

Statistical Evidence on counting the population

National Statistician's Submission to the
Treasury Sub-Committee Inquiry into Counting
the Population

Contents

Summary

1 Uses of population statistics

- 1.1 Main uses and users
- 1.2 How well user needs are met
- 1.3 Effects of inaccuracies or uncertainties
- 1.4 Engaging with stakeholders

2 Current methods and sources

- 2.1 Methods used
 - 2.1.1 Estimating population
 - 2.1.2 National population projections
 - 2.1.3 Sub-national population projections
 - 2.1.4 Migration
- 2.2 Sources currently used
 - 2.2.1 Uses and timeliness of Census information
 - 2.2.2 Post surveys
 - 2.2.3 Population surveys
 - 2.2.4 NHS registers
 - 2.2.5 Fertility and mortality
- 2.3 UK comparisons
- 2.4 International comparisons

3 Issues in producing population statistics

- 3.1 Concepts and definitions
- 3.2 Is the estimation methodology appropriate?
- 3.3 Reliability of available sources
- 3.4 Accuracy of population projections
- 3.5 Revisions policy

4 Alternative sources

- 4.1 National insurance registers
- 4.2 Pupil and student information
- 4.3 Local authority information
- 4.4 Migrant registration
- 4.5 E-Borders
- 4.6 National surveys

5 Planned work for 2008 to 2012

- 5.1 Improving population and migration statistics
 - 5.1.1 Short term migration estimates
 - 5.1.2 Access to administrative records
 - 5.1.3 Survey enhancements
 - 5.1.4 Statistical modelling
 - 5.1.5 Coherent reporting
- 5.2 2011 Census preparation
 - 5.2.1 Matching population definitions to user needs
 - 5.2.2 Census Test
 - 5.2.3 Census design and questions
 - 5.2.4 Coordination of the Census across the UK
 - 5.2.5 Improving coverage
 - 5.2.6 Improving response rates
 - 5.2.7 Response estimation
 - 5.2.8 Census estimation in 2011
 - 5.2.9 Census outputs

6 Population Statistics in 2013 and beyond

- 6.1 Future of the Census
- 6.2 Population registers
- 6.3 Plans to consult stakeholders

Annex A Recommendations of the Inter-departmental Task Force on Migration Statistics

Summary

This submission provides evidence on the statistical issues relevant to the Treasury Sub-Committee's inquiry into counting the population. The issues covered are as follows:

Uses of population statistics (Section 1)

- With increasing population mobility, it is essential to have relevant, accurate and timely population statistics. They provide the evidence base for managing the economy, developing policies and allocating resources for service delivery.
- These statistics have assumed increased importance for macro-economic policy. Population estimates are crucial for judging the size of the potential labour supply and therefore the extent to which the economy can grow in a non-inflationary way.

Current methods and sources (Section 2)

- National Statistics on population are focused on usual residents in each geographic area. They are produced by combining the best possible information currently available, to high quality standards. They are based on internationally recognised and transparent methods that are peer reviewed by external experts.
- By combining sources they have real strengths compared with those statistics that, for example, are based on National Insurance registers or the Worker Registration Scheme that only record migrants coming in to the UK but not those going out.
- Most countries produce annual population estimates and regular projections to similar levels of quality and coverage. Population statistics in England and Wales compare well with those in other countries.
- Census estimates are essential as these provide a benchmark and anchor for population estimates and projections in the years between censuses.

Issues in producing population statistics (Section 3)

- In a period of significant population change and individual mobility, users are seeking:
 - Estimates of a broader range of population statistics and indicators (e.g. short term migrants, levels of population turnover);
 - More accurate counts of the numbers of migrants entering and leaving the UK; and
 - More accurate counts of local populations.
- Population estimates and projections rely on information about births, deaths and migration. Registration of births and deaths occurring in the UK is recognised to be of high quality. The largest area of uncertainty

surrounds migration, for which there is no registration system. For this reason, there is no comprehensive count of the numbers nationally or locally.

- Estimates of international migration rely, to a substantial extent, on the International Passenger Survey. National figures have relatively small levels of uncertainty. At local levels, individual estimates are subject to greater levels of uncertainty.
- Levels of internal migration are substantial. At the level of geographic detail at which population estimates are required the use of administrative registers is essential. The timeliness and coverage of existing registers is variable. Although NHS patient registers provide the best fit to usually resident populations, they have recognised limitations (e.g. list inflation and delays in identifying moves among young, fit population groups).

Alternative sources (Section 4)

- There are a number of alternative sources of information that have the potential to improve estimates of numbers of both internal and international migrants. These include administrative sources such as National Insurance records, Patient Register data, the School Census, information on students in higher education, e-Borders and the Worker Registration Scheme.
- To fulfil this potential will require:
 - agreement with the Government Department responsible;
 - investment to ensure that migrant information can be identified accurately; and
 - Parliamentary approval, where it does not already exist, for data sharing under the Statistics and Registration Services Act 2007.
- ONS is also investigating the improvements needed to surveys and looking at alternatives where necessary (e.g. port surveys, communal establishment surveys)

Planned work for 2008 to 2012 (Section 5)

- Planning for 2011 Census is in train, focusing on the need for accurate population figures.
- In May 2006, the Inter-Departmental Task Force on Migration Statistics was set up by the National Statistician to recommend timely improvements that could be made to estimates of migration and migrant populations in the United Kingdom, both nationally and at local level. The Task Force report was published in December 2006. Some of the recommended improvements have already been made. Delivery of further, more substantive improvements is scheduled in each of the years 2008 to 2012. However, the problems identified cannot be solved by ONS alone:

- Support is being sought across Government for improving access to and quality of administrative data and for funding of new survey collections and methods.

Population Statistics in 2013 and beyond (Section 6)

- ONS has set out a vision for an integrated population statistics system that would bring together survey and administrative sources. The need for future Censuses will be assessed within this framework. ONS will next year be initiating a project to review the needs for a 2016 census and alternatives to a census for 2021.

1 Uses of population statistics

1.1 Main uses and users

Understanding the size and characteristics of the population and how it is changing is important to our understanding of society and the economy. It is essential to have relevant, accurate and timely migration and population statistics to provide the evidence base for managing the economy, developing policies and allocating resources for service delivery.

Population estimates and projections are used for planning, resource allocation, business decisions and a broad range of public policy purposes. They provide essential contextual information for research and analysis and in calculating rates for key demographic measures (such as fertility rates and dependency ratios) and economic indicators such as employment rates. With increasing mobility population and migration statistics have assumed increased importance for macroeconomic policy. They are crucial for judging the size of the potential labour supply and therefore the extent to which the economy can grow in a non-inflationary way.

A key use of the population estimates and projections is in funding formulae. The Department for Communities and Local Government (for England), the Scottish Government and Welsh Assembly Government (for Wales) use these data in local government settlements. Population projections are similarly used in the resource allocation formula for the NHS in England by the Department of Health. Health allocations in Scotland make use of population estimates and those in Wales make use of the Census.

Population projections play a key role in the Government's Long-term Public Finance Report, published annually by HM Treasury, and in the development of pension policies.

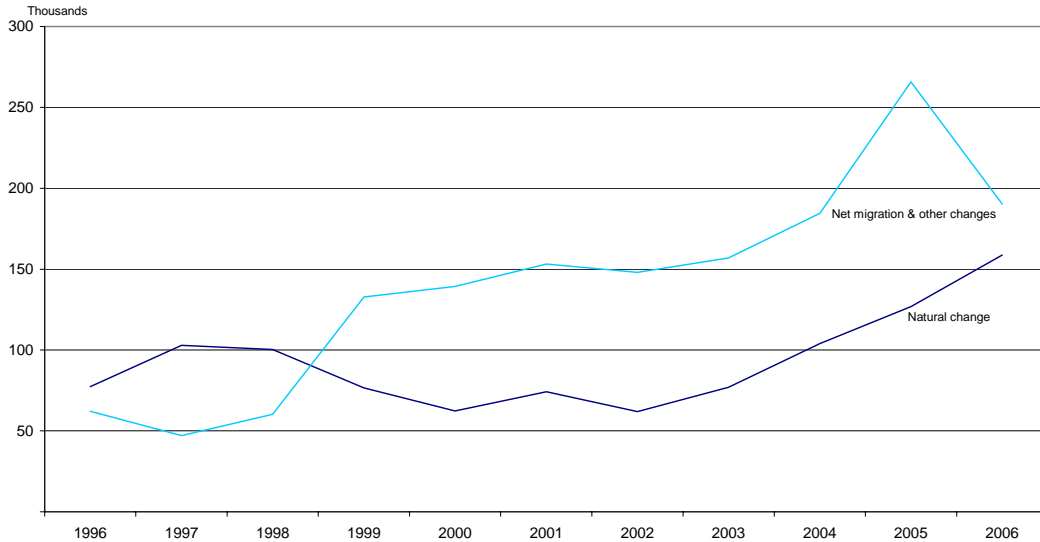
1.2 How well user needs are met

Current population statistics relate to the *usually resident* population – that is to say they count people where they usually live. For this purpose, internal and international migrants are counted if they move address for a year or more. Population and migration statistics are produced on this basis by combining the best possible information currently available. They are produced to high quality standard, using internationally recognised and transparent methods that have been peer reviewed by external experts. By combining sources they have real strengths compared with those statistics that cover only people coming in to the UK, but not those going out.

In a period of significant population change and individual mobility, meeting the requirements of users has become more challenging. Having a single definitional base does not meet the needs of all users (e.g. the Bank of England and increasing numbers of local authorities). The amount of population turnover, both nationally and locally, also makes it more difficult to

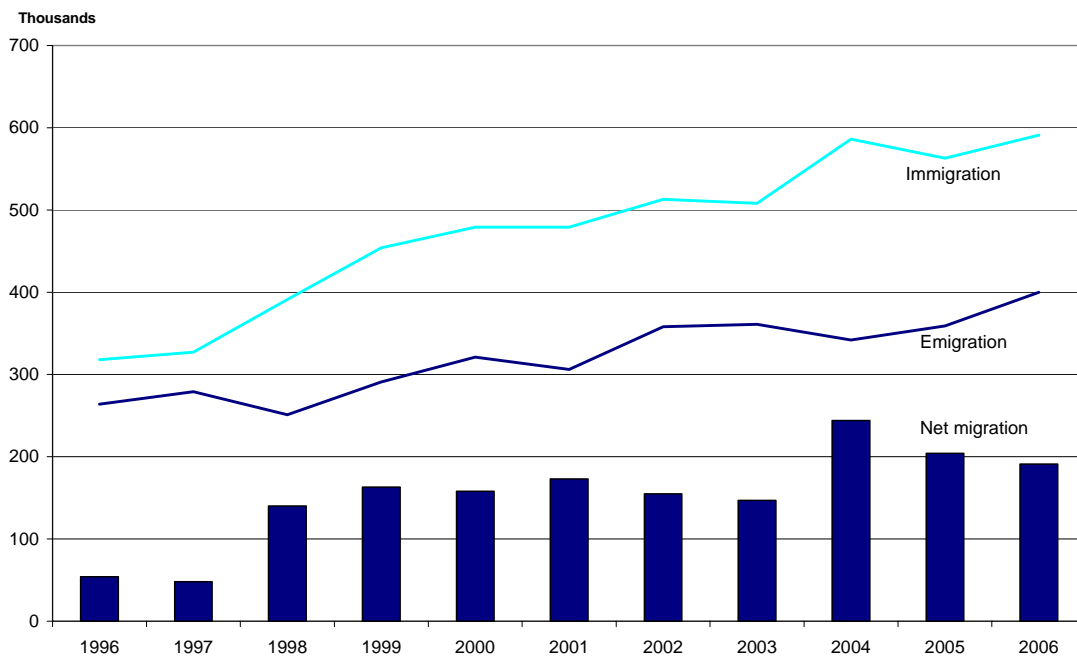
be certain about the numbers of people in an area and on what basis they are there.

Figure 1 Components of change in UK population estimates, 1996-2006



Information about births and deaths is based on registration and considered to be reliable. However migration is the now the largest driver of population change (Figure 1), due to increases in both immigration and emigration (Figure 2). It is the also the component that is subject to the greatest degree of uncertainty, as there is no registration system and, for this reason, no comprehensive count of the numbers.

Figure 2 Migration to and from the UK, 1996-2006



A substantial part of the headline estimates of international migration rely on the International Passenger Survey. National figures have relatively small levels of uncertainty. At local levels, it is necessary to combine years and distribute figures using other sources. At this level, individual estimates are subject to greater levels of uncertainty.

Levels of internal migration are substantial (Table 1). At the level of geographic detail at which population estimates are required the use of administrative registers is essential. The timeliness and coverage of existing registers is variable. Although NHS patient registers provide the best fit to usually resident populations, they have recognised limitations (see Section 2.2.4).

Table 1 Areas with the highest volume of internal and international migration per 1,000 population

Area	Mid-2001 to mid-2006					
	Internal Migration		International Migration		Volume of migration per 1,000 population ¹	
	In	Out	In	Out	All migration	International migration
1 Cambridge	54,100	57,900	28,500	18,200	278	82
2 City of London ²	3,900	3,600	1,500	1,500	276	78
3 Westminster	88,700	95,200	65,700	37,700	259	93
4 Oxford	66,000	70,800	31,900	17,000	258	68
5 Wandsworth	123,400	142,300	40,800	27,300	243	50
6 Camden	86,200	96,900	53,400	25,800	243	73
7 Hammersmith and Fulham	66,900	83,200	33,200	22,900	242	66
8 Isles of Scilly ²	1,200	1,300	-	-	238	6
9 Islington	77,300	90,200	29,000	17,200	234	51
10 Lambeth	109,300	142,000	32,800	16,400	222	36

Notes

1. Volume of migration per 1,000 population is calculated as (in migration + out migration)/population*1000 (separately for all migration and international migration).

2. Rates for the City of London and Isles of Scilly are based on less than 10,000 population.

- Nil or less than half the final digit shown

Both ONS and users recognise that further improvements to population and migration statistics are desirable, given the current high levels of population change.

There are three specific areas of improvement that users are seeking:

- Estimates of a broader range of population statistics and indicators (e.g. short term migrants, levels of population turnover);
- More accurate counts of the numbers of migrants entering and leaving the UK; and
- More accurate counts of local populations.

In 2003, ONS initiated a substantial programme of work to improve migration and population statistics. It is focussed on making improvements to the methods and data sources used to estimate the population at national and local levels during the inter-censal period. These improvements are needed to minimise the risk of divergence between the rolled forward mid-year population estimates and the 2011 Census-based population estimates, and to better understand the differences that remain.

www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/default.asp

The key strands of this work are:

- migration research (both international and internal within the UK);
- collaborative work with local authorities to investigate the potential for making greater use of administrative data sources to improve local estimates; and
- population definitions.

1.3 Effects of inaccuracies or uncertainties

Population estimates and projections contribute to decisions on the distribution of significant resources. For example, around £100 billion of central government funds each year are allocated to local areas in England through the capitation element of NHS resource allocation and the CLG Formula Grant Settlement. This is equivalent to approximately £2,000 per head. Inaccuracies at local level may lead to imprecision in the allocation formulae. This, in turn, can affect the amount of central finance provided to the various authorities and agencies responsible for delivering services locally. However, the relationship between headline population numbers and funding provision is complex. For example, for many services the amounts allocated are heavily dependent on the age structure of the population and the calculations incorporate factors other than population numbers.

At a national level, uncertainties about the size and age structure of the population now and in the future have been identified as a concern by a number of organisations, for the Bank of England (in relation to macro-economic policy) and the Pensions Commission (in relation to future pensions provision).

1.4 Engaging with stakeholders

ONS is committed to engaging with stakeholders, and makes significant efforts to seek their views and participation in developments related to population statistics. All significant decisions on statistical developments are accompanied by public consultation. Regular liaison meetings are held with central and local government representatives to discuss population statistics issues. ONS population experts also regularly attend, and present information to, conferences with a population and demography theme.

Recent methodology improvements to international migration statistics were presented at liaison meetings held with central and local government, as well as at the annual conference of the British Society for Population Studies. A series of regional seminars were also held to present these changes to users, supported by the publication of a wide range of methodological material on the National Statistics website. A panel of expert users, from local government and academia, quality assured the improved methods.

ONS has recently carried out a number of studies in collaboration with local authorities to identify how local sources could be used on a nationally comparable basis to improve population statistics. Findings from these studies were discussed at a series of participative workshops with representatives from a wide range of local authorities and other interested parties. Over 70 organisations sent representatives. Papers from each case study were made available on the National Statistics website:

www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/default.asp

A final report on the studies will be published in the near future, incorporating discussion from the workshops.

Stakeholder engagement is a key element in planning the 2011 Census. A Census Stakeholder Engagement Strategy is in development which identifies and classifies the various stakeholders and stakeholder organisations to ensure that they are fully engaged and managed effectively and that any concerns are addressed in advance of the Census so as to maximise response rates and confidence in the Census.

Discussions have also been held with various community and interest groups and organisations. In addition, a number of specific Census Advisory Groups covering the interests of a wide range of census user communities and other stakeholders have been established. These cover local authorities, academics, business and Central government stakeholders in England and Wales. Future engagement is being planned with other key stakeholder groups.

The success of the 2011 Census will be influenced by how well stakeholders are engaged and managed, and this is therefore a key priority for ONS.

2 Current methods and sources

2.1 Methods used

2.1.1 Estimating population

ONS produces usually resident population estimates for England and Wales and combines these with estimates for Scotland and Northern Ireland to produce figures for the UK as a whole. Details of how estimates are made in England and Wales can be found at:

www.statistics.gov.uk/downloads/theme_population/Making_PopulationEstimate.pdf

Population estimates for Scotland are produced by the General Register Office for Scotland, GRO(S):

www.groscotland.gov.uk/statistics/library/poptest/index.html

The Northern Ireland Statistics and Research Agency (NISRA) produces population estimates for Northern Ireland:

www.nisra.gov.uk/statistics/financeandpersonnel/DMB/datavault.html

The population from the 2001 Census underpins the subsequent mid-year population estimates. The definition of the resident basis of the 2001 Census is given in Box 1.

Box 1 Resident basis of the 2001 Census

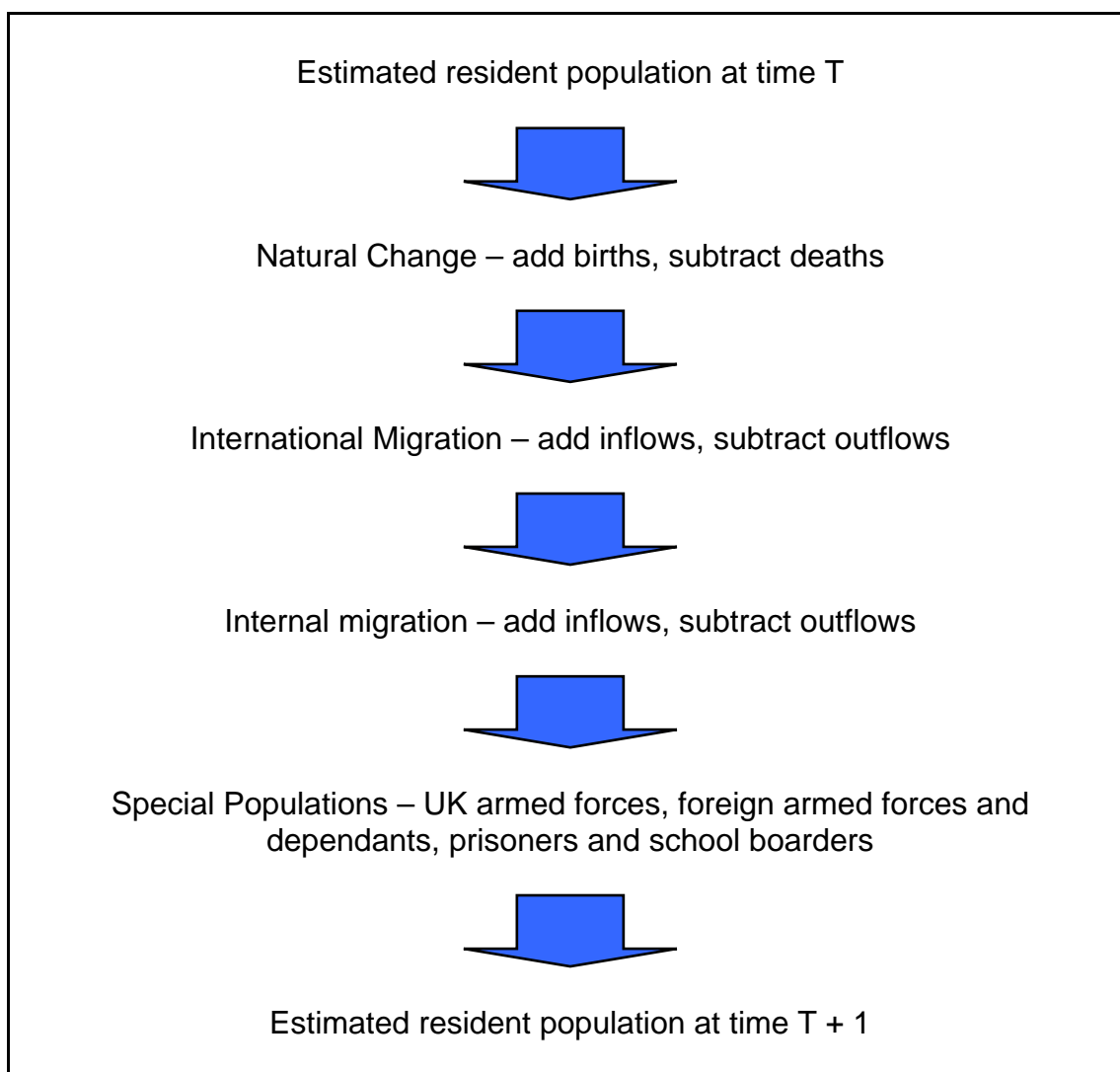
The 2001 Census was conducted on a resident basis. This means the statistics relate to where people usually live, as opposed to where they are on Census night. Students and schoolchildren studying away from home are counted as resident at their term-time address. Residents absent from home on Census night were required to be included on the Census form at their usual/resident address. Wholly absent households were legally required to complete a Census form on their return. No information is provided on people present but not usually resident.

In the inter-censal period, estimates of the resident population are made using what is known as the “cohort component method”. This updates the previous mid-year estimate, by ‘ageing’ the population by one year, allowing for natural change due to births and deaths in the past year and adding on net migration (that is people moving between areas or countries for a year or more). The process of adding and subtracting components is shown in Figure 3. This is a standard demographic method and is used by most other national statistics institutions in Census taking countries.

Adjustments are also made for some special population groups that are not captured adequately by data sources currently used to estimate internal and international migration. These are home and foreign armed forces, dependants of foreign armed forces, prisoners and pupils in boarding schools.

The sources used in producing population statistics are discussed in Section 2.2.

Figure 3: Mid-year population estimates component methodology



2.1.2 National population projections

National population projections are prepared by the Office for National Statistics on behalf of the Registrars General for England & Wales, Scotland, and Northern Ireland. National population projections by age and sex are produced for the United Kingdom and constituent countries every two years. The production of these national projections was a responsibility of the Government Actuary's Department (GAD), in consultation with the statistical offices of the constituent countries, until 31 January 2006 when the responsibility moved to ONS.

The 2006-based projections were published on the 23 October 2007, see

www.statistics.gov.uk/cci/nugget.asp?id=1352

They are based on a full scale review of the underlying assumptions about future fertility, mortality and migration. The assumptions are agreed in liaison with the devolved administrations, following consultation with key users of

projections in each country and advice from an expert academic advisory panel. The assumptions are based on analysis of demographic trends. They are not forecasts and do not attempt to predict the impact that future government policies, changing economic circumstances or other factors (whether in the UK or overseas) might have on demographic behaviour. They simply provide the population levels and age structure that would result if the assumptions about fertility, mortality and migration levels were to be realised in practice.

For the first time in the last forty years of national projections, the long-term birth rate assumption has been increased for the principal 2006-based projection, on the basis of an analysis of factors contributing to rising fertility in all four UK countries over the past four years. Migration assumptions and life expectancy assumptions have also been raised. This combination of increases in all three components of population change has caused a significant increase in projected future population size, compared with the 2004-based principal projection.

Variant projections are also produced as an illustration of how the population size and structure would change under various scenarios, and to give users an indication of the sensitivity of the projections to changing underlying assumptions.

2.1.3 Sub-national population projections

ONS produces sub-national projections for England that are fully consistent with the national projections produced every two years. Across all sub-national areas they sum to the national projections in terms of population (by single year of age and sex) and components of change (births, deaths and international migration). The sub-national projections include numbers of projected population by age (5 year age groups) and sex for a twenty-five year period to 2029. They give projections down to Government Office Region, Strategic Health Authority, County, Unitary authority, London borough, and metropolitan and non-metropolitan district level.

Sub-national population projections use local data on population, births and deaths data to calculate local fertility and mortality rates. Internal migration estimates are based on Patient Register Data System (PRDS) data which is available at LA level. International migration consists of a combination of data from the PRDS, International Passenger Survey and Labour Force Survey data and Home Office data on asylum seekers. Where necessary, census data is used to disaggregate this data down to the geographic level needed for the projections.

Details of the projections can be found at:

www.statistics.gov.uk/statbase/Product.asp?vlnk=997

The next set of sub-national projections will be published in summer 2008. These will be based on the recently published 2006 National Projections (see Section 2.3).

2.1.4 Migration

Migration is the most difficult component of population to estimate. Figures are required on moves into and out of the United Kingdom (international migration), those between its component countries and between areas within each country (internal migration).

International migration

ONS uses the United Nations recommended definition of a long term international migrant in compiling population estimates. This is someone who changes their country of residence for a period of at least 12 months. Those who move or travel for shorter periods are excluded from these estimates. Sources used include:

- International Passenger Survey (IPS);
- Labour Force Survey data on the location of recent migrants;
- Home Office data estimating the number of asylum seekers and dependants who are not counted by the IPS;
- National Asylum Seeker Support Service data on numbers of asylum seekers by LA;
- Irish Quarterly National Household Survey and National Health Service Central Register (NHSCR) data for estimates of flows between the UK and the Republic of Ireland;
- 2001 Census data; and
- A wide range of other data sources used for out-migration modelling.

Estimates are largely based on IPS, supplemented by the information on flows to and from the Irish Republic. Adjustments are then made for asylum seekers and their dependants, people whose intended stay, as reported to the IPS, is less than 12 months, but who subsequently stay for a year or more (known as 'visitor switchers'), and, conversely, for those who intend to stay for a year or more but do not do so ('migrant switchers').

Improvements to the methodology implemented in 2007 mean that:

- By using an ONS major household survey (the Labour Force Survey) in combination with the International Passenger Survey (IPS), better estimates can be made of where migrants go within the country than using the IPS alone.
- The changes recognise that, for example, many migrants who initially arrive in London move on.

Details of the improvements ONS is making to population and migration statistics are at:

www.statistics.gov.uk/statbase/Product.asp?vlnk=14834

Internal migration

Internal migration estimates are based on the registration of patients for NHS General Practitioner Services. In this context, an internal migrant is defined as a person who changes their postcode of residence between one year and the next. Address changes are currently identified in two ways:

- Re-registration with a GP following a move between health areas, as recorded on the NHS Central Register (NHSCR); and
- Notification to GPs of a change of address by patients. ONS are supplied with an annual extract of the information held on local health area systems that relates to postcode of residence.

Details of the methods used for estimating internal migration are at:

www.statistics.gov.uk/statbase/Product.asp?vlnk=7070

2.2 Sources currently used

2.2.1 Uses and timeliness of Census information

The 2001 Census data has proved to be a rich and uniquely valuable source of information of the population of England and Wales.

ONS uses include providing the basis for all mid 2001 population estimates (national, local, small area, ethnic group). Census distributions are also used in subsequent years to provide more detail than can reliably be obtained from sample surveys or annual rolled-forward estimates. ONS fulfils its requirements to report on social change by producing analyses that combine information from census with that from surveys, registration of life events and other administrative sources. Publications include Social Trends, the “Focus On” series and Population Trends.

An immense amount of tabular information was made available to users from the 2001 Census. In all about two billion counts were produced. These were issued in 335 standard table formats for various types of geographic areas. These ranged from national level tables down to Local Authorities, wards and Super Output Areas, Health Areas, National Parks, Parliamentary Constituencies, Postal Sectors. They cover all the topics of the Census – demography, ethnicity, country of birth, religion, health, carers, labour market, qualifications, household and family composition, housing types and tenure, availability of cars.

Some 30 Origin-destination tables provide information about flows of people between local authorities, wards, or output areas either due to migration in the year before Census or travel to work.

To date 1338 ad-hoc tables have been produced for customers ranging from government departments, local authorities, academics, charities and other

divisions of ONS. Interest focused, in particular, on having more detail on ethnicity, religion and families than was provided in the standard tables.

To facilitate in-depth research using the Census, ONS provided ESRC with three samples of anonymised records. These are made available to users by Manchester University. A further two, more detailed, samples are available for analysis within the safe setting of the Virtual Microdata Laboratory at ONS sites.

Tabular material is now made available through web based tools that simplify extraction, analysis and comparison with other data for small areas (in particular the Neighbourhood Statistics System and NOMIS).

2.2.2 Port surveys

The IPS interviews passengers travelling to or from the UK through airports, by sea and through the Channel Tunnel. The survey collects data primarily for tourism purposes, to inform the travel account of the balance of payments, but is also used in estimating international migration.

Interview teams routinely identify every n th person (' n ' varies by port and route, taking account of traffic flows) in the flow of passengers past a specified point. Information is collected from any migrants identified through these routine samples. However, for selected ports and routes, additional passengers are selected for a short interview. The questions asked are designed to establish whether the people selected are migrants. If this is the case, more detailed questions are then asked. Prior to 2007, these additional interviews were carried out only for arrivals (to identify immigrants only). Since January, they have been extended to departures (to boost the number of emigrants interviewed). At present the only reliable source of information on emigration is the IPS.

IPS sampling is carried out at all airports with more than 1 million international passengers travelling through them. This currently includes 5 London airports, Manchester and 10 regional airports. The IPS uses Civil Aviation Authority (CAA) figures to weight up the sample figures to total flows, to ensure that all people are accounted for. In addition the Channel Tunnel and 10 sea ports are covered and again the survey data are weighted to total flows supplied by Eurotunnel, Eurostar and Department for Transport.

Following the recommendation of the Inter-departmental Task Force on Migration Statistics to improve information collected on migrants at ports, ONS initiated a review of port surveys. An interim report of the review was published on the National Statistics website in October 2007.

www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/default.asp

This made a recommendation, taking into account the most recent travel patterns, that additional shifts should be introduced – including at Manchester,

Stansted and Luton – from 2008 to better optimise the sample for migration purposes. This recommendation will be implemented. Further changes will be recommended for 2009 in the final report. Improved information from a port survey will be used in combination with other sources, such as the new enlarged household survey starting in 2008 and the 2011 Census.

2.2.3 Population surveys

The Labour Force Survey (LFS) is a sample survey based on postcode address registers that include all types of private households including multi-occupied dwellings and households in multiple occupation (HMOs). The survey includes questions on address one year earlier, which can be used to identify migrants. This is used to provide important information on where migrants settle, their origins (e.g. country of birth) and what they do (e.g. employment, study). The LFS excludes most communal establishments although it does cover most staff resident in National Health Service accommodation. Students in halls of residence are covered by proxy through their parents and thus foreign students living in halls of residence are not likely to be covered – those living in private households will be.

Improvements have been made to the international migration methodology by combining International Passenger Survey (IPS) data with LFS data. This has resulted in:

- Improving the distribution of international in-migrants (nationally between England and Wales and regionally within England) by using the LFS in combination with the IPS; and
- Refining the existing two-stage process for distributing international in-migrants to local areas within each region in England and Wales, by removing reliance on the smallest IPS sample numbers for some local areas and making adjustments where there is evidence of a tendency to over-report other areas.

The method for estimating international migrants uses geographical distribution of in-migrants obtained from the LFS to improve on the regional information available from the IPS. IPS information is based on respondents' stated intended area of residence on their arrival in the country. However, these intentions may not be an accurate reflection of where people actually settle. As the LFS is a household survey, it measures where migrants are actually living.

ONS has initiated a study into the feasibility of conducting a communal establishment survey, asking similar questions to those used in the LFS. This would have multiple benefits – for migration and disability statistics, in establishing a sampling frame of establishments and in improving the range of comparisons that are possible between census counts and surveys information.

2.2.4 NHS registers

The use of patient registers in estimating internal migration was described in Section 2.1.4. When a person re-registers with a GP a record is made and is used to measure moves between local authority areas. ONS assumes that the average delay between moving and an individual re-registering with a GP is 30 days. This is taken into account in making estimates. However re-registration is known to be particularly slow for particular groups, for example young men.

Information from patient registers is not currently used in estimating international migration. Although the first registration of those allocated a new NHS number on arrival in the country is separately identifiable, this identification is not retained when the patient registers with a second or subsequent GP. Consequently, by the time an annual snapshot is obtained, many new migrants will not be identified. This results in a systematic undercount.

These registers are not appropriate for measuring international emigration as there is currently no incentive to de-register when leaving the country and very few people do so.

Patient register data is also used to produce population estimates below local authority level, for example at electoral ward level. The data were also used for validation of the 2001 Census results. It is likely that they will be used in a similar way following the 2011 Census.

The strengths of these data relate particularly to coverage:

- The data include all people requiring access to NHS services through a GP regardless of age or reason for visit; and
- Individuals staying in the UK for longer than 3 months can register with a GP and will be included.

However, the data excludes:

- Those not wishing to access NHS services from a GP;
- Those staying in the UK for under 3 months; and
- Information on the country of origin of new registrations.

2.2.5 Fertility and mortality

Information on births and deaths registered in this country are used in the compilation of mid-year population estimates. These are obtained from the General Register Office through the compulsory registration of all births and deaths. They are considered to provide a reliable indication of these events and include both information needed for registration and additional statistical items.

The annual number of births in the UK has increased from 669,000 in 2001 to 748,600 in 2006. The recent increase in the number of births in the UK is due to changes in fertility rates and changes in the size and age structure of the female population. In part this reflects net inward international migration of women in the fertile age groups in recent years.

2.3 UK comparisons

Population estimates and projections are produced using comparable methods across the United Kingdom. From the figures supplied to ONS by the constituent countries, figures for the United Kingdom are made available on a consistent basis.

A slightly different methodology is used in Scotland and Northern Ireland to estimate international migration for the purposes of population estimation from that used in England and Wales. Given the small size of the IPS sample for those countries, adjustments are made to migration estimates using administrative sources. For this reason, figures published by ONS on Total International Migration (which are based primarily on the IPS) differ slightly from those used in estimating the UK population.

A UK-wide work programme on population statistics and demographic analysis is co-ordinated by the UK Population Committee, on which ONS and constituent countries are represented. An Advisory Board, which includes external experts from the local government, academic and business sectors, advises it in that role and helps identify gaps in provision.

2.4 International comparisons

Population statistics in England and Wales, and the UK more widely, compare well with other countries.

Most countries produce annual population estimates and regular projections to similar or lower levels of quality and coverage. The estimates and projections both use internationally recognised and accepted methodology:

http://epp.eurostat.cec.eu.int/cache/ITY_OFFPUB/KS-CC-03-005/EN/KS-CC-03-005-EN.PDF

Unlike some countries though, the UK does not have a comprehensive system of recording international migrants into and out of the country, nor does it have an established and linked system of administrative sources that allows more precise measurement of where people are in the country between Censuses. These are acknowledged weaknesses with our population statistics. However, it is recognised that, with increased mobility, even countries with established population registers are finding it increasingly difficult to ensure comprehensive coverage of international migration through these registers.

www.unece.org/stats/documents/ece/ces/2006/32.e.pdf

In some areas, we are noticeably “ahead of the game” internationally, for example most countries do not have separate estimates of short term migrants (see Section 5.2.1).

3 Issues in producing population statistics

Some of the key issues in producing population statistics are described in this section under the following broad headings:

- concepts and definitions;
- methods of calculation;
- reliability and accuracy of sources for population statistics purposes; and
- revisions policy.

3.1 Concepts and definitions

As indicated in Section 1.2, population statistics are based on the concept of usual residence. As an increasing number of individuals are more mobile or spend time at more than one address, this becomes increasingly difficult to operationalise and the statistics are less likely to cover the full range of user needs. The usually resident population does not always coincide with the number of persons to be found in an area at a particular time of the day or year. The daytime populations of cities and the summertime populations of holiday resorts will normally be larger than their usually resident populations. Some areas now experience a constant turnover of short term migrants.

Recognising these issues, work is in hand to develop estimates of short term migrants (Section 5.1.2). Consideration is being given to what population bases are required from the 2011 Census, to underpin statistics in the years that follow. This is described in Section 5.2.1. The increasing sensitivity of population counts to the base that is used has significant implications for the relevance of administrative sources as an aid to counting population. As indicated in the discussion of NHS patient registers (Section 2.2.5), the effective base for a register is determined by the rules governing the administrative system rather than statistical requirements. This is considered further in looking at alternative sources (Section 4).

3.2 Is the estimation methodology appropriate?

ONS population estimates represent the best population estimates that are currently available. ONS has made recent improvements to the way the international migration component of population estimates is calculated both nationally and at local authority level.

The published estimates are produced using consistent methods for all local authorities and strategic health authorities in England & Wales. Population estimates are also available for Primary Care Organisation areas. Detailed

information about the components of change is made available to all local authorities, to aid understanding of population changes within each area.

ONS is open and transparent in the methods used to produce population estimates, following international standards and having what we do peer reviewed by external experts. A detailed methodology guide is published, which is open about any limitations. This will be updated in the near future to include the recent revisions to the migration methodology. The methodology guide can be found at:

www.statistics.gov.uk/downloads/theme_population/Making_PopulationEstimate.pdf

3.3 Reliability of available sources

The accuracy of the mid year population estimates is dependent on the quality of data available to measure components of population change (births, deaths and migration). The use of consistent data for measuring these components of change is key to ensuring a common level of accuracy in mid year population estimates for different areas. Migration, both internal and external, is the hardest component to measure.

Of the data sources used to estimate population estimates:

- The Census provides a reliable base and set of distributions, that worked well in most areas (as is discussed in Section 5.2.7);
- Birth and Death registrations are considered to accurately reflect numbers of events occurring in this country;
- Internal migration data are reliant on people registering change of address with their doctors promptly after a move (as discussed in Section 2.1.4); and
- International migration is difficult to estimate, though good use is made of available sources, but estimates are subject to a margin of confidence (as is discussed below).

In addition, there are other data sources that are important in estimating population in some local areas:

- Counts of 'long term' prisoners are highly reliable and accurate;
- Counts of boarding school pupils are generally reliable and accurate though require significant quality assurance and are reliant on accurate form completion by individual schools;
- Estimates of UK armed forces numbers are accurate, but require significant modelling to meet population estimate purposes; and
- Estimates of foreign (American) armed forces are dependent on the continuing goodwill of the USAF, but are reliable and relatively accurate, though significant data manipulation is required to convert these data into data that meet the purposes of population estimation.

The principal source of international migration data is the International Passenger Survey (IPS). As with all surveys, the IPS is subject to sampling variability. Standard errors, a measure of how much a sample estimate differs from the true value because of random effects, can be calculated from IPS estimates.

As a guide, the standard error for an estimate of 40,000 migrants from the IPS is typically around 10 per cent. In this example, this would mean that there is a one in twenty chance of the true value being less than 32,000 or more than 48,000 (that is to say, outside a range calculated as the estimated value plus or minus twice the standard error). In general, as the estimated number of migrants decreases, uncertainty becomes proportionately larger. For example, when the estimate of migration is 1,000 the standard error increases to around 40 per cent. However this can vary for certain routes on which passengers are sampled.

For England and Wales as a whole, the IPS component of the estimate of international in-migration during 2006 was 489,000. This was associated with a standard error of four per cent. The comparable figure for out-migration was 345,000, with a standard error of five per cent. As the estimated numbers of international migrants varied between regions of England, so too did the standard errors. The largest numbers of migrants went to and from London (151,000 in-migrants, with a standard error of five per cent, and 111,000 out-migrants, with a standard error of nine per cent). The North East had the fewest migrants, 13,000 in each direction (with standard errors of 27 per cent for in-migrants and 30 per cent for out-migrants). Figures for Wales were 13,000 international in-migrants (standard error of 22 per cent) and 8,000 out-migrants (standard error of 25 per cent).

By using three year averages in estimating the migration component of population estimates at regional levels, the effects of sampling variation are significantly reduced.

As a survey, the IPS is subject also to non-sampling errors including non-response. The questions also focus on intentions (about length of stay and where migrants will live). These are often not realised, or may subsequently change. To estimate the amount by which actual and intended length of stay differ, new IPS questions were introduced in 2004, to be asked of those interviewed at the end of a stay. Based on the answers to these questions, adjustments have now been made to national estimates of long term migrants. For 2006, this added 28,000 to the estimate of net migration. These adjustments are, of course, themselves subject to sampling variation.

3.4 Accuracy of population projections

ONS's national and sub national projections are trend based. They project what is likely to happen in the future if current demographic trends continue. They do not provide a forecast or prediction of what might happen to future trends. If current trends change, then the future population will almost certainly differ from the projection.

For a number of reasons gauging the accuracy of past projections is complex. ONS has published an article in Population Trends looking at the accuracy of national projections:

www.statistics.gov.uk/downloads/theme_population/PT129.pdf

The national total population has historically been projected reasonably accurately but this is largely a result of compensating differences. Differences between assumptions and outturns for future mortality, migration or fertility would affect the accuracy of the population projection, and each element can be - and has been in the past - subject to significant change.

A simple comparison of mid-2004 based projections for mid-2006 with mid-2006 population estimates indicates that over 95 per cent of English LAs differed by less than 2 per cent from the projection, with the biggest differences at +3 and -5 per cent.

Recent analyses of past UK projections provide figures on the accuracy of national projections and the component assumptions^{1 2}. In general, migration assumptions have the greatest uncertainty. One study found that the mean absolute error in assumptions of net migration to the UK has been around 60,000 ten years ahead and 100,000 after twenty years¹. A separate analysis² suggests that the accuracy of UK migration projections has been around the European average.

These analyses showed that, in the short to medium-term, projections of the working age population are far more accurate than those for the very youngest and oldest age groups. For example, errors in projections of the population aged 20-64 ten years ahead have averaged around 1 to 2 per cent compared with errors of around 10 per cent for the 0-4 or 85+ age-groups.

3.5 Revisions policy

A formal revisions policy came into effect on 5 July 2007. The policy, based on the National Statistics Revision Protocol, relates to the population statistics produced under the National Statistics Centre for Demography work programme by the Office for National Statistics, the General Register Office for Scotland, the Northern Ireland Statistics and Research Agency and the Statistical Directorate of the Welsh Assembly Government.

ONS will revise population statistics following a new Census, deriving a new population base. Between Censuses, ONS continues to develop its methods and sources. In doing this the key principles are:

¹ Shaw C. Fifty years of United Kingdom national population projections: how accurate have they been? Population Trends 128

² Keilman N. UK national population projections in perspective: how successful compared to those in other European countries? Population Trends 129

- To revise outputs when significant effects of methodological change are established and quantified. There is an element of judgement in deciding what is significant in this context, taking account of user needs.
- To announce substantial methodological changes before the release of statistics based on the new methods, together with an indication of the likely effects.
- To seek to avoid frequent revisions and attempt, as far as is possible, to ensure that any revisions are in place prior to the production of the biennial population projections rounds.

In addition, from time to time, there will be a need to make revisions outside of the planned schedule, for example because of unforeseen errors. Such unplanned revisions will be monitored and the possibility of such revisions minimised. All revisions, both planned and unplanned, will be pre-announced.

4 Alternative Sources

National Insurance Number (NINo), Worker Registration System (WRS) and NHS Patient Registration data are commonly cited as alternative measures of population change. A comparison of these sources was published recently:

www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/downloads/admin.pdf

ONS is investigating how aggregate level counts from these and other alternative sources might be used in migration estimation and in producing additional indicators of population change at local level. The uses of and access to individual records is also being reviewed, following the recommendations of the Inter-Departmental Taskforce on Migration Statistics (see Section 5.1). Use of individual records from administrative sources would, in particular, make it possible to undertake linkage between information held on different sources. However such data are potentially disclosive and so are subject to limitations on access.

Work has recently been undertaken within Departments, such as DWP, to investigate how existing linked data can be further exploited to improve the identification of migrant histories, including improved identification of emigration from the UK. This is included in the statistical evidence presented to the House of Lords Economic affairs Committee:

www.parliament.uk/parliamentary_committees/lords_economic_affairs/eaffwrevid.cfm

4.1 National insurance registers

National Insurance Numbers (NINo) are issued to individuals when they reach age 16 and are used to record a person's national insurance contributions and social security benefit claims. New numbers are issued to the following migrants:

- All non-UK born nationals aged 16 or over working, planning to work or claim benefits legally in the UK, regardless of how long individuals intend to stay.

The following are excluded:

- Dependants of NINo applicants, unless they work or claim benefits;
- Individuals from overseas not working, planning to work, or claim benefits - for example, this will include many students;
- Migrants who are not of working age if not claiming benefits; and
- Those with an existing national insurance number, for example returning UK nationals.

This source provides numbers registering for a NINo in order to work or claim benefits and tax credits. Others who come to the UK are excluded. There is no requirement to de-register on leaving the country or. For this reason, the figures do not show the number of foreign nationals working or claiming benefit at any given point nor do they distinguish between long and short term migrants.

4.2 Pupil and student information

The School Census provides, every term, a snapshot of all school pupils in state education in England. It is collected by DCFS and is used for monitoring the effectiveness of policies and school/local authority funding. Similar systems are in place in the devolved administrations. There are a number of definitional issues which limit the value of comparing aggregate School Census figures with population estimates (children in independent schools, short term migrants, visitors and children with more than one address). However, these data may be useful if linked to other sources to provide more information about migrants.

The Higher Education Statistics Agency (HESA) collects data about students attending all publicly-funded higher education institutions in the UK. The term-time full postcode will be collected from 2007/08, thereby overcoming a limitation in the coverage of current data. This will inform both internal migration estimates of students and international migration of foreign students in higher education. ONS also intends to explore the availability of data on students not covered by HESA. For instance, we will be looking at what data may be available on further education students from the Learning Skills Council.

4.3 Local authority information

ONS has worked with local authorities to investigate local sources of information to assess whether they can be used on a nationally comparable basis to improve population estimates. Studies of four local authorities were conducted, each representing areas with specific issues in estimating population accurately. The sources examined included:

- The Electoral Register records people resident in each local authority who would be 18 or older during each year beginning 16 February and are eligible to vote in local government, devolved administration and or Parliamentary elections;
- Housing Needs Surveys that are carried out by all local authorities in England; and
- Council Tax Billing and Exemptions list based on a register of dwellings kept at the Valuation Office Agency. Each local authority is responsible for administering its own billing list.

ONS published reports on the individual studies earlier in 2007. These can be found at:

www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/default.asp

Workshops were held to discuss these reports, to which all local authorities were invited. ONS will shortly be publishing a final report on this work.

4.4 Migrant registration

Nationals of countries (other than Cyprus and Malta) that joined the EU in May 2004 - the A8 countries - who wish to take up employment in the UK for a period of at least a month are generally required to register with the Worker Registration Scheme (WRS). Workers who are self-employed do not need to register. They must register more than once if they are employed by more than one employer and must re-register if they change employer. Each application represents one job, not one applicant.

The population covered on the WRS includes:

- Long-term international migrants from A8 countries working as employees in the UK;
- Visitors and short term migrants from A8 countries, staying for over a month, and intending to work as employees in the UK; and
- Dependants of WRS applicants. It is likely that there is some double counting as dependants may also be registered in their own right on the WRS.

The following are excluded:

- Migrants from A8 countries who are self employed;
- A8 migrants staying for less than a month;
- A8 migrants who migrate or visit the UK for reasons other than work, for example including potentially many students;
- Migrants from non-A8 countries.

Figures relate to the address of the applicant's employer rather than their own usual residence and are produced by date of application rather than date of

entry into the UK. The data only include those registering when they take up a job, when intended length of stay is recorded. However neither actual duration of employment or if and when the applicant returns home are recorded.

4.5 E-Borders

The Home Office e-borders programme aims to establish a modernised, intelligence-led border control. In the long-term e-Borders will provide the best option for recording individual movements into and out of the UK and length of stay in the UK for all modes of transport. However, it will only provide information about people arriving and leaving the UK not where in the UK they will live. In so far as it is possible to link journeys into the country with journeys out for the same individual, by identifying travel patterns it is in principle possible to separately identify long term migrants, short term migrants (including seasonal workers) and visitors. However detailed analysis will be required to develop rules for categorising people with more complex travel patterns, for example distinguishing those who take up residence in this country for a prolonged period but make frequent trips abroad from those who reside abroad but frequently visit the UK.

The ONS is responsible for statistics on international and internal migration whereas the Home Office is responsible for statistics on immigration control. The ONS has been participating fully with the Home Office in the early stages of the e-Borders procurement process to ensure that full use can be made for analysis purposes of the extensive data that should start to become available from 2009.

4.6 National surveys

As indicated in Section 2.14, data from a survey (the IPS) is used with administrative sources to estimate international migration to and from the UK and is used in combination with the LFS and Census figures to distribute these estimates to regions and local areas. The IPS is currently the only source of information on emigration.

Surveys are an essential tool in estimating international migration because:

- They provide a cost-effective means of updating Census information each year;
- Social and economic questions can be asked and related to migration. These are not available on many administrative sources and provide both context and outcome information (e.g. employment); and
- They are better suited to probing issues, such as intentions and reason for visit, than Census or administrative sources.

However, as indicated in Section 3.3, they do have limitations. Specifically:

- All estimates are subject to sampling variation;
- Numbers of migrants sampled are too small, even in the large population and passenger surveys, to provide robust estimates at local levels; and

- Non-response tends to vary across population groups and areas, making accurate estimation more difficult.

This analysis suggests that, to get the best estimates of international migration, information from well designed sample surveys needs to be used in combination with that obtained from the alternative sources discussed earlier in this section. The following section describes plans to improve the information obtained from surveys and other sources.

5 Planned work for 2008 to 2012

5.1 Improving population and migration statistics

In 2006, the National Statistician set up an Inter-departmental Task Force on Migration Statistics to identify timely improvements that could be made to international migration statistics, in advance of those that might flow from long term strategic systems (such as e-borders).

www.statistics.gov.uk/statbase/Product.asp?vlnk=14731

The recommendations of the Task Force are summarised in Annex A. The developments being taken forward as part of this programme and the wider programme of improvements to population and migration statistics are described below.

5.1.1 Short term migration estimates

ONS currently produces National Statistics on international migration based on the United Nations (UN) recommended definition of a long-term migrant, someone who changes his or her country of usual residence for a period of at least a year. It is widely recognised that these estimates do not capture all visits, and ONS have been exploring how to estimate short-term migration.

The UN defines short-term migration as moves made for between three and 12 months for reasons of employment or study. An initial feasibility report, published in January 2007, sought opinions as to whether this definition met all user requirements.

The feedback to the feasibility report revealed that different users had different requirements. Requests were made to broaden both the 'length of stay' and the 'reason for visit' criteria. In October 2007, ONS published the first set of short-term migration estimates for mid-2004 and mid-2005. National estimates for a number of differing definitions were published for England and Wales, with separate estimates shown for London.

www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/downloads/STM_Research_Report.pdf

There is significant demand for short-term migration figures at local authority level. However, the International Passenger Survey (IPS) does not provide

sufficiently robust estimates at this level, and no single alternative data source is currently available to produce such estimates. The availability of local area level estimates is dependent on the development of a suitable methodology and sources. Research work to look at identifying a method for producing local area level short-term migration estimates is being taken forward over the next year.

5.1.2 Access to administrative records

The Inter-departmental Taskforce on Migration Statistics recognised the potential for improving statistics through using records from administrative sources. It recommended that access to a number of such sources was essential to develop record linkage approaches to measuring migration. Sources identified include components of the Work and Pensions Longitudinal Study (WPLS), migration statistics from new NHS IT systems, the School Census, and the Higher Education Statistics Agency (HESA). Taking forward the recommendations of the taskforce, ONS has prioritised negotiating access to these sources. A framework for access will be provided by the Statistics and Registration Services Act 2007, due to come into force on April 1st 2008. The Act, establishing the independence of ONS, contains powers to enable information sharing between public authorities and the newly established Statistics Board for statistical purposes. This is subject to the following safeguards:

- protection of confidentiality;
- only where there is no existing power/ it is otherwise prohibited by law;
- subject to bilateral Ministerial agreement;
- sharing only for specific purposes and subject to a public interest test and
- Parliamentary approval.

Use of administrative records in combination will require development of new tools and techniques, including the ability to evaluate the quality of the information for statistical purposes. First steps have been taken in a pilot project in 2007. Further projects specifically related to population statistics, Census and administrative data will be undertaken in 2008/9 to build on this work.

5.1.3 Survey enhancements

The Inter-departmental Task Force on Migration Statistics made a number of recommendations on improvements that could be made to surveys to improve the quality of the migration data they provide.

The task force recommended a review of port surveys. This is underway, and an interim report was published in October 2007. The review proposed a number of enhancements that could be made to the International Passenger Survey (IPS) in 2008 that would increase the number of migrants sampled. More fundamental changes to the IPS are also being considered, including whether separate specific surveys should be run to meet the needs of current customers of the IPS (for example migration, tourism, balance of payments).

The main concerns that users have with the Labour Force Survey as a source of information about migrants are to do with the non-coverage of communal establishments and with the sample size of the LFS. ONS is assessing the feasibility of a communal establishment survey to increase the coverage of migrants.

In 2008 the LFS will include a special module on migration. In 2009 the new, continuous, household survey will replace the LFS and be enhanced to contain migration questions on the core sample every quarter.

5.1.4 Statistical modelling

While survey data are likely to remain the main source of international migration statistics at national and regional level they are already enhanced by the use of a model in apportioning the numbers of emigrants to Local Authority Districts. A wide range of other data sources are used in the construction of this model. Work is already under way to refine this model by using small area estimation techniques. Consideration will also be given to the possibility of constructing a similar model for immigration.

A joint ONS/Economic and Social Research Council studentship is researching the modelling of internal migration in the UK. Future research might also investigate the use of time series models for migration estimates.

5.1.5 Coherent reporting

ONS is working with other Departments to take forward plans to produce better, more coherent reporting on migration statistics, a key recommendation from the Inter-departmental Task Force on Migration Statistics.

Work is well advanced on a cross-government review of migration reporting and on deciding which statistics should be within scope for coherent reporting. A public consultation on coherent reporting of migration statistics will be carried out in 2008.

In consulting with other departments, ONS is also considering how best to use a panel of migration experts to add value to existing migration reporting (another task force recommendation). It is anticipated that public consultation on the plans for coherent reporting will be published early 2008.

Earlier this year, ONS published figures on the volume of internal and external migration experienced by each local authority (see Table 1 in Section 1.2). This was widely welcomed by users and indicates the need to establish a wider and more relevant set of data about local populations. At the simplest level, these data would include short term migrant figures and population turnover due to migration, but could be widened into a coherent package of indicators.

5.2 2011 Census preparation

The final Census design has yet to be confirmed so the following is dependent on final design decisions, contract costs and Test evaluation. It reflects plans at the time of writing. Latest information about the 2011 Census can be accessed from:

www.statistics.gov.uk/census/2011Census/default.asp

5.2.1 Matching population definitions to user needs

Choice of population bases for enumeration of the 2011 Census is critical to the type of data obtained at output for users. Discussions in 2004 presented four options for the 2011 enumeration:

- (a) population present;
- (b) population usually resident;
- (c) population present plus usual residents temporarily absent; and
- (d) population usually resident plus visitors.

In considering the optimal enumeration base for 2011 one issue was continuity of measurement with previous censuses; another was providing continuity with post-2011 population measurement. British censuses in the years 1801-1971 employed a population present enumeration base; subsequently, the 1981 and 1991 censuses, although principally using a population present base, were designed to count BOTH population present and usual residents; the 2001 census employed usual residence alone. Post-2011 developments will probably be founded on administrative sources and based on usual residence.

Extensive consultations in 2004 amongst users (local/health authorities, central government departments and academia) concluded that:

- Usual residence is the key population output base required;
- A population present base would fail to provide accurate data on household composition, migration, resident population, journey to work etc.; and
- Within the usually resident base, clarification is required of rules to reduce ambiguity in recording hard-to-count groups.

Further discussions have endorsed these views, adding that:

- Information is needed about short term migrant workers for labour market purposes; and
- In addition to usual residence data, information on visitors (both from within the UK, and abroad) is required.

5.2.2 Census Test

Background

The 2007 Census Test in England and Wales was held on 13 May 2007 in five different local authorities covering about 100,000 households. A report can be found at:

www.statistics.gov.uk/census/2011Census/2011Project/2007test.asp

The main objectives of the Test were to assess:

- The effect on response of:
 - the use of post-out to deliver questionnaires; and
 - the inclusion of a question on income.
- The feasibility of major innovations in operational procedures, such as address checking, the outsourcing of recruitment, training and pay, and questionnaire tracking.

The overall return rate for the Test was 46 per cent. The Test over-sampled in the hardest to count areas (40 per cent of Test areas compared to 10 per cent of England & Wales). If the sample had been representative of England & Wales, it is estimated that the Test return rate would have been 58 per cent, a comparable rate to that achieved in the 1997 Test (59 per cent).

Key results

The key results from the Test are:

Post-out – A post-out methodology, rather than hand delivery, reduces the significant risk of being able to recruit a large, sufficiently skilled, field force; and, provides cost savings that can be channelled into targeting hard to count populations

The delivery of questionnaires via post-out proved successful in the Test. The same resources were devoted to follow-up of postal and hand delivered questionnaires. As a result, more resources were put into hand-delivery areas overall, with contact being made on the door-step during delivery by hand. Nonetheless, the return rate for questionnaires delivered by post was only 3 percentage points lower than hand delivery (44 per cent post-out, 48 per cent hand delivery). Modelling suggests that this difference could be recovered through additional follow-up of postal delivery and still provide significant cost savings. Therefore, in 2011 the majority of households in England & Wales will receive their questionnaires by post.

Income – The return rate for a questionnaire including income was 3 percentage points lower than those without (45 per cent income, 48 per cent no income). A decision on the inclusion of an income question will be based on further assessment of the quality of responses and the strength of user requirement and questionnaire space considerations.

Address checking – The Test was the first time that a full separate operational address check has been conducted, previously this was undertaken as part of questionnaire delivery.

The Test demonstrated that an address check will be required to correct deficiencies in the currently available address registers, which are mostly associated with converted flats within existing buildings.

Recruitment, training and pay - For the first time recruitment, training and pay of field staff was outsourced together. Based on the success in the Test and additional market and options analysis, the Census intends to outsource these services for 2011.

Questionnaire tracking - Individual questionnaires were successfully tracked from delivery to receipt with the updated information exchanged with the field force to enable efficient and effective follow-up of non-response.

5.2.3 Census design and questions

ONS recommendations for the content of the 2011 Census will be based on a number of factors, and user requirements are a key consideration. These requirements are considered alongside issues of data quality, respondent burden and public acceptability as well as operational and financial considerations.

The current working assumption is for a 24-page household questionnaire with three pages of individual questions per household member as in 2001. However, it has been clear from consultation with users that there is significant demand for more topics than can be accommodated within three pages of individual questions.

ONS is currently prioritising two new topics for inclusion in 2011 which would increase our understanding of the population count, namely, second residences and month/year of entry into the UK. However, this would mean the exclusion of some topics which were included in 2001 (for example, carers, qualifications, industry) unless a fourth page of questions is introduced. ONS is currently seeking funding for an additional page of questions per person so that more information can be collected on the population.

5.2.4 Coordination of the Census across the UK

The UK is unique in the world in having three Census Offices for carrying out the census and responsible to separate Parliaments and Assemblies. Other countries have a single census office. Devolution has increased the local accountability for census questions and operations, and makes co-ordination harder.

The National Statistician seeks to maximise the extent of UK Census harmonisation, but has little authority to compel it. Some census users want

the best information for their country, regardless of consistency with other parts of the UK. However, most uses for policy development and monitoring require consistency across the UK.

The three Census Offices seek to co-ordinate census questions, census operations, and census outputs. An agreement in principle between the Registrars General was signed in 2005, and is regularly reviewed and updated. There is close working-level liaison and joint working to harmonise census questions - whilst allowing reasonable variation in each census office.

The Registrars General have agreed a common statement on disclosure control, with a view to a single method for disclosure control in 2011 (not achieved in 2001).

5.2.5 Improving coverage

Post out and hand delivery will be used to deliver Census questionnaires in 2011. The primary method will be post out, but in areas where ONS are not confident in the completeness of the address register, questionnaires will be hand delivered. In either case, if someone does not receive a questionnaire they can request one through a contact centre or web based help facility. New/replacement questionnaires will be sent out through the post. During the follow up exercise, field staff will also hand out replacement questionnaires. There needs to be a strong role for local authorities in:

- Agreeing the address base in advance;
- Providing local knowledge to identify potential enumeration difficulties; and
- Promoting Census and encouraging participation.

People will either complete the questionnaire on paper and return it through the post to a central location or use the internet questionnaire. Central post back will enable prompt, cost effective receipting of questionnaires and enable Census management to have up to date information on the rate and patterns of response across the country and take decisions accordingly. Internet capture will offer another route for the public to respond potentially appealing to groups such as students that traditionally are hard to engage in the Census.

Support will be offered through a contact centre and a web based help facility and there will also be supporting literature, including translations of the questions. Blind and partially sighted people will be offered large print questionnaires. Respondents will also be able to request field visits via the contact centre, to help them complete the questionnaire.

Enumerators will follow up questionnaires that have not been returned. When contact is made, the enumerator will be encouraged to offer help to the household to enable them to complete their questionnaire, from writing in the responses to posting it for them.

5.2.6 Improving response rates

There are a number of strands to this:

- The field design for 2011 means a greater proportion of resources are being put into the enumeration of hard to count groups and areas, to people who can't or won't fill in their form without enumerator intervention. Where these areas coincide with deprivation, higher pay rates will be offered to ensure that we do attract sufficient staff. Enumerators will be mobile rather than assigned to a pre-determined area so we can move resources during the field operation in response to events/response rates. This means that if an area is proving more difficult to enumerate than previously anticipated, additional staff can be deployed to support the process. The use of central post back and an operational intelligence system will enable us to have accurate up to date information on response patterns at local levels during the Census operation so take prompt remedial action if necessary.
- The use of post out will enable delivery of questionnaires to some properties where we would otherwise struggle for example those with access control and security arrangements.
- A programme of community liaison is being developed that will work with national and sub-national organisations that represent many of the population groups in areas that are typically hard to count. Information from this will both feed into how we approach different population groups as well as providing a means to encourage participation from the 'inside'.
- A strong publicity campaign that exploits media channels that are used by these groups and puts forward messages that are meaningful and relevant to the specific groups will also be in place.

5.2.7 Response estimation

No census is perfect and some people are missed. This undercount (or non-response) is not uniform across geographical areas or other sub-groups of the population such as age and sex groups. For resource allocation, this will have a disproportionate effect if the populations that are missed are those that attract higher levels of funding (e.g. children or the elderly). For this reason, without any adjustment, the allocations relying on uncorrected census counts would result in resources being wrongly allocated. To prevent this happening, census undercount is measured and the outcome disseminated to users.

In the 2001 Census, a methodology and process were put in place to identify and adjust for the number of people and households not counted in the 2001 Census. Both the Statistics Commission and the Local Government Association published reviews that concluded that the methodology used in 2001 was the best available.

ONS outlined its 2011 Census coverage assessment and adjustment strategy in the spring 2007 edition of Population Trends

www.statistics.gov.uk/downloads/theme_population/PopulationTrends127.pdf

The overriding strategy is to build on the methodological framework used in the 2001 Census, using it as a platform to develop an improved methodology with a number of objectives:

- The strategy will aim to address the lessons from 2001, looking for improvements and taking into account the changes to the census design.
- ONS are looking to build in more sources of data, e.g. Council Tax, and more time for Quality Assurance and analysis into the processes to reduce the risk of having to make post-census adjustments.
- The methodology should produce results that are robust and of high quality, with no Local Authority having poorer quality results than in 2001.
- Gaining acceptance of the methodology from users is a key objective. Users will not accept their census population estimates if they are not confident about the methodology used to derive them.
- Simple methods should be developed where possible to aid communication of the methodology with all users through appropriate channels and with tailored materials.

The development of the methodology that will be used to achieve the above aims and objectives is underway. ONS has been consulting with users through its advisory groups, and has been peer reviewing the methodological proposals developed to date. This engagement and quality assurance will be widened as the detailed methods develop.

5.2.8 Census estimation in 2011

For the 2011 Census, ONS will be refining the procedures it introduced to ensure the accuracy of the 2001 Census estimates (see Section 5.2.7). The approach provides an estimate of the level of under enumeration in the main Census, in terms of both households and individuals. Among the refinements for 2011 are improved identification of difficult to count areas and accounting for over enumeration.

In addition, ONS have been reviewing the definitional bases to be used in the 2011 Census. This work includes consideration of population sub-groups, such as short-term migrants, not estimated by the 2001 Census. The definitional bases used are important to ensure consistency between Census and other ONS products, such as the mid-year population estimates.

5.2.9 Census outputs

Output from the 2011 Census falls into three broad categories of information:

- Estimates of the numbers of population units - people, households and dwellings;

- Population structures - e.g. family and household relationships, ethnic groups; and
- Population and housing characteristics - e.g. education and health.

A significant volume of pre-planned statistics in tabular form will be devised so as to provide a set of consistent output. This will be supplemented by services to deliver customised output for specific users.

Availability will be from first release of population estimates, scheduled for September 2012, with a rolling programme of releases through to the end of 2013.

Dissemination is expected to be predominantly via the web. Paper reports and other electronic media (e.g. DVD) are also expected to be available.

We will be providing commentary and analysis of key results subsequent to the initial release of population details.

6 Population Statistics in 2013 and beyond

6.1 Future of the Census

ONS has set out a vision for an integrated population statistics system that would bring together survey and administrative sources.

www.statistics.gov.uk/about/Methodology_by_theme/downloads/Demographic_Statistics_Service.pdf

The need for future Censuses will be assessed within this framework. ONS will next year be initiating a project to review the needs for a 2016 census and alternatives to a census for 2021.

To date, the pattern of Census taking in the UK has focused on holding them at ten yearly intervals, with only a few exceptions. The evaluation of the needs for a 2006 census concluded that effort would be better put into improving other data sources. ONS has taken this forward through the development of a continuous population survey - bringing together four existing household surveys to provide a large annual sample core.

The new survey aims to increase the range and quality of statistical outputs while preserving the integrity of key time series. It will provide regular estimates of key socio-demographic variables at sub-regional level between decennial censuses.

The sample will be made up of the total number of addresses sampled by the existing surveys, making it the largest ever continuous survey to be conducted in Great Britain. It would be possible to boost this survey to provide core population information for smaller areas

A phased timetable for implementation is planned from January 2008, with the LFS survey module being incorporated later in 2008.

6.2 Population registers

The ONS led Citizen Information Project (CIP) that reported in 2006, found that there is significant value to both citizens and the public sector in greater sharing of basic citizen information in a secure way across central and local Government.

www.gro.gov.uk/cip/Definition/FinalReportAnnexes/index.asp

The CIP is now closed and its recommendations are being taken forward by other government departments, i.e. where the opportunities exist, subject to legislation, to develop systems that have the potential to deliver many of the CIP benefits in the longer term. It is recognised that a statistical imperative alone will not be sufficient to establish and maintain a comprehensive and up to date population register.

In the UK there are several administrative sources of information about the population that are registered for a particular service e.g. NHS patient registers, NI numbers). None of them are sufficiently comprehensive or up to date to constitute a population register. In particular, there are significant practical difficulties in identifying those people on these registers who no longer live in the UK.

6.3 Plans to consult stakeholders

As indicated in Section 6.1, next year ONS be initiating a project to review the needs for a 2016 census and alternatives to a census for 2021 within the framework of an integrated population statistics system. Engagement with stakeholders will be central to this review.

Recommendations of the Inter-departmental Task Force on Migration Statistics

Recommendation A: Improve information about migrants as they enter or leave the country

- Establish a port survey to capture an increased sample of migrants, especially emigrants. Bring forward key elements of the e-Borders project, including passport scanning. Improvements to statistics could be delivered in three to five years;
- Provide more data on controlled migrants from landing cards, in particular, duration of stay and destination in the UK. Link data to subsequent information about the migrant. A sample of all travellers would need to complete a landing card on arrival in the UK;
- Collect migration-related information from the points-based information system being developed to manage the flow of migrants coming to the UK to work or study.

Recommendation B: Improve information about migrants living in this country

- Survey people living in communal establishments, who are not currently covered by ONS household surveys. Make more use of information on migrants collected by local authorities, employers or agencies providing work for migrants;
- Include in the 2011 Census questions that identify short-term and long-term migrants;
- ONS and devolved administrations should have access to timely administrative information that potentially identifies migrants.

Recommendation C: Link official data sources to relate migrants' intentions at entry to the UK to subsequent events, such as employment, having a child and when they leave the country

- Explore the potential for using a current survey, the Work and Pensions Longitudinal Study, to provide information on patterns of employment, children and benefits among migrants;
- ONS and the devolved administrations should continue to have access to the population statistics items, available on individual level health registers, that are needed to estimate migration;
- Access should be provided to individual level School Census data for statistical purposes, to allow linking with other sources so as to improve the statistics on migrants and their families.

Recommendation D: Improve key indicators of migrant numbers and trends

- Improve the use of statistical and demographic models to enhance migration and population estimates;
- Convene an expert committee on migration statistics reporting to the National Statistician to provide an up to date interpretation of current UK migration statistics.

Recommendation E: Publish all statistics collected across government on migration and migrants in a single UK-wide report

- Provide a more coherent picture than is available from the wide range of disparate information currently available;
- The National Statistics Centre for Demography, part of ONS, should publish an Annual Report on Migration Statistics.