Article

Exploring international migration concepts and definitions with Home Office administrative data

Research article investigating additional concepts and defintions for measuring international migration using Home Office administrative data.

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1 . Introduction

The Office for National Statistics (ONS) is working in partnership across the Government Statistical Service (GSS) to transform the way we produce population and migration statistics to better meet the needs of our users and to ensure that we are making the best use of all available information by putting administrative data at the core of our system.

Under our latest plans for the transformation programme, our focus in 2020 will be on using evidence from administrative data to improve international migration statistics based on existing survey sources. However, alongside this we are continuing to progress research into how we can link a range of government data sources to build an integrated system for measuring population and migration, with the aim of delivering improvements to population statistics from 2021.

As part of this longer-term work we have been developing our understanding of the strengths and limitations of these sources and what they can tell us about different groups of the population; looking at how we can use them to apply our existing definitions of international migration; and exploring the new opportunities they provide for producing alternative statistics based on additional concepts and definitions. We would like to gather feedback from users on the research presented here to inform our next steps, which we will be taking forward in collaboration with our partners across government, including the devolved administrations in Northern Ireland, Scotland and Wales.

Users of migration statistics have told us that they need more flexibility around how we currently define international migration. Our existing migration measures are based on the United Nations (UN) definition of long-term international migration (LTIM) and predominantly use data collected through the International Passenger Survey (IPS). This allows us to create internationally comparable statistics. However, previous research has shown that travel and migration patterns are becoming increasingly complex and no longer fit neatly into the existing definitions. Administrative data are enabling us to investigate this complexity in greater depth and develop potential supplementary definitions of LTIM.

Exploratory analysis published in July 2018 using Home Office administrative data investigated how long non-EU migrants reside in the UK and confirmed that not all non-EU citizens that held a visa for 12 months or longer remained in the country for the whole duration of their visa. Further research published in January 2019 looked at two different definitions that could be used to define LTIM, were we to publish additional breakdowns.

We have continued to work closely with Home Office experts to improve our understanding of the data and the work presented in this article builds on this previous research by looking at:

- a method for applying the existing UN definition of LTIM to Home Office Exit Checks data

- two potential methods for supplementary definitions of LTIM based on classifying travel patterns in the Exit Checks data – Actual Time Spent in the UK method and the Majority of Time method

- comparing and contrasting the results of the three possible methods, analysing their strengths and limitations, and the impact these different definitions have on the resulting population

This article forms part of a wider set of research papers on international migration concepts and definitions published today (14 February 2020).

2 . Main findings

We have explored how Home Office Exit Checks data can be used to define and quantify long-term international migrants (LTIM). For the first time, we have investigated three different definitions of LTIM and compared the impact these different definitions have on the resulting population.

We found that:

- the number of individuals identified as long-term international migrants varies between the definitions; this highlights the importance of carefully considering which definitions should be used to characterise the population and the policy impacts of each definition

- the greatest difference between the methods can be seen in those travelling on study and family visas; the differences between the definitions are less notable for those on work, visit and other visa types

- common travel patterns among students such as returning home during holidays cause significant differences in how the methods classify this group; we also see differences between students aged 18 and 22 years, a finding confirmed by the work done linking Exit Checks to Higher Education data

- all the methods presented here may hide some of the complexity in travel patterns as at this stage of the research we have only been able to look at travel events in a single year

Details of the methodology for each of the three potential methods are presented in Sections 5 and 6, while the results of comparing and assessing these methods can be found in Section 7.

We plan to make further progress by seeking feedback from users of migration statistics. This will help us to establish the most important factors of migration statistics and help develop our definitions accordingly.

3 . Things you need to know about this release

Disclaimer

These Research Outputs are not [official statistics](#) on the population or international migration, nor are they used in the underlying methods or assumptions in the production of official statistics. Rather, they are published as outputs from research into additional methodologies that are different to those currently used in the production of migration statistics.

These outputs should not be used for policy-making or decision-making and are not directly comparable with published estimates of international migration.

Home Office Exit Checks data

This research focuses on Home Office Exit Checks data for the year 8 April 2016 to 7 April 2017. The Exit Checks data are the available source that identifies when non-European Economic Area (EEA) nationals have entered or exited the UK, it does not capture information on EEA nationals. We have used this target year as the methods described require a year prior to the period of interest and a year after, and the data we have available cover three years from 8 April 2015 to 7 April 2018.

We need data for further years to assess the stability of these supplementary methods over time, ideally using at least a three-year time series. We will continue to work with the Home Office to receive regular updates to the data, enabling us to further develop our understanding of migration patterns.

This article will only investigate immigration. While emigration is an important component of international migration, to be counted as an emigrant, an individual must first be identified as resident in the country. This requires a longer time period of data than we currently have available. We will describe the methods for quantifying emigration, which will be explored in future research.

4 . Why are we exploring supplementary definitions to measure international migration?

Our existing migration measures predominantly use data collected through the International Passenger Survey (IPS) and allow us to create internationally comparable statistics as they are based on the United Nations (UN) definition of long-term international migration (LTIM):

"A person who moves to a country other than that of his or her usual residence for a period of at least a year (12 months), so that the country of destination effectively becomes his or her new country of usual residence."

Previous research has shown that migration patterns are becoming increasingly complex and no longer fit neatly into the existing definitions. As discussed in the Concepts and definitions overview article this increasing complexity has led the UN to begin a review into their definitions. Administrative data are enabling us to investigate this complexity in greater depth and attempt to apply additional definitions of LTIM.

Methods of measuring LTIM flows

The three methods discussed in this article are as follows.

Applying the UN Standard Definition to Home Office Exit Checks data:

* requires at least 12 months between arrival and last departure but ignores absences in between

Actual Time Spent in the UK:

* requires presence for 10 months out of 12 in a year

Majority of Time in the UK:

* requires presence for at least 6 months out of 12, of which at least one day has to be in the last two months of the year

Feedback questions

This research feeds into the transformation of the population and migration statistics system and the review of existing concepts and definitions we are conducting. We welcome your feedback on the concepts and definitions discussed in this article, our progress to date and our transformation plans.

Specifically, for this work on LTIM definitions we would like to know:

- Would having supplementary definitions of long-term international migration impact on the way you use migration statistics?

- Would any of the definitions and methods discussed here meet your needs better? If not, what refinements could be made, or different definitions considered?

- Is there value in having supplementary international migration definitions for sub-populations, in addition to the UN standard definition? For example, international students.

- Should we allow for some periods of absence when assessing migration status, as with the first method, or account for all periods of absence?

Please send any feedback on these questions to pop.info@ons.gov.uk

Please indicate in your response if you do not wish for the Centre for International Migration (ONS) to keep your details. Your personal information will be stored and processed securely as outlined in the Privacy information for our Stakeholders document.

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

In the future, as we move towards an administrative data-led system, we need to consider how the United Nations (UN) standard definition can be applied to the data sources available to us. By doing this, we aim to ensure that our long-term international migration (LTIM) figures remain internationally comparable, while transforming the population and migration statistics system to reduce respondent burden and improve our flexibility to meet user needs. We will continue to use the UN definition for LTIM in our quarterly international migration statistics releases.

Current Office for National Statistics (ONS) migration statistics are intentions based – International Passenger Survey (IPS) respondents are asked about their intended duration of stay in the country. Administrative data usually measure actual events (such as an arrival or departure from the UK), but do not usually measure intentions (such as intention to remain in the UK for the next 12 months).

Travel events may not align well with intentions, for example, a respondent could initially intend to stay for 12 months but then leave after just 9 months. Under the current system, a switcher adjustment is made to account for this. However, the 2018 switcher review and August 2019 progress report on understanding different migration data sources have shown that the current switcher adjustments may not be adequately adjusting for the difference between people's intentions and their actual behaviour. Following this work, preliminary adjustments have now been made to estimates of EU immigration and non-EU emigration to begin to account for this.

IPS interviewers currently guide respondents to exclude short absences abroad when answering their intended duration of stay. In moving towards an administrative data-led system, we need to consider how we define usual residence for long-term international migrants and how long they can be absent while still considered usually resident. In this context, usual residence is defined as the country where a person normally spends their time, ignoring periods of temporary absence. This article begins to explore how we might address this in administrative data.

## Method proposed for applying the UN definition to administrative data

We have extended the method explored in our July 2018 research, which applied the UN standard definition using Home Office Exit Checks data. This was done to improve the accuracy of how travel to the UK is classified. This method looks at first arrival and last departure within a visa period as an approximation for length of stay in the UK.

In this previous research, each visa was considered separately. We have since made developments to allow visas to be joined if they overlap to create "visa periods". Visa periods have been constructed to ensure that travel events are not assessed on two different visas for the same visit. If there is a gap between visas, then a new visa period is started. The first arrival and latest departure within these visa periods are used as an approximation for length of stay in the UK.

The method used for applying the UN standard definition for immigration is shown in Figure 1. First, a cohort is selected using visa periods with a first arrival date in the 12-month target period, in this case, 8 April 2016 to 7 April 2017. Time between the first arrival and last departure within a visa period is then used to determine length of stay.

If the usual residence threshold of 12 months or more in the country is met, the previous visa period is used to determine if this is a new long-term immigrant or one who has previously been in the country. If presence is not identified in the country for the 12 months preceding first arrival on a given visa, or the previous visa period had a length of stay of less than 12 months, this pattern of travel will be considered as new, long-term immigration.

Figure 1: Illustrative example of Applying the UN Standard Definition to Home Office Exit Checks data
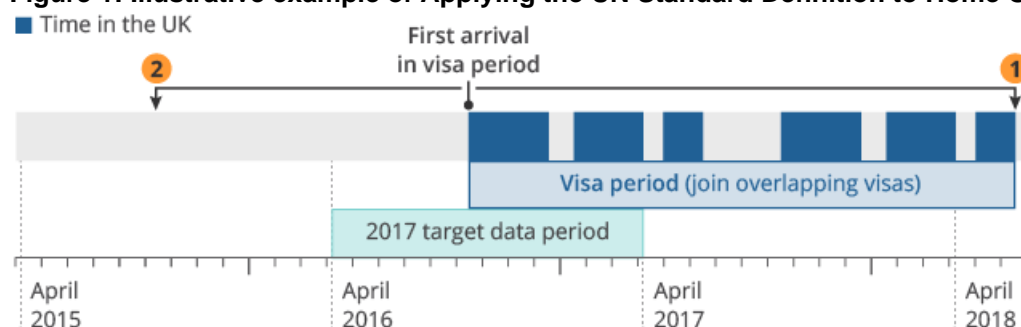
① Count time from first arrival in visa period until last departure to find length of stay
   12 months or longer = usually resident
② Check 12 months back from first arrival
   No presence/previous stay less than 12 months = new long-term immigrant

Source: Office for National Statistics

In this method, if the first arrival is missing, the start date of the visa is taken instead. Similarly, if last departure is missing, the end date of the visa is used in its place. In this method, we also exclude any journeys on long-term visit visas.

There are a number of ways in which a traveller's arrival or departure may legitimately not be recorded in Exit Checks, for example, where journeys are made via the Common Travel Area (CTA) with the Republic of Ireland. This issue will need to be considered in any future work to develop regional level estimates using Exit Checks data, particularly for Northern Ireland.

As discussed, previously, measuring emigration would require more data than we currently have available. However, we have developed criteria that could be used in future as more data become available. For the Applying the UN Standard Definition method, these criteria are:

- length of stay, using visa information, is 12 months or more prior to departure

- next visa period starts more than 12 months in the future or is only short-term

See Section 7 for further analysis that compares the results of this method with two additional supplementary definitions.

6 . Supplementary definitions for international migration

Here we present two supplementary methods for assessing international migration through classifying travel patterns. These definitions do not replace existing UN definitions or long-term international migration (LTIM) estimates, and we will continue to report on these in our Migration Statistics Quarterly Report.

However, we have begun to explore supplementary definitions that may go beyond current definitions, serving a specific policy or user need. The definitions presented in this article are a first iteration and demonstrate the opportunities available when using the Home Office Exit Checks data. There may, however, be other useful definitions other than those explored here. For this reason, we would like to hear your feedback.

As with the method described previously, if a first arrival or last departure are missing, these data are replaced with the start or end of the extract accordingly. We do this as we assume that, if first arrival is missing, they have been here since before the data extract or, if the last departure is missing, remained here after the extract ended. The two supplementary definitions differ from the Applying the UN Standard Definition method by using the start and end dates of the data extract, 8 April 2015 and 8 April 2018 respectively, rather than visa period start and end dates. These supplementary methods also use all records with complete data and no records are removed based on the type of visa held by the traveller.

Supplementary method 1: Actual Time Spent in the UK

The Actual Time Spent in the UK method assesses time spent in and out of the country within a given reference period and is shown in Figure 2. This method was developed to provide a more accurate assessment of time spent in the UK than the first arrival and last departure used by the Implementing the UN Standard Definition method.

Unlike the method that applies the UN Standard Definition, this method does not ignore any absences between first arrival and last departure. Instead, it sets a threshold for the amount of time in the country to be considered a long-term migrant. This is similar to supplementary definitions used in Australia and New Zealand, where they require an individual to be in the country for 12 months in a 16-month period to be considered usually resident. Currently, we do not have data covering a long enough time period to apply this method so have applied a threshold requiring presence for 10 months out of 12.

The amount of time spent outside of the country while still being classified as usually resident is likely to be an important concept for public policy and one that will vary between different policy areas. For example, an individual may maintain housing in the country across the year if they are absent for only two months. Conversely, an individual would not be using water or public transportation if they are not present in the country.

Unlike the Applying the UN Standard Definition method, the Actual Time Spent in the UK method is not dependent on visas and therefore does not exclude any visa types. If a record had an incomplete travel history other than first arrival or last departure, the record was excluded from the analysis.

As Figure 2 shows, to assess immigration we look forward 12 months from first arrival within a period of interest and count the number of days in the country. We first assess usual residence by identifying presence in the country for more than 10 months (304 days or more) after first arrival. We then look backwards from this first arrival to ensure absence from the country for more than 10 months in the year preceding arrival. If both conditions are met, we classify as a new long-term immigrant.

Figure 2: Illustrative example of the Actual Time in the UK method
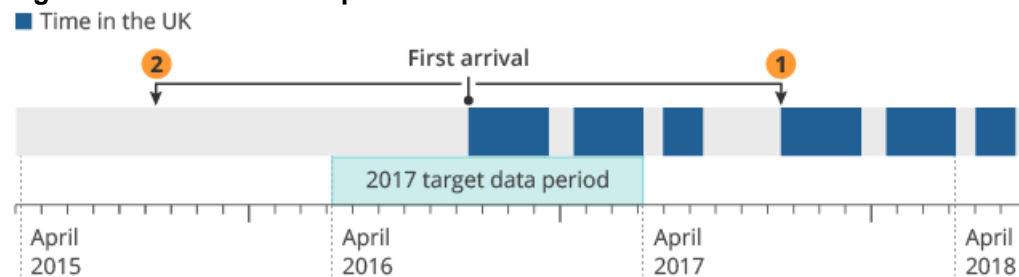
1. Count number of days spent in UK within 12 months from first arrival
   304 days (10 months) or more in UK = usually resident
2. Check 12 months back from first arrival
   Previously in UK less than 61 days (2 months) = new long-term immigrant

Source: Office for National Statistics

When more data become available, the emigration criteria for the Actual Time Spent in the UK method will be:

- absent from the UK for more than 10 months in the 12 months after a departure

- present in the UK for more than 10 months in the 12 months before departure

Supplementary method 2: Majority of Time

The Majority of Time method investigates the threshold we should use for assessing long-term migration status and is shown in Figure 3. Rather than the large proportion of time spent in the country required by the Actual Time Spent in the UK method, the Majority of Time method aims to establish whether a greater amount of time was spent in the country than out of the country over a 12-month period.

This is similar to the method used alongside the UN Standard Definition in Norway, where migrants are considered to be long-term if they remain in the country for at least 6 months in a 12-month period. This threshold ensures that an individual can only be classified as a long-term migrant in one country at a time.

For assessing immigration, we use two main criteria, which must be met to be classified as a long-term immigrant:

- present in the UK for at least 183 days (six months and a day) in a 12-month period

- present for at least one day in the UK during the last two months of their 12-month period (in months 11 or 12)

The second of these criteria aims to ensure that the stay was spread across the 12-month period. This avoids classifying those that stayed for six months and a day consecutively and then left as usually resident across the year.

As shown in Figure 3, to assess whether these criteria are met, we look forwards 12 months from arrival date and assess length of presence in the country. We then assess presence in the country during the last two months of the 12-month period, flagging where this is more than or equal to one day.

Unlike the Applying the UN Standard Definition method, the Majority of Time method is not dependent on visas and therefore does not exclude any visa types. If a record had an incomplete travel history other than first arrival or last departure, the record was excluded from the analysis.

Figure 3: Illustrative example of the Majority of Time method

■ Time in the UK
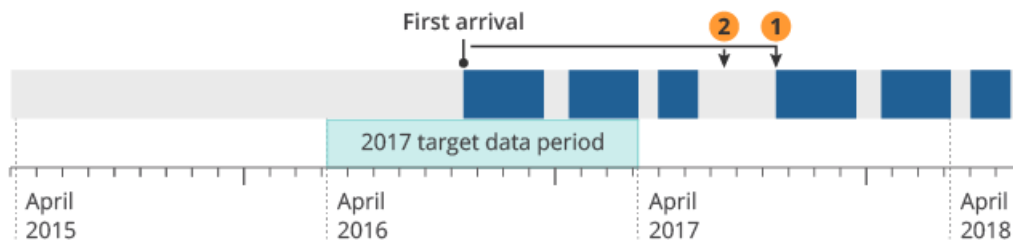
① Count number of days spent in UK within 12 months from first arrival
183 days (6 months and a day) or more in UK = usually resident
AND
② Check last two months of 12-month period
In UK at least 1 day in months 11 or 12 = long-term immigrant

Source: Office for National Statistics

When more data become available, the emigration criteria for the Majority of Time method will be:

- previously flagged as in the UK long-term using the Majority of Time immigration criteria

- present in the UK for less than 183 days (six months and a day) in a 12-month period

- absent from the UK at the end of their 12-month period (between months 10 and 12)

7 . Comparison of methods

There are several definitional and methodological differences between the three methods set out here that will lead to variation in what travel patterns would be classified as long-term international migration (LTIM).

The figures presented here are research outputs only and should not be regarded as estimates of Long-Term International Migration.
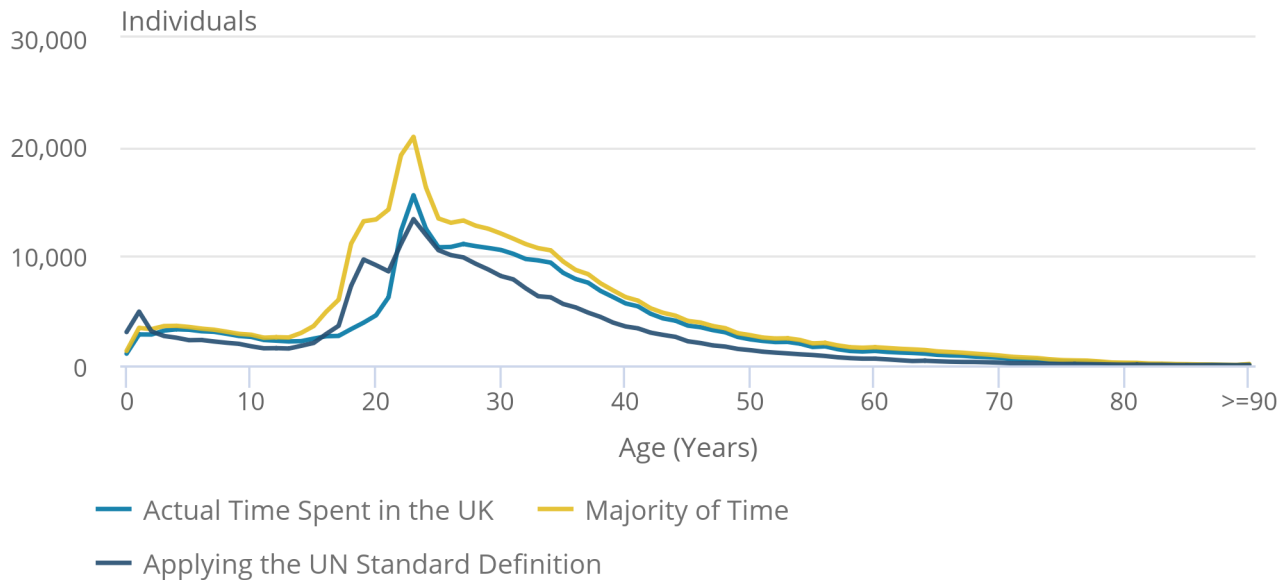
This section considers how each of the methods identifies and classifies different migrant groups.

Figure 4: There are more long-term immigrants aged in their early 20s

Long-term, non-EEA immigrants by age for the year ending April 2017, UK

Source: Home Office – Exit Checks data

Figure 4 shows the age distributions of long-term immigrants as counted by each of the methods described in this article.

For all three methods, there is a very similar pattern with the number of long-term immigrants, peaking at around age 23 years. This is consistent with the overall Exit Checks data, which show higher numbers of travel events by those aged in their early 20s. Both distributions are consistent with what we already understand about migration patterns.

The main difference between the methods is the number of long-term immigrants being identified, with the Majority of Time method counting more at all ages. This is expected though, as the requirements for being a long-term migrant are much lower for this method than the other two.

When looking at the method that applies the UN Standard Definition, we see a small spike at around age 18 years. This can be explained, in part, by a large number of students being flagged as long-term immigrants at this age.

Visa class comparisons

Figure 5 shows the number of long-term immigrants grouped by different visa classes for each of the three methods. These classes are based on the type of visa that an individual was on for the majority of their stay in the UK. Individuals may be classified as long-term on a visit type visa if they stay for up to six months on a long-term visit visa and then transition to a different type for a shorter period of time.

The "Other" category contains visas that did not easily fit into one of the other standard visa groups or were classed as admin visas.

Figure 5: There is more variation between the methods for those on study or family visas

Numbers of long-term, non-EEA immigrants split by method and visa class for the year ending April 2017, UK

Figure 5: There is more variation between the methods for those on study or family visas

Numbers of long-term, non-EEA immigrants split by method and visa class for the year ending April 2017, UK
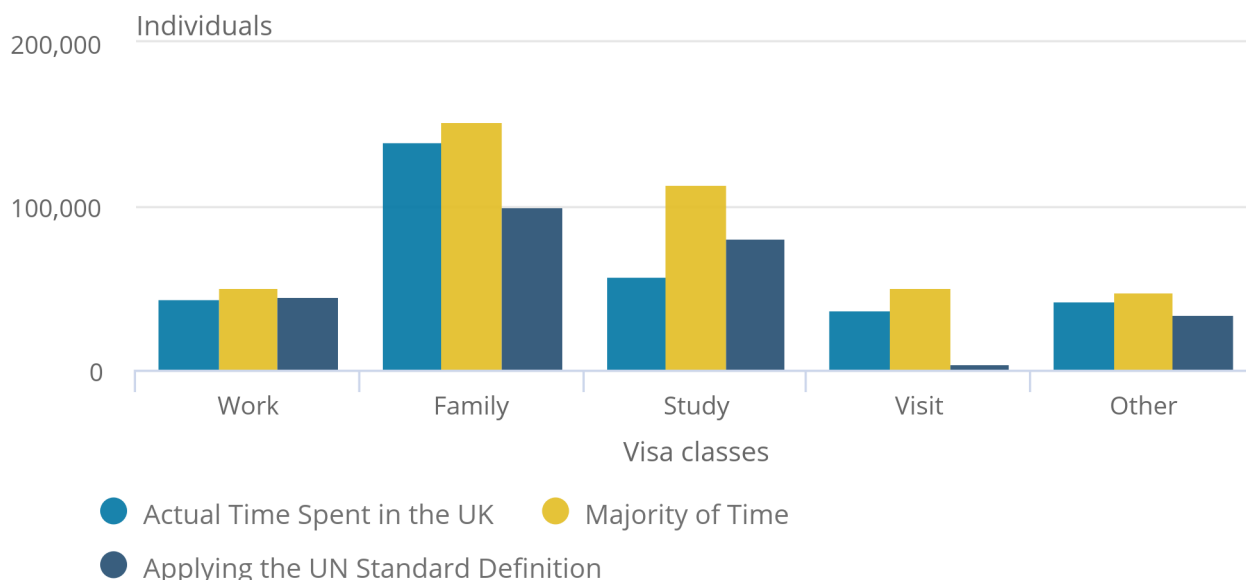
Source: Home Office – Exit Checks data

The different methods count very similar numbers of long-term immigrants for those on work type visas, only showing notable differences when looking at family and study type visas. Applying the UN standard definition method removes those on long-term standard visitor visas. As a result, this method identifies only a small number of those on visit type visas.

There are clear differences in the number of people on family type visas being flagged as long-term immigrants, with the method applying the UN Standard Definition counting fewer than the two supplementary methods. It is, however, difficult to identify any clear patterns for this group as they have less homogenous travel patterns than, for example, students and cover a wide variety of people at all ages and from varying backgrounds.

The differences in the counts for those on study visas highlights the impact of implementing supplementary definitions for long-term international migration. Actual Time Spent in the UK counts comparatively few long-term migrants on study type visas, which supports our other research that finds that many international students stay for less than 10 months of the year following their arrival.

Figure 6 shows the travel patterns of an example international undergraduate student for each method. This student is absent for periods in December, April, August and September as they have returned home for the Christmas, Easter and summer breaks.

Based on this travel pattern, a student would be flagged as long-term by the Applying the UN Standard Definition and Majority of Time methods but not Actual Time Spent in the UK. Whilst not all international students behave in the same way, this is a pattern commonly seen and can be used to explain the differences in the way students are flagged by the three methods.

Figure 6: Comparison of methods example - undergraduate student
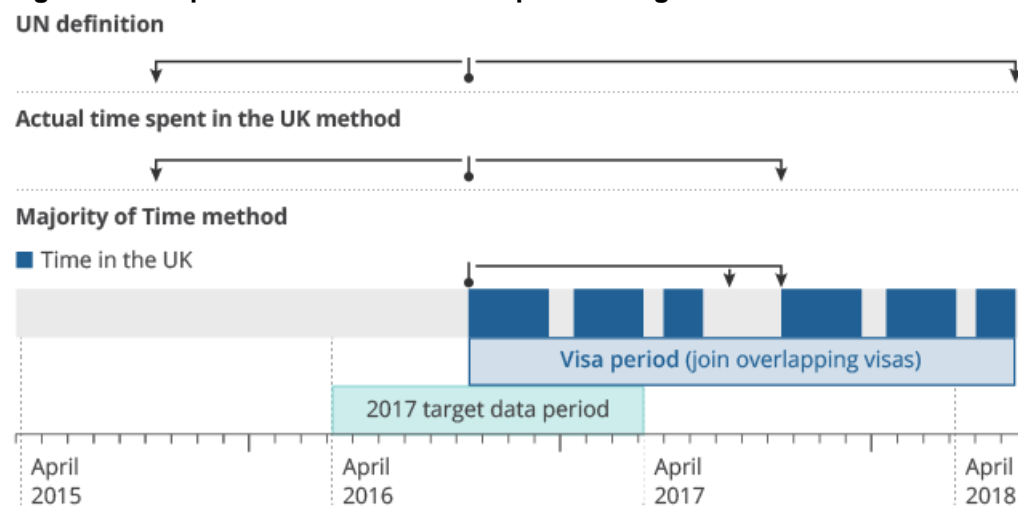

Source: Office for National Statistics

Figure 7 also suggests that the methods behave differently for different kinds of students, with all three methods capturing postgraduate students but the Majority of Time and UN Standard Definition methods capturing comparatively more undergraduates. This is because of undergraduates spending less time in the country for their studies than postgraduate students. This is supported by the findings in other research that shows that over half of non-EU undergraduate students spend less than 10 months in the country during a 12-month period, whereas the opposite is true for postgraduate students.

Figure 7: There are differences between the methods in the number of students they count

Number of long-term, non-EEA immigrants on study visas by age for the year ending April 2017, UK
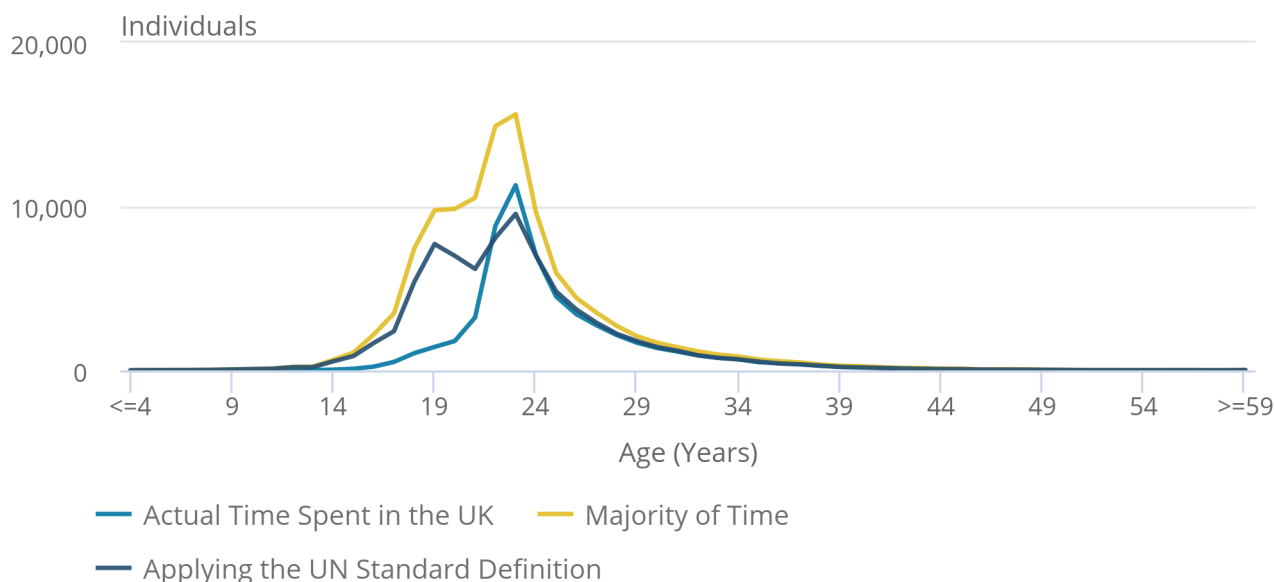
Source: Home Office – Exit Checks data

8 . Conclusions and next steps

The methods operate similarly for most visa groups, with the main difference being scale of the total figures. As the threshold for presence in the country is low at six months and one day, the Majority of Time method produces the highest overall long-term international migration (LTIM) figures.

The greatest differences between the methods can be seen in those travelling on study and family visas. A large proportion of those on study visas will be undergraduate university students, who are likely to follow similar travel patterns, returning home during holidays. This was found to cause significant differences in how the methods classify this group. The Majority of Time method produced the highest overall figures, again because of the low threshold of time required in the UK. The Actual Time Spent in the UK method identified fewer undergraduate students as long-term, but identified a comparatively greater number of postgraduate students.

For family type visas, there are similar differences but, when investigated further, it is difficult to pick out any clear travel patterns that can explain these differences in the way that student travel patterns can. This is because those on family type visas behave in a less homogenous way.

The methods presented here may hide some of the complexity in travel patterns as we are currently only able to look at a single year. In particular, those with circular travel patterns may be categorised incorrectly or missed despite spending large amounts of time in the UK.

An important next step for this research is to gather your [feedback](#) on the potential methods described in this article and whether there are alternative approaches or variations on these that would better meet user needs. As outlined in the introduction to this article, the methods and results described here are a first attempt at what can be done with the Home Office Exit Checks data and your feedback, particularly on the questions at the end of Section 4, will be important for determining the direction of our transformation journey in this area.