

# Long-Term International Migration estimates methodology

In-depth look at methodology of both Long-Term International Migration (LTIM) and the International Passenger Survey (IPS), including preliminary adjustments, assumptions made for variables, and changes over time.

Contact:  
Mike James  
migstatsunit@ons.gov.uk  
+44 (0)1329 444097

Release date:  
27 February 2020

Next release:  
To be announced

## Table of contents

1. [Current methodology](#)
2. [Data sources used to compile final estimates of LTIM](#)
3. [Components of LTIM](#)
4. [Preliminary adjustments to LTIM](#)
5. [Assumptions made to produce LTIM](#)
6. [Provisional and final estimates of LTIM](#)
7. [Reliability of migration estimates](#)
8. [Summary of methodological changes](#)
9. [Related links](#)

# 1 . Current methodology

The methodology outlined in the following sections was first applied in 2009 for the calculation of the 2008 estimates and revisions were made to earlier years as appropriate.

As a consequence of these methodological improvements, the Long-Term International Migration (LTIM, formerly known as Total International Migration or TIM) back series was revised.

In August 2019, a set of preliminary adjustments were introduced for data from year ending June 2009 to the most recent rolling year estimate as described in Section 4.

## Challenges with measuring international migration

Our research has clearly shown that no single source of data can fully reflect the complexity of migration. However, when we look at all available sources together it provides a much clearer picture. We set out how we can draw on the combined strengths of survey and administrative data to provide a better understanding of international migration in [Understanding different migration data sources: August 2019 progress report](#).

Bringing these research findings and all available data sources together, from August 2019, we made preliminary adjustments to our previously published headline measures from migration. This is to provide our best possible assessment of trends over time. As new data sources become available, we will build on our research so far and continue to develop our approach for adjusting the International Passenger Survey (IPS) estimates to take account of uncertain intentions. Whilst we go through this [transformation journey](#), we have sought to re-classify our migration statistics as [Experimental Statistics](#) in line with [Office for Statistics Regulation guidance](#).

Measuring illegal migrants presents another challenge. For more information on measuring illegal migration, please see the [International migration – terms, definitions and frequently asked questions](#).

## Definition of a long-term migrant

The Office for National Statistics (ONS) uses the United Nations (UN) recommended definition of a long-term international migrant:

“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.”

For more information, see page 18 of the [Recommendations on Statistics of International Migration \(PDF, 5.0MB\)](#).

This is the definition used to calculate net migration and is also used for the UK usually resident population estimate series. This definition does not necessarily coincide with those used by other organisations.

# 2 . Data sources used to compile final estimates of LTIM

Estimates of Long-Term International Migration (LTIM) are produced from these main data sources:

- International Passenger Survey (IPS)
- [Labour Force Survey \(LFS\)](#) - provides a geographical distribution of migrants for the calibration methodology
- Home Office data on asylum seeker flows and their dependants, on non-asylum enforced removals and on people resettled in the UK under various resettlement schemes
- forecasted LTIM estimates based on previous GP registrations from the Northern Ireland Statistics and Research Agency (NISRA) for estimating long-term international migration to and from Northern Ireland and the Rest of the World, from 2008 onwards; forecasted data are replaced with final data for LTIM final annual estimates
- [preliminary adjustments](#) to help address the uncertain intentions for non-EU students and EU8 nationals moving to the UK using data from the Home Office and the Department for Work and Pensions

### 3 . Components of LTIM

Long-Term International Migration (LTIM) comprises a number of components, which are described below. This section explains each of these components in further detail.

Section 4 explains the preliminary adjustments methods and subsequent refinements made as part of our [transformation journey](#).

## Migration equation to estimate Long-Term International Migration (LTIM)

LTIM estimates are produced from a range of data sources.

LTIM estimates equal:

- IPS data (which identified 3,000 to 4,000 respondents of the 700,000 to 800,000 respondents per year as international migrants)
- plus Northern Ireland migration flows<sup>1</sup>
- plus Asylum seeker flows (including non-asylum enforced removals, adjustment and resettlement adjustments)<sup>2</sup>
- plus Visitor switchers<sup>3</sup>
- subtract Migrant switchers
- plus Preliminary adjustments

### Notes for: Migration equation to estimate Long-Term International Migration

1. Northern Ireland migration flows data are taken from the Northern Ireland Statistics and Research Agency (NISRA).
2. Asylum seeker flows data are from the Home Office.
3. Visitor switcher data are from the International Passenger Survey.
4. Migrant switchers data are from the International Passenger Survey.
5. Preliminary adjustments data are from the Home Office, the Department for Work and Pensions, Higher Education Statistics Agency, and Census.

## International Passenger Survey (IPS)

The [International Passenger Survey](#) (IPS) is a sample survey of passengers arriving at, and departing from, UK air and sea ports and the Channel Tunnel. It is carried out by the Office for National Statistics (ONS) for a range of public and private sector organisations. In particular, it provides figures used for the travel account of the balance of payments, captures data on international tourism as well as providing data on the numbers and characteristics of short-term and long-term international migrants.

The long-term international migration data from the IPS are the largest component of the LTIM estimates. It is important to note that these data are intentions-based, for example, the survey asks how long each migrant intends to remain in or out of the UK, as opposed to recording what they have done on their later journeys.

In 2009, adjustments were made to the methodology of the IPS, in terms of both sampling and data processing. This resulted in a sample design that is better optimised for collecting data on migrants.

A review into the [Quality of LTIM estimates \(PDF, 1.0MB\)](#) showed that the IPS missed migration flows, particularly of EU8 citizens, prior to improvements to the survey in 2009 that increased its coverage of regional airports. As a result, the net migration estimates for 2001 to 2011 were revised in light of the results of the 2011 Census, which showed that net migration was higher than implied by published migration estimates.

[International Passenger Survey: quality in relation to migration flows](#) provides further detail on the IPS, including its sample design; how the collected data are weighted to be representative of the total numbers travelling; information about the quality of the estimates; and details of the recent changes and their impacts. Further general information about the IPS can be obtained from the annual report [Travel trends – a report on the International Passenger Survey](#).

A copy of the IPS migrant trailer questionnaires are available on the [International migration methodology page](#).

The IPS has some limitations with respect to measuring immigration and emigration, as it:

- is a sample survey and so only a sample and not every migrant to or from the UK is interviewed; as a result, the estimates are subject to a degree of [uncertainty](#)
- does not capture all asylum seekers who may be entering or leaving the UK
- does not take into account the changing intentions of passengers (those who intended to remain in or out of the UK for 12 months, but actually spent less than a year and those who believed they would be staying or leaving for less than a year but actually spent longer)
- does not capture those who are crossing the land border between the UK (Northern Ireland) and the Republic of Ireland

## Calibration of IPS data

The IPS asks long-term immigrants to state where they intend to move to within the UK. Our research, as part of the [Migration Statistics Improvement Programme](#) (MSIP), compared IPS data with the 2001 Census and the [Labour Force Survey](#) (LFS) (a sample survey of households living at private addresses in the UK). This revealed that there are some migrants who will live at their intended destination for only a short period of time before moving elsewhere. In particular, IPS data show a greater proportion of migrants stating London as their destination compared with either the LFS or census data. One explanation is that London is an international gateway to the UK and is therefore a transition point before they settle in other parts of the UK.

The geographical distribution of immigrants who were recorded entering the UK by the IPS can therefore be improved with the use of the LFS. This is because it asks respondents where they lived a year ago and this identifies recent migrants. The LFS can therefore provide more reliable data on where migrants actually live rather than on their intentions when they first arrive.

A methodology has been developed that adjusts the IPS data to the geographical distributions provided by the LFS (known as “calibration”) and is described in detail in the article [The use of calibration in estimating international in-migration to UK countries and the regions of England \(PDF, 43KB\)](#). The main steps are as follows:

- LFS data are used to identify the geographical distribution of recent immigrants (those that arrived in the UK within the last year) by UK constituent countries and regions
- these distributions are applied to IPS inflows to create a “control total” for each geographical area
- IPS data are calibrated to each control total

An IPS dataset is created, which has the same total inflows as the original, but the estimates by geographical area are consistent with LFS data on where recent migrants are living.

Calibration is applied to individual IPS contacts, potentially changing the weight of each contact so that regional proportions match those of the LFS. Calibration can therefore affect all IPS breakdowns (for example, citizenship) not only regional breakdowns.

Outflow data are not put through the process of calibration and remain unchanged. An assessment of the impact of these changes on the LTIM series can be seen in [Impact of revised methodologies on total international migration \(TIM\) estimates \(PDF, 77KB\)](#).

This improved methodology has been implemented back to 1999 because the scope of the original research only went back this far. Prior to this, the IPS alone was used to distribute migrants around the UK. Care therefore needs to be taken when examining detailed breakdowns of the IPS estimates before and after 1999, particularly when comparing regional or country estimates before and after this point.

## Migrant and visitor switchers

One of the main features of the IPS estimates of long-term international migration is that they are based on passengers’ intentions. The IPS classifies long-term international migrants as travellers who intend to change their country of residence for at least a year. This can be either overseas residents arriving to live in the UK, or UK residents leaving to live abroad.

Sometimes these intentions may not be realised. People who enter or leave the UK intending to be a visitor, that is, staying or being away for less than 12 months, may actually migrate for more than a year. These people are, in effect, visitors who subsequently become migrants and are referred to as “visitor switchers”. These migrants must therefore be added to the estimate of migration to make it comprehensive.

Alternatively, some people who enter or leave the UK intending to migrate (for 12 months or more), may actually stay in or leave for less than a year. These people are known as “migrant switchers” as they intended to be migrants, but were actually visitors. They need to be removed from IPS migrant flows. These adjustments improve the accuracy of the LTIM estimates.

These switchers are identified by the IPS as they complete their journey when subsequently entering or leaving the UK. The passenger is asked how long they intended to stay in the UK or overseas when they initially arrived or departed and for how long they actually remained in or out of the UK.

## Visitor switcher methodology

In response to a need for more accurate estimates of visitor switchers, new IPS questions were introduced in 2004. These questions collect data on respondents who did not intend to stay in or leave the UK for longer than a year, but subsequently did. These data are then used to provide a more informed indication of how many visitors will change their intentions and become migrants. This is an improvement to the previous methodology, which estimated how many of the potential visitor switchers would become migrants, without the additional information from the IPS.

It is known that the likelihood of a visitor changing their intentions can vary depending on their citizenship and place of last or next residence. To take these differences into account, the visitor switchers are split into four groups before any calculations are carried out: those entering the UK who are EEA and non-EEA citizens, those leaving the UK who are EEA citizens going to the EU and all “other” citizens leaving the UK going to anywhere in the world. (The EEA refers to the European Economic Area, which is the EU plus Iceland, Liechtenstein and Norway.)

For each group the following calculation is made:

$$\frac{\left( \begin{array}{l} \text{respondents who did not intend to stay in} \\ \text{or leave the UK for longer than a year, but} \\ \text{subsequently did, over previous three years} \end{array} \right)}{\left( \begin{array}{l} \text{respondents who stated an intention to stay in} \\ \text{their destination country for 6 to 12 months or} \\ \text{possibly 12 months, over previous three years} \end{array} \right)} \times \left( \begin{array}{l} \text{respondents who stated an intention to} \\ \text{stay in their destination country for 6 to} \\ \text{12 months or possibly 12 months, this year} \end{array} \right)$$

For details of the proportions of components that make up LTIM estimates, please see [Table 1.01](#) for long-term international migrants.

## Migrant switcher methodology

The new IPS questions introduced in 2004 also collect data that can help improve the estimation of the number of migrant switchers. As with visitor switchers, these questions gather information on a traveller’s completed journey, therefore allowing the estimate to be calculated using actual migrant switcher data, as opposed to just using data for those who originally intended to be migrants.

As with the calculation of visitor switchers, a fraction is produced that takes the number of migrant switchers (over the previous three years) and divides these by the number of migrants recorded by the IPS in the previous three years. This denominator is therefore the pool of travellers who could potentially become migrant switchers as they were initially recorded stating an intention to be migrants. It is produced separately for both immigration and emigration. Unlike visitor switchers, there is no distinction between citizenships or countries of last or next residence for migrant switcher calculations.

The number of migrant switchers is then removed from the estimate of Long-Term International Migration (LTIM) in the reference year as these people are not migrants. The proportion will change each year depending on the number of both migrants and migrant switchers captured by the IPS.

For details of the proportions of components that make up LTIM estimates, please see [Table 1.01](#) for long-term international migrants.

Because of the new IPS questions being introduced in 2004, a decision was made to apply the new methodology to the 2004 estimates onwards. Care therefore needs to be taken when comparing LTIM estimates before and after this year. The 2006 calendar year estimates were the first to use a full three years of data as required by the methodology as the new questions in the IPS were only introduced in 2004.

A comparison of how the fractions have changed using the previous and current methodologies is provided in Appendix C of [Impact of revised methodologies on total international migration \(TIM\) estimates](#) (PDF, 77KB).

## Asylum seekers and non-asylum enforced removals

The IPS does not interview all asylum seekers entering or leaving the UK. In order to produce LTIM estimates, we obtain data from the Home Office (as they are responsible for immigration control and applications for settlement, citizenship and asylum) on principal applicant asylum seekers and their dependants. Details can be found on the [Home Office \(UK Visas and Immigration Agency\) website](#).

Data are provided for different types of asylum seekers. This includes the number of those who applied for asylum, were refused asylum, appealed against their asylum decision, asylum seekers who were returned home and those who withdrew. These different categories dictate whether the asylum seeker is leaving or entering the UK. An adjustment for asylum seekers returned, departing voluntarily, or withdrawing their application and leaving the UK within a year of the application, is made. This therefore excludes those who are not long-term international migrants from the LTIM estimates.

Asylum applications covered by the Home Office can be identified as either “port” or “in-country”. Port asylum seekers – the minority – are those who apply at port when entering the UK. Most port asylum seekers are not captured in the IPS because they are usually escorted over the IPS counting line. An allowance is made when estimating port asylum seekers for the small number of migrants in the IPS data who give “seeking asylum” as their reason for entry and will therefore be double-counted if kept in.

In-country asylum seekers are those who enter the UK and later apply for asylum while in the UK. It is assumed that information about planned duration of stay given to the IPS interviewer is the same as that given to the Immigration Officer and, therefore, that in-country asylum seekers are unlikely to be captured as migrants in the IPS.

In summary, asylum seeker immigration figures are based on the number of people applying for asylum. These data are used to adjust the IPS estimates in order to:

- exclude those asylum seekers counted by the IPS on arrival in the UK to remove the possibility of double-counting
- allow for the small numbers of those counted in both the principal applicant and dependant applications data
- exclude those who were returned within a year of their application

Asylum seeker emigration figures are based on:

- the number who were returned to their country of origin
- the number who withdrew their application and were known to have left the UK
- a small number of applicants who had been refused asylum in the previous year (and, if appropriate, had been unsuccessful at appeal) or who had withdrawn their application and were not known to have left the UK.

The Home Office also collects data on non-asylum enforced removals – these are people who have been removed from the UK and who have not claimed asylum at any stage. They would not be interviewed by the IPS upon leaving the UK as they would not cross the sampling line. No adjustment for these people is required for inflow estimates, as they were not asylum seekers and therefore would have crossed the IPS sampling line on entering the UK.

For 2013 data onwards, it is possible to identify long-term international migrants within the data on non-asylum enforced removals. Therefore for 2013 estimates onwards, an adjustment is made to include non-asylum enforced removals in asylum seekers' emigration estimates. The approximate impact of applying the adjustment is to increase emigration estimates by 2,000 to 3,000 per year and reduce net migration by around 1%.

For 2015 data onwards, adjustments using Home Office data on people resettled in the UK under four resettlement schemes have been included within LTIM estimates. This affects the inflow and, as a result, net balance estimates for LTIM.

## Estimate of migration to and from Northern Ireland

The IPS does not sample those passengers who cross the land border between the UK (Northern Ireland) and the Republic of Ireland. In addition, no ports in Northern Ireland have historically been surveyed in the IPS, although this started at Belfast International Airport in 2009.

Family doctor registration data is the most complete source that can be used to estimate international immigration to Northern Ireland. This source gives information on an intention to stay for a period of time and covers all age groups.

The health card system records de-registrations with family doctors in Northern Ireland, while the Central Statistics Office (CSO) Ireland Quarterly National Household Survey provides the number of people moving from Northern Ireland to the Republic of Ireland. In combination, these sources are used to estimate emigration from Northern Ireland to all countries outside the UK.

These estimates are then incorporated into the LTIM estimates. A more detailed explanation of this methodology and the recent changes is available in [Improving estimates of international migration in Northern Ireland, and between the UK and the Republic of Ireland](#) (PDF, 57KB). Further information about international migration statistics for Northern Ireland is available at the [Northern Ireland Statistics and Research Agency \(NISRA\)](#).

It should be noted that since 2014, we use forecasted data provided by NISRA for quarterly LTIM estimates. This is to improve timeliness of statistical outputs. Forecasted data are replaced with final data for the annual final LTIM estimates.

## 4 . Preliminary adjustments to LTIM

To get the best overview of trends in migration, we need to look at all available data sources. In August 2019, a set of preliminary adjustments were introduced for data from year ending June 2009 to the most recent rolling year estimate. In this section we describe the preliminary adjustments for EU8 inflows and non-EU student outflows in detail. As part of the population and migration statistics [transformation journey](#) and as new sources of data become available we will continue to refine our adjustments to ensure we have the best estimate of international migration.

### Reasons for making preliminary adjustments

When we look over an extended time period (2005 to 2018) there is a divergence in what the International Passenger Survey (IPS) and Annual Population Survey (APS) tell us about long-term international migration. Research showed that [definitional and survey differences only explain part of this divergence](#).

While patterns are similar in both surveys for many country groups, research found divergences between the sources for EU migration are driven primarily by different patterns for the central and eastern European (EU8)<sup>1</sup> countries and divergences for non-EU migration are driven primarily by different patterns for Asian countries.

The most likely cause of the remaining divergence is the impact of certain groups having a higher degree of uncertainty in their intentions to move to and from the UK. This makes it more challenging to measure migration using traditional methods such as the IPS, where our estimates are dependent on the information people give us about how long they intend to move to and from the UK. For non-EU citizens we have focused only on [students](#) as this is where our previous work highlighted the largest discrepancy and we have evidence of uncertain intentions being a potential contributing factor.

To help address the impact of uncertain intentions for non-EU students at the end of their studies and for EU8 citizens moving to the UK, we apply preliminary adjustments to our LTIM estimates based on data from the Home Office, Higher Education Statistics Agency (HESA) and Department for Work and Pensions (DWP) – which tell us about people's actual behaviour. We also use census data to apply preliminary adjustments to EU8 citizens.

Our approach to these adjustments builds on our previous research:

- [2016 report](#) exploring the relationship between IPS estimates and National Insurance number (NINo) registrations
- [2017 report](#) using Home Office data to build a better understanding of international student migration
- [2018 report](#) comparing IPS estimates with Home Office data for non-EU migration

Overall, we find these preliminary adjustments only have a small impact on UK net migration, and the trends we see over time are largely unchanged, giving us confidence in our previous headline estimates.

There are limitations to these preliminary adjustments, which we will look to address as we refine them as part of the transformation programme in conjunction with our colleagues across the Government Statistical Service (GSS).

## Preliminary adjustment for non-EU student outflow estimates

The aim of the preliminary adjustment for non-EU students is to more closely align IPS estimates of non-EU former students emigrating with evidence on their actual behaviour from [Home Office Exit Checks data \(PDF, 662KB\)](#).

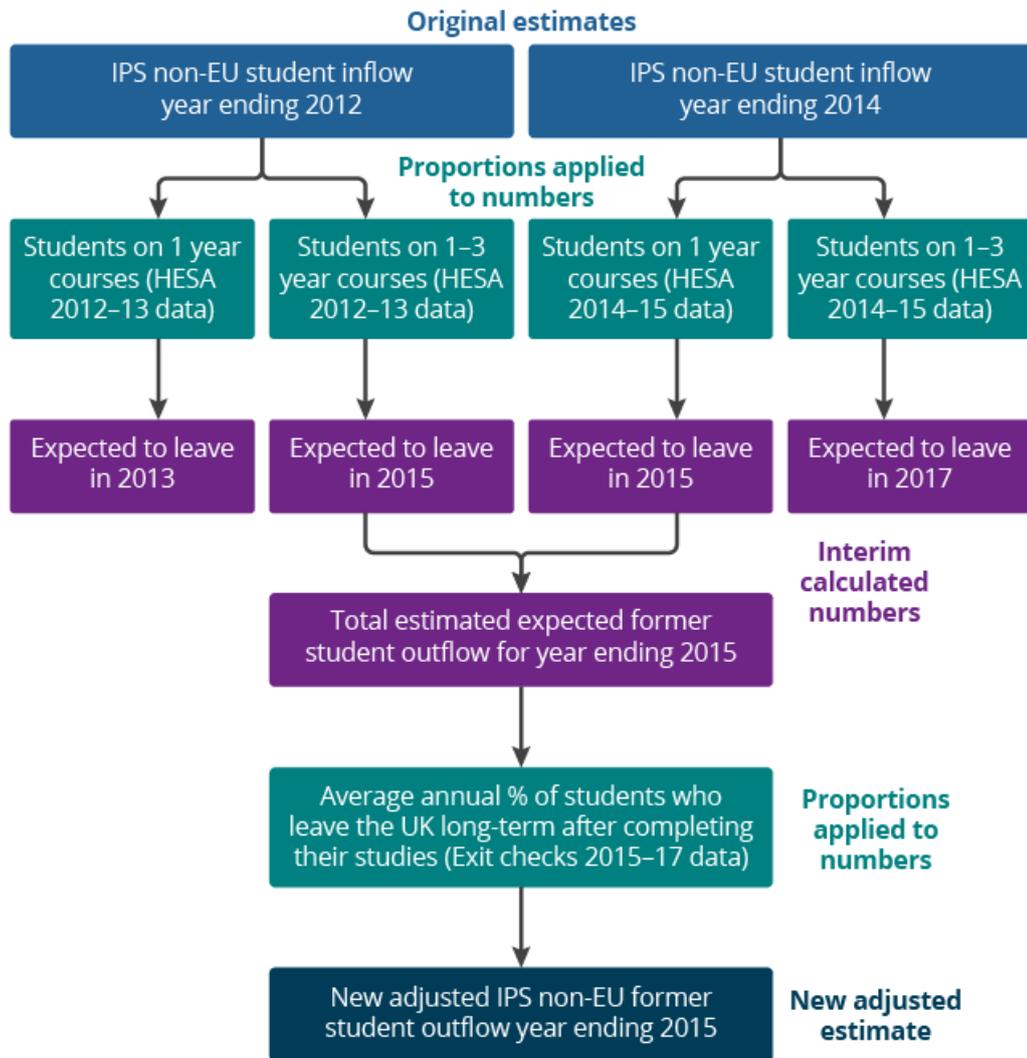
First we take the IPS student inflow estimate<sup>2</sup> and given we know that many students will not emigrate that same year, we have used Higher Education Statistics Agency (HESA) data to calculate preliminary proportions of first-year students who expect to leave the UK after a year and those who expect to leave after more than a year and less than four years.

Exit Checks data are then used to identify the proportion of students who departed the UK long-term after completing their studies. For each relevant year ending period, both proportions are applied in turn to the IPS student inflow estimate to derive a new adjusted estimate of former student outflow. Figure 2 provides a worked example of the numbers, data sources and calculations applied that make up the new adjusted former student outflow estimate for 2015.

Finally, the difference between the original IPS estimate of former student outflow and the new adjusted estimate is applied to the original overall Long-Term International Migration (LTIM) outflow estimate to create a new adjusted LTIM outflow estimate.

These same calculations are made for each rolling year and for each individual non-EU world region (see Citizenship Groupings in the [International migration – table of contents](#)). The individual non-EU world region estimates are then summed to create a new adjusted non-EU outflow, which also feeds into the non-EU net migration for each rolling year. This adjustment feeds through to adjust the non-British and All citizenships outflow and net migration estimates.

**Figure 1: Worked example calculating the new adjusted non-EU student outflow for year ending December 2015**



Source: Office for National Statistics

Given the data we have available, this preliminary adjustment has been calculated from year ending December 2012 to the most recent rolling year estimate.

Table 1 outlines each of the data sources used and main limitations in making the preliminary adjustments.

Table 1: Summary of data sources used and the main known limitations

Data source	Limitations
International Passenger Survey estimates	Former student outflow estimates are only available from 2012.  Non-EU student inflow estimate was corrected for year ending September 2016 to year ending June 2017 to account for an anomaly in the IPS data.  Intentions based sample survey data.
Home Office - Exit Checks data	Only two financial years of data (2015-2017) available within ONS.
Higher Education Statistics Agency - first year student records data	Based on domicile (country of previous residence) not nationality or citizenship.  Based only on students at Higher Education Institutions in UK. IPS respondents may include study in schools and further education.  May include students who have dropped out of their studies.

Source: Office for National Statistics

## Preliminary adjustment for EU8 inflow estimates

The aim of the preliminary adjustment for EU8 immigrants is to more closely align LTIM estimates with evidence:

- from the 2011 Census, which suggested the IPS underestimated EU8 immigration from 2005 to 2011 and adjusting the EU8 country group
- on actual behaviour as seen in DWP data

The new adjusted EU8 inflow estimates are made for each rolling year to year ending March 2016 and feed into the EU8 net migration. This adjustment feeds through to adjust the EU, non-British and All citizenships inflow and net migration estimates.

## Adjusting migration estimates to year ending December 2010 using 2011 Census data

Evidence from the [2011 Census suggested that immigration had been underestimated \(PDF, 171KB\)](#) and in 2014 we made [revisions to official net migration estimates \(PDF, 55KB\)](#). The majority of the adjustment was to account for a 250,000 underestimate of EU8 immigrants. At the time we did not revise the official immigration or emigration estimates but we now have more [evidence of the likely distribution of EU8 immigration](#) and so use 2011 Census data to make a preliminary adjustment to uplift the EU8 inflow from 2005 to year ending December 2010.

We distributed the 250,000 EU8 immigrants over time broadly proportionally to the distribution of EU8 immigrants in the official LTIM figures since 2004. However, the share was lessened in the later years to reflect the improved certainty for the estimates in those years because of changes in the IPS sample. For the latter years it is acknowledged that there may still be some missed EU8 immigrants, which may be because of underestimation of visitor switchers rather than necessarily to the IPS itself.

There are some limitations in using 2011 Census data in making the adjustments:

- the 250,000 EU8 immigration adjustment is for England and Wales only
- the 250,000 does not represent the full underestimate of the growth of the EU8-born population between mid-2001 and the 2011 Census as it only includes those migrants who were still in the UK on Census day

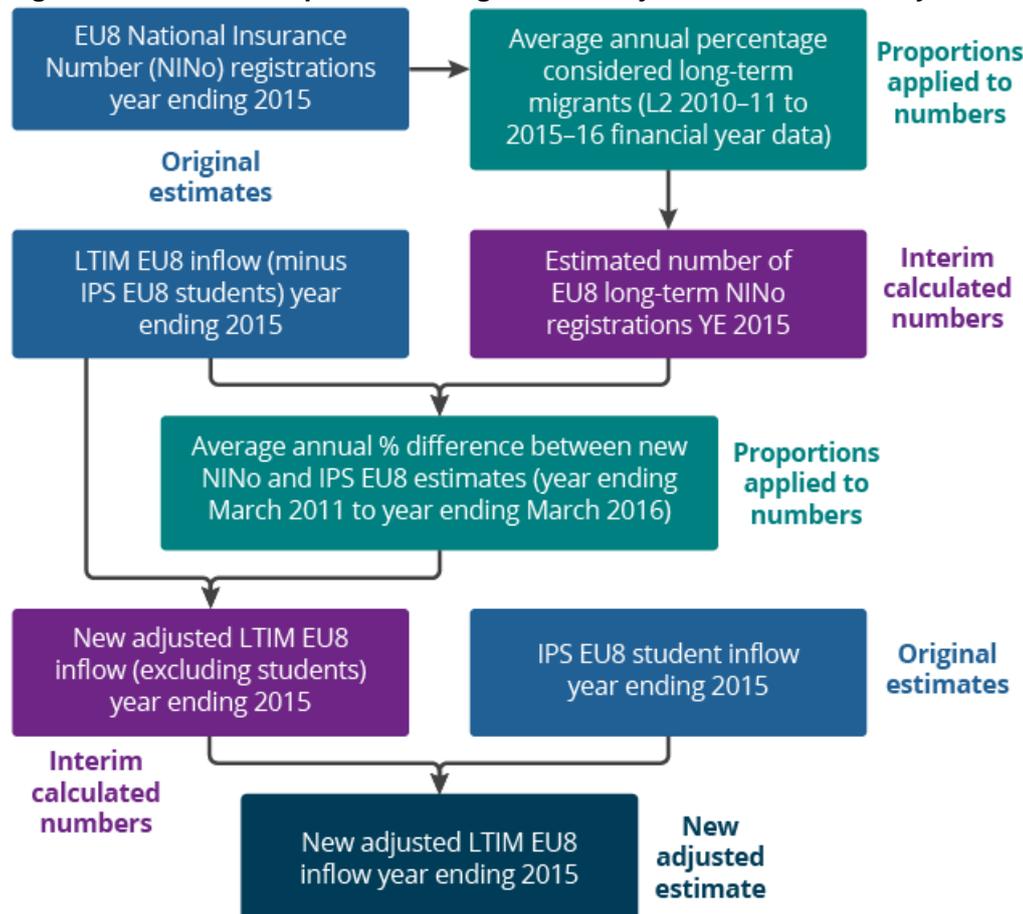
## Adjusting migration estimates to year ending March 2016 using DWP data

First, we use the DWP Lifetime Labour Market Database (L2) to calculate the proportion of EU8 citizens registering for a National Insurance number (NINo) who can be considered long-term migrants. We apply this proportion to the published number of NINo registrations to EU8 adults in the UK.

We then compare this new estimate to the IPS EU8 inflow estimate (excluding students), calculate the percentage difference and average this difference over the time periods available.

This average percentage difference is then applied to the IPS EU8 inflow (excluding students) to adjust the inflow upwards. Figure 4 provides a worked example of the numbers, data sources and calculations applied that make up the new adjusted EU8 inflow estimate for 2015.

**Figure 2: Worked example calculating the new adjusted EU8 inflow for year ending December 2015**



Source: Office for National Statistics

There are limitations to this method, which we will look to address as we refine this EU preliminary adjustment as part of the transformation programme. We anticipate we will have additional data sources and more up-to-date information available as the work progresses, which will help us refine this EU adjustment. At this early stage in our understanding we have therefore taken a very cautious approach to the adjustment and applied it from year ending March 2011 to year ending March 2016 only. From 2016 there was a change in the pattern of divergence for EU8 between the IPS and APS data, which requires further exploration.

The adjustment has been applied to LTIM minus the IPS student inflow. We recognise that some students may be included in the L2 long-term interactions group and we need to further understand this group before adding it as part of an adjustment.

The L2 allowed analysis of non-UK national adults who registered for a NINo in the UK and had interactions with National Insurance, Pay As You Earn, DWP benefit and local authority benefit systems. Interactions of more than 52 weeks across the registration year and the subsequent year could suggest that they were a long-term migrant. There are a number of known limitations of the L2 data in making the adjustments:

- L2 is a 1% sample of those with a NINo
- L2 data are only available from tax year ending 2011 up to tax year ending 2018; only complete data up to March 2016 are used in this analysis
- L2 data does not include all activities that a migrant may have, so the long-term proportions are based on the data available
- In L2, migrants are recorded in the tax year that they registered for a NINo and so includes some migrants who arrived from previous years

## Changes to preliminary adjustments

We published our first set of [preliminary adjustments](#) in the [August 2019 Migration Statistics Quarterly Report \(MSQR\)](#) and [November 2019 MSQR](#). In the [February 2020 MSQR](#), as we continue our period of development and innovation, we have made small refinements to our preliminary adjustment methods to ensure we continue to provide our best possible assessment of migration trends:

- for the EU and non-EU preliminary adjustments we aligned the adjustment to use data for each appropriate year ending period rather than rolling the same adjustment through four time periods
- recalculated the HESA, Exit Check data and revised IPS student inflow figures by world region and aggregated to non-EU rather than using a non-EU figure
- included “Other Europe” to the non-EU student emigration figure
- removed students on courses of less than one year from the denominator totals when calculating the HESA proportions
- used UK-level HESA data rather than England and Wales data
- smoothed the census EU8 adjustment over the intervening year end periods
- prioritised adjustments made using DWP data, where the EU8 adjustments using census and DWP data time periods overlapped, to avoid double counting; DWP data were prioritised as these data represent actual behaviour
- used a six-year average percentage, rather than two four-year average percentages for the L2 long-term interactions calculation

For further details of the preliminary adjustments first implemented in August 2019 see Annex B and Annex E of [Understanding different migration data sources: August 2019 progress report](#).

## Overall impact of the preliminary adjustments

Our assessment is that the preliminary adjustments have a small impact on UK net migration and the trends we see over time are largely unchanged. However, there are some different patterns for EU immigration and non-EU emigration. The preliminary adjustments made in the February 2020 MSQR and their impact are summarised in Table 2.

Table 2: Summary of preliminary adjustments made in February 2020

Preliminary adjustment	Overall impact of adjustment	Date of first and latest update to the adjustment	Data source used for adjustment	Years of data adjusted
Non-EU student outflow – to reflect uncertain intentions on likely length of stay out of the UK	Outflow increase and net decrease – non-EU and non-British (students)	August 2019 MSQR and February 2020 MSQR	Home Office Exit checks and Higher Education Statistics Agency data	YE Dec 2012 to latest rolling year
EU8 inflow – to adjust for an underestimation identified between Censuses	Inflow and net increases – EU8, EU and non-British	August 2019 MSQR and February 2020 MSQR	Census 2011	YE Jun 2009 to YE Dec 2010 (could go back to 2005)
EU8 inflow – to reflect uncertain intentions on likely length of stay	Inflow and net increases – EU8, EU and non-British	August 2019 and February 2020	Department for Work and Pensions Lifetime Labour Market Database data	YE Mar 2011 to YE Mar 2016

Source: Office for National Statistics

Table 1 in the [Provisional long-term international migration estimates](#) includes both the preliminary adjustments and original estimates.

Since we first introduced the preliminary adjustments in August 2019 we continue to review our current and possible new data sources and work to refine our method.

Your feedback is important. We want to hear what our users think about the methods we are developing and our transformation journey plans. So, during this period of development please send us your feedback so we can better understand your needs. Please email any feedback to [pop.info@ons.gov.uk](mailto:pop.info@ons.gov.uk).

## Notes for Preliminary adjustments to LTIM

1. Czechia, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia.
2. The IPS non-EU student inflow estimate was corrected in July 2018 for year ending September 2016 to year ending June 2017 to account for [an anomaly in the IPS data](#). The estimates were revised up by 33,000. This 33,000 was not broken down by world region and the world region estimates of student inflow were left unchanged. As the non-EU adjustment methodology uses IPS student inflow data by world region, the 33,000 was proportionally distributed to the world regions before being fed into the adjustment methodology.

## 5 . Assumptions made to produce LTIM

The published Long-Term International Migration (LTIM) figures are broken down to show estimates by variables such as citizenship, and age and sex. To produce estimates for each of these variables, data from the sources that contribute to LTIM also need to be broken down by the same variables.

Migrant data from the International Passenger Survey (IPS) are available broken down by each variable. Data on Northern Ireland flows and asylum seeker data are not and need to be derived using a series of assumptions. In addition, the IPS data used to calculate the visitor switcher adjustments are based on a relatively small sample size each year, but still need to be broken down in the same way.

The following tables detail how the Northern Ireland flow data, asylum seekers and visitor switcher data are broken down for each variable. It is not necessary to do further processing to form assumptions for the migrant switcher data as they are applied as a direct proportion of the IPS migrant estimates.

Table 3: Assumptions made for citizenship

<b>Source</b>	<b>Assumption made for citizenship</b>
Northern Ireland immigration data	Uses IPS immigration data constrained to NISRA family doctor registration data by age, sex, country of last residence and reason for migration
Northern Ireland emigration data	Uses 75% of the immigration distribution from Northern Ireland data and 25% of the IPS emigration distribution, constrained to total Northern Ireland emigration
Asylum seeker, non-asylum enforced removals and resettlement data	None as Home Office provides data by citizenship
Visitor switcher data	A three-year average of the visitor switcher data by citizenship is used.

Source: Office for National Statistics

Table 4: Assumptions made for country of last or next residence

<b>Source</b>	<b>Assumption made for country of last or next residence</b>
Northern Ireland immigration data	Data come from family doctor registration
Northern Ireland emigration data	Uses 75% of the immigration distribution from Northern Ireland data and 25% of the IPS emigration distribution, constrained to total Northern Ireland emigration
Asylum seeker, non-asylum enforced removals and resettlement data	Assumed to be the same as citizenship
Visitor switcher data	A three-year average of the visitor switcher data by country of last or next residence is used

Source: Office for National Statistics

Table 5: Assumptions made for main reason for migration

<b>Source</b>	<b>Assumption made for main reason for migration</b>
Northern Ireland immigration data	Data come from family doctor registration
Northern Ireland emigration data	Uses 75% of the immigration distribution from Northern Ireland data and 25% of the IPS emigration distribution, constrained to total Northern Ireland emigration
Asylum seeker, non-asylum enforced removals and resettlement data	Is always included in the “other” reason for migration category
Visitor switcher data	A three-year average of the visitor switcher data by reason for migration is used

Source: Office for National Statistics

Table 6: Assumptions made for usual occupation (prior to migration)

<b>Source</b>	<b>Assumption made for usual occupation (prior to migration)</b>
Northern Ireland immigration data	Uses IPS immigration data constrained to NISRA family doctor registration data by age, sex, country of last residence and reason for migration
Northern Ireland emigration data	Uses 75% of the immigration distribution from Northern Ireland data and 25% of the IPS emigration distribution, constrained to total Northern Ireland emigration
Asylum seeker, non-asylum enforced removals, resettlement and visitor switcher data	20% of age 16 and over assumed Professional / Managerial 20% of age 16 and over assumed Manual / Clerical 20% of age 16 and over assumed Student 40% of age 16 and over assumed Other All aged 15 and under assumed Child

Source: Office for National Statistics

IPS data are adjusted using the Labour Force Survey (LFS) distributions to more reliably distribute immigrants throughout the UK, known as calibration. The following assumptions are made for people who are not covered by the IPS or whose intended length of stay changes.

Table 7: Assumptions made for origin or destination distribution within the UK

<b>Source</b>	<b>Assumption made for origin or destination distribution within the UK</b>
Northern Ireland flow data	Northern Ireland
Asylum seeker and non-asylum enforced removals data	Distribution calculated using asylum support data (a data-set containing the number of asylum seekers receiving support and their locations), which is supplied by the Home Office
Resettlement data	Syrian Vulnerable Persons Resettlement Scheme (SVPRS) refugees: Distribution calculated using SVPRS lead local authority data supplied by the Home Office Other scheme refugees: Distributed to reflect distribution of SVPRS refugees
Visitor switcher inflow data	Use the LFS distribution to assume the migrant's destination within the UK
Visitor switcher outflow data	Calculated by using the most recent three-year average of the IPS visitor data by origin

Source: Office for National Statistics

Table 8: Assumptions made for age and sex

<b>Source</b>	<b>Assumption made for age and sex</b>
Northern Ireland flow data	Data come from family doctor registration
Asylum seeker, non-asylum enforced removals and resettlement data	None as the Home Office provides the data by age and sex
Visitor switcher flow data	Calculated by using the most recent three-year average of the IPS visitor data by age and sex

Source: Office for National Statistics

Table 9: Assumptions made for sex and marital status

<b>Source</b>	<b>Assumption made for sex and marital status</b>
Northern Ireland immigration data	Data on sex come from family doctor registration. Data on marital status use IPS immigration data constrained to NISRA family doctor registration data by age, sex, country of last residence and reason for migration
Northern Ireland emigration data	Data on sex come from family doctor registration. Data on marital status use 75% of the immigration distribution from Northern Ireland data and 25% of the IPS emigration distribution, constrained to total Northern Ireland emigration
Asylum seeker, non-asylum enforced removals, resettlement and visitor switcher data	Estimated using a three-year average of the marital status distribution taken from the IPS. Carried out separately for males and females aged 15 and over

Source: Office for National Statistics

A distribution for intended length of stay from the IPS is used for those entering and leaving the UK for work or study.

Table 10: Assumptions made for intended length of stay

Source	Assumption made for intended length of stay
Northern Ireland immigration data	Uses IPS immigration data constrained to NISRA family doctor registration data by age, sex, country of last residence and reason for migration
Northern Ireland emigration data	Uses 75% of the immigration distribution from Northern Ireland data and 25% of the IPS emigration distribution, constrained to total Northern Ireland emigration
Asylum seeker, non-asylum enforced removals, resettlement (inflow only) and visitor switcher data	25% assumed intended length of one to two years
	25% assumed intended length of three to four years
	25% assumed intended length of more than four years
	25% assumed unsure

Source: Office for National Statistics

## 6 . Provisional and final estimates of LTIM

Provisional figures allow for a timely comparison of recent migration patterns on a quarterly basis. However, these are subject to change as their calculation is based upon provisional data. The final Long-Term International Migration (LTIM) estimates are considered to provide a more reliable picture of migration and allow for annual comparisons over time.

### Provisional LTIM (rolling year quarterly)

LTIM estimates offer the most comprehensive early indication of migration flows into and out of the UK. LTIM are predominantly based on data from the International Passenger Survey (IPS). In addition, they are adjusted to account for asylum seekers (including a non-asylum enforced removals adjustment and people resettled in the UK under four resettlement schemes), migration to and from Northern Ireland and people whose length of stay changes from their original intentions.

Releases of provisional LTIM data every quarter show overall estimates of immigration, emigration and net migration by citizenship and main reason for migration, and are available for the last 10 years.

The preliminary adjustments have been applied to LTIM Tables 1 and 2 only.

### Provisional IPS (rolling year quarterly)

These estimates are based solely on data collected by the IPS. They offer an early indication of changes in patterns of long-term international migration to and from the UK. The rolling year-based estimates are produced every quarter and provide up-to-date data on citizenship and main reason for migration and are available for the last 10 years.

The preliminary adjustments have not been applied to these tables (LTIM Tables 3 and 4).

## Final LTIM calendar year (1-series and 2-series)

LTIM estimates provide the most comprehensive estimates of long-term international migration to and from the UK. The IPS provides the foundation of these estimates. Final LTIM estimates are published annually in November or December. Data are available from 1991 and include tables by calendar year, half year or mid-year.

1-series (methodology) contains tables showing the components and adjustments for LTIM and the [confidence intervals](#) and non-response associated with the IPS estimates. These are available from 1975 onwards.

2-series tables usually focus on one characteristic of migrants, from the following list:

- citizenship
- country of last or next residence
- country of birth
- age and sex
- sex and marital status
- usual occupation (prior to migration)
- main reason for migration
- origin or destination within the UK
- intended length of stay

The preliminary adjustments have not been applied to these tables.

## Final IPS calendar year (3-series and 4-series)

These estimates are published annually in November or December. They provide detailed cross-tabulated data of all available variables. Since November 2012, the data within the 3-series tables have been available from 1975 onwards (superseding the 2-series tables previously published covering 1975 to 1990).

Characteristics of migrants that are in one or more of the tables are:

- citizenship
- country of last or next residence
- country of birth
- age and sex
- sex and marital status
- usual occupation (prior to migration)
- main reason for migration
- previous main reason for migration
- origin or destination within the UK
- intended length of stay
- actual length of stay
- route

4-series tables are underlying datasets of final IPS data. These annual tables provide further breakdowns of migrant characteristics by individual country rather than country grouping. Underlying datasets are available from 2000 to the latest annual estimates (2016).

The preliminary adjustments have not been applied to these tables.

## Comparison of provisional and final data

LTIM is predominantly based on data from the IPS, supplemented by adjustments made for asylum seekers, non-asylum enforced removals, flows from Northern Ireland, and visitor and migrant switchers. Therefore, the majority of the differences between provisional and final LTIM estimates can be accounted for by the replacement of provisional IPS data with final IPS data. Nonetheless, the differences between overall provisional and final estimates of long-term international migration from the IPS are minimal. Table 11 gives an example of the specific difference between provisional and final IPS data.

Table 11: Percentage differences between provisional and final 2016 International Passenger Survey estimates, UK

Rolling year ending	Inflows (long-term migrants)			Outflows (long-term migrants)		
	Provisional IPS estimate	Final IPS estimate	Percentage difference	Provisional IPS estimate	Final IPS estimate	Percentage difference
March 2016	566,000	567,000	0.2	287,000	287,000	0
June 2016	581,000	582,000	0.2	293,000	293,000	0
September 2016	530,000	531,000	0.2	300,000	300,000	0
December 2016	525,000	527,000	0.4	315,000	316,000	0.3

Source: Office for National Statistics

Once the final IPS data are incorporated in the LTIM estimates, final data for asylum seeker flows, non-asylum enforced removals and flows from Northern Ireland are incorporated to produce the final LTIM estimates. These adjustments are typically negligible (Table 12).

Table 12: Percentage differences between provisional LTIM estimates (including final International Passenger Survey data) and final LTIM estimates, UK, 2016

Rolling year ending	Inflows (long-term migrants)			Outflows (long-term migrants)		
	Provisional LTIM estimate (including final IPS data)	Final LTIM estimate <sup>1</sup>	Percentage difference	Provisional LTIM estimate (including final IPS data)	Final LTIM estimate <sup>1</sup>	Percentage difference
March 2016	638,000	638,000	0	311,000	311,000	0
June 2016	653,000	652,000	-0.2	317,000	316,000	-0.3
September 2016	598,000	598,000	0	325,000	325,000	0
December 2016	589,000	589,000	0	340,000	340,000	0

Source: Office for National Statistics

#### Notes

1. Excluding the preliminary adjustments. [Back to table](#)

## 7 . Reliability of migration estimates

Estimates of Long-Term International Migration (LTIM) are:

- the best estimates currently available
- based on a consistent definition since 1991
- produced in accordance with the [Code of Practice for Statistics](#)

To see how these estimates of LTIM measure against the Code of Practice Pillar of Quality, please see the [Quality and Methodology Information Report for Long-Term International Migration](#).

Further information on the reliability and accuracy of Long-Term International Migration estimates, including sampling distribution, sampling error, and confidence intervals, can be found in [Long-Term International Migration estimates and their reliability and accuracy](#).

## 8 . Summary of methodological changes

Over time, small adjustments have been made in the methodology to produce Long-Term International Migration (LTIM) estimates. These reflect improvements in the components or statistical techniques used to estimate the flow of international migrants. Table 13 summarises changes and Table 14 identifies where discontinuities exist in the present time series of LTIM, from 1991 to the latest time period.

Table 13: Summary of methodological changes to components of final LTIM estimates, 1991 to 2016

<b>Period of data on which change was implemented</b>	<b>Component of LTIM affected</b>	<b>Changes made</b>	<b>Impact of changes</b>	<b>Further information</b>
2015	Asylum seekers	Including an adjustment for people resettling in the UK under various resettlement schemes.	Increases immigration by the precise number of Great Britain immigrants under the resettlement schemes.	
2013	Asylum seekers	Including an adjustment for non-asylum enforced removals within the asylum seeker adjustment.	Decreases emigration by the precise number of Great Britain non-enforced asylum removals.	
2009	International Passenger Survey (IPS)	Changes to sample design and data processing.	Survey more statistically robust, particularly for international migrants not entering the country through Heathrow.	International Passenger Survey Methodology
2008	IPS and Republic of Ireland component	IPS figures on the Republic of Ireland used in LTIM instead of data from the Central Statistics Office of Ireland.	Discontinuity between 2008 and earlier years, as revisions to the back series of final IPS data (used in final LTIM figures) have not been run. But it is thought that between 2001 and 2006, UK immigration would have increased by an average of 10,000 per year and UK emigration would have decreased by an average of 2,000 per year.	Improving estimates of international migration in Northern Ireland, and between the UK and Republic of Ireland
	IPS and Northern Irish component	Northern Irish data is calculated using data from family doctor registrations in Northern Ireland. Previously data from the IPS was used.		
2008 and back series to 1999	IPS – geographical distribution of immigrants	IPS inflow calibrated to Labour Force Survey (LFS) distribution of recent migrants.	Inflows – reduction of migrants into London and increase of migrants elsewhere. Calibration also introduced some secondary effects on other variables. Revised back to 1999 – small discontinuity with years prior to 1999.	Impact of revised methodologies on Total International Migration (TIM) estimates

2006 and back series to 2004	Visitor and migrant switchers	New IPS questions introduced to capture "actual migrants". These data inform the visitor and migrant switcher calculations.	Applied to 2004 data onwards. Total inflows – negligible impact. Total outflows – reduction of 20,000 a year in 2004 and 2005 incorporated into revisions. Small discontinuity with years prior to 2004.	
2003 and back series to 1991	Visitor switchers	Previously estimates were based just on visa data supplied by the Home Office. Now calculated by Office for National Statistics (ONS) for the first time using fixed proportions.	Between 1992 and 2001, these changes led to a reduction in the net inflow of 97,000. Incorporated into 2003 revisions.	Impact of revised methodologies on Total International Migration (TIM) estimates
2003 to 1991	Migrant switchers	Assumed that 5% of those identified by the IPS as immigrants became migrant switchers. For outflows it was assumed that 1% of emigrants returned to the UK within a year, also became migrant switchers.	Same methodology used for years 1991 to 2003.	Impact of revised methodologies on Total International Migration (TIM) estimates
2002 backdated to 1991	Asylum seekers	Improvement in the estimation of the outflow of unsuccessful asylum seekers; and an allowance for the dependants of asylum seekers not captured by other data sources.	Negligible difference to net flow of asylum seekers.	
1999 backdated to 1992	Adjustments to IPS weightings	Improvements were made to the methods used to weight up the estimate of migrants from the IPS.	The net effect of these weighting changes in 1999 was to decrease the inflow by 4.2% and increase the outflow by 3.4%. The adjusted flows for each year remained within originally published error bands for the IPS estimates.	MN No.26 International Migration 1999
1992 to 1994, revised	Adjustments to Home Office data (visitor switchers and asylum seekers)	Revisions to the previously provided visitor switcher and asylum seeker data for 1992 to 1994.	These revisions reduced the total visitor switcher inflow by 26,000 and increased the total asylum seeker inflow by 21,000 over the three-year period. The net effect on LTIM estimates was small, as it only reduced the inflow by 5,000.	Impact of revised methodologies on Total International Migration (TIM) estimates

**Table 14: Discontinuities in the component data of final LTIM estimates, 1991 to 2015**

```
.tg {border-collapse:collapse;border-spacing:0;} .tg td{font-family:Arial, sans-serif;font-size:14px;
padding:10px 5px;border-style:solid;border-width:1px;overflow:hidden;word-break:normal;border-
color:black;} .tg th{font-family:Arial, sans-serif;font-size:14px;font-weight:normal;padding:10px 5px;
border-style:solid;border-width:1px;overflow:hidden;word-break:normal;border-color:black;} .tg .tg-
cly1{text-align:left;vertical-align:middle} .tg .tg-za14{border-color:inherit;text-align:left;vertical-align:
bottom} .tg .tg-0pky{border-color:inherit;text-align:left;vertical-align:top} .tg .tg-0lax{text-align:left;
vertical-align:top}
```

Period	International Passenger Survey (IPS)	Data on flows to and from Northern Ireland	Data on flows to and from the Republic of Ireland	Visitor switchers	Migrant switchers	Asylum seekers
1991		Data from the IPS	Data from Central Statistics Office of Ireland.	Estimated using fixed proportions of European Economic Area (EEA) and non-EEA citizens to EU and Other countries.	Estimated that 5% of inflow of IPS migrants and 1% of outflow become Migrant switchers each year.	Calculated by ONS using Home Office Data.
1992						
1993						
1994						
1995						
1996						
1997						
1998						
1999	IPS inflow calibrated to LFS distribution of recent migrants.					
2000						
2001						
2002						
2003						
2004				Visitor switcher calculations based on information from new IPS questions on actual length of stay.	Migrant switcher calculations based on information from new IPS questions on actual length of stay.	
2005						
2006						
2007						
2008						
2009	IPS inflow calibrated to LFS distribution of recent migrants.	Data supplied by NISRA using family doctor registrations.	IPS data used.			
2010						
2011	Changes to sample design and data processing.					
2012						
2013						Adjustment for non-asylum enforced removals included.

Source: Office for National Statistics

Unfortunately, it is not always possible to apply changes in methodology to the entire back series. This is because of problems regarding data availability in earlier years. This has resulted in unavoidable discontinuities in the time series. Overall these discontinuities are small and it is important not to confuse the size of the revisions with the real underlying trends in LTIM.

## 9 . Related links

### [Long-Term International Migration estimates and their reliability and accuracy](#)

Methodology | Released 27 February 2020

Understanding the reliability and accuracy of Long-Term International Migration estimates, including sampling distribution, sampling error, statistical significance and confidence intervals.

### [Long-term international migration QMI](#)

Methodology | Last updated 28 November 2019

Quality and methodology information for Long-Term International Migration estimates, detailing the strengths and limitations of the data, methods used and data users and uses.

### [International migration – terms, definitions and frequently answered questions](#)

Methodology | Last updated 28 January 2019

Useful terms and definitions for long-term and short-term international migration.