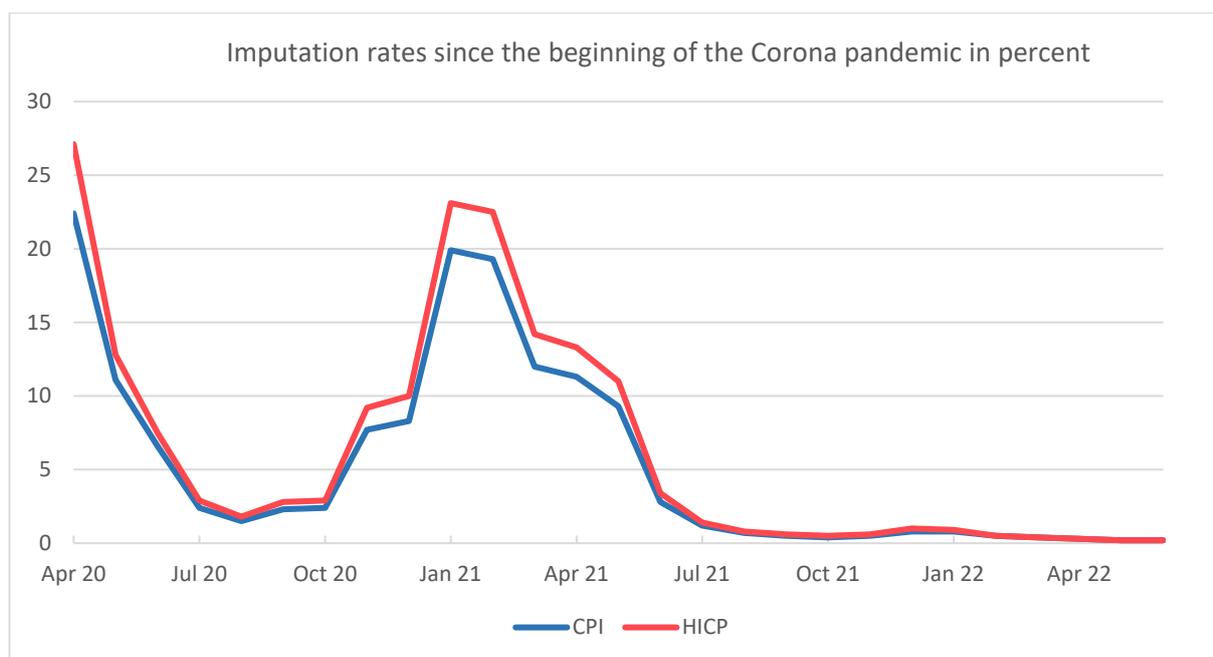
As a presentation of limited data quality, monthly index values of goods where price survey in the corresponding reference month shows an imputation share of more than 50%, taking into account the weighting pattern, are flagged with a bracket. The rates of change may also be limited by a high imputation share in their significance. This is the case if either the index value of the current month or the index value of the reference month had to be marked due to a high imputation share. Such restrictions are also indicated in the publications, e. g. in the form of footnotes.

Annual values are flagged if the corresponding items were flagged in at least six reporting months due to corona-related data quality limitations. In 2020, this concerns passenger transport by air and package holidays, both abroad. In 2021, other series were affected in addition to these positions, since, in contrast to 2020, imputations were not only required from March but from January onwards. The data for the monthly and annual imputation rates can be found in the table in the following section. The imputation share of more than 50% extends so far to a few months and only individual product groups. The quality of the overall results is guaranteed. For 2021, the CPI has been compared with a CPI calculated without the product groups strongly imputed beyond 2020 and confirms this. The rates of change of this index compared to the previous year differ only marginally from those of the CPI.

### Shares of imputed prices in the Consumer Price Index (CPI)

Due to the effects of the corona crisis, the imputation rates were temporarily significantly increased in spring 2020 and had normalised to a large extent in the course of the summer and autumn. A higher imputation rate means that prices are determined by mathematical methods at a higher rate than usual. Due to the renewed measures to limit the corona pandemic in late autumn 2020 and winter 2020/21, there were again increased failures in the monthly price collection. In January 2021, the imputation share of the CPI as a whole increased to 19.9%, the highest level since April 2020. Due to some relaxations and the expansion of offers such as Click & Collect and new offers such as Click & Meet, the share of imputations decreased steadily to 0.4% by October 2021. The share increased slightly in the meantime, but has been consistently below 1%.

### Appendix 3



#### Differences between the Consumer price index and the Harmonised index of consumer prices

For European purposes, the Federal Statistical Office calculates a Harmonised index of consumer prices (HICP) for Germany in addition to the national consumer price index (CPI).

The CPI measures the average price development of all goods and services purchased by private households for consumption purposes. It serves both to measure inflation and to deflate macroeconomic variables, i.e. to convert nominal changes into real changes and to provide a measure of compensation for recipients of regularly recurring payments.

The HICP was developed by the European Union to allow for international comparisons of price changes and to aggregate them into a single overall inflation rate for Europe and the European Monetary Union.

These different objectives imply different methodologies and small differences in coverage.

However, there is no difference between the CPI and the HICP in the fundamental statements about the imputation shares in consumer prices.

Price collection has been affected by the corona crisis throughout Europe since March 2020. Eurostat has developed guidelines in close coordination to address the missing prices with coordinated methods. In 2020, the imputation share within the EU and the euro area was always slightly higher than in Germany. Between January and May 2021, this ratio had reversed. For example, while the HICP imputation rate was 11% for Germany in May 2021, it was around 9% in the euro area as a whole and just under 8% in the EU area. Since June 2021, rounded quotas have also been much lower internationally, similar to Germany. In August, they were 1% (Germany) and 3% (euro area and EU area). Since September these figures have not been published by Eurostat due to the low level.

More detailed data and more information are available in the section „COVID-19 and HICP“ on the following website: <https://ec.europa.eu/eurostat/web/hicp/methodology>