

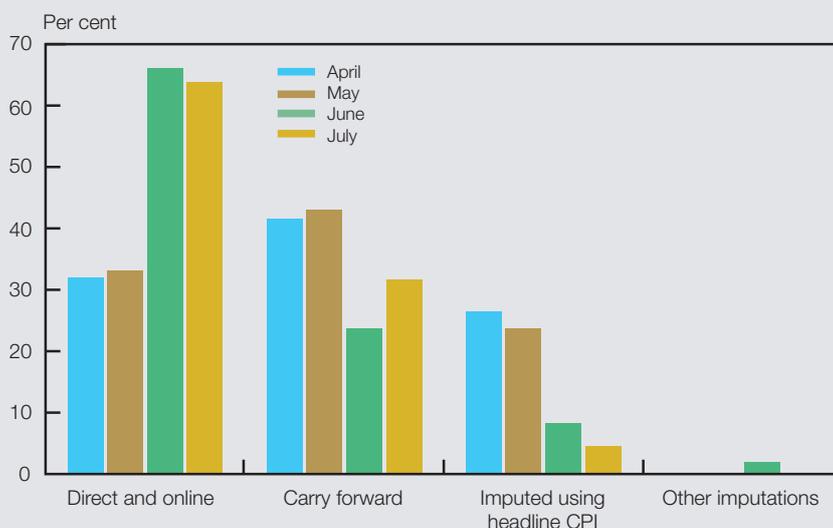
Box 3 Methodological changes to the compilation of the consumer price index in response to the COVID-19 lockdown

The compilation of the consumer price index (CPI) by Statistics South Africa (Stats SA) has faced significant challenges since the lockdown restrictions imposed in South Africa in response to the coronavirus disease 2019 (COVID-19) from 27 March 2020 and during the subsequent period of gradual normalisation.

The national lockdown prohibited certain products and services from being sold, and Stats SA's field staff were unable to conduct direct price collection at the stores selling retail items available for sale due to travel restrictions. As a result, some price data required to compile the CPI were unavailable, and not all products had comparable prices. This necessitated a change in the survey methodology to online price collection (where applicable) as well as the introduction of imputation practices in some instances.

Headline CPI was compiled using a combination of different techniques as from April 2020 to accommodate the challenges brought on by the imposition of lockdown restrictions. This included a combination of traditional direct in-store and online collection of comparable prices, headline CPI imputations of the price changes of those products and services¹ that were banned from being sold, the carrying forward of periodic surveyed prices (implying no month-to-month change)², and other imputations.

Contribution of the different methodologies to the weight of CPI



Source: Stats SA

In April 2020, imputations for items that were not allowed to be sold accounted for 26.5% of the weight of the CPI basket amid strict lockdown restrictions.³ Direct and online collection of prices accounted for a weight of 12% and 20% respectively of the items in the CPI basket. The direct collection of prices applied mainly to services, with the prices obtained from an official or administrative source. The prices of items with a weight of 41.5% that were not due for collection, were carried forward.

In May 2020, the lockdown was eased from level 5 to level 4, and a broader range of goods and services became available for sale, while Stats SA resumed in-store price collection. However, although available for sale in May, the prices of those products and services that were not allowed to be sold in April and were consequently imputed, were again imputed in May due to the absence of comparable prices for April. Headline CPI imputations accounted for 23.7% of the weight of the CPI basket.⁴ The collection of comparable prices of goods and services accounted for a combined weight of 33.1% in the CPI basket (13.1% direct and 20% online), while the prices of items with a weight of 43% were carried forward.

In June 2020, lockdown restrictions eased further from level 4 to level 3, and headline CPI imputations of price changes declined to a weight of only 8.3% of the goods and services in the CPI basket.⁵ Similarly to May, imputations were made for items that were not allowed to be sold in June or in the absence of a comparable price in May. The weight of the items for which prices were collected directly and online increased to 66%

1 For banned products and services where no consumer expenditure on the item in the CPI basket was possible, the index was imputed using the change in the headline (all items) index based on those products and services for which prices were available.

2 Where the price of a good or service does not change every month, and is only surveyed quarterly, six-monthly or annually.

3 See *Changes to the calculation and publication date of the April consumer price index (CPI) due to COVID-19 lockdown restrictions* published by Statistics South Africa (Stats SA) on 21 May 2020, available at http://www.statssa.gov.za/cpi/documents/CPI_COVID_method_issues_21_05_20.pdf

4 See *Update on the consumer price index (CPI) for May*, published by Stats SA on 10 July 2020, available at http://www.statssa.gov.za/cpi/documents/CPI_COVID_method_issues_May.pdf

5 See *Update on the consumer price index (CPI) for June and revised publication schedule*, published by Stats SA on 27 July 2020, available at http://www.statssa.gov.za/cpi/documents/CPI_COVID19_Method_Issues_June.pdf





of the CPI basket. The weight of the items for which indices were carried forward declined to 23.7%, while 2% of the weight of the CPI was imputed using the class mean method⁶.

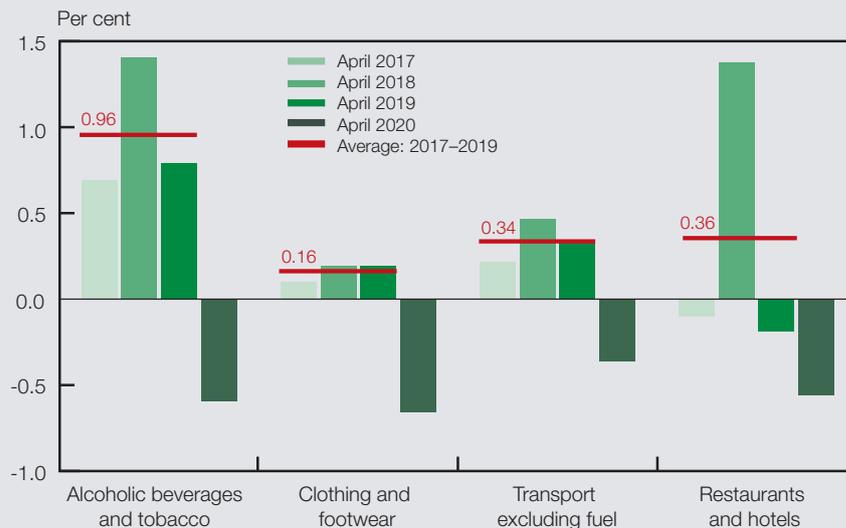
In July 2020, the collection and compilation methodology of the CPI largely normalised in the context of further easing of lockdown restrictions. Headline CPI imputations accounted for only 4.5% of the weight of the CPI basket, while 31.7% were carried forward and 63.8% were either collected directly or online in July.⁷ The increase in the weight of items carried forward from June to July reflects the usual decline in the number of quarterly surveys over this period.

The imputation methodology introduced some biases to consumer price inflation in April 2020, May and June, with headline CPI largely influenced by changes in food and fuel prices. These biases were more pronounced in the calculation of underlying inflation, as these measures include most of the imputed items. If the actual change in the prices of the goods and services that were imputed was smaller than the change in headline CPI, it would introduce an upward bias, but if the actual change in the prices of those items was larger than the change in headline CPI, it would introduce a downward bias.

The marked month-to-month declines in fuel prices of 11.1% and 12.2% in April and May respectively exerted some downward bias on headline CPI, more than what would otherwise be justified by its weight of 4.58% in the CPI basket. In particular, these declines exacerbated the slowdown in core inflation.

The likely underestimation of some imputed categories in April and May is shown by the month-to-month changes in four of the imputed categories for the past four years. In all instances, the average month-to-month percentage changes during the 2017–2019 period were much higher than the April 2020 and May changes.

Month-to-month percentage change in selected imputed CPI categories in April: 2017–2020

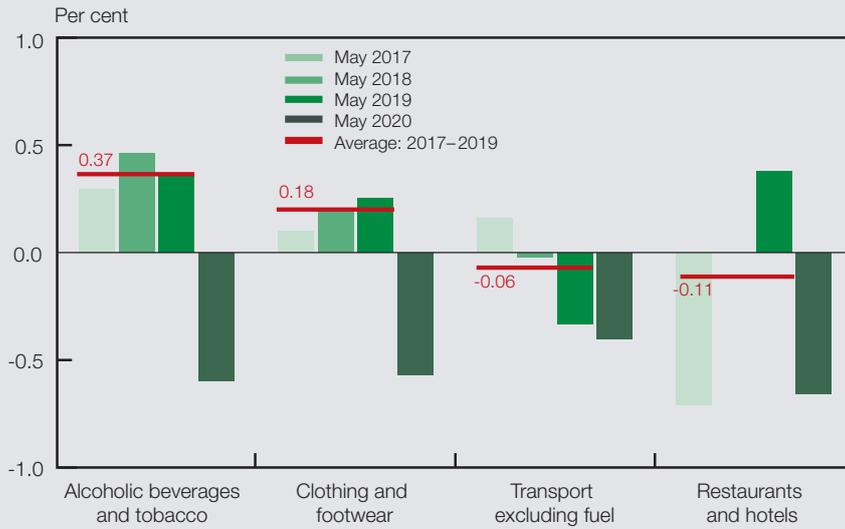


Source: Stats SA

⁶ This method entails imputing the average price change of a product or service using the change in the next-highest level aggregate index.

⁷ See *Update on the consumer price index (CPI) for July*, published by Stats SA on 20 August 2020, available at http://www.statssa.gov.za/cpi/documents/CPI_COVID_method_issues_July.pdf

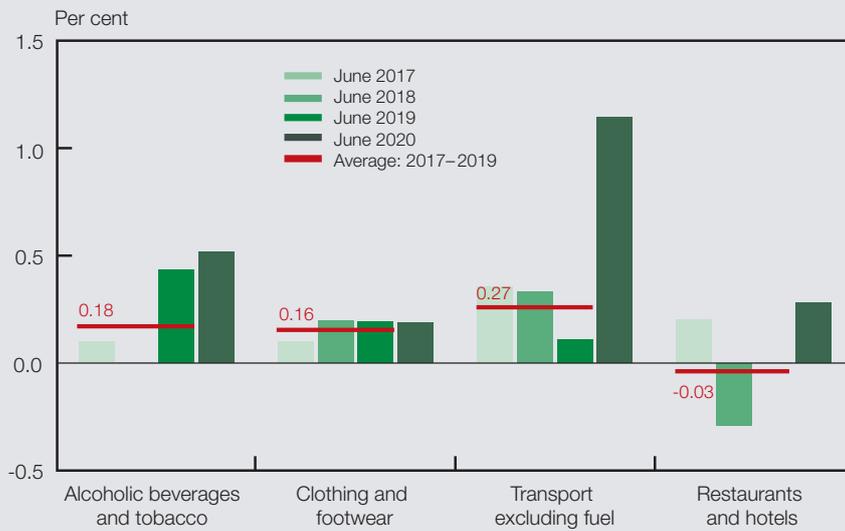
Month-to-month percentage change in selected imputed CPI categories in May: 2017–2020



Source: Stats SA

In June 2020, the downward bias in both headline and core inflation dissipated as fuel prices increased by 7.5% month to month, somewhat countering the inordinate decreases in fuel prices in the two preceding months and as the percentage of imputed items declined significantly.

Month-to-month percentage change in selected imputed CPI categories in June: 2017–2020



Source: Stats SA

