

# 2016 Graduate Outcomes Survey - Longitudinal Methodological Report

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Social  
Research  
Centre

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## List of abbreviations

<b>ABS</b>	Australian Bureau of Statistics
<b>AGS</b>	Australian Graduate Survey
<b>AMRS</b>	Australian Market and Social Research Society
<b>ATSI</b>	Aboriginal and Torres Strait Islander
<b>BGS</b>	Beyond Graduation Survey
<b>CATI</b>	Computer Assisted Telephone Interviewing
<b>CEQ</b>	Course Experience Questionnaire
<b>ESS</b>	Employer Satisfaction Survey
<b>GCA</b>	Graduate Careers Australia
<b>GDS</b>	Graduate Destination Survey
<b>GOS</b>	Graduate Outcomes Survey
<b>GOS- L</b>	Graduate Outcomes Survey - Longitudinal
<b>GOQ</b>	Graduate Outcomes Questionnaire
<b>HEIMS</b>	Higher Education Information Management System
<b>ISO</b>	International Standards Organisation
<b>LFS</b>	Labor Force Survey
<b>PREQ</b>	Postgraduate Research Experience Questionnaire
<b>QA</b>	Quality Assurance
<b>QILT</b>	Quality Indicators for Learning and Teaching
<b>SES</b>	Student Experience Survey
<b>TSE</b>	Total Survey Error

# 1. Introduction

## 1.1. Overview

This report documents the technical aspects of 2016 Graduate Outcomes Survey - Longitudinal (GOS-L), conducted on behalf of the Australian Government Department of Education and Training (the Department).

It seeks to:

- document and review survey processes
- consolidate project documentation and assorted reports generated throughout the survey period
- review methodological and operational procedures with a view to inform future survey iterations.

The appendices attached to this report contain core survey materials (including the questionnaire, invitation and reminder communications), in-field reporting module examples, details of participating institutions and non-reportable respondent characteristics.

## 1.2. About the Graduate Outcomes Survey - Longitudinal (GOS- L)

The GOS- L replaced the Beyond Graduation Survey (BGS) as part of the rollout of the Quality Indicators for Learning and Teaching (QILT) suite of surveys, commissioned by the Australian Government Department of Education and Training. The Social Research Centre worked with higher education providers and key stakeholders to administer the GOS- L.

The BGS commenced in 2009 to provide an insight into the activities, outcomes and experiences of graduates from Australian higher education institutions several years after the completion of their studies. The BGS surveyed respondents to the Australian Graduate Survey AGS three years after course completion, and was the first large-scale longitudinal study of Australian higher education graduates.

The BGS focused on the main activity of the graduate at the time of the survey, particularly in relation to work and further study. Additional information about activities in which the graduate had engaged between course completion and the present was also collected. Graduates were also asked to make a retrospective assessment of both their course experience and the contribution that their higher education experience has made to their lives.

From February 2016, the Graduate Outcomes Survey-Longitudinal (GOS- L) replaced the BGS.

Elements of the BGS instrument were retained, however the GOS- L instrument was designed to link back to the Graduate Outcomes Survey (GOS), to allow longitudinal analysis of graduate outcomes, and enable comparison with the National Labour Force statistics.

The questionnaire was designed to use, where possible, established and validated instruments to collect data; allowing an objective comparison to be made between graduate outcomes and national labour force statistics and other indicators such as over qualification and graduate attributes.

Graduates who completed a course in 2012 and responded to the Australian Graduate Survey (AGS) in 2013 were invited to participate in the 2016 GOS- L. Graduate sample including contact information

was provided by the higher education institutions whose graduates completed the 2012 AGS, and agreed to recontact through the provision of their email address.

**Table 1**      **Design features of the GOS- L**

<b>Feature</b>	<b>Element</b>
Research design	Follow-up
Instrument	GOQ-L
Sample frame	AGS (until 2018)
In-scope population	All higher education graduates who completed the establishment survey
Census/Sample	Census
Data collection mode <sup>2</sup>	Online
Reference dates	Week prior to the survey
Enumeration period <sup>3</sup>	One month
Focus	Medium term labour force outcomes
Previous survey of this cohort	Beyond Graduation Survey (BGS)
Participation requirements	Higher education institutions that took part in the establishment survey
Institutional items	Yes
Additional populations	Yes



## 2. Overview of the GOS- L

Table 2 contains an overview of the 2016 GOS- L data collection. In total 51 institutions participated in the GOS- L, with 94,101 graduates ruled as in-scope for the survey. Given that the length of time between the AGS and GOS- L was three years, the response rate was higher than expected at 33.3 per cent overall. This translated to 30,338 surveys. As shown in Appendix 1, the majority of the sample and responses were from the university sector with postgraduates responding at a proportionally higher rate (36.0% university and 40.4% NUHEI) than undergraduates (31.6% university and 30.9% NUHEI).

**Table 2** GOS- L project overview

Project element	University	NUHEI	Total
No. of participating institutions	37	14	51
No. of in-scope graduates	93,172	929	94,101
No. of completed surveys	30,040	298	30,338
Response rate (%)	33.3%	33.0%	33.3%
Data collection period	February		
Data collection mode	Online		
Analytic unit <sup>1</sup>	Graduate		

### 2.1. Mitigating potential sources of error

The Social Research Centre approaches quality assurance for survey research from a Total Survey Error (TSE) paradigm. This approach is further informed by the quality dimensions outlined in the ABS' Data Quality Framework (i.e. Relevance, Timeliness, Accuracy, Coherence, Interpretability and Accessibility). The TSE approach identifies all potential sources of error in the design, collection, processing and analysis of survey data and provides a theoretical and practical framework for optimising survey quality within given design parameters. This understanding of Total Survey Error has enabled the Social Research Centre to design a Total Survey Quality Framework which allows us to address known quality issues at every stage of the survey cycle.

The main sources of error affecting survey accuracy include specification errors (e.g. misinterpretation of project aims and objectives), sampling frame errors and omissions (e.g. gaps, biases, inaccuracies in the sampling frame), sampling error (e.g. biases in the respondent selection routine or sub-sampling routines) measurement error (e.g. questionnaire design errors, interviewer errors, respondent errors), non-response error (e.g. both unit-level and item-level non-response) and data processing errors (e.g. errors in data editing, coding, weighting or the creation of data files or tables).

The Social Research Centre has had an accredited ISO Quality Assurance (QA) scheme in place for over five years which addresses each of these points in the survey cycle. Our QA system documents all responsibilities, authorities, procedures and the corrective action process. All key junctures of the project process are covered by the quality system, with a particular focus on project scoping (to reduce specification error), pre-field checks (to reduce measurement error as a result of questionnaire design), output auditing (to reduce data processing errors) and project review (consistent with a continuous improvement approach towards limiting total survey error).

The transition of graduate surveys from the BGS to the GOS-L provided an opportunity to review the previous methodology and procedures with a view to improving robustness and mitigating potential sources of error. With that in mind, a number of areas were identified as potential sources of error to be remediated, as well as aligning the TSE framework with current practices within the Social Research Centre, as outlined in Table 3.

**Table 3 Potential sources of survey error relevant to the GOS-L**

Error type	Source of error	Context	Mitigation strategy
<b>Coverage error</b>	In-scope population inaccurately represented in the sample frame	Previous longitudinal graduate surveys used a sample frame that was not refreshed or maintained. It was unknown whether the contact information for in-scope graduates was accurate. Some institutions had also elected to suppress information vital to completing the survey such as course name, graduate name and email address.	Institutions were provided with the option to update contact details and complete records that were missing key data fields. If institutions elected not to update missing fields, additional programming ensured that the email invitations were as personalised as they could be and this required data was captured as part of the survey.
<b>Sampling error</b>	Incorrect graduates selected to participate	Institutions have the option to flag graduates they believe to be out-of-scope. Graduates may also report that they are not eligible to complete the survey.	Overall, out-of-scope graduates constituted less than .5 of a per cent of the available sample. These records will be further examined to assess where there are an unacceptably high proportion of graduates are flagged by institutions or screen out during the survey.
<b>Non-response error</b>	Unit level non-response	Online data collection may result in unacceptably high levels of non-response by graduates.	The GOS-L is supported by a complementary and detailed range of response maximisation strategies implemented by the Social Research Centre and institutions. The responsive design of the GOS-L ensures that follow-up aims to maximise both response rate and representativeness. Our approach resulted in a overall response rate of 33 per cent which is a substantial improvement from the 13 per cent achieved most recently for the BGS.
	Item-level non-response	Graduates may skip items that they feel are irrelevant, unimportant or too sensitive. They may also be unable (or unwilling) to readily recall their employment history for the past three years.	Item level non-response was minimised by ensuring that all questions were relevant to graduates. A number of options were included for items know to have high levels of non-response, such as salary, to maximise the opportunity for data capture. The online survey was designed to simplify complex employment history sequences to ease respondent burden and aid accurate recall.
<b>Validity</b>	Questionnaire fails to measure the relevant constructs	While the core concepts of previous graduate surveys were retained, the instrument was fully redesigned.	Established and validated instruments were used for the core of the questionnaire particularly in relation to labour force status, engagement with further study and perceived over-qualification. Attitudinal scales were validated using Rasch Modelling and Factor Analysis.
<b>Measurement error</b>	Poor questionnaire design	The layout or structure of the new questionnaire could lead to inaccurate or incomplete responses	The GOQ-L underwent cognitive testing and was also independently reviewed by the QILT Working Group.
<b>Processing error</b>	Inadequate validation checks	With any new survey that does not have established procedures regarding data production, there is the possibility of introducing error.	Core data files are independently validated as the data is extracted from the data collection system, when the data is cleaned and finalised, by the research team, and by the Department prior to distribution.
	Coding errors or inconsistent coding of open-ended responses	There are a number of detailed items in the GOS-L relevant to labour force participation that require accurate coding.	Items were coded to ABS approved code frames such as ANZSCO and ANZSIC for industry and occupation, where possible. Existing ISO procedures ensured that all coding was executed consistently with a very low error rate.

# 3. Survey Establishment

## 3.1. Overall approach to the 2016 GOS- L

The GOS- L online collection period for the 2016 reporting year occurred during February 2016. Telephone reminders, a response maximisation technique where graduates are contacted and asked to complete the GOS online, were offered on a fee-for service basis. Telephone reminders were used to drive respondents to the online survey, which made them eligible for reporting at the national level, and outcomes throughout the main body of this report. Four universities undertook Telephone Reminder follow-up. More information on the approach to Telephone Reminders is outlined in Section 5.4 with outcomes from telephone reminders detailed in Section 7.4. Key schedule dates for the 2016 GOS- L are outlined in Table 4 below.

**Table 4 Key GOS- L schedule dates**

Schedule milestone	2016 collection
GOS- L Webinar	27 January
Online survey open	1 February
Online survey closed	29 February
Telephone reminders started	29 February
Telephone reminders finished	13 March
Survey closed for telephone reminder completes	23 March

## 3.2. Institutional Engagement

### 3.2.1. Participating Institutions

The 2016 GOS- L included graduates from 35 Table A universities, two Table B universities and 14 Non-University Higher Education Institutions (NUHEIs). The list of institutions involved in the GOS- L is in Appendix 2. The population frame was generated from respondents to the 2013 AGS, which formed the group of institutions invited to take part in the GOS- L 2016.

### 3.2.2. QILT Community Liaison Strategy

The introduction of QILT in 2015 represented a significant change for the higher education sector both from strategic and operational perspectives. While institutions were aware of many of the developments associated with QILT since 2010, the speed and size of these changes have required careful implementation to create a smooth transition from the current environment to the QILT framework.

Our approach to managing the change associated with the introduction of QILT in 2015 has been based on the principals of:

- transparency
- open communication
- active support
- respect.

To facilitate the principles of change, a QILT Webinar program has been held monthly since 2015 to share information and train institutional staff. The QILT Webinar series has provided the sector and interested parties with up to date information about QILT surveys and, with a GOS- L webinar conducted in January 2016 to further explain the processes related to the GOS- L collection.

The Department and the Social Research Centre were mindful that the initial implementation of QILT surveys had created a level of reporting burden for universities over the course of 2014 and 2015. The administration of the GOS- L in February 2016 followed fairly quickly after the first administration of the GOS in November 2015. To reduce the potential reporting burden on institutions, we proposed that the 2016 GOS- L be conducted on an opt-in basis. Under this agreed proposal, we confirmed participation and administrative requirements with each individual institution. The opt-in process was well-received, with only three universities and one NUHEI declining participation.

### **3.2.3. Privacy & confidentiality**

All Social Research Centre staff involved in the 2016 GOS- L (including helpline operators) were entered into a project-specific Deed of Confidentiality. The Social Research Centre also had in place a Deed of Confidentiality with the mailing house to which the data supplied by institutions was sent, and which used the same security controls that they have in place for the printing and distribution of NAPLAN booklets; including the destruction of all personal data as soon as the materials have been printed. The only data released to the Social Research Centre was the students' email address, postal address, contact telephone number, the stratification variables and any additional, non-identifying administrative data required for operational or analytic purposes. The GOS- L was conducted within the ethical guidelines laid out in the Australian Code for the Responsible Conduct of Research.

Data collection for the 2016 GOS- L was undertaken in accordance with ISO 20252 standards, the AMSRS code of practice, the Market and Social Research Privacy Principles, and the Australian Privacy Act. The Social Research Centre also entered into a Deed of Confidentiality with institutions as required.

## **3.3. Defining the in-scope population**

The GOS- L population frame had to be drawn from previous responses to the 2013 AGS, as had been the case with the BGS. This effectively restricted participation to universities, given the very limited past participation of NUHEIs in the AGS. The launch of the GOS will provide a nationally consistent population frame for use in the GOS- L in future years.

The 2016 GOS- L population consisted of all graduates who completed a course of study at an Australian higher education institution in 2012 and completed the 2013 AGS. The Department supplied the Social Research Centre with Graduate Careers Australia's (GCA) file of all graduates that had completed the AGS in 2013. Institutions were given the option to either not participate in GOS- L, take part in GOS- L but not update any details of the graduates in the file (i.e. graduate name, graduate email address etc.), or to take part in the GOS- L and update graduate details where they could. Of the 51 institutions that opted to participate, 29 institutions updated graduate contact information and 22 opted to leave the graduate details as supplied in the GCA file.

## 3.4. The Graduate Outcomes Questionnaire - Longitudinal

### 3.4.1. Conceptual structure of the GOQ-L

Development of the Graduate Outcomes Questionnaire - Longitudinal (GOQ-L) was undertaken through a number of channels:

- cognitive testing of the GOQ-L
- review of the Beyond Graduation Survey (BGS) instrument
- alignment with the Graduate Outcomes Questionnaire (GOQ).

A cognitive pre-testing program aimed to ensure that each of the items unique to GOQ- L were easily understood, relevant, and captured valid and reliable data. The employment history module was also tested for fatigue, given the potential for burdening respondents who may have held a number of occupations since participating in the 2013 AGS. Key findings from cognitive testing showed some confusion within the employment history module as to the definition of a change of occupation (i.e. needing to factor in changing position within an organisation, and staying in the same occupation but changing employers). Additional questions and explanations as to how a graduate was to count the number of occupations since the 2013 AGS were added for clarity. Use of the word 'occupation' also caused some confusion throughout the GOQ- L, with graduates interpreting a change in occupation as a change in industry, career, or job type. As this language is used in the standardised labour force module, which was directly repurposed from the ABS Labour Force Survey, the use of the word occupation was kept for consistency across the instrument. A 'hover over' was used to define 'occupation' for clarity.

The GOQ modules covering labour force participation, further study, graduate attributes and graduate preparation were also used in the GOQ-L for consistency in aligning the GOQ and GOQ- L findings. For a full review of the GOQ conceptual development, refer to the GOS 2015/16 Methodology Report.

The reference instruments used to develop the GOQ and GOQ- L items are listed in Table 5 below. Where a data element has not been output from a survey question, the source that was used to create the element is identified.

**Table 5** Data element sources

Source	Acronym	Description
Australian Bureau of Statistics Labour Force Survey	ABS LFS	Monthly national survey of employed and unemployed persons.
Australian Bureau of Statistics Survey of Income & Housing	ABS SIH	Biannual national survey of working age persons
Australian Bureau of Statistics Underemployed Workers Survey	ABS UWS	Conducted as a supplementary survey to the Monthly Population Survey
Australian Qualification Framework Learning Outcome	-	Criteria that differentiate between each qualification level.
Australian & New Zealand Standard Classification of Occupations	ANZSCO	Occupational coding standard
Australian & New Zealand Standard Industrial Classification	ANZSIC	Industry coding standard
Beyond Graduation Survey	BGS	Retired longitudinal survey of graduate activities
Course Experience Questionnaire	CEQ	Perceptions of coursework studies and the higher education intuition
Derived	-	Calculated from other variables

Source	Acronym	Description
Employer Satisfaction Survey - Graduate Survey	ESS - G	Pilot survey with graduates used to collect attitudinal data and supervisor contact information.
Establishment survey	-	Initial or baseline wave of data collection from graduates
Graduate Destination Survey	GDS	Retired survey of graduate activities
Graduate Outcomes Questionnaire	GOQ	Current national graduate survey of short-term outcomes
Graduate Outcomes Questionnaire - Longitudinal	GOQ - L	Current national graduate survey of medium-term outcomes
Higher Education Information Management System	HEIMS	National administrative collection
Operational file	-	Non-survey data resulting from the collection (e.g. completion date)
Postgraduate Research Experience Questionnaire	PREQ	Perceptions of research studies and the higher education institution
Sample file	-	Data used for data collection or analytic purposes
Scale of Perceived Overqualification	SPOQ	Graduate perceptions of the extent to which they are using their education and skills in their current occupation
Standard Australian Classification of Countries	SACC	Country coding standard

### 3.4.2. Operationalising the GOQ- L in 2016

Table 6 outlines the thematic areas of the eight GOQ- L modules. The core design of the GOS is modular and longitudinal so that the initial survey supports the active, ongoing follow-up of graduates within the GOS- L framework. The items and definitions used in the GOQ- L instrument are consistent with those in the GOQ. A copy of the generic survey instrument (i.e. excluding any institution specific items) is included in Appendix 3.

**Table 6** GOS- L module themes

Module	Themes
Module A	Screening and Confirmation
Module B	Labour force
Module H	Employment History
Module C	Further study
Module D	Graduate Attributes Scale - Graduate
Module Z	Graduate preparation
Module E	Additional items (Departmental, institutional etc.)
Module F	Contact details

The content of each of the GOQ- L modules is outlined below.

### **Module A: Introduction and screening**

This module confirms that the graduate completed the qualification supplied in the sample, and allows for corrections to the information we have. Graduates are also asked to confirm details from the AGS such as employment and further study status.

### **Module B: Labour force**

The labour force section measures graduates' employment outcomes, including perceived over qualification and underemployment, and an open ended question asking the main reason for not working or looking for work among the relevant sample. It also contains a number of questions sourced from the ABS Labour Force Survey, to enable comparisons to this data.

### **Module H: Employment history**

This module captures how the graduate's career has progressed since completing the initial establishment survey. Graduates who indicate they are currently or were previously working in an occupation that was different to their original occupation were administered the employment history module. For each different occupation held since the previous survey, questions were asked regarding the employer name, tasks involved, hours worked, location, date occupation ended (if it had), and salary.

### **Module C: Further study**

The further study module confirms whether the graduate has gone onto further full time or part time study after completing their studies, and what type of qualification they are currently studying for.

### **Module D: Graduate Attributes Scale – Graduate**

The Graduate Attributes Scale – Graduate (GAS-G) aimed to measure the extent to which graduates agreed that they were prepared for employment across each of the GAS-G thematic areas. The GAS-G domains cover:

- Foundation skills – general literacy, numeracy and communication skills and the ability to investigate and integrate knowledge.
- Adaptive skills – the ability to innovate, adapt and apply skills/knowledge and work independently.
- Collaborative skills – teamwork and interpersonal skills.

The GAS-G items are administered to graduates who are in employment at the time of the survey.

### **Module Z: Graduate preparation**

Graduates who were in employment were asked about the requirement and importance of their qualification in order to do their job, and the ways in which the qualification prepared them for employment. This included three open ended items:

- the main ways the institution prepared them for their current employment (if employed)
- the main ways the institution could have better prepared them for their current employment (if employed)



- the main reason the graduate selected their response to the previous question ‘Thinking about your original decision to complete this higher education course between <gradyr-2> and early <gradyr>, if you had to make this choice again, would you study...’.

## Module E: Additional items

This module contained institution specific questions that were only asked of the institution’s graduates. These items were added on a fee per item basis, and not included in any national reporting or datafiles.

## Module F: Contact details

Graduates were asked if they consented to being contacted for research in the future, and if so the best method of contact and their updated contact information.

### 3.4.3. Institution Specific Items

One institution included questions in the GOQ-L in the form of net promoter score items. Currently, institution specific items do not fall under any data sharing arrangements, though this may be possible in future GOS- L survey iterations if institutions are able to come to an agreement.

### 3.4.4. Missing sample information

Due to the decentralised approach to the administration of the BGS, some institutions did not have all of the sample information required for the survey. Specifically, graduate names, course codes, course names, occupation title, employer names (where a graduate was employed in 2013), and the course name of further qualifications if undertaken in 2013.

Where a course name, occupation title, employer name, or further study qualification title was missing, the graduate was asked to enter these details in the screening module and these details were fed in throughout the remainder of the survey. The graduate also had the option to change their employment or further study status as entered into the survey at the time of completing the 2013 AGS.

While missing graduate names did not impact the online survey (as their name was not used within the instrument), they were included in the email invitation and reminders. Where names were missing the emails were kept generic, opening with ‘Dear Graduate’ instead of ‘Dear [Graduate Name]’.

## 3.5. Online Survey

The GOS- L instrument was programmed in SPSS Dimensions, with all institutions having the same base survey link rather than each institution receiving its own separate link. This was done in order to improve the ease of data capture, as well as facilitate the seamless use of Computer Assisted Telephone Interviewing (CATI) (if required by individual institutions). This approach also supported the development and deployment of the live national and institutional reporting modules (See Section 5.5 Monitoring and Progress Reporting).

The online survey could be accessed by clicking on the link in the email invitation or email reminders, or via the GOS- L landing page on the QILT website (<https://www.qilt.edu.au/surveys/graduate-outcomes-survey---longitudinal> or a redirect from [www.gos.edu.au/l](http://www.gos.edu.au/l)), where after selecting the ‘Start Survey’ button, graduates were taken to a login page to enter the username and password provided in emails and non-response letters.

Online survey presentation was informed by Australian Bureau of Statistics standards, accessibility guidelines and other relevant resources, with standard features including:

- mobile device optimisation



- sequencing controls
- input controls and internal logic checks
- use of a progress bar
- tailored error messages, as appropriate
- no vertical scrolling required, with long statement batteries split over several screens, as necessary
- recording panels for free text responses commensurate with level of detail required in the response
- 'saving' with progression to the next screen
- the capacity to save and return to finish off at another time, resuming at the last question completed.

Screenshots of the online survey are included in Appendix 4.

## 4. Sampling

The 2016 GOS- L in-scope population consisted of all graduates who completed a course of study at an Australian higher education institution in 2012, completed the 2013 AGS, and agreed to recontact.

### 4.1. Sampling approach

The 2013 AGS population file was provided to the Social Research Centre by the Department. The Social Research Centre checked and cleaned the file before uploading to participating institutions, who were asked to update missing variables where possible.

The 2016 GOS will provide a nationally consistent population frame for use in the GOS- L in future years, using a centralised approach to sampling based on data extracted from the Higher Education Information Management System (HEIMS).

#### 4.1.1. Sampling parameters

Key data elements (see Appendix 5) were extracted from the AGS 2013 data file and contained 27 variables, grouped below by their application within the GOS- L:

- Graduate background variables – used for reporting purposes and to verify the representativeness of the sample.
- Course-related elements – used to develop the sample frame and to pre-populate sections of the survey.
- Graduate address details – used to send letters to graduates who did not respond to the email invitation.
- Institutional appended variables – used to provide graduates' current enrolment status, faculty and campus (optional), institutional email addresses and mobile phone number for institutions taking part in telephone reminders.

Six data elements were prepopulated in the population file template:

- Institutional code and name (E306 and E306C), the unique identification number (GCAID) and reference year (REFYEAR) as they were recorded in the original 2013 AGS file; and
- Long term email addresses (LT\_EMAIL), which was provided for approximately 50 per cent of graduates who participated in the 2013 AGS.
- The variable 'In-Scope' was prepopulated reflecting the criteria for inclusion in the GOS- L, as outlined in Section 3.1. A breakdown of the codes used for the In-Scope variable are as follows:
  0. In-scope.
  1. Dropped from analysis in the AGS (where the AGS variable 'analyse'=1).
  2. Not to be surveyed (deceased or not to be contacted under any circumstances).
  3. Other reasons as determined by institution.

#### 4.1.2. Long term email address as consent for further research

Most participating institutions collected a long-term email address at the 2013 AGS question: "We would like to stay in touch with you in order to see how your career develops in coming years and gain later feedback from you reflecting on your higher education experience. If you would like to participate in this future research, please provide a long-term email address". Consent to participate in the GOS- L was implied if a respondent gave an email address. There was no explicit question that allowed respondents

to say they did *not* wish to be contacted for future research (via email or post) and so a missing long term email was regarded as implied non-consent.

There was a small number of institutions with missing long term email addresses in the GCA file supplied to the Social Research Centre. In this event the following process was undertaken:

- Institutions emailed all in scope 2013 AGS respondents using contact information from other sources (e.g. alumni databases) asking if they would like to opt out of the research.
- Institutions supplied the Social Research Centre with details of those who did not opt out, and the Social Research Centre updated these respondents as in-scope.

## 4.2. Institutional verification process

As discussed in Section 3.2.2, participation in the 2016 GOS- L was optional; furthermore, the verification process, which consisted of updating contact details where possible, was also optional. The options for verification of the sample were as follows among those institutions opted in to the survey:

- Update graduate contact details where possible
- Do not update graduate contact details (default option)

Of the 51 participating institutions, 29 chose to update contact details (26 universities and 3 NUHEIs), details of which are in Appendix 6. Institutions without long term email addresses for graduates in the GCA file were required to take up option A to continue to participate in the GOS- L.

Specific updates within the verification process included:

- Providing up to three email addresses; population of the email fields followed a hierarchy, where the email address most likely to reach the graduate was populated in “email1”, and the next best options in “email2” and “email3”.
- Student ID (E313) and Course details (E307 and E308) were included to allow for the use of HEIMS to extract relevant course and enrolment details, which were not available in the original AGS file.
- Graduates’ permanent home address details were requested (E410 to E471) to enable hardcopy non-response activity.

### 4.2.1. Quality of data elements in the sample file

Given that 20 per cent of graduate records were not updated, there were a number of data elements that were not populated within the survey, due to various blank fields in the original data set used to derive the population frame. Missing details in the data sets were as follows:

- Course name for 35.3 per cent of records in original file, reduced to 7.3 percent after institution update.
- Employer name for those in full or part-time employment for 8.2 per cent of records in the original file, reduced to 7.6 percent after institution update.
- Occupation for those in full or part-time employment for 8.6 per cent of records in original file, reduced to 7.3 percent after institution update.
- Further qualification course title of those undertaking further study in 2013 for 31.0 per cent of records, in original file, reduced to 2.3 percent after institution update.

A number of additional elements were programmed into the questionnaire script to work around the missing details, as outlined in Section 3.4.4.

## 5. Data collection

### 5.1. Fieldwork overview

The online survey commenced on Monday February 1 and closed to institutions not utilising telephone reminders on Monday February 29. Data collection was supported by a number of strategies focused on maximising response rate. Strategies are outlined in the following section:

- Response maximisation: consisting predominately of email invitation and reminders, supported by a national prize draw, SMS, and a hardcopy non-response letter; supported by the Social Research Centre's helpdesk and dedicated GOS- L email inbox.
- Telephone Reminders: carried out after the online fieldwork period which enabled four institutions to supplement online response rates. The survey closed for these institutions on Wednesday March 23.
- Live monitoring of survey outcomes: allowing institutions, the Department, and the Social Research Centre to effectively keep abreast of completion across parameters of interest.

All participating institutions were provided with a collection guide to the GOS- L, which covered the key aspects and dates of data collection. The 2016 collection guide can be viewed in Appendix 7.

### 5.2. Graduate engagement strategies

As the sample base for the GOS- L was so targeted, social media was not utilised in the same way as other QILT surveys. Primary activities undertaken by the Social Research Centre involved updating survey launch and close dates, and prize draw winners on the QILT Facebook page. Institutions were asked to host their own GOS- L page as well, to provide legitimacy to the survey.

A small number of institutions chose to send GOS- L engagement emails to their graduates prior to data collection commencement, however this was optional due to ongoing preparations for the 2016 GOS May, and the associated requirement to reduce the administrative burden on institutions.

#### 5.2.1. Social media use

As we were attempting to contact graduates who had completed their qualification in 2012, we did not ask institutions to connect with their graduates via email or social media, and there was no social media campaign. Due to privacy restrictions, we were unable to provide a list of respondent details to external parties (i.e., LinkedIn), something that would have been required if we were to target respondents in any sort of social media or advertising campaign.

Due to the highly targeted nature of the GOS- L, institutions were not required to promote the survey in the same way as is encouraged for the GOS and SES.

### 5.3. Response maximisation

The 2016 GOS- L was conducted via an online survey and accessed through email invitations and reminders. These invitations and reminders contained information about the GOS- L, including the prize draws, and a unique link that took the graduates directly into their survey, bypassing the need to enter login details.

As discussed above, the Social Research Centre was restricted to a simplified response maximisation strategy due to privacy concerns. This included:

- prize draw incentives

- generic, partial, and targeted email reminders
- a hard copy letter follow-up for graduates who did not respond to email invitations.

### 5.3.1. Incentivisation strategy

The four-week rolling prize draw was designed to maximise early response rates by offering more chances to win the earlier the survey was completed (e.g. if the survey was completed by the end of the week the graduate would be entered into all four prize draws). There were four prize draws in total with one \$1,000 prepaid Visa gift card, two \$500 prepaid Visa gift cards and five \$250 prepaid Visa gift cards to be won each week. The total prize pool was valued at \$10,000.

### 5.3.2. Invitation and follow-up reminder strategy

A multi-pronged approach was used in the GOS- L response maximisation effort; using email, hardcopy letter, and SMS as methods of approaching and following up graduates. Institutions choosing to update their graduate details had the option to include mobile phone numbers in the sample, allowing SMS reminder activity to be utilised on an as-needs basis.

### Email activity and SMS

The Social Research Centre sent one email invitation, one non-response letter, seven email reminders and one SMS over the course of the survey, as outlined in Table 7. Due to a server issue resulting in an error message when the reminder 6 link was clicked, an apology email was sent the day after the reminder, to a small number of graduates who had clicked the link before the issue was fixed.

**Table 7** Email invitation and reminder schedule

Activity	2016 GOS- L Collection	
	Date	Number sent
Email invitation sent	1-Feb	94,081
Email reminder 1	4-Feb	80,843
Email reminder 2	9-Feb	75,361
Email reminder 3	13-Feb	71,501
Email reminder 4	16-Feb	67,645
SMS	20-Feb	6,894
Email reminder 5	20-Feb	64,096
Email reminder 6	23-Feb	62,685
Email reminder 7	27-Feb	60,737
Fieldwork closes	29-Feb	-

From the invitation onwards, emails were sent to the primary email and a secondary email if supplied. From reminder six onwards emails were sent to a tertiary email address if supplied. This activity schedule was designed to keep the baseline survey completions (those completed between reminders) as high as possible to maximise response rates. Response to the earlier reminders was higher, which was expected given the rolling prize draw.

The emails contained GOS- L branding and a unique link that took participants directly to the survey, as well as manual login and helpdesk details. An unsubscribe link was provided in the footer of the email if graduates no longer wanted to receive reminder emails. Graduates who had completed the survey or were disqualified from participating were also removed from the next scheduled email reminder. See Appendix 8 for examples of email content.

SMS follow-up was provided on an as-needs basis with institutions that provided mobile numbers to the Social Research Centre. SMS was used to alert students to the GOS- L invitation, with the SMS including the email address it was sent to. Email activity and the SMS were timed close together due to the limited information that can be conveyed within an SMS 160 character limit. The SMS content directed the student to check their email for their login details and included a link to the GOS- L website for easy access to the survey login page. Graduates were able to opt out or unsubscribe via SMS reply.

### Hardcopy letter

A hardcopy letter was sent to domestic non-responders (for whom the Social Research Centre had a valid postal address) after the initial email invitation. This mail out was sent on February 6 to those who had not responded to the online invitation by February 2. The letter typically arrived within the first two weeks of the fieldwork period. See Appendix 8 for an example of the letter content.

### 5.3.3. 1800 helpdesk and inbox management

The Social Research Centre provided a GOS- L 1800 helpdesk and inbox to provide graduates with alternative methods to contact with the GOS- L team. The 1800 number was also available to international students (with an international dialling code), and remained operational for the duration of the fieldwork period. The helpdesk was staffed between 9am and 8:30pm on weekdays and between 11am and 5pm on weekends. All out of hours callers were routed to a voicemail service, with calls returned within 24 hours.

The GOS- L helpdesk team was briefed on the GOS- L background, procedures and questionnaire to enable them to answer a wide range of queries. To further support the helpdesk, a database was made available to the team to enable them to look up caller information and survey links, as well as providing a method for logging all contacts. As shown in Table 8 8, the helpdesk received 339 queries with the majority of these involving opt outs from the survey (86), problems accessing the survey (78), appointment making for CATI follow-up (49), and change of details (47).

**Table 8 Graduate enquiries to the GOS-L helpdesk**

Type of enquiry	1800 Number	GOS Inbox	Total
Opt out of survey	17	69	86
Problems with URL / access / login	16	62	78
CATI appointment	49	0	49
Change of contact details	24	23	47
Requested general survey information	2	22	24
Already completed	3	19	22
Survey feedback	0	18	18
Other	5	0	5
Privacy/confidentiality concerns	0	5	5
Prize draw query	0	4	4
Survey Reset	1	0	1
<b>Total</b>	<b>117</b>	<b>222</b>	<b>339</b>

All refusals and out of scopes were removed from the reminder email sample to avoid future reminders being sent to these sample members. Sample contact details were also updated before each reminder email for those requesting an update to their details.

## 5.4. Telephone non-response follow up

Four institutions utilised fee based telephone reminders, which involved contacting graduates who had not completed or opted out of the online survey by telephone. During this contact updated emails were collected, with a survey invitation emailed the next day. If the graduate had not responded one week after the initial reminder email invitation had been sent, then one last reminder email was sent.

Telephone reminders were conducted between February 29 and March 13, with the survey remaining open until March 23 to allow for additional reminder emails to be sent and graduates to respond.

Call procedures for telephone reminders for the 2016 GOS- L featured:

- call attempts placed over different days of the week and times of day
- a second call attempt to 'fax / modem' and 'number disconnected' outcomes (given that there are occasionally issues with home internet connections and problems at the exchange)
- use of the alternative contact number(s), where provided.

Completions resulting from Telephone Reminders were included as nationally reportable data, as they were consistent with the collection mode in the main online fieldwork period. Telephone Reminder outcomes are reported in Section 7.4.

Telephone Reminders used 'contacts' as the sample outcome metric, meaning that once records were 'contacted' they were considered complete and removed from the available telephone sample. Contact was defined as speaking to the graduate and included outcomes such as a consent to complete, refusal, and away for the duration of study.

### 5.4.1. Interviewer team briefing and quality control

All interviewers selected to work on the GOS- L telephone reminders attended a briefing session, delivered by the Social Research Centre project management team. Sixteen interviewers were briefed on February 29 and a core team of three conducted the majority of calls.

The briefing covered the following aspects:

- survey context and background
- survey procedures (sample management protocols, response rate maximisation procedures)
- privacy and confidentiality issues
- targeted refusal aversion techniques
- strategies to maintain co-operation (i.e., minimise mid-survey terminations)
- comprehensive practice interviewing and role play.

## 5.5. Monitoring and progress reporting

Weekly update emails were sent to institutions outlining the response rate that had been achieved and how the individual institution compared to the average response rate overall, and their cohort average (University or NUHEI average). The Department was provided with weekly updates covering survey launches, in-field milestones and the response rates of institutions overall.

### 5.5.1. Live progress reporting

In addition to weekly updates, the Department was provided with access to a specially designed 'live' online reporting module which provided an overview of participation rates for each institution and a

national average of universities and NUHEIs. Results were provided in real time and included capped completes, out of scopes and opt outs for each institution. An example of the national reporting module is shown in Appendix 9.

Institutions were also able to monitor their progress throughout a subset of the same live reporting module made available to the Department. Each institution was provided with their own login which allowed institutions to track their own responses and instantly view a summary of their data including:

- number of completed surveys
- number of partially completed surveys (i.e., 'in progress' or abandoned)
- number of out of scope graduates.

The standard reporting module also allowed survey managers to track responses across the following variables:

- study area
- gender
- level of qualification
- paid work status
- further study status
- faculty name
- campus name
- entry/exit type.

Raw data could also be downloaded from the reporting module, which displayed the survey status for each graduate. The reporting module enabled monitoring of response rates, and the early identification of poor-performing areas.



## 6. Data Processing

### 6.1. Definition of the analytic unit

The analytic unit for the GOS- L is the graduate. The data file contains one record for each respondent to the survey.

In the 2016 GOS- L data set, a record was a complete and valid GOQ- L if the following conditions were met:

- the graduate had completed the AGS in 2013
- the graduate had provided a response as to whether they had worked in the last week
- the graduate had responded whether they were in further study.

### 6.2. Data cleaning and preparation

Data preparation occurred on the raw data file exported from the data collection platform, with consolidating and cleaning routines applied, such as:

- recoding value labels where required
- re-coding of 'no answers' to the missing values conventions
- cleaning of employer name and coding of occupation, industry and further study field of education
- spell checking and light cleaning of email addresses and 'other' specify responses.

Coded responses for verbatim items were added (e.g. ANZSIC, ANZSCO), and then a consistent missing data convention was applied. The missing data codes are detailed in Table 9 below.

**Table 9** Missing data conventions

Missing data type	Data file convention
Item skipped	99
Don't know	98
Item not applicable	97
Service/support not received	96
Not asked	95

Where a value field is wider than two characters, a leading '9' is appended (e.g. 9997 for a four character field if the item was not applicable).

When a variable contained these codes as a valid response (e.g. hours of work) or contained values higher than these codes, a leading '9' was appended to the front of the code (e.g. 'Not asked' for hours of work was coded as 995). Missing data codes for variables where the missing value format may unintentionally clash with actual data values (e.g. salary and a missing value code of 99999), were appended with a negative sign.

### 6.3. Coding and preparation of verbatim responses

Open ended and other specify responses were consolidated into a single workflow, with a view to ensuring the efficient and consistent application of coding. This was carried out progressively throughout the fieldwork period to minimise time burden on data processing after fieldwork; especially given the volume and associated time required to code variables such as multiple businesses and occupations listed in the Employment History module.

All coding was undertaken by experienced, fully briefed coders, accustomed to working with standard Australian Bureau of Statistics code frames. Coding was validated in accordance with ISO 20252 procedures. Under these procedures, 10 per cent of responses are validated for coding accuracy and achieving a minimum accuracy of 90 per cent within the batch isolated for validation. If the accuracy of coding is found to be less than 90 per cent, another batch is extracted for further validation. The proportion of the second and subsequent batches is dependent on the degree of inaccuracy found in the previous validation iterations. This process continues until the desired accuracy level is reached within each batch.

Table 10 shows which items were coded, and the sources utilised in this process. Where an ANZSIC or ANZSCO code was provided in the occupation and employer name variables in the GCA file, the Social Research Centre did not recode any employment details. Where an ANZSIC or ANZSCO code was missing, but the verbatim of occupation or employer name provided, the Social Research Centre coded the occupation or employer. All occupation and employer name variables in the labour force and employment history modules were coded manually by the Social Research Centre.

**Table 10** Items coded and source for coding decisions

Item coded	Source
2013 Course	Regardless of whether a graduate had 'corrected' the course in the screener to something different, the Social Research Centre reverted back to the course codes as supplied in the GCA data file.
Occupation	Occupation was coded using Australian and New Zealand Standard Classification of Occupations (ANZSCO, Version 1.2, 2013, Australian Bureau of Statistics catalogue number 1220.0) at the six digit level
Industry	Industry was coded using Australian and New Zealand Standard Industrial Classification (ANZSIC, 2006, Australian Bureau of Statistics catalogue number 1292.0.55.002) at the four digit level.
Location of employment	For graduates working overseas, country of employment was coded using the Standard Australian Classification of Countries (SACC, Second edition, Australian Bureau of Statistics catalogue number 1269.0). Postcodes of employment, for graduates working in Australia, were manually applied by look up.
Further study field of education	Field of education was coded using Australian Standard Classification of Education (ASCED, 2001, Australian Bureau of Statistics catalogue number 1272.0) at the six digit level.

## 7. Response analysis

### 7.1. Overall response rates by institution

As the time period and methodology have changed substantially from the BGS, it was not possible to forecast a national response rate with accuracy. The overall response rate achieved in the 2016 GOS-L collection period was 33.3 per cent, which was substantially higher than the BGS in 2015 (13.4%)<sup>1</sup>. The success of the 2016 GOS-L suggests the centralised sampling approach, response maximisation strategies and fixed fieldwork schedule worked well to achieve an overall response rate improvement from 2015.

Tables 11 and 12 below contain the response rate for each university and NUHEI for the 2016 GOS-L. University response rates ranged from 15.5 to 55.3 per cent, with an overall proportion of 2.6 per cent electing to opt out of the survey.

**Table 11** Response rates and opt outs for universities

	Sample	Out of scope	Opted-out	Final sample	Completed	Response Rate %
Australian Catholic University	2,655	8	60	2,587	552	21.3
Bond University	848	10	44	794	228	28.7
Central Queensland University	1,454	1	45	1,408	218	15.5
Charles Sturt University	1,816	7	39	1,770	830	46.9
Curtin University	2,789	7	63	2,719	1,224	45.0
Deakin University	3,581	16	64	3,501	1,177	33.6
Edith Cowan University	2,613	4	66	2,543	1,240	48.8
Federation University Australia	861	10	17	834	155	18.6
Flinders University	2,251	12	36	2,203	969	44.0
Griffith University	4,977	15	155	4,807	1,261	26.2
James Cook University	1,043	13	11	1,019	346	34.0
La Trobe University	515	1	8	506	156	30.8
Macquarie University	2,375	12	67	2,296	674	29.4
Monash University	7,367	11	241	7,115	2,757	38.7
Murdoch University	1,065	5	28	1,032	457	44.3
Queensland University of Technology	4,267	30	102	4,135	1,273	30.8
RMIT University	2,184	5	53	2,126	899	42.3
Southern Cross University	654	1	14	639	213	33.3
Swinburne University of Technology	2,593	17	84	2,492	707	28.4
The Australian National University	2,822	21	67	2,734	1,099	40.2
The University of Adelaide	3,068	19	63	2,986	992	33.2
The University of Melbourne	7,619	45	203	7,371	3,114	42.2
The University of Notre Dame Australia	407	0	8	399	141	35.3
The University of Queensland	5,015	26	131	4,858	1,818	37.4

<sup>1</sup> <http://www.graduatecareers.com.au/wp-content/uploads/2016/07/Beyond-Graduation-2015-FINAL.pdf>

	Sample	Out of scope	Opted-out	Final sample	Completed	Response Rate %
The University of Sydney	3,925	46	101	3,778	1,303	34.5
The University of Western Australia	2,151	8	67	2,076	607	29.2
University of Canberra	833	2	19	812	262	32.3
University of Divinity	49	1	1	47	26	55.3
University of New England	227	1	3	223	102	45.7
University of Newcastle	2,930	13	69	2,848	626	22.0
University of South Australia	4,666	15	57	4,594	966	21.0
University of Southern Queensland	1,171	6	35	1,130	284	25.1
University of Tasmania	1,350	4	26	1,320	437	33.1
University of Technology Sydney	5,778	22	218	5,538	1,505	27.2
University of the Sunshine Coast	786	1	25	760	279	36.7
Victoria University	1,010	8	12	990	281	28.4
Western Sydney University	3,457	12	115	3,330	862	25.9
<b>Total</b>	<b>93,172</b>	<b>435</b>	<b>2,417</b>	<b>90,320</b>	<b>30,040</b>	<b>33.3</b>

NUHEI response rates ranged from 16.7 to 64.3 per cent, with a similar proportion of opt outs to the universities at 2.5 per cent, validating the effectiveness of the survey methodology and response maximisation procedures.

**Table 12 Response rates and opt outs for NUHEIs**

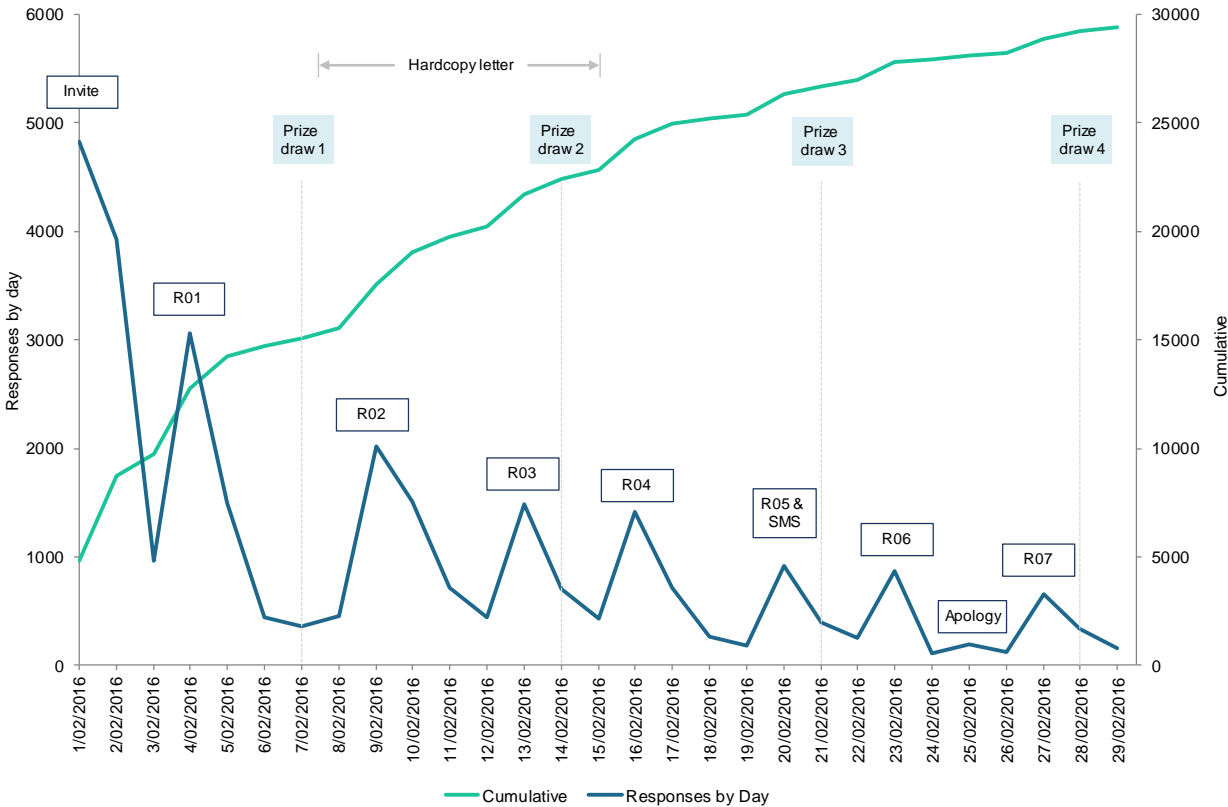
Institution	Sample	Out of scope	Opted-out	Final sample	Completed	Response Rate %
Academy of Design Australia	43	0	1	42	10	23.8
Australian College of Applied Psychology (Navitas Institute)	134	0	3	131	40	30.5
Australian College of Physical Education	91	1	0	90	15	16.7
Australian College of Theology	133	0	3	130	66	50.8
Avondale College of Higher Education	62	1	2	59	33	55.9
Christian Heritage College	72	0	1	71	19	26.8
Eastern College Australia	15	1	0	14	9	64.3
Endeavour College	150	0	6	144	29	20.1
Holmesglen Institute	85	0	3	82	20	24.4
International College of Management, Sydney	33	0	1	32	13	40.6
Melbourne Institute of Technology	8	0	0	8	2	25.0
Melbourne Polytechnic	26	0	0	26	9	34.6
Sydney College of Divinity	28	0	1	27	9	33.3
Tabor College of Higher Education	49	1	2	46	24	52.2
<b>Total</b>	<b>929</b>	<b>4</b>	<b>23</b>	<b>902</b>	<b>298</b>	<b>33.0</b>

## 7.2. Rate of Response

Figure 1 illustrates that the majority of surveys were completed early in the fieldwork period (before the second prize draw), which indicates that the response maximisation measures employed were effective. The slightly longer delay between reminders 1 and 2 was due to assumptions that the hard copy reminder letter would broach the gap, however postal delays resulted in the bulk of the mail out arriving between reminders 2 and 4.

The resulting decline in momentum illustrates the importance of utilising activity between reminders, such as SMS and reminder calls. Response to the invitation and first two reminders was highest, which was to be expected given the rolling prize draw.

**Figure 1 Rate of response overall**

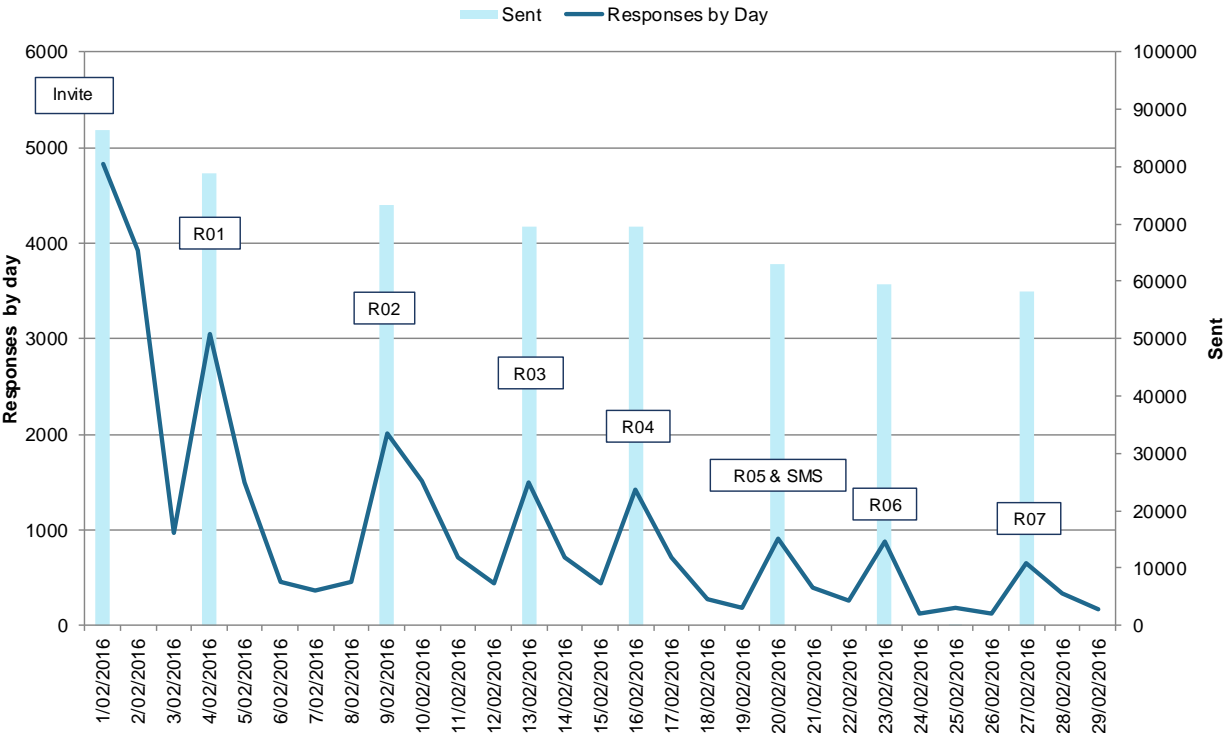


Undergraduate and postgraduate respondents displayed very similar patterns of response, with postgraduates contributing a lower proportion to the total response rate, as was expected given their representation in the sample. Further analysis of response patterns reveals that postgraduate respondents were slightly more likely to complete the survey than undergraduates (see Appendix 10).

### 7.3. Email response maximisation analysis

The total number of emails sent during the fieldwork period was 579,862. Figure 2 shows the number of emails sent compared to the number of responses by day. While the number of emails sent reduced over time as completions, opt outs and out of scope graduates were removed from sample, the decreased rate of return for completions over time was more evident.

**Figure 2** Number of emails sent and correlating completions



From reminder two onwards, the generic email text included tailored text for those who had begun but not yet completed the survey. This entailed a reminder that they could continue from where they last stopped the survey. Study areas with lower response rates were targeted from reminder four onwards, with altered text reminding participants that survey completion from graduates in their study area was particularly important, including acknowledgement of how busy they must be.

Table 13 below shows that the email invitation open rate was moderate at 28.5 per cent, with a high proportion of bounces (8.2%) and unopened emails (51.3%), indicating that there were some issues with sample quality. Given the amount of time between the 2013 AGS and the GOS- L this was not unexpected. The proportion of graduates who clicked the link in the survey invitation was high, with 40.7 per cent of those who opened this email clicking through, indicating some engagement with the GOS- L. Opt outs were low, at less than one percent each send, suggesting the nature of the survey and the timings of sends were not a concern for graduates.

The outcomes of each reminder are detailed for universities and NUHEIs separately in Appendix 11.

**Table 13 Combined email outcomes as a proportion of total available sample per send**

	Invitation	Reminder 1	Reminder 2	Reminder 3	Reminder 4 <sup>3</sup>	Reminder 5	Reminder 6	Reminder 7
Opened	26,828	21,583	16,515	13,020	14,060	10,211	11,423	10,238
	28.5%	26.7%	21.3%	18.2%	20.8%	15.7%	18.2%	16.9%
Survey Link clicked*	10,920	5,752	4,016	2,622	2,627	1,786	2,086	1,422
	40.7%	26.7%	24.3%	20.1%	18.7%	17.5%	18.3%	13.9%
Soft Bounced <sup>1</sup>	1,693	1,858	4,016	1,964	1,702	1,912	1,929	2,387
	1.8%	2.3%	5.2%	2.7%	2.5%	2.9%	3.1%	3.9%
Hard Bounced <sup>2</sup>	6,044	30	23	17	23	12	1,222	11
	6.4%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%	0.0%
Opt out	334	339	372	332	386	315	265	267
	0.4%	0.4%	0.5%	0.5%	0.6%	0.5%	0.4%	0.4%
Unopened	48,262	51,281	52,522	53,546	48,847	50,670	45,760	46,412
	51.3%	63.4%	67.8%	74.9%	72.2%	78.1%	73.0%	76.4%
Total Sent	94,081 <sup>4</sup>	80,843	77,464	71,501	67,645	64,906	62,685	60,737
	100%	100%	100%	100%	100%	100%	100%	100%

\* Percentage calculated from opened

<sup>1</sup>Soft bounce denotes occasions when the email cannot get through at the time of the send, commonly due to an inbox having reached capacity or the mail server being temporarily down. These emails will reattempt on the next send.

<sup>2</sup>Hard bounce denotes a permanently unusable email address, commonly the result of a non-existent domain or disabled mailbox. These emails will not be included in subsequent sends.

<sup>3</sup>All records that had not opened previous emails were sent an email to additional email addresses provided from Reminder 4.

<sup>4</sup>Excludes sample records that were sent a hardcopy reminder due to a missing email address

The proportion of unopened emails across all sends (i.e., the graduate did not open any email sent and the email was not otherwise classified as a bounce or opt out, and their GOS- L survey was not completed) was high at 28.0 per cent among undergraduates and 24.0 per cent among postgraduates (see Table 14). This is not unexpected given that large numbers of sample were not updated.

This indicates that most graduates are opening at least one email throughout the collection period, although

**Table 14 Summary of unopened emails**

	Undergraduate	Postgraduate	Total
Graduates approached (n)	58,683	35,418	94,101
Unopened at all email sends (n)	16,418	8,492	24,910
Unopened at all email sends (%)	28.0	24.0	26.5

The sample characteristics of graduates who did not open any emails is outlined in Table 15. The profile is remarkably similar to the main sample, although undergraduates, those under 30 years of age, in full time study, and who speak a language other than English at home are more likely not to open any GOS- L emails.

**Table 15** Characteristics of graduates who did not open emails against the total sample

	Total sample	%	Unopened email sample	%
<b>Base</b>	<b>94,101</b>		<b>24,910</b>	
<b>Status</b>				
Undergraduate	58,678	62.4	16,418	65.9
Postgraduate Coursework	31,845	33.8	7,833	31.4
Postgraduate Research	3,578	3.8	659	2.6
<b>Gender*</b>				
Male	37,750	40.1	9,835	39.5
Female	56,342	59.9	15,073	60.5
<b>Aboriginal and Torres Strait Islander</b>				
Non-Indigenous	91,751	97.5	24,273	97.4
Indigenous	540	0.6	168	0.7
No information	1,810	1.9	469	1.9
<b>Disability</b>				
No disability	91,389	97.1	24,212	97.2
Disability	2,458	2.6	617	2.5
No information	254	0.3	81	0.3
<b>Age</b>				
30 years or under	68,497	72.8	19,220	77.2
Over 30 years	25,604	27.2	5,690	22.8
<b>Mode of attendance</b>				
Internal and mixed mode	81,844	87.0	5,225	87.5
External	12,139	12.9	3,078	12.4
No information	118	0.1	34	0.1
<b>Type of attendance</b>				
Mainly Full-time	72,160	76.7	19,785	79.4
Mainly Part-time	21,755	23.1	5,074	20.4
No information	186	0.2	51	0.2
<b>Main Language Spoken at Home</b>				
English	63,880	67.9	15,909	63.9
Language other than English	28,103	29.9	8,395	33.7
Unknown	2,118	2.3	606	2.4
<b>Born in Australia</b>				
Yes	51,467	54.7	12,694	51.0
No	38,180	40.6	10,898	43.7
Unknown	186	0.2	1,318	5.3



### 7.3.1. Analysis of updated vs non-updated sample

Updated sample was supplied by 29 institutions, with the majority of this sample containing graduate names (98.3%). As can be seen in Table 16, sample from institutions choosing not to update was missing all graduate names. Research studies show that personalisation (a graduate name included on the invitation or reminder email) significantly increases the odds of a response<sup>2</sup>.

**Table 16 Summary of updated sample**

	Sample updated n=75,128	Sample not updated n=18,973
Graduate name included	73,881	-
	98.3%	-
Graduate name not included	1,247	18,973
	1.7%	100.0%

This was borne out in the GOS- L, illustrated by Table 17, where sample without names consistently underperformed in regards to completions (9.7 percentage points lower than named sample), and was overrepresented in bounces (11.8% vs. 0.6%) and no response (72.4% vs. 62.6%).

Given that all non-updated sample did not contain graduate names, completion rates, bounces and non-response are almost identical between non-updated sample and sample without names.

**Table 17 Outcomes by sample quality**

	Sample updated n=75,128	Sample not updated n=18,973	Graduate name included n=73,881	Graduate name not included n=20,220
Complete	25,655	4,683	25,359	4,979
	34.1%	24.7%	34.3%	24.6%
Out of scope	2,319	560	2,275	604
	3.1%	3.0%	3.1%	3.0%
Hard bounces	617	2,187	428	2,376
	0.8%	11.5%	0.6%	11.8%
No response	47,154	13,730	46,247	14,637
	62.8%	72.4%	62.6%	72.4%

### 7.3.2. Non-response analysis

Close to two thirds of the graduate sample did not participate in the GOS- L. Table 18 shows that Undergraduates were less likely to respond to the survey, while Postgraduate Research respondents were more likely to complete the GOS- L. Males and graduates under 30 years of age were also overrepresented in the non-response sample, as were those who studied full time, or on campus. Graduates who speak a language other than English at home, and international students were also less likely to participate.

<sup>2</sup> Sauermaun, H & Roach, M, *Increasing web survey response rates in innovation research: An experimental study of static and dynamic contact features*. Research Policy, 2013.

In order to further understand the key demographic differences, a logistic regression was performed based on all in-scope cases for the GOS- L (N=91,222). Sample parameters included were status, gender, ATSI, citizenship, type of attendance, attendance mode, language spoken at home, disability indicator, age, and study area.

The logistic regression identified several groups more likely than others to respond to the survey with strong response associated with studying for an Honours degree or a Doctorate. Those from a non-English speaking background and older graduates were also more responsive. Students who were not permanent Australian residents were less likely to respond.

**Table 18 Non-response sample characteristics**

	Respondents	%	Non-responders	%
<b>Base</b>	<b>30,338</b>	<b>100.0</b>	<b>60,884</b>	<b>100.0</b>
<b>Status</b>				
Undergraduate	17,920	59.1	38,853	63.8
Postgraduate Coursework	10,721	35.3	20,217	33.2
Postgraduate Research	1,697	5.6	1,814	3.0
<b>Gender*</b>				
Male	10,863	35.8	25,461	41.8
Female	19,474	64.2	35,415	58.2
<b>Aboriginal and Torres Strait Islander</b>				
Non-Indigenous	29,593	97.5	59,344	97.5
Indigenous	182	0.6	347	0.6
No information	563	1.9	1,193	2.0
<b>Disability</b>				
No disability	29,366	96.8	59,209	97.2
Disability	919	3.0	1,479	2.4
No information	53	0.2	196	0.3
<b>Age</b>				
30 years or under	19,769	65.2	46,438	76.3
Over 30 years	10,569	34.8	14,438	23.7
<b>Mode of attendance</b>				
Internal and mixed mode	25,502	84.1	53,755	88.3
External	4,803	15.8	7,048	11.6
No information	33	0.1	81	0.1
<b>Type of attendance</b>				
Full-time	21,762	71.7	48,093	79.0
Part-time	8,527	28.1	12,662	20.8
No information	49	0.2	129	0.2
<b>Main Language Spoken at Home</b>				
English	23,897	78.8	38,005	62.4
Language other than English	5,956	19.6	21,318	35.0
Unknown	485	1.6	1,561	2.6
<b>Citizen/resident indicator*</b>				
Domestic	26,541	87.5	43,525	71.5
International	3,797	12.5	17,359	28.5

\*sub category may not add up to base

There were differences in response by study area, as seen in Table 19, with science and mathematics, health services and support, teacher education, humanities, culture and social sciences, and psychology graduates more likely to respond to the GOS- L. Graduates from business and management were the least likely to have participated in the survey.

Analysis demonstrated that response was related to study area, even when other factors such as gender and age were accounted for. Response was more likely among those studying Science and Mathematics, Engineering, Architecture and Built Environment, Pharmacy, Dentistry, Veterinary Science, Rehabilitation, Humanities, Culture and Social Sciences, Social Work, Psychology and Creative Arts.

**Table 19 Non-response sample characteristics across study area**

	Respondents	%	Non-responders	%
<b>Base</b>	<b>30,338</b>	<b>100.0</b>	<b>60,884</b>	<b>100.0</b>
<b>Study area</b>				
Science and mathematics	2,763	9.1	4,088	6.7
Computing and Information Systems	863	2.8	2,389	3.9
Engineering	1,697	5.6	3,890	6.4
Architecture and built environment	681	2.2	1,741	2.9
Agriculture and environmental studies	546	1.8	785	1.3
Health services and support	1,908	6.3	3,046	5.0
Medicine	745	2.5	954	1.6
Nursing	2,084	6.9	4,102	6.7
Pharmacy	253	0.8	452	0.7
Dentistry	129	0.4	250	0.4
Veterinary science	172	0.6	218	0.4
Rehabilitation	385	1.3	596	1.0
Teacher education	3,528	11.6	5,928	9.7
Business and management	5,706	18.8	18,428	30.3
Humanities, culture and social sciences	3,243	10.7	4,405	7.2
Social work	755	2.5	994	1.6
Psychology	1,553	5.1	1,986	3.3
Law and paralegal studies	1,162	3.8	2,183	3.6
Creative arts	1,008	3.3	2,004	3.3
Communication	93	0.3	218	0.4
Tourism, hospitality, personal services, sport and recreation	1,064	3.5	2,227	3.7

### 7.3.3. SMS Response analysis

An SMS was sent to 6,894 graduates to coincide with the fifth reminder on February 20, in order to drive them to the recently sent email reminder. As shown in Table 20, the proportion of email recipients who also received an SMS on the same day as the fifth reminder was 10.6 per cent, with 11.2 per cent sent to undergraduate and 9.7 per cent sent to postgraduate populations.

Only graduates with a mobile number provided by the institution were included in the SMS reminder. Institutions with lagging response rates were targeted for SMS, with ten universities and one NUHEI institution included in the SMS send.

Content of the SMS was aimed at driving graduates to email reminders. Where possible, the primary email address for the graduate was inserted into the SMS to assist graduates in locating the inbox that the email reminder was sent to. A small number of email addresses (78) were too long to fit into the character limit for an SMS so they received a variation that excluded the sent email address. Refer to Appendix 8 for SMS content.

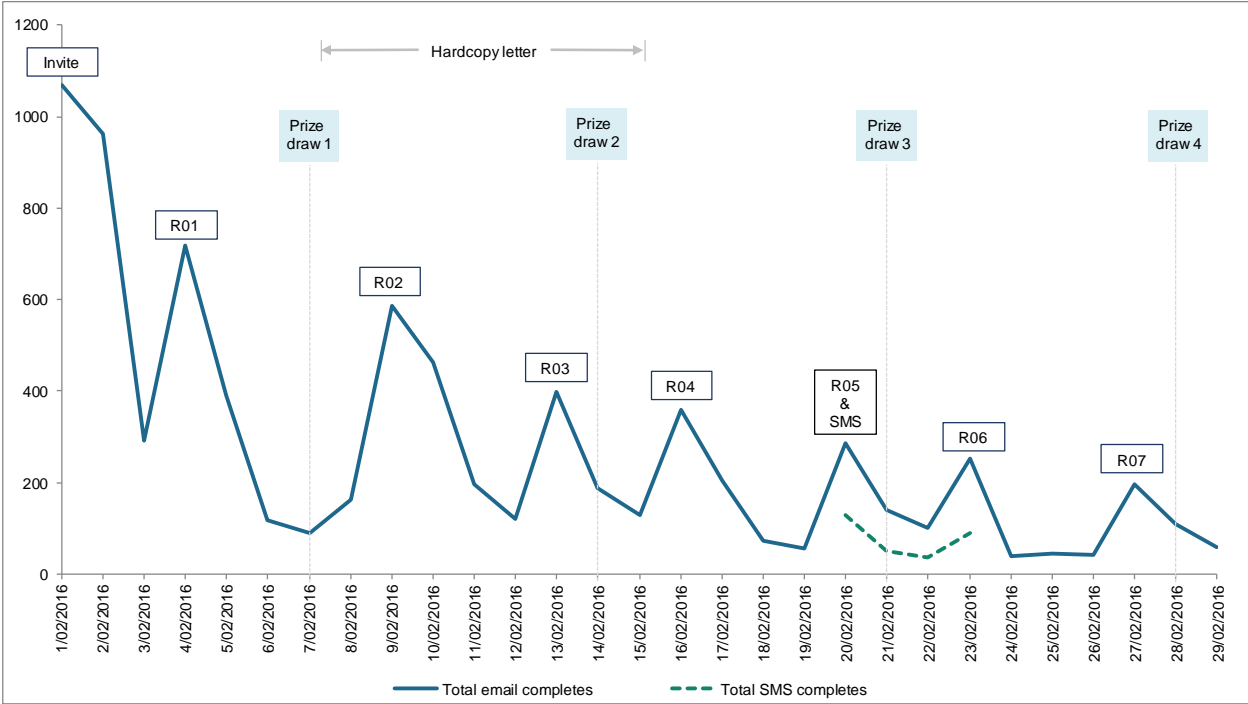
The SMS was successful at driving completion, with 28.1 per cent of reminder 5 completions coming from the link. Interestingly undergraduates were a little more responsive to this methodology, with 29.8 per cent of reminder 5 completes coming from SMS versus 25.5 per cent postgraduate SMS completes.

**Table 20 Proportion of email recipients sent an SMS**

Graduate status	Number of reminder 5 Emails Sent	Number of completed surveys	Number of SMS Sent	% of email recipients sent SMS	Number of completed surveys via SMS	% of completed reminder 5 surveys via SMS
Undergraduate	41,283	672	4,612	11.2	200	29.8
Postgraduate	23,623	412	2,282	9.7	105	25.5
Total	64,906	1,084	6,894	10.6	305	28.1

While the SMS was sent to coincide with reminder 5, there was overlap with reminder 6 as well, indicating that this approach continued to drive respondents to the survey over a period of time, not just on the day of send. This pattern of response was similar for both undergraduate and postgraduate respondents (see Appendix 10).

**Figure 3 SMS response profile**



### 7.3.4. Server outage link issue

On February 24 a server issue resulted in the survey link in reminder 6 (sent on February 23) presenting an error message to those who clicked through. This impacted 235 graduates who clicked on the link before the issue was resolved. An email apologising for the error and letting graduates know that it had been fixed was sent to those affected on February 25, resulting in 121 completes (51.5%).

## 7.4. Telephone reminder analysis

Across the four institutions that requested telephone reminder follow-up after the main online collection period, 9,152 records were entered into the dialler, with 1,532 records (16.7%) unusable, either due to disconnection or invalidity. Contact was made with 38.8 per cent of records, which was consistent between undergraduates (38.6%) and postgraduates (39.3%). Approximately 35 per cent of records yielded an email address for the survey link follow-up email. Of the total number of graduates that contact was made with, 28.3 per cent went on to complete the survey, with postgraduates going on to complete the survey at a higher rate (31.5%) compared to undergraduates (26.4%). Table 21 below outlines the main outcomes of telephone reminder activity.

**Table 21 Telephone reminders outcomes**

	Undergraduate		Postgraduate		Total	
	n	%	n	%	n	%
<b>Total sample initiated</b>	<b>5,822</b>	<b>100.0</b>	<b>3,330</b>	<b>100.0</b>	<b>9,152</b>	<b>100.0</b>
Unusable sample	950	16.3	582	17.5	1,532	16.7
No Contact	2,626	45.1	1,439	43.2	4,065	44.4
<b>Total contact</b>	<b>2,246</b>	<b>38.6</b>	<b>1,309</b>	<b>39.3</b>	<b>3,555</b>	<b>38.8</b>
Collected graduate's email	2,057	35.3	1,218	36.6	3,275	35.8
Other call outcome	189	3.3	91	2.7	280	3.0
<b>Total completed online surveys<sup>1</sup></b>	<b>593</b>	<b>26.4</b>	<b>412</b>	<b>31.5</b>	<b>1,005</b>	<b>28.3</b>

<sup>1</sup>base is total contacts

## 7.5. Employment History item non-response

The employment history module was created to collect the details of every occupation a graduate had held since completing the 2013 AGS. Graduates in employment were asked how many occupations they had held since 2013, and to include any change of occupation within a business (i.e. changed from analyst to senior analyst in one business) or changes of business with no change in occupation (i.e. changed from analyst at Business A to being an analyst at Business B). Close to one in ten (9.7%) in scope respondents (had worked elsewhere or changed occupation within the same business) chose not to provide the number of occupations they had held, and therefore were not taken through the remainder of the employment history module.

Those who did provide a number were asked to list out the name of their employer or business, and the occupation/s they held there, with the maximum number of occupations to be listed out capped at 10. The graduate was looped through a set of questions relating to each occupation. The number of respondents with more than five occupations was very low, with only 124 respondents with a sixth occupation, and 56 graduates who had held seven occupations since participating in the GOS.

The employment history module went through a cognitive pre-testing program to test item non-response or survey break off due to the repetitive nature of the module, and strategies were

implemented to reduce both occurrences (see section 3.4). Even with these strategies in place there was an increase in attrition as graduates progressed through each occupation loop.

Table 22 demonstrates increasing rates of non-response, particularly hours worked, which has one in three graduates opting not to respond (36.7%) by occupation five. This indicates that data quality is compromised as graduates become less tolerant of the repetitiveness of this section of the survey. Given the low number of graduates with more than five occupations, consideration should be given to reducing the number of occupation loops.

**Table 22 Employment History non-response**

GOS- L item		Occupation 1 n=10,811	Occupation 2 n=5,673	Occupation 3 n=2,073	Occupation 4 n=699	Occupation 5 n=305
<b>Employment History</b>		% missing	% missing	% missing	% missing	% missing
EHIND	Business/industry	1.5	8.0	10.4	12.9	12.1
EHOCC	Occupation	2.0	8.1	10.6	12.9	11.1
ehhrs	Hours worked per week	5.3	20.1	28.1	32.2	36.7
Ehsly <sup>12</sup>	Salary (In Aust)	15.5	13.3	12.6	11.5	12.9

<sup>1</sup> Base sizes for salary are lower than base provided for each occupation due to the exclusion of graduates not working in Australia.

<sup>2</sup> Non response calculation for salary also includes 'don't know'

An interesting observation is the stability in the proportion of graduates choosing to either skip or answer 'don't know' to the salary questions.

## 7.6. Respondent characteristics

Table 23 illustrates the differences between sample parameters and the respondent profile; the alignment between the two groups is overall very similar. Comparable to the GOS, mismatch is most prevalent across gender, age, type of attendance, language spoken at home, and born in Australia variables. Refer to Appendix 12 for further profile comparisons.

**Table 23 Respondent characteristics**

	Total sample	%	Respondents	%
<b>Base</b>	94,101		30,338	
<b>Status</b>				
Undergraduate	58,678	62.4	17,920	59.1
Postgraduate Coursework	31,845	33.8	10,721	35.3
Postgraduate Research	3,578	3.8	1,697	5.6
<b>Gender*</b>				
Male	37,750	40.1	10,863	35.8
Female	56,342	59.9	19,474	64.2
<b>Aboriginal and Torres Strait Islander</b>				
Non-Indigenous	91,751	97.5	29,593	97.5
Indigenous	540	0.6	182	0.6
No information	1,810	1.9	563	1.9
<b>Disability</b>				

	Total sample	%	Respondents	%
No disability	91,389	97.1	29,366	96.8
Disability	2,458	2.6	919	3.0
No information	254	0.3	53	0.2
<b>Age</b>				
30 years or under	68,497	72.8	19,769	65.2
Over 30 years	25,604	27.2	10,569	34.8
<b>Mode of attendance</b>				
Internal and mixed mode	81,844	87.0	25,502	84.1
External	12,139	12.9	4,803	15.8
No information	118	0.1	33	0.1
<b>Type of attendance</b>				
Mainly Full-time	72,160	76.7	21,762	71.7
Mainly Part-time	21,755	23.1	8527	28.1
No information	186	0.2	49	0.2
<b>Main Language Spoken at Home</b>				
English	63,880	67.9	23,897	78.8
Language other than English	28,103	29.9	5,956	19.6
Unknown	2,118	2.3	485	1.6
<b>Born in Australia</b>				
Yes	51,467	54.7	19,693	64.9
No	38,180	40.6	9346	30.8
Unknown	186	0.2	1,299	4.3

## 8. Summary of issues for future surveys

The 2016 implementation of the GOS-L demonstrated that an improved approach to sample creation and data collection substantially improved graduate engagement and response rates. Key enhancements to the research methodology included:

- the ability for institutions to update graduate contact information
- a streamlined survey, particularly for those in stable employment
- a flexible and tailored response maximisation strategy to maintain and improve participation and improve non-response.

Institutional engagement with the GOS-L was very positive and consistent with the high levels of support that have been offered in relation to the SES and the GOS. Projected response rates were modest due to uncertainties around the quality of contact information however the achieved overall response rate of 33.3 per cent greatly exceeded expectations. As such, while there is still room for improvement, we feel that the GOS-L is in a strong position to deliver high quality and detailed information about medium-term graduate destinations.

Improving overall Total Survey Error (TSE) is the core focus of our commitment to continuous improvement across all QILT surveys. Mitigating potential sources of errors of representation and measurement error are key considerations for future surveys.

### 8.1. Improving TSE

The improvement of TSE for GOS- L will be achieved through maximising both institution and graduate engagement with the survey, and thus increasing response rates and enhancing data quality. This will involve careful messaging to the institutions around sample updates (improved response), and the introduction of in field telephone reminders to reduce non response. There will be ongoing panel maintenance with each round of GOS respondents to ensure that in 2019, when the GOS becomes the source of sample for the GOS- L, these respondents are familiar with, and expecting the GOS- L invitation.

We are also working toward improved mobile optimisation to limit the burden on respondents choosing to complete the survey on a small screen device. This will improve the quality of data collected, as well as reducing the number of respondents dropping out of the survey, or changing mid survey to another platform such as a desktop or laptop.

### 8.2. Sampling strategy

In an effort to reduce the burden on institutions participating in GOS- L, they were given a choice as to whether they provided a sample update or skipped this process. This included missing graduate names, missing course details, missing contact details, or updating old contact details. Over half of the institutions chose to update details where possible, however, for those not updating, the Social Research Centre only had details as supplied in the GCA file. As discussed in Section 7.3.1, there was a difference of 9.7% in response rate between updated sample and non-updated sample. Based on this we recommend using this evidence to encourage institutions to update graduate details.



### 8.3. Improvements to the GOQ- L

One important component of reporting GOS- L data involves accurate collection of graduates' salary (if the graduate is currently employed). There were some analysis issues regarding inconsistent salaries for those who have more than one job, where salary for their main job is higher than their combined salary for all jobs. To combat this, we will identify these graduates during the survey, and route them into questions that offer them a chance to correct their salary.

We also recommend reducing the number of occupation loops in the employment history module, which is currently sitting at ten, to five. Analysis of the GOS- L data has shown that the more loops a respondent has to complete, the more likely they are to skip questions. We also know that the number of respondents who have had more than five jobs is very low.

# Glossary

# Appendix 1      Response rate by institution type

# Appendix 2    Institution participation

# Appendix 3 Graduate Outcomes Questionnaire- Longitudinal

## **Appendix 4 Graduate Outcomes Questionnaire- Longitudinal screenshots**

# Appendix 5      GOS- L Data elements

## **Appendix 6      Institution by sample update status**



# Appendix 7      2016 Collection guide

# Appendix 8      Email & hardcopy reminders

# Appendix 9      Reporting module

# Appendix 10 Response rate by graduate type

## **Appendix 11   Email outcomes by institution type**

## **Appendix 12 Respondent characteristics - non-reportable**