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Lessons learned from censuses of the 2020 round

Statistics for the Non-Household Population – Experience from the England & Wales Census

Note by Office for National Statistics, United Kingdom*

Summary

In each recent census we have recognized that producing statistics for the non-household population represents some unique challenges. As the non-household population includes people living in student halls of residences, care homes and on armed forces bases they represent particularly important parts of many local areas and have different socio-demographic characteristics to much of the household population.

The design of the 2021 Census was flexible enough to be adapted to many of the challenges presented by the pandemic, but we took extra steps during collection and processing to ensure we were able to produce robust statistics. A number of the adaptations are relevant for any future data collection activities for the non-household population, and there several areas of future work that we now want to explore including definitions, use of administrative data and the implications of having online data collection.

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Note: The designations employed in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

I. Introduction

1. The design for the 2021 Census in England & Wales recognized that the census must reflect the lives of people living in Communal Establishments (CEs) as well as in private households¹. A Communal Establishment (CE) is defined as an establishment providing managed residential accommodation, so this includes student halls of residence, care homes, prisons and boarding schools.
2. The CE population represents a small but essential part of the socio-economic picture of an area and of the country. In the 2011 Census, 1.7 per cent of the population lived in a CE but these tended to be geographically clustered, and residents can have a different profile to the wider private household population.
3. It is recognized that the methods of reaching people in CEs will differ not only from the private household population but also depending on the size and nature of the establishment. Inevitably there are varying levels of difficulty involved in making contact and ensuring that all residents complete their census returns.
4. This paper sets out the planned design for collecting data from persons in CEs for the 2021 Census in England & Wales. It then presents some of the challenges faced with conducting a census during 2021, including but not only because of the global pandemic, before setting out some of the actions that were taken during the collection and processing of census estimates to ensure that robust statistics were produced.
5. Finally it draws together some of the potential lessons to be learned from the 2021 Census experience. This is relevant not only for data collected through a census or survey, but also where statistics are produced using administrative and non-survey sources. The Office for National Statistics (ONS) is in the process of transforming its system of population and migration statistics to put administrative data at its core².

II. Design of the 2021 Census – Communal Establishments

6. ONS put in place robust plans for how it would collect census information from individuals who lived in CEs. It was the responsibility of each CE manager to complete basic information about the establishment itself. This included the nature of the establishment; how many people were currently living there; and how many visitors were staying overnight.
7. Clear guidance was provided as part of the questionnaire on whom to include as currently living there³:
 - (a) Anyone who has already spent, or is expected to spend, 6 months or more at the establishment, even if they were away on 21 March 2021;
 - (b) UK residents who are staying at the establishment on 21 March and have no usual UK address;
 - (c) People who live outside the UK who have stayed, or intended to stay, in the UK for 3 months or more who do not have another UK address;
 - (d) Students or schoolchildren who stay at the establishment during term time;
 - (e) The CE manager, their family, staff and others who live at the establishment.
8. It was then the responsibility of all individuals who were identified as currently living at the establishment to complete an individual census questionnaire. This covered the range of socio-economic questions asked on the household questionnaire.

¹ See [The 2021 Census of Population and Housing in England and Wales – GOV.UK \(www.gov.uk\)](https://www.gov.uk).

² See [Population and migration statistics system transformation – overview – Office for National Statistics](#).

³ See [Census 2021 paper questionnaires – Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk).

9. A comprehensive question testing exercise was carried out for the CE manager questionnaire and for the individual questionnaire⁴. This included the removal of the ‘age groups catered for’ and ‘groups catered for’ questions from the CE manager questionnaire, given the other information collected.

10. Addresses to be contacted during the census process (private households and CEs) were identified on an address frame⁵. An existing address index product (Address Base Premium) maintained by a third party proprietor was used as the basis for the frame. Address Base Premium is updated every six weeks using a range of administrative sources and is widely used across government and the private sector. To ensure completeness and consistency with census definitions it was necessary to supplement the frame with additional administrative data on student halls of residence, care homes, defence establishments, prisons and boarding schools.

11. Prior to the census, field staff liaised with local government and other head offices/agencies to inform them of the census and initiate contact with each CE identified on the address frame. This identified the appropriate local official for future contact, confirmed details of the establishment and identified any special support which might be required.

12. The data collection approach differed by CE type, recognizing the different circumstances and population groups covered. As an example, elderly care home residents were provided with paper questionnaires whereas students in halls of residence were provided with initial contact letters (containing online access codes) only.

13. Specially trained field staff hand delivered individual paper questionnaires or initial contact letters to each CE along with a questionnaire for the CE manager. Field staff then undertook follow-up activity to promote the importance of the census and to remind individuals of the need to complete and the legal requirement to do so.

14. The public was made aware of the importance of the 2021 Census through a national advertising campaign. Tailored engagement and advertising campaigns were also developed for parts of the population where there was a recognized need to take extra steps to ensure people understood how they should respond and why it was so important. The student campaign was an essential component of the strategy of optimizing response from those living in halls of residence.

15. Statistics from the 2021 Census represent the whole population rather than simply those who completed a questionnaire. ONS estimates and adjusts for under- and overcoverage in private households and small CEs (with fewer than 50 usual residents) using an independent Census Coverage Survey (CCS). A stratified sample of approximately 350,000 households is asked to complete a subset of questions shortly after the census. CCS data are then linked to corresponding census data with statistical modelling using dual system estimation to estimate and adjust estimates to make them representative of the whole population.

16. Large CEs (with 50 or more usual residents) are not included in the CCS. Instead ONS used administrative data as the basis for estimating and adjusting.

⁴ See [Communal establishments and individual questionnaire question development for Census 2021 – Office for National Statistics \(ons.gov.uk\)](#).

⁵ See [Statistical design for Census 2021, England and Wales – Office for National Statistics \(ons.gov.uk\)](#).

III. Communal Establishments: challenges faced

A. COVID-19

17. The coronavirus (COVID-19) outbreak was declared a pandemic by the World Health Organization on 11 March 2020, with the UK entering a first national lockdown on 23 March 2020.

18. On 6 January 2021, England went into a third national lockdown, joining Wales, which had entered a national lockdown on 19 December 2020. “Stay at home” restrictions were in place on Census Day, 21 March 2021, with people then encouraged to stay local from 28 March 2021 as the first step of lifting lockdown restrictions. Further lifting of restrictions took place on 12 April 2021, including self-contained holiday accommodation opening, and again on 17 May 2021. Students were told not to return to campus until 17 May unless studying hands-on courses.

19. Government guidance for students resulted in a more complex picture than had been planned for. This had two consequences. Firstly, for students there may have been more uncertainty about which address they should use in the census. Secondly, even though all contact letters were delivered, students may not have been in halls to collect them or to be reminded to complete the census.

20. The situation also presented a more complex picture for hall managers who were asked on the CE form how many people were living at the hall.

21. ONS was particularly aware of the sensitivity and potential risks with collecting information from elderly or vulnerable residents who lived in care homes. It was not possible for field officers to enter care homes in person, although they were able to deliver forms and guidance (in the same way as postal or food delivery services).

B. Potential confusion between CE and household

22. A wide range of establishments are covered by CEs. Even within CE categories there is a variety of different living arrangements.

23. Student halls of residence, for example, can be separated into different sub-buildings and can be organized into shared self-contained flats or individual rooms (or a combination of both). The census does identify separately care homes as those with and without nursing, but increasingly common independent living flats are treated as private households.

24. Considerable work went into providing clarity for the address frame about which establishments should be treated as a CE. Field officers provided an on-the-ground check of this and were able to change census form type from CE to household. This depended on field officers’ ability to differentiate accurately. There were examples both of cases where the incorrect form type had been assigned on the frame, and where field officers had incorrectly switched.

IV. Adaptations made

A. Students

25. Adaptations were made to a number of parts of the collection and processing of student data. These are relevant both to students in private household and to those in CEs.

1. Direct communication with students

26. ONS recognized ahead of collection operations that not all students would be at their term-time address to pick up paper instructions on how and when to complete the census. This information was available on a student-specific area of the 2021 Census website, but students would have to be motivated to seek this information.

27. Working directly with higher education establishments, ONS was able to send information on the census electronically to students either through email, noticeboards and in some instances through tutors. This information could be sent to students regardless of whether they lived in private households or CEs and regardless of whether they were currently at their term-time address.

2. Copying students from their out-of-term address to their term-time address

28. While students were asked to complete the census at their term-time address, all households were asked whether there were any individuals who lived at another address for 30 days or more. This included students who had a term-time address elsewhere. Only basic information on name, date-of-birth, sex and marital status was collected for a student who had another term-time address. In published census statistics, students with term-time address elsewhere were not counted as part of the usual residence population at their out-of-term address.

29. ONS undertook a linkage exercise to identify whether an individual who stated a term-time address elsewhere had completed a census return for this address. If they had not, the individual was copied into the term-time address regardless of whether it was a private household or a CE. This was the first time that data from other forms had been used in this way.

3. Student halls survey

30. As stated above, any undercoverage in large CEs (with more than 50 usual residents) was estimated and adjusted for using administrative data. By reconciling differences between these sources, we calculated census undercoverage by age and sex for each individual large establishment. This approach was an improvement from the 2011 approach, as data on age and sex were not available from many 2011 administrative data sources. We used robust administrative data for those in care homes, UK defence establishments and prisons.

31. These data had been compiled centrally and came from a single supplier. It was not possible to use a centrally administered source for student halls or boarding schools so ONS undertook a student halls survey to collect administrative data directly from each education provider or from private companies who provided student hall accommodation.

32. The survey ran shortly after the census collection period and was enhanced significantly from that which had been carried out in 2011 and which had been planned for 2021. Accommodation offices were asked to provide details of the number of residents by age and sex consistent with the residency definition used in the census. We also asked about the number of residents who were international students.

33. Most importantly, all accommodation offices were included in the survey, covering more than 100 universities. In 2011 only a sample was covered. The survey provided an opportunity to clarify the usual resident definition with providers and to compare the information collected with that supplied on the census CE form itself.

34. The survey also provided an opportunity to understand the composition of the halls of residence where this was complex, for example where there were multiple buildings referred to under a common hall name. This provided valuable insight for later processing and validation of statistics.

35. We achieved an excellent response rate to this voluntary survey, as set out below:

- (a) 92 per cent for university-owned halls of residence;
- (b) 81 per cent for privately-run halls of residence;
- (c) 92 per cent for boarding schools.

4. Improvements to validating census statistics

36. ONS undertakes a comprehensive validation of census statistics to ensure that they are coherent with other published data⁶. Where they are not, further investigation is carried out to understand the source of the discrepancy. In the majority of cases the differences were attributable to definitional, coverage or timing issues with comparator sources. Adjustments were made to census estimates where there was clear evidence of the need to do so.

37. In preparation for validating estimates of students, ONS undertook a detailed linkage exercise to determine how quick students were at updating their address information on a number of sources. Students tend to move more often than the wider population and young men are known to be particularly slow to update their registration for medical services.

38. The analysis provided a useful insight into how students updated their records through the course of their studies.⁷

39. For the first time, ONS also took the step of working with local government as part of the validation. Users were given limited access to census estimates prior to publication for quality assurance and were unable to share data any further. They were asked to highlight inconsistencies with locally-held data that should be investigated further. Insight was particularly valuable where local government had close links to the universities in their area.

B. Resolving discrepancy between CE and household type

40. Adaptations were made at the collection, processing and validation stages to our approach towards identifying and resolving CEs that had been counted as households, and vice versa.

41. As address type changes were made during the collection operation, a clerical address resolution team was established to undertake validation of address type changes as they were taking place. This made use of capacity which had been developed to improve the quality of the address frame ahead of the operation.

42. Clerical checking involved staff located at ONS who would investigate changes through online searches and validation against other data sources to understand whether there was evidence that an address had been correctly swapped.

43. During processing of census data we undertook checks on households which had potentially been counted as a CE. This included identifying implausible households through the size and age structure of household members. Cases were identified of care homes and children's homes with concentrations of the elderly and young at the same address.

44. We also carried out an assessment during processing of addresses which were part of a more complex address structure on the frame. This was to identify and reconcile examples of misclassifications or duplicates. Student halls sometimes had multi-layer address structures such as a name for a student area (primary), building (secondary) and flat (tertiary). Through investigating these hierarchies, we could identify examples of cases in which respondents had completed household forms for lower layer addresses, and correct for these in processing.

⁶ See [Approach and processes for assuring the quality of the 2021 Census data – Office for National Statistics \(ons.gov.uk\)](#).

⁷ See [Understanding students across administrative data in England and Wales – Office for National Statistics \(ons.gov.uk\)](#).

V. Conclusions

45. Every census has a unique set of circumstances during which data are collected and processed. The ability to recognize and adapt to these circumstances is fundamental to the final statistics which are produced.

46. With the global pandemic it was clear that ONS needed to be prepared to adapt, given the unprecedented level of uncertainty for some population groups. Having a clear understanding of our design and the interconnections and implications of the component parts was essential to enable us to respond.

47. Some of the steps we took which are of particular value to other data collection and processing activities, be that in a traditional census or in future models of statistical production. These include:

(a) Engaging with students through their institution (alongside the broader student communication campaign) enables direct engagement and is consistent with the ‘online first’ principle of transforming data collection activity;

(b) Administrative data held by university institutions themselves are particularly important to supplement data collection activity, or in working with other sources of administrative data;

(c) As CE structures change and get increasingly complex, having an understanding of these structures is essential to understand where there may be issues with the initial frame, during data collection and in data processing;

(d) Definitions of CEs may need to be revisited in the context of how structures are changing, to ensure that our statistics accurately reflect both population and housing;

(e) Given the complexities of definitions and structures for CEs, processes to identify and correct misclassifications should be integral to the design of future data collection activity.
