Advisory Panel on Consumer Prices Technical Panel

31 January 2025

Office for National Statistics

Actions from previous meetings

No.	Action	Person responsible	Progress
APCP-T (September 2024)			
1	Panel members requested to provide comments on Energy component and CPI intensity papers	Panel members	Complete
2	Poll requesting panel availability will be sent out to confirm next meeting	Secretariat	Complete
APCP-J (December 2024)			
3	ONS to reach out a small group of panel members to discuss comms on the impact of base price imputation change on CPI and CPIH.	Mike Hardie	Complete
4	ONS to check whether cloud platform security procedure is already published.	Mike Hardie	On-going
5	The Chair asks panel members to send any further comments on Jill Leyland's paper to her directly please.	Panel members	Complete

APCP-T:
HPI Imputation

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**31 January 2025**

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Background

- UK HPI tends to observe downwards revisions, driven by downwards revisions in the new build estimates.

- HPI's 1st estimates for Great Britain are forecast forward one month using Nationwide's HPI index for use in RPI, so improvements to early provisional HPI estimates would directly benefit RPI.

- Potential methodology improvements HPI imputation were outlined in the April 2023 paper APCP-T(23)03.

- ONS has conducted exploratory work focused on improvement to the monthly imputation approach for "floor area" and "number of rooms" in the Great Britain HPI model.

Findings

- Missingness rate for floor area (and number of rooms) for new build properties in England and Wales is high in months immediately following a sale, and reduces over time.

- Floor area missingness rates for Scotland are shown here for context, but note that floor area is not used for Scotland in the GB model due to differences in measurement between Scotland and England & Wales.

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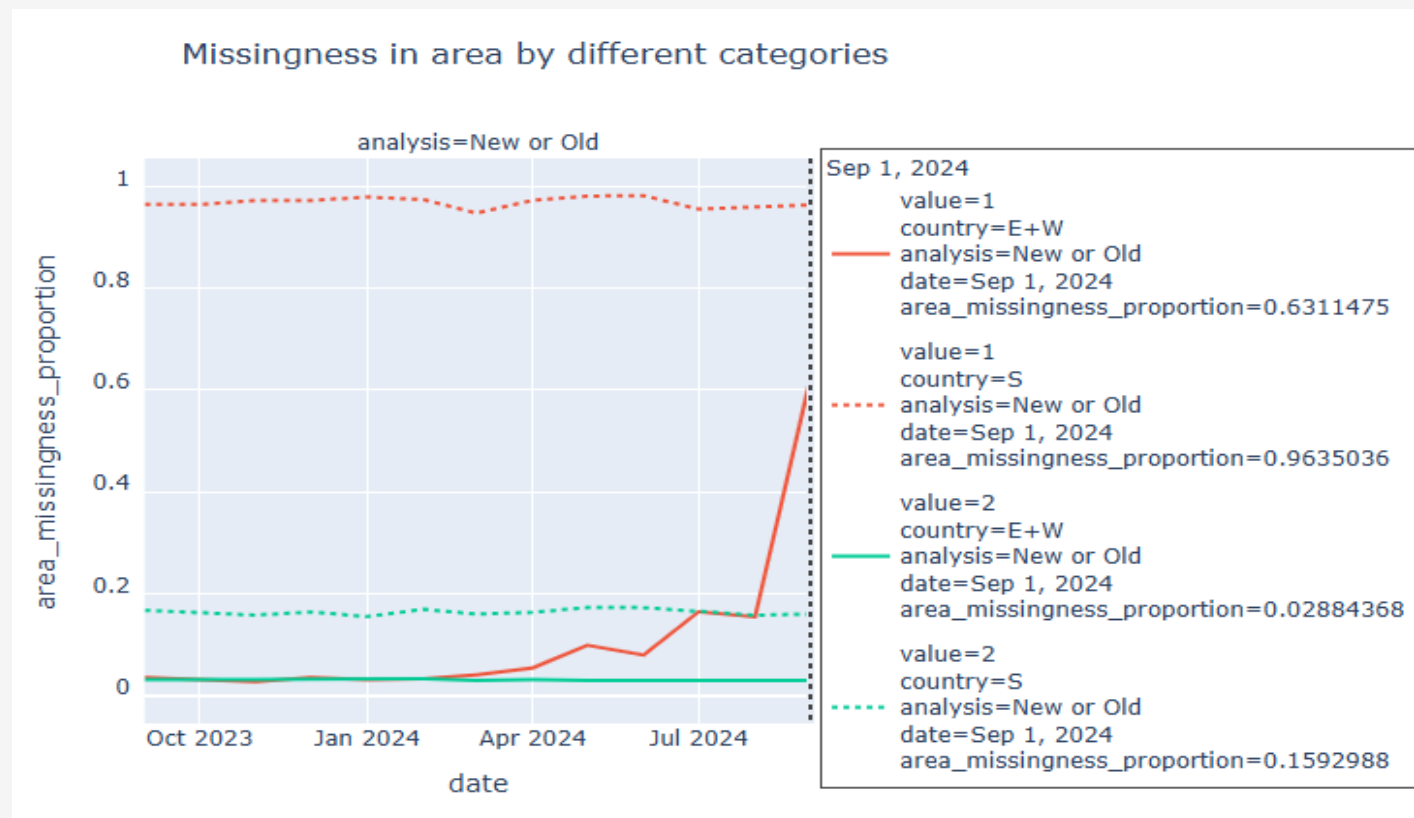
Findings

- For England & Wales, missing values for floor area are imputed to non-zero values in the annual fixed basket, but missing values for floor area are set to zero in the monthly data used for the regression model.

- This means the regression model is run on data with different characteristics than the fixed basket the model fit is applied to.

- The regression model misattributes some of the price contribution for floor area to the to the new/old build property characteristic, leading to over-estimation of new build price.

- As time passes, the missingness rate decreases and the over-estimation of the "new build premium" reduces, leading to downwards revisions.

Proposed improvements to HPI imputation

- Stage 1: By mid-2025, implement an improved monthly imputation (median/mode or k-nearest neighbour) to the Great Britain HPI model.

- Stage 2: Follow with a comprehensive imputation review within a wider UK HPI methods review (based on potential methodology improvements outlined in the APCP-T(23)03 paper.

Proposed improvements: stage 1

Variable	Current monthly imputation	Proposed monthly imputation
Floor area	For Scotland, floor area (from EPC data) is set/imputed to zero for all properties. For England & Wales, non-missing floor area data (from VOA data) is used and missing values for floor area are set/imputed to zero.	For Scotland, floor area (from EPC data) is set/imputed to zero for all properties. For England & Wales, non-missing floor area data (from VOA data) is used and missing values for floor area are imputed to a non-zero value using England & Wales properties for the imputation.
Number of rooms	For Scotland, non-missing number of rooms (from EPC data) is used, and missing values for number of rooms are set/imputed to a 'missing' category. For England & Wales, non-missing number of rooms (from VOA data) is used, and missing values for number of rooms are set to a 'missing' category.	For Scotland, non-missing number of rooms (from EPC data) is used, and missing values for number of rooms are imputed using Scotland properties for the imputation. For England & Wales, non-missing number of rooms (from VOA data) is used, and missing values for number of rooms are imputed using England & Wales properties for the imputation.

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Findings

Comparison of imputation methods impact on aggregated gm_price

- Average new build price is consistently lower if imputation is applied, compared with the current "no imputation" approach.

- Over-estimation for new builds is greater in the early provisional estimates (demonstrated by a larger gap between the blue and red lines), and reduces as older periods are revised.

- Over-estimation for new builds is mitigated better by improving the imputation for missings, than by the current "pooling" approach.

- Improving the monthly imputation is likely to reduce the size of revisions in the UK HPI and reduce the need for new build "pooling" of data for early estimates.

- Hence is likely to improve the quality of early provisional HPI estimates, which are used in RPI production.

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Request of the Panel

- Does the Panel support ONS' proposal to improve the monthly imputation in the UK HPI, to use a median or k-nearest neighbour imputation?

- Does the Panel support ONS' two-step plan?

- Feedback on which imputation methods to consider in a later imputation review (e.g. CANCEIS, which is used in the HPI annual imputation, or univariate decision tree, which is used in ONS' rents imputation).

AOB

- Using MoveIT to securely send files; demo by Rifah and Aimee on how to use it

- Updated APCP-T terms of reference, conflict of interest submission from the panel required

- Actions by correspondence:

- OSR request to reassess publication status of previously-redacted rents development papers