Obstacles to Action
A Study of New Zealanders' Physical Activity and Nutrition

Technical Report

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Sampling

Sampling frame

It was important to obtain a sampling frame that was as accurate as possible to ensure good coverage of households in New Zealand. We considered two sampling frames for use: the New Zealand Post database and the electoral roll.

Although the New Zealand Post database claimed to have good coverage (approx 1.2 million unique addresses), the main (known) biases included:

- Stable households -- no one has moved in or out for many years, hence biased against older people
- People who do not fill in a change of direction form (Māori, young people, Pacific People, immigrants)
- Vacant houses, demolished/removed households are potentially still in the database
- Rural addresses in a separate database.

For the electoral roll, the main (known) biases were:

- People not registered electors (young people, Māori, Pacific People, immigrants)
- Addresses of people aged 18 years and over, no direct way of targeting 16-17 year olds.

After comparing the two databases, it was decided that the electoral roll was the best option for this survey.

Sampling process

After having selected the sampling frame, the sampling process was more straight-forward.

Key features of the sampling process were:

- Sampling list was electoral roll data supplied digitally

- Oversampled addresses of those of Māori descent by around 26%. This resulted in 14.4% of sample of Māori descent, compared with 11.4% of adults in New Zealand Māori in the 2001 census

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- Oversampled addresses of those aged under 25 years by around 14% (18.1% of sample under 25, whereas 15.9% of the population aged 16+ are aged 16-24). In short, we aimed not only to adjust for under-coverage of the younger people by the electoral roll (the Electoral Office claim only 83% of those aged 18 to 24 are enrolled, compared with 94% of the total population aged 18+), but also made an allowance for the typically lower response rate from this age group

- The sample was selected proportional to the usually resident population aged 15+ in each TLA (Territorial Local Authority). In this way, variations in electoral enrolment patterns between regions are blocked from biasing our sample

- 14,000 names were then randomly selected. If a duplicate address was selected, this was replaced with another randomly selected address.

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Weighting

The weighting was carried out by James Reilly of Statistical Insights Ltd. Following is the report from James Reilly.

Introduction Case weights are commonly calculated and applied during the analysis of survey data. They serve to adjust for the sample design and can help reduce the potential for non-response bias.

For example, in a general population survey of individuals where one person is randomly selected from each address (such as the Obstacles to Action study), unweighted results would be biased for any response that is correlated with household size. This bias is due to respondents having different selection probabilities. Applying inverse probability weights removes this bias, although it may lead to a much reduced effective sample size if the selection probabilities are highly variable.

Even after correcting for sample selection probabilities, the demographic profile of the sample may exhibit some skews relative to known population figures. These may be due to differential non-response. If the demographic variables collected in the survey are comparable to the Census data, methods such as post-stratification or rim weighting can adjust for these differences and may help reduce potential non-response bias in other survey variables.

After outlining relevant aspects of the sample design for the Obstacles to Action study, this report describes the weighting methods applied to address the above issues for this data, and documents the formulae and population figures used.

Sample design   Although Statistical Insights was not involved in developing the sample design for this survey, the design has a strong bearing on the weighting procedures used. The relevant features of the design are therefore summarised below.

The Obstacles to Action population consisted of all people living in New Zealand aged 16 or more. A stratified two-stage sample has been drawn from this population for the Obstacles to Action study. First a stratified sample of people was selected from the electoral roll, with strata being defined by region and ancestry (whether of Māori descent or not). Region sample sizes were allocated in proportion to the population aged 15 or more, and this was split between Māori and non-Māori to give a 26% higher number of Māori than their share of the population. People aged 18-24 were also given a 66% higher chance of being chosen, not by further stratification but by giving them larger "size" weights and selecting people with probability proportional to size. Duplicate addresses were removed from the sample and replaced with a randomly selected person from that stratum.

Questionnaires were sent to the addresses of people selected in this first stage, addressed "To residents at <address>". The person with the first birthday after 1 June(out of those people aged 16 or more living at that address) was asked to complete the questionnaire[1].

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[1]A further instruction was also given: "If it is difficult to know who is the adult with the next birthday at this address (e.g. retirement home, hostel, etc), then please give this questionnaire to <Name from electoral roll>. (If they are no longer at this address, please deliver to the adult occupying their room or closest to it.)"

Selection probabilities

Selection probabilities for people on the electoral roll during the first stage of sampling were given by

$$p_{1,hi} = \frac{n_h c_i}{3 N_{ha} + 5 N_{hb}}$$

where n_h was the desired sample size for the current stratum h, listed in Table A1 in the Appendix; $c_i = 3$ if person i is aged 25+, and $c_i = 5$ if person i is aged 18-24; N_{ha} is the number of people on the electoral roll in stratum h who are aged 25+; and N_{hb} is the number of people on the electoral roll in stratum h who are aged 18-24.

The selection probability for the address of person j is therefore

$$p_{1,j} = 1 - \prod_{A_j} (1 - p_{1,hi})$$

where A_j includes all people on the electoral roll who live at that address.

The second stage of selection involved selecting the person aged 16 or more with the first birthday after 1 June at that address. Assuming that birthdays can be considered as distributed at random, this means that the final selection probabilities are given by $p_i = p_{1,j}/s_{16+}$ where s_{16+} is the number of people aged 16 or more who live at that address.

Inverse probability weights w_i were then calculated as $w_i = 1/p_i$.

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Demographic profiles

Initial demographic profiles were produced by applying these inverse probability weights (or preweights) to the survey data. These preweighted sample profiles were compared to population profiles from the 2001 Census, as shown in the tables below.

Table 1: Age by gender profiles. Note the shortage of young males in the sample, as well as females aged 16-17 and some older age groups.

Age by Gender	Census	Preweighted Sample	Ratio
Male 16-17	1.9%	1.4%	1.39
Male 18-19	1.8%	2.0%	0.90
Male 20-24	4.2%	2.6%	1.59
Male 25-29	4.2%	1.9%	2.18
Male 30-34	4.6%	3.0%	1.57
Male 35-39	5.0%	2.9%	1.75
Male 40-44	4.9%	3.4%	1.44
Male 45-49	4.4%	4.6%	0.96
Male 50-54	4.2%	4.0%	1.04
Male 56-59	3.2%	3.5%	0.91
Male 60-64	2.7%	3.6%	0.73
Male 65-69	2.2%	1.9%	1.15
Male 70-74	2.0%	1.6%	1.20
Male 75-79	1.4%	1.2%	1.16
Male 80+	1.3%	0.7%	1.79
Female 16-17	1.8%	1.2%	1.48
Female 18-19	1.8%	4.7%	0.38
Female 20-24	4.3%	8.7%	0.49
Female 25-29	4.6%	4.4%	1.04
Female 30-34	5.2%	4.2%	1.23
Female 35-39	5.5%	4.9%	1.13
Female 40-44	5.2%	6.1%	0.85
Female 45-49	4.6%	6.5%	0.70
Female 50-54	4.2%	5.6%	0.75
Female 56-59	3.2%	4.4%	0.73
Female 60-64	2.8%	3.0%	0.90
Female 65-69	2.3%	2.0%	1.13
Female 70-74	2.2%	1.7%	1.25
Female 75-79	1.9%	1.1%	1.78
Female 80+	2.6%	2.9%	0.88

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Table 2: Regional profiles. The sample deficit in the north and surplus in the south is consistent with response rate patterns observed in other surveys.

Region	Census	Preweighted Sample	Ratio
Northern North Island/ Area outside region	51.4%	46.1%	1.12
Lower North Island	23.7%	23.4%	1.02
South Island	24.9%	30.6%	0.81

Table 3: Ethnicity profiles. Note discrepancies for Māori and Other ethnic groups.

Ethnicity	Census	Preweighted Sample	Ratio
Māori	10.7%	7.8%	1.36
Pacific People	4.3%	3.9%	1.11
Asian	6.0%	5.8%	1.04
Other except New Zealand European	5.8%	9.9%	0.59
NZ European	66.1%	71.2%	0.93
Not elsewhere included vs not answered	7.0%	1.4%	5.15

The residual category "Not Elsewhere Included" in the Census data may not be comparable with the "Not Answered" category in the Obstacles to Action data.

Table 4: Household size profile from the Census versus the address size profile from the Obstacles to Action

	Census	Preweighted Sample	Ratio
1 Usual resident	13.7%	4.6%	2.96
2 Usual residents	48.3%	41.5%	1.16
3 Usual residents	19.4%	18.9%	1.03
4 Usual residents	10.7%	12.6%	0.85
5 or more Usual residents	7.9%	22.3%	0.35

Note that the definitions used are not comparable between the two surveys.

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Rim weighting   Cell weighting (or post-stratification) could not be used to adjust for these sample skews because at a minimum it was desirable to control for gender, age (including 16-17 year olds) and ethnicity (including Pacific people). However, this would generate many cells, some with sample sizes that were very small, and would therefore produce unstable results. It was decided that rim weighting would be used instead, with three rims: one rim for region, another rim for ethnicity by gender by broad age groups (under 40 versus 40 years or more), and a third rim for gender by detailed age groups. The categories shown in the tables above were used, with the exception of the broad age groups described earlier and the residual ethnicity categories (not elsewhere specified/not answered), which were combined with NZ European. Population figures for each rim cell were calculated as the 2001 Census population figure multiplied by 1.0814 to account for Census undercount and the increase in the population between 2001 and 2003[2]. These population weighting targets are shown in Tables A2-A4 in the Appendix.

The "household" size variable showed large differences between the Census and the Obstacles to Action profiles, which at first glance might suggest that these too should be adjusted for. However, in the Obstacles to Action study this variable is based on the number of people living at that address, not the number living in the household as reported in the Census, so these profiles are not comparable. The observed differences (fewer small housing units in the Obstacles to Action study, and more larger ones) are in the direction that would be expected due to some addresses covering multiple dwellings, and some dwellings containing multiple households. Since post-stratification and rim weighting require profiles for comparable variables, it was decided not to use "household" size in this part of the weighting process.

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[2]This figure of 1.0814 was derived by dividing Statistics New Zealand's population estimate for the number of people aged 15 or more as at 30 June 2003 (3,124,800) by the 2001 Census figure for the usually resident population aged 15 or more (2889534).

The weights originally produced by this process were highly variable, resulting in a design effect greater than 5 and an effective sample size of about 1600. To reduce the extent of this problem, a maximum value of 10 was imposed on the "household" size used when calculating the inverse probability preweight. This decreased the weighting effect to 2.0 and increased the effective sample size to over 4000. However, it has introduced some potential bias, reducing the contribution of people living in large "households" to the survey results. The 45 capped records accounted for over 10% of the population according to the old weights, but using the final weights they made up only 2.7% of the total.

Weights were not calculated for 128 cases with missing demographic or "household" size information, and these cases have been omitted from weighted analyses of the survey data.

Results

Good agreement with the population weighting targets was achieved, as shown in Tables A2-A4 in the Appendix.

The distribution of the final weights is shown below.

This distribution resulted in an overall weighting effect of 1.97. The average weight was 366.9, and the maximum was 6973.

Final Weight Distribution

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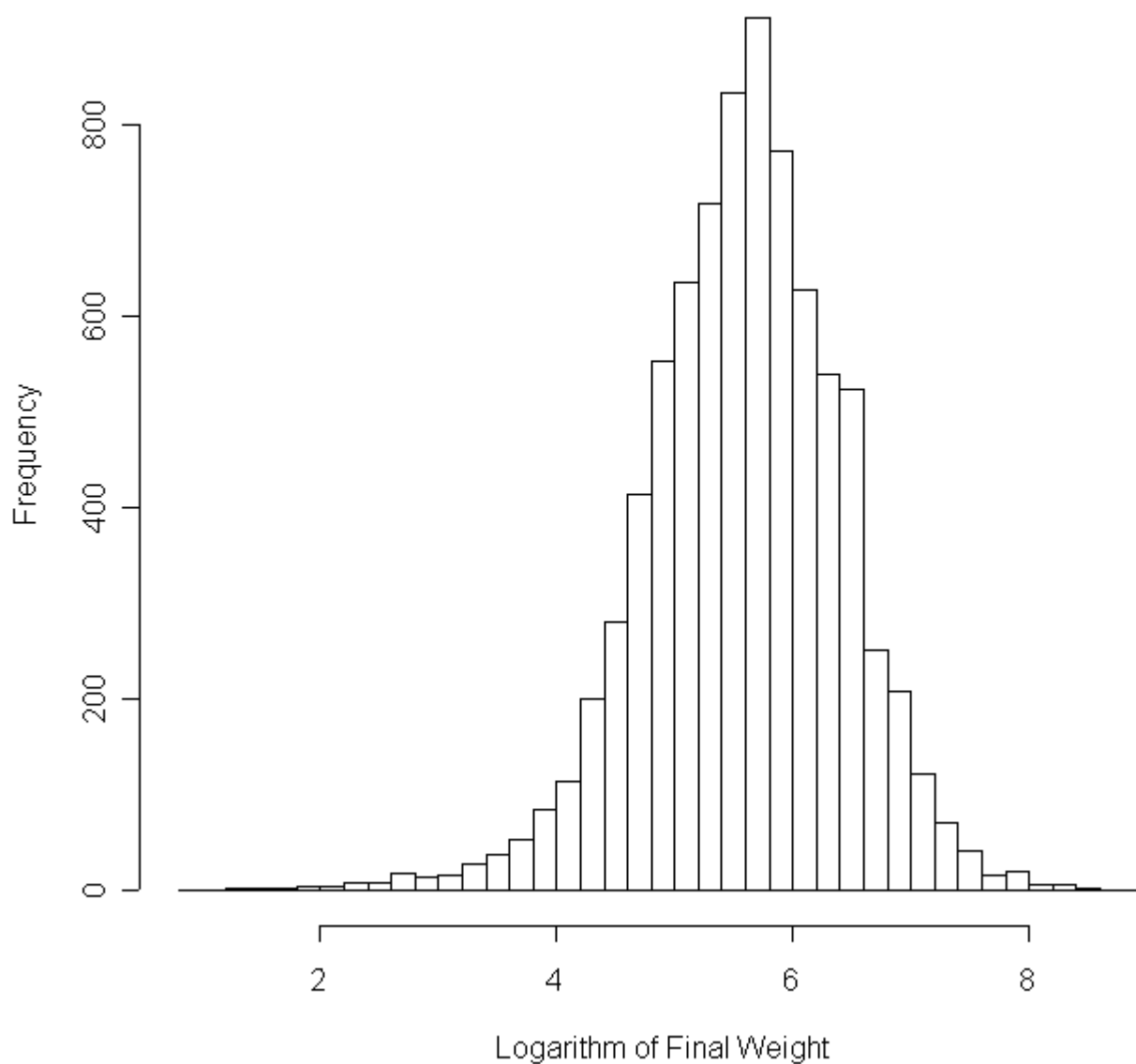
Conclusion   The weighting procedure used in the Obstacles to Action study has accounted for varying sample selection probabilities. The weights have also been adjusted for demographic skews relative to population where appropriate, reducing the potential bias due to non-response.

However there may be some remaining non-response bias, since the demographic control variables used will probably only adjust for part of any non-response skews on other variables. It is also important to realise that the inverse probability weights were adjusted to increase the effective sample size, but this adjustment may have caused the results to underrepresent people who share an address with many other people.

Questionnaire Development

Questionnaire development

The starting point was the lengthy questionnaire supplied by permission of the American Cancer Society, which they used for research designed by Dr Edward Maibach[3]. Preliminary changes were made by SPARC (e.g. eliminating several questions seen as irrelevant for the current project, adapting media and information source questions to New Zealand, substantially shortening dietary intake questions, replacing physical activity measurement questions with ones in current use here, adding demographic questions in use here) and then it was passed to ACNielsen for further development.

An early decision was made to go beyond simply removing obvious Americanisms and preserving maximum comparability to the US Cancer Society results question by question. While maintaining the overall conceptual model, in particular potential for useful segmentation and behavioural modelling, the following general changes were made:

- Replacing Americanisms (e.g. "take-away" not "take-out"; "fruit" not "fruits"; "avoid constipation" not "be 'regular', cleanse the body"; "walking group" not "mall walking program"). More subtly, this involved taking account of other differences between countries (e.g. "netball" not "basketball"; "recommended guidelines" not "government recommended guidelines" because New Zealand is not perceived to have the equivalent of the US Surgeon General, etc.)

- **New Zealand-ising** (e.g. adding concepts such as "whanau", "marae"; changing alcohol questions to match those in the NZ Health Survey; changing possible incentives for fruit and vegetable consumption to ones judged more realistic here)

- **Adding** a few extra questions seen as useful here (e.g. "stage of change" questions for physical activity and nutrition; transport-related cycling and walking)

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[3] That work is based on his extensive prior research reflected in publications such as: Maibach & Parrott (1995); Maibach et al. (1996); Weir, Maibach et al. (2000).

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- **Respondent-friendly** formatting and design. Greater emphasis was necessary here because the American Cancer Society research used an established research panel of people presumably highly familiar with completing questionnaires whereas we had to approach a random sample of households

  Such improvements included: More generous spacing; placing important definitions such as "regular physical activity" immediately before questions they were relevant to, rather than once only at the start of the questionnaire; replacing 10-point scales with a non-central midpoint of 5 by 7-point scales with a central mid-point of 4; eliminating most "double-banking" and "triple-banking" of response options which is known to cause respondents to overlook some of them; reducing perceived repetitiveness by placing parallel statements about physical activity and nutrition immediately after each other rather than widely apart in long list of statements to be rated; shortening by eliminating many redundant instructions; many wording changes for improved clarity suggested by pre-testing. In addition, requirements of optical scanning for data processing rather than manual data entry resulted in further format changes

- **Technical improvements.** Results provided from the American Cancer Society data highlighted problems such as question redundancy (questions which correlate "too" highly), and "ceiling effects" (a question resulting in nearly everyone giving very high ratings, hence providing minimal information to segment differences between them).

Pre-testing

Once we had a reasonable final draft of the questionnaire, we pre-tested it with individuals across various ages, ethnicities and gender.

By pre-testing we mean that a researcher was actively involved probing a person about the questionnaire either while they were working through it or shortly after. Thus, this was quite an in-depth session with each individual to get their underlying thoughts as they went through the questionnaire.

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The pre-testing stage involved 4 researchers and 22 respondents. The respondent profile was as follows:

- 12 female and 10 male

- 5 Māori (interviewed by a Māori researcher)

- Some of the respondents were selected because of known health problems (e.g. recent coronary bypass, diabetes, multiples sclerosis)

- Ages varied from 9 to 79 with at least one person representing every decade in between (two children aged under 16 were included to highlight words which might create difficulties for those with literacy problems or with English as a second language).

Piloting

Given that initial questionnaire development and pre-testing resulted in a very large number of changes from the original American Cancer Society questionnaire, a pilot stage was necessary. One hundred people in Auckland and Rotorua were recruited to complete the questionnaire independently and the responses were examined for inconsistency and other problems (in addition, we directly invited pilot respondents to make comments on the questionnaire and to explain why they felt unable to answer any questions). Recruitment quotas for age, gender, and ethnicity (Māori versus other) were used to ensure diversity. Around half the pilot questionnaires were received in time to improve the final questionnaire; 67 were returned in total.

In order to find out the reasons for non-response, approximately 13 of those who had not responded were rung up by ACNielsen interviewers and were asked a few short questions. This found that, of those who had not responded, about half had planned on completing it and sending it back in (they hadn't yet got around to it). Others felt that they were too busy to fill it in.

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Enquiries from Respondents

Handling enquiries

A 24-hour 0800 number was set up to respond to enquiries. A FAQ (Frequently Asked Questions) sheet was prepared in anticipation for respondent enquiries. ACNielsen staff members were briefed to field calls during the day and the calls were fielded by an external company (who were fully briefed) during the evening.

Over 400 calls were answered during the survey period with 252 calls fielded during business hours (between the hours of 8.30 and 5pm, answered by ACNielsen staff) and 176 outside of business hours.

The majority of the calls received were from households who did not wish to take part. These households were then removed from any further reminder mailings.

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Response Rate

Achieving a good response

Overall, we aimed to follow the evidence-based recommendations for achieving high response rates from self-completion surveys established both overseas (e.g. Dillman, 2000) and confirmed in New Zealand (e.g. Brennan, 1992). These included:

- Respondent-friendly questionnaire (as described above)

- Multiple contacts (pre-notification letter, questionnaire with carefully worded cover letter, reminder postcard, first reminder letter and questionnaire, second reminder letter and questionnaire -- using "special" delivery method of courier)

- Token incentive (pen attached to the survey).

Some procedures shown to have good effects on response rate were considered but were not used in this project. For example, security risks led us to using a token incentive of a pen rather than the more solidly proven token financial incentives. Personalisation was not done because of sampling issues (there is no list available of New Zealanders aged 16+ ideal for such sampling). However, tone of address and letters took into account degree of personalisation; for example, we used "To all residents" (as suggested by Dillman, 2000, p 160) rather than the more formulaic "Dear householder".

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Final response rate

The final response rate of 61% breaks down as follows:

Total households mailed out	14,000
Ineligible	
Gone no address (GNAs), returned to sender	419
Phoned ACNielsen – empty house	7
Eligible	
Complete (usable)	8,291
Incomplete (unusable)	98
Wrong person completed (unusable)	8
Came in after cut-off date	281
Refused	
Phoned ACNielsen	518
Blank returns	217
Did not hear back from	4161
Completed (usable)	**8,291**
Total eligible	**13,574**

Thus, the response rate for total completed returns (usable) out of total eligible households is 61%.

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Data Processing

Editing   All surveys were 'edited' by ACNielsen staff before data entry. The main purpose for editing of the surveys was to ensure that the responses are clear for the data entry staff to minimise errors. An editing guide was produced for ACNielsen staff so that all surveys were edited consistently.

The main edits were as follows:

- Blank responses were left blank

- For questions that followed a skip (e.g. C2: Have not had a drink containing alcohol in the last year), this was checked that it was correctly followed

- For questions that required a single code and two codes had been filled in, a code was randomly selected. Exceptions depended on any comments respondents may have noted down or if one of the codes were "Does not apply" or if the question was ordinal

- For responses requiring the respondent to write in a figure (e.g. height, weight), logic checks and a bit of common sense were exercised. For example, if a respondent filled in that they were 10kg, this was more likely to be 10 stone

- If a survey was less than half completed, this was considered to be unusable.

Data entry   All surveys were scanned (an optical image taken) by Complete Data Solutions and data entry was carried out on the scanned copy of the questionnaire.

The surveys were 100% double entry. That is, all surveys were data entered by one person and completely data entered for a second time by another person. The two surveys were then compared and any discrepancies were checked and corrected.

Data Processing, continued

Data 'cleaning' and creating new variables

Once all the data had been entered into a database, integrity and logic checks were carried out on the full database by ACNielsen's Data Processing Unit (DPU).

To ensure that the original responses remained unaltered, where required, new variables were created from the original variables. Additional variables such as Body Mass Index (BMI) [4] were also created from existing variables.

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[4] BMI = weight in kilograms divided by height in metres squared (kg/m^2)

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Date of Return Profiling

Date of return profiling

Date of return profiling was to show trends over time from the early weeks of response through to the later ones. This served two purposes:

- To track the returns and the effect of the reminders

- To observe trends on certain demographic groups so that any remedial action (e.g. follow-up face-to-face survey of 100 non-respondents) could be actioned within an appropriate timeframe.

All surveys were date stamped with the date that they were received by ACNielsen.

Provisional results on demographics and some key variables by week of return were presented two weeks after the cut-off date.

The large sample size (more than 8000 responses over 9 weeks) meant that trends could be seen quite clearly in the different composition of returns each week. Key trends found in the week-by-week breakdowns included:

- Males responded less in the first weeks and also the very last weeks of the survey (34-39% compared with 42-43% in the middle weeks)

- Responses from Māori climbed steadily (7% in the first couple of weeks, 10-12% in the middle weeks, and 11-13% in the last three weeks) showing that the careful reminder procedures were useful in reducing bias related to Māori non-response

- As expected, physically inactive people required more reminders: 12-15% in three early weeks recorded zero days "active" (question D15) compared with 16-19% in the last three weeks; those in the highest stage of change (already regularly active or more than 6 months, question D20) fell from 45-48% in three early weeks to 37-40% the last two weeks

- Similarly, those eating fewer than 3 servings of vegetables per day increased from 29-31% in three early weeks to 39-45% in the last two weeks. No similar trend was apparent with the number of servings of fruit.

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Date of Return Profiling

Key comparisons of sample composition to external data sources such as the 2001 Census included:

- As usual, more males failed to respond—only 39% of responses came from males. Similarly, underrepresentation from younger adults, Māori and Pacific peoples needed to be corrected by statistical weighting (and this is presented more fully in the section on weighting)

- Comparisons were also made to external surveys of physical activity and the 1997 National Nutrition Survey. But these comparisons are superseded given the recent availability of provisional results from the 2000-03 New Zealand Health Survey.

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Target Group Definition

Defining the Target Group

Complete definition of who was left in for the Segmentation

Note: All Question numbers refer to Section D of the questionnaire.

A: Main Definitions

Remove (from segmentation database) if

Q20=5 OR (Q20 = 1 And Q15<2)

Translation:

1) Respondent has been doing at least 15 minutes of vigorous physical activity or 30 minutes of moderate activity for 5 or more days each week - for more than past 6 months – "On Target"

OR

2) Respondent does not intend doing any regular physical activity for next 6 months AND had at most one day of physical activity during the week preceding questionnaire completion = "Inactive"

Removed:

On Target n = 3746 (Group I)

Inactive n = 642 (Group II)

Total removed n = 4388

Notice that on the above definitions those who are missing on Q15, and have a '5' answer to Q20 (n=53), were removed. Those who are missing on Q20 (n=319) were not removed even if they were included with an answer less than 2 days on Q15 (n=60).

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B: Missing Values

No Answer to Q15 AND Q20=1 (n=52) Removed, because their answer pattern was indicative of Group II respondents

No answer to Q15 AND to Q20 n=135: If Q17 is also missing (n=88) OR Q17=1 (n=8) OR Q17=7 (n=3) then removed (n=99)

Grand Total removed n = 4539

Number remaining for segmentation n=3752

After weighting, the total Target Group for segmentation is n=3700.

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Clustering and Segmentation

Clustering preparation

The main Target Group of respondents made up the population for clustering.

Missing values were replaced using the SPSS Missing Values module, (Expectation-Maximisation method).

A list of defining variables were agreed on after discussion, and after many explorative runs with alternative variable sets. Some variables were made up of sets of other variables; in each of these instances the arithmetic mean was used to summarise the variable set (with the choice of variables to average being guided by principal components analysis).

In one case, question D6n on discouragement from others, the excessive skewness of a variable was reduced by taking the square root of its values. All the variables were converted to Z-scores before running the segmentations. Data were weighted.

Clustering

The primary segmentation algorithm used was the SPSS K-Means module. Each segmentation outcome was thoroughly tested for

- Global, not local, optimum cluster solution.
- Stable solution - random noise added to variables and reproducability tests run.

We are confident that the final segment outcome passed both of the above tests, as well as meeting the usual conditions of

- Interpretability
- Reasonable sized segments, not too big to be undifferentiated, and not too small to be useless in practical marketing terms.

Cluster centres

The cluster means for the key variables are in the table below. Note that "D1abdgn" indicates that items a,b,d,g and n from question 1 in section D have been averaged. Because all measures were converted to a Z-scores before clustering, 0 always means average for the Target Group overall (and hence negative numbers mean below average, and positive numbers mean above average).

	1 Others Oriented	2 I'm OK Thanks	3 Go Away—it's not for me	4 Busy & Stressed	5 Support Seekers	6 Why not then?
Intrinsic motivation (D1abdgn)	0.01	-0.24	**-1.27**	0.19	-0.25	**0.93**
Extrinsic motivation (D1efhik)	**0.64**	**-0.44**	**-0.4**	**0.44**	-0.1	0.11
Confident be physically active 5 days (C1a)	-0.06	0.29	**-0.64**	-0.29	**-0.37**	**0.77**
Benefits – likelihood from PA (D5a-l)	0.01	**-0.67**	**-1**	**0.41**	0.27	**0.64**
Benefits of healthy living – importance (B6abcdefhil)	0	**-0.69**	**-1.06**	**0.41**	**0.31**	**0.57**
Importance of good health (A3a-e)	-0.03	**-0.31**	**-1.43**	0.24	0.11	**0.53**
Rating of general health (B1)	-0.26	**0.31**	**-0.52**	-0.19	**-0.47**	**0.55**
Lately under stress (A1i)	0.1	**-0.57**	0.16	**0.39**	0.24	-0.17
Lack of encouragement (D4)*	0.06	**-0.43**	-0.05	**-0.47**	**1.69**	**-0.32**
Others discourage me (D6n)	**2.35**	**-0.35**	0.02	-0.26	-0.25	**-0.38**
Lack of time (D6bc)**	**0.33**	**-0.47**	-0.08	**0.59**	**0.33**	-0.26
Barriers environmental (D6efh)	**1.03**	**-0.57**	0.16	**0.34**	**0.43**	**-0.64**
Lack of commitment (D6glm)	**0.7**	**-0.49**	**0.46**	**0.39**	**0.46**	**-0.79**

*Ratings from question D4 were first recoded so that they reflected lack of encouragement only (not surplus encouragement).
** Missing values were treated as "1" for questions D6b and c in this analysis, the lowest possible rating (many evidently skipped these questions because they did not work or did not have family responsibilities worth mentioning)

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Path Modelling

Path modelling

The main objective of the structural equation modelling was to identify the main influences on behaviour, on which to target behaviour change initiatives. Within this objective there are two specific issues relating to questions that emerged from the original research for the American Cancer Society (Porter Novelli, 2002). These are:

- Is there a trade-off between levels of physical activity and eating fruit and vegetables i.e. their roles as compensatory or competing behaviours, where improvements in one behaviour come in the expense of the other?

- Do the intrinsic and extrinsic forms of motivation have differing roles, and what is their relative importance?

The analysis reported below uses question D15 as the dependent variable (number of days active in the past week) and uses the whole data set available from the survey. Attempts were made to estimate a model using MET scores[5] to represent physical activity (because these scores take into account the amount of time active per day) but these did not work (technically, the estimation process failed to converge). Also, using D15 maintained consistency with the segmentation analysis.

The whole data set, not just the Target Group, was used to develop a general model that addresses the objectives in the most informative way. The model **structure** is the same as that developed by Maibach for the original US research for the American Cancer Society (Porter Novelli, 2002). The individual survey questions covered in the model are listed in the 'Path Modelling Detail' section in this Appendix, which also gives brief notes on the major alternative models that developed.

A summary of the statistically significant relationships is given on the attached diagram. The figures beside each path are standardised coefficients, which enable direct comparisons of the influence of each variable; i.e. a coefficient of 0.20 is twice as influential as a coefficient of 0.10. The coefficients with minus values describe inverse relationships, which may reduce levels of physical activity. The overall measures of "goodness of fit" for the model are at the lower end of the acceptable range for scientific research (see 'Path Modelling Detail' section).

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[5] Using the kind of scoring protocol recommended for the International Physical Activity Questionnaire (IPAQ) available on www.ipaq.ki.se.

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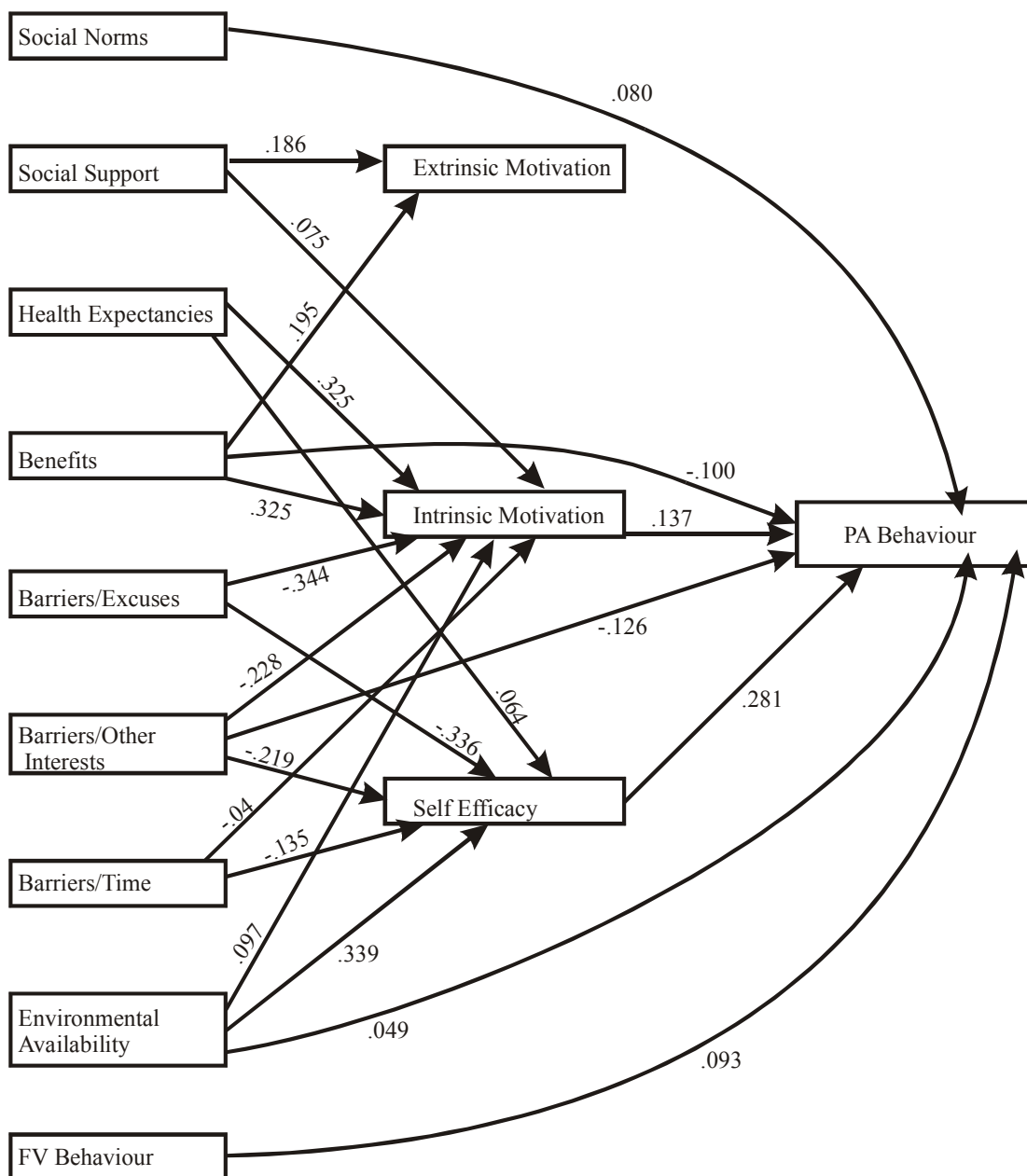
Seven variables directly impact on levels of physical activity. The most important of these are the two mediating variables, self-efficacy and intrinsic motivation. In order of magnitude the other variables that have a direct influence are:

- Other Interests (e.g. boredom or other preferences) (-.126). This is a consistent relationship that occurs in all the different models tried on the data and different groups within the dataset.

- Benefits (-.100). This result should be disregarded as illogical. Benefits are very highly correlated with health expectancies and environmental availability and the estimation processes cannot always sort out the separate effects of the different variables in these situations.

- Fruit and vegetable behaviour (.093). This is based on the average of questions concerning the number of servings per day of fruit and vegetables (E7 and E9). It shows a significant positive relationship that implies that, in general, more active people also eat more fruit and vegetables. The compensatory nature of the (negative) relationship identified in the U.S. study is not supported.

- Social norms (.080). A weak direct link to behaviour is supported for social norms (i.e. the extent to which other people around the respondent are seen as regularly active).

- Environmental availability (.049). There is a weak but statistically significant direct link from environmental availability to behaviour although the main role of this variable is the contribution that it makes to explaining self-efficacy.

The role of fruit and vegetable behaviour

The basic relationship between the fruit and vegetable behaviour and physical activity is described above. That both behaviours should be positively correlated should not be unexpected since they are both concerned with positive health outcomes.

The result from our analysis is more obvious than the inverse relationship proposed from the American Cancer Society study. We believe that the negative relationship found in the American Cancer Society study was probably the result of the particular sample selected for the analysis. Those selected in the "In motion" segment are high fruit and vegetable eating with medium activity, high activity and medium fruit and vegetable eating, or medium on both behaviours (as shown in the following diagram).

Activity Levels
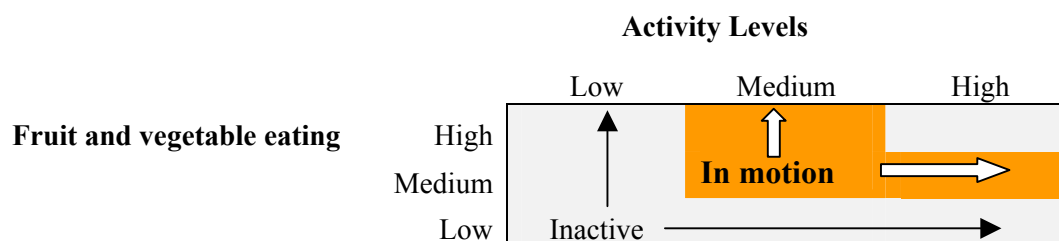
When the results from these three boxes for "In motion" are aggregated it is likely to produce a negative relationship. We have experimented with restricted ranges of physical activity behaviour in this New Zealand data set, but in that situation statistically significant relationships with fruit and vegetable activity disappear from the model completely.

We applied path modelling somewhat differently, however, modelling the full range of differences in physical activity from all 8,291 respondents rather than only the moderate levels of physical activity present in a specific segment (as done in the American Cancer Society study for the Women in Motion segment). We find no evidence to support the interesting suggestion of the American Cancer Society results that improvements in physical activity levels may come at the expense of improvements in eating habits (or vice versa).

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Intrinsic versus extrinsic motivation

Consistent with the ACS study, intrinsic motivation is far more important than extrinsic motivation in determining levels of physical activity. The most important variables that raise levels of intrinsic motivation are health expectancies and the perceived benefits of physical activity.

Excuses and other interests are important in lowering levels of intrinsic motivation. Both of these variables are also important in lowering levels of self-efficacy.

Extrinsic motivation levels may still be of interest, not as a direct target for change, but rather as an indicator of appropriate ways to approach segments in order to promote other types of change.

Suggested promotional initiatives

The results from the path model suggest two clear strategic directions to potentially raise levels of physical activity. The first, and possibly slightly less difficult, is to raise levels of intrinsic motivation. The second approach would be to attempt to negate the influence of some of the many barriers that are shown to be significant in reducing levels of intrinsic motivation and self-efficacy. Various possibilities are discussed elsewhere in these reports in sections on barriers and self-efficacy.

Path modelling details

Estimation used the asymptotically distribution-free method as implemented in AMOS version 4, with unweighted data.

Key Goodness of Fit Statistics for Model:

Fit Measure	Default model
Discrepancy	3987.487
Degrees of freedom	64
P	0.000
Number of parameters	41
Discrepancy / df	62.304
RMR	1.101
GFI	0.906
Adjusted GFI	0.847
Parsimony-adjusted GFI	0.553
Normed fit index	0.572
Relative fit index	0.392
Incremental fit index	0.576
Tucker-Lewis index	0.396
Comparative fit index	0.575
RMSEA	0.086
RMSEA lower bound	0.084
RMSEA upper bound	0.088
P for test of close fit	0.000

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Measures Used

1. Health expectancies: weighted average of questions A1m, A2a, A2c and A2e (weights from A3)
2. Social norms: average of questions A4a, A4b and A4c
3. Self efficacy: average of C1a and C1f
4. Extrinsic motivation: average of D1e, D1f, D1h, D1k and D1i
5. Intrinsic motivation: average of D1b, D1d, D1g, D1j and D1l
6. Social support: average of D3a to D3h
7. Benefits: weighted average D5a to D5l (weights from B6)
8. Excuse barriers: average of D6k, D6n, D6s and D6t
9. Other interests barriers: average of D6g, D6h, D6l, and D6m
10. Time barriers: average of D6b, D6c, D6j and D6o
11. Environmental availability: average of D7a to D7n
12. Tangible benefits: average of D8a to D8m

Other Physical Activity models tested

Two other models are worth noting briefly. **Firstly**, an alternative model was run that incorporated a set of barriers relating to physical comfort (average of D6p, D6t, D6u, D6v and D6w). This was based mainly on additional questions added to the New Zealand survey and which appear influential in the segmentation analysis. For this model question D6t was removed from the 'excuse' barriers. The benefits measure was also changed for this model to be an average of B6a to B6m following discussion about possible ways to overcome the illogical result presumed to arise from multicollinearity in the data. There is also the possibility that the likelihood ratings, D5, may be ambiguous for some respondents who are already active and focussing on the actual beliefs regarding health benefits overcomes this issue.

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The overall results are similar to the general model described above though, while it is still statistically significant, the link between intrinsic motivation and behaviour is not as strong (0.095). The benefits variable ceases to 'misbehave' and the physical comfort barriers are shown to be significant in influencing both intrinsic motivation and self-efficacy.

Overall the results emphasise the importance of increasing self-efficacy by reducing perceptions of different barriers and increasing environmental availability. The most important standardised regression weights are:

Other interest barriers – intrinsic motivation	-.188
Excuse barriers – intrinsic motivation	-.306
Excuse barriers – self-efficacy	-.284
Physical comfort barriers – intrinsic motivation	-.171
Physical comfort barriers – self-efficacy	-.297
Benefits – intrinsic motivation	.239
Health expectancies – intrinsic motivation	.365
Environmental availability – self-efficacy	.327
Benefits – extrinsic motivation	.167
Social support – extrinsic motivation	.174
Other interest barriers – behaviour	-.124
Self efficacy – behaviour	.293

The **second model** worth noting briefly was one of the analyses conducted on a reduced behavioural range (i.e. excluding the most active and least active) similar to that used for the segmentation. Because the behaviour range is reduced a smaller number of variables are significant in the model. Only self-efficacy and other interest barriers have significant links to behaviour and self-efficacy is mainly influenced by environmental availability, excuse and other interest barriers. The reduced explanation in this analysis illustrates in practical terms why it is preferable to work with the full data set in order to get a robust view of different potential relationships proposed in the full model.

Excuse barriers – self-efficacy	-.316
Environmental availability – self-efficacy	.229
Other interest barriers –self-efficacy	-.260
Other interest barriers – behaviour	-.093
Self efficacy – behaviour	.163

We initially considered developing a more theoretically-based structural equation model (e.g. using constructs from the widely-used Theory of Planned Behaviour). However, we chose to replicate the American Cancer Society model not just because of the practical usefulness of comparability with that work, but also because the questionnaire lacked some elements desirable for the less exploratory models we considered (in particular, it lacked appropriate measures of intention, not to mention the ideal of directly measured behavioural change).

Fruit and Vegetable Replication

An equivalent model to the main physical activity model has also been run for the fruit and vegetable behaviour data collected in the survey. The main diagram will be presented and discussed in separate reports issued by the Cancer Society of New Zealand. Again, the results emphasise the important influences of self-efficacy and intrinsic motivation and thus they provide general reassurance about the most important potential routes to influencing health related behaviours.

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Reliability scores for measures in both physical activity and fruit and vegetable models

Physical Activity Variables	α	Fruit and Veg Variables	α
Health Expectancies	.82	Health Expectancies	.84
Social Norms	.73	Social Norms	.78
Self Efficacy	.59	Self Efficacy	.60
Extrinsic Motivation	.87	Extrinsic Motivation	.75
Intrinsic Motivation	.81	Intrinsic Motivation	.84
Social Support	.87	Social Support	.88
Benefits	.94	Benefits	.92
Tangible Rewards	.92	Tangible Rewards	.93
Other interest barriers	.76	Other interests	.74
Excuse barriers	.74	Access	.74
Time barriers	.74	Cost	.90
Environmental Availability	.87	Convenience	.83
Physical Comfort barriers	.85	Dislike	.85

Appendix I – ACNielsen Quality Assurance

Quality Assurance

ACNielsen is committed to the principles of Total Quality Management, and in 1995 achieved certification under the International Standards Organisation ISO 9001 code.

The company maintains rigorous standards of quality control in all areas of operation. Furthermore, ACNielsen is routinely and regularly subjected to **independent external auditing** of all aspects of its survey operations.

ISO 9001

In terms of this project, all processes involved are covered by our ISO 9001 procedures.

Code of Ethics

All research conducted by ACNielsen conforms with the Code of Professional Behaviour of the Market Research Society of New Zealand

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Appendix II – Population Weighting Targets

Table A1: Stratum sample sizes.

TLA	Maori Sample Size	Non-Maori Sample Size
001	78	117
002	56	194
003	14	50
004	25	260
005	50	661
006	81	534
007	125	1,306
008	163	839
009	35	112
010	30	157
011	14	84
012	12	49
013	38	103
015	14	93
016	82	349
017	23	125
018	10	23
019	24	57
020	14	20
021	33	82
022	25	115
023	53	292
024	79	153
025	47	69
026	14	9
027	18	14
028	70	85
029	18	13
030	57	187
031	34	168
032	10	37
033	32	217
034	4	29
035	20	79
036	19	31
037	32	129
038	13	42
039	13	88
040	37	238
041	12	52
042	22	90
043	18	145
044	34	131
045	19	116
046	57	295
047	53	594
048	13	71
049	3	23
050	5	28
051	11	143
052	13	146
053	15	137
054	2	12
055	3	33
056	4	44
057	4	26
058	2	35
059	9	128
060	88	1,148
061	3	28
062	6	95
063	5	92
064	9	152
065	1	13
066	2	25
067	2	1
068	4	74
069	4	52
070	4	64
071	28	424
072	6	58
073	10	97
074	5	42
075	25	163

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Appendix II – Population Weighting Targets, continued

Table A2: Estimated population figures and final weight totals for the categories in the region rim.

	Target	Sum of Weights
Northern North Island/ Area outside region	1539573.4	1539573.3
Lower North Island	710149.1	710149.1
South Island	745427.2	745426.4

Table A3: Estimated population figures and final weight totals for the categories in the ethnicity by age by gender rim.

Category	Target	Sum of Weights
Maori Male <40	92280.4	92280.4
Maori Male 40+	58072.7	58072.7
Maori Female <40	105140.8	105140.8
Maori Female 40+	64554.8	64554.8
Pacific Male <40	38499.9	38499.9
Pacific Male 40+	23105.8	23105.8
Pacific Female <40	42707.8	42707.8
Pacific Female 40+	25441.7	25441.7
Asian Male <40	49579.2	49579.1
Asian Male 40+	33140.4	33140.4
Asian Female <40	57764.5	57764.5
Asian Female 40+	39002.8	39002.8
Other except NZ European Male <40	33380.4	33380.4
Other except NZ European Male 40+	51081.3	51081.3
Other except NZ European Female <40	38233.9	38233.9
Other except NZ European Female 40+	52077.3	52077.3
NZ European (or Not Elsewhere Included) Male <40	437813.0	437812.9
NZ European (or Not Elsewhere Included) Male 40+	620359.2	620359.0
NZ European (or Not Elsewhere Included) Female <40	448392.6	448392.5
NZ European (or Not Elsewhere Included) Female 40+	684521.4	684521.2

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Table A4: Estimated population figures and final weight totals for the categories in the age by gender rim.

Category	Target	Sum of Weights
Male 16-17	57556.4	57556.8
Male 18-19	55162.2	55162.6
Male 20-24	124913.7	124914.7
Male 25-29	124456.3	124457.2
Male 30-34	138860.8	138861.8
Male 35-39	150598.6	150599.7
Male 40-44	147248.3	147248.4
Male 45-49	132110.6	132110.7
Male 50-54	124787.2	124787.3
Male 56-59	95725.1	95725.2
Male 60-64	79847.7	79847.8
Male 65-69	65251.8	65251.8
Male 70-74	58549.2	58549.2
Male 75-79	42736.6	42736.7
Male 80+	39502.1	39502.1
Female 16-17	55178.4	55177.8
Female 18-19	53540.0	53539.5
Female 20-24	127441.0	127439.8
Female 25-29	136330.3	136328.9
Female 30-34	155439.0	155437.5
Female 35-39	164317.5	164315.8
Female 40-44	156789.7	156789.9
Female 45-49	136655.8	136656.0
Female 50-54	126535.9	126536.0
Female 56-59	97042.3	97042.4
Female 60-64	82508.0	82508.1
Female 65-69	68132.7	68132.8
Female 70-74	65089.6	65089.7
Female 75-79	56404.7	56404.8
Female 80+	76438.0	76438.1

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Appendix III – References

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Appendix IV – Questionnaire

Physical activity and nutrition
in New Zealand

SP*RC
ihi AOTEAROA
Sport & Recreation New Zealand

Cancer
Society

Thank you for helping with an important study about the physical activity and eating habits of New Zealanders. Sport and Recreation New Zealand (SPARC, formerly the Hillary Commission) and the Cancer Society will use this study to improve the health of New Zealanders. By chance, your address has been chosen to be part of this study. Only one person in your house should complete this questionnaire – **the adult who has the first birthday after 1 June**. (Adult means someone aged 16 or over.)

Your answers will be totally private. No one other than the researchers will be able to tell that it was someone from your house who answered the survey. Each person's answers will be put together with those of others to show the results.

You can return your completed questionnaire in the Freepost envelope supplied.

If you have any questions, ACNielsen will be happy to talk with you. Their toll free number is 0800 226 737. Call any time (including nights and weekends) and ask for Gordon Stewart or Sandra Dodds.

We'd like to thank you in advance for your time and effort.

Sincerely

Nicholas Hill
Chief Executive, SPARC

Neil Chave
Chief Executive, Cancer Society of New Zealand

How to answer

Use a **blue** or **black** pen (that does not soak through the paper), or a **dark** pencil. Put an **X** inside the box provided. (Do not mark any areas outside the box.)

☐1 ☒2 ☐3 ☐4 ☐5

If you change your mind or make a mistake:
Fill in the whole box and mark the correct one as shown.

☐1 ■2 ☒3 ☐4 ☐5

Office use only
☐☐☐☐☐☐

"Physical activities" are things you do that increase your breathing and/or heart-rate (this includes but is not limited to exercise). Examples of these physical activities include brisk walking, biking, swimming, dancing, aerobics, gardening, sports and other activities that "get you moving".

1. Below are a number of statements with which you may or may not agree. For each statement, please indicate how much you personally agree or disagree with it. *If you don't understand a statement, please leave that line* **blank.**

   After each statement, there are five boxes numbered 1 to 5. Mark ☒ one box on each line. (That is, please ☒ the box beside 1 if you strongly disagree, 2 if you moderately disagree, 3 if you neither disagree or agree, 4 if you moderately agree, or 5 if you strongly agree.)

		Strongly disagree		Neither agree nor disagree		Strongly agree
a	I get enough "physical activity" to keep me healthy	1	2	3	4	5
b	I eat enough fruit and vegetables to keep me healthy	1	2	3	4	5
c	If I get enough "physical activity", I don't really have to worry about what I eat	1	2	3	4	5
d	If I eat right, I don't really have to worry about "physical activity"	1	2	3	4	5
e	I prefer to be physically active on my own rather than in a group with an exercise leader	1	2	3	4	5
f	I am more physically active than typical for people my age	1	2	3	4	5
g	I eat more fruit than typical for people my age	1	2	3	4	5
h	I eat more vegetables than typical for people my age	1	2	3	4	5
i	Lately I have been under a lot of stress	1	2	3	4	5
j	I am so busy at work that I am too tired to be physically active when I get home	1	2	3	4	5
k	I get enough "physical activity" according to recommended guidelines	1	2	3	4	5
l	I eat enough fruit and vegetables according to recommended guidelines	1	2	3	4	5
m	People who are not physically active are at risk of health problems	1	2	3	4	5
n	People who don't eat fruit and vegetables are at risk of health problems	1	2	3	4	5
o	Being physically active is a priority in my life	1	2	3	4	5
p	Having healthy eating habits is very important to me	1	2	3	4	5
q	I used to be better at sports and other "physical activities"	1	2	3	4	5
r	I don't pay attention to recommended "physical activity" guidelines because they are always changing	1	2	3	4	5
s	I don't pay attention to recommended healthy eating guidelines because they are always changing	1	2	3	4	5
t	I go out of my way to buy organically grown fruit and vegetables	1	2	3	4	5
u	Frozen vegetables are as healthy as fresh vegetables	1	2	3	4	5

> **"Regular physical activity"** means at least 15 minutes of vigorous activity (makes you 'huff and puff') **or** a total of 30 minutes or more of moderate activity (causes a slight but noticeable increase in breathing and heart rate) each day for **5 or more days** each week. Include brisk walking.

2. Please indicate how much you personally agree or disagree with each statement.
(Mark ☒ one box on each line)

		Strongly disagree		Neither agree nor disagree		Strongly agree
a	"Regular physical activity" will help me live a healthy life	1	2	3	4	5
b	Eating fruit and vegetables will help me live a healthy life	1	2	3	4	5
c	"Regular physical activity" decreases the risk of heart disease	1	2	3	4	5
d	Eating fruit and vegetables decreases the risk of heart disease	1	2	3	4	5
e	"Regular physical activity" decreases the risk of cancer	1	2	3	4	5
f	Eating fruit and vegetables decreases the risk of cancer	1	2	3	4	5
g	Most weeks I could replace car trips by walking or cycling on at least 2 days (without too much difficulty)	1	2	3	4	5
h	Dinner doesn't seem right without meat (chicken, pork, beef, lamb)	1	2	3	4	5
i	I am concerned about the amount of pesticides on my fruit and vegetables	1	2	3	4	5
j	I don't need to eat a lot of fruit and vegetables because I take multivitamin tablets	1	2	3	4	5
k	Eating healthier means giving up the foods I like	1	2	3	4	5
l	I would count 100% fruit juice as a serving of fruit	1	2	3	4	5
m	I would count dried fruit (raisins, dried apricots, etc) as a serving of fruit	1	2	3	4	5

3. For each of the following, how important is it to you that <u>you</u> ...

		Not at all important				Very important
a	Live a healthy life	1	2	3	4	5
b	Do things to lower your risk of heart disease	1	2	3	4	5
c	Do things to lower your risk of developing cancer	1	2	3	4	5
d	Make changes in your daily routine in order to prevent health problems	1	2	3	4	5
e	Follow recommended health guidelines	1	2	3	4	5

4. **In your opinion**, about what percent of the following people do "regular physical activity" ?

		0%	20%	40%	60%	80%	100%	Does not apply
a	Your family members	1	2	3	4	5	6	9
b	Your friends	1	2	3	4	5	6	9
c	People your age in New Zealand	1	2	3	4	5	6	9

A **"serving"** of fruit means: 1 medium piece of fruit
or 2 small pieces of fruit
or 1/2 cup of stewed fruit.
*Example: 1 apple + 2 small apricots = 2 servings. Do **not** include fruit juice or dried fruit.*

A **"serving"** of vegetables means: 1 medium potato/kumara
or 1/2 cup cooked vegetables
or 1 cup of salad vegetables
*Example: 2 medium potatoes + 1/2 cup peas = 3 servings. Do **not** include vegetable juices.*

5. **In your opinion**, about what percent of the following people eat five or more "servings" of fruit and vegetables a day?

		0%	20%	40%	60%	80%	100%	Does not apply
a	Your family members	☐1	☐2	☐3	☐4	☐5	☐6	☐9
b	Your friends	☐1	☐2	☐3	☐4	☐5	☐6	☐9
c	People your age in New Zealand	☐1	☐2	☐3	☐4	☐5	☐6	☐9

SECTION B – YOUR HEALTH

1. In general, would you say your health is… (*Mark* ☒ *one box*)

Poor	Fair	Good	Very good	Excellent
☐1	☐2	☐3	☐4	☐5

2. How would you describe your weight?

Very underweight	Slightly underweight	About the right weight	Slightly overweight	Very overweight/obese
☐1	☐2	☐3	☐4	☐5

3. Are you trying to...

Gain weight	Lose weight	Neither of these
☐1	☐2	☐3

4. **During the past 12 months** have you had (or do you currently have) any of these health conditions?
(*Mark* ☒ *all boxes that apply*)

High blood pressure	☐1	Anxiety disorder	☐10
High cholesterol	☐2	Depression or mood disorder	☐11
Asthma	☐3	Breast cancer	☐12
Respiratory tract infection	☐4	Colon cancer	☐13
Hay fever or other seasonal allergies	☐5	Prostate cancer	☐14
Heart attack, heart disease or angina	☐6	Other cancer	☐15
Diabetes	☐7	Other physical health condition	☐16
Osteoporosis	☐8	Other mental health condition	☐17
Arthritis	☐9	None of the above	☐18

5. **During the past 12 months**, has a doctor, nurse, or other health professional ...

		Yes	No	Not sure
a	Told you to be **more** physically active	☐1	☐2	☐3
b	Told you to eat **fewer** foods that are high in fat	☐1	☐2	☐3
c	Told you to eat **more** fruit and vegetables	☐1	☐2	☐3
d	Given you a Green Prescription (recommended/prescribed physical activity)	☐1	☐2	☐3
e	Given you any advice or treatment at all	☐1	☐2	☐3

6. The following is a list of possible results people may experience when they do things to improve their health (such as regular physical activity or eating at least 5 servings of fruit and vegetables a day).
Please indicate how **personally important** each result is to you.

How <u>important</u> is it to YOU to …

		Not at all important				Very important
a	Look better (appearance)	☐1	☐2	☐3	☐4	☐5
b	Lose or maintain weight	☐1	☐2	☐3	☐4	☐5
c	Have more energy	☐1	☐2	☐3	☐4	☐5
d	Feel more relaxed	☐1	☐2	☐3	☐4	☐5
e	Feel more in control of your life	☐1	☐2	☐3	☐4	☐5
f	Set a good example for others	☐1	☐2	☐3	☐4	☐5
g	Live a longer life	☐1	☐2	☐3	☐4	☐5
h	Have fun	☐1	☐2	☐3	☐4	☐5
i	Sleep more soundly	☐1	☐2	☐3	☐4	☐5
j	Avoid constipation	☐1	☐2	☐3	☐4	☐5
k	Feel good about yourself	☐1	☐2	☐3	☐4	☐5
l	Get to be with people/socialise	☐1	☐2	☐3	☐4	☐5
m	Improve your overall fitness level	☐1	☐2	☐3	☐4	☐5

Reminder: Use a **blue** or **black** pen (that does not soak through the paper), or a **dark** pencil. Put an **X** inside the box provided. (Do not mark any areas outside the box.)

CORRECT   ☐1   ☒2   ☐3   INCORRECT   ☑   ☑/   ☒

SECTION C – HEALTH BEHAVIOUR

1. Assume that you **want** to do each of the following. How **confident** are you that you can do each, beginning this week and continuing for at least **ONE month**? *(Mark ☒ one box for each statement)*

How confident are you that you could…	Not at all confident									Extremely confident
a	Be physically active at least 5 days per week for a total of at least 30 minutes a day	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6	□ 7	□ 8	□ 9	□ 10
b	Eat a low-fat diet (eating less fried foods, chips, mayonnaise, cream, etc.)	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6	□ 7	□ 8	□ 9	□ 10
c	Maintain a healthy weight, or begin to lose excess weight	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6	□ 7	□ 8	□ 9	□ 10
d	Get 7 or more hours of sleep each night	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6	□ 7	□ 8	□ 9	□ 10
e	Try a new fruit or vegetable this month to see if you like it	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6	□ 7	□ 8	□ 9	□ 10
f	Try a new physical activity this month to see if you like it	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6	□ 7	□ 8	□ 9	□ 10
g	Eat at least five servings of fruit and vegetables every day	□ 1	□ 2	□ 3	□ 4	□ 5	□ 6	□ 7	□ 8	□ 9	□ 10

2. Have you had a drink containing alcohol in the last year?

Yes	No	Don't know
□ 1	□ 2	□ 3
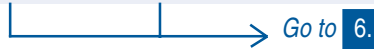
Go to **6.**

3. How often do you have a drink containing alcohol?

Monthly or less	2 to 4 times a month	2 to 3 times a week	4 or more times a week
□ 1	□ 2	□ 3	□ 4

4. How many drinks containing alcohol do you have on a typical day when you are drinking?

> As a guide, a drink is:
> - a can or small bottle of beer
> - a small glass of wine
> - a nip of spirits (a 'single' in a pub)

1 or 2	3 or 4	5 or 6	7 to 9	10 or more
□ 1	□ 2	□ 3	□ 4	□ 5

5. How often do you have 5 or more drinks on one occasion?

Never	Less than monthly	Monthly	Weekly	Daily or almost daily
□ 1	□ 2	□ 3	□ 4	□ 5

6. During the past 30 days, on about how many days did you smoke cigarettes?

(If you did not smoke at all in the last 12 months, write in an ⊠)

[ ][ ] days

7. During the past 30 days, on the days you smoked, about how many cigarettes a day did you usually smoke?

(If you did not smoke at all, write in an ⊠)

[ ][ ][ ] cigarettes each day

SECTION D – PHYSICAL ACTIVITY

1. Please indicate how much you personally agree or disagree with each statement.
(If you don't understand a statement, please leave that line blank)

When I am <u>physically active</u>, it is because…	Strongly disagree			Neither agree nor disagree			Strongly agree
a	I enjoy physical activity	1	2	3	4	5	6	7
b	It is an important choice I really want to make	1	2	3	4	5	6	7
c	I would feel guilty or ashamed of myself if I didn't	1	2	3	4	5	6	7
d	I believe it is a very good thing for my health	1	2	3	4	5	6	7
e	Others would be upset with me if I didn't	1	2	3	4	5	6	7
f	I feel pressure from others to be more active	1	2	3	4	5	6	7
g	It is consistent with my life goals	1	2	3	4	5	6	7
h	I want others to approve of me	1	2	3	4	5	6	7
i	I want others to see I can do it	1	2	3	4	5	6	7
j	Not doing so puts my health at serious risk	1	2	3	4	5	6	7
k	My family wants me to	1	2	3	4	5	6	7
l	I want to take responsibility for my own health	1	2	3	4	5	6	7
m	I want to be a good role model for my children	1	2	3	4	5	6	7
n	I care about keeping in shape	1	2	3	4	5	6	7
o	My work is physically active	1	2	3	4	5	6	7
p	It is important to me that my dog gets enough exercise	1	2	3	4	5	6	7

2. Do you have (or share) responsibility for regularly exercising a dog?

Yes	No
1	2

3. How much encouragement do you get from the following people to be physically active?

		None						A lot	Does not apply
a	Your spouse or partner	1	2	3	4	5	6	7	9
b	Your family/whanau/children (other than spouse/partner)	1	2	3	4	5	6	7	9
c	Your close friends	1	2	3	4	5	6	7	9
d	People you work with	1	2	3	4	5	6	7	9
e	People at your church or place of worship	1	2	3	4	5	6	7	9
f	Your doctor or health care provider	1	2	3	4	5	6	7	9
g	Your employer	1	2	3	4	5	6	7	9
h	People at your marae	1	2	3	4	5	6	7	9

4. Overall, would you say the amount of encouragement you get is ...

Not enough			About right		Too much	
1	2	3	4	5	6	7

5. The following is a list of possible results people may experience when they engage in "regular physical activity".
Please indicate how **likely** YOU are to experience each result if you engage in physical activity.

> **"Regular physical activity"** means at least 15 minutes of vigorous activity (makes you 'huff and puff') **or** a total of 30 minutes or more of moderate activity (causes a slight but noticeable increase in breathing and heart rate) each day for **5 or more days** each week. Include brisk walking.

	How likely is it YOU would…	Not at all likely				Very likely
a	Look better (appearance)	1	2	3	4	5
b	Lose or maintain weight	1	2	3	4	5
c	Have more energy	1	2	3	4	5
d	Feel more relaxed	1	2	3	4	5
e	Feel more in control of your life	1	2	3	4	5
f	Set a good example for others	1	2	3	4	5
g	Live a longer life	1	2	3	4	5
h	Have fun	1	2	3	4	5
i	Sleep more soundly	1	2	3	4	5
j	Feel good about yourself	1	2	3	4	5
k	Get to be with people/socialise	1	2	3	4	5
l	Improve your overall fitness level	1	2	3	4	5

6. The following is a list of possible things that keep some people from being physically active. For each one, please indicate how much each influences your own activity level.

		Doesn't influence me at all						Influences me a lot
		1	2	3	4	5	6	7
a	Lack of energy/too tired	☐	☐	☐	☐	☐	☐	☐
b	Lack of time due to work	☐	☐	☐	☐	☐	☐	☐
c	Lack of time due to family responsibilities	☐	☐	☐	☐	☐	☐	☐
d	Arthritis or other health problems	☐	☐	☐	☐	☐	☐	☐
e	Costs too much (clothes, equipment, etc.)	☐	☐	☐	☐	☐	☐	☐
f	Facilities (parks, gyms) too hard to get to	☐	☐	☐	☐	☐	☐	☐
g	It's too hard to stick to a routine	☐	☐	☐	☐	☐	☐	☐
h	No one to do physical activities with	☐	☐	☐	☐	☐	☐	☐
i	I worry about my safety	☐	☐	☐	☐	☐	☐	☐
j	I would have to get someone to watch my children	☐	☐	☐	☐	☐	☐	☐
k	I'm too old	☐	☐	☐	☐	☐	☐	☐
l	I get bored quickly	☐	☐	☐	☐	☐	☐	☐
m	There are other things I'd rather do during my free time	☐	☐	☐	☐	☐	☐	☐
n	Others discourage me from being physically active	☐	☐	☐	☐	☐	☐	☐
o	I have too many household chores to do	☐	☐	☐	☐	☐	☐	☐
p	Physical activity is uncomfortable for me	☐	☐	☐	☐	☐	☐	☐
q	I'm too out of shape to start	☐	☐	☐	☐	☐	☐	☐
r	I feel I am too overweight to be physically active	☐	☐	☐	☐	☐	☐	☐
s	I don't know how to be physically active	☐	☐	☐	☐	☐	☐	☐
t	I don't like to sweat	☐	☐	☐	☐	☐	☐	☐
u	I don't like feeling out of breath	☐	☐	☐	☐	☐	☐	☐
v	I don't like other people to see me being physically active	☐	☐	☐	☐	☐	☐	☐
w	Physical activity takes too much effort	☐	☐	☐	☐	☐	☐	☐

Reminder: If you change your mind or make a mistake:
Fill in the whole box and mark the correct one as shown.

☐ 1   ☒ 2   ⊠ 3   ☐ 4   ☐ 5

7. Below is a list of things you may have in your neighbourhood or at work.

First, in column A mark one box that best indicates whether or not you would use each of these things **if they were available to you.**

Secondly, in column B please mark one box to indicate which ones you consider are **readily available** *to you now.*

		Column A		Column B	
		Would you use this if it were available to you?		**Is it readily available in your neighbourhood or at work?**	
		Definitely would not ☐1 ☐2 ☐3 ☐4 ☐5 Definitely would		Yes	No
a	Cycle lanes or paths	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
b	Walking group	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
c	Walking tracks	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
d	Public park with playing fields	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
e	Swimming pool, beach or lake	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
f	School gym/pool open to community on weekends	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
g	Netball or tennis courts	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
h	Community recreation centre	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
i	Health club or gym near work	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
j	Health club or gym near home	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
k	Shower at work	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
l	Home exercise equipment	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
m	Organised sports (like touch rugby, netball)	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2
n	Sports shop	☐1 ☐2 ☐3 ☐4 ☐5		☐1	☐2

Check: Have you answered both column A and column B?

8. I would be more physically active if…

		Not at all likely				Very likely	Does not apply
a	I could call a toll-free number to get advice from an expert	1	2	3	4	5	9
b	I could get a free pamphlet on how to do it	1	2	3	4	5	9
c	I could get a free or low-cost gym membership	1	2	3	4	5	9
d	My health insurance company rewarded me with lower premiums	1	2	3	4	5	9
e	Every time I was physically active I would earn points towards free things like magazines, clothes, and travel	1	2	3	4	5	9
f	I had an extra hour of free time during my day	1	2	3	4	5	9
g	Someone agreed to support me/check on my progress	1	2	3	4	5	9
h	I could get someone to watch my children	1	2	3	4	5	9
i	My employer offered a gym membership	1	2	3	4	5	9
j	My employer allowed time for it	1	2	3	4	5	9
k	My employer paid me to be more physically active	1	2	3	4	5	9
l	I thought it would get my children to be more active	1	2	3	4	5	9
m	I had someone to go with	1	2	3	4	5	9

9. Which of the following (if any) apply to your neighbourhood **and put you off** being physically active?
(Mark ⊠ all boxes that apply)

There are not enough footpaths	1
Footpaths are not well maintained	2
Traffic is too heavy	3
There are steep hills	4
There is not enough street lighting	5
There are not enough cycle lanes or paths	6
There are too many stop signs/lights	7
The scenery is not that nice	8
I rarely see people walking or being physically active	9
There is a lot of crime	10
Dog nuisance	11
None of the above	12

10. Is a bicycle (in working order) usually available for you to use?

Yes	No
1	2

11. How often have you ridden a bicycle during the last 3 months? (*Mark* ☒ *the **first** box that applies)*

Never learned to ride properly	☐ 1
Not at all during the last 3 months	☐ 2
Only once or twice	☐ 3
1-2 times a month	☐ 4
About once a week	☐ 5
2-3 days a week	☐ 6
Most days	☐ 7

12. For a short journey when the weather was fine and you have nothing to carry, would you ... (*Mark* ☒ ***one** box)*

Not even consider using a bicycle	☐ 1
Realise that you could use a bicycle but wouldn't actually do it	☐ 2
Think seriously about the pros and cons of cycling but rarely do it	☐ 3
Try cycling on some occasions	☐ 4
Cycle quite often	☐ 5
Almost always cycle	☐ 6

13. *For this question only: if you have a bicycle, please assume that it is temporarily unavailable.* For a journey of 1.5 km (about 15 minutes walk at normal walking speed), when the weather was fine and you have nothing heavy to carry, would you ...   (*Mark* ☒ ***one** box)*

Not even consider walking	☐ 1
Realise that you could walk but wouldn't actually do it	☐ 2
Think seriously about the pros and cons of walking but rarely do it	☐ 3
Walk on some occasions	☐ 4
Walk quite often	☐ 5
Almost always walk	☐ 6

14. The next questions ask about physical activity that you may have done in the past 7 days. Please answer each question even if you do not consider yourself to be an active person. Think about the activities you do at work, as part of your housework and gardening, to get from place to place, and in your spare time for recreation, exercise or sport. The questions ask you separately about brisk walking, moderate activity and vigorous activity.

Do not count the same time more than once:
Example 1. You run for 20 minutes. Count this time as vigorous activity only, not also as moderate.
Example 2. A 45 minute ball game with 30 minutes at moderate intensity then 15 minutes at vigorous intensity.
Count this activity as 30 minutes moderate and 15 minutes vigorous.

a Walking

During the last 7 days, on how many days did you **walk at a brisk pace?** *(A pace at which you are breathing harder than normal.)* This includes walking at work, walking to travel from place to place, and any other walking that you did solely for recreation, sport, exercise or leisure.

Think about **only** that walking done for at least 10 minutes at a time. *(Mark ☒ one box)*

0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
☐ 9	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

How much time did you **usually** spend doing such brisk walking on each of those days? *(Write in number)*

☐☐☐ minutes a day   **OR**   ☐☐ hours a day

b Moderate physical activity

During the last 7 days, on how many days did you do **moderate** physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking. (*Moderate physical activity will cause a slight, but noticeable, increase in breathing and heart-rate.*)

Think about **only** those physical activities done for at least 10 minutes at a time.

0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
☐ 9	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

How much time did you **usually** spend doing moderate physical activities on each of those days? *(Write in number)*

☐☐☐ minutes a day   **OR**   ☐☐ hours a day

c Vigorous physical activity

During the last 7 days, on how many days did you do **vigorous** physical activities like heavy lifting, digging, aerobics, running, rugby, netball, or fast bicycling? *(Vigorous activity is activity that makes you "huff and puff", and where talking in full sentences between a breath is difficult.)*

Think about **only** those physical activities done for at least 10 minutes at a time.

0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
☐ 9	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

How much time did you **usually** spend doing vigorous physical activities on each of those days? *(Write in number)*

☐☐☐ minutes a day   **OR**   ☐☐ hours a day

Please check that you have not counted the same time more than once.

15. *Crucial Question! Please answer carefully.* Thinking about all your activities (brisk walking, moderate, or vigorous), on how many of the last 7 days were you **active**? ("Active" means doing 15 minutes or more of vigorous activity, or a total of 30 minutes or more of moderate activity or brisk walking.)

0 days	1 day	2 days	3 days	4 days	5 days	6 days	7 days
☐ 9	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

16. Were your answers to the last questions (Q14-Q15) clearly affected because of pregnancy, illness, injury, or disability? *(Mark ☒ all boxes that apply)*

No	☐ 1
Yes, because of pregnancy	☐ 2
Yes, because of a temporary illness	☐ 3
Yes, because of a long-term illness	☐ 4
Yes, because of a temporary injury	☐ 5
Yes, because of a permanent injury or disability	☐ 6

17. Overall, how physically active do you consider yourself to be?

Not at all physically active   Very physically active

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

18. How long have you been active **at this level**?

Less than one month	1-3 months	4-6 months	7-9 months	10-12 months	More than 12 months
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

19. Over the next 6 months, do you think you will be...

Less physically active   About the same   More physically active

☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

20. Are you "regularly physically active" according to the definition below? *(Mark ☒ one box)*

> **"Regular physical activity"** means at least 15 minutes of vigorous activity (makes you 'huff and puff') **or** a total of 30 minutes or more of moderate activity (causes a slight but noticeable increase in breathing and heart rate) each day for **5 or more days** each week. Include brisk walking.

No, and I do not intend to be in the next 6 months	☐ 1
No, but I am thinking about starting to be in the next 6 months	☐ 2
No, but I intend to begin in the next 30 days	☐ 3
Yes, I am but only began in the last 6 months	☐ 4
Yes, I am and have been for more than 6 months	☐ 5

Remember: Only one person should fill in this questionnaire.

SECTION E – NUTRITION

1. How much do you personally agree or disagree with each statement?

	When I eat fruit and vegetables, it is because…	Strongly disagree			Neither agree nor disagree			Strongly agree
a	I enjoy eating fruit and vegetables	1	2	3	4	5	6	7
b	It is an important choice I really want to make	1	2	3	4	5	6	7
c	I would feel guilty or ashamed of myself if I didn't	1	2	3	4	5	6	7
d	I believe it is a very good thing for my health	1	2	3	4	5	6	7
e	Others would be upset with me if I didn't	1	2	3	4	5	6	7
f	I feel pressure from others to eat healthier	1	2	3	4	5	6	7
g	It is consistent with my life goals	1	2	3	4	5	6	7
h	I want others to approve of me	1	2	3	4	5	6	7
i	Not doing so puts my health at serious risk	1	2	3	4	5	6	7
j	My family wants me to	1	2	3	4	5	6	7
k	I want to be a good role model for my children	1	2	3	4	5	6	7
l	I want to take responsibility for my own health	1	2	3	4	5	6	7
m	Fruit makes an easy snack	1	2	3	4	5	6	7
n	I want to get more vitamins	1	2	3	4	5	6	7

2. How much encouragement do you get from the following people to eat fruit and vegetables?

		None						A lot	Does not apply
a	Your spouse or partner	1	2	3	4	5	6	7	9
b	Your family/whānau/children (other than spouse/partner)	1	2	3	4	5	6	7	9
c	Your close friends	1	2	3	4	5	6	7	9
d	People you work with	1	2	3	4	5	6	7	9
e	People at your church or place of worship	1	2	3	4	5	6	7	9
f	Your doctor or health care provider	1	2	3	4	5	6	7	9
g	Your employer	1	2	3	4	5	6	7	9
h	People at your marae	1	2	3	4	5	6	7	9

3. Overall, would you say the amount of encouragement you get is…

Not enough			About right			Too much
1	2	3	4	5	6	7

4. The following is a list of possible results people might experience when they eat at least five servings of fruit and vegetables a day. Please indicate how **likely** YOU are to experience each result if you eat at least five servings of fruit and vegetables daily.

		Not at all likely				Very likely
How likely is it YOU would ...						
a	Look better (appearance)	1	2	3	4	5
b	Lose or maintain weight	1	2	3	4	5
c	Have more energy	1	2	3	4	5
d	Feel more in control of your life	1	2	3	4	5
e	Set a good example for others	1	2	3	4	5
f	Live a longer life	1	2	3	4	5
g	Avoid constipation	1	2	3	4	5
h	Feel good about yourself	1	2	3	4	5

5. The following is a list of possible things that keep people from eating fruit and vegetables each day. For each one, please indicate how much each influences the number of fruit and vegetables you eat each day.

		Doesn't influence me at all						Influences me a lot
a	Fruit costs too much	1	2	3	4	5	6	7
b	Vegetables cost too much	1	2	3	4	5	6	7
c	Fresh fruit spoils too quickly	1	2	3	4	5	6	7
d	Fresh vegetables spoil too quickly	1	2	3	4	5	6	7
e	I prefer to eat other snacks (like chips and biscuits)	1	2	3	4	5	6	7
f	They don't give me 'quick energy' like a chocolate bar does	1	2	3	4	5	6	7
g	I'm not a good cook	1	2	3	4	5	6	7
h	Fruit and vegetables are not available where I work	1	2	3	4	5	6	7
i	The supermarket I go to most doesn't carry a lot of different fruit and vegetables	1	2	3	4	5	6	7
j	I can't get good quality fruit and vegetables at my local shops	1	2	3	4	5	6	7
k	Fruit takes too much time to prepare (clean, cut up, cook)	1	2	3	4	5	6	7
l	Vegetables take too much time to prepare (clean, cut up, cook)	1	2	3	4	5	6	7
m	Fruit isn't filling enough	1	2	3	4	5	6	7
n	Vegetables aren't filling enough	1	2	3	4	5	6	7
o	I don't like most fruit	1	2	3	4	5	6	7
p	I don't like most vegetables	1	2	3	4	5	6	7
q	My family doesn't like fruit	1	2	3	4	5	6	7
r	My family doesn't like vegetables	1	2	3	4	5	6	7
s	Fruit is difficult to eat when I'm 'on the go'	1	2	3	4	5	6	7
t	Vegetables are difficult to eat when I'm 'on the go'	1	2	3	4	5	6	7

6. Please indicate how likely you would be to eat **more** fruit and vegetables if …

		Not at all likely				Very likely	Does not apply
a	I could call a toll-free number to get advice from an expert on how to prepare or cook fruit and vegetables	1	2	3	4	5	9
b	I could get a free pamphlet on how to prepare fruit and vegetables	1	2	3	4	5	9
c	Fruit and vegetables came in more convenient packages (pre-washed, cut up)	1	2	3	4	5	9
d	My employer offered free or low-cost fruit and vegetables at work	1	2	3	4	5	9
e	There was more information on TV about how to prepare or cook fruit and vegetables	1	2	3	4	5	9
f	The place I buy my lunch had more fruit and vegetables	1	2	3	4	5	9
g	My doctor or nurse told me it would improve my health	1	2	3	4	5	9
h	I could collect bar codes from fruit and vegetables which go into prize draws	1	2	3	4	5	9
i	I could get free advice from a dietitian	1	2	3	4	5	9
j	I could get a free cookbook about fruit and vegetables	1	2	3	4	5	9

7. On average, how many **"servings"** of fruit (fresh, frozen, canned or stewed) do you eat per day? Do **not** include fruit juice or dried fruit.

> A **"serving"** of fruit means: 1 medium piece of fruit
> or 2 small pieces of fruit
> or 1/2 cup of stewed fruit.
> *Example: 1 apple + 2 small apricots = 2 servings. Do **not** include fruit juice or dried fruit.*

I don't eat fruit	1
Less than 1 serving per day	2
1 serving per day	3
2 servings per day	4
3 servings per day	5
4 servings per day	6
5 or more servings per day	7

8. Do you consistently eat 2 or more "servings" of **fruit** a day? (*Mark ☒ one box*)

No, and I do not intend to in the next 6 months	1
No, but I intend to in the next 6 months	2
No, but I plan to in the next 30 days	3
Yes, I have been, but for less than 6 months	4
Yes, and I have been for more than 6 months	5

9. On average, how many "**servings**" of vegetables (fresh, frozen, canned) do you eat a day? Do **not** include vegetable juices.

> A "**serving**" of vegetables means:　　1 medium potato/kumara
> or 1/2 cup cooked vegetables
> or 1 cup of salad vegetables
> *Example: 2 medium potatoes + 1/2 cup peas = 3 servings. Do **not** include vegetable juices.*

I don't eat vegetables	☐ 1
Less than 1 serving per day	☐ 2
1 serving per day	☐ 3
2 servings per day	☐ 4
3 servings per day	☐ 5
4 servings per day	☐ 6
5 or more servings per day	☐ 7

10. Do you consistently eat 3 or more "servings" of **vegetables** a day? (*Mark ☒ one box*)

No, and I do not intend to in the next 6 months	☐ 1
No, but I intend to in the next 6 months	☐ 2
No, but I plan to in the next 30 days	☐ 3
Yes, I have been, but for less than 6 months	☐ 4
Yes, and I have been for more than 6 months	☐ 5

11. Overall, how do you feel about the amount of fruit and vegetables that you typically eat?

Not enough			About right			Too much
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

12. Over the next 6 months, do you think you will...

Eat fewer fruit and vegetables			Eat about the same			Eat more fruit and vegetables
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

13. Do you consider yourself to be a vegetarian?

Yes (no meat or fish) ☐ 1　　　No ☐ 2

14. Who usually does the cooking in your house?

I do	☐ 1
Someone else living with me does	☐ 2
Shared equally	☐ 3
Other (e.g. my meals are delivered)	☐ 4

15. When vegetables are cooked in your house, how are they **usually** prepared? (*Mark* ☒ *all boxes that apply*)

Deep fry them in oil	☐ 1
Steam or microwave them	☐ 2
Pan fry/sauté them in oil, butter or margarine	☐ 3
Boil them	☐ 4
Bake or grill them	☐ 5
Roast them	☐ 6
Don't know	☐ 7

16. If you wanted to add a **vegetable** to your diet, when would be the easiest time to do it? (*Mark* ☒ *one box*)

At breakfast	☐ 1
At lunch	☐ 2
At dinner	☐ 3
As a dessert	☐ 4
As a snack	☐ 5

17. If you wanted to add a **fruit** to your diet, when would be the easiest time to do it? (*Mark* ☒ *one box*)

At breakfast	☐ 1
At lunch	☐ 2
At dinner	☐ 3
As a dessert	☐ 4
As a snack	☐ 5

18. How many nights do you usually eat out or bring home take-away food instead of preparing dinner at home?

Less than once a month	☐ 1
1-2 times a month	☐ 2
About 1 time a week	☐ 3
About 2 times a week	☐ 4
About 3 times a week	☐ 5
About 4 times a week	☐ 6
About 5-7 times a week	☐ 7

19. How many nights a week do you eat dinner while watching television?

0 nights	1 night	2 nights	3 nights	4 nights	5 nights	6 nights	7 nights
☐ 9	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

20. Have you heard of "5+ A Day" ?

Yes ☐ 1   No ☐ 2

SECTION F – GETTING HEALTH AND PHYSICAL ACTIVITY INFORMATION

1. Please indicate how much you would **trust** each of the following sources for health and physical activity information.

		Don't trust at all				Trust a lot
a	Your doctor	1	2	3	4	5
b	Your doctor's nurse	1	2	3	4	5
c	Dietitian	1	2	3	4	5
d	Naturopath or homeopath	1	2	3	4	5
e	Other health professional (e.g. physiotherapist)	1	2	3	4	5
f	Pharmacist/chemist	1	2	3	4	5
g	Your local hospital	1	2	3	4	5
h	Your local Public Health Unit	1	2	3	4	5
i	Your local District Health Board	1	2	3	4	5
j	The Ministry of Health	1	2	3	4	5
k	SPARC/Push Play Campaign (previously Hillary Commission)	1	2	3	4	5
l	Regional Sports Trusts	1	2	3	4	5
m	Cancer Society	1	2	3	4	5
n	Diabetes New Zealand	1	2	3	4	5
o	Heart Foundation	1	2	3	4	5
p	Gym personnel or personal trainer	1	2	3	4	5
q	Your family	1	2	3	4	5
r	Your friends	1	2	3	4	5
s	The Internet	1	2	3	4	5
t	Books or journals	1	2	3	4	5
u	Magazine articles	1	2	3	4	5
v	Newspaper articles	1	2	3	4	5
w	Television programmes	1	2	3	4	5
x	Radio programmes	1	2	3	4	5

2. Which of the following health areas would you be most interested in learning more about? (*Mark ☒ all boxes that apply*)

Physical activity/exercise	☐ 1
Nutrition/food choices	☐ 2
Weight control	☐ 3
Quitting smoking	☐ 4
Stress management	☐ 5
Blood pressure control	☐ 6
Improving sleep	☐ 7
Information on specific diseases and conditions	☐ 8
Information on drugs and medications	☐ 9
Information on alternative therapies	☐ 10
How to stay healthy	☐ 11
None of these	☐ 12

3. How often do you use **the Internet** to find **health information** (including health-related news, information about specific conditions, etc.)?

Never	☐ 1
A few times a year	☐ 2
Once a month	☐ 3
Several times a month	☐ 4
A few times a week	☐ 5
Every day	☐ 6

4. When you log on to the Internet for **personal** reasons (not for work), what is your Homepage? (The page that opens first)

Not applicable	☐ 1
nzoom	☐ 2
yahoo	☐ 3
nzherald	☐ 4
nzjobs.co.nz	☐ 5
xtramsn.co.nz	☐ 6
Alta Vista	☐ 7
Google	☐ 8
stuff.co.nz	☐ 9
Other	☐ 10
Don't know	☐ 11

5. Which of the following websites do you commonly use? (*Mark ☒ all boxes that apply*)

None of those below	☐ 1
yahoo	☐ 2
xtramsn.co.nz	☐ 3
Alta Vista	☐ 4
Google	☐ 5

SECTION G - ABOUT YOURSELF

Finally, a few questions to help us describe the groups of people who have responded to this questionnaire. All this information remains confidential.

1. Are you…

Male ☐ 1   Female ☐ 2

2. What is your height without shoes?

☐☐☐ cm **or** ☐ feet ☐☐ inches

3. What is your weight without shoes?

☐☐☐ kg **or** ☐☐ stone ☐☐ pounds

4. Are you ... *(Mark ☒ the one box which best describes you now)*

Single	☐ 1
Married/living with partner	☐ 2
Separated/divorced	☐ 3
Widowed	☐ 4
Other	☐ 5

5. Which location best describes where you live?

Large city (more than 100,000 people)	☐ 1
Smaller city (30,000 to 100,000 people)	☐ 2
Town (1,000 to 29,999 people)	☐ 3
Small town, community or village (less than 1,000 people)	☐ 4
Don't know/not sure	☐ 5

6. Which ethnic group do you belong to?
(Mark ☒ the box or boxes which apply to you)

New Zealand European	☐ 1
Māori	☐ 2
Samoan	☐ 3
Cook Island Maori	☐ 4
Tongan	☐ 5
Niuean	☐ 6
Chinese	☐ 7
Indian	☐ 8
Other Asian (such as Korean, Filipino, Japanese)	☐ 9
British/ European	☐ 10
Other	☐ 11

7. To which of these age groups do you belong?

16 - 17 years	☐ 1
18 - 19 years	☐ 2
20 - 24 years	☐ 3
25 - 29 years	☐ 4
30 - 34 years	☐ 5
35 - 39 years	☐ 6
40 - 44 years	☐ 7
45 - 49 years	☐ 8
50 - 54 years	☐ 9
55 - 59 years	☐ 10
60 - 64 years	☐ 11
65 - 69 years	☐ 12
70 - 74 years	☐ 13
75 - 79 years	☐ 14
80 years and over	☐ 15

8. What is your highest secondary school qualification? *(Mark ☒ one box)*

None	☐ 1
NZ School Certificate in one or more subjects, or National Certificate Level 1	☐ 2
NZ Sixth Form Certificate in one or more subjects, or National Certificate Level 2	☐ 3
NZ University Entrance before 1986 in one or more subjects	☐ 4
NZ Higher School Certificate, or Higher Leaving Certificate	☐ 5
University Entrance qualification from NZ University Bursary	☐ 6
NZ A or B Bursary, Scholarship, or National Certificate Level 3	☐ 7
Other NZ secondary school qualification	☐ 8
Overseas secondary school qualification	☐ 9

9. Apart from secondary school qualifications, do you have another qualification? Don't count incomplete qualifications or qualifications that take less than 3 months of full-time study (or the equivalent) to get. (*Mark* ☒ *all that apply*)

No	☐ 1
Bachelor Degree or higher degree	☐ 2
Other complete qualification taking 3 or more months of full-time study, or the equivalent (e.g. diploma, trade certificate)	☐ 3

10. Which one of the following best describes you? (*Mark* ☒ *one box - if more than one category applies, mark the one you spend most time doing over a week.*)

Working full-time	☐ 1
Working part-time	☐ 2
Unemployed/Actively seeking a job	☐ 3
At home	☐ 4
Retired	☐ 5
Sick/Invalid	☐ 6
Student (full-time, including secondary school)	☐ 7
Other	☐ 8

11. Which one of these best describes where you work?

Not doing paid work	☐ 1
Mainly in an office	☐ 2
Mainly in a shop	☐ 3
Mainly in a factory	☐ 4
Mainly outside	☐ 5
Mainly at home (inside)	☐ 6
None of the above	☐ 7

12. How many people (including working owners) work for your organisation at the place where you work? *Include both full-time and part-time workers. Ignore any physically separate sites your organisation may have.*

Not doing paid work	☐ 1
1 - 5	☐ 2
6 - 9	☐ 3
10 - 49	☐ 4
50 or more	☐ 5

13. When you are at work, which one of the following best describes what you do? Would you say you…

Mostly sit	☐ 1
Mostly stand	☐ 2
Mostly walk or perform light labour	☐ 3
Mostly do heavy labour or physically demanding work	☐ 4
Not applicable	☐ 5

14. Which of these best describes your **personal** income before tax in the last 12 months? That includes benefit and retirement income, as well as paid income from all sources.

Zero income or loss	☐ 1
$1 - $5,000	☐ 2
$5,001 - $10,000	☐ 3
$10,001 - $15,000	☐ 4
$15,001 - $20,000	☐ 5
$20,001 - $30,000	☐ 6
$30,001 - $40,000	☐ 7
$40,001 - $50,000	☐ 8
$50,001 - $70,000	☐ 9
$70,001 - $100,000	☐ 10
$100,001 or more	☐ 11
Don't know	☐ 12

Reminder: If you change your mind or make a mistake:

Fill in the whole box and mark the correct one as shown.

☐ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5

15. Which one of these best describes the **total household** income before tax in the last 12 months? That includes benefit and retirement income, as well as paid income from all sources.

Same as personal income	☐ 1
Up to $10,000	☐ 2
$10,001 – $20,000	☐ 3
$20,001 – $30,000	☐ 4
$30,001 – $40,000	☐ 5
$40,001 – $50,000	☐ 6
$50,001 – $70,000	☐ 7
$70,001 – $100,000	☐ 8
$100,001 or more	☐ 9
Don't know	☐ 10
Not applicable - flat, hostel, boarding etc	☐ 11

16. Which of the following best describes your address?

Private household or flat	☐ 1
Home for the elderly	☐ 2
Other institution (e.g. hostel)	☐ 3
Other *(please specify below)*	☐ 4

_____

17. Counting yourself (and any boarders), how many people **in total** live at this address? *Only count people usually living with you at least 4 days a week.*

☐☐☐ people ⟵

18. Of these, how many are…

☐☐☐ people aged 18 years or more

☐☐☐ people aged 16 – 17 years

☐☐☐ children aged 5 – 15 years

☐☐☐ children 0 – 4 years

☐☐☐ Total

Check: *Total should equal previous answer*

19. Are any of the people aged **under 18 years** at this address …

	Yes	No
Your child/children	☐ 1	☐ 2
Your grandchild/grandchildren	☐ 1	☐ 2

20. At a later stage, we would like to contact a few people for some follow-up research. If you are happy to be contacted, please write your telephone number here:

Area Code

☐ 0 ☐☐ – ☐☐☐☐☐☐☐

Check: Have you answered all pages of this questionnaire?

Thank you very much for your time and effort.

Please put the completed questionnaire in the Freepost envelope provided and post it to:

Freepost 727
ACNIELSEN
PO Box 11 346
Wellington