

Migration Statistics Quarterly Report – Information for Users

1. Introduction

This user information document provides more details of the quality and data sources used in the Migration Statistics Quarterly Report (MSQR). This includes:

- guidance on how to interpret confidence intervals (Section 2)
- guidance on the difference between provisional and final data (Section 3)
- guidance on interpretation and comparability of the data sources (Section 4 and 5)
- information on the nature and methodology of each source, highlighting any definitions or quality issues to be aware of when interpreting the data (Section 5)

2. Interpreting confidence intervals for migration estimates

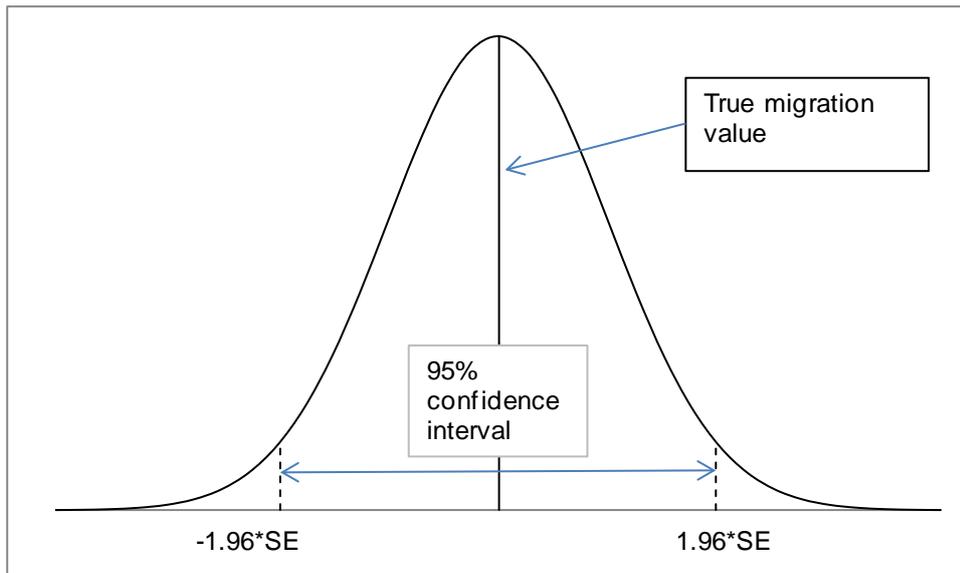
Sample surveys are used when we would like to know something about a population of individuals but asking all of them is impractical. For example we might wish to know how many people are migrating into and out of the UK each year. One way to find this out would be to ask everyone crossing the UK border about their migration intentions. However, this would be a very expensive and impractical approach. Instead a more cost effective approach is to use a sample survey.

The International Passenger Survey (IPS) interviews a sample of passengers (around 700,000 to 800,000 per year) passing through entry and exit points from the UK. This sample is used, among other things, to provide data to estimate the true number of people migrating into and out of the UK.

As with all sample surveys, the estimates produced are based on only one of a number of possible samples of passengers that could have been drawn at a given point in time. Each of these possible samples would produce an estimated number of migrants which may be different to the true value that would have been obtained if everyone passing through were interviewed.

2.1 How do we know how accurate our estimate is?

The different possible samples of passengers that could have been selected can be used to produce a sampling distribution for the figure we are trying to estimate. For example, if we are estimating immigration within a particular year, one sample may produce an estimate of 500,000, another may have resulted in an estimate of 515,000 and another may have produced an estimate of 490,000. If we could take a lot of samples like this and plot the estimates from each sample we would produce a chart of the sampling distribution of our estimate. Assuming that the estimation method we use to produce the estimate for each sample is unbiased, the shape of the plot would follow the widely recognised normal distribution, where the most likely estimates of the true value are centred towards the middle and the least likely estimates are at the “tail ends”.



In practice, in order to estimate the true value for a specific population of, say, the number of immigrants, we take one sample and produce a single estimate. We assume that the sampling distribution of our estimate would approximately follow a normal distribution, centred on the true value, and we can use a statistical formula to calculate the standard error (SE) around the estimate. This is a measure of the accuracy of the estimate.

As illustrated on the diagram above, 95% of the estimates would lie within 1.96 multiplied by the true standard deviation of the sampling distribution. This also works the other way round, so we can say that for 95% of random samples taken, our estimate will be no more than 1.96 multiplied by the standard error of that estimate away from the true value that we are trying to estimate. Using this knowledge, we can calculate a confidence interval around our estimate.

Confidence intervals are indicators of the extent to which the estimate may differ from the true value. The larger the confidence interval, the less precise is the estimate. The central value within the confidence interval is the best estimate of the true value. The confidence interval around the estimate captures the uncertainty of the estimate, and gives an interval within which we can say that there is a high probability that the true value lies.

At the 95% confidence level, over many repeats of the sample under the same conditions, we would expect the confidence interval to contain the true value 95 times out of 100. Equivalently, we can say that there would be a 1 in 20 chance that the true value would lie outside of the range of the 95% confidence interval.

2.2 Interpreting change

Changes in the estimates from the IPS from one period to the next may occur simply by chance. In other words, the change may be due to which individuals were selected to answer the survey, and may not represent any real-world change in migration.

Statistical tests can be used to determine whether any increases or decreases that we see in the estimates from the IPS are due to chance, or whether they are likely to represent a real change in migration patterns. These tests examine the difference between two estimates and calculate a confidence interval of the difference. If this interval contains zero then the

difference is not statistically significant. If the tests show that the changes are unlikely to have occurred through chance alone, and are likely to reflect a real change, then the change is described as being statistically significant. The usual standard is to carry out these tests at the 5% level of statistical significance. This means that we would expect only 1 out of 20 statistically significant differences to have occurred purely by chance.

Users will observe that the confidence intervals become larger for more detailed estimates (such as citizenship by reason for migrating). This is because the number of people in the sample who have these specific characteristics (such as EU8 citizens arriving to study in the UK) is smaller than the number of people sampled within a category at a higher level (such as the number of total EU citizens arriving to study in the UK). Therefore users of migration statistics are advised to use the highest level break down of data where possible.

When using estimates of detailed characteristics, users are advised to be cautious about drawing conclusions regarding changes in figures from one time period to the next. To assist with this, shading has been applied to cells within the published tables to indicate where a change is statistically significant from the previous year. This means that the change is likely to reflect a real change in migration patterns rather than occurring as a result of the sampled passengers being different in characteristics by chance.

Long-Term International Migration (LTIM) estimates are calculated from IPS estimates with additional data to account for flows of asylum seekers, non-asylum enforced removals, flows from Northern Ireland and visitor and migrant switchers. LTIM estimates are shown with the confidence intervals for the IPS component of the estimate in order to give users an indication of the robustness of the estimate. Similarly the uncertainty associated with the IPS component of the estimate is used to calculate statistically significant changes in the LTIM estimates. However, when interpreting these confidence intervals and statistically significant changes, users should be aware that there is no method for quantifying the error associated with the non-survey components of LTIM, which is unlikely to be random.

2.3 Revisions to net migration estimates

In April 2014, we published a [report](#) on the quality of LTIM from 2001 to 2011. This review found that prior to improvements on the IPS in 2009, net international migration was likely to have been underestimated during the middle part of the decade. Net migration estimates for 2001 to 2011 have been revised, and [guidance](#) to users on interpreting these revised estimates alongside published LTIM estimates has been published.

3. Understanding provisional and final estimates of long-term international migration

The estimates presented by us contain final LTIM and IPS data for all quarters to December 2014 and provisional data for March and June 2015. The final LTIM data for 2014 were released in November 2015. Final LTIM data for 2015 will be published in December 2016.

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 LTIM estimates are considered to provide a more reliable picture of migration and allow for annual comparisons over time.

Estimates of LTIM are about 90% 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 1 shows the specific difference between provisional and final IPS data for years ending March, June, September and December 2014.

Table 1: Percentage differences between provisional and final IPS estimates

Rolling Year Ending	Inflows			Outflows		
	Provisional IPS estimate	Final IPS estimate	Percentage Difference	Provisional IPS estimate	Final IPS estimate	Percentage Difference
March 2014	519,000	510,000	-1.7	297,000	294,000	-1.0
June 2014	539,000	530,000	-1.7	303,000	299,000	-1.3
September 2014	578,000	569,000	-1.6	305,000	302,000	-1.0
December 2014	592,000	583,000	-1.5	300,000	297,000	-1.0

Source: Office for National Statistics – International Passenger Survey

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. For example, Table 2 shows that differences are small between the provisional LTIM figures (including final IPS data) for year ending December 2014 published in May 2015, and the final LTIM figures for the same period published in November 2015.

The differences for the emigration estimates are slightly higher than for the immigration estimates, because a change has been introduced to the LTIM methodology for final 2013 estimates to include an additional small adjustment for non-asylum enforced removals (see [LTIM Methodology](#) document). This adjustment will appear in all provisional and final estimates from 2013 onwards.

Table 2: Percentage differences between provisional LTIM estimates (including final IPS data) and final LTIM estimates

Rolling Year Ending	Inflows			Outflows		
	Provisional LTIM estimate (including final IPS data)	Final LTIM estimate	Percentage Difference	Provisional LTIM estimate (including final IPS data)	Final LTIM estimate	Percentage Difference
March 2014	552,000	552,000	0	316,000	316,000	0
June 2014	575,000	574,000	-0.2	320,000	320,000	0
September 2014	615,000	615,000	0	324,000	323,000	-0.3
December 2014	632,000	632,000	0	320,000	319,000	-0.3

Source: Office for National Statistics – Long-Term International Migration

The figures for LTIM published in this edition of the MSQR are final for estimates up to the year ending December 2014, and provisional for the years ending March and June 2015.

4. Interpreting migration data sources

There is a range of different data sources used in the MSQR and it is important to understand what each source relates to and the ways in which it may be interpreted.

4.1 Classes of migration information

There are three broad classes of international migration information in the MSQR: flows, registrations and stocks.

- a) Flows. These are direct measures of migration – that is how many people are moving from one place to another. Information on international flows is available in two ONS datasets: Long-Term International Migration (LTIM) and International Passenger Survey (IPS) estimates of long-term international migration. IPS data are available in further detail than LTIM data. Note that both these datasets only consider migrants who stated that they were intending to stay in or be absent from the UK for a period of at least 12 months.
- b) Registrations. These are measures of the number of people applying for and/or being granted permission to work or stay in the UK, including Department for Work and Pensions (DWP) information on National Insurance number (NINo) allocations to adult overseas nationals, and the Home Office's data on visas, asylum and grants of settlement.
- c) Stocks. These are measures of numbers of people resident in the UK. Stocks information is available in ONS's and National Records of Scotland's (NRS's) data on population by country of birth and nationality. Stocks data are published annually in August and are included in the August MSQR.

4.2 Comparing International Passenger Survey (IPS) estimates with Long-Term International Migration estimates

The provisional quarterly LTIM estimates, which were introduced to the MSQR in August 2010, can be compared directly with the annual LTIM estimates published each November. For data published from February 2012 onwards, provisional LTIM figures are available in two tables for citizenship and main reason for migration.

The most timely cross-tabulated data are still the provisional IPS estimates. The IPS table 'citizenship by main reason for migration' provides valuable information about migration patterns into and out of the UK, but this level of detail is not available for the additional adjustments that are applied to LTIM estimates. Particular care is needed when comparing these with Long-Term International Migration (LTIM).

The IPS is the main component of LTIM but does not take into account adjustments for:

- people whose length of stay changes from their original intentions,
- additional information on international migration to and from Northern Ireland
- asylum seekers, and
- non-asylum enforced removals.

The IPS is supplemented by these adjustments, resulting in LTIM estimates.

4.3 Comparing flows, registrations and stocks data

Flows measure all people who state their intention to move for 12 months or more. However, stocks are based on the resident population and are measured from the Annual Population Survey, which covers households only and not residents living in communal establishments.

Data on flows, registrations and stocks may display apparently contradictory trends.

For example, it may be that the LTIM data indicate steady numbers of immigrants, but the NINo statistics show an increased number of successful registrations. However, the LTIM data describe people stating an intention to stay at least a year, whereas the NINo statistics include people who came to work in the UK for a short period of time (for example for a summer job) and then left again. In addition, NINo allocations do not necessarily reflect a recent move to the UK at all, as an overseas national may already have been in the UK for several years (for example as a student or a dependent) before they decide to seek employment.

Alternatively, the LTIM inflows and registrations data may suggest downward trends while the stock of people born outside the UK has gone up. This can be explained by a situation as follows. Assume a starting point of 0 people from a particular country of birth in the UK. If 100,000 such people enter the UK in the first year (and all stay) but in the next year the inflow halves so only 50,000 enter (and all stay), the total stock would have risen to 150,000.

In other words, stocks of people born outside the UK can continue to rise despite reduced inflows, and only go down if the combined totals of emigration and deaths exceed immigration.

4.4 Stocks data by country of birth and nationality

The population by country of birth and nationality data have a link with migration but are only partly influenced by current migration trends.

People born overseas include recent migrants but also people who have lived in the UK for decades, many of whom now have British nationality. There are also people who were born overseas but have always been British nationals – for example, the children of armed forces personnel who were living abroad at the time of the birth.

Similarly, people of non-British nationality may have been in the UK for decades, or may have been born in the UK to non-British parents and have always lived in the UK.

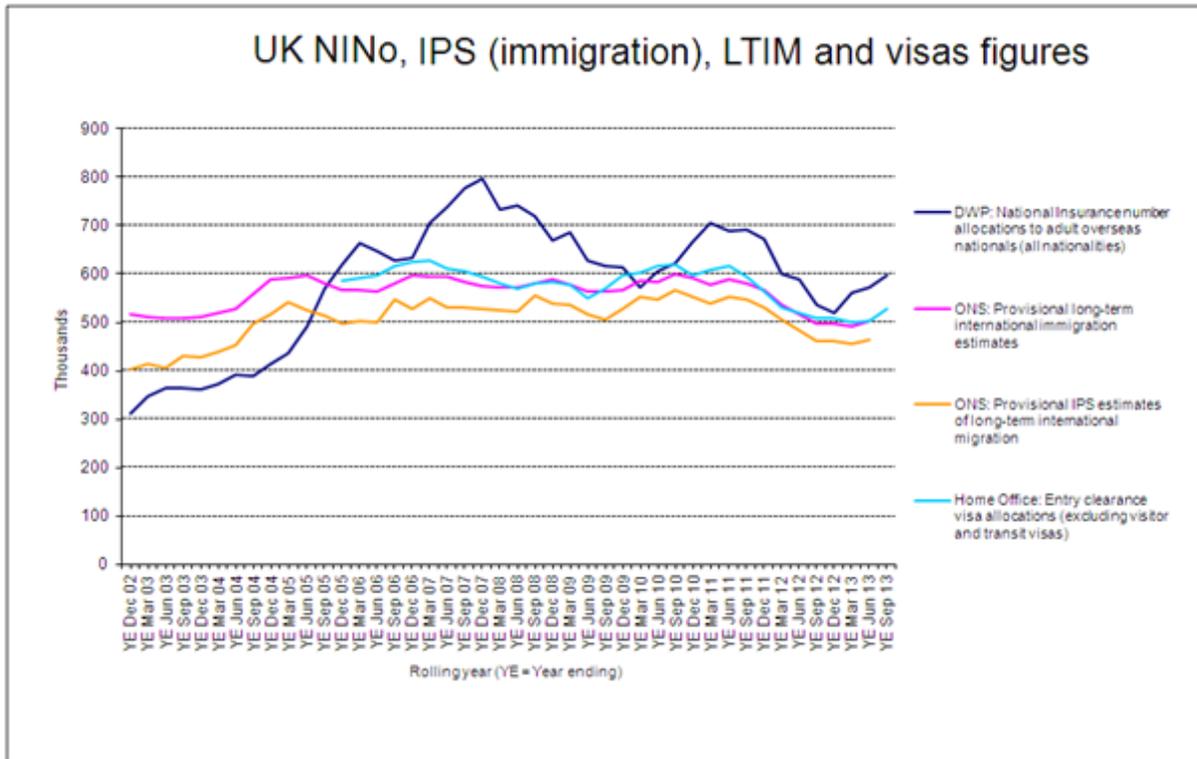
Therefore just because someone was born abroad or is not of British nationality does not necessarily mean they are what many people would consider to be an “immigrant”.

Further information on interpretation and comparison of international migration flows and stocks data sources is available in the following paper: [Estimating International Migration: An exploration of the definitional differences between the Labour Force Survey, Annual Population Survey, International Passenger Survey and Long-Term International Migration](#)

5. Comparing migration data sources

Our quarterly publication, the Migration Statistics Quarterly Report (MSQR) describes a range of data sources which reflect different aspects of migration. Figure 1 draws four key sources of quarterly immigration data together, using an example of data published in February 2014.

Figure 1: Measures of immigration to the UK, 2002 to 2013



Sources: ONS, Home Office, DWP

Notes:

1. Up to YE Dec 09 the line for total long-term international migration values is derived from biannual data (YE Jun and YE Dec) only.
2. All statistics in this graph are National Statistics.

The different sources of migrant statistics (Figure 2) provide a useful comparison for LTIM, however they cover different groups of people and so differences between them are to be expected. This Venn diagram shows the main similarities and differences between the three data sources.

There are exceptions to these main differences, mainly concerning small groups of migrants. These are detailed in Table 3.

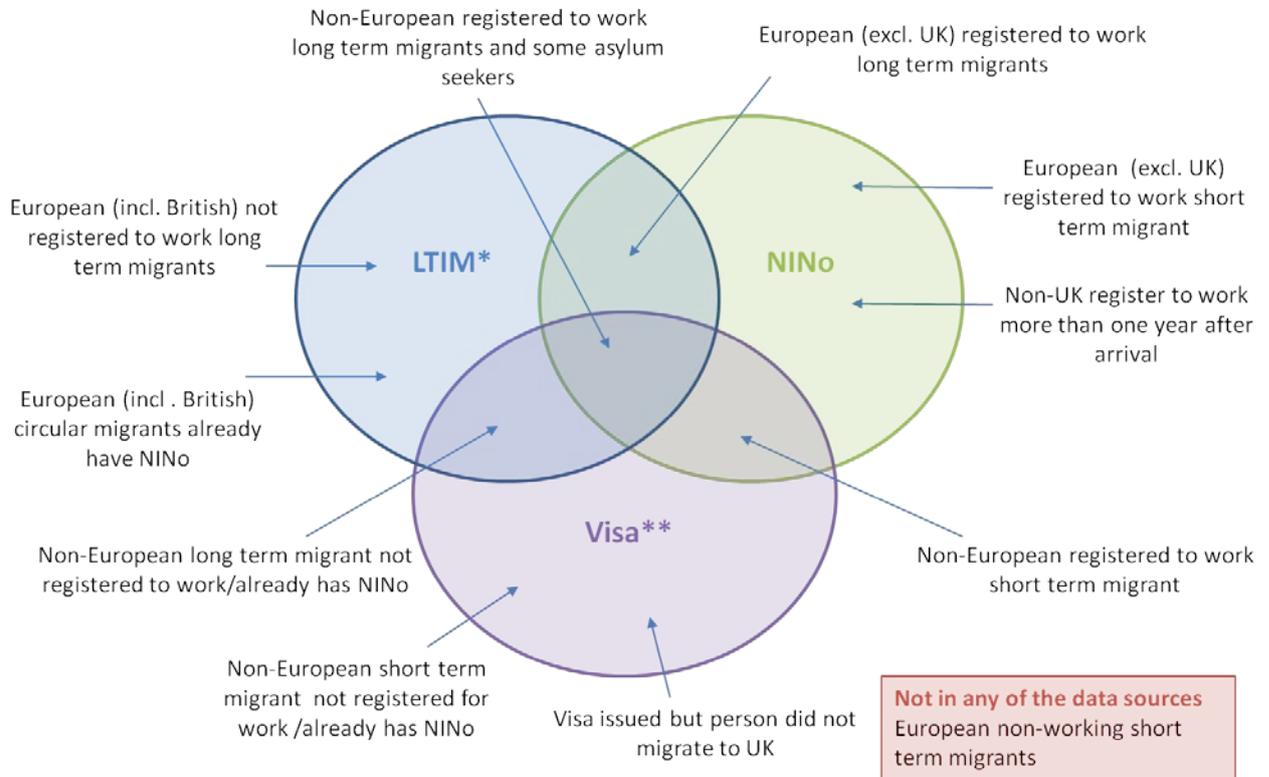
The Venn diagram compares sources within the 12 month reference period. When comparing LTIM with other sources it must be noted that, particularly with NINOs, migrants may not be captured in the comparison source in the LTIM reference period,

For example, a migrant may have arrived in September 2013 and been counted as a migrant by LTIM. They register for a NINo in November 2014, and so were not counted in NINo registrations until the following year.

Figure 2: Comparison of coverage of MSQR data sources

Which different migrant groups are counted by MSQR data sources?

Within a twelve month period



- “European” Includes migrants from European Economic Area (EEA) countries and Switzerland.
- * LTIM records main reason for migrating but not all reasons, for example someone arriving as a student could go on to apply for a NINo in order to do some part-time work. In this example, LTIM would record a student and the student would also be counted in NINo registrations.
- ** Visas excluding visas for visit or transit.

Table 3: Detailed explanation of data sources:

This table shows which data sources cover which group of migrants.

	LTIM	Visa	NINo
Long-term international migrants	Counted on the basis that they intend to stay for 12 months or more. Adjustment is made for those who changed their intention.	Those who require a visa (ie non EEA/Swiss) are included.	Those who register to work are included.

Short-term international migrants	Not included.	Those that require a visa (ie non-EEA/Swiss) are included.	Those who register to work are included.
Asylum seekers (AS)	Captured in HO data. Since November 2014, LTIM estimates also take account of non-asylum enforced removals.	May capture someone who arrives with a visa and later goes on to claim asylum.	If asylum is granted within a year of arrival, AS may be captured in NINo records for the reference year. If asylum is granted after a year (or application takes more than a year, which allows AS to work before being granted asylum) AS will be captured in NINo records but outside the reference year.
Applied for visa but didn't travel	Not included.	Included, although very small numbers.	Not included.

Summary of datasets used in Migration Statistics Quarterly Report

Dataset	Provisional Long-Term International Migration (LTIM)
Data category	Flows
Producer	ONS
Release frequency	Provisional rolling annual estimates are released quarterly – they were first published in August 2010 and include overall immigration, emigration and net migration only. In February 2012 this was expanded to include citizenship and main reason for migration. Rolling annual data are used to ensure that estimates are sufficiently robust and to smooth the seasonality of the data.
Description	Estimates of total long-term international migration to and from the UK. IPS estimates (see below) are the prime source of data but they are supplemented with data on asylum seekers and people whose length of stay has changed from their original intentions. In addition they use a different data source for figures on the number of international migrants entering and leaving Northern Ireland.

	<p>Figures for previous years were revised in November 2009. In addition the methodology for estimating flows from 2008 onwards is different to that used for earlier years. For further details please see Improving estimates of international migration in Northern Ireland, and between the UK and Republic of Ireland.</p>
Geographic coverage	UK
Lowest geographic level	Country / region
Underlying data sources	International Passenger Survey (IPS), Labour Force Survey (LFS), asylum seeker data from the Home Office, migration data from the Northern Ireland Statistics and Research Agency (NISRA).
Relevant definitions	Citizenship is defined according to the passport that IPS survey respondents state that they hold. It does not refer to any other passport(s) that migrants of multiple nationalities may hold.
Notes on quality	<p>As they are based on a sample survey, IPS estimates of migration are subject to sampling error. To help the interpretation of the estimates we test the statistical significance (at the 5% significance level) of changes in the IPS migration estimates.</p> <p>LTIM figures are derived from a range of sources – survey and administrative – and exact sampling errors are not available. However, as the IPS estimates are the predominant component of LTIM then for the MSQR we consider a change in an LTIM estimate to be significant if the change for the underlying IPS estimate is significant. This affects the way the estimates are described in the text:</p> <ul style="list-style-type: none"> • In cases where an LTIM estimate is not considered statistically significantly different from a year earlier, we indicate this. • In cases where an LTIM estimate is considered statistically significantly different from a year earlier, we describe the change. <p>Note that these comparisons are only made where an equivalent LTIM value from a year earlier exists.</p> <p>We also produce final LTIM estimates. There may be small differences between the provisional and final LTIM estimates – these are explained in the LTIM Frequently Asked Questions and Background Notes, published alongside the data.</p>
Link to product and more information	LTIM Summaries and Publications and LTIM data tables (final) and LTIM latest provisional estimates .

Dataset	Provisional International Passenger Survey (IPS) estimates of long-term international migration
Data category	Flows

Producer	ONS
Release frequency	Quarterly
Description	<p>This is the IPS component of international migration, so not the total picture – see notes on quality.</p> <p>Provisional rolling annual IPS estimates of international migration inflows, outflows and net flows are released quarterly, and are broken down by citizenship (covered in the MSQR) and reason for migration. Following a consultation held in 2014, from February 2015 the quarterly estimates have been produced on both old and new country groupings. These new country groupings are published for IPS estimates only (not LTIM).</p> <p>ONS also produces final IPS estimates, which are used in the final Long-Term International Migration data. There may be small differences between the provisional and final IPS estimates – these are explained in the LTIM Frequently Asked Questions and Background Notes, published alongside the data. Final IPS tables on citizenship, country of birth and country of last or next residence were produced for the first time on the new country groupings in November 2014.</p>
Geographic coverage	UK
Lowest geographic level	UK
Underlying data sources	IPS
Relevant definitions	<p>Citizenship is defined according to the passport survey respondents state that they hold. It does not refer to any other passport(s) that migrants of multiple nationalities may hold.</p> <p>The IPS estimates are based on people moving into or out of the UK for a period of at least 12 months, based on their stated intentions when they are surveyed.</p>

Notes on quality	<p>IPS estimates are not a complete measure as they do not include asylum seekers and people whose intended length of stay has changed from their original intentions. Compared with the Long-Term International Migration data they also use a different data source for figures on the number of international migrants entering and leaving Northern Ireland.</p> <p>As they are based on a sample survey, IPS estimates of migration are subject to sampling error. To help the interpretation of the estimates we test the statistical significance (at the 5% significance level) of changes in the IPS migration estimates. This affects the way the estimates are described in the MSQR:</p> <ul style="list-style-type: none"> • In cases where an IPS estimate is not statistically significantly different from a year earlier, we usually indicate this. However, in cases where the difference between the two estimated values is very small we may alternatively describe them as “similar”. • In cases where an IPS estimate is statistically significantly different from a year earlier, we describe the change.
Link to product and more information	The latest IPS data tables can be found alongside the LTIM tables.

Dataset	Population by country of birth and nationality from the Annual Population Survey (APS)
Data category	Stocks
Producer	ONS
Release frequency	Annually (August)
Description	Estimates of population by country of birth and nationality, based on responses to the APS.
Geographic coverage	UK
Lowest geographic level	Local authority
Underlying data sources	APS
Relevant definitions	Country of birth and nationality are as stated by the respondents to the APS.
Notes on quality	<p>APS does not sample communal establishments.</p> <p>As they are based on a sample survey, APS estimates are subject to sampling error. To help the interpretation of the estimates ONS publishes confidence intervals alongside the estimates.</p>
Links to product and more information	<p>Population by Country of Birth and Nationality</p> <p>Data for Scottish council areas, published by NRS:</p> <p>National Records of Scotland Population by Country of Birth and Nationality</p>

Dataset	National Insurance numbers (NINOs) allocated to adult overseas nationals entering the UK
Data category	Inflows / Registrations
Producer	DWP
Release frequency	Quarterly
Description	A measure of NINOs registered to adult non-UK nationals entering the UK
Geographic coverage	UK
Lowest geographic level	Local authority
Underlying data sources	National Insurance Registration System (NIRS)
Relevant definitions	NINOs are required by non-UK nationals for employment (including self-employment), benefit and tax credit purposes in the UK
Notes on quality	<p>Comprehensive measure of adult overseas nationals entering the UK and registering for a NINo irrespective of length of stay. The series includes short-term migrants but excludes migrants who do not register for a NINo (such as those studying, or dependants).</p> <p>The statistics refer to date of NINo registration, not date of arrival in the UK.</p>
Link to product and more information	National Insurance Number Allocations to Adult Overseas Nationals entering the UK

Dataset	Internal migration within the UK (previously referred to as Internal migration by country/region for the UK). This was last included in the MSQR in May 2012.
Data category	Flows (but note that this is internal flows only, not international flows)
Producer	ONS
Release frequency	Annual (June)
Description	Counts of numbers of NHS patients moving between countries / regions of the UK, based on data from the National Health Service Central Register (NHSCR).
Geographic coverage	UK
Lowest geographic level	Country / Region
Underlying data sources	NHSCR
Relevant definitions	
Notes on quality	<p>This source is an indicator of movements around the UK but is not a comprehensive measure of migration, as people may not notify the NHS when they change address, or may not be registered with a GP at all.</p> <p>The data indicate movements between countries/regions, but not the number of moves within each country/region.</p>
Link to product and more information	Migration within the UK

Dataset	Labour Force Survey
Data category	Stocks
Producer	ONS
Release frequency	Monthly (rolling 3 month average time period)
Description	Provides estimates for those aged 16 and over on various aspects of the UK's labour market activity. For example, employment, unemployment, economic inactivity and redundancies.
Geographic coverage	UK
Lowest geographic level	For employment, unemployment and economic inactivity, estimates are available for countries of the UK. Further breakdown to regions and local authorities are available for England and Wales, and council areas for Scotland.
Underlying data sources	The Labour Force Survey
Relevant definitions	Economically inactive people are those without a job who have not actively sought work in the last 4 weeks, and/or are not available to start work in the next 2 weeks. Those who are unemployed have actively sought work in the last 4 weeks and are available or waiting to start a job in the next 2 weeks.
Notes on quality	ONS does not recommend making single month comparisons. The estimates are designed to compare non-overlapping 3 month average time periods.
Link to product and more information	Labour Market Statistics

'A guide to Home Office administrative datasets and their coverage is given in the User Guide to Home Office Immigration Statistics
<https://www.gov.uk/government/publications/user-guide-to-home-office-immigration-statistics--9>

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Home Office

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