



Long DLHE 1011 Weighting Process

Weighting

- 1.1 As per the previous survey, Samples 'A' and Sample 'B', were combined and analysed as one. In line with previous approaches to weighting, the samples were weighted, firstly to correct for selection bias and then to correct for response bias, to ensure that the weighted survey findings were representative of those who completed the six month DLHE survey.
- 1.2 An additional weight was also developed for use when conducting analysis at individual HEP level.
- 1.3 The remainder of this chapter describes in detail the specific weighting methodology that was used.
- 1.4 The database of graduates selected to take part in the survey was split into two sub-samples:
 - **Sample 'A'**: A group which was sampled using various sampling fractions, dependent on key profiling variables. The purpose of the sampling fraction was to over and under-sample certain groups in order to respectively boost the number of cases in particular subgroups and prevent certain groups from dominating the sample. Within this group the sampling fraction ranged between 0.06 (6%) and 1 (100%). Respondents selected in the sample were vigorously followed up using telephone, postal and email contact to ensure they completed the survey.
 - **Sample 'B'**: A purposeful sample of respondents for whom emails and mobile phone numbers were available. All of these respondents had a 100% probability of selection. These respondents were only invited via email and text message not followed up using other methods.

Stage 1 – Sampling Weights

- 1.5 Both completes and incompletes for Sample A were initially weighted to correct for the different sampling fractions used. The weights were the inverse of the sampling fraction by case. A scaling factor was applied to these weights across Sample A to give an average weight of 1, delivering the same weighted as unweighted base.
- 1.6 Given that Sample B was a purposeful sample, all cases in Sample B were assigned a weight of 1 at this stage (effectively leaving them unweighted).
- 1.7 The net outcome was to provide sampling weights for both samples which give the same unweighted as weighted marginal totals for Sample A and B. The Sample A weights were used as an input weight into Stage 2.

Stage 2 – Non-Response Weights

- 1.8 A predictive model was developed to model non-response behaviour (whether respondents completed the survey) using Binary Logistic Regression. Given the large difference in response rate between



Sample 'A' (43%) and Sample 'B' (13%)¹ and following the same convention as the last wave of research, it was decided to develop the model based on Sample 'A' only and then apply the predictions from the Model to both Sample A and B.

- 1.9 The Logistic Regression model provided a prediction of the probability of completing vs not responding. The model was estimated with the sampling weights from Stage 1 active.
- 1.10 The following profiling variables were screened as potential predictors:
- Method of Data Collection for the Early Survey
 - Age
 - Maximum Level of Qualification Obtained
 - Subject of Course
 - DLHE Activity
 - Specialist Higher Education Institution
 - Ethnicity (Asian; Black; Mixed; Other; White; Unknown/Refused)
 - Disabled and in receipt of DSA
 - Domicile
 - Industrial Placement
 - Employment activity
 - Maths marker
 - Country of Institution
 - Health Education England leaver
 - OUG Marker
- 1.11 A number of variables in the model were recoded or collapsed across categories to provide a simpler model.
- 1.12 All "non-completes" were deleted from Samples 'A' and 'B' and a predicted probability of completion was scored on the "completes" in each sample, using the model described above. These probabilities were then inverted to give a second, non-response, level of weighting. The net effect was to weight Sample A and B to correct for differential response rates resulting from the above variable.

Stage 3 – Final Composite weights

- 1.13 A composite weighting variable was created from Stages 1 & 2, for completes only, and rescaled to ensure the weighted and unweighted bases for completes in Sample 'A' and 'B' were identical.
- 1.14 Trimming was applied to the largest weights to ensure that weights were capped at 5. This only applied to approximately the top 2% of cases. The trimmed weights were then rescaled separately within Sample

¹ The difference in response rate between Sample A and B is a result of Sample 'A' graduates being followed up more extensively than Sample 'B'.



'A' and 'B' to give the correct marginal totals for the base sizes.² This final weight is the weight used in the analysis.

HEP weights

- 1.15 As well as national weights a set of HEP specific weights were calculated to correct for response bias at HEP level. This was done on the combined completed interviews from Samples 'A' and 'B'. The process for calculating HEP weights was based on that used for the previous DLHE Longitudinal Survey, and differentiated depending on the number of interviews completed for that HEP.
- 1.16 For HEPs with 400 or more DLHE Longitudinal Survey respondents the survey data are weighted so as to give a close percentage match between the survey and the census in terms of broad subject group, the part-time/full-time split; and the postgraduate/undergraduate split.
- 1.17 The broad subject groups in the DLHE Longitudinal Study were: health and welfare; science and agriculture; engineering, manufacture and construction; social science, business, law and combined; humanities and arts; education.
- 1.18 For HEPs with between 200 and 399 DLHE Longitudinal Survey respondents the survey data were weighted so as to give a close percentage match between the survey and the census in terms of the part-time/full-time split; and the postgraduate/undergraduate split.
- 1.19 For HEPs with between 100 and 199 DLHE Longitudinal Survey respondents the survey data are weighted so as to give a close percentage match between the survey and the census in terms of the postgraduate/undergraduate split.
- 1.20 For HEPs with fewer than 100 DLHE Longitudinal Survey respondents no HEP level adjustment has been made.

² Note the effect of this final rescaling is to raise some of the weights to slightly over 5, though the range of the final weights was considered reasonable.

