

2017 Employer Satisfaction Survey Methodology Report

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Social
Research
Centre

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List of abbreviations

AAGE	Australian Association of Graduate Employers
AAIR	Australasian Association for Institutional Research
ABS	Australian Bureau of Statistics
AGS	Australian Graduate Survey
AITSL	Australian Institute for Teaching and School Leadership
AMRS	Australian Market and Social Research Society
ANZSIC	Australian New Zealand Standard Industrial Classification
ANZSCO	Australian New Zealand Standard Classification of Occupations
ATSI	Aboriginal and Torres Strait Islander
CATI	Computer Assisted Telephone Interviewing
ESS	Employer Satisfaction Survey
ESQ	Employer Satisfaction Questionnaire
GAS-E	Graduate Attributes Scale – Employer
GAS-G	Graduate Attributes Scale – Graduate
GOS	Graduate Outcomes Survey
GOQ	Graduate Outcomes Questionnaire
HEIMS	Higher Education Information Management System
ISO	International Standards Organisation
NAGCAS	National Association of Graduate Careers Advisory Services
NHMRC	National Health and Medical Research Council
NUHEI	Non-University Higher Education Institute
QA	Quality Assurance
QILT	Quality Indicators for Learning and Teaching
TSE	Total Survey Error
WRC	Workplace Research Centre

1. Introduction

1.1. Overview

This report documents the technical aspects of the 2017 Employer Satisfaction Survey (ESS), conducted on behalf of the Australian Government Department of Education and Training (the department).

It seeks to:

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

The appendices attached to this report contain core administration survey materials including the questionnaire, invitation and reminder communications.

1.2. Background to the ESS

The ESS is the newest and most innovative component of the Quality Indicators for Learning and Teaching (QILT) program. While there has been a national, higher education graduate survey for more than thirty years, individual institutions have struggled to implement their own employer survey, let alone consider collecting national feedback at an employer level.

The ESS was originally developed and pilot tested by the Workplace Research Centre (WRC) at the University of Sydney. It was designed to measure employer perceptions of the readiness of graduates to enter the workplace.

Based on feedback and observations from the 2013 ESS Pilot, it was apparent that there were operational and conceptual issues that still required attention. The main operational issue to be overcome related to 'building' an appropriate sample pool of employer contact details to support robust survey estimates. Graduates are wary about sharing their employer's email address or telephone number, primarily due to concerns that their supervisor will be commenting on their work performance rather than providing feedback on the extent to which their higher education studies have prepared them for employment. The 2013 ESS Pilot also found that while the Employer Satisfaction Questionnaire (ESQ) displayed a number of useful properties, additional work was required to refine and improve the instrument.

To address the identified operational and conceptual issues, two additional pilot tests were undertaken in 2014 and 2015. The two pilot test phases for the ESS included:

- a methodological pilot: to test different approaches (drawing upon learnings from the 2013 ESS Pilot) to asking Australian Graduate Survey (AGS) respondents to provide their supervisor contact details for the ESS
- a content pilot: to review the ESS item wording and coverage against current policy and thinking.

Improvements were made to the ESQ and the research methodology which were implemented as part of the first national rollout of the ESS in November 2015.

1.3. About the ESS

The ESS is administered under the QILT survey program, commissioned by the department, using sample generated through the Graduate Outcomes Survey (GOS).

The ESS involved two rounds of data collection with supervisors of recent graduates, commencing in November and May each year. A small supplementary round was conducted in February to support higher education institutions with trimester calendars.

The ESS is open to graduate employers from universities and non-university higher education institutions. Data is aggregated and reported after the completion of the May round.

2. Overview of the ESS

2.1. Summary

Table 1 contains an overview of the main elements of the 2017 ESS. Running parallel to the GOS, two main rounds of data collection were undertaken in November and May, with a minor round in February.

Table 1 ESS project overview

	Total	Nov 2016	Feb 2017	May 2017
In-scope supervisors approached ^{1, 2}	9,022	3,174	137	5,711
Completed surveys ²	4,348	1,627	62	2,659
Overall response rate ³	48.2%	51.3%	45.3%	46.6%
Data collection period	Nov 2016 – Jul 2017	Nov 2016 - Feb 2017	Feb - Apr 2017	May - Jul 2017
Data collection mode	Online and CATI			
Analytic unit	Supervisor			

¹ Excludes opt outs and out of scope surveys.

² Excludes non HESA institutions for consistency with the GOS and ESS National Reports

³ For the purpose of QILT projects, response rate is defined as completed surveys as a proportion of final sample (supervisors approached), where final sample excludes unusable sample (e.g. no contact details), out of scope and opted out

2.2. Mitigating potential sources of error

The Social Research Centre approaches quality assurance for survey research from a Total Survey Error (TSE) paradigm¹. 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 led the Social Research Centre to design a Total Survey Quality Framework which enables the identification of 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 for 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

¹ Paul B. Biemer, *Total Survey Error: Design, Implementation and Evaluation*. Public Opinion Quarterly, Volume 75 No 5, Special Issue, 2010.

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).

Additionally, the ESS was undertaken in accordance with the Privacy Act (1988) and the Australian Privacy Principles contained therein, the Privacy (Market and Social Research) Code 2014, the Australian Market and the Social Research Centre's Code of Professional Practice, and ISO 20252 standards.

The ESS presents a range of challenges from a TSE perspective. The most significant is in relation to the sample frame as there is no known way of accessing a consolidated list of supervisors of recent graduates from an Australian higher education institution. Previous surveys have relied on general surveys of employers and asked generic questions about graduate preparation and employability. The ESS seeks to make a direct link between the graduate, the institution and the employer which adds an unprecedented level of complexity to the creation of the sample for the ESS.

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 2.

Table 2 Potential sources of survey error relevant to the ESS

Error type	Source of error	Context	Mitigation strategy
Coverage error	In-scope population inaccurately represented in the sample frame	There is no known sample frame for supervisors of recent graduates. The ESS relies on graduates completing the GOS to generate the sample frame for graduate supervisors. Current analyses show that there are areas of over and under coverage with some graduates more likely to provide contact details than others.	The sample frame will become more representative of the population when graduates become more used to providing contact information for their supervisors. Further investigation is required to determine if there are specific strategies that, for example, encourage those who have completed an undergraduate qualification to support the recruitment of supervisors.
Sampling error	Incorrect supervisors selected to participate	All supervisors nominated by graduates are eligible to participate. Screening questions confirm that the employer is the graduate's current supervisor.	Overall, out-of-scope supervisors constituted approximately 1.8 per cent of supervisors approached. This indicates that majority of employers nominated into the ESS sample are the current supervisors of the graduates and screening processes effectively determine the in-scope status of the supervisor.
Non-response error	Unit level non-response	Length of the survey or general lack of engagement may result in unacceptably high levels of non-response by supervisors.	The survey is intentionally less than ten minutes in length and can be easily stopped and resumed if the supervisor is interrupted. Supervisor engagement strategies are under development to support future collections.
	Item-level non-response	Employers may skip items that they feel are irrelevant, unimportant or too sensitive.	Item level non-response was minimised by ensuring that all questions were directly relevant to graduate supervisors.
Validity	Questionnaire fails to measure the relevant constructs	The survey is relatively new and only tested in a limited number of contexts.	Attitudinal scales were validated using Rasch Modelling and Factor Analysis which suggested that the scales and the majority of items are functioning as expected across the complete range of discipline areas.
Measurement error	Poor questionnaire design	The layout or structure of the questionnaire could lead to inaccurate or incomplete responses.	The ESQ underwent cognitive testing, a trial in 2015, and was also independently reviewed by the QILT working group.
	Mode of data collection	The ESS can be completed via telephone or online to provide maximum flexibility and minimise burden on supervisors.	Mode effects were modelled to assess whether any bias is introduced in relation to key reporting metrics.
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 ESS relevant to the labour force that require accurate coding.	Items were coded to ABS approved code frames such as Australia New Zealand Standard Classification of Organisations (ANZSCO) and Australia New Zealand Standard Industry Classification (ANZSIC) for occupation and industry, where possible. Existing ISO procedures ensured that all coding was executed consistently with a very low error rate.

3. Survey establishment

3.1. Approach to the ESS

The ESS is administered in parallel with the GOS and the first collection period for the ESS 2017 reporting year took place in November 2016, and the second in May 2017. A supplementary round occurred in February 2017 to accommodate a small number of institutions that offer trimester rather than semester study periods. February 2017 outcomes are combined with the 2016 November round ESS throughout this report, with the exception of main fieldwork dates and technical aspects which have been listed out separately.

Computer Assisted Telephone Interviewing (CATI) is the primary mode of collection for the ESS with online collection a secondary mode and, unlike the GOS and the Student Experience Survey (SES), completed telephone surveys are included in the nationally reported data.

Key schedule dates for the 2017 ESS are summarised in Table 3.

Table 3 Key ESS schedule dates

Schedule milestone	November collection	February collection	May collection
ESS survey open	2 November 2016	15 February 2017	3 May 2017
ESS survey closed	19 February 2017	21 April 2017	14 July 2017

3.2. The ESQ

3.2.1. Development of the ESQ

The 2013 ESS Pilot noted that while the ESQ was informed by a review of the literature, the instrument was largely based on items from an employer survey conducted by one institution. As such, it was recommended that additional work should be undertaken to improve and refine the instrument. More specifically:

- Factor analysis suggested some sets of items did not cluster in a manner that was sufficient to create a coherent scale.
- Not all items seemed to be regarded as equally important by employers from all fields of education.
- Further cognitive testing of the clusters and the items was required.

Data from the 2013 ESS pilot was used to examine the psychometric properties of the six sets of graduate attributes that were thought to be regarded as important by employers. Findings from this supplementary analysis of the data indicated that:

- the Graduate Attributes Scale – Employers (GAS - E) functions adequately as an overall scale but there was little evidence that the sub-scales (sets of attributes) formed distinct, cohesive sets of items
- the GAS – E sub-scales suffer from a lack of measurement precision due to the absence of items targeted at employers who exhibited high levels of satisfaction

- the four-point rating scale performed adequately however there were large gaps between some of the categories suggesting that a mid-point was required to support employers to provide more accurate ratings
- most items met the assumptions of the Rasch model however they could be improved through review and rewording, particularly in relation to those items that were answered unpredictably.

These issues were addressed and tested in the 2015 pilot test of the ESQ. The current instrument includes a GAS-E with improved measurement precision and a revised rating scale for all attitudinal items.

3.2.2. Operationalising the ESQ

In keeping with the other surveys in the QILT suite, the core design of the ESQ was modular to support a flexible and responsive approach to future implementations of the surveys. Modules can be modified or retired without unduly impacting on the overall structure or flow of the ESQ.

Table 4 outlines the thematic areas of the six ESQ modules.

Table 4 ESQ module themes

Module	Themes
Module A	Introduction and screening
Module B	Overall graduate preparation
Module C	Graduate Attributes Scale – Employer
Module D	Emerging policy issues
Module E	Discipline or institution specific issues
Module F	Close

The content of each of the ESS modules is outlined below.

Module A: Introduction and screening

This module confirms the supervisor’s role in relation to the graduate to ensure that the supervisor is in-scope for the ESS. Additional information is collected regarding the supervisor’s awareness of the graduate’s qualification and awarding institution, as well as the occupation of the graduate and the supervisor.

Module B: Overall graduate preparation

In this section, supervisors are asked about the importance of the graduate’s qualification in order for the graduate to do their job, whether the qualification is a requirement for the position, and the ways in which the qualification prepared the graduate for employment. Based on their experience with the graduate, supervisors also indicate the extent to which they would consider hiring another graduate from the same institution. Two open ended items are included in this module:

- the main ways the institution prepared the graduate for their current employment, and
- the main ways the institution could have better prepared the graduate for their current employment.

Module C: GAS – E

The GAS-E measures the extent to which supervisors agreed the graduate was prepared for employment across each of the GAS-E domains (see Section 3.2.3). Three GAS-E subscales are also administered to graduates as part of the GOS and form the basis for the Graduate Attributes Scale – Graduate (GAS-G).

Module D: Emerging policy issues

Module D is a placeholder for any questions the Australian Government wishes to ask of graduate supervisors. This data is not available in national data files.

Module E: Discipline or institution specific issues

Module E is a placeholder for any discipline (e.g. engineering, accountancy etc.) or institution specific issues relevant to graduate supervisors. This data is not available in national data files.

Module F: Close

This module asks whether supervisors would like feedback about the survey and if they wish their institution to be acknowledged on the QILT website as a supporter of the survey.

3.2.3. GAS – E

The basis for the GAS-E was developed as part of the original 2013/14 Trial of the EES. The project team synthesised frameworks relevant to the skills of university graduates and identified a number of general graduate attributes. The GAS-E has been designed to assess common rather than specific graduate attributes, within a limited workplace context. The items were further tested and refined during a 2015 trial of the instrument. Five graduate attribute domains have been identified, including:

- 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
- technical and professional skills – application of professional and technical knowledge and standards
- employability and enterprise skills – ability to perform and innovate in the workplace.

Table 5 on the following page lists the items associated with each GAS-E domain.

Table 5 GAS-E items

Domain	GAS-E item label	# of items
Adaptive skills and attributes	egadapt1, egadapt2, egadapt3, egadapt4, egadapt5, egadapt6	6
Foundation skills	egfound1, egfound2, egfound3, egfound4, egfound5, egfound6, egfound7, egfound8	8
Teamwork and interpersonal skills	egcollb1, egcollb2, egcollb3, egcollb4, egcollb5	5
Technical and professional skills	egtech1, egtech2, egtech3, egtech4, egtech5, egtech6	6
Employability and enterprise skills	egemploy1, egemploy2, egemploy3, egemploy4, egemploy5, egemploy6, egemploy7, egemploy8	8

3.3. External engagement

3.3.1. Promotion of the ESS

Promoting the ESS involved reaching out to both graduates and employers through institutions and various peak bodies. Institutions were supplied with flyers to hand out at graduate ceremonies, encouraging graduates to provide their supervisor details when responding to the GOS. A number of peak bodies including Australian Associate of Graduate Employers (AAGS), Australian Institute for Teaching and School Leadership (AITSL) and National Associate of Graduate Careers Advisory Services (NAGCAS) were also made aware of the ESS through conferences and meetings.

3.3.2. Participating institutions

Employed graduates of institutions which took part in the 2017 GOS were eligible to provide contact information for their supervisors if they were not self-employed or working in a family business. Given this, the institutions participating in the ESS were identical to participating institutions for the GOS. The November 2016 round included graduates from 37 Table A, three Table B institutions, and 39² NUHEIs. The May 2017 round included graduates from 37 Table A, four Table B institutions, and 51 NUHEIs. Two Table A and one NUHEI participated in the supplementary February round.

As the collection of ESS sample relied on employed graduates to give supervisor details, there were some smaller institutions where no valid supervisor details were provided by their graduates, and so participation in GOS did not necessarily mean an institution had the opportunity to participate in ESS. For a full list of institutions that had graduates provide valid supervisor details and the supervisor complete the ESS, refer to Appendix 7.

3.3.3. Privacy and confidentiality

The ESS is conducted within the ethical guidelines laid out in the Australian Code for the Responsible Conduct of Research³. All data collection for the ESS was undertaken in accordance with ISO 20252 standards, the Australian Market and Social Research Society (AMSRS) code of practice, the Privacy (Market and Social Research) Code, and the Australian Privacy Act.

² Excludes non HESA NUHEIs for consistency with the GOS and ESS National Report

³ National Health and Medical Research Council and Universities Australia, 2007, www.nhmrc.gov.au/guidelines-publications/r39

All third-party data collected in the GOS was entered into the ESS workflow within a week of receiving this information, in accordance with the Privacy Code. This delay was due to the need to clean the sample provided, upload it to the central database, and allocate appropriate resources within the telephone workflow.

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. This included limiting access to information across project team members, 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 UTM (Unified Threat Management) 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 WAN connections

Additionally, all Social Research Centre staff involved in the 2017 ESS (including helpline operators) entered into a project-specific Deed of Confidentiality.

3.3.4. Institution specific items

In keeping with QILT survey processes, institutions were able to add additional questions. In 2017 one institution added additional questions to the ESS.

3.4. CATI survey

The CATI ESS survey was administered in an identical format to the online ESS. Interviewers had an interfacing script at the front and back ends of the online survey which allowed categorisation of call outcomes. Once agreement to complete the survey was established, the interviewers initiated the online survey and recorded responses into the online survey. The non-mandatory nature of the ESQ items allowed for responses to items to be skipped if requested by the supervisor.

3.4.1. Call procedures

Call procedures for the CATI survey, for supervisors entering the CATI workflow directly (no email address information provided) or as part of the online survey non-response follow up activity, featured:

- call attempts placed over different days of the working week and times of day
- placing a second call attempt to 'fax / modem' and 'number disconnected' outcomes (given that there are occasionally issues with internet connections and problems at the exchange)
- providing login details if supervisors preferred to complete online, rather than complete a telephone interview.

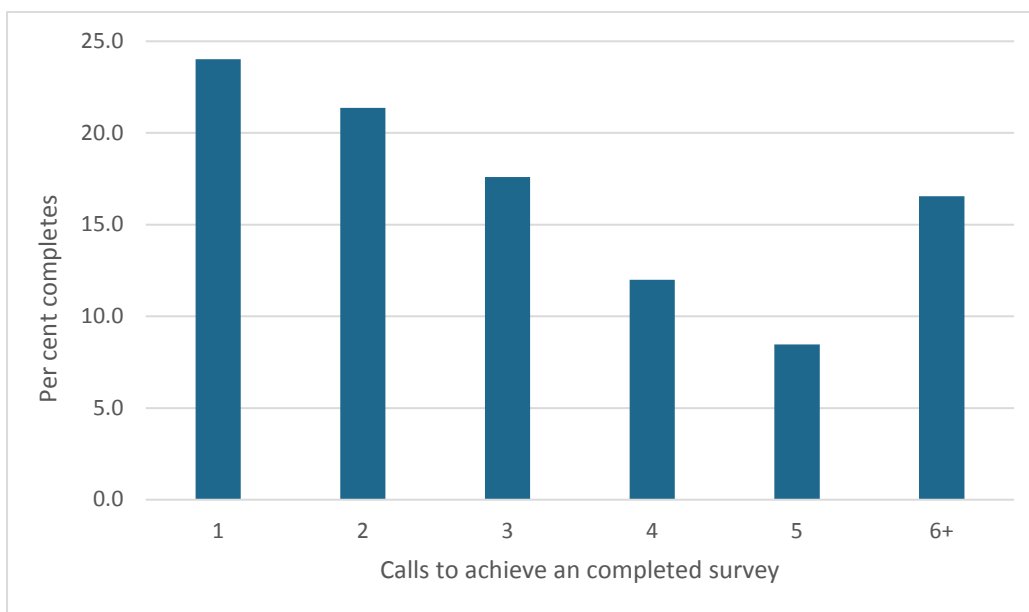
The peak days for CATI surveys were Tuesday to Thursday (refer to Table 6). There was a very small number of requests for weekend appointments.

Table 6 CATI complete by day of week

Day of week	% of CATI completes
Monday	15.2
Tuesday	21.8
Wednesday	21.8
Thursday	20.1
Friday	18.9
Saturday/Sunday	2.1

Figure 1 below shows that the majority of surveys completed by telephone occurred within the first five call attempts (83.5 per cent), in particular on the first (24.0 per cent) and second (21.4 per cent) call attempts. One in six surveys completed by telephone required six or more calls before participating in the ESS (16.5 per cent), indicating the ongoing requirement for an extended call regime when approaching supervisors to participate in the ESS.

Figure 1 CATI completes by number of times contacted



3.4.2. Interviewer team briefing and quality control

All interviewers selected to work on the ESS attended a comprehensive briefing session, delivered by the SRC project management team. Briefings were conducted on 1 November 2016, 6 February 2017 and 1 May 2017.

The briefing covered the following aspects:

- survey context and background
- survey procedures (sample management protocols, response maximisation procedures)
- privacy and confidentiality issues

- a detailed examination of the survey questionnaire, with a focus on ensuring the uniform interpretation of questions and response frames, and addressing item-specific data quality issues
- targeted refusal aversion techniques
- strategies to maintain co-operation (i.e. minimise mid-survey terminations)
- approaches to get past 'gatekeepers' (e.g. receptionist, personal assistant)
- comprehensive practice interviewing and role play
- a review of key data quality issues.

During the November and February collection periods 27 interviewers worked on the project, with a core team of 6 undertaking the majority of calls. During the May collection period 35 interviewers were briefed with a core team of 8 undertaking the majority of calls.

Validations were undertaken by remote monitoring, in accordance with ISO 20252 procedures.

3.5. Online survey

The online survey could be accessed by clicking on the link in the email invitation or email reminders (refer to Appendix 5). Unlike the SES and GOS, due to the limited ESS sample frame, there was no option to start the survey via the QILT website.

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 level of detail required in the response
- 'saving' with progression to the next screen
- capacity to save and return to finish off at another time, resuming at the last question completed.

A copy of the generic survey instrument (i.e. excluding any institution specific items) and screenshots of the survey are included in Appendices 1 and 2.

4. Sampling

4.1. Approach to sample creation

The in-scope population for the ESS included workplace supervisors of higher education graduates (not self-employed or working in a family business) who completed the GOS. The Graduate Outcomes Questionnaire (GOQ) was used to create this sample frame through a recruitment module requesting supervisor contact details. A number of response maximisation activities were implemented to achieve the highest possible participation rate for the GOS, in order to maximise the number of ESS sample records.

The ESS recruitment module in the GOQ contains a set of items aimed at graduates who were in paid employment the week prior to their completion of the GOS. Recruitment outcomes are shown below in Table 7. As can be seen, of the graduates who responded to the request for supervisor details, approximately four in ten (40.7 per cent) indicated that they could provide supervisor details. The eventual proportion of usable supervisor details was significantly lower, due to the provision of incomplete or inaccurate contact details.

Table 7 Graduate response to request for ESS supervisor details

Response to request for supervisor details	Nov-16		Feb-17		May-17		Total GOS 2017	
	n	%	n	%	n	%	n	%
I can provide their work contact details	6,147	40.2	223	37.4	12,244	41.0	18,614	40.7
I can provide their contact information but I wish to log out of the survey and check their details first	112	0.7	1	0.2	252	0.8	365	0.8
I can provide their contact information but I would like you to call me	985	6.4	32	5.4	1,103	3.7	2,120	4.6
I do not wish to provide my supervisors details ¹	689	4.5	28	4.7	2,113	7.1	2,830	6.2
I would like more information before I provide my supervisor's details	7,361	48.1	312	52.3	14,186	47.4	21,859	47.7
Total responses	15,294	100.0	596	100.0	29,898	100.0	45,788	100.0
No response	7,727		302		38,529		46,558	
Total in-scope for ESS	23,021		898		68,427		92,346	

¹ This option was only available to CATI respondents

Previous pilot surveys and cognitive testing had shown that graduates are reluctant to provide information about their supervisors, particularly if they are concerned about their work performance being assessed at the early stages of their employment, or feel that their employment is not related to their qualification. To overcome these objections, the recruitment text was designed to alleviate these concerns, with additional information available to those who wanted to know more about the ESS before providing contact details.

The refusal option '*I do not wish to provide my supervisors details*' was omitted for all online surveys, given that a trial undertaken during the GOS 2016 suggested that the removal of this option yielded a greater proportion of graduates indicating their willingness to provide supervisor details.

Refer to Appendix 3 for details of the ESS supervisor recruitment section of the GOQ, and Appendix 4 for supporting materials available for graduates which were provided in response to ‘I would like more information before I provide my supervisor’s details’.

Graduates who selected the refusal option were asked reason for refusal. As shown at Table 8, the most common reason given was graduate concern that their supervisor does not have enough time to participate.

There was a large proportion of other reasons for refusal across all three rounds, ranging between 11.1 and 41.6 per cent. These reasons included graduates who are on secondment, graduates on rotation between different areas of the business, as well as graduates who are senior managers who did not feel the provision of supervisor information was relevant to their role.

Table 8 Graduate reasons for refusal of ESS supervisor details

Reason for ESS refusal	November		February		May	
	n	%	n	%	n	%
I'm concerned that my supervisor does not have enough time	131	21.6	9	33.3	122	28.6
My job is temporary only /casual only	76	12.5	3	11.1	32	7.5
I'm concerned about my supervisor's response	68	11.2	2	7.4	40	9.4
I do not have a direct supervisor	58	9.6	4	14.8	47	11.0
I do not know the email address of my supervisor	20	3.3	5	18.5	56	13.1
My supervisor does not have an email address	1	0.2	1	3.7	1	0.2
Other reasons	252	41.6	3	11.1	129	30.2
Total responding	606	100.0	27	100.0	428	100.0
No response	83		1		1,685	
Total	689		28		2,113	

4.2. ESS bridge trial

In an effort to improve the proportion of graduates providing valid supervisor contact details for the ESS, the May 2017 round of the GOS featured a trial of two alternative ‘ESS bridge’ formats, in addition to the standard format provided at Appendix 3. ‘ESS bridge’ is the term used to describe the mechanism for transitioning from the GOS to the ESS via the collection of supervisor contact details for the ESS.

ESS bridge 2 asked the graduate for permission to call the graduate within the next week, with a view to an interviewer explaining the ESS over the phone to the graduate, and allaying the kinds of potential concerns that contribute to ESS refusals.

ESS bridge 3 featured two statement batteries seeking to ‘prime’ the graduate regarding the importance of employer feedback in shaping higher education courses, before proceeding to the request for supervisor details, using content similar to the standard ESS bridge.

Outcomes from the ESS bridge trial are summarised in Section 7.

4.3. Sample maximisation activities

4.3.1. Additional telephone workflows

Requested contact

Feedback from focus groups during the ESS pilot phase suggested that the option of direct contact from the QILT helpdesk could provide more personalised reassurance regarding graduate concerns about the provision of supervisor contact information. To address this issue, the response option '*I can provide their contact information but I would like you to call me*' was added to the response frame at the request for supervisor contact details.

During all GOS collection periods, graduates who selected this option were entered into a telephone workflow. Interviewers contacted these graduates to discuss any concerns they had about providing supervisor details.

As can be seen at Table 9 on the next page, overall, some 29.0 per cent of those who requested contact went on to provide valid supervisor details during the follow up phone call.

Table 9 Requested contact from the Social Research Centre

<i>I can provide their contact information but I would like you to call me (refer Table 7)</i>	Overall n=2,120	Nov/Feb n=1,017	May n=1,103
Number provided valid supervisor details	614	253	361
% provided valid supervisor details	29.0	24.9	32.7

Entered invalid details

All supervisor details collected were subject to a verification process before they were entered into online or CATI workflows. Each record was manually checked to confirm that valid details had been provided (e.g. phone number was not missing numbers or the area code, email addresses contained an '@' sign, a domain name, and a 'dot' after the domain name) and that no offensive or obviously fake names had been entered, or that the graduate had submitted their own contact details.

Where invalid details had been provided, records were entered into a separate telephone workflow where an interviewer called the graduate and sought to confirm the correct details.

For cases where invalid details had been given and it was obvious the graduate did not want to give details (e.g. entered 'Do not wish to disclose' or similar in the 'Supervisor name' field), or no phone number was available, the details were rejected and not entered into the telephone workflow.

4.4. Review of in-scope sample profile

Tables 10, 11 and 12 compare the characteristics of employed graduates from the GOS with the profile of graduates who provided in-scope supervisor details, to identify the extent to which the sample for the ESS reflects the distribution of employed recent graduates.

Table 10 on the next page shows that there was relatively strong representation of graduates aged over 30 years, indigenous graduates and males, and some under-representation of graduates aged 30 years or under, and females amongst graduates providing in-scope supervisor details.

Table 100 Demographic profile of graduates providing in-scope supervisor details

	Employed graduates		In-scope supervisor details	
	n	%	n	%
Gender				
Male	37,940	39.0	4,290	45.6
Female	59,386	61.0	5,121	54.4
Age				
30 years or under	67,810	69.6	5,417	57.5
Over 30 years	29,671	30.4	4,007	42.5
Aboriginal and Torres Strait Islander				
Indigenous	839	0.9	101	1.1
Non-Indigenous	96,496	99.1	9,312	98.9
Main language spoken at home				
English	84,589	86.8	7,975	84.6
Language other than English	12,892	13.2	1,451	15.4
Disability				
Reported disability	4,028	4.1	450	4.8
No reported disability	93,311	95.9	8,963	95.2

Table 11 shows that the in-scope supervisor details sample had strong representation of postgraduate research, external / distance and NUHEI graduates, with some under-representation of undergraduates.

Table 111 Higher education characteristics of graduates providing in-scope supervisor details

	Employed graduates		In-scope supervisor details	
	n	%	n	%
Institution type				
University	92,811	95.2	8,882	94.2
NUHEI	4,670	4.8	544	5.8
Study mode				
Internal/mixed	79,485	81.7	7,249	77.0
External/distance	17,850	18.3	2,164	23.0
Course level				
Undergraduate	54,714	56.1	4,446	47.2
Postgraduate coursework	37,875	38.9	4,075	43.2
Postgraduate research	4,892	5.0	905	9.6

Table 12 on the next page shows that fields of study such as Agriculture and Environment Studies and Engineering had strong representation in the in-scope supervisor details sample, relative to Creative Arts and Society and Culture.

Table 122 Broad field of education of graduates providing in-scope supervisor details

	Employed graduates		In-scope supervisor details	
	n	%	n	%
Natural & Physical Sciences	7,175	7.4	672	7.1
Information Technology	3,806	3.9	382	4.1
Engineering & Related Technologies	5,895	6.0	718	7.6
Architecture & Building	2,137	2.2	217	2.3
Agriculture & Environmental Studies	1,572	1.6	206	2.2
Health	20,028	20.5	1,944	20.6
Education	11,146	11.4	1,246	13.2
Management & Commerce	19,302	19.8	1,865	19.8
Society & Culture	20,757	21.3	1,761	18.7
Creative Arts	5,647	5.8	408	4.3
Food, Hospitality & Personal Services	16	0.0	7	0.1

5. Data collection

5.1. Fieldwork overview

The 2017 ESS was a dual mode survey, with both online and CATI workflows offered to supervisors, with the understanding that many supervisors would not participate in the online survey without CATI follow up.

Where a valid email address was provided, the supervisor was assigned to the online workflow, on the basis that supervisors would prefer to receive information about the ESS in writing, and that they would prefer the opportunity to self-complete in their own time. Where only a phone number was provided the supervisor was assigned to the CATI workflow.

If a supervisor did not respond to the email invitation or reminders they were then entered into the CATI follow up workflow, if a phone number had been provided. The supervisor was transferred into the CATI workflow immediately if a 'hard bounce' outcome was recorded for the supervisor email address provided by the graduate.

Table 13 below shows the original allocation of supervisors to the online and telephone workflows, and the number and proportion of supervisor records changing workflow as a result of a 'hard bounce' outcome, or as a result of non-response to the online survey invitation and reminders.

Overall, whilst a majority of supervisor records (88.2 per cent) were initially assigned to the online workflow, a significant proportion, almost 70 per cent of those originally assigned to the online workflow, ended up in the telephone workflow. This highlights the importance of telephone activity as part of the ESS response maximisation effort.

Table 133 Workflow across email and CATI

	Nov-16		Feb-17		May-17		Total	
	n	%	n	%	n	%	n	%
Initial workflow								
Total supervisors approached	3,419	100.0	137	100.0	5,922	100.0	9,478	100.0
Assigned to online workflow (email information only)	619	18.1	18	13.1	1,031	17.4	1,668	17.6
Assigned to online workflow (email and phone number information)	2,552	74.6	115	83.9	4,203	71.0	6,870	72.5
Total assigned to online workflow	3,171	92.7	133	97.1	5,234	88.4	8,538	90.1
Assigned to telephone workflow (telephone number only)	248	7.3	4	2.9	688	11.6	940	9.9
Changed workflow								
Total changed workflow	2,105	100.0	101	100.0	3,660	100.0	5,866	100.0
Hard bounce	311	14.8	0	0.0	509	13.9	820	14.0
Online non-response (added to telephone workflow)	1,794	85.2	101	100.0	3,151	86.1	5,046	86.0
Total telephone workflow (originally assigned to telephone workflow plus changed workflow)	2,353		105		4,348		6,806	

The ESS instrument was programmed into SPSS Dimensions to ease data capture as well as facilitate the seamless use of CATI. This approach also supported the development and deployment of the live reporting module. Dates for each ESS data collection round are shown below in Table 14.

Table 144 ESS dates by mode

	November	February	May
Online data collection	2 Nov 2016 – 19 Feb 2017	15 Feb – 21 Apr 2017	3 May – 14 Jul 2017
CATI data collection	7 Nov 2016 – 19 Feb 2017	17 Feb – 21 Apr 2017	8 May – 14 Jul 2017

5.1.1. Initial approach and follow up strategy

As detailed above, dual methodologies were utilised in the 2017 ESS response maximisation effort; with online and CATI workflows established to support supervisor participation.

The online workflow was activated as the primary workflow for all records with a valid email address. Both workflows followed a predefined structure, with the online workflow consisting of an initial invitation sent the next working day, and a reminder email sent to non-responders four working days later (i.e. if sent invitation email on a Monday they would receive a reminder email on Friday). All emails were ESS-branded, html-enabled and included a hyperlink directly to the online survey, as well as helpdesk email address and dedicated 1800 telephone number. Supervisors were able to unsubscribe by clicking a link in the footer of the email. Supervisors who had completed a survey, those who had opted out of the survey, and those who had been disqualified from participating were removed from any further follow up activity.

If a supervisor had not responded to the emails and a phone number had also been provided, then they would be approached via CATI. In the November and February collection periods, non-responders were entered into CATI five working days after non-response to the reminder email. For the May collection period, supervisors were entered into CATI two working days after non-response to the reminder email.

If the record only had a valid telephone number for the supervisor, it was entered into the CATI workflow the first working day following the provision of the contact details. Table 15 provides the overall outcomes from ESS sample. As can be seen, a survey was completed for 46.0 per cent of supervisors approached, with a very small proportion of outcomes classified as opt out (2.5 per cent) or out of scope (1.8 per cent).

Table 155 ESS sample outcomes

	Nov-16		Feb-17		May-17		Total	
	n	%	n	%	n	%	n	%
Total supervisors approached	3,419	100.0	137	100.0	5,922	100.0	9,478	100.0
Completed surveys - HESA	1,627	47.6	62	45.3	2,659	44.9	4,348	45.9
Completed surveys - non HESA	12	0.4	0	0.0	2	0.0	14	0.1
Total completed surveys	1,639	47.9	62	45.3	2,661	44.9	4,362	46.0
Online out of scope	0	0.0	0	0.0	1	<0.1	1	<0.1
Online opt out	19	0.6	0	0.0	27	0.5	46	0.5
No response/partial complete	1,572	46.0	75	54.7	3,060	51.7	4,707	49.7
CATI out of scope	97	2.8	0	0.0	78	1.3	175	1.8
CATI opt out	92	2.7	0	0.0	95	1.6	187	2.0

5.2. ESS helpdesk

An ESS helpdesk was established to respond to supervisor queries via telephone or email. The 1800 number was also available to international supervisors (with an international dialling code), and remained operational for the duration of the fieldwork period. The helpdesk was staffed during standard business hours, and all out of hours callers were routed to a voicemail service, with calls returned within one business day.

The ESS helpdesk team were briefed on the ESS 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. The helpdesk processed 448 telephone and email transactions across regular ESS activity and the various sample building and validation activities in the GOS to ESS transition, with the primary reason for contact being to make an appointment. As can be seen at Table 16, other reasons for contacting the helpdesk included problems with the email link, confirming survey completion, opting outs or confirming a preference to complete online.

Table 166 Reason for supervisor contact

Reason for contact	Standard ESS	Requested contact	Invalid details follow up	Total	Total %
Problems with URL / access / login	15	-	26	41	5.3
Already completed the survey	13	-	5	18	2.3
Opt-out	21	9	10	40	5.2
CATI appointment	337	64	183	584	75.9
Requested general survey information	8	1	2	11	1.4
Wants to complete online	30	-	-	30	3.9
Other	24	9	12	45	5.9
Total	448	83	238	769	100.0

All opt-outs were removed from the reminder and CATI sample on a regular basis to avoid future reminder emails or calls to these sample members. Sample contact details were also updated before each reminder for those requesting an update to their details.

Members of the QILT team were responsible for monitoring the ESS inbox and responded as appropriate to queries and complaints.

5.3. Progress reporting

The department was provided with access to a bespoke 'live' online reporting module which provided an overview of supervisor detail collection rates for each institution and the total participation rates for all institutions. Results were provided in real time and included number of graduates in-scope to provide details, number of details actually collected and participation rates of supervisors (including partials, out-of-scopes and opt outs).

6. Data processing

6.1. Definition of the analytic unit

The analytic unit for the ESS is the course or major. An ESQ was defined as valid and complete if the supervisor had provided a valid response at equalimp (importance of qualification to be able to do their job well), ecrsprep (qualification prepared graduate for the job) and ehire (likelihood the employer would hire another graduate with the same qualification) questions.

The ESS data file contains one record for each of the graduate's courses or majors to a maximum of two. Supervisors appear twice in the file if the graduate they supervised either completed a single degree with two majors, or a double degree. If a graduate had completed a single degree with two majors, the second major is included in the ESS data file but not included in National reporting.

6.2. Data cleaning and preparation

All items in the body of the questionnaire were re-filtered to their respective bases to ensure there were no errant responses.

6.2.1. Data cleaning

Data collected was consolidated and cleaning routines applied, such as:

- recoding value labels where required
- re-coding of 'no answers' to the missing values conventions
- cleaning of supervisor name and coding of occupation and further study field of education
- spell checking and light cleaning of email addresses, business names, ebstprep (main ways institution prepared graduate for employment), eimpprep (ways institution could have better prepared graduates for employment) and 'other' specify responses.

6.2.2. Coding

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.

Items for coding and action taken included:

Occupation (of graduate and of supervisor) - coded using ANZSCO, Version 1.2, 2013, ABS catalogue number 1220.0 at the six-digit level

Location of employment (from GOS) - for graduates working overseas, country of employment was coded using the Standard Australian Classification of Countries (SACC, Second edition, ABS catalogue number 1269.0). For graduates working in Australia who recorded the suburb of their employer, postcode of employment was sourced using concordances of locality and postcode maintained by the Social Research Centre, based on ABS and Australia Post products.

7. Response analysis

7.1. Response rate

As can be seen at Table 17, a total of 4,348 surveys were completed from 9,022 in-scope supervisors approached⁴, which equates to a response rate of 48.2 per cent.

Table 177 Response rate summary by provider type and round

	Project total	University	NUHEI	Nov-16	Feb-17	May-17
In-scope supervisors approached	9,022	8,505	517	3,174	137	5,711
Surveys completed	4,348	4,094	254	1,627	62	2,659
Response rate %	48.2	48.1	49.1	51.3	45.3	46.6

The supervisors of university graduates completed 4,094 ESS surveys (48.1 per cent response rate), while supervisors of NUHEI graduates completed 254 ESS surveys (49.1 per cent response rate).

Response rates were similar across the collection periods, with 1,627 completed surveys (51.3 per cent response rate) achieved in the November round, 62 completed surveys (45.3 per cent) in the February round and 2,659 completed surveys (46.6 per cent) in the May round.

7.2. Mode of completion

Almost half of the supervisors completing the ESS (47.9 per cent) elected to complete online, supporting the case for a dual mode design. As can be seen at Table 18, a majority of those completing online (27.2 per cent of all completing, equating to 56.8 per cent of those completing online) completed online in response to the initial email invitation or reminder, and did not require follow up by telephone.

Over half (52.1 per cent) of ESS surveys were completed by telephone, indicating that CATI is an important workflow to maintain, to ensure that response rates continue to improve.

Table 188 Mode of completion

	Total	Total %
Total completed	4,348	100.0
Total completed online	2,081	47.9
<i>Completed online without telephone follow up</i>	1,182	27.2
<i>Completed online after telephone follow up</i>	899	20.7
Total completed by telephone	2,267	52.1

Table 19 on the next page reviews sample yield and mode of completion within the stream to which the supervisor was originally assigned, based on the supervisor contact information collected during the GOS.

Overall sample yield was similar for the online stream (48.5 per cent) and the CATI stream (45.6 per cent). Approximately half the supervisors in the online stream (23.8 per cent of all supervisors assigned to the online stream, equating to 49.0 per cent of supervisors assigned to the online stream who completed), completed as a result of telephone follow up.

⁴ Excludes non-HESA institutions to align with response rates reported in the ESS National Report

Table 199 Sample yield and mode of completion by stream

	Online		CATI	
	n	%	n	%
In scope supervisors approached	8,185		837	
Total completed	3,966	48.5	382	45.6
Completed online	2,019	24.7	62	7.4
Completed by phone	1,947	23.8	320	38.2

A small proportion (7.4 per cent of all supervisors assigned to the CATI stream, equating to 16.2 per cent of supervisors assigned to the CATI stream who completed), ended up completing online.

As noted above, this reiterates the importance of a dual mode design for the ESS.

7.3. ESS bridge trial review

Table 20 shows the progression from GOS completion to ESS completion by survey round and by bridge trial type (as outlined in Section 4.2) for the May 2017 round.

Approximately two thirds of graduates (66.4 per cent) who are employed and in scope for the bridge respond at the bridge, that is, there is significant sample loss at this first stage of ESS recruitment, either because graduates perceive they have 'finished' the GOS, or because of the bridge content.

Table 200 Bridge trial outcomes overview

	Total ESS	Nov-16	Feb-17	Bridge1	May-17 Bridge2	Bridge3	Total May-17
A Completed GOS	120,747	29,464	1,161	32,902	28,351	28,869	90,122
B Employed graduates	97,481	24,501	983	26,361	22,291	23,345	71,997
C Employed and in scope for ESS (bridge)	92,346	23,021	898	24,954	21,219	22,254	68,427
D Responded to bridge	61,326	15,159	596	15,797	18,351	11,423	45,571
E Agreed to supply supervisor contact details	23,640	7,004	254	7,062	4,471	4,849	16,382
F Provided supervisor details	13,361	6,378	233	3,261	1,291	2,198	6,750
G Usable details provided	9,426	3,378	137	2,911	1,133	1,867	5,911
H In scope supervisors approached	9,022	3,174	137	2,799	1,105	1,807	5,711
I ESS complete	4,348	1,627	62	1,386	467	806	2,659
D/C Responded to bridge as % in scope for ESS	66.4	65.8	66.4	63.3	86.5	51.3	66.6
G/C Supplied usable details as % in scope for ESS	10.2	14.7	15.3	11.7	5.3	8.4	8.6
I/C ESS complete as % in-scope for ESS	4.7	7.1	6.9	5.6	2.2	3.6	3.9
E/D Agreed to supply details as % responded to bridge	38.5	46.2	42.6	44.7	24.4	42.4	35.9
F/D Supplied details as % responded to bridge	21.8	42.1	39.1	20.6	7.0	19.2	14.8
G/D Supplied usable details as % responded to bridge	15.4	22.3	23.0	18.4	6.2	16.3	13.0
G/F Usable details provided as % provided details	70.5	53.0	58.8	89.3	87.8	84.9	87.6

Of the bridge trial options, the highest response (86.5%) at this initial stage was for Bridge 2, however, the response options at Bridge 2 were a simple 'Yes' or 'No' to a request to be contacted by telephone about the ESS. In this context, it is not surprising that Bridge 2 registers a high response at this initial stage.

Just over one third (38.5 per cent) of those responding at the bridge agreed to provide supervisor contact details. Bridge options 1 and 3 significantly outperformed Bridge 2 at this stage in the workflow, with 44.7 per cent and 42.4 per cent of graduates respectively, responding at the bridge and providing supervisor contact details in the May round. The performance of the standard bridge (Bridge 1) at this stage in the workflow is broadly consistent by round of survey activity (46.2, 42.6 and 44.7 per cent for the November '16, February '17 and May '17 rounds respectively).

Sample loss at this stage occurs when the supervisor details provided are either incomplete, inaccurate or refused. Just over two thirds (70.5 per cent) of supervisor contact details provided are classified as 'usable'. Minor changes made to workflows, input controls and investment in follow up activity for the collection of supervisor contact details for the May round resulted in all trial conditions in May outperforming the earlier rounds. In May, 87.6 per cent of supervisor contact details provided were 'usable', relative to 53.0 and 58.8 per cent in the November and February rounds respectively.

Of the three trial conditions, the standard Bridge 1 performed strongest in terms of what could be considered the ultimate measure of the success of the bridge: usable contact details provided as a proportion of graduates in scope for the ESS. In the May round, 11.7 per cent of Bridge 1 graduates who were in scope for the bridge supplied usable supervisor contact details, compared with 5.3 per cent for Bridge 2 and 8.4 per cent for Bridge 3. The standard Bridge 1 performed better in both the November (14.7 per cent) and February (15.3 per cent) rounds on this measure, relative to the May round (11.7 per cent).

The same pattern of relative effectiveness of the different bridge types carried through into ESS completes as a proportion of graduates in scope for the ESS, with Bridge 1 (5.6 per cent) outperforming Bridge 2 (2.2 per cent) and Bridge 3 (3.6 per cent) in the May round on this measure.

The bridge trial suggests that neither seeking to talk the graduate through the value of the ESS by telephone (Bridge 2) nor attempting to prime the graduate to be more accepting of the provision of supervisor contact details (Bridge 3) is superior to the standard bridge format (Bridge 1). There is, however, clear value in investment in telephone-based activity to collect, correct or validate supervisor contact details, as evidenced by the sharp increase in 'usable details provided as a proportion of details provided' for the May round.

7.4. Summary of call outcomes

Table 21 on the next page summarises call outcomes for sample records in the main ESS telephone workflow, that is, it excludes calls to collect or validate supervisor contact information.

A total of 25,987 calls were placed to 7,847 sample records, with almost three in ten (28.9 per cent) sample records resulting in a survey completed by telephone, with a further one in five (19.9 per cent) resulting in a survey completed online, either before telephone contact was initiated, or as a result of telephone follow up activity.

Telephone follow up activity generated a modest level of supervisor refusals (2.7 per cent of total records), and identified a small proportion of out of scope supervisors (2.8 per cent, 'did not supervise graduate').

Table 211 Summary of call outcomes

	Total	Nov-16	May-17
Total records	7,847	2,867	4,980
Survey completed by telephone	28.9	25.5	30.8
Survey completed online	19.9	27.1	15.8
Refusal	2.7	3.7	2.2
Appointment	4.6	4.7	4.6
Agreed to complete online	1.1	2.1	0.5
Did not supervise graduate	2.8	3.5	2.3
Other contact	3.5	3.1	3.8
Non contact	28.9	22.4	32.7
Unusable	7.5	7.8	7.3
Total call attempts	25,987	10,458	15,529
Calls per sample record not completing online	4.1	5.0	3.7
Calls per completed telephone survey	11.5	14.3	10.1
Average telephone interview duration (minutes)	13.2	13.3	13.1

Despite best efforts to ‘clean’ the sample, some 7.5 per cent of sample records resulted in an ‘unusable’ outcome (number disconnected, person not known at number provided, fax / data line).

The main barrier to the achievement of a greater yield from the sample appears to be making contact with the supervisor (28.9 per cent non-contacts) and turning appointments into completed surveys (4.6 per cent residual appointments at the end of data collection period). This is not uncommon in surveys targeting businesses.

On average, 4.1 calls were placed to each sample record that did not result in an online complete, highlighting the effort that was applied to maximise the yield from the sample.

The average telephone interview duration, inclusive of time to locate and screen the supervisor, was 13.2 minutes.

7.5. Email response analysis

Table 22 shows that on average, two in five supervisors opened the invitation (38.4 per cent) and reminder (41.0 per cent) emails. Of those opening the email, a similar proportion (34.5 and 40.4 per cent for the invitation and reminder respectively) went on to open the survey by clicking on the link.

Table 22 Email outcomes

	Invitation	Reminder
Total sent n	8,563	6,596
Subtotal opened %	38.4	41.0
<i>Clicked on link %</i>	<i>13.3</i>	<i>16.6</i>
<i>Opt out %</i>	<i>0.4</i>	<i>0.4</i>
<i>Opened, no action %</i>	<i>24.8</i>	<i>24.0</i>
Unopened %	50.9	57.7
Soft bounce ¹ %	0.9	1.1
Hard bounce ² %	9.7	0.2
Clicked on link as % opened	34.5	40.4

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 were reattempted on the next send.

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

Email invitation activity resulted in minimal opt outs (0.4 per cent for both the invitation and reminder).

A 'hard bounce' outcome was recorded for approximately one in ten (9.7 per cent) emails sent.

Strong open and click through rates at the reminder email suggest that further reminder email activity may be worthy of consideration, before switching to telephone non-response follow up.

7.6. Item level non-response

Item-level non-response refers to the proportion of respondents who skipped past a question without submitting an answer, and is an important consideration for surveys such as the ESS where questions are non-mandatory.

As can be seen at Appendix 6, which provides details of non-response for each question, item non-response is minimal across the confirmatory and overall graduate preparations questions in Modules A and B. It rises from approximately 2.0 per cent item non-response early in the GAS, to up to 6.0 per cent late in the GAS, with a notable lift in item non-response from approximately 2.0 per cent to 5.0 per cent in the transition from the first statement battery, 'foundation skills', to the second statement battery, 'adaptive skills and attributes'. This suggests that there is some element of respondent fatigue working through the 33 statements that make up the GAS, and/or respondents reacting to being presented with a series of statements, rather than a variety of question types.

Items in the GAS statement batteries include a 'Not applicable' option, which for the purpose of the review of item non-response is regarded as a valid response. However, it is worth noting that two items, in particular, attract a high level of 'Not applicable' responses; 'Numeracy skills' (13.8 per cent of all respondents) and 'Demonstrating management skills' (13.4 per cent).

Item non-response is highest for the two free text response questions, 'Main ways institution prepared graduate for employment (22.2 per cent) and 'Main ways institution could have better prepared graduate for employment (50.2 per cent). This is likely to be related to supervisors being time poor and the additional cognitive effort required to provide a free text response.

7.7. Achieved sample characteristics

Tables 23, 24 and 25 on the next page compare the characteristics of employed graduates from the GOS with the profile of graduates whose supervisor completed the ESS, to identify the extent to which the ESS departs from being a representative survey of employers of recent graduates.

Table 23 shows that there was strong representation of graduates aged over 30 years, indigenous graduates and graduates reporting a disability in the achieved ESS sample, and some under-representation of graduates aged 30 years or under, and graduates speaking a language other than English at home.

Table 24 shows that the achieved ESS sample had strong representation of postgraduate research, external / distance and NUHEI graduates, with some under-representation of undergraduates and graduates with an internal / mixed study mode.

Table 25 shows that fields of study such as Engineering and Related Technologies, Agriculture and Environment Studies and Education has strong representation in the achieved ESS sample, relative to Creative Arts, Management and Commerce, and Society and Culture

Table 23 ESS achieved sample - graduate demographic profile

	Employed graduates		Supervisors	
	n	%	n	%
Gender				
Male	37,940	39.0	1,830	42.1
Female	59,386	61.0	2,514	57.9
Age				
30 years or under	67,810	69.6	2,426	55.8
Over 30 years	29,671	30.4	1,922	44.2
Aboriginal and Torres Strait Islander				
Indigenous	839	0.9	54	1.2
Non-Indigenous	96,496	99.1	4,290	98.8
Main language spoken at home				
English	84,589	86.8	3,882	89.3
Language other than English	12,892	13.2	466	10.7
Disability				
Reported disability	4,028	4.1	244	5.6
No reported disability	93,311	95.9	4,100	94.4

Table 24 ESS achieved sample - graduate higher education characteristics

	Employed graduates		Supervisors	
	n	%	n	%
Institution type				
University	92,811	95.2	4,094	94.2
NUHEI	4,670	4.8	254	5.8
Study mode				
Internal/mixed	79,485	81.7	3,217	74.1
External/distance	17,850	18.3	1,127	25.9
Course level				
Undergraduate	54,714	56.1	2,173	50.0
Postgraduate coursework	37,875	38.9	1,821	41.9
Postgraduate research	4,892	5.0	354	8.1

Table 25 ESS achieved sample - broad field of education of graduates

	Employed graduates		Supervisors	
	n	%	n	%
Natural & Physical Sciences	7,175	7.4	308	7.1
Information Technology	3,806	3.9	155	3.6
Engineering & Related Technologies	5,895	6.0	322	7.4
Architecture & Building	2,137	2.2	94	2.2
Agriculture & Environmental Studies	1,572	1.6	88	2.0
Health	20,028	20.5	918	21.1
Education	11,146	11.4	659	15.2
Management & Commerce	19,302	19.8	773	17.8
Society & Culture	20,757	21.3	839	19.3
Creative Arts	5,647	5.8	187	4.3
Food, Hospitality & Personal Services	16	0.0	5	0.1

8. Summary of issues for future surveys

The 2017 implementation of the ESS built upon the successful proof of concept from the previous iteration in 2016. Key achievements in 2017 included:

- A 42.5 per cent increase in the number of ESS surveys completed, up from 3,061 in 2016 to 4,362 in 2017
- Positive outcomes from investment in 'sample build' activity, that is, contacting graduates to collect, correct or validate supervisor contact information, where the graduate has stopped at the bridge or requested contact at the bridge
- The successful conduct of an ESS bridge trial, which, following on from the experimentation with alternative approaches to the bridge during the survey development phase, confirmed that the standard bridge outperforms the alternatives trialled in May 2017, which were based on concepts of 'personal follow up' (Bridge 2) and 'priming' (Bridge 3)

It is clear that the ESS will need to continue to offer multiple modes of completion, going forward, and that telephone follow up of supervisors originally assigned to the online stream is an essential component of maximising response from this stream.

Consideration could also be given to additional email reminder activity, prior to switching to telephone follow up activity as part of the sequential mixed mode strategy.

Table 20 highlights where sample loss occurs across the project workflow, and strategies will need to be developed to specifically understand and address sample loss at each stage. This is consistent with the TSE philosophy applied to the QILT program, and efforts to further reduce errors of representation, in particular.

It will be important to engage institutions to normalise supervisor details provision during their awareness raising activities with graduates. It is expected that messaging in this regard will need to be more direct, and make a clear case as to why graduates should be invested in the ESS, perhaps building on some of the 'priming' concepts used in the bridge trial.

Online functionality in the GOS which seeks to attempt to 'convert refusals' at the ESS bridge and / or the point at which supervisor contact information is requested may also be worthy of consideration.

The release of the 2017 ESS National Report on the QILT website may prove an important component of demonstrating how the data is presented, and mitigating graduate concerns about the provision of supervisor contact information.

It could also be used to assist in the engagement of professional associations and graduate employer groups, with a view to raising awareness of the ESS amongst supervisors, and creating an expectation of being contacted by email or phone to participate in the ESS.

There remains considerable scope to build awareness and acceptance of the ESS, and to continue to refine operational procedures, for future implementations.

Glossary

Explanation of Table A and Table B institutions: Providers listed in Table A are approved for all Australian Government grants under Higher Education Support Act 2003 (HESA) HESA and their students can receive all forms of assistance. Providers listed in Table B are eligible for some grants for particular purposes. Table B providers can offer FEE-HELP assistance to their students. Table B providers approved for National Priority places can also offer HECS-HELP assistance.

Field of Education: Ensures courses, specialisations and units of study with the same or similar occupational emphasis are classified to the same field of education. There are 12 broad fields and 71 narrow fields of education.

Out of Scope: Supervisors who indicated that they did not supervise the graduate.

Opted out: Supervisors who indicated that they did not want to complete the survey or unsubscribed from invitation or reminder emails.

Telephone reminder(s): When the participant is telephoned and reminded to complete the survey online.

Soft bounce: A soft bounce occurs when an email cannot get through to the supervisor's inbox at the time of the send, commonly due to the inbox having reached capacity or the mail server is temporarily down. Emails that are a 'soft bounce' will be sent again in the next send.

Hard bounce: A hard bounce occurs when it is sent to a permanently unusable email address, commonly the result of a non-existent domain or disabled mailbox. These emails are removed from subsequent sends.

Complaint (as an email outcome): A 'complaint' is recorded as an email outcome when a supervisor clicks the 'This is Spam' or 'Junk Mail' buttons in their email client instead of clicking the unsubscribe link in the email. Categorized in final status reporting as 'opted out'

ESS bridge: describe the mechanism for transitioning from the GOS to the ESS via the collection of supervisor contact details for the ESS.

Response rate: completed surveys as a proportion of final sample (supervisors approached), where final sample excludes unusable sample (e.g. no contact details), out of scope and opted out.

Sample yield: completed surveys as a proportion of all supervisors approached (i.e. does not exclude out of scope and opted out from the denominator, as for the response rate calculation)

Appendix 1 ESQ

Appendix 2 ESQ screenshots

Appendix 3 ESS supervisor recruitment

Appendix 4 ESS recruitment supporting materials

Appendix 5 ESS invitation and reminder email content

Appendix 6 Item level non-response

Appendix 7 Participating institutions