

University of Warwick halls of residence data: quality assurance of administrative data used in population statistics, June 2019

A quality report looking at the use and suitability of the University of Warwick halls of residence data in population estimates.

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1 . Introduction

What are the University of Warwick halls of residence data?

The University of Warwick Accommodation Office allocates rooms to students in halls of residence on the university campus each academic year and manages the information relating to the halls of residence during the year. The Accommodation Office's allocations database contains information on the halls of residence, the type of student they contain and the number of bed-spaces.

The University of Warwick campus has one main postcode, where students and staff living in halls of residence on the campus are counted. However, the postcode crosses the boundary between two local authorities. The University of Warwick halls of residence data are used to allow for the fact that the postcode crosses the boundary.

How are University of Warwick halls of residence data used by the ONS in population statistics?

Within the Office for National Statistics (ONS), the Population Estimates Unit (PEU) produces population estimates for England and Wales every year at different levels of geography. Postcodes are used in the geo-referencing process to allocate a local authority; University of Warwick halls of residence all have the same postcode, even though the halls are located in more than one local authority, as such the data are needed to make an adjustment to better reflect the area of usual residence.

PEU uses the University of Warwick halls of residence data in order to make an adjustment between the population estimates for Coventry and Warwick. Since 2011, the adjustment has had the effect of moving between 300 and 530 19-year olds out of Coventry and into Warwick each year.

This report covers the processes involved from data collection through to the population estimates produced by the Centre for Ageing and Demography at the ONS. It identifies potential risks in data quality and accuracy as well as details of how those risks are mitigated.

This report does not aim to report on the whole of the mid-year population estimate processing or the quality assurance relating to the processing of the other components used in their production.

This report is intended to supplement existing documentation, such as:

- [Mid-year population estimates QMI](#)
- [Mid-year population estimates methodology](#)
- [Mid-year population estimates mid-2018](#)

Strengths and limitations

Overall, this data source is judged to be of suitable and sufficient quality for the use to which it is being put within population estimates.

A strength of the data is that information on the number of students and location is available for each hall of residence on the university campus. PEU can, therefore, make a correction to improve population estimates at local authority level. Up-to-date information on the number of students in each hall of residence is provided by the University of Warwick Accommodation Office every year.

However, there are some acknowledged limitations when applying the data to our uses:

- the age and sex information for each hall of residence is not available, but the age and sex distribution of the students can be imputed for the adjustments by using data from the Higher Education Statistics Agency (HESA) for students living in halls of residence on the university campus
- bed-spaces can be used by staff rather than students; a total number of staff is provided with the data, which are distributed amongst the halls and removed to avoid double-counting
- some bed-spaces are occupied by short-term residents, such as those attending courses of less than one year; therefore, the bed-space figures provided have to be reduced by 20%, in order to estimate bed-spaces occupied by students resident for 12 months or more (and therefore meeting the definition of “usually resident”)

What is QAAD?

The Quality Assurance of Administrative Data (QAAD) is a framework created by the [UK Statistics Authority](#). The framework is a way of assessing the quality of data inputs to ensure that they are of suitable and sufficient quality for use in [National Statistics](#) methodologies. It is a way of ensuring that the final statistics are built on a foundation of robust data.

QAAD reports are required to demonstrate the quality of the data from the point the data are passed from an individual to an organisation, through to the point that the data are used in the production processes of National Statistics. The relative strengths and weaknesses of the data for the purpose to which they are being applied are also highlighted.

Within the UK Statistics Authority's [QAAD – Setting the Standard \(PDF, 298KB\)](#) documentation it states, “The need for investigation and documentation increases at each level of assurance.”

The QAAD Toolkit sets out four levels for the quality assurance that may be required of a dataset:

- A0 – no assurance
- A1 – basic assurance
- A2 – enhanced assurance
- A3 – comprehensive assurance

The UK Statistics Authority states that the A0 level is not compliant with the [Code of Practice for Statistics](#). The assessment of the assurance level is in turn based on a combination of assessments of data quality risk and public interest. The toolkit sets out the level of assurances required as follows:

- A1: Basic assurance – the statistical producer has reviewed and published a summary of the administrative data quality assurance (QA) arrangements
- A2: Enhanced assurance – the statistical producer has evaluated the administrative data QA arrangements and published a fuller description of the assurance
- A3: Comprehensive assurance – the statistical producer has investigated the administrative data QA arrangements, identified the results of independent audit, and published detailed documentation about the assurance and audit

Within the UK Statistics Authority [QAAD – Setting the standard \(PDF, 298KB\)](#) documentation it states:

“Quality assurance of administrative data is more than simply checking that the figures add up. It is an ongoing, iterative process to assess the data’s fitness to serve their purpose. It covers the entire statistical production process and involves monitoring data quality over time and reporting on variations in that quality. Post collection quality assurance methods, such as data validation, are an important part of the quality assurance process, but can be of limited value if the underlying data are of poor quality. The Authority encourages the application of critical judgment of the underlying data from administrative systems "before" the data are extracted for supply into the statistical production process. As with survey data, producers need to: investigate the administrative data to identify errors, uncertainty and potential bias in the data; make efforts to understand why these errors occur and to manage or, if possible, eliminate them; and communicate to users how these could affect the statistics and their use.”

The toolkit outlines four areas of assurance; the rest of this report can be split into these areas. The areas for assurance are:

- operational context and administrative data collection
- communication with data supply partners
- quality assurance principles, standards and checks applied by data suppliers
- producer’s quality assurance investigations and documentation

Assessment of quality assurance level

Our assessment was carried out using the [QAAD Toolkit](#). This assesses an administrative data source in terms of the risk to data quality and its onward use in statistics as well as the profile of the statistics produced from the source.

The matrix approach to assessment advised by the UK Statistics Authority has two components: separate assessments of the public profile of our statistics (low, medium, high) and data quality concerns about the inputs for our statistics (low, medium, high).

Quality assurance of our final statistics and the methods used to create our statistics are not part of this assessment but are subject to scrutiny elsewhere as part of our National Statistics accreditation.

The outcome of our assessment then determines the level of assurance and documentation required to inform people about the quality assurance arrangements in place for the administrative systems from which our statistics are sourced. The results of those assessments are an A1 rating.

The A1 rating means that a basic level of assurance is required for these sources and this report will provide information to meet this level of assurance.

Table 1: Summary of quality assurance level for the University of Warwick halls of residence data

Use	Risk of quality concern	Public profile	Assurance level
Overall Assessment			A1- basic
Population Estimates Unit (PEU)	Low	High	A1- basic

Source: Office for National Statistics

University of Warwick halls of residence data used within our outputs have been given an A1 rating based on risk profile scoring. This is a basic level of assurance. University of Warwick halls of residence data are considered a low concern in terms of quality (risk) and are used in statistics of high public interest (profile).

The level of risk of data quality concerns is low because:

- collection of the data by the University of Warwick is closely aligned to its use by PEU
- completeness of the data
- the extent to which it can influence the final population estimates

If you feel this report does not adequately provide this assurance then please contact pop.info@ons.gov.uk with your concerns.

2 . Operational context and administrative data collection

The University of Warwick provides accommodation for undergraduate and postgraduate students on the campus. The allocations process is managed by the University Accommodation Office. Applications are made online and are open in June for students who have received an offer of a place to study at the University for the following academic year.

There are a variety of different halls of residence across the campus, which are available to different types of students. Students are able to select a certain number of halls of residence in their application. Most applications are allocated using a random ballot and matching students' preferences.

The Accommodation Office maintains an allocation plan, containing a complete list of bed-spaces in the halls of residence on the campus. This includes the name of the hall of residence, the type of student and the number of bed-spaces. Records are maintained through the allocation plan and any changes are made on a yearly basis. Any structural changes to the accommodation are brought into the allocation plan.

The Accommodation Office maintains an allocations database containing information on the number of bed-spaces in each hall of residence. The number of bed-spaces are checked every year, and the allocations database is updated with any new information. This is to ensure that rooms are allocated accurately to students.

Since the University of Warwick halls of residence data do not contain information on age and sex, PEU calculates the number of students for the adjustment using the number of bed-spaces in the halls of residence on the Warwick side of the campus and then imputes age and sex using the distribution of students at the University of Warwick obtained from data from the Higher Education Statistics Agency (HESA). The HESA data are not part of this report and will be covered in a separate [QAAD report](#).

3 . Communication with data supply partners

The Population Estimates Unit (PEU) has no formal agreement with the University of Warwick for the supply of the data.

PEU provides a request via email to the University's Accommodation Office for the provision of the University of Warwick halls of residence data, which are gathered from their allocations database. The data request is for the number of student bed-spaces in halls of residence on the Warwick side of the campus, by hall and type of student (for example, undergraduate, final year undergraduate and postgraduate).

Any issues relating to the supply of the data are fed back to the Accommodation Office at the University of Warwick. There is no formal sign-off of the data from the data supplier.

Engagement with users

We continually engage with users, through a variety of means, to understand how our outputs are meeting their requirements. Feedback provided tends to relate to the overall statistical methodology and the impact on the final statistics, rather than to any individual data source. To date no specific feedback on the use of this data source has been provided.

4 . Quality assurance principles, standards and checks applied by data suppliers

This section details the checks and standards applied to the data prior to receipt by the Centre for Ageing and Demography.

The University Accommodation Office maintains the allocations plan and the allocation database. Records are maintained through the allocations plan and any works that will result in structural change are reflected in the allocation plan.

Allocations of rooms to students are made using the allocations database. The information contained in the allocation plan and the allocations database is cross-referenced by the allocation team and cross-checked with the teams in halls to make sure that it is correct.

If there are discrepancies and there is a room on the allocations database that does not exist, the student will not have a room. If a room is not on the allocations database, then it cannot be allocated and will remain empty.

5 . Producer's quality assurance investigations and documentation

This section details the checks and standards applied to the data for University of Warwick halls of residence data after receipt by the Centre for Ageing and Demography. The checks carried out prior to receipt of the data are detailed in Section 4.

The University of Warwick halls of residence data are used by the Population Estimates Unit (PEU) to calculate an adjustment in the production of the mid-year population estimates relating to Coventry and Warwick. The data are used in conjunction with the Higher Education Statistics Agency (HESA) data for the University of Warwick.

PEU carries out basic checks on the University of Warwick halls of residence data, such as:

- checking that the data are complete and are valid
- checking that the raw figures have been copied into the processing files correctly
- comparing the figures for the current year with the previous year's figures
- verifying that no errors have occurred during the data processing
- when the processing is complete, we check to see that the adjustments to Coventry and Warwick broadly balance and that they sum to the total for halls

If the checks yield any issues with the University of Warwick halls of residence data, PEU will contact the data supplier to discuss the issues.

There is a low risk to the quality of the data. The figures do not vary much from year to year. The age and sex information used in the adjustment is obtained from HESA data for students living in halls of residence on the university campus.

6 . Conclusion

The University of Warwick halls of residence data used in the production of population estimates are deemed to be low risk in terms of data quality concerns. The data have sufficient strength to justify inclusion in our statistical methods. As such, they are deemed to carry an A1 assurance rating, using the QAAD toolkit, meaning that a basic level of assurance is provided.

University of Warwick halls of residence data are used in population estimates to make an adjustment to the population estimates for Coventry and Warwick to better reflect students living on campus.

University of Warwick halls of residence data are subject to a number of checks to ensure that the individual data supply is fit for use in statistical production processes.