

# **Improved Methods for Estimating International Migration**

## **The Use of the Labour Force Survey to Improve Estimates of International In-migration - Coverage and Quality**

### **Introduction**

The Labour Force Survey (LFS) is a quarterly household survey conducted across Great Britain by ONS. An equivalent survey is conducted in Northern Ireland so that outputs are available on a UK basis.

The main purpose of the LFS is to collect and provide information on the UK labour market. In so doing, the survey collects information that, in conjunction with data from other sources, can be used in the estimation of international in-migration.

Each household sampled for the LFS remains in the sample for five successive quarters. Around 60,000 households are sampled each quarter and approximately one-fifth (or 12,000) of these households each quarter is in the sample for the first time.

People living at more than one address are only sampled by the LFS at their main residential address. People temporarily away from their usual address, for six months or less, are included in the LFS, where their information can be collected by proxy from another household member.

Migrants are identified from responses to the question asking where the respondent was living 12 months previously. Those who were living abroad 12 months previously are categorised as international in-migrants.

The questions relating to migration are only asked in the spring quarter each year at present. This will change when the LFS becomes part of the new enlarged household survey - the Integrated Household Survey (IHS) - in April 2008. Through the IHS, the migration questions will be asked of all respondents in all quarters.

The main LFS sampling frame covers all private households in Great Britain but excludes most communal establishments. An additional sampling frame covers about 92 per cent of residents in NHS staff accommodation.

Students living in halls of residence or boarding schools are covered by the LFS if their parents are resident in Great Britain, as information about them is collected by proxy at their parents' address. This is not the case, however, for most international migrant students living in halls of residence/boarding schools, as their parents are likely to live abroad.

The exclusion of most communal establishments from the LFS, in particular those housing international migrant students, has the potential to introduce bias into the sub-national distribution of international in-migrants from the LFS. ONS has investigated whether this is the case and found that there is no cause for concern at the country/regional level. The results of this investigation are reported later in the paper.

## **Use of LFS data in the improved sub-national distribution of in-migration estimates**

ONS plans to use LFS data to improve the distribution of UK international in-migration estimates between the countries of the UK and between government office regions (GORs) within England. Current estimates at country and GOR level are based on data from the International Passenger Survey (IPS). On arrival in the UK, the IPS asks migrants where they intend to live. Data on international in-migration is also available from the 2001 Census and the LFS. Both of these data sources record where respondents are actually living. Analysis of data from the IPS, the 2001 Census and the LFS has shown that the distribution of where migrants live by country and region differs from where migrants state they intend to live in the IPS.

The improved methodology will use a country and GOR distribution from the LFS to apportion UK estimates of international in-migration from the IPS. The LFS data used will cover a three year period to ensure estimates at the country and GOR level are robust.

Within London, ONS further proposes to use LFS data to distribute the estimate of international non-student in-migrants for the London GOR between intermediate geographies, as the first step in a two-stage process of apportioning GOR level estimates between local authorities. ONS does not propose to use LFS data in this way outside London because the sample of migrants in the LFS is insufficient to permit sub-regional estimates outside London.

### **Coverage of communal establishments**

Users of population statistics have expressed concern as to whether or not the exclusion of most communal establishments from the LFS, in particular those housing migrant students, has the potential to introduce bias into the sub-national distribution of international in-migrants. The analyses described over the following sections were conducted to assess whether this was the case and, if so, whether this would have a significant impact on the resulting distributions.

### **Analysis of international in-migrants resident in households and communal establishments, 2001 Census**

Unlike the LFS, the 2001 Census covered both private households and communal establishments. Table 1 shows the percentage of international in-migrants (those living outside the UK one year ago) resident in households and in communal establishments in the 2001 Census for Wales and for GORs in England.

Table 1: People living outside the UK one year ago now living in households or communal establishments in England and Wales, 2001 Census by region

	Households	Communal Establishments	Total	Percentage in Communal Establishments
North East	8,194	1,586	9,780	16.2
North West	21,767	4,523	26,290	17.2
Yorkshire & The Humber	21,293	3,289	24,582	13.4
East Midlands	15,880	2,792	18,672	15.0
West Midlands	19,380	4,114	23,494	17.5
East	30,677	5,901	36,578	16.1
London	111,905	9,087	120,992	7.5
South East	58,750	12,533	71,283	17.6
South West	23,526	5,308	28,834	18.4
England	311,372	49,133	360,505	13.6
Wales	8,009	1,919	9,928	19.3
England & Wales	319,381	51,052	370,433	13.8

For England and Wales as a whole in 2001, 14 per cent of international in-migrants lived in communal establishments. For Wales and most of the English GORs, the proportions varied between 13 and 19 per cent. For London, however, the proportion was lower at 7.5 per cent.

Because the proportions of in-migrants resident in communal establishments were similar for most regions in 2001, using the LFS to distribute in-migrants at UK country/GOR level is unlikely to result in biased estimates in most areas. However, the lower proportion of in-migrants living in communal establishments in London may result in a slight over-estimate of in-migrants for this region.

### **Distribution of international migrant students in the LFS and the IPS**

As mentioned above, analysis has shown that the distribution of where international in-migrants live by country and region as recorded by the LFS differs from where in-migrants tell IPS interviewers they intend to live. Whilst differences for individual regions can vary year on year, the proportion of in-migrants living in London compared to the rest of the UK is consistently higher in the IPS than in the LFS. In order to investigate whether this difference is observed for both students and non-students, analysis was carried out using data from the LFS (combined years 2001-2005) and the IPS (combined years 2000-2004). The term 'students' refers to those classified as 'full time students' in the LFS, and to those whose main reason for visit in the IPS was 'formal study'.

Table 2 compares the LFS and IPS distributions of student and non-student international migrants between London and the rest of the UK.

Table 2: Distribution of student and non-student international in-migrants, LFS vs IPS, London and the rest of the UK, percentages

	LFS 2001-2005			IPS 2000-2004		
	London	Rest of UK	All	London	Rest of UK	All
Students	16.6	16.2	16.3	24.5	25.8	25.3
Non-students	83.4	83.8	83.7	75.5	74.2	74.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

The proportion of international in-migrants who were students in the LFS was 16 per cent compared to 25 per cent in the IPS. This lower proportion of students in the LFS is consistent for London and the rest of the UK, reflecting the fact that most international students living in communal establishments are not included in the LFS sample.

Table 3 compares the LFS and IPS distributions of migrants between London and the rest of the UK for students and non-students.

Table 3: Distribution of international migrants between London and the rest of the UK, students and non-students, LFS vs IPS, percentages

	LFS 2001-2005			IPS 2000-2004		
	Students	Non-students	All	Students	Non-students	All
London	31.5	30.9	31.0	35.1	36.7	36.3
Rest of the UK	68.5	69.1	69.0	64.9	63.3	63.7
UK	100.0	100.0	100.0	100.0	100.0	100.0

The LFS estimated a lower proportion of UK in-migrants in London than the IPS (31 per cent versus 36 per cent). This difference was similar for both students (31 per cent versus 35 per cent) and non-students (31 per cent versus 37 per cent). Thus the undercoverage in the LFS of foreign students living in communal establishments has very little impact on the distribution of migrants between London and the rest of the UK.

### **Imputation of migrant students living in communal establishments**

The potential impact of the LFS not sampling international migrant students living in communal establishments upon the distributions obtained from the LFS has been evaluated using a two stage process:

- (i) Estimating the total number of international migrant students that the LFS would count if student communal establishments were sampled; and
- (ii) Imputing the London/rest of the UK distributions that would be obtained from the LFS if student communal establishments were sampled.

To address (i), the ratio of students to non-students was calculated from IPS inflows. This ratio was applied to the number of LFS migrant non-students, to give an estimated number of migrant students that would be recorded in the LFS if students in communal establishments were sampled.

To address (ii), two methods of imputation were used to investigate the possible impact of the ‘missing’ students on the LFS distribution.

- (a) Imputation using the LFS distribution of migrant students: assuming that the migrant students sampled in the LFS had the same geographical distribution as those not sampled.
- (b) Imputation using the IPS distribution of migrant students: assuming that the distribution of migrant students in the IPS was representative of all migrant students that could potentially be sampled by the LFS (i.e. those living in private households and in communal establishments).

The ‘true’ distribution of migrant students would be likely to fall somewhere between the values calculated under (a) and (b). Table 4 shows the imputed distributions using each of these approaches.

Table 4: Imputed London/rest of the UK distributions for LFS in-migrants if student communal establishments had been sampled, percentages

	LFS Original Distribution	Distribution Imputed Using:	
		LFS Distribution of Students	IPS Distribution of Students
London	31.0	31.1	32.0
Non-London	69.0	68.9	68.0
All	100.0	100.0	100.0

The proportion of international in-migrants living in London was almost identical for the original LFS distribution and the distribution resulting from imputing students in communal establishments using method (a) above (31.0 per cent versus 31.1 per cent). There was a slightly greater difference when the original LFS distribution was compared to the distribution calculated using method (b), but this was still small (31.0 per cent versus 32.0 per cent). Thus this analysis indicates that the undercoverage by the LFS of foreign students living in communal establishments has very little impact on the overall distribution of in-migrants across the UK.

## Conclusion

These analyses indicate that the very limited coverage of communal establishments in the LFS, and in particular the undercoverage of foreign students living in halls of residence and boarding schools, has very little impact on the distribution of in-migrants at UK country/GOR level. It should be noted that the impact may be greater when smaller geographic areas are considered (since student residences tend to be concentrated in specific local areas). This is the reason why, when distributing international in-migrants to intermediate geography level within London, the LFS has only been used to distribute non-student migrants.

## **LFS reference material**

Further details on the LFS:

<http://www.statistics.gov.uk/statbase/Product.asp?vlnk=1537>

The LFS user guide:

<http://www.statistics.gov.uk/StatBase/Product.asp?vlnk=1537&Pos=4&ColRank=1&Rank=176>