

Article

# Prices economic analysis, quarterly: May 2020

Additional economic analysis of the latest Consumer Prices Index including owner occupiers' housing costs (CPIH), Producer Price Index (PPI), and long-term trends.

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# 1 . Main points

- The Consumer Prices Index including owner occupiers' housing costs (CPIH) 12-month inflation rate was 0.9% in April 2020, down from 1.5% in March 2020; the Consumer Prices Index (CPI) was 0.8% in April 2020, down from 1.5% in March 2020.
- Compared with the official CPIH series, an experimental series that updates the CPIH basket to remove unavailable items leads to an annual growth rate 0.1 percentage points lower than the official rate, at 0.8%.
- Compared with the official CPI series, an experimental series that updates the basket to remove unavailable items leads to an annual growth rate 0.2 percentage points lower than the official rate, at 0.6%.
- Differences between the official and experimental series are primarily driven by transport services, where seasonal imputation methods used in the official series have negated an impact from international travel (air fares, sea fares and Eurotunnel fares), whereas when these services are excluded in the rescaled basket, their absence has a downward drag on the annual rate of the experimental series.
- Modifying the CPIH and CPI baskets further to account for changes in fuel consumption results in an annual rate in line with the official rates, at 0.9% and 0.8% respectively.

These supplementary series are experimental and should not be used instead of the [official measures of consumer price inflation](#). These experimental analyses are based on underlying assumptions about changes in consumption as a result of the coronavirus (COVID-19) pandemic. Updating the basket of goods and services within the year to account for consumption changes means that the consistency of the final index value is not consistent over time and is not consistent with other countries' official rates.

## 2 . Background

Following the implementation of social distancing policies and movement restrictions brought into effect on 23 March 2020 in response to the coronavirus (COVID-19) pandemic, we have put exceptional measures in place to ensure the consistency and maintain the ongoing collection of our headline consumer price inflation statistics so they remain as accurate as possible. Details of our plans for data collection, compilation and publication of our various price statistics can be found in the article [Coronavirus and the effects on UK prices](#).

There were three notable challenges with producing consumer price statistics for April 2020. Firstly, approximately 80% of the prices used in consumer price statistics are collected in stores across the UK, and this was not possible because of current movement restrictions. Secondly, there were around 90 unavailable goods and services where consumers can no longer access the market because it has effectively shut down. Finally, we have seen large changes in the consumption patterns of UK households as a result of the pandemic.

A number of principles were agreed upon internationally to ensure the continued accuracy of consumer price statistics in these unprecedented times, and to ensure the consistency of the series, both over time and across countries. Namely, it was decided that a fixed basket concept should be maintained.

There are several reasons this was considered the most appropriate approach: the lack of robust and timely expenditure information meant that it was not a viable option to update the basket in response to changing consumer spending patterns; it is likely the basket will change several times over the coming months undermining the comparability of these statistics over time; and updating the basket within-year would reduce the international comparability of the series.

Therefore, changes in the consumption of goods and services are not explicitly accounted for, and only changes in prices of available items influence the rate of inflation. While complying with this, it was deemed pertinent that any items that are unavailable for consumption should have as little impact on the annual inflation rate as possible, to reflect that there are no current price changes for unavailable goods and services.

While the approach taken to calculate the Consumer Prices Index including owner occupiers' housing costs (CPIH) and the Consumer Prices Index (CPI) is the most appropriate approach for a number of reasons, it does not necessarily reflect changes in consumption patterns that have occurred as a result of the coronavirus (COVID-19) pandemic and the subsequent UK government policies.

In this article we explore the impact of the approach taken to calculate CPIH and CPI given the current circumstances and compare it with experimental series.

Our first experimental series looks at what would happen to inflation if we re-weighted the basket for April 2020 so that unavailable items had zero relative importance in calculating the final indices. Our second experimental series looks at what would have happened to the headline rate had we accounted for the [recent reported drop in fuel consumption](#). This is an assumption made to show the type of impact that changing the weight of fuels and lubricants could have on the 12-month growth rates of CPIH and CPI. If the actual change in consumption for fuels and lubricants were to be higher than this it would have a larger impact, while a smaller change in consumption would reduce the scale of the impact.

### 3 . Introduction

We apply phased adjustments to the weights of the baskets for the Consumer Prices Index including owner occupiers' housing costs (CPIH) and the Consumer Prices Index (CPI) to reflect different assumptions and scenarios. The methodology and assumptions behind these adjustments are outlined in Section 6.

The official published CPIH and CPI series (referred to in this article as "Official") use expenditure weights to account for the relative importance of different goods and services in household budgets. For example, in normal times a household will likely spend more on fuel than apples, so fuel will receive a higher weight and exert a greater influence on the official rate of inflation.

Weights within the CPIH and CPI baskets are usually updated at the beginning of the year to reflect changes in general spending patterns, while otherwise remaining unchanged throughout the year, to allow for comparisons of price movements within the year. In the two experimental series introduced in this article, we make some further adjustments to the weights of specific components within-year, to reflect some of the observed changes in consumption patterns and the availability of certain goods and services. Unavailable items in this article are defined as goods and services that consumers can no longer access because the market has effectively been shut down (for example, hairdressers and leisure centres).

In order to introduce a new set of goods and services and a new set of weights it is necessary to use a chain-link. This involves calculating the price change between the new month (April 2020) and an overlap month (March 2020) and linking that movement on to the old series (ending March 2020). More information on chain-linking can be found in Section 3.6 of our [Consumer Price Indices Technical Manual](#). As we have used a chain-link to introduce weight changes in the experimental series, we compare the impacts with the official series had a chain-link been introduced. This ensures comparability in methods between series.

### 4 . Results

Tables 1 and 2 show indices, 12-month growth rates and 1-month growth rates for the Consumer Prices Index including owner occupiers' housing costs (CPIH) and the Consumer Prices Index (CPI), respectively, under the following scenarios:

- [Official published CPIH and CPI series](#) (referred to as “Official”)
- Official CPIH and CPI series, chain-linked to March 2020 for consistent comparison with the experimental series (referred to as “Chain-link”, for details see Section 6)
- CPIH and CPI baskets updated to remove [unavailable items](#) and their weight applied proportionately to available items (referred to as “Rescaled”)
- CPIH and CPI baskets updated, as previously, to remove unavailable items, while also reducing the fuels and lubricants weight by 70% and reappportioning the remaining weight across available items (referred to as “Fuel adjusted”)

Table 1: Index and growth rate values for adjustments to CPIH  
April 2020

April 2020 CPIH	CPIH (2015=100)	YoY%	MoM%
Official	108.6	0.9	0.0
Chain-link	108.6	0.9	0.0
Rescaled	108.5	0.8	-0.2
Fuel adjusted	108.7	0.9	0.0

Source: Office for National Statistics - Consumer Prices Index including owner occupiers’ housing costs

Table 2: Index and growth rate values for adjustments to CPI  
April 2020

April 2020 CPI	CPI(2015=100)	YoY%	MoM%
Official	108.5	0.8	-0.2
Chain-link	108.4	0.7	-0.2
Rescaled	108.2	0.6	-0.4
Fuel adjusted	108.5	0.8	-0.2

Source: Office for National Statistics - Consumer Prices Index

For CPIH and CPI, introducing a chain-link between March and April in the official series (“Chain-link”) marginally reduces both the 12-month growth rate and the 1-month growth rate relative to the official series, though only the 12-month growth rate of CPI has a difference when rounded to one decimal place. Rescaling the weights to remove unavailable items reduces those growth rates for both CPIH and CPI. This is primarily because some seasonal imputations have been made in the official series to ensure that unavailable seasonal items do not impact on the headline rate, again this is most notable in transport. These differences are explored further in Section 5.

There are also some differences between the “chain-link” series and the “rescaled” series caused by rescaling the weights, including setting some to zero, although these differences largely offset each other. For example, in CPIH a larger weight for gas increases the downward contribution for this component to the monthly inflation rate, but this is offset by an increase in Council Tax, which receives a proportional increase in its weight when rescaling to account for unavailable items.

Making a further adjustment to account for the reduced expenditure on fuels and lubricants (“Fuel adjusted”) increases the annual and monthly growth rates slightly compared with the rescaled values and broadly in line with the official rates. This is because fuel prices have fallen considerably on both the year and the month to April 2020, putting downward pressure on inflation. By reducing the weight of fuels and lubricants by 70%, this downward pressure on the aggregate inflation rate is reduced.

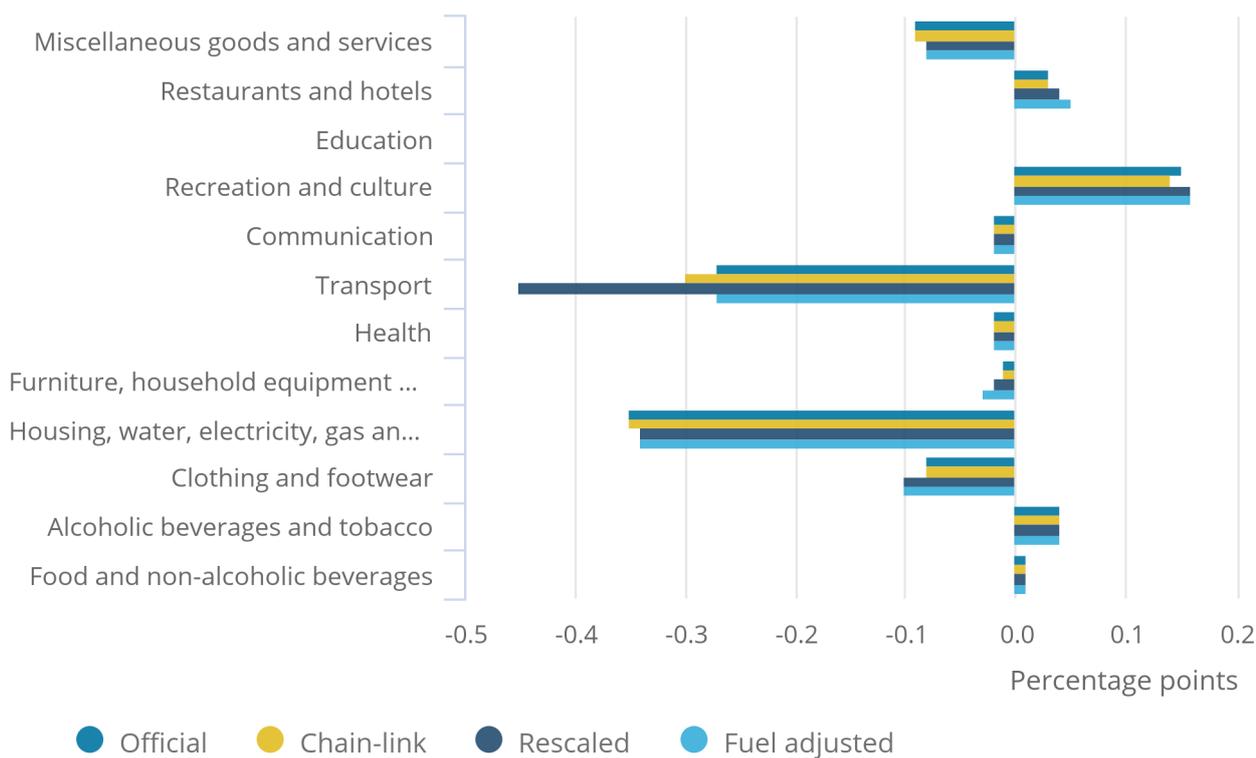
This is an assumption made to show the type of impact that changing the weight of fuels and lubricants could have on the 12-month growth rates of CPIH and CPI. If the actual change in consumption for fuels and lubricants were to be higher than this it would have a larger impact, while a smaller change in consumption would reduce the scale of the impact.

**Figure 1: Contributions to the change in the 12-month growth rate of CPIH for the official and experimental series**

UK, April 2020

Figure 1: Contributions to the change in the 12-month growth rate of CPIH for the official and experimental series

UK, April 2020



Source: Office for National Statistics - Consumer Prices Index including owner occupiers' housing costs

Figure 1 shows the contribution that each division made to the change in the 12-month growth rate of CPIH between March and April 2020, for the official rates and for the three experimental series. More than half of the divisions, including clothing and footwear, housing, transport, and miscellaneous goods and services, contributed to the fall in the headline rate between March and April 2020. More details on these movements can be found in the [Consumer Price Inflation bulletin](#).

While the experimental series show similar contributions to the change in the 12-month rate across most divisions, it is shown that the primary driver of the differences between series lies within the transport division; this difference is explored further in Section 5.

## 5 . Contributions from transport components

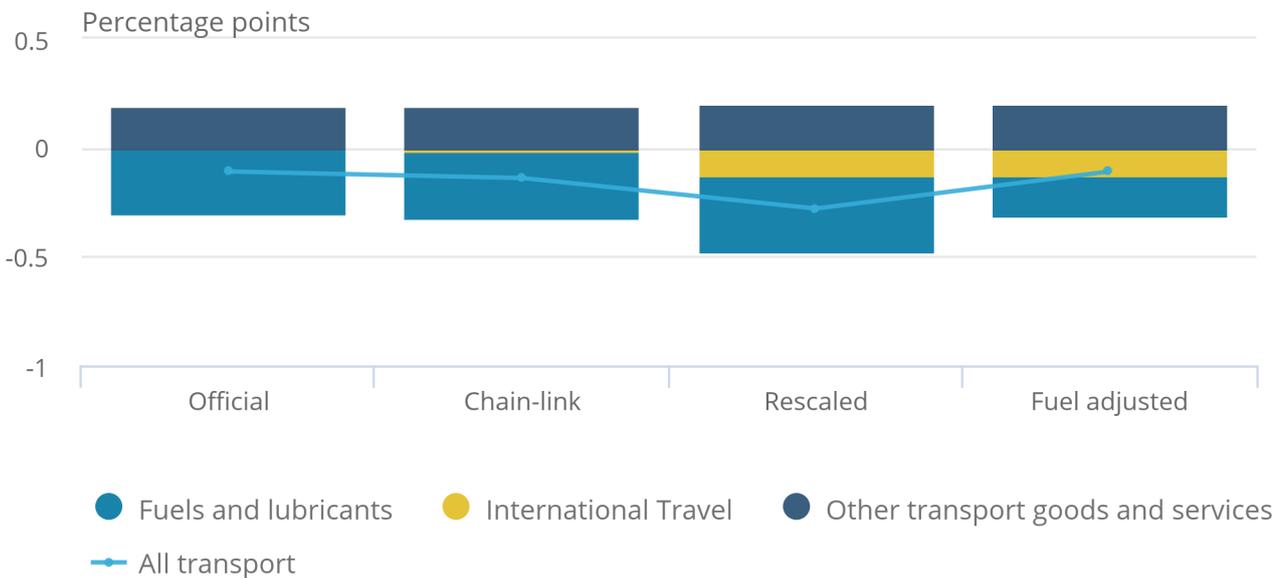
Figure 2 shows the contribution that different components of transport have made to the 12-month growth rate for the official and experimental series. The equivalent data for CPI show similar trends and are included in the [full dataset](#).

**Figure 2: Contributions to the 12-month growth rate of CPIH by component of transport**

UK, April 2020

Figure 2: Contributions to the 12-month growth rate of CPIH by component of transport

UK, April 2020



Source: Office for National Statistics – Consumer Prices Index including owner occupiers’ housing costs

Notes:

1. “International travel” is a bespoke category made up of air fares, sea fares and Euro tunnel fares, “other transport goods and services” covers all other available transport related goods and services, such as the purchase and maintenance of vehicles, and transport within the UK.

Compared with the chain-linked version of the official series (“Chain-link”), rescaling the basket to remove unavailable items increases the downward contribution to the 12-month growth rate from transport. This is primarily driven by international travel, a category made up of air fares, sea fares and Eurotunnel fares.

International travel is subject to seasonal price effects and prices usually rise as people take Easter holidays, however, prices were deemed unavailable in April 2020 as non-essential movement was restricted. In the official series, prices for unavailable seasonal items such as international travel were imputed for April 2020. This imputation was calculated by applying the all-items annual growth rate to the index from April 2019. This approach was taken to avoid unavailable seasonal items having an impact on the annual rate of inflation; the effect of this can be seen in Figure 2 where international travel shows a negligible contribution towards the annual rate.

By removing these unavailable seasonal items in our experimental rescaled basket, we remove the positive contribution that international travel fares would usually be making in the run-up to Easter. The contribution to the 12-month growth rate of the rescaled basket, therefore, reflects the fall in prices in the year to March 2020, resulting in a downward contribution to the annual rate.

When the weight of fuels and lubricants is reduced, the negative contribution from international travel brings the overall 12-month growth rate of the rescaled basket broadly in line with that for the official series.

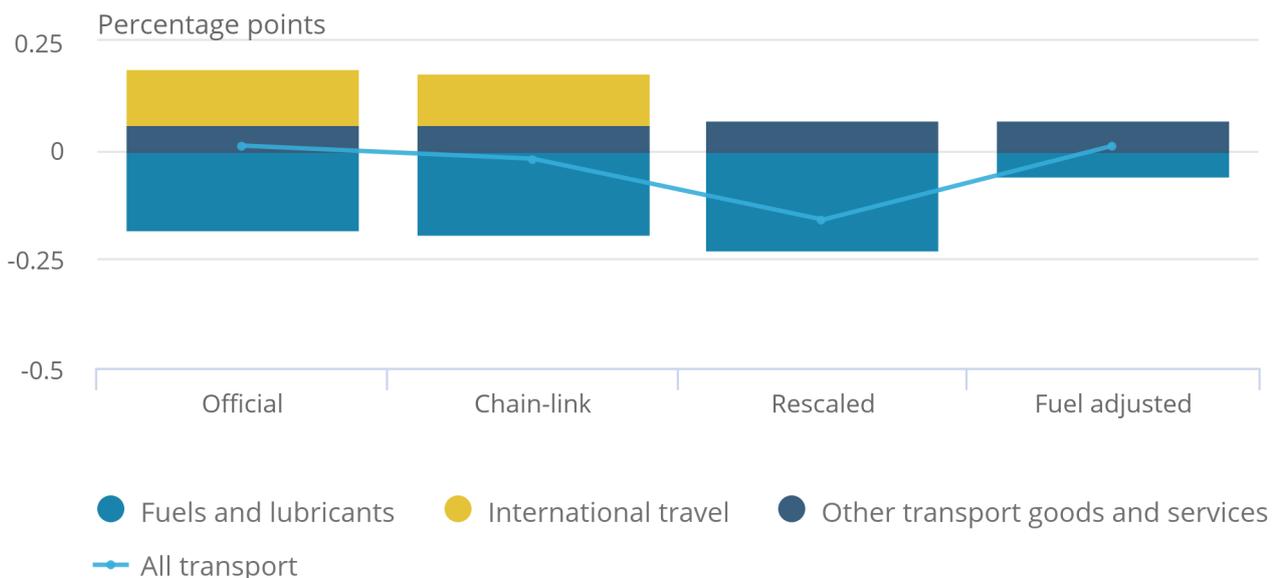
Figure 3 shows contributions that different components of transport have made to the 1-month growth rate of the official CPIH and the experimental series. The equivalent series for CPI are included in the [full dataset](#).

**Figure 3: Contributions to the 1-month growth rate of CPIH by component of transport**

UK, April 2020

Figure 3: Contributions to the 1-month growth rate of CPIH by component of transport

UK, April 2020



Source: Office for National Statistics – Consumer Prices Index including owner occupiers’ housing costs

For the official series, international travel makes a positive contribution to the 1-month growth rate of CPIH between March and April 2020, as was seen between the same two months a year ago. As we have removed international travel components from the experimental rescaled basket, they have no impact on the 1-month growth rate of CPIH in April 2020. As these components had a positive contribution in April 2019, this leads to a downward contribution to the annual rate of inflation, as was seen in Figure 2.

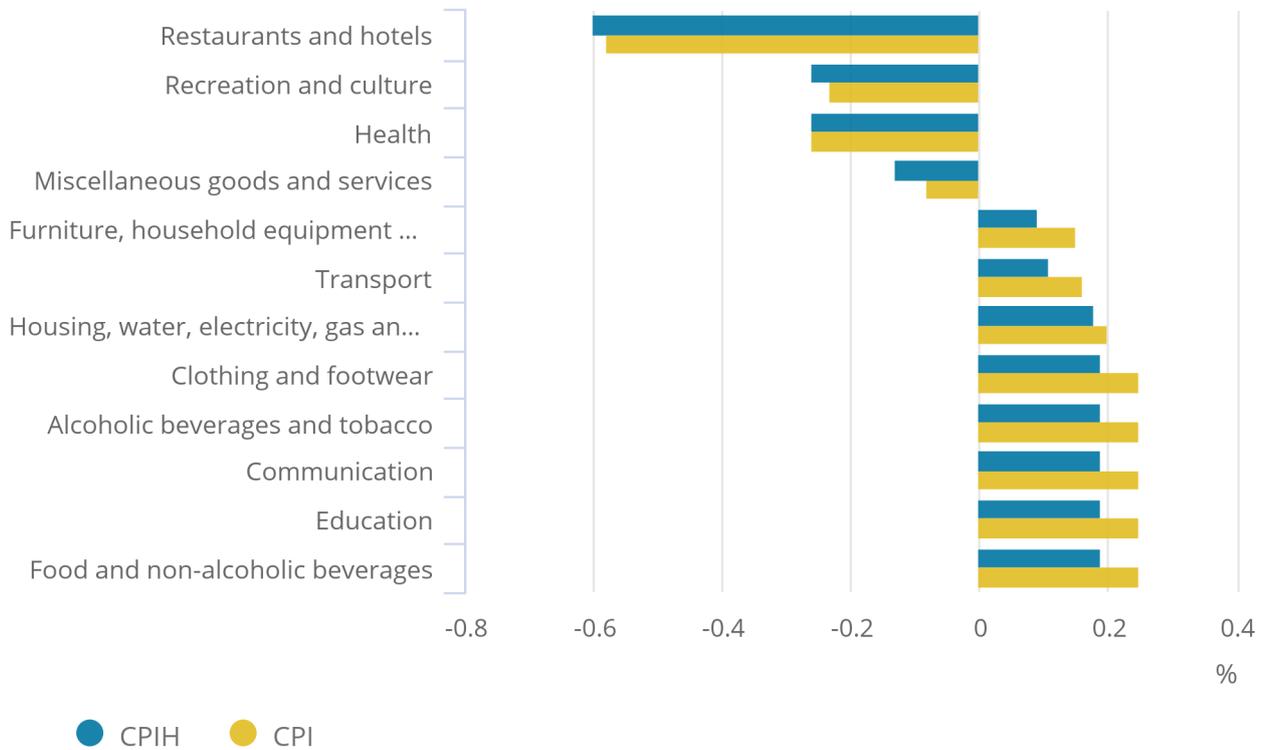
## 6 . Methodology

### Rescaling the baskets

To rescale the baskets we apply a weight of zero to unavailable items and apply their weights proportionately to the remaining items of the basket. Figures 4 and 5 show the impact that this adjustment has on the weight of each division within the Consumer Prices Index including owner occupiers' housing costs (CPIH) and the Consumer Prices Index (CPI), compared with their previous weights. Figure 4 shows the percentage change in the weight and Figure 5 shows the difference in actual weight (measured in parts per thousand). The list of unavailable items is in Annex B of [Coronavirus and the effect on UK prices](#).

**Figure 4: Percentage change in weights from rescaling of CPI and CPIH baskets**

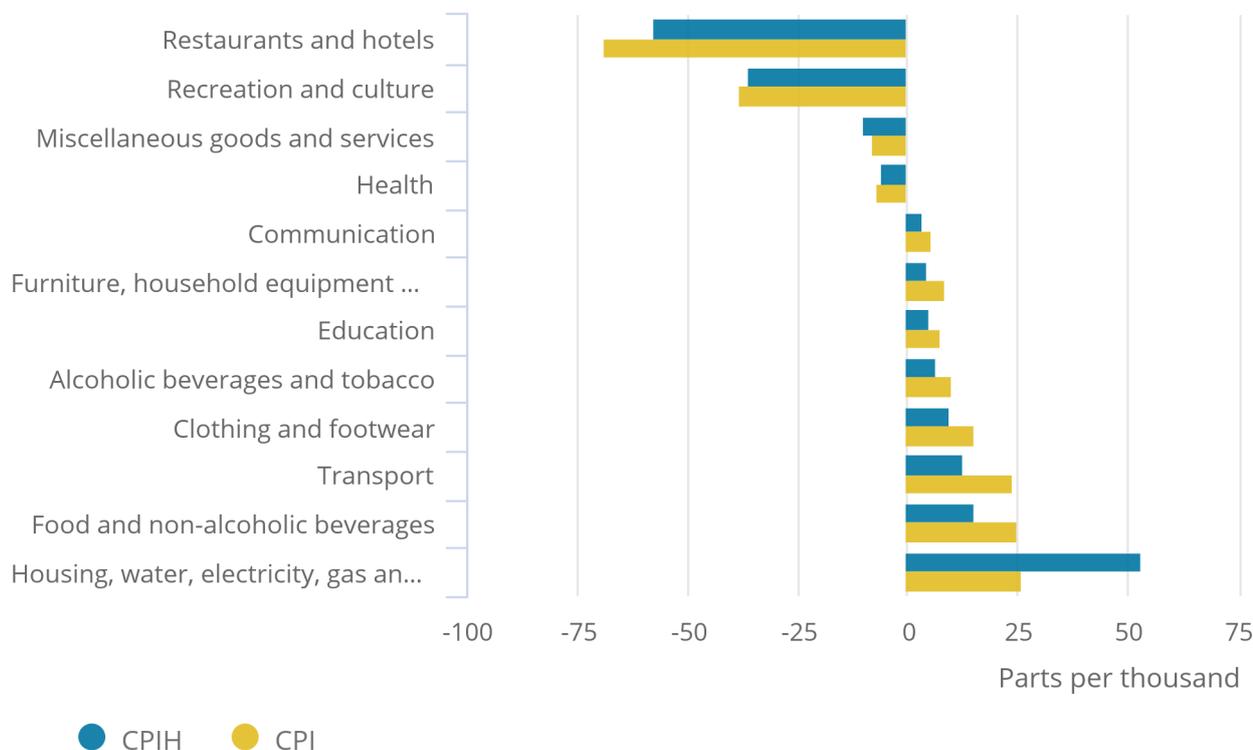
Figure 4: Percentage change in weights from rescaling of CPI and CPIH baskets



Source: Office for National Statistics – Consumer Prices Index including owner occupiers’ housing costs and Consumer Prices Index

**Figure 5: Absolute change in weights from rescaling the CPIH basket**

Figure 5: Absolute change in weights from rescaling the CPIH basket



**Source: Office for National Statistics – Consumer Prices Index including owner occupiers’ housing costs and Consumer Prices Index**

Removing unavailable items and rescaling the weights reduces the total weight of four divisions and increases the weight of the remaining eight. Restaurants and hotels saw the largest drop in weight of all the categories, reflecting the large-scale changes to the sector following social distancing policies and movement restrictions brought into effect at the end of March, with many restaurants and hotels unable to operate during April.

Recreation and culture, health, and miscellaneous goods and services also have a lower weight in the rescaled basket for similar reasons. Recreation and culture includes services like cinemas and cultural venues that have also been unable to open, as well as package holidays that have also ceased as the government has advised against all but essential travel. Health also contains unavailable items including non-essential dentist charges and private health services, such as physiotherapists and chiropractors, while miscellaneous goods and services is missing items such as hairdressing, manicures and legal services.

While the overall weight has increased for each of the other divisions, most nonetheless contain some items that were unavailable in April, and therefore have a weight of zero. The increased weight for other items within those categories more than offsets the reduction in weight from the missing items.

## Chain-linking the official series to March

Weights within the CPIH and CPI baskets are usually updated at the beginning of the year to reflect changes in general spending patterns, while otherwise remaining unchanged throughout the year, to allow for comparisons of price movements within the year. In these experimental series, we make some further adjustments to the weights of specific components within-year, to reflect some of the reported changes in consumption patterns.

In order to introduce a new set of goods and services and a new set of weights it is necessary to use a chain-link. This involves calculating the price change between the new month (April 2020) and an overlap month (March 2020) and linking that movement on to the old series (ending March 2020). More information on chain-linking can be found in Section 3.6 of our [Consumer Price Indices Technical Manual](#).

The chain-link itself can have a small impact on the index; typically, we compare prices in each month with a base month (for example, prices in April are calculated relative to prices in January) so the movement between the previous month (March) and the current month (April) has no direct impact on the index. When introducing a chain-link, the movement between the previous and current month is directly accounted for. As we have used a chain-link to introduce the rescaled weights, we compare the impacts with the official series had a chain-link been introduced. This ensures comparability in methods between series.

## Reducing the weight for fuels and lubricants

As well as accounting for items that are not currently available, additional adjustments can be made to the basket coverage and weights to reflect recent changes in consumption. There have been broad changes in consumer spending patterns reported following social distancing policies and movement restrictions brought into effect at the end of March that would likely affect how people experience inflation and relative price changes in April.

Perhaps the most notable change in consumption has been spending on motor fuels. As people have been encouraged to stay at home, avoid unnecessary journeys, and to work from home if possible, demand for petrol and diesel has fallen considerably. Based on [reports from the Petrol Retailers Association](#) and anecdotal evidence from retailers we make the assumption that spending on motor fuels has fallen by approximately 70%, and adjust the weight for fuels and lubricants accordingly by setting the weights to 30% of their original value. The fuels and lubricants category also includes engine oil and we assume an equal fall in demand for that.

We then apply the weight deducted from fuels and lubricants across available items within the basket. This is an assumption made to show the type of impact that changing the weight of fuels and lubricants could have on the 12-month growth rates of CPIH and CPI. If the actual change in consumption for fuels and lubricants were to be higher than this it would have a larger impact, while a smaller change in consumption would reduce the scale of the impact. These weights, for both CPIH and CPI, can be found in the [full dataset](#).

## 7 . Conclusions

The relative comparability between the official rate and the experimental series highlight that the imputation methods used in calculating the official rate were effective in negating the impact of unavailable items on the 12-month rate. As shown in the case of transport, the official 12-month rate removed the impact from seasonal items more effectively than our experimental approach based on removing the items and rescaling the weights.

Adjusting the weights for changes in fuel consumption also resulted in there being relatively minor differences between the experimental series and the official rates. As shown in Figure 2, there are some differences underlying this: while removing unavailable international travel has a greater downward pull on the experimental series than the official rate, the downward drag from fuels and lubricants is lessened because of the reduced weight.

## 8 . Next steps

The experimental datasets here take an initial step towards accounting for recent changes in consumer spending patterns. The rescaled basket allows us to compare different approaches to accounting for items that are not currently available to consumers. Reducing the fuels and lubricants weight takes this one step further to reflect one change in consumption that has been reported and has a considerable impact on the overall inflation rate, though it has been applied in a broad way with no assumptions about which items within the other COICOPs would see the greatest increase in expenditure, or also see falls in expenditure.

It is reasonable to assume that many other parts of the basket have also been subject to considerable changes in consumer spending patterns. In the future, we will consider what evidence is available to make reasonable assumptions about those changes in consumer spending and explore the feasibility of more detailed and nuanced adjustments to the weights of other items in the basket.

## 9 . Authors

Kathryn Keane, Helen Sands, Kenneth Ezeoguine and Robert Kotlar, Office for National Statistics.

## 10 . Related links

[Coronavirus and the effects on UK prices](#)

Article | Published 6 May 2020

Plans for data collection, compilation and publication of our various prices statistics following movement restrictions as a result of the coronavirus (COVID-19) pandemic.

[Consumer price inflation, UK](#)

Bulletin | Monthly

Price indices, percentage changes and weights for the different measures of consumer price inflation.