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Definitions of population and migration

Measuring migration in a changing world – how should migration statistics reflect the complexity of modern travel patterns?

Note by Office for National Statistics (ONS) Centre for International Migration*

Summary

The ONS Centre for International Migration is transforming the way we produce UK migration statistics, to make more use of administrative data than ever before. This offers us a huge opportunity to produce a broader range of statistics that better reflect the complexities of people's travel patterns in the world today.

Current migration statistics are centred around the UN definitions of long-term and short-term migration. But by maximising the power of administrative data, there is real potential to go further by considering alternative definitions and cover topics such as circular migration – repeated patterns of travel into and out of the UK.

We will cover:

- The limitations of using the current definitions to measure complex travel patterns and what definitional changes the users of UK migration statistics need;
- The challenges of aligning administrative data sources with the current definitions of long-term and short-term international migration and identifying and classifying different types of international migrants;
- Our experiences of using administrative data sources has presented opportunities to explore alternative definitions that use flexibility around duration of stay;
- Discussion on our plans for further development of alternative definitions.

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I. Introduction

1. The Office for National Statistics (ONS) is transforming the way we produce UK population and migration statistics to better meet the needs of our users and to produce the best statistics from all available data.
2. In the UK, international migration is a reserved policy area whereas population is devolved, so ONS statistics cover migration at a UK level and population for England and Wales. Working in partnership across the Government Statistical Service (GSS), we are progressing a programme of work to put administrative data at the core of our evidence on international migration (UK) and on population (England and Wales) by 2020.
3. The Centre for International Migration at ONS produce the UK migration statistics, which are centred around the UN definitions of long-term and short-term migration. The statistics are predominately based on the International Passenger Survey (IPS) with adjustments made using administrative data. Using administrative data provides an opportunity to produce a broader range of statistics that better reflect the complexities of people's travel patterns in the world today.
4. This paper explains the opportunities and challenges ONS have experienced in using administrative data for measuring international migration and sets out the methods for alternative definitions that we are researching. This follows the presentation that was given at the UNECE work session in 2018 on the ONS transformation programme.

II. Existing concepts and definitions

5. Our current population and migration statistics are closely aligned with main concepts and definitions set by the United Nations. This ensures users can make "like-for-like" comparisons with statistics produced by other countries.
6. UN recommended definitions are used for usually resident population, long-term migration, short-term migration and to define overseas residents.
7. To meet broad needs for short-term migration, ONS estimates are currently produced based on the UN definition¹ as well as two further definitions:
 - i. Moves made for between 3 and 12 months for any reason;
 - ii. Moves made for between 1 and 12 months for any reason.
8. ONS does not currently measure circular migration, however, using administrative data, we are researching the concept set out by UNECE².

¹ UN recommended definition of a short-term international migrant is "A person who moves to a country other than that of his or her usual residence for a period of at least three months but less than a year except in cases where the movement to that country is for purposes of recreation, holiday, visits to friends and relatives, business, medical treatment or religious pilgrimage."

² The UNECE has set out the concept of circular migration as: "A repetition of legal migrations by the same person between two or more countries", <https://www.unece.org/index.php?id=44717>

A. Limitations of existing concepts and definitions

9. Whilst our current concepts and definitions cover a range of important information on population and migration, they are not comprehensive. People's lives are complex, as illustrated by our previous research³ on understanding what Home Office administrative data can tell us about travel patterns into and out of the UK.
10. Migrants enter and leave the UK for a variety of reasons, stay for different lengths of time and interact with society and the economy in different ways. We therefore believe that additional or alternative definitions may be needed to better reflect this complexity. An important example of this is circular migration, which is not covered by the statistics that ONS currently publishes.
11. There are some overlaps between the definition of short-term migrants and overseas visitors applied by ONS. For example, a visitor staying in England for 4 months would also be defined as a short-term migrant.
12. Also, how ONS currently apply the definitions for long-term and short-term migration estimates are different. Adding together long-term and short-term international migration estimates does not provide a reliable measure of all immigration and emigration to the UK within a specific time-period. This is because:
 - i. Short-term immigration flows are based on journeys to England and Wales, not the movement of people into and out of the UK, and have methodological differences from long-term migrant flows;
 - ii. It is possible for someone to be both a long-term and short-term migrant in a given period;
 - iii. Short-term estimates are based on actual migration behaviours as reported at the end of their stay, whereas long-term estimates use migrants' intentions to infer their length of stay at the start of their stay or departure.
13. The UK government has set out plans for a new UK immigration system⁴, it is therefore important that ONS considers how our definitions reflect different types of movement into and out of the UK, both now and in the future.
14. Further limitations of the current definitions have been identified through the feedback from users of ONS migration statistics. See the following section II.B for further details.

B. User feedback

15. In January 2019, ONS published a research engagement report⁵ in which we requested feedback from users and stakeholders on our transformation programme and plans. In this we asked important questions for users on concepts and definitions, specifically:

³ ONS, 2018, Report on international migration data sources, <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/articles/reportonthecomplexityandqualityofinternationalmigrationstatistics/july2018>

⁴ HM Government, 2018, The UK's Future Skills-Based Immigration System, <https://www.gov.uk/government/publications/the-uks-future-skills-based-immigration-system>

⁵ ONS, 2019, Update on out population and migration statistics transformation journey: a research engagement report, <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/articles/updateonourpopulationandmigrationstatisticsstransformationjourneyaresearchengagementreport/2019-01-30>

- i. What additional or alternative definitions would support you in better understanding population and patterns of migration? This might include different population bases, such as daytime populations, public service populations, etc.;
 - ii. How should any grouping and definitions we develop in the future interact with our existing definitions of long-term migration, short-term migration, usually resident population and overseas visitors?
16. Since then, we have gathered feedback using a range of different approaches from a range of users, including representatives from central and local government departments, international organisations, universities and research institutions, think tanks and other independent bodies with an interest in population and migration statistics.
17. Our users highlighted the need for further flexibility in what we measure and expressed support for our proposal to move beyond current categories or groupings. Some of the traditional definitions such as “long-term migrant” or “usual resident population” were found to be rigid and do not tell users enough about the way the population changes in a modern world.
18. The feedback so far demonstrates that users are looking for our statistics to measure a range of different things, and that some user needs will emerge over time given the changing policy context for migration. It is also clear that some concepts are more important to some users than others, for example, some highlighted a preference for grouping migrant populations according to nationality. However, other users found that this can be misleading – especially over time, given people’s nationality can change – and expressed a preference for statistics broken down by country of birth or country of origin.
19. There was a clear interest in our work on circular (or “repeat”) migration and understanding these types of migrant movements. Examples of other concepts and definitions suggested by users included: temporary or seasonal short-term workers, temporary residents and permanent residents, daytime populations, usual user of services populations and part-year or full-year populations. Users also asked about what more we could do to understand irregular migration to and from the UK.
20. Some users expressed a need for data based on visa status at both entry to the UK and while resident in the UK, moving beyond the self-reported status captured through the International Passenger Survey (IPS). This would provide more information about how many people are moving to, and residing in, the UK under the different routes available under current (and future) immigration rules. There was also an interest in understanding how migrants may switch or move between definitions during their time in the UK, including transitions from visitor or short-term migrants into long-term migrants or residents.
21. Many users highlighted the continued importance of internal migration or population churn and ensuring that data and definitions for both internal and international migration fit together as part of a coherent population and migration statistics system.

III. What survey and administrative data sources are we using?

22. We currently present administrative data alongside quarterly statistics⁶ that are based on the International Passenger Survey (IPS). The IPS captures the individual’s intentions at the time of

⁶ ONS, 2019, Migration Statistics Quarterly Report: August 2019
<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/bulletins/migrationstatisticsquarterlyreport/august2019>

interview when arriving or departing the UK. Intentions do not necessarily reflect actual behaviour and may not neatly fit into our definitions of a long-term or short-term migrant either.

23. The Home Office administrative data, called Exit Checks, discussed within this paper are based on actual travel patterns of migrants in the UK on visas, and different definitions are possible, for example, visa length as used in our report in August 2017⁷. So far, this has been our main administrative data source used for research into concepts and definitions. Section IV goes into more detail on the methods being developed using Exit Checks.
24. Other administrative data sources that we have been or will be using (including potential new data sources) in the future have previously been summarised (see table 2 of our research engagement report⁵).
25. As administrative data are not collected for statistical purposes, when we try to use the data to produce statistics that relate to specific definitions, we find that each data source has its own unique coverage patterns and statistical quality considerations. For some sources, presence on that source means we can be relatively sure an individual is usually resident in the country.
26. Conversely, other sources are useful as snapshot evidence of presence in the country at a particular moment in time, which together can provide a longitudinal picture of a population change; these sources are useful to understand “activity” of the migrants during their stay.
27. The IPS will continue to have a role in ensuring our outputs remain timely. Administrative sources are often retrospective, that is, they tell us about activity that has already happened. There may be notable time lags before we can use these sources to identify new arrivals to the UK – as people may not register for public services such as health care immediately and consequently, will not be present in the administrative data until they do. We may also need to wait to ensure that new arrivals or departures have been active or inactive in the data sources for long enough to be considered a long-term migrant (as stated in the UN definition).
28. The IPS will therefore continue to be essential as a leading indicator of international migration. The survey collects information on the future intentions of individuals moving to the UK and helps provide a timely picture of migration patterns. We can then potentially enhance it using the latest administrative sources, so that we reach our best assessment of migration – reflecting the strengths of what different sources can tell us.

IV. Using administrative data to explore concepts and definitions

29. As part of our transformation, we have been exploring additional or alternative definitions to those that we use currently. It is important to stress that ONS will continue to use existing UN definitions to produce estimates of international migration in the UK. These alternative definitions are additional to provide further flexibility and information on measuring migration.
30. So far our research into concepts and definitions has had two objectives:
 - i. How can we apply existing UN definitions for long-term migration using administrative based data;
 - ii. Explore alternative or additional definitions to provide more flexibility for users.

⁷ ONS, 2017, What’s happening with international student migration?
<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/internationalmigration/articles/whats happening with international student migration/2017-08-24>

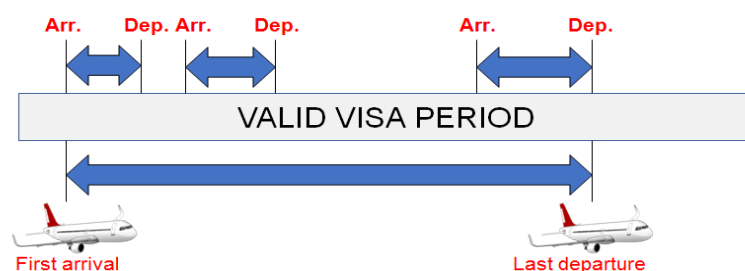
31. The rest of this section covers our previous research and our plans for measuring long-term immigration and emigration using administrative data.

A. Applying UN long-term migration definition to Home Office Exit Checks data

1. Previous research

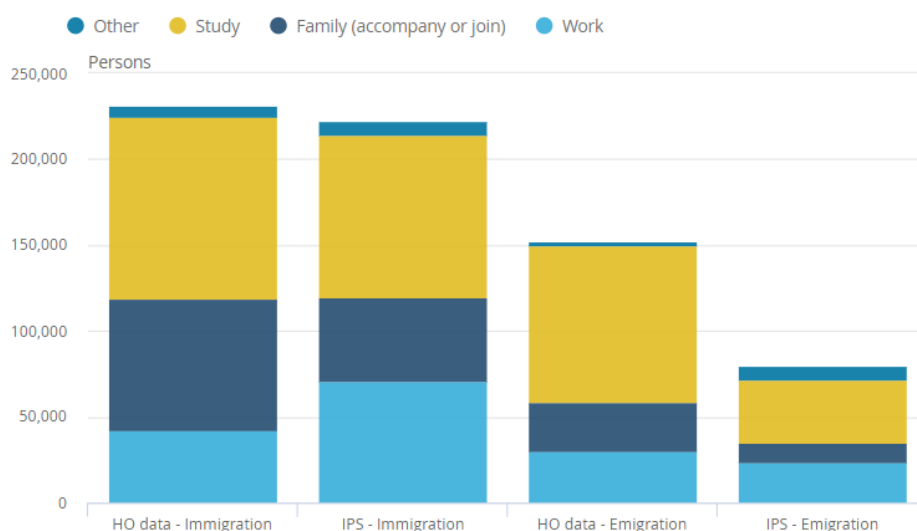
32. In July 2018 we published exploratory research using Home Office Exit Checks administrative data to further our understanding of how long-term non-EU migrants are residing in the UK based on recorded travel patterns³.
33. The method used length of stay within the UK, calculated as the number of days between first arrival and last departure within a visa period for immigration and vice versa for emigration. The number of days spent in or out of the country was then applied to the UN definitions for long- and short-term migrants.

Figure 1
Hypothetical example of an individual's travel patterns during the period of their visa



34. Our analysis showed that whilst there are some similar travel patterns, depending on the type of visa migrants apply for, it is not straightforward to generalise the patterns that are seen within the data to come up with definitive rules around how to classify someone as a long-term migrant.
35. Figure 2 illustrates the differences between the measures of migration derived from Home Office administrative data and the IPS figures. For long-term immigration, travel into the country for more than 12 months, the patterns between the two data sources were fairly similar.
36. Whereas estimates on long-term emigration are more different between the two sources. This finding is consistent with the international student migration research⁷, which suggested a potential underestimate of student emigration. Further investigation into these findings are required.
37. These differences may be due to the type of data collected (intentions compared with travel details used for operational purposes), the way it is collected (a face-to-face sample survey versus an operational system with data supplied by air, rail and sea carriers), the quality of the two data sources, and in the assumptions made to process these data. Neither source directly measures whether an individual is usually resident whilst in the UK or elsewhere.

Figure 2
 Preliminary Home Office (HO) administrative data results compared with International Passenger Survey (IPS) data – long-term migration, UK, 2016 to 2017

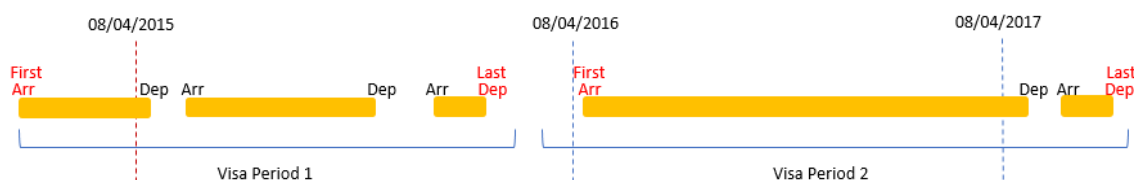


Source: Office for National Statistics analysis of Home Office administrative data and International Passenger Survey (IPS) data

2. Refining this method

38. In the previous method, censoring may have occurred in the travel history data from the Home Office administrative system. For example, incomplete travel events prior to the introduction of the Exit Checks programme in April 2015, or where further years of travel data are needed to confirm if someone has been resident in the UK long-term.
39. Since then, we have been working with a more comprehensive extract of the administrative data. Therefore, we have had the opportunity to refine the method of defining visa periods using the visits data. A visa period is determined by connecting visits that an individual makes to the UK. If an individual has multiple visas, overlapping ones are grouped into one ‘visa period’ but if there is a gap then they are kept separate. Figure 3 illustrates this approach to defining a visa period.

Figure 3
 Illustration of the first arrival (arr) / last departure (dep) method and defining visa periods



40. Table 1 lists out the methodological steps used in this refined method of first arrival and last departure for immigration and emigration.

Table 1

Methodological steps applied to produce immigration and emigration estimates with the first arrival / last departure method

Immigration:	Emigration:
Previous visa period used for time spent out of UK and previous length of stay.	Next visa period is used for time spent out of UK and next length of stay.
Cohort selected with first arrival between 8th April 2016 and 7th April 2017 inclusive.	Cohort selected with last departure between 8th April 2016 and 7th April 2017 inclusive.
Those with a length of stay of ≥ 365 days are potential long-term immigrants.	Those with a length of stay of ≥ 365 days are potential long-term emigrants.
The previous time out and previous length of stay are then used to determine this.	The next time out and next length of stay are the used to determine this.

41. Further analysis of this refined method is currently being carried out. An update will be published later in the year.

B. Alternative definitions for international migration

42. The feedback on the population and migration statistics transformation programme so far has highlighted the need for further flexibility in what and how we measure to reflect the population changes in a modern world. There was also a clear need to better inform local decision makers and to consider likely policy changes in future, given potential changes to future immigration policy⁴ as the UK exits the EU.
43. We have started to explore alternative definitions, based on the data currently available to ONS, and have so far been progressing two methods. However, there may be others that we will develop in the future dependent on user feedback or new data sources as they become available. These alternative definitions look at time in and out of the country and not visa condition or status. They do not replace existing UN definitions.
44. The following two sections summarise these alternative definitions and the current methods that are being explored. Further details on the method and an update on exploratory analysis will be published later in the year, to gather feedback from users to support further development.

1. Aggregated travel events

45. This method assesses how long someone has been in the UK by counting days spent in and out the country within a given reference period.
46. At present, we are currently using a definition of 10 months in a 12-month period. For each individual, we look forwards and backwards a set amount of time (12 months) from each arrival and departure date:
- i. If an individual meets this threshold of being present in the UK for 10 out of 12 months, then they will be considered a long-term immigrant under this new approach;

- ii. An individual is classified as a long-term emigrant if they have previously stayed in the UK for more than 10 months in a 12-month period and are absent from the country for more than 10 months in the following 12-month period.
47. The above criteria are applied over any given 12-month reference period to provide alternative estimates for long-term migration.

2. Six months and a day

48. This method again assesses how many days an individual has been present in the UK but instead currently uses a threshold of ‘six months and a day’ to determine long-term migration. Six months and a day was chosen because this is the minimum period to assess whether an individual has spent the majority of their time inside or outside the UK.
49. An individual is defined as a long-term immigrant if they have stayed in the country for more than 6 months and a day within a 12-month period. With the reverse for emigration.
50. An additional criterion is applied to ensure we are not including individuals who repeatedly come into the UK for six months and a day over consecutive years. We look to only include those who are present in the UK during the last two months of their 12-month period. This ensures the time period is spread over the year.

C. Circular patterns of movement by people and circular migration

51. ONS does not currently measure circular migration. The plans for a new UK immigration system include a new transitional route for temporary short-term workers to come for a maximum of 12 months before a 12-month cooling off period, alongside the continued operation of already established temporary routes, such as the Youth Mobility Scheme and Tier 5 Visas. It is therefore important that ONS considers how our definitions reflect different types of movement into and out of the UK, both now and in the future.
52. Using the UNECE’s 2016 paper⁸ we have considered ‘circular’ migration as people must have made at least three cross-border movements. Our research so far has looked at circular travel patterns over a relatively short period of time – based on the Exit Checks data currently available to ONS - which in this case are repeated entries into the UK. Therefore, our current methods and applications have focussed on ‘short term stays’. This work excludes circular patterns by British nationals.
53. Earlier this year we published our new analysis⁵ of circular patterns of movement using Home Office Exit Checks data, which clearly demonstrated the complexity of the travel patterns we can see in the data for non-EU nationals. Looking at who arrived in the UK on a non-visit visa and their travel patterns for the following two-year period, we were able to identify a range of circular journeys into and out of the country, categorise these into groups and look at their characteristics. For example, those we defined as having a low or medium number of journeys tended to be here for around two to five months and travelled for the purposes of study or family.
54. There is therefore potential to produce statistics on circular migration in future, so we will explore how we can do this based on feedback from our users about what aspects are most important to them. We plan to carry out further research to:

⁸ UNECE, 2016, Defining and measuring circular migration, <https://www.unece.org/index.php?id=44717>

- i. Develop our methodology for measuring repeated patterns of movement;
 - ii. Consider whether and how to define circular migration – who should we include and what important aspects should we measure – and how to ensure coherence with other definitions of migration and changes to the UK immigration system.
55. Later this year we will publish an article with an update on our exploratory research into circular travel patterns of non-EU nationals.

V. Conclusions and next steps

56. ONS will continue to use existing UN definitions to produce estimates of international migration in the UK both using survey and administrative data. Alongside this, we look to explore alternative definitions using administrative data to provide further flexibility and insight to our users.
57. There is more work to do, including incorporating other administrative data sources to better understand aspects of migration and reveal some of the different travel patterns that migrants make.
58. By maximising the power of administrative data, we can improve the coverage of our data, particularly for groups such as EU migrants. Whilst we have improved our knowledge of what administrative sources such as health and income data can tell us about both EU and non-EU migration, our existing evidence base is much stronger for non-EU migration. Our next steps will focus on how we can use these further data sources to improve our coverage and address known challenges such as using administrative data to measure emigration from the UK.
59. We will continue to update on our progress, iteratively and engage with our users over our plans to put administrative data at the core of population and migration statistics, to ensure these continue to meet their needs.
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