

Improving Migration and Population Statistics

Refinements to student adjustment method between indicative and final estimates

1. Introduction

1.1 A student adjustment method was used within the package of indicative improvements to the mid-08 population estimates. Office for National Statistics (ONS) has continued to research refinements to the student adjustment method since producing the set of indicative impacts. The refinements taken forward were in response to comments made at the internal quality assurance, the Local Insight Reference Panel (LIRP), Expert Peer Review Group and the topic specific students reference group.¹ The student adjustment process was re-run in January 2010, taking these refinements into account.

1.2 Refinements were taken forward in 4 areas, summarised in 2 below. More detail is given in 3 below.

2. Summary of refinements

2.1 Proportion of overseas students assumed to stay in England and Wales once they finish their studies

2.1.1 National Insurance Number (NINo) data were used in the production of the indicative impacts to estimate what proportion of overseas students remain in England and Wales after their studies. The refinement work carried out updates the NINo data for each year rather than use data for 2000/01 only, as in the production of the indicatives.

2.2 The method for dealing with records with unknown term-time residence

2.2.1 The Higher Education Statistics Agency (HESA) dataset contains a variable which flags whether a student is living at their parental home during term-time, and further investigation showed this to be of adequate quality for those students included in the adjustment method. This information can be used to refine the imputation of term-time address. Where term-time address is missing, if a student is living at their parental home it is possible to assume that a migration move did not take place. This refinement is particularly important to improve the validity of the student adjustment in Salford.

¹ These meetings are part of the quality assurance strategy for the improvements. Further detail on the quality assurance strategy is available at: <http://www.ons.gov.uk/about-statistics/methodology-and-quality/imps/updates-reports/quality-assurance-strategy.pdf>

2.3 The leaving rates and non-registration rates for post-studies moves

2.3.1 It was necessary to use a number of assumptions about the Census data used in the 'from studies' adjustment. This element of the refinement work explored whether these assumptions were suitable and how these could be improved.

2.4 Refinements to the double-counting adjustment

2.4.1 The double-counting adjustment was revisited as internal quality assurance comments suggested alternative approaches which should be explored. These involved refining the data on which the double-counting adjustment is based.

3. Refinements

3.1 Proportion of overseas students assumed to stay in England and Wales once they finish their studies

3.1.1 The student adjustment does not cover international migration moves. However, overseas students who remain in the UK after the end of their studies are treated as usually resident. If such individuals move Local Authority (LA) at the end of their studies this should be identified as an internal migration move through patient re-registration.

3.1.2 The 'post studies' adjustment includes an allowance for a proportion of overseas-domiciled leavers who stay in the UK. This is based on National Insurance Number (NINo) registrations. These are then subsequently treated using the same process as UK-origin leavers i.e. to identify how many didn't re-register with a GP if they moved and where they moved to.

3.1.3 Reason for the change

3.1.3.1 Originally the percentage of overseas students assumed to stay in the UK was based on 2001 National Insurance Number (NINo) and HESA data. The NINo registrations data included in-migrants who had arrived at least 3 years before their application; the HESA data included overseas students who had finished their studies in 2001 and were in at least their third year of study. Dividing the NINo 'delayed registrations' by the HESA count gave an estimate of 25 per cent of overseas leavers staying in the UK. However issues emerged concerning the data used and how they were processed:

- the data provider (Department for Work and Pensions) recommends that NINo data prior to 2002 should not be used due to data quality issues
- the NINo data were limited to those aged 21 to 28, but the HESA data was inclusive of all ages
- there was an error in the NINo SAS coding that has subsequently been discovered, and
- the term-time residence of *UK domiciled* leavers had been used to impute term-LAs to *overseas domiciled* leavers

3.1.4 Details of the change

3.1.4.1 The proportion of overseas domiciled students who stayed in England & Wales at the end of their studies was recalculated using NINo and HESA data for each year from 2002. The resultant proportions are between 40 and 60 per cent –

see Table 1. These are considerably larger than before: a result of not using the 2001 NINo data and correcting the coding error.

Table 1 – NINo registrations¹ and HESA overseas leavers², ages 21-28

Year	NINo Data	HESA Data	% staying in the UK
2002	7808	19575	40
2003	9911	20025	49
2004	11685	20690	56
2005	13617	22520	60
2006	12071	24757	49
2007	12605	25703	49

1 NINo registrations made at least 3 years after arrival in the UK

2 HESA overseas leavers after at least their 3rd year of study

Source: Office for National Statistics – based on HESA data

3.1.4.2 Having calculated the percentage of overseas leavers assumed to stay in the UK after finishing their studies, this is applied to the HESA data on overseas leavers. The numbers resulting from this are then treated as for other university leavers, in terms of the percentage assumed to move out the LA and not changing their GP registration when they do so.

3.1.4.3 In addition, unknown term-LA locations of overseas leavers were imputed using those known for overseas leavers, rather than the residence patterns of UK origin students.

3.2 The method for dealing with records with unknown term-time residence

3.2.1 Reason for the change

3.2.1.1 In the 2007/08 data, ten per cent of first year undergraduate records had missing term LA information. A further one per cent had a term LA that wasn't considered feasible². In the previous method where term LA was missing or unfeasible it was imputed using the residence patterns at that institution where a feasible term LA had been given (first year undergraduates, according to age and sex).

3.2.1.2 Three institutions had 99 per cent or more records missing term LA information. For two of these (Staffordshire and Southampton Universities) it was assumed that all students lived in the LA of the campus; for the third (Salford University), a 9:1 split was used between Salford and Manchester LAs, as some hall and private accommodation was available in the latter.

3.2.1.3 The adjustment to Salford was particularly large and suggested the imputation should be revisited. The HESA data shows that 56 per cent of Salford University first year undergraduate students had a domicile in a district neighbouring Salford. It seemed unlikely that these students would have moved to another LA to study at the university.

² Considered feasible if in the same Government Office Region (GOR) as the campus of study, or in a neighbouring GOR

3.2.2 Details of the change

3.2.2.1 The HESA data contains a variable which identifies whether a student is living in their parental home in that year of study³. This was not used in the adjustments implemented to produce the indicative impacts. Details of the changes are as follows:

- the 'to studies' adjustment was recalculated removing records where term LA was missing if they were living at their parental home and if address was within a feasible distance of the campus of study (i.e. in the same or neighbouring GOR)
- 'end studies': for leavers with unknown term LA but living at parental home, the domicile LA was used directly as the last term LA
- in addition, imputation of unknown term LA for those not at parental home (i.e. student migrants) was done using data on known term LAs for student migrants
- It is noted that the change is being made for all universities, not just those highlighted in 3.2.1.2.

3.3 The leaving rates and non-registration rates for post-studies moves

3.3.1 Reason for the change

3.3.1.1 It was necessary to use 2001 Census data to produce the end of studies adjustment. Specifically the data was used to identify what proportion of former students move LA at the end of their studies and what proportion did not change their GP registration when they moved (the non-registration rate).

3.3.1.2 A known issue with the 2001 Census was the unexpectedly high number of 'no usual address a year ago' responses. In the original adjustment it was assumed that a proportion of these records had changed address in the previous twelve months. The other important issue with the census data used were the addition to the mid-2001 population estimates following the LA studies and LS adjustment work. These were additions to the population total were by age and sex only, they didn't identify whether the individuals had changed address in the previous twelve months. A proportion of these 'mid-01 addition' records were assigned as migrants in the original adjustment.

3.3.1.3 ONS' internal methodology quality assurance panel recommended that ONSCD revisit how these additions to the Census were treated after the indicative estimates were produced.

3.3.2 Details of the change

3.3.2.1 For both the 'no usual address' and 'mid-01 additions' it is necessary to estimate what proportion were graduate migrants. For the proportion moving LA at the end of their studies, both proportions had been calculated without first removing records with 'no usual address' from the denominator and using all migrants rather than just graduates. Similarly, for the non-registration rate, records with 'no usual address' should have been excluded from the denominator.

3.3.2.2 These were amended and fed through into the rest of the end of studies adjustment. In addition, rates were separately calculated for males and females.

³ Note regarding the quality of this variable – judged to be adequate for full-time (FT) and sandwich (SW) students but not for part-time and others.

3.4 Refinements to the double-counting adjustment

3.4.1 Reason for the change

3.4.1.1 A double-counting adjustment is required as the student adjustment is being used to correct for late patient re-registrations. Without a double-counting adjustment, when an individual does eventually re-register the move will be counted twice if their original move had been adjusted for.

3.4.1.2 In the indicatives, the double-counting adjustment was based on patient registration data. Students were identified as living in halls of residence (based on their postcode) and then tracked longitudinally to identify when they did eventually re-register. This 'phasing' approach followed a cohort of patient registrations registered as living in a hall of residence postcode in 1999, having already been registered as living there for at least 3 years (for the start of study double-counting adjustment) and for at least 5 years (for the end of study double-counting adjustment). ONS' methodology quality assurance panel raised concern that the approach did not account for how much longer than 3 or 5 years individuals had been registered as living at that postcode.

3.4.2 Details of the change

3.4.2.1 The phasing was recalculated based on cohorts found in halls who had spent exactly 3 or 5 years in 1999, 2000 and 2001. Phasing showed a good degree of consistency year on year. As a result the phasing is based on the aggregate across all three years.

3.4.2.2 As with the previous double-counting adjustment, the phasing was calculated separately for males and females as evidence showed that women are quicker to re-register than men.

3.4.2.3 The change to the phasing of the double-counting adjustments for 'to studies' and 'post studies' moves are shown in Table 2 and Table 3. For both the start and end of studies adjustments the impact is to counter-adjust slightly more than was done on the indicative impacts. Slight increases are shown for both males and females.

Table 2 – Impact of using new phasing for start of study double-counting adjustment

	Re-registration After X Years			
	1	2	3	4
New Phasing				
Males				
% Changing Registration	42%	23%	10%	7%
Cumulative %	42%	65%	75%	83%
Females				
% Changing Registration	71%	18%	5%	2%
Cumulative %	71%	89%	95%	97%
Phasing in Indicatives				
Males				
% Changing Registration	30%	15%	7%	5%
Cumulative %	30%	45%	52%	57%
Females				
% Changing Registration	68%	15%	7%	4%
Cumulative %	68%	83%	90%	94%

Source: Office for National Statistics

Table 3 – Impact of using new phasing for start of study double-counting adjustment

	Re-registration After X Years					
	1	2	3	4	5	6
New Phasing						
Males						
% Changing Registration	19%	9%	5%	4%	2%	1%
Cumulative %	19%	29%	34%	38%	40%	42%
Females						
% Changing Registration	39%	15%	8%	1%	3%	1%
Cumulative %	39%	54%	62%	63%	65%	66%
Phasing in Indicatives						
Males						
% Changing Registration	12%	9%	8%	4%	2%	5%
Cumulative %	12%	21%	29%	33%	35%	40%
Females						
% Changing Registration	39%	24%	8%	3%	2%	3%
Cumulative %	39%	63%	71%	74%	76%	79%

Source: Office for National Statistics

4. Summary

4.1 There are a number of different types of refinements described in this paper: better data were used for overseas students and for unknown term-time address; detailed method refinements were used for the leavers' assumptions and the double-counting adjustment.