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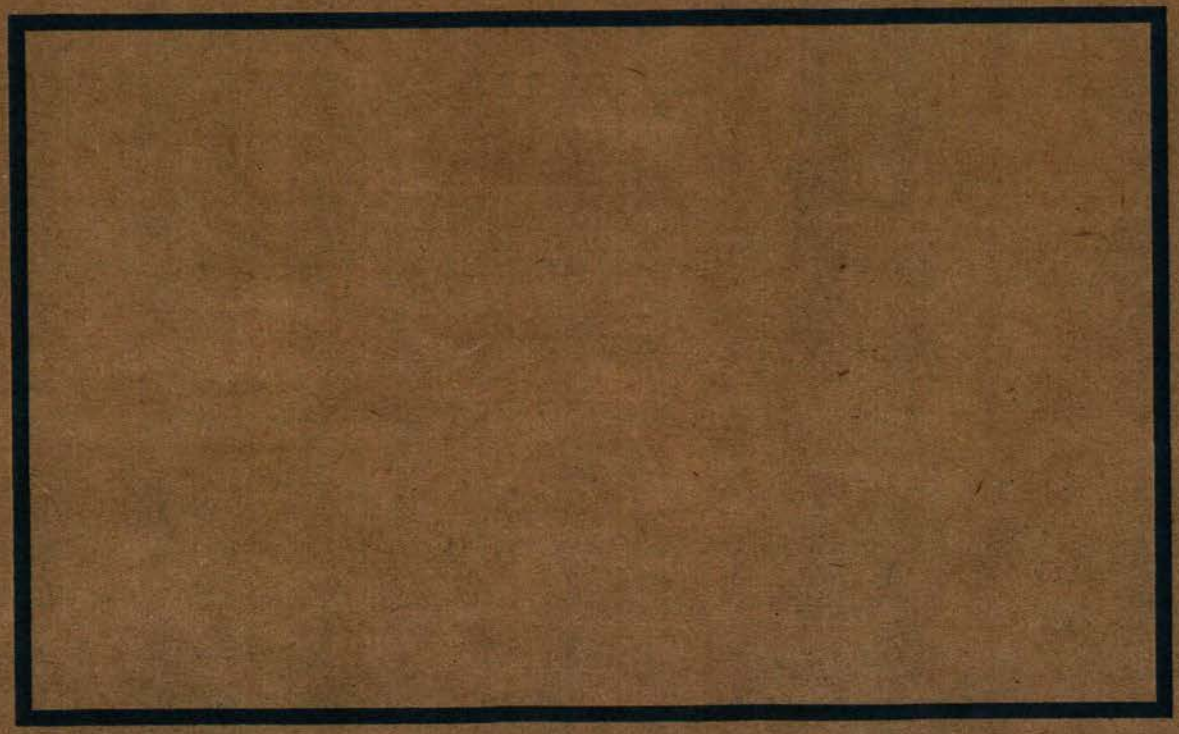
G S Leonard, D M Johnston, D Paton - GNS



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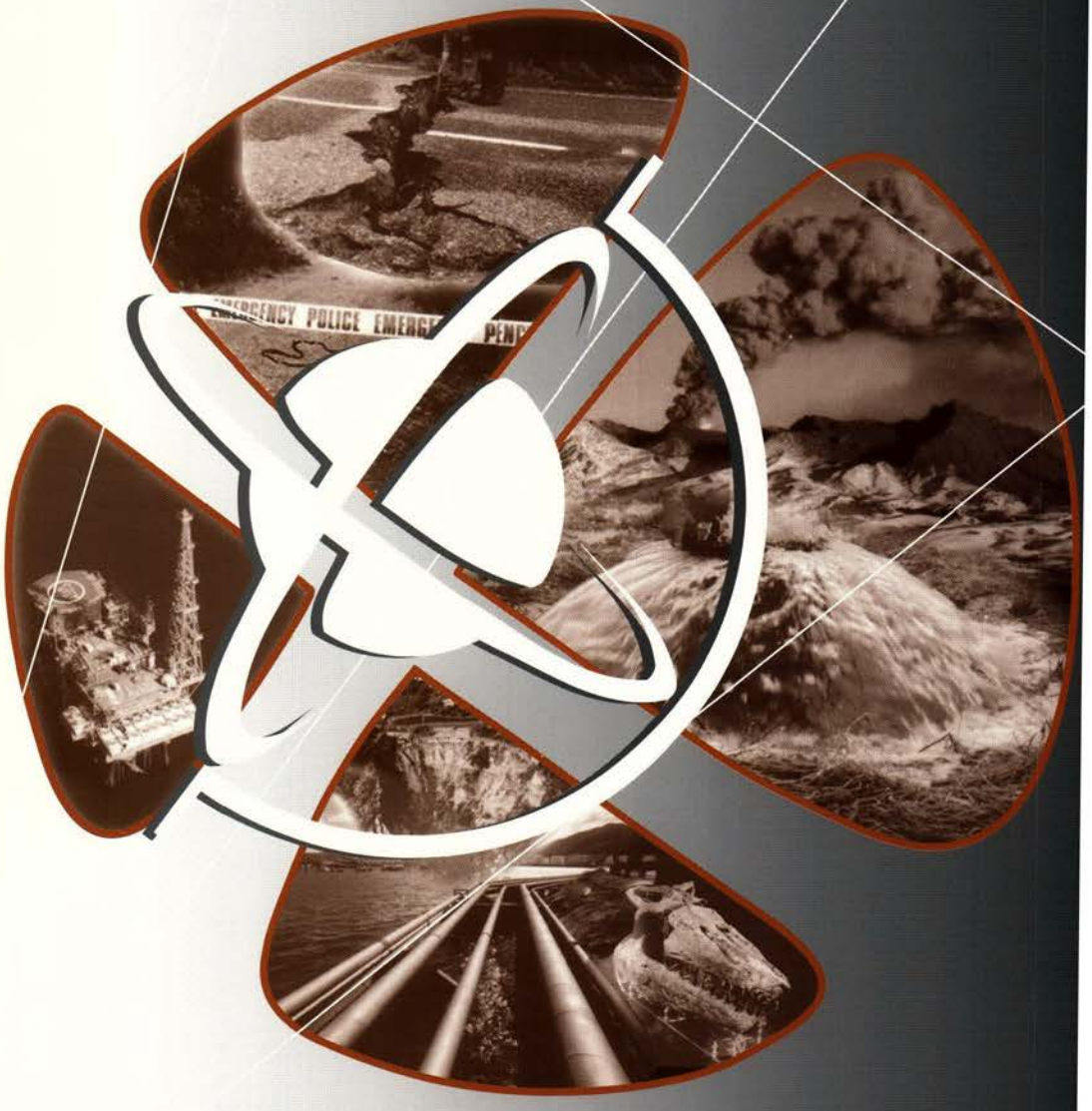

Analysis of Te Anau residents' impacts, awareness and preparedness following the 2003 Fiordland earthquake

by G. S. Leonard, D. M. Johnston & D. Paton

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Institute of Geological & Nuclear Sciences Limited
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December 2004

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CONTENTS

FIGURES

TABLES

ABSTRACT

On August 22, 2003, a magnitude 7.1 earthquake struck the Fiordland area of the South Island of New Zealand. The largest urban area affected was Te Anau, a town of 678 households, located approximately 75 km from the epicentre.

In April 2004 a postal survey of residents of Te Anau was conducted primarily to estimate (a) damage and losses (insured and uninsured), (b) awareness of the earthquake hazard, and (c) preparedness for earthquakes. Of 600 questionnaires mailed out, 486 were successfully delivered and of these a return rate of 33% was obtained (response n=162). Ninety-two percent of the respondents to this survey stated that they had experienced the earthquake. The remainder were most likely out of town.

Sixty four percent of respondents experienced damage or loss from the earthquake, but the types of damage were relatively minor in most cases (the majority of respondents had small appliances undisturbed). Of those who experienced damage, 13.3% did report entire structure distortion. There is a significant correlation of lower damage to indicators of higher preparation prior to the event. Conversely, respondents who suffered damage have a slightly higher intention to prepare in the future in terms of preventing damage and definitely seeking information on risk, but not in terms of involvement in a local discussion group.

In terms of preparedness, those who own their homes appear to be more than twice as likely to secure moveable objects. Many of the earthquake preparedness actions suggested by the questionnaire have been completed by only a minority of respondents, either before or after the earthquake, and regardless of whether or not they experienced damage. Preparedness actions (especially restraining household objects) that were conducted specifically to protect against earthquakes appear to have been more effective at reducing damage/loss from this earthquake than if those same actions were done for other reasons. Difficulty and cost of preparedness actions are not major reported barriers to preparedness actions. Instead time, perceived effectiveness and perceived probability of an earthquake are the major reported barriers.

The total sampled insured loss was $0.20M and can be projected to between $0.98M and $1.40M of insured loss for the whole community. Total reported uninsured loss was only $0.01M which is projected to $0.03M for the whole Te Anau community. Completion of preventive measures by respondents is correlated to their mean loss; the mean value of loss was more than five times greater for households who have not 'secured moveable objects in [their] home' at any stage. More of those with damage/loss reported taking time, and a longer period, to get their home back to normal. This is a significant disruption, and possibly hardship/frustration not sampled by the direct losses. Actual time taken cleaning up, in hours, was on average quite low.

Two thirds of houses were reportedly constructed after 1970. There was less exterior hairline cracking in wood-clad houses, but entire structure distortion was slightly more common in wood and stucco-clad houses. A third of respondents do not know what type of ground is under their site, and of those that do, damage was significantly less on river gravels than on other reported substrates. Most houses in Te Anau are on flat to gently sloping land, with no significant difference in damage between the two.

People who experienced damage/loss from the earthquake have, on average, lived in their house for a significantly shorter length of time. Eighty-five percent of respondents report having home insurance and 87% report having contents insurance, however a slight bias towards higher socio-economic respondents may mean that this is higher than the actual insurance level for Te Anau. The majority of insurance rates have not gone up and almost no one has had difficulty getting insurance cover since the event. Those with damage now consider themselves more knowledgeable about how to reduce or prevent damage from earthquakes than those without damage.

KEYWORDS

Fiordland, earthquake, Te Anau, magnitude 7.1, awareness, preparedness, damage, losses, insurance, survey

1.0 INTRODUCTION

On August 22, 2003, a magnitude 7.1 earthquake struck the Fiordland area of the South Island of New Zealand. The area immediately around the epicentre was unpopulated, and Fiordland in general is very sparsely populated with little infrastructure or development compared to the rest of New Zealand. The earthquake triggered hundreds of landslips in the steep fiord-dominated landscape. The largest urban area affected was Te Anau, a town of nearly 700 households (678 at 2001 census count), located approximately 75 km from the epicentre.

In April 2004 a survey of residents of Te Anau was conducted primarily to estimate:

(a) damage and losses (insured and uninsured),
(b) awareness of the earthquake hazard and
(c) preparedness for earthquakes.

Ninety-two percent of the respondents to this survey stated that they had experienced the earthquake (Q1[1]). Of Te Anau's approximately 1860 residents (2001 census data) that is approximately 1710 people who felt the earthquake. The remainder were most likely out of town, as shaking was felt strongly by those people present for the earthquake (Warwick Smith, pers. comm., 2004). This report presents and discusses the damage and loss respondents incurred, their awareness of earthquake hazards and preparedness before and after the event.

2.0 METHODOLOGY

The primary research method used in this work was a postal questionnaire. Bartley (1999) describes advantages and disadvantages of mail surveys: they provide researchers with a cost-effective way to gather data from large, geographically dispersed populations, and it is also possible to cover more complex issues in mail surveys than over the telephone. However, weaknesses of mail surveys are: their slowness; that no interviewer is present in person to clear up confusion; the frequently low response rates; and the problem of respondent self-selection which can lead to demographic biases. It is a major principle in modern social science research that participation in research must be voluntary (Snook, 1999), and therefore, respondents can self-select and the possibility of demographic biases in the sample arises. Telephone and face-to-face surveys can overcome this problem by quota sampling, but it is more difficult to overcome in mail surveys.

Mail surveys were our preferred survey method because of their cost-effective nature, and their ability to allow respondents to make considered responses to complex and interlinked questions. However, we acknowledge the problem of demographic bias in the sample associated with this method. As a consequence, the conclusions and recommendations suggested here should be viewed with this in mind.

[1] 'Q1' refers to Question 1 in the questionnaire, tabulated results of which are given, sorted by question number, in Appendix 1.

2.1 Survey and questionnaire design

The sampling technique involved recording all households within Te Anau and mailing questionnaires to all of those who were reachable by postal methods (see response rate footnote below). This includes nearly all of the 678 2001-census-reported households. Previous earthquake research questionnaires (e.g. Ronan et al., 2001) and GeoNet felt reports were used as a basis for the questionnaire, with GNS and EQC staff providing input into the final version. Questionnaires were mailed out during March 2004 and followed by reminders in April 2004 (see below).

2.2 Reminder letters

To maximise mail survey response rates, Dillman (2000) recommends as many as five contacts with those asked to participate in a mail survey, from a pre-notice letter advising prospective participants that an important survey is to be sent to them, through to a final contact with the reassurance that participation in the study is needed and valued. We adopted elements of this advice by sending replacement questionnaires, accompanied by reminder letters, to those who had not returned the original questionnaire within two to three weeks.

3.0 SAMPLE CHARACTERISTICS

3.1 Response rate

Of the 486 questionnaires that were apparently successfully delivered[2], 33% were returned complete, which provides a sample of 162 respondents (Table 1). The indicative margins of error, given a sample of 162 responses, are:

- 7.0% (at 95% confidence) for responses as an individual (ie. out of a population of 1860 in Te Anau); and
- 5.9% (at 95% confidence) for responses as a household (ie. out of a population of 678).

Table 1 Mail-out numbers and response rate

Number mailed out	600
Number failed (returned to sender undeliverable)	114
Number apparently successfully delivered	486
Number returned complete	**162**
Response rate	**33%**

3.2 Demographics

Table 2 presents the demographic characteristics of the sample compared to the 2001 census data for Te Anau. In terms of gender, ethnicity and employment status the sample is reasonably similar to the 2001 census data. It is also similar in highest educational qualification if we assume that most of the people choosing the option 'other' in the census chose Trade or professional certificate in the questionnaire, because an 'other' option was not available.

There is a slight skew in income level, with the sample being under-represented in the lowest income bracket (<$15 000 total household gross income) most of all. More families without children, and less people living alone, answered the survey, and respondents are generally older than the census population for Te Anau. The skew in terms of household composition and age should be kept in mind when interpreting results, especially those related to perceptions and awareness. The slight skew in income indicates that the sample may be overall less vulnerable than the population, but this would be more alarming if there was a significant bias in ethnicity and/or education, which there is not.

[2] Despite having a displayed street address some Te Anau houses were either not reachable by postal methods, or were returned unoccupied or non-existent.

Table 2 Respondents' demographics compared to the 2001 census

	2004 n	2004 Survey %	2001 Census %
Gender	158		
Female		54	51
Male		46	49
Age	160		
18 - 19		0*	*
20 - 29		8	19
30 - 39		14	20
40 - 49		26	22
50 - 59		21	17
60 and over		31	23
Household composition	159		
Family with children		30	35
Family without children		45	30
Live alone		17	24
Non-family		4	6
Other		4	5
Ethnicity			
NZ Maori	156	5	7
NZ European		89	88
NZ Pacific Islander		1	0
NZ Asian		1	4
Other		4	1
Highest educational qualification	155		
No school qualification		23	24
School qualifications		33	33
Trade or professional certificate		34	19
University undergraduate degree		9	5
University postgraduate degree		2	2
Other		-	17
Total gross household income			
below $15 000	146	6	12
$15 001 - $20 000		8	9
$20 001 - $30 000		13	16
$30 001 - $40 000		16	12
$40 001 - $50 000		16	14
$50 001 and over		42	37
$60 001 and over		(28)	-
($50 001 - $70 000)		-	(18)
($70 001 - $100 000)		-	(10)
($100 001 and over)		-	(9)
Employment status	158		
Employed (full and part-time)		73	76
Not in paid employment		27	24

*There were no respondents in the 18-19 age group. The closest census age group is from 15 to 20, which constitutes 8% of the total population over 15 for Te Anau. Respondent and census age groups for 20 and above are given as percentages of the total people aged 20 and above only.

The bias seen here (differences between the census and the survey returns suggests bias in regard to age, household composition, and education) is less than in many random mail surveys that we have conducted (e.g. Leonard et al., submitted, Walton et al., 2004). This may be partly because the sample of 162 represents 24% of the 678 households in Te Anau, rather than of a usually much larger population.

Both pre- and post-earthquake data were collected post event; this introduces another potential source of bias and suggests some caution in interpretation of changes in actions/preparedness etc. due to the earthquake reported by respondents.

Eighty percent of respondents own the house they live in (Q32) and there is no significant correlation of household ownership to loss. However, unrelated to earthquake risk, 17.5% of household owners have secured moveable objects in their home compared to 7.7% of tenants. The earthquake had a more marked impact on tenants in motivating them to secure moveable objects specifically against earthquake damage/loss (3.8% secured objects before the earthquake, 15.4% did so after it) than the impact on owners (4.4% secured objects before the earthquake, 9.6% did so after it). The majority of owners (65%) and tenants (73%) have still not secured movable objects.

4.0 DAMAGE AND LOSSES

In Te Anau 64% of respondents' houses and/or property experienced damage/loss from the August 2003 Fiordland earthquake. That is approximately 434 of the 678 households in Te Anau (2001 census data). This section discusses those damage/losses in terms of:

a) their nature;
b) their value, both insured and uninsured; and
c) the awareness and preparedness of the Te Anau community.

4.1 Damage descriptions and building construction

Questions 2 and 3 allow determination of approximate shaking intensity (a future report will cover this and incorporate other 'felt-report' data separate to this survey). The effects of the earthquake are described here in terms of the most common response to each of these shaking intensity indicators.

Dishes, doors or windows rattled, and/or walls creaked loudly (80%). 'A few'/'many' (87%) small objects such as ornaments were moved or upset, none or only a few items of glassware, dishes, ornaments etc. were broken and a few items (92%) were thrown from shelves. The majority (52%) of small appliances such as TVs or computers were undisturbed, but a significant proportion (38%) were shifted. Larger appliances were mostly undisturbed (84%). Most unrestrained hot water cylinders were not damaged (90%) and almost all of those that were damaged only leaked (9%) - two cylinders overturned.

The above impacts were generally less for people who had 'secured moveable objects in their home' prior to the earthquake specifically to protect against earthquakes, than for those people who had not secured at all prior to the event; except for large appliances and hot water cylinders. This may indicate that large objects are generally not secured unless a person is specifically concerned about earthquake damage. These are only suggestive findings because of the relatively low sample of people who have secured at all (n=44).

There was no damage to 93% of respondents' chimneys, 6% had cracking or bricks dislodged and three respondents had their chimney twisted or broken at the roofline. Of respondents with any damage/loss, those with a reinforced modern chimney (89%) apparently had less chimney damage, but with a sample of only 8 with an older chimney this is not conclusive.

Considering the magnitude of the earthquake, building damage was relatively minor across most Te Anau respondents (Q3):

- 2% had exterior elevated water tanks move or leak.
- 6% had standard windows crack and only 1% had them break out.
- 4% had large display windows crack, and only one had them break out.
- 22% had hairline cracks in their exterior walls with only 6% reporting large cracks – one respondent had a total wall collapse.
- wood was the most common type of exterior wall (32%) with stucco, brick veneer, concrete block, solid brick and 'other' each 12-17%.
- Gib-board appears to be a more common type of interior wall than 'other' (10% 'no such [Gib-board] walls' compared to 23% for 'other'), however, no significant difference in damage type or proportion is seen between 'Gib-board' versus 'other'.
- 20% had ceiling panels 'damaged/many dislodged'.

More extensive damage occurred in some cases: 8% of all respondents had their entire structure distorted, and 3% of houses shifted on their foundations.

External wall type has little correlation to overall damage/loss, but external wall hairline cracking was significantly higher in houses with non-wood external walls. Hairline cracking was highest in concrete block, followed by stucco followed by solid brick and brick veneer. External wall partial collapse was only seen in a few (6%) of the stucco-clad houses. Entire structure distortion appears to have been slightly more common in wood- and stucco-clad houses. These results are only indicative because of the relatively low number of damaged houses of each exterior wall type (maximum n=32 for 'wood').

Almost all buildings were constructed after 1945 (98%) with one third being pre-1970 and two thirds being post-1970 in construction (Q4). The predominance of buildings post-1970 means that earthquake resilient building codes were applied in construction of probably the majority of Te Anau homes, possibly reducing the incidence of major structural damage. A slightly higher (2% higher) proportion of those reporting no damage/loss were in post-1970 houses than those with damage/loss, but it may not be significant.

4.2 Nature of house site

A third of people do not know what type of ground is under their house site (Q4); 10% stated the ground under their house site is rock, 7% stated it is clay, 3% stated it is fill, 1% stated it is sand and 46% stated it is river gravels. Damage was less on river gravel than other substrates (44% of those reporting damage/loss were on river gravel, whereas 55% of those with no damage/loss were on river gravel, with little difference in the 'don't know' response).

Respondents reported that the ground is level under 78% of houses (Q4), gently sloping under 21% and steeply sloping under only 1% of houses. A flat to gentle slope in Te Anau is in

keeping with a predominantly river gravel substrate (low-angle river fan) and it minimised damage from earthquake-triggered land slips, which were pervasive in the steep mountains to the west. There was no significant difference in reported damage/loss on gently sloping versus flat ground.

4.3 Length of time lived in the house and community

People who have experienced damage/loss from the earthquake have, on average, lived in their houses for a significantly shorter length of time (57% less than 6 years, Figure 1) than those who experienced no damage/loss (42% less than 6 years). The same trend is true for length of time lived in their community, but to a lesser extent.

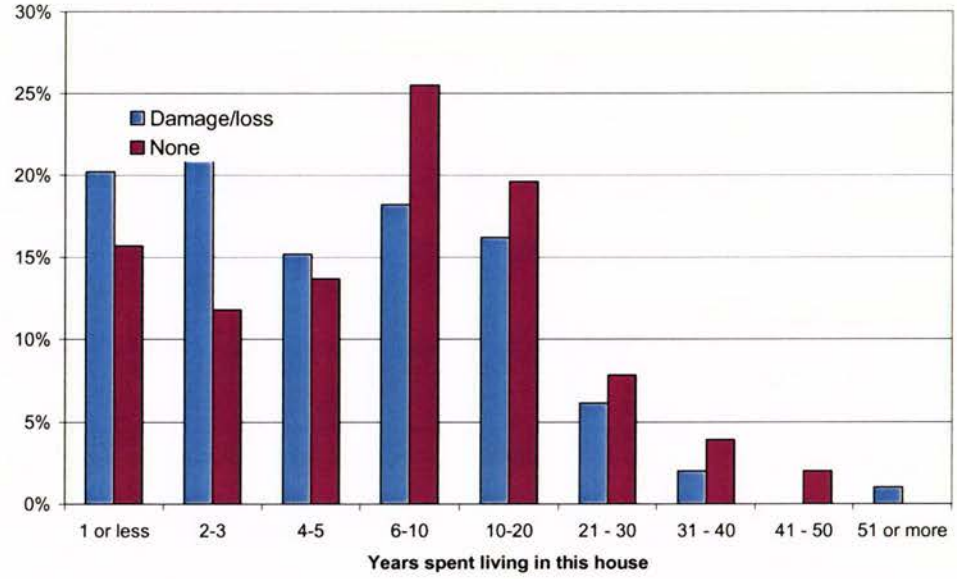


Figure 1 Summary of respondents' time spent living in their house (Q33) for those with damage/loss compared to those without.

4.4 Value of damage/loss

Compared to the 64% of people who reported some damage/loss (Section 4.0), only 28% of respondents supplied an insured loss (Q5) and 16% supplied an uninsured loss (Q7). Twenty percent of those reporting an insured loss also had an uninsured loss, whereas two thirds of those with uninsured losses reported no insured loss. Projected losses are shown in Table 3 and explained in the following two sections. Completion of preventive measures by respondents is correlated to their mean loss; the mean value of loss was more than five times greater for households who have not 'secured moveable objects in [their] home' at any stage (Q20).

Table 3 Loss projections for Te Anau

Reported and projected losses	
Total sampled insured loss (excluding outlier)	**$0.20M**
Projected total insured loss for Te Anau (excluding outlier)	**$0.85M**
Outlier* sampled insured loss	**$0.13M**
Total projected insured loss for Te Anau (1 outlier* – 4.2 outliers*)	**$0.98M – $1.40M**
Total sampled uninsured loss	**$0.01M**
Total projected uninsured loss for Te Anau	**$0.03M**
Total projected loss for Te Anau	**$1.02M – $1.43M**

*A single respondent reported a loss of $130,000, an outlier to the other responses. This can either be added into the total projected loss once ($0.98M) or multiplied by 4.2, from the sample to the total population ($1.40M).

4.4.1 Insured loss

The total insured loss (Q5) for the sample (n=162) was $204,044 with a range of $1 to $17,700 and a mean of $4,534 across the 45 households with an insured loss, or $1,260 across the total sample of 162. A single $130,000 loss for 'both building/structure and contents damage' has been removed from the generalised statistics here, because the low (single) high-value response is drastically different from the range of other responses and is best added singly to the total loss for Te Anau, rather than being projected by a factor of 4 from the sample to the population of households.

If we project the sample mean loss ($1,260) to the population of 678 households the loss is $854,280. The single extreme sampled loss of $130,000 mentioned above should then be added to this, giving a total of approximately $1M projected insured loss for Te Anau in the August 2003 Fiordland earthquake. This rises to $1.4M if the $130,000 single loss is multiplied out from the sample to the whole community, rather than being counted only once. The strong effect of the one extreme loss suggests that a comprehensive analysis of insurance company data is needed to test the projection made here.

4.4.2 Uninsured loss

Uninsured losses were reported at a very low level (Q7). The total uninsured loss was $8,125 incurred across 26 respondents ($5,505 of which was by people with no insured loss). This gives a mean uninsured loss of $313 across those with losses, or $50 across the total 162 respondents. Projected to the population of 678 in Te Anau the total uninsured loss was approximately $33,900 ($23,039 of which is loss by people with no insured loss).

With this small total projected uninsured loss, and the miximum single uninsured loss reported as $1000, the Te Anau community bore very little direct financial burden from the August 2003 Fiordland earthquake. Indirect impacts are analysed in the following sections.

4.4.3 Time taken to get home back to normal

Of the total respondents 36% reported some time taken getting their home back to normal after the earthquake (Q8); three quarters of these were respondents who reported some type of damage/loss:

- 22% of those houses without any damage/loss reported a time taken for their home to get back to normal, with a mean of a week and a half (10 days[3]).
- 41% of those houses reporting damage/loss reported a time taken to get their home back to normal after the earthquake, with those respondents taking a mean of over a month (39 days). The distribution for houses with damage/loss is distinctly bimodal with 4 respondents reporting over 200 days required to get back to normal.

These data point to significant disruption and possibly hardship that is not represented in direct financial loss, because the houses with high numbers of days (> 100) taken to get back to normal do not strongly correlate to the highest insured or uninsured losses. A further eight respondents (5% of respondents) reported 'still waiting' or words to that effect (with no estimate of time supplied), these have not been included in the analysis above.

A total of 566 hours was spent cleaning up the respondents' properties, a further 110 as

[3] Months were converted to standard days at a rate of 30.4 days per month

unpaid volunteers. This can be projected as 2,369 hours to the whole Te Anau population, at 3.5 hours per person for their cleaning up own property, and 460 hours as an unpaid volunteer. A further 233 hours was spent as part of paid work (975 hours projected to the whole population). Given the high rate of insurance this was almost wholly footed by insurance companies, local businesses and local government.

This is a low number of hours and the likely financial cost of these hours was very low. Cleanup across Te Anau had an equivalent value of $23,690 at $10/hour, and volunteer work a further $4,600 at $10/hour. These are certainly maximum values as most cleanup and volunteer work would be completed in spare time and so not leading to loss of income. Across the whole town any loss of income would be at least partly compensated by the $9,750 at $10/hour earned as part of paid work cleaning up.

4.5 Insurance

Considering the vast majority of losses were insured (Section 4.3) it is not surprising that 85% of respondents have home insurance and 87% have contents insurance (Figure 2). However nearly half (42%) of those people who made an insurance claim with a private insurance company (non-EQC) stated that their company has not settled their claim in a fair way (Q11). This is a common response from claimants in a natural disaster/hazard occurrence and often results from the person being underinsured or incorrectly insured, compared to their expectations. This is a common problem across New Zealand recognised by most companies (Insurance Council of New Zealand, pers comm. 2004). In contrast a high proportion (89%) of respondents making an EQC claim felt that EQC had settled their claim in a fair way.

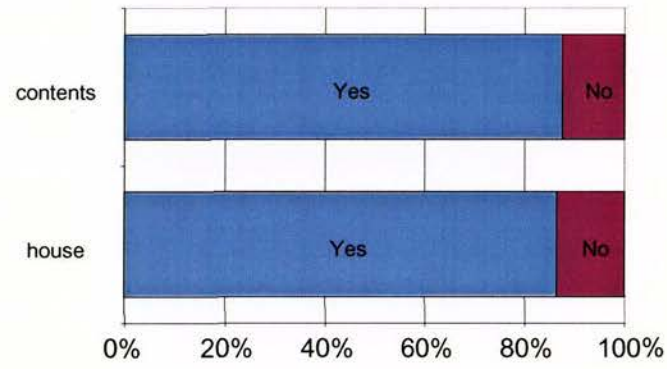


Figure 2 Proportion of respondents with house and contents insurance (Q10).

About one third of respondents who felt the question applied to them (ie. likely interacted with their company through a claim) found that their insurance rates have gone up since the earthquake, this constitutes 10% of the total sample. Only one respondent found that they had difficulty getting insurance cover after the event, and 3% of respondents stated that they cannot afford insurance cover.

5.0 AWARENESS AND PREPAREDNESS

5.1 Timing and motivation of actions

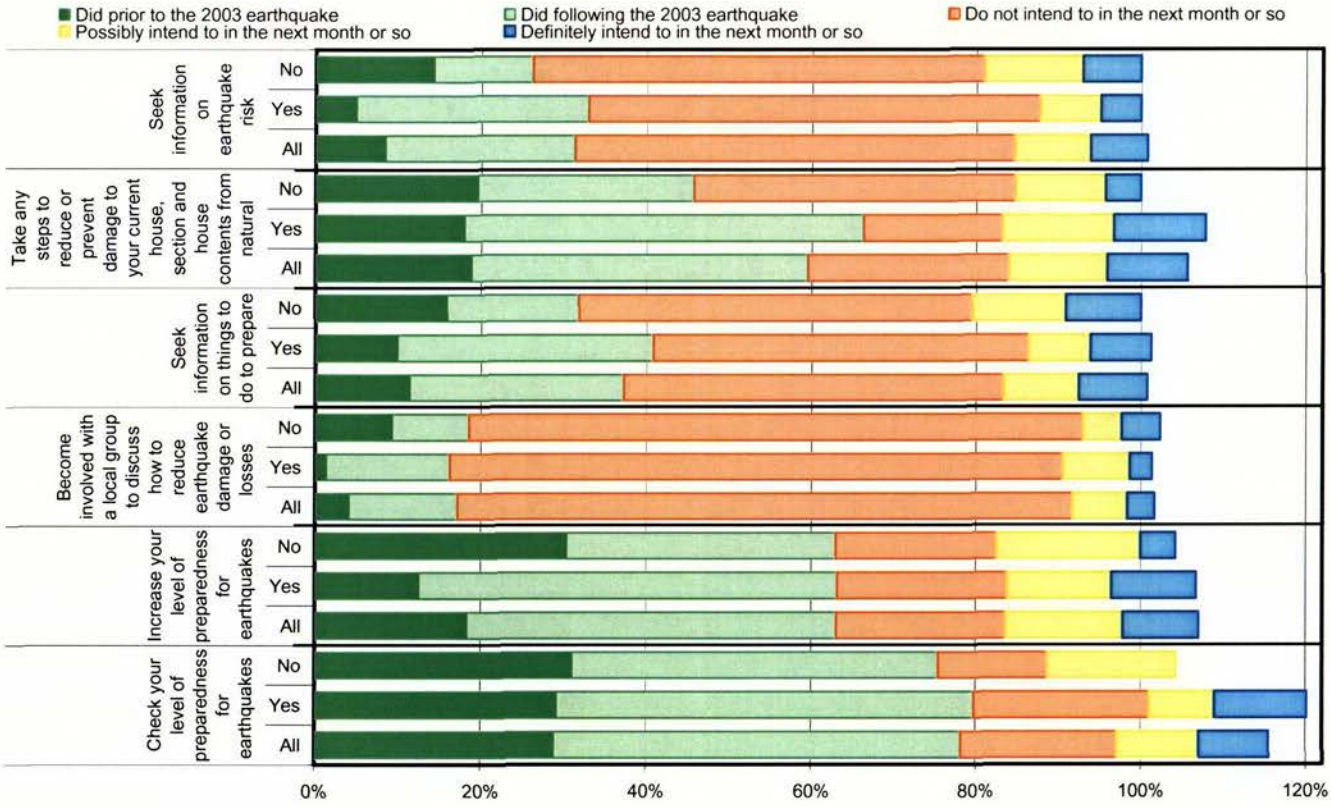
The proportion of respondents with damage/loss who completed the following actions more than doubled after the earthquake (Figure 3): 'sought information on earthquake risk', 'took steps to reduce or prevent damage to their property from natural disasters', 'became involved with a local group to discuss earthquake damage or loss reduction', and 'increased their level of earthquake preparedness'. The highest was 51% of people with damage/loss 'checking their level of preparedness' and 'increasing this level'. Amongst these respondents who had damage/loss, there is now relatively low intention (highest 11%) to take these actions in the next month. This is in contrast to their burst of activity between the earthquake and survey date.

The increases in seeking of information on earthquake risk (increase from 5 to 28%) and becoming involved in a local group (increase from 1 to 15%) were particularly marked in respondents with damage/loss.

In contrast to those with damage/loss, there was relatively little post-earthquake increase in levels of these intentions and actions amongst people without damage/loss. Note that the overall levels of reported completion of these activities is still low. All but two actions have less than 50% of respondents having completed them.

After the earthquake the proportion of people who had 'checked their level of preparedness' nearly doubled. There was little difference in the proportion of respondents 'checking' between those with and without damage/loss; this suggests that the earthquake had an equally strong impact on people's interest in how well prepared they are in future, but damage/loss pushed a higher proportion towards the other more involved actions.

Low motivation to 'become involved with a local group to discuss how to reduce earthquake damage or loss' and 'seek information on earthquake risk' is of particular concern. A large proportion of respondents have no intention of completing each of these activities in the next month. These were also the actions with the lowest overall reported completion before, and after, the earthquake. While people like the idea of external sources of information and the existence of support and information groups, few actually interact with these resources, even after a major earthquake.



'No' = respondents without damage/loss, 'Yes' = respondents with damage/loss, and 'All' is the average for all respondents (including the 'No' and 'Yes' sub-samples).

Figure 3 Intention/action of respondents to seek information and prepare for earthquakes for those without (no) damage/loss, with (yes) damage/loss, and 'all' (Q12).

5.2 Sources for information

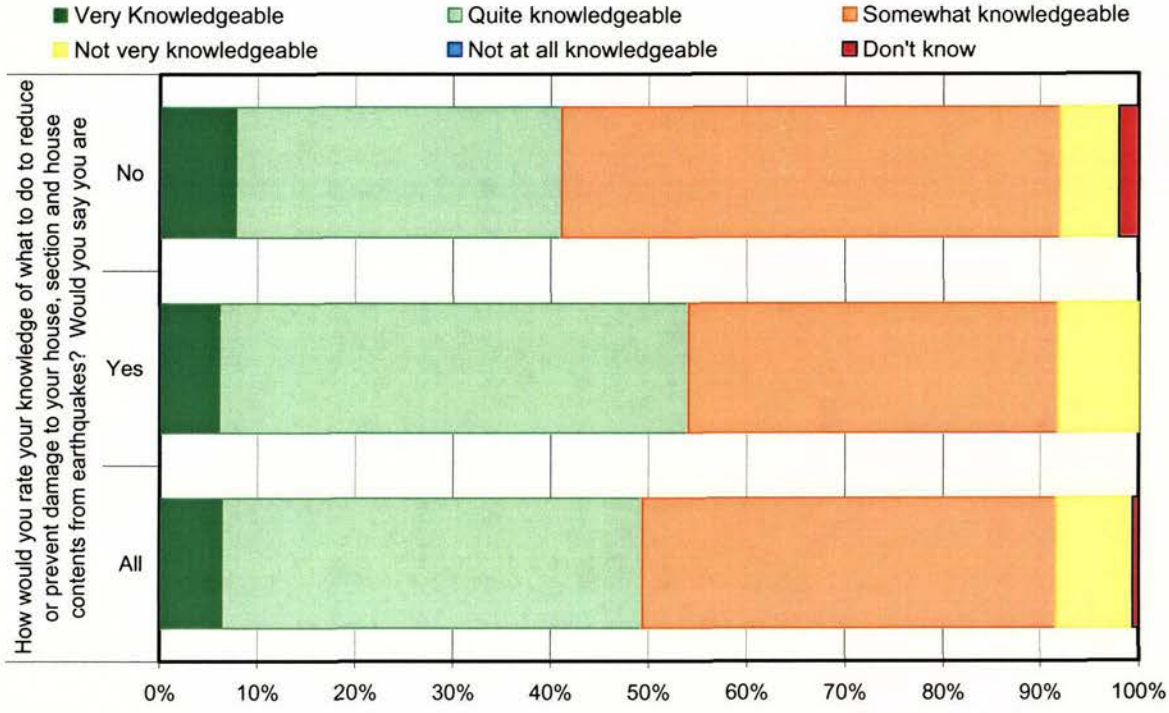
The most commonly listed source organisations for information on earthquake risk and/or preparedness were Civil Defence and EQC (Q12).

It is important to recognise the potential of general public meetings in natural hazards information dissemination, particularly considering the low levels of direct seeking of information or joining interest groups even after the earthquake. Of the 162 respondents 33% attended the public meeting, held by Southland District Council with speakers from EQC, GNS, DoC and Civil Defence, one week after the earthquake (on Thursday, 28th August, 2003). A further 46% did not attend but knew someone who attended, leaving only 21% who did not know anyone who attended (Q13). Two thirds of the total respondents scored the meeting as a 4 or a 5 on a scale from 1-Not at all useful to 5-Very useful (Q14). There was a significantly higher scored level of 'Very useful' for those without damage/loss (39%) than those with (30%). This may be because those with damage have a slightly lower perception of earthquakes as controllable events and so found the information less satisfying.

Public meetings are clearly an effective and well received a way of communicating information to those without damage/loss as to those with damage/loss. This becomes important because people without damage/loss have been shown above to have a much lesser motivation to take action to obtain earthquake-related information through other channels than those with damage/loss. Meetings need to be coupled with other information exercises, however, considering only one third of respondents actually attended.

5.3 Preparedness perceptions

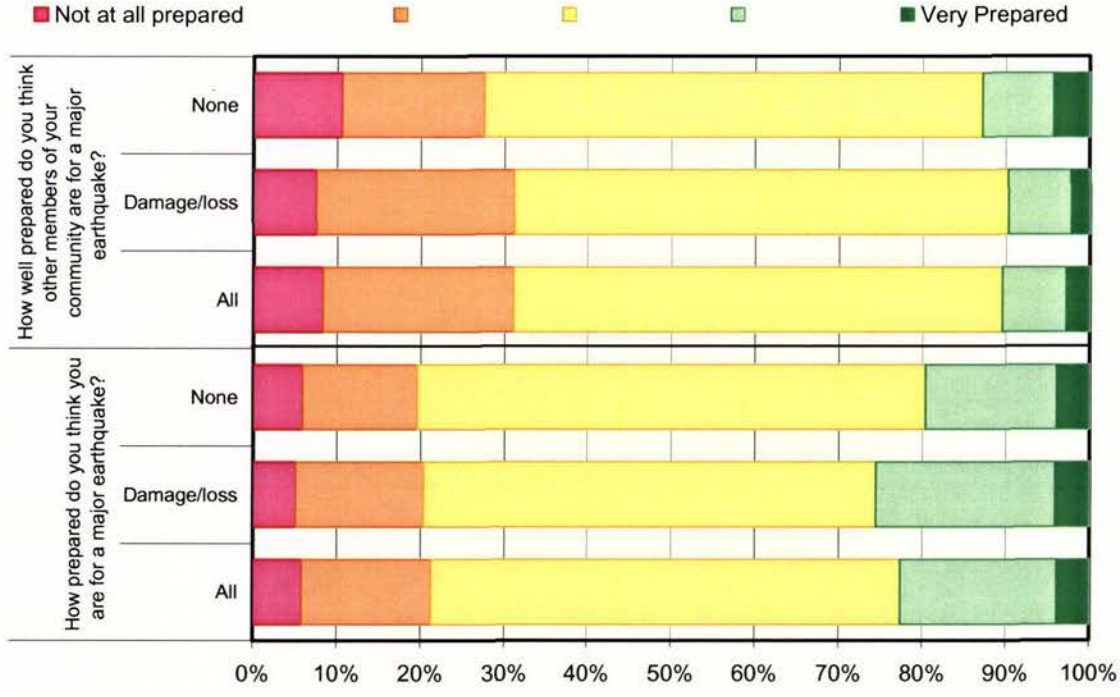
In general, respondents reported having some knowledge of what to do to prepare for earthquakes, a little more so if they have experienced damage/loss. Respondents rated themselves as somewhat to very knowledgeable (92%) in terms of what to do to reduce or prevent damage to their property from earthquakes (Figure 4). Very few (1%) felt they 'didn't know' what to do to prepare for earthquakes, and these were confined to people who had no damage/loss from the earthquake. Those with damage/loss reported a slightly higher overall level of knowledge for this question.



'No' = respondents without damage/loss, 'Yes' = respondents with damage/loss, and 'All' is the average for all respondents (including the 'No' and 'Yes' sub-samples).

Figure 4 Self rating of knowledge of reduction activities for those without (no) damage/loss, with (yes) damage/loss, and 'all' (Q15).

Figure 5 shows respondents' perceptions of their own preparedness for a major earthquake compared to their perception of other members of their communities' preparedness (Q17). There was significantly higher[4] perceived personal preparedness than that perceived for the community. This is a common phenomenon and is referred to as an unrealistic optimism bias (Paton et al., 2000). This is important because individual respondents may accept a need for preparedness, but attribute it to others more than themselves. If every respondent falls into this trap preparedness will be low. Those with damage/loss appear to consider themselves slightly more prepared and the community slightly less prepared, than those without damage/loss, however, the difference is not statistically significant.



'None' = respondents without damage/loss, 'Damage/loss' = respondents with damage/loss, and 'All' is the average for all respondents (including the 'None' and 'Damage/loss' sub-samples). Note that respondents were supplied a scale from 'Not at all prepared' to 'Very prepared', without descriptions given for the intermediate values (thus the colour squares with no text given in the legend).

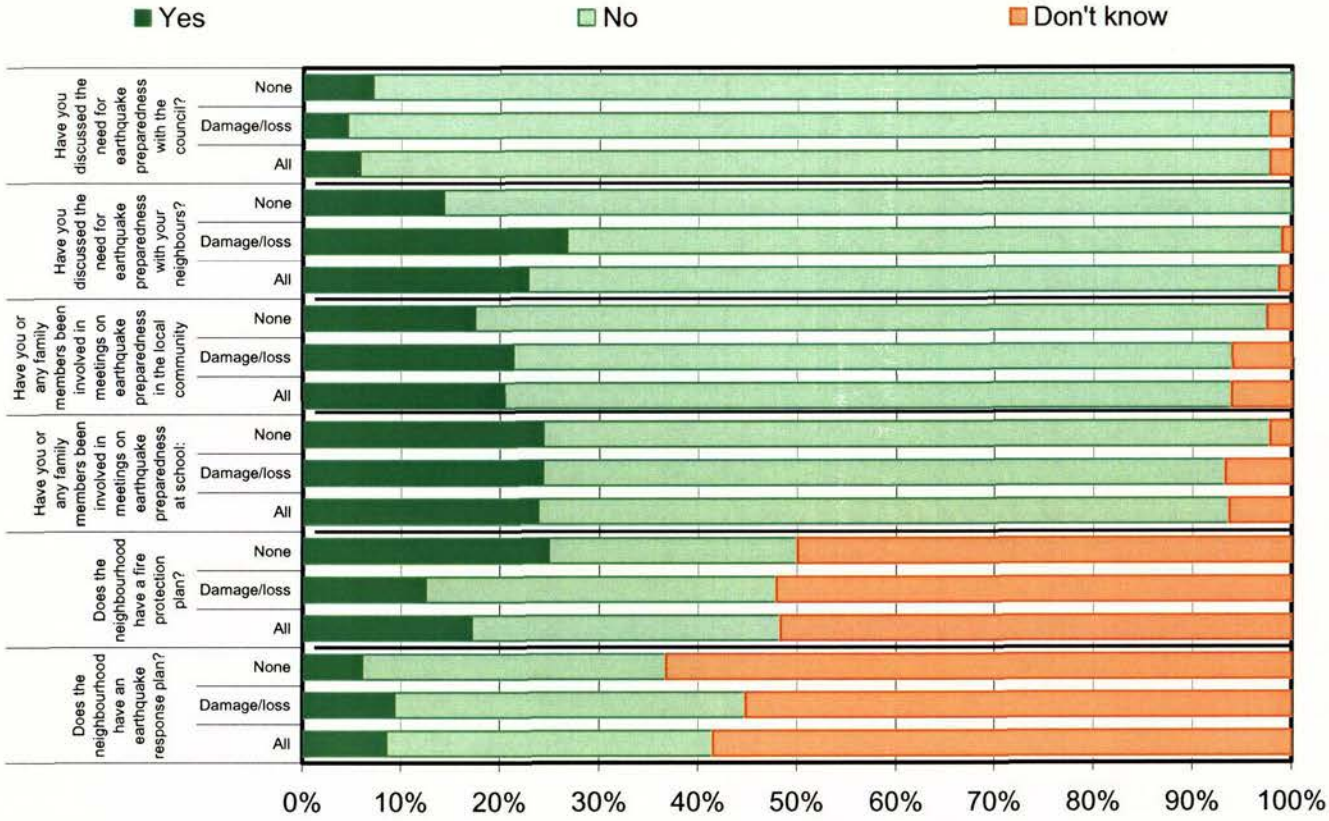
Figure 5 Respondents' perceived preparedness compared to that of their community for those without (no) damage/loss, with (yes) damage/loss, and 'all' (Q17).

Respondents' perceived level of 'local council preparedness' (Q19) lies between that of 'themselves' and of 'their community' but is not statistically different from either one.

[4] Using a paired-sample T-test: t=3.793, df=144; p<0.01

5.4 Community preparedness

When asked about whether the neighbourhood had an earthquake response plan, a quarter said that one existed, and the other three quarters said there was none (Figure 6). Over 50% of respondents do not know if their neighbourhood has an earthquake response or fire protection plan. A higher proportion of those with damage/loss said the neighbourhood does not have fire protection plan than said those without damage loss, however the proportion stating that the neighbourhood had an earthquake response plan was about the same for those with and without damage/loss from the earthquake.



'None' = respondents without damage/loss, 'Damage/loss' = respondents with damage/loss, and 'All' is the average for all respondents (including the 'None' and 'Damage/loss' sub-samples).

Figure 6 Activities that help minimise disruption to a community if an earthquake occurs for those without (no) damage/loss, with (yes) damage/loss, and 'all' (Q16).

Over 90% of respondents felt that they knew whether or not family members had been involved in meetings on earthquake preparedness at school and in the local community. Of those, under a third stated a family member had been involved at school and under a quarter stated a family member had been involved in the local community. This has at least three possible explanations: (1) meetings on earthquake preparedness were more common at school than in the local neighbourhood, (2) they had a higher profile, and/or (3) respondents thought

meetings on earthquake preparedness were a little more likely to exist at school.

Less than a third of respondents have discussed the need for earthquake preparedness with their neighbours and less than a quarter have discussed it with the council. Twice as many respondents with damage/loss had discussed such a need with their neighbours than for those without damage/loss.

5.5 Sources and timing of preparedness information

Information on earthquake preparedness can come from a variety of sources. The proportion of respondents receiving information on preparing for earthquakes from different individual sources varies considerably before, compared to after, the earthquake; and depending on whether or not they suffered damage/loss from the earthquake (Figure 7).

Thirty-three percent of respondents (42% of those with no damage/loss) reported getting no information from any source about preparing for earthquakes before the 2003 Fiordland Earthquake. No one information source provided information about preparing for earthquakes to a majority of respondents, either before or after the earthquake. The most-cited single source was TV or Radio, with 41% of respondents receiving information from this following the earthquake. The largest decrease in citation of information source following the earthquake was in 'telephone book' by those with damage/loss (drop from 37 to 24%).

Prior to the earthquake 37% of those with damage/loss had received information from their telephone book, but this dropped to 24% following it. In contrast a lower proportion of those without damage/loss had received information from their phone book prior to (22%) the earthquake with little change (20%) following it.

The largest increases in information received following the earthquake by those with damage/loss were from EQC (increase from 23 to 35%), GNS (15 to 24%), District (21 to 30%) and Regional (23 to 31%) Councils, Newspapers/magazines (30 to 38%) TV or Radio (34 to 40%) and school handouts (5 to 11%). The largest decrease for this group was in information from the telephone book, (decrease from 37 to 24%), Police or Fire Service (19 to 10%), business (17 to 9%), and their insurance company/agent (18 to 13%).

While those with damage/loss reported an increase in information from Councils, the increase in information to those without damage/loss from District (increase from 13 to 29%) and Regional (increase from 13 to 31%) Councils was much greater. Unlike those with damage/loss, those without damage/loss had a large increase in information from meetings/seminars/workshops after the earthquake (increase from 7 to 27%), where you work (7 to 20%), friends or relatives (15 to 26%) and posters or postcards (9 to 16%). Other levels of information provided were more similar across those with and without damage/loss.

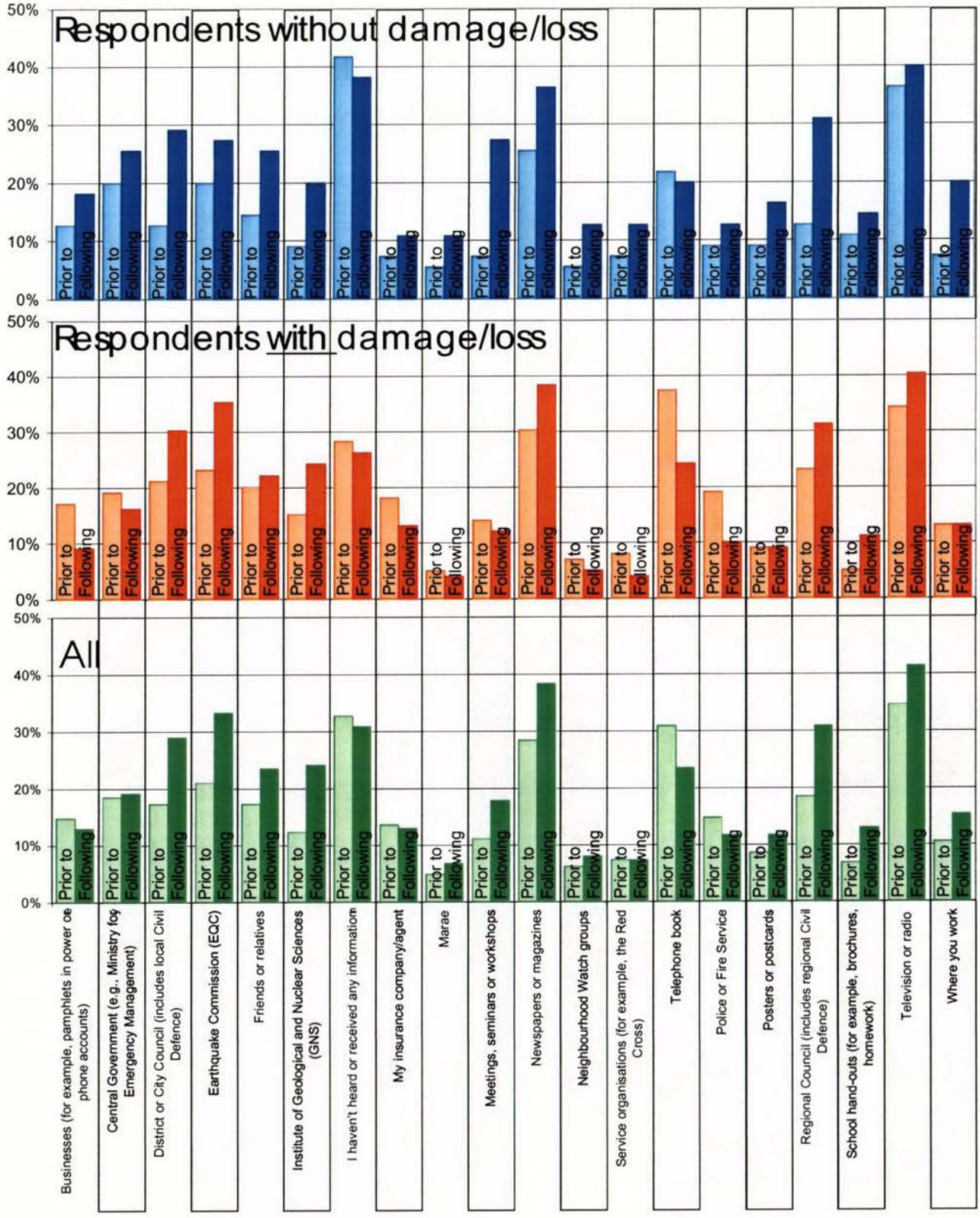


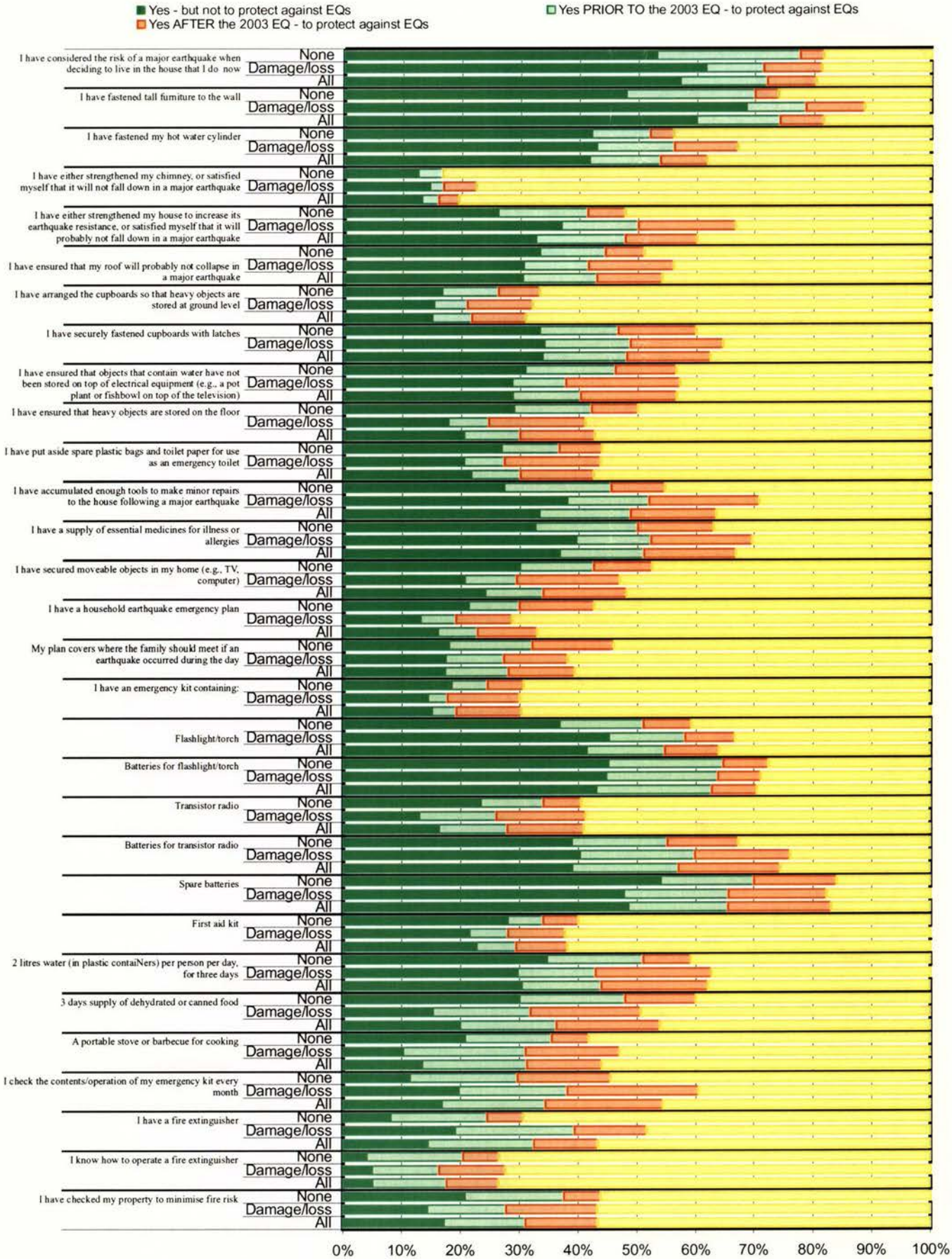
Figure 7 **Reported sources from which information about preparing for earthquakes was received prior to, and following, the earthquake (Q18).**

5.6 Preparedness actions

Figure 8 presents the level of reported completion of preparedness actions in relation to the earthquake. Over 50% of respondents have not taken a particular action, even after the earthquake, for half of these actions. In the case of most actions, there is little significant difference in the levels of actions taken before the earthquake between those with and without damage. A noticeably higher proportion of respondents without damage/loss have undertaken these actions specifically to protect against earthquake damage: securing moveable objects, ensuring heavy objects are stored close to the floor, strengthening chimneys and houses, avoiding storing water above electrical equipment, making household earthquake plans and having an emergency kit.

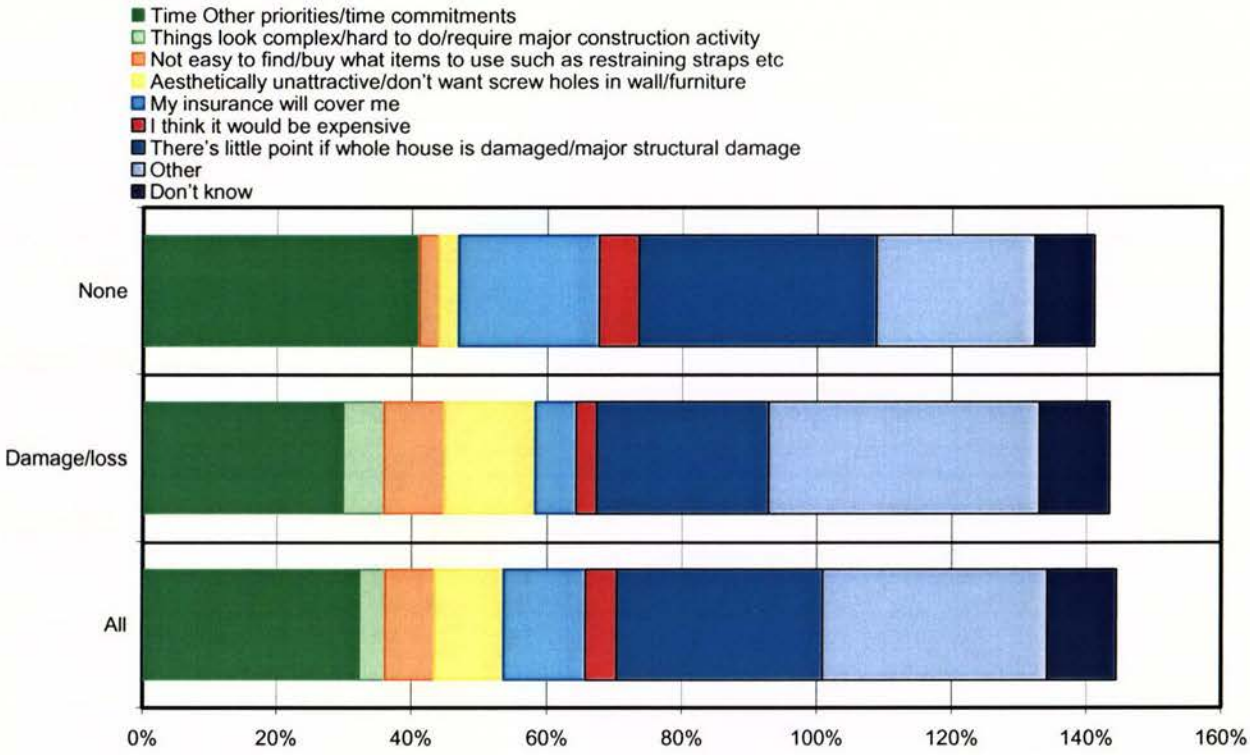
The data indicates a possible need for fastening and strengthening actions to be earthquake-specific to make a difference in reducing damage/loss. A higher proportion of those without damage/loss had fastened tall furniture to the wall *to protect against earthquakes*, than of those with damage/loss (Q20). However, a more equal proportion of each group had fastened tall furniture to the wall, but *not specifically to protect against earthquakes*. In terms of strengthening chimneys and houses, a higher proportion of those who suffered damage reported having done this before the earthquake but not specifically to protect against earthquakes, while a higher proportion of those without damage/loss had completed these two actions specifically to protect against earthquakes.

Figure 8 **(following page) Reported completion of actions that can be done to minimise earthquake damage. Shown for 'all' respondents, those with 'damage/loss' and for those with 'none'.**


Yes - but not to protect against EQs
Yes AFTER the 2003 EQ - to protect against EQs
Yes PRIOR TO the 2003 EQ - to protect against EQs
I have considered the risk of a major earthquake when deciding to live in the house that I do now
I have fastened tall furniture to the wall
I have fastened my hot water cylinder
I have either strengthened my chimney, or satisfied myself that it will not fall down in a major earthquake
I have either strengthened my house to increase its earthquake resistance, or satisfied myself that it will probably not fall down in a major earthquake
I have ensured that my roof will probably not collapse in a major earthquake
I have arranged the cupboards so that heavy objects are stored at ground level
I have securely fastened cupboards with latches
I have ensured that objects that contain water have not been stored on top of electrical equipment (e.g., a pot plant or fishbowl on top of the television)
I have ensured that heavy objects are stored on the floor
I have put aside spare plastic bags and toilet paper for use as an emergency toilet
I have accumulated enough tools to make minor repairs to the house following a major earthquake
I have a supply of essential medicines for illness or allergies
I have secured moveable objects in my home (e.g., TV, computer)
I have a household earthquake emergency plan
My plan covers where the family should meet if an earthquake occurred during the day
I have an emergency kit containing:
Flashlight/torch
Batteries for flashlight/torch
Transistor radio
Batteries for transistor radio
Spare batteries
First aid kit
2 litres water (in plastic contaiNers) per person per day, for three days
3 days supply of dehydrated or canned food
A portable stove or barbecue for cooking
I check the contents/operation of my emergency kit every month
I have a fire extinguisher
I know how to operate a fire extinguisher
I have checked my property to minimise fire risk
None
Damage/loss
All
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

5.6.1 Barriers to preparedness

The largest single barrier to taking the actions listed in Figure 8 was 'Time: Other priorities/time commitments' for those without damage/loss, whereas it was 'other' for those with damage loss (Figure 9). Experience of loss seems to have brought greater awareness of the effectiveness of preparedness measures and possibility of insurance coverage failures: a lower proportion of those with damage/loss cite 'there is little point if whole house is damaged/major structural damage' and 'my insurance will cover me' than for those without damage/loss. Conversely, a higher proportion of those with damage/loss cite aesthetics and availability of materials as a barrier.



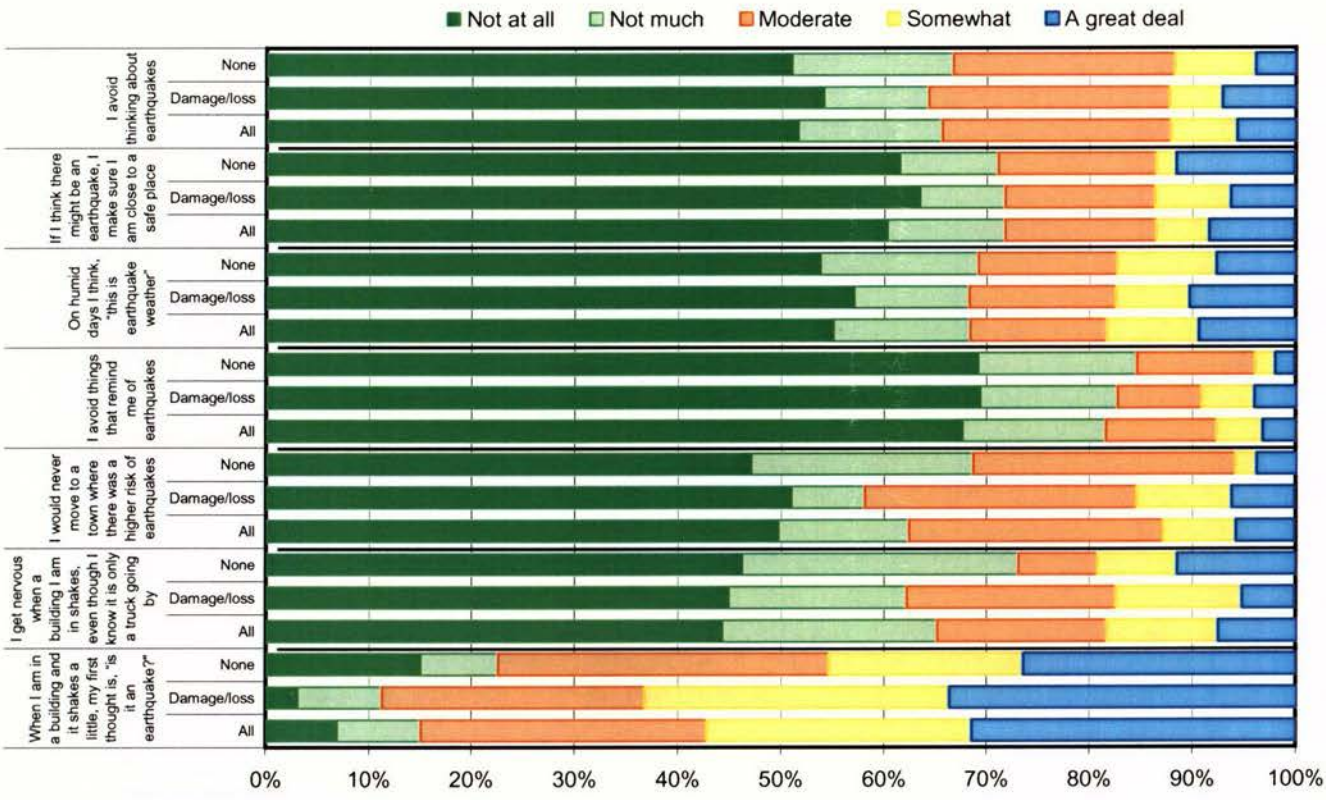
'None' = respondents without damage/loss, 'Damage/loss' = respondents with damage/loss, and 'All' is the average for all respondents (including the 'None' and 'Damage/loss' sub-samples).

Figure 9 Factors preventing preparedness actions shown in Figure 8 from being undertaken. Shown for 'all' respondents, those with 'damage/loss' and for those with 'none' (Q21).

Among the 'other' barriers-to-preparedness-action given, many indicated that preparedness was not necessary, either because another earthquake was not likely, because their possessions are not at risk, or they felt their house was already 'strong'. A few directly listed 'complacency'/'laziness'/'not bothered'. Five respondents indicated that because they were renting their property, it was the landlord's job.

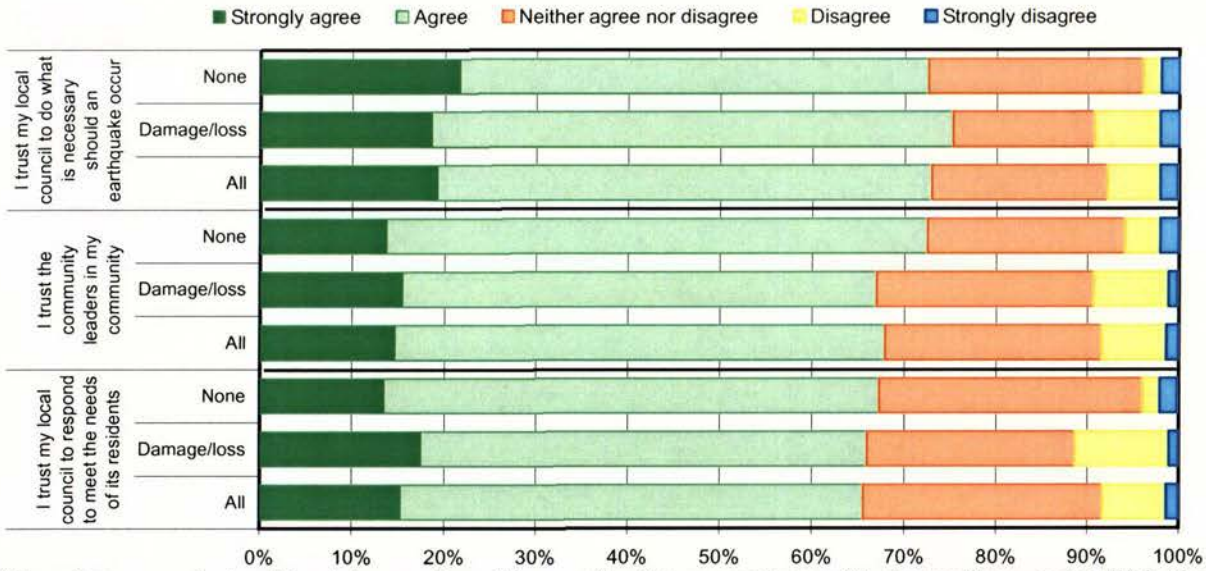
6.0 PERCEPTION AND MOTIVATION INDICATORS

Figures 10 through 13 present the results of questions 22 through 31. The responses to these questions are indicators of motivations and perceptions which affect preparedness and intention to prepare. They are presented in their raw form here and will be analysed along with school and business survey data in a later report.



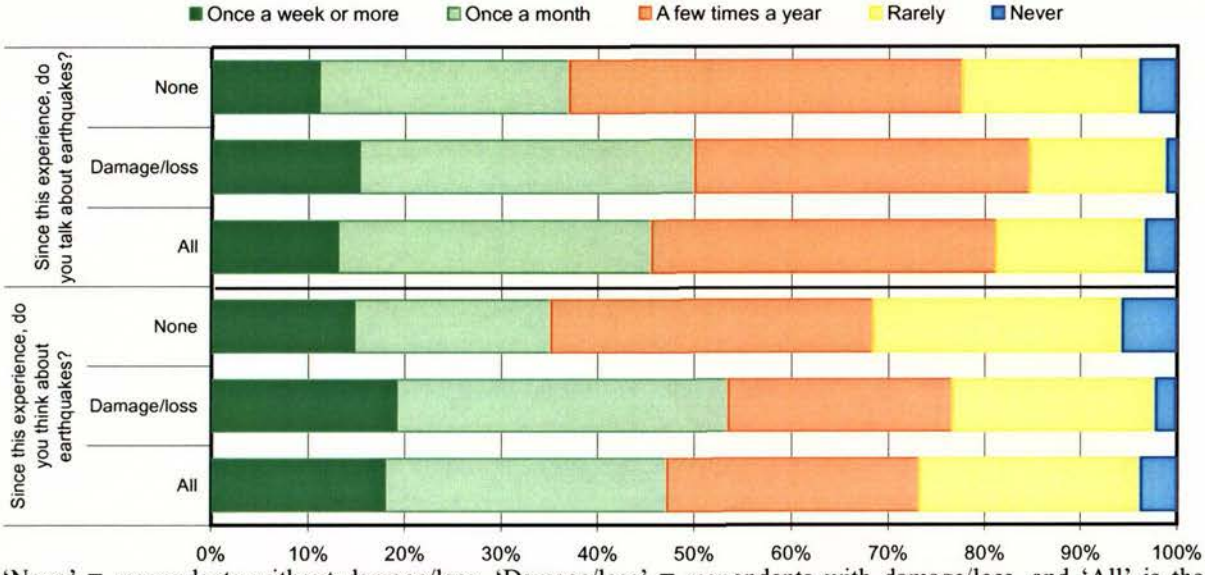
'None' = respondents without damage/loss, 'Damage/loss' = respondents with damage/loss, and 'All' is the average for all respondents (including the 'None' and 'Damage/loss' sub-samples).

Figure 10 Perception indicators sampled in Question 22



'None' = respondents without damage/loss, 'Damage/loss' = respondents with damage/loss, and 'All' is the average for all respondents (including the 'None' and 'Damage/loss' sub-samples).

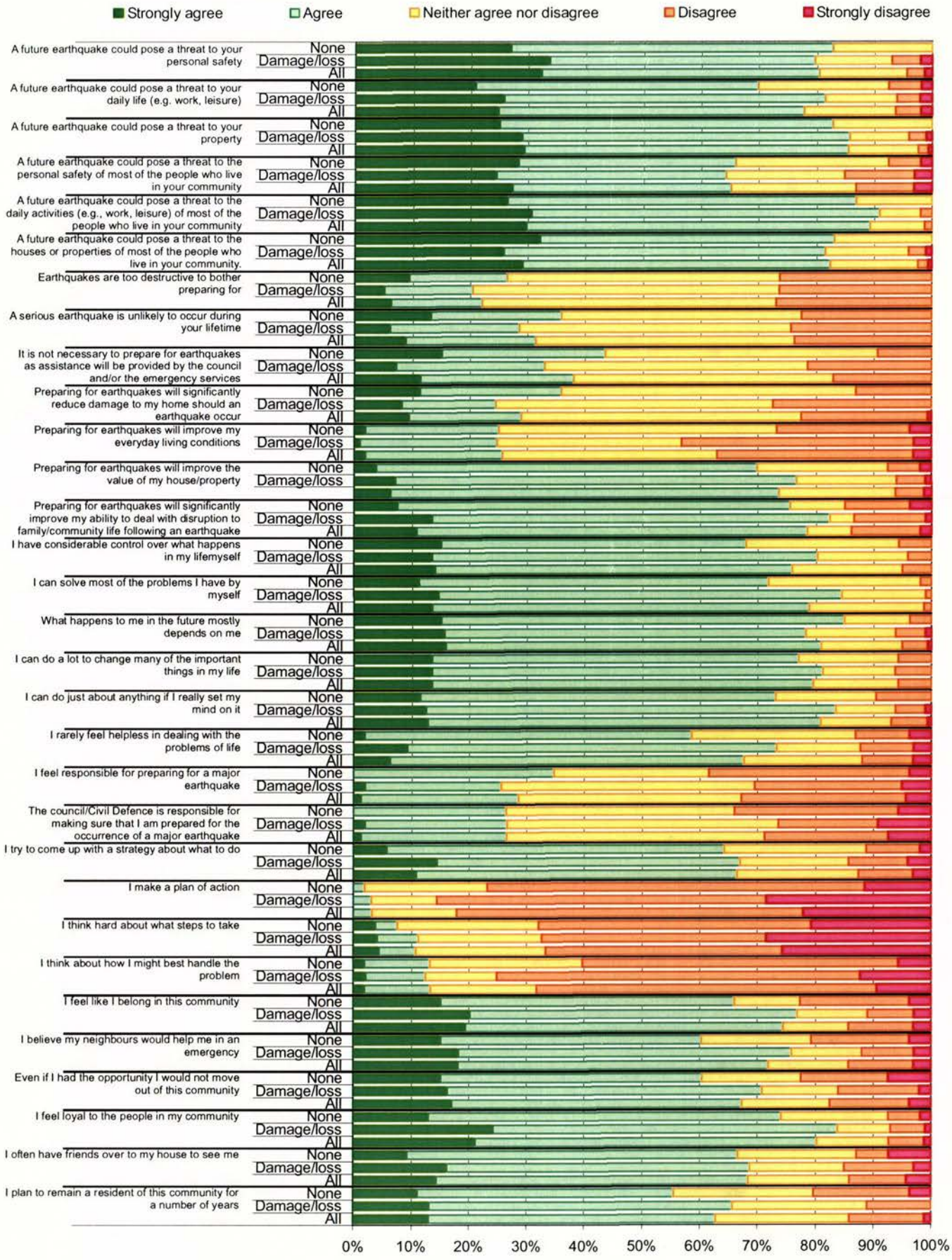
Figure 11 Perception indicators sampled in Question 23



'None' = respondents without damage/loss, 'Damage/loss' = respondents with damage/loss, and 'All' is the average for all respondents (including the 'None' and 'Damage/loss' sub-samples).

Figure 12 Perception indicators sampled in Question 24

Figure 13 (following page) Perception indicators sampled in Questions 25 through 31


Strongly agree
Agree
Neither agree nor disagree
Disagree
Strongly disagree
A future earthquake could pose a threat to your personal safety
A future earthquake could pose a threat to your daily life (e.g. work, leisure)
A future earthquake could pose a threat to your property
A future earthquake could pose a threat to the personal safety of most of the people who live in your community
A future earthquake could pose a threat to the daily activities (e.g., work, leisure) of most of the people who live in your community
A future earthquake could pose a threat to the houses or properties of most of the people who live in your community.
Earthquakes are too destructive to bother preparing for
A serious earthquake is unlikely to occur during your lifetime
It is not necessary to prepare for earthquakes as assistance will be provided by the council and/or the emergency services
Preparing for earthquakes will significantly reduce damage to my home should an earthquake occur
Preparing for earthquakes will improve my everyday living conditions
Preparing for earthquakes will improve the value of my house/property
Preparing for earthquakes will significantly improve my ability to deal with disruption to family/community life following an earthquake
I have considerable control over what happens in my lifemyself
I can solve most of the problems I have by myself
What happens to me in the future mostly depends on me
I can do a lot to change many of the important things in my life
I can do just about anything if I really set my mind on it
I rarely feel helpless in dealing with the problems of life
I feel responsible for preparing for a major earthquake
The council/Civil Defence is responsible for making sure that I am prepared for the occurrence of a major earthquake
I try to come up with a strategy about what to do
I make a plan of action
I think hard about what steps to take
I think about how I might best handle the problem
I feel like I belong in this community
I believe my neighbours would help me in an emergency
Even if I had the opportunity I would not move out of this community
I feel loyal to the people in my community
I often have friends over to my house to see me
I plan to remain a resident of this community for a number of years
None
Damage/loss
All
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%

7.0 CONCLUSIONS

The following is a brief summary of the conclusions from analysis of the survey responses.

- Those who own their home appear to be more than twice as likely to secure moveable objects. There is no significant correlation of household ownership to loss, possibly because of the relatively small sample of tenants.

- Sixty four percent of respondents experienced damage or loss from the earthquake, but the types of damage were relatively minor in most cases (the majority of respondents had small appliances undisturbed). Of those damaged, 13.3% did report entire structure distortion.

- There is a significant correlation of lower damage to indicators of higher preparation prior to the event. Conversely, respondents suffering damage have a slightly higher intention to prepare in the future in terms of preventing damage and definitely seeking information on risk, but not in terms of involvement in a local discussion group.

- Many of the earthquake preparedness actions suggested by the questionnaire have been completed by only a minority of respondents, either before or after the earthquake, and regardless of whether or not they suffered damage.

- Preparedness actions (especially restraining household objects) that were conducted specifically to protect against earthquakes appear to have been more effective at reducing damage/loss from this earthquake than if those same actions were done for other reasons.

- Difficulty and cost of preparedness actions are not major reported barriers to preparedness actions. Instead time, perceived effectiveness and perceived probability of an earthquake are the major reported barriers.

- The total sampled insured loss was $0.20M and can be projected to between $0.98M and $1.40M of insured loss for the whole community, depending on how a single $130,000 outlier is treated. Total reported uninsured loss was only $0.01M which is projected to $0.03M for the whole Te Anau community.

- Completion of preventive measures by respondents is correlated to their mean loss; the mean value of loss was more than five times greater for households who have not 'secured moveable objects in [their] home' at any stage.

- A greater proportion of those that experienced damage/loss reported taking time, and a longer period, to get their home back to normal. This is a significant disruption, and possibly hardship/frustration not sampled by the direct losses. Actual time taken cleaning up, in hours, was on average quite low.

- Two thirds of houses were reportedly constructed after 1970 and there was no significant difference in damage between interior wall type. There was less exterior hairline cracking in wood-clad houses, but entire structure distortion was slightly more common in wood and stucco-clad houses.
- A third of respondents do not know what type of ground is under their site, and of those that do damage was significantly less on river gravels than on other reported substrates. Most houses in Te Anau are on flat to gently sloping land, with not significant difference in damage between the two.
- People who experience damage/loss from the earthquake have, on average, lived in their house for a significantly shorter length of time.
- 85% of respondents report having home insurance and 87% report having contents insurance, however a slight bias towards higher socio-economic respondents may mean that this is higher than the actual insurance level for Te Anau. The majority of insurance rates have not gone up and almost no one has had difficulty getting insurance cover since the event.
- Those with damage now consider themselves more knowledgeable about how to reduce or prevent damage from earthquakes than those without damage.

8.0 ACKNOWLEDGEMENTS

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APPENDIX 1 SURVEY RESULTS

SECTION A IMPACTS

Question 1

(%)		All
Did you experience the August 2003 Fiordland earthquake?	Yes	91.9%
	No	8.1%
	N	161
Did your house and/or property experience any damage/loss at all from that earthquake?	Yes	64.3%
	No	35.7%
	N	154

Even if you were not present for the earthquake please complete all questions below:

Question 2 Please identify whether the following have happened in/to your home as a result of the 2003 earthquake (please tick one per line) (a few = less than about 10%, most = greater than about 75%)

(%)		All
Dishes, doors or windows rattled, and/or walls creaked	Not at all	4.1%
	Stightly	15.6%
	Loudly	80.3%
	N	147
Small objects (e.g. ornaments) moved/upset	None	7.6%
	A few	55.7%
	Many	31.0%
	Most	5.7%
	N	158
Glassware, dishes ornaments etc. broken	None	48.7%
	A few	43.6%
	Many	7.7%
	Most	.0%
	N	156
Items (e.g. books, ornaments) thrown from shelves	None	25.9%
	A few	55.7%
	Many	15.2%
	Most	3.2%
	N	158
Small appliances (e.g. TV, computer)	Were undisturbed	51.6%
	Shifted	38.4%
	Overturned	3.1%
	Fell to floor	6.9%
	N	159

Large appliances (e.g. fridge, range, filing cabinet)	Were undisturbed	84.3%
	Shifted	13.8%
	Shifted 0.5 m or more	1.3%
	Fell to floor	.6%
	N	159
Unrestrained hot water cylinder	Was not damaged	89.5%
	Leaked Water	9.1%
	Overturned	1.4%
	N	143

Question 3 Please identify structural damage done to your home as a result of the 2003 earthquake. (Please tick only one per line)

(%)		All
Chimney damage (choose one) (of all respondents)	No damage	93.2%
	Cracked or bricks dislodged	5.6%
	Twisted, or broken at roofline	1.2%
	Fallen from roofline	.0%
	Fallen from base	.0%
	N	162
Was the chimney: (of those with some form of damage/loss)	An old chimney (i.e. unreinforced)	12.5%
	A modern chimney	87.5%
	N	64
Exterior elevated water tanks damage (of all respondents)	No damage	98.1%
	Moved/leaked	1.9%
	Twisted and or brought down	.0%
	N	162
Standard windows (of all respondents)	None cracked	93.8%
	A few cracked	6.2%
	Many cracked	.0%
	Most cracked	.0%
	N	162
	None broken out	98.8%
	A few broken out	1.2%
	Many broken out	.0%
	Most broken out	.0%
	N	162

Large display windows (of all respondents)	None cracked	96.3%
	A few cracked	3.7%
	Many cracked	.0%
	Most cracked	.0%
	N	162
	None broken out	99.4%
	A few broken out	.0%
	Many broken out	.0%
	Most broken out	.6%
	N	162
Exterior walls damage (of all respondents)	No damage	71.0%
	Hairline cracks	22.2%
	Large cracks	6.2%
	bulged/distorted	.0%
	Partial collapse	.6%
	Total collapse	.0%
	N	162
Main type of exterior walls:	Wood	31.7%
	Stucco (cement)	16.8%
	Brick veneer	11.9%
	Concrete block	11.9%
	Solid brick	12.9%
	Other	14.9%
	N	101
Gib-board interior walls damage	No such walls	10.2%
	No damage	26.5%
	Hairline cracks	46.9%
	Large cracks	16.3%
	N	98
Other interior walls damage	No such walls	23.4%
	No damage	44.2%
	Hairline cracks	26.0%
	Large cracks	6.5%
	N	77
Ceiling panels damage	No damage	79.6%
	Damaged/ many dislodged	19.8%
	3	.6%
	N	162
Entire structure damage	No damage	90.0%
	Distorted	7.5%
	Shifted on foundations	2.5%
	Thrown off foundations	.0%
	N	160

Question 4 **Please indicate the nature of your home and its site. (please tick one per line)**

(%)		All
What type of ground is under the building?	Don't know	33.5%
	Rock	9.7%
	Clay	7.1%
	Fill	3.2%
	Sand	.6%
	River gravels	45.8%
	N	155
Is the ground:	Level	78.1%
	Gently sloping	20.6%
	Steeply sloping	1.3%
	N	160
When was the building constructed?	Don't know	5.1%
	Before 1945	1.9%
	1945-1970	31.2%
	After 1970	61.8%
	N	157

Question 5 **Please estimate the total amount paid out (if any) by insurance company(s) for:**

Respondents <u>supplying</u> any <u>insured</u> loss:

(n=162)	All
Yes (n=45)	28%
No	72%

Of respondents supplying any insured loss (ie. not restricted to a 'No' response to Question 1[damage/loss])

	N	Min	Max	Sum	Mean	s.d.
Building/structure damage:	31	$1	$17,700	$164,399	$5,303	$4,617
Contents damage	10	$50	$6,200	$14,745	$1,475	$2,119
Both building /structure and contents damage	7	$800	$10,000	$23,500*	$3,917	$4,009
Removal of debris	0					
Vehicles/boats/caravans/trailer damage	0					
Other	1	$1,400	$1,400	$1,400	$1,400	.

* A single 'both building/structure and contents damage' value of $130,000 has been removed from the generalised statistics here, because the low (single) high response is drastically different from the range of other responses and is best added singly to the total loss for Te Anau, rather than being projected by a factor of 4 from the sample to the population of households.

Question 6 Did you or your household bear any financial costs as a direct result of the 2003 Fiordland earthquake, that were not covered by insurance, including what was below your insurance excess (but excluding loss of earnings, if any)?

(n=154)	All
Yes	18%
No	84%

Question 7 Please estimate the total cost of your household's expenditure (in dollars) not covered by insurance for:

Respondents supplying any uninsured loss:

(n=162)	All
Yes (n=26)	16%
No	84%

Of respondents supplying any uninsured loss (ie. not restricted to a 'No' response to Question 6)

	N	Min	Max	Sum	Mean	s.d.
Building/structure damage:	8	$100	$1,000	$3,250	$406	$378
Contents damage	14	$75	$1,000	$3,325	$238	$252
Both building /structure and contents damage	3	$200	$500	$900	$300	$173
Removal of debris	00					
Vehicles/boats/caravans/trailer damage	0					
Other	6	$30	$200	$650	$108	$69

Question 8 How long did it take to get your home back to normal?

	N	Min	Max	Sum	Mean	s.d.
Standard days	59	1	243	1809	31	64

(months have been taken as 30.4 days)

Eight respondents (5% of respondents) reported 'still waiting' or words to that effect (with no estimate of time supplied), these have not been included in analysis of Question 8.

Some respondents entered non-standard responses less than one day. Respondents indicating a significant ('1/2', 'part' etc.) proportion of a single day are included as '1' day. Respondents indicating less than one hour ('a few minutes', '20 minutes' etc.) have not been included.

Question 9 How much time in total did members of your household spend on responding to the 2003 earthquake and/or helping with the cleanup? (e.g. 3 people helping for 1 day each equals 3 days).

Total hours:

	N	Min	Max	Sum	Mean	s.d.
Cleaning up your property	56	1	112	**566**	10.1	21.1
As an unpaid volunteer	10	2	40	**110**	11.0	12.5
As part of paid work	10	3	96	**233**	23.3	27.7

One day recalculated as 8 hours

Of those who gave a number of people capable of helping:

(n=36)		Valid Percent
Number of people capable of helping in your household	1	19.4
	2	50.0
	3	11.1
	4	8.3
	5	2.8
	6	2.8
	7	2.8
	10	2.8

Hours per person capable of helping (for those who gave a number of capable people):

	N	Min	Max	Sum	Mean	s.d.
Cleaning up your property	31	0	56	211	**6.8**	11.9
As an unpaid volunteer	7	1	24	41	**5.9**	8.4
As part of paid work	9	2	48	113	**12.5**	14.2

Question 10 Do you personally have and pay for yourself/jointly?

Home insurance:

% (n=150)	All
Yes	84.7
No	13.3
Don't know	2.0

Contents insurance

% (n=153)	All
Yes	86.9
No	12.4
Don't know	0.7

SECTION B RESPONSE

Question 11 Of the following statements, which are correct in your case? (Tick only one per line)

(%)		
EQC has settled my claim in a fair way	Does not apply	65.7%
	Yes	30.6%
	No	3.7%
	N	134
My insurance company has settled my claim in a fair way	Does not apply	90.0%
	Yes	5.8%
	No	4.2%
	N	120
My insurance rates have gone up since the event	Does not apply	57.5%
	Yes	14.2%
	No	28.3%
	N	113
I have found it difficult to get insurance cover since the event	Does not apply	65.5%
	Yes	.8%
	No	33.6%
	N	119
I cannot afford insurance cover	Does not apply	65.3%
	Yes	4.2%
	No	30.5%
	N	118

Question 12 Please indicate when you have-done/will-do each of the following: (Tick all that apply in each line)

(%)		All(n=162)	(of those answering the following to 'any damage/loss at all' in Question 1) Yes (n=99)	No (n=55)
Check your level of preparedness for earthquakes	Did prior to the 2003 earthquake	28.9%	29.2%	31.1%
	Did following the 2003 earthquake	49.3%	50.6%	44.4%
	Do not intend to in the next month or so	19.0%	21.3%	13.3%
	Possibly intend to in the next month or so	9.9%	7.9%	15.6%
	Definitely intend to in the next month or so	8.5%	11.2%	.0%
Increase your level of preparedness for earthquakes	Did prior to the 2003 earthquake	18.4%	12.6%	30.4%
	Did following the 2003 earthquake	44.7%	50.6%	32.6%
	Do not intend to in the next month or so	20.6%	20.7%	19.6%
	Possibly intend to in the next month or so	14.2%	12.6%	17.4%
	Definitely intend to in the next month or so	9.2%	10.3%	4.3%
Become involved with a local group to discuss how to reduce earthquake damage or losses	Did prior to the 2003 earthquake	4.1%	1.4%	9.3%
	Did following the 2003 earthquake	13.1%	14.9%	9.3%
	Do not intend to in the next month or so	74.6%	74.3%	74.4%
	Possibly intend to in the next month or so	6.6%	8.1%	4.7%
	Definitely intend to in the next month or so	3.3%	2.7%	4.7%
Seek information on things to do to prepare	Did prior to the 2003 earthquake	11.4%	9.9%	15.9%
	Did following the 2003 earthquake	25.8%	30.9%	15.9%
	Do not intend to in the next month or so	46.2%	45.7%	47.7%
	Possibly intend to in the next month or so	9.1%	7.4%	11.4%
	Definitely intend to in the next month or so	8.3%	7.4%	9.1%
Take any steps to reduce or prevent damage to your current house, section and house contents from natural disasters	Did prior to the 2003 earthquake	18.9%	18.0%	19.6%
	Did following the 2003 earthquake	40.6%	48.3%	26.1%
	Do not intend to in the next month or so	24.5%	16.9%	39.1%
	Possibly intend to in the next month or so	11.9%	13.5%	10.9%
	Definitely intend to in the next month or so	9.8%	11.2%	4.3%

Seek information on earthquake risk	Did prior to the 2003 earthquake	8.4%	4.9%	14.3%
	Did following the 2003 earthquake	22.9%	28.0%	11.9%
	Do not intend to in the next month or so	53.4%	54.9%	54.8%
	Possibly intend to in the next month or so	9.2%	7.3%	11.9%
	Definitely intend to in the next month or so	6.9%	4.9%	7.1%

If you have sought, or intend to seek, information on earthquake risk and/or preparedness, please list the sources/organisations you have contacted, or intend to contact:

First source given	Second source given
attended meeting in Te Anau post eq / watched video	
Attended public meetings, spoked to engineers, builders & earthquake commsion.	& earthquake commission.
Civil Defence	Geonet internet site
Civil Defence	Public meeting on earthquakes
civil defence	
civil defence	
civil defence	
Civil Defence	
civil defence	
community meeting	
District Council EQC	
Don't know of any	
Earthquake Commission	Internet - friends
Earthquake Commission	
email	SDC
EQ Commission, locally had meetings	
EQC	
EQC	
EQC	
Geonet website	telephone book instructions
GNS website	EQC website
got a video from local library in the 2003 earthquake	
haven't done anything	
Insurance co	Regional council EQC
Internet	EQC
Local Bodies	
Public Gathering	
Public meetings - District Council	EQC
Read a mail leaflet sent out	Read a police document sent out
read the newspaper etc	
telephone book	local council
Telephone book	on the internet

Television	Insurance Company
Used GNS web site	local library
we were seeking for info from experts	
websites worldwide	
www.geonet.	
yellow pages	geological & nuclear sciences came to place of work

Question 13 Did you or anyone you know attend the public meeting, held by Southland District Council with speakers from EQC, GNS, DoC and Civil Defence, one week after the earthquake (on Thursday, 28th August, 2003)? (Tick only one)

% (n=156)	All
Yes I attended the meeting	32.7
I didn't attend but yes I know someone who did attend the meeting	46.2
No, I don't know anyone who attended	21.2

Question 14 Please rate (from 1 = Very useful to 5 = Not at all useful) how useful you found/heard the meetings to be (of those answering 'attended' or 'know someone who attended' to Question 13):

(%)	All	(of those answering the following to 'any damage/loss at all' in Question 1)	
		Yes	No
Very Useful	33.3%	30.3%	39.4%
	33.3%	33.3%	33.3%
	23.2%	25.8%	18.2%
	7.1%	7.6%	6.1%
Not at all useful	3.0%	3.0%	3.0%
N	99	66	33

SECTION C PREPAREDNESS

Question 15 How would you rate your knowledge of what to do to reduce or prevent damage to your house, section and house contents from earthquakes? Would you say you are: (Tick only one)

(%)	All	(of those answering the following to 'any damage/loss at all' in Question 1)	
		Yes	No
Very knowledgeable	6.4%	6.1%	7.8%
Quite knowledgeable	42.9%	48.0%	33.3%
Somewhat knowledgeable	42.3%	37.8%	51.0%
Not very knowledgeable	7.7%	8.2%	5.9%
Not at all knowledgeable	.0%	.0%	.0%
Don't know	.6%	.0%	2.0%
N	156	98	51

Question 16 The following activities help minimise disruption to a community if an earthquake occurs. Please record whether they currently apply to your community: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1)	
			Yes	No
Does the neighbourhood have an earthquake response plan?	Yes	8.6%	9.4%	6.1%
	No	32.9%	35.4%	30.6%
	Don't know	58.6%	55.2%	63.3%
	N	152	96	49
Does the neighbourhood have a fire protection plan?	Yes	17.2%	12.5%	25.0%
	No	31.1%	35.4%	25.0%
	Don't know	51.7%	52.1%	50.0%
	N	151	96	48
Have you or any family members been involved in meetings on earthquake preparedness at school:	Yes	23.9%	24.4%	24.4%
	No	69.7%	68.9%	73.3%
	Don't know	6.3%	6.7%	2.2%
	N	142	90	45
Have you or any family members been involved in meetings on earthquake preparedness in the local community	Yes	20.5%	21.4%	17.5%
	No	73.5%	72.6%	80.0%
	Don't know	6.1%	6.0%	2.5%
	N	132	84	40

Have you discussed the need for earthquake preparedness with your neighbours?	Yes	22.9%	26.8%	14.3%
	No	75.8%	72.2%	85.7%
	Don't know	1.3%	1.0%	.0%
	N	153	97	49
Have you discussed the need for earthquake preparedness with the council?	Yes	5.8%	4.5%	7.1%
	No	92.0%	93.3%	92.9%
	Don't know	2.2%	2.2%	.0%
	N	138	89	42

Question 17 Please rate (from 1 = Not at all prepared to 5 = Very prepared) the extent to which you perceive each of the following is prepared to deal with an earthquake: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1)	
			Yes	No
How prepared do you think you are for a major earthquake?	Not at all prepared	5.8%	5.1%	5.9%
		15.5%	15.3%	13.7%
		56.1%	54.1%	60.8%
		18.7%	21.4%	15.7%
	Very Prepared	3.9%	4.1%	3.9%
	N	155	98	51
How well prepared do you think other members of your community are for a major earthquake?	Not at all prepared	8.3%	7.5%	10.6%
		22.8%	23.7%	17.0%
		58.6%	59.1%	59.6%
		7.6%	7.5%	8.5%
	Very Prepared	2.8%	2.2%	4.3%
	N	145	93	47

Question 18 Have you heard or received information about preparing for earthquakes from any of the following? Please consider 'prior to' and 'following' the 2003 earthquake separately and tick once or twice per line as necessary.

		All	(of those answering the following to 'any damage/loss at all' in Question 1)	
(%)	Relationship to the 2003 earthquake		Yes	No
Businesses (for example, pamphlets in power or phone accounts)	Prior	14.8%	17.2%	12.7%
	Following	13.0%	9.1%	18.2%
Central Government (e.g., Ministry for Emergency Management)	Prior	18.5%	19.2%	20.0%
	Following	19.1%	16.2%	25.5%
District or City Council (includes local Civil Defence)	Prior	17.3%	21.2%	12.7%
	Following	29.0%	30.3%	29.1%
Earthquake Commission (EQC)	Prior	21.0%	23.2%	20.0%
	Following	33.3%	35.4%	27.3%
Friends or relatives	Prior	17.3%	20.2%	14.5%
	Following	23.5%	22.2%	25.5%
Institute of Geological and Nuclear Sciences (GNS)	Prior	12.3%	15.2%	9.1%
	Following	24.1%	24.2%	20.0%
I haven't heard or received any information	Prior	32.7%	28.3%	41.8%
	Following	30.9%	26.3%	38.2%
My insurance company/agent	Prior	13.6%	18.2%	7.3%
	Following	13.0%	13.1%	10.9%
Marae	Prior	4.9%	5.1%	5.5%
	Following	6.8%	4.0%	10.9%
Meetings, seminars or workshops	Prior	11.1%	14.1%	7.3%
	Following	17.9%	12.1%	27.3%
Newspapers or magazines	Prior	28.4%	30.3%	25.5%
	Following	38.3%	38.4%	36.4%
Neighbourhood Watch groups	Prior	6.2%	7.1%	5.5%
	Following	8.0%	5.1%	12.7%
Service organisations (for example, the Red Cross)	Prior	7.4%	8.1%	7.3%
	Following	7.4%	4.0%	12.7%
Telephone book	Prior	30.9%	37.4%	21.8%
	Following	23.5%	24.2%	20.0%
Police or Fire Service	Prior	14.8%	19.2%	9.1%
	Following	11.7%	10.1%	12.7%
Posters or postcards	Prior	8.6%	9.1%	9.1%
	Following	11.7%	9.1%	16.4%
Regional Council (includes regional Civil Defence)	Prior	18.5%	23.2%	12.7%
	Following	30.9%	31.3%	30.9%
School hand-outs (for example, brochures, homework)	Prior	6.8%	5.1%	10.9%
	Following	13.0%	11.1%	14.5%

Television or radio	Prior	34.6%	34.3%	36.4%
	Following	41.4%	40.4%	40.0%
Where you work	Prior	10.5%	13.1%	7.3%
	Following	15.4%	13.1%	20.0%

Question 19 Please rate (from 1 = Not at all prepared to 5 = Very prepared) how well prepared you think your local council is for a major earthquake: (please tick only one)

(%)	All	(of those answering the following to 'any damage/loss at all' in Question 1)	
		Yes	No
Not at all prepared	10.7%	8.6%	14.9%
	11.4%	16.1%	2.1%
	60.0%	55.9%	68.1%
	15.7%	16.1%	14.9%
Very prepared	2.1%	3.2%	.0%
N	140	93	47

Question 20 The following are things that can be done to minimise earthquake damage. In regard to your household, please record whether you <u>have done</u> each item: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Q 1)	
			Yes	No
I have considered the risk of a major earthquake when deciding to live in the house that I do now	Yes - but not to protect against EQs	17.2%	14.4%	20.8%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	13.8%	13.3%	16.7%
	Yes AFTER the 2003 EQ - to protect against EQs	12.4%	15.6%	6.3%
	No	56.6%	56.7%	56.3%
	N	145	90	48
I have fastened tall furniture to the wall	Yes - but not to protect against EQs	5.1%	5.0%	4.1%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	12.5%	11.3%	16.3%
	Yes AFTER the 2003 EQ - to protect against EQs	8.8%	11.3%	6.1%
	No	73.5%	72.5%	73.5%
	N	136	80	49

I have fastened my hot water cylinder	Yes - but not to protect against EQs	14.5%	19.1%	8.2%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	17.9%	20.2%	16.3%
	Yes AFTER the 2003 EQ - to protect against EQs	11.0%	12.4%	6.1%
	No	56.6%	48.3%	69.4%
	N	145	89	49
I have either strengthened my chimney, or satisfied myself that it will not fall down in a major earthquake	Yes - but not to protect against EQs	16.8%	19.7%	11.4%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	17.6%	18.4%	18.2%
	Yes AFTER the 2003 EQ - to protect against EQs	20.0%	22.4%	15.9%
	No	45.6%	39.5%	54.5%
	N	125	76	44
I have either strengthened my house to increase its earthquake resistance, or satisfied myself that it will probably not fall down in a major earthquake	Yes - but not to protect against EQs	13.5%	10.3%	20.8%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	17.7%	20.7%	14.6%
	Yes AFTER the 2003 EQ - to protect against EQs	12.8%	16.1%	6.3%
	No	56.0%	52.9%	58.3%
	N	141	87	48
I have ensured that my roof will probably not collapse in a major earthquake	Yes - but not to protect against EQs	19.9%	15.3%	30.0%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	16.3%	16.5%	18.0%
	Yes AFTER the 2003 EQ - to protect against EQs	17.7%	18.8%	12.0%
	No	46.1%	49.4%	40.0%
	N	141	85	50
I have arranged the cupboards so that heavy objects are stored at ground level	Yes - but not to protect against EQs	30.4%	29.7%	34.7%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	13.5%	13.2%	16.3%
	Yes AFTER the 2003 EQ - to protect against EQs	18.2%	19.8%	8.2%
	No	37.8%	37.4%	40.8%
	N	148	91	49
I have securely fastened cupboards with latches	Yes - but not to protect against EQs	22.7%	21.5%	28.0%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	6.7%	6.5%	6.0%
	Yes AFTER the 2003 EQ - to protect against EQs	8.7%	9.7%	6.0%
	No	62.0%	62.4%	60.0%
	N	150	93	50
I have ensured that objects that contain water have not been stored on top of electrical equipment (e.g., a pot plant or fishbowl on top of the television)	Yes - but not to protect against EQs	48.6%	47.8%	54.0%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	16.9%	17.8%	16.0%
	Yes AFTER the 2003 EQ - to protect against EQs	17.6%	16.7%	14.0%
	No	16.9%	17.8%	16.0%
	N	148	90	50
I have ensured that heavy objects are stored on the floor	Yes - but not to protect against EQs	38.9%	40.2%	38.8%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	18.1%	19.6%	16.3%
	Yes AFTER the 2003 EQ - to protect against EQs	17.4%	16.3%	12.2%
	No	25.5%	23.9%	32.7%
	N	149	92	49
I have put aside spare plastic bags and toilet paper for use as an emergency toilet	Yes - but not to protect against EQs	16.3%	13.0%	23.4%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	11.6%	13.0%	10.6%
	Yes AFTER the 2003 EQ - to protect against EQs	12.9%	15.2%	6.4%
	No	59.2%	58.7%	59.6%
	N	147	92	47

I have accumulated enough tools to make minor repairs to the house following a major earthquake	Yes - but not to protect against EQs	43.1%	44.7%	45.1%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	19.6%	19.1%	19.6%
	Yes AFTER the 2003 EQ - to protect against EQs	7.8%	7.4%	7.8%
	No	29.4%	28.7%	27.5%
	N	153	94	51
I have a supply of essential medicines for illness or allergies	Yes - but not to protect against EQs	41.3%	45.2%	36.7%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	13.3%	12.9%	14.3%
	Yes AFTER the 2003 EQ - to protect against EQs	9.3%	8.6%	8.2%
	No	36.0%	33.3%	40.8%
	N	150	93	49
I have secured moveable objects in my home (e.g., TV, computer)	Yes - but not to protect against EQs	15.1%	14.4%	18.4%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	4.1%	3.3%	6.1%
	Yes AFTER the 2003 EQ - to protect against EQs	11.0%	12.2%	6.1%
	No	69.9%	70.0%	69.4%
	N	146	90	49
I have a household earthquake emergency plan	Yes - but not to protect against EQs	17.3%	17.4%	18.0%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	10.7%	9.8%	14.0%
	Yes AFTER the 2003 EQ - to protect against EQs	11.3%	10.9%	14.0%
	No	60.7%	62.0%	54.0%
	N	150	92	50
My plan covers where the family should meet if an earthquake occurred during the day	Yes - but not to protect against EQs	16.1%	13.1%	21.3%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	6.6%	6.0%	8.5%
	Yes AFTER the 2003 EQ - to protect against EQs	10.2%	9.5%	12.8%
	No	67.2%	71.4%	57.4%
	N	137	84	47
I have an emergency kit containing:	Yes - but not to protect against EQs	24.1%	20.6%	30.0%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	9.8%	8.8%	12.5%
	Yes AFTER the 2003 EQ - to protect against EQs	14.3%	17.6%	10.0%
	No	51.8%	52.9%	47.5%
	N	112	68	40
Flashlight/torch	Yes - but not to protect against EQs	36.7%	39.5%	32.6%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	14.4%	12.8%	17.4%
	Yes AFTER the 2003 EQ - to protect against EQs	15.8%	17.4%	13.0%
	No	33.1%	30.2%	37.0%
	N	139	86	46
Batteries for flashlight/torch	Yes - but not to protect against EQs	33.3%	38.0%	27.3%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	15.5%	13.9%	18.2%
	Yes AFTER the 2003 EQ - to protect against EQs	14.7%	19.0%	9.1%
	No	36.4%	29.1%	45.5%
	N	129	79	44
Transistor radio	Yes - but not to protect against EQs	21.7%	20.5%	26.8%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	8.3%	6.8%	9.8%
	Yes AFTER the 2003 EQ - to protect against EQs	12.5%	16.4%	7.3%
	No	57.5%	56.2%	56.1%
	N	120	73	41

Batteries for transistor radio	Yes - but not to protect against EQs	20.5%	17.8%	28.9%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	9.4%	6.8%	13.2%
	Yes AFTER the 2003 EQ - to protect against EQs	12.8%	16.4%	7.9%
	No	57.3%	58.9%	50.0%
	N	117	73	38
Spare batteries	Yes - but not to protect against EQs	28.7%	28.6%	30.8%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	11.5%	9.1%	15.4%
	Yes AFTER the 2003 EQ - to protect against EQs	16.4%	19.5%	10.3%
	No	43.4%	42.9%	43.6%
	N	122	77	39
First aid kit	Yes - but not to protect against EQs	33.8%	34.1%	33.3%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	14.3%	14.6%	13.3%
	Yes AFTER the 2003 EQ - to protect against EQs	14.3%	15.9%	13.3%
	No	37.6%	35.4%	40.0%
	N	133	82	45
2 litres water (in plastic contaiNers) per person per day, for three days	Yes - but not to protect against EQs	15.0%	15.3%	16.7%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	6.7%	5.6%	9.5%
	Yes AFTER the 2003 EQ - to protect against EQs	9.2%	11.1%	7.1%
	No	69.2%	68.1%	66.7%
	N	120	72	42
3 days supply of dehydrated or canned food	Yes - but not to protect against EQs	30.4%	30.5%	33.3%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	12.6%	11.0%	11.1%
	Yes AFTER the 2003 EQ - to protect against EQs	11.1%	14.6%	6.7%
	No	45.9%	43.9%	48.9%
	N	135	82	45
A portable stove or barbecue for cooking	Yes - but not to protect against EQs	32.6%	36.9%	26.1%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	15.2%	13.1%	15.2%
	Yes AFTER the 2003 EQ - to protect against EQs	12.3%	16.7%	6.5%
	No	39.9%	33.3%	52.2%
	N	138	84	46
I check the contents/operation of my emergency kit every month	Yes - but not to protect against EQs	13.2%	14.6%	12.5%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	2.8%	2.2%	4.2%
	Yes AFTER the 2003 EQ - to protect against EQs	3.5%	5.6%	.0%
	No	80.6%	77.5%	83.3%
	N	144	89	48
I have a fire extinguisher	Yes - but not to protect against EQs	41.6%	42.9%	42.0%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	12.1%	13.2%	10.0%
	Yes AFTER the 2003 EQ - to protect against EQs	8.1%	11.0%	4.0%
	No	38.3%	33.0%	44.0%
	N	149	91	50
I know how to operate a fire extinguisher	Yes - but not to protect against EQs	59.9%	68.5%	48.0%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	14.3%	10.1%	22.0%
	Yes AFTER the 2003 EQ - to protect against EQs	7.5%	10.1%	4.0%
	No	18.4%	11.2%	26.0%
	N	147	89	50

I have checked my property to minimise fire risk	Yes - but not to protect against EQs	57.1%	61.5%	53.1%
	Yes PRIOR TO the 2003 EQ - to protect against EQs	15.0%	9.9%	24.5%
	Yes AFTER the 2003 EQ - to protect against EQs	8.2%	9.9%	4.1%
	No	19.7%	18.7%	18.4%
	N	147	91	49

Question 21 If your household has not <u>already</u> taken any of the actions listed in <u>Question 20</u> to secure items in your home against earthquakes, please indicate why? (Tick all that apply)

(%)	All	(of those answering the following to 'any damage/loss at all' in Question 1)	
		Yes	No
Time Other priorities/time commitments	32.4%	29.9%	41.2%
Things look complex/hard to do/require major construction activity	3.7%	6.0%	.0%
Not easy to find/buy what items to use such as restraining straps etc	7.4%	9.0%	2.9%
Aesthetically unattractive/don't want screw holes in wall/furniture	10.2%	13.4%	2.9%
My insurance will cover me	12.0%	6.0%	20.6%
I think it would be expensive	4.6%	3.0%	5.9%
There's little point if whole house is damaged/major structural damage	30.6%	25.4%	35.3%
Other	33.3%	40.3%	23.5%
Don't know	10.2%	10.4%	8.8%

'Other' responses to Question 21

as we had little damage, securing ornaments was all that is necessary
built new house
Does not need doing / done
Don't expect another major eq
don't own house
Don't that all the time.
earthquakes are natural & occur anyway
emergency hit not one place but in all place's
Feel it is landlords job to do most things
first time I've seen a list of what to do, I'd love a detailed one
have done some, other not required
Have very little furnishings that can fall over
House undamaged. Very strong
I don t have high furniture
I don t want to plan my life around earthquakes but will makes changes when I get my own home
I feel safe here
I think I am reasonably prepared

impractical to secure everything
just haven't bothered getting a kit together
know where to find these items quickly
lazy
live in rental property
My house has little in it. No large items
New house so assume stucture is sound
no high furniture
not bothered
not important in our situation
only renting. Can't do things without permission
rental property
renting house
some have already
Used to small quakes. Just complacent
very little to screw to wall
will do when repairs completed
will secure water heater

Question 22 Please read each of the following statements and describe (on a scale from 1 = Not at all to 5 = A great deal) the extent to which they apply to you: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1)	
			Yes	No
When I am in a building and it shakes a little, my first thought is, "is it an earthquake?"	Not at all	6.9%	3.1%	15.1%
	Not much	8.2%	8.2%	7.5%
	Moderate	27.7%	25.5%	32.1%
	Somewhat	25.8%	29.6%	18.9%
	A great deal	31.4%	33.7%	26.4%
	N	159	98	53
I get nervous when a building I am in shakes, even though I know it is only a truck going by	Not at all	44.3%	44.9%	46.2%
	Not much	20.9%	17.3%	26.9%
	Moderate	16.5%	20.4%	7.7%
	Somewhat	10.8%	12.2%	7.7%
	A great deal	7.6%	5.1%	11.5%
	N	158	98	52
I would never move to a town where there was a higher risk of earthquakes	Not at all	49.7%	51.0%	47.1%
	Not much	12.7%	7.1%	21.6%
	Moderate	24.8%	26.5%	25.5%
	Somewhat	7.0%	9.2%	2.0%
	A great deal	5.7%	6.1%	3.9%
	N	157	98	51

I avoid things that remind me of earthquakes	Not at all	67.7%	69.4%	69.2%
	Not much	13.9%	13.3%	15.4%
	Moderate	10.8%	8.2%	11.5%
	Somewhat	4.4%	5.1%	1.9%
	A great deal	3.2%	4.1%	1.9%
	N	158	98	52
On humid days I think, "this is earthquake weather"	Not at all	55.1%	57.1%	53.8%
	Not much	13.3%	11.2%	15.4%
	Moderate	13.3%	14.3%	13.5%
	Somewhat	8.9%	7.1%	9.6%
	A great deal	9.5%	10.2%	7.7%
	N	158	98	52
If I think there might be an earthquake, I make sure I am close to a safe place	Not at all	60.3%	63.5%	61.5%
	Not much	11.5%	8.3%	9.6%
	Moderate	14.7%	14.6%	15.4%
	Somewhat	5.1%	7.3%	1.9%
	A great deal	8.3%	6.3%	11.5%
	N	156	96	52
I avoid thinking about earthquakes	Not at all	51.6%	54.1%	51.0%
	Not much	14.0%	10.2%	15.7%
	Moderate	22.3%	23.5%	21.6%
	Somewhat	6.4%	5.1%	7.8%
	A great deal	5.7%	7.1%	3.9%
	N	157	98	51

Question 23 In regard to your general feelings about living in this *community*, please describe the extent to which you agree or disagree with each statement: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1) Yes	No
I trust my local council to respond to meet the needs of its residents	Strongly agree	15.3%	17.5%	13.5%
	Agree	50.3%	48.5%	53.8%
	Neither agree nor disagree	26.1%	22.7%	28.8%
	Disagree	7.0%	10.3%	1.9%
	Strongly disagree	1.3%	1.0%	1.9%
	N	157	97	52
I trust the community leaders in my community	Strongly agree	14.7%	15.5%	13.7%
	Agree	53.2%	51.5%	58.8%
	Neither agree nor disagree	23.7%	23.7%	21.6%
	Disagree	7.1%	8.2%	3.9%
	Strongly disagree	1.3%	1.0%	2.0%
	N	156	97	51
I trust my local council to do what is necessary should an earthquake occur	Strongly agree	19.2%	18.6%	21.6%
	Agree	53.8%	56.7%	51.0%
	Neither agree nor disagree	19.2%	15.5%	23.5%
	Disagree	5.8%	7.2%	2.0%
	Strongly disagree	1.9%	2.1%	2.0%
	N	156	97	51

SECTION D PERCEPTIONS

Question 24 Please describe how often you do the following: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1) Yes	No
Since this experience, do you think about earthquakes?	Once a week or more	18.0%	19.2%	14.8%
	Once a month	29.2%	34.3%	20.4%
	A few times a year	26.1%	23.2%	33.3%
	Rarely	23.0%	21.2%	25.9%
	Never	3.7%	2.0%	5.6%
	N	161	99	54
Since this experience, do you talk about earthquakes?	Once a week or more	13.1%	15.3%	11.1%
	Once a month	32.5%	34.7%	25.9%
	A few times a year	35.6%	34.7%	40.7%
	Rarely	15.6%	14.3%	18.5%
	Never	3.1%	1.0%	3.7%
	N	160	98	54

Question 25 Please describe the extent to which you agree or disagree with each of the following statements, *these statements relate to <u>you</u>*: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1) Yes	No
A future earthquake could pose a threat to your personal safety	Strongly agree	13.0%	13.1%	11.1%
	Agree	49.7%	52.5%	44.4%
	Neither agree nor disagree	23.0%	23.2%	24.1%
	Disagree	13.0%	11.1%	16.7%
	Strongly disagree	1.2%	.0%	3.7%
	N	161	99	54
A future earthquake could pose a threat to your daily life (e.g. work, leisure)	Strongly agree	14.3%	16.2%	9.3%
	Agree	54.0%	52.5%	57.4%
	Neither agree nor disagree	17.4%	16.2%	20.4%
	Disagree	9.9%	12.1%	5.6%
	Strongly disagree	4.3%	3.0%	7.4%
	N	161	99	54

A future earthquake could pose a threat to your property	Strongly agree	21.1%	24.2%	13.0%
	Agree	59.0%	59.6%	61.1%
	Neither agree nor disagree	12.4%	9.1%	18.5%
	Disagree	6.2%	6.1%	5.6%
	Strongly disagree	1.2%	1.0%	1.9%
	N	161	99	54

Question 26 Please describe the extent to which you agree or disagree with each of the following statements. *These statements relate to <u>other members of the community</u>*: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1) Yes	No
A future earthquake could pose a threat to the personal safety of most of the people who live in your community	Strongly agree	17.0%	16.2%	15.1%
	Agree	50.3%	54.5%	45.3%
	Neither agree nor disagree	15.1%	13.1%	17.0%
	Disagree	13.8%	14.1%	15.1%
	Strongly disagree	3.8%	2.0%	7.5%
	N	159	99	53
A future earthquake could pose a threat to the daily activities (e.g., work, leisure) of most of the people who live in your community	Strongly agree	18.1%	18.2%	15.1%
	Agree	53.8%	57.6%	45.3%
	Neither agree nor disagree	13.8%	12.1%	18.9%
	Disagree	11.3%	9.1%	17.0%
	Strongly disagree	3.1%	3.0%	3.8%
	N	160	99	53
A future earthquake could pose a threat to the houses or properties of most of the people who live in your community.	Strongly agree	19.4%	20.2%	15.1%
	Agree	55.0%	56.6%	50.9%
	Neither agree nor disagree	11.3%	12.1%	11.3%
	Disagree	11.3%	8.1%	18.9%
	Strongly disagree	3.1%	3.0%	3.8%
	N	160	99	53

Question 27 Since you have had this experience, please describe the extent to which you agree or disagree with each of the following statements: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1) Yes	No
Earthquakes are too destructive to bother preparing for	Strongly agree	1.9%	2.1%	1.9%
	Agree	11.4%	10.3%	11.3%
	Neither agree nor disagree	18.4%	12.4%	26.4%
	Disagree	58.9%	62.9%	54.7%
	Strongly disagree	9.5%	12.4%	5.7%
	N	158	97	53
A serious earthquake is unlikely to occur during your lifetime	Strongly agree	4.4%	4.1%	3.8%
	Agree	6.3%	7.1%	3.8%
	Neither agree nor disagree	22.6%	21.4%	24.5%
	Disagree	40.9%	38.8%	47.2%
	Strongly disagree	25.8%	28.6%	20.8%
	N	159	98	53
It is not necessary to prepare for earthquakes as assistance will be provided by the council and/or the emergency services	Strongly agree	.0%	.0%	.0%
	Agree	3.2%	3.1%	1.9%
	Neither agree nor disagree	14.6%	11.2%	21.2%
	Disagree	60.1%	57.1%	65.4%
	Strongly disagree	22.2%	28.6%	11.5%
	N	158	98	52
Preparing for earthquakes will significantly reduce damage to my home should an earthquake occur	Strongly agree	10.8%	14.4%	5.7%
	Agree	55.7%	52.6%	58.5%
	Neither agree nor disagree	20.9%	18.6%	24.5%
	Disagree	9.5%	10.3%	9.4%
	Strongly disagree	3.2%	4.1%	1.9%
	N	158	97	53
Preparing for earthquakes will improve my everyday living conditions	Strongly agree	1.3%	2.0%	.0%
	Agree	25.2%	24.5%	26.4%
	Neither agree nor disagree	44.7%	46.9%	39.6%
	Disagree	21.4%	17.3%	28.3%
	Strongly disagree	7.5%	9.2%	5.7%
	N	159	98	53
Preparing for earthquakes will improve the value of my house/property	Strongly agree	1.3%	2.0%	.0%
	Agree	27.2%	23.5%	34.6%
	Neither agree nor disagree	38.6%	43.9%	26.9%
	Disagree	28.5%	25.5%	34.6%
	Strongly disagree	4.4%	5.1%	3.8%
	N	158	98	52

Preparing for earthquakes will significantly improve my ability to deal with disruption to family/community life following an earthquake	Strongly agree	6.3%	9.3%	1.9%
	Agree	61.4%	63.9%	56.6%
	Neither agree nor disagree	20.3%	14.4%	28.3%
	Disagree	8.9%	9.3%	9.4%
	Strongly disagree	3.2%	3.1%	3.8%
	N	158	97	53

Question 28 In regard to the issues and problems that you deal with in your *everyday life*, please describe the extent to which you agree or disagree with each of the following statements: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1) Yes	No
I have considerable control over what happens in my life	Strongly agree	12.8%	12.5%	11.5%
	Agree	67.9%	70.8%	61.5%
	Neither agree nor disagree	12.2%	10.4%	17.3%
	Disagree	6.4%	5.2%	9.6%
	Strongly disagree	.6%	1.0%	.0%
	N	156	96	52
I can solve most of the problems I have by myself	Strongly agree	13.5%	13.5%	13.5%
	Agree	66.0%	67.7%	63.5%
	Neither agree nor disagree	14.7%	12.5%	17.3%
	Disagree	5.8%	6.3%	5.8%
	Strongly disagree	.0%	.0%	.0%
	N	156	96	52
What happens to me in the future mostly depends on me	Strongly agree	15.9%	15.6%	15.1%
	Agree	65.0%	62.5%	69.8%
	Neither agree nor disagree	14.0%	15.6%	11.3%
	Disagree	4.5%	5.2%	3.8%
	Strongly disagree	.6%	1.0%	.0%
	N	157	96	53
I can do a lot to change many of the important things in my life	Strongly agree	13.5%	14.6%	11.3%
	Agree	65.4%	69.8%	60.4%
	Neither agree nor disagree	19.9%	14.6%	26.4%
	Disagree	1.3%	1.0%	1.9%
	Strongly disagree	.0%	.0%	.0%
	N	156	96	53

I can do just about anything if I really set my mind on it	Strongly agree	14.0%	13.5%	15.1%
	Agree	61.8%	66.7%	52.8%
	Neither agree nor disagree	19.1%	15.6%	26.4%
	Disagree	5.1%	4.2%	5.7%
	Strongly disagree	.0%	.0%	.0%
	N	157	96	53
I rarely feel helpless in dealing with the problems of life	Strongly agree	10.8%	13.5%	7.5%
	Agree	67.5%	68.8%	67.9%
	Neither agree nor disagree	7.6%	4.2%	9.4%
	Disagree	12.1%	12.5%	11.3%
	Strongly disagree	1.9%	1.0%	3.8%
	N	157	96	53

Question 29 Please describe the extent to which you agree or disagree with each of the following statements regarding responsibility for preparing for future earthquakes: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1)	
			Yes	No
I feel responsible for preparing for a major earthquake	Strongly agree	6.3%	7.1%	3.8%
	Agree	67.3%	69.4%	66.0%
	Neither agree nor disagree	20.1%	17.3%	22.6%
	Disagree	5.0%	5.1%	5.7%
	Strongly disagree	1.3%	1.0%	1.9%
	N	159	98	53
The council/Civil Defence is responsible for making sure that I am prepared for the occurrence of a major earthquake	Strongly agree	1.9%	1.0%	1.9%
	Agree	23.7%	23.7%	23.1%
	Neither agree nor disagree	37.2%	32.0%	48.1%
	Disagree	34.0%	40.2%	23.1%
	Strongly disagree	3.2%	3.1%	3.8%
	N	156	97	52

Question 30 In regard to dealing with problems in your everyday life, please describe on a scale from 1 (I usually don't do this at all) to 4 (I usually do this a lot) how much of each of the following you do: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1)	
			Yes	No
I try to come up with a strategy about what to do	Strongly agree	9.4%	8.2%	11.3%
	Agree	19.5%	16.3%	24.5%
	Neither agree nor disagree	48.4%	48.0%	50.9%
	Disagree	22.0%	27.6%	13.2%
	Strongly disagree	.6%	.0%	.0%
	N	159	98	53
I make a plan of action	Strongly agree	11.4%	7.2%	15.1%
	Agree	26.6%	25.8%	28.3%
	Neither agree nor disagree	44.9%	45.4%	47.2%
	Disagree	17.1%	21.6%	9.4%
	Strongly disagree	.0%	.0%	.0%
	N	158	97	53
I think hard about what steps to take	Strongly agree	8.8%	6.1%	13.2%
	Agree	22.6%	22.4%	22.6%
	Neither agree nor disagree	44.7%	46.9%	41.5%
	Disagree	23.9%	24.5%	22.6%
	Strongly disagree	.0%	.0%	.0%
	N	159	98	53
I think about how I might best handle the problem	Strongly agree	6.3%	5.1%	9.4%
	Agree	15.7%	15.3%	17.0%
	Neither agree nor disagree	50.9%	53.1%	47.2%
	Disagree	27.0%	26.5%	26.4%
	Strongly disagree	.0%	.0%	.0%
	N	159	98	53

Question 31 In regard to living in this *community* generally, please describe the extent to which you agree or disagree with each statement: (Tick only one per line)

(%)		All	(of those answering the following to 'any damage/loss at all' in Question 1)	
			Yes	No
I feel like I belong in this community	Strongly agree	29.1%	25.8%	32.1%
	Agree	53.2%	55.7%	50.9%
	Neither agree nor disagree	15.2%	14.4%	17.0%
	Disagree	1.9%	3.1%	.0%
	Strongly disagree	.6%	1.0%	.0%
	N	158	97	53
I believe my neighbours would help me in an emergency	Strongly agree	29.7%	30.6%	26.4%
	Agree	59.5%	60.2%	60.4%
	Neither agree nor disagree	9.5%	7.1%	13.2%
	Disagree	1.3%	2.0%	.0%
	Strongly disagree	.0%	.0%	.0%
	N	158	98	53
Even if I had the opportunity I would not move out of this community	Strongly agree	27.2%	24.5%	28.3%
	Agree	38.0%	39.8%	37.7%
	Neither agree nor disagree	21.5%	20.4%	26.4%
	Disagree	10.1%	12.2%	5.7%
	Strongly disagree	3.2%	3.1%	1.9%
	N	158	98	53
I feel loyal to the people in my community	Strongly agree	29.3%	28.9%	25.0%
	Agree	56.1%	56.7%	57.7%
	Neither agree nor disagree	12.1%	10.3%	17.3%
	Disagree	1.9%	3.1%	.0%
	Strongly disagree	.6%	1.0%	.0%
	N	157	97	52
I often have friends over to my house to see me	Strongly agree	24.8%	25.8%	20.8%
	Agree	52.9%	55.7%	49.1%
	Neither agree nor disagree	15.9%	12.4%	22.6%
	Disagree	4.5%	4.1%	5.7%
	Strongly disagree	1.9%	2.1%	1.9%
	N	157	97	53
I plan to remain a resident of this community for a number of years	Strongly agree	32.3%	33.7%	26.9%
	Agree	48.1%	45.9%	55.8%
	Neither agree nor disagree	15.2%	13.3%	17.3%
	Disagree	3.2%	5.1%	.0%
	Strongly disagree	1.3%	2.0%	.0%
	N	158	98	52

Question 32 Do you, or someone in your house, own or rent the home you live in?

	All
Own or buying, to live in it	80%
Own or buying, but only for use as a holiday home	2%
Rent, to live in it	18%
Rent, but only for use as a holiday home	1%
N	159

Question 33 How long have you lived in this community and house?

Length of time living in this community				Length of time living in this home			
Years	All	(of those answering the following to 'any damage/loss at all' in Q 1) Yes	No	Years	All	(of those answering the following to 'any damage/loss at all' in Q 1) Yes	No
1 or less	4.6%	4.0%	5.7%	1 or less	18.7%	20.2%	15.7%
2 - 3	8.6%	11.1%	3.8%	2 - 3	18.0%	21.2%	11.8%
4 - 5	7.2%	7.1%	7.5%	4 - 5	14.7%	15.2%	13.7%
6 - 10	19.1%	21.2%	15.1%	6 - 10	20.7%	18.2%	25.5%
11 - 20	22.4%	22.2%	22.6%	11 - 20	17.3%	16.2%	19.6%
21 - 30	18.4%	21.2%	13.2%	21 - 30	6.7%	6.1%	7.8%
31 - 40	14.5%	8.1%	26.4%	31 - 40	2.7%	2.0%	3.9%
41 - 50	3.3%	3.0%	3.8%	41 - 50	.7%	.0%	2.0%
51 or more	2.0%	2.0%	1.9%	51 or more	.7%	1.0%	.0%
N	152	99	53	N	150	99	51

Additional comments

Am now in temporary Rental accommodation - will think about these things when in my own home.
Far to long for most people to reply to.
I was not living in Te Anau at the time
Income has nothing to do with earthquakes!
My husband & I live here & have 3 daughters in area & 8 grandchildren. We lived in Milford Sound for 15 years & we thought we knew it all re eqs. Lots there often but not big ones
Q 18 (I have never received any information on earthquakes ever)
This survey is an absolute waste of money that could be used better. What next!
this survey is far too detailed & long.
we made a claim but it was too late.

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