

Mid-2006 Short-term Migration Estimates for England & Wales

1. Introduction

1.1 Experimental estimates of short-term migration based on the International Passenger Survey (IPS) have been developed by ONS to supplement existing National Statistics of long-term migrants who change their country of residence for at least a year. The first experimental short-term migration estimates issued previously were for mid-2004 and mid-2005. This report presents the latest available figures, for mid-2006.

1.2 Further work is being undertaken to improve the timeliness and geographical coverage of these experimental estimates and to achieve National Statistics status. An element identified in achieving this status is to produce additional information on the quality of the estimates. A methodology has now been developed to provide standard errors¹ of the stock estimates of short-term migration. This quality measure is being published for the first time in this paper, standard errors were previously only available for the flow estimates. Further detail on the methodology is provided in Appendix 1.

2. Short-term Migration Flow Estimates

2.1 Within this section estimates for the period from 1st July 2005 to 30th June 2006 are referred to simply as “mid-2006”. Estimates of short-term visits in mid-2006 are presented in the tables below. Alongside the estimates are the associated standard errors expressed as a percentage. Any estimate from the IPS with a standard error greater than 25% should be treated with caution as they are subject to a high level of uncertainty.

Table 1: In-flow of overseas residents into England & Wales, by length of stay and reason for visit (in thousands)

Reason for Visit	3-12 month length of stay				1-12 month length of stay			
	mid-2004	mid-2005	mid-2006		mid-2004	mid-2005	mid-2006	
	In-flow	In-flow	In-flow	SE (%)	In-flow	In-flow	In-flow	SE (%)
Employment	59	90	108	12	113	175	208	9
Study	78	70	82	12	218	193	222	7
Employment or Study	138	160	190	8	331	368	429	6
Other	157	175	184	9	791	878	1,008	4
All Reasons	295	335	374	6	1,122	1,246	1,437	3

¹ The standard error is an indication of the accuracy of an estimate and how much a sample estimate is likely to differ from the true value because of random effects.

2.2 Inflows of short-term migrant workers are estimated to have increased between mid-2005 and mid-2006. In particular, visits for 3-12 months for employment rose by 20 per cent in this period. This was less than the rise between mid-2004 and mid-2005, the first year post accession.

2.3 As in other years, the majority of visits are stays of less than 3 months and for other reasons than employment or study, e.g. visiting friends and family or tourism purposes.

2.4 The term in-flow refers to short-term migration visits made by individuals who are usually resident outside the UK. Out-flow refers to short-term migration visits by individuals who are usually resident in the UK. Return moves of individuals who have been in the UK as short-term migrants are not counted as out-flows. For this reason in-flow and out-flow will not balance as they refer to different migration streams.

Table 2: Out-flow of England & Wales residents by length of stay and reason for visit (in thousands)

Reason for Visit	3-12 month length of stay				1-12 month length of stay			
	mid-2004	mid-2005	mid-2006		mid-2004	mid-2005	mid-2006	
	Out-flow	Out-flow	Out-flow	SE (%)	Out-flow	Out-flow	Out-flow	SE (%)
Employment	28	24	39	16	64	46	79	12
Study	11	9	11	28	28	35	28	19
Employment or Study	39	33	50	14	92	81	107	10
Other	370	358	368	5	2,136	2,319	2,412	2
All Reasons	409	391	418	5	2,227	2,399	2,519	2

2.5 Table 2 shows that when considering all reasons for visit there are more England & Wales residents making short-term visits abroad than short term migrants overseas entering England & Wales.

2.6 Overall, out-flow of short-term migrants from England & Wales has increased between mid-2005 and mid-2006. This is in contrast to the previous period where falls of between 3 and 27 per cent were recorded when looking at the different reasons for visit and lengths of stay. It is difficult to make any clear assessment of the trends of short-term out-migration from England & Wales given the short time series of data available.

3. Short-term Migration Stock Estimates

3.1 The stock refers to the average population present in an area over a specified period, whereas a flow is the number of visits made in a given period. Flows are not equal to stocks over a 12 month period for short-term migration as many of those who enter leave before the end of the year. The stock over a specified period is generally lower than the flows over the same period.

3.2 The stock of short-term migrants in England & Wales is referred to as 'in-stock' whereas the stock of England & Wales residents temporarily out of the country is referred to as 'out-stock'.

Table 3: In-stock of short-term migrants staying 3-12 months in England & Wales by reason for visit (in thousands) with mean length of stay (in months)

Reason for Visit	3-12 month length of stay						SE (%)
	mid-2004		mid-2005		mid-2006		
	In-stock	Mean Length of Stay	In-stock	Mean Length of Stay	In-stock	Mean Length of Stay	
Employment	20	5.1	36	5.3	48	5.5	12
Study	34	6.0	30	5.8	33	5.1	11
Employment or Study	54	5.6	67	5.5	81	5.4	8
Other	62	4.8	67	4.7	69	4.9	7
All Reasons	116	5.2	134	5.1	149	5.1	6

Table 4: In-stock of short-term migrants staying 1-12 months in England & Wales by reason for visit (in thousands) with mean length of stay (in months)

Reason for Visit	1-12 month length of stay						SE (%)
	mid-2004		mid-2005		mid-2006		
	In-stock	Mean Length of Stay	In-stock	Mean Length of Stay	In-stock	Mean Length of Stay	
Employment	28	3.8	50	3.8	64	4.1	9
Study	54	3.6	52	3.4	54	3.2	8
Employment or Study	82	3.6	102	3.6	117	3.7	6
Other	147	2.4	157	2.4	174	2.3	4
All Reasons	229	2.8	259	2.7	291	2.7	3

3.3 The stock estimates follow the same broad trends as exhibited by the flow estimates. The mean length of stay for all reasons for visit remains stable compared to mid-2005.

3.4 The standard errors associated with these estimates are being published for the first time in this paper. They show that there is a similar level of uncertainty around the stock estimates when compared to the equivalent flow estimates.

Table 5: Out-stock of short-term migrants overseas for 3-12 months by reason for visit (in thousands) with mean length of stay (in months)

Reason for Visit	3-12 month length of stay						SE (%)
	mid-2004		mid-2005		mid-2006		
	Out-stock	Mean Length of Stay	Out-stock	Mean Length of Stay	Out-stock	Mean Length of Stay	
Employment	13	5.5	11	6.0	16	5.8	17
Study	5	5.4	3	4.4	5	6.1	33
Employment or Study	19	5.5	14	5.6	20	5.8	15
Other	155	5.2	150	5.3	157	5.2	5
All Reasons	173	5.3	164	5.3	177	5.3	5

Table 6: Out-stock of short-term migrants overseas for 1-12 months by reason for visit (in thousands) with mean length of stay (in months)

Reason for Visit	1-12 month length of stay						SE (%)
	mid-2004		mid-2005		mid-2006		
	Out-stock	Mean Length of Stay	Out-stock	Mean Length of Stay	Out-stock	Mean Length of Stay	
Employment	18	3.5	14	4.1	22	3.9	13
Study	8	3.6	7	2.4	7	3.5	23
Employment or Study	26	3.6	21	3.5	29	3.8	11
Other	380	2.4	401	2.3	425	2.3	2
All Reasons	406	2.4	422	2.3	454	2.4	2

4. Next Steps

4.1 ONS research into short-term migration is focussing on developing short-term migration estimates at Local Authority level and a report assessing the feasibility of this is due for publication in November 2008.

4.2 Research has also been undertaken to investigate methods of improving the timeliness of short-term migration estimates. ONS is currently looking at the feasibility of using provisional IPS data to reduce the time between the reference and publication dates of these estimates.

A timetable for publishing estimates at England & Wales level for mid-2007 is under development.

4.3 In the longer term, ONS will continue the development of estimates of short-term migration with the aim of achieving 'National Statistics' status.

References

1. Office for National Statistics (2008) Updated Short-term Migration Estimates, mid-2004 and mid-2005, available at:
http://www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/downloads/STM_Update.pdf
2. Office for National Statistics (2008) A Reconciliation Exercise between IPS Based Estimates of International Immigration and Counts from Administrative Sources, available at:
http://www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/downloads/Reconciliation_Exercise.pdf
3. Office for National Statistics (2007) Research Report on Short-term Migration, available at:
http://www.statistics.gov.uk/about/data/methodology/specific/population/future/imps/updates/downloads/STM_Research_Report.pdf

Appendix 1 – Stock Estimates Standard Error Methodology

The expression for a short-term migrant stock estimate is

$$\sum_{i=1}^n d_i w_i \quad (1)$$

where w_i is the survey weight of the i th migrant case in the IPS, d_i is the number of days spent by the short-term in-migrant or out-migrant in or out of the UK, and n is the number of short-term migrant cases contributing to the estimate. The expression used for the standard error is

$$\sqrt{\sum_{i=1}^n (d_i w_i)^2} \quad (2)$$

However, since this expression is in units of days, it is then divided by the appropriate number (365) to convert it into units of years.

Discussion

The expression we use is a simplification, in two ways, of the one for a true standard error. Firstly the expression simplifies the true variance formula for the quantity being estimated, and secondly it ignores the survey design of the IPS.

a) Simplification of the true formula

A true simple sampling standard error would take into account every case in the IPS sample, whether or not it was a case of short-term migration. Those cases, for instance tourists that were not short-term migration cases would automatically have a zero value for d_i . We would calculate the simple mean of $d_i w_i$ as

$$\overline{dw} = \frac{\sum_{i=1}^N (d_i w_i)}{N} \quad (3)$$

where N is the size of the IPS sample from which the short-term migration is estimated, including cases that are not short-term migration cases. In the case of the in-migrant estimate N would be the size of the in-flow sample, and in the case of the out-migrant estimate N would be the size of the out-flow sample. The true expression for the simple sampling standard error would then be

$$\sqrt{\sum_{i=1}^N (d_i w_i - \overline{dw})^2} \quad (4)$$

We can show algebraically that expression (2) will always lead to a larger estimate than the true standard error given by expression (4), but also that if \overline{dw} is small, the overestimation will be small. This happens with the migrant stock estimate, because migrants are rare relative to visitors in the IPS sample.

It is inconvenient for ONS to collect IPS data in a form that allows expression (4) to be calculated, since normally data from migration filter shifts are not held on the same file as visitor data, and migrant variables are processed without using the full data set. However, the complete 2003/04 inflow sample was collected as a research exercise and showed that expression (2) increased the true simple sampling standard error by 2 per cent.

b) The survey design

Expression (4) gives the standard error that would arise if the IPS used simple random sampling. In fact, the IPS sampling design is highly complex, involving stratification (by port, terminal, quarter of year, time of day and time of week) and clustering in the sample due to the use of sample shifts. ONS estimates complex errors for a few key variables in the travel and tourism outputs in order to calculate the design factors, the ratio of complex standard errors to simple standard errors. Design factors give an idea of how much the simple standard errors underestimate the true standard errors.

The design factor for short-term migrant stock estimate is likely to be only slightly greater than one (i.e. underestimation of standard error from using simple standard errors will be small). This is because it is an estimate of a numeric variable (number of days), and numeric variables tend to have smaller design effects than those for counts or proportions.

Conclusion

Expression (2) will be used by the ONS for the standard errors of short-term migrant stock estimates. It simplifies the estimation of the true standard error by simplifying the true variance formula and ignoring the complex survey design. By simplifying the true variance formula it overestimates the true standard error by a small percentage, and by ignoring the complex survey design it underestimates the true standard error by a small percentage. The net effect should be that the expression used is close to the true standard error.