

Population bases and statistical provision: towards a more flexible future?

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In an increasingly complex and mobile society, there is a need for population estimates to be produced on a more flexible basis. Different uses of population data may require information to be output on different population bases, such as where people usually live ('usual residence') or where they are on a particular day ('population present'). This article explores many of the issues associated with defining 'the population'.

Following consultation with data users, it outlines recommended population definitions that could facilitate a more flexible approach. Comparisons are made between the output bases produced from the 2001 Census and the more adaptable outputs potentially available in future if the recommended definitions were used.

BACKGROUND

In 2003 the Office for National Statistics (ONS) published *A Demographic Statistics Service for the 21st Century*.¹ The report was intended to stimulate discussion about the strategy for population measurement over the next few decades. It addressed the issue of providing population statistics based on different definitions (see Box One) to reflect diverse and dynamic living patterns in modern society. Increases in multiple residency, weekly commuting to work, numbers of children of parents living apart and more frequent movements between countries all reflect these more complex lifestyles. The report stressed the need to be more flexible in defining residency, while encouraging ONS to explore various definitions of the population from existing sources. No single population definition can meet all user needs: although the usually resident population is important, some service providers also require counts on other bases.

In addition to usual residence, the report listed 14 other output bases of potential interest (Table 1). Only three of these were produced and published from the 2001 Census, with two more theoretically or partly available. The three were usual residence, household population and communal population, with out-of-term population and work-day population being theoretically or partially available.

The key to taking this innovative approach lay in asking major data users which output bases they would find most useful without predefining their options. They were also asked how ONS should strike a balance between improving the quality of outputs on the usual residence base and producing new types of population output and analysis. This would include discussion of which working definitions would deliver their requirements in providing effective measures of living patterns in modern

Box one

What are population definitions and bases?

At any one time, the 'population' of an area could include people who live there normally, those living there for part of the time, those living there temporarily, those visiting the area, those working in the area and those who normally live in the area but are currently somewhere else. The numbers in each of these groups are likely to vary depending on the time of day, day of the week and time of year. Therefore it is important to define exactly what we mean by 'the population' of an area when collecting information from or producing information relating to that population.

When deciding how to define a country's population, the key issues are who to include in the population and where to include them:

Who should be included as part of the country's 'population'?

One approach is to include all people living or staying in the country on a particular day or night. This is commonly known as defining the population on a 'population present' or *de facto* basis. However, this includes visitors (those who are simply in the country for a short time) as part of the country's 'population' and excludes those staying abroad for a similar period. This issue can be avoided by using a 'usual residence' base, that is to say including all people who 'usually' live in the country. This requires a clear definition of 'usual residence', a concept discussed in detail in this article. For some purposes it may be important to include visitors as well as usual residents in a population base as they may use services or contribute to the economy.

A key issue in distinguishing usual residents from visitors is the amount of time spent in the country.

Where in the country should each person be included?

Using a 'population present' base, people are included wherever they are staying on a particular night, whereas a 'usual residence' base includes people in the area where they usually live. This article discusses some of the difficulties in determining where certain groups of people with more than one address or no address 'usually' live. For some areas, the population on a 'population present' base can be very different from that on a 'usual residence' base.

The population base is simply the way in which the population is defined for the purposes of collecting or producing data. Table 1 shows a variety of possible bases. The population base at enumeration (when the data are collected) may not necessarily be the same as the population base for outputs (when the data are published).

society. This article addresses these issues and analyses data users' views in order to provide guidance for a more flexible and effective future population provision. This discussion has very broad statistical relevance but in the short-term will be focused on the 2011 Census which is likely to underpin population estimates during the following decade.

It is important to note that the issues discussed in this article reflect users' requirements, but in practice, these will be constrained by operational considerations on the 2011 Census (for example, space on the questionnaire and the need to keep the enumeration process as simple as

Table 1

Possible output bases for population and actual availability from the 2001 Census

Output Base ¹	Available from 2001 Census?
1. Usual residence – the population at the address at which they <i>usually</i> live	Yes
2. Household population – the population living in private households	Yes
3. Communal population – the population living in communal establishments	Yes
4. Out of term population – the population usually resident in an area out of term-time	Theoretically available but in practice not produced
5. Seasonal population – either the usually resident population at different times of year or enhanced to include visitors (for example, tourists)	No
6. De facto population – population present on Census night	No
7. Legal population – any 'legal' definition of the population to serve a particular purpose	No
8. Week-day population – population usually resident/present overnight during the week (for example, Monday to Thursday nights)	No
9. Weekend population – population usually resident/present at the weekend (for example, Friday night to Sunday)	No
10. Temporarily resident population – those present in an area but are not usually resident there (for example, divided children, temporary migrant workers)	No
11. Work-day population – population present in an area during normal working hours Monday to Friday	Workplace population and daytime population estimates (workplace population plus those resident in the area who are not working) published for ages 16–74. Place of study not available
12. Average population – average of various other population bases	No
13. UK residents living abroad – temporarily or for part of the time (for example, international commuters)	No
14. Non-UK residents living in the UK – for example, visitors, short-term migrants, international commuters	No
15. Bespoke service populations – target population for a specific service/policy	Determined by nature of output needed

¹ As described in *A Demographic Statistics Service for the 21st Century*.¹

possible to minimise respondent burden). ONS will need to review these requirements, assess the feasibility of collecting the desired information and prioritise each requirement through further discussion with users.

USER CONSULTATION AND ENUMERATION BASES

ONS conducted a written consultation exercise on population bases² with users of population data over the period June to September 2004. This revealed support for output data to be based primarily on usual residence for both individuals in households and in communal establishments. Only by employing a precise and detailed definition of *usual residence* might hard-to-define groups be 'captured'. Moreover, users recommended that visitors should be recorded for two reasons. Firstly, visitors from overseas working within the UK often contribute to the economic activity of the country even though they may not be 'usually resident'. Secondly, if visitors are required to complete a census questionnaire, people may be less likely to avoid their legal obligation to comply with the census on the grounds that they do not have a 'usual' residence.

As a follow up to the consultation, ONS convened the Population Definitions Working Group in September 2004 with a brief to provide definitional advice on population data issues. The working group

consisted of population data experts from a variety of backgrounds (local authorities, central government, academia and the private sector) and a core of ONS topic experts. Its role included addressing specific issues in preparation for the 2011 Census. The role was purely advisory, since final responsibility for the census lies with ONS.

The working group endorsed the conclusions of the 2004 consultation. While recognising that the choice of output base was a key issue, it noted that this would impinge on the choice and definition of enumeration base. Accordingly, the group supported the use of a *usual residents plus visitors* enumeration base in the 2011 Census as meeting key user needs. ONS has since agreed that the 2011 Census should have this composite *usual residents plus visitors* enumeration base. Discussions of output bases for census data for 2011 were set against this agreed enumeration base, though ONS has yet to finalise precise definitions of both *usual residence* and *visitors* for the 2011 Census. The sections below summarise the main definitional issues discussed by the working group.

USUAL RESIDENCE

Usual residence is where people usually live. For most people this is straightforward because they normally live at one address only. However, difficulties in defining usual residence arise in some cases, particularly with the more mobile sections of the population. For example, a retired couple sharing time between their UK home and another home in Spain: are they *usually resident* in the UK? Similarly, a person with a home in Berkshire who spends the weekend there with their family, but also has a weekday flat in London near to their workplace: deciding where this person is *usually resident* is fraught with difficulty. They may spend more time in the London flat, but their family lives at their Berkshire home: which of the two is their *usual residence*? Two key issues require resolution: first, distinguishing UK residents from those usually living abroad, and, second, assigning UK residents to local areas within the UK.

In 2001 the Census definition³ of a usual resident was:

‘... someone who spends the majority of their time residing at that address’.

There were a number of clarifications to this definition (see Box Two). These were stated clearly on the 2001 Census questionnaire.

Box two:

2001 Census definition of a usual resident

A usual resident is generally defined as someone who spends the majority of their time residing at that address. It includes:

- people who usually live at that address but who are temporarily away from home (on holiday, visiting friends or relatives, or temporarily in a hospital or similar establishment) on Census day
- people who work away from home for part of the time, or who are members of the armed forces
- a baby born before 30 April 2001, even if still in hospital; and
- people present on Census day, even if temporarily, who have no other usual address

The enumeration base for the 2001 Census was usual residents only, allowing some individuals to avoid the Census by claiming that they had no ‘usual’ residence. The composite base of usual residents plus visitors agreed for 2011 could help to overcome this problem.

Although some people have more than one residence, for the purposes of the census each person must be assigned only one *usual* residence. Those people without any usual residence are assigned to an address to ensure that they are not omitted from the count; this would be where they are on Census night.

The working group recommended a series of clarifications in defining usual residence. Persons working away from home during the week and returning to the permanent or family home at the weekend should have the permanent or family home recorded as their usual residence, even if the majority of their time is spent at their ‘working week’ address. This enables family relationship data to be obtained. It should be noted that other users might prefer such people to be counted where they live during the working week; this is discussed later in the section on ‘secondary residence’.

Armed forces need to be treated differently from weekly commuters, as they frequently work away from their permanent or family residence for long periods of time. In the 2001 Census members of the armed forces with partners were counted at their family residence but single service people were counted at their base address. The usual residence of armed forces is a contentious issue, since different users require different definitions. To maintain consistency with population estimates’ methodology, some users prefer the usual residence to be the address at which forces’ personnel live when working at their base, as this is where more resources are used (this would be a change from the 2001 definition). Other users prefer armed forces’ personnel to be counted at their family residence so that household structures are maintained and family relationships accurately represented.

The issues discussed above also apply to people sharing their time between the UK and abroad. In general people will be considered usually resident in the UK if they spend the majority of their time in the country or if their family or permanent home is in the UK although they work abroad for part of the time. In practice 2011 Census respondents will define themselves as either usual residents or as visitors.

Consideration was given as to whether a standard duration should be applied for residency in a country, such as the 12 months recommended by the UN Economic Commission for Europe.⁴ In particular, the working group considered a ‘six month rule’ to determine usual residence, as in the formal 2001 definition. For example if a person had spent more than six months of the past year in the UK, their usual residence would be the UK; conversely if they had spent more than six months of the past year outside the UK, they would not be usual residents (but would need to be enumerated as visitors). However there are practical difficulties with this. For example a person who moved permanently to the UK one month before Census day would be captured as a visitor rather than a resident under this definition.

This illustrates how usual residence status may be based on intent as well as past behaviour. A person who left the UK to live in another country one month before the census for short-term employment purposes might consider themselves to be usually resident in the UK if they intended to return within a couple of months, but not if they planned to stay abroad for some time. Therefore a suitable definition of usual residence in the UK rather than abroad would need to be very detailed and thus less likely to be read by the majority of respondents. Moreover, if people who are abroad on Census day have immediate family in the UK they are more likely to be included on a questionnaire by other household members than those without close family in the UK.

Another group with more than one residence in the UK is those children of parents living apart who spend part of their time staying with each parent. In such cases, the usual residence would be the address at which children spend the majority of their time. The 'tie breaker' for children divided equally between parents could be where the child is on Census night.

For students, the group recommended that usual address is their term-time address, since most students will spend the bulk of their time there. This is consistent with the 2001 Census definition, when students were recorded at their term-time address for the first time, and also consistent with population estimates.

The usual residence of those living in communal establishments needs to be clearly defined to avoid counting people both at the communal and at any family or permanent address, or not counting them at all. Users recommend that six months is an appropriate length of time to use to define usual residence in a communal. If the person has already spent or intends to spend six months or more in the establishment then usual residence would be there. Otherwise the person would be enumerated as a visitor in that establishment and as usually resident at their family or permanent address. Intended stay is necessary in defining usual residence for this group since some moves into communals may be permanent, for example an older person moving to a residential home. In such a case it would not make sense for them to be recorded as usually resident at their family or permanent address purely because they had lived in the establishment for less than six months.

Prisoners serving sentences in prison can be treated as residents or visitors in the same way as other people living in communal establishments for census purposes. However prisoners on remand are an exception to this rule since their stay in the prison is considered temporary. The group recommended that remand prisoners be recorded as usually resident at their family or permanent address, unless they have no other usual residence. Defining the usual residence of sentenced and remand prisoners separately in this way is consistent with the 2001 Census and with mid-year population estimates.

Those usually resident in the UK but with no usual address were enumerated where they were present on Census night in 2001. The group recommended a similar practice in 2011. These 'resident visitors' are of particular interest as they are likely to be mobile and hard to count. Users want resident visitors to be separately identifiable in outputs to gain a greater understanding of the numbers and characteristics of these people. For example, it would be useful to differentiate between resident visitors counted in the communal population (including those sleeping rough and in hostels), and those living in a household on Census day.

In looking at these recommendations, ONS must ensure that these hard-to-define groups are captured without unduly compromising on the majority's understanding of the definition of usual residence.

VISITORS

The 1991 Census collected information on both usual residents and visitors present on Census night. In 2001 space was included on the census questionnaire to list any visitors at the address, but this visitor information was not collated. In 2011 ONS plans to use a combined enumeration base of usual residents plus visitors to provide more comprehensive coverage of the whole population.

A variety of user requirements for visitor data were identified by the public consultation.⁵ Collection of visitor data would enable estimates to be made on a 'usual residents plus visitors' base which would reflect more closely the number of people using services in each area, including

visitors. This information would permit more appropriate levels of service provision and resource allocation. Although some users only require data on particular types of visitor, the most appropriate strategy is to record all visitors present on Census night, because enumerating some visitors and not others would be too complex. The collection of visitor data might also offer some operational benefit if it could be used to help estimate any undercount.

It is not feasible to collect a large amount of data from visitors since emphasis on visitors would reduce the quantity of data that could be collected from usual residents. There is also an issue of respondent burden as this group may be particularly unwilling to answer a long set of questions. Local authorities would like information on the age and sex of visitors plus an indication of usual residence (postcode if usually resident in the UK or country if usually resident abroad).

The collection of usual address information from visitors would enable two types of visitor to be distinguished:

- those with a usual address elsewhere in the UK
- those with a usual address abroad

Those with no usual address may consider themselves to be visitors at their Census day address, but should be enumerated as usually resident at that address and would be referred to as 'resident visitors'.

Visitors with a usual address elsewhere in the UK might include holidaymakers, those staying with friends or relatives for the night and people working away from home temporarily. These people should be recorded as visitors at their Census night address but also be required to complete a questionnaire or have it completed on their behalf at their usual residence. All data users want outputs on the usual residence base to include such temporarily absent persons counted at their usual address. Collecting basic demographic data from this group at their address on Census night would provide limited information on UK overnight visitors to different areas, which could further inform resource allocation. It would also enable visitors who were not counted at their usual address to be matched back to their usual address if resources permitted.

It is unlikely to be feasible to produce estimates on a 'population present' base from visitor information, since all visitors would need to be matched successfully to their usual residence and removed from that address (if in the UK) – this would be highly dependent on the quality of visitor information collected and on processing resources available.

Visitors with a usual address abroad might include holidaymakers, temporary workers from abroad, people who have retired abroad and students on short courses. Counts of all such visitors are required to inform resource allocation and service provision. In addition, users of labour market statistics have requested counts of temporary visitors from abroad who are working in the UK. Adding such people to the usually resident population base could provide a more appropriate denominator for employment rates and similar economic measures. This would require the collection of data on economic activity from visitors.

SECONDARY RESIDENCE

Some people divide their time between several addresses. The issue of which of these addresses should be considered as the usual residence has been discussed earlier. Collecting information about secondary residences in addition to usual residence would create the potential to produce estimates on a wider range of output bases, as well as adding to understanding of the movements of particular population groups. Collection of data for multiple secondary residences would be desirable, though in practice cost and respondent burden would limit questions to one secondary residence per person.

In some cases a person's secondary residence is simply the conventional 'second home' – a weekend or holiday property owned by that person. But the issue of secondary residence encompasses much more than this. The concept of secondary residence applies to a person rather than a dwelling. For example a person's secondary residence might be the B&B where they stay from Monday to Friday while working away from home. It might be a student's vacation address or the other parent's residence, for children whose parents live apart. A particular dwelling may be the usual residence of one person and the secondary residence of another. However, a building owned by one person, but rented out to others, is not considered to be the owner's secondary residence.

Users require data on conventional second homes to understand housing demand and affordability and to inform housing provision in local areas. In addition users would like information on all types of secondary residence for service provision and resource allocation purposes. Some types of local area, in particular those with large numbers of workers staying during the week who are usually resident elsewhere, would welcome this information about their weekday populations. Collecting information on both term-time and vacation addresses for students (as in 2001) and on secondary residence for armed forces' personnel could enable both sending and receiving authorities to have a greater understanding of fluctuations in their populations.

Secondary residence information could also be used to obtain a greater understanding of the fluidity of the population, not only in specific areas but for specific groups of the population. For example, the data could provide a valuable insight into the prevalence of weekly commuting. Similarly, no estimates are available at present on the numbers of children moving regularly between the homes of parents living apart.

An additional benefit from collecting secondary residence data would be to improve the accuracy of journey to work data. Consider a person who is usually resident in Hampshire at weekends but lives and works in London during the week. Users would require information on the daily journey to work from the home in London to the workplace. However if only usual residence was collected, the point of origin for their daily journey to work would be incorrectly recorded as Hampshire. Overall this would give a misleading view of transport patterns. Thus secondary residence data may improve the accuracy of journey to work data by increasing the likelihood of identifying the correct origin of the daily journey.

In addition to these uses, secondary residence data has the potential to be used to help estimate over-count in the census by identifying people incorrectly counted as usually resident at two addresses. For example the Longitudinal Study has provided evidence that in 2001 some children were double counted at both parents' addresses.⁶ A suitable method to estimate over-count would need to be developed for this potential to be realised.

Users emphasised the importance of secondary residence information in providing the flexibility to produce outputs under different residence definitions. Collecting these data would provide the ability to output populations on separate weekday and weekend bases, as well as the out-of-term population base, providing the data were of sufficient quality. It would also be a step towards the estimation of the 'average population' of local areas. The quality of these output bases would depend on how much information it is feasible to collect on the purpose and length of time spent at secondary residences and on the quality of responses to these questions. There is also the related issue of competition for space on the census questionnaire.

To obtain the information required by users, data would need to be collected not only on the second address itself but on the type of secondary residence, for example whether it is used for holidays, during

the working week or is the other parent's address. In addition, those with secondary residences would ideally need to be asked how frequently they move between addresses or how much time they normally spend at each address. For those whose secondary residence is outside the UK, only the country of residence is required.

HOUSEHOLDS AND COMMUNAL ESTABLISHMENTS

Most people in England and Wales live in private households rather than in large establishments such as student halls of residence, nursing homes and army barracks. In 2001, 98.2 per cent of people in England and Wales were living in private households, while 1.8 per cent (over 934,000 people) were resident in communal establishments.⁷ The latter included people living in medical and care establishments, prisons, defence and educational establishments.

The definition of a communal establishment distinguishes the communal establishment population (those living in communal establishments) from the household population (everybody else). Therefore in order to identify the household population, it is essential to define clearly a communal establishment.

In previous censuses, selected output tables were produced separately for the household population and for the communal population. There is a continuing need for these two population bases and also for information to be collected from individuals as part of household units or communal establishments. For example, national and local household projections used in planning of housing provision require a household population base and information on household units derived from the census. The household population is also used for weighting various household surveys which do not cover communal residents. In addition to these key requirements, many users need data on the characteristics of households (for example family relationships within households, household income) or of people living in different types of communal establishment (for example, age, gender, general health).

Communal establishments

In 2001, a communal was defined as:

'an establishment providing managed residential accommodation.'

In this context, 'managed' means that the accommodation is supervised on a full-time or part-time basis.

Users emphasised the importance of consistency in the definition of a communal establishment and agreed that the term 'managed' is the key criterion in determining a communal establishment, even if the manager does not live on site full-time or at all. Continuity in this definition would aid comparisons over time, for example, in research on specialised communal populations such as older people. In addition, changing the definition of an establishment would impact on the size of the household population, which is used as a base or a denominator for a wide range of measures. Therefore it seems appropriate to keep the 2001 definition for 2011, subject to clarification of a few 'grey' areas.

Certain types of accommodation are particularly problematic when categorising residents as living in either a communal establishment or a household. These include sheltered accommodation units for older people and purpose-built student cluster flats. The increasing prevalence of these types of accommodation compounds the scale of the problem; for example the rise in student numbers in higher education has led to the construction of more non-traditional student accommodation.

Student accommodation can illustrate the types of difficulties encountered. Students in a traditional hall of residence offering meals and owned by their university are clearly part of the communal population. It is equally clear that groups of students who rent a house from a private landlord are part of the household population. However between these extremes lie a wide variety of other forms of student accommodation. For example, a university might own some large houses in a residential area that each accommodates several students. Or a private company may manage purpose-built flats in which students have their own rooms and bathrooms with shared kitchens. Are either of these communal establishments?

There are various criteria that can be used to define whether accommodation is communal or not:

- number of residents
- type of living arrangements (such as shared facilities)
- ownership of the property
- whether the accommodation is available to anybody or only a select group (such as older people or students)

Some of these criteria could be identified by enumerators on Census day while others would need to be determined in advance.

The working group recommended that:

‘Accommodation available only to students (and not to anybody else) should be defined as communal. This would include university-owned cluster flats, university-owned houses and similar accommodation owned by a private company and provided solely for students. It would exclude houses rented to students by private landlords, as these are part of the general housing stock.’

Sheltered accommodation for older people is another hard to define area. Where an establishment provides all meals to its residents and they do not have separate cooking facilities, the accommodation is clearly communal. Conversely, where sheltered accommodation is provided in self-contained flats with their own kitchen facilities, the residents form part of the household population. However the status of accommodation between these extremes may be less clear. In 2001 a sheltered accommodation establishment was defined as communal if fewer than 50 per cent of units had their own cooking facilities; the working group recommended continued use of this cut-off to ensure consistency over time.

While many members of staff working in ‘communals’, and their families, will not live at the establishment, others may live on site. A criterion needs to be provided to distinguish between those included in the communal population and those living in private households within the establishment. In the latter case, the working group recommended that if they live in a household space that is a self-contained unit with its own door, then people are classified as part of the household population. There is a compelling argument for having such staff counted in private households where possible, since the census normally asks for information about relationships between household members, but not between people living in establishments. Hence family information would be lost if staff households were enumerated as part of the communal population.

Households

Having defined the household population (by specifying who is part of the communal population), the key remaining issue is how to divide up the household population into separate households. In most cases this is straightforward. A family or an individual living alone in a dwelling is

generally thought of as a household. However, should a lodger living in their spare room be part of their household or in a separate one-person household?

The main difficulty in defining households arises where unrelated adults share a dwelling. For example if five students are sharing a privately-rented dwelling, does this represent one multi-person household or five separate one-person households? Most working group members stated that they would prefer the former, but others recognised the need for flexibility. Any decision made about this will impact upon the number of households estimated by the census.

A household can conceptually be defined in a variety of ways, including:

- by the relationships between people living in a dwelling (are they family, friends or strangers who live in the same accommodation?)
- by shared activities (for example, paying bills, eating together)
- by the facilities shared (for example, living room, bathroom or kitchen).

In the 2001 Census, the household definition included aspects of the three concepts above:

‘A household is

- one person living alone, or
- a group of people (not necessarily related) living at the same address with common housekeeping – sharing either a living room or sitting room, or at least one meal a day.’

Users believe that the 2001 definition is a good starting point for 2011 and that consistency over time is important. However they argue that the term ‘common housekeeping’ is outdated and would be poorly understood in 2011. In addition, the definition needs to reflect social changes and in this context the clause referring to ‘sharing at least one meal a day’ was thought problematic, given that many families do not sit down and eat together regularly.

The working group recommended the following working definition:

‘A household is

- one person living alone, or
- a group of people (not necessarily related) living at the same address and sharing cooking facilities *and* some living space.’

Whereas the 2001 definition required either a social element (sharing meals) or an accommodation element (sharing a living or sitting room), this recommended definition has moved to a solely accommodation-based household definition. This would provide a more objective basis with which to define a household.

DISCUSSION

The aim of the report *A Demographic Statistics Service for the 21st Century* was to stimulate practical thinking to nurture a more flexible series of output bases. These are needed to measure the increasingly more mobile population and more diverse living arrangements in modern society. The key requirement for users remains accurate delivery of outputted data on a usual residence base; however, the flexibility afforded by other population bases at output is important for other purposes such as performance monitoring.

Comparisons between the output bases available from the 2001 Census and those theoretically available from the 2011 Census, subject to implementation of the recommended definitions discussed above, would indicate the feasibility of moving towards this goal of greater flexibility. Table 2 assesses potential improvements over the 2001 provision, and merits more detailed discussion.

Table 2

Population bases potentially available from the 2011 Census and other sources

Output Base ¹	Potentially available from 2011 Census?	Examples of alternative sources in Census year and intercensal years
1. Usual residence – the population at the address at which they usually live	Yes – planned	Mid-year population estimates (based on census usually resident population; slightly different definition of usual residence)
2. Household population – the population living in private households	Yes – planned	Mid-year household population estimates (based on census usually resident population and census proportion in households)
3. Communal population – the population living in communal establishments	Yes – planned	Data available for some types of establishment, for example, prisoners data from Home Office; student data from HESA
4. Out of term population – the population usually resident in an area out of term-time	Yes (possible; would need to ask students and boarding school pupils for their vacation address, if different)	
5. Seasonal population – either the usually resident population at different times of year or enhanced to include visitors (for example, tourists)	No	Experimental quarterly population estimates (based on census usually resident population) estimate the resident population for each quarter
6. De facto population – population present on Census night	Unlikely in 2011 (though possible if visitor data is of high quality and resources available to match visitors back to their usual residence and remove them from the population there)	
7. Legal population – any 'legal' definition of the population to serve a particular purpose	No	
8. Week-day population – population usually resident/present overnight during the week (for example, Monday to Thursday nights)	Possible. Could be estimated for 2011 if secondary residence data available (address plus purpose or frequency of stay).	
9. Weekend population – population usually resident/present at the weekend (for example, Friday night to Sunday)	Possible. Similar to usual residence under proposed Census definition if Census day is on a weekend; quality of estimate for 2011 would be improved if secondary residence data available (address plus purpose or frequency of stay)	
10. Temporarily resident population – those present in an area but are not usually resident there (for example, divided children, temporary migrant workers)	Yes – planned. Available from visitor data but accuracy of this base would be dependent on the quality of visitor information collected in 2011	Some data on sub-groups from for example, International Passenger Survey, British Tourism Survey
11. Work-day population – population present in an area during normal working hours Monday to Friday	Possible. Could be partly estimated from workplace data. Place of study data also needed for the full picture	Survey data on employment. Data on pupils/students from, for example, DfES or educational institutions
12. Average population – average of various other population bases	Possible; dependent upon other output bases available	
13. UK residents living abroad – temporarily or for part of the time (for example, international commuters)	No. But secondary residence data would provide some information on this, if collected in 2011	Some information may be available from, for example, electoral registers, health or National Insurance sources. Potential to obtain limited data from household surveys or from International Passenger Survey
14. Non-UK residents living in the UK – for example, visitors, short-term migrants, international commuters	Yes – planned. Available from visitor data but accuracy of this base would be dependent on the quality of visitor information collected in 2011	International Passenger Survey (visitors); National Insurance data, work permits (temporary foreign workers)
15. Bespoke service populations – target population for a specific service/policy	Dependent upon nature of output needed	Health or administrative sources

¹ As described in *A Demographic Statistics Service for the 21st Century*¹.

Many of the output bases in Table 2 could be fully or partly provided by the 2011 Census, though the extent would be determined by the range of variables collected. The three output bases available in 2001 would be retained in 2011 (that is, usual residence, household population and communal population).

In addition, a further four output bases in Table 2 could potentially be available in 2011 if the working group's recommendations were followed. These would be:

- Week-day population; this could be estimated if secondary residence data were available (address plus purpose or frequency of stay). However, the accuracy of this estimation would be determined by the type of questions asked
- Weekend population; this might be approximately equivalent to usual residence as a result of a tightened definition of usual residence; the quality of estimation would be improved if secondary residence data were available (address plus purpose or frequency of stay)
- Temporarily resident population; this would be obtained from visitor data in 2011

- Out of term population; this would be feasible if students and boarding school pupils were asked for their vacation address, as in 2001

A further benefit might be increased flexibility within the bespoke service populations, affording greater opportunities for outputs based especially upon visitor data. This would constitute a potential improvement on the 2001 bespoke outputs.

Some output bases not available from the census could be derived partially from administrative sources or surveys, but such sources are often limited in coverage and would require further refinement before being considered suitable as a population base.

CONCLUSIONS

The list of possible output bases listed by the 2003 report is not necessarily exhaustive; other potential bases may emerge in continuing discussions within the working group. For example, producers and users of labour market statistics have expressed a need for an output

base combining usual residents with temporary workers from abroad to produce a more comprehensive population base for employment statistics. Delivery of this and similar output bases would be determined by both technical feasibility and resources.

On balance, significant improvements to the flexibility of outputs could more readily be achieved if these recommended definitions were applied to the enumeration base of usual residents plus visitors in 2011. The implications of this for authorities with large numbers of people living there for only part of the time, for example during the working week, could be very significant. Similarly, weekend populations might be better measured as a result of a more comprehensive working definition of usual residence. The temporarily resident population on Census night would give an indication of numbers of foreign and domestic visitors, which would be valuable for local areas. All of these would represent an improvement over what was possible for 2001, providing a step towards a more flexible data output platform for the 21st century, consistent with the aims of the 2003 report.

As indicated in the background section, the 2011 Census will be limited by questionnaire space and a requirement to keep the enumeration process as simple as possible. Accordingly, the next step is for ONS to review the strength of these cases and give appropriate priority to each one, following discussions with users. Development work is also underway within ONS to investigate the quality of information that can be collected from a self-completion question on the topics that are necessary to deliver flexible population outputs from the 2011 Census.

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