

# **Advisory Panels for Consumer Prices**

2018 Annual Report to the National Statistician

April 2019

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## 1. Introduction

This is the third annual report from the Advisory Panels for Consumer Prices (APCP) to the National Statistician. The APCP Technical have met four times in the year to December 2018, and the APCP Stakeholder have met separately three times in the year to December 2018, to discuss a number of issues important to the ongoing progress of consumer price statistics in the UK. This report includes a summary of the discussions held by the panels throughout 2018, and the resulting outcomes. These discussions regard the development of indices to meet user needs, the forward work programme for consumer price statistics, and other methodological changes to consumer price statistics in the UK.

## 2. Recommendations

The APCP recommend to the National Statistician that:

- The National Statistician notes the progress ONS has made against the work programme for consumer price statistics, and endorses the forward work programme that focuses on: the use of alternative data sources, improving elementary aggregate indices, particularly clothing, and research into improving the measures used within the Household Costs Indices.
- He notes the progress on moving towards the use of alternative data sources in consumer price statistics with the creation of the data collection strategy and the completion of the discovery project to map out the end-to-end pipeline for processing alternative data sources; work on this should continue as a high priority
- The 3-year work plan on the Household Costs Indices (HCIs) should be endorsed, particularly further work to establish the conceptual foundations for the indices which will inform future development decisions; the student loans index should be refined ready for the next publication in early 2019
- ONS should publish the CPIH historical estimates back to 1988 as a priority, whilst continuing to review the methodology back to 1947 with CPI components remaining as they are.
- ONS should review the methodology for used cars by using alternative data sources and extending the age of cars included in the used cars index
- Further work should be done to incorporate new stratum weights for shop-type by assessing the data sources suggested by the Technical Panel; in particular, the Annual Business Survey (ABS) and the Annual Survey of Goods and Services, alongside Inter-Departmental Business Register data.

Specifically the APCP-S also recommend to the National Statistician that:

- Work on using alternative data sources to address the unique challenges with measuring clothing prices should continue as a high priority, and should be used in support of a wider review of the criteria used to assess the application of different index number formulae at the lowest level of aggregation. ONS should also work to put in place a robust framework for maintenance of the RPI, given its probable long-term and widespread use in the private sector and in inflation linked gilts. The Panel remains particularly concerned by the impact of clothing on the RPI since 2010

## 3. Background

The establishment of the Technical and Stakeholder APCP was recommended by an [independent review](#) of the governance of price statistics in February 2014, which considered

matters relating to the governance arrangements and structures underpinning the production of consumer price indices by the ONS.

The APCP have met regularly throughout 2018. The Technical Panel typically meet 1-2 weeks prior to the Stakeholder Panel and the Chair of the Technical Panel then provides an update to the Stakeholder Panel on the discussions that have taken place. The APCP do not necessarily discuss the same papers, but there has been much overlap in the discussions held throughout the course of 2018.

The Technical Panel<sup>1</sup> functions to provide independent advice to the National Statistician on technical aspects of consumer price indices, as requested by ONS and/or the Stakeholder Panel. The Stakeholder Panel<sup>2</sup> functions to provide independent advice to the National Statistician on the uses and applications of consumer price indices, to ensure that these statistics meet the needs of users and 'serve the public good'.

On 8 January 2015, the UK Statistics Authority (UKSA) published an independent [review of UK consumer price statistics](#) led by Paul Johnson, Director of the Institute for Fiscal Studies. A number of recommendations were made, and the Authority launched a formal [public consultation](#) in the summer of 2015.

Many of the topics that have been discussed by the APCP during 2018 stem from recommendations made by the review and on questions that were raised during the formal public consultation. Other topics surrounding the consumer prices landscape were discussed, including an extended historical series and standard errors for CPIH, Household Costs Indices, and the use of RPI. The used cars price index was also discussed.

#### **4. Topics discussed in the past year**

The APCP (Technical and Stakeholder) have met separately 3 times in the year to September 2018. A number of topics have been discussed by the APCP, including:

- using alternative data sources in consumer price statistics
- investigating the use of web scraped data to improve clothing measurement
- improvements to CPIH
- measuring changes in used car prices
- developing the Household Cost Indices
- the forward work programme for consumer price statistics

The Technical Panel have also discussed a number of methodological topics, including:

- feasibility study into producing CPIH-consistent inflation rates for UK regions
- updating the data source for shop type weights

In addition, the Stakeholder Panel discussed further topics, including:

- use of the RPI

#### **4.1. Using alternative data sources in consumer price statistics**

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<sup>1</sup> Technical Advisory Panel for Consumer Prices [Terms of Reference](#)

<sup>2</sup> Stakeholder Advisory Panel for Consumer Prices [Terms of Reference](#)

In line with the Better Statistics Better Decisions Strategy there will be a move from collecting prices manually to electronic means wherever feasible and efficient. The Stakeholder Panel discussed how the legal constraints on RPI might affect the move to alternative data sources and constrain methodological improvements if new methods were considered to be a fundamental change. ONS will only know if the change is detrimental once data are obtained. It was agreed that the ONS should take an evidence-based approach with regards to implementing alternative data sources, taking time to review progress and learn lessons. The Stakeholder Panel also discussed the potential benefits of using alternative data sources and when these might be implemented in an aggregate measure of consumer prices. The panel encouraged ONS to continue to be transparent about their plans and any challenges they face.

Members of the Technical Panel discussed the key challenges ONS will face during this project with product churn identified as a key issue to overcome. Panel members highlighted that gaining access to scanner data was particularly important and suggested that in the absence of data, freely available datasets should be used to develop sampling methods and pre-processing techniques before a robust stream of data is confirmed.

The introduction of web scraped data offers the ONS the opportunity to extend the current classification structure by adding additional items to the structure and adding further levels within items. The technical panel discussed the risks of extending the classification structure. With respect to the addition of new items, panel members said ONS should be aware of the risk of increased volatility that will come with alternative data sources when creating indexes. The additional layer of classification at the sub item level was also discussed. Members were in agreement that creating more homogeneous groups was important; however, care needed to be taken to make sure these groups make sense in practice. The panel agreed that ONS should be making full use of the increased amount of data that will come from alternative data sources and therefore supported extending the classification.

ONS have conducted research into creating approximate weights for web scraped data using the product ranking from websites. Panel members were sceptical as to whether the given popularity ranking could be trusted. Panel members suggested looking at the number of transactions rather than expenditure which would better represent popularity. Another suggestion was if ONS could collect some summary statistics from retailers then ONS could use this to create a better approximation of expenditure by assuming a distribution and using these summary statistics to recreate it. Other panel members agreed that this was worth pursuing.

#### **4.2. Investigating the use of web scraped data to improve clothing measurement**

In 2016, the APCP recommended that work on clothing should be returned to a high priority. ONS has subsequently raised the profile of this work stream on its [Consumer Prices Development Plan](#). Following suggestions from the Technical Panel in 2017, ONS has focused on using alternative data sources, such as web-scraped data, to improve the measurement of clothing prices. This year, both panels commented on the work ONS had done thus far, and suggested further statistical techniques and methodologies which could be applied to the data.

At Stakeholder panel there was much discussion around the current approach to collecting clothing prices, particularly with respect to RPI and the formula effect, and the panel have suggested a number of ongoing actions to improve our understanding of the issues.

#### **4.3. The use of the Retail Price Index (RPI)**

The ongoing House of Lords inquiry into the use of the RPI was discussed and Stakeholder Panel members gave specific advice on how to proceed with the RPI. Most of the panel members felt that the ongoing use of RPI in its current form was leading to problems for some

users. In their mind, action on the RPI was important. In particular, the challenges of accurately measuring clothing prices remained challenging across all indices, but was acute in the RPI. A number of different options had been put forward. It was suggested that the clothing element be excluded from the RPI or that the clothing element in the RPI be aggregated using the Jevons instead of the Carli. Another suggestion was that the RPI should be phased out over a period of time and in the long term there should be price indices based on a sound conceptual background and a guide on how to use them.

There were some members who were also concerned about the use of the Jevons index in the CPI.

ONS's position is that the RPI will continue to be maintained through routine changes and that it will only consider making methodological changes to the RPI if to not do so would inhibit the improvement of CPIH and the Consumer Prices Index. Whilst the ONS have significantly scaled back publication of RPI-related data, it continues to publish the minimum necessary to ensure the essential needs of existing users are met.

#### **4.4. Developing the Household Cost Indices**

The Stakeholder Panel discussed the usefulness of the work done so far on the HCIs and agreed that for future work ONS look at including capital costs and student loans. Future publications could also provide analysis of how different household groups are affected as interest rates rise.

From feedback given through the HCIs questionnaire, there were some suggestions of improving the methodology used in the preliminary estimates, expanding the scope of the indices and coordinating with other projects.

ONS is attempting to capture student loans within the HCIs on a payments basis. Two approaches were presented to the Technical Panel – a data-based approach, and a model-based approach. The Panel discussed at length whether the proposed methods were in fact a price index. The data-based approach to measurement was considered inappropriate due to small sample sizes and volatility in the results. The model-based approach was reworked to include the mean graduate salary rather than the median, and Panel members suggested approaches that could be used to validate the model. There was also discussion around whether maintenance loans should be removed from the student loans index or not, as double counting may not be an issue when democratic weights are used. Members pointed out more generally the need to be conceptually consistent across the HCIs with respect to how loans and credit are treated.

The Technical Panel also considered two alternative options for measuring capital mortgage repayments – one based on survey data, and the other an adaptation of the mortgage interest payments (MIPs) methodology. This prompted some considerable discussion around the conceptual foundation of the HCIs, which several members felt needed clarifying further. It was felt that neither of the methods, in the form presented in the paper, were robust enough for use in a publication, since the survey data are volatile and the mix of housing is not held fixed, whereas some of the assumptions underlying the MIPs-based approach need further testing.

#### **4.5. Feasibility study into producing CPIH-consistent inflation rates for UK regions**

The Technical Panel discussed the difficulties in creating regional estimates. The declining response rate in the Living Costs and Food Survey (LCF) was raised as a concern; this is a considerable problem for producing regional baskets and weights. Panel members suggested looking at the variability within each region as a function of the respective sample

size. Small area estimation is currently being investigated to help alleviate this problem, and the observed volatility in the resulting weights. ONS National Accounts are also looking to produce [regional household expenditure](#) estimates that may further enable this work.

#### **4.6. Improvements to CPIH**

The Technical Panel discussed the methodology used to calculate a historical series for CPIH for the period 1947 to 2005. The Panel agreed that the greatest complexity in this calculation was obtaining data for imputed rentals prior to 2005 as the source used from 2005 is unavailable in previous periods. There was some discussion as to whether it was important to have a historical series comparable with CPI where adjustments have been made over time or to have a series that is comparable with the current CPIH. The panel mostly agreed that CPI components should be left as they are. Both panels agreed that the series should be published back to 1988 in the first instance, with further work carried out for earlier estimates.

The Technical Panel also discussed at length the complexities of producing variance estimates for CPIH. The discussion focussed on the characteristics of the jackknife and bootstrapping techniques used and how this would affect the estimates. Panel members agreed that the measures could be useful as a diagnostic tool, for example to identify categories with high variance and see if this could be reduced in some way. However, it was raised that this had potential to lead to misinterpretation, as low variability does not necessarily mean the results are un-biased. The panel concluded that ONS should adapt this research into an academic article that also clearly sets out all possible sources of error, and what can and can't be quantified.

#### **4.7. Updating the data source for shop type weights**

Technical panel members offered alternatives to the suggested Retail Sales Index (RSI) data that could be adapted to meet the requirements. These included the Annual Business Survey (ABS) and the Annual Survey of Goods and Services (ASGS), alongside Inter-Departmental Business Register data (IDBR). ONS will take the suggestions from the panels and investigate the possibility of using these data sources.

#### **4.8. Measuring changes in used car prices**

Due to the high interest in the car finance and car leasing market APCP suggested that improvement of the used car index should be made a high priority. The panel discussed the unusual trend shown in the ONS used-cars index and offered varying explanations. It was shown that a similar issue is seen across European countries. The technical panel discussed research from IFS, Eurostat and other NSIs.

The stakeholder panel suggested approaching industry experts to get further insight into the trends of the market and look into the use of web scraped data. They also suggested that ONS should extend the age of cars looked at in the used cars index past two and three-year old cars.

#### **4.8. The forward work programme for consumer price statistics**

In May 2018 both APCPs discussed the forward work programme and the priorities for consumer prices. The Technical Panel made some suggestions about what work could be added to the work plan, such as considering the digital and sharing economy. Members also discussed wanting to see further work on airfares.

The Stakeholder Panel discussed the need for scanner data as web-scraped data only captures the list price, not the sale price. Panel members also felt that the clothing item on the work programme should be renamed to include reference to the formula effect, as it involves reviewing the selection criteria for different elementary aggregates, which is wider than clothing. They also suggested that ONS should put in place a better framework for the ongoing maintenance of RPI.

The programme has been updated to reflect the recommendations from both APCP. More information can be found in section 5 and the updated work programme is provided in Annex A.



## 5. Forward work programme for consumer price statistics

ONS has a programme of research and development that is aimed at improving and maintaining the range of consumer price indices - ensuring that they continue to meet user needs, make use of new and innovative methods, and are compliant with EU regulations. Since the previous iteration of the work programme, a considerable amount of progress has been made. This includes:

- the first annual publication of CPIH-consistent subgroups in November 2017
- the publication of the first preliminary estimates of the Household Costs Indices in December 2017
- publication of relative regional consumer price levels in March 2018, and the first iteration of a feasibility study into producing CPIH on a regional basis in November 2017
- implementation of additional price quotes for fruit and vegetable items collected on the Friday preceding index day in CPIH and CPI

ONS expects its top priorities for the next few years will be to continue to develop the range of consumer price measures to meet the 3 user needs identified by the National Statistician – a set of measures consistent with recognised economic principles, measuring the household experience of changing prices and costs, and the ongoing need for the Retail Prices Index (RPI) for its use in long-standing contracts. ONS' priorities therefore are to:

- Continue to improve CPIH, its lead measure of inflation, by providing users with a longer time series and more granular data, continuing to explore the calculation of variance estimates, provide further information and assurance on data sources used to compile the CPIH, improve user understanding, and embed CPIH as the lead inflation measure in the UK
- continue to produce and improve the CPI so that there is a measure that is comparable internationally
- work to develop a set of indices that reflect inflation as experienced by household groups
- continue to publish the RPI as a legacy measure, while making any necessary routine changes
- improve all of its consumer price statistics through the use of alternative sources of price and transaction data, and in particular for clothing items

ONS have committed to review and update this work programme annually and to provide an update to the Authority Board via the National Statistician. In updating the work programme, ONS will seek the guidance of the Advisory Panels on Consumer Prices and engage with users and experts of these statistics.

Annex A presents the work programme proposed by APCP for May 2018 onwards, taking into account changed priorities since the previous iteration of the work programme.

## 6. Membership of the Technical Advisory Panel for Consumer Prices<sup>3</sup>

### Members

|                                |   |
|--------------------------------|---|
| Mr Nick Vaughan*               | Director of National Accounts and Economic Statistics, Office for National Statistics– until September 2018 (Chair) |
| Mr Grant Fitzner**             | Director of National Accounts and Economic Statistics, Office for National Statistics – from December 2018          |
| Mr John Astin                  | Independent expert – nominated by RSS   |
| Prof. Bert Balk                | Erasmus University, Netherlands   |
| Dr Antonio Chessa**            | Statistics Netherlands  |
| Prof. Ian Crawford             | University of Oxford  |
| Mr Michael Hardie**            | Office for National Statistics  |
| Mr Rupert de Vincent-Humphreys | European Central Bank   |
| Mr Peter Levell                | Institute of Fiscal Studies   |
| Dr. Jens Mehrhoff              | Eurostat  |
| Mr Mike Prestwood*             | Office for National Statistics  |
| Dr Jeff Ralph*                 | Office for National Statistics  |
| Mr Paul Smith                  | University of Southampton   |
| Prof. Martin Weale             | King's College London   |

### Secretariat

|                      |                                |
|----------------------|--------------------------------|
| Mr Christopher Payne | Office for National Statistics |
| Mr Jack Philips*     | Office for National Statistics |

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<sup>3</sup> Members of the Technical Advisory Panel for Consumer Prices have been appointed for their expertise rather than their institution.

\* Members that have stepped down from the panel during the year

\*\* New members of the panel that joined throughout the year

## 7. Membership of the Stakeholder Advisory Panel for Consumer Prices

### Members

|                      |   |
|----------------------|---|
| Dame Kate Barker     | Chair   |
| Mr Jonathan Athow    | Office for National Statistics                            |
| Mr Richard Barwell   | BNP Paribas   |
| Mr Andy Haldane      | Bank of England   |
| Mr Michael Hardie**  | Office for National Statistics                            |
| Ms Jill Leyland      | Royal Statistical Society                                 |
| Ms Clare Lombardelli | HM Treasury   |
| Mr Mike Prestwood*   | Office for National Statistics                            |
| Mr Ian Rowson        | Civil Aviation Authority/Cadent Customer Engagement Group |
| Mr Andrew Sentance   | PricewaterhouseCoopers                                    |
| Mr Geoff Tily        | Trades Union Congress                                     |
| Mr Nick Vaughan*     | Office for National Statistics                            |
| Ms Sally West*       | Age UK  |
| Mr Matthew Whittaker | Resolution Foundation                                     |

### Secretariat

|                  |                                |
|------------------|--------------------------------|
| Dr James Tucker* | Office for National Statistics |
| Miss Jaya Jassi* | Office for National Statistics |
| Mr Andy King**   | Office for National Statistics |

\* Members that have stepped down from the panel during the year

\*\* New members of the panel that joined throughout the year

## 8. Papers presented to the Technical Advisory Panel of Consumer Prices in 2018

| Date     | Title   | Summary  |
|----------|---|--|
| Jan 2018 | Producing standard errors for CPIH<br><a href="#">APCP-T(18)01</a>  | This paper presents work to develop measures of accuracy of the 12 month rate of change for CPIH, looking at the variance arising from the selection of representative items and their pricing in a sample of outlets.   |
| Jan 2018 | Feasibility study into producing CPIH-consistent inflation rates for UK regions<br><a href="#">APCP-T(18)02</a> | A recent study by the University of Southampton looking at the feasibility of producing regional breakdowns of CPIH using the current price collection.  |
| Jan 2018 | Producing a historical series for CPIH<br><a href="#">APCP-T(18)03</a>  | The current CPIH time series extends back to 2005, however, there is a user need for a longer time series. This paper sets out the approach taken to calculate a historic series from 1947 to 2005.  |
| Jan 2018 | Improving the used cars index<br><a href="#">APCP-T(17)04</a>   | There has recently been increased user interest in used car prices and in 2017 Eurostat undertook a review of the approaches taken in EU countries. This paper explains the methodology used for the UK index and compares the results with those of other EU countries. |
| May 2018 | Calculating a price index for student loan repayments<br><a href="#">APCP-T(18)06</a>                           | This paper proposes a methodology to calculate a price index for student loan repayments within the Household Costs Indices (HCIs) and discusses both conceptual and practical challenges.   |
| May 2018 | Draft work programme<br><a href="#">APCP-T(18)07</a>  | ONS have committed to update the work programme annually to take into account changing priorities.   |
| May 2018 | Investigating the use of web scraped data to improve clothing measurement<br><a href="#">APCP-T(18)08</a>       | This paper presents preliminary analysis of using web scraped data to calculate experimental price indices for clothing items.   |
| May 2018 | Extending the classification structure<br><a href="#">APCP-T(18)09</a>  | This paper sets out the initial thinking as to whether it is possible to expand the existing classification structure to make better use of alternative data that will be collected.   |
| Sep 2018 | Updating the data source for shop-type weights<br><a href="#">APCP-T(18)11</a>                                  | This paper sets out work to date on the use of Retail Sales Index data to update shop-type weights, and using this revised shop weight information to rework stratum level weights.  |
| Sep 2018 | Variance estimates for the Consumer Prices Index including owner occupiers' housing costs                       | This paper presents an update on work to develop measures of accuracy of the 12 month rate of change for CPIH, looking at the variance arising from the selection of representative items and their pricing in a sample of outlets.                                      |

|                      |   |   |
|----------------------|---|---|
|                      | <a href="#">APCP-T(18)12</a>  |   |
| <b>Sep 2018</b>      | Proposed pipeline for processing alternative data sources<br><a href="#">APCP-T(18)13</a>                                 | The aim of this preliminary research was to sketch out a proposed end to end pipeline, comprised of individual modules required to process the data; for example, 'classification'.   |
| <b>Sep 2018</b>      | The use of approximate expenditure weights for web scraped data in consumer price indices<br><a href="#">APCP-T(18)14</a> | This paper is an initial investigation into approximate weight allocation methods for the products used in the calculation of an item's index.  |
| <b>December 2018</b> | Calculating a price index for capital mortgage repayments<br><a href="#">APCP-T(18)16</a>                                 | This paper presents two potential methodologies for producing a mortgage capital repayments index for use in a variant of the Household Costs Indices.  |
| <b>December 2018</b> | Calculating a price index for student loans<br><a href="#">APCP-T(18)17</a>   | This paper addresses feedback on the model for calculating a student loans repayment index presented at the last APCP-T. It adapts the model to make use of the mean graduate salary and also presents an index based on Living Costs and Food Survey data. |

Note: excludes Terms of Reference, verbal updates, minutes, agendas and letters

## 9. Papers presented to the Stakeholder Advisory Panel on Consumer Prices in 2018

| Date     | Title  | Summary   |
|----------|--|---|
| Feb 2018 | Producing a historical series for CPIH<br><a href="#">APCP-S(18)01</a>   | The current CPIH time series extends back to 2005, however, there is a user need for a longer time series. This paper sets out the approach taken to calculate a historic series from 1947 to 2005.   |
| Feb 2018 | Improving the used cars Index<br><a href="#">APCP-S(18)02</a>  | There has recently been increased user interest in used car prices and in 2017 Eurostat undertook a review of the approaches taken in EU countries. The paper explains the methodology used for the UK index and compares the results with those of other EU countries. |
| Feb 2018 | <i>Consumer Prices Data Collection Strategy</i><br><a href="#">APCP-S(18)03</a>                                  | In line with the Better Statistics Better Decisions Strategy there will be a move from collecting prices manually to electronic means wherever feasible and efficient.  |
| Feb 2018 | <i>Household Cost Indices</i><br><a href="#">APCP-S(18)04</a>  | The first preliminary estimates of the Household Costs Indices (HCIs) were published in December 2017. This paper summarises the publications and results.  |
| May 2018 | <i>Producing a historical series for CPIH</i><br><a href="#">APCP-S(18)06</a>                                    | ONS have committed to update the work programme annually to take into account changing priorities.  |
| May 2018 | <i>Investigating the use of web scraped data to improve clothing measurement</i><br><a href="#">APCP-S(18)07</a> | This paper presents preliminary analysis of using web scraped data to calculate experimental price indices for clothing items.  |
| May 2018 | <i>Household Cost Indices development plan</i><br><a href="#">APCP-S(18)08</a>                                   | The first preliminary estimates of the Household Costs Indices (HCIs) were published in December 2017. This paper summarises the feedback received and outlines the plan for the next three years of development.   |
| Sep 2018 | Reviewing the methodology of the used car price index<br><a href="#">APCP-S(18)10</a>                            | There has recently been an increased user interest in used car prices given Eurostat's review. This paper reviews the current methodology of the used car price index and advises on potential solutions to the methodological issues.                                  |
| Sep 2018 | The use of the retail price index (RPI)<br><a href="#">APCP-S(18)11</a>  | This note circulates the published transcripts from the House of Lords Economic Affairs Committee inquiry on the use of the RPI.  |
| Sep 2018 | Proposed pipeline for processing alternative data sources<br><a href="#">APCP-S(18)12</a>                        | The aim of this preliminary research was to sketch out a proposed end to end pipeline, comprised of individual modules required to process the data, for example 'classification'.  |

Note: excludes Terms of Reference, verbal updates, minutes, agendas and letters

## **Annex A – Forward Work Programme for Consumer Price Statistics**

## Introduction

The work programme for consumer prices statistics was first included in the 2015 consultation on consumer prices statistics. The current work programme has since been updated to reflect the outcome of the review, and also to reflect decisions reached by the National Statistician following the consultation. It has also been updated to reflect the views of the Advisory Panels on Consumer Prices following discussion by both the Technical and Stakeholder Panels in May 2018. The programme and priorities also reflect the priority placed on the use of alternative data sources by Professor Sir Charles Bean’s review of economic statistics (commonly referred to as the Bean Review).

We expect that our top priorities for the next few years will be to continue to develop the range of consumer price measures to meet the 3 user needs identified by the National Statistician – a set of measures consistent with recognised economic principles, measuring the household experience of changing prices and costs, and the ongoing need for the Retail Prices Index (RPI) for its use in long-standing contracts. Our priorities therefore are to:

- Continue to improve CPIH, our lead measure of inflation, by providing users with a longer time series and more granular data, continuing to explore the calculation of variance estimates, provide further information and assurance on data sources used to compile the CPIH, improve user understanding, and embed CPIH as the lead inflation measure in the UK
- continue to produce and improve the CPI so that there is a measure that is comparable internationally
- work to develop Household Costs Indices: a set of indices that reflect inflation as experienced by households and household groups
- continue to publish the RPI as a legacy measure, while making any necessary routine changes
- improve all of our consumer price statistics through the use of alternative sources of price and transaction data, and in particular for clothing items

## High priority items

High priority items are the cornerstone of the development programme and if necessary will be prioritised over the delivery of medium and low priority items. High priority items are listed in order of implementation (of the first deliverable).

| <b>Developing a historical series for CPIH</b> |   |
|--|---|
| Overview                                       | <p>CPIH, the lead measure of inflation, is the most comprehensive measure of consumer price inflation, given its inclusion of owner occupiers’ housing costs (OOH). The current time series extends back to 2005, which is when the rental data sources used to calculate the OOH component for England begin.</p> <p>A modelled historical series has previously been estimated for the CPI<sup>4</sup>. To increase the usability of CPIH and provide</p> |

<sup>4</sup> [Modelling a Back Series for the Consumer Prices Index, 1950 - 2011](#)



|                |   |            |
|----------------|---|------------|
|                | <p>a longer commentary on the impact of owner occupiers' housing costs on inflation, a historical series will be modelled for CPIH.</p> <p>In January 2018 both Advisory Panels on Consumer Prices considered a proposed methodology for the historical series, and recommended publishing the series from 1988 to 2005, whilst continuing to investigate the series from 1947 to 1988 further.</p> |            |
| Implementation | Publish the CPIH historical series for 1988 to 2005   | Q4 2018    |
|                | Further development on the early part of the series   | Early 2018 |
|                | Publish the CPIH historical series for 1947 to 1988   | Q4 2019    |

| <b>Data collection strategy for consumer price statistics</b> |  |
|---|--|
| Overview  | <p>Improvements in technologies have resulted in new, alternative, sources of price data which could be used in the compilation of price indices. There are 2 main alternative data sources which could be used, specifically point of sale scanner data and online price data.</p> <p>We completed our initial research phase into alternative data sources in August 2017. This focused on using web scraped data to replace or supplement the traditional collection of prices, in particular focusing on:</p> <ul style="list-style-type: none"> <li>• investigating the use of online price data in the measurement of clothing prices</li> <li>• undertaking a feasibility study into using online price data to replace the central and local collection of prices</li> <li>• reviewing appropriate price index methodology for use with alternative data sources</li> <li>• investigating the use of a database of rail fares transactions to improve the rail fares item in CPI</li> <li>• why prices for some items are sourced from the internet, while others are obtained from local shop-based collections<sup>5</sup></li> </ul> <p>These work streams have in turn fed into the development of the data collection strategy for consumer prices statistics. The strategy outlines the scope of future work required to incorporate alternative data sources for both the central</p> |

<sup>5</sup> Ibid, Recommendation 11

|                |   |         |
|----------------|---|---------|
|                | <p>collection and elements of the local collection. These data sources may also provide a more efficient way to capture the increase in online expenditure that has occurred over the last decade. We believe there is potential to collect around 25% of the basket from scanner data and 20% from web scraping which will reduce the amount of locally collected prices as well as the use of manual online collection and CDs and Brochures for centrally collected prices.</p> <p>We will also continue to work towards incorporating more robust data sources (including scanner data). Research during the initial research phase focused on web scraped data collected via in-house methods including scrapers developed in house, or off the shelf scraping solutions. Due to the resource needed for maintenance a decision was made to procure web scraped data from a third-party supplier.</p> <p>This item ties in with <a href="#">ESCoE's work stream</a> on measurement issues in the modern economy which is investigating how measurement prices might evolve in light of the digital revolution.</p> |         |
| Implementation | Build of a prototype pipeline for processing web scraped data in the aggregation of consumer price statistics   | Q4 2018 |
|                | Methodology review for expenditure weights for web scraped data complete  | Q1 2019 |
|                | Publication of a range of experimental indices based on web scraped data  | Q1 2019 |
|                | Framework for assessing quality of indices using alternative data sources completed   | Q2 2019 |
|                | Build of a prototype pipeline for processing scanner data in the aggregation of consumer price statistics   | Q3 2019 |
|                | Publication of a range of experimental indices based on scanner data  | Q1 2020 |
|                | Implementation of improvements to rail fares  | Q1 2021 |

### Improvements to elementary aggregate indices

|          |  |
|----------|--|
| Overview | <p>In 2010, ONS made a number of changes to the methodology used to collect clothing prices. These changes meant that the gap between RPI and CPI, which use different formulae at the lowest level of aggregation<sup>6</sup>, widened.</p> <p>Constructing price indices for clothing items can be problematic. This is because the high product turnover associated with fashion items makes it difficult to identify</p> |
|----------|--|

<sup>6</sup> CPI and RPI: increased impact of the formula effect in 2010 available [here](#).

|                |   |         |
|----------------|---|---------|
|                | <p>comparable replacements. ONS will continue to explore the measurement of clothing prices through analysis of web scraped or scanner clothing data (see use of alternative data sources), as well as considering other ways that the measurement of clothing price changes could be improved. ONS will seek the advice of its advisory panels in this matter.</p> <p>Following the 2010 clothing changes and subsequent consultation, the National Statistician announced that the RPI's methodology would be frozen and that it would become a legacy measure, with only routine changes being made. ONS will now work to put in place a better framework for ongoing maintenance of the RPI. The work will also consider recommendations from the Johnson Review to review and publish the criteria for formula selection at the lowest level of aggregation.</p> |         |
| Implementation | Report on methodology and comparison of methods   | Q3 2019 |
|                | Framework for ongoing maintenance of RPI  | Q4 2019 |
|                | Criteria for elementary aggregates and impact assessment  | Q1 2020 |
|                | Proposal on improvements to clothing  | Q1 2020 |

### Developing Household Cost Indices (HCIs)

|          |   |
|----------|---|
| Overview | <p>The concept of a Household Costs Index (HCI) was first proposed by Astin and Leyland (as the Household Inflation Index, HII), culminating in a paper<sup>7</sup> submitted as a response to the 2015 consultation on consumer price statistics. Suggested differences from existing measures of price change include the potential inclusion of asset prices and interest payments, plus giving each household's expenditure equal weight. Following the consultation the National Statistician decided that the HCIs could serve as an important complement to the suite of consumer price indices.</p> <p>Work has now commenced to develop these indices, releasing focused analytical articles throughout 2017 and beyond that will help shape the production of the final measure. ONS has subsequently engaged with its advisory panels on a number of development issues. Initial experimental indices were <a href="#">published</a><sup>8</sup> in December 2017 but there are a number of concepts that will need to be explored further. Further experimental publications will</p> |
|----------|---|

<sup>7</sup> [Towards a Household Inflation Index.](#)

<sup>8</sup> [Household Costs Indices, UK: preliminary estimates 2005 to 2017](#)

|                |  |         |
|----------------|--|---------|
|                | <p>continue to be published on an annual basis to support the development.</p> <p>Following the 2015 consultation on consumer price statistics, the National Statistician reached the decision that ONS should produce comparable measures of income and price change for different household groups on an annual basis in one publication. We will engage with users to shape further development of the measures.</p> <p>Much consideration has gone into how comparable measures of income and price change should be produced, and work in the area suggests there may be a case for a ‘family of indices’ to deflate income using different definitions. As such Household Costs Indices may be appropriate to be matched to a microeconomic measure of income. This item ties in with <a href="#">ESCoE’s work stream</a> on democratic measures of income growth which aims to make a wider range of measures available to policy-makers.</p> |         |
| Implementation | Release first revision of the experimental Household Costs Indices   | Q1 2019 |
|                | Consultation with stakeholders   | Q2 2019 |
|                | Release final revision of the experimental Household Costs Indices   | Q1 2021 |
|                | Increase frequency of income and price change publications, using nowcasting techniques to improve the frequency of income measures  | 2021    |

### Medium priority items

Medium priority items form an important part of the work programme but if necessary delivery may be delayed for high priority items. Medium priority items are listed in order of implementation (of the first deliverable).

| European compliance issues |  |
|----------------------------|--|
| Overview                   | <p>The UK CPI is also the UK’s Harmonised Index of Consumer Prices (HICP). The HICP is a measure of inflation produced by all EU member states in line with EU regulations. We are working to ensure compliance through improvements to the methodology for package holidays.</p> <p>In 2015, Eurostat published the UK Compliance Report<sup>[2]</sup> which stated that ONS’s method for package</p> |

<sup>[2]</sup> [UK Compliance Report](#)

|                |   |         |
|----------------|---|---------|
|                | holiday collection is non-compliant. This is because price relatives for package holidays are calculated by comparing the price in the current month with the price the same month a year ago, rather than comparing with the price in December. Work is underway to develop an improved methodology. |         |
| Implementation | Development work to the Advisory Panels on Consumer Prices for review   | Q2 2019 |
|                | Implementation of improvements to package holidays  | Q1 2020 |

| <b>Used cars</b> |  |         |
|------------------|--|---------|
| Overview         | <p>Accurate measurement of changes in car prices is a challenging area for consumer price statistics. While producing an index for new cars is comparatively straightforward, for used cars quality adjustments are required to ensure that age and mileage are controlled for throughout the year.</p> <p>There is a high level of user interest in car prices, perhaps linked to the UK having seen a large growth in car finance in recent years. The range of approaches employed across EU countries, along with divergent price trends, has also prompted Eurostat to review car price index methodology, with a focus on used cars.</p> <p>In early 2018, the Advisory Panels on Consumer Prices recommended that we should review the current methodology for used cars.</p> |         |
| Implementation   | Review of used cars methodology  | Q4 2018 |
|                  | Improvements to the methodology for used cars  | 2020    |

| <b>Developing measures of accuracy for CPIH</b> |  |  |
|---|--|--|
| Overview  | <p>Due to the complex survey design, calculating standard errors for CPIH and specifically the growth in CPIH is very challenging.</p> <p>There are 2 dimensions to the sampling: selection of items and selection of outlets. The sampling involves purposive sampling of both items and outlets. The CPIH weights come from a variety of sources. Some are administrative sources, some are survey-based. They are then put through national accounts balancing. This all makes the estimation of sampling errors difficult.</p> <p>Also, CPIH weights are price-updated using movements in the appropriate CPIH index, so there is an interaction</p> |  |

|                |   |          |
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|                | <p>between weights and prices. Annual rates of change in the price index are ratio estimates, usually over a chain link, so there may be correlations between prices in successive periods that need to be taken into account.</p> <p>An article on the effect of variance in the weights of CPIH was published in Autumn 2017<sup>9</sup>, and work on the effect of variance in the prices was reviewed by the Advisory Panels on Consumer Prices in early 2018 and again in late 2018, where a combined estimate was considered.</p> |          |
| Implementation | Further analysis and refinement   | 2018     |
|                | Academic article on the variance in CPIH  | Mid 2019 |

| <b>Review of quality adjustment and monitoring of quality change</b> |  |
|--|--|
| Overview   | <p>One of the more difficult issues in producing consumer price inflation statistics is the accurate measurement and treatment of quality change due to changing product specifications. The Johnson Review considered quality change and recommended ONS provides more information to explain how quality change is monitored. In response to the 2015 consultation on consumer price statistics some users suggested that ONS should devote more resources to improving and monitoring methods of quality adjustment. In particular the quality adjustment of services could be given more consideration. The Bean Review<sup>10</sup> also considered quality change and found that the issue is likely to grow in importance with the “spreading tentacles of the digital revolution”.</p> <p>To address these findings a project has been initiated to review quality adjustment methods used in consumer price inflation statistics and provide more detail on how quality adjustment is monitored.</p> <p>This item ties in with <a href="#">ESCoE's work stream</a> on measuring activity in services sectors, as the project aims to investigate the deficiencies in the current measures of services activities for the UK and how might they be improved.</p> |

<sup>9</sup> [Survey Methodology Bulletin, Autumn 2017](#)

<sup>10</sup> Details of the [Bean review and the final report](#)

|                |  |         |
|----------------|--|---------|
| Implementation | Report on quality adjustment methods used and how quality adjustment should be monitored | Q2 2019 |
|----------------|--|---------|

**Improvements to CPIH methodology**

|                |  |         |
|----------------|--|---------|
| Overview       | <p>There are a number of ways in which the owner occupiers' housing costs (OOH) component of CPIH could be further improved. We intend to explore these potential developments to improve the effectiveness of CPIH as a measure of inflation. These are described in this section.</p> <p>When the OOH component in CPIH was developed in 2011 using administrative data sources for England, Wales and Scotland, comparable rental data for Northern Ireland were not suitable. At the time the Northern Ireland Housing Executive (NIHE) received private rental data biannually, covering the Belfast Metropolitan Region only. As a result the existing CPI private rental data series for Northern Ireland has continued to be used. Since then the coverage across Northern Ireland has improved and the data are now available monthly. New data from Northern Ireland was incorporated into our rental index (IPHRP) on 19 September 2018. The new data is not sufficiently timely for use in OOH. We will continue our discussions with Northern Ireland to improve the timeliness of the data in 2019.</p> <p>Currently, dwelling stock data from the Ministry of Housing, Communities and Local Government (MHCLG) are used to mix- adjust rental data to reflect the OOH market. However, the property type split is not available on a regional basis, so the same property type split is applied across all regions. We will explore other potential sources of data to improve the stratification.</p> <p>The Johnson Review<sup>11</sup> identified that recent research into the measurement of rental equivalence has suggested using a flow measure (new lets only), rather than a stock measure (new and existing lets). We will also explore the appropriateness of using this new approach to measuring rental equivalence costs.</p> |         |
| Implementation | New rental data source for Northern Ireland implemented in OOH   | Q1 2020 |
|                | Present findings from investigation into stock and flow measures of rental equivalence   | 2020    |

<sup>11</sup> Details of the [Johnson review and the final report](#)

|  |  |      |
|--|--|------|
|  | Improved property type split for stratum weights | 2021 |
|--|--|------|

| <b>Regional indices</b> |  |         |
|-------------------------|--|---------|
| Overview                | <p>Amongst other user interest, a recent Economy, Jobs and Fair Work Committee of the Scottish Parliament recommended<sup>12</sup> that a price index for Scotland should be given priority. Regional price indices could also improve the granularity of other high priority work such as the Household Costs Indices and CPIH subgroups.</p> <p>The regular collection of prices for consumer price inflation statistics is optimised for measuring inflation at the UK level. Prices are collected locally in 141 locations spread across Scotland, Wales, Northern Ireland and the 9 regions of England. As a result, the number of locations visited per region is small, making the data less suitable for regional indices. Additionally, the prices for many products are collected centrally with no regional breakdown. The viability of using the existing price data to produce more geographically disaggregated price indices was assessed in a feasibility report published in November 2017. We aim to build on the findings of this report to work towards more robust regional price indices for the UK.</p> |         |
| Implementation          | Ongoing development work towards the production of regional price indices  | Q4 2019 |

### Low priority items

The delivery of low priority items may be delayed or even stopped to ensure the delivery of high and medium priority items. Low priority items are listed in order of implementation (of the first deliverable).

| <b>Review the existing methodology for reconciliation between CPIH and RPI</b> |  |         |
|--|--|---------|
| Overview   | <p>With the move towards making CPIH the preferred measure of inflation, ONS is developing a reconciliation between CPIH and RPI, on a consistent basis with that currently published for CPI and RPI. In the longer term, alternative approaches will be investigated, using detailed item-level information.</p> |         |
| Implementation   | Experimental improved reconciliation method  | Q2 2020 |

<sup>12</sup> [How to make data count: improving the quality and coverage of economic statistics](#)



| <b>Weights</b> |  |         |
|----------------|--|---------|
| Overview       | <p>The Johnson Review made a number of recommendations to improve the weights used in consumer price inflation statistics. In early 2017 ONS improved the commentary in the annual weights article to explain why weights differ and the publication was also brought forward to coincide with the implementation of the annual weights in the consumer price inflation publication. The review also recommended that ONS consider whether the stratification of items by shop type can be improved<sup>13</sup>. ONS is seeking to introduce an appropriate stratification where weights for different types of shops are available and can be updated.</p> |         |
| Implementation | Proposals to APCP-T  | Q3 2019 |
|                | Update shop type weights in the CPI and CPIH   | Q1 2020 |

| <b>Discounts</b> |   |         |
|------------------|---|---------|
| Overview         | <p>Retailers are offering an increasing array of discounts to attract customers. Single product discounts (available to all consumers without conditions) are captured in consumer price statistics. However, many other types of discounts, such as multi-buy offers or loyalty schemes are excluded. The Johnson Review recognised the difficulty of accurately reflecting all discounts in consumer price statistics and recommended that ONS carry out more work in this area, ultimately seeking to reflect a wider range of discounts in its consumer prices statistics.</p> <p>ONS has contracted TNS, the company which collects price information used to compile consumer price inflation statistics, to collect additional discounts metadata for some items which are already collected locally. Field collectors are asked to record information on discounts (including multibuy discounts) on the handheld devices. The pilot will be run on all food and drink items, with the facility to expand to other product groups in the future. Web scraped data are also being used to explore the prevalence of discounts.</p> |         |
| Implementation   | Analysis of discount data collected locally   | Q3 2019 |
|                  | Implement outcome of pilot  | Q1 2021 |

<sup>13</sup> Ibid, Recommendation 17

| <b>Develop alternatives to the use of RPI data</b> |  |
|--|--|
| Overview   | <p>Following the 2015 consultation on consumer price statistics, the National Statistician decided that ONS would publish the bare minimum of RPI-related data necessary to ensure the critical and essential needs of existing users are met. To aid users in finding alternatives to the use of RPI data we will:</p> <ul style="list-style-type: none"> <li>• develop a new method for calculating average prices using CPIH</li> <li>• shift the long run (1750 onwards) inflation series from RPI to CPIH</li> <li>• develop and publish a hierarchy of historical indices</li> </ul> |
| Implementation                                     | <p>Alternatives developed to the use of RPI data</p> <p style="text-align: right;">Q1 2020</p>   |

| <b>Improvements to OOH(NA)</b> |  |
|--------------------------------|--|
| Overview                       | <p>The ONS currently produce an experimental net acquisitions index for Eurostat, as part of a pilot to incorporate owner occupiers' housing costs (OOH) into the HICP. Currently there is no weight for the component "existing dwellings new to the household" sector, which means that it is given a zero weight in the aggregation. Moreover, the weight for the "acquisition of new dwellings" component includes new dwellings outside the OOH sector (that is, the weight is gross acquisitions, rather than net). ONS will explore data sources that could be used to improve this experimental index.</p> |
| Implementation                 | <p>Improved methodology for the net acquisitions index</p> <p style="text-align: right;">2020</p>  |

| <b>Inclusion of FISIM in CPIH</b> |  |
|-----------------------------------|--|
| Overview                          | <p>Financial intermediation services indirectly measured (FISIM) are included in the National Accounts measure of household final consumption expenditure (HHFCE) but are not currently included in consumer price indices. The scope of CPI, which is governed by European legislation, is drawn from the same source as HHFCE and the exclusion of FISIM is one of the biggest differences between the two. As CPIH is not bound by the same legislation, we will consider the suitability of including FISIM as a proxy for the service charge that households pay to banks. A review will include consideration of conceptual appropriateness, international practice and methodology used to calculate a price index for FISIM.</p> |
| Implementation                    | <p>Feasibility study on the inclusion of FISIM in CPIH</p> <p style="text-align: right;">2020</p>  |

| <b>The extent to which consumers substitute between outlets</b> |   |      |
|---|---|------|
| Overview  | The Johnson Review recommended that ONS should research the extent to which consumers substitute between outlets. For example, this would capture how prices for the same goods have changed with the move from corner shops to supermarkets and from supermarkets to online providers. |      |
| Implementation  | Report on the extent to which consumers substitute between outlets  | 2021 |