2006/07 GAMING AND BETTING ACTIVITIES SURVEY

SURVEY DOCUMENTATION

COMMISSIONED BY THE:

HEALTH SPONSORSHIP COUNCIL

PREPARED AND CONDUCTED BY:

NATIONAL RESEARCH BUREAU LTD

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2. BACKGROUND TO THE SURVEY

The *2006/07 Gaming and Betting Activities Survey* contributes to New Zealand's public health approach to addressing gambling harm, including the national social marketing programme *Problem Gambling – Our Communities, Our Families, Our Problem*.[1] The HSC (Health Sponsorship Council) is developing and implementing this programme to strengthen society's understanding and awareness of, and response to, gambling-related harms.

The goal of the social marketing programme is to:

> Reduce the incidence of problem gambling and the impact of gambling harms in Aotearoa / New Zealand.

Gambling-related harm is an emerging public health issue in New Zealand, with significant health, social and economic implications. While gambling is a popular recreational activity and some communities benefit from funds raised from gambling, for many people and their families gambling has harmful consequences and the effects on the community are far reaching.

Problem gambling occurs when people, and often their families or communities, experience harm or distress because of gambling. Problem gambling can affect health, relationships, finances, employment, and children, and the harms from gambling can extend to the entire community. Problem gambling affects several groups disproportionately, including Maori, Pacific peoples, people who are disadvantaged in socio-economic terms, and some Asian communities.

Gambling in New Zealand is controlled by the Gambling Act 2003. The Act includes preventing and minimising the harm caused by gambling, including problem gambling, as one of its purposes.

The Ministry of Health is the government department responsible, under the Act, for the prevention and treatment of problem gambling. The Ministry's approach is outlined in a six-year strategic plan – *Preventing and Minimising Gambling Harm: Strategic plan 2004-2010*[2] – that treats problem gambling as a public health issue.

The Ministry's strategy includes provision for a social marketing programme to:

- encourage New Zealanders to make healthy lifestyle choices about gambling

- promote discussion about the effects of gambling in the community

- reduce the incidence of problem gambling among the general population, with a specific emphasis on at-risk populations.

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[1] For more information see: http://www.ourproblem.org.nz/
[2] The plan is available at:
http://www.moh.govt.nz/moh.nsf/0/0320D2273BDBF732CC256FB80009EF74/$File/problemgambling-strategicplan-2004-2010.pdf

The Ministry has contracted HSC to develop and deliver this social marketing programme and a baseline survey. The social marketing programme was launched in April 2007 with 'Kiwi Lives', a mass media campaign that highlights the damaging effect of problem gambling in homes and communities, and aims to increase awareness and understanding of problem gambling and its impacts. The campaign also aims to create a supportive environment for public health and community action.

The *2006/07 Gaming and Betting Activities Survey* provides baseline information for evaluating the impact of the social marketing programme and related public health activities in communities, and for informing the planning of future public health services.

The title "Gaming and Betting Activities Survey" was chosen for the survey to avoid mentioning "gambling" when introducing the survey and so potentially compromising a set of questions at the start of the interview that asked respondents which activities they perceived as "true gambling".

3. SURVEY OBJECTIVES

The general objective of the survey was to formulate and gather information on the public's health knowledge, behaviours, protective attitudes and practices, in relation to gambling.

Specifically, the survey aimed to measure the extent to which:

1.   People understand gambling and the potential benefits and drawbacks.

2.   People are acquiring knowledge of the harms of gambling.

3.   People understand how harmful gambling can impact on individuals, families and communities.

4.   People are able to identify the occurrence of problem gambling within themselves or others.

5.   People and communities know about, support and adopt strategies to avoid problem-level gambling and minimise gambling harms.

6.   People know where to go, or to refer others to, for help or support.

7.   People understand how communities can play a role in minimising the harmful effects of gambling (for example, by commenting on local councils' policies on gaming machines).

8.   People participate in discussion and debate about the place of gambling in their community.

The survey also was designed to:

1.   Monitor participation in different types of gambling and link different levels of participation to knowledge and behaviour.
2.   Collect demographic information about survey participants (age, gender, ethnicity, family type and socio-economic position) to help understand and interpret their knowledge and behaviours.

*   *   *   *   *

4. SPECIFIC INFORMATION GATHERED

Information gathered to fulfil the objectives is summarised here in the sequence in which it is gathered in the questionnaire and in which it appears in the data set. The purpose of this section is to expand on the way the survey objectives were interpreted into captured data.

Information Point / Topic	Objective / Purpose Served	Question Numbers
Participation in 10 types of gambling	Participation	A1a-j
How often participated in the last 12 months	Participation	A2a-j
Which types perceived as 'true' gambling	1	A3
Perceived positioning of the 10 types of gambling against nine criteria, being: - for socialising vs for money - taking advantage of people - damaging relationships - traditional to NZ life - challenge to try skills - does good for the community - gives hope of better lifestyle - good night out - escape from stress.	1	B1 – B9
Whether special skill can improve chances of winning, and if so – for which types	1	C1 & C2
Advantages of raising money from gambling, if any.	1	D1 & D2
Disadvantages of raising money from gambling, if any.	1	D3 & D4
Whether money raised from gambling does more good than harm / harm than good.	1	D5
Advertising or promotion, if any, seen for gambling.	5	E1
Whether gambling promotion raises awareness of particular activity/venues, or encourages gambling activity.	5	E2

Information Point / Topic	Objective / Purpose Served	Question Numbers
Whether advertising of gambling activities should be limited by regulation as to timing and type.	5	E3
Alternative entertainments to gambling that people can mention.	5	E4 & E5
Recall of advertising warning of harm from gambling in last 3 months – type and message.	Benchmark questions for communications campaign	E6 – E9
Whether any type(s) of gambling are thought more likely to attract people into excessive gambling.	2	F1 – F3
*Self report of "overdoing" gambling, last 12 months and ever – what type of gambling that was.	4	* Adults only F4(A) – F6(A)
Whether a friend or family member thought to have gambled to excess over last 12 months – type of gambling involved.	4	F7 – F8
How common or uncommon they think it is for people to get into personal or money trouble from gambling and whether some people are more likely than others to get into trouble – if so, who	2	G1 – G3
* What is thought to attract people to start gambling, and what is thought to put them off from starting.	1	* Youth only G4(Y) – G5(Y)
Things people can do to prevent getting caught up in excessive gambling.	5	G6 – G7
* Awareness of each of 6 things people can do to avoid getting caught up in excessive gambling.	5	* Adults only G8 (A)
* Whether their household has used any of those ways – if so, which.	5	* Adults only G9(A) – G10(A)
* Ability to name something that gambling operators do to help players avoid gambling too much – and what that is.	5	* Adults only G11(A) – G12(A)
* Seen or heard each of 6 measures being used to help people not overspend on gambling – if so, which ones.	5	* Adults only G13(A) – G14(A)
* Awareness of what families/adults might do to stop young people from starting gambling, or gambling too much.	5	* Adults only G15(A) – G16(A)

Information Point / Topic	Objective / Purpose Served	Question Numbers
Signs thought to indicate a person is gambling harmfully.	4	H1 – H2
Knowing what to do to help a friend or family member who was gambling too much.	4 & 6	H3 – H4
Knowing of ways that gambling too much might affect a person and their household.	3	H5 – H6
Perceived consequences for the wider community of gambling too much.	3	H7 – H8
Whether family/household has talked about dangers of gambling/gambling harm – last 12 months.	5	H9
Whether family/household talked about ways to avoid gambling too much – last 12 months.	5	H10
Whether either of these happened in wider family/household: - argument over time/money spent gambling, - someone had to go without/bills unpaid.	4	H11a-b
Perceptions of how extensive or limited the role of each of 5 groups should be in preventing people gambling too much.	5	H12a-e
Ability to name a service or organisation that they could direct a person to for help.	6	I 1 – I 2
Prompted awareness of 5 specified sources of help.	6	I 3 – I 4
Which of the 5 services people would feel comfortable referring a friend or family member to – if not, then why that is.	6	I 5 – I 6
Heard of or seen advertising/leaflets etc for services to people in trouble from gambling.	6	I 7
* Awareness of who is responsible for gaming machine location and numbers in the local area.	7	*Adults only J1(A) – J2(A)
* How satisfied with decisions on pokies in the area, and why.	7	*Adults only J3(A) – J4(A)
* Whether they agree there is a need for the community to discuss problems/work out solutions.	7	*Adults only J5(A)

Information Point / Topic	Objective / Purpose Served	Question Numbers
* Whether taken part in discussions/meetings in last 5 years about gambling problems/ solutions and what type it was.	8	*Adults only J6(A) – J7(A)
* Whether taken part in <u>school</u> discussions in last 5 years about gambling problems and what form these took.	8	*Youth only J8(Y) – J10(Y)
* Whether taken part <u>outside</u> of school, with details as above.	8	*Youth only J11(Y) – J12(Y)
* Whether heard of, and whether involved in, each of 5 activities that communities can do in relation to managing local gambling.	7	*Adults only J13(A) – J14(A)
<u>Demographic Questions</u> Gender, Age Group, Ethnicity, birth country, year arrived in NZ, people living with, and household income.	Demographic profile	K1 – K7
Linked data: - Deprivation Index of meshblock. - Geographical area. - Urban/Rural	Contextual information	Statistics NZ

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5. DEVELOPMENT OF THE QUESTIONNAIRE

1.   The basis for developing the questions for the survey was the survey objectives listed in section 3.

2.   Where previous questions existed and continuity with their previous use was desirable, these were included in the survey unchanged. Since the social marketing programme was a new one, relatively few such questions existed. Questions carried into the survey were confined to:

- Participation in gambling activities, and the frequency of participation. These questions were modelled on those used in the Department of Internal Affairs' (DIA) participation surveys[3], although to reduce respondent burden the 18 gambling activities surveyed by DIA were grouped into 10 categories in the GBAS (see question A1).

- Demographic questions were consistent with those in use by Statistics New Zealand (SNZ) and recommended for Government surveys.

3.   Most of the questions were created in a process that was both interactive and iterative. This process occurred within the HSC Research and Evaluation Unit, and between HSC and the survey implementation contractor, NRB. HSC also took advice from individuals working in the problem gambling and regulatory sectors.

Responses that might inform each of the objectives were identified and ways of expressing each response in a question were considered. Researchers reflected on variations to the phrasing of the questions until a pilot-ready set was arrived at for compiling into a questionnaire for testing.

4.   The questionnaire was transferred into computer assisted software (Blaise) in order to test it in as close to the main survey format as possible. This version is referred to as the initial, or pilot, questionnaire.

5.   It was an explicit strategy in developing the initial questionnaire to include more questions than would eventually be used in the final version. The purpose of this was to try out a wide range of questions, with a view to being able to discard those which appeared to be less functional as questions and/or yielded less useful data, as judged by preliminary distributions of answers in the pilot.

6.   A full report of the pilot procedure, including a copy of the pilot questionnaire is available from HSC on request.

7.   The final questionnaire and cards used as visual prompts for selected questions are available on www.ourproblem.org.nz

<p style="text-align:center">*   *   *   *   *</p>

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[3]   Department of Internal Affairs. (2008). *People's Participation in, and Attitudes to, Gambling, 1985-2005.* Report by Research and Evaluation Services for the Regulation and Compliance Branch. Wellington: Department of Internal Affairs.

6. SAMPLE DESIGN & SAMPLING

DESIGN

Considerations

A major consideration in the design of the sample survey for the GBAS was the need to provide adequate subsamples of different ethnic groups within the overall population. Pacific, Maori and some sections of Asian communities are disproportionately affected by gambling harm and so HSC required a sample to provide sufficient monitoring information for each of these three groups.

To these ethnic groups a further target group was added – young people aged 15-17 years.

The challenge for the sample was to arrive at a design that would:

• provide nationwide, projectable figures

• employ an approach characterised by higher (face-to-face), rather than lower (phone, mail, web) public participation

• deliver some 250 plus interviews for each of the ethnic and youth groups

• provide the minimum design effect for the overall sample and specific target groups within the budget for the survey. For this aspect, as with all surveys that need to divert a proportion of resources to building up over-samples of selected groups, a degree of pragmatism was adopted in the sample design and target sample sizes.

Overview of the Design

A national random probability design in which each member of the population had a known, though unequal, probability of selection, formed the basis for the survey design. Using SNZ meshblocks as the initial unit of sampling, two strata were formed – a Pacific peoples stratum consisting of meshblocks in which 20% or more of the population were of Pacific ethnicity, and an Other stratum consisting of "other" remaining meshblocks.

A total of 240 meshblocks were sampled – 50 in the Pacific, and 190 in the Other, stratum. A third stratum was formed later when budget became available to screen further for ethnic groups. This strategy involved selecting from within the Other stratum those meshblocks with non-zero (specifically >0.5%) Pacific population for additional screening of Pacific peoples, and, concurrently, additional screening for Maori, Asian peoples, and young people. This third or "booster sub-stratum", was a substratum of 93 meshblocks contained within the 190 Other stratum meshblocks.

Sampling within these meshblock selections consisted of a core sample of (on average) 6.5 dwellings in each stratum, with these dwellings chosen as every xth from a random startpoint where x was a function of the 2001 Census dwelling count for the meshblock. Meshblocks were re-enumerated by NRB interviewers to identify all eligible dwellings, but the x factor was not changed in-field. A cap of 10 dwellings – allowing for intercensal growth in the number of dwellings in meshblocks - was applied to prevent a disproportionately large cluster size in meshblocks experiencing substantial growth in the number of dwellings.

The final design implemented is described below:

Pacific peoples stratum

Definition:	Population of meshblock is 20% or more Pacific peoples and contains 9 or more dwellings.
Number Drawn:	50 meshblocks.
Sampling Method:	PPS (ie, probability proportional to size, where size is the number of dwellings in the meshblock).
Number of dwellings approached:	Average of 6.5 dwellings with a cap of 10 dwellings.
Adult Eligibility:	Any/all ethnicities eligible.
Adult Selection:	One adult per dwelling – selected using the Kish procedure[4] with non-replacement to select a respondent randomly.
Youth Eligibility:	Aged 15-17 years, any ethnicity.
Youth Selection:	One young person per dwelling (in dwellings where there was a 15 to 17-year-old, as well as an adult 18 years and over) – selected using the Kish procedure with non-replacement.

Other stratum

Definition:	Meshblocks remaining after those with 20%+ Pacific peoples removed and containing 9 or more dwellings.
Number Drawn:	190 meshblocks.
Sampling Method:	PPS (ie, probability proportional to size, where size is the number of dwellings in the meshblock).
Number of dwellings approached in the <u>core sample</u>:	Average of 6.5 dwellings with a cap of 10 dwellings.
Adult Eligibility in the <u>core sample</u>:	Any/all ethnicities eligible.

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4   For details of this procedure see - Kish L. (1949). A procedure for objective respondent selection within the household. *Journal of American Statistical Association*, 44, 380-387.

Adult Selection in the <u>core sample</u>:	One adult per dwelling – selected using the Kish procedure with non-replacement.
Youth Eligibility in the <u>core sample</u>:	Aged 15-17 years, any ethnicity.
Youth Selection in the <u>core sample</u>:	One young person per dwelling (in dwellings where there was a 15 to 17-year-old, as well as an adult 18 years and over) – selected using the Kish procedure with non-replacement.

Number of dwellings approached in the <u>screened</u> sample:	Up to 20 for Pacific peoples
	         11 for Maori
	         11 for Asian peoples.

Adult Eligibility in the <u>screened</u> sample:	For the first 11 dwellings, Maori, Pacific and Asian peoples were eligible but other ethnicities were ineligible. For the next 9 dwellings only Pacific peoples were eligible.
Adult Selection in the <u>screened</u> sample:	Kish procedures were used to select one adult per dwelling from those eligible, with non- replacement.
Youth Eligibility in the <u>screened</u> sample:	Young people were eligible in 5 dwellings in the screened sample – their eligibility was independent of the ethnicity of the adult respondent being screened for – ie, they were eligible regardless of the ethnicity of the eligible adult and regardless of their own ethnicity.
Youth Selection in the <u>screened</u> sample:	One young person per dwelling (in dwellings where there was a 15 to 17-year-old, as well as an adult 18 years and over) – selected using the Kish procedure with non-replacement.

Booster sub-stratum

Definition:	Those (93) meshblocks within the 190 Other stratum for which the Pacific peoples population was non-zero, ie, greater than 0.5%.
Number Drawn:	93 meshblocks.
Number of dwellings approached:	Up to a <u>further</u> 36 dwellings were screened, <u>where available,</u> in the meshblock, over and above the 20 screened for in the Other stratum in which:
Adult Eligibility:	Maori, Pacific and Asian peoples were eligible in all 36 dwellings. Other ethnicities were ineligible.
Adult Selection:	Kish procedures were used to select one adult per dwelling from those eligible, with non-replacement.
Youth Eligibility:	Young people were eligible in the first 12 homes of the 36 – they were eligible regardless of the adult's ethnicity and regardless of their own ethnicity.
Youth Selection:	Kish procedures were used to select one young person per dwelling, with non-replacement.

Design Effects Modelling

The initial two-stratum sample, and its subsequent three-stratum extension, were submitted to an independent statistician (Alistair Gray of Statistical Research Associates) for consideration of the design effects ie, the effect of the complex sample design on the sampling error. The purpose of this step was to model the expected design effects in order to determine whether these were of an order common (or uncommon) to area survey samples, and were (or were not) an acceptable pragmatic solution consistent with the budget for the survey.

The key factors to consider are the impact of the stratification, choice of primary sampling unit (psu), and screening within the psu, on the efficiency of the design as measured by the design effect (deff).[5]

The stratification of SNZ meshblocks was based on whether they had "moderate Pacific density" (ie, meshblocks where 20% or more people were of Pacific ethnicity; and other meshblocks). For the purposes of the modelling exercise, the deff is decomposed into two components. The first component is the deff arising from the stratification. Generally if the strata have similar variances (which is what is expected as proportions are being measured), what affects the deff is the difference in weights in the strata. The second component is the impact of the ultimate cluster size, which typically is small relative to the psu size, but not necessarily so in a screening design.

The Pacific stratification had the following characteristics for the distribution of meshblock size (number of dwellings):

	Minimum	Lower Quartile	Median	Mean	Upper Quartile	Maximum
Pacific stratum	9	24	33	39	48	270
Other stratum	9	24	39	42	54	165

Hence, the weights will be different, as sampling with probability proportional to size means that, on average, the larger meshblocks are selected where difference in the size of the meshblocks is more pronounced between the two strata. In this stratification, the impact of this difference is mitigated somewhat by not allocating too much of the sample to the Pacific stratum. Various options were considered and the one chosen (50 meshblocks for the Pacific stratum; 190 for the Other stratum) resulted in the weights for the two strata not differing by a very large amount, and so the impact of the differences would be minor.

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[5] One way of explaining the deff is: the complex sample design would be as accurate as a simple random sample whose size is the complex sample design's sample size divided by the deff. For example, if the deff is 1.5 and the complex sample design has a sample size of 3000, then it would be as accurate as a simple random sample of 2000.

The data used for modelling the impact of the cluster size and intra-cluster correlation were from the DIA's Gambling Participation and Attitudes Survey; a previous Immunisation Survey; and the 2001 Census meshblock data. For the Gambling Participation and Attitudes Survey, approximate design effects (deffs) were calculated using a jackknife variance estimator that produces a pseudo-replicate sample by deleting in turn each primary sampling unit (psu), which were SNZ meshblocks, and recalculating the estimate. These deffs would probably underestimate the true deffs since the impact of post-stratification was ignored for simplicity. Experience with previous surveys suggests that, provided the design is sensible, it is differing response rates across sex, age and ethnic groups that cause large departures from expected deffs. Predicting these differential response rates is very uncertain, hence the decision to exclude this step.

In summary, the deffs for a range of attitude variables (from Section L of the 2005 Gambling Participation and Attitudes Survey) were in the range 1.3 to 2.1.

The standard formula for relating the ultimate cluster size $\overline{m}$ and the intra-cluster correlation ρ is:

$$deff = 1 + (\overline{m} - 1)\rho$$

Assuming that 8.8 is the average ultimate cluster size, this suggests an implicit cluster (meshblock) correlation in the range 0.04 - 0.14, which is fairly standard.

The summary of number of interviews in a meshblock is:

Minimum	Lower Quartile	Median	Mean	Upper Quartile	Maximum
1	6	9	8.8	11	21

Yield Modelling

The anticipated yield of the total sample and the sub samples within it were modelled on the 2001 Census data for meshblocks, using dwelling and ethnicity data to provide the expected yields shown in the Figure overleaf. This expected yield was prepared from all meshblocks (containing 9 or more dwellings), prior to a specific selection being sampled for the survey. Both the initial two-tier design and the later three-tier "ethnicity booster" design are illustrated in the yield models that follow.

* * * * *

YIELD ESTIMATES FOR "3-TIER" SAMPLE

GBAS SAMPLE: Screening for further Pacific peoples interviews in non-zero Pacific meshblocks, and then including Maori and Asian homes encountered in that screening.

Stratum	Average Composition Of Sample Using Stats Incidence Within Household Counts					Meshblocks	Frame (≥9 HH)
	Maori	Pacific Peoples	Asian	Other	Total		
Pacific Peoples (20%+)	0.204	0.309	0.119	0.366	0.998	50	1890
All Other	0.123	0.031	0.063	0.782	0.999	190	30225
All Other (>0.5% Pacific, substratum of All Other)	0.101	0.063	0.059	na	na	93	<-(Subset of the 190)
Totals						240	

Stratum	Composition Of Sample Core				
	Maori	Pacific Peoples	Asian	Other	Total
Pacific Peoples (20%+)	46	70	27	83	227
All Other	106	27	54	676	864
Totals	153	97	82	759	1091
			Screened		
Screening (From All Other)	180	82	92		
Booster Screening (From All Other >0.5%)	79	103	96		
			Totals		
Total Adults	412	282	270	759	1723
Total Youth	23	12	12	123	169
Overall Total	434	294	282	882	1892

Samples

Core Sample Cluster Size (From both strata)	6.5	
Response Rate	70%	
Screening HH for Pacific (In Other Stratum)	20.0	0.031
Response Rate	70%	
Screening HH for Maori (In Other Stratum)	11.0	0.123
Response Rate	70%	
Screening HH for Asian (In Other Stratum)	11.0	0.063
Response Rate	70%	
Booster Screening HH for Pacific (In Other Stratum >0.5%)	25.0	0.063
Response Rate	70%	
Booster Screening HH for Maori (In Other Stratum >0.5%)	12.0	0.101
Response Rate	70%	
Booster Screening HH for Asian (In Other Stratum >0.5%)	25.0	0.059
Response Rate	70%	

Screening this many additional dwellings in this stratum gives this number of additional Pacific, Maori and Asian interviews to give these approximate totals

Summary

Core households in either stratum	6.5
Screened households in All Other stratum (≤0.5% Pacific)	20
Screened households in All Other stratum (>0.5% Pacific)	45

Note 1: Some 15 further youth interviews also would be obtained, they have not been added to these figures.
Note 2: HH = households

YIELD ESTIMATES FOR THE INITIAL 2 TIER SAMPLE
WITH SCREENING IN THE ALL OTHER STRATUM

GBAS SAMPLE:

Stratum	Average Composition Of Sample Using Stats Incidence Within Household Counts					Meshblocks	Frame (≥9 HH)
	Maori	Pacific Peoples	Asian	Other	Total		
Pacific Peoples (20%+)	0.204	0.309	0.119	0.366	0.998	50	1890
All Other	0.123	0.031	0.063	0.782	0.999	190	30225
Totals						240	

Stratum	Composition Of Sample (Unweighted)				
	Maori	Pacific Peoples	Asian	Other	Total
Pacific Peoples	46	70	27	83	227
All Other	106	27	54	676	864
Totals	153	97	82	759	1091
Screening	180	82	92		
Total Adults	333	180	174	759	1445
Total Youth	23	12	12	123	169
Overall Total	355	191	186	882	1614

Samples

Core Sample Cluster Size (From both strata)	6.5	
Response Rate	70%	
Screening HH for Pacific (In All Other Stratum)	20.0	0.031
Response Rate	70%	
Screening HH for Maori (In All Other Stratum)	11.0	0.123
Response Rate	70%	
Screening HH for Asian (In All Other Stratum)	11.0	0.063
Response Rate	70%	

Note 1: HH = households

7. WEIGHTING AND WEIGHTS

PROBABILITY OF SELECTION AND SELECTION WEIGHTS

The probability of selection for each respondent comes from three factors:

- The probability of the psu being selected.

- The probability of their dwelling being selected within the psu.

- The probability of the respondent being selected from all the eligible individuals within the dwelling.

The PSUs were selected with probability proportional to size (dwellings) from meshblocks containing 9 or more dwellings. The target number of dwellings selected for both the Pacific and the Other stratum samples was, on average, 6.5.

In some of the smaller meshblocks, there were occasions when less than 20 dwellings were available for the screening sample and, on even fewer occasions, only sufficient dwellings were available for the core sample.

Only one adult and, if resident, one young person, per dwelling were selected for interview, irrespective of the number of eligible individuals in the dwelling.

The PSUs were selected with probability proportional to size.

n = number of PSUs to be sampled from the stratum.
N = number of PSUs in the stratum.
x_i = number of dwellings in the ith PSU as at Census 2001.
m_i = number of core dwellings sampled in the ith PSU.
s_j = number of Screened dwellings sampled in the ith PSU.
y_i = number of dwellings in the ith PSU enumerated by the interviewer.
e_j = number of eligible respondents within the jth sampled dwelling.

Probability of a *non-screenable* respondent's selection is:

$$n * \frac{x_i}{\sum_{i=1}^{N} x_i} * \frac{m_i}{y_i} * \frac{1}{e_j}$$

Probability of *screenable* respondent's selection is:

$$n * \frac{x_i}{\sum\limits_{i=1}^{N} x_i} * \frac{s_i}{y_i} * \frac{1}{e_j} + n * \frac{x_i}{\sum\limits_{i=1}^{N} x_i} * \frac{m_i}{y_i} * \frac{1}{e_j}$$

$$= n * \frac{x_i}{\sum\limits_{i=1}^{N} x_i} * \frac{m_i + s_i}{y_i} * \frac{1}{e_j}$$

$$\sum\limits_{i=1}^{N} x_i \quad \text{for the Pacific stratum} = 72252$$

$$\sum\limits_{i=1}^{N} x_i \quad \text{for the Other stratum} = 1{,}273{,}554$$

The selection weight applied to each respondent in the database of responses is the inverse of the probability of selection for that respondent.

RESPONSE RATE ADJUSTMENT

Response rate adjustments were made at meshblock level. The purpose of this adjustment is to set the contribution of each meshblock's interviews equal to the estimated number of people eligible to be interviewed in the meshblock. This neutralises, at least arithmetically, the affect on the representativeness of the total sample that could be caused by some meshblocks having lower response rates, while others had higher response rates.

BENCHMARKING

Following the application of the selection weights to the data records, comparisons were made of the counts of various demographic groups in the sample (the 'observed') with the counts of those same groups from the 2006 Census (the 'expected').

Dividing the expected by the observed yielded a benchmarking adjustment to rebalance the sample to more closely reflect population characteristics.

The demographic groups chosen for benchmarking were as follows:

- age group (5) within…

- gender (2) within…

- ethnic group (4).

* * * * *

8. RESPONSE RATES

Response rates can be either weighted or unweighted. The "official" response rate generally adopted for social and health surveys is the weighted response rate. However, it is informative to provide both. This has been done below.

UNWEIGHTED RESPONSE RATE

* *Extracted largely from Public Health Intelligence's: Minimum Survey Document Requirements*

The unweighted response rate for the GBAS is 66.2%. This rate reflects the extent to which the eligible public took part in the survey – ie, it is an operational figure, rather than a reflection of how well the population under consideration is being reflected. The formula used to calculate this response rate is provided below:

There are four components to the response rate calculation as follows:

Main Subsection of PSU

- Eligibles responding = Interview.
- Ineligibles = Not Eligible + Dwelling Vacant + Respondent Infirm + Respondent Unavailable.
- Eligibility unknown = No Reply + No Access.
- Eligibles non-responding = Household Refusal + Respondent Refusal + Not Available + Appointment + Language Difficulty + Other.

Screened Subsection of PSU

- Eligibles responding = Interview.
- Ineligibles = Not Eligible + Dwelling Vacant + Respondent Infirm + Respondent Unavailable.
- Eligibility unknown = Household Refusal + No Reply + No Access.
- Eligibles non-responding = Respondent Refusal + Not Available + Appointment + Language Difficulty + Other.

The response rate is calculated as follows:

$$\text{Response rate} = \frac{\underset{1774}{\text{Number of eligible responding}}}{\underset{1774}{\underset{\text{responding}}{\text{Number of eligible}}} + \underset{811}{\underset{\text{non-responding}}{\text{Number of eligible}}} + \underset{99}{\underset{\text{from the unknowns}}{\text{Estimated number of eligibles}}}} \times 100$$

An assumption is made that the estimated number of *eligibles* from the count of unknowns is in the same proportion as eligibles from the set of known eligibility, shown in the calculation below:

$$\underset{\text{the unknowns}}{\underset{\text{of eligibles from}}{\text{Estimated number}}} = \frac{\underset{1774}{\underset{\text{responding}}{\text{Number of eligible}}} + \underset{811}{\underset{\text{non-responding}}{\text{Number of eligible}}}}{\underset{1774}{\underset{\substack{\text{eligible} \\ \text{responding}}}{\text{Number of}}} + \underset{811}{\underset{\substack{\text{eligible} \\ \text{non-responding}}}{\text{Number of}}} + \underset{5302}{\underset{\substack{\text{of} \\ \text{ineligibles}}}{\text{Number}}}} \times \underset{302}{\underset{\text{unknowns}}{\text{Number of}}}$$

WEIGHTED RESPONSE RATE

The weighted response rate for the survey is 66.3%.

Weighted response rates reflect the probability of being selected into the sample, and describe the success of the study in terms of the population being measured. The unweighted and weighted response rates would be the same in the case where every person selected for the survey has the same probability (chance) of selection. In the GBAS survey, the need to oversample some ethnic groups led to people having different chances of selection, and consequently there is a difference in the weighted and unweighted response rate calculations.

The "official" response rate for this survey is the weighted response rate because the selection method uses differing probabilities of selection.

$$\text{Response rate} = \frac{\text{Number of eligible responding weighted (wtd)} \atop 338365}{\underset{338365}{\text{Number of eligible}} + \underset{153549}{\text{Number of eligible}} + \underset{18104}{\text{Estimated number of eligibles}}} \times 100$$

An assumption is made that the estimated number of *eligibles* from the list of unknowns is in the same proportion as eligibles from the set of known eligibility, shown in the calculation below.

$$\text{Estimated number of eligibles from the unknowns} = \frac{\underset{338365}{\text{Number of eligible responding wtd}} + \underset{153549}{\text{Number of eligible non-responding wtd}}}{\underset{3383365}{\substack{\text{Number of}\\\text{eligible}\\\text{responding}\\\text{wtd}}} + \underset{153549}{\substack{\text{Number of}\\\text{eligible}\\\text{non-responding}\\\text{wtd}}} + \underset{964419}{\substack{\text{Number}\\\text{of}\\\text{ineligibles}\\\text{wtd}}}} \times \underset{53599}{\substack{\text{Number of}\\\text{unknowns wtd}}}$$

The figures appearing in this weighted response rate calculation were arrived at by giving each dwelling contacted a weight of the inverse of their probability of selection.

* * * * *

9. INTERVIEWING AND DATA COLLECTION

DATA COLLECTION

The data collection method for the survey was computer-assisted personal interviewing (CAPI). Face-to-face interviews were conducted at respondents' homes by NRB interviewers who were specifically trained to administer the questionnaire.

INTERVIEWING

Approximately 60 interviewers were trained in the sampling and interviewing procedure. A core of some two-thirds of these people were experienced members of the NRB interviewing team, while one-third were new recruits to augment the team and account for attrition during the survey.

Interviewer training sessions took place in the 20 largest population centres. These were delivered by the NRB Area Supervisor for that centre. Training sessions were spread over one day and covered both sampling procedures and questionnaire administration. A simulated (scripted) interview was conducted by each interviewer as part of this training.

Training sessions revolved around a training manual which contained both generic NRB training material as well as material specific to the administration of the GBAS.

PERFORMANCE AND QUALITY CONTROL

Interviewers were monitored by their NRB Area Supervisors by way of:

- Regular meetings to examine sampling sheet completion and deal with meshblock issues and enumeration checks.

- Examination of individual response rates and consideration of remedies.

- Auditing of 15% of completed interviews to ensure fidelity of interviewing.

CALLING AND CALLBACKS

Households were initially approached predominantly between 4pm and 7pm on weekdays, and 11am and 6pm on weekends. Thereafter, appointments were made at a time that best suited the household for completing the interview. Up to 9 calls were made at each sampled home to attempt to contact the respondent. Days of the week and time of day that contacts were attempted were varied to maximise the chance of successful contact.

INTERVIEW AIDS

Three aids were used by the interviewer:

The first was a brochure prepared and printed by HSC to identify the sponsor of the survey and to answer the range of questions frequently asked by respondents for social surveys. A copy of this brochure follows this section.

The second aid was a bound set of showcards on which the answer options for a number of the questions were printed. The purpose of these was to clarify the types of answers of interest and to assist in distinguishing different answers from one another. These cards also help to speed up the interview.

Thirdly, at the end of the interview respondents were offered the "Gambling Safely?" brochure prepared and printed by Gambling Helpline Limited (2004). This provided a selection of phone numbers that anyone seeking help or advice about gambling could contact. A copy follows this section.

ETHICS

The survey was voluntary and this point was clearly stated in the HSC brochure, as well as verbally by the interviewer. All survey procedures were consistent with the Code of Practice of the Market Research Society of NZ Inc.

Confidentiality of all the information given by respondents in the interviews was assured by the Privacy Act 1993. The final, stored electronic records contain no identification of the participating respondents, and responses can only be analysed as overall or grouped data.

RESPONDENT BURDEN

The survey sought to minimise the burden on respondents by:

• Seeking interviews by appointment rather than pressuring people for immediate participation.

• Planning for a 20-minute average duration. In practice, a duration of 38.5 minutes eventuated - the use of many open-ended questions enabled respondents to express their views fully and so this dictated the duration of the interview to a degree.

• Using showcards wherever possible to speed up answering.

• Inviting open-ended answers to enable people to feel they could express themselves, rather than being simply an information source.

DATA COLLECTION AND CODING

The interview was computer driven (CAPI), with all replies being entered into the software (BLAISE) by the interviewer through the laptop's keyboard. As interviewing progressed, completed interviews were uploaded to NRB's website, from which they were drawn down for inspection, coding and editing. Interviews were uploaded to the website on a weekly basis.

Open-ended questions were used extensively. For these, the interviewer keyed in the verbal answers, as near as possible to the respondent's spoken words, allowing for coding to take place subsequently by NRB's data processing team.

TIMING

Interviews were conducted from mid-December 2006 to May 2007, with a small, final sweep to try to recover interviews with people who were unavailable or too busy, over June-August 2007. Over 90% of the interviews took place in the main sweep.

*　*　*　*　*

![hsc marketing social change]

The HSC is a New Zealand government agency that promotes health and encourages healthy lifestyles.

We do this by developing and delivering health promotion and marketing programmes.

These include Smokefree, Auahi Kore, SunSmart, Bike Wise and Healthy Eating.

www.hsc.org.nz

If you were out when we called, we'd still like to interview someone in your household for the 2006/07 Gaming and Betting Activities Survey.

Our interviewer will call again shortly to arrange a time that is convenient.

If you want to know more about the survey, please call National Research Bureau's freephone information line, between 9am and 5pm weekdays.

NRB 0800 672 476

We appreciate your help.

![hsc marketing social change]

2006/07 **Gaming and Betting Activities** Survey

A nationwide survey for the Health Sponsorship Council

What is the 2006/07 Gaming and Betting Activities Survey?

One type of entertainment that people can take part in is betting and games of chance. This survey is about people's views and experiences of these activities. We want to talk to people who take part in these activities and people who don't. About 1,500 people will take part in this survey over the next four months.

Who is carrying out the survey?

The National Research Bureau (NRB Ltd), a private and independent research company, is carrying out the survey for the Health Sponsorship Council (HSC).

Why was I asked to participate?

Addresses are selected randomly throughout New Zealand, so your home has been chosen by chance to take part in this survey.

One adult (aged 18 years or over) will be asked to take part. If there is anyone in your household aged 15-17 years, we may ask them to take part in the survey as well.

You do not have to take part in the survey. However, it will be very helpful if you can.

Where and when will I be interviewed?

In your own home. The interviewer calling on you will have photo identification and an interviewer number.

If you are busy when the interviewer calls, please ask them to come back when it's more convenient. The interviewer is happy to make an appointment for a time and day that suits you.

What sort of questions will I be asked?

You will be asked questions about your views of gaming and betting, whether you take part in any gaming or betting or not, and what advantages and disadvantages you think these activities have for individuals, families and the community.

If you don't want to answer a particular question, you don't have to, just tell the interviewer.

But I don't take part in any gaming or betting activities!

It doesn't matter – the survey gathers the views of all New Zealanders, whether they take part in gaming and betting or not.

How long will it take?

The interview will take about 15-20 minutes.

Can I have an interviewer of my own gender (male or female) or culture?

Yes, you can. Please let the interviewer know if you would like your interview to be done by an interviewer of the same gender or culture as yourself. If you prefer, phone the survey information line (0800 672 476) and leave your request with the supervisor. Remember to leave a contact phone number or address.

Can I have an interpreter?

Yes, you can ask for an interpreter or a NZ Sign Language interpreter if you need one.

What happens to my answers?

The interviewer will not discuss your information with anyone else, and no-one will know that you have taken part in this survey.

Your answers are confidential and are protected by the Privacy Act 1993. You will not be identified from the results. No person's name or address is connected to the answers they give.

The answers from the survey are grouped and are only reported as anonymous statistical data.

What will the information be used for?

The survey will help us to develop health and community programmes to strengthen society's understanding of and response to gaming and betting activities.

Can I find out about the results from the survey?

The results of the survey will be available by mid-2007. You can get a free copy from the website

www.hsc.org.nz

or by phoning 04 472 5777.

Thank you for your time.

0800 654 655 Free Phone Seven Days

Gambling Helpline NEW ZEALAND

© Gambling Helpline Limited 2004

Gambling Safely?

We can work through some
practical suggestions with you

We can discuss the warning signs
and provide independent advice

We can provide ongoing support to
help you regain control

We support family and friends too

Main service (open seven days)

Gambling Helpline	0800 654 655

Specialist services (call to check hours)

Maori Gambling Helpline	0800 654 656
Pasifika Gambling Helpline	0800 654 657 Vai Lelei
Youth Gambling Helpline	0800 654 659 In ya face
Gambling Debt Helpline	0800 654 658

PO Box 74-010, Market Road, Auckland

www.gamblingproblem.co.nz

PLAY 3 C

ALL OTHER WINS
PAID BY ATTENDANT

GETTING
FURTHER
IN DEBT?

BAR

CAN'T
SEEM TO
STOP?

BAR

1000

"*I enjoy gambling but want to make sure I do it in a safe way*"

"*I don't think I have a problem, even though my family/friends say I do*"

"*I don't know how to stop; I'm no longer in control*"

"*I wish he/she would spend more time with me and less on gambling*"

We support you.

The Gambling Helpline provides support for any person affected by gambling.

This includes learning how to gamble in a way that is safe for you, through to managing or stopping gambling if it is creating problems for you or for someone you care about.

We also provide support for family or friends of someone whose gambling behaviour is causing problems.

You can phone anytime and if this is outside our hours, or you're unable to get through, please leave a message and we'll discreetly return your call.

If you are not ready to call us just yet, another option is to check out our website **www.gamblingproblem.co.nz.** This provides more information about who we are, about gambling in New Zealand as well as some gambling assessment guides and self-help resources.

The website includes a talking point forum – similar to a chat room – where people share their stories about gambling.

We listen.

All our staff are trained counsellors who understand gambling and gambling problems.

We want to understand your needs and work with your choices.

We have gambling debt specialists and support helplines for Maori, Pacific and youth communities.

Our main helpline is open every day of the year.

When you are ready
Call us
0800 654 655
Seven days
Free and discreet.

10. CODED, DERIVED, AND LINKED VARIABLES

CODED VARIABLES

Coding of open-ended questions was undertaken by initially printing out the textual answers given by respondents to each open-ended question. These answers were examined jointly by the researcher and a data specialist to search for recurring points or themes. Each recurring point/theme was identified as a code. All answers falling sufficiently close to that point/theme, ie, differing only in the words the person used to describe it, were assigned to that code. The questions coded in this way, the code summary descriptions, and a selection of answers falling under that code are included in the Appendices of Open-Ended Responses.

Questions for which a selection of pre-coded answers and also an "All Others" code was allowed were treated in the same way as open-ended questions. In this case, the number of original codes was extended to accommodate any further recurring answers. In some instances, interviewers tend to put into "All Others" an answer which is quite well accommodated in one of the pre-coded categories. In this case, the answer was assigned that code.

DERIVED VARIABLES

One derived variable was created. This was based on the type and frequency of gambling in which each respondent participated. Four mutually exclusive categories were created for this variable based on respondent's participation in gambling activities in the last 12 months, as follows:

1. Non gamblers: not participated in any activities in the last 12 months.

2. Infrequent gamblers: participate in any activities less than once a week.

3. Frequent, non-continuous gamblers: participate weekly or more often in non-continuous forms of gambling.

4. Frequent, continuous gamblers: participate weekly or more often in continuous forms of gambling

For the GBAS, non-continuous forms of gambling include lottery games, going to casino evenings/buying raffle tickets for fundraising, and making bets with family/friends. Continuous forms of gambling include playing electronic gaming (pokie) machines, betting on horse or dog races, or sports events, table games at casinos, housie and bingo, and Internet and text games.

This variable has been used as a "banner", or column heading, for the analysis of each question.

LINKED VARIABLES

These are defined here as variables obtained by linking to existing constructs, rather than by gathering new data in the survey. Two variables were available by linkage to the meshblock number within which the interview took place.

Urban vs Rural:	This is a Statistics New Zealand classification. In this survey, the Main Urban and Secondary Urban centres formed the Urban category. The remaining options are Minor Urban and Rural, which together made up the Rural category.

Deprivation Index:
NZ Dep'01

Meshblocks are coded in terms of a number of variables (9) relating to the socio-economic status (SES) of residents of the meshblock. Each meshblock is characterised by a decile number 1-10 describing the aggregate SES of the area.

The important point to note is that the NZ Dep refers to the decile of an area and the survey use this decile to signal the (probable) SES of the individual respondent. See http://stats.govt.nz for fuller explanation of the derivation of this index.

Imputation:

Imputation for non-response or refused answers was not done. Household income was not stated, ie, either refused or unknown by approximately 13% - this is left as *unstated* in the data tables.

* * * * *

11. DATASETS, DATA DICTIONARIES AND TABLES OF RESULTS

A copy of the GBAS dataset and data dictionary can be made available to researchers on application to the Manager of the HSC's Research and Evaluation Unit.

The initial data tables produced for the GBAS are available on the website: www.ourproblem.org.nz.

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12. CONFIDENCE INTERVALS

VARIANCE ESTIMATION FOR THE GAMING AND BETTING ACTIVITIES SURVEY

The sample design for the GBAS was a stratified, two-stage cluster design. The first-stage clusters were SNZ meshblocks. The second-stage clusters were dwellings within the meshblock. The meshblocks were selected in a systematic, probability proportional to size sampling scheme (pps). The achieved sample was post-stratified by sex, age and ethnicity.

The combination of a pps design and post-stratified estimator means only approximate analytic variance estimators are available, and so it was decided to use a jackknife variance estimator. (See, for example, Chapter 4 of Wolter, *Introduction to Variance Estimation*, 2nd ed, Springer 2007). There were 237 first-stage clusters (primary sampling units - psus), so the jackknife estimator in effect creates 237 replicate estimates by deleting one psu at at time. In practice, for generalised regression estimators (such as the post-stratified estimator used here) the jackknife estimator can be reduced to a set of jackknife weights which can be calculated once and then applied to any variable.

The calculation of the jackknife weights used the survey package written for R by Thomas Lumley (R Development Core Team. (2007). *R: A Language and Environment for Statistical Computing*, R Foundation for Statistical Computing, Vienna, Austria, ISBN 3-900051-07-0, http://www.R-project.org). This is based on the survey package of Stata.

CONFIDENCE INTERVALS

Usually confidence intervals are constructed from sample errors using the normal approximation. That is the sample error is multiplied by the z-value corresponding to the confidence level and added and subtracted from the estimate giving the upper and lower confidence limits, respectively.

Some of the estimates were very small or for subpopulations which have small sample sizes. In these cases it is well known that the normal approximation is inadequate. In particular, the confidence will include values less than 0%.

There are many approaches to overcoming this problem. The one adopted here is due to Korn and Graubard (see Korn E L and Graubard B I. (1998). Confidence intervals for proportions with very small expected number of positive counts estimated from survey data. *Survey Methodology*, 24, pp 193-201). This method was tested and used in the Department of Internal Affairs 1999 Gaming Survey (see Gray A G Haslett S J and Kuzmicich G S. (2004). Confidence intervals for proportions estimated from complex sample designs. *Journal of Official Statistics* 20(4), pp705-723).

The approach is to use one of the exact methods of constructing a binomial confidence interval and, instead of using the sample size, using the effective sample size for the estimate. This is the sample size divided by the design effect for that estimate. The exact binomial method used is the equal–tailed, Jeffreys prior confidence interval for a binomial (see Brown L D and Cai T T and DasGupta A. (2001). Interval Estimation for a Binomial Proportion. *Statistical Science*, 16, pp 101-133).

Generally, for estimates not close to 0% or 100%, or with large sample sizes, the normal approximation confidence interval limits are within 0.1%, so they have been used. Otherwise, the confidence interval using the Korn and Graubard method has been used.

* * * * *