



Justice Sector

THE NEW ZEALAND CRIME AND SAFETY
SURVEY 2009:
Technical Report

December 2010

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1 Introduction

This report describes the design and methods of the 2009 New Zealand Crime and Safety Survey (NZCASS). The 2009 survey is the fourth national victimisation survey undertaken in New Zealand. The first two surveys (called the New Zealand National Survey of Crime Victims) were undertaken in 1996 and 2001. In 2006, the survey was renamed the New Zealand Crime and Safety Survey.

The fieldwork for 2009 NZCASS was conducted for the Ministry of Justice by the National Research Bureau (NRB). The statistical weighting and imputation was provided by James Reilly of Statistical Insights, and the legal offence coding was performed by staff and students from the Faculty of Law of Victoria University of Wellington. The data analysis was undertaken by Ministry of Justice staff.

The 2009 NZCASS was based on a nationally representative random sample of 6,106 people aged 15 and over living in private households throughout New Zealand (excluding most offshore islands). This includes a 'booster' sample of 1,297 Māori. Oversampling Māori improves the reliability of estimates for this group.

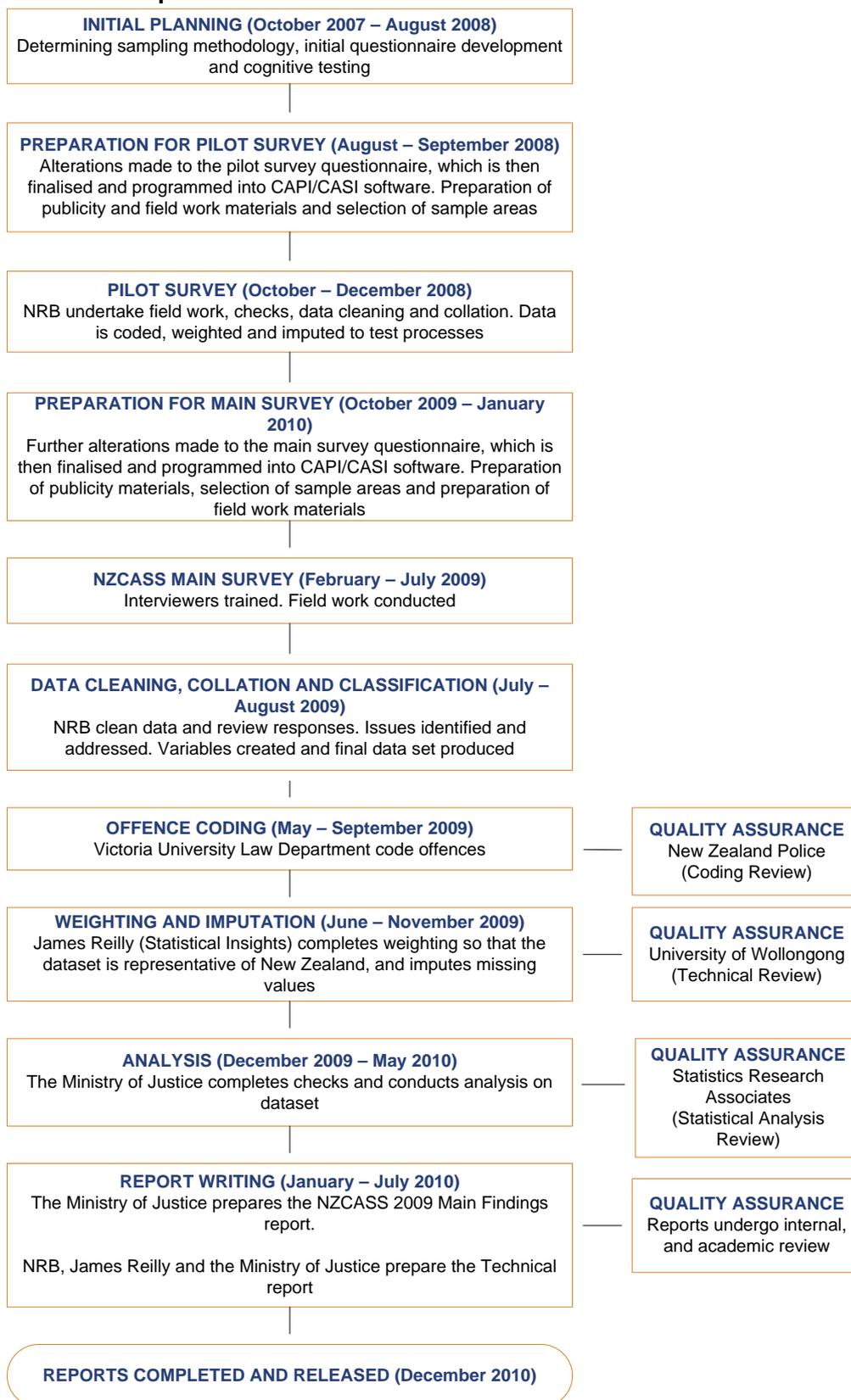
Respondents were interviewed at their homes. They were asked whether they had been a victim of the crimes covered by the survey since 1st January 2008, the circumstances and impact of the crimes they had experienced and a number of other crime-related issues.

1.1 Purpose of the 2009 NZCASS

The 2009 NZCASS:

- Measures the amount of crime in New Zealand in 2008 by asking people about crimes they experienced themselves. The survey includes crimes not reported to the Police, so it is an important complement to police records. Victims do not report crime for various reasons. Without the NZCASS, we would have no information on these unreported crimes.
- Provides information on offences reported to the Police, and the reasons for not reporting. It also gives information on how well victims thought the Police responded when they did report a crime.
- Can show changes in the amount and effects of victimisation between 2005 and 2008. Comparisons with earlier surveys are limited due to changes in the survey design (see section 1.3 below).
- Identifies those most at risk of different types of crime in terms of age, gender, ethnicity, etc.
- Gives information on the nature of victimisation, such as its physical, financial and emotional effects.
- Gives information on the public's perception of crime problems in their areas, and on their concerns about personal victimisation.

Figure 1.1: The NZCASS process



1.2 The process of NZCASS 2009

Figure 1.1 shows the process that was undertaken from planning the 2009 NZCASS to producing the Main Findings report. Key stages were quality assured to ensure that the methods and design were appropriate, and where possible followed the 2006 methodology to ensure comparisons could be drawn between the two surveys.

1.3 Comparability between surveys

As mentioned previously, the 2009 NZCASS is New Zealand's fourth victimisation survey. The 2009 survey was designed to allow comparisons to be drawn between 2006 and 2009, by replicating the 2006 sampling processes, questionnaire and offence coding processes as close as possible. The 2009 NZCASS results were compared to the 2006 results, but not to those of the previous surveys due to significant methodological changes made between the 1996, 2001 and 2006 surveys.

1.4 Report structure

This report provides technical documentation of the survey design and methods used to produce the survey findings. The report begins at the *initial planning* stage and ends at the *weighting and imputation* stage.¹ The specific topics covered are:

- sample design
- questionnaire design and testing
- fieldwork procedures and interviewers
- validation and checking of interviews
- audits and checks
- response rate calculations and interview duration
- survey weights
- imputation methods
- variance estimation.

¹ Descriptions of the offence coding and analysis stages are covered in separate reports.

2 Sampling methodology

2.1 Overview of the sample

Broadly stated, the methodology for the 2009 NZCASS was a nationwide, random probability survey, with respondents selected from households using multistage sampling methods, which are described in detail below. The primary sampling unit (PSU) for the 2009 survey was Statistic New Zealand's meshblocks. The method employed for the survey was individual face-to-face CAPI² and CASI (self-completion³) laptop interviews.

The 2009 NZCASS multistage design was almost identical to that used in the 2006 NZCASS, and the 2001 and 1996 New Zealand National Survey of Crime Victims (NZNSCV). The sample was drawn in a multistage sequence commencing from an unstratified (Cochran, 1977) frame, through to clusters of dwellings, and then to a single respondent from each dwelling. That is, areas (meshblocks) were selected first, then households within areas, and then one respondent within each household was selected. Each of these steps forms a distinct sampling stage. The final stage in the sample design was the selection of a small number of incidents from those experienced by respondents. Each of these four stages is detailed further below. Known probabilities of selection apply to all respondents.

The 2009 NZCASS comprised two samples: a main sample, and a Māori booster sample. The Māori booster sample was selected so that the survey produced more reliable results for Māori. In the 2009 survey, the same meshblocks were selected for the main and Māori booster sample. In comparison, in the 2006 survey the areas (Nielsen Area Units, or NAUs) selected for the Māori booster sample were selected independently from the main sample areas, meaning that only Māori were eligible in these NAUs. This difference in the design of the Māori booster sample may have had some effects, although these effects are considered to be small. For example, this may have affected the Māori booster sample response rate (see Chapter 6 for more detail).

The number of interviews targeted and achieved in the 2006 and 2009 surveys is shown in Table 2.1 (see section 6.2 and Appendix A1 for more detail). The 2006 targeted and achieved interview numbers were used as a guide in determining the 2009 targets.

Table 2.1: Interviews targeted and achieved in the 2006 and 2009 NZCASS

Sample	2006 Target	2006 Achieved	2009 Target	2009 Achieved
Main	4,000	4,229	4,030	4,809
Māori booster	1,600	1,187	1,409	1,297
Total	5,600	5,416	5,439	6,106

² Computer Assisted Personal Interviewing; that is, questions administered by an interviewer.

³ Computer Assisted Self Interviewing; that is, questions completed by a respondent.

Some of the key features of the 2009 survey methodology are presented in Table 2.2.

Table 2.2: Key features of 2009 survey methodology

- The 2009 survey methodology was designed to replicate the 2006 NZCASS methodology as closely as possible.
- Meshblocks were used as the Primary Sampling Unit. One thousand meshblocks were selected for the survey. In 2006, 800 NAUs were selected for the main sample, and 320 separate NAUs were selected for the Māori booster sample.
- The dwellings approached in each meshblock were separated into main sample (core) dwellings, and Māori booster sample (screened) dwellings.
- The research was conducted in the homes of eligible respondents, with one respondent per household. To be eligible for interview, respondents had to be the person in the household aged 15 years or over with the next birthday. A further initial criterion for eligibility applied in Māori booster sample households, where respondents had to identify as being New Zealand Māori.
- It was expected that an average of 6.5 dwellings would be approached in each meshblock for the main sample, and that this would result in an average of four interviews per area. A maximum of 10 dwellings could be approached in each area for the main sample. For the Māori booster sample, a maximum of 16 dwellings could be approached in each area.
- The main sample averages and the Māori booster sample maximum were used, together with the expected response rate, and, in the case of the Māori booster sample, an estimate of the percentage of dwellings containing at least one Māori resident aged 15 or over, to ensure that 4,030 main sample interviews were conducted, and 1,439 Māori booster sample interviews were conducted.

2.2 Target population

The population targeted for the survey was the total usually resident, non-institutionalised, civilian population of New Zealand aged 15 years and over.

2.2.1 Geographic coverage

The survey extended across all areas of the North Island, South Island and Waiheke Island. Other offshore islands were not covered by the survey. PSUs containing fewer than nine dwellings were also excluded from the frame.

2.2.2 Dwellings coverage

The survey covered the eligible population living within permanent, private dwellings.⁴

⁴ In general, where 'dwellings' are mentioned in this chapter, this refers to permanent, private dwellings, which includes both occupied and unoccupied dwellings. Census 2006 dwelling counts are of occupied permanent, private dwellings, and excludes unoccupied dwellings. When interviewers select (permanent, private) dwellings to approach, these include both unoccupied and occupied dwellings, and the unoccupied dwellings are categorised as 'Vacant (V)', in the household contact outcomes.

Expressed in terms of the Census descriptions for various dwelling types, the phrase 'permanent, private dwelling' is defined as either a separate house, or two or more houses or flats joined together or a flat or house joined to a business or shop or a bach, crib or hut (as long as they are not attached to a work camp), that are used as private dwellings.

Private dwelling types that were not included in the survey were temporary private dwellings such as caravans, cabins or tents in a motor camp, or boats. All non-private dwellings were excluded from the survey. Examples of this type of dwelling included hotels, motels, guest houses, boarding houses, hostels and motor camps. Members of the New Zealand population living in institutions were also excluded from the survey. Examples of these institutions included hospitals and psychiatric institutions, prisons, barracks for the New Zealand armed forces, and homes for the elderly.⁵

2.2.3 Eligible respondents

All people aged 15 years and over who are usually resident within permanent private dwellings were eligible for selection as respondents.⁶

The term 'usually resident' excluded people who were present within the dwelling at the time of the interview but who usually resided elsewhere (either within New Zealand or overseas). Other people who were ineligible were non-New Zealand diplomats and their non-New Zealand staff, members of non-New Zealand armed forces stationed in New Zealand, and overseas visitors in New Zealand for less than 12 months.

For the Māori booster sample, the usually resident adult (aged 15 or over), had to also identify as Māori to be eligible. During screening, the 'door-opener' was asked: "Is there anyone usually living here aged 15 years or older who might consider themselves Māori? That is, if asked which ethnic group or groups they belong to, they would include Māori." This was the same as the method and wording used in the 2006 survey. In 2009, if the selected respondent in the Māori booster household was not the 'door-opener', the selected respondent's identification as Māori was checked with them prior to the interview, to ensure they were eligible.

2.3 Survey frame

The survey frame provided the first stage in the sampling process, which proceeded to dwelling selection within the meshblock and then on to respondent selection within the dwelling. The procedure for this selection process is described in Section 2.4.

The survey frame was the list of meshblocks that fell within the geographical coverage of the survey. All meshblocks on islands (except Waiheke), waterways and inlets were removed from the frame, as were meshblocks with fewer than nine dwellings. A total of 34,728 meshblocks

⁵ Hospitalised or dependent residents of homes for the elderly were ineligible for the survey. However, residents of these homes who were living independently (for example, in self-contained units) were eligible.

⁶ The Australian Bureau of Statistics methodological review of the 1996 NSCV recommended that the official definition of 'usually resident' be adopted. This was used for the 2001 and 2006 surveys, and was used again in 2009. It mandates respondent self-definition of 'usually resident', with a number of exceptions. These are defined in Statistics New Zealand's "Statistical Standard for Usual Residence 1999".

remained in the frame.⁷ While these two processes excluded 6,656 meshblocks (or 16 percent of all meshblocks), they excluded only 2 percent of all dwellings from the survey frame.

A meshblock is the smallest geographical statistical unit for which data is collected and processed by Statistics New Zealand. They provide the aggregation into larger statistical units such as area units, territorial local authorities and regions. There are 41,384 meshblocks defined in New Zealand.

In the previous NZCASS/NZNSCV surveys (1996, 2001, and 2006), a different area frame was used - Nielsen Area Units (NAUs). An NAU is larger than a meshblock, as each NAU combines on average seven meshblocks. Each of the approximately 6,000 NAUs contained around 230 dwellings (Reilly & Sullivan, 2008:47), whereas each of the 41,384 meshblocks in the 2009 survey contained around 35 dwellings. As the areas used in 2006 and 2009 contained differing average dwelling sizes, this may have had some effects on the sample, but it is thought that these effects are minor.

Meshblocks were ordered by region and then within region by urban area classification. The meshblock dwelling counts, as at Census 2006, were used to attach a cumulative dwelling count to each meshblock.

2.4 Sample design – sampling stages

2.4.1 Primary Sampling Unit (meshblocks): meshblock selection

The first level of sampling took place at the level of meshblock. A total of 1,000 meshblocks were selected.⁸ Each of these meshblocks were sampled systematically from a randomly selected starting dwelling.

This start point (dwelling) was calculated by taking a random number between 0 and $\frac{\sum_{i=1}^N x_i}{n}$.

This created the series of numbers ...

$$\left(\text{start}, \text{start} + \frac{\sum_{i=1}^N x_i}{n}, \text{start} + 2 * \frac{\sum_{i=1}^N x_i}{n}, \dots, \text{start} + 999 * \frac{\sum_{i=1}^N x_i}{n} \right) \dots$$

Which gave the 1,000 points which identified the meshblocks to be included in the sample. Where...

n is the number of meshblocks to be sampled.

x_i is the number of dwellings in the 'ith' meshblock as reported in Census 2006.

N is the number of meshblocks in the frame.

⁷ The 2006 Census count of occupied, private dwellings for these meshblocks was 1,455,093.

⁸ 1,000 meshblocks were selected from 34,728 in 2009, whereas in 2006, 1,120 NAUs were selected from approximately 6,000 NAUs.

The probability of selection for each meshblock was in direct proportion to the number of dwellings (as reported by 2006 Census counts of occupied, private dwellings) within the meshblock. This is PPS (probability proportional to size) sampling (Cochran, 1977).

The 2009 NZCASS used systematic PPS sampling, as described above.⁹ The 2006 NZCASS used a stratified systematic PPS sample, with replacement, for both the main and Māori booster samples.¹⁰

In 2009, 1,000 meshblocks were chosen, and the main and Māori booster samples were selected from within these meshblocks (see below). In comparison, in 2006, 800 main sample NAUs were selected and 320 separate Māori booster NAUs were selected. The distribution of the sample meshblocks is shown below by Region and Urban Classification, and is compared with the Census 2006 distribution.

Table 2.3: Distribution of sampled meshblocks

Region	Urban Classification							
	Major Urban Area		Secondary Urban Area		Minor Urban Area		Rural Area or Centre	
	Census 2006 Dwellings	NZCASS Mesh-blocks						
Northland	1.3%	1.3%	0.7%	0.6%	-	-	1.8%	1.9%
Auckland	27.6%	27.6%	0.4%	0.4%	0.7%	0.7%	1.3%	1.2%
Waikato	4.5%	4.5%	1.0%	1.0%	1.9%	1.9%	2.1%	2.1%
Bay of Plenty	4.2%	4.2%	0.5%	0.5%	0.7%	0.7%	1.2%	1.2%
Gisborne	0.8%	0.7%	-	-	-	-	0.3%	0.3%
Hawke's Bay	3.0%	3.0%	-	-	0.3%	0.3%	0.5%	0.4%
Taranaki	1.3%	1.4%	0.3%	0.2%	0.5%	0.6%	0.6%	0.6%
Manawatu-Wanganui	3.0%	2.9%	0.9%	0.9%	0.8%	0.9%	1.0%	1.0%
Wellington	10.2%	10.1%	0.5%	0.6%	0.4%	0.4%	0.4%	0.4%
Tasman	0.4%	0.4%	-	-	0.3%	0.3%	0.5%	0.5%
Nelson	1.2%	1.2%	-	-	-	-	-	-
Marlborough	-	-	0.8%	0.7%	0.1%	0.2%	0.3%	0.2%
West Coast	-	-	0.3%	0.3%	0.2%	0.2%	0.3%	0.3%
Canterbury	9.5%	9.6%	1.2%	1.2%	1.1%	1.1%	1.9%	1.9%
Otago	2.8%	2.8%	0.4%	0.4%	0.9%	0.9%	1.0%	1.0%
Southland	1.3%	1.2%	0.3%	0.3%	0.2%	0.2%	0.6%	0.6%

⁹ The 2009 systematic sample method used meant that PSUs were selected without replacement, thus each meshblock in the sample frame could be selected only once. For the 2009 systematic PPS sampling, there was no practical difference between the 'with replacement' and 'without replacement' selection methods, as no meshblocks contained enough dwellings to be selected twice: 1,000 meshblocks were selected out of 34,728, the systematic household 'step' or 'skip' was 1,455, and the largest 2009 meshblock contained 291 (occupied, private) dwellings.

¹⁰ In 2006, a 'with replacement' sampling method was used. One NAU was selected twice for the main sample, and another was selected three times. No NAUs were selected twice for the Māori booster sample.

2.4.2 Secondary Sampling Unit (dwellings): dwelling selection

Main sample (core sample)

NRB provided the interviewer with both the description of streets and a map of their meshblock. Each meshblock was described according to the streets, side of street and the portion of street belonging to the meshblock. A systematic, random start point was chosen by NRB, and marked on each meshblock map, to prevent interviewers from selecting the start point. A randomly selected start point was also used in the 2006 NZCASS (Reilly & Sullivan, 2008).

Every 'X'th permanent, private dwelling from a starting point within the meshblock was selected for the main sample. This process distributed the selected dwellings throughout the meshblock.

The 'X' is a sample fraction derived by dividing the number of Census counts of occupied, private dwellings in the meshblock by the cluster size. The cluster size was set at 6.5; that is, the average cluster size of dwellings to be approached (or visited) in the 1,000 meshblocks for the main sample was 6.5. In 2006, this cluster size for the NAUs was nine (Reilly & Sullivan, 2008).

The 2009 cluster size was determined by the number of meshblocks sampled (1,000), the targeted response rate (62%) and the final required sample size (4,030). In other words, approaching 6,500 dwellings with a response rate of 62 percent would result in 4,030 interviews. This means an average interview cluster size of four (4,030/1,000) was targeted in 2009. In comparison, the 2006 NZCASS targeted an average interview cluster size of five. In both 2009 and 2006, the average main sample interview cluster sizes targeted provided a good compromise between sample spread and cost efficiency.

As described above, every 'X'th dwelling was approached for inclusion in the main sample, and this method distributed the selected dwellings throughout the meshblock, irrespective of meshblock size. This method minimised the clustering effect even further than in 2006, where every fourth dwelling was approached.¹¹ This method distributed the selected dwellings evenly throughout each meshblock, except in a very small number of meshblocks that had experienced significant growth since the March 2006 Census.

Interviewers could approach a maximum of 10 dwellings in each meshblock for the main sample. This limit was imposed to ensure interview cluster sizes did not get too large in the very small number of meshblocks that had experienced significant growth since the March 2006 Census. (See Appendix A3 for detail on Census and dwelling counts.)

Dwellings in rural areas were approached using the same method as that used in non-rural areas. In 2006, consecutive dwellings were approached in rural areas to minimise travel costs. The result of this difference is that there was less interview clustering in rural areas in the 2009 survey than in the 2006 survey.

¹¹ As nine dwellings were approached for each NAU in 2006, this meant that the first 33 dwellings in each NAU were worked in, out of, on average, 230 dwellings (ie., around 15% of each NAU was worked in). This differs from the 2009 method which distributed the selected dwellings across each meshblock.

An outcome was obtained from every dwelling in the main sample cluster (see Chapter 6 for further details of contact outcomes and response rates in the main sample).¹²

Māori booster sample (screened sample)

In addition to the main sample (core) dwellings, up to 16 additional dwellings were also sampled for the Māori booster sample. This number was determined by the number of meshblocks sampled, the anticipated response rate, the incidence of dwellings containing Māori, and the required Māori subsample. The number of dwellings to approach was held constant at 16, rather than being recalculated for each meshblock. The exception to this was where meshblocks had a low number of dwellings overall, and it was therefore not possible to approach 16 Māori booster sample dwellings (discussed further below).

The 1,000 meshblocks selected for the sample were sent to Statistics New Zealand to determine the likely ethnic group interview yields for the main and Māori booster samples. These yields were used to determine the maximum number of dwellings (16) per meshblock approached for the Māori booster (screened) sample.¹³

In these dwellings, residents of Māori ethnicity were eligible for selection. Respondents with Māori ethnicity were defined as 'screenable respondents'. The sampling fraction applied to these dwellings was one, once all the main sample (core) dwellings had been identified and set aside. Starting from the dwelling adjacent to the first selected main sample dwelling, the dwellings 'in-between' the main sample dwellings were consecutively selected, up to a maximum of 16 dwellings.

As a maximum of 26 dwellings could be approached (10 in the main sample and 16 in the Māori booster sample), in the small percentage of meshblocks that contained fewer than 26 dwellings, it was possible that fewer than 16 dwellings would be approached for the Māori booster sample. In practice, often seven main sample dwellings were approached, as a main sample cluster size of 6.5 was targeted.

Meshblocks which contained fewer than nine dwellings, according to 2006 Census counts were not included in the sample. In meshblocks with a Census count of nine, only main sample dwellings were selected. Thirty-six of the 1,000 meshblocks selected had a Census count of nine, and therefore no dwellings were approached for the Māori booster sample.

An outcome was obtained from every dwelling in the Māori booster sample (see Chapter 6 for more details).

In 2006, a different method was used to select the Māori booster sample. Three hundred and twenty NAUs were selected for the Māori booster sample, and these were separate from the 800 main sample NAUs. Māori booster NAUs were selected with probability proportional to the estimated number of Māori dwellings. An average interview cluster size of five was targeted in these 320 NAUs, with the goal of achieving 1,600 interviews. NAUs with a low Māori density

¹² Outcomes were: Interview (I), Household Refusal (HR), Respondent Refusal (RR), Not Eligible (NE), Access Denied (AD), and Unavailable (U). Please see also Tables 6.4 and 6.5.

¹³ These are sampled home numbers 11 to 26 in the NZCASS data. In the October 2008 pilot survey, a maximum of 18 dwellings were approached in the Māori booster sample in each meshblock: these were sampled home numbers 11 to 28 in the NZCASS pilot survey data.

were deleted from the sampling frame. As in the 2001 survey, NAUs where less than 5 percent of dwellings contained Māori were removed from the sampling frame for the booster sample. This accounted for 3 percent of NAUs, but only 0.2 percent of Māori households.

2.4.3 Tertiary Sampling Unit (respondents): respondent selection

To select the respondent within each sampled dwelling, the interviewer asked the person who answered the door for a list of the first names and birth month of every eligible respondent in the dwelling (see section 2.3 for more detail). The interviewer selected the person who had the next birthday to be the respondent. There was no substitution in the case of non-response.

For situations where the next birthday was not known (for example, in a household where a flatmate did not know birth months of other flatmates), the screener included an alternative procedure based on the alphabetical order of first names. This alternative procedure selected the adult (aged 15 or over) whose first name began with the letter earliest in the alphabet.

Because many types of victimisation are household-based, only one respondent per dwelling was selected. This provided efficient measurement of household victimisation, and avoided potential contamination effects that may have arisen if more than one person in a household was interviewed. As discussed in Chapter 8, weights for person-based estimates incorporated the number of residents aged 15 or older per household to remove any household size biasing effect, which is a routine statistical procedure for household-based surveys.

2.5 Household and meshblock calls

Once the ethnic group yields described in section 2.4.2 (Māori booster sample) were known, this was linked with the desired response rate (62%) to determine the final number of calls (and call-backs) which would be made to each dwelling. A maximum of 10 calls (an initial call, plus nine call-backs) was made to each dwelling.

In addition, each meshblock was visited by an interviewer a minimum of five times,¹⁴ unless the interviewer had achieved or recorded a final contact outcome¹⁵ for all selected households in a meshblock (see section 4.2 for details).

¹⁴ The 2006 procedure to visit areas and approach dwellings was different (Reilly & Sullivan, 2008; 12). After an initial pre-notification visit, up to three interviewing visits were made to each area in urban areas. No pre-notification visit was made in rural areas or in booster sample areas, and up to four interviewing visits were made to each area for the booster sample. No maximum number of interviewing visits for rural areas in the main sample was specified, although it was assumed that this was the same as for urban areas. No maximum number of calls to each dwelling was specified, although six or more calls were possible for urban dwellings in the main sample.

¹⁵ Outcomes were: Interview (I), Household Refusal (HR), Respondent Refusal (RR), Not Eligible (NE), Access Denied (AD), and Unavailable (U).

2.6 Probabilities of selection

2.6.1 Meshblock – PSU

Meshblocks were selected with the following probabilities:

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

Where...

n is the number of meshblocks to be sampled.

x_i is the number of dwellings in the 'xth' meshblock as reported in Census 2006.

N is the number of meshblocks in the frame.

2.6.2 Dwelling/respondent

Non-screenable respondents within main sample (core) dwellings were selected with the following probability:

$$\frac{c_i}{y_i} * \frac{1}{e_c}$$

Where...

c_i is the number of main sample (core) dwellings sampled within the meshblock.

y_i is the number of dwellings enumerated in the xth meshblock at the time of sampling.

e_c is the number of people in the dwelling eligible for selection.

Screenable respondents within either main sample (core) dwellings or Māori booster (screenable) dwellings are selected with the following probability:

$$\frac{c_i}{y_i} * \frac{1}{e_c} + \frac{s_i}{y_i} * \frac{1}{e_s}$$

Where...

s_i is the number of dwellings screened for the ethnicity of the respondent within the meshblock.

e_s is the number of eligible people within the dwelling of screenable ethnicity.

2.6.3 Overall probabilities of selection

For respondents of non-screenable ethnicities:

$$n * \frac{x_i}{\sum_{i=1}^N x_i} * \frac{c_i}{y_i} * \frac{1}{e_c}$$

For respondents of screenable ethnicities:

$$n * \frac{x_i}{\sum_{i=1}^N x_i} * \frac{1}{y_i} \left(\frac{c_i}{e_c} + \frac{s_i}{e_s} \right)$$

2.7 Interviews conducted with Māori respondents

The number of interviews conducted with Māori respondents in the main sample, Māori booster sample, and in the sample overall are shown in Table 2.4, with interviewing targets (or expected numbers) and completion percentages.

Table 2.4: Interviews conducted with Māori respondents

	Number of interviews			
Main*	543	29.5	572***	94.9
Māori booster**	1,297	70.5	1,409	92.1
Total	1,840	100.0	1,981	92.9

* Māori respondents in the main sample included all respondents who selected Māori as one of their ethnic groups. It is a count of 'total responses', or a 'non-prioritised' count.

** Māori respondents interviewed for the Māori booster sample; those interviews with a sampled home number in the range 11 to 26.

*** The main sample number is an expected number. That is, the number of interviews expected to be conducted with Māori respondents in this part of the sample. This expected number was based on the number of meshblocks (1,000), the incidence of adult Māori in the population (14.2%), the main sample cluster size (6.5), and the response rate targeted (62%).

The percentage of interviews conducted with Māori respondents¹⁶ was 30 percent in 2009 (1,840/6,106), and 31 percent in 2006 (1,698/5,416) (Mayhew & Reilly, 2007:104).

In 2009, the number of interviews with Māori in the booster sample was 1,297. In 2006, 1,187 Māori booster sample interviews were achieved out of an expected 1,600 (or 74 percent completed; see Reilly and Sullivan, 2008:1). In 2009, 11 percent of respondents identified as Māori in the main sample (543/4,809) and in 2006, this figure was 12 percent (511/4,229).

2.7.1 Booster sample eligibility rates

There have been substantial changes in the booster sample's eligibility rate across the 2006 and 2009 NZCASS surveys and the 2001 NZCVS. Specifically, the proportion of occupied dwellings where the initial contact said there was an adult Māori living in their household at the booster eligibility screener question was 27 percent in 2001, 23 percent in 2006, and 17 percent in 2009. This decline contrasts with the increasing proportion of Māori in the population over this time period.

The screener question changed between 2001 and 2006, incorporating less blunt wording, which may explain the drop between 2001 and 2006. The booster sample design was similar in 2001 and 2006, but changed in 2009, as booster sample interviews were conducted in the

¹⁶ For detail on the percentage of interviews achieved with men see Appendix A2.

same areas as the main sample. In contrast, dedicated booster areas were selected in 2006 with probability proportional to the number of households containing Māori in each area. This change is likely to have caused the eligibility rate to drop. This change in the sample design has been adjusted for by the survey weights, to enable the comparability of results between the 2006 and 2009 NZCASS.

3 Questionnaire design and incident selection

3.1 Interview mode

As in the 2006 and 2001 surveys, the interview was conducted using CAPI (Computer Assisted Personal Interviewing) where the interviewer entered the respondent's answers onto a laptop; and CASI (Computer Assisted Self Interviewing), where the interviewer turned the laptop over to the respondent to complete sensitive sections of questioning. The Computer Assisted Interviewing (CAI) software used was Blaise CAI software.¹⁷ An important advantage of using CAI software was that it could ensure the survey logic was adhered to, and the selection of the CAPI Victim Forms could be computerised (see section 3.2.1).

3.2 Selection of incidents

At four points during the interview (at the main CAPI screener questions, and at each of the three sets of self-completion screener questions), respondents were asked how many incidents they had experienced since 1 January 2008 of various types of crime. More detailed information is then requested through a Victim Form for some of these incidents (see Figure 3.1 for an outline of the questionnaire.)

The reference period stretching from the interview date back to the beginning of the previous calendar year was retained again for 2009, to ensure comparability with the 2006 surveys.¹⁸

3.2.1 Selection of incidents in the CAPI section

The 2009 approach for the selection of incidents was identical to that used in 2006. Because completing a CAPI Victim Form took about 10 minutes, it was not feasible to get heavily victimised respondents to fill in a Victim Form for each of the incidents they experienced. Instead, if a respondent recorded more than three incidents at the CAPI screener questions, Victim Forms were only completed for a maximum of three incidents, which were randomly selected by the CAPI software. If there were three incidents or fewer, Victim Forms were completed for each incident.

The sample design for selecting incidents aimed to ensure the accuracy of incidence and prevalence rates for key offence types, and provide sufficient Victim Form information on the characteristics of major offence types, and to maintain consistency with the approach used in the 2006 survey.

Essentially, all occurrences of all incidents recorded at the CAPI screener questions were placed into a 'pool of occurrences' from which up to a maximum of three (occurrences of)

¹⁷ In 2006, Conformat CAI software was used.

¹⁸ The 1996 and 2001 NZNSCV surveys, and the 2006 and 2009 NZCASS surveys all had the same reference period. However, the interviewing periods for these four surveys have differed; see Chapter 4 for further details.

incidents were randomly selected for the (up to three) CAPI Victim Forms. Each (occurrence of an) incident was assigned a probability of selection, or weight, as described below.

Incidents were selected independently, without replacement, with selection probabilities proportional to the weight given to the incidents' screener questions. Screener questions fell into three priority categories (low, medium and high, as shown below), with corresponding selection weights 1, 2 and 3. The probability of selection for a particular incident depended on both the extent of competition from other incidents, and the screener question that the incident was recorded at.

The selection weight for incident *i* was denoted by *w_i*. Then the probability of selection for incident *j* for a particular Victim Form was $w_j / \sum (w_i)$, where the sum was taken over all incidents available for selection at that stage. (Incidents were selected without replacement, so those that had already been selected for an earlier Victim Form would not be included in the sum.) Once this incident selection design was implemented in CAPI, extensive simulation tests were conducted (along with code review) to ensure that it worked as intended (see section 3.4.3).

Each of the 15 incident types (based on the screener questions) were assigned a number and weight, as shown in Table 3.1.

Table 3.1: Crimes (incidents), description, question numbers and weights

Crime number	Crime (incident) description	Question number	Weight (level)
1	Theft of a vehicle	28	3
2	Theft from a vehicle	29	1
3	Damage to a vehicle	30	1
4	Attempt to break into your home/garage	31	2
5	Unlawful entry into your home/garage	32	1
6	Theft from outside property over \$10	34	1
7	Theft from inside your home by someone allowed to be there	35	2
8	Deliberate damage to property belonging to your household	35.416	2
9	Assault on you	36	3
10	Threat of assault on you	37	3
11	Other damage to your personal property	38	3
12	Threat to damage your personal property	39	2
13	Theft or attempted theft of something you were carrying	40	3
14	Theft of your personal property	41	2
15	Other offence type	43	1

3.2.2 Selection of incidents in the Self-Completion (CASI) section

The CASI section covered incidents that were of a more sensitive nature than those covered in the CAPI section. The CASI section contained three Victim Forms:

- Victim Form 1: Violence by a partner
- Victim Form 2: Violence by people you know well
- Victim Form 3: Sexual incidents

Each of the three CASI Victim Forms was preceded by four screener questions. If a respondent answered 'Yes' to at least one of the four screening questions preceding each of the Victim Forms, they then completed that Victim Form.

Where there was more than one incident within a CASI section, the respondent was asked to think about the most recent incident and complete a Victim Form for that incident.

Some of the heaviest victimisation was recorded in the self-completion sections (as would be expected from their coverage of victimisation within ongoing relationships). Because only one Victim Form was allocated to each section, the probability of selecting incidents experienced by these heavily victimised respondents was very low. This resulted in highly variable incident weights, and may mean that the incidents with missing data are not similar to other incidents.

3.3 Questionnaire development

The questionnaire used in the 2009 survey was based on the 2006 survey questionnaire. Although some changes were made, the final questionnaires used for both surveys were very similar. The structure of the final questionnaire is shown in Figure 3.1. Questions added into the 2009 survey are indicated by an asterisk. Questions modified since the 2006 survey are indicated by two asterisks. The questionnaire and showcards are available on the Ministry of Justice website. The screener¹⁹ and sampling sheets are in Appendix A4, as is a selection of laptop 'screenshots' (Appendix G) to illustrate the look and feel of the CAPI and CASI sections of the questionnaire.

In addition to the new and modified questions for the 2009 survey, other changes between the 2006 and 2009 surveys involved the deletion of some questions. The experience of e-crime and the cost of crime sections from the 2006 survey were not included in the 2009 survey.

The changes helped to improve consistency across different sections of the questionnaire, and addressed some issues with wording of certain 2006 questions. The development process attempted to balance desirable improvements against the need to maintain comparability with previous surveys.²⁰

¹⁹ These were called contact sheets in 2006.

²⁰ Further information on the changes between the 2006 and 2009 surveys is in the questionnaire changes log, which can be accessed from the Ministry of Justice upon request.

Figure 3.1: Outline of the 2009 NZCASS questionnaire topics

Interviewer administered (CAPI) section	Self-completion (CASI) section
<p>1.1 Main questionnaire Attitudes to local crime and incivilities Fear of and worry about crime Neighbourhood support Confidence in the criminal justice system</p> <p>1.2 CAPI Victim Form(s) CAPI victimisation screener questions Details of victimisation incident, including: ■ date of offence, same/series of offences, location of offence, mode of entry, contact with the offender, items stolen, damage, insurance, attempted theft, use of force, threats and weapon use, medical attention, emotional reactions, reporting to the police, victim needs** perception of seriousness of incident.</p> <p>1.3 Demographic questions Personal questions, such as: ■ age group ■ ethnicity ■ employment status ■ marital status ■ sexual orientation* Household questions, such as: ■ household type ■ household size ■ household tenure.</p>	<p>2.1 Self-Completion I – violence by a partner Screener questions on: ■ assault ■ threats of assault ■ vandalism to personal property ■ threats of vandalism to personal property. Victim Form questions, including: ■ reporting to Police ■ Police response* ■ victim needs** ■ emotional reaction. Psychological abuse</p> <p>2.2 Self-Completion II – offences by people well known Screener questions on: ■ assault ■ threats of assault ■ vandalism to personal property ■ threats of vandalism to personal property. Victim Form questions, including: ■ reporting to Police ■ Police response* ■ victim needs** ■ emotional reaction.</p> <p>2.3 Self-Completion III – sexual incidents Screener questions on: ■ rape ■ attempted rape ■ distressing sexual touching ■ other sexual violence or threats. Victim Form questions, including: ■ reporting to Police ■ Police response* ■ victim needs** ■ emotional reaction. 'Ever Victimised' questions, for the four types of sexual incidents.</p>

* New question(s) in 2009

** Question(s) modified since 2006

3.4 Questionnaire preparation and testing

The questionnaire preparation and testing involved questionnaire formatting, CAPI/CASI development, pretesting, cognitive testing, piloting of the questionnaire, and incident selection tests. These are outlined in turn below.

3.4.1 Questionnaire formatting, CAI programming and pretesting

The 2006 questionnaire was updated for the 2009 survey. The intention was to mimic as closely as possible the question wording, routing, formatting, and visual 'look and feel' on screen that was used in 2006.

Writing the pilot and main survey questionnaires was an iterative process of revision and improvement, from June 2008 to early February 2009. The 2009 word version of the questionnaire was written to provide all information needed for both a layperson and a Computer Assisted Interviewing (CAI) software programmer. In parallel with the development of the MS Word version of the questionnaire was the programming of the Word questionnaire in Blaise²¹ CAI software. The 2006 questionnaire was programmed using Conformat CAI software rather than Blaise. The formatting and the 'look and feel' of the Conformat screenshots were mimicked as far as possible with Blaise software, to ensure consistency between the two surveys. Thorough testing of this programming was carried out prior to the software being loaded onto laptop computers for the pilot survey.

Much of the questionnaire development work consisted of discussion and desk review rather than pretesting with respondents. A series of laptop electronic pretests of the questionnaire were conducted from July 2008 to January 2009 by NRB researchers and in-house field staff.

3.4.2 Cognitive test

There were some new and modified questions proposed for the 2009 NZCASS, and these were evaluated in both a cognitive test, and the pilot survey. The cognitive test was conducted by NRB in the first half of September 2008 as an initial assessment of these questions. The cognitive test was conducted with 23 carefully selected male and female participants from a range of different age and ethnic groups.

The main criterion for recruitment for the cognitive test was that all participants had to have been actual victims of at least one crime in the last two years, which had been reported to the Police. There were nine interviewers who worked on the cognitive test, and each interviewer was issued with quotas for ethnicity, gender and age groups. Interviewers used three recruiting methods: they either located the participants via the 'snowballing' method (ie, asking people they knew if they knew of someone that had been a victim of crime), door knocked, or used the intercept method (eg, near a shopping centre).

The 21 particular questions tested in the cognitive test related to disability, sexual orientation, the Police response to incidents, victim needs, help or advice wanted, whether respondents were sole parents, and household income range.

²¹ Blaise Developer's Software, Version 4.7 Enterprise, produced by Statistics Netherlands.

As a result of the cognitive testing, some changes and improvements were made to these questions, based on the direct feedback from both the respondents and interviewers involved.²²

3.4.3 Incident selection tests

Once the incident selection design was implemented in the Blaise CAPI software, extensive incident selection simulation tests were conducted, using synthetic or 'dummy' interviews, to ensure that the design worked as intended (see section 3.2).

These tests related to the selection of incidents, reported by respondents in the 15 CAPI screener questions, for a Victim Form. A maximum of three incidents could be selected for CAPI Victim Forms. The selection of incidents is a critical part of NZCASS, and is needed to ensure that national victimisation incidence and prevalence rates can be accurately estimated.

The incident selections made were weighted selections, where each incident was given a weight of 1, 2 or 3 (see section 3.2.1).

The incident selection testing procedure involved testing 12 different sets of data values, which related to 12 different scenarios of incident and occurrence selection within the 15 screener questions. The 12 sets of values were programmed into the Blaise software; that is, 12 sets of answers were programmed, so that particular answers were given to certain screener questions, for each of the 12 scenarios, and then (up to) three incidents were selected for Victim Forms.

The Blaise software was then programmed to create batches of synthetic, or 'dummy' interviews, for each of the sets of values, and each of the 12 sets of synthetic interviews also showed which incidents were selected, for each synthetic interview created.

Varying numbers of synthetic interviews were created, depending on the likelihood of respondents experiencing the incidents referred to by each set of data values.²³ This was to ensure that incident types which occur far less often than others have a chance of being selected, and thus the programming could be checked. These 12 sets of synthetic interview data files were provided to the Ministry's statistical consultant who confirmed that the incident selection procedure was working as intended.

3.4.4 The pilot survey

The pilot survey fieldwork took place from 1 to 21 October 2008 during which 194 interviews were conducted, with a response rate of 68 percent, and a mean interview duration of 58 minutes.²⁴

Twenty-seven meshblocks were selected by inspection to meet certain criteria, rather than being chosen by a random method for the pilot survey. Eleven of these meshblocks²⁵ selected

²² See the 2009 NZCASS Cognitive Test Report for further details.

²³ For the set of data values that included the incidents most likely to be experienced, 5,000 synthetic interviews were created. For the set of data values that included the incidents least likely to be experienced, 77,000 synthetic interviews were created.

²⁴ This included the 10 minutes for setting up and disengaging with the respondent at the beginning and end of the interview.

²⁵ 41% of the meshblocks, to match the eight out of 20 NAUs selected in the 2006 pilot.

were 'high crime' areas, which were defined as areas that had a high offence rate per head of population within Police Station Areas throughout New Zealand.²⁶ The sample was selected to produce a wide range of people to complete the survey, to both fully test the questionnaire, and to ensure that an over-representative number of Victim Forms were selected, by choosing high crime areas.

One of the most important aspects of the pilot survey was that it acted as a final trial of the questionnaire and other survey processes, to check their functioning prior to the implementation of the main survey. In particular, the pilot survey 'troubleshooted' the questionnaire in advance, to reduce problems that may be encountered during interviews, particularly regarding any new or modified questions.

The pilot findings provided useful input into final question wording and routing, laptop screen layout, CAPI/CASI programming, show cards, and development of interviewer protocols (eg, via training and interviewer manuals).

Amendments were made to the questionnaire for the main survey as a result of the pilot survey, especially with regard to questions that were new or modified prior to the pilot survey. For example, it was decided not to include the pilot survey questions asking about household income and whether respondents were sole parents.²⁷

One of the outputs included in the pilot survey report was individual question timings. As the pilot survey's mean interview duration was longer than the desired 50 minutes, these timings were useful for deciding which questions could be considered for deletion prior to the main survey to reduce the interview length.

The Blaise software also included a function which allowed interviewers to record 'remarks' or comments, at any time, and in relation to any question. A number of remarks were made in both the CAPI and CASI sections of the questionnaire, and many of these provided valuable feedback on questions, particularly the new and modified questions. This function was disabled for the main survey, to ensure comparability with the 2006 survey, as no similar function was used in 2006.

Interviewers were also given the facility to record 'interviewer comments' in a field at the very end of the interview, after the CASI section. Comments could be made about anything, including feedback on specific questions, concerns a respondent might have, how the interview went in general, and feedback for in-house NRB staff. These comments were helpful for questionnaire design and other survey procedures prior to the main survey. This facility was retained for the main 2009 NZCASS survey, and the comments were used for checking procedures (see Chapter 5 for more details).

²⁶ The method of inspection for selecting the pilot survey meshblocks also took into account other criteria, including ensuring a good spread of meshblocks across New Zealand, a proportional spread between both the North and South Island, a proportional spread between urban and rural meshblocks (using Statistics New Zealand urban/rural criteria), a 'population proportional' spread of meshblocks across the cities within the Auckland, Wellington and Christchurch regions, and a relatively even spread of deprivation indices, but with a focus on the most deprived areas (deprivation index 9 or 10). Please refer to the Pilot Survey Report for further details.

²⁷ Please refer to the Pilot Survey Report (section 10), and the Questionnaire Changes Log document for further details.

4 Fieldwork methods and interviewers

This chapter outlines the fieldwork processes and methods that NRB undertook for NZCASS. It covers the fieldwork duration, timing and procedures, interviewer management, training and interviewer materials.

4.1 Fieldwork period

Fieldwork for the 2009 NZCASS was conducted from Saturday 14 February 2009 to Sunday 5 July 2009.²⁸ This is similar to the 2006 NZCASS fieldwork period, which was conducted from 9 February to 25 June 2006.²⁹

The 1,000 meshblocks were issued progressively to the 180 interviewers as the fieldwork progressed. Twenty percent of meshblocks were issued in February, 38 percent in March, 23 percent in April, 14 percent in May and the remaining 5 percent in June. The process of progressively issuing meshblocks occurred particularly in the larger urban areas, where the bulk of the meshblocks were located.

4.2 Fieldwork procedures

4.2.1 Household calling procedure

To maximise the chances of obtaining interviews at the selected dwellings in each meshblock (that is, to maximise the response rate), 'call-backs' were made by interviewers to dwellings where no contact was made at the first call.

Up to a maximum of nine call-backs (ten calls in total) were made to the selected dwellings. Call-backs were made on different days of the week, and at different times of the day (especially during the weekend), to maximise the chances of contacting respondents. The maximum of ten dwelling calls applied to all 1,000 meshblocks. If no contact was made on the tenth call to a dwelling, the outcome recorded at that call was the final outcome (usually 'No Reply' or 'Not Available') and the selected dwelling was not replaced with another dwelling.

4.2.2 Area (meshblock) visiting procedure

In addition to the household calling procedure outlined above, to maximise contact and the response rate, each meshblock was visited by an interviewer a minimum of five times,³⁰ unless the interviewer had achieved or recorded a final contact outcome³¹ for all selected households in a meshblock. Interviewers were allowed to make a maximum of 7 visits to a meshblock.

²⁸ Fieldwork, which includes enumeration, household selection, setting up interview appointment times and interviewing was carried out in the 142 days in this period. Interviews were conducted over 139 days, from Tuesday 17th February to Sunday 5th July.

²⁹ The 2001 fieldwork dates were 12th July to 31st October 2001, and the 1996 fieldwork dates were between April and July 1996.

³⁰ The procedure used in 2006 to visit areas and approach dwellings was different — refer to Reilly & Sullivan (2008; 12).

³¹ For example, Interview (I), Household Refusal (HR), Respondent Refusal (RR), Not Eligible (NE), Access Denied (AD), and Unavailable (U).

There were a small number of occasions where an extra eight or even ninth visit to a meshblock was required. In these cases, the extra visits were authorised by the local NRB supervisor.

4.2.3 Fieldwork timing

Most fieldwork was conducted after 4 p.m. on weekdays, or at weekends, to maximise the chances of finding the selected resident at home at the time of the call and to increase the chances of interviewing the selected respondent within the number of calls allowed to each dwelling. Interviewers working in rural locations were allowed to visit earlier in the day, at lunch-time, as this was when they were likely to find respondents at home.

Interviewers did a mix of weekday and weekend calls within each meshblock. Typically, trips to each meshblock were spread over an average of four weeks.

4.3 General interviewer management

4.3.1 Introduction

Given the complexity of NZCASS, interviewers were given substantial project-specific training and briefing. NRB's standard interviewer selection and training procedures are outlined below, together with the nature of specific training and briefing required for the 2009 NZCASS.

As with the previous NZCASS survey, close attention was paid to interviewer selection, bearing in mind the sensitive nature of some of the questionnaire and the necessary stringent ethical considerations. Respondents could also request an interviewer of the same gender or ethnicity, if they preferred.

4.3.2 Recruitment

NRB employed 180 interviewers on this project. New interviewers familiarised themselves with the Interviewers' Manual, and NRB's Health and Safety Manual. A number of newly recruited interviewers had previous door-to-door interviewing experience. Interviewers who were new to door-to-door interviewing work were given extra training, and were assisted and monitored more actively by their supervisor.

4.4 Interviewer training

4.4.1 Pilot survey training

The pilot survey commenced with interviewer and supervisor training sessions, in eight NRB supervisor areas around the country over the week of Saturday 27 September to Friday 3 October 2008. Three main sessions were held in Auckland, Wellington and Christchurch, and five sessions with smaller interviewing teams were held in Whangarei, Hamilton, Rotorua, Gisborne and Dunedin. Twenty-six interviewers were trained and worked on the pilot survey,

and 11 supervisors managed these interviewers.³² NRB researchers and/or field managers conducted these sessions; some of which were also attended by Ministry staff.

4.4.2 General training – new interviewers

All new interviewers completed a general one day training session prior to the specific NZCASS briefing.³³ The broad topics covered included professional standards, administering the interview, succeeding with the respondent, supervision and auditing, and occupational and cultural considerations. The initial general training, including the specific topics mentioned below, is covered in the general Interviewers' Manual.

The specific topics introduced the new interviewer to market and social research and interviewing, and covered the following:

- interviewer neutrality
- questionnaires
- question types
- probing, use of show cards
- meshblock enumeration
- selecting households and respondents
- tips for successfully working in a meshblock over the allowed time period
- contacting respondents
- 'getting the interview' and response rates
- confidentiality
- laptop training and procedures
- occupational safety and health
- respondent safety
- cultural empathy
- paperwork.

The use of other interviewer materials was also covered, such as what is included in meshblock and interviewer kits, and the correct use and presentation of survey-specific materials, such as brochures and letters.

Interviewers were also briefed about the specifics of the NZCASS (see section 4.5.3). After new interviewers were briefed on NZCASS, a buddy system was used where interviewers were accompanied in the field by either their supervisor, or a more experienced interviewer, who

³² Eleven supervisors were used in eight areas, as three supervisors were based in Auckland and two in Christchurch.

³³ This depended on their previous experience with door-to-door interviewing work. New interviewers with significant previous door-to-door interviewing experience often covered this training in half a day. Similar to 2006 training procedures, NRB also had general retraining, or refresher training modules, which were used at the discretion of the field manager or supervisor, where they deemed this to be appropriate for a particular interviewer. This training was given if there were issues relating to poor response rates and where it was clear that the procedures and/or methodology were not being correctly followed. Only a small number of interviewers were given this general retraining.

observed and provided on-the-spot assistance, advice and encouragement. This buddy system was in place until the interviewer was comfortable proceeding on their own (usually after one full day of being accompanied).

4.4.3 NZCASS training and briefings – all interviewers

Interviewer training sessions for the NZCASS were full, one-day sessions held from 13th of February to early March 2010. NRB maintained 29 area-based interviewing teams in 22 cities around New Zealand, and each team was led by a supervisor. Twenty-eight interviewer sessions were held throughout New Zealand.³⁴ Interviewers could not start interviewing until training was completed. Hence, interviewing started in some areas before others.

NRB researchers and/or field managers led interviewer sessions in Auckland, Wellington and Christchurch. Supervisors in these cities also attended these sessions. Sessions in provincial cities were led by the local NRB supervisor. All supervisors thoroughly familiarised themselves with NZCASS by carefully reading through the Interviewers Manual and by reviewing all field and interviewing materials.³⁵ Supervisors consulted with, and were assisted by, NRB field managers.

Ministry staff attended six of the sessions in both the larger cities and the smaller provincial cities. They presented some segments of the training, and contributed to the training throughout the day. The same training format was followed in all interviewer briefings.

The structure of the interview sessions was as follows:

- Brief introduction to the survey
- Background to the survey, including an overview of crime surveys and their use
- Fieldwork method and paperwork: selection of dwellings and respondents (sampling and screening), completing paperwork, including the specific NZCASS sample, screening and wage sheets, and use of the survey brochures and letters
- Questionnaire introduction and description. After a general introduction to the questionnaire, this included running through the laptop interview, by projecting the interview screen by screen,³⁶ and highlighting particular questions and points to note. This focused on the hardest parts of the questionnaire, including complexities at the start of the Victim Form. The more complex parts of the questionnaire were also mentioned in detail in the NZCASS Interviewers Manual
- Interviewer/respondent safety and cultural empathy
- Interviewers formed into pairs to run through the interview on laptops, taking turns to role play interviewer and respondent
- Question and answer time: feedback and answering questions arising from role plays. Many questions were also answered while interviewers were undertaking the role play.

³⁴ Two Wellington-based teams combined for a briefing.

³⁵ Eleven supervisors were already familiar with NZCASS, having worked on the pilot survey – see section 4.5.1.

³⁶ In some of the smaller centres, this was not projected; it was just viewed on screen.

Interviewers were instructed to complete 'dummy' or practice interviews after the training sessions with family and friends, to build up familiarity with the questionnaire, some of the complexities at the start of the CAPI Victim Form, and the administration of the self-completion section.

4.5 Fieldwork/briefing materials

The main reference document for briefings and fieldwork was a detailed Interviewers Manual. Other documentation and materials included the brochures, letters (see Appendix B), pens, thank you cards (see Appendix B), show cards, consent form, main and Māori booster sample screening and sampling sheets, the outcome codes card, meshblock descriptions, meshblock maps, interview kits, and meshblock kits.

To assist interviewers with answering respondents' queries and also persuading respondents to take part in NZCASS, a full-colour, four-page brochure was produced. This brochure introduced the survey and gave detailed answers to a number of common NZCASS questions. It was published in eight languages; English, Māori, Samoan, Tongan, Cook Island Māori, Chinese (Mandarin), Korean and Hindi. In addition, a letter from the Ministry (available in English and Māori) introduced the survey and also included interview appointment details (see Appendix B).

4.5.1 Thank you card and gift

A good quality pen was offered to all respondents at the end of the interview as a small thank you gift. The pen did not include any branding. At the same time, a thank you card, was also offered to all respondents. The card was a full-colour, four-page card, in the same design as the NZCASS brochures. It included a list of contact phone numbers for support/helping agencies. Interviewers were instructed to offer the thank you card to all respondents so they did not have to judge which respondents may need assistance. Interviewers were also instructed not to leave the thank you card behind at a home, without offering the card directly to the respondent. This procedure was followed to ensure the safety of participants, given the use of Ministry of Justice branding on the card.

4.6 Fieldwork issues encountered

A telephone survey with similar subject matter was conducted in April – May 2009 in one district. This was the Rotorua District Council's 'Perceptions of Safety' survey. The Ministry, NRB and the research company conducting the survey on behalf of the Council liaised to ensure that the door-to-door and phone interviewers were not contacting households in the same suburbs or areas at the same time. NRB received no reports of any problems with regard to this issue.

There were a few minor technical issues experienced with interviewers' laptops in the fieldwork period. These are discussed in Chapter 5.

4.7 Interviewer area team progress

Twenty-three interview teams achieved or exceeded the expected number of interviews. That is, each of these teams was at or above 100 percent of their final expected interview count. The

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remaining six interview teams completed from 90 percent to 99 percent of their expected interview counts.

5 Checks and audits

This chapter outlines the checks and audits that NRB conducted for the NZCASS. It covers four areas: CAPI and CASI questionnaire checks, interview checks and validation, checks of interview data, and dataset checks.

5.1 CAPI and CASI questionnaire checks

The first series of checks involved rigorous checking of the CAPI/CASI questionnaire. This included checking the question phrasing, interviewer instructions, answer options, and in particular that all routing or skipping instructions were programmed correctly. As part of this checking process, many logic, consistency and range checks were programmed in the Blaise questionnaire script, or source code, to ensure the data was of high quality.

These checks were of the two types which the Blaise programming language permits: *checks* (or 'hard' errors), and *signals* (or 'soft' errors). Both *checks* and *signals* were programmed into Blaise prior to the fieldwork commencing. *Checks* required interviewers to change data that they had entered, whereas *signals* gave the interviewer the opportunity to check and possibly change data that they had entered.

There were three different types of *checks*: logic checks, consistency checks, and range checks. An example of each of these three checks is outlined below. *Checks* were used where an attempt had been made to enter an answer option which was not allowed, or where certain conditions were not met, and the data needed to be corrected.

5.1.1 Logic checks

A frequently used example of this in NZCASS was where a particular code (or sometimes codes) was unique, within the range of answers allowed for a multiple response question. Typically, this applied for a 'Don't know' response (code 98), which could not be used in combination with any other answer option. The message "The option 'Don't Know' cannot be selected together with other options!" would appear on the laptop screen, and then the data could be corrected. For example, 'Don't know' (code 98) was a unique code in Q49 "Where did the incident happen?" which was a question which allowed multiple responses. This *check* was also used in some questions for other similar answer options, such as 'Refused', 'No' and 'None', and for answers such as 'Did not approach or contact any of these' (code 13) in Q131.502.

5.1.2 Consistency checks

A number of related consistency *checks* were used in a small group of demographic questions, which ensured that data about the number of people in the household, the number of children in the household, and the household type were all consistent with each other.³⁷

³⁷ These checks are described in the 2009 NZCASS questionnaire, questions 146a to 148.

5.1.3 Range checks

For certain questions, the data had to be in a certain range. For example, in the variable 'PSU number', which was entered by the interviewer, the data had to be a four digit number in the range 1,001 to 2,000. *Checks* also ensured that the data entered was numeric, and contained neither spaces nor decimal points.³⁸

Signals gave the interviewer the opportunity to check and, if necessary, change data that had been entered. That is, this type of error allowed the interviewer to ensure that certain data conditions were met. This was used when conflicting responses were given to two different questions. For example, main and Māori booster sampled home numbers were given different number set ranges,³⁹ and if the sample type selected (main or Māori booster) conflicted with the home number already entered, a 'signal' error message appeared which allowed the interviewer to change the sample type⁴⁰.

5.2 Interview checks and validation

Checking of interviewers' work was undertaken using five different auditing methods. These were paperwork, telephone, physical, face-to-face, and electronic audits.

5.2.1 Paperwork audits

Checks of interviewers' paperwork were undertaken throughout the period of the fieldwork to validate the authenticity of interviews. This covered checking meshblock maps, sampling sheets, respondent selection (screening) sheets and time sheets. Area maps were checked together with the sampling sheets to ensure that all designated dwellings were within map boundaries, and that the correct start point was used. Sampling sheets were checked to ensure that the correct household and respondent selection procedure had been used for both the main and Māori booster samples, that the correct respondent had been selected, and that the sampling sheets were correctly completed. Sampling sheets were also matched against time sheets. The dates and times recorded on interviewers' sampling sheets were matched with electronic interview date and time data.

A further field paperwork check was made for interviews which were out of frame, where interviewers did not follow the correct procedures in selecting sample households. In total, 14 interviews were deleted because they were out of frame (12 from the main sample and two from the Māori booster sample). Of these, eight interviews were deleted because interviewers had accidentally strayed outside their meshblock boundaries. The remaining six interviews were

³⁸ More than one type of *check* could be used for one question. For example, logic and range checks were used in question 99, where a non-zero answer was expected in either the 'days' or 'hours' variable. Checks ensured that there was an answer, that the answer was in either the 'days' or 'hours' variable, that there was not an answer in both variables, and that the answer entered was not zero.

³⁹ Sampled home numbers in the main sample were in the range one to ten, and in the Māori booster sample were in the range 11 to 26.

⁴⁰ The sampled home number variable was programmed so that it could not be modified. If the sampled home number entered was incorrect, the interviewer indicated this in the interviewer comments variable at the end of the interview, and this was corrected by NRB data staff.

deleted because interviewers contacted too many main sample households, and conducted interviews in households which should not have been contacted.

5.2.2 Telephone audits

Telephone audits, or telephone validation interviews, were conducted for a systematic selection of 20 percent of completed interviews per interviewer. The systematic selection was spread across the meshblocks that the interviewer had worked in. Supervisors audited 20 percent of interviews each week, per meshblock. In addition, for new interviewers, a 100 percent telephone audit was conducted for the first completed meshblock.

The telephone audit covered the following: confirming the household address, confirming that the respondent selection procedure was followed and the correct person had been interviewed, the interview length, that the show cards were used, that the interviewer keyed their answers into a laptop computer, that the respondents were asked to enter some of their answers into the laptop, and any additional comments about the interview or interviewer.

5.2.3 Physical audits

In addition to the telephone audits, which checked interviewed households, supervisors physically audited the accuracy of interviewers' work in the un-interviewed households in each meshblock. Physical audits included the supervisor making a single trip to the interviewer's meshblock area, walking around the meshblock and talking to either the eligible, but not interviewed resident (where possible), or other household residents. Walking around the meshblock area checked that both the enumeration and the drawing of the sample (household selection of the main and Māori booster samples) had been carried out correctly. Talking to un-interviewed eligible residents, or other household residents, verified the accuracy of the household outcomes that interviewers had recorded. This included outcomes where no interview had been conducted, such as the outcomes Unavailable, Not Eligible, Vacant, Language and Access Denied. Physical audits also gave supervisors the opportunity to conduct interviews in meshblocks with low response rates, which was undertaken in a small number of meshblocks.

Physical audits by area supervisors were conducted on the first completed meshblock of new interviewers,⁴¹ to ensure that the work of new interviewers met the required standard. In addition to this, supervisors physically audited the meshblocks of all interviewers at random throughout the duration of the survey. All interviewers had at least one of their meshblocks physically audited.

5.2.4 Face-to-face audits

Face-to-face audits were conducted to validate any suspect interviews. These were used for two interviewers as a result of outcomes from the electronic audits (see the description below). The face-to-face audits covered the same topics as the telephone audits, as described in section 5.2.2, but also allowed the opportunity for further questioning if needed.

⁴¹ Unless the meshblock was more than 60 km from the area supervisor's home, in which case the first completed meshblock by an interviewer within this 60 km range was audited instead.

5.2.5 Electronic audits

Electronic audits of data such as interview durations and question timings were also carried out; that is, survey paradata⁴² was analysed. In particular, the electronic audits related to timings of interviews overall, and timings of sections of questions within the questionnaire. This data was analysed to check for outliers and anomalies that suggested problematic interviewer or questionnaire performance.

Individual interviewer's performance was analysed with respect to interview durations, timing for specific questions, timing for groups of questions, any questions or interviews which appeared to be entered or conducted out of hours (between 9.30 p.m. and 8.00 a.m.), and analysis of long or frequent breaks within interviews.

Near the beginning of the fieldwork period, the electronic audits suggested that two newly recruited interviewers may have falsified some of their interviews. An investigation confirmed this was the case and the interviewers were immediately dismissed, and the falsified interviews were deleted from the dataset. Door-to-door validation interviews were conducted for all interviews done by these two interviewers.

These electronic audits formed part of the checks of interview data described below, but are included in this section as they were part of the validation process.

5.3 Checks of interview data

NRB conducted a number of ongoing checks of interview data throughout the fieldwork period, and appropriate action was taken if any anomalies were discovered. Most of these checks were carried out on a weekly basis:

- Each laptop needed a three digit 'computer number' for identification purposes. Interview data was checked to ensure this number was attached to each electronic interview record
- Checks ensured that each laptop's date and time settings were correct by examining this data within each interview record
- Checks were made on the use of code 97 (which means the incident occurred '97 times or more') in the victim screening questions (questions 28 to 43). There were just a few interviews which included this code. NRB consulted the Ministry on those interviews with incorrect data entries to determine appropriate action
- Checks were carried out for interview completeness, to ensure the last question in the demographics section had been answered in all interviews. Incomplete interviews were not included in the dataset
- Checks were made to detect interviews with very short interview durations. NRB defined this as a questionnaire duration less than 14 minutes.⁴³ There were 13 interviews (0.2 % of interviews) which had legitimate questionnaire durations of 11, 12 or 13 minutes. As expected, none of these interviews⁴⁴ contained any CAPI or CASI Victim Form data

⁴² Survey paradata is information about the process of survey data collection. For further information about current developments with respect to survey paradata, please see (O'Reilly, 2009).

⁴³ This is the same as an [interview](#) duration less than 24 minutes.

⁴⁴ These 13 interviews were conducted by eight different interviewers.

- Checks were also made to detect interviews with unusually long interview durations. NRB defined this as questionnaire durations greater than 150 minutes.⁴⁵ There were three interviews⁴⁶ which had legitimate questionnaire durations longer than 150 minutes. These three interviews contained data for either two or three CAPI Victim Forms, and one also contained data for CASI Victim Forms
- Checks were made on all interviews where code 7 (Refused) was used in Q44, in any of the three Victim Forms, as this code was new in 2009. NRB checked and resolved the queries relating to these interviews. Some of these refusals were found to be part of the same incident or a series of incidents, and the data for these Victim Forms was then coded to reflect this. There were 80 such interviews (1.3 % of interviews) in the NZCASS dataset (see Appendix C for analysis of these checks.)
- Interviewers could record 'interviewer comments', such as feedback on specific questions, respondents concerns, and feedback for in-house NRB staff, in a field at the very end of the interview, after the self-completion section. These comments were all reviewed. Ministry staff advised NRB on how to resolve certain issues arising from these comments, such as suggested changes to interview data, or missing data
- Interviews were checked to ensure that the following data were 'in agreement' with each other: the sampled home number, the main or Māori booster sample selection, the ethnicity or ethnicities selected, the interviewer's comments (if any), and paperwork (sampling and screening sheets). There were just a few of these interviews where these data did not 'agree', and these were all resolved into the correct sample, once paperwork had been received back from the field, and/or the interviewer comments field had been reviewed
- Checks were undertaken for interviews which were in the Māori booster sample, but where the respondent had not selected Māori as one of their ethnic groups, and therefore the interview had been terminated near the beginning of the demographic questions. In total, during the interviewing period as a whole, seven interviews were deleted from the dataset for this reason.

5.4 Preparing the dataset for analysis

Three interim datasets were provided to the Ministry on the completion of 549, 1,965, and 3,013 interviews, to check the quality of data provided. The 3,013 interviews were also provided to the statistical consultant in May, and in addition, weighting variables for 6,089 interviews were provided to the statistical consultant in mid-July to assist with weighting preparation. NRB ran checking procedures on the data throughout the process described above, to try to ensure that all interview and offence coding variables in the dataset were correct.

CAPI and CASI Victim Form interview data was provided by NRB to the Victoria University Wellington (VUW) offence coding team, and then NRB merged the created offence codes onto the dataset. The Victim Form data was provided to the offence coding team in two batches; one batch of 3,103 interviews in mid-May, and the second batch in mid-July after the completion of 6,106 interviews. NRB merged the offence codes into the dataset after each batch was coded.

⁴⁵ This is the same as an interview duration greater than 160 minutes.

⁴⁶ These interviews were conducted by three different interviewers.

In mid-September, finalised interview data with both batches of offence codes were provided to the Ministry and the statistical consultant. The complete NZCASS dataset comprised four types of data, or groups of variables:

- questionnaire and other associated interview variables⁴⁷, provided by NRB
- derived variables⁴⁸ provided by NRB
- offence coding variables, provided by the VUW offence coding team
- weighting and other variables⁴⁹, provided by the NZCASS statistical consultant.

The statistical consultant ran an additional set of checks on the interview and offence coding data, to ensure that all Victim Forms that should have been assigned offence codes had indeed received them. These checks identified some errors in the completed dataset which were subsequently corrected.

Final data checking was conducted in early October 2009. NRB ran a set of programmed edit checks using SAS software, which checked the plausibility of frequency tables, compliance with skip instructions, and that all interview Victim Form data contained offence codes. Once completed the finalised interview and offence coding data was provided to the Ministry and the statistical consultant.

In early November, NRB supplied the derived variables to the NZCASS statistical consultant, who then merged these variables on to the dataset. Subsequent to this, the weighting and other variables were merged on to the dataset by the statistical consultant, and further checks on the dataset were run by the statistical consultant and Ministry data staff.

⁴⁷ Associated variables included, in particular, date and time stamps, four interview duration variables (CAPI, CASI, Exit, Overall), five ethnicity coding variables and two occupation coding variables. Ethnicity and occupation coding is described in Chapter 6.

⁴⁸ Derived variables included the statistically coded descriptions of respondent's occupations, recoded variables, such as household composition and household size, and area variables, such as TLA (Territorial Local Authority) number, urban area number, and two different urbanisation categorisations.

⁴⁹ Other variables supplied included deprivation indexes and scores.

6 Response rates and interview durations

This chapter provides a detailed account of the response rates achieved for the 2009 NZCASS and comparisons are made where possible to the response rates achieved in 2006. The chapter also provides a detailed description and analysis of interview durations.

6.1 Response rates

The main sample, Māori booster sample, and overall sample unweighted response rates for the 1,000 NZCASS meshblocks are summarised in Table 6.1. The targeted response rate for the NZCASS was 62 percent (see section 6.4 for the calculations).

Table 6.1: Summary of 2009 NZCASS response rates

Sample	Response Rate*	Interviews	Estimated Eligibles	Dwellings Visited
Main	70.6%	4,809	6,809.4	6,934
Māori booster	68.5%	1,297	1,893.4	14,008
Overall	70.2%	6,106	8,702.8	20,942

* The response rate is calculated by dividing the number of interviews by the number of estimated eligibles.

In comparison, the response rate in the 2006 main sample was 59 percent, and in the 2006 Māori booster sample, it was 56 percent. The corresponding figures were 65 and 57 percent in the 2001 survey, and 56 percent and 66 percent in the 1996 survey. Response rates have thus varied between each of these surveys, as shown in Table 6.2.

Table 6.2: Comparison of NZCASS response rates

Sample	1996	2001	2006	2009
Main	56%	65%	59%	71%
Māori booster	66%	57%	56%	69%
Overall	NS	NS	NS	70%

NS = Not stated in the 2006 NZCASS Technical Report.

The response rate calculations used by NRB in 2009 are not the same as those used in the previous surveys. The response rates between surveys are not directly comparable because of changes in the sample design⁵⁰ and differences in recording contact outcomes. In particular, the contact outcomes recorded in 2009 for 'unavailable' and 'not available' are not directly comparable with the 'unavailable' code recorded in previous surveys. Similarly, codes for respondents who were not able to be interviewed are not directly comparable. In 2009, 'Language' and 'Incapacitated (Infirm/Hospitalised)' were used, whereas a single 'respondent

⁵⁰ One of these changes to the sample design is detailed in section 6.9.1.

not interviewable' code was used in previous surveys. Although the response rates are not directly comparable, the comparison is shown here as the differences are thought to have had a relatively small effect.

The 6,106 NZCASS interviews were conducted in 998 of the 1,000 meshblocks. One meshblock selected in the Tasman District was no longer residential (it is now industrial only), and in one meshblock containing apartments in Auckland City, the apartment manager denied the NRB interviewer access to the dwellings.

Similar to the 2006 survey, respondents who completed all sections except for the self-completion section were counted as complete interviews. Approximately 4 percent of the 6,106 respondents did not complete the self-completion section (228/6,106).

6.1.1 Māori booster sample response rate

The design of the Māori booster sample changed from 2006 to 2009. In 2006, the Māori booster sample was targeted towards areas of high Māori incidence. In 2009, the Māori booster sample was a 'flat' sample with probabilities proportional to the general population size. In 2006, NAUs (Nielsen Area Units) were excluded from the sampling frame for the booster sample where fewer than 5 percent of dwellings contained Māori. This accounted for 3 percent of NAUs, but only 0.2 percent of Māori households (Reilly & Sullivan, 2008:5). Using the contact outcomes data, the NZCASS statistical consultant adjusted the 2009 Māori booster response rate to 66.6 percent, to allow more direct comparisons between the 2006 and 2009 Māori booster response rates. The adjusted Māori booster response rate of 66.6 percent was calculated by weighting the response outcome data by Māori household incidence, and excluding meshblocks that would have been excluded due to an incidence below 5 percent. This is 1.9 percent lower than the unweighted 2009 Māori booster response rate for all meshblocks, of 68.5 percent.

6.2 Sample numbers and completion percentages

The total number of interviews completed at the completion of fieldwork (Sunday 5 July 2009) was 6,106. The number of main sample, Māori booster sample, and overall sample interviews are shown in the table below, along with interviewing targets and completion percentages.

Table 6.3: Interviews completed and targets by sample type

Sample	Number of interviews	% of total	Target	% of target completed
Main	4,809	78.8	4,030	119.3
Māori booster	1,297	21.2	1,409	92.1
Total	6,106	100.0	5,439	112.3

It is important to bear in mind that the targets shown here are based on the variables described previously. In particular, the targeted response rate of 62 percent for both samples, was one of the key factors in determining the target numbers. Given that a response rate of 71 percent was achieved in the main sample, the number of interviews completed exceeded the target.

6.3 Household contact outcomes

Interviewers recorded the outcome of the final call to each sampled dwelling as a variable on their sampling sheets. These variables were then used in the response rate calculations. Please note that these were the final outcomes, as interviewers could call at a selected dwelling up to a maximum of 10 times. Table 6.4 provides the contact outcomes for the main and Māori booster samples, and for the sample overall.

Table 6.4: Household contact outcomes for main, Māori booster and overall samples

No.	Contact Outcome	Code	Category	Main Sample	Māori booster Sample	Overall Sample
1	Interview	I	A	4,809	1,297	6,106
2	Not Eligible	NE	B	5	11,512	11,517
3	Unavailable**	U	B	104	42	146
4	No reply	NR	C	204	317	521
5	Access denied/No access	AD	C	73	124	197
6	Household refusal	HR	D or C	563	245	808
7	Respondent refusal	RR	D	768	259	1,027
8	Not available**	NA	D	226	134	360
9	Appointment	APT	D	0	0	0
10	Language++	L	D	47	2	49
11	Incapacitated (Infirm/Hospitalised)	INC	D	79	39	118
12	Partial	P	D	9	7	16
13	Other	OTH	D	47	30	77
	Dwellings Visited⁺			6,934	14,008	20,942
	Estimated Eligibles			6,809.39	1,893.39	8,702.78
	Response Rate (%)			70.62	68.50	70.16
	Vacant*	V	*	472	744	1,216***

+ 'Dwellings Visited' was the sum of the 13 contact outcomes listed above. These were the occupied dwellings; the unoccupied dwellings (vacant dwellings) were listed separately.

++ This referred to English language difficulties; that is, household members could not understand the interviewer or any of the printed brochures.

* This contact outcome (V) was not included in either the response rate calculation or the calculation of (occupied) dwellings visited, but has been included in this table for completeness. Note also that the 'out of frame' (OOF) outcome was also excluded from the response rate calculations. There were 14 OOF outcomes (12 from the main sample and two from the Māori booster). See Chapter 5 for more details.

** The difference between these two outcomes (U and NA) is that Unavailable referred to usual residents who were living away from the household for the duration of the survey, whereas Not Available referred to selected usual residents who were not available for the interview at the time of call by the interviewer.

*** This count was from all 1,000 'closed' meshblocks. It was 5.5 percent of all dwellings visited, both occupied and unoccupied (1,216/22,158). NRB's experience of door-to-door, nationwide surveys is that 5 percent to 6 percent of dwellings visited are vacant, so this was in line with expectations.

6.4 Response rate calculations

As noted previously, the response rate calculations used the outcome of the final call to each sampled dwelling that interviewers recorded on the sampling sheets. These outcomes were allocated to categories in the following manner for each of the PSUs in the sample, $i = 1$ to 1,000.

Table 6.5: Contact outcomes and categories

Category	Outcomes
Interviews (a_i)	Interviews (I)
Not eligible (b_i)	Not eligible (NE), Unavailable (U)*
Eligibility not established (c_i)	No reply (NR), Access denied / No access (AD), Household refusal (HR) in Māori booster sample*
Eligible non response (d_i)	Respondent refusal (RR), Not available (NA), Appointment (APT), Language (L), Incapacitated (INC), Partial (P), Other (OTH), Household refusal (HR) in main sample*

* For main sample dwellings this outcome was included in the Eligible non response (d_i) category, for Māori booster sample dwellings this outcome was included in the Eligibility not established (c_i) category.

An estimate of the eligible households within the PSU was calculated:

$$a_i + d_i + \frac{c_i \times (a_i + d_i)}{(a_i + b_i + d_i)}$$

The response rate was the number of interviews achieved divided by the estimated eligible households, as shown below. This was the formula for calculating the response rate for each of the main (Core) and Māori booster (screened) sample components within each PSU (meshblock).

$$\frac{a_i}{a_i + d_i + \frac{c_i \times (a_i + d_i)}{(a_i + b_i + d_i)}}$$

This reduced, or simplified, to the following:

$$\frac{a_i \times (a_i + b_i + d_i)}{(a_i + d_i)(a_i + b_i + c_i + d_i)}$$

The response rate for a group of PSUs was the average of the response rate for the individual PSUs, weighted by the estimated eligible households within each.

6.5 Response rate progress over time

As the NZCASS fieldwork progressed, contact outcomes were entered into a database for each sampled home, and response rates on completed meshblocks (PSUs) were periodically analysed as the fieldwork progressed.

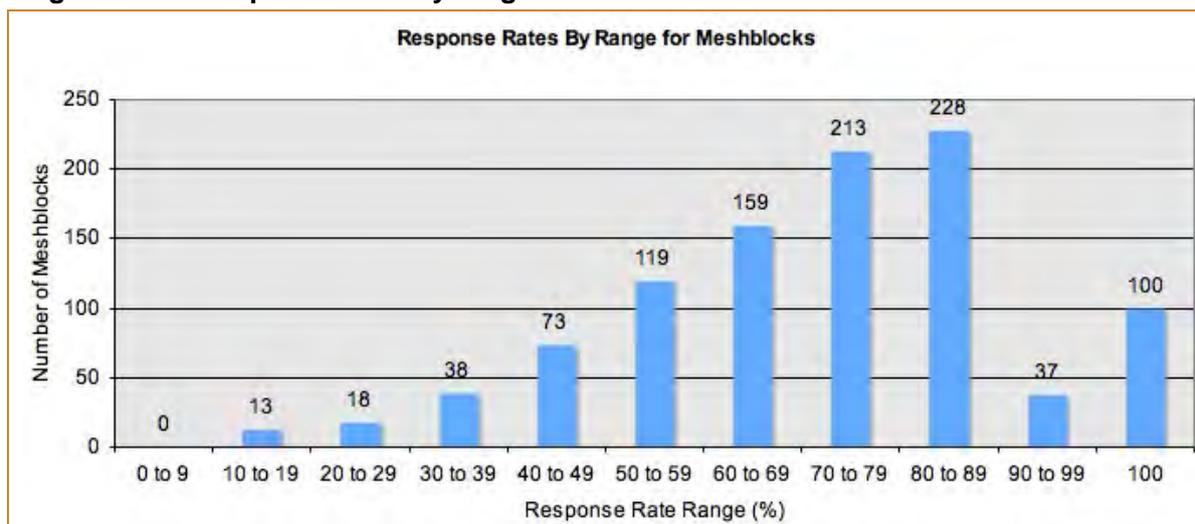
The response rates for the overall, main and Māori booster samples varied within the 69 percent to 78 percent range as the survey fieldwork progressed (see Appendix D1 for detail). The first 500 meshblocks were entered into the response rate database by 20 June, with the remaining 500 meshblocks entered from 21 June to 30 July. The response rates decreased 3 percent for the overall, main and Māori booster samples in July because most of the meshblocks with low response rates were entered into the response rate database in July.

There was a relatively small percentage of meshblocks with low response rates (14 percent of all meshblocks had response rates of less than 50 percent), which lowered the response rate overall. This 14 percent is 142 meshblocks out of 998.

6.6 Distribution of response rates for meshblocks

Interviewers aimed to achieve a distribution of response rates for meshblocks (PSUs) near or above the overall response rate, and also with as few meshblocks as possible with low response rates (defined as being below 50 percent). A breakdown of the number of meshblocks in each response rate range is shown in Figure 6.1 (see Appendix 6.1. for more detail).

Figure 6.1: Response rates by range for meshblocks*



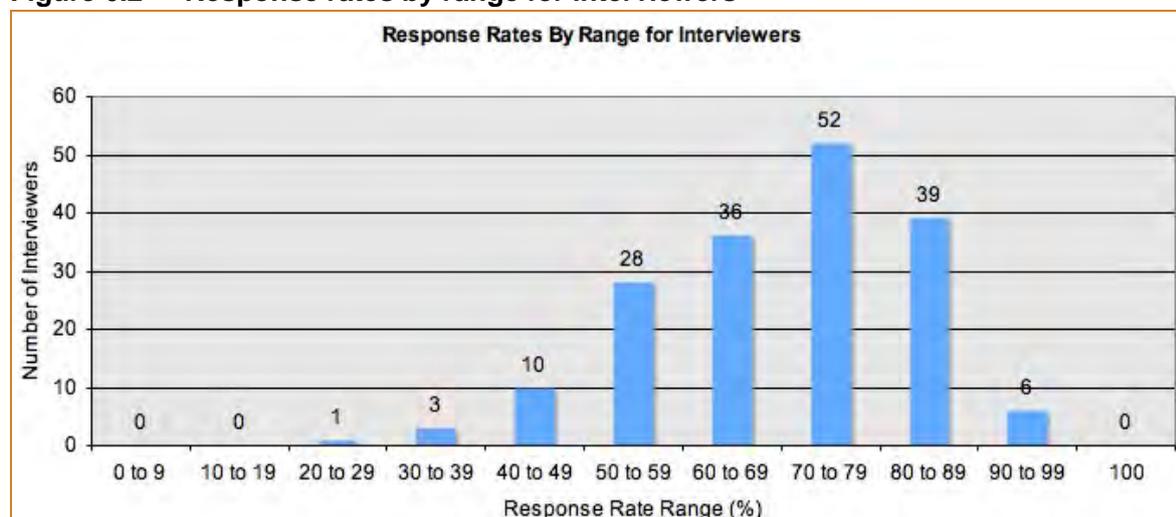
* 998 meshblocks are included in this figure. The two meshblocks where no interviews were conducted were excluded (see section 6.1 for the explanation).

Interviewers achieved a response rate of 50 percent or higher in 86 percent of all meshblocks, and a response rate of less than 50 percent in 14 percent of meshblocks. Interviewers achieved a response rate of 70 percent or higher in 58 percent of meshblocks, and a response rate of 100 percent in 10 percent of meshblocks.

6.7 Distribution of response rates for interviewers

Figure 6.2 shows the distribution of response rates by interviewer.

Figure 6.2 Response rates by range for interviewers*



* 175 interviewers are included in this chart⁵¹

A response rate of 50 percent or higher was achieved by 92 percent of interviewers, and a response rate of less than 50 percent was achieved by 8 percent of interviewers. A response rate of 70 percent or higher was achieved by 55 percent of interviewers.

Response rates did not differ markedly based on the interviewer's experience working with NRB, and it was noted that there was a similar outcome* in 2006 (Reilly & Sullivan, 2008). Similar to 2006, interviewers were categorised into four groups, based on their experience working as CAPI/face-to-face interviewers for NRB, and from least to most experience the response rate for each group was 69 percent, 70 percent, 68 percent and 72 percent⁵².

6.8 Response rates by area (Statistics NZ region)

A relatively even distribution of response rates across New Zealand was desirable, rather than high response rates in some areas and low response rates in other areas, although some

⁵¹ As mentioned in section 4.1, 180 interviewers conducted interviews for NZCASS. Five interviewers were excluded from this figure, as they conducted insufficient interviews to have the response rate for a meshblock attributed to them. Four of these interviewers conducted just one interview each in four different meshblocks, and one interviewer conducted three interviews in two meshblocks. The response rate for these six meshblocks was attributed to the main interviewer who worked in each meshblock.

⁵² This analysis does not take into account the number of years experience that interviewers (new interviewers in particular) may have had working as CAPI/face-to-face interviewers prior to working for NRB. Some interviewers new to NRB had worked on the 2006 NZCASS, the 2001 NSCV and even the 1996 NSCV. In addition, this grouped response rate analysis does not separate out more qualitative response rate factors relating to the interaction between an individual interviewer and each respondent, the 'persuasiveness' of each interviewer and the rapport that is established with each respondent both prior to and during each interview.

variation was expected. To analyse response rate distribution, the Statistics New Zealand Region variable was chosen (see Table 6.6.)

Table 6.6: Response rates by region

Region number	Region	Number of interviews	Number of meshblocks (PSUs)	Overall sample response rate (%)
01	Northland	243	38	62
02	Auckland	1,788	298 ⁺	72
03	Waikato	601	95	68
04	Bay of Plenty	492	66	70
05	Gisborne	76	10	68
06	Hawke's Bay	276	37	74
07	Taranaki	126	28	56
08	Manawatu – Wanganui	374	57	72
09	Wellington	689	115	68
16	Tasman	53	11 ⁺	67
17	Nelson	61	12	62
18	Marlborough	52	11	64
12	West Coast	48	8	80
13	Canterbury	789	138	72
14	Otago	301	51	75
15	Southland	137	23	78
	Overall	6,106	998⁺	70

+ In two selected meshblocks (within Auckland City and Tasman District) there were no interviews conducted (see section 6.1).

6.9 Maximising the response rate

As noted in the 2006 Technical Report, a decline in response rates in voluntary surveys has been evident in recent years across a number of surveys and in a large number of countries. To maximise the response rate for the 2009 survey, the following factors or initiatives were implemented:

- using a high maximum number of calls (10) to each dwelling (household)
- spreading these (up to 10) calls on different days, and at different times of the day
- using a minimum of five visits to each meshblock
- using well-designed publicity and promotional materials. In particular, the design and use of a four page, colour information brochure, in a question and answer format (see chapter 5)
- a letter signed by the Secretary for Justice was provided in English or Māori, which gave key details about the survey, and included appointment details for scheduled interviews
- potential respondents could request an interviewer of the same gender or ethnicity as themselves, and change appointment times
- 0800 numbers for the Ministry of Justice, National Research Bureau, and the Victims of Crime Information line were prominently displayed on the brochure and letter. The Victims of Crime website (www.victimsinfo.govt.nz) was also shown on the brochures

- respondents were informed about where and when they would be able to find the survey results
- promotion of the survey in newspapers and websites to increase awareness of the survey and provide evidence of authenticity
- interviewers with low response rates were identified, retrained and monitored.

6.10 Response to the self-completion section

As previously noted, the self completion section covered incidents of a sensitive or confidential nature. Topics covered were violence by a partner, violence by people you know well, and sexual incidents.

Similar to the 2006 survey, respondents who completed all sections except the self-completion section were counted as complete interviews. Ninety-six percent of respondents completed the self-completion section (5,878/6,106). That is, 5,878 respondents answered the last self-completion question (Q370.444). For detail on completed CAPI forms see Appendix D3.

Approximately 4 percent of the 6,106 respondents did not complete the self-completion section (228/6,106). Most of these respondents (207) did not attempt to answer any questions in the self-completion section, and a smaller number of respondents (21) answered some, but not all of the self-completion questions. In comparison, 6 percent of respondents in the 2006 NZCASS refused to complete the self-completion sections (Reilly & Sullivan, 2008).

In 2009, refusals in the self-completion section were disproportionately from older respondents: 7 percent of those aged 60 or older refused (104/1,559), compared to 2 percent of those aged 15 to 59 (100/4,538).⁵³ In comparison, in 2006, 11 percent of those aged 60 or older refused, and 5 percent of those aged 15 to 59 refused (Reilly & Sullivan, 2008).

The most common reasons respondents gave for refusals were that they were too busy, or they had given enough of their time already, they were too tired, the questions were too personal, or were no one else's business, just not wanting to answer, and concerns, or lack of confidence, about using a laptop computer.

The following factors may explain why the self-completion refusal rate in 2009 was lower than in 2006:

- the New Zealand population in general has greater familiarity with and confidence using (laptop) computers compared to 2006
- it is possible that the CAPI interview length was shorter in 2009 than in 2006. The overall interview length in 2009 was 49 minutes, and 52 minutes in 2006. It is thus possible that the CAPI component was shorter in 2009 (the 2009 mean CAPI duration was 27 minutes – see Table 6.8).

⁵³ Three 'missing' respondents refused to state their age group and were not included in this age analysis. Age was analysed from the 207 respondents (3.4 percent - see above) who did not answer any self-completion questions: 100 aged 15 to 59 years, 104 aged 60 or older, and three who refused to state their age group.

6.11 Interview durations

The mean interview duration for the 6,106 NZCASS interviews was 49 minutes in 2009. In comparison, the reported average interview length in 2006 was 52 minutes, and 47 minutes in 2001 (Reilly & Sullivan, 2008).

Questionnaire durations were timed within each laptop from the keystroke entry of the first item of information to the last of those items specifically integral to the questionnaire.

However, the interview duration also includes the consent form procedure, explanation of showcards and similar prequestion time, and the interview closing and disengagement. This pre-interview and post-interview time combined was averaged at 10 minutes and added to the laptop questionnaire duration, to calculate the interview duration. This method of interview calculation was the same as that used for the 2006 NZCASS (Reilly & Sullivan, 2008).

In general, durations shown in this section are interview durations. Questionnaire durations are also shown in some tables (see Appendix D3).

Table 6.7 shows interview durations by range. There was a wide variation in the interview duration: 6 percent of interviews were less than 30 minutes, 74 percent were 30 to 59 minutes, and 20 percent were 60 minutes or longer.

Table 6.7: Interview duration by range

Interview range (duration in minutes)	Frequency	%
0–29	358	5.9
30–39	1,717	28.1
40–49	1,716	28.1
50–59	1,102	18.0
60–69	554	9.1
70–79	313	5.1
80+	346	5.7
Total	6,106	100.0

The mean durations for the CAPI/CASI questionnaire sections are summarised in Table 6.8.

Table 6.8: Mean durations by questionnaire section and sample type

	Questionnaire/Section of questionnaire	Booster sample (minutes)	Main sample (minutes)	Total sample (minutes)
	CAPI mean duration	28.9	26.7	27.2
Plus	CASI mean duration	9.6	8.6	8.8
Plus	Recontact/Exit mean duration	2.7	2.8	2.8
Equals	Questionnaire mean duration	41.2	38.1	38.8
Plus	Getting settled and disengaging with the respondent at close of interview	10.0	10.0	10.0
Equals	Interview mean duration	51.2	48.1	48.8

Included in the CASI mean duration were respondents who did not complete this section (approximately 4 percent of the 6,106 respondents).

6.12 Mean durations by the number of CAPI Victim Forms completed

This section outlines the mean interview durations for the number and percentage of respondents completing each of the CAPI Victim Forms, and by the number of CAPI Victim Forms completed.

For the purposes of this analysis of mean durations, a CAPI Victim Form (VF) was defined as completed, if the last VF question (Q138) was answered; that is, Q138_1 for CAPI VF 1, Q138_2 for CAPI VF 2, and Q138_3 for CAPI VF 3.

This definition was used as it meant that the entire CAPI Victim Form had been completed (all questions in the VF had been answered). Otherwise, a 'same' or 'series' VF could qualify as a completed VF, but in these VFs nearly all of the questions were not asked, so including these VFs as completed may have given a misleading impression of the completed VF mean interview durations.

Table 6.9 shows the number and percentage of respondents who completed each of the three CAPI Victim Forms, using the above definition.

All of the completed victims forms went through an offence coding process to determine whether the incident detailed in the Victim Form was a crime and in the survey scope (eg, that the incident was a personal or household crime). Therefore, the count of completed Victim Forms provided in the tables below does not equal the number of people victimised.

Table 6.9: Number and percent of respondents completing each of the CAPI Victim Forms

CAPI Victim Form number completed	Frequency	%
CAPI VF1	2,601	42.6
CAPI VF2	1,093	17.9
CAPI VF3	545	8.9

Table 6.10 compares the mean interview durations by the number of CAPI Victim Forms completed, which is then broken down by sample type (Main, Māori booster and Overall). It is important to note that in Table 6.10 the completion of one CAPI VF does not necessarily mean the first CAPI VF was completed, as it does in Table 6.9. A single CAPI VF could have been completed in any one of the three VFs. Ninety-eight percent of all interviews containing one completed CAPI VF completed this VF in the first VF (1,456/1,491), with just under a further 2 percent completing the second VF (24/1,491), and the remainder completing the third VF (11/1,491).

Similarly, the completion of two CAPI VFs did not necessarily mean the first and second CAPI VFs had been completed. Two CAPI VFs could have been completed in any two of the three VFs (first and second, first and third, or second and third). Eighty-six percent of all interviews containing two completed CAPI VFs completed these VFs in the first and second VF (625/729), with a further 12 percent completing the first and third VFs (90/729), and the remaining 2 percent completing the second and third VFs (14/729).

Table 6.10: Comparison of frequencies, percentages and mean interview durations, by the number of CAPI Victim Forms completed

CAPI Victim Forms completed	Main sample			Māori booster sample			Overall sample		
	N=	%	Mean duration	N=	%	Mean duration	N=	%	Mean duration
0	2,822	58.7	41.2	634	48.9	42.2	3,456	56.6	41.4
1	1,157	24.0	52.3	334	25.8	53.3	1,491	24.4	52.5
2	538	11.2	61.5	191	14.7	62.8	729	11.9	61.8
3	292	6.1	73.9	138	10.6	71.5	430	7.1	73.1
Overall	4,809	100.0	48.1	1,297	100.0	51.2	6,106	100.0	48.8

The key determinant of any given interview duration was the number of CAPI Victim Forms (VFs) that have been completed in that interview, as each of the three (maximum) possible CAPI Victim Forms contained a number of questions (Q44 to Q138).

In general respondent burden increases as more CAPI VFs are completed. However, respondents generally accepted the length of the questionnaire, although some respondents who completed two, or especially, three CAPI VFs were irritated with the repetitive (although necessary) nature of the Victim Form questions.

Table 6.11 compares the mean interview durations by the number of CAPI Victim Forms completed for the 2006 and 2009 surveys.

Table 6.11: Comparison of frequencies, percentages and mean interview durations, by the number of CAPI Victim Forms completed in the 2006 and 2009 NZCASS

CAPI Victim Forms completed	2006 Survey			2009 Survey		
	N= *	%	Mean duration	N=	%	Mean duration
0	3,304	61	44	3,456	57	41
1	1,029	19	56	1,491	24	53
2	379	7	66	729	12	62
3	704	13	75	430	7	73
Overall	5,416	100	52	6,106	100	49

* These are approximate interview numbers, calculated from percentage figures in the 2006 Key Findings Report (Mayhew & Reilly, 2007:46)

6.13 Mean interview durations by the number of CASI Victim Forms completed

In Tables 6.12 and 6.13 a self-completion (CASI) Victim Form was defined as completed if the last Victim Form question had been answered, which therefore meant all questions in the Victim Form had been answered. The last questions were Q224 for CASI VF 1, Q287 for CASI VF 2, and Q370 for CASI VF 3.

Table 6.12 shows the number and percent of respondents who completed each of the three CASI VFs, while Table 6.13 shows the mean interview durations by the number of self-completed VFs.

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Table 6.12: Number and percent of respondents completing each of the CASI Victim Forms

CASI Victim Form number completed	Frequency	%
CASI VF1	311	5.1
CASI VF2	377	6.2
CASI VF3	152	2.5

Table 6.13: Mean interview durations by the number of CASI Victim Forms completed

Number of self-completed Victim Forms completed	Frequency	%	Mean duration
0	5,397	88.4	46.9
1	586	9.6	60.7
2	115	1.9	73.5
3	8	0.1	90.0
All (0, 1, 2 or 3)	6,106	100.0	48.8
One or more (1, 2 or 3)	709	11.6	63.1

7 Classifications and coding

7.1 Classifications and standards

The value of statistical data is maximised through the use of common frameworks, standards and classifications.⁵⁴ A number of official classifications and standards were used in the 2009 NZCASS, including:

Occupation classifications:

- Statistical Standard for Occupation 2002
- New Zealand Standard Classification of Occupations [NZSCO] 1999 (coded to 4 digits).

Socioeconomic classification:⁵⁵

- New Zealand Socio-Economic Index [NZSEI] 1991 and 1996 (both as the original two digit score, and collapsed into six groups⁵⁶ for cross-tabulation).

Ethnicity classifications:

- Statistical Standard for Ethnicity 2005
- Standard Classification of Ethnicity 2005 (coded to 2 digits with one addition; see section 7.3.2).

Area classifications:

- Territorial Authority Classification 2006
- Urban Area Classification 2006
- Police District 2006 (used for each of the 12 Police Districts) and Police Station Area 2006 (used to calculate an overall crime rate for weighting purposes, as described in Chapter 8).

Other classifications:

- Statistical Standard for Usual Residence 2008
- New Zealand Index of Deprivation [NZDep] 2006 and 2001 (not official, but independent and widely used).

All of these except NZDep,⁵⁷ Police District⁵⁸ and Police Station Area are documented on the Statistics New Zealand website.⁵⁹

⁵⁴ Principle 4 (Coherence) of the Official Statistics System Statement of Principles: www.statisphere.govt.nz/about-official-statistics/official-statistics-principles/principle-4.aspx. See also, in general: www.statisphere.govt.nz/about-official-statistics/official-statistics-principles.aspx

⁵⁵ Although NZSEI was produced for the 2009 survey, it was not used in the analysis.

⁵⁶ NZSEI 1991 was used in the 2001 and 2006 surveys. The groups used for NZSEI were 70–90, 60–69, 50–59, 40–49, 30–39, and 10–29.

⁵⁷ Salmond, C & Crampton, P (2002). *NZDep2001 Index of Deprivation*. Wellington: Ministry of Health. URL <http://www.moh.govt.nz>.

⁵⁸ www.police.govt.nz/district/index.html

⁵⁹ www.stats.govt.nz/methods_and_services/surveys-and-methods/classifications-and-standards/classification-related-stats-standards.aspx

7.2 Derived and recoded variables

Four variables were derived and three variables were recoded. These are outlined below, and are defined in further detail in the NZCASS data dictionary (available from the Ministry of Justice, upon request).

7.2.1 Derived variables

A variable was derived from the dwelling tenure and landlord variables, classifying households into the following five categories: rent from a private landlord, rent from a non-private landlord, rent but do not know or refused to state landlord, own the dwelling, and a residual category for respondents who did not own or rent, or who did not know or refused to state the dwelling tenure.

The Territorial Authority Classification 2006 was used to classify NZCASS meshblocks into each of the 72 Territorial Authorities in which they were located, and from this a NZCASS region variable was derived. This variable defined three broad regions for New Zealand: the Upper North Island, Lower North Island and South Island (full details are provided in the data dictionary).

The Urban Area Classification 2006 was used to classify NZCASS meshblocks into each of the 140 Urban Areas in which they were located, and from this two urbanisation variables were derived. The first of these variables classified meshblocks into five categories: Auckland, Other Metropolitan Cities, Other Major Urban Areas, Secondary Urban Areas, and Minor Urban Areas & Rural Areas (full details are in the data dictionary).

The second of these variables recoded the first variable into three categories: Auckland, Other Major Urban Areas, and Other areas. The category 'Other Major Urban Areas' combined 'Other Metropolitan Cities' and 'Other Major Urban Areas' from the first variable, and the category 'Other areas' combined 'Secondary Urban Areas' and 'Minor Urban Areas & Rural Areas' from the first variable.

7.2.2 Recoded variables

The household composition survey question (question 148), was recoded to create a second household composition variable. This recoded variable contained seven categories: one person living alone, solo parent with child/children, couple without children/children not living at home, couple with child/children, extended family/whanau, flatmates, and family, other combination. There were two differences between this variable and the question 148 variable. These were that the numerical categories (codes) for 'Flatmates', and 'Family, other combination' were swapped, and that the 'other' and 'refused' responses from question 148 were not included in the recoded variable.

Question 146a, on household size, was recoded to create a second household size variable. This recoded variable contained four categories: one person, two people, three or four people, and five or more people. 'Don't know' and 'refused' responses from question 146a were coded as missing values.

Question 161, on the respondent's perception of how well their household was managing on their total household income, was recoded to create a second 'managing on income' variable. This variable recoded the three categories from question 161 into two categories: 'managing quite well' and 'not managing so well.' The category 'not managing so well' combined 'just getting by, unable to save if wanted to' and 'getting into difficulties' from question 161. "Don't know" and "refused" responses from question 161 were coded as missing values.

7.3 Coded variables

NRB completed the following three types of coding:

7.3.1 Occupation coding

Information given in relation to the main income earner's occupation was coded for socioeconomic classification. For the 2009 survey, socioeconomic classification was done using the New Zealand Socio-Economic Index (or NZSEI). This was a two-stage process. First, NRB coded the open-ended verbatim responses to questions about occupation and the main tasks in the occupation⁶⁰ to level 4 (four digits) of the New Zealand Standard Classification of Occupations [NZSCO] 1999 (Statistics New Zealand, 2001).⁶¹ Second, these codes were converted by the NZCASS statistical consultant into NZSEI scores using a concordance available from Statistics New Zealand.⁶² NZSEI scores ranged from 10 to 90, and were collapsed into six groups for tabulation purposes.

7.3.2 Coding of ethnicity responses

NRB coded responses to the ethnicity questions⁶³ to level 2 (two digits), using the Standard Classification of Ethnicity (2005).⁶⁴ Most ethnicity responses matched pre-coded answer options, but there were also a number of 'Other' ethnicities specified. All ethnicity responses, both precoded and specified, were coded to the level 2 codeframe. An addition to this codeframe was a separate code assigned to responses of 'New Zealander' and/or 'Kiwi', even though the official standard only includes this code at level 4 (five digits).⁶⁵ These were combined with European responses in the Main Findings Report.

Where a respondent mentioned two ethnicity responses that could be coded using the same two digit code, this code was only included once, to ensure that ethnic groups were not over-represented, within the context of the two digit coding framework. For example, two

⁶⁰ Questions 157 to 160.

⁶¹ The coded data contains occupation codes in the range 1111 to 9999. This coding is included as two variables, called Q157Code and Q159Code, in the NZCASS dataset.

⁶² For the few NZSCO 1999 codes that did not have a unique NZSEI score, the average of the possible values was taken.

⁶³ Questions 151, 151a, 151b and 151.457. Questions 151, 151a, 151b were multiple response questions, and 151.457 was a single response question.

⁶⁴ The coded data contained 21 codes in the range 10 to 95. This coding included five variables in the NZCASS dataset, called ethnicCode1 to ethnicCode5. Five was the maximum number of ethnicity responses mentioned, using this codeframe.

⁶⁵ Code 62 was assigned to this two digit codeframe, and the official standard assigns these responses as code 61118. Twenty-eight of the 6,106 respondents mentioned this as one of their ethnicity responses.

respondents mentioned English and French amongst their responses: both of these are code 12, which is 'Other European', and so this code was included only once.

7.3.3 Back-coding from 'Other Specify' responses

No new codes were created. Where a verbatim comment in an 'Other Specify' response matched a precoded answer option, NRB staff back-coded the comment into the correct precoded option. However, for most 'Other Specify' responses, this was not the case, and so they were left as 'Other Specify'.

In all cases, open-ended verbatim responses were typed directly into the laptop, and subsequently coded by NRB coding staff in the office rather than by interviewers in the field.

7.4 Classifying incidents

The classification of offences was undertaken separately by Victoria University after the fieldwork was completed. Incidents had to meet legal definitions of criminal behaviour to be counted. Full details of the offence coding procedures are described in the Coding Manual.⁶⁶

Classification of offences was based on the responses in the CAPI and CASI Victim Forms, including a short description in the respondent's own words (except for sexual offences). It also drew to some extent on which screener question was answered affirmatively.

The coding was conducted in much the same way in the 2009 and 2006 surveys, but the 1996 and 2001 surveys were coded somewhat differently (see Reilly and & Sullivan, 2008).

Table 7.1 shows the 2009 survey offence codes alongside the corresponding codes from the previous surveys. It also shows whether they had a personal (P) or household (H) weight, which depended on the nature of the offence.⁶⁷ Offences excluded from the survey count are also shown.

⁶⁶ The Coding Manual is available from the Ministry of Justice on request.

⁶⁷ Weights used remained the same between the 2006 and 2009 surveys, but there were changes to the weights between 2001 and 2006.

Table 7.1: Offence codes

	1996 Offence codes	2001 Offence codes	2006 Offence codes	2009 Offence codes	2009 Weight	Not counted
Sexual violation of women	1	1	1	1	P	
Sexual violation of men	2	2	2	2	P	
Incest	3	3	3	3		✓
Indecent assault	4	4	4	4	P	
Indecent exposure	5	5	5	5		✓
Grievous assaults	6	6	6	6	P	
Other assaults	7	7	7	7	P	
Abduction/kidnapping	8	8	8	8	P	
Robbery	9	9	9	9	P	
Theft from person	10	10	10	10	P	
Burglary (old definition) ⁶⁸	11	11	11	11	H	
Burglary (new definition)	-	-	41	41	H	
Theft from inside home (right to be there)	12	12	12	12	H	
Theft from outside home, over \$10	13	13	13	13	H	
Taking/conversion motor vehicle	14	14	14	14	H	
Unlawful interference/getting into motor vehicle	15	15	15	15	H	
Theft from motor vehicles	16	16	16	16	H	
Taking/conversion/unlawful interference with bicycle ⁶⁹	17	17	17	17	H	
General theft of personal property	18	18	18	18	P	
Arson	19	19	19	19	H	
Wilful damage to household property (new) ⁷⁰	20	20	27	27	H	
Wilful damage to personal property (new)	20	20	28	28	P	
Threatening to kill/assault/threatening behaviour	21	21	21	21	P	
Threatening to damage personal property (new)	-	-	29	29	P	
Extortion/blackmail	22	22	22	22		✓
Unlawfully in building (no intent to commit offence)	23	23	23	23		✓
Peeping Toms, lurking etc	24	24	24	24		✓
Fraud	-	25	25	25		✓
Damage to motor vehicles	20	26	26	26	H	
In scope, but not able to tell which offence			85	85		✓
Not an offence	88 ⁷¹	88	86	86		✓
Offence not in scope			87	87		✓

⁶⁸ The legal definition of burglary changed between the 2001 and 2006 surveys. The current definition covers thefts from enclosed yards, which may have been included under Code 13 before, and does not require forced entry. Thus, a new code was added in 2006 for the new definition. The old code was retained to allow comparisons with previous surveys.

⁶⁹ Bicycle theft was treated as a personal offence in 1996 and 2001, so (in theory) thefts of bicycles belonging to other household members were excluded. Also many bicycles were stolen from outside the house, and should in principle have been given Code 13, but were coded as bicycle theft. In 2006 and 2009, bicycle thefts were treated as a household offence.

⁷⁰ In the 1996 and 2001 surveys, Code 20 covered wilful damage in general. This included damage to both household and personal property in 2001. Damage to motor vehicles was also included in Code 20 in 1996.

⁷¹ 'Not relevant' codes were only added to the 1996 data during analysis of 2001 survey data. Prior to that, these incidents were simply omitted from the dataset, and no imputation was conducted to adjust for their removal.

8 Survey weights

This chapter describes the methods used to produce weights for the 2009 NZCASS. Weights are usually applied to sample survey data during its analysis to adjust for factors such as differential selection probabilities, non-response patterns and sample skews relative to population figures. The 2009 NZCASS is no exception.

The sample design for the 2009 NZCASS covered four levels: meshblocks, households,⁷² people, and victimisation incidents. Weights have been calculated to enable analysis of the 2009 NZCASS data at three of these levels: households, people, and incidents. These weights incorporate adjustments for each of the factors listed above. Household weights are the simplest and are dealt with first, followed by person weights and finally incident weights.

8.1 Household weights

Initial household weights were calculated as the reciprocal of each household's estimated probability of inclusion in the sample, across both the Māori booster sample and the main sample. (Person weights were calculated using a similar process.) The inclusion probability for household i was calculated as follows:

$$\begin{aligned} p_i &= P(\text{household } i \text{ included}) \\ &= P(\text{household } i \text{ selected and eligible}) \\ &= \sum_{s=1}^2 P_{i,s} r_{i,s} \end{aligned}$$

where $P_{i,s}$ is the probability that household i was selected for sample s and $r_{i,s}$ is the probability that household i was eligible for sample s . (The main sample and Māori booster sample are indexed by $s = 1$ and 2 respectively.)

One thousand meshblocks were selected systematically with unequal probabilities that were proportional to the number of occupied private dwellings they contained according to the 2006 Census.⁷³ So the probability of selecting a meshblock m that contained d_m occupied private dwellings according to the 2006 Census is $1000d_m/D$, where D was the number of private occupied dwellings in the sampling frame according to the 2006 Census.

A fraction of the occupied private dwellings in each selected meshblock m were approached, with every x^{th} such dwelling being approached as part of the main sample (up to a maximum of 10). Here x_m was calculated as the number of occupied private dwellings the meshblock contained at the 2006 Census (denoted d_m), divided by 6.5.⁷⁴ The interviewer also enumerated all occupied private dwellings in the meshblock at the time of selection. The probability that

⁷² The term "household" is used here as a shorthand for 'private occupied dwelling'. This differs from the official definition of household used by Statistics New Zealand.

⁷³ Meshblocks with fewer than nine occupied private dwellings were excluded from the sampling frame, as were meshblocks in inlets, waterways, and on islands other than Waiheke Island and the North and South Islands.

⁷⁴ As explained in Chapter 2 (Sampling methodology), the figure of 6.5 was derived by dividing the target main sample size (4030) by the number of meshblocks selected (1000) and the expected response rate (62%).

household i within meshblock m was selected for the main sample, assuming meshblock m had been selected, was therefore $\min(1/x_m, 10/e_m)$, where e_m is the number of occupied private dwellings enumerated by the interviewer in meshblock m .

As a result, the probability $p_{i,1}$ that each occupied private dwelling was selected for the main sample was

$$\begin{aligned} p_{i,1} &= P(\text{household } i \text{ selected for main sample}) \\ &= P(\text{meshblock } m \text{ selected})P\left(\text{household } i \text{ selected for main sample} \right. \\ &\quad \left. \text{within meshblock } m \right) \\ &= \frac{1000d_m}{D} \min\left(\frac{1}{x_m}, \frac{10}{e_m}\right) \\ &= \frac{1000d_m}{D} \min\left(\frac{1}{\left\lfloor \frac{d_m}{6.5} \right\rfloor}, \frac{10}{e_m}\right) \end{aligned}$$

where $\lfloor \cdot \rfloor$ denotes the rounding operator, which returns the nearest integer to its argument. Most occupied private dwellings thus had approximately the same probability of being approached for the main sample, which is similar to the outcome of the sample design used in the 2006 NZCASS. Meshblocks where the number of dwellings changed substantially are the main exception.

Another 18 dwellings were selected for the Māori booster sample in each meshblock (or less than 18 dwellings if the meshblock did not contain this many after excluding those dwellings selected for the main sample). The probability $p_{i,2}$ that each occupied private dwelling was selected for the Māori booster sample was

$$\begin{aligned} p_{i,2} &= P(\text{household } i \text{ selected for booster sample}) \\ &= P(\text{meshblock } m \text{ selected})P\left(\text{household } i \text{ selected for booster sample} \right. \\ &\quad \left. \text{within meshblock } m \right) \\ &= \frac{1000d_m}{D} \frac{\min(18, e_m \left(1 - \min\left(\frac{1}{\left\lfloor \frac{d_m}{6.5} \right\rfloor}, \frac{10}{e_m}\right)\right))}{e_m} \end{aligned}$$

These differ substantially from the selection probabilities in the 2006 NZCASS. Analysing the data using the survey weights ensured this did not affect comparisons between the two surveys' results.

The second element of the household inclusion probability formula is the probability that a household was eligible for each sample. All households in the dataset were eligible for the main sample, ie, the probability of eligibility for the main sample $r_{i,1}$ is always 1. Household eligibility for the Māori booster sample is determined by whether there were any Māori aged 15 or more living in the household; ie, $r_{i,2}$ is 1 if the household contains any Māori aged 15 or more, and is 0 otherwise. However, 14 non-Māori respondents gave responses of 'Don't know' or 'Refused' when asked how many Māori aged 15 or more lived in their household. Logistic regression was

used to estimate the probabilities of each of their households being eligible for the booster sample, ie, that they contained any Māori aged 15 or more. A model was fitted using data from all the other non-Māori respondents, and using the number of people in the household aged 15 or more as the only predictor.

Eligibility for the Māori booster sample was not collected in earlier surveys for non-Māori respondents in the main sample, and in those surveys $r_{i,2}$ was estimated for these respondents. For making comparisons with previous surveys, an alternative version of the probability $r_{i,2}$ that household i was eligible for the Māori booster sample was calculated as follows: $r_{i,2}$ was 1 if the respondent was Māori; $r_{i,2}$ was 0 if the number of people aged 15 or more in household was 1, because the respondent is non-Māori; and for the remaining households, the desired probability

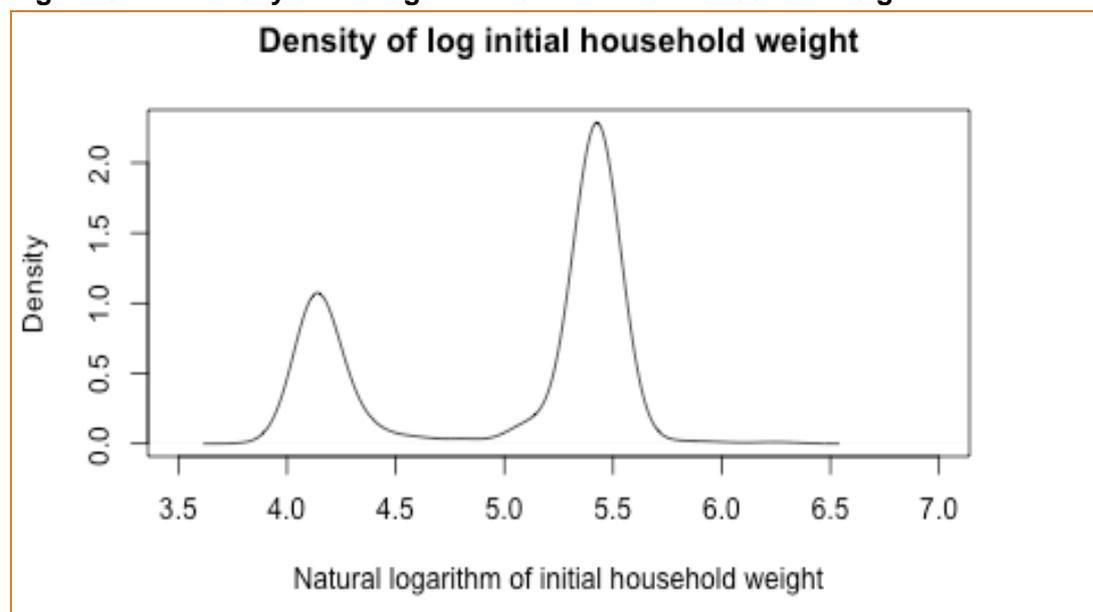
was estimated as $r_{i,2} = \frac{u}{1 - (1-u)v}$, where u is the proportion of people in the household aged 15 or more who would be eligible for the Māori booster sample, averaged over all households known to be of mixed eligibility, and v is the proportion of households that were eligible. Specifically, $u = 0.09644$, and $v = (1297+471)/(1297+11554+471) = 0.13271$.⁷⁵ Thus for non-Māori living with other adults $r_{i,2} = 0.01454$.⁷⁶

The initial household weight was calculated as the reciprocal of the household inclusion probabilities described above. The resulting weights had an average value of 173.3, a coefficient of variation of 0.458, and ranged from 49.2 up to 524.3. They were somewhat more variable than in the 2006 NZCASS (as would be expected from the changes to the sample design), but not excessively so. The estimated probability density of the logarithm of the initial household weights is shown in Figure 8.1;⁷⁷ a histogram showing the unsmoothed empirical density of these weights is provided in Appendix E5. The distribution in Figure 8.1 is bimodal because the Māori booster sample gives Māori a higher chance of being selected.

⁷⁵ In total, 1297 booster interviews were conducted, another 471 households were approached for the booster sample and were eligible, while 11,554 households were approached for the booster sample but were ineligible.

⁷⁶ The value of $r_{i,2}$ (0.01454) is a constant; this means that it applies unchanged to all non-Māori living with other adults.

⁷⁷ The density shown in Figure 8.1 estimated using a Gaussian kernel, with the bandwidth given by the rule of thumb in equation 3.3.1 on page 48 of Silverman (1986). That is, the bandwidth was the minimum of the interquartile range divided by 1.34 and the standard deviation, multiplied by 0.9 divided by the sample size to the power of one-fifth.

Figure 8.1: Density of the logarithm of the initial household weight.

A non-response adjustment was made to these initial household weights, to allow for differential unit non-response. This adjustment was expected to be especially useful for variables for which population totals are not available, such as which sample the household was part of, because these cannot be adjusted for in the later post-stratification step. It does assume that the missing data is missing at random (conditional on the adjustment variables). If this is not a realistic assumption, survey results could be biased, as could comparisons between surveys.⁷⁸

To adjust for non-response, the response outcome data was summarised using a single overall logistic regression model. This was fitted to the dataset containing the outcome counts by samples for all 1000 meshblocks,⁷⁹ with the number of trials in each meshblock taken as the estimated number of eligible dwellings approached (rounded to the nearest whole number), and interviews being counted as successful trials. First a model was fitted using the following predictor variables: sample (Māori booster or main sample), the 2008 crime rate in that Police Station Area (on a truncated log scale), broad region, level of urbanisation, and deprivation index (NZDep2006). Then the non-response model was selected by sequentially removing predictor variables that were not statistically significant, until only significant variables remained at a 90 percent confidence level (see Appendix E1.)

The final predictors were the deprivation index and transformed crime rate, and their parameter estimates are shown in Table 8.1. The deprivation index had a mean around 1000, a standard deviation of roughly 90, and ranged from 853 to 1466, while the transformed crime rate ranged from -4 to -1.5, with a mean of -2.4 and a standard deviation of 0.43. (Appendix E1 gives more information about these two variables.) The model's Brier score was 0.21, and the Somer's D

⁷⁸ The term 'bias' is used here in a technical sense, meaning the extent to which the average of the results would not agree with the true population figures (if these were known), supposing that the survey was conducted many times in the same circumstances but different samples were selected according to the same design.

⁷⁹ There was no outcome data for the Māori booster sample in meshblocks containing exactly nine dwellings, however, since they were excluded from the Māori booster sample (as described in Chapter 2).

and gamma statistics were 0.10. According to the le Cessie-van Houwelingen normal test statistic and the modified Hosmer Lemeshow test, there was no suggestion of lack of fit ($p=0.68$ and $p=0.22$ respectively). Initial household weights were divided by the predicted probabilities of response based on this model, which ranged from 0.528 to 0.770. The resulting weights had an average of 245.5 and a coefficient of variation of 0.455, and ranged from 66.9 to 793.4.

Table 8.1: Parameter estimates for non-response model

Variable	Parameter estimate	Std. error
Intercept	2.1459	0.3471
Transformed crime rate	-0.1302	0.0645
NZDep score	-0.0016	0.0003

The household weights resulting from the non-response adjustment were then post-stratified⁸⁰ by level of urbanisation, based on the estimated number of households in each category as at 30 June 2009 (see Appendix E3). This aligned the total of the household weights in each urbanisation category with the estimated number of households shown in Table 8.2 below.

Table 8.2: Population targets for household weight calculation

Urbanisation	Number of households
Auckland	433543
Wellington/Christchurch/Dunedin	354777
Other main urban areas	330153
Other urban areas	242949
Rural areas	257178

The household weights were post-stratified by urbanisation for consistency with the 2006 NZCASS, and because urbanisation is generally associated with both crime rate and non-response. There were few other good benchmark candidates for households.

The final household weights after post-stratification ranged from 67.8 to 859.5, with an average of 249.8 and a coefficient of variation of 0.459. These weights can be used for analyses of household characteristics, and in particular to calculate incidence and prevalence figures for household offences.

8.2 Person weights

Person weights were calculated in a similar way to household weights, with initial inverse probability weights being adjusted for unit non-response and then aligned with population benchmarks. The only differences were that the selection probabilities incorporated an extra factor to account for the selection of one person from those in the household who were eligible to be interviewed, and that more than one benchmark variable was used, requiring the use of raking⁸¹ instead of post-stratification.

⁸⁰ Post-stratification is a widely used technique for adjusting survey weights so that the results agree with known population benchmarks (see Appendix E3).

⁸¹ Raking, also known as rim weighting, enables the simultaneous control of marginal distributions for several benchmark variables (in contrast to post-stratification, which controls only on a single categorical variable). It was implemented here using Lumley's (2004, 2009) rake function, with the default convergence criterion, and that function's source code provides the most precise description of the method used.

The components of the household inclusion probabilities for each sample were divided by the number of people living in the household who were eligible to be interviewed⁸² (to adjust for only one person from each household being interviewed), according to the following formula:

$$o_i = P(\text{person } i \text{ was included}) \\ = \sum_{s=1}^2 \frac{p_{i,s} r_{i,s}}{e_{i,s}}$$

where $e_{i,s}$ is the number of people aged 15 or more living with respondent i who were eligible for sample s , except that $e_{i,2}$ is taken as 0 for non-Māori respondents. Initial person weights were taken as the reciprocal of each person's inclusion probability, ie, as $1/o_i$.

Adjustment for unit non-response used the same non-response model as for households, ie, the initial person weights were divided by the same predicted probabilities of response as for the household weights. The person weights were then raked by combinations of age,⁸³ sex and ethnicity. These combinations are consistent with those used in the 2006 NZCASS. Weighted sample profiles (before raking) show substantial skews relative to the population benchmarks for several of these groups, especially those relating to Māori, and none of the groups have small sample sizes. (The smallest group was Māori males aged 60 or more, which contained 110 respondents.) The population targets used are shown in Table 8.3, in the order that they were raked.

The initial inverse probability person weights ranged from 53.2 to 2212.0, with an average of 375.5 and a coefficient of variation of 0.678. After the non-response adjustment, the person weights had an average of 531.8 and a coefficient of variation of 0.679. The final person weights after raking ranged from 69.2 to 2735.0, with an average of 560.9 and a coefficient of variation of 0.681.

Person weights can be used in the calculation of incidence and prevalence figures for personal offences, and for the analysis of self-completion lifetime prevalence data and of most data from the main questionnaire. No further adjustments have been made to account for non-response to the entire self-completion component, on the grounds that this is consistent with previous waves of the NZCASS and because non-response here remains small.

⁸² If the number of eligible household members was greater than six, a value of six was used instead. This affected 12 respondents.

⁸³ Four respondents refused to give their age. The resulting missing values were imputed using random hot deck imputation.

Table 8.3: Population targets for person weight calculation

Weighting control group	Estimated population at 30 June 2009
Males 15–24	320240
Males 25–39	413660
Males 40–59	567340
Males 60–69	192620
Males 70+	166780
Females 15–24	307240
Females 25–39	443430
Females 40–59	598780
Females 60–69	200330
Females 70+	214240
Māori Males 15–39	121132
Māori Males 40–59	61982
Māori Males 60+	21318
Māori Females 15–39	128610
Māori Females 40–59	69082
Māori Females 60+	24466
Non-Māori	2998070
Pacific	208200
Non-Pacific	3216460
Asian	366600
Non-Asian	3058060

8.3 Incident weights

Incident weights were derived from person weights by dividing them by the selection probability for that incident (given that the current respondent had been selected). If the incident selection probability was less than 0.1, however, a value of 0.1 was used instead.⁸⁴ This reduced the variability of these probabilities, and thus reduced the variability in the weights that would result from using the actual incident probabilities from heavily victimised respondents, although this is at the cost of introducing some potential for bias. Since a value of 0.1 was used in the 2001 and 2006 surveys, it was used again here for consistency. The same cut-off value was used for incidents from both the main interviewer-administered questionnaire and the self-completion questionnaire.

The most recent incident was selected within each self-completion section, but a more complex selection process was used for incidents recorded in the main questionnaire. These were divided into high, medium or low priority incidents,⁸⁵ and an incident was selected without replacement for each of the three Victim Forms in turn. High priority incidents were given three

⁸⁴ This truncation of the distribution of probabilities affected 63 incidents. Although these incidents made up only 2 percent of sampled incidents, they would have accounted for 24 percent of the total of all incident weights if this truncation had not been applied. After truncation, they accounted for only 12 percent of the incident weight total.

⁸⁵ High priority incidents were those recorded at questions 28, 36, 37, 38, and 40. Medium priority incidents were those recorded at questions 31, 35, 35.416, 39, and 41. Low priority incidents were those recorded at questions 29, 30, 32, 34, and 43.

times more chance of being selected for each Victim Form than a low priority incident, and medium priority incidents were given twice as much chance. The overall probability that a given incident from the main questionnaire was selected for a Victim Form thus depended on whether it was a high, medium or low priority incident, as well as how many low, medium and high priority incidents were experienced by that participant.

The joint probability of selecting various numbers of high, medium or low priority incidents was derived by enumerating the relevant parts of the probability space through a branching process. The probability of selecting an incident was then calculated adding up the probabilities for each of the appropriate nodes. (The R code for these calculations is shown in Appendix E4.) For instance, if a respondent reported one low priority incident, one medium priority incident, and two high priority incidents, the probability that a low priority incident was selected for the first Victim Form would be 1/9, and the probabilities of a medium and high priority incident being selected would be 2/9 and 6/9 respectively. (Note this is the probability of any high priority incident being selected, not a specific incident.) If we suppose the low priority incident was the one selected, then one medium priority and two high priority incidents would remain, and the conditional probability of selecting a medium priority incident for the second Victim Form would be 2/8. The joint probability of selecting a low priority incident for the first Victim Form and a medium priority incident for the second Victim Form is the product $(1/9) \times (2/8) = 2/72$. Similarly, the conditional probability of selecting a high priority incident for the second Victim Form would be 6/8, and the joint probability of selecting a low priority incident for the first Victim Form and a high priority incident for the second Victim Form would be $(1/9) \times (6/8) = 6/72$.

Similar calculations give the full joint distribution for the priority of the incidents selected for the first two Victim Forms as:

$$\begin{bmatrix} 0 & 2/63 & 6/54 \\ 2/72 & 0 & 12/54 \\ 6/72 & 12/63 & 18/54 \end{bmatrix} = \begin{bmatrix} 0 & 0.0317 & 0.1111 \\ 0.0278 & 0 & 0.2222 \\ 0.0833 & 0.1905 & 0.3333 \end{bmatrix}$$

where the first Victim Form indexes the columns, and the second the rows.

Now suppose that a low priority incident was selected for the first Victim Form, and a high priority incident was selected for the second Victim Form. Then one medium priority and one high priority incident would remain, and the conditional probability that a medium priority incident would be selected for the third Victim Form would be 2/5. The unconditional joint probability of selecting a low priority incident for the first Victim Form, a high priority incident for the second, and a medium priority incident for the third Victim Form would be $(6/72) \times (2/5) = 0.03333$.

Similar calculations give the full joint distribution for the priority of the incidents selected for all three Victim Forms as:

$$\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0.0556 \\ 0 & 0.0467 & 0.1111 \end{bmatrix} \begin{bmatrix} 0 & 0 & 0.0444 \\ 0 & 0 & 0 \\ 0.0333 & 0 & 0.2222 \end{bmatrix} \begin{bmatrix} 0 & 0.0317 & 0.0667 \\ 0.0278 & 0 & 0.1667 \\ 0.05 & 0.1429 & 0 \end{bmatrix}$$

where the third Victim Form indexes across matrices (and the first Victim Form indexes the columns, and the second Victim Form indexes the rows, as before). Summing the entries where a low priority incident was selected (ie, the first matrix, and the first row and column of the other two matrices) gives the total probability that a low priority incident was selected for any of the three Victim Forms as 0.468254.

The self-completion questionnaire comprised three sections, for incidents committed by partners, incidents committed by people the respondent knew well, and sexual incidents, respectively. Each section included four screener questions establishing how many incidents had occurred, followed by a series of questions corresponding to the Victim Forms in the main interviewer-administered questionnaire. If more than one incident was reported in a section, the corresponding Victim Form questions were completed for the most recent incident. Although this was not a random selection, it was assumed for weighting purposes that the incident was selected at random, with equal probability given to all the incidents reported in that section.⁸⁶ The resulting selection probability was the reciprocal of the number of incidents reported at all screeners in that section.

Isolated missing values for the number of incidents (eg, from a 'Don't wish to answer' response to a particular screener question) were imputed with the value 1, as was done in 2001 and 2006.

While it might seem more consistent to derive a second set of incident weights from the household weights rather than the personal weights, and use these for analysing household incidents, this would introduce some bias in comparisons against previous results because incident weights were derived from personal weights for all incidents in the 2001 and 2006 surveys. This previous approach produces results in terms of person-incidents, that is the numbers of incidents experienced by people living in the affected households. This better matches the common interpretation of the results in terms of the proportions of victims affected.⁸⁷ To maintain comparability with the previous approach, personal weights have again been used for all incidents in the 2009 NZCASS.⁸⁸ If the weighted results are interpreted in terms of incidents, this introduces some bias.⁸⁹ It is more correct to interpret the weighted results in terms of person-incidents, as explained above.

The incident weights ranged from 69.2 to 24530.0, with an average of 1007.0 and a coefficient of variation of 1.52. The density plots for the weights in Figure 8.2 show that incident weights are more variable than person weights, which in turn are more variable than household weights.

⁸⁶ The assumption of random equiprobable selection of self-completion incidents within each selection follows from a model that assumes the interview date is not related to patterns of victimisation, and that respondents recall and report incidents perfectly. The latter assumption is already made implicitly elsewhere in the weighting and analysis.

⁸⁷ The distinction between victims and incidents was explicitly discussed in footnote 35 on page 61 of the 2006 Key Findings report, which explains that this distinction is generally not maintained within the report.

⁸⁸ Another option would be to derive household incident weights from the household weights and use these to produce the main estimates, but use incident weights derived solely from personal weights for comparisons with previous surveys.

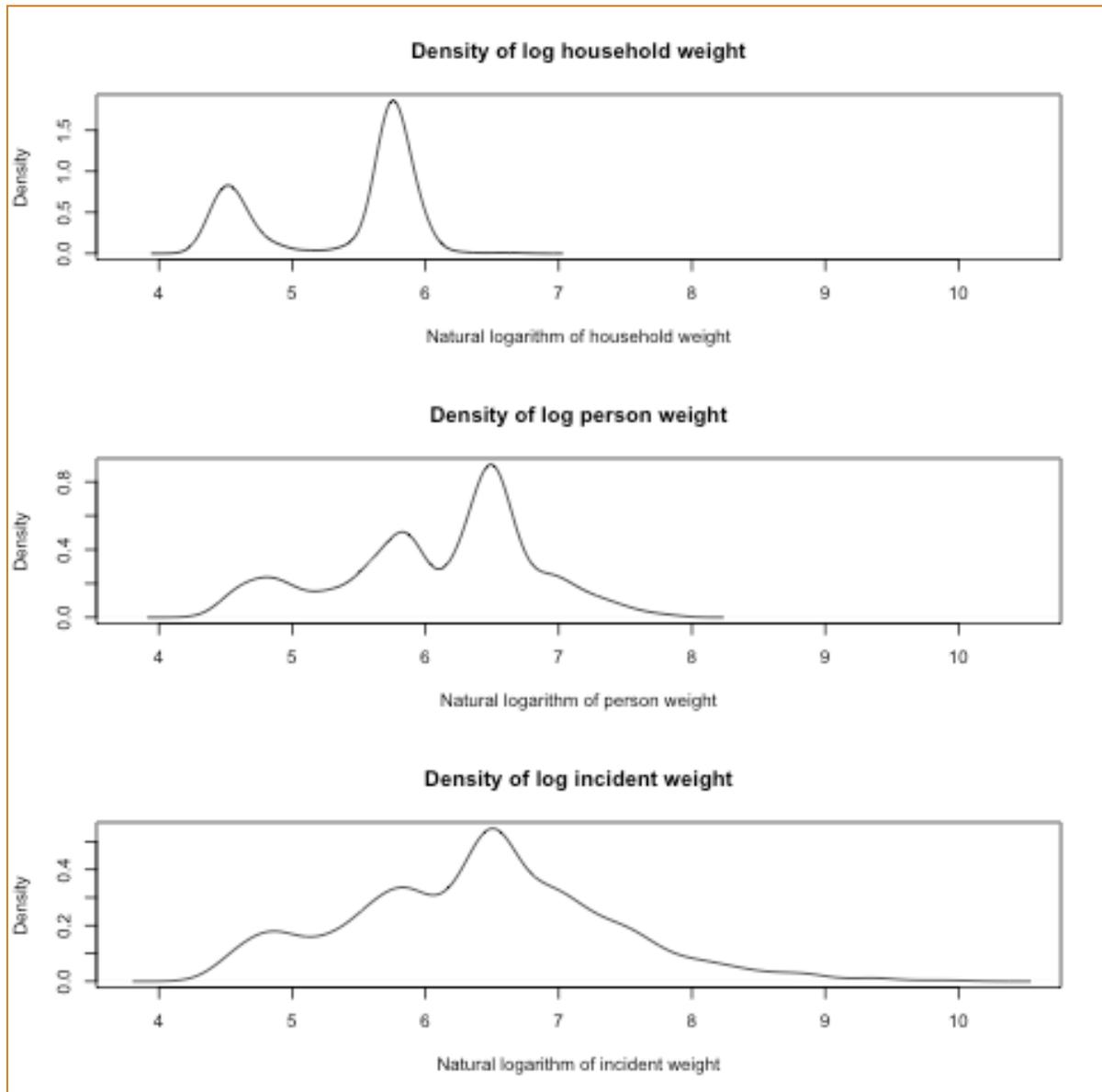
⁸⁹ This interpretational bias would be particularly severe if estimates of total numbers of incidents were produced from these weights, although in previous surveys all results have been expressed as percentages.

Survey weights

This reflects the large variation in selection probabilities at each of the last two stages of the 2009 NZCASS sample design. Histograms for the weights are given in Appendix E3.

Incident weights were merged into the Victim Form dataset for analysis purposes. This dataset contained a record for each Victim Form completed, and so could contain up to six records for each respondent—three from the interviewer-administered questionnaire and one from each section of the self-completion questionnaire.

Figure 8.2: Densities of logarithms of the household, person and incident weights



9 Imputation

Each respondent could only complete a few Victim Forms, due to interview time constraints. Since some respondents are heavily victimised, some incidents do not have a Victim Form. In fact, most do not; Victim Forms were completed for only 37 percent of the incidents reported in the 2009 NZCASS. The incident weights described in Chapter 8 adjust for this to provide an effective method of analysis when each Victim Form can be viewed in isolation. Most of the data collected in Victim Forms will be analysed using these weights. However, victimisation rates are also a critical output from the 2009 NZCASS. These are usually expressed as prevalence rates (the proportion of people or households who experienced offences of a certain type) and incidence rates (the average number of such offences experienced by a person or household). Direct calculation of incidence and prevalence rates required information about all the incidents experienced⁹⁰ by each survey participant, including three items collected on each Victim Form: whether the incident occurred during the year 2008; whether the incident was determined during offence coding to be an offence within the scope of the survey (termed being relevant); and which detailed offence codes the incident attracts. Another item that can be derived from Victim Form data (under certain assumptions) is how likely the incident was to have been reported a second time at another screener question.

Information on these items was required for all incidents, including the 63 percent of incidents without Victim Forms,⁹¹ to enable the direct calculation of incidence and prevalence figures.⁹² However this data is missing for the incidents without Victim Forms, necessitating some form of imputation for this missing data.⁹³ The process of imputation also affects the sampling error of the results, although for some imputation methods it is hard to figure out how much. Multiple imputation (Rubin, 1987) has been used in the 2009 NZCASS to quantify this effect, via Lumley's (2004) 'mitools' package. Ten imputations have been used throughout.

⁹⁰ Strictly speaking, this is most critical for prevalence rates, since the number of offences could be calculated directly from the incident weights, and thus so could incidence rates. These figures would be less reliable than those based on imputation, however. In contrast, prevalence rates cannot be calculated directly using weights. Prevalence is defined as the proportion of people (or households) who experienced the offence in question, but the available data does not establish which offences were experienced for people with missing Victim Forms, ie, who reported experiencing more than three incidents in the main questionnaire (or more than one incident in a self-completion section). Imputation provides a natural solution to this problem, and since imputed values have been produced to enable calculation of prevalence rates, it makes sense to use the same values to calculate incidence rates.

⁹¹ The proportion of incidents without Victim Forms depends on the questionnaire design, and in particular the choice to gather Victim Form data for just one incident from those reported in each section of the self-completion questionnaire and at most three incidents from the main questionnaire. One option for reducing the proportion of incidents without Victim Forms was a mini-Victim Form developed during planning for the 2006 NZCASS, to gather only the information required for calculating incidence and prevalence, for one more incident from the main questionnaire. It was ruled out then due to constraints on interview duration, and omitted from the 2009 NZCASS for consistency.

⁹² Alternative methods that do not require data for all incidents are theoretically possible, such as pseudolikelihood estimators, but these were not believed to be feasible due to the complexity of the data. Incidents that are duplicated across screeners would pose the greatest difficulty.

⁹³ Imputation is a commonly used remedy for missing data, which involves filling in the missing values with allowable values for the variable in question. Many imputation methods have been devised (for an overview see Seastrom et al., 2002)

9.1 Imputing the number of incidents

Each screener question consisted of two parts: “Since 1st January 2008, has anyone [done this to you]?”, then (if the answer to the first part was “Yes”) “How many times?” The responses to the two parts were stored in separate variables for the self-completion screeners, but were combined into a single variable for the main screeners (except Q42 and Q43). The number of incidents was zero if the respondent reported that nothing of that nature had happened to them, but was missing if the respondent said “Don't know/Can't remember” or “Don't wish to answer” at either part of the screener question. Appendix F1 includes a table showing the frequencies of these responses.

A value of 1 was imputed when the number of incidents was missing. In other words, it was assumed that the respondent reported being a victim of just one incident. This is likely to be a poor assumption in many of these cases, but it was hoped that this provided a reasonable compromise between over counting for those who were not victims and undercounting for those who really experienced more than one such incident. However, it was suspected that most of these responses would be from victims, since non-victims would presumably not have trouble remembering the answer and might have less reason to be averse to answering the question.⁹⁴ This suggests that the approach used here probably underestimates the true level of victimisation, and that other common imputation methods (such as an unrestricted random hot-deck) would also suffer from a similar problem.⁹⁵ Hot-deck imputation would also introduce more variability. The primary reasons for imputing a value of 1 in the 2009 NZCASS were that this approach was used in the 2001 and 2006 surveys, and that no clearly superior method was identified.

The number of incidents was missing in 80 places for the screener questions in the main questionnaire, coming from 68 respondents. The missing values were not uniformly distributed across these 15 screener questions; roughly a quarter of them (19) affected Q31 (attempted break-ins), accounting for 5 percent of the people who said “Yes” to this screener question. Missing information was more common in the self-completion sections, with missing values accounting for approximately one-quarter of the non-negative responses. Missing information was most prevalent at the sexual victimisation screener questions, where (except for the distressing sexual touching question) roughly the same number of respondents failed to provide information as provided a specific positive number of incidents. Even within the remaining questions there was substantial variation between the screener questions, with missing information being almost twice as likely as complete positive information for the last screener question (which asked about other sexual violence).

The following table shows the numbers of respondents giving definite answers at each screener question, as well as the numbers not giving a response for various reasons, and the average

⁹⁴ However, non-victims might have refused to answer the self-completion screener questions because they felt the topic was too personal in nature, despite not being victims themselves. Refusals were the dominant form of non-response for the sexual screener questions.

⁹⁵ This assumes the donor pool would consist of all respondents with complete data for that screener question. Another possibility is to restrict the donor pool to those reporting some incidents at that screener, which would probably then err in the other direction.

number of incidents reported among those giving a positive number. Structural zeroes are denoted with a dash.

Table 9.1: A summary of responses at the screener questions, including non-response and average incident counts

Screener	Zero	More than zero	Don't know/ can't remember	Refused	Not asked	Average incident count
Q28	5558	163	3	-	382	1.27
Q29	5214	504	6	-	382	1.30
Q30	4950	768	6	-	382	1.36
Q31	5734	353	19	-	-	1.34
Q32	5742	356	8	-	-	1.37
Q34	5397	706	3	-	-	1.45
Q35	5782	314	10	-	-	2.18
Q35_416	5545	557	4	-	-	1.80
Q36	5888	218	0	-	-	2.22
Q37	5710	393	3	-	-	2.66
Q38	6022	83	1	-	-	1.56
Q39	6014	90	2	-	-	1.77
Q40	5985	121	0	-	-	1.78
Q41	5790	308	8	-	-	1.94
Q42/Q43	5795	304	7	-	-	3.03
Q167_419/420	3870	197	17	23	1999	3.52
Q167_421/422	3923	150	14	19	2000	4.04
Q167_423/424	3908	162	22	12	2002	3.65
Q167_425/426	3987	85	19	13	2002	3.89
Q227/228	5631	194	31	30	220	3.11
Q229/230	5596	237	27	24	222	3.54
Q231/232	5694	128	37	25	222	2.70
Q233/234	5743	87	27	27	222	5.62
Q287_433/434	5798	45	7	31	225	3.89
Q287_435/436	5803	35	8	34	226	2.91
Q287_437/438	5718	117	10	35	226	3.46
Q287_439/440	5815	25	8	32	226	2.80

If mean imputation or random hot-deck imputation was used instead of imputing a value of 1, still assuming that all the missing responses were from victims (and restricting the mean or the donor pool to victims accordingly), this would roughly double the estimated incidence of rape. The estimated prevalence would also be somewhat higher (because the higher number of incidents means it is more likely one will still count after imputation of dates and relevance), though prevalence would not increase as much as incidence. The estimated incidence and prevalence of all offences would increase slightly. Hot-deck imputation would be essentially unbiased if all the respondents who do not know or refuse to state the number of incidents they experienced (or whether they experienced any at all) were victims, and they experienced similar numbers as respondents who did acknowledge being victims. Mean imputation relies on similar

assumptions.⁹⁶ At least the first of these assumptions seems unlikely to hold, however, and we have no strong reason to believe that the biases caused by these two aspects of the issue would necessarily cancel out.

Another cause of missing information for the self-completion screener questions was the refusal of around 3.5 percent of respondents to answer the self-completion questionnaire.⁹⁷ No overt imputation has been conducted to correct for this, ie, it is effectively assumed that these people experienced no offences of the types covered by the self-completion screener questions. This will have led to underestimation of the true victimisation rates for these offence types, although the bias will not have been large due to (1) the small level of self-completion non-response, and (2) its skew towards older respondents. Based on the age profile of self-completion non-response and of confrontational crime from the self-completion screeners, it appears that the incidence of confrontational crime among self-completion non-respondents might be around 70 percent as high as among the rest of the sample. This suggests that the incidence of confrontational crime from the self-completion screeners may be understated by around 2.5 percent due to self-completion non-response, ie, an incidence estimate of 21.6 percent would become approximately 22.1 percent if an age-based adjustment was made for self-completion non-response.

9.2 Date imputation

For each incident without a Victim Form from the main screeners, the calendar year in which the incident occurred was imputed randomly assuming that it had an equal chance of occurring on each day between 1 January 2008 and the interview date. That is, the year each incident occurred was imputed as being in 2008 with probability equal to 366 divided by the number of days between 1 January 2008 and the interview date. This was done independently across incidents and for each of the ten imputations conducted per incident. This is the same method as used in the 1996, 2001 and 2006 surveys.

For self-completion incidents, the same method was used, except when the incident with date information from that section occurred during 2008. Since that incident is the last incident in that section to have occurred, all the others are then imputed as occurring during 2008. This is the same method as used for the self-completion sections of the 2006 survey. The assumption of even spread is not ideal even when the last incident occurred in 2009, because knowing this provides some additional information about when the other incidents are likely to have occurred. However, the 2006 method has been continued for consistency.

The assumption of even spread also does not account for recall bias. An investigation of the known incident dates in 2006 (described in Appendix A6 to the 2006 NZCASS Technical Report) suggested that this is likely to have had a substantial effect on the victimisation risk estimates from that survey, and even stronger effects in the previous surveys.⁹⁸ However, no

⁹⁶ Mean imputation would induce some technical bias in prevalence estimates, even if its underlying assumptions hold, due to the non-linear effect of other imputation steps on these estimates.

⁹⁷ The number of self-completion non-respondents gradually increased from 205 to 226 between the first and last questions in the self-completion questionnaire; ie, 3.4 percent to 3.7 percent of all respondents.

⁹⁸ Similar patterns of bias were observed in the 2005 Irish International Crime Survey (van Dijk et al , 2007: 9/11).

easy method of correcting for this has been apparent, and imputing using the empirical date spread would actually make things worse.

The interviewing dates in 2009 were similar to those in 2006, so any recall effect will probably have affected the two surveys to much the same extent. Comparisons over this time period should therefore be relatively unaffected.

9.3 Relevance imputation

Different types of offences have widely varying relevance rates (and varying proportions of missing data). These are shown in the following table, broken down by source question (ie, the screener question at which that incident was enumerated). Here 'relevant' means that the incident occurred in New Zealand since 1 January 2008 (based on the response to question 44) and had been assigned an offence code other than 85, 86 or 87.

Table 9.2: Missing forms and relevance rates by main screener question

Source question ⁹⁹	Description	% of incidents without Victim Forms	Relevance rate (for completed Victim Forms)
Q28	Vehicle theft	28	88
Q29	Theft from vehicle	34	90
Q30	Damage to vehicle	38	74
Q31	Attempt to break in	37	65
Q32	Burglary	45	89
Q34	Theft from property	38	88
Q35	Theft from inside home	57	89
Q35.416 ¹⁰⁰	Household damage	44	86
Q40	Theft from person	59	81
Q41	Other theft	54	63
Q36	Assault	57	89
Q37	Threat of assault	61	72
Q38	Other damage	53	61
Q39	Threat of damage	70	73
Q43	Other Incidents (Main Questionnaire)	67	32
Q167.420	Assault (by current partner)		
Q167.422	Threat of assault (by current partner)		
Q167.424	Damage (by current partner)	86	86
Q167.426	Threat of damage (by current partner)		
Q228	Assault (by person well known)		
Q230	Threats (by person well known)		
Q232	Damage (by person well known)	83	85
Q234	Threat of damage (by person well known)		
Q287.434	Forced sexual intercourse		
Q287.436	Attempted forced sexual intercourse	79	_ ¹⁰¹
Q287.438	Distressing sexual touching		
Q287.440	Other sexual violence, incl. threats		

The relevance rates for the main screeners vary from 32 percent to 90 percent, so the screener question was expected to be a useful predictor of relevance status. An imputation model was chosen by stepwise selection, starting with a model that included (for incidents from the main questionnaire) the screener question, household composition, household size, tenure/landlord, gender, age group (15–24, 25–39, 40–59, and 60 years or more), marital status, employment status, ethnicity (European, Māori, and Other), urbanisation, NZSEI, and the NZDep2006

⁹⁹ The source question is not recorded for self-completion Victim Forms, so the rates shown apply to a whole section of the self-completion questionnaire (ie, four screener questions combined).

¹⁰⁰ Questionnaire numbering: Q416 followed Q35; it is referred to as Q35.416 to indicate this. The survey documentation follows this protocol in most cases where question numbers did not reflect the interview order.

¹⁰¹ Incident descriptions were not collected for any sexual incidents. All the last incidents from this section were coded as valid offences, and the relevance imputation method used here would maintain this for the rest of these incidents. This is different from the 2001 method, where it was assumed that these incidents had similar relevance rates to other incidents from the self-completion questionnaire, but is the same as the 2006 approach.

score.¹⁰² This reduced to a model with the screener question, age group, other ethnicity, household composition, tenure/landlord, and the NZDep2006 score as predictors. Details of the model are shown in Table 9.3. According to the le Cessie-van Houwelingen normal test statistic, there was a suggestion of lack of fit ($Z = -1.9$), but this was not statistically significant. (The associated Brier score was 0.15, while the Somer's D and gamma statistics were both 0.47.) This model was used to multiply impute relevance status for incidents from the main screener questions without Victim Forms, by generating parameter values from their maximum likelihood distribution for each of the 10 imputations, using these to predict the probability that each incident would be relevant, then randomly generating relevance status using these predicted probabilities.

Table 9.3: Relevance imputation for incidents from main screeners

Predictor variable	Level (relative to base level, for categorical variables)	Parameter estimate	Standard error
(Intercept)		-1.2883	0.5227
Screener	Things stolen from/off vehicle	-0.1933	0.2968
Screener	Vehicle tampering/damage	0.9036	0.2688
Screener	Unsuccessful burglary	1.3740	0.2811
Screener	Successful burglary	-0.1221	0.3214
Screener	Theft from property – outside	-0.0417	0.2815
Screener	Theft from property – inside	0.0210	0.3140
Screener	Theft from a person	0.6833	0.3734
Screener	Other theft	1.4534	0.2828
Screener	Damage	1.5003	0.3675
Screener	Threatened to damage	1.1454	0.4173
Screener	Assault	0.0163	0.3373
Screener	Threatened to assault	1.1584	0.2765
Screener	Other	2.6780	0.2828
Screener	Damage to HH property	0.0706	0.2825
Age	25 – 39	0.6112	0.1295
Age	40 – 59	0.6585	0.1312
Age	60 or older	0.9111	0.1614
NZDep06		-0.0012	0.0004
Other ethnicity		0.3332	0.1142
Tenure and landlord	Rented – other landlord	-0.2251	0.0950
Tenure and landlord	Owned	0.0098	0.1583
Tenure and landlord	Other tenure	0.4073	0.3468

For self-completion incidents, the source screener question for the last incident is not collected. This was imputed randomly within each section with probability proportional to the number of incidents reported at each screener question. Then the same process was used to choose a relevance imputation model, with the same candidate variables (except of course that the screener questions were different).

¹⁰² Respondents with missing values for any of the predictor variables were omitted from the model.

9.4 Offence code imputation

Offence codes were imputed using a hot-deck imputation method (the approximate Bayesian bootstrap, Rubin, 1987:124), with imputation classes defined by source screener question. In other words, the donor pool used to impute the offence codes for incidents from a given screener question was a with-replacement sample of incidents from that same screener question. (The imputed screener question was used for self-completion incidents.) This technique reproduces the distribution of offence codes from each screener, on average, and aims to incorporate an appropriate degree of variability into the multiple imputations. The same method was used in the 2006 NZCASS. In contrast, mode imputation was used in the 1996 and 2001 surveys. The old technique would have depressed the estimated rates for offences like bicycle theft that do not have dedicated screener questions, and overstated the rates for other offences that did have their own screener question.

9.5 Duplicated incidents

The screener questions are intended to gather the number of incidents experienced by each respondent, without double counting. To make this clear to the respondent, all the screener questions (apart from the first screener question in each questionnaire section) incorporate phrases such as “Apart from this” or “Leaving aside anything already mentioned”. A new set of questions were added to the 2006 survey early in the Victim Form to establish how well this worked. Specifically, these questions asked whether the current incident was actually the same as in one of the previous Victim Forms, if the incidents came from different screener questions. (If so, the rest of the Victim Form was skipped.) These questions were retained in the 2009 NZCASS. No such questions were added to the self-completion questionnaire, because Victim Form questions were only asked for one incident from each section there, and so duplicates within a section were not possible. It would be possible to add questions to establish whether the self-completion Victim Forms referred to the same incident as a Victim Form from an earlier section, although in theory this also should not happen due to other exclusions incorporated into the screener questions.

Because some incidents were not selected for Victim Forms, the new questions only provided partial information on the degree of overlap or duplication between screener counts. To be specific, they only detected duplication between the three (or fewer) incidents for which Victim Forms were completed. For example, if only three incidents were reported in the main screeners (call them A, B, and C), the new questions would give complete information about the three possible duplications AB, AC, and BC. If one extra incident D was reported (at a separate screener question), no information would be gathered about the three extra possible duplications AD, BD, and CD. If yet another incident E was reported, there would be no information about its possible duplications AE, BE, CE, and DE, and so forth. The number of unobserved duplications can thus be quite large for heavily victimised respondents. This example relates to incidents reported in the main questionnaire. The situation is worse in the self-completion questionnaire; all possible duplications within each self-completion section were unobserved.

The unobserved duplications were imputed for other incidents by estimating the rate of duplication per potential clash, and independently simulating duplications randomly for each

unobserved potential clash, using the estimated duplication rate. The rate of duplication per potential clash was estimated separately for incidents with one and two potential clashes, and these rates were averaged to derive an overall estimated duplication rate per potential clash of 1.24 percent. This was substantially lower than the rate of 3.75 percent found in 2006. Approximately 3.5 percent of incidents from the main screeners with no Victim Form were projected to be duplicates. This is higher than the rate of duplication per potential clash (1.24%), because most of the incidents had many potential clashes. The projected duplicates were excluded from the calculation of victimisation rates to help avoid over-reporting through failure to follow the 'apart from...' instructions.

As discussed above, the new questions were not added to the self-completion questionnaire, so there is no data on duplications here. The duplication rate from main screener incidents was applied to all self-completion incidents, and around 10 percent were estimated to be duplicates.¹⁰³

9.6 Heavy victimisation cut-off

After imputation, a cut-off was applied to improve the reliability of the estimated rates. Using the imputed values, all out-of-scope or duplicated incidents, and those that did not occur in New Zealand during 2008, were excluded from the dataset. The number of remaining offences from the main questionnaire was not allowed to exceed 30 for any respondent. Any further offences above this value were not included in the victimisation estimates. The specific incidents to be deleted were selected randomly, and this was done separately for each of the ten imputations. The same cut-off procedure was applied independently to incidents from the self-completion components.

Averaged across imputations, this cut-off ruled out 2.3 percent of incidents from the main questionnaire that would otherwise have been counted. These came from 22 respondents (ie, 0.36% of all respondents). The cut-off had a greater effect on self-completion incidents, ruling out 12.7 percent of these on average (again restricting consideration just to those incidents that would otherwise have been counted). These came from just 26 respondents (0.43% of all respondents).

The same cut-off value and method was applied in 2006. The percentages of incidents dropped in the 2009 NZCASS were lower than in the 2006 survey, but the numbers of respondents affected were similar. No cut-off was applied in 2001. This trade-off and the other issues considered are covered further in Appendix F.¹⁰⁴

¹⁰³ In the 2006 survey, by comparison, 15 percent of incidents from the main screeners were estimated to be duplicates, and 17 percent of incidents from the self-completion questionnaire.

¹⁰⁴ The introduction of the cut-off in 2006 was prompted by the easing of controls on how many incidents could be reported at each screener question. The selection of the cut-off value was partly guided by an examination of the trade-off between the estimated reduction in variance that would be achieved against the potential bias each cut-off value might introduce.

10 Variance estimation

While sample surveys like the NZCASS provide a practical and cost-effective means of collecting information on victimisation, the survey results are inherently subject to random sampling variation. The size of this variation must be estimated and considered to sensibly interpret the results. Variance estimation for the NZCASS is complicated by the survey's complex sample design and the large amount of missing data. A delete-a-group jackknife method (Kott, 1998) was used to accommodate the sample design and weighting,¹⁰⁵ and the effect of imputation was estimated using multiple imputation.

10.1 Delete-a-group jackknife

The delete-a-group jackknife (DAGJK), like other resampling methods, uses the variation between the results for many sample 'replicates' to estimate sampling variances (excluding imputation effects). Replicates were created by first randomly dividing the primary sampling units (PSUs) into equal groups, then omitting one group from the sample to form each replicate. Each replicate can equivalently be thought of as assigning the 'omitted' group zero weight (and increasing the weights for other respondents to compensate) instead of actually removing them from the dataset. For the 2009 NZCASS, 100 replicates were used. That is, the 1000 PSUs (meshblocks) were randomly divided into 100 groups of 10 meshblocks, each of which formed the omitted group for one replicate.

The weighting process was rerun¹⁰⁶ for each of the 100 jackknife replicates, producing 100 sets of replicate weights, to account for the effect of the weighting framework. A variance estimate can be calculated as

$$\hat{v}_{JK}(\hat{\theta}) = \frac{99}{100} \sum_{k=1}^{100} (\hat{\theta}_k - \hat{\theta})^2$$

where $\hat{\theta}$ is the statistic of interest, calculated using the original survey weights, and $\hat{\theta}_k$ is the same statistic calculated using the k th set of replicate weights. According to a widely used approximation (Kott, 1998), this variance estimate can be treated as having 99 degrees of freedom.

10.2 Multiple imputation

The effect of imputation on the reliability of victimisation rates has been accounted for using multiple imputation (Rubin, 1987). Each stochastic imputation step was repeated 10 times, using parameter values drawn from their maximum likelihood distribution.¹⁰⁷ To produce each variance estimate, the 10 resulting imputed datasets were analysed using each of the 100 sets

¹⁰⁵ In contrast, balanced repeated replication was used for the 2006 NZCASS. This technique can handle stratification and non-negligible sampling fractions well, but relies on imperfect workarounds for unrealistic assumptions such as each stratum containing exactly 2 sampled PSUs. Because the 2009 sample was unstratified and the first stage sampling fraction was negligible, the simpler delete-a-group jackknife was used for the 2009 NZCASS instead.

¹⁰⁶ However, the same non-response adjustment model was used across all replicates, ie, model selection was not rerun for each replicate. This may lead to sampling errors being slightly underestimated.

¹⁰⁷ Except for the duplication adjustment, where a simple pq/n formula was used for the parameter variance.

Variance estimation

of jackknife replicate weights, producing 1000 results. For a particular imputed dataset, say the j^{th} one, the results from all the jackknife weights were combined using the jackknife variance formula above to give the complete-data variance estimate $\hat{v}_{JK,j}(\hat{\theta})$. Once this was done for each imputed dataset, the results were combined using Rubin’s standard combining rules:

$$\hat{v}_{MI,JK}(\hat{\theta}) = \left(\frac{1}{10} \sum_{j=1}^{10} \hat{v}_{JK,j}(\hat{\theta}) \right) + \left(1 + \frac{1}{10} \right) \text{var}[\hat{\theta}]$$

where $\text{var}[\hat{\theta}]$ is the variance of the values of the statistic of interest across the 10 imputed datasets. Confidence intervals were calculated using a t distribution with the appropriate degrees of freedom.

Imputation had a fairly modest effect of the variances of overall victimisation rates, but had a more substantial effect on the variances of certain offence types, such as sexual offences. The following table shows the percentage of missing information for the incidence and prevalence of selected offence types.

Table 9.4: Percentage of missing information for selected offence types

Offence type	% of missing information for	
	Incidence	Prevalence
Assaults	12%	10%
Threats	11%	8%
Burglary	5%	8%
Motor vehicle offences	16%	19%
Bicycle theft	31%	30%
Sexual offences	75%	16%
Confrontational offences	17%	3%
Personal offences	16%	4%
Household offences	10%	3%
All offences	13%	7%

The variance estimates for victimisation rates assume that the imputation and analysis models are congenial (Meng, 1994), as model misspecification can cause multiple imputation to produce biased variance estimates.

References

Cochran, W. G. (1977) *Sampling Techniques*. New York: Wiley.

Deming, W.E. (1943) *Statistical Adjustment of Data*. New York: Wiley.

Deming, W. E. and Stephan, F.F. (1940) On a least squares adjustment of a sampled frequency table when the expected marginal totals are known. *Annals of Mathematical Statistics*, 11, pp 427–444.

Deville, J.-C. and Särndal, C.E. (1992) Calibration estimators in survey sampling. *Journal of the American Statistical Association* 87, pp 376–382.

Deville, J.-C., Särndal, C.E. and Sautory, O. (1993) Generalized raking procedures in survey sampling, *Journal of the American Statistical Association* 88, pp 1013–1020.

Kott, P.S. (1998) Using the Delete-a-Group Jackknife Variance Estimator in NASS Surveys. NASS Research Report 98-01 (revised 2001). URL <http://www.nass.usda.gov/research/reports/RRGJ7.pdf>.

Lohr, S. L. (1999) *Sampling: Design and analysis*. Pacific Grove, CA: Duxbury Press.

Lumley, T. (2004) Analysis of complex survey samples. *Journal of Statistical Software*, 9(1), pp 1–19.

Lumley, T. (2004) *Mitools: Tools for multiple imputation of missing data*. R package version 1.0. URL <http://cran.r-project.org/src/contrib/Descriptions/mitools.html>.

Lumley, T. (2006) *Survey: analysis of complex survey samples*. R package version 3.6-4. URL <http://faculty.washington.edu/tlumley/survey/>.

Lumley, T. (2009) *Survey: analysis of complex survey samples*. R package version 3.13. URL <http://faculty.washington.edu/tlumley/survey/>.

Mayhew, P. and Reilly, J. (2007) *The New Zealand Crime and Safety Survey 2006: Key Findings*. Wellington: Ministry of Justice.

Meng, X.L. (1994) Multiple-imputation inferences with uncongenial sources of input. *Statistical Science*, 9 (4), pp 538–558.

O'Reilly, J. (2009) *Paradata and Blaise: A review of recent applications and research*. URL <http://ibuc2009.blaiseusers.org/papers/7d.pdf>.

Reilly, J. and Sullivan, C. (2008) *Technical Report: New Zealand Crime & Safety Survey 2006*. Wellington: Ministry of Justice. URL <http://www.justice.govt.nz/publications/global-publications/t/technical-report-february-2008>.

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References

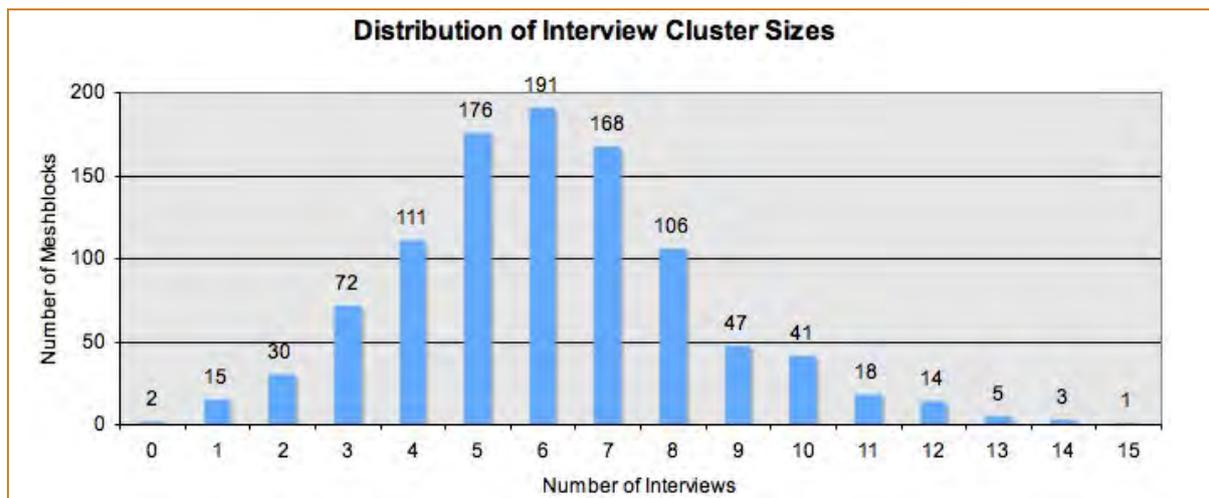
- Rubin, D.B. (1987) *Multiple imputation for non-response in surveys*. New York: Wiley.
- Salmond, C. and Crampton, P. (2002) *NZDep2001 Index of Deprivation*. Wellington: Ministry of Health. URL <http://www.moh.govt.nz>.
- Salmond, C. and Crampton, P. (2007) *NZDep2006 Index of Deprivation*. Wellington: Ministry of Health. URL <http://www.moh.govt.nz>.
- Särndal, C. E., Swensson, B. and Wretman, J. (1991) *Model assisted survey sampling*. New York: Springer-Verlag.
- Särndal, C. E., Swensson, B. and Wretman, J. (1992) *Model assisted survey sampling*. New York: Springer-Verlag.
- Seastrom, M., Kaufman, S. and Lee, R. (2002) Explicit methods of imputing for item nonresponse. Appendix B3 in *NCES Statistical Standards, September 2002*. Washington, D.C: National Center for Education Statistics, U.S. Department of Education. URL <http://nces.ed.gov/statprog/2002/appendixb3.asp>.
- Silverman, B. W. (1986) *Density estimation for statistics and data analysis*. London: Chapman and Hall.
- Statistics New Zealand. (2001) *New Zealand Standard Classification of Occupations 1999*. Wellington: Statistics New Zealand.
- Stephan, F.F. (1942) An iterative method of adjusting sample frequencies when expected marginal totals are known. *Annals of Mathematical Statistics*, 13(2), pp 166–178.
- Van Dijk, J., Manchin, R., van Kesteren, J., Nevala, S. and Hideg, G. (2007) *Methodology of the European Crime and Safety Survey 2005*. European Crime and Safety Survey Consortium. URL http://www.europeansafetyobservatory.eu/downloads/WP_methodology.pdf.
- Wells, J. E. (1998) Oversampling through households or other clusters: Comparisons of methods for weighting the oversampled elements. *Australian and New Zealand Journal of Statistics*, 40, pp 269–277.
- Wolter, K.M. (1985) *Introduction to variance estimation*. New York: Springer-Verlag.

Appendix A: Sampling

A1 Interview cluster sizes

The distribution of interview cluster sizes for the overall sample is shown in Figure A1. The interview cluster sizes by the number of meshblocks for the main and Māori booster samples are provided in Table A1.

Figure A1: Distribution of interview cluster sizes, for the overall sample



1: There were no interviews conducted in two selected meshblocks: one in Auckland City and one in Tasman District, as explained in Chapter 6.

Table A1: Interview cluster sizes, by number of meshblocks for the main and Māori booster samples

Number of interviews (cluster size)	Number of meshblocks (PSUs) in main sample	Number of meshblocks (PSUs) in Māori booster sample
0+	5	383*
1	30	294
2	58	164
3	130	69
4	179	39
5	235	19
6	217	17
7	98	7
8	40	6
9	6	2
10	2	0
	1,000	1,000

+ There were no interviews conducted in two selected meshblocks: one in Auckland City and one in Tasman District, as explained in Chapter 6. The table above includes these two meshblocks.

* Included in these 383 meshblocks are the 36 meshblocks with a 2006 Census count of 9 dwellings, where the sample design meant that no dwellings were approached to be included in the Māori booster sample. Refer to section 2.4.2 for the description of selection of the Māori booster sample dwellings.

The main sample was designed so that an average of 6.5 households per meshblock would be approached (visited), and the targeted response rate of 62 percent would result in an average of 4.0 main sample interviews per meshblock [6,500 households * 0.62 = 4,030 interviews].

Across all 1,000 meshblocks, 4,809 interviews were conducted for the main sample, which means that the average interview cluster size for the main sample was 4.81. However, there were five meshblocks in which no main sample interviews were conducted. No main sample interviews were conducted in three meshblocks due to non-response (eg, refusals), and no interviews were conducted in two other meshblocks, which means that the average interview cluster size for the main sample, in the 995 meshblocks in which main sample interviews were conducted, was 4.83.

The Māori booster sample was not designed to achieve an average interview cluster size per meshblock, rather, it was designed to conduct a certain number of interviews (1,409). This design was based on the number of meshblocks (1,000) the (maximum) number of households screened per meshblock (16), the incidence of households containing adult Māori (14.2%), and the targeted response rate (62%): $1,000 * 16 * 0.142 * 0.62 = 1,409$.

While not specifically designed to achieve an average interview cluster size per meshblock for the Māori booster sample, the 1,409 interviews equates to an average expected number of 1.4 Māori booster interviews per meshblock. An analysis of Māori booster sample outcomes is outlined briefly below.

Across all 1,000 meshblocks, 1,297 interviews were conducted for the Māori booster sample, and this means that the average interview cluster size for the Māori booster sample was 1.30. No Māori booster sample interviews were conducted in 383 of these meshblocks for four reasons: ineligibility (there were no adult Māori residents in the households visited in these meshblocks), non-response (e.g. refusals) because the sample design meant that there was no Māori booster sample (this applied in the 36 meshblocks where the 2006 Census count of dwellings was 9), and due to the two meshblocks in which no interviews were conducted. This means that the average interview cluster size for the Māori booster sample, in the 617 meshblocks in which Māori booster sample interviews were conducted, was 2.10.

Table A2: Interviews, meshblocks and average interview cluster sizes, by region

Region number	Region	Number of interviews	Number of meshblocks (PSUs)	Average interview cluster size
01	Northland	243	38	6.4
02	Auckland	1,788	299 ⁺	6.0
03	Waikato	601	95	6.3
04	Bay of Plenty	492	66	7.4
05	Gisborne	76	10	7.6
06	Hawke's Bay	276	37	7.4
07	Taranaki	126	28	4.5
08	Manawatu-Wanganui	374	57	6.6
09	Wellington	689	115	6.0
16	Tasman	53	12 ⁺	4.4
17	Nelson	61	12	5.1
18	Marlborough	52	11	4.7
12	West Coast	48	8	6.0
13	Canterbury	789	138	5.7
14	Otago	301	51	5.9
15	Southland	137	23	6.0
	Overall	6,106	1,000⁺	6.1

⁺ The table above includes the two meshblocks where there were no interviews conducted (one in Auckland City and one in Tasman District) as explained in Chapter 6.

A2 Interviews conducted with men

The 2009 NZCASS percentage of male respondents was 43.3 percent (2,642 men/6,106 total interviews). The 2006 NZCASS percentage was 40.6 percent (2,199 men/5,416 interviews; see Mayhew & Reilly, 2007).

NRB's experience of conducting large sample surveys is that the final male percentage is in the 40 percent to 45 percent range. The male/female ratio amongst adults in the New Zealand population is approximately 48 percent men and 52 percent women, so the 'expected' figure for men (population proportional) is 48 percent, rather than 50 percent.

The male percentage was monitored on a weekly basis. The lowest male percentage in the 20 weeks of fieldwork was 42.2 percent and the highest was 44.4 percent.

An important factor influencing the percentage of male respondents is the effect of interviewing one person per household. It is common practice to use this interviewing method. However, when just one person per household is interviewed, it does mean that a somewhat unrepresentative sample is to be expected with respect to gender, and also other demographic variables such as age and ethnicity.

Selecting one respondent from each household does skew the sample slightly, resulting in a sample somewhat at odds with true population proportions. However, given that the respondent has been selected at random, the respondent survey weights before post-stratification correct for this effect to some extent. Applying these weights gives the proportion of males as 45

percent, which is higher than the unweighted 43.3 percent mentioned above, but still lower than desired population proportion of 48 percent.

A3 Enumerated dwellings counts and comparison with census counts

NRB monitored the interviewer count of enumerated dwellings in each meshblock, and how these counts compared with Census counts. NRB had entered the enumerated dwellings data for all 1,000 meshblocks by the end of July 2009.

The total count of enumerated dwellings in the 1,000 NZCASS meshblocks was 50,405, and the total Census count of dwellings in these meshblocks was 46,314. Therefore, the count of enumerated dwellings overall was 8.8 percent higher in these meshblocks than the Census count overall.

There are two factors which might explain this difference: unoccupied dwellings, and inter-censal growth. The Census count was of occupied dwellings, and the enumeration count included both occupied and unoccupied dwellings. Of the 22,158 dwellings visited, 5.5 percent were unoccupied (vacant), and we expected a very similar proportion across all enumerated dwellings. The inter-censal growth of dwellings showed an 8.1 percent growth over the 2001 to 2006 period. This equated to 4.9 percent growth over three years, and this figure can be used as an approximation for the growth from the March 2006 Census to the February to July 2009 NZCASS.

To ensure comparability with the NZCASS meshblocks (which were chosen only from meshblocks that contained nine or more dwellings) this 8.1 percent figure was calculated from only those meshblocks which also contained nine or more dwellings, and these dwelling counts were 1,345,806 for 2001, and 1,455,093 for 2006 (occupied, private dwelling counts for all meshblocks were 1,359,843 in 2001, and 1,471,746 in 2006).

The 5.5 percent unoccupied dwellings figure combined with the 4.9 percent inter-censal growth figure produced a 10.4 percent difference, which is 1.6 percent higher than the 8.8 percent difference. While this difference is not large, it may be due to some dwellings being categorised as vacant during the interviewing period for a particular meshblock, but which may not have been vacant long term. For example, the residents of a dwelling may return from a holiday the week after the interviewer finishes working in a meshblock.

In 906 of the meshblocks (90.6%), the difference between the Census and enumeration counts was 10 or fewer dwellings. In 59 of the meshblocks (5.9%), the difference between the Census and enumeration counts was between 11 and 20 dwellings. In 35 of the meshblocks (3.5%), the difference between the Census and enumeration counts was 21 or more dwellings.

A4 Screening sheets for selecting respondents

08-086



2009 NEW ZEALAND CRIME AND SAFETY SURVEY

PSU:

Sampled Home:

**BLUE SCREENER: MAIN SAMPLE
ALL ETHNIC GROUPS ELIGIBLE**

1. INITIAL INTRODUCTION

"Good morning/afternoon/evening. My name is _____ from the National Research Bureau. We are doing a nationwide survey on behalf of the Ministry of Justice about how New Zealanders feel about crime and safety, and we'd like to include the opinions of your household. Here is a letter and brochure from the Ministry that tells you what the survey is all about."

HAND OVER LETTER AND BROCHURE.

IF NECESSARY:

- "This is a very important survey, because the results will help Government departments plan how to deal with crime more effectively."
- "Your household has been selected at random to take part in our survey and everything you tell us remains confidential and anonymous."

2. LIST OF ADULTS IN HOUSEHOLD

"It is very important that we interview a cross-section of New Zealanders. To do this, I need to ask you for the first name (or the initials) of everyone who **usually lives** in this household aged 15 years and over."

LIST NAMES IN GRID BELOW.

PROBE: "And just to check, is that everyone aged 15 and over who usually lives here?"

*Note: **Include** children who board at school but return for holidays, and children in joint custody who spend equal or more nights here than elsewhere. **Exclude** tertiary students who live elsewhere while studying.*

Usual residents of household (aged 15+ years)			
	First name	Month of Birth	✓ when selected
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

3. RESPONDENT SELECTION

"Thank you. Now would you please tell me in which month each of these people was born?"

LIST BIRTH MONTH IN GRID ABOVE: January – December.

THE ELIGIBLE RESPONDENT IS THE PERSON WHO HAS THE **NEXT BIRTHDAY**. Tick eligible person in the right hand column of the grid.

08-086

BLUE SCREENER

NOTES:

- a. If there is more than one person with the same eligible birthday month, ask for the person who has their birthday first in that month.
- b. If the 'door-opener' cannot give you the birth months of all listed household members, use this procedure:
 - Write first names of all 15+ household members in alphabetical order (e.g., Brian before Debbie).
 - Then select the name beginning with the letter earliest in the alphabet (e.g., Sue before Thomas). This person therefore is the eligible respondent. Tick this person's name in the right hand column of the grid.

4. RE-INTRODUCTION

"The person who has been randomly chosen is Xxx. Is he/she available at the moment?"

IF YES, SAY: "May I please speak with Xxx?"

IF NO, ASK: "When is a good time to catch Xxx at home? I'm happy to come back at any time over the next week or so."

Repeat initial introduction if door-opener and respondent are different people.

5. CONTACT DETAILS

FIRST NAME: _____

SURNAME: _____

ADDRESS

Street no. & name: _____

Suburb: _____

City/Town: _____

PHONE NUMBERS:

Home: _____

Work: _____

Mobile: _____

6. RESEARCH FINDINGS

Does respondent want a summary of research findings? Yes No

If so, check **full** address is recorded above, OR record email address _____

08-086

BLUE SCREENER

7. **RECORDS**

- If able to interview immediately, check the respondent has up to 1 hour available now, then proceed with the interview.
- If returning later for interview, write time and date on respondent letter.
- Record appropriate outcome on the **blue** sampling sheet.

8. **REFUSAL INFORMATION**

For refusals, please provide the following information:

'Soft' Refusal [√] 'Hard' Refusal [√]

Reason: _____

Probable Ethnicity: _____

Probable Gender: _____

THE NEW ZEALAND CRIME AND SAFETY SURVEY 2009: TECHNICAL REPORT

Appendix A: Sampling

08-086



2009 NEW ZEALAND CRIME AND SAFETY SURVEY

PSU:

Sampled Home:

**BUFF SCREENER: 'SCREENED' SAMPLE
ONLY MAORI ELIGIBLE**

1. INITIAL INTRODUCTION

"Good morning/afternoon/evening. My name is _____ from the National Research Bureau. We are doing a nationwide survey on behalf of the Ministry of Justice about how New Zealanders feel about crime and safety. Could I have just a moment of your time to see if anyone in this household is eligible for this survey?"

2. SCREENING FOR MAORI

"Thank you. For this study we need to obtain a good spread of different types of people. Is there anyone usually living here aged 15 years or older **who might consider themselves Māori**? That is, if asked which ethnic group or groups they belong to, they would include Māori."

- No Māori in household → Not Eligible →

THANK AND CLOSE. RECORD AS NE ON BUFF SAMPLING SHEET.
--
- Yes (including "possibly") →

CONTINUE.

3. LETTER/BROCHURE

"Thank you. Here is a letter and brochure from the Ministry of Justice which tells you about the survey."

HAND OVER LETTER AND BROCHURE (English and Māori versions).

IF NECESSARY:

- "This is a very important survey, because the results will help Government departments plan how to deal with crime more effectively."
- "Your household has been selected at random to take part in our survey and everything you tell us remains confidential and anonymous."

08-086

BUFF SCREENER

4. **LIST OF MAORI ADULTS IN HOUSEHOLD**

"It is very important that we interview a representative selection of Māori New Zealanders. To do this, can you tell me the first name (or the initials) of all Māori aged 15 and over who usually live here?"

IF NEEDED: "By 'Māori' we mean that if asked which ethnic group or groups they belong to, they would include Māori."

LIST NAMES IN GRID BELOW.

PROBE: "Is that ALL Māori aged 15 and over who live here?". PROBE TO 'YES'.

Note: **include** children who board at school but return for holidays, and children in joint custody who spend equal or more nights here than elsewhere. **Exclude** tertiary students who live elsewhere while studying.

Usual residents of household (Māori, aged 15+ years)			
	First name	Month of Birth	✓ when selected
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

5. **RESPONDENT SELECTION**

"Thank you. Now would you please tell me in which month each of these people was born?"

LIST BIRTH MONTH IN GRID ABOVE: January – December.

THE ELIGIBLE RESPONDENT IS THE PERSON WHO HAS THE **NEXT BIRTHDAY**. Tick eligible person in the right hand column of the grid.

NOTES:

- a. If there is more than one person with the same eligible birthday month, ask for the person who has their birthday first in that month.
- b. If the 'door-opener' cannot give you the birth months of all listed household members, use this procedure:
 - Write first names of all 15+ household members in alphabetical order (e.g., Brian before Debbie).
 - Then select the name beginning with the letter earliest in the alphabet (e.g., Sue before Thomas). This person therefore is the eligible respondent. Tick this person's name in the right hand column of the grid.

6. **RE-INTRODUCTION**

"The person who has been randomly chosen is Xxx. Is he/she available at the moment?"

IF YES, SAY: "May I please speak with Xxx?"

IF NO, ASK: "When is a good time to catch Xxx at home? I'm happy to come back at any time over the next week or so."

Repeat initial introduction if door-opener and respondent are different people. **In this case, please confirm with the selected respondent that they do in fact consider themselves Māori.**

08-086

BUFF SCREENER

7. CONTACT DETAILS

FIRST NAME: _____

SURNAME: _____

ADDRESS:

Street no. & name: _____

Suburb: _____

City/Town: _____

PHONE NUMBERS:

Home: _____

Work: _____

Mobile: _____

8. RESEARCH FINDINGS

Does respondent want a summary of research findings? Yes No

If so, check **full** address is recorded above, OR record email address _____

9. RECORDS

- If able to interview immediately, check the respondent has up to 1 hour available now, then proceed with the interview.
- If returning later for interview, write time and date on respondent letter.
- Record appropriate outcome on the **buff** sampling sheet.

10. REFUSAL INFORMATION

For refusals, please provide the following information:

'Soft' Refusal 'Hard' Refusal

Reason: _____

Probable Ethnicity: _____

Probable Gender: _____

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Page 1 Blue

Census Count =



MAIN HOMES SAMPLING SHEET 'N' HOMES ONLY

Enumeration Count =

All ethnic groups are eligible

N Factor =

PSU:

INTERVIEWER NO:

INTERVIEWER NAME:

Address						
Phone Number						
Respondent's Name						
SAMPLED HOME >		0 1	0 2	0 3	0 4	0 5
INITIAL CALL	Date					
	Time					
	Outcome					
1st CALLBACK	Date					
	Time					
	Outcome					
2nd CALLBACK	Date					
	Time					
	Outcome					
3rd CALLBACK	Date					
	Time					
	Outcome					
4th CALLBACK	Date					
	Time					
	Outcome					
5th CALLBACK	Date					
	Time					
	Outcome					
6th CALLBACK	Date					
	Time					
	Outcome					
7th CALLBACK	Date					
	Time					
	Outcome					
8th CALLBACK	Date					
	Time					
	Outcome					
9th CALLBACK	Date					
	Time					
	Outcome					
UPLOAD DATE						

THE NEW ZEALAND CRIME AND SAFETY SURVEY 2009: TECHNICAL REPORT

Appendix A: Sampling

08-086 NZ Crime and Safety Survey

Page 3 Buff



SCREENED HOMES SAMPLING SHEET 'IN-BETWEEN' HOMES ONLY

Only Maori are eligible

PSU:

Address					
Phone Number					
Respondent's Name					
SAMPLED HOME >		1 1	1 2	1 3	1 4
INITIAL CALL	Date				
	Time				
	Outcome				
1st CALLBACK	Date				
	Time				
	Outcome				
2nd CALLBACK	Date				
	Time				
	Outcome				
3rd CALLBACK	Date				
	Time				
	Outcome				
4th CALLBACK	Date				
	Time				
	Outcome				
5th CALLBACK	Date				
	Time				
	Outcome				
6th CALLBACK	Date				
	Time				
	Outcome				
7th CALLBACK	Date				
	Time				
	Outcome				
8th CALLBACK	Date				
	Time				
	Outcome				
9th CALLBACK	Date				
	Time				
	Outcome				
UPLOAD DATE					

Appendix B: Fieldwork

B1 Brochures, letters and thank you cards

Copies of the brochure, introductory letter and thank you card are provided in this section of the appendix. For the 2009 NZCASS, 16,000 English letters and 2,000 Māori letters were printed, as well as 7,000 thank you cards. The number of brochures printed is provided in Table B.1.

Table B1: Number of brochures printed

Language	Number
English	12,000
Māori	2,000
Samoan	500
Tongan	500
Cook Island Māori	500
Chinese (Mandarin)	500
Korean	500
Hindi	500
Total	17,000

Q Where can I find out more information about this survey?

A

- You can ask the interviewer further questions about this survey.
- You can ring the National Research Bureau, toll free, on 0800 672 476.
- You can call the Ministry of Justice, toll free, on 0800 604 878.

Q Who can I call to find out about support services for victims of crime?

A You can call the Victims of Crime Information Line, toll free, on 0800 650 654 or visit www.victiminfo.govt.nz

Q If I have been a victim of crime and I would like to report it, who should I call?

A You can call or visit your local Police station.

Thank you very much for helping us with this survey.

New Zealand Crime and Safety Survey 2009

We'd like to find out more about New Zealanders' feelings of safety and experience of crime.

This will inform the work being done by a range of agencies to create safer neighbourhoods and communities. This survey is carried out nationwide every few years. Please help us by sharing your experiences.

February 2009
New Zealand Government
NRB
MINISTRY OF JUSTICE
Takahi i te Ture

Q What is the New Zealand Crime and Safety Survey?

A The New Zealand Crime and Safety Survey collects information about New Zealanders' feelings of safety and experience of crime. We carried out similar surveys in 1996, 2001 and 2006. About 5600 people in households throughout the country will take part in the survey.

Q Who is carrying out the survey?

A The survey is being carried out by the National Research Bureau (NRB) on behalf of the Ministry of Justice. The NRB is an independent, New Zealand-based, social and market research company.

Q When, where and how will the questions be asked?

A You can choose to do the survey at another time and/or place if you like. The interviewers will use laptop computers rather than paper questionnaires. If there is anything you don't want to talk about, you can type it into the laptop yourself. You can also have a friend or family member sit with you if you like. You can stop the survey at any time if you wish.

Q How long will the interview take?

A The interview length can vary depending on how often you have been a victim of crime. It is likely to be around 30 minutes if you have not experienced any crime. It will take longer if you have been a victim of crime recently. The interview can be done at a date and time that suits you.

Q What questions will be asked?

A The questions are about:

- how safe you feel in your community and how this might affect your everyday life
- if you have experienced any crimes and, if so, what the effects were
- whether or not you have told anyone about them
- how helpful any agencies were (if they were contacted).

Q Why was I asked to take part?

A People have been randomly selected to take part in the survey. You don't need to have been a victim of crime to answer the questions.

Q Don't the Police and other government agencies already have this sort of information?

A Many offences are not reported to the Police so this survey helps build a more complete picture of crime in New Zealand – which better informs the work by justice sector agencies to create safer neighbourhoods and communities.

Q How is my privacy protected?

A 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 know that you have taken part in the survey. The answers you give are added to other people's answers to create group statistics. The statistics, which are coded for computer analysis, will be kept and may be used by approved researchers.

Q What will the information be used for?

A The results from the survey will inform work being done by a range of justice sector agencies to create safer neighbourhoods and communities. Without the survey, there would be a big gap in the knowledge base on New Zealanders' experiences of victimisation.

Q Where can I find the survey results?

A The results will be published on the Ministry of Justice website www.justice.govt.nz. It is expected the key findings will be released to the public in mid-2010.



February 2009

Dear Householder

Greetings, Kia ora, Talofa lava, Kia orana, Malo e lelei

The New Zealand Crime and Safety Survey 2009

I write to ask for your help on a survey of great importance to every New Zealander. The Ministry of Justice has asked the National Research Bureau (NRB) to survey New Zealanders about their feelings of safety and experience of crime. This will help a range of agencies to plan better services for the victims of crime and create safer communities.

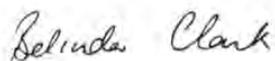
The survey is taking place throughout New Zealand from February to June 2009.

Your address has been chosen at random to be part of the survey. When an NRB interviewer knocks on your door, they will show you their identification and invite a person aged 15 years or over to be interviewed.

Each person's answers are confidential and the information provided is protected by the Privacy Act. The answers will be put together with those of others to show the results as statistics. The main statistics will be published on the Ministry of Justice website (www.justice.govt.nz) in 2010.

Thank you for your time. Your participation will contribute to the success of this survey.

Yours sincerely



Belinda Clark
Secretary of Justice and Chief Executive

Your NRB 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 call the NRB on **0800 672 476**.



Dear Survey Participant,

Thank you very much for taking part in the New Zealand Crime and Safety Survey 2009. Information from previous surveys has been used to support work by justice sector agencies to create safer neighbourhoods and communities. We appreciate your time and effort.

If you are affected by crime in the future then please refer to the contact numbers listed here for information and support.

The Victims of Crime Information Line, **0800 650 654**, provides information about services for people affected by crime. The line is staffed every day from **9am-11pm**.



Listed here are some of the agencies that provide support for victims of crime. The Victims of Crime Information Line **0800 650 654** can provide the details of agencies that are not listed – including those who provide services for particular ethnic groups.



Victim Support
0800 VICTIM
or 0800 842 846

Women's Refuge
Call the Victims of Crime Information Line on 0800 650 654 for the local number in your area, or look under 'W' in the white pages.

Citizens Advice Bureau
0800 FOR CAB
or 0800 367 222

National Youth helpline
0800 37 66 33

Family Violence Information Line
0800 456 450

Rape Crisis
Call the Victims of Crime Information Line on 0800 650 654 for the local number in your area.

Lifeline
0800 54 33 54

Age Concern
Call the Victims of Crime Information Line on 0800 650 654 for the local number in your area.

To report a crime, you can call or visit your local Police station. In the case of an emergency, dial 111.

Appendix C: Checks and audits

C1 Checks and analysis of Q44 responses in the CAPI Victim Forms

Question 44 is asked at the beginning of each CAPI Victim Form, and asks: "Can I just confirm that this incident happened in New Zealand AND after 1st January 2008?"

In the 2006 NZCASS, the Q44 response options were 'Yes' or 'No'. The 2009 NZCASS also allowed a 'Refused' response. As this 'Refused' option was new in 2009, the distribution of the responses to this question was analysed and is discussed below.

Table C1: Analysis of Q44 responses

Number of interviews			6,106	
Question	Victim Form	Response	N=	%
Q44	1	1=Yes	2,708	97.2
		5=No	69	2.5
		7=Refused	10	0.3
		TOTAL	2,787	100.0
Q44	2	1=Yes	1,382	91.5
		5=No	93	6.1
		7=Refused	36	2.4
		TOTAL	1,511	100.0
Q44	3	1=Yes	761	84.1
		5=No	85	9.4
		7=Refused	59	6.5
		TOTAL	905	100.0

In total, within the 6,106 interviews, and across all three Victim Forms, there were:

- 2,732 interviews (44.7%) that contained at least one code 1 (Yes) in Q44,
- 198 interviews (3.2%) that contained at least one code 5 (No) in Q44,
- 80 interviews (1.3%) that contained at least one code 7 (Refused) in Q44, and
- 275 interviews (4.5%) that contained a 5 (No) or 7 (Refused) in Q44.

In general, the table above shows that the percentage of both the 'No' and 'Refused' responses increased as more Victim Forms were attempted or completed.

A more detailed analysis, controlling for the number of incidents/crimes selected, is shown in Table C2. Please note that this table shows the number of incidents/crimes selected, not the number of Victim Forms completed. Incidents were selected after the CAPI Victim Form screening questions, but prior to the CAPI Victim Forms.

Table C2: Analysis of Q44 responses, controlling for the number of incidents/crimes selected

Number of interviews			1,276		606		905		6,106	
Number of Incidents/crimes selected			1		2		3		Overall	
Question	Victim form	Response	N=	%	N=	%	N=	%	N=	%
Q44	1	1=Yes	1,237	97.0	595	98.2	876	96.8	2,708	97.2
		5=No	35	2.7	10	1.7	24	2.6	69	2.5
		7=Refused	4	0.3	1	0.1	5	0.6	10	0.3
		TOTAL	1,276	100.0	606	100.0	905	100.0	2,787	100.0
Q44	2	1=Yes	NA	NA	560	92.4	822	90.8	1,382	91.5
		5=No	NA	NA	40	6.6	53	5.9	93	6.1
		7=Refused	NA	NA	6	1.0	30	3.3	36	2.4
		TOTAL	NA	NA	606	100.0	905	100.0	1,511	100.0
Q44	3	1=Yes	NA	NA	NA	NA	761	84.1	761	84.1
		5=No	NA	NA	NA	NA	85	9.4	85	9.4
		7=Refused	NA	NA	NA	NA	59	6.5	59	6.5
		TOTAL	NA	NA	NA	NA	905	100.0	905	100.0

NA = Not applicable; that is, not asked, due to the number of incidents selected.

Table C2 suggests that respondents learned how to avoid extra work (to some degree), as they went through the interview. The alternative explanation is that the more heavily victimised respondents were less compliant in general. However, as there is no statistically significant difference between those respondents who have had two or three incidents selected, this alternative does not seem not to be the case.

The significant difference was calculated by combining the 'No' and 'Refused' responses in Victim Form two, for two and three incident selections. That is, it used the 7.6 percent (6.6% + 1.0%) and 9.2 percent (5.9% + 3.3%) figures above. This resulted in a significant difference of 2.9 percent, and the difference between the two percentages is 1.6 percent. [Given the formula used, the same significant difference of 2.9% was produced if the 'Yes' percentages of 92.4 and 90.8 are used].

The increase in the percentage of 'No' and 'Refused' responses combined, from the first to the second Victim Form, for respondents who have two or three incident selections, was very similar. That is, for two incident selections, this increased by 5.8 percent (from 1.8% to 7.6%), and for three incident selections, this increased by 6.0 percent (from 3.2% to 9.2%). In other words, the increase in the percentage of 'No' and 'Refused' responses combined, from the first to the second Victim Form, was very similar for both the most victimised respondents (those with three incident selections), and the somewhat less victimised respondents (those with two incident selections).

Further, in Table C2, the non-compliance rate (No + Refused) in the first Victim Form for the three groups (1, 2 and 3 crimes selected) was very similar: 3.0 percent for 1 crime, 1.8 percent for 2 crimes and 3.2 percent for 3 crimes. Even the least victimised group (those that are only going to complete one Victim Form) had a very similar non-compliance percentage (3.0%),

when compared to the most heavily victimised group (3.2% for 3 crimes). This suggests that the most victimised group are no less compliant than the least victimised group.

The distribution of the Q44 responses for four sets of interviews completed by different dates is shown in the table below. An analysis of the trend over time, with respect to the 'No' and 'Refused' responses generally shows that these percentages decreased as the fieldwork progressed. This was the case for four out of the six response categories. However, in the other two response categories of the 'No' responses in the first and second Victim Forms, they did increase slightly: from 2.2 percent to 2.5 percent, and from 5.9 percent to 6.1 percent.

Table C3: Analysis of Q44 responses over time

Number of interviews			3,103		3,911		5,081		6,106	
Date			21 st April		5 th May		2 nd June		5 th July	
Question	Victim form	Response	N=	%	N=	%	N=	%	N=	%
Q44	1	1=Yes	1,365	97.0	1,714	97.3	2,253	97.5	2,708	97.2
		5=No	36	2.6	40	2.3	50	2.2	69	2.5
		7=Refused	6	0.4	7	0.4	7	0.3	10	0.3
		TOTAL	1,407	100.0	1,761	100.0	2,310	100.0	2,787	100.0
Q44	2	1=Yes	668	87.6	849	88.5	1,134	90.5	1,382	91.5
		5=No	52	6.8	65	6.8	74	5.9	93	6.1
		7=Refused	43	5.6	45	4.7	45	3.6	36	2.4
		TOTAL	763	100.0	959	100.0	1,253	100.0	1,511	100.0
Q44	3	1=Yes	374	78.1	464	78.9	615	81.1	761	84.1
		5=No	48	10.0	60	10.2	73	9.6	85	9.4
		7=Refused	57	11.9	64	10.9	70	9.3	59	6.5
		TOTAL	479	100.0	588	100.0	758	100.0	905	100.0

All of the interviews containing a refused Victim Form (or forms) were investigated to ascertain whether or not the refused Victim Form was a 'same' incident, or part of a 'series' of incidents with a previous Victim Form. Where the interviewer or respondent confirmed that a refused Victim Form was a 'same' or 'series' incident,¹⁰⁸ the refusal was changed to 'Yes' (and then the same/series questions at the beginning of the Victim Form were completed). This process resulted in a decrease in the 'Refused' percentage between 2nd June and 5th July for Victim Form 2 and especially for Victim Form 3. Conversely, it contributed to the increase in the 'Yes' percentage in the second and third Victim Forms between 2nd June and 5th July (see Table C3).

¹⁰⁸ If the interviewer was unable to confirm this, the respondent was contacted for confirmation.

Appendix D: Response rates and interview duration

D1 Analysis of response rates

As the NZCASS fieldwork progressed, contact outcomes were entered into a database for each sampled home, and response rates on completed meshblocks (PSUs) were periodically analysed (see Table D1 and D2 below).

Table D1: Response rate progress over time

No.	Date	Number of completed meshblocks	Main sample response rate (%)	Māori booster sample response rate (%)	Overall sample response rate (%)
1	8 April 2009	7	NC*	NC*	75
2	16 April 2009	16	NC*	NC*	74
3	7 May 2009	107	78	72	76
4	12 May 2009	126	77	71	76
5	10 June 2009	379	76	71	75
6	12 June 2009	399	76	72	75
7	23 June 2009	512	74	70	73
8	26 June 2009	540	74	69	73
9	30 July 2009	1,000	71	69	70

* NC = Not calculated

Table D2: Distribution of response rates by ranges

% response rate range	Number of meshblocks (PSUs) in range*	% of meshblocks in range	Cumulative number of meshblocks (PSUs)*	Cumulative % of meshblocks
0 to 9	0	0	0	0
10 to 19	13	1.3	13	1.3
20 to 29	18	1.8	31	3.1
30 to 39	38	3.8	69	6.9
40 to 49	73	7.3	142	14.2
50 to 59	119	11.9	261	26.1
60 to 69	159	15.9	420	42.0
70 to 79	213	21.4	633	63.4
80 to 89	228	22.9	861	86.3
90 to 99	37	3.7	898	90.0
100	100	10.0	998	100.0
Overall	998	100.0		

* This excludes the two meshblocks in which no interviews were conducted (see Chapter 6.1 for explanation).

D2 Completed CAPI Victim Forms

CAPI Victim Form completions are shown in the three tables below. There are a number of ways to measure whether a Victim Form has been completed. Table D3 defines a CAPI Victim Form as complete if the last Victim Form question (Q138) has been answered; in other words, all questions in the CAPI Victim Form have been answered.

Table D3: CAPI VF completions using 'Q138 has been answered'

Number of CAPI Victim Forms completed	Number of interviews	%	Cumulative interviews	Cumulative %
0	3,456	56.60	3,456	56.60
1	1,491	24.42	4,947	81.02
2	729	11.94	5,676	92.96
3	430	7.04	6,106	100.00
Total	6,106	100.00		

Using this definition, the number of respondents with at least one CAPI Victim Form completed was 2,650 (43.4 %).

Alternatively a Victim Form can be counted when Q44 = 1 (Yes). That is, the selected incident happened in New Zealand AND after 1st January 2008. This definition is used in Table D4.

Table D4: CAPI VF completions using 'Q44=1 (Yes)'

Number of CAPI Victim Forms completed	Number of interviews	%	Cumulative interviews	Cumulative %
0	3,374	55.26	3,374	55.26
1	1,335	21.86	4,709	77.12
2	675	11.06	5,384	88.18
3	722	11.82	6,106	100.00
Total	6,106	100.00		

Using this definition, the number of respondents with at least one CAPI Victim Form completed was 2,732 (44.7%).

D3 Mean interview/questionnaire durations

This section provides a breakdown of the analysis into the mean duration of the interviews. Table D5 below shows mean durations for each section of the questionnaire, and also for the main, Māori booster and overall sample, for each number of CAPI Victim Forms completed.

Table D5: Mean durations by the number of CAPI Victim Forms completed and sample type

CAPI VFs completed	Sample	Count	Mean CAPI minutes	Mean SC minutes	Mean exit minutes	Mean questionnaire minutes	Mean interview minutes
0	Main	2,822	19.8	8.5	2.7	31.2	41.2
0	Māori booster	634	20.1	9.2	2.8	32.2	42.2
0	Total	3,456	19.9	8.7	2.8	31.4	41.4
1	Main	1,157	31.2	8.4	2.7	42.3	52.3
1	Māori booster	334	30.9	9.7	2.7	43.3	53.3
1	Total	1,491	31.1	8.7	2.7	42.5	52.5
2	Main	538	40.2	8.5	2.7	51.5	61.5
2	Māori booster	191	40.2	9.9	2.6	52.8	62.8
2	Total	729	40.2	8.9	2.7	51.8	61.8
3	Main	292	50.5	10.3	3.1	63.9	73.9
3	Māori booster	138	48.1	10.5	2.9	61.5	71.5
3	Total	430	49.7	10.3	3.0	63.1	73.1
Overall		6,106	27.2	8.8	2.7	38.8	48.8

Table D5 shows that each CAPI form took around 10 minutes to complete:

- no CAPI VFs completed had a mean CAPI duration of 20 minutes (19.9)
- one CAPI VF completed had a mean CAPI duration of 31 minutes (31.1)
- two CAPI VFs completed had a mean CAPI duration of 40 minutes (40.2) and
- three CAPI VFs completed had a mean CAPI duration of 50 minutes (49.7).

Note that the mean CAPI minutes figures included all questions in the CAPI section; that is, the introductory questions, the Victim Form screening questions, the Victim Form questions and the demographic questions.

Table D6 expands on Tables 6.9 and 6.10 in Chapter 6. It shows mean durations for each section of the questionnaire, and also for the main, Māori booster and overall sample, for each number of self-completion (CASI) Victim Forms completed. Here, a CASI Victim Form was defined as being completed if the last Victim Form question was answered. The last questions were Q224 for CASI VF 1, Q287 for CASI VF 2, and Q370 for CASI VF 3.

Table D6 shows that each self-complete form took around 6 minutes to complete, although there was some variation:

- no SC VFs completed had a mean SC duration of 8 minutes (7.9)
- one SC VF completed had a mean SC duration of 15 minutes (14.7)
- two SC VFs completed had a mean SC duration of 19 minutes (19.3)
- three SC VFs completed had a mean SC duration of 27 minutes (26.8).

By 'combining' the CAPI and CASI Victim Form completion information, it is possible to produce information on the completion of all six possible Victim Forms. The first definition was used to define a completed CAPI form (the last Victim Form question (Q138) has been answered), and the same CASI definition was used (the last question in the Victim Form has been answered; Q224 for SC VF 1, Q287 for SC VF 2, and Q370 for SC VF 3).

Table D6: Mean durations by the number of self-completion (CASI) Victim Forms and sample type

SC VFs completed	Sample	Count	Mean CAPI minutes	Mean SC minutes	Mean exit minutes	Mean questionnaire minutes	Mean interview minutes
0	Main	4,355	25.9	7.9	2.8	36.6	46.6
0	Māori booster	1,042	27.4	8.0	2.7	38.1	48.1
0	Total	5,397	26.2	7.9	2.7	36.9	46.9
1	Main	390	33.5	14.7	2.7	50.9	60.9
1	Māori booster	196	32.7	14.7	2.9	50.3	60.3
1	Total	586	33.3	14.7	2.7	50.7	60.7
2	Main	62	40.4	20.0	2.4	62.9	72.9
2	Māori booster	53	41.7	18.5	3.8	64.1	74.1
2	Total	115	41.0	19.3	3.0	63.5	73.5
3	Main	2	50.0	19.0	4.5	73.0	83.0
3	Māori booster	6	48.7	29.3	4.0	82.3	92.3
3	Total	8	49.0	26.8	4.1	80.0	90.0
Overall		6,106	27.2	8.8	2.7	38.8	48.8

Note that, for example, three Victim Forms completed in the tables below could mean the respondent completed one CAPI and two CASI Victim Forms. However, this (the mix of CAPI and CASI Victim Forms) was not the case, given that only 5 percent, 6 percent and 2.5 percent of respondents completed, respectively, Victim Forms 1, 2 and 3.

The number of respondents completing five or six Victim Forms was very small: only 33 respondents completed five Victim Forms and just three respondents completed all six Victim Forms, so the mean durations associated with these small numbers of respondents are best considered as indicative.

Table D7 shows the number and percentage of respondents that completed each of the six Victim Forms, while Table D8 shows the mean interview durations by the number of Victim Forms completed.

Table D7: Number and percentage of respondents completing the CAPI and CASI Victim Forms

Victim Form number completed	Frequency	%
CAPI VF 1	2,601	42.6
CAPI VF 2	1,093	17.9
CAPI VF 3	545	8.9
SC VF 1	311	5.1
SC VF 2	377	6.2
SC VF 3	152	2.5

Table D8 shows that each Victim Form took around 10 minutes to complete: if no Victim Forms were completed, the mean interview duration was 41 minutes, if one Victim Form was completed, the mean interview duration was 51 minutes, and so forth, through to if six Victim Forms were completed, the mean interview duration was 100 minutes.

Table D8: Mean interview durations by the total number of Victim Forms completed

Number of (CAPI or SC) Victim Forms completed	Frequency	%	Mean duration
0	3,245	53.2 ⁺	40.9
1	1,490	24.4	50.8
2	748	12.3	59.1
3	438	7.2	69.0
4	149	2.4	77.3
5	33	0.5	89.5
6	3	0.0	99.7
All (0, 1, 2, 3, 4, 5 or 6)	6,106	100.0	48.8
One or more (1, 2, 3, 4, 5 or 6)	2,861	46.9	57.6

⁺ This has been rounded up from 53.14% so that the percentages add to 100.0%

Table D9 provides further information on mean durations by the number of Victim Forms completed for the main, Māori booster and overall sample.

Table D9: Mean durations by the total number of Victim Forms completed for each sample type

Total VFs completed	Sample	Count	Mean CAPI minutes	Mean SC minutes	Mean exit minutes	Mean questionnaire minutes	Mean interview minutes
0	Main	2,679	19.9	8.2	2.8	30.9	40.9
0	Māori booster	566	20.2	8.3	2.8	31.3	41.3
0	Total	3,245	19.9	8.2	2.8	30.9	40.9
1	Main	1,168	29.7	8.6	2.7	40.9	50.9
1	Māori booster	322	28.3	9.7	2.6	40.5	50.5
1	Total	1,490	29.4	8.8	2.6	40.8	50.8
2	Main	561	38.0	8.6	2.7	49.3	59.3
2	Māori booster	187	35.9	9.9	2.6	48.4	58.4
2	Total	748	37.4	8.9	2.7	49.1	59.1
3	Main	286	46.7	9.7	3.1	59.5	69.5
3	Māori booster	152	45.3	10.1	2.8	58.2	68.2
3	Total	438	46.2	9.8	3.0	59.0	69.0
4	Main	95	49.1	15.9	2.7	67.7	77.7
4	Māori booster	54	46.6	16.6	3.4	66.5	76.5
4	Total	149	48.2	16.2	2.9	67.3	77.3
5	Main	19	60.2	22.7	2.4	85.4	95.4
5	Māori booster	14	49.7	18.0	3.9	71.6	81.6
5	Total	33	55.7	20.7	3.0	79.5	89.5
6	Main	1	57.0	14.0	6.0	77.0	87.0
6	Māori booster	2	51.5	39.0	4.5	96.0	106.0
6	Total	3	53.3	30.7	5.0	89.7	99.7
Overall		6,106	27.2	8.8	2.7	38.8	48.8

D4 Interview numbers achieved by month, ethnicity, and gender

There are four yield tables which follow. These are reported in two sets of two tables each, where the interviewing yield for ethnicity by total response (non-prioritised) is shown first, and

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Appendix D: Response rates and interview duration

then ethnicity by single response (prioritised) second, for each set of tables. For the two prioritised ethnicity tables, Māori responses were prioritised first, then Pacific, then Asian, then 'European & Other'.

Table D10: Ethnicity by total response (non-prioritised)

			Ethnicity								Total
			Māori		Pacific		Asian		European and Other		
Age Group	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
15–19	224	232	79	79	23	13	16	16	106	124	456
20–24	259	194	92	67	15	12	36	23	116	92	453
25–34	730	501	260	152	43	21	64	48	363	280	1231
35–44	803	601	236	178	31	22	71	48	465	353	1404
45–54	722	517	199	125	25	15	42	28	456	349	1239
55–64	531	426	115	81	8	5	13	25	395	315	957
65+	668	517	100	75	4	6	11	10	553	426	1185
Refused	4	3		2					4	1	7
Total	3941	2991	1081	759	149	94	253	198	2458	1940	6932

Table D11: Ethnicity by single response (prioritised)

			Ethnicity								Total
			Māori		Pacific		Asian		European and Other		
Age Group	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
15–19	169	188	79	79	16	9	10	16	64	84	357
20–24	218	158	92	67	9	9	35	22	82	60	376
25–34	581	408	260	152	29	12	58	47	234	197	989
35–44	701	532	236	178	25	19	65	47	375	288	1233
45–54	661	468	199	125	22	11	41	27	399	305	1129
55–64	496	393	115	81	8	5	12	24	361	283	889
65+	633	491	100	75	4	6	10	9	519	401	1124
Refused	5	4		2					5	2	9
Total	3464	2642	1081	759	113	71	231	192	2039	1620	6106

Table D12: Gender by total response (non-prioritised)

			Ethnicity								Total
			Māori		Pacific		Asian		European and Other		
Sample	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
Main	2862	2252	312	231	124	76	239	196	2187	1749	5114
Māori booster	1079	739	769	528	25	18	14	2	271	191	1818
Overall	3941	2991	1081	759	149	94	253	198	2458	1940	6932

Table D13: Gender by single response (prioritised)

			Ethnicity								Total
			Māori		Pacific		Asian		European and Other		
Sample	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	
Main	2695	2114	312	231	113	71	231	192	2039	1620	4809
Māori booster	769	528	769	528							1297
Overall	3464	2642	1081	759	113	71	231	192	2039	1620	6106

Table D14: Interviews completed by month

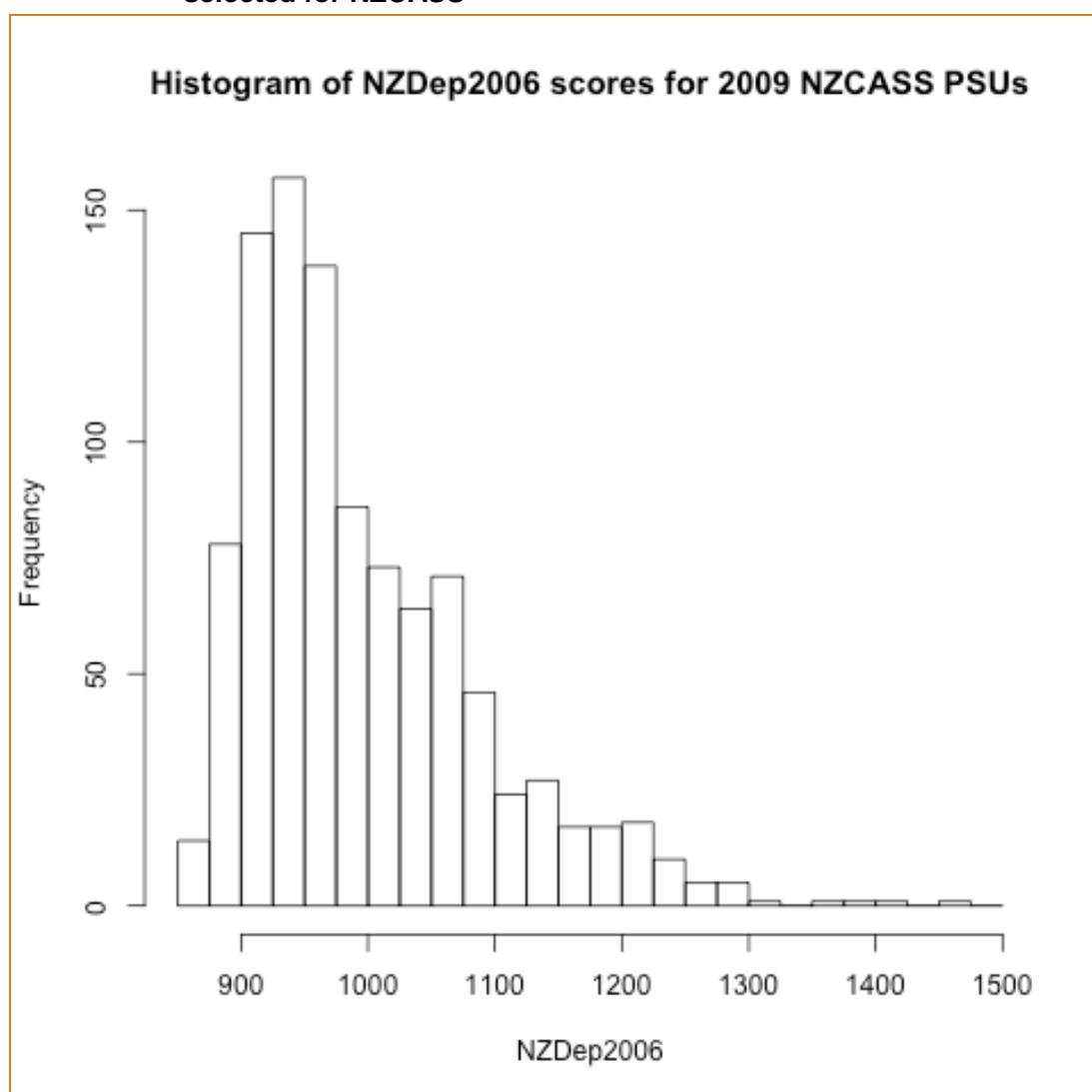
Month	Number of days	Number of interviews	%
17–28 February 2009	12	147	2.4
1–31 March 2009	31	2,000	32.8
1–30 April 2009	30	1,616	26.5
1–31 May 2009	31	1,412	23.1
1–30 June 2009	30	918	15.0
1–5 July 2009	5	13	0.2
Total	139	6,106	100.0

Appendix E: Survey weights

E1 Non-response predictor variables

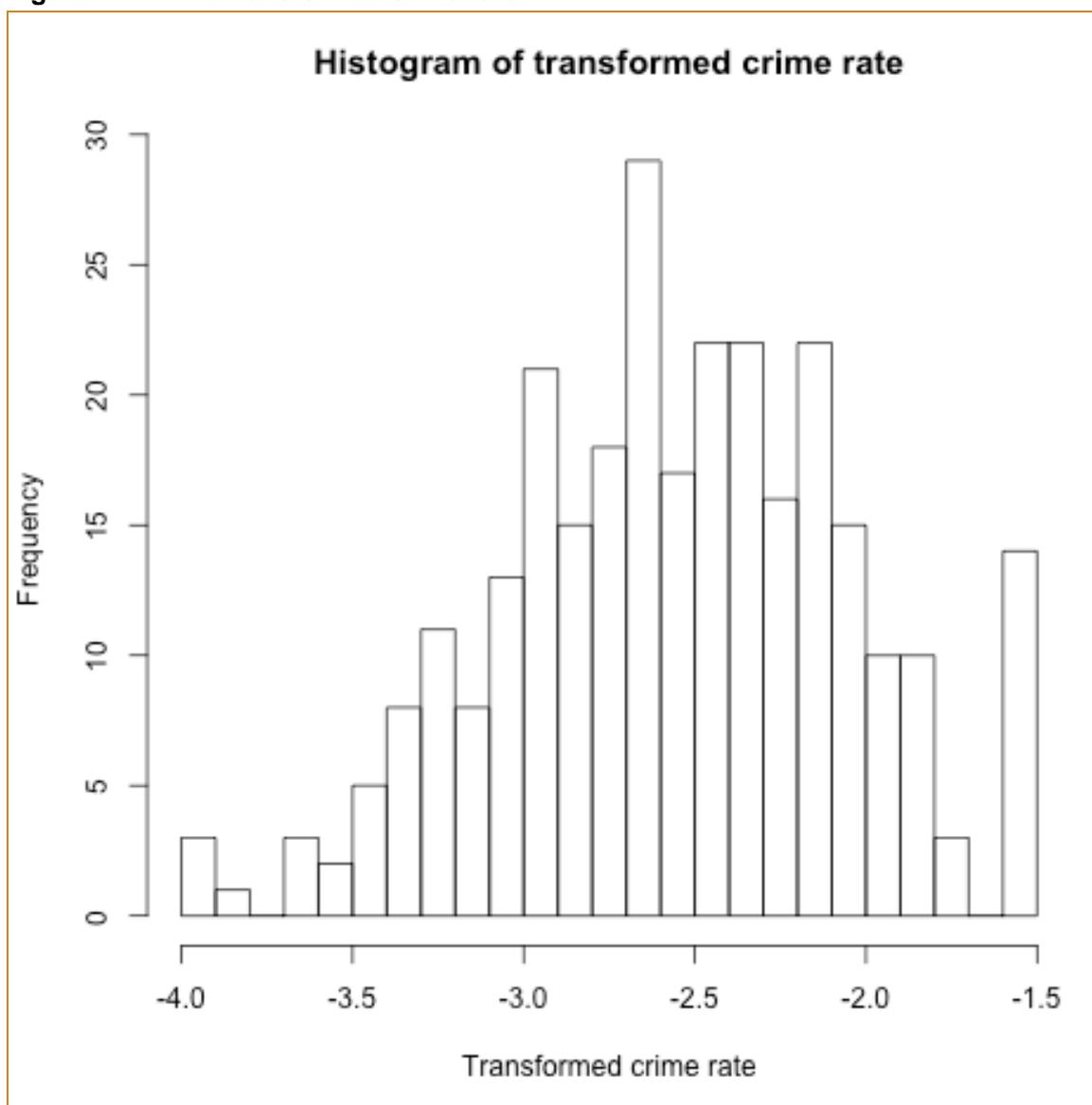
This section provides more detailed information about the predictor variables used in the non-response model, namely the deprivation index and transformed crime rate. The deprivation index NZDep2006 is described fully by Salmond and Crampton (2007). It is defined at meshblock level, so everyone in the same meshblock is given the same deprivation score, and it is a right-skewed continuous variable with a mean close to 1000 and a standard deviation of roughly 90. Below is a histogram of its distribution over the 1000 meshblocks selected for the 2009 NZCASS, where it ranges from 853 to 1466.

Figure E1: Values of the deprivation index NZDep2006 for the meshblocks (PSUs) selected for NZCASS



The transformed crime rate is intended as a broad indicator of the level of crime recorded in each police station area. The crime rate was derived by dividing the number of offences recorded by police at that station¹⁰⁹ by the population resident in that area. Due to some stations having unusual catchment areas, such as those at airports or in central business districts, crime rates had a strong right skew, even after taking logarithms. The logarithm of the crime rate was truncated, replacing any values above -1.5 with -1.5 and any values below -4 with -4. A histogram of this transformed crime rate across police station areas follows below.

Figure E2: The transformed crime rate



¹⁰⁹ For operational reasons, offences reported at the Moturoa and Stoke police stations are recorded as having been reported at larger nearby stations. The population figures for the relevant areas were also combined before calculating the crime rate.

E2 Post-stratification and raking

This section describes the weighting techniques called post-stratification and raking, and illustrates them using simple examples. Both these techniques produce weights that align the survey data with benchmark figures. (These benchmarks are usually derived from larger surveys, Census figures or other reliable sources.) They are often used to help adjust for unit non-response.

Post-stratification involves splitting the respondents into groups (called post-strata or weighting classes). The simplest form of post-stratification assigns each respondent a weight calculated as the benchmark figure for their group divided by the number of respondents in that group.

For example, suppose we have a survey with 700 respondents that we want to post-stratify based on three age groups, and that the respondent numbers and population benchmarks for these groups are as follows:

Age	Number of respondents	Age	Population benchmarks
Under 35	200	Under 35	2400
35–64	300	35–64	4800
65 or more	200	65 or more	3000

Then the weights for each respondent depend solely on their age group:

Age	Respondent weights
Under 35	$\frac{2400}{200} = 12$
35–64	$\frac{4800}{300} = 16$
65 or more	$\frac{3000}{200} = 15$

When these weights are used in analyses of the survey data, the results will reflect the population proportions of the different age groups. In particular, the sum of the respondent weights in each age group will agree with the population benchmarks.

However, the above example assumes that the respondents have no initial weights that must be taken into account (ie, that a simple random sample or some other self-weighting design was used). Often the weighting process must instead take an initial set of weights into account.

Post-stratification handles initial weights by making two modifications to the above procedure. Instead of simply counting the number of respondents in each weighting class, their initial weights are totalled. Then the ratio of the relevant benchmark to this total is calculated, and each respondent's initial weight is multiplied by this ratio to produce the weight to be used in later analyses. The ratio calculated is called the post-stratification adjustment factor for that weighting class.

Suppose that initial weights were needed in the survey from the example above. The data (for the first few respondents) might look like this:

Respondent ID Number	Age	Initial weight
1	35-64	2
2	Under 35	1
3	65 or more	2
4	65 or more	1
5	35-64	3
⋮	⋮	⋮

Suppose that adding up the initial weights within each age group gives the following totals:

Age	Total of initial weights
Under 35	300
35-64	600
65 or more	500

Then the adjustment factors are calculated by dividing the population benchmarks by the above totals, as follows:

Age	Adjustment Factors
Under 35	$\frac{2400}{300} = 8$
35-64	$\frac{4800}{600} = 8$
65 or more	$\frac{3000}{500} = 6$

Finally the weights are produced by multiplying each respondent's pre-weight by the adjustment factor for their age group.

Respondent ID Number	Age	Pre-weight	Adjustment Factor	Weight
1	35-64	2	8	16
2	Under 35	1	8	8
3	65 or more	2	6	12
4	65 or more	1	6	6
5	35-64	3	8	24
⋮	⋮	⋮	⋮	⋮

A good overview of post-stratification is given by Lohr (1999). A more theoretical treatment is provided by Särndal, Swensson and Wretman (1991), who cast the method as a special case of the regression estimator under a group means model.

Post-stratified survey results are asymptotically unbiased under the assumption that the data missing due to non-response is missing at random (MAR). The MAR assumption means that

the weighting classes explain all the systematic differences between respondents and non-respondents. While post-stratification is useful for combating non-response bias, it can also be justified simply because it improves the reliability of the survey results.

Post-stratification can also be used when benchmarks are available for all combinations of two or more variables. The weighting classes are simply taken to be all combinations of the variables (or all cells in the multi-way cross-tabulation of all the variables), and the methods described above are applied without further modification.

However, extending post-stratification in this way rapidly becomes unwieldy if more than a very few weighting variables are involved. The number of weighting classes required increases exponentially as the number of variables increases. This means that even with only a few variables, there may be insufficient numbers of people in each class to provide reliable results. (Cells containing no people can also often occur; these would lead to division by zero.) These problems can be staved off slightly by combining similar cells, but this does not work for long. The benchmarks may also be less reliable at a more detailed level, or perhaps may not even be available.

Raking provides a solution to these problems. The raking algorithm follows an iterative process of controlling for each benchmark in turn, until all benchmarks are satisfied (at least to within close tolerances). For example, say we want to control for two variables. First we apply post-stratification based on the first variable, taking into account any initial weight required. The resulting weights are then used as pre-weights, and we apply post-stratification based on the second variable. While this will produce weights that align the survey data with the benchmarks for the second variable, these weights will usually not align the data with the benchmarks for the first variable. However the alignment will usually be better than it was for the initial pre-weights. We then post-stratify by the first variable again, followed by the second variable, and so on until convergence is attained, ie, until the alignment is close enough for all practical purposes.

Raking has been in use since the 1940s (Deming and Stephan, 1940), and is also known as raking ratio estimation or rim weighting. It is closely related to the iterative proportional fitting algorithm for modelling discrete data. Related weighting methods such as linear weighting, generalised raking and calibration have been developed more recently. Although the raking ratio algorithm is not guaranteed to converge, it will converge in many practical situations if used with care. The method assumes that a model including each variable, but no interactions between the variables, explains the missing data mechanism.

A simple example illustrating how the algorithm works follows. Suppose we now want to control for the age and sex, and that totalling the initial weights gives the following table:

	Male	Female	Total
Under 35	120	180	300
35-64	300	200	500
65 or more	200	400	600
Total	620	780	1400

We also have the following marginal population benchmarks (but need not have benchmarks for the cells within the table):

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Appendix E: Survey weights

	Male	Female	Total
Under 35			2400
35-64			3000
65 or more			4800
Total	5100	5100	10200

Then the first step is to control for age, as before:

Age	Adjustment Factors
Under 35	$\frac{2400}{300} = 8$
35-64	$\frac{4800}{600} = 8$
65 or more	$\frac{3000}{500} = 6$

Multiplying the initial weights by these adjustment factors gives a new set of weights. When these are totalled, this gives the following updated table:

	Male	Female	Total
Under 35	960	1440	2400
35-64	1800	1200	3000
65 or more	1600	3200	4800
Total	4360	5840	10200

The age controls are satisfied, but not the sex benchmarks. The next step is to control for sex. The adjustment factors are 5100/4360 and 5100/5840:

Sex	Adjustment Factors
Male	1.169725
Female	0.873288

Updating the weights, and the table of their totals, gives:

	Male	Female	Total
Under 35	1122.936	1257.534	2380.47
35-64	2105.505	1047.945	3153.45
65 or more	1871.560	2794.521	4666.08
Total	5100	5100	10200

Now the sex controls are satisfied, but not the age benchmarks (although the 'under 35' group is quite close). So age must be controlled for again:

Age	Adjustment Factors
Under 35	1.008204
35-64	0.951339
65 or more	1.028701

This once again brings age into line, but disturbs the sex balance. However the sex balance is closer to the benchmarks than it was last time age was controlled.

	Male	Female	Total
Under 35	1132.149	1267.851	2400
35-64	2003.049	996.951	3000
65 or more	1925.275	2874.725	4800
Total	5060.473	5139.527	10200

Controlling for sex again yields:

	Male	Female	Total
Under 35	1140.992	1258.100	2399.092
35-64	2018.695	989.284	3007.979
65 or more	1940.313	2852.616	4792.929
Total	5100	5100	10200

Although the age totals are not perfect, they are already getting close to their benchmarks. This is after only two repetitions of controlling for age, then sex. After five iterations the process is practically complete. Here is the resulting table:

	Male	Female	Total
Under 35	1141.934	1258.066	2400.000
35-64	2013.905	986.096	3000.001
65 or more	1944.161	2855.838	4799.999
Total	5100	5100	10200

Final adjustment factors can be derived from this table by dividing the values by those in the original table of initial weight totals.

Although raking is a powerful technique for aligning survey data with several benchmarks, one drawback of this method is that it can produce a heavily right skewed weight distribution, due to the multiplicative nature of the adjustments made. A small fraction of relatively large weights can considerably reduce the reliability of the survey results. For this reason, methods have been developed to ensure that the weights are not too extreme by keeping them within certain bounds (for example by Deville and Särndal 1992). These have not been used in the 2009 NZCASS, and are beyond the scope of this appendix.

E3 Sample and population profiles

The following table compares the 2009 NZCASS sample profile, unweighted and after each stage of the weighting process, with the corresponding population proportions across weighting control variables.

Table E1: Sample and population profiles for variables used in post-stratification and raking

	Unweighted sample	Probability weights only	After non-response adjustment	Final weights (after post-stratification or raking)	Population (2009 estimates)
Urbanisation					
Auckland	27.0%	28.6%	28.6%	26.8%	26.8%
Other metropolitan cities	21.7%	22.8%	22.6%	21.9%	21.9%
Other main urban areas	22.0%	19.9%	20.2%	20.4%	20.4%
Secondary urban areas	15.8%	15.1%	15.2%	15.0%	15.0%
Rural/minor urban areas	13.6%	13.7%	13.4%	15.9%	15.9%
Age by gender					
Males 15–24	5.7%	7.4%	7.4%	9.4%	9.4%
Males 25–39	11.3%	10.9%	11.0%	12.1%	12.1%
Males 40–59	15.4%	16.2%	16.0%	16.6%	16.6%
Males 60–69	5.8%	5.6%	5.6%	5.6%	5.6%
Males 70+	5.1%	4.9%	4.9%	4.9%	4.9%
Females 15–24	6.4%	7.7%	7.8%	9.0%	9.0%
Females 25–39	15.4%	13.4%	13.5%	12.9%	12.9%
Females 40–59	20.3%	21.5%	21.5%	17.5%	17.5%
Females 60–69	7.2%	6.5%	6.4%	5.8%	5.8%
Females 70+	7.5%	5.9%	5.9%	6.3%	6.3%
Māori by age by gender					
Māori Males 15–39	6.4%	2.4%	2.5%	3.5%	3.5%
Māori Males 40–59	4.2%	1.4%	1.4%	1.8%	1.8%
Māori Males 60+	1.8%	0.5%	0.5%	0.6%	0.6%
Māori Females 15–39	9.1%	3.1%	3.2%	3.8%	3.8%
Māori Females 40–59	6.1%	2.1%	2.2%	2.0%	2.0%
Māori Females 60+	2.5%	0.7%	0.7%	0.7%	0.7%
Non-Māori	69.9%	89.7%	89.4%	87.5%	81.2%
Pacific					
Pacific	4.0%	5.8%	6.2%	6.1%	6.1%
Non-Pacific	96.0%	94.2%	93.8%	93.9%	93.9%
Asian					
Asian	7.4%	11.9%	11.9%	10.7%	10.7%
Non-Asian	92.6%	88.1%	88.1%	89.3%	89.3%

As expected, the weighted sample profiles for these variables match the population figures precisely.

E4 R code for calculating incident selection probabilities

The following R code was used to calculate the selection probabilities for high, medium and low priority incidents.

```
# Numbers of high, medium and low priority incidents
no98 <- function(x) {x[x==98] <- NA; x} # 98 means Don't Know
cass09b$nH <- with(cass09b, rowSums(no98(cbind(Q28, Q40, Q36, Q37, Q38)),
na.rm=TRUE))
cass09b$nM <- with(cass09b, rowSums(no98(cbind(Q31, Q35, Q35_416, Q41,
Q39)), na.rm=TRUE))
cass09b$nL <- with(cass09b, rowSums(no98(cbind(Q29, Q30, Q32, Q34, Q43)),
na.rm=TRUE))
# 97 means "97 or more" - incidents past 97 are thus excluded from the
sampling frame

# Function to calculate probabilities of selecting a low, medium, or high
priority incident for the next victim form, given specified numbers in
each category
wtSel3 <- function(xL,xM,xH) {c(xL,2*xM,3*xH)/sum(xL,2*xM,3*xH)}

# Function to calculate the probabilities of selecting a particular low,
medium, or high priority incident of any of the three victim forms, given
the number of incidents in each category
pIncidSel <- function(o3=c(2,2,2)) {
  # Extract component of argument
  oH <- o3[3]
  oM <- o3[2]
  oL <- o3[1]
  # Calculate probabilities for first incident selected
  p1 <- wtSel3(oL,oM,oH)
  # Calculate joint probabilities for first two incidents selected
  p2 <- matrix(c(p1[1]*wtSel3(max(0,oL-1),oM,oH),
                p1[2]*wtSel3(oL,max(0,oM-1),oH),
                p1[3]*wtSel3(oL,oM,max(0,oH-1))),
              nrow=3, ncol=3, byrow=FALSE)
  # Calculate joint probabilities for all three incidents selected
  p3 <- array(dim=c(3,3,3))
  p3[1,1,] <- p2[1,1]*wtSel3(max(0,oL-2),oM,oH)
  p3[1,2,] <- p2[1,2]*wtSel3(max(0,oL-1),max(0,oM-1),oH)
  p3[1,3,] <- p2[1,3]*wtSel3(max(0,oL-1),oM,max(0,oH-1))
  p3[2,1,] <- p2[2,1]*wtSel3(max(0,oL-1),max(0,oM-1),oH)
  p3[2,2,] <- p2[2,2]*wtSel3(oL,max(0,oM-2),oH)
  p3[2,3,] <- p2[2,3]*wtSel3(oL,max(0,oM-1),max(0,oH-1))
  p3[3,1,] <- p2[3,1]*wtSel3(max(0,oL-1),oM,max(0,oH-1))
  p3[3,2,] <- p2[3,2]*wtSel3(oL,max(0,oM-1),max(0,oH-1))
  p3[3,3,] <- p2[3,3]*wtSel3(oL,oM,max(0,oH-2))
}
```

```

# Calculate marginal probabilities
ind1 <- array(rep(1:3,9),dim=c(3,3,3))
ind2 <- array(rep(sort(rep(1:3,3)),3),dim=c(3,3,3))
ind3 <- array(sort(rep(1:3,9)),dim=c(3,3,3))
sL <- (ind1==1) + (ind2==1) + (ind3==1)
sM <- (ind1==2) + (ind2==2) + (ind3==2)
sH <- (ind1==3) + (ind2==3) + (ind3==3)
if (oL > 0) {pL <- sum(p3*sL/oL)} else {pL <- 0}
if (oM > 0) {pM <- sum(p3*sM/oM)} else {pM <- 0}
if (oH > 0) {pH <- sum(p3*sH/oH)} else {pH <- 0}
return(c(pL=pL, pM=pM, pH=pH))
}

tmp <- t(apply(cass09b[,c("nL","nM","nH")], 1, function(x3) {if
(sum(x3)<4) {return(rep(1,3))} else {pIncidSel(x3)}}))

cass09b$pL <- tmp[,1]
cass09b$pM <- tmp[,2]
cass09b$pH <- tmp[,3]

```

Figure E3: Histograms of initial household weights, untransformed

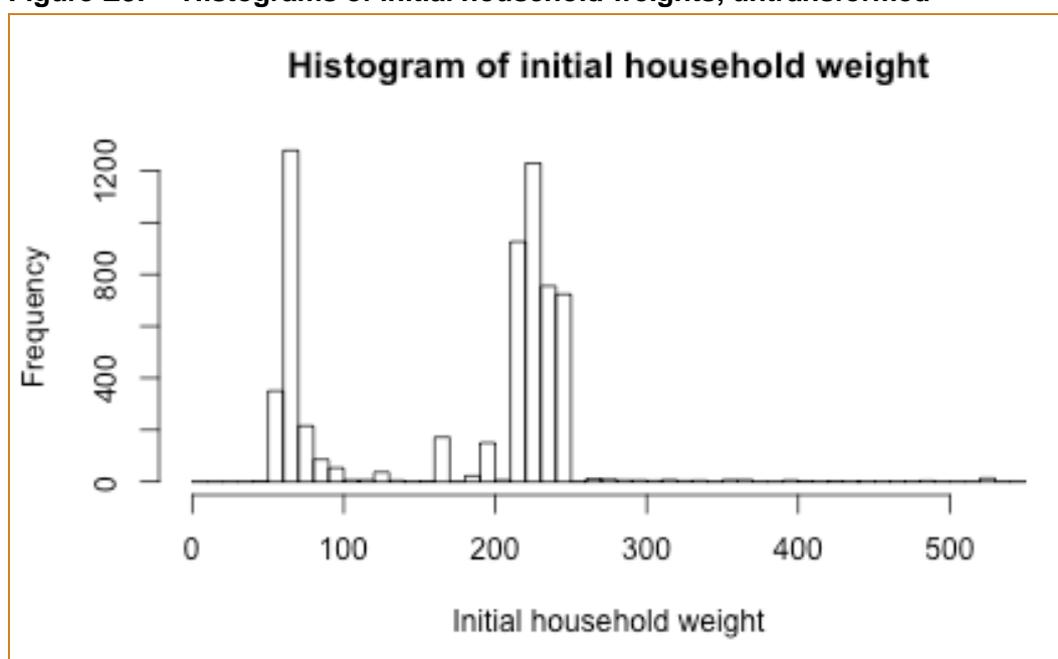
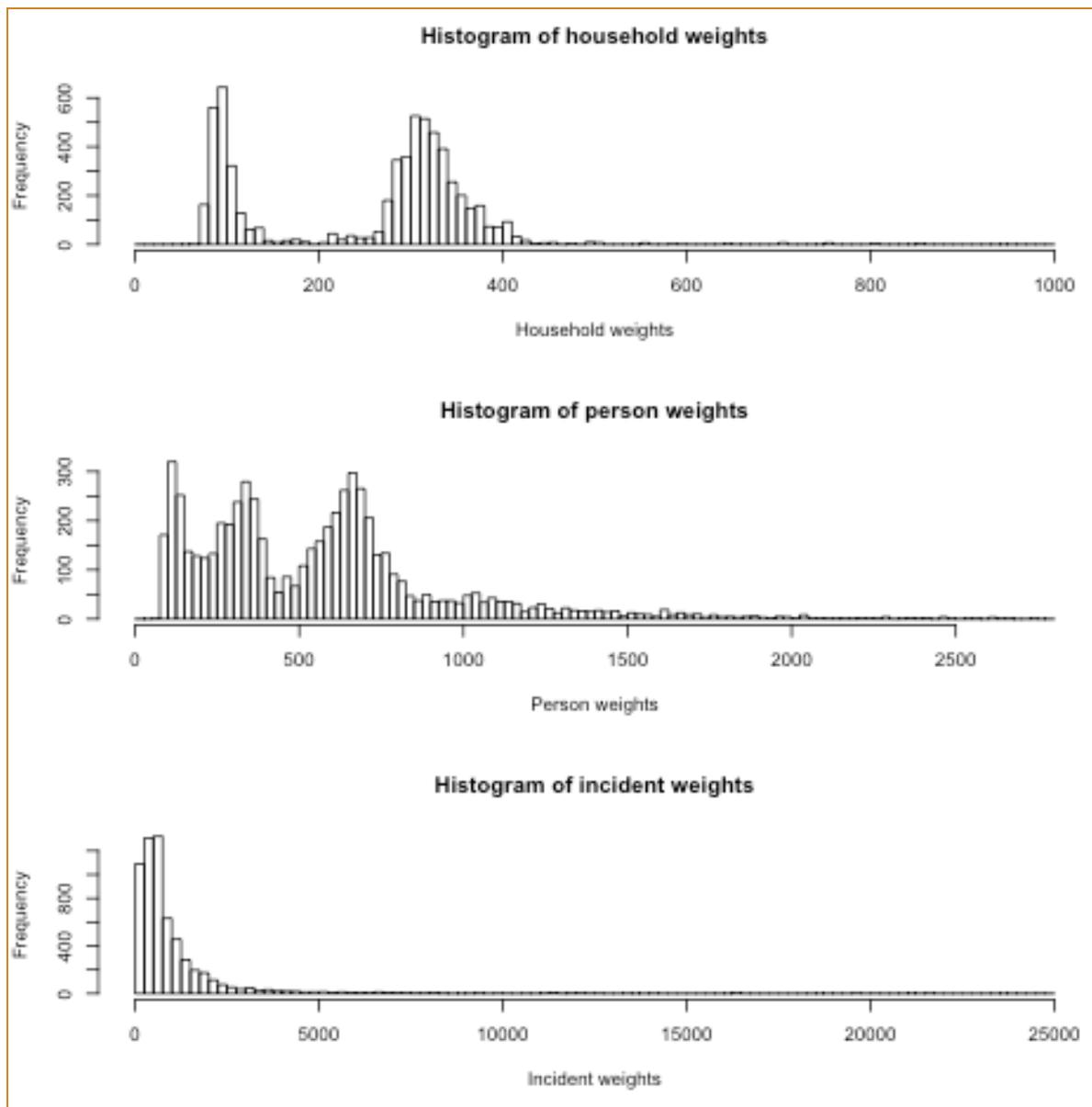


Figure E4: Histograms of the final untransformed household, person and incident weights



Appendix F: Imputation

F1 Bias, variance and the heavy victimisation cut-off

Chapter 9 describes the cut-off applied to heavily victimised respondents. This section provides some background information about how the cut-off value of 30 offences was chosen in 2006. Applying this cut-off alters the statistical properties of the survey's estimates of incidence rates. In particular, it is expected to reduce their variance while increasing their bias. The following table presents naive estimates of the effect various cut-off values might have on the bias and variance of the average number of offences experienced, based on data from the main questionnaire in 2006.

Table F1: Estimates of bias and variance reductions for various cut-off values

Cut-off value	Estimate of bias squared ($\times 10^4$)	Reduction in variance ($\times 10^4$)
60	0.0	0.3
50	0.9	2.3
40	6.8	5.6
30	18.4	8.1
20	74.4	12.5

While the patterns in this table are illuminating, not much reliance can be placed on these specific figures. They are based on simple formulae that assume that (a) applying no cut-off would provide unbiased figures, and (b) a simple random sample was used. Neither assumption is valid. They also include data for all types of crimes and the full sample. Having said that, these figures suggest that a cut-off of around 50 might be best. If, instead of assumption (b), a design effect of 2.0 was assumed, the optimal cut-off would shift to around 40.

For subsamples and less comprehensive offence groupings, the bias was generally expected to be affected less than the variance. Together with a desire for consistency, this supported the choice of 30 for the cut-off value in the 2006 NZCASS. While the same cut-off value was used in the 2009 NZCASS to maintain comparability, it may be worth investing in further analyses before deciding on a cut-off value for future surveys.

Appendix G: Screenshots

This selection of laptop screenshots aims to demonstrate the “look and feel” of the questionnaire.

Interviewer administration section

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

IDNum

Interviewer Query

Enter your three digit interviewer number.

-- ADMINISTRATION --

PSU number 9999

Sampled home number 01

Interviewer number 123

999901 11:56:37 a.m.

Screenshots of the interviewer administered (CAPI) section – Main questionnaire

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

Q6

What sort of crime problems do you think there are in this neighbourhood?

Do not read!
 Multiple response allowed!
 PROBE: 'What others?' Probe to No/Nothing.
 IF NEEDED, READ: 'This neighbourhood' means the streets around you. (RURAL) 'This neighbourhood' means your 'district'.

<input checked="" type="checkbox"/> 1. Burglary / break-ins	<input type="checkbox"/> 10. Theft of cars
<input type="checkbox"/> 2. Vandalism / graffiti	<input type="checkbox"/> 11. Theft from and damage to cars
<input type="checkbox"/> 3. Petty thefts	<input type="checkbox"/> 12. Dangerous driving / speeding / hoons in cars
<input type="checkbox"/> 4. Assault	<input type="checkbox"/> 13. Drink driving
<input type="checkbox"/> 5. Youths on the street / youths fighting	<input type="checkbox"/> 14. Drinking / drunken behaviour / under-age drinking
<input type="checkbox"/> 6. Street attacks	<input type="checkbox"/> 15. Selling drugs / growing or manufacturing drugs
<input type="checkbox"/> 7. Domestic violence	<input type="checkbox"/> 16. Drug use
<input type="checkbox"/> 8. Sexual crimes	<input type="checkbox"/> 96. Other
<input type="checkbox"/> 9. Prowlers	<input type="checkbox"/> 98. Don't know

Q6 Sort of crime

999901 12:08:30 p.m.

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

Q8.5

Showcard A

(Using the categories on Showcard A, can you tell me how much of a problem you think the following things are in your neighbourhood?)

- Drunks, glue sniffers or people high on drugs on the streets -

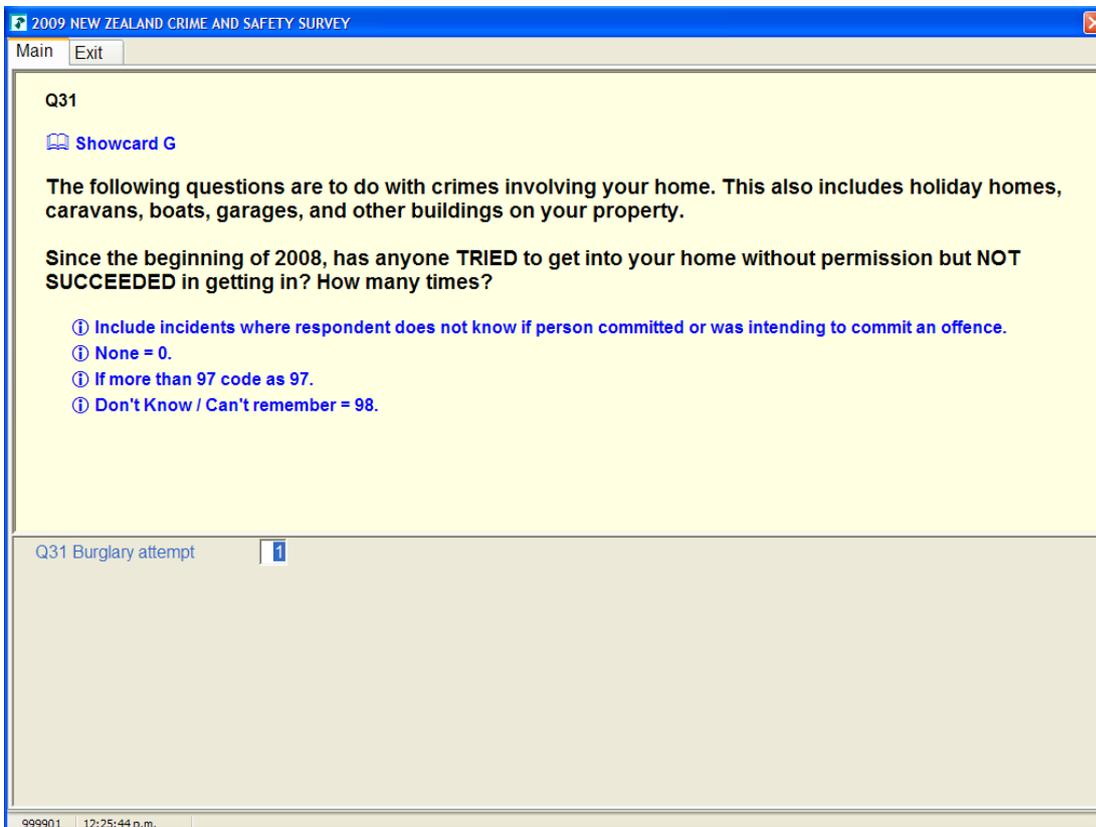
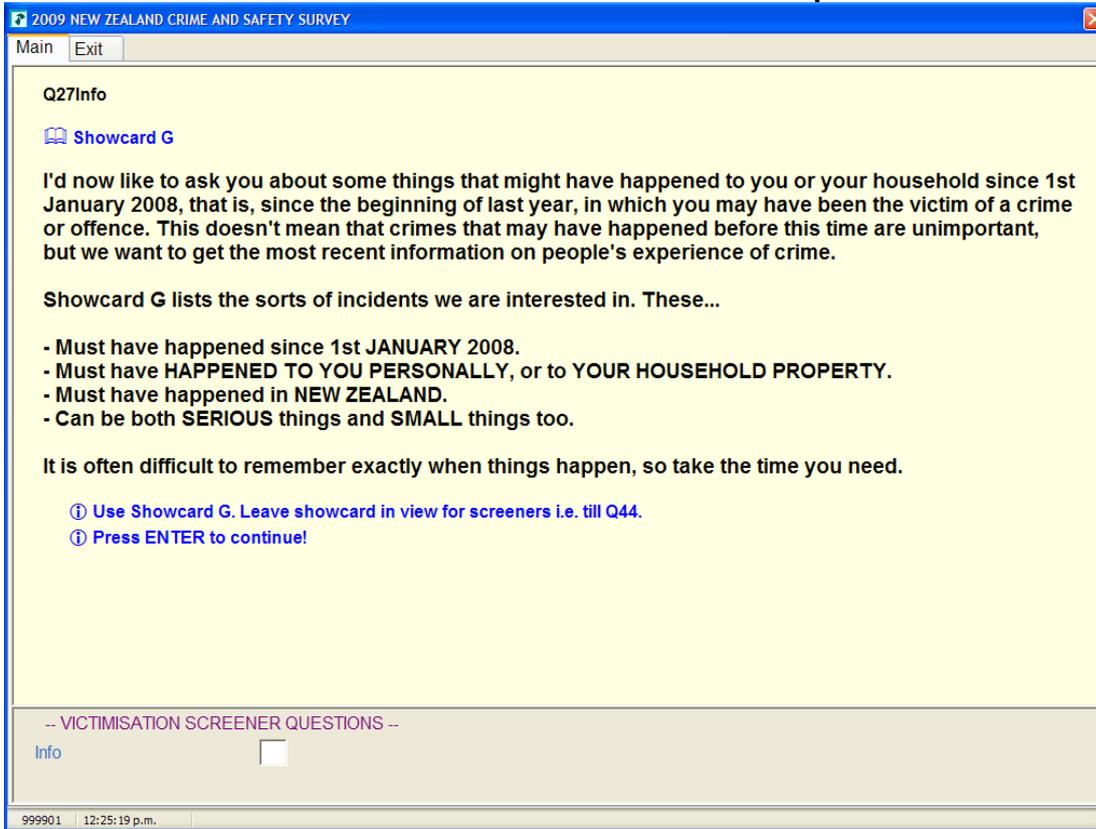
The questions Q8.1 - Q8.5 are asked in a random rotation order!
 PROBE, IF NEEDED, READ: 'This neighbourhood' means the streets around you. (RURAL) 'This neighbourhood' means your 'district'.

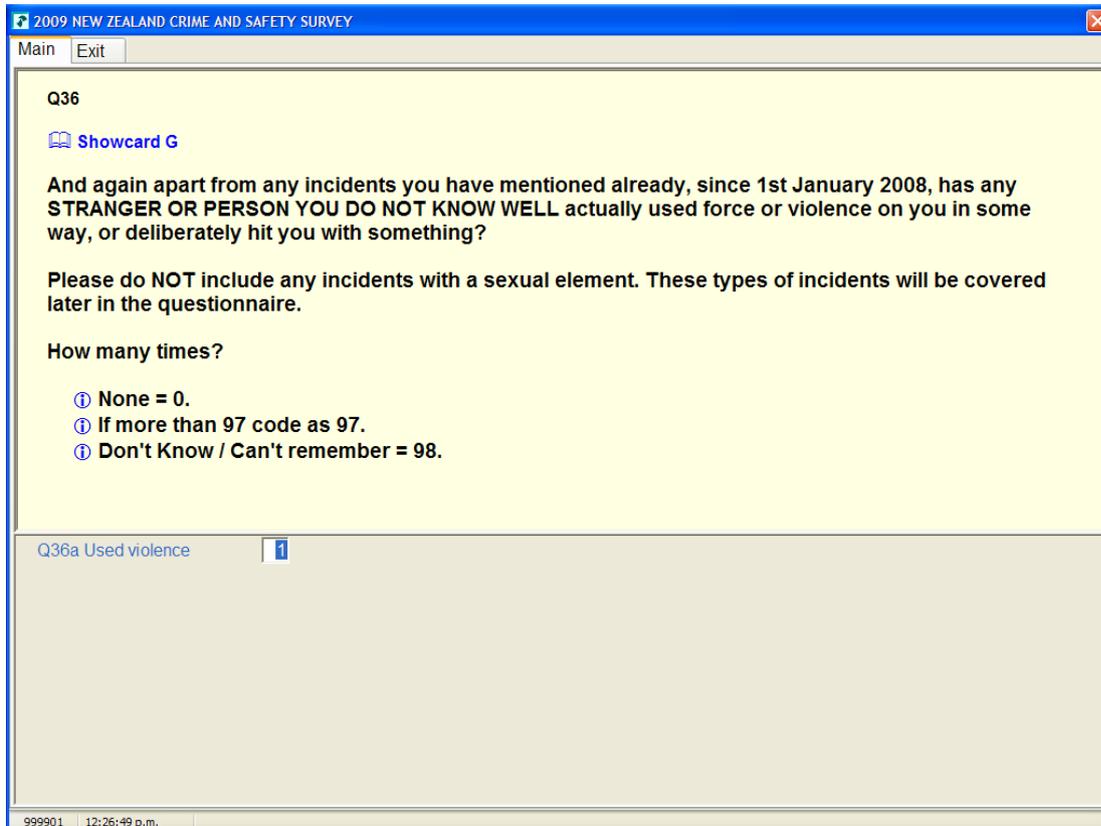
1. A very big problem
 2. A fairly big problem
 3. Not a very big problem
 4. Not a problem at all
 98. NOT ON SHOWCARD: Don't know

Q8.1 Rubbish and litter	<input type="text" value="1"/>	VeryBig
Q8.2 Damage	<input type="text" value="1"/>	VeryBig
Q8.3 Speeding cars	<input type="text" value="1"/>	VeryBig
Q8.4 Teenagers	<input type="text" value="1"/>	VeryBig
Q8.5 Drunks	<input type="text" value="1"/>	VeryBig

999901 12:09:19 p.m.

Screenshots of the CAPI section – Victim for screener questions





Screenshots of the CAPI section – Victim Form questions

The image shows two screenshots of a computer-aided interview (CAPI) interface for the 2009 New Zealand Crime and Safety Survey. The top screenshot displays 'VICTIM FORM 1' with an introductory text block and a confirmation question. The bottom screenshot displays question 'Q49' with a list of 19 possible locations for an incident, categorized into 'In / around own home', 'Elsewhere', and 'In or near victim's place of work'. A '6' is entered in a response box at the bottom right of the second screenshot.

2009 NEW ZEALAND CRIME AND SAFETY SURVEY
Main Exit

VICTIM FORM 1

Now I'd like to get a few more details about three of the incidents. The computer selected them randomly, to make sure we get a wide spread of information about the things that happen to people. To start, please think about the theft of a vehicle.

Can I just confirm that this incident happened in New Zealand AND after 1st January 2008?

1. Yes
 5. No
 7. Respondent does not wish to discuss this incident

-- VICTIM FORM 1 --
 Q44 Confirmation 1 Ref

999901 12:49:19 p.m.

2009 NEW ZEALAND CRIME AND SAFETY SURVEY
Main Exit

Q49

Where did the incident happen?

[Multiple response allowed!](#)

<p>In / around own home</p> <p><input type="checkbox"/> 2. Inside your home</p> <p><input type="checkbox"/> 3. In a garage, carport, shed, outbuilding</p> <p><input type="checkbox"/> 4. An attempt to get inside your home, garage, carport, shed, outbuilding</p> <p><input type="checkbox"/> 5. Inside same building (corridor, stairs, lift etc)</p> <p><input checked="" type="checkbox"/> 6. Outside the home on the same premises (garden, drive, walkways etc)</p> <p><input type="checkbox"/> 7. In street outside home</p> <p>In or near victim's place of work</p> <p><input type="checkbox"/> 9. Inside work</p> <p><input type="checkbox"/> 10. Out of doors at work</p> <p><input type="checkbox"/> 11. In a car park or garage at work</p> <p><input type="checkbox"/> 12. In street near work</p>	<p>Elsewhere</p> <p><input type="checkbox"/> 14. On the street</p> <p><input type="checkbox"/> 15. In a car park</p> <p><input type="checkbox"/> 16. Pub / wine bar / nightclub / disco / sports club, cafe</p> <p><input type="checkbox"/> 17. In / around a sports ground</p> <p><input type="checkbox"/> 18. In / around place of public entertainment (e.g. cinema)</p> <p><input type="checkbox"/> 19. Other public building (e.g. shop, school, hospital)</p> <p><input type="checkbox"/> 20. On transport or in / around transport facilities</p> <p><input type="checkbox"/> 21. Inside someone else's house</p> <p><input type="checkbox"/> 22. Outside someone else's house</p> <p><input type="checkbox"/> 23. Inside some other building</p> <p><input type="checkbox"/> 96. Other</p> <p><input type="checkbox"/> 98. Don't know</p>
--	--

6

999901 3:24:56 p.m.

Screenshots of the CAPI section – demographic questions

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

Q146a

I now want to ask a few questions about you and your household. First, how many people usually live in your household, including you?

- ① Include children who board at school but return for holidays, and children in joint custody who spend equal or more nights here than elsewhere.
- ① Exclude tertiary students who live elsewhere while studying.
- ① Don't Know=98, Refused =99.

Q146a HH Members | 5

999901 | 12:04:11 p.m.

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

Q151

Showcard W

Please use this card to tell me which ethnic group or groups you belong to.

① Multiple response allowed!

- 1. NZ European
- 2. Māori
- 3. Samoan
- 4. Cook Island Māori
- 5. Tongan
- 6. Niuean
- 7. Chinese
- 8. Indian
- 96. Other (such as Dutch, Japanese, Tokelauan)
- 99. NOT ON SHOWCARD: Refused

Q151 Ethnic group | 1-2

999901 | 12:05:50 p.m.

Screenshots from self-completion (CASI) section

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

SELF COMPLETION SECTION

The next section is concerned with people's experiences as victims of some other kinds of crime, which we have not discussed yet. Some of the questions asked are very personal. Because of this we are asking you to continue the survey by entering your answers directly into the computer.

This is specially designed to be easy for anyone to complete, even if they don't use a computer.

- * Please be as honest as possible. It is important that we have a complete picture of what happens to people.
- * Your answers are totally confidential and will not be seen by me unless you ask me to help you.
- * Your answers will be put together with those of other people to show the results.
- * Even if you have not experienced any incidents of the type you will be asked about, we still need to know that. In this case, you will only need to answer a few questions.

Press ENTER to continue!

1. Continue

Q163Intro Information

Q163 Start

999901 12:06:53 p.m.

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

Q167_417

SECTION 1: VIOLENCE BY A PARTNER

Most of the following questions are about things that might have happened to you since 1st January 2008, but some questions relate to things that may have happened earlier.

- * We only want to know about things which have happened to you personally.
- * We don't just want to know about serious things - we want to know about small things too.

If you are unsure how to fill your answers in, feel free to ask the interviewer to help you.

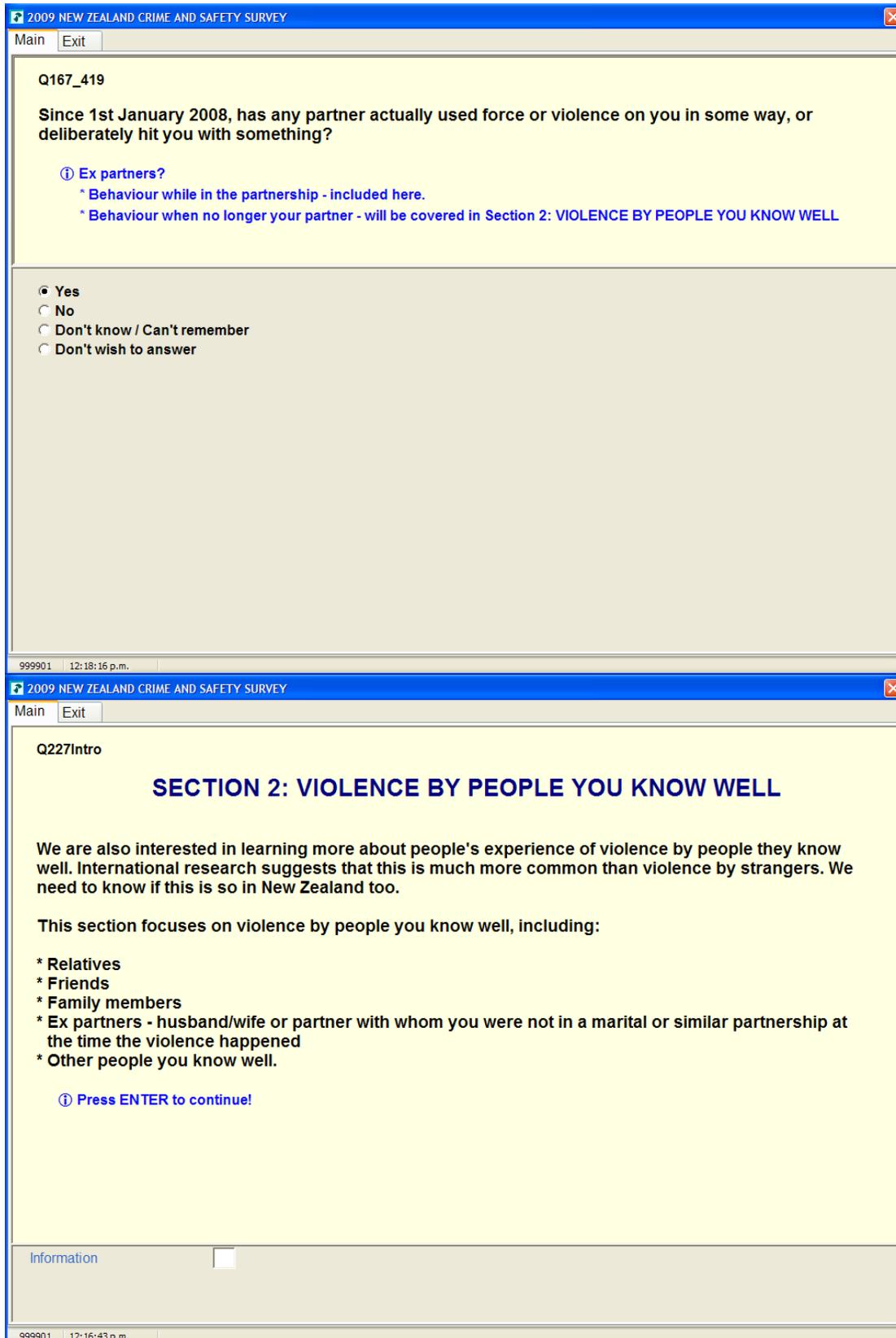
In this section, we are interested in learning about New Zealanders' experience of violence by people who were partners at the time it happened. International research suggests that this is much more common than violence by strangers. We need to know if this is so in New Zealand too.

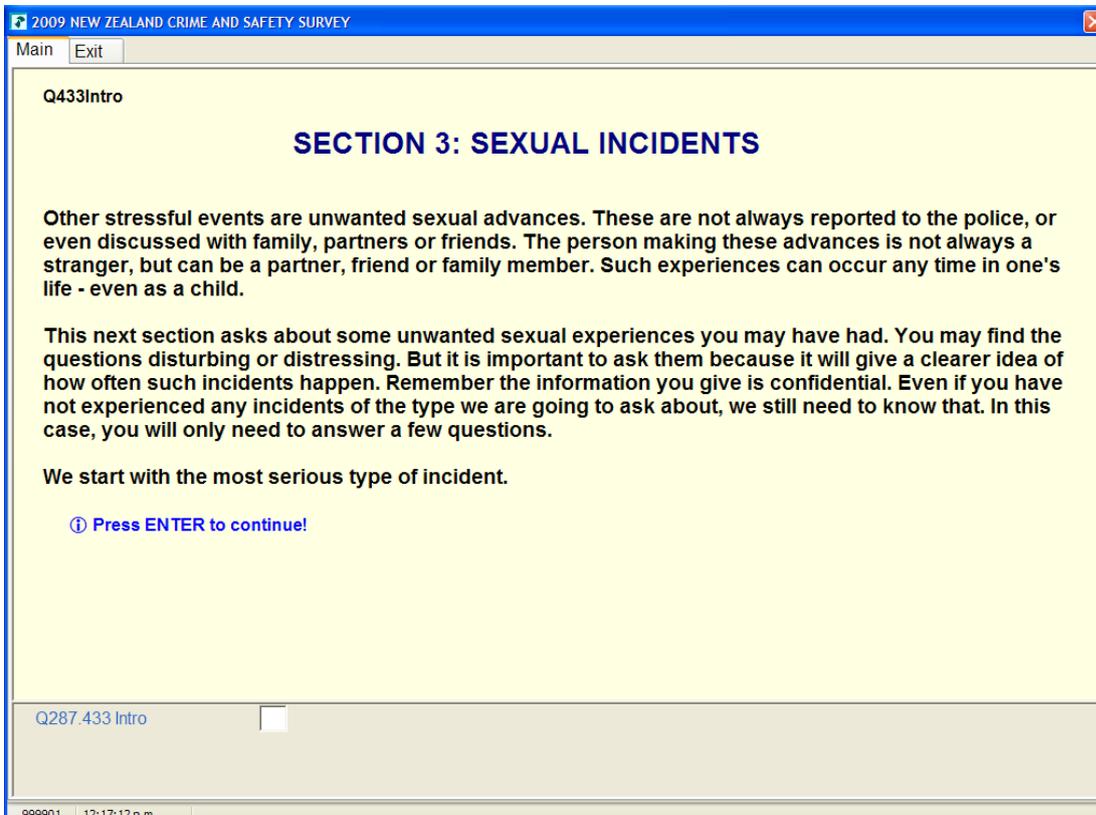
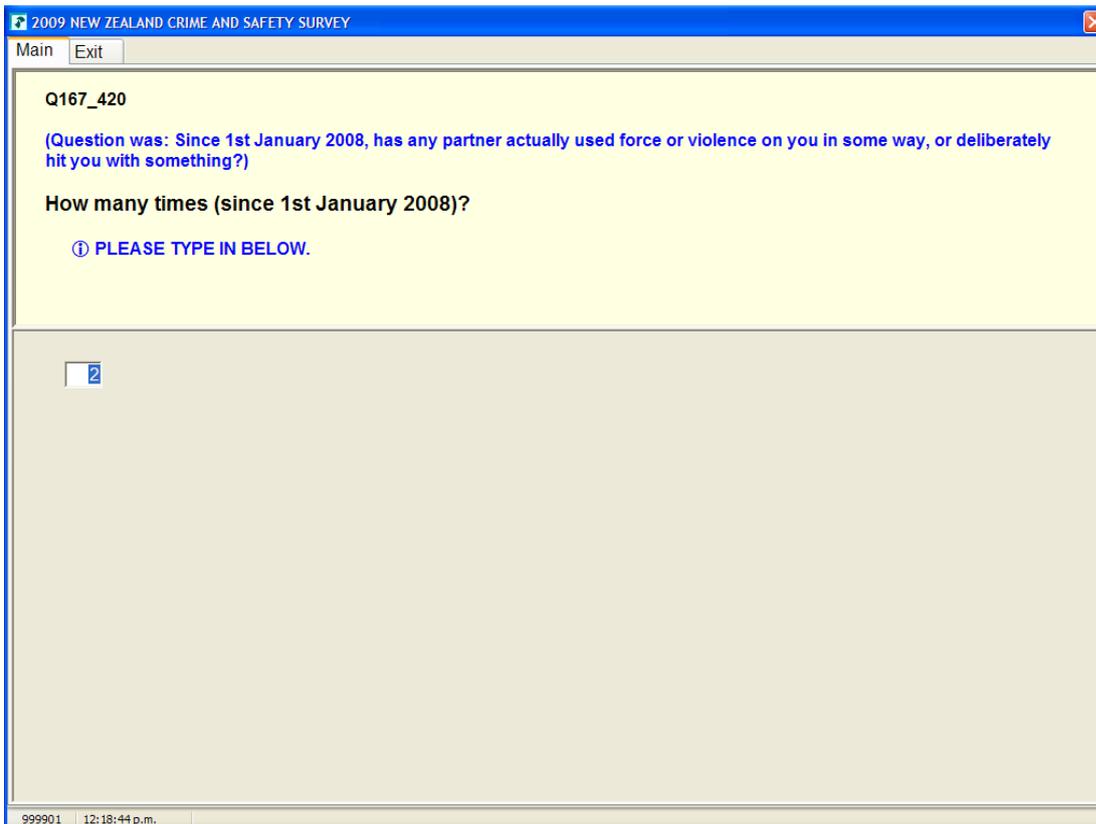
First, can you please say whether you are currently in a marital or similar partnership.

If you wish to go back to an answer please push the "up arrow" on the keyboard.
Once an answer is recorded please push the "Enter" button on the keyboard. The next question will then appear.

Yes, have a husband/wife or partner of the opposite sex
 Yes, have a partner of the same sex
 No, do not currently have a husband/wife or partner

999901 12:09:05 p.m.





Screenshots of the CASI section – Victim Form questions

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

Q182

Please think about **the most recent incident** of any of those you have mentioned above which have happened since 1st January 2008.

What did this most recent incident involve? Was it...

PLEASE SELECT ALL THAT APPLY!

- Actual force or violence on you
- Threat of force or violence on you, in a way that actually frightened you
- Deliberate damage to something belonging to you
- Threat of deliberate damage to something belonging to you

1-3

999901 12:20:26 p.m.

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

Q243

What was **their** relationship to **you** at the time it happened?

- Previous husband/wife or partner
- Boyfriend or girlfriend
- Previous boyfriend or girlfriend
- Parent
- Step-parent
- Sibling or step-sibling
- Son or daughter including in-law
- Other family including extended family
- Parent's partner / boyfriend / girlfriend
- A friend of yours
- A family friend
- Other household member (e.g. flatmate, boarder)
- Work colleague, workmate, or fellow student
- Employer
- Neighbour
- Acquaintance
- Paid caregiver
- Other
- Don't know / Can't say

999901 12:26:50 p.m.

2009 NEW ZEALAND CRIME AND SAFETY SURVEY

Main Exit

Q278_529

Were you approached or contacted by any of the following offering help or advice after the incident?
The next question is whether you contacted any of them.

PLEASE SELECT ALL THAT APPLY!

- Victim Support
- Rape crisis / HELP (Sexual Abuse Centre) / Women's Refuge
- Citizens Advice Bureau
- Church / church group / Salvation Army
- Neighbourhood Support (Neighbourhood Watch) / Rural Support
- Iwi or other Māori organisation
- Pacific organisation
- Work-based professional support, for example, employee assistance programme, in-house support team
- Work colleague / employer / fellow student
- Doctor, nurse, psychologist, psychiatrist or counsellor
- Victims of Crime Information Line
- Other government agency (not the Police)
- Other community organisation
- Not approached or contacted by any of these
- Don't know / can't remember

1-4

999901 12:28:46 p.m.

