

2017 Graduate Outcomes Survey - Longitudinal Methodological Report

March 2018



Social
Research
Centre

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List of abbreviations

ABS	Australian Bureau of Statistics
AGS	Australian Graduate Survey
AMSRs	Australian Market and Social Research Society
ANZSIC	Australian New Zealand Standard Industrial Classification
ANZSCO	Australian New Zealand Standard Classification of Occupations
ASCED	Australian Standard Classification of Education
ATSI	Aboriginal and Torres Strait Islander
BGS	Beyond Graduation Survey
CATI	Computer Assisted Telephone Interviewing
CEQ	Course Experience Questionnaire
ESS	Employer Satisfaction Survey
GAS-E	Graduate Attributes Scale – Employer
GAS-G	Graduate Attributes Scale – Graduate
GCA	Graduate Careers Australia
GDS	Graduate Destination Survey
GOS	Graduate Outcomes Survey
GOS-L	Graduate Outcomes Survey - Longitudinal
GOQ	Graduate Outcomes Questionnaire
HEIMS	Higher Education Information Management System
ISO	International Standards Organisation
NUHEI	Non-University Higher Education Institute
LFS	Labor Force Survey
PREQ	Postgraduate Research Experience Questionnaire
QA	Quality Assurance
QILT	Quality Indicators for Learning and Teaching
SES	Student Experience Survey
TSE	Total Survey Error

1. Introduction

1.1. Overview

This report documents the technical aspects of 2017 implementation of the 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 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 department. 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 GOS-L replaced the BGS, with data collection currently in its second year.

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 established and validated items, where possible, 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 2013 and responded to the 2014 AGS were invited to participate in the 2017 GOS-L. Graduate sample including contact information was provided by the higher education institutions whose graduates completed the 2014 AGS, and agreed to recontact through the provision of their email address.

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

Feature	Element
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	Online
Reference dates	Week prior to the survey
Enumeration period	Five weeks
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

The 2017 GOS-L collection had a total of 56 institutions eligible to take part based on the 2014 AGS data. One institution opted to not participate in the 2017 GOS-L, leaving a total of 55 participating institutions. Of the 139,520 records in the AGS sample, 99,058 graduates across both universities and Non-University Higher Education Institutions (NUHEIs) were able to be contacted, forming the base of the 2017 GOS-L sample.

Building on the better than expected response rate of 33.3 per cent in 2016, the 2017 GOS-L again exceeded expectations with an overall response rate of 42.2 per cent. As can be seen at Table 2, a total of 38,591 surveys were completed in 2017; 38,236 in the university sector and 355 amongst NUHEI graduates.

Table 2 GOS-L project overview

Project element	2016 Collection			2017 Collection		
	University	NUHEI	Total	University	NUHEI	Total
Participating institutions	37	14	51	39	16	55
Graduates approached	93,172	929	94,101	98,118	940	99,058
Final in-scope graduates	90,320	902	91,222	90,613	832	91,445
Completed surveys	30,040	298	30,338	38,236	355	38,591
Response rate (%)	33.3%	33.0%	33.3%	42.2%	42.7%	42.2%
Data collection period	February - March					
Data collection mode	Online					
Analytic unit	Graduate					

Appendix 1 summarises response by undergraduates and postgraduates within provider type. It shows that postgraduates responded at a higher rate (44.7 per cent university and 51.5 per cent NUHEI) than undergraduates (40.6 per cent university and 39.2 per cent NUHEI).

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 Australian Bureau of Statistics' (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 TSE 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 / misunderstanding 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 International Standards Organisation (ISO) Quality Assurance (QA) scheme in place since 2007 which addresses each of these points in the survey cycle. The QA system documents all responsibilities, authorities, procedures and opportunities for improvement. 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 TSE).

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, several 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
Coverage error	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.
Sampling error	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 0.5 of a per cent of the available sample. These records will be further examined to assess where there is an unacceptably high proportion of graduates flagged for exclusion by institutions or graduates who screen out during the survey.
Non-response error	Unit level non-response	Online data collection may result in unacceptably high levels of non-response by graduates.	<p>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.</p> <p>Our initial approach in 2016 resulted in an overall response rate of 33 per cent which is a substantial improvement from the 13 per cent achieved most recently for the BGS.</p> <p>In 2017, the fieldwork period was extended by an extra week to five weeks, to better accommodate the likelihood that medium-term graduates would be harder to reach, given the length of time since graduation and the change from AGS/BGS to the QILT survey suite. Additionally, in 2017, to maximise response amongst medium term graduates, in field telephone reminders were employed where phone contact details were available, as more direct response maximisation technique.</p>
	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 known 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.

Error type	Source of error	Context	Mitigation strategy
Validity	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.
Measurement error	Poor questionnaire design	The layout or structure of the new questionnaire could lead to inaccurate or incomplete responses.	The Graduates Outcome Questionnaire-Longitudinal (GOQ-L) underwent cognitive testing and was also independently reviewed by the QILT working group.
Processing error	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 Australia New Zealand Standard Classification of Occupations (ANZSCO) and Australia New Zealand Standard Industrial Classification (ANZSIC) for occupation and industry respectively, 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 2017 GOS-L

The approach to the 2017 GOS-L reflected the learnings from both the 2016 collection and the best practices employed across the other QILT surveys (i.e. GOS and Student Experience Survey (SES)), which resulted in a number of response maximisation improvements to the GOS-L collection:

- The data collection period was extended by one additional week to five weeks in total, to allow a longer time period for busy graduates to respond.
- In field telephone reminders, a response maximisation technique where graduates are contacted and asked to complete the survey online, were utilised as they have proven to be an effective response maximisation technique in the SES and GOS.

In addition to the improvements listed above, established response maximisation strategies were retained such as a national incentivisation strategy and targeted email reminders.

Institutions were able to opt-in to telephone reminders after the online fieldwork period, with uptake from five institutions on a fee-for service basis. Telephone reminders drive graduates to the online survey, which made them eligible for reporting at the national level so are included in the outcomes of this report.

More information on the approach to telephone reminders is provided in Section 5.4 with outcomes from telephone reminders detailed in Section 7.5. Key schedule dates for the 2017 GOS-L are summarised in Table 4 below.

Table 4 Key GOS-L schedule dates

Schedule milestone	2017 collection
GOS-L web seminar	3 February
Online survey open	1 February
In field telephone reminders started	13 February
In field telephone reminders finished	26 February
Online survey closed	7 March
Post field telephone reminders started	8 March
Post field telephone reminders finished	19 March
Survey closed for telephone reminder completes	23 March

3.2. Institutional engagement

3.2.1. Participating institutions

The 2017 GOS-L included graduates from 36 Table A universities, three Table B universities and 16 NUHEIs. The list of institutions involved in the GOS-L is provided at Appendix 2. The population frame was generated from respondents to the 2014 AGS and formed the group of institutions invited to take part in the 2017 GOS-L.

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 previous environment to the QILT framework.

The approach to manage the change associated with the introduction of QILT has been based on the principals of:

- transparency
- open communication
- active support
- respect.

To facilitate the principles of change, a QILT web seminar (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, with a GOS-L webinar conducted to further explain the processes related to the GOS-L collection.

In keeping with the processes followed for the 2016 GOS-L collection, to reduce the potential reporting burden on institutions, the 2017 GOS-L was conducted on an opt-in basis. The opt-in process was well-received, with only one university declining participation.

3.2.3. Privacy and confidentiality

The GOS-L was conducted within the ethical guidelines laid out in the Australian Code for the Responsible Conduct of Research. Data collection was undertaken in accordance with ISO 20252 standards, the Australian Market and Social Research Society (AMSRS) code of practice, the Market and Social Research Privacy Principles, the Australian Privacy Act, and The Higher Education Support Act 2003.

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 Social Research Centre had a number of measures in place to ensure the privacy of individuals and compliance with both Commonwealth and industry standards on secure data storage and management, including limited access to information for project team members and multi-level passwords on all electronic storage systems, the use of a secure file exchange to distribute sample and data files between the Social Research Centre and institutions, and ensuring that all servers used in the execution of the online survey complied with Australian privacy standards.

In terms of online privacy management, the Social Research Centre deployed commercial Unified Threat Management (UTM) devices to protect the internal network from the public network. These devices provided firewall protection, intrusion protection, virus scanning, online content filtering and managed multiple Wide Area Network (WAN) connections.

Additionally, all Social Research Centre staff involved in the 2017 GOS-L (including helpline operators) signed a Deed of Confidentiality, as part of their requirements for employment. The Social Research Centre also entered into a Deed of Confidentiality with institutions as required. Two universities entered into a project-specific Deed of Confidentiality.

3.3. Defining the in-scope population

The GOS-L population frame was drawn from previous responses to the 2014 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. From 2019, the GOS will provide a nationally consistent population frame for use in the GOS-L in future years.

The 2017 GOS-L population consisted of all graduates who completed a course of study at an Australian higher education institution in 2013 and completed the 2014 AGS. The department supplied the Social Research Centre with the Graduate Careers Australia's (GCA) file of all graduates who had completed the 2014 AGS. 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 55 institutions that opted to participate, 38 institutions updated graduate contact information and 17 opted to leave the graduate details as supplied in the GCA file. Refer to Appendix 6 for details.

3.4. The GOQ-L

3.4.1. Conceptual structure of the GOQ-L

Development of the GOQ-L was undertaken through a number of channels:

- cognitive testing of the GOQ-L
- review of the 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 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 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 2016 GOS Methodology Report.

The reference instruments used to develop the GOQ-L items are listed in Table 5 on the next page.

Table 5 GOQ-L reference surveys

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
Beyond Graduation Survey	BGS	Retired longitudinal survey of graduate activities
Graduate Destination Survey	GDS	Retired survey of graduate activities
Graduate Outcomes Questionnaire	GOQ	Current national graduate survey of short-term outcomes
Scale of Perceived Over-qualification	SPOQ	Graduate perceptions of the extent to which they are using their education and skills in their current occupation

3.4.2. Operationalising the GOQ-L in 2017

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 at Appendix 3.

Table 6 GOS-L module themes

Module	Themes
Module A	Introduction, screening and confirmation
Module B	Labour force
Module H	Employment history
Module C	Further study
Module D	Graduate Attributes Scale - Graduate
Module E	Graduate preparation
Module F	Additional items (departmental, institutional etc.)
Module G	Contact details

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

Module A: Introduction, screening and confirmation

This module confirms that the graduate completed the qualification supplied in the sample, and allows for corrections to the information provided, or the collection of key information, where it was missing in the sample provided. 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 with this data.

Module H: Employment history

This module captures how the graduate's career has progressed since completing the 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 graduation, and what type of qualification they are 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 E: 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 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 (the same qualification at the same institution / the same qualification at a different institution / the same subject area(s) at the same institution / the same subject area(s) at a different institution / something completely different at the same institution / something completely different at a different institution / I wouldn't study at all).

Module F: 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 national data files.

Module G: 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

Two institutions included questions in the GOQ-L. One institution included a Net Promoter Score (NPS) item at both a course and institution level. The other institution included a series of items related to working graduates and their workplace composition, and participation in the institution's career services.

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, there were instances when sample information required for the 2017 GOS-L, such as graduate name, course code, course name, occupation title, employer name (for graduates employed in 2014), and course name (for graduates undertaking further study in 2014), was not collected by some institutions.

Where a course name, occupation title, employer name, or further study qualification title was missing in the sample, the graduate was asked to provide these details in the 2017 GOS-L screening module, with these details fed forward throughout the remainder of the survey. The graduate also had the option to change their employment or further study status as recorded at the time of completing the 2014 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 generic, opening with 'Dear Graduate' instead of 'Dear [Graduate Name]'.

3.5. Online survey

The Social Research Centre uses Unicom Intelligence (previously IBM SPSS Data Collection) for online data collection (refer to <http://www.unicomsi.com/intelligence> for further details). This platform was selected specifically because it offers a seamless interface between online and telephone survey methods, and can be programmed to interact with other software, for example the data collection reporting portal used by institutions to monitor their progress during fieldwork (refer to Section 5.5 for more details).

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), where after selecting the 'Start Survey' button, graduates were taken to a login page to enter the username and password provided in invitation and reminder emails.

Online survey presentation was informed by ABS 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 the 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 2017 GOS-L in-scope population consisted of all graduates who completed a course of study at an Australian higher education institution in 2013, completed the 2014 AGS, and agreed to recontact.

4.1. Sampling approach

The 2014 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, which were asked to update missing variables where possible.

The GOS will provide a nationally consistent population frame for use in the GOS-L from the 2019 collection, 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 were extracted from the 2013 AGS data file and sample file containing 27 variables was created (refer to Appendix 5), with variables grouped by their application within the GOS-L as follows:

- 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
- 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
- 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*', reflecting the criteria for inclusion in the GOS-L, 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 the institution.

4.1.2. Long term email address as consent for further research

Most participating institutions collected a long-term email address at the 2014 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:

1. Institutions emailed all in-scope 2014 AGS respondents using contact information from other sources (e.g. alumni databases) asking if they would like to opt out of the 2017 GOS-L.
2. Institutions supplied the Social Research Centre with details of those who did not opt out, and the Social Research Centre classified these sample members as in-scope.

4.2. Institutional verification process

As discussed in Section 3.2.2, institutional participation in the 2017 GOS-L was optional; in addition, 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:

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

Of the 56 institutions that collected data for the 2014 AGS, one university chose to opt-out of the collection. A majority of the 55 participating institutions chose to update their sample (38), which was a marked improvement on the update rate in 2016 (29 institutions updated in 2016). Details of which institutions updated sample are provided at 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:

- Provision of 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) as their address was confirmed if they agreed to further research at the end of the survey.
- Provision of phone numbers was optional. Where provided, phone numbers were used for telephone reminders and SMS, as appropriate, during data collection.

5. Data collection

5.1. Fieldwork overview

The online survey commenced on Monday 1 February 2017 and closed to institutions not utilising post field telephone reminders on Tuesday 7 March. Data collection was supported by a number of strategies focused on maximising response, including:

- standard response maximisation, consisting predominately of email invitation and reminders, a national prize draw, in field telephone reminders, and SMS; supported by the Social Research Centre's helpdesk and dedicated GOS-L email inbox
- live monitoring of survey outcomes: allowing institutions, the department, and the Social Research Centre to effectively keep abreast of completion across parameters of interest
- a moderate social media campaign
- post field telephone reminders, carried out after the online fieldwork period, which enabled five institutions to supplement online response rates. The survey closed for these institutions on Wednesday 23 March.

All participating institutions were provided with a collection guide to the GOS-L, which covered the key aspects and dates of data collection. The 2017 collection guide is provided at Appendix 7.

5.2. Graduate engagement strategies

As with the 2016 collection, GOS-L graduate engagement was presented to institutions as an optional activity. Nine universities undertook engagement activities for the 2017 GOS-L, suggesting that the legitimacy and benefit of participating in GOS-L was becoming more widely recognised across institutions. Most engagement was in the lead up to the survey in the form of an awareness email, using the templates provided by the Social Research Centre. Two institutions chose to send hardcopy letters in the lead up to the survey launch.

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.

5.2.1. Social media use

Due to the highly targeted nature of the GOS-L and as we were attempting to contact graduates who had completed their qualification in 2013 and had agreed to be re-contacted, institutions were not asked to connect with their graduates via email or social media.

A moderate social media campaign was rolled-out by the Social Research Centre which consisted of a paid advertising campaign through Facebook which targeted users that were a graduate and had been studying between 2011 to 2013 in Australia. These criteria attempted to reach graduates who were eligible to participate in the GOS-L, however, it was expected that some graduates who saw the ad would not be eligible to participate. Ads were shown on both Facebook and Instagram platforms through the Facebook Ad Manager function.

5.3. Response maximisation

The 2017 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 details¹. Over the five-week fieldwork period, response maximisation included:

- prize draw incentives
- generic, partial, and targeted email reminders
- in field telephone reminders to drive graduates to the online survey
- a moderate social media presence.

5.3.1. Incentivisation strategy

The five-week rolling prize draw was designed to encourage early response by offering more chances to win the earlier the survey was completed (e.g. if the survey was completed by the end of the first week the graduate would be entered into all five prize draws). There were five prize draws in total with one \$1,000 prepaid Visa gift card, two \$500 prepaid Visa gift cards and five \$100 prepaid Visa gift cards to be won each week. The total prize pool was valued at \$12,500.

5.3.2. Invitation and follow up reminder strategy

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

Drawing on learnings from the 2016 GOS, the 2017 GOS-L used a number of strategies to maximise survey response where possible, resulting in the following tailoring of messaging:

- the use of the first person in selected reminder emails (e.g. *'I contacted you a few days ago....'*)
- a warm, understanding, friendly tone which proved most successful in the GOS
- the use of text such as *'You are from a select group of students'* for smaller study areas only, such as Law and Paralegal Studies, Pharmacy and Dentistry.

The findings from GOS 2106 were applied to the invitation and reminder emails during the 2017 GOS-L. Additionally, variable messaging and language pitch was trialled among the following subgroups.

Age

Analysis from the 2016 GOS-L showed that older sample members (particularly those aged 45 years or older) were generally associated with higher response rates, relative to younger sample members.

It was hypothesised that long, formal emails were more likely to appeal to older age groups, and that a casual, empathetic tone would be more appealing for younger age groups. On this basis, the language pitch was tailored by age group, commencing with the initial invitation email.

¹ Username and password were only required if entering the GOS_L online survey via the GOS-L landing page on the QILT website.

Study areas

The 2016 GOS-L collection identified that study areas such as Architecture and built environment, Nursing, Teacher education, and Communications had lower response rates. Based on the GOS May 2016 trial, these study areas responded well to reminders that acknowledged '*you must be very busy*'. Language acknowledging busy lives was tested on these study areas for the GOS-L from the first reminder.

Partial completes

In addition to standard targeting of respondents who start the survey but do not continue with it, a new trial was to target graduates who began the survey on a small screen device (phone or tablet) but had not returned to continue the survey. An email reminder that let them know they were able to finish the survey on a computer added from the first email reminder. Targeting of study area and age were carried out simultaneously with partial targeting.

Email activity and SMS

The Social Research Centre sent one email invitation, nine email reminders and one SMS over the course of the online fieldwork period, as outlined in Table 7.

Table 7 Email invitation and reminder schedule

2017 GOS-L Collection		
Activity	Date	Number sent
Email invitation sent	1 February	99,024
Email reminder 1	4 February	86,316
Email reminder 2	9 February	81,650
Email reminder 3	13 February	76,340
Email reminder 4	16 February	72,694
SMS	16 February	22,532
Email reminder 5	20 February	67,906
Email reminder 6	23 February	65,154
Email reminder 7	27 February	61,395
Email reminder 8	1 March	60,161
Email reminder 9	4 March	58,518
Online fieldwork closes	7 March	

From the invitation onwards, emails were sent to the primary email address and the secondary email address if supplied. From reminder six onwards emails were sent to a tertiary email address if supplied. This activity schedule was designed to maintain momentum in the baseline survey completions (those completed between reminders). As could be expected, response to the earlier reminders was higher, 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. Respondents who had completed the survey or graduates who were disqualified from participating were also removed from the next scheduled email reminder. Refer to Appendix 8 for examples of email content.

SMS follow up was provided on an as-needs basis for sample members at institutions which provided mobile numbers to the Social Research Centre. SMS was used to compliment the email strategy. Graduates were able to opt out or unsubscribe via SMS reply.

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 make 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, the helpdesk received 408 queries with the majority of these relating to opt outs from the survey (117), change of details (80), requests for general survey information (71), and problems accessing the survey (68).

Table 8 Reason for contacting the GOS-L helpdesk

Type of enquiry	1800 Number	GOS Inbox	Total
Opt out of survey	9	108	117
Problems with URL / access / login	9	59	68
CATI appointment	7	1	8
Change of contact details	18	62	80
Requested general survey information	53	18	71
Already completed	4	21	25
Survey feedback	0	3	3
Other	1	12	13
Privacy/confidentiality concerns	1	3	4
Prize draw query	0	0	0
Survey reset	2	17	19
Total	104	304	408

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

Telephone non-response follow up involved attempting to contact graduates who had not completed or opted out of the online survey by telephone. Upon contact, updated email address details 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 reminder follow up was undertaken both in field and post field. In field telephone reminder activity was aimed at improving national response rates, whereas post-field was a fee-for-service activity to enable institutions to 'top-up' response rates for internal reporting purposes. Five institutions utilised fee-based post field telephone reminders.

In field telephone reminders were conducted between 13 and 26 February. Post field telephone reminders were conducted between 8 and 19 March, with the online survey remaining open until 23 March to allow for reminder emails from telephone reminder activity to be sent, and for graduates to respond.

Call procedures for telephone reminders for the 2017 GOS-L featured:

- call attempts placed over different days of the week and times of day
- use of the alternative contact number(s), where provided.

Online survey completions resulting from post field telephone reminder activity were included as nationally reportable data, as the mode of completion was consistent with online surveys completed as part of the main online fieldwork period. In field telephone reminder outcomes are summarised in Section 7.5.

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 GOS-L telephone reminders attended a briefing session, delivered by the Social Research Centre project management team. Interviewers were briefed on 13 February, with the briefing covering:

- survey context and background
- survey procedures (sample management protocols, response maximisation procedures)
- privacy and confidentiality issues
- targeted refusal aversion techniques
- strategies to maintain co-operation
- 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 overall response rate, and their cohort average (University or NUHEI average). The department was provided with weekly updates covering survey launches, in field milestones and the response rate 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 counts of completes, out of scopes and opt outs for each institution. An example of the national reporting module is shown at Appendix 9.

Institutions were also able to monitor their progress through 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
- student type
- faculty name
- campus name
- survey 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 2017 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 2014 AGS)
- 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 consolidation 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 the number of characters in a field exceeds two, one or more leading '9's' are added, as appropriate (e.g. the code for 'not applicable' for a four-character field becomes 9997).

Where 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 added to 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 assigned a negative value.

6.3. Coding and preparation of verbatim responses

Open-ended and other specify responses across online and telephone modes of collection were consolidated into a single workflow for coding, to ensure an efficient and consistent approach to coding. Coding 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 ABS code frames.

Coding was validated in accordance with ISO 20252 procedures, using an independent validation approach, where 10 per cent of responses are coded by a second coder. Any discrepancies are referred to the lead coder for adjudication, with established procedures to trigger re-training of coders and / or the recoding of an entire question, based on the level of discrepancy.

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, ABS catalogue number 1220.0) at the six digit level
Industry	Industry was coded using Australian and New Zealand Standard Industrial Classification (ANZSIC, 2006, ABS 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, ABS 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, ABS catalogue number 1272.0) at the six digit level.

7. Response analysis

7.1. Overall response rate by institution

The overall response rate² for the 2017 GOS-L was 42.2 per cent, an 8.9 percentage point increase over the response rate achieved for the 2016 GOS-L (33.3 per cent). The success of the 2017 GOS-L suggests the centralised sampling approach, improved response maximisation strategies and extended fieldwork period worked well to achieve a significant improvement in response rate, relative to the 2016 GOS-L.

Please note that the response rate tables in this report refer to operational data including post online fieldwork full Computer Assisted Telephone Interviews (CATI) where commissioned.

Tables 11 and 12 below contain the response rate for each university and NUHEI for the 2017 GOS-L. University response rates ranged from 25.5 to 80.3 per cent, with 4.3 per cent of sample members electing to opt-out of the survey.

Table 11 Response rates and opt-outs for universities

Institution	Sample provided	Unusable sample	Out of scope	Opted-out	Final sample	Survey completed	Response Rate (%)
Australian Catholic University	2,606	106	8	123	2,369	948	40.0
Bond University	767	25	2	49	691	273	39.5
Central Queensland University	495	27	2	15	451	149	33.0
Charles Darwin University	471	12	2	19	438	212	48.4
Charles Sturt University	1,533	48	8	45	1,432	665	46.4
Curtin University	5,515	19	24	213	5,259	2,101	40.0
Deakin University	4804	230	13	185	4,376	1,972	45.1
Edith Cowan University	2,551	1	3	103	2,444	1,228	50.2
Federation University Australia	938	131	4	38	765	204	26.7
Flinders University	2,524	453	9	63	1,999	1,032	51.6
Griffith University	4,687	110	27	202	4348	2,011	46.3
James Cook University	1,056	7	3	24	1,022	473	46.3
La Trobe University	592	37	4	26	525	273	52.0
Macquarie University	2,751	0	12	141	2,598	915	35.2
Monash University	7,492	239	13	396	6,844	3,140	45.9
Murdoch University	291	16	1	12	262	141	53.8
Queensland University of Technology	3,197	9	26	139	3,023	1,199	39.7
RMIT University	2,426	25	1	95	2,305	1,131	49.1
Southern Cross University	539	6	2	24	507	248	48.9
Swinburne University of Technology	2,410	2	6	136	2,266	785	34.6
The Australian National University	1,892	71	7	83	1,731	861	49.7
The University of Adelaide	2,848	39	16	121	2,672	1,107	41.4
The University of Melbourne	8,153	120	38	304	7,691	3,752	48.8
The University of Notre Dame Australia	418	10	0	12	396	167	42.2
The University of Queensland	5,464	9	15	242	5,198	2,497	48.0
The University of Sydney	3,993	5	25	227	3,736	1,617	43.3

² For the purpose of QILT projects, response rate is defined as completed surveys as a proportion of final sample, where final sample excludes unusable sample (e.g. no contact details), out of scope and opted out

Institution	Sample provided	Unusable sample	Out of scope	Opted-out	Final sample	Survey completed	Response Rate (%)
The University of Western Australia	2,348	206	6	105	2,031	869	42.8
University of Canberra	830	24	1	31	774	379	49.0
University of Divinity	67	6	14	2	45	21	46.7
University of New England	221	3	2	3	213	171	80.3
University of New South Wales	5,964	144	40	348	5,432	2,329	42.9
University of Newcastle	2,741	188	7	74	2,472	713	28.8
University of South Australia	4,738	19	14	150	4,555	1,433	31.5
University of Southern Queensland	567	61	2	27	477	239	50.1
University of Tasmania	1264	92	2	36	1,134	476	42.0
University of Technology Sydney	3,127	93	14	169	2,851	727	25.5
University of the Sunshine Coast	859	8	2	23	826	386	46.7
Victoria University	999	1	2	32	964	323	33.5
Western Sydney University	3,980	243	13	233	3,491	1,069	30.6
Total	98,118	2,845	390	4,270	90,613	38,236	42.2

NUHEI response rates ranged from 18.5 to 77.8 per cent, with a similar proportion of opt outs to the universities at 5.0 per cent, validating the effectiveness of the survey methodology and response maximisation procedures.

Table 12 Response rates and opt-outs for NUHEIs

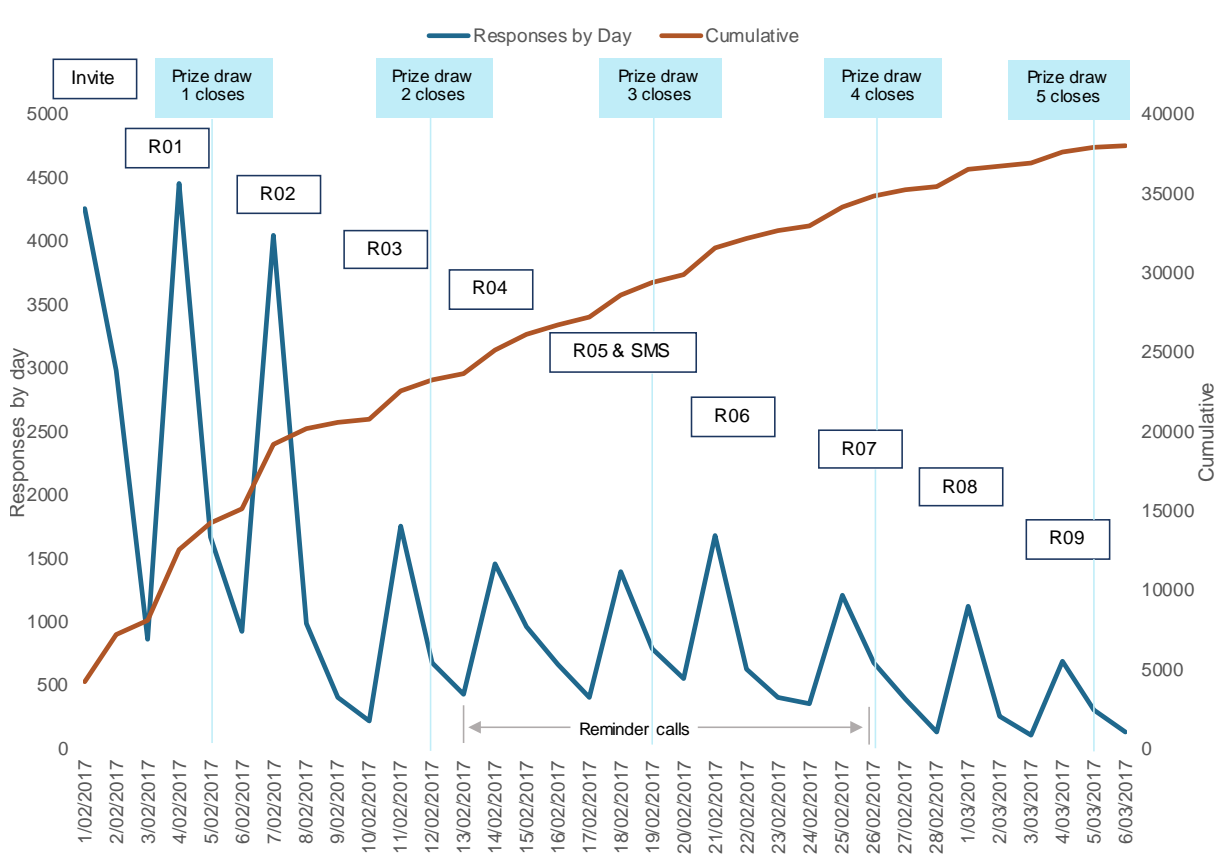
Institution	Sample provided	Unusable sample	Out of scope	Opted-out	Final sample	Survey completed	Response Rate (%)
Academy of Design Australia	37	5	0	5	27	5	18.5
Australian College of Applied Psychology (Navitas Institute)	125	2	2	1	120	59	49.2
Australian College of Physical Education	90	14	0	7	69	13	18.8
Australian College of Theology	155	3	2	12	138	82	59.4
Australian Institute of Business	20	1	0	0	19	9	47.4
Avondale College of Higher Education	55	2	0	3	50	26	52.0
Blue Mountains International Hotel Management School	10	0	0	0	10	5	50.0
Christian Heritage College	48	7	0	1	40	14	35.0
Eastern College Australia	19	0	0	1	18	14	77.8
Endeavour College	133	2	0	8	123	52	42.3
Holmesglen Institute	58	7	0	5	46	16	34.8
Melbourne Institute of Technology	46	1	0	1	44	9	20.5
Melbourne Polytechnic	37	4	0	1	32	7	21.9
Raffles College of Design and Commerce	44	3	1	2	38	11	28.9
Sydney College of Divinity	24	0	1	0	23	12	52.2
Tabor College of Higher Education	39	2	2	0	35	21	60.0
Total	940	53	8	47	832	355	42.7

7.2. Rate of response

For the purpose of QILT projects, rate of response refers to how quickly surveys are completed.

Based on observations from the 2016 GOS-L, the number of days elapsed between reminder 1 and reminder 2 was reduced for the 2017 GOS-L, in order to capitalise on the momentum in the commencement of online survey data collection. Figure 1 shows a strong rate of survey completion in the first three emails (Invite to R02), and suggests that the tightening of the schedule gave a good initial boost to the rate of response with 53.1 per cent of total surveys completed between the invitation and reminder 2.

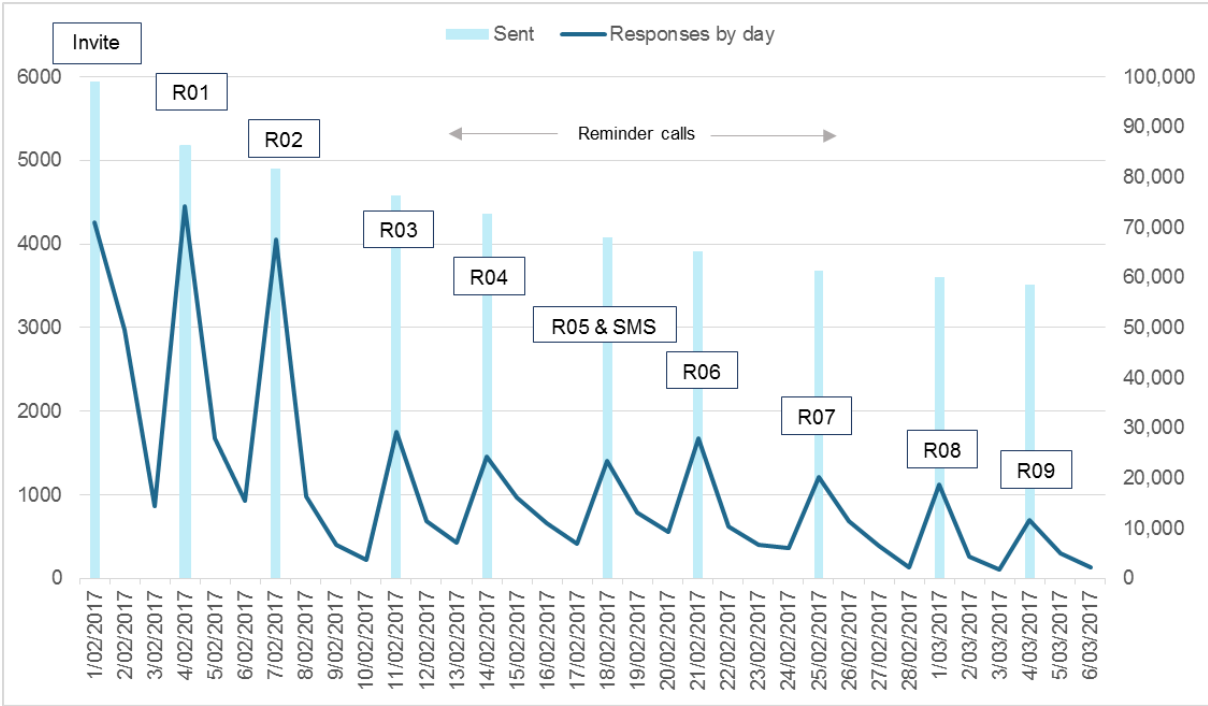
Figure 1 Rate of response overall



7.3. Email response maximisation analysis

The total number of emails sent during the fieldwork period was 729,158. Figure 2 shows the number of emails sent compared with the number of responses by day. As expected, the number of emails sent reduced over time as completions, opt-outs and out of scope graduates were removed from sample. Compared to the 2016 fieldwork period of 29 days, the 2017 GOS had 34 days in field. During the additional days in field, 1,486 incremental surveys were completed (equating to a 1.1 percentage point increase in the response rate) with one additional email reminder (reminder 9) added to the workflow.

Figure 2 Number of emails sent and correlating completions



From reminder one onwards, the generic email text included tailored text for those who had begun but not yet completed the survey, with a focus on those who had opened the survey link on a small screen device and not since completed their survey. This entailed a reminder that they could continue from where they last stopped the survey on a desktop. 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. Age group – either under or over 30 years – was used to tailor the email text age appropriately.

Table 13 on the next page shows that the email invitation open rate was moderate at 19.4 per cent, which was 9.9 percentage points lower than in 2016 (28.5 per cent). The proportion of invitation email hard and soft bounces in 2017 (5.2 per cent) was less than in 2016 (8.2 per cent). This may be attributable to a larger number of institutions updating graduate contact details in 2017, relative to 2016 (refer also Section 4.2). Of those graduates opening the invitation email, the proportion who clicked the survey link in 2017 was 17.4 per cent, compared with 40.7% in the 2016 GOS-L. This reason for this apparent change in behaviour in response to the email is unclear but it may reflect a broader trend of email providers automatically classifying large sends as ‘clutter’ or ‘promotions’. Opt-outs were low, at less than one per cent each send, suggesting the nature of the survey and the timings of sends were not a concern for graduates.

Table 13 Email send outcomes by round of activity

Total	Invite	R1	R2	R3	R4	R5	R6	R7	R8	R9
Total sent n	99,024	86,316	81,650	76,340	72,694	67,906	65,154	61,395	60,161	58,518
Opened %	19.4	21.6	19.0	15.7	18.0	12.5	12.4	13.6	12.9	12.0
Clicked on link %	3.4	3.2	2.7	1.5	1.4	1.3	1.2	1.1	1.0	0.6
Opt out %	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
Other %	15.9	18.2	16.1	14.0	16.3	11.0	11.0	12.4	11.8	11.3
Unopened %	75.5	77.6	80.4	83.5	80.7	86.5	87.1	85.9	86.7	87.6
Soft bounce ¹ %	0.7	0.6	0.5	0.7	0.7	0.6	0.4	0.4	0.4	0.3
Hard bounce ² %	4.5	0.1	0.1	0.1	0.6	0.4	0.1	0.0	0.0	0.0
Clicked on link as % opened	17.4	14.8	14.2	9.5	7.9	10.5	9.6	8.1	7.4	5.3

¹Soft 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.

² 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.

As could be expected, open rates and the 'clicked on link' rate generally trend downwards with each reminder, with a corresponding increase in the 'unopened' rate. Email send outcomes by institution type and by graduate type reminder are provided at Appendix 10.

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 42.2 per cent among undergraduates and 39.6 per cent among postgraduates (refer to Table 14). This is not unexpected given the length of time since the graduate has completed their studies, however, it is much higher than the 2016 unopened rate (postgraduate at 28.0 per cent and undergraduate at 24.0 per cent in 2016).

Table 14 Summary of unopened emails

	Undergraduate	Postgraduate	Total
Graduates approached (n)	60,741	38,317	99,058
Unopened at all email sends (n)	25,657	15,184	40,841
Unopened at all email sends (%)	42.2%	39.6%	41.2%

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, suggesting that the incorporation of more diverse response maximisation techniques in 2017 (i.e. SMS and in field telephone reminders) improved the likelihood of specific groups opening emails.

In 2016, undergraduates, those under 30 years of age, in full time study, and who speak a language other than English at home were more likely not to open any GOS-L emails, but in 2017 the difference between overall approached sample and unopened email sample for the selected characteristics had narrowed to less than one percentage point difference, compared to differences ranging from 2.7 to 4.4 percentage points in 2016.

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

	Total sample approached	%	Unopened email sample	%
Base	99,058	100.0	40,841	100.0
Status				
Undergraduate	60,741	61.3	25,657	62.8
Postgraduate Coursework	34,242	34.6	13,731	33.6
Postgraduate Research	4,075	4.1	1,453	3.6
Gender*				
Male	40,050	40.4	16,003	39.2
Female	58,990	59.6	24,831	60.8
Aboriginal and Torres Strait Islander				
Non-Indigenous	96,358	97.3	39,663	97.1
Indigenous	738	0.7	355	0.9
No information	1,962	2.0	823	2.0
Disability				
No disability	95,612	96.5	39,366	96.4
Disability	2,894	2.9	1,252	3.1
No information	552	0.6	223	0.5
Age				
30 years or under	71,589	72.3	29,689	72.7
Over 30 years	27,444	27.7	11,142	27.3
Mode of attendance				
Internal and mixed mode	86,794	87.6	35,579	87.1
External	12,075	12.2	5,187	12.7
No information	189	0.2	75	0.2
Type of attendance				
Mainly Full-time	77,146	77.9	31,787	77.8
Mainly Part-time	21,672	21.9	8,939	21.9
No information	240	0.2	115	0.3
Main Language Spoken at Home				
English	67,587	68.2	27,685	67.8
Language other than English	28,957	29.2	12,191	29.8
Unknown	2,514	2.5	965	2.4
Born in Australia				
Yes	57,422	58.0	23,571	57.7
No	40,613	41.0	16,783	41.1
Unknown	1,023	1.0	487	1.2

7.3.1. Review of updated vs non-updated sample

Updated sample was supplied by 38 institutions, comprising 90,738 (91.6 per cent) of all graduates approached.

A graduate name was provided for all except 520 cases where the sample was updated, resulting in 8,840 cases (8.9 per cent) without a graduate name included.

Table 16 shows that for sample members whose contact details were updated by institutions, completion rates were higher and hard bounce rates were lower, relative to sample members whose contact details were not updated.

Table 16 Outcomes by sample quality

	Sample updated		Graduate name included	
	Yes	No	Yes	No
Total approached n	90,738	8,320	90,218	8,840
Completed survey %	39.5	33.2	39.5	33.6
Out of scope %	0.4	0.3	0.4	0.3
Opted out %	4.4	3.6	4.4	3.5
Hard bounce %	2.5	7.4	2.5	7.2
No response %	53.2	55.6	53.2	55.4

Table 16 also shows that personalisation, where the graduate name was included on the invitation and reminder email, had a positive impact on propensity to respond. This is consistent with the research literature³.

7.3.2. Non-response analysis

Fifty-eight per cent of the sample did not respond to the GOS-L. Table 17 shows that pattern of non-response remained largely consistent with 2016. 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. However, small improvements in the ratio of respondents within gender were seen, with a two percentage points increase for males (38 per cent) compared to females (62 per cent in 2017, 64 per cent in 2016) which is discussed in Section 7.6.

³ Saueremann, H & Roach, M, *Increasing web survey response rates in innovation research: An experimental study of static and dynamic contact features*. Research Policy, 2013.

Table 17 Non-response sample characteristics

	Respondents	%	Non-responders	%
Base	38,591	100.0	52,854	100.0
Status				
Undergraduate	22,595	58.5	33,136	62.7
Postgraduate Coursework	13,921	36.1	18,047	34.1
Postgraduate Research	2,075	5.4	1,671	3.2
Gender*				
Male	14,580	37.8	22,135	41.9
Female	24,003	62.2	30,709	58.1
Aboriginal and Torres Strait Islander				
Non-Indigenous	37,639	97.5	51,300	97.1
Indigenous	301	0.8	367	0.7
No information	651	1.7	1,187	2.2
Disability				
No disability	37,156	96.3	51,124	96.7
Disability	1,267	3.3	1,407	2.7
No information	168	0.4	323	0.6
Age*				
30 years or under	25,627	66.4	40,260	76.2
Over 30 years	12,951	33.6	12,582	23.8
Mode of attendance				
Internal and mixed mode	32,973	85.4	47,178	89.3
External	5,556	14.4	5,573	10.5
No information	62	0.2	103	0.2
Type of attendance				
Full-time	28,680	74.3	42,621	80.6
Part-time	9,841	25.5	10,093	19.1
No information	70	0.2	140	0.3
Main Language Spoken at Home				
English	29,550	76.6	32,640	61.8
Language other than English	8,176	21.2	18,729	35.4
Unknown	865	2.2	1,485	2.8
Citizen / resident indicator*				
Domestic	32,666	84.6	37,748	71.4
International	5,925	15.4	15,106	28.6

*sub category may not add up to base

A logistic regression was performed to further understand the non-response profile for GOS-L. Sample parameters included were status, gender, Aboriginal and Torres Strait Islander (ATSI), citizenship, type of attendance, attendance mode, language spoken at home, disability indicator, age, level of previous study, and current study area 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, Masters, or a Doctorate. Those from a non-English speaking background and those with no previous qualifications were less likely to respond.

Analysis demonstrated that response was related to study area. When other factors such as gender and age were accounted for, Computing and Information Systems, Architecture and built environment, Health services and support, Nursing, Teacher education, Law and paralegal studies, Tourism, Hospitality, Personal Services, Sport and recreation, Creative arts, and Communications were less likely to respond to the GOS-L.

7.3.3. SMS response analysis

A total of 22,532 SMS were sent before reminder 5, on 16 February, to raise awareness of the email reminders sent.

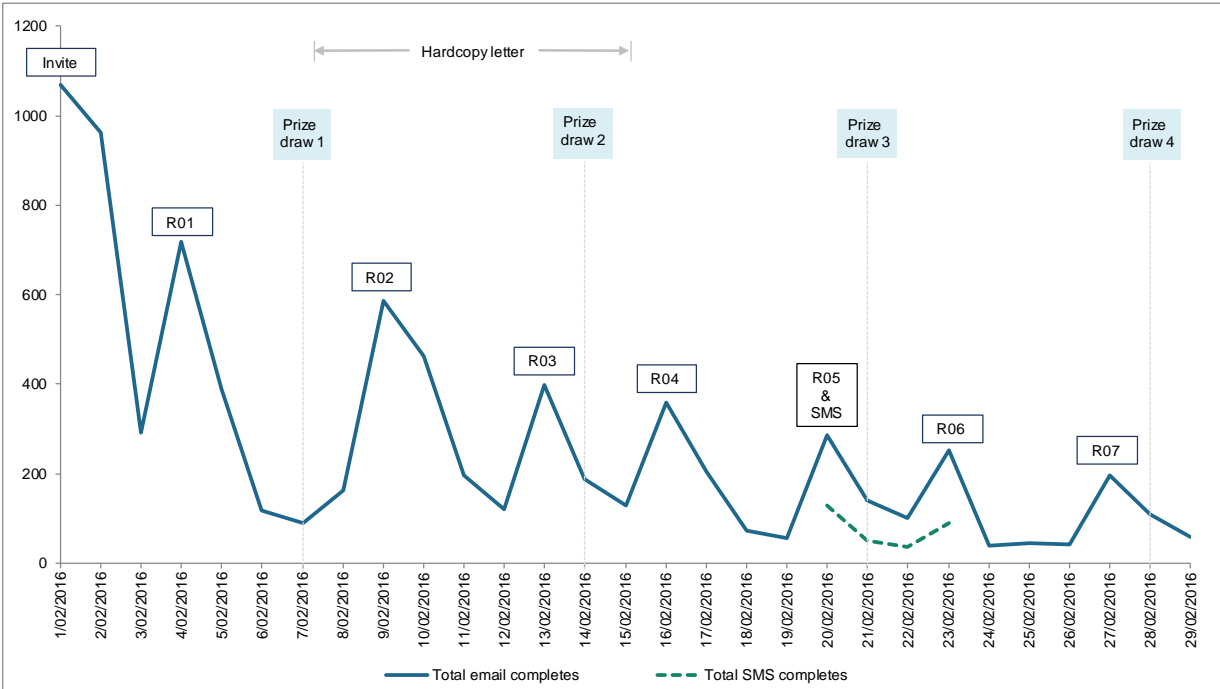
As shown in Table 20, the proportion of email recipients who also received an SMS close to the fifth reminder was 31.0 per cent, with 25.6 per cent sent to undergraduate and 5.4 per cent sent to postgraduate populations.

Content of the SMS was aimed at driving graduates to email reminders: *'The Graduate Outcomes Survey Longitudinal is in your inbox. Tell us about your higher education 3 years on & win prizes! www.gos.edu.au/ for info. Optout:1'*

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.

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.

Figure 3 SMS response profile



7.4. Social media activity review

The Social Research Centre conducted a moderate campaign through the QILT Facebook page's digital marketing services, aimed broadly at Australia-based graduates who graduated in the years relevant to the 2014 AGS sample.

The tables below examine the estimated *impressions* (the number of times the ad was on screen), *reach* (the number of people that saw the ad) and *ad recall lift* (the estimated number of people likely to remember your ads within 2 days) by gender and by platform.

As shown in Table 18, the ad campaign reached more females (57.2 per cent) than males (42.2 per cent) and this gender split is in line with proportion of Facebook users identifying as female (58 per cent)⁴. In total 4,410 users were estimated to remember the ad two days after seeing it. This is calculated by using the amount of time people spent looking at the ad and the historical relationships between attention people give ads and results from ad recall surveys.

Table 18 Facebook social media campaign outcomes by gender

Audience	Impressions		Reach		Ad Recall lift	
	n	%*	n	%*	n	%*
Female	100,267	57.9	21,167	57.2	2,530	57.4
Male	71,606	41.4	15,631	42.2	1,870	42.4
Unknown	1,110	0.6	200	0.5	-	-
Total	172,983	100	36,998	100	4,410	100

*Due to rounding, values may not add up to 100

Table 19 compares outcomes of the campaign by the two platforms available through Facebook – Facebook itself and Instagram. The majority of impressions and reaches were via Instagram rather than Facebook (128,452 compared to 44,558). This suggests that more of the target audience interact with Instagram than Facebook.

Table 19 Social media campaign outcomes by platform

Platform	Impressions		Reach		Ad Recall lift	
	n	%*	n	%*	n	%
Facebook	44,558	25.8	14,170	38.3	1,130	25.6
Instagram	128,425	74.2	28,467	76.9	3,600	81.6
Total	172,983		36,998		4,410	

*Values do not equal 100 which is consistent with Facebook reporting data

Given social media was not deployed in the 2016 GOS-L collection, the 2017 social media outcomes by platform constitute a baseline for future analysis.

⁴ <https://searchenginewatch.com/sew/study/2208971/men-cost-less-to-reach-with-facebook-ads-click-more>

7.5. Telephone reminder analysis

In field reminder calls were conducted during the second week of the online fieldwork period. Lower performing study areas where a phone number was provided were entered into the reminder workflow.

A total of 43,040 records were initiated across both undergraduate and postgraduate course types, with 4,388 records (10.2 per cent) unusable, due mainly to the number provided being disconnected. Contact was made with 29.7 per cent of records, with a majority (86.7 per cent) of contacts yielding an email address to re-send the survey link to, with 26.3 per cent going on to complete the survey.

An email address was provided at a higher rate by postgraduates (27.1 per cent) compared to undergraduates (25.8 per cent). Table 20 below outlines the main outcomes of telephone reminder activity.

Table 20 Telephone reminders outcomes

	Undergraduate		Postgraduate		Total	
	n	%	n	%	n	%
Total sample initiated	27,258	100.0	15,782	100.0	43,040	100.0
Unusable sample	2,813	10.3	1,575	10.0	4,388	10.2
No contact	16,342	60.0	9,509	60.3	25,851	60.1
Total contact	8,103	29.7	4,698	29.8	12,801	29.7
Collected graduate's email	6,987	86.2	4,109	87.5	11,096	86.7
Other call outcome	139	1.7	101	2.1	240	1.9
Total completed online surveys¹	1,804	6.6	1,115	7.1	2,919	6.8

¹base is 'collected graduate's email'

7.6. 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 2014 AGS. Graduates in employment were asked how many occupations they had held since 2014, 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).

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 103 respondents with a sixth occupation, and 35 graduates who had held seven occupations since participating in the AGS.

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 (refer to Section 3.4). Even with these strategies in place there was an increase in attrition as graduates progressed through each occupation loop.

Table 21 demonstrates increasing rates of non-response, particularly hours worked, which has one in three graduates opting not to respond (30.5 per cent) by occupation five. Similarly, *Salary in Australia*, showed increased non-response as employment history instances increased, from 20.3 per cent missing in occupation 1 to 40.3 per cent missing by occupation 5. 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 21 Employment history non-response

GOS-L item		Occupation 1 n=14,005	Occupation 2 n=7,643	Occupation 3 n=2,978	Occupation 4 n=1,019	Occupation 5 n=390
Employment history		% missing	% missing	% missing	% missing	% missing
EHIND	Business/industry	0.3	0.5	1.0	1.8	1.5
EHOCC	Occupation	1.5	0.8	1.8	2.1	1.8
ehhrs	Hours worked per week	11.3	25.6	26.9	30.0	30.5
Ehsly ¹	Salary (In Aust)	20.3	35.4	38.5	40.3	40.3

¹Non-response calculation for salary also includes 'don't know'

7.7. Respondent characteristics

Table 22 on the next page compares the responding sample with the total sample approached by selected characteristics. Overall the responding sample aligns well with the total sample across most parameters.

There is strong representation in the achieved sample of postgraduates (research), sample members aged over 30, graduates who studied part time and graduates attending externally.

As is the case with the achieved sample for the GOS, there is an under-representation of males, graduates aged under 30, graduates who studied full time, graduates speaking a language other than English at home, and graduates born overseas.

At an overall level, there was a small improvement in the representation of males in the achieved sample for the 2017 GOS-L (37.8%), relative to the proportion of males in the total sample (40.2%), when compared with the equivalent proportions for the 2016 GOS-L (35.8% males in the achieved sample, 40.0% males in the total sample).

Refer to Appendix 11 for details of respondent characteristics by institution and graduate type.

Table 22 Respondent characteristics

	Total sample	%	Respondents	%
Base	91,445	100.0	38,591	100.0
Status				
Undergraduate	55,731	60.9	22,595	58.5
Postgraduate Coursework	31,968	35.0	13,921	36.1
Postgraduate Research	3,746	4.1	2,075	5.4
Gender				
Male	36,715	40.2	14,580	37.8
Female	54,712	59.8	24,003	62.2
Aboriginal and Torres Strait Islander				
Non-Indigenous	88,939	97.3	37,639	97.5
Indigenous	668	0.7	301	0.8
No information	1,838	2.0	651	1.7
Disability				
No disability	88,280	96.5	37,156	96.3
Disability	2,674	2.9	1,267	3.3
No information	491	0.5	168	0.4
Age				
30 years or under	65,887	72.1	25,627	66.4
Over 30 years	25,533	27.9	12,951	33.6
Mode of attendance				
Internal and mixed mode	80,151	87.6	32,973	85.4
External	11,129	12.2	5,556	14.4
No information	165	0.2	62	0.2
Type of attendance				
Mainly Full-time	71,301	78.0	28,680	74.3
Mainly Part-time	19,934	21.8	9,841	25.5
No information	210	0.2	70	0.2
Main Language Spoken at Home				
English	62,190	68.0	29,550	76.6
Language other than English	26,905	29.4	8,176	21.2
Unknown	2,350	2.6	865	2.2
Born in Australia				
Yes	52,660	57.6	25,238	65.4
No	37,842	41.4	12,931	33.5
Unknown	943	1.0	422	1.1

Note: under adds for some characteristics due to missing data

8. Summary of issues for future surveys

The 2017 implementation of the GOS-L was characterised through incremental enhancements to response rates through improved institutional engagement in the updating of contact details, and the adaptation of subtle variations in the approach to response maximisation from other surveys in the QILT suite, such as tailoring of reminder email content by age group, graduate type and study area.

The research methodology featured:

- 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 seek to maintain and incrementally improve, participation.

Institutional engagement with the GOS-L was very positive and consistent with the high levels of support that were offered in relation to the SES and the GOS.

There was strong incremental improvement in the overall response rate, up from 33.3 per cent in 2016 to 42.2 per cent in 2017. The focus going forward will be to seek to maintain the response rate against a backdrop of increasingly sophisticated email filtering systems, as evidenced by an apparent decline in open and click through rates in 2017. The GOS-L remains in a strong position to deliver high quality and detailed information about medium-term graduate destinations.

Improving overall Total Survey Error (TSE) remains 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 (with an aim of focussing attention among poorer performing study areas) and enhancing data quality.

This will involve careful messaging to the institutions around the positive impact on response of effort invested in sample updates, and the continued use of in field telephone reminders to improve the representation of specific groups in the sample.

The forward work plan includes panel maintenance activity with each round of GOS respondents, with a view to ensuring that for the 2019 GOS-L and beyond, when the GOS becomes the source of sample for the GOS-L, sample members are familiar with, and expecting the GOS-L invitation.

We are also working towards improved response modelling to support responsive design techniques and to optimise allocation of resources for non-response follow up activities, such as in-field reminder calls and use of SMS. The overall aim is to improve the representation of groups that may otherwise be at risk of under-representation in the achieved sample.

8.2. Sampling strategy

Institutions will continue to be strongly encouraged to update contact details, given the 6.3 percentage point differential in absolute sample yield (completed surveys as a proportion of sample members approached) between sample records with updated contact details and sample records using details as supplied in the GCA file (which may be missing graduate names, course details, contact details, or contain old contact details) (refer to analysis at Section 7.3.1).

8.3. Improvements to the GOQ- L

Further to the analysis presented in Section 7.6, it is recommended that the number of occupation loops in the employment history module is reduced from ten to five.

The more loops a respondent has to complete, the more likely they are to skip questions. There may also be recall issues where the respondent has had multiple jobs. It is also of note that the number of respondents who report that they have had more than five jobs is very low.

It will be important to develop a clear vision for the employment history module, and understand how this relates to respondents' capacity to provide accurate information, and how panel maintenance activities might integrate with the GOS-L employment history module to reduce respondent burden.

Appendix 1 Response rate by institution and graduate type

Appendix 2 Institution participation

Appendix 3 Graduate Outcomes Questionnaire - Longitudinal

Appendix 4 Graduate Outcomes Questionnaire - Longitudinal screenshots

Appendix 5 Sample file elements

Appendix 6 Institution by sample update status

Appendix 7 2017 Collection guide

Appendix 8 Email and SMS content

Appendix 9 Reporting module

Appendix 10 Email outcomes by institution and graduate type

Appendix 11 Respondent characteristics