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This short note provides an overview of some of the population research and analysis that has been undertaken at the School of Geography, looking specifically at the robustness of local population estimates and projections. The research has had a particular focus on the estimation of immigration flows, which have been a dominant driver of population growth in Leeds, both in the mid-year estimates of population produced since 2001 and in the latest, 2006-based, sub-national projections.
<http://www.geog.leeds.ac.uk/projects/migrants/>

Population estimation and projection

1. Regional context

The latest, 2006-based, population projections produced by ONS suggest that the regions of the North will increase their total population by 2.2m (15%) by 2031 (Figure 1). However, the rate of growth is unevenly distributed with a 23% growth in Yorkshire & Humber exceeding that projected in the North West (12%) and the North East (8%).

Figure 1: 2006-based population projections (ONS, 2008)

	Population (000)			
	2006	2031	Growth	%
North East	2,556	2,769	213	8%
North West	6,853	7,696	843	12%
Yorkshire & Humber	5,142	6,319	1,176	23%
Northern Way regions	14,551	16,784	2,232	15%

Scrutiny of the 'components' of population change for each region reveal how dominant the 'net international migration' component is as a driver of growth in Yorkshire & Humber, accounting for 25,500 of the projected 47,500 annual population growth (Figure 2). Natural change accounts for 20,900 per year and net internal migration just 1,200.

Figure 2: Components of population growth (ONS, 2008)

	Average <u>annual</u> growth, 2006-2031 (000s)			
	Natural Change	Net Internal Migration	Net International Migration	Total
North East	3.7	2.2	2.8	8.7
North West	19.8	5.6	8.9	34.2
Yorkshire & Humber	20.9	1.2	25.5	47.5
Northern Way regions	44.3	9.0	37.1	90.4

Natural Change = Births – Deaths

Net Internal Migration = Immigration – Outmigration,

Net International Migration = Immigration - Emigration

2. Local context

The associated ‘components of change’ for **Leeds** over a slightly shorter projection period (2008-2026) indicate the sensitivity of the population projection to the estimation of the net international migration component (Figure 3). 8,500 of the projected 9,400 annual increase in Leeds’ population is due to net immigration. Assurance of the robustness of this estimate of international migration is fundamental to the assurance of local population projections (2008-2033) and the mid year population estimates (2001-2008) as the same estimation methodology applies to both.

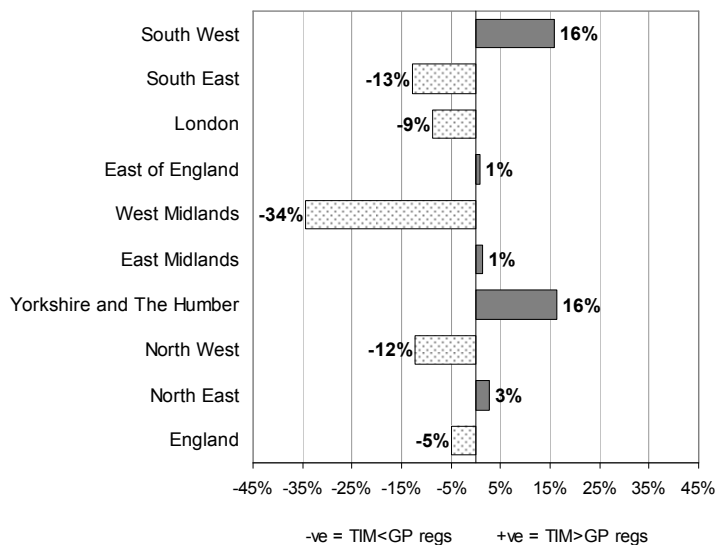
Figure 3: Leeds, Components of population growth (ONS, 2008)

	Population (000)
Population 2008	770
<i>Average annual growth 2008-2026</i>	
Natural Change	5.2
Net Migration	-4.4
Net International Migration	8.5
Annual growth 2008-2026	9.4
Population 2026	938

3. Our research

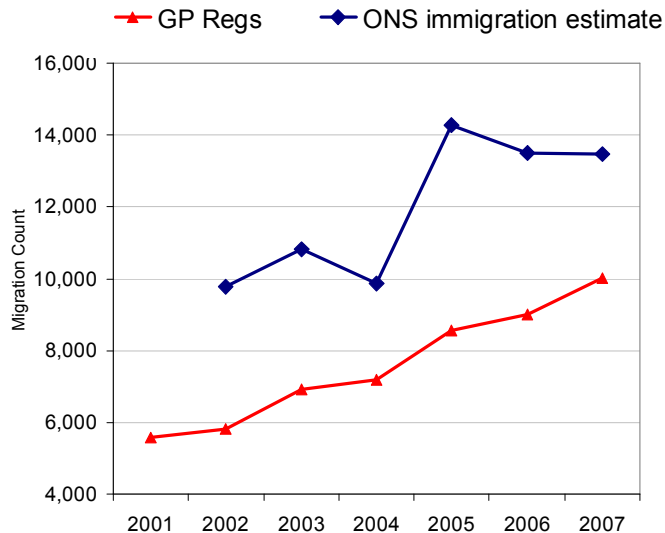
Research at the School of Geography has focused on the use of a range of alternative data sources for the measurement of international migration, specifically immigration. This research has highlighted significant ‘regional’ differences between ONS estimates of immigration and evidence from administrative data sources, specifically the registration of international migrants with a GP (Flag 4 data). Averaged over a three-year period, ONS estimates of immigration for Yorkshire & Humber were 16% higher than the total number of GP registrations (Figure 4).

Figure 4: ONS immigration estimates compared to GP registration statistics



This discrepancy is magnified at a local level. An illustration of the profile of ONS immigration estimates and GP registration (Flag 4) statistics in Leeds over an extended time-series shows the extent of the discrepancy between the two (Figure 5). The data suggests that immigration estimates for Leeds have typically been too high, most likely due to the methodology for estimating immigration flows at a regional level using a combination of sample datasets (International Passenger Survey and the Labour Force Survey).

Figure 5: ONS immigration estimates compared to GP registration (Flag 4) statistics, Leeds



4. Alternative estimates of immigration and population

In our research we have used a combination of administrative datasets (GP registrations, NINO national insurance number registrations, and HESA international student numbers) to derive an alternative estimate of immigration for each local authority area in the UK.

This method uses the national statistics on immigration from the International Passenger Survey but distributes them sub-nationally using a combination of the administrative datasets. This produces an alternative estimate of immigration that redresses some of the 'regional imbalances' previously identified and aligns these estimates more closely to local statistical evidence from administrative sources.

These alternative immigration estimates have been calculated for 2001-2007 and used to derive an alternative mid-year population estimate for Leeds. This is a 'single component-focused' method as no changes are made to the existing emigration, internal migration or natural change components of the estimation procedure.

Nevertheless the alternative output presented here illustrates that using the alternative estimate of immigration for Leeds, the mid-year estimate of population in 2007 is **734,300**, which is almost 27,000 lower than that calculated in the ONS mid-year statistics (Figure 6).

Similarly, the alternative immigration estimate has been applied to the 2006-based population projections (again keeping other components unchanged). This results in a population projection for Leeds in 2026 of **830,000**, some 108,000 lower than that projected in the ONS published statistics (Figure 7).

Figure 6: Leeds, mid-year population estimates using alternative immigration estimates

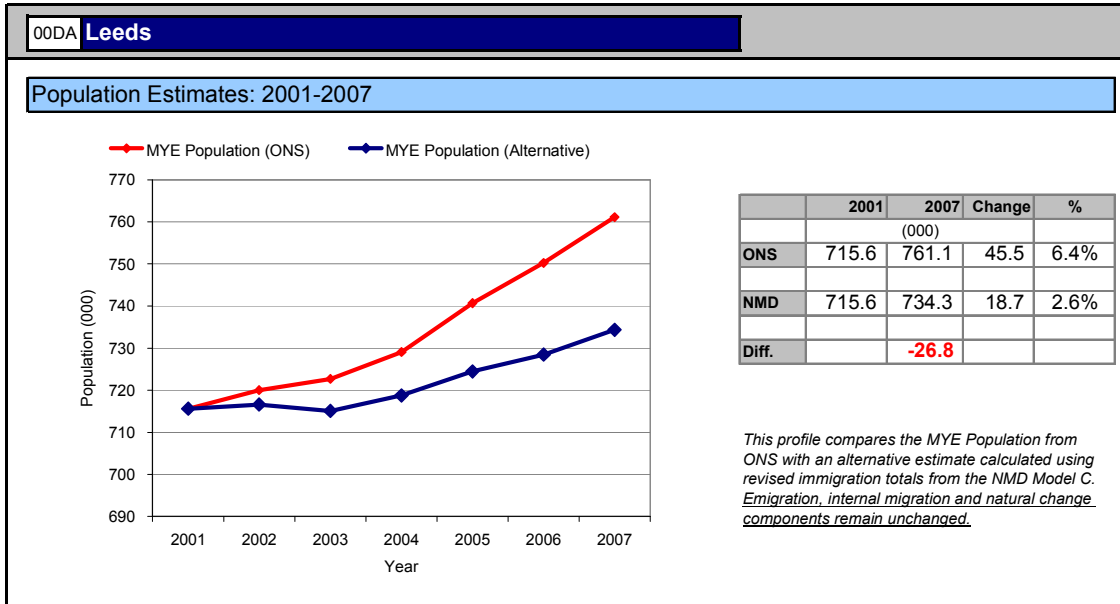


Figure 7: Leeds, population projections using alternative immigration estimates

Scenario	Population (000)			
	2008	2026	incr	% incr
1 Base (SNPP 2006)	770	938	169	22%
2 Base (alternative)	770	830	61	8%
Difference			-108	

5. Concluding comments

The 2006-based population projections estimate that the population of Leeds will grow by 22% to 2026, an additional 169,000 people in the city. The dominant component in this growth is ‘net immigration’.

Our research suggests that the methodology used to estimate immigration has resulted in flows that are too high for Yorkshire & Humber and for Leeds in particular. Alternative estimates suggest that projections to 2026 could be up to 108,000 lower than published. The existing mid-year estimate for Leeds may also be too high.

ONS will be consulting on new estimation methodologies during the remainder of 2009, using administrative datasets more directly in its immigration methods. Retrospectively revised mid-year estimates will be produced in Spring 2010 together with 2008-based sub-national projections. The ongoing effects of the recession are likely to impact upon international migration assumptions in addition to any planned methodological changes.

In the absence of a population register, robust estimation of immigration is very difficult (emigration estimation even more so). Given this difficulty it is necessary to ensure that local (administrative) datasets are used to validate official estimates and to quality assure what is a crucial component of demographic change in the city.