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GAMBLING PREVALENCE IN SOUTH AUSTRALIA (2012)

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TECHNICAL AND METHODOLOGICAL SUMMARY REPORT

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1 Introduction

1.1 Overview

This report summarises and evaluates the methodology used to undertake the 2012 SA Gambling Prevalence Survey.

The report is structured as follows:

- Section 2 provides an overview of the survey
- Section 3 provides details of the sampling processes and survey procedures
- Section 4 provides an overview of questionnaire design and testing
- Section 5 details data collection and quality control procedures
- Section 6 provides call statistics and an analysis of response
- Section 7 covers data processing, weighting and survey outputs

The survey questionnaire is appended.

1.2 Project background

The 2012 survey of Gambling Prevalence in South Australia is the fifth formal gambling prevalence study undertaken in South Australia since 1995. Prior to this study there was a telephone survey of 1,206 adults conducted by Delfabbro and Winefield in 1996[1]; a national survey conducted by the Federal Productivity Commission in 1999; a survey of over 6,000 people conducted by the Department of Human Services in 2001; and a large-scale telephone survey of 17,745 people conducted by the Department for Families and Communities in 2005.

This latest survey of Gambling Prevalence in South Australia (GPSA) was conducted during the period October to December 2012. It sought to further describe the gambling patterns of adults and young people in South Australia and followed a similar approach to the 2005 GPSA with telephone data collection and a questionnaire which repeated a number of the core questions from the 2005 survey.

However, the total 2012 sample size was considerably smaller (n=9,508); the questionnaire incorporated a number of new questions (especially questions relating to internet gambling); and the approach to establishing problem gambling prevalence was changed slightly so that “at risk” gambling status could also be determined for those people who gambled less than once a fortnight, that is, were not “regular gamblers” as defined in the 2005 survey. These issues limited comparability between the 2005 and 2012 GPSA surveys on a number of measures.

[1] Delfabbro P, Winefield A. *Community gambling patterns and the prevalence of gambling-related problems in South Australia: with particular reference to gaming machines.* Adelaide: Department of Family and Community Services, 1996.

2 Survey overview

The in-scope population for the survey was South Australian residents aged 16 years and over who were contactable by either a landline or mobile phone. Data collection was via Computer Assisted Telephone Interviewing (CATI).

The survey used a dual-frame sampling methodology (i.e. a sample design that utilises both landline and mobile phone telephone numbers) which resulted in 7,133 interviews being conducted with respondents who were part of the randomly generated (RDD) landline sample and 2,375 interviews with respondents selected from a list-based mobile phone sample.

A dual-frame sampling methodology, which enabled interviews to be undertaken with persons residing in 'mobile-phone only' households, was preferred to a sample frame which comprised solely of landline phone numbers. The reason for adopting a dual-frame design was based on recognition of the fact that only interviewing persons contactable via landline numbers is now considered to result in non-ignorable biases in survey estimates. This is due to the exclusion of an increasing proportion of the population residing in 'mobile phone-only' households, currently estimated at around 19% of the population.

This coverage bias was noted in the 2010 Productivity Commission report into gambling, as follows:

> *"Problem gambling surveys are usually based on interviews over fixed line telephones. Young people – who are known to have higher risks of problem gambling (for instance, AC Nielson 2001, p.10) – are often out or only use mobile phones. In the NSW prevalence survey, AC Nielson reported that there was 40 per cent under-sampling of people aged 18-24 years old. (The next highest level of understatement was around 18 per cent and related to the next age group of 25-34 year olds.) While under-sampling can be partially corrected through weighting, that still requires the strong assumption that the group of young people who are at home or do use fixed line phones are representative of those omitted from the survey."*[2]

Given this situation, to ensure the 2012 South Australian Gambling Survey achieved as representative sample of the South Australian population as possible a dual-frame design comprising RDD landline numbers and list-based mobile numbers was used. A list-based (i.e. non-random) sample frame was used for the mobile phone component of the sample. The reason for preferring a non-random list-based approach to sampling mobile phone numbers was due to the lack of geographic markers attached to mobile phone numbers in Australia. As such, there are substantial telephone screening costs to be incurred in mounting a survey in South Australia using randomly generated mobile phone numbers as only about one in 10 of the numbers called would belong to a South Australian resident. Adopting such an approach would have substantially increased the costs associated with mounting the survey.

While using a combination of randomly generated landline numbers and a non-random list of mobile phone numbers is an important caveat to note in terms of the generalisability of the survey findings, the view of the research team is that these limitations have been managed through careful research design and execution. Both the research team and the Department are confident that the reported findings from the 2012 Gambling Prevalence in South Australia survey provide a more accurate 'read' on gambling in South Australia than would have been obtained had the survey been conducted via landline telephone numbers only.

[2] Productivity Commission 2010, Gambling, Report no. 50, Canberra (p5.13).

Tables 7a, 7b and 7c provide an overview of selected results comparing the unweighted survey estimates obtained from the landline sample with the unweighted estimates emanating from the full dual-frame sample used for this survey.

The commercial sample provider, Sampleworx, provided the landline sample for this survey. For the mobile phone component, sample was provided by another commercial list provider (Global Data Pty Ltd via the Prospect Shop) which has an 'opt in' privacy compliant list of 85,000 mobile phone numbers in South Australia, compiled from sources such as research companies, utilities companies and subscriber lists. All mobile phone numbers were washed against directory listings (using the Sensis macromatch product) to identify mobile phone numbers listed in the white pages telephone directory. The release of the mobile phone sample was then controlled so as to ensure that directory-listed mobile phone numbers were not over-represented in the final sample. This meant limiting the proportion of directory-listed mobile phone numbers to approximately 5% of the total mobile phone sample in line with known parameters based on the 2010 SA Population Health Omnibus Survey.

Respondents for the landline survey were selected using the "last birthday" method. Respondents for the mobile phone component of the survey were in-scope phone answerers. The strategies adopted to maximise response included repeated call backs to establish contact, leaving messages on answering machines / voicemail, the operation of 1800 numbers by the Social Research Centre and the Department of Communities and Social Inclusion, offering a Departmental letter to explain the nature of the survey, refusal conversion interviewing and interviewing in languages other the English. Further details about response rates are provided in Section 6.3.

Table 1: Survey overview

	Landline sample	Mobile phone sample	Total Dual-frame sample
Interviews completed	7,133	2,375	9,508
Cooperation rate (AAPOR Cooperation Rate 3)[3]	53.7%	52.8%	53.4%
Response rate (AAPOR Response Rate 3) [4]	38.7%	22.1%	32.5%
Start date	30 Oct 12	30 Oct 12	30 Oct 12
Finish date	20 Dec 12	30 Oct 12	30 Oct 12
Average interview length (minutes)	13.8 mins	14.6 mins	14.0 mins

[3] Refer to Section 6.3 for further information.
[4] Refer to Section 6.3 for further information.

3 Sample Design and Survey Procedures

3.1 Sample design and stratification

The sample was stratified on geography. A disproportionate stratified sample design was used for the landline component of the study, with landline interview quotas equally distributed across the 12 SA Government regions (approx. *n=594* per region).

Given the less reliable nature of the postcode information provided with the mobile sample, two broad geographic strata were set up on a probability proportional to size basis (*n=1800* Greater Adelaide, *n=575* Rest of SA).

Final allocations to geographic strata were based on the confirmed postcode/location information provided by respondents. The distribution of interviews across the 12 geographic strata is provided in Table 2 below.

As shown, the geographic distribution of the landline sample matched well with the target of 594 interviews per region (the maximum achieved in any region was 620 interviews in Northern Adelaide while the minimum was 565 in Eastern Adelaide); while the mobile sample more or less matched the population counts for each region.

Table 2: Geographic distribution of interviews by sample frame.

Location	Sample Frame		
	Landline (a)	Mobile (b)	Total (a+b)
Greater Adelaide			
Eastern Adelaide	565	284	849
Northern Adelaide	620	444	1,064
Southern Adelaide	608	491	1,099
Western Adelaide	594	255	849
Adelaide Hills	598	149	747
Barossa, Light and Lower North	595	109	704
Fleurieu and Kangaroo Island	589	94	683
Subtotal	***4,169***	***1,826***	***5,995***
Country Regions			
Eyre and Western	592	59	651
Far North	590	28	618
Limestone Coast	593	147	740
Murray and Mallee	602	156	758
Yorke and Mid North	587	159	746
Subtotal	***2,964***	***549***	***3,513***
TOTAL	***7,133***	***2,375***	***9,508***

3.2 Number of call-backs

A call cycle of 10 calls to landlines and 6 calls to mobiles was used for this survey. The advantage of such an approach is that it enables interviews to be achieved with hard to reach individuals (see Section 6.4 for further analysis of the impact on the achieved sample of the call procedures adopted for this survey).

3.3 Call times

For the landline sample, initial contact attempts were made between 4.30 pm and 8.30 pm on weekdays, and 10.00 am and 4.00 pm on Saturdays and 11.00 am and 4.00 pm on Sundays. Appointments were made for any time within the hours of operation of the call centre. Given the time zone differences across the country initial calls to mobile phone numbers were not made prior to 1.00 pm.

3.4 Interviewing in languages other than English

Non-English language interviewing was limited to the most commonly spoken community languages in South Australia - Mandarin, Cantonese, Vietnamese, Italian, Greek and Arabic. Having identified the preferred language of a sample member, these records were stockpiled until a reasonable workload for a bi-lingual interviewer was available.

Where the preferred language could not be immediately identified a call-back was made in the hope that another household member / phone answerer might be available to assist with the request for interview. Where the preferred language was not one of the six target languages, the record was assigned the code “language difficulty, no follow up” and no further call attempts were made.

A total of 70 interviews were conducted in a language other than English.

3.5 Leaving messages on answering machines

Up to two pre-scripted messages were left on answering machines / voicemails providing a brief description of the survey along with an invitation to call the Social Research Centre’s 1800 number to participate in the survey.

3.6 Refusal conversion interviews

Discretionary calls were made to ‘soft refusals’ and ‘immediate hang ups’ in order to try again to obtain an interview from that household / individual. This resulted in 319 interviews from records that would otherwise have been classified as refusals. Of these, 228 came from the landline sample frame and 91 from the mobile sample frame.

There were no significant socio-demographic differences between respondents obtained from the refusal conversion process and those obtained from ‘normal’ interviews apart from a slightly higher proportion of ‘country region’ interviews in the refusal conversion subgroup (44.8% versus 36.9% of ‘normal’ interviews).

4 Questionnaire Design

4.1 Questionnaire development and pilot testing

The questionnaire was based on questions used previously in the 2005 Gambling Prevalence in South Australia survey and also took into account the Gambling Prevalence Study Standards (2011) released by Gambling Research Australia and prepared by the Queensland Office of Regulatory Policy, Department of Justice and Attorney General. Questions were added to address emerging issues such as internet gambling. To accommodate these additions a number of questions were removed; these deletions either dealt with issues which were felt to have been explored sufficiently in 2005 or in other gambling surveys and/or which were no longer considered to be as relevant as they were at the time of the 2005 survey.

As in 2005, the Problem Gambling Severity Index (PGSI), a component of the Canadian Problem Gambling Index (CPGI), was used to ascertain the presence and severity of problem gambling. For those respondents aged 16 or 17 years, the adolescent problem gambling measure, the Diagnostic and Statistical Manual, Version IV, Juvenile Criteria (DSM-IV-MR-J) 10 was used to identify problem gamblers.

A formal pilot test of 50 interviews was conducted from 23-24 October, 2012. The final questionnaire used in 2012 is appended to this document (Appendix 1).

5 Data Collection and Quality Control

5.1 Ethical considerations

This survey was approved by the South Australian Department for Communities and Social Inclusion Research Ethics Committee as complying with the provisions obtained in the *National Statement on Ethical Conduct in Human Research (2007)*. Reference Number: REC 2012-09#31.

As part of these ethical obligations, a Departmental letter explaining the nature of the survey was available to respondents upon request. During the field period, only four such requests were made and fulfilled. All survey participants, regardless of their answers, were offered the telephone numbers for three gambling and related support services.

In addition to meeting the requirements of the Ethics Committee, the AMSRO Privacy Principles and the AMSRS Code of Professional Behaviour were adhered to. Appropriate interviewer training was provided with regard to administering the survey and dealing with sensitive situations and adverse events.

A very important ethical consideration with respect to conducting interviews via a mobile phone is to ensure that it is safe for the sample member to take the call. With that end in mind all members of the mobile phone sample were asked at the outset "*May I just check whether or not it is safe for you to take this call at the moment? If not, I am happy to call you back when it is more convenient for you*".

Social Research Centre interviewers are trained in appropriate call escalation procedures. Only one Call Alert was raised during the course of fieldwork and this related to an incident whereby an interviewer reported that an incoherent respondent made mention of past suicidal tendencies. In addition, one request for general information was made to the Department's Study Information Line.

5.2 Field team briefing

All interviewers selected to work on this survey attended a two-hour briefing session which covered:

- Project background, objectives and procedures
- All aspects of administering the survey questionnaire, including specific data quality issues
- Overview of respondent liaison issues, including refusal avoidance techniques, and
- Special procedures for calling mobile phone numbers (e.g. ensuring safety, recording of State / Territory, offering to call back on a landline).

The briefing sessions were delivered by the Social Research Centre project manager and supervisory staff. A total of 85 interviewers were briefed on the survey although only 75 of these actually worked on the 2012 GPSA while 37 interviewers conducted 75% of the total 9,508 surveys.

5.3 Fieldwork quality control procedures

The in-field quality monitoring techniques applied to this project included:

- Validation of interviews in accordance with ISO Standard 20252
- Maintenance of an “interviewer handout” document addressing respondent liaison issues and tips for refusal avoidance
- Examination of verbatim responses to “other specify” questions, and
- Monitoring (listening in) by the Social Research Centre project managers and supervisors.

6 Call Results and Analysis of Response

6.1 Call disposition

A total of 39,168 sample records (22,021 landline numbers and 17,147 mobile numbers) were initiated to achieve the final 9,508 surveys completed for the 2012 GPSA. A total of 216,605 calls were placed to these sample records equating to an average of 5.5 calls per record and one completed interview for every 22.8 calls.

In order to enable the response dynamics of this survey to be more easily compared with international studies using a dual-frame methodology the codes used to describe the final call disposition in Table 3 are those recommended by the American Association of Public Opinion Research[5].

Table 3: Final Call Disposition

	Call Disposition Code	Dual-frame Sample		Landline Sample		Mobile Sample	
		N	%	N	%	N	%
Total sample records initiated		**39,168**	**100.0**	**22,021**	**100.0**	**17,147**	**100.0**
Interview (Category 1)							
Complete	1.0/1.10	9,508	24.3	7,133	32.4	2,375	13.9
Partial	1.2000	180	0.5	118	0.5	62	0.4
Eligible, non-interview (Category 2)	2.0000						
Household-level refusal	2.1110	5,418	13.8	5,349	24.3	69	0.4
Known-respondent refusal	2.1120	2,685	6.9	692	3.1	1,993	11.6
Respondent never available	2.2100	1,271	3.2	1,010	4.6	261	1.5
Telephone answering device (confirming HH)	2.2200	5,898	15.1	1,375	6.2	4,523	26.4
Physically or mentally unable/incompetent	2.3200	659	1.7	646	2.9	13	0.1
Language problem	2.3300	273	0.7	227	1.0	46	0.3
Location/Activity not allowing interview	2.3500	50	0.1	0	0.0	50	0.3
Unknown eligibility, non-interview (Category 3)	3.0000						
Always busy	3.1200	541	1.4	243	1.1	298	1.7
No answer	3.1300	3,277	8.4	1,893	8.6	1,384	8.1
Call blocking	3.1500	403	1.0	7	0.0	396	2.3
No screener completed	3.2100	172	0.4	122	0.6	50	0.3
Not eligible (Category 4)	4.0000						
Out of sample - other strata than originally coded	4.1000	1,824	4.7	109	0.5	1,715	10.0
Fax/data line	4.2000	1,056	2.7	922	4.2	134	0.8
Non-working/disconnect	4.3000	4,164	10.6	823	3.7	3,341	19.5
Non residence	4.5000	1,619	4.1	1,341	6.1	278	1.6
No eligible respondent	4.7000	170	0.4	11	0.0	159	0.9
Records used per interview		**4.1**		**3.1**		**7.2**	

[5] *Standard Definitions Final Dispositions of Case Codes and Outcome Rates for Surveys* Revised 2011; AAPOR (2011).

As shown in Table 3, of all sample records initiated 24.3% ended in a completed interview. Other common outcomes included "telephone answering devices" (15.1%), "household level refusals" (13.8%) and "non-working numbers/disconnections" (10.6%).

It is also evident from Table 3 that final call outcomes from the landline sample included a higher proportion of completed interviews than did those from the mobile sample (32.4% and 13.9% respectively).

While there appears to have been a slightly higher percentage of respondent refusals in the mobile sample (11.6% versus 3.1% of final call outcomes from the landline sample), this is offset by the mobile sample's virtually non-existent level of "household refusals" (0.4%[6] versus 24.3% of the landline sample); in fact, the overall refusal rate for the mobile phone sample was significantly lower than that of the landline sample (see Table 6). It is also evident that final call outcomes from the mobile sample included substantially higher levels of "telephone answering devices" (26.4% versus 6.2%), "non-working numbers/disconnections" (19.5% versus 3.7%) and "out of sample – other strata" (10.0% versus 0.5%) reflecting the greater degree of uncertainty associated with the geographic information available for mobile phone numbers.

Overall, the figures in Table 3 indicate that, for the reasons mentioned above, the mobile sample was less efficient that the landline sample (7.2 records per interview for the mobile sample; 3.1 records per interview for the landline sample).

6.2 Analysis of response

The response rate used for this report is the American Association for Public Opinion Research (AAPOR) Response Rate 3 (RR3)[7]. This relies on estimating the proportion of cases of unknown eligibility that may have been eligible for the survey and including this estimate in the denominator for the calculation of the survey response rate. The formula for Response Rate 3 is:

$$RR3 = \frac{I}{(I+P)+(R+NC+O) + e(UH+UO)}$$

Where:

I = Interviews

P = Partial interviews

R = Refusals

NC = Non-contacts

O= Other

E = Estimate of the proportion of unknown outcomes likely to have been in-scope

UH = Unknown, if household / occupied

UO = Unknown, other.

[6] Generally a result of a mobile phone being answered by someone other than the owner.
[7] *Standard Definitions Final Dispositions of Case Codes and Outcome Rates for Surveys* Revised 2011; AAPOR (2011).

The e value for this survey is the default value calculated by the AAPOR on-line Response Rate Calculator[8]. In this case the e values are 0.746 for the total sample, 0.838 for landlines and 0.625 for mobiles. The formula used for calculating these values was:

$$e = \frac{\text{(Interviews + Partial interviews) + (Eligible non-interviews)}}{\text{(Interviews + Partial interviews) + (Eligible non-interviews) + (Not eligible)}}$$

On this basis (refer to Table 4) the overall **response rate** for the survey was 32.5%, 38.7% for the landline frame and 22.1% for the mobile phone frame. Advice provided by the AAPOR[9] suggests these response rates would be judged as 'good' by US standards where typical response rates for dual-frame media polls are between 10% and 15% for landline sample frames and between 6% and 10% for mobile phone sample frames.

Table 4: Calculation of response rates

	Total sample	Landline Sample	Mobile phone Sample
Total phone numbers used	**39,168**	**22,021**	**17,147**
I=Complete Interviews (1.1)	9,508	7,133	2,375
P=Partial Interviews (1.2)	180	118	62
R=Refusal and break off (2.1)	8,103	6,041	2,062
NC=Non Contact (2.2)	7,169	2,385	4,784
O=Other (2.0, 2.3)	982	873	109
e	0.746	0.838	0.625
UH=Unknown Household (3.1)	4,221	2,143	2,078
UO=Unknown other (3.2-3.9)	172	122	50
Response Rate 3	**%**	**%**	**%**
I / ((I+P) + (R+NC+O) + e(UH+UO))	32.5	38.7	22.1
Cooperation Rate 3			
I / ((I+P)+R))	53.4	53.7	52.8
Refusal Rate 3			
R / ((I+P)+(R+NC+O))	31.2	36.5	22.0
Contact Rate 3			
(I+P)+R+O / (I+P)+R+O+NC	72.4	85.6	49.1

The **cooperation rates** for the survey (interviews / interviews + refusals) are more typically reported as the 'response rate' for Australian surveys. The overall cooperation rate was 53.4%, with little variation between the landline frame (53.7%) and the mobile phone frame (52.8%).

The **refusal rate** for members of the landline frame was 36.5% compared with 22.0% for the mobile phone frame. There is no evidence here to suggest people consider interview requests via a mobile phone to be more intrusive (and therefore more likely to be refused) than interview requests via a landline phone.

[8] For more complete instructions about how to classify final dispositions see the complete Standard Definitions and Eligibility Calculation documents at http://www.aapor.org
[9] Via communications with Paul Lavrakas, Vice President / President-Elect of the AAPOR.

The other major difference between the sample frames is in terms of **contact rates** with 85.6% of the landline frame contactable compared with 49.1% of the mobile phone frame. As discussed earlier (in Section 6.1) this reflects key differences between mobile and landline phones with calls made to a mobile phone appearing more likely to reach an answering device or non-working number or to reach a person residing outside the geographically required location.

6.3 Reasons for refusal

The reasons given by sample members for refusing to participate in the survey were captured by interviewers wherever possible. The results are shown in Table 5. At an overall level:

- 45.2% of refusals resulted from potential respondents stating they were “not interested” in taking part in the survey;
- 24.7% simply hung up before a reason could be ascertained; and
- 12.0% said they were too busy.

Table 5: Reason for refusal

	Total		Sample Frame			
			Landline (a)		Mobile (b)	
	N	%	N	%	N	%
Not interested	4,441	45.2%	3,331	46.6%	1,110	41.6%[(a)]
No comment / just hung up	2,420	24.7%	1,711	23.9%	709	26.6%[(a)]
Too busy	1,182	12.0%	665	9.3%	517	19.4%[(a)]
Too old / frail / deaf / unable to do survey	662	6.7%	647	9.1%	15	0.6%[(a)]
Never do surveys	226	2.3%	194	2.7%	32	1.2%[(a)]
Don't like subject matter	131	1.3%	105	1.5%	26	1.0%
Don't trust surveys / government	125	1.3%	94	1.3%	31	1.2%
Get too many calls for surveys / telemarketing	105	1.1%	71	1.0%	34	1.3%
Don't believe surveys are confidential / privacy concerns	98	1.0%	78	1.1%	20	0.7%
Too personal / intrusive	95	1.0%	75	1.0%	20	0.7%
Objected to being called on their mobile phone	82	0.8%	-	-	82	3.1%[(a)]
Asked to be taken off list and never called again	50	0.5%	19	0.3%	31	1.2%[(a)]
15-25 minutes is too long	40	0.4%	34	0.5%	6	0.2%
Silent number	38	0.4%	33	0.5%	5	0.2%
Language difficulty	22	0.2%	16	0.2%	6	0.2%
Going away / moving house	19	0.2%	14	0.2%	5	0.2%
Not a residential number (business, etc)	6	0.1%	3	0.0%	3	0.1%
No one 18 plus in household	4	0.0%	4	0.1%	-	-
Respondent unreliable/drunk	4	0.0%	2	0.0%	2	0.1%
Other reason	65	0.7%	50	0.7%	15	0.6%
Total (excludes non-response)	**9,815**	**100.0%**	**7,146**	**100.0%**	**2,669**	**100.0%**

(a) Value in column (b) differs significantly from the value in column (a) ($p<0.05$).

Members of the mobile phone frame who refused to be interviewed were **more likely** than members of the landline sample to claim they were "too busy" (19.4% versus 9.3%); to just hang up (26.6% versus 23.9%); and not unexpectedly, to object to being called on their mobile phone (3.1% versus 0.0%).

At the same time, consistent with the lower refusal rate shown in Table 4, members of the mobile phone sample were **less likely** to say they were "not interested" (41.6% versus 46.6%) or that they "never do surveys" (1.2% versus 2.7%). They were also less likely to claim to be "too old/frail/deaf" to do the survey (0.6% versus 9.1%).

6.4 Review of the call cycle

The impact of using an extended call regime

The value of using an extended call cycle (a six call cycle being more typical) is evident from the results presented in Table 6. This shows that 1,366 out of a total of 9,508 interviews (14.4%) were achieved from the seventh or subsequent call attempt.

Table 6: Analysis of response by call attempt

Selected characteristics	Number of calls		
	1-3 *(n=6,238)* % (a)	4-6 *(n=1,904)* % (b)	7 or more *(n=1,366)* % (c)
Gender			
Male	43.6	45.0	47.5[(a)]
Female	56.3	55.0	52.5[(a)]
Age group (years)			
16-17	1.0	1.5	1.2
18-24	3.6	5.3	5.5[(a)]
25-34	7.1	9.9	12.1[(a)]
35-44	13.6	16.9	20.3[(a)]
45-54	17.3	19.5	22.9[(a)]
55-64	21.8	21.8	20.9
65-74	21.1	17.0	13.1[(a)]
75+	14.5	8.2	4.0[(a)]
Gambling Prevalence			
Any gambling in last 12 months	66.4	68.6	71.4[(a)]
Living arrangements			
Household with 4 or more residents 16 years plus	6.2	7.9	7.9[(a)]
Educational attainment			
Trade/Tech Cert/Diploma	21.8	21.7	25.8[(a)]
Employment status			
In paid employment	51.5	63.7	74.2[(a)]
Home duties	7.0	6.3	4.8[(a)]
Retirees	33.6	22.5	15.2[(a)]

(b) Value in column (c) differs significantly from the value in column (a) ($p<0.05$).

Table 6 also shows that the extended call cycle improved the representation of various population subgroups including; persons aged 18 to 54 years; past year gamblers; people living in households with four or more residents aged 16 years or more (typically "group households"); those with a trade qualification, technical certificate or diploma; and people in paid employment.

6.5 Achieved sample profile

Given that one of the main objectives of this study was to better understand the impact that exclusion of 'mobile phone only' persons has on the estimates produced from surveys using a traditional landline RDD sampling frame, the differences in the profiles of landline respondents and "mobile phone only" respondents is of interest. The major differences between these groups are summarised in Tables 7a-7c column (a) versus column (f).

It is evident that, compared to members of the landline sample, the mobile phone only respondent group had a higher proportion of:

- Males (57.7% versus 41.0%);
- People aged 18 to 44 years, particularly those aged 18 to 24 years (9.4% versus 3.5%) and 25 to 34 years (30.6% versus 5.3%);
- People holding a formal post-secondary educational qualification – university degree (30.5% versus 21.8%), trade qualification, certificate or diploma (28.3% versus 20.9%);
- Those never married (24.9% versus 13.0%) and people who were separated or divorced (19.5% versus 10.8%);
- People born in Australia (83.8% versus 78.5%);
- Those living in households with only one resident aged 16 years or more (31.5% versus 28.0%);
- Those in full-time work (58.4% versus 29.0%) or unemployed (3.3% versus 1.5%);
- People with one or more dependents under 18 years of age (31.1% versus 23.7%).

The mobile phone only group also had a higher proportion of:

- People exhibiting one or more indicators of financial stress (one indicator – 9.4% versus 6.0%; two or more indicators – 11.1% versus 3.8%);
- People who smoke (19.3% versus 12.9%) and people who use alcohol (42.4% versus 24.5%), marijuana (3.0% versus 0.9%) and/or amphetamines (1.4% versus 0.4%) while gambling.
- Mobile phone only respondents also showed higher prevalence for most forms of gambling apart from buying lotto/lottery tickets or instant scratch tickets and playing bingo. This point is of particular interest as it clearly suggests that exclusion of mobile phone only respondents would result in underestimates for the prevalence of most of the gambling activities assessed in the 2012 GPSA survey.

Table 7a: Unweighted sample profile by sample frame and telephone status

Unweighted Base: All respondents	Total Dual-frame *(n=9,508)* %	Landline Frame			Mobile Frame		
		Total *(n=7,133)* % (a)	Dual user *(n=5,974)* % (b)	Landline Only *(n=1,142)* % (c)	Total *(n=2,375)* % (d)	Dual User *(n=1,573)* % (e)	Mobile Only *(n=794)* % (f)
Characteristics							
Gender							
Male	44.5	41.0	41.4	39.1	54.8[a]	53.3[b]	57.7[a]
Females	55.5	59.0	58.6	60.9	45.2[a]	46.7[b]	42.3[a]
Age Group							
16 to 17 years	1.1	1.3	1.3	1.6	0.5[a]	0.7	0.1[a]
18 to 24 years	4.2	3.5	3.9	1.3	6.5[a]	5.1[b]	9.4[a]
25 to 34 years	8.4	5.3	6.1	1.3	17.5[a]	10.9[b]	30.6[a]
35 to 44 years	15.2	13.3	15.2	3.7	20.8[a]	21.6[b]	19.0[a]
45 to 54 years	18.6	17.4	18.9	10.0	21.9[a]	24.4[b]	16.9
55 to 64 years	21.6	22.4	23.5	16.5	19.2[a]	21.0[b]	15.7[a]
65 to 74 years	19.1	22.0	21.1	26.4	10.6[a]	13.0[b]	5.9[a]
75 years or more	11.8	14.7	10.0	39.3	2.9[a]	3.3[b]	2.3[a]
Educational attainment							
University degree or higher	23.8	21.8	23.8	11.8	29.7[a]	29.4[b]	30.5[a]
Trade qual./ Certificate or Diploma	22.3	20.9	22.4	13.3	26.5[a]	25.6[b]	28.3[a]
All other	53.1	56.4	53.3	73.1	43.0[a]	44.3[b]	40.7[a]
Language usually spoken at home							
English	93.5	94.0	94.9	90.0	92.0[a]	92.0[b]	92.2[a]
Other language	6.3	5.8	5.0	9.7	7.7[a]	7.9[b]	7.3
Marital status							
Never married	14.1	13.0	12.9	13.3	17.4[a]	13.7	24.9[a]
Married/living with a partner	63.7	63.2	66.4	46.7	65.0	71.6[b]	52.1[a]
Separated/Divorced	11.5	10.8	10.8	10.8	13.6[a]	10.6	19.5[a]
Widowed	10.0	12.3	9.2	28.4	3.3[a]	3.5[b]	2.9[a]
Country of birth							
Australia	79.2	78.5	79.5	73.8	81.3[a]	80.0	83.8[a]
Other	20.6	21.3	20.4	26.1	18.4[a]	19.7	16.0[a]
Number of persons 16 years plus in household							
One	26.6	28.0	24.4	46.1	22.4[a]	17.7[b]	31.5[a]
Two	55.3	54.8	57.2	42.4	56.6	57.5	54.9
Three or more	18.2	17.2	18.3	11.6	21.0[a]	24.9[b]	13.6[a]
Work status							
Working full-time	35.0	29.0	32.4	11.9	52.9[a]	50.3[b]	58.4[a]
Working part-time/hours unknown	22.2	22.1	24.6	9.4	22.5	24.1	19.3
Unemployed	1.7	1.5	1.3	2.8	2.1	1.4	3.3[a]
Home duties	6.6	7.4	6.8	10.8	4.1[a]	4.1[b]	4.2[a]
Retired	28.8	34.0	29.4	58.3	12.9[a]	14.7[b]	9.3[a]
All other	5.5	5.6	5.4	6.5	5.3	5.2	5.5
Dependents under 18 years of age							
None	73.0	76.2	73.4	90.7	63.7[a]	61.1[b]	68.8[a]
One or more	26.8	23.7	26.5	9.0	36.0[a]	38.6[b]	31.1[a]

Superscripts show results which are significantly ($p<0.05$) different from col a (in cols. d and f) or col b (in col. e).
Note: "Don't know" / "Refused" responses are not shown here; hence results in some categories add to less than 100%.
** Total landline contains n=17 of unknown mobile/dual-user status; Total mobile contains n=8 of unknown status.

Some differences were also evident between "dual user" groups (ie: people with both a landline and a mobile phone) from the landline and mobile sample frames. Those from the mobile sample frame had a higher proportion of males; 18 to 54 year olds; people with post-secondary educational qualifications; those speaking language other than English; people married/living with a partner; residents of households with three or more people aged 16 years or over; those in full-time paid work; people with one or more dependents under 18 years of age; those exhibiting on or more indicators of financial stress; smokers and those who use alcohol while gambling; and keno players, casino gamblers, sports bettors and day traders.

Table 7b: Unweighted sample profile by sample frame and telephone status

	Total Dual-frame	Landline Frame			Mobile Frame		
Unweighted Base: All respondents		**Total**	**Dual user**	**Landline Only**	**Total**	**Dual User**	**Mobile Only**
	(n=9,508) %	*(n=7,133)* % (a)	*(n=5,974)* % (b)	*(n=1,142)* % (c)	*(n=2,375)* % (d)	*(n=1,573)* % (e)	*(n=794)* % (f)
Characteristics							
Financial stress							
Indicators of cash-flow difficulties							
Could not pay electricity, gas or telephone bills on time	7.5	6.4	6.7	4.6	10.7(a)	9.3(b)	13.6(a)
Could not pay the rent or mortgage on time	1.9	1.4	1.5	0.9	3.7(a)	2.3(b)	6.4(a)
Asked for financial help from friends or family	4.8	3.6	3.9	2.3	8.5(a)	6.6(b)	12.2(a)
Indicators of financial hardship							
Pawned or sold something	1.8	1.5	1.5	1.2	2.7(a)	2.4(b)	3.3(a)
Went without meals	1.5	1.3	1.2	1.8	2.0(a)	1.3	3.3(a)
Asked for help from welfare/community organisations	1.9	1.7	1.6	2.5	2.5(a)	2.0	3.5(a)
Number of Indicators of financial stress							
None	88.5	90.2	90.0	91.3	83.3(a)	85.1(b)	79.5(a)
One	6.8	6.0	6.1	5.5	9.2(a)	9.1(b)	9.4(a)
Two or more	4.7	3.8	3.9	3.2	7.5(a)	5.8(b)	11.1(a)
Smoking status							
Daily smoker	11.8	11.3	11.3	10.9	13.3(a)	12.5	15.1(a)
Smoke at all	13.7	12.9	13.0	12.0	16.4(a)	14.9(b)	19.3(a)
Substances used while gambling							
Base: Past year gamblers	*(n=6,423)*	*(n=4,759)*	*(n=4,117)*	*(n=634)*	*(n=1,664)*	*(n=1,093)*	*(n=566)*
Alcohol	27.7	24.5	26.1	14.5	36.8(a)	33.9(b)	42.4(a)
Painkillers	3.5	3.7	3.3	6.0	3.0	2.8	3.4
Anti-depressants	2.5	2.4	2.3	3.5	2.6	2.7	2.7
Marijuana	1.1	0.9	0.9	1.1	1.6(a)	0.9	3.0(a)
Amphetamines	0.5	0.4	0.4	0.3	0.7	0.4	1.4(a)
Tranquillisers	0.4	0.4	0.4	0.3	0.2	0.2	0.2

Superscripts show results which are significantly ($p<0.05$) different from col a (in cols. d and f) or col b (in col. e).
** Total landline contains n=17 of unknown mobile/dual-user status; Total mobile contains n=8 of unknown status.

Table 7c: Unweighted gambling prevalence estimates by sample frame and telephone status

Unweighted Base: All respondents	Total Dual-frame *(n=9,508)* %	Landline Frame			Mobile Frame		
		Total *(n=7,133)* % (a)	Dual user *(n=5,974)* % (b)	Landline Only *(n=1,142)* % (c)	Total *(n=2,375)* % (d)	Dual User *(n=1,573)* % (e)	Mobile Only *(n=794)* % (f)
Characteristics							
Gambling prevalence (last 12 months)							
Played poker machines or gaming machines (EGMs)	23.0	22.1	23.1	17.3	25.5[(a)]	24.5	27.3[(a)]
Bought instant scratch tickets	20.4	20.5	21.2	17.0	19.9	20.5	18.9
Bet on horse or greyhound racing	18.9	17.8	18.8	12.4	22.1[(a)]	19.7	27.0[(a)]
Played keno	6.6	5.9	6.3	3.7	8.7[(a)]	7.8[(b)]	10.6[(a)]
Played table games at a casino such as blackjack or roulette	3.4	2.4	2.8	0.7	6.5[(a)]	5.1[(b)]	9.3[(a)]
Bet on sporting events like football, cricket or tennis	3.8	2.9	3.1	1.5	6.4[(a)]	5.0[(b)]	9.3[(a)]
Played games like cards or mah-jong privately for money	1.9	1.5	1.7	0.4	3.0[(a)]	2.3	4.3[(a)]
Bought lotto/lottery tickets	56.4	55.7	58.1	43.2	58.4[(a)]	58.4	58.7
Played bingo at a club, hall or other place	2.7	2.8	2.7	3.2	2.6	2.5	2.6
Played casino games or poker for money over the internet	0.7	0.6	0.7	0.4	0.8	0.4	1.6[(a)]
Participated in day trading	0.6	0.4	0.4	0.2	1.1[(a)]	1.1[(b)]	1.0[(a)]
Participated in some other form of gambling activity	0.3	0.3	0.3	0.2	0.2	-	0.5
Participated in any of these forms of gambling activity	67.6	66.7	68.9	55.5	70.1[(a)]	69.5	71.3[(a)]

Superscripts show results which are significantly ($p<0.05$) different from col a (in cols. d and f) or col b (in col. e).
** Total landline contains n=17 of unknown mobile/dual-user status; Total mobile contains n=8 of unknown status.

7 Data Processing and Outputs

7.1 Approach to weighting

It is usual to weight the data collected via sample surveys in order to:

- adjust for unequal probabilities of selection both at the unit and within-unit level;
- properly combine the landline and mobile phone samples; and
- compensate for the effects of non-coverage and non-response.

Weighting survey data improves the ability to draw inferences about the population based on the sample surveyed.

Broadly, the weighting procedure adopted for the 2012 GPSA comprised the following steps:

1. Firstly, an initial chance of selection weight was applied to the landline sample. This weight was based on the number of eligible persons and the number of landlines in the household.

   In theory this household weight is given by:

   $$w = \frac{number\ of\ family\ members\ 16\ yrs\ \&\ over}{number\ of\ landlines}$$

   However, in practice a number of data edits and imputations were necessary to facilitate the weighting process. These included:

   - Capping the number of family members 16 years and over at five persons so as not to give undue weight to respondents from extremely large households.
   - Capping the number of landlines at five phone lines so as not to overly diminish the weight given to respondents from households with an extreme number of phone lines.
   - If the number of family members 16 years and over was refused, the number was assumed to be two. This was a modal value based upon the 2011 Census of Population and Housing.
   - If the number of landlines was unknown or refused, it was assumed to be one. It was known that the true value was at least one as the respondent was from the landline sample and the modal value for this question was a single landline per household.

2. Due to the list based nature of the mobile sample it was not possible to calculate weights using selection probability as a basis. Thus the initial weights for the mobile sample were set to the mean initial weight of the landline sample (1.93) so that their contribution to the overall sample was proportional to the sample. This approach maximises the statistical power or effective sample size.

3. Finally, a RIM weighting[10] procedure was used to benchmark the combined landline and mobile samples to the South Australian population. Three simultaneous constraints were applied in this process:

   - Age and gender by geography;
   - Region totals; and
   - Education by geography.

   In the following sections the data imputations required and marginal tables used are provided.

   Age and Gender by Geography

   Exploration of the age and gender profiles of the Department's regions showed that simple benchmarking against a state wide age and gender profile together with benchmarking to the relevant population in each region was sufficient, with the exception of the Far North region which had a distinctly different profile. Hence it was appropriate to apply the age by gender profiling dividing the state into two geographic areas; Far North and "the rest". The age and gender by geography marginal population benchmarks used are shown in Table 8.

Table 8: Population benchmarks for age and gender by geography

Target categories	Far North N	All Other Regions N
Females		
16 to 19 years	662	39,461
20 to 34 years	2,825	149,502
35 to 44 years	1,833	107,032
45 to 54 years	1,832	111,769
55 to 64 years	1,463	100,287
65 to 74 years	835	68,245
75 years or more	647	72,324
Males		
16 to 19 years	714	41,681
20 to 34 years	3,348	151,532
35 to 44 years	2,271	104,821
45 to 54 years	2,301	108,608
55 to 64 years	1,772	95,685
65 to 74 years	1,079	62,926
75 years or more	529	50,924

[10] For an explanation of the RIM weighting procedure, see: Data Analysis Australia (2012), *Design and Weighting for Australian Household/Consumer and Business Surveys – A Better Practice Guide*, AMSRS/1, Data Analysis Australia, Perth. Available online to AMSRS members: www.amsrs.com.au/member-centre/member-centre.

Region Totals

The marginal population benchmarks for the regions are provided in Table 9.

Table 9: Population benchmarks for regions

Target variables	N
Geographic Location	
Eastern Adelaide	174,981
Northern Adelaide	284,102
Southern Adelaide	257,678
Western Adelaide	179,663
Adelaide Hills	53,308
Barossa, Light and Lower North	50,972
Fleurieu and Kangaroo Island	38,595
Eyre and Western	44,114
Far North	22,111
Limestone Coast	49,448
Murray and Mallee	54,159
Yorke and Mid North	59,777

Education by Geography

The marginal education attainment by geography population benchmarks are provided in Table 10. Note that the geographical split applied for education was Greater Adelaide and the rest of South Australia. The regions of Adelaide Hills, Eastern Adelaide, Northern Adelaide, Southern Adelaide and Western Adelaide were taken to approximate Greater Adelaide. The implementation, however, considered the Far North and other regions (Barossa, Light and Lower North; Fleurieu and Kangaroo Island; Eyre and Western; Limestone Coast; Murray and Mallee; Yorke and Mid-North) separately so the education breakdown (non-graduate versus Bachelor Degree or higher in Greater Adelaide versus Far North versus rest of SA) proportions were applied to these totals to reach the marginal population benchmarks shown.

If the level of education was not ascertained the respondent was assumed not to have a Bachelor Degree or higher level of educational attainment. This assumption was guided by the relatively small proportion of the SA population having a university qualification (2011 Census of Population and Housing)

Table 10: Population benchmarks for education by geography

Target categories	Greater Adelaide N	Far North N	All Other Regions N
Bachelors Degree or higher	176,296	1,821	24,461
Non-graduate	791,436	20,290	272,604

7.2 Data file provision

Two SPSS data files (and accompanying documentation) were provided as part of the 2012 GPSA survey outputs:

- The first of these contained 2012 data as a stand-alone data set although it did contain a number of derived variables which were created so as to match particular variables from the 2005 GPSA data.
- The second data set was a time-series file containing selected data from the 2005 and 2012 GPSA surveys.

Appendix 1: Questionnaire