Methodology Report for the 2007/08 New Zealand Alcohol and Drug Use Survey

Author

This report was written by Aloka Bhattacharya, Health and Disability Intelligence, Ministry of Health.

Acknowledgements

Thank you to the many New Zealanders who participated in the New Zealand Alcohol and Drug Use Survey and to the interviewers who worked so diligently to collect the data.

The author is also very grateful to Kylie Mason, Robert Templeton, Niki Stefanogiannis and Miranda Devlin from Health and Disability Intelligence, Ministry of Health, for peer-reviewing this report.

Ministry of Health. 2010. *Methodology Report for the 2007/08 New Zealand Alcohol and Drug Use Survey*. Wellington: Ministry of Health.

Published in June 2010 by the
Ministry of Health
PO Box 5013, Wellington 6145, New Zealand

ISBN 978-0-478-35965-7 (online)
HP 5107

This document is available on the Ministry of Health's website:
http://www.moh.govt.nz

Contents

List of Tables

List of Figures

1 Introduction

The 2007/08 New Zealand Alcohol and Drug Use Survey (NZADUS) is a component of the New Zealand Health Monitor, an integrated programme of household surveys and cohort studies managed by Health and Disability Intelligence of the Ministry of Health. Previous surveys on alcohol use were conducted in 1995, 2000 and 2004, and on drug use in 1998, 2001 and 2003. These surveys on alcohol use and drug use, known as Health Behaviours Surveys (HBS), were run by the Centre for Social and Health Outcome Research and Evaluation (SHORE) and Te Ropu Whariki of Massey University.

The NZADUS was carried out from August 2007 to April 2008. All New Zealanders aged 16–64 years who were usually resident in permanent, private dwellings at the time of the survey were eligible for selection in this survey.

This methodology report details the procedures and protocols followed to ensure the NZADUS produces the high-quality and robust data expected of official statistics. Publication of descriptive analysis reports, online data tables, as well as further information and documentation, can be accessed at http://www.moh.govt.nz/moh.nsf/indexmh/dataandstatistics-survey-alcoholanddruguse.

2 Background

The New Zealand Health Monitor aims to monitor the health and health behaviour of the New Zealand population (Ministry of Health 2005). It is also an important element in the cross-sector Programme of Official Social Statistics, managed by Statistics New Zealand. As a signatory to the Protocols of Official Statistics (Statistics New Zealand 2007), the Ministry of Health has employed best-practice survey techniques to produce high-quality data through the 2007/08 New Zealand Alcohol and Drug Use Survey (NZADUS).

The NZADUS measured self-reported alcohol, illicit and other drug use for recreational purposes, including consumption patterns, risk and protective behaviours associated with alcohol and drug use, harmful effects and help seeking, among the usually resident New Zealand population aged 16–64 years living in permanent private dwellings.

The survey methodology was selected to enable sufficient coverage of certain target populations, especially Māori and Pacific populations. The sampling design for the NZADUS used a multi-stage stratified random sampling approach based on an area-sampling frame, with screening to booster Māori and Pacific samples.

The mode of data collection for the survey was a face-to-face computer-assisted personal interview (CAPI) for the majority of the questions. Sensitive questions were completed by participants on laptop computer using an audio computer-assisted self-interview (A–CASI).

The survey was carried out from August 2007 to April 2008, collecting information on 6784 respondents aged 16–64 years, of whom 1825 identified themselves as Māori and 817 as Pacific. A final weighted response rate of 60% was achieved for this survey.

HDI developed the objectives and content of the NZADUS in consultation with stakeholders and an external technical group. The data collection of the survey was outsourced to a specialist data collection agency, CBG Health Research Ltd. HDI analysed the survey data and prepared this report, as well as reports on the findings from the survey (Ministry of Health 2009; 2010).

2.1 Objectives of the NZADUS

The objectives of the NZADUS were to provide information on the:

- prevalence of alcohol, illicit and other drug use for recreational purposes in the resident New Zealand population aged 16–64 years
- quantity and frequency of alcohol use, by type
- frequency of risky drinking
- frequency of illicit and other drug use for recreational purposes, by type of drug
- types of harm to self from own alcohol and drug use
- types of harm to self from others' alcohol and drug use
- risk-taking and help-seeking behaviour for alcohol and illicit drug use

- unmet need for related services
- differences between population groups as defined by age (16–17, 18–24, 25–34, 35–44, 45–54, 55–64 years), gender, ethnicity (Māori, Pacific, Asian, European/ Other and also Māori, non-Māori) and socioeconomic position.

2.2 Ethical approval

The New Zealand Health and Disability Multi-Region Ethics Committee granted approval for the NZADUS (MEC/05/09/107), confirming that the study met the following ethical principles:

- validity of research
- minimisation of harm
- privacy and confidentiality
- informed consent
- cultural and social responsibility.

The Ethics Committee approved the wording of all public materials from the survey, including the invitation letter, information brochures, consent form, pre-testing version of the questionnaire and thank-you cards. The Ethics Committee also later approved the use of a small incentive to encourage non-responders to participate in the survey in order to increase the sample size and improve the response rate.

3 Population and Frame

This section discusses the target population, the survey population and the sample frame. The *target population* is the population the survey aims to represent. All statistics for the survey refer to the target population. The *survey population* is the population that had a probability of being selected to participate in the survey. For various reasons (discussed below), there was a small proportion of people who could not be covered by the survey. As a result, the survey population is slightly smaller than the target population. The sample weights are designed to reflect the target population, so that the weighted statistics produced from the NZADUS can be taken to be representative of this population.

The sample frame is the list of areas, and the lists of dwellings and people within areas, that were used to select the NZADUS sample from the survey population.

3.1 Target population

The target population was the usually resident civilian population aged 16–64 years living in permanent private dwellings in New Zealand. The target population was approximately 2.6 million adults.

The target population is defined to include only permanent private dwellings, so temporary private dwellings are excluded, including caravans, cabins and tents in a motor camp, and boats. The target population also excludes non-private dwellings such as hotels, motels, guest houses, boarding houses, homes for the elderly, hostels, motor camps, hospitals, barracks and prisons.

People were eligible to be interviewed at their usual residence only. If they were temporarily visiting a household that was selected into the NZADUS, they were not eligible to be selected as part of that household. This method of selection ensured that no-one had a double chance of being selected for the survey.

People who were usually resident in a private dwelling in New Zealand but were temporarily overseas for some of the survey period fell within the scope of the survey. In the great majority of cases these individuals had a chance of being selected in the survey, as the survey provider made repeated call-backs to non-contacted households in the sample over the survey period.

3.2 Survey population

For practical reasons, a small number of households that were part of the defined target population were excluded from the survey population. As a result, the survey population is slightly smaller than the target population, but this has been accounted for in the final estimates using survey weights. Households not included were those in meshblocks with less than nine occupied dwellings (according to the 2006 New Zealand Census of Population and Dwellings), and those located off the main islands of New Zealand (North, South and Waiheke), such as those on sparsely inhabited off-shore islands, on-shore islands, waterways and inlets. Due to the small number of households omitted, any possible bias is likely to be extremely small.

3.3 Sample frame

The sample frame is the list of areas, and the lists of dwellings and people within these areas, that were used to select the NZADUS sample from the survey population. An area-based frame of Statistics New Zealand's meshblocks was used, based on New Zealand 2006 Census meshblocks, containing 34,728 meshblocks.

A sample of 1300 meshblocks was selected from this frame. The lists of all the addresses in each of these areas were then used as a frame from which a sample of dwellings was selected from each meshblock. One eligible adult (if any) was then selected from each selected dwelling.

4 Sample Design

4.1 Objectives of the sample design

The sample design was developed based on the following objectives.

1. The design should support analysis of the survey data by multiple users, and therefore should avoid large variation in estimation weights.
2. Estimates for the following age groups are required: 16–17, 18–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59 and 60–64 years.
3. Very high coverage of key target populations (especially Māori, Pacific and low-income populations) is required.
4. Estimates by ethnic groups will be attempted (Māori, Pacific, Asian, European/Other), with Māori estimates having approximately the same relative standard error/accuracy as the non-Māori population estimates (equal explanatory power), to the extent that this can reasonably be achieved.
5. The sample design should be cost efficient; that is, it should provide a large sample size with a minimal design effect and within a reasonable budget.
6. Population-level prevalence is to be estimated for alcohol, cannabis, amphetamine, benzylpiperazine (BZP) party pills and other illicit drug use with sufficient accuracy.
7. The survey should be of robust design to produce reliable and valid baseline data, in order to make comparisons with data from future alcohol and drug use surveys.
8. The sample design could possibly allow small area estimations at the District Health Board level, although insufficient data may preclude accurate estimates.

4.2 Sample selection

The sample design for the NZADUS used a multi-stage stratified random sampling approach using an area-based sampling frame, with screening for booster samples of Māori and Pacific people. The primary sampling unit (PSU) was a meshblock, selected by probability proportional to size, and the strata used were District Health Boards. The probabilities of selection within strata were based partly on the concentration of Māori and Pacific population groups. A three-step selection process was used to achieve the sample.

Step 1: Selection of meshblocks

Meshblocks were selected by using a method of probability proportional to size. In this case, the size measure is the usually resident adult population aged 16–64 years in each meshblock as at the 2006 Census (adjusted by a targeting factor, which is the square root of the concentration of the Māori and Pacific population in each meshblock). This targeting factor means meshblocks with larger Māori and Pacific populations had a greater chance of being selected. In all, 1300 meshblocks were selected throughout the country for inclusion in the NZADUS.

Step 2: Selection of households within meshblocks

Two samples (core and screened) were drawn from the same selection of PSUs. The core sample was drawn by selecting an average of 10 households from each PSU, using a systematic selection (Korn and Graubard 1999). The screened sample was drawn by selecting 10 further households using a systematic random selection from each PSU. In total, 12,573 households were approached for the core sample and 12,701 households were approached for inclusion in the screened sample.

Step 3: Selection of respondents within households

The procedure for selecting respondents in the core and screened households was essentially the same. Within each household all eligible adults (those aged 16–64 years who usually reside at that dwelling) were identified. The names of all eligible respondents were then listed in descending order of age on a sampling Kish grid (Kish 1949), and the ethnicities (obtained by proxy from the person who answered the door, using the Statistics New Zealand question) of all household members were recorded. One adult was selected based on whose name fell alongside predetermined indicators on the sampling Kish grid.

For the screened sample, households having at least one person aged 16–64 years from the Māori or Pacific ethnic group were considered eligible for selection. One adult identified as being of Māori or Pacific ethnicity, was selected using the Kish grid method.

There was no substitution of households or respondents if the selected household or respondent was not contactable or was unavailable. Overall, 6784 respondents completed the interview.

4.3 Rationale for the sample design

The sample design was selected from multiple options as the best possible way to meet the objectives of the NZADUS while producing limited variation in the weights and the lowest possible design effects.

The simplest possible sample design would be a simple random sample of all people in New Zealand, so that everyone has an equal and independent chance of being selected in the sample. However, a design of this type would not be feasible because:

- there is not a sufficiently accurate list of all addresses in New Zealand which can be used as a sampling frame
- the sample would be geographically very spread out, requiring interviewers to travel great distances between interviews.

Also, a simple random sample would not result in large enough numbers of Māori or Pacific people in the sample to enable adequate statistics for these groups. For these reasons, the NZADUS, like most household surveys, uses a complex sample design.

Complex designs have a number of features that affect the precision of statistics coming from the survey.

1. *Different people have a different chance of selection.* This is captured in the 'weight', which is the number of people that each survey respondent represents in the target population. The more likely one is to be selected, the lower the weight. In the NZADUS, Māori and Pacific people have lower weights than other people, to reflect the fact that these groups had an increased chance of selection in the sample relative to simple random sampling.
2. *The sample is 'clustered'.* In the NZADUS a sample of meshblocks was selected and a sample of households was selected from each meshblock. If the households in the sample were shown on a map of New Zealand they would appear clumped. This makes the survey more affordable, as interviewers do not have to travel between as many areas as they would if simple random sampling were used.

The net effect of a complex design can be measured by the 'design effect' (or DEFF). The DEFF is the ratio of the variance (a measure of precision) of an estimate achieved by a complex design, relative to the variance of the same estimate that would be achieved by a simple random sample of the same size. The closer the DEFF is to 1, the closer the design is to simple random sampling. Design effects of between 2 and 4 are typical in population health studies, which mean the variance is larger than would have been obtained using a simple random sample. Even though the DEFF is greater than 1, it does not mean that a simple random sample should be used, as this would be prohibitively expensive. A complex design like that used in the NZADUS is less precise than a simple random sample with the same sample size, but is much more precise than could be achieved by a simple random sample with the same budget.

Nevertheless, DEFFs should not be too large. In particular, it is appropriate for weights to vary across the sample, otherwise it would not be possible for Māori and Pacific people to have an increased chance of selection in the sample. If the variation in weights is too extreme, however, the DEFF will be very large, and this would be counter-productive for all statistics, even for Māori and other sub-population groups. The best statistical methods available for sampling sub-populations were used to ensure that the design was appropriate for achieving adequate precision for national and sub-population estimates within the survey budget.

Design effects are different for each statistic. For example, the design effect for past-year drinkers for the national estimate was 2.19; it was 1.25 for Māori and 1.53 for Pacific people.

5 Data Collection Instruments

The sample design of the NZADUS was changed from the previous national surveys in New Zealand on drug use and alcohol use: the 2003 Health Behaviours Survey on Drug Use and the 2004 Health Behaviours Survey on Alcohol Use.

5.1 Rationale for the change in sample design from 2003 to 2007

The 2003 Health Behaviours Survey on Drug Use (HBS–DU 2003) and the 2004 Health Behaviours Survey on Alcohol Use (HBS–AU 2004) were undertaken as computer-assisted telephone interview (CATI) surveys by the Centre for Social and Health Outcome Research and Evaluation (SHORE) and Te Ropu Whariki of Massey University. The reports were published by the Ministry of Health (Ministry of Health 2007a; 2007b).

To improve the cost efficiency of the health survey programme, the decision was made to combine the separate alcohol use and drug use surveys in the NZADUS. Gains in cost efficiency could be achieved by providing in the one survey a large sample size with a minimal design effect, as well as a reduction in respondent burden through eliminating the duplication of questions.

Another change from previous surveys was the decision to collect data using the computer-assisted personal interview (CAPI) method rather than CATI. The CAPI method was preferred for the following reasons.

1. CATI surveys do not cover Māori, Pacific and lower socioeconomic groups particularly well due to lower ownership of telephone landlines by these groups. The current preference for use of mobile phones over domestic landlines also tends to further restrict coverage by CATI surveys.
2. The change in survey mode from CATI to CAPI provided an opportunity to incorporate a self-complete module with audio prompts (A–CASI) in the survey. This module was entered directly into a computer by the respondent to collect data on sensitive topics for the NZADUS. Survey experience with collecting sensitive information suggests that respondents are more likely to provide more detail on sensitive topics such as individual patterns of alcohol and drug use, risk-taking and help-seeking behaviour, and incidents of violence related to substance using this method (Tourangeau and Yan 2007). The CAPI approach also allowed the use of 'show cards', which are cards that display a selection of possible answers for a respondent to select from and are considered to be an advantage when dealing with sensitive or complex questions.

Another benefit of the move to a CAPI survey is that it helps to build a consistent time series for a high-quality health monitoring programme. Comparing components of the NZADUS data with other New Zealand Health Monitor survey data, which are also collected using the CAPI method, was a factor when decisions were made on the choice of questions for use in the questionnaire.

5.2 Consultation on content

The questionnaire for the NZADUS was developed in consultation with internal and external stakeholders.

5.3 Questionnaire content

The NZADUS collected information on the broad topics of alcohol use, drug use, and sociodemographics. Where possible, questions were sourced from previous surveys. The development of questionnaire content for the survey was informed by a review of similar surveys undertaken in New Zealand and elsewhere. Where possible, questions were taken from previous surveys, including the:

- 2006/07 New Zealand Health Survey
- 2004 New Zealand Health Behaviours Survey – Alcohol Use
- 2003 New Zealand Health Behaviours Survey – Drug Use
- 2004 Canadian Addiction Survey
- American Drug and Alcohol Survey
- 2004 National Drug Strategy Household Survey (Australia)
- USA National Epidemiological Survey on Alcohol and Related Conditions
- USA National Survey on Drug Use and Health 2006.

The full questionnaire for the NZADUS is available online at: http://www.moh.govt.nz/moh.nsf/indexmh/dataandstatistics-survey-alcoholanddruguse.

Table 1 presents a summary of the content of the NZADUS.

Table 1: Summarised content of the NZADUS

Module	Topics
Alcohol use	Lifetime and past-year alcohol use (including frequency of use in past year, types of alcohol consumed, age of first use), amount consumed on typical drinking occasion, risky drinking, risk-taking behaviour, harms and health problems due to alcohol use, protective behaviours when drinking, receiving help for alcohol use, unmet need for help
BZP party pill use	Past-year BZP party pill use (including frequency of use in past year, age of first use), typical occasion, risk-taking behaviour, harms and health problems due to BZP party pill use, receiving help for BZP party pill use, unmet need for help
Cannabis use	Cannabis use (including frequency of use in past year, age of first use), risk-taking behaviour, harms and health problems, receiving help for cannabis use, unmet need for help
Amphetamine use	Amphetamine use (including frequency of use in past year, age of first use), risk-taking behaviour, harms and health problems, receiving help for amphetamine use, unmet need for help
Other drug use	Use of other drugs (eg, frequency of use in past year, age of first use), risk-taking behaviour, harms and health problems, receiving help for other drug use, unmet need for help
Needle use	Use of needles (ever and in last 12 months)
Harm caused by other people's alcohol and drug use	Harmful effects due to someone else's alcohol use (on friendships or social life, home life, financial position), been involved in motor vehicle accident or other accident that involved someone's alcohol and/or drug use, assaulted by someone while they were under the influence of alcohol and/or drugs
Sociodemographic questions	Sex, age, ethnic group, education, income, income support, employment, tobacco use
Alcohol and drug use while pregnant and breastfeeding	Use of alcohol or other drugs while pregnant or breastfeeding
Recontact	Recontact details

5.4 Constraints on content

The following constraints influenced the choice of topics and questions for inclusion in the NZADUS.

1. *Limitations associated with questionnaires.* The questionnaires were not able to gather complex, detailed information. They are best designed with closed questions and predetermined tick-box responses.
2. *Respondent burden and resistance.* The questionnaire had to be designed so that New Zealanders were willing to participate in the survey. In order to promote completion of a questionnaire, it should be completed in a reasonable amount of time (preferably less than 45 minutes). Questions from topics that offend or annoy people, or that collect sensitive data, were placed in a sensitive questions module for the respondent to complete on their own at the end of the questionnaire.

3. *Continuity and relevance.* The NZADUS needed to be able to continue to monitor population health over time (by comparing data from one survey to the next) and, at the same time, remain relevant to the information needs of the Ministry of Health. The criteria for inclusion of new questions are set out below.
4. *Integration.* The NZADUS questionnaire used standard frameworks and classifications with validated questions, where possible, to allow for the integration of the survey data with data from other sources, in particular New Zealand Health Monitor surveys.

5.5 Criteria for new content

Where topics or questions were suggested for inclusion in the NZADUS that were not included in previous drug or alcohol surveys, the proposals were assessed against the following criteria before inclusion.

1. The NZADUS would be the most appropriate source for the information. The data could not be collected more effectively and efficiently by other means (such as an epidemiological study).
2. The information would be required for monitoring over time (as opposed to a one-off research project).
3. The information collected would be needed to inform decisions made by the Ministry of Health or District Health Boards. The data should be relevant to the New Zealand Health Strategy and current priority areas for the Ministry of Health.
4. Quality information could be collected. The data collected by the questions would provide information of an acceptable quality.

The questions in the NZADUS were largely based on the previous New Zealand Health Behaviours Surveys for Alcohol Use and Drug Use. Where possible, the original wording of questions from other surveys was retained to help ensure their validity and to enable comparisons between surveys. Where changes were made to the questions and response categories, the decisions were informed by experience with the results of the Health Behaviours Survey data.

5.6 Questionnaire testing

The pre-test version of the questionnaire was sent to CBG Health Research Ltd for CAPI conversion and subsequent testing. CBG Health Research Ltd tested the questionnaire on 60 respondents whose substance use patterns ranged from non-use to high use and multiple uses of alcohol and drugs. Interviews were conducted in July 2007.

All feedback received from testing was collated and summarised by CBG Health Research Ltd, and then forwarded to HDI for consideration prior to commencing the dress rehearsal.

5.7 Dress rehearsal

CBG Health Research Ltd conducted a dress rehearsal in the first week of August 2007 in 29 meshblocks randomly selected throughout New Zealand. The dress rehearsal was used to test the sample design, to further refine the questionnaire, and to trial operations and processes for data collection.

6 Data Collection and Quality Control

6.1 Collection mode

Interviews were conducted in respondents' homes, with responses typed directly into a laptop computer. Depending on the question module, the responses were typed in either by the interviewer or by the respondent. Show cards with predetermined response categories were used to assist respondents, where appropriate.

More specifically, the survey was administered in three parts (modules). The interviewers conducted the first part by asking questions on alcohol and BZP party pill use. Next, the respondent answered a self-complete section on sensitive topics related to personal patterns of alcohol and drug use. The third and final section of the survey was conducted by the interviewer, and covered standard demographic questions and re-contact details.

6.2 Interviewer training

The NZADUS interview team consisted of approximately 98 CBG Health Research Ltd experienced interviewers. Interviewers received two one-day training courses on how to conduct the NZADUS interviews.

6.3 Enumeration

Before selecting households to participate in the NZADUS, all the dwellings in the selected meshblocks were enumerated to take account of the number of new dwellings built and the number of buildings demolished since the 2006 census enumeration.

6.4 Call pattern

The call pattern used in the NZADUS was an important component of achieving high response performance. CBG Health Research Ltd conducted a total of up to eight calls at each sampled dwelling, at different times of the day and on different days of the week, before accepting a dwelling as a non-contact.

6.5 Informed consent

The NZADUS was voluntary, relying on the good will of participants, and consent was obtained. People selected for the survey were given an invitation letter from the Ministry of Health and an information brochure. If they agreed to take part, they were asked to sign a consent form. NZADUS was referred as 'The 2007 Alcohol and Drug Use Survey' in the invitation letter and the consent form and the name of the survey was later changed to more accurately reflect the time period of the survey.

6.6 Koha and support for participants

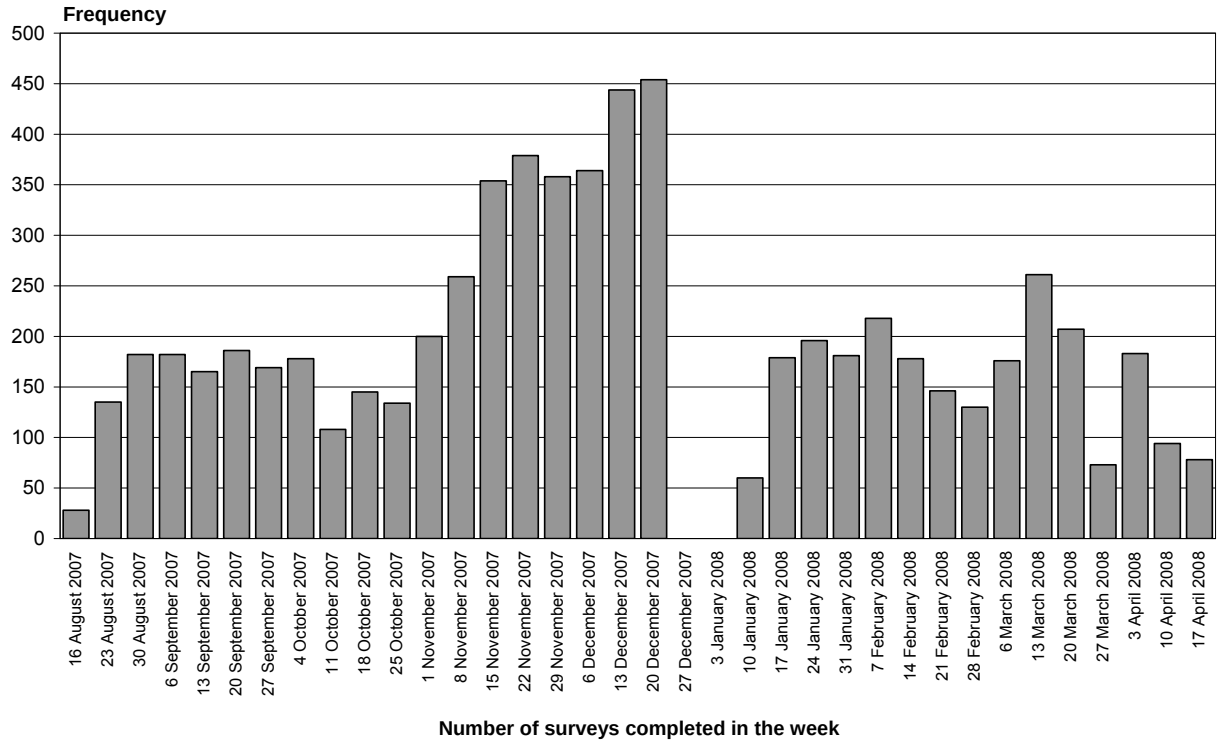
All participants of the NZADUS were given a thank-you card at the conclusion of the interview.

As response rates for the NZADUS were lower than anticipated, approval was gained from the Multi-Region Ethics Committee to use a $20 Warehouse voucher as an incentive for people who had originally declined to take part in the survey. This use of an incentive increased the response rate from 55% to 60%.

6.7 Field dates

Interviews for the NZADUS commenced on 10 August 2007 and finished on 13 April 2008. Figure 1 shows the number of interviews conducted in the week ending each Thursday. No interviews were carried out over the Christmas–New Year period, or on Easter Friday or Easter Sunday.

Figure 1: NZADUS interviews per week



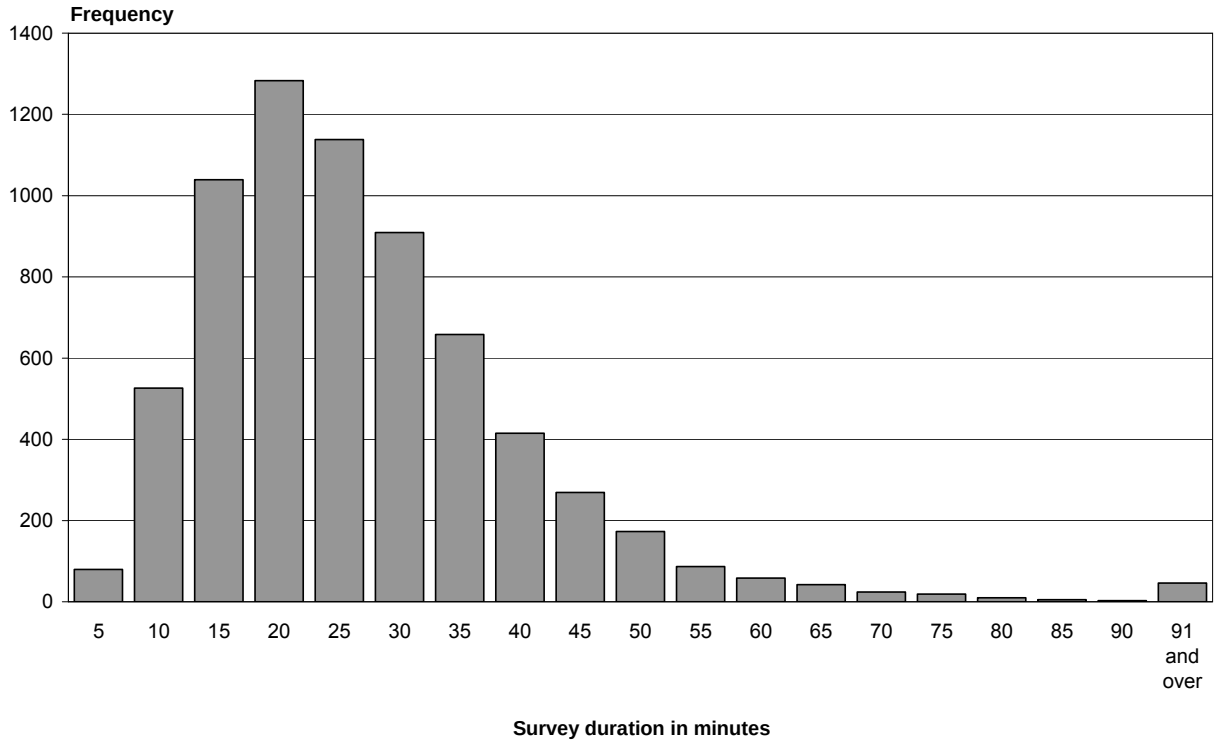
6.8 Respondent burden

The questionnaire and survey design attempted to minimise respondent burden, using the following methods.

- Only one eligible person was selected from each dwelling.
- Generally well-tested and well-proven questionnaires were used.
- Trained interviewers conducted the interviews.

The median time to complete the interview (including all three parts) was approximately 23 minutes, with 93% of interviews completed in 45 minutes or less. Figure 2 provides further detail on the interview duration for respondents.

Figure 2: NZADUS interview duration



7 Final Response Rates

The response rate is a measure of how many people who were selected to take part in the survey actually participated. A high response rate means that the survey results are more representative of the New Zealand population.

A total sample size of 6784 interviews was achieved, with a weighted response rate of 60%. The final sample included 1825 Māori respondents and 817 Pacific respondents.

There are four components to the response rate calculation:

- ineligibles (eg, vacant sections, vacant dwellings and non-residential dwellings)
- eligible responding (interview conducted, respondent confirmed to be eligible for the survey)
- eligible non-responding (interview not conducted, but enough information collected to indicate that the household did contain an eligible adult – almost all refusals were in this category)
- unknown eligibility (eg, non-contacts and refusals who provided insufficient information to determine eligibility).

The weighted response rate was calculated as follows:

$$\text{Weighted response rate} = \frac{\text{Weighted number of eligibles responding}}{\left[\text{Weighted number of eligibles responding}\right] + \left[\text{Weighted number of eligibles non-responding}\right] + \left[\text{Estimated number of eligibles from the unknowns}\right]}$$

The justification for this response rate was that a proportion of the unknowns were likely to be eligible if contact could have been made. As contact could not be made with the estimated number who would be eligible, they were classified as non-respondents.

The estimated number of unknown eligibles was calculated as follows:

$$\left[\text{Estimated number of eligibles from the unknowns}\right] = \left[\text{Weighted number of unknowns}\right] \times \frac{\left[\text{Weighted number of eligibles responding}\right] + \left[\text{Weighted number of eligibles non-responding}\right]}{\left[\text{Weighted number of eligibles responding}\right] + \left[\text{Weighted number eligibles non-responding}\right] + \left[\text{Weighted number of ineligibles}\right]}$$

Table 2 shows details of the response rate calculation of response rates.

Table 2: Response summary of NZADUS

	Number of interviews		
	Core	**Screen**	**Total**
A = Responses	5,277	1,507	6,784
B = Eligible non-response	2,808	1,125	3,933
C = Ineligibles	3,381	9,228	12,609
D = Non-response with unknown ineligibility	1,107	841	1,948
E = Eligibility rate = (A+B)/(A+B+C)	71%	22%	46%
Response rate = A/(A+B+E*D)	60%	53%	58%
Response rate (weighted)	60%	53%	60%

8 Data Processing

This section outlines the processes used to collect, check and output the data for the NZADUS.

8.1 Capture

The NZADUS questionnaire was provided to CBG Health Research Ltd as a Word document in April 2007. This questionnaire was turned into a series of web pages using off-the-shelf software (*The Survey System*). Each tablet personal computer (HPtc4400) provided to the interviewers had a web server installed, and the survey was administered as a series of web pages linked to a survey database unique to each tablet personal computer.

Windows *Media Player* was called when each page in the self-complete module was displayed to play the audio track that narrated the question.

The date of completion of the survey and survey timing data were recorded automatically in the survey database, as was the duration of the time spent answering each survey question.

8.2 Coding

Most of the questions used single-response options. However, some questions allowed for multiple responses. For these questions all responses were retained, with each response shown as a separate variable on the data file.

8.3 Security of information

Any information collected in the survey that could be used to identify individuals has been treated as strictly confidential. Data were transferred from interviewers' tablet personal computer to head office at CBG Health Research Ltd by a secure Internet upload facility. Data were transported to HDI at the Ministry of Health on CD-Rom by signed courier.

Names and addresses of people and households who participated in the survey have not been stored with response data. Unit record data were stored in a secure area and were only accessible on a restricted ('need to know') basis.

8.4 Checking and editing

CBG Health Research Ltd undertook routine checking and editing of the data throughout the field period of the NZADUS. In addition, the final unit record data sets provided to HDI have been edited for range and logic.

8.5 Imputation

Date-of-birth questions had some 'don't know' and 'refused' responses. In these cases age was imputed. Seven respondents reported their age as just over 64, and they were

analysed as 64 years old. Three respondents had no gender information, and this was imputed from the other questions, such as pregnancy status. Missing (or refusal) responses on the ethnicity question were analysed as 'European'.

8.6 Creation of derived variables

A number of derived variables have been created on the NZADUS data set. Where possible, standard definitions have been used and all derivations were thoroughly checked.

For the purpose of ethnic group analyses, non-response was included as European/ Other, as was 'New Zealander'.

For more information on the derived variables in the NZADUS, refer to the confidentialised unit record file (CURF) documentation, which will be available in late 2010.

9 Weighting

To ensure that no group is under- or over-represented in estimates from the survey, 'weights' are calculated for every survey participant. The weight can be thought of as the number of people in the population represented by a given survey participant.

9.1 Overview of weighting process

Most national surveys have complex sample designs, where different groups have different chances of being selected in the survey. These complex designs are used for a variety of purposes, including:

- reducing interviewer travel costs by ensuring the sample is geographically clustered, or 'clumped'
- ensuring all regions of interest, including small regions, have a sufficient sample to enable adequate estimates
- ensuring all sub-populations, in particular the Māori and Pacific populations, have a sufficient sample to enable adequate estimates.

Estimation weights are used to achieve this aim. A weight is calculated for every respondent, and these weights are used to calculate estimates of population totals (counts), averages and proportions. Typically, members of groups who have a lower chance of selection are assigned a higher weight, so that these groups are not under-represented in estimates. Conversely, groups with a higher chance of selection receive lower weights. Also, groups that have a lower response rate (eg, younger men) are usually assigned a higher weight so that these groups are correctly represented in all estimates from the survey.

Weights are designed to do two things:

(a) reflect the probabilities of selection of each respondent

(b) make use of external population benchmarks (typically obtained from a population census) to correct for any discrepancies between the sample and the population benchmarks – this improves the precision of estimates and reduces bias due to non-response.

The first aim (a) can be achieved by setting weights equal to 1 divided by the probability of selection for the respondent. This method is called inverse probability weighting. However, a better method is calibrated weighting, which can achieve both (a) and (b). Calibrated weighting is the method used for the NZADUS, and is discussed below.

9.2 Calibrated weights

The most commonly used methodology for survey weighting is calibrated weighting, and this is what was used for the NZADUS. Calibrated weights are calculated using population benchmark information obtained externally from the survey. In the case of the NZADUS, this consisted of population counts from the 2006 Census, broken down by age, sex and ethnic group and adjusted to 2007 population estimates. The idea was to incorporate this external information about the population into the weights.

This means that if the sample differs from the population according to any of these categories, then the estimation weights will correct for the discrepancy. For example, if young men are under-represented in the sample relative to the census counts (as is often the case due to non-response), the weights for young male respondents would be increased, so that this group is correctly represented in estimates.

Calibrated weights are calculated to achieve two requirements.

a) The weights should be close to the inverse of the probability of selection of each respondent.

b) The weights are calibrated to the known population counts for a range of sub-populations (eg, age-by-sex categories). This means that the sum of the weights for respondents in the sub-population must exactly equal the known benchmark for the sub-population size.

To be more mathematically precise, the weights are chosen to minimise a measure of the distance between the weights and the inverse selection probabilities, subject to (b) being satisfied. Requirement (a) ensures that estimates have low bias, while requirement (b) improves the precision of estimates and achieves consistency between the survey estimates and external benchmark information.

A number of distance measures are in common use. A chi-square distance function (case 1 in Deville and Särndal 1992) was used for the weighting of the NZADUS, which corresponds to generalised regression estimation (also known as GREG).

The inverse selection probability is sometimes called the initial weight. The final, calibrated, weights are sometimes expressed as:

final weight = initial weight x g-weight.

The ‘g-weight’ indicates the factor by which calibration has changed the initial weight.

9.3 Benchmark populations used for NZADUS

The benchmarks used in the NZADUS weighting were population counts by:

- age (16–17, 18–19, 20–24, 25–29, 30–34, 35–39, 40–44, 45–49, 50–54, 55–59, 60–64 years)
- sex (male, female)
- total ethnic group (Statistics New Zealand Level 1 classification) (Māori, Pacific, Other).

Age, sex and ethnicity were included because these variables are related to alcohol and drug use behaviour, are related to non-response, and were a key output classification for the survey.

The most recent New Zealand Census was conducted in March 2006, whereas the NZADUS was conducted from August 2007. Population benchmarks for weighting the NZADUS were compiled as follows.

- Statistics New Zealand provided 2006 Census counts for usual residents in private dwellings by age, sex, ethnicity and District Health Board. The Statistics New Zealand estimated resident population (ERP) series was used to estimate population growth between mid-2006 and the end of 2007. Growth factors were calculated by taking the ratios of the 2007 ERP to the 2006 ERP, by sex and age.
- The growth factors were then applied to the undercount-adjusted[1] census counts. This provided estimates of the usually resident population in private dwellings in 2007.

Note: The population growth was calculated at the age-by-sex level, but applied to age-by-sex-by-ethnicity. In reality, population growth over 2006 to 2007 would vary by ethnicity. This small adjustment would have only a minor effect on estimated counts from the NZADUS, and an even smaller effect on prevalence estimates.

9.4 Calculation of estimates

Once all weights have been calculated, estimates of means, totals, counts and proportions can be calculated as follows.

Proportions

The proportion of the population who belong to a particular group (eg, the proportion of the population who drink large amounts of alcohol) is estimated by calculating the sum of the weights for the respondents in the group, divided by the sum of the weights of all respondents.

Proportions within population groups

The proportion of people in a population group who belong to a subgroup (eg, the proportion of Māori who drink large amounts of alcohol) is estimated by calculating the sum of the weights for the respondents in the subgroup (Māori who drink large amounts of alcohol), divided by the sum of the weights for the respondents in the population group (Māori).

[1] The census undercount is the number of people missed by a census who were meant to be counted. These undercount estimates come from Statistics New Zealand's post-enumeration survey conducted shortly after the Census.

Averages (means)

Estimates of the population averages (eg, the average age of first drinking a large amount of alcohol) are calculated by calculating:

- the sum, over all respondents, of the weight multiplied by the variable of interest
- divided by the sum of the weights.

Averages within population groups

Sometimes the average within a group is of interest (eg, the average age of first drinking a large amount of alcohol among males). The estimate is given by calculating:

- the sum, over respondents in the group, of the weight multiplied by the variable of interest
- divided by the sum of the weights of respondents in the group.

9.5 Replicate weights

Standard errors are a measure of the precision of an estimate, and replicate weights are a method for obtaining standard errors for any weighted estimate. In the NZADUS, 100 replicate weights were produced for every respondent in the sample. For any weighted estimator, 100 'replicate estimators' can be calculated using these replicate weights. The standard error of the population estimate is based on the variation of the replicate estimates. This process can be done automatically in a number of statistical packages, including SUDAAN, STATA and R. The SAS programs developed for analyses incorporated these replicate weights.

The replicate weights were produced using the GREGWT package, which was provided by the Australian Bureau of Statistics. Each of the 100 replicate estimators corresponds to removing a group of meshblocks, reweighting the remaining sample, and applying an appropriate scaling factor. This is called the delete-a-group jack-knife method. For technical information on replicate variance estimation in surveys, see Rao and Wu (1988) and Shao and Tu (1995).

10 Technical Notes for Analysis

The descriptive NZADUS analyses presented in *Alcohol Use in New Zealand* (Ministry of Health 2009) and *Drug Use in New Zealand* (Ministry of Health 2010) used some specific techniques, which are discussed below.

10.1 Total response ethnicity

Ethnicity is self-defined, and in the survey questionnaire respondents were able to report affiliation with up to nine different groups, using the Statistics New Zealand standard ethnicity question.

In the above reports, descriptive results were presented by total response ethnic group. This method involves allocating each person to each ethnic group they identify with out of the following four main ethnic groups: European/Other, Māori, Pacific and Asian. These ethnic groups are the most appropriate for representing valid multiple ethnic group data in the restricted space of the reports (Callister et al 2007). In analyses presented in the reports, the 'Other' ethnic group (comprising mainly Middle Eastern, Latin American and African ethnicities) were combined with 'European' due to small numbers in the 'Other' ethnic group.

Using total response ethnicity can result in overlapping groups, where one person is included in several ethnic groups. For this reason, standardised rate ratios were presented that compare each ethnic group with the total New Zealand adult population (ie, the reference group). Specific methods were used for rate ratios and their 95% confidence intervals to account for having ethnic groups that were not mutually exclusive. When calculating the confidence intervals for these, the co-variance between the two groups were taken into account. The delete-a-group jack-knife method was used to do this, because this technique gives a good approximation for the variance between groups by summing up all the differences between two groups within a replicate sample.

Age-standardised weights for each ethnic group were calculated separately to account for people with multiple ethnicities. There were 100 standardised replicate weights for each total response ethnic group the data were analysed by.

For more information about the use of total response ethnic groups for New Zealand Health Monitor surveys, see Ministry of Health 2008a.

10.2 Socioeconomic deprivation

Neighbourhood socioeconomic deprivation was measured by 2006 New Zealand Index of Deprivation (NZDep2006) quintiles. NZDep2006 is an area-based index of deprivation that measures the level of socioeconomic deprivation for each neighbourhood (meshblock) according to a combination of the following 2006 Census variables: household income, means-tested benefit status, access to car, household crowding, home ownership, unemployment, qualifications, sole-parent families and access to a telephone (land-line or mobile) (Salmond et al 2007). The predecessors of NZDep2006 (NZDep91, NZDep96 and NZDep2001) have been validated. This means that the index accurately describes levels of socioeconomic deprivation in small areas and is highly correlated with key health outcomes and behaviours, such as mortality and smoking (Crampton et al 2004).

10.3 Age standardisation

Unadjusted rates have been presented in the above reports for estimates of the prevalence in the total population and by age group. However, age is an important determinant of health, so populations with different age structures (such as men and women, due to women having a longer life expectancy) will have different rates due to these age differences.

Age standardisation was performed by the direct method using the World Health Organization (WHO) world population age distribution (Ahmad et al 2000). This statistical method of standardising for age has been used in analyses by gender, ethnic group and neighbourhood deprivation (NZDep2006), and for comparisons between NZADUS and previous surveys like the New Zealand Health Surveys and Health Behaviours Surveys.

10.4 Statistical significance

Unless otherwise stated, all differences noted in the text in *Alcohol Use in New Zealand* (Ministry of Health 2009) and *Drug Use in New Zealand* (Ministry of Health 2010) are statistically significant.

Ninety-five percent confidence intervals have been used to represent the sample error for estimates. In these two reports, any differences between two variables where the confidence intervals overlapped were tested using a t-test. The significance of a t-test is represented by the p-value. If a p-value is below 0.05, then we are 95% confident the difference between the two estimates is statistically significant.

Small numbers

When calculating confidence intervals for percentages where the numerator (number of respondents with the variable of interest) was less than 30, or the lower confidence interval resulted in a value less than 0, or the upper confidence interval resulted in a value greater than 100, the Korn and Graubard method was used to calculate the confidence interval (Korn and Graubard 1998). This means that where a confidence interval spreads outside the range of a percentage, the confidence interval may be asymmetrical.

Percentiles

To calculate variances (and hence confidence intervals) using replicate weights for percentiles (including medians), the Woodruff method was used (Woodruff 1952).

10.5 Suppression due to small numbers

Small sample numbers can affect both the reliability and the confidentiality of results. Problems with reliability occur when the sample becomes too small to adequately represent the population from which it has been drawn. Problems with confidentiality can occur when it becomes possible to identify an individual, usually someone in a sub-group of the population within a small geographical area.

In order to ensure the survey data presented are reliable and that the confidentiality of the participants is protected, data have only been presented when there are at least 30 people in the denominator (the population group being analysed). Care has been taken to ensure that no participant can be identified in the results.

10.6 Adjusting population totals for item non-response

To account for item non-response in population total estimates, a factor was calculated using the sum of the weighted denominator and the weighted number of item non-respondents divided by the weighted denominator. This was applied to both the weighted numerator and the weighted denominator.

11 Comparability of NZADUS Data with Other Survey Data

In order to determine any changes in the prevalence of indicators over time, a limited number of analyses were carried out comparing NZADUS prevalence estimates with earlier prevalence estimates from other surveys.

Where possible in the descriptive outputs, data from the NZADUS were compared with data from the Health Behaviours Surveys and previous New Zealand Health Surveys. This section gives a brief description of the surveys used in the time trend analyses and provides information on the comparability of the surveys.

Special note on comparing surveys

Caution is recommended when comparing results between surveys, as there are differences in sample sizes, response rates, questions and methodology. We advise that these aspects be taken into account before making comparisons between results from different surveys.

11.1 Health Behaviours Surveys

a) 2003 Health Behaviours Survey – Drug Use

The survey design and data collection for the 2003 Health Behaviours Survey – Drug Use (HBS-DU) was carried out by the Centre for Social and Health Outcomes Research and Evaluation (SHORE) and Te Ropu Whariki, of Massey University.

The target population for the 2003 HBS–DU survey was the New Zealand population aged 13–65 years living in private residential dwellings. The survey was carried out with a computer-assisted telephone interview (CATI) system, with a sample size of 8095 respondents. A stratified sample design was used for the survey, with increased sampling of Māori. Three different sample frames were utilised to obtain both a full coverage of the population and an increased sample of Māori respondents, to allow equal explanatory power for the Māori population. These sample frames included:

- a random digit dialling (RDD) sample from the general population
- an RDD Māori screened sample
- a sample from the full electoral roll of people who identified as having Māori ancestry.

b) 2004 Health Behaviours Survey – Alcohol Use

The survey design and data collection for the 2004 Health Behaviours Survey – Alcohol Use (HBS-AU) was carried out by the Centre for Social and Health Outcomes Research and Evaluation (SHORE) and Te Ropu Whariki, of Massey University.

The target population for the 2004 HBS-AU survey was the New Zealand population aged 12–65 years living in private residential dwellings. The survey was carried out

with a computer-assisted telephone interview (CATI) survey, with a sample size of 9847 respondents. A stratified sample design was used for the survey, with increased sampling of Māori. Three different sample frames were utilised to obtain both a full coverage of the population and an increased sample of Māori respondents, to allow equal explanatory power for this group. These sample frames included:

- a random digit dialling (RDD) sample from the general population
- an RDD Māori screened sample
- a sample from the full electoral roll of people who identified as having Māori ancestry.

11.2 New Zealand Health Surveys

a) 1996/97 New Zealand Health Survey

The target population for the adult component of the 1996/97 New Zealand Health Survey was defined as the total usually resident civilian population of New Zealand aged 15 years and over, residing in permanent private households.

A stratified cluster sampling process was undertaken by Statistics New Zealand to select a sample from the target population. The sampling frame was area-based using Statistics New Zealand primary sampling units (PSUs). Māori and Pacific people were oversampled in order to obtain more reliable estimates. There was also some regional oversampling.

The sample consisted of 11,921 eligible households. One eligible adult was randomly selected from each selected household. The adult response rate was 74%.

Data were collected from October 1996 to October 1997 using face-to-face interviewing. The final sample was made up of 7862 adults (including 1321 Māori adults).

Full details on the methodology of the 1996/97 New Zealand Health Survey can be found in *Taking the Pulse: The 1996/97 New Zealand Health Survey* (Ministry of Health 1999).

b) 2002/03 New Zealand Health Survey

The target population for the 2002/03 NZ Health Survey was the usually resident New Zealand adult population, aged 15 years and over, living in permanent private dwellings. An area-based frame using meshblocks as primary sampling units was used as the sample frame. Māori, Pacific people and Asian people were oversampled.

Data were collected from September 2002 to January 2004 using face-to-face interviewing. The total response rate for the survey was 72%. A total of 12,929 people responded to the survey, including 4369 Māori.

Full details on the methodology of the 2002/03 NZ Health Survey can be found in *A Portrait of Health: Key results of the 2002/03 New Zealand Health Survey* (Ministry of Health 2004).

c) 2006/07 New Zealand Health Survey

The target population for the adult component of the 2006/07 NZ Health Survey was the usually resident New Zealand adult population, 15 years and over, living in permanent private dwellings. An area-based frame using meshblocks as primary sampling units was used as the sample frame. A screened sample was taken of Māori, Pacific and Asian peoples.

Data were collected from October 2006 to November 2007 using CAPI face-to-face interviewing. The total response rate for the survey was 68%. A total of 12,488 people responded to the survey, including 3160 Māori, 1033 Pacific people and 1513 Asian people.

Full details on the methodology of the 2006/07 NZ Health Survey can be found in *Methodology Report for the 2006/07 New Zealand Health Survey* (Ministry of Health 2008b).

11.3 Comparability of the surveys

Drug Use in New Zealand (Ministry of Health 2010) included a limited number of comparisons between the NZADUS and both the HBS-DU and the 2002/03 NZHS. The report *Alcohol Use in New Zealand* (Ministry of Health 2009) included comparisons with the 1996/97, 2002/03 and 2006/07 NZ Health Surveys.

There are several points to note when interpreting these comparisons.

Although HBS-DU and NZADUS had similar response rates, there were several important differences between them. The HBS–DU used telephone interviews, whereas the NZADUS was based on self-completed computerised interviews. The questions were not identical and other factors, including the question order, may have affected the comparability of results. For comparison purposes, HBS-DU data were re-analysed using NZADUS target age groups. The time trend analyses were restricted to questions that were relatively comparable between the surveys.

The 1996/97, 2002/03, 2006/07 NZ Health Surveys collected data via a face-to-face interview whereas NZADUS was based on self-completed computerised interviews for sensitive questions. Also, other factors, including the question order, may have affected the comparability of results. For comparable questions, data from previous NZ Health Surveys were reanalysed for the 16–64-year old population.

Although care was taken to ensure that only questions with similar wording were used to assess changes in indicators, caution is required when comparing the results as other factors (such as question order) can influence responses to an unknown extent.

12 Dissemination of Data

There are several ways to access the results and data from the NZADUS:

- publications
- online data tables
- confidential unit record files (CURFs)
- contacting HDI.

12.1 Publications

Reports and technical papers about the NZADUS are available on the Ministry of Health website at:
http://www.moh.govt.nz/moh.nsf/indexmh/dataandstatistics-survey-alcoholanddruguse.

The first publication on the NZADUS was released in October 2009: *Alcohol Use in New Zealand* (Ministry of Health 2009), followed by *Drug Use in New Zealand* (Ministry of Health 2010) in January 2010. These reports provide updates of alcohol and drug use in New Zealand, examining current use, consumption patterns, harmful effects and the help-seeking behaviour of the respondents. Changes over time in the prevalence of current use are also presented.

These two publications presented the key findings of the NZADUS by gender, age group, ethnic group and neighbourhood deprivation. Results are compared with earlier surveys, where possible.

12.2 Online data tables

To see the data for all key descriptive analyses presented by gender, ethnic group, age group and NZDep2006, go to
http://www.moh.govt.nz/moh.nsf/indexmh/dataandstatistics-survey-alcoholanddruguse, where data tables can be accessed online in Excel format.

12.3 Access to confidentialised unit record files (CURFs)

The analyses presented in publications are only a small proportion of those that could be undertaken. HDI encourages researchers to use NZADUS data sets to explore topics of interest. The NZADUS CURF, with accompanying documentation and user guides, will be available in late 2010.

CURFs have had all identifying information about individuals removed, and have been modified to protect individual information. Approval is subject to certain criteria, terms and conditions, and the researcher's organisation must sign a microdata access agreement with HDI. Refer to HDI's Microdata Data Access Protocol online for more information and to download the application form (http://www.moh.govt.nz/moh.nsf/indexmh/hdi-data#access).

12.4 Contacting HDI

For more information on NZADUS, please contact:

Health and Disability Intelligence
Health and Disability Systems Strategy Directorate
Ministry of Health
PO Box 5013
Wellington 6145
New Zealand

Tel: +64 (4) 816 2000
Fax: +64 (4) 496 2340
Email: hdi@moh.govt.nz. Or, to contact staff directly, email:
[firstname_lastname]@moh.govt.nz

References

Ahmad O, Boschi-Pinto C, Lopez A, et al. 2000. *Age-standardization of Rates: A new WHO standard*. Geneva: World Health Organization.

Callister P, Didham R, Potter D, et al. 2007. Measuring ethnicity in New Zealand: developing tools for health outcomes analysis. *Ethnicity and Health* 12: 299–320.

Crampton P, Salmond C, Kirkpatrick R. 2004. *Degrees of Deprivation in New Zealand: An atlas of socioeconomic difference*. Auckland: David Bateman.

Deville JC, Särndal CE. 1992. Calibration estimators in survey sampling. *Journal of the American Statistical Association* 87: 376–82.

Kish L. 1949. A procedure for objective respondent selection within the household. *Journal of the American Statistical Association* 44(247): 380–7.

Korn EL, Graubard BI. 1998. Confidence intervals for proportions with small expected number of positive counts estimated from survey data. *Survey Methodology* 24(2): 193–201.

Korn EL, Graubard BI. 1999. *Analysis of health surveys*. John Wiley & Sons, Inc. ISBN 0-471-13773-1.

Ministry of Health. 1999. *Taking the Pulse: The 1996/97 New Zealand Health Survey*. Wellington: Ministry of Health.

Ministry of Health. 2004. *A Portrait of Health: Key results of the 2002/03 New Zealand Health Survey*. Wellington: Ministry of Health.

Ministry of Health. 2005. *The New Zealand Health Monitor: Updated strategic plan.* Wellington: Ministry of Health.

Ministry of Health. 2007a. *Alcohol Use in New Zealand: Analysis of the 2004 New Zealand Health Behaviours Survey – Alcohol Use*. Wellington: Ministry of Health.

Ministry of Health. 2007b. *Drug Use in New Zealand: Analysis of the 2003 New Zealand Health Behaviours Survey – Drug Use*. Wellington: Ministry of Health.

Ministry of Health. 2008a. *Presenting Ethnicity: Comparing prioritised and total response ethnicity in descriptive analyses of New Zealand Health Monitor surveys.* Wellington: Ministry of Health.

Ministry of Health. 2008b. *Methodology Report for the 2006/07 New Zealand Health Survey.* Wellington: Ministry of Health.

Ministry of Health. 2009. *Alcohol Use in New Zealand: Key results of the 2007/08 New Zealand Alcohol and Drug Use Survey*. Wellington: Ministry of Health.

Ministry of Health. 2010. *Drug Use in New Zealand: Key results of the 2007/08 New Zealand Alcohol and Drug Use Survey*. Wellington: Ministry of Health.

Rao JNK, Wu CFJ. 1988. Resampling inferences with complex survey data. *Journal of the American Statistical Association* 83(401): 231–41.

Salmond C, Crampton P, Atkinson J. 2007. *NZDep2006 Index of Deprivation User's Manual*. Wellington: Department of Public Health, University of Otago.

Shao J, Tu D. 1995. *The Jackknife and Bootstrap.* New York: Springer-Verlag.

Statistics New Zealand. 2007. *Principles and Protocols for Producers of Tier 1 Statistics.* Wellington: Statistics New Zealand.

Tourangeau R, Yan T. 2007. Sensitive questions in surveys. Psychological Bulletin 133(5): 859–83.

Woodruff RS. 1952. Confidence intervals for medians and other position measures. *Journal of the American Statistical Association* 47: 635–46.

Appendix 1: Information Provided to Participants

Invitation letter

MINISTRY OF HEALTH
MANATŪ HAUORA

133 Molesworth St
P.O. Box 5013
Wellington 6011
New Zealand
Phone (04) 496 2000
Fax (04) 496 2340

Dear Householder

The Ministry of Health invites you to take part in the 2007 New Zealand Alcohol and Drug Use Survey (ADUS07)

Your household has been selected by chance to participate in the 2007 New Zealand Alcohol and Drug Use Survey (ADUS07). About 9,000 people will take part in this survey over the next 4 months. The information collected will be used to develop policies around alcohol and drug use, and improve alcohol and drug programmes and services to better meet the needs of New Zealanders.

One adult aged 16 to 64 years old, if any in your household, will be invited to take part. While participation is voluntary, the Ministry of Health hopes you will consent to participate. Your participation is important to improve the health of New Zealanders and the New Zealand health system.

An interviewer from CBG Health Research will visit your house to speak with you further and answer any questions you may have. Interviewing will take place throughout New Zealand from July 2007 to December 2007.

Regards

Stephen McKernan
Director-General of Health
Ministry of Health

Your interviewer's name is _____

Appointment Day _____ Date _____ Time _____

If you would like to change this appointment or request an interviewer of the same gender or ethnicity as yourself, please phone CBG Health Research on 0800 4SURVEYS (0800 478783).

English-language information brochure

What is the information used for?

The Ministry of Health will use the information from the ADUS07 to:

- monitor the use of alcohol and use of different drugs in the population
- develop health policies around alcohol and other drug use
- develop alcohol and drug programmes and services that better meet the needs of New Zealanders
- conduct additional health research about alcohol and other drug use.

Health researchers outside of the Ministry of Health can apply to use ADUS07 data. This data will not contain any information that could identify you (in accordance with the Health Act 1956, clause 22H).

Where can I find the survey results?

The Ministry of Health will publish the ADUS07 results on its website in late 2008. You can get a free copy from the website www.moh.govt.nz/publications

Further enquiries

For more information on the ADUS07 please visit:
www.moh.govt.nz/phi/surveys/adus

or phone CBG Health Research Limited on
0800 4SURVEY (0800 478783) if you have any questions.

Thank you for reading this pamphlet.

The ADUS07 has been approved by the Multi-region Health Research Ethics Committee and is managed by Public Health Intelligence, the epidemiology and research group of the Ministry of Health, www.moh.govt.nz/phi,
email: phi@moh.govt.nz

HP 4402
May 2007

CBG

MINISTRY OF HEALTH
MANATŪ HAUORA

2007 New Zealand Alcohol and Drug Use Survey

For more information call
CBG Health Research on
0800 4SURVEY (0800 478783)

What is the 2007 New Zealand Alcohol and Drug Use Survey?

The 2007 New Zealand Alcohol and Drug Use Survey (ADUS07) collects information about the use of alcohol and other drugs from New Zealanders aged 16 to 64 years. About 9000 people will take part in this survey over the next 4 months.

Surveys about alcohol use were conducted in 1995, 2000 and 2003/04, and surveys about drug use were conducted in 1990, 1998, 2001 and 2003. This is the first time the two topics have been combined into one survey.

Who is carrying out the survey?

A company called CBG Health Research has been contracted by the Ministry of Health to interview people for the ADUS07.

Why was I asked to participate?

Addresses from selected areas of New Zealand were chosen by chance. One adult (if any aged 16 to 64 years) from your household will be asked to take part.

Your experiences are important to the Ministry of Health. Even if you have never used alcohol or drugs, or only tried them once, the Ministry would like to hear from you. We want to have a clear picture of how often New Zealanders use alcohol and other drugs.

What questions will be asked?

The ADUS07 asks questions about:

- alcohol use (first time tried, how often, where used, how much, any need for help to reduce alcohol use)
- BZP party pill use (first time tried, how often, where used, any need for help to reduce BZP party pill use)
- drug use (first time tried, how often, where used, any need for help to reduce drug use)
- alcohol and drug use related harm.

How will the questions be asked?

The interview is done in three parts. First, the interviewer asks you questions about your alcohol and BZP party pill drug use in the last 12 months. Second, you complete a questionnaire on your own. The interviewer will show you how to do it, but they will not be able to see your answers. The more sensitive questions, which may make some people feel uncomfortable, are included in this second section. Lastly, the interviewer asks you some general questions about you.

You can tell the interviewer if there are any questions you don't want to answer.

How long will it take?

The interview takes about 30 minutes to complete. This can be done at a date and time that suits you and your family.

How is my privacy protected?

The information you provide to the interviewer is confidential and protected by the Privacy Act 1993. This means the interviewer will not discuss your information with anyone else, and no-one will be able to know that you have taken part in this survey.

The section of the questionnaire that contains sensitive questions is completely private, as you answer these questions on your own. When you finish, the section is sealed and the interviewer cannot see your answers.

The answers you give to questions are added to other people's answers to create group statistics. No personal information will be given to other government departments or researchers.

Consent form

2007 Alcohol and Drug Use Survey (ADUS07)

Request for interpreter

English	I wish to have an interpreter.	Yes	No
Māori	E hiahia ana ahau ki tētahi kaiwhakamāori korero.	Ae	Kao
Samoan	Ou te mana'o ia i ai se fa'amatala upu.	Ioe	Leai
Tongan	Oku ou fiema'u ha fakatonulea.	Io	Ikai
Cook Island	Ka inangaro au i tetai tangata uri reo.	Ae	Kare
Niuean	Fia manako au ke fakaaoga e taha tagat fakahokohoko kupu.	E	Nakai
Fijian	Au gadreva me dua e vakadewa vosa vei au.	Io	Sega
Chinese	我希望有口译员	是	否
Korean	통역사가 필요합니다.	예	아니오
Hindi	१. अनुवादक, टीकाकार, दुभाषिया, व्याख्याता	हां	नहीं

Consent form

I agree to take part in the 2007 Alcohol and Drug Use Survey (ADUS07).

Please read each bullet point carefully before signing below:

- I have read and I understand the information pamphlet on the ADUS07. I know I can ask questions at any time and I can contact CBG Health Research on 0800 4SURVEY (0800 478783) or the Ministry of Health (www.moh.govt.nz) if I want further information.
- I know that I can stop the interview at any time and I don't have to answer every question. There is no disadvantage to me if I don't want to take part or if I stop at any time.
- I know that my participation in the ADUS07 is confidential and any information that could identify me will never be used in any reports on this study. All my answers are protected by the Privacy Act 1993.

Name: (Please Print) _____

Signed: _____ **Date:** _____/_____/_____

Interviewer's signature _____

MB | | | | | | | | | | Household ID | | | | | | | |

White: Interviewer's copy
Blue: Respondent's copy

HP 4428
July 2007

Appendix 2: Sample Sizes

Tables A1 to A3 show the NZADUS sample sizes and the total usually resident population counts by gender, age and ethnicity.

Please note that due to the complex sample design of the survey the sample size is not the only determinant of the reliability of the results. The geographic clustering of the sample, the unequal probabilities of selection, and the boosted sampling of Māori and Pacific peoples in the survey also affect the precision of estimates.

Table A1: Sample sizes and population counts, by gender, 16–64 years, NZADUS

Gender	Sample size	Population
Men	2,421	1,267,091
Women	4,363	1,373,426
Total	6,784	2,640,517

Note: Population (rounded to the nearest hundred) is the benchmark population used for weighting.

Table A2: Sample sizes and population counts, by ethnic group and gender, 16–64 years, NZADUS

Ethnic group	Gender	Sample size	Population
Māori	Men	641	150,441
	Women	1,184	177,088
Pacific	Men	308	71,969
	Women	509	79,870
Non-Māori non-Pacific	Men	1,599	1,044,681
	Women	2,929	1,116,468

Note: Total response ethnicity is considered in the sample, so, the total is more than the sample size. Population (rounded to the nearest hundred) is the benchmark population used for weighting.

For more information about the use of total response ethnic groups for New Zealand Health Monitor surveys, see Ministry of Health 2008a.

Table A3: Sample sizes and population counts, by age group and gender, 16–64 years, NZADUS

Age group	Gender	Sample size	Population
16–17 years	Men	98	62,917
	Women	126	61,193
18–19 years	Men	117	54,781
	Women	141	53,381
20–24 years	Men	229	132,268
	Women	394	140,150
25–29 years	Men	253	120,563
	Women	445	134,638
30–34 years	Men	264	122,631
	Women	553	140,950
35-39 years	Men	280	142,272
	Women	602	164,290
40–44 years	Men	260	144,698
	Women	524	161,919
45–49 years	Men	247	147,292
	Women	428	160,299
50–54 years	Men	233	128,486
	Women	384	136,070
55–59 years	Men	190	114,890
	Women	362	119,928
60–64 years	Men	218	96,293
	Women	332	100,608

Note: Population (rounded to the nearest hundred) is the benchmark population used for weighting.