

Additional methodology details

Telco consumer experience—Australian adults and households, businesses: Phone and internet services

OCTOBER 2020

Canberra

Red Building
Benjamin Offices
Chan Street
Belconnen ACT

PO Box 78
Belconnen ACT 2616

T +61 2 6219 5555
F +61 2 6219 5353

Melbourne

Level 32
Melbourne Central Tower
360 Elizabeth Street
Melbourne VIC

PO Box 13112
Law Courts
Melbourne VIC 8010

T +61 3 9963 6800
F +61 3 9963 6899

Sydney

Level 5
The Bay Centre
65 Pirrama Road
Pyrmont NSW

PO Box Q500
Queen Victoria Building
NSW 1230

T +61 2 9334 7700 or 1800 226 667
F +61 2 9334 7799

Copyright notice

<https://creativecommons.org/licenses/by/4.0/>

With the exception of coats of arms, logos, emblems, images, other third-party material or devices protected by a trademark, this content is made available under the terms of the Creative Commons Attribution 4.0 International (CC BY 4.0) licence.

We request attribution as © Commonwealth of Australia (Australian Communications and Media Authority) 2020.

All other rights are reserved.

The Australian Communications and Media Authority has undertaken reasonable enquiries to identify material owned by third parties and secure permission for its reproduction. Permission may need to be obtained from third parties to re-use their material.

Written enquiries may be sent to:

Manager, Editorial Services
PO Box 13112
Law Courts
Melbourne VIC 8010
Email: info@acma.gov.au

Contents

Introduction	1
Additional methodology details	2
Key features	2
Limitations	2
Statistical reliability	5
Standard errors and weighting effects	5
Professional standards	8
Privacy and ethics	8
Quality assurance	8
Sample profiles	9
Profile of samples—unweighted counts of respondents and proportions of weighted totals	9

Introduction

This report provides additional detail on the methodology to supplement the ACMA's research reports:

- > *Telco consumer experience—Australian adults and households: Phone and internet services*
- > *Telco consumer experience—Australian businesses: Phone and internet services*

The ACMA commissioned [ENGINE](#) to conduct consumer research to explore Australians' use of, and attitudes towards, their telecommunications services¹ and devices.²

It included three related quantitative surveys on individuals, households and businesses.

Table 1: Key details of the surveys

	Individual	Household	Business
Target population	Australian adults	Australian households	Australian businesses with 0–199 employees
Target respondent	Individuals who were the main or joint decision-makers for a personal telco service included in the research	The member of the household who has the main or shared responsibility for at least one household telco service included in the research	The person within the business who has the main or shared responsibility for managing the businesses' telco services
Telco services included	Personal telco services used by individuals: <ul style="list-style-type: none"> > mobile phones > mobile broadband 	Telco services used by members of a household: <ul style="list-style-type: none"> > home phones > home internet > mobile broadband > family plans for data sharing among multiple mobile phones 	Telco services used in and paid for by the business: <ul style="list-style-type: none"> > business phones > business internet > mobile broadband > business mobile phones
Final sample size	900	1,101	850
Initial in-scope respondents screened for weighting purposes	938	1,228	n/a as not needed for weighting
Fieldwork dates	18 Sept – 3 Oct 2019	8 Oct –3 Nov 2019	11 Nov – 18 Dec 2019
Interview duration (average)	15 minutes	16 minutes	20 minutes

¹ A service is the connection that a household pays a telco for, that connects a device to a PSTN telephone network, mobile network or the internet.

² A device relies on its internet connection either from a separate mobile service or it connects to wi-fi from a home internet services other networks outside the home.

Additional methodology details

Key features

- > Sampling for the individual and household surveys was random digit dialling from separate mobile phone samples sourced from SamplePages. Sample for the business survey was a list of businesses in Australia sourced from illion, with random digit dialling within strata defined by industry and size that were calculated from ABS business counts. The approach used for all three surveys ensured representativeness, accuracy and repeatability, which will allow for any future tracking.
- > For the business survey, employment size and industry were provided in the illion business database, but they are not guaranteed to be up-to-date or accurate. The accuracy of these items is sufficient for stratification and sample design purposes. However, the survey collected the current employment size and industry division directly from businesses through the survey for use in weighting and reporting.
- > Main or joint decision-makers were targeted so that respondents would be more likely to have experience with and knowledge of telecommunications products and services, which ensures a greater data quality and accuracy.
- > Separate draft quantitative questionnaires for each survey were developed by the ACMA, with input from ENGINE and key ACMA stakeholders. Each questionnaire underwent testing including:
 - > cognitive testing—four with individuals, six with households (both in August 2019) and five with businesses (October 2019). Each participant was recruited by ENGINE'S in-house qualitative recruitment team and was given an incentive. The findings from this stage resulted in some amendments to the survey.
 - > pilot testing in September–October 2019 with n=30 individual, n=18 household, and n=10 business interviews to further test key aspects, including flow, programming, response categories and timings. This resulted in some further minor amendments.

Limitations

Sample coverage—individual survey

A mobile phone sample frame did not fully cover the target population as it excluded the small proportion of people who were main or joint decision-makers for a mobile broadband service but did not have a mobile phone. Overall, the proportion of the population without a mobile phone was less than three per cent³ and the expected high degree of association of having mobile broadband and also a mobile phone, suggests the expected group not covered by a mobile phone sample frame was much lower than three per cent.

Consideration was given to adding an alternate sample frame to incorporate sampling via landline phones as well as mobile phones (a dual frame design), but that would have resulted in an estimated 10–20 per cent increase in sample error and an increase in project cost.

The single mobile phone sample frame was the most appropriate option as it provided the best coverage of the target population. Any benefit of adding an alternate sample

³ [ACMA Communications report 2018–19](#)—data from Roy Morgan Research, for the year to December 2019, 96.5 per cent of Australians aged 18 and over own or use a mobile phone.

frame would be offset by the increase in sample error, as well as an increase in project cost.

Sample coverage—household survey

As a mobile phone sample frame was used, it does not fully cover the target population as it excludes households with a member mainly or jointly responsible for at least one in-scope household telco service who did not have a mobile phone. Overall, the proportion of the population without a mobile phone is six per cent, but the expected association of having a household telco service and a mobile phone service suggests that the missing coverage may be much lower than this.

Consideration was given to adding an alternate sample frame to incorporate calls to landline phones as well as mobile phones (a dual frame design) to further cover that missing group, however coverage would still be incomplete. In addition, a dual frame design would have resulted in an estimated 10–20 per cent increase in sample error and an increase in project cost.

The single mobile phone sample frame was the most appropriate option as it provided the best coverage of the target population. Any benefit of adding an alternate sample frame would be offset by the increase in sample error, as well as an increase in project cost.

Sample coverage—business survey

Businesses in the agriculture, forestry and fishing division were excluded from the business survey as this division is not well covered by illion.

The ABS definition of a business is an organisation that is 'actively trading in the market sector'. This means that *most* public sector organisations and all not-for-profit organisations were excluded from the survey scope.

These exclusions were achieved by applying these rules in the extraction of the sample from the business sample provider, as well as through the screening of businesses during the interview.

Potential overlap

People who are self-employed can use telco services for both personal and business purposes. This means there was potential for our surveys to collect information in more than one survey, and therefore potential for duplication between the individual or household surveys and the business survey, where services are in common across two surveys. As an example, for self-employed people who used a single mobile phone for both business and personal purposes, there was potential for this to be collected in both the individual and the business survey. A similar overlap may arise where a very small business shares an internet or landline phone service across their business and their personal purposes.

It is not meaningful to attribute complaints about mobile phone services to one of the two surveys. This means that there was a structural, unavoidable overlap between the two surveys. The overlap is preferable to missing this information in the surveys.

It should be noted that this overlap is structural and not the result of a design flaw. Consideration of the possible impact of this overlap on analyses from this project required an understanding of the group giving rise to the overlap: self-employed sole proprietors of private businesses with no employees in the individual or household and in the business populations.

Non-employed businesses constitute 62.1 per cent of all Australian businesses.

Sole proprietors who manage non-employing businesses may also be consumers for individual services and household services. The estimated resident population of Australians aged 18 years or more in September 2019 was 19.847 million, meaning that sole proprietors make up 7.2 per cent of all consumers. Not all of these sole proprietors may have used telco services across their business and personal uses, so the overlap may be smaller than that.

Recall

As with any survey, recall and data quality were potential issues. To minimise issues with recall, the time period that respondents were asked to recall was kept as short as possible and balanced with the need for a period that allowed for sufficient information to be gathered. Six months was used for nearly all questions where a recall period was needed. For changes to telco plans or providers, the recall period was two years.

It should be noted that 'Don't know/Can't say' responses were allowed for in the survey, and they may have been used when a respondent did not recall or were not sure how to respond. However, analysis showed the proportions of 'Don't know/Can't say' responses relative to other response options were commonly very small throughout the survey. Where they are not shown in a chart, it is noted that they were very small.

Statistical reliability

Standard errors and weighting effects

The standard errors used in statistical significance testing took account of the sample design and weighting by calculating an effective sample size, based on the Weight Effect (WEFF). The WEFF was calculated to be 1.12 for the individual survey, 1.2 for the household survey, and 2.15 for the business survey.

Margins of error enabled confidence intervals to be calculated. This research used a 95 per cent confidence interval for survey estimates, which is calculated as the survey estimate +/- the margin of error. There are 95 chances in 100 that the true value lies within the 95 per cent confidence interval.

Calculations in the table below show the margins of error for estimates of proportions.

Table 2: Margin of error for each total sample

	Individual	Household	Business
Actual sample size, n=	900	1,101	850
WEFF	1.12	1.2	2.15
Effective sample size, n= (once sample design and weighting were taken into account)	804	918	395
Estimated survey proportions	Margins of error at the 95% confidence level (taking into account WEFF) Percentage points (+/-)		
5% or 95%	1.5	1.4	2.1
10% or 90%	2.1	1.9	3.0
20% or 80%	2.8	2.6	3.9
30% or 70%	3.2	3.0	4.5
40% or 60%	3.4	3.2	4.8
50%	3.5	3.2	4.9

For example, for a survey result of 50.0 per cent based on the total sample for the individual survey of n=900, there are 95 chances in 100 that the true value lies within the range of 46.5–53.5 per cent.

When comparing a result between subgroups (for example, comparing households that have made a complaint to their telco in the previous six months (n=307) with those who have not or don't know (n=794), the margin of error depends on the base size of the subgroups and the percentages being compared. The margin of error for particular subgroup sizes, with WEFF accounted for, are provided below as a guide.

Margin of error for subgroups

Table 3: Individual survey

	Sample of individuals		
Actual sample size, n=	900 (total sample of individuals)	622 (individuals living in a major city)	169 (individuals with a mobile broadband service)
Effective sample size with WEFF of 1.12, n=	804	555	151
Estimated survey proportions	Margins of error at the 95% confidence level (taking into account WEFF) Percentage points (+/-)		
5% or 95%	1.5	1.8	3.5
10% or 90%	2.1	2.5	4.8
20% or 80%	2.8	3.3	6.4
30% or 70%	3.2	3.8	7.3
40% or 60%	3.4	4.1	7.8
50%	3.5	4.2	8.0

Table 4: Household survey

	Sample of households		
Actual sample size, n=	1,101 (total sample of households)	552 (households that contacted telco in previous 6 months)	307 (households that made a complaint to their telco in the previous 6 months)
Effective sample size with WEFF of 1.2, n=	918	460	256
Estimated survey proportions	Margins of error at the 95% confidence level (taking into account WEFF) Percentage points (+/-)		
5% or 95%	1.4	2.0	2.7
10% or 90%	1.9	2.7	3.7
20% or 80%	2.6	3.7	4.9
30% or 70%	3.0	4.2	5.6
40% or 60%	3.2	4.5	6.0
50%	3.2	4.6	6.1

Table 5: Business survey

	Sample of businesses		
Actual sample size, n=	850 (total sample of businesses)	578 (businesses with issues or faults in the previous 6 months)	323 (businesses that made an enquiry in the previous 6 months)
Effective sample size with WEFF of 2.15, n=	395	269	150
Estimated survey proportions	Margin of error for estimates of proportions (taking into account WEFF) Percentage points (+/-)		
5% or 95%	2.1	2.6	3.5
10% or 90%	3.0	3.6	4.8
20% or 80%	3.9	4.8	6.4
30% or 70%	4.5	5.5	7.3
40% or 60%	4.8	5.9	7.8
50%	4.9	6.0	8.0

Professional standards

Privacy and ethics

This research was undertaken in accordance with:

- > the [Privacy Act 1988](#) and the [Australian Privacy Principles](#)
- > The Research Society's [Code of Professional Behaviour](#) and [Privacy \(Market and Social Research\) Code 2014](#)
- > the [Telemarketing and Research Calls Industry Standard Variation 2017](#)
- > [ISO 20252 standards](#).

Quality assurance

The research agency commissioned to conduct the research was ENGINE. In collaboration with the ACMA research team, the sample frame was designed by Dr Phil Hughes, Head of Statistical Consulting (APAC) for ENGINE, who is highly regarded as a research expert in sampling and weighting complex government surveys.

All interviews were conducted from ENGINE's dedicated CATI facility in Melbourne CBD. The team of interviewers selected were briefed specifically on the project by members of both the ENGINE and the ACMA project teams before the fieldwork. Up to five calls were attempted to each mobile number or each business to achieve an interview with an eligible person, which assists in minimising non-response.

ENGINE is a member of the Association of Market and Social Research Organisations (AMSRO) and as such, its staff and interviewers abide by The Research Society Code of Professional Behaviour. The ACMA's researchers working on this project area also all members of The Research Society. Key members of both ENGINE and the ACMA research team have Qualified Professional Researcher accreditation.

Weighted data tables and data files were provided by ENGINE. Data and analysis presented in the reports was conducted by the ACMA research team, with some key quality assurance checks undertaken by ENGINE.

Sample profiles

Profile of samples—unweighted counts of respondents and proportions of weighted totals

Table 6: Individual survey

	Actual sample size, n=	Weighted %
Total base	900	100
Gender		
Male	512	49
Female	388	51
Age		
18–24 years	103	11
25–34 years	139	20
35–44 years	128	17
45–54 years	151	16
55–64 years	162	15
65+ years	217	21
Location		
Living in major cities	624	71
Outside major cities	267	28
Unknown	9	1
Household income A		
Under \$40,000	127	14
\$40,000–\$59,999	81	8
Under \$60,000 but don't know/refused which category	29	3
\$60,000–\$99,999	132	14
\$100,000–\$149,999	106	12
\$150,000 and over	166	19
\$60,000 and over but don't know/refused which category	62	7
Total don't know/refused	197	22
Household income B		
Total under \$60,000	237	26
Total \$60,000 and over	466	52
Total don't know/refused	197	22

Note: 'Major cities' is a category in the ABS Remoteness Area classification, referring to cities (and their surrounding areas) with populations in excess of 250,000.

Table 7: Household survey

	Actual sample size, n=	Weighted %
Total base	1,101	100
Location		
In major cities	768	71
Outside major cities	333	29
Household income A		
Under \$40,000	121	13
\$40,000–\$59,999	84	9
Under \$60,000 but don't know/refused which category	31	3
\$60,000–\$99,999	197	18
\$100,000–\$149,999	170	15
\$150,000 and over	230	18
\$60,000 and over but don't know/refused which category	70	5
Total don't know/refused	198	18
Household income B		
Total under \$60,000	236	25
Total \$60,000 and over	667	57
Total don't know/refused	198	18
Children aged under 18 in the household		
Households with children	356	31
Households without children	745	69
Number of people living in the household		
One	168	21
Two	406	40
Three or more	527	39

Note: 'Major cities' is a category in the ABS Remoteness Area classification, referring to cities (and their surrounding areas) with populations in excess of 250,000.

Table 8: Business survey

	Actual sample size, n=	Weighted %
Total base	850	100
Company type		
Private business, for profit	620	64
Self-employed sole proprietor of a business with no employees	230	36
Number of employees		
Zero	143	21
One	101	17
2–4	210	35
5–19	302	22
20–199	94	5
Number of locations		
One	706	88
More than one	144	12
Locations of operation		
In major cities	572	69
Outside major cities	312	33
Business turnover in Australia for the financial year ending 30th June 2019		
<\$500,000	335	48
\$500,000 – <\$2 million	202	25
\$2 million or more	124	8
Don't know/refused	189	19

Note 1: 'Major cities' is a category in the ABS Remoteness Area classification, referring to cities (and their surrounding areas) with populations in excess of 250,000.

Note 2: 'Locations of operation' includes n=34 businesses that operate from both major cities and other areas, equating to a weighted proportion of two per cent.