



## BIBLIOGRAPHIC REFERENCE

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## **ABSTRACT**

The M6.5 Cook Strait earthquake of 21st July 2013 and the M6.6 Lake Grassmere earthquake of 16th August 2013 were felt widely across both the North and South Islands of New Zealand. Shaking was felt throughout the Wellington region and some building damage occurred within Wellington City. In October 2013, the Joint Centre for Disaster Research at Massey University/GNS Science conducted research on how Wellington residents responded to and reacted to the July and August 2013 earthquakes, their perceptions of tsunami immediately after the earthquakes, as well their perceptions of aftershock advice. This report presents the data results of the survey.

## **KEYWORDS**

Cook Strait, Lake Grassmere, earthquake, Wellington, residents, response, reaction, aftershock advice.



## 1.0 INTRODUCTION

The Cook Strait earthquake on Sunday 21st July 2013 and the Lake Grassmere earthquake on Friday 16th August 2013 were felt widely throughout both the North and South Islands of New Zealand.

The Cook Strait earthquake had a magnitude of 6.5, occurred at a depth of 13 km and was situated ~51km from central Wellington (GeoNet, 2013; EQC, 2013). The Lake Grassmere earthquake had a magnitude of 6.6, occurred at a depth of 8 km and was situated ~77km from central Wellington (GeoNet, 2013; EQC, 2013). Both earthquakes were 'strike-slip' events – two similarly-sized earthquakes with the same sort of characteristics like this are termed a 'doublet' (GeoNet, 2013).

Immediately after the Cook Strait earthquake in July 2013, the Massey University/GNS Science Joint Centre for Disaster Research planned to conduct a survey into the immediate actions that people within Wellington city took following the earthquake, by adapting a pre-existing survey that was conducted to assess the immediate behavioural responses to the Christchurch earthquake of February 2011 and the Tohoku earthquake of March 2011 (Lindell et al., 2014). Additional questions were added to this survey to assess people's perceptions of tsunami immediately after these earthquakes, as well as their perception and understanding of aftershock probabilities. However, prior to the dissemination of this survey, the August 2013 Lake Grassmere earthquake occurred. The occurrence of this 'doublet' of earthquakes provided a rare opportunity to both compare people's responses between the two earthquakes, as well as assess their self-reported preparedness measures taken in response to each earthquake and over time. In particular, the second earthquake occurred on a Friday afternoon and so greatly impacted people at work in the Wellington Central Business District (CBD). The survey, undertaken in October 2013, thus provides valuable insights into people's immediate actions when the majority were separated from family and home, in contrast to the first earthquake. This report presents the results of this survey of residents.

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Surveyed respondents were asked to be the person in the household aged 18 years or older who most recently had a birthday. Confidentiality was assured and respondents remained anonymous. All research conducted within this study was done in accordance with Massey University's Code of Ethical Conduct for Research, Teaching and Evaluations Involving Human Participants, and the project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

Survey respondents were asked to answer thirty questions about how they reacted, how they responded, who they were with, where they were located, and how they felt during the Cook Strait and Lake Grassmere earthquakes, as well as their perceptions and understanding of real and hypothetical aftershock communications. Additionally, twelve demographic questions were asked to ensure that the study covered a cross section of the communities represented. Respondents were also asked for any comments about their good and/or bad experiences during the earthquakes.

Respondents were asked to post the completed questionnaire in the postage-paid envelope provided.

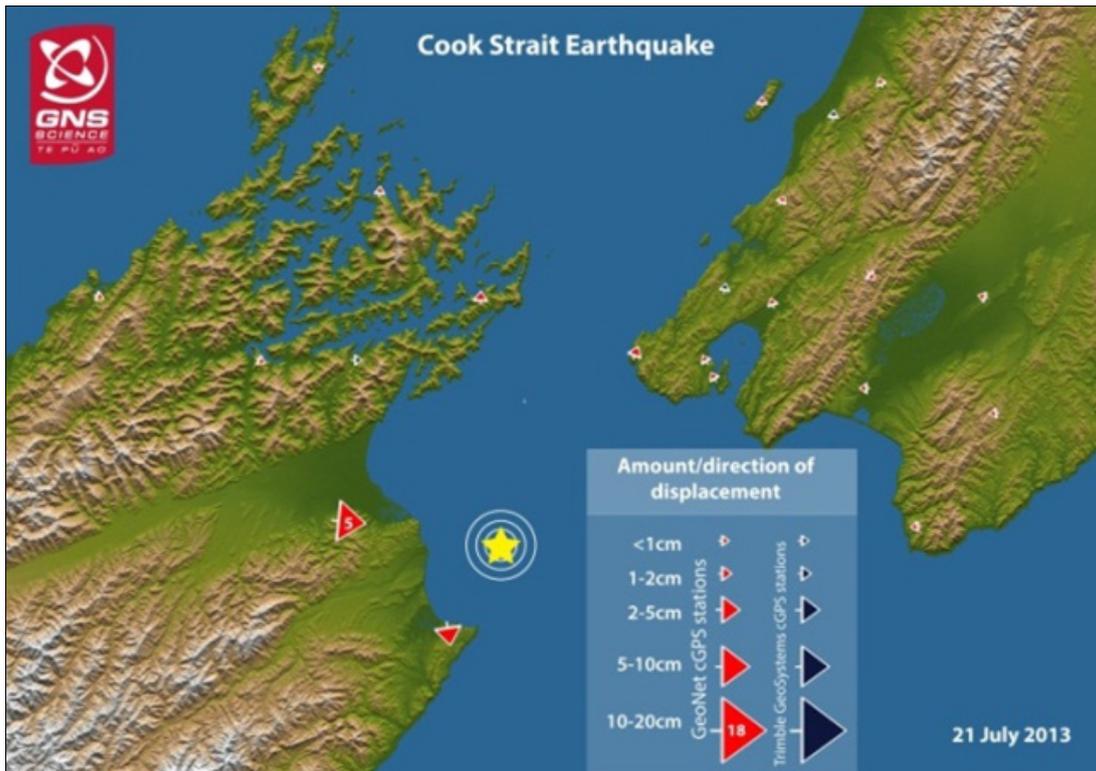
Questionnaire response data was entered into the SPSS program for analysis. During data entry it was discovered that in Question 8 in the survey questionnaire there was an option row with boxes missing (should have been row 8). Only one respondent had checked that option and so this Question 8 row 8 option was not included in the survey results reported. The SPSS data was analysed and tables created for this report.

### 3.0 SETTING

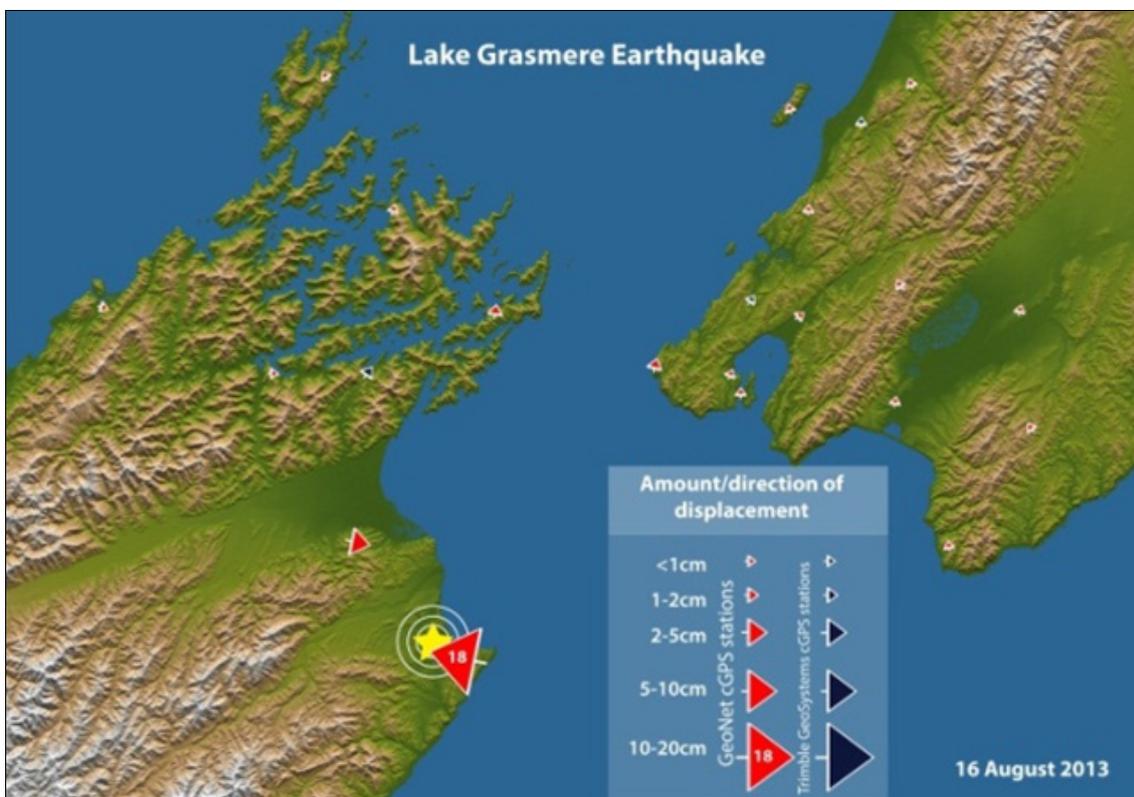
The Cook Strait earthquake sequence included two major events that caused damage nearby Wellington City. The Cook Strait and Lake Grassmere earthquakes occurred at sea in the Cook Strait, and on land bordering the Strait (see Figure 3.1). The Cook Strait earthquakes (see Figure 3.2 and Figure 3.3) are thought to have occurred on a previously unknown offshore extension of the London Hills Fault which runs from near the town of Ward and enters Cook Strait between Lake Grassmere and Cape Campbell (Fenaughty, 2013; Holden et al., 2013).



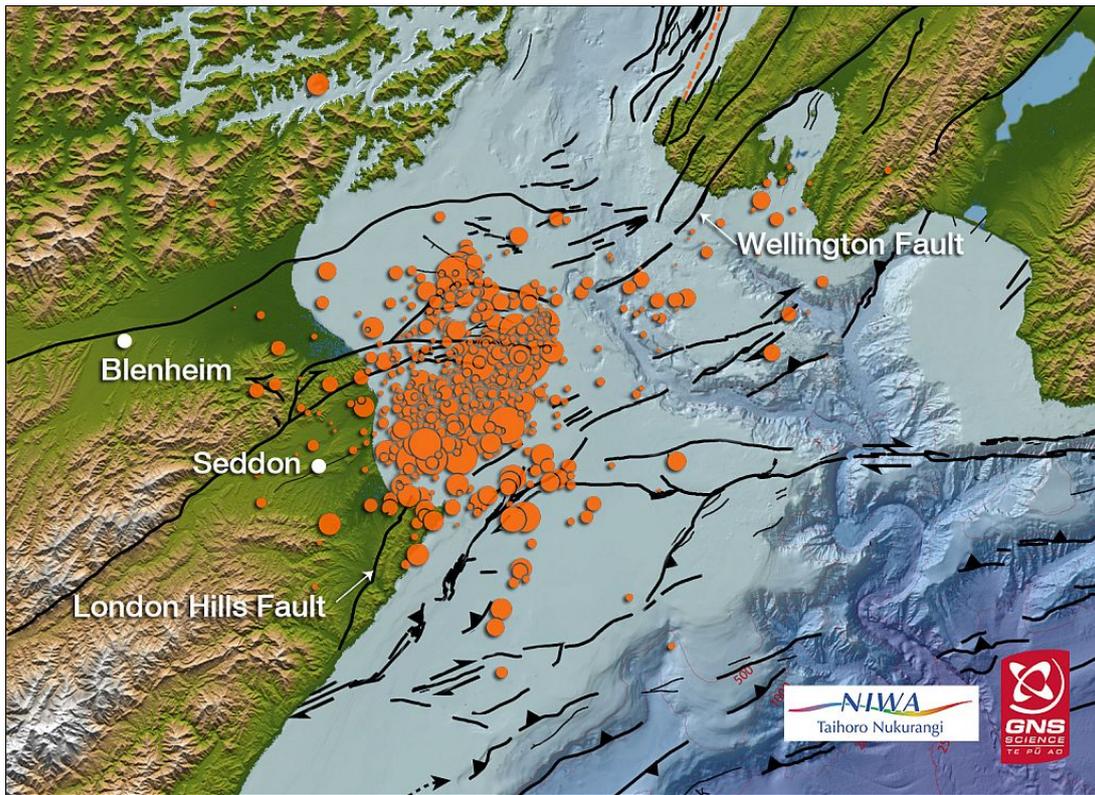
**Figure 3.1** Location map. Source: <http://www.vidiani.com/?p=13715>



**Figure 3.2** Epicentre of the Cook Strait earthquake event, New Zealand (indicated by yellow star). The magnitude and direction of displacement at monitoring sites is indicated by arrows. Source: <http://info.geonet.org.nz/display/quake/M+6.6%2C+Lake+Grassmere%2C+16+August+2013>

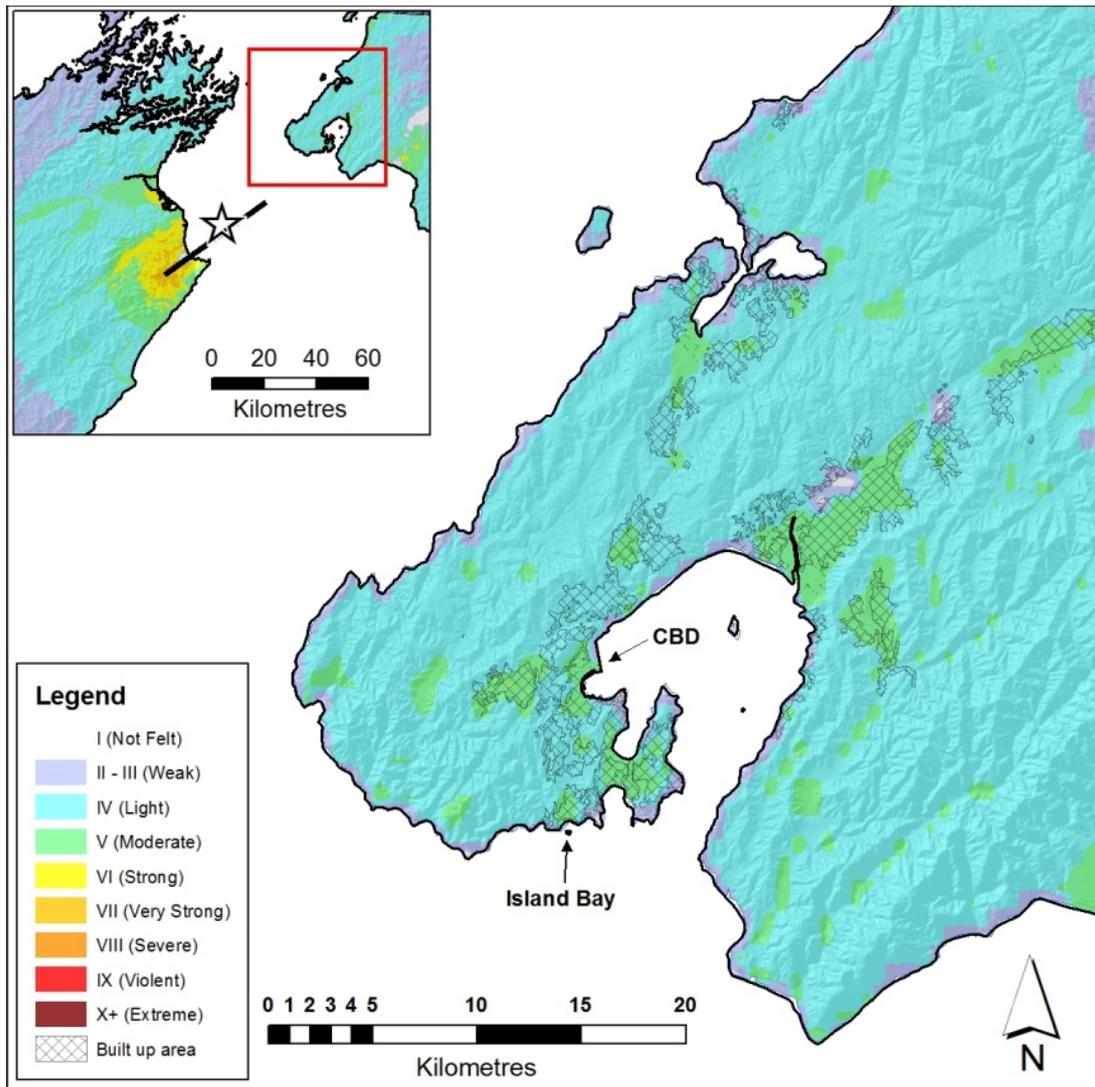


**Figure 3.3** Epicentre of the Lake Grassmere earthquake event, New Zealand (indicated by yellow star). The magnitude and direction of displacement at monitoring sites is indicated by arrows. Source: <http://info.geonet.org.nz/display/quake/M+6.6%2C+Lake+Grassmere%2C+16+August+2013>

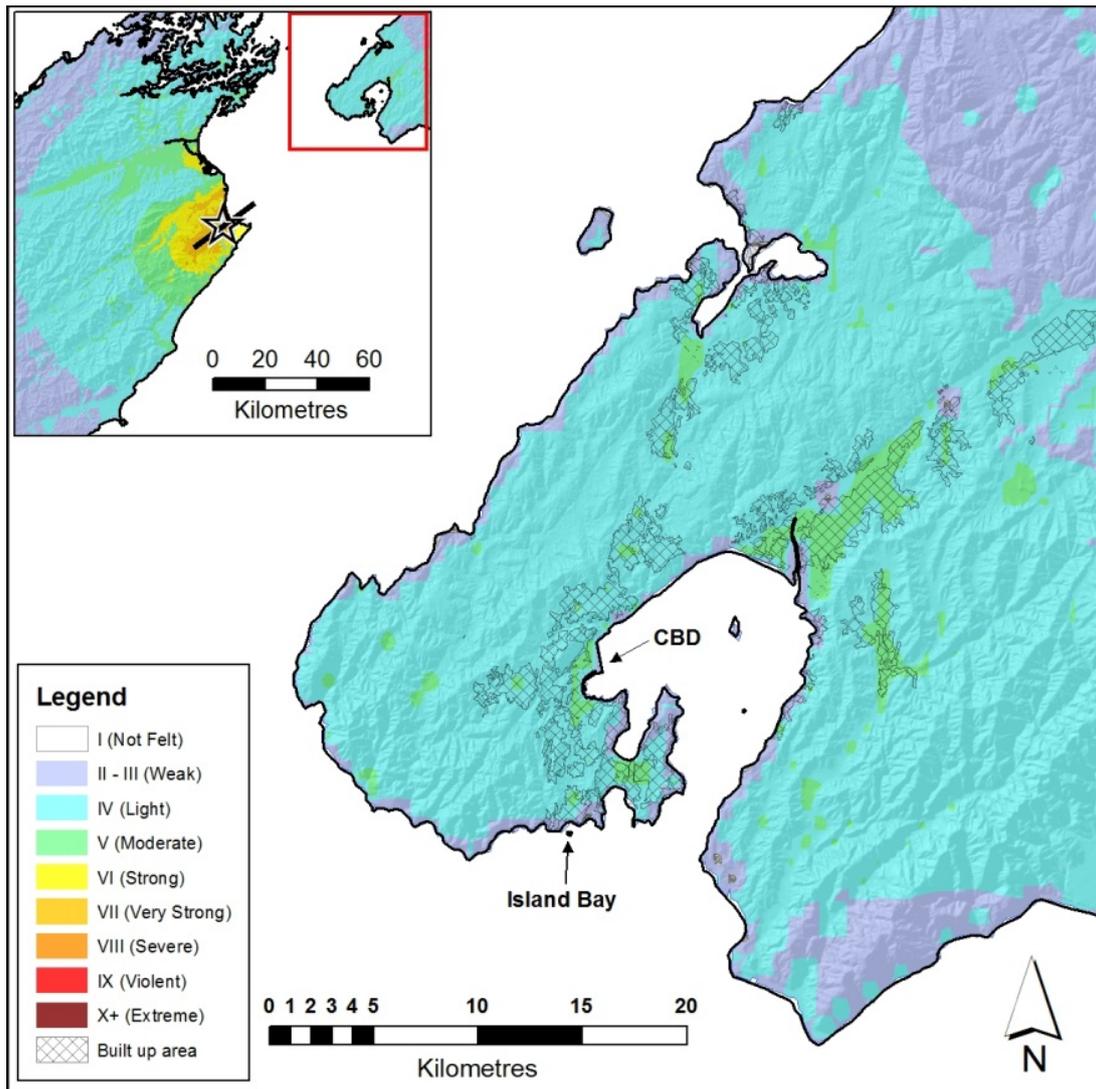


**Figure 3.4** Cook Strait map showing known faults and the Cook Strait earthquake sequence.  
 Source: <http://info.geonet.org.nz/pages/viewpage.action?pageId=5800119>

Figure 3.5 and Figure 3.6 have been produced by GeoNet using ‘ShakeMap’, a product developed by the U.S. Geological Survey (Wald et al., 1999). The maps indicated the severity of the ground shaking produced by the Cook Strait and Lake Grassmere earthquakes. The north-eastern area of the South Island close to the epicentre experienced the most severe shaking in both main earthquakes of the sequence. The range in intensity of ground shaking varied throughout the region depending on the distance from the earthquake, the rock and soil conditions, and complexities in the structure of the Earth’s crust causing differences in the propagation of seismic waves from the earthquakes. These differences are indicated in Figure 3.3 and Figure 3.4.



**Figure 3.5** Cook Strait earthquake shaking intensity map. Source: GNS Science.



**Figure 3.6** Lake Grassmere earthquake shaking intensity map. Source: GNS Science.

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## 4.0 TABULATED RESULTS

Of the 600 survey questionnaires delivered, 204 were completed and returned. Both fully and partially completed questionnaires are included in the tabulated data below.

### SECTION 1: REACTIONS DURING AND AFTER EACH EARTHQUAKE

#### Q1.

When the earthquake occurred, in which suburb were you located?		Count (n = 182)	Column Valid N %
<b>Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)</b>	Auckland	3	1.5
	Berhampore	2	1.0
	Brooklyn	1	0.5
	Carterton	1	0.5
	Wellington CBD	4	2.0
	Elderslea (Upper Hutt)	1	0.5
	Hataitai	2	1.0
	Hawkes Bay	1	0.5
	Houghton Bay	17	8.3
	In-flight to Hamilton	1	0.5
	Island Bay	43	21.0
	Kaitoke	1	0.5
	Lower Hutt	2	1.0
	Lyll Bay	23	11.2
	Melrose	16	7.8
	Miramar	1	0.5
	New Plymouth	1	0.5
	Newtown	5	2.4
	Otaki	1	0.5
	Out of town	3	1.5
	Overseas	4	2.0
	Owhiro Bay	22	10.7
	Petone	1	0.5
	Porirua	1	0.5
	Pukerua Bay	1	0.5
	Roseneath	1	0.5
	SH 1	1	0.5
	Southgate	17	8.3
Taupo	1	0.5	
Tawa	1	0.5	
Thorndon	2	1.0	

**Q1**

<b>When the earthquake occurred, in which suburb were you located?</b>		<b>Count (n = 174)</b>	<b>Column Valid N %</b>
<b>Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)</b>	Aotea	1	0.5
	Auckland	2	1.0
	Brooklyn	3	1.5
	CBD	50	24.4
	Eastbourne	1	0.5
	Evans Bay	1	0.5
	Hamilton	1	0.5
	Hataitai	1	0.5
	Houghton Bay	9	4.4
	Island Bay	17	8.3
	Johnsonville	2	1.0
	Kelburn	1	0.5
	Kilbirnie	2	1.0
	Lambton	2	1.0
	Lyall Bay	16	7.8
	Melrose	6	2.9
	Miramar	5	2.4
	Mt Cook	2	1.0
	Mt Victoria	1	0.5
	New Plymouth	1	0.5
	Newtown	13	6.3
	Ngaio	1	0.5
	On route to Mt Ruapehu	1	0.5
	Overseas	3	1.5
	Owhiro Bay	5	2.4
	Paraparaumu	1	0.5
	Petone	1	0.5
	Porirua	2	1.0
	Rongotai	2	1.0
	Seatoun	1	0.5
Southgate	6	2.9	
Strathmore	1	0.5	
Te Aro	3	1.5	
Thorndon	10	4.9	

**1b**

Were you in the Wellington Region during:		Count	Row Valid N %	Total
The Cook Strait earthquake	Yes	164	92.7	177
	No	13	7.3	
The Lake Grassmere earthquake	Yes	166	95.4	174
	No	8	4.6	
Both earthquakes	Yes	146	85.9	170
	No	24	14.1	

**Q2.**

When the earthquake occurred, in which of the following places were you located?	Cook Strait Earthquake		Lake Grassmere Earthquake	
	Count (n = 190)	Column Valid N %	Count (n = 191)	Column Valid N %
At your home	138	72.6	63	33.0
At the home of friends or family	12	6.3	9	4.7
At your workplace	8	4.2	77	40.3
In a public place (e.g., shopping or recreation)	15	7.9	19	9.9
Driving a vehicle	4	2.1	9	4.7
Passenger in a vehicle	4	2.1	2	1.0
Other	9	4.7	12	6.3

**Q2. When the earthquake occurred, in which of the following places were you located (Other)?**

**Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)**

- Europe
- Holiday Bach
- Hospital
- In an aeroplane
- In Christchurch
- On holiday
- Overseas
- Running home from work
- Thumbs Up Hall

**Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)**

- A client's workplace
- Amora Hotel
- At a conference
- At place of study
- Kindergarten (collecting child)
- Not felt. Wife alone in garden
- Out of town
- Overseas
- Probably walking along road to Island Bay
- Underground car park
- University
- Visiting the Chiropractor

### Q3. Cook Strait earthquake

What was your Street location during the earthquake – Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)	Count	Column Valid N %
Adelaide Rd	2	1.2
Aotaki St	1	0.6
Besides the Beach	1	0.6
Brighton St	1	0.6
Brooklyn Rd	1	0.6
Buckley Rd	19	11.6
Carlton St	3	1.8
Clyde St	2	1.2
Constable St	1	0.6
Derwent St	12	7.3
Evans Bay Parade	1	0.6
Fergusson Dr	1	0.6
Freyberg St	7	4.3
Frobisher St	7	4.3
Grafton Rd	1	0.6
Hamilton Rd	1	0.6
Happy Valley Rd	8	4.9
Hornsey Rd	11	6.7
Houghton Bay Park	1	0.6
Houghton Bay Rd	15	9.7
Humber St	2	1.2
John St	1	0.6
Kaitoke Reserve SH2	1	0.6
Kingsford Smith St	1	0.6
Lambton Quay	1	0.6
Macalister Park	1	0.6
Milne Tce	1	0.6
Mt Eden	1	0.6
Murchison St	1	0.6
Onepu Rd	4	2.4
Owhiro Bay Parade	15	9.1
Queens Dr	8	4.9
Queens Wharf	1	0.6
Riddiford St	1	0.6
Rintoul St	1	0.6
Severn St	6	3.6
Silbury Pl, Petone (potential misspelling of street)	1	0.6
Southern Cross Cres	2	1.2
Southgate	1	0.6
Taranaki St	1	0.6

<b>What was your Street location during the earthquake – Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)</b>	<b>Count</b>	<b>Column Valid N %</b>
The Parade	3	1.8
Tirangi Rd	1	0.6
Titahi Bay Rd	1	0.6
Toru St	1	0.6
Turangi	1	0.6
View Rd	2	1.2
Washington Ave	1	0.6
Webb St	1	0.6
Wha St	2	1.2
Willis Street	1	0.6
Wye St	3	1.8
<b>Total</b>	<b>164</b>	<b>100.0</b>

### Q3. Lake Grassmere earthquake

<b>What was your street location during the earthquake – Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)</b>	<b>Count</b>	<b>Column Valid N %</b>
Kate Sheppard Pl	1	0.6
Adelaide Rd	4	2.3
Aitken St	4	2.3
Awarua St	1	0.6
Bay Rd	1	0.6
Boulcott St	1	0.6
Bowen St	2	1.2
Brooklyn Rd	1	0.6
Buckley Rd	8	4.7
Burma Rd	1	0.6
Cable St	1	0.6
Carlton St	1	0.6
Clyde St	1	0.6
Constable St	2	1.2
Coromandel St	1	0.6
Courtenay Pl	2	1.2
Cuba St	1	0.6
Customhouse Quay	5	2.9
Daniell St	1	0.6
Derwent St	2	1.2
Dixon St	1	0.6
Ellice St	1	0.6
Evans Bay Parade	1	0.6
Farnham St	1	0.6
Featherston St	2	1.2
Freyberg St	2	1.2

<b>What was your street location during the earthquake – Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)</b>	<b>Count</b>	<b>Column Valid N %</b>
Frobisher St	4	2.3
Ghuznee St	1	0.6
Greta Point	1	0.6
Grey St	1	0.6
Happy Valley Rd	4	2.3
Hawkestone St	1	0.6
Hornsey Rd	4	2.3
Houghton Bay Rd	9	5.3
Kate Shepherd Pl	1	0.6
Kelburn Parade	2	1.2
Kent Tce	1	0.6
Lambton Quay	6	3.5
Manners St	1	0.6
Mein St	2	1.2
Melbourne Rd	1	0.6
Miramar Ave	1	0.6
Molesworth St	4	2.3
Moonshine Rd	1	0.6
North City Mall	1	0.6
Ohiro Rd	2	1.2
Onepu Rd	2	1.2
Ottawa Rd	1	0.6
Owen St	2	1.2
Owhiro Bay Parade	4	2.3
Panama St	1	0.6
Papakowhai Rd	2	1.2
Paraparaumu	1	0.6
Pipitea St	1	0.6
Post Office Square	1	0.6
Pukerua Bay	1	0.6
Queens Dr	7	4.1
Railway Ave	1	0.6
Richmond Rd	1	0.6
Riddiford St	3	1.5
Severn St	2	1.2
Shelly Bay	2	1.2
Southgate	1	0.6
Stewart Duff Dr	1	0.6
Strathmore Ave	1	0.6
Taranaki St	2	1.2
Tasman St	1	0.6

What was your street location during the earthquake – Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	Count	Column Valid N %
The Terrace	9	5.3
Thorndon Quay	1	0.6
Tinakori Rd	1	0.6
Tirangi Rd	2	1.2
Toru St	1	0.6
Tory St	1	0.6
Upper Bourke St	1	0.6
Victoria St	3	1.5
Vivian St	1	0.6
Wakefield St	1	0.6
Washington Ave	1	0.6
Wellington Port	1	0.6
Wexford Rd	1	0.6
Wha St	1	0.6
Willis St	9	5.3
Wye St	2	1.2
<b>Total</b>	<b>171</b>	<b>100.0</b>

#### Q3a.

Were you at your home address during the earthquake:	Yes		No		Total
	Count	Column Valid N %	Count	Column Valid N %	
Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)	125	73.1	46	26.9	171
Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	51	30.2	118	69.8	169
During both earthquakes	38	24.7	116	75.3	154

#### Q4.

When the earthquake occurred, which of the following best describes your household?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
All household members were together	109	61.5	40	23.4
Some household members were absent but I knew they were in a safe location	38	21.5	50	29.2
Some household members were absent and I knew they were in danger	1	0.6	3	1.8
Some household members were absent and I didn't know if they were safe	29	16.4	78	45.6
<b>Total</b>	<b>177</b>	<b>100.0</b>	<b>171</b>	<b>100.0</b>

**Q5.**

When the earthquake occurred, what was your social context?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
I was alone	66	29.8	44	21.1
I was with children under 18 yr of age	48	21.6	29	13.9
I was with adults I knew	101	45.6	114	54.5
I was with adult strangers	7	3.0	22	10.5
<b>Total</b>	<b>222</b>	<b>100.0</b>	<b>209</b>	<b>100.0</b>

**Q6.**

How strong was the earthquake shaking that you felt?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
Not felt	9	4.8	8	4.2
Weak shaking	3	1.6	1	0.5
Mild shaking	6	3.2	6	3.1
Moderate shaking	39	20.9	41	21.5
Strong shaking	104	55.6	106	55.5
Violent shaking	26	13.9	29	15.2
<b>Total</b>	<b>187</b>	<b>100.0</b>	<b>191</b>	<b>100.0</b>

**Q7.**

For how long did you feel earthquake shaking?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
0–10 seconds	34	19.0	35	19.1
11–20 seconds	54	30.2	44	24.0
21–30 seconds	40	22.3	36	19.7
31–40 seconds	22	12.3	29	15.8
41–50 seconds	15	8.4	15	8.2
51–60 seconds	6	3.4	13	7.1
>60 seconds	8	4.5	11	6.0
<b>Total</b>	<b>179</b>	<b>100.0</b>	<b>183</b>	<b>100.0</b>

**Q8.**

What was your first response while the earthquake was shaking?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column N %	Count	Column N %
Continued what I was doing before the shaking	11	6.1	9	4.9
Stopped what I was doing but stayed where I was	62	34.6	56	30.6
Dropped, covered under a sturdy piece of furniture (e.g., table or desk), and held on to it	19	10.6	68	37.2
Moved to a doorway	62	34.6	29	15.8
Tried to protect other people nearby	15	8.4	8	4.4
Tried to protect property nearby (e.g., prevent things from falling)	1	0.6	2	1.1
Immediately left the building I was in	7	3.9	5	2.7
Did not feel earthquake, so continued driving	2	1.1	5	2.7
Pulled over to the side of the road	0	0.0	1	0.5
<b>Total</b>	<b>179</b>	<b>100.0</b>		<b>100.0</b>

**Q9.**

To what extent did you feel each of the following emotions during the earthquake shaking?		Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
		Count	Column Valid %	Count	Column Valid %
Optimistic	Not at all	61	42.4	69	44.8
	2	25	17.4	25	16.2
	3	47	32.6	45	29.2
	4	7	4.9	11	7.1
	Very great extent	4	2.8	4	2.6
	<b>Total</b>	<b>144</b>	<b>100.0</b>	<b>154</b>	<b>100.0</b>
Depressed	Not at all	114	79.7	114	75.0
	2	15	10.5	21	13.8
	3	8	5.6	12	7.9
	4	5	3.5	3	2.0
	Very great extent	1	0.7	2	1.3
	<b>Total</b>	<b>143</b>	<b>100.0</b>	<b>152</b>	<b>100.0</b>
Annoyed	Not at all	115	80.4	110	72.4
	2	9	6.3	20	13.2
	3	10	7.0	13	8.6
	4	8	5.6	7	4.6
	Very great extent	1	0.7	2	1.3
	<b>Total</b>	<b>143</b>	<b>100.0</b>	<b>152</b>	<b>100.0</b>
Nervous	Not at all	14	8.9	17	10.2
	2	22	14.0	33	19.8
	3	44	28.0	34	20.4
	4	44	28.0	50	29.9
	Very great extent	33	21.0	33	19.8
	<b>Total</b>	<b>157</b>	<b>100.0</b>	<b>167</b>	<b>100.0</b>
Fearful	Not at all	24	14.8	24	14.4
	2	37	22.8	37	22.2
	3	35	21.6	37	22.2
	4	39	24.1	34	20.4
	Very great extent	27	16.7	35	21.0
	<b>Total</b>	<b>162</b>	<b>100.0</b>	<b>167</b>	<b>100.0</b>
Relaxed	Not at all	81	57.0	85	54.1
	2	27	19.0	36	22.9
	3	22	15.5	23	14.6
	4	9	6.3	9	5.7
	Very great extent	3	2.1	4	2.5
	<b>Total</b>	<b>142</b>	<b>100.0</b>	<b>157</b>	<b>100.0</b>

To what extent did you feel each of the following emotions during the earthquake shaking?		Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
		Count	Column Valid %	Count	Column Valid %
Energetic	Not at all	32	22.4	34	22.1
	2	26	18.2	33	21.4
	3	50	35.0	49	31.8
	4	28	19.6	27	17.5
	Very great extent	7	4.9	11	7.1
	<b>Total</b>	<b>143</b>	<b>100.0</b>	<b>154</b>	<b>100.0</b>
Alert	Not at all	9	5.6	7	4.2
	2	8	5.0	6	3.6
	3	34	21.2	41	24.4
	4	54	33.8	49	29.2
	Very great extent	55	34.4	65	38.7
	<b>Total</b>	<b>160</b>	<b>100.0</b>	<b>168</b>	<b>100.0</b>
Passive	Not at all	79	55.2	81	53.3
	2	34	23.8	35	23.0
	3	21	14.7	25	16.4
	4	8	5.6	9	5.9
	Very great extent	1	0.7	2	1.3
	<b>Total</b>	<b>143</b>	<b>100.0</b>	<b>152</b>	<b>100.0</b>

**Q10.**

To what extent did you believe each of the following <i>during</i> the earthquake shaking?		Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
		Count	Column Valid %	Count	Column Valid %
The building you were in would be severely damaged or destroyed?	Not at all	74	46.5	69	40.6
	2	41	25.8	42	24.7
	3	34	21.4	31	18.2
	4	8	5.0	22	12.9
	Very great extent	2	1.3	6	3.5
	<b>Total</b>	<b>159</b>	<b>100.0</b>	<b>170</b>	<b>100.0</b>
Your home would be severely damaged or destroyed?	Not at all	62	38.0	72	43.4
	2	56	34.4	51	30.7
	3	34	20.9	31	18.7
	4	10	6.1	10	6.0
	Very great extent	1	0.6	2	1.2
	<b>Total</b>	<b>163</b>	<b>100.0</b>	<b>166</b>	<b>100.0</b>
You and your family would be injured or killed?	Not at all	70	44.0	68	40.7
	2	53	33.3	52	31.1
	3	23	14.5	26	15.6
	4	10	6.3	17	10.2
	Very great extent	3	1.9	4	2.4
	<b>Total</b>	<b>159</b>	<b>100.0</b>	<b>167</b>	<b>100.0</b>
There would be disruption to your job that would prevent you from working?	Not at all	74	50.0	51	31.7
	2	39	26.4	37	23.0
	3	14	9.5	23	14.3
	4	11	7.4	30	18.6
	Very great extent	10	6.8	20	12.4
	<b>Total</b>	<b>148</b>	<b>100.0</b>	<b>161</b>	<b>100.0</b>
There would be disruption to electrical, telephone, and other basic services?	Not at all	35	22.0	30	18.1
	2	52	32.7	50	30.1
	3	36	22.6	45	27.1
	4	31	19.5	26	15.7
	Very great extent	5	3.1	15	9.0
	<b>Total</b>	<b>159</b>	<b>100.0</b>	<b>166</b>	<b>100.0</b>

**Q11.**

During the first 30 minutes after the earthquake shaking stopped, which of these did you do?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
Returned to find out what had happened	110	53.9	87	42.6
Tried to find out what had happened	107	52.5	111	54.4
Turned off utilities (gas, electricity or water)	9	4.4	3	1.5
Tried to contact household members	77	37.7	106	52.0
Cleaned up broken or fallen items	32	15.7	20	9.8
Helped people near me	20	9.8	38	18.6
Went to my home	18	8.8	42	20.6
Went to the home of a friend or relative	10	4.9	6	2.9
Went to a public shelter	0	0	1	0.5
Went somewhere else	11	5.4	27	13.2

**Q11. During the first 30 minutes after the earthquake shaking stopped, which of these did you do? Other (please explain)**

**Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm).**

- Checked emergency escape kits
- Checked Facebook, posted that I was OK
- Checked for damage
- Checked house for damage
- Checked on 'non-resident' children. Checked on neighbours
- Checked on colleagues
- Checked on neighbours
- Checked piles under house
- Communicated with family
- Contacted family overseas and in Auckland to say we were okay
- Contacted friends and family
- Contacted relatives to let them know I was fine
- Did the dishes! (in case the water went off later)
- Discussed what had happened and feelings with others
- Drove out to my daughters in Tawa
- Evacuated to high ground immediately
- First I tried to contact my children and partners who all live in Wellington (but are not in my household)
- GeoNet
- Heard news on radio so rung family back home
- I was at home
- Just waited
- My partner checked GeoNet
- Noted the time. Rang my friend in Island Bay to compare notes. Listened to Radio NZ

- Rang family members to check on them. Checked all doors in house for square
- Rang local family members
- Restaurant
- School to get kids
- Seemed obvious it was a quake, texted friends, neighbours to say we were ok and were they?
- Sleeping
- Son's house on hill above Lyall Bay in case of tsunami
- Stayed at the tea dance and enjoyed it!
- Stopped off at supermarket
- Supermarket than home
- Took down heavy items
- Up the hill in car (tsunami)?
- Up the hill in case there was a tsunami
- Waited to be picked up
- Was at home
- Was in car and not aware of earthquake
- Went outside and talked to neighbours
- Went to a movie at Penthouse Cinema. Read the 2 texts that family members sent me to say they were fine and ask if I was fine
- Went to pick up family member in other suburb
- Went up hill in case tsunami
- Work evacuation point outside
- Work place and their evacuation plan

#### **Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)**

- As CEO my first priority was checking all my staff were ok, also texting family members
- Cafe
- Cafe in New Plymouth
- Back to work
- Car in parking building
- Carried on drinking
- Checked Facebook, posted that I was ok
- Checked for damage
- Checked GeoNet and the news online
- Checked house for damage
- Checked on 'non-resident' children. Checked on neighbours
- Checked on colleagues
- Checked on neighbour
- Colleagues checked Geonet. Partner contacted me as agreed. Went back to work but the building was still swaying. Boss decided to close up for the day. Began to head for home as agreed in family earthquake plan
- Contacted friends and family
- Contacted relatives to let them know I was fine
- Discussed what had happened and feelings with others
- Had meeting of Emergency Management Team – evacuated

- I didn't want to go home for fear of tsunami so parked up a hill and tried to get hold of partner
- I was going somewhere else
- My partner checked GeoNet
- Next door neighbour
- Not felt
- Noted the time. Rang my friend in Island Bay to compare notes. Listened to Radio NZ
- Other University campus to pick up friend
- Parliament grounds near work
- Planned building structural inspections
- Put petrol in the car
- Rang family members to check on them. Checked all doors in house for square
- Returned to my workplace to check on and made contact with people and property
- School of my children
- School to pick up children
- Stayed at the tea dance and enjoyed it!
- Stood outside
- To a bar with friends to wait for traffic to ease to get home
- Visited friend in hospital
- Walked up to Vic to meet my daughter
- Was due to finish work anyway
- Went back to work to find out what to do. Safe building so secure
- Went for a walk around the block and then sat outdoors
- Went to school to collect my child
- Went to school to pick up son
- Went to the pub

**Q12.**

During the first 30 minutes after the shaking stopped, which communication channels did you use?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
None	12	5.9	9	4.4
Face to face conversation	96	47.1	115	56.4
Television	49	24.0	25	12.3
Radio	59	28.9	47	23.0
Telephone: voice call	71	34.8	81	39.7
Telephone: text message	98	48.0	123	60.3
Internet	91	44.6	103	50.5

**Q13.**

When the earthquake struck, did you consider that a tsunami could occur?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm).		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
Yes	90	55.2	80	47.1
No	73	44.8	90	52.9
<b>Total</b>	<b>163</b>	<b>100.0</b>	<b>170</b>	<b>100.0</b>

**Q13a.**

If yes, how likely did you think it was that the earthquake would:		Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
		Count	Column Valid %	Count	Column Valid %
Cause a tsunami?	Not at all	18	16.1	24	20.7
	2	38	33.9	36	31.0
	3	35	31.3	38	32.8
	4	12	10.7	12	10.3
	Very great extent	9	8.0	6	5.2
<b>Total</b>		<b>112</b>	<b>100.0</b>	<b>116</b>	<b>100.0</b>
Reach your location?	Not at all	49	48.5	54	55.8
	2	15	14.9	21	21.6
	3	20	19.8	10	10.3
	4	9	8.9	8	8.2
	Very great extent	8	7.9	4	4.1
<b>Total</b>		<b>101</b>	<b>100.0</b>	<b>97</b>	<b>100.0</b>
Reach your home?	Not at all	52	49.1	58	57.0
	2	12	11.3	11	11.0
	3	22	20.8	15	15.0
	4	10	9.4	10	11.0
	Very great extent	10	9.4	6	6.0
<b>Total</b>		<b>106</b>	<b>100.0</b>	<b>100</b>	<b>100.0</b>

**Q13a. Statistical range**

If yes, how likely did you think it was that the earthquake would:	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)			Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)		
	Mean	Std. Deviation	Count	Mean	Std. Deviation	Count
Cause a tsunami?	2.61	1.13	112	2.43	1.13	116
Reach your location?	2.13	1.32	101	1.84	1.16	97
Reach your home?	2.19	1.38	106	1.95	1.30	100

**Q13b.**

If yes, when the earthquake struck, how soon afterwards did you think would be the earliest a tsunami might strike where you were located		Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
		Count	Column Valid %	Count	Column Valid %
Hours	1	11	5.4	10	4.9
	1-2	1	0.5	2	1.0
	2	2	1.0	2	1.0
	4	0	0.0	1	0.5
	6	1	0.5	1	0.5
	24	1	0.5	1	0.5
Minutes	2	1	0.5	2	1.0
	3	2	1.0	1	0.5
	5	4	2.0	7	3.4
	8	1	0.5	0	0.0
	8-10	1	0.5	0	0.0
	10	29	14.2	20	9.8
	12	1	0.5	1	0.5
	15	5	2.5	6	2.9
	15-20	1	0.5	1	0.5
	20	3	1.5	2	1.0
	20-30	0	0.0	1	0.5
	30	17	8.3	15	7.4
<b>Total</b>		<b>81</b>		<b>73</b>	

**Q13c.**

When the earthquake struck, how likely did you think it was that it would cause a tsunami that would:		Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
		Count	Column Valid %	Count	Column Valid %
Severely damage or destroy many homes in Wellington	Not at all	68	45.9	72	50.0
	2	48	32.5	47	32.6
	3	19	12.8	15	10.4
	4	7	4.7	5	3.5
	Very great extent	6	4.1	5	3.5
<b>Total</b>		<b>148</b>	<b>100.0</b>	<b>144</b>	<b>100.0</b>
Injure or kill many people in Wellington if they did not evacuate?	Not at all	71	49.2	76	53.5
	2	41	28.5	42	29.6
	3	22	15.3	15	10.6
	4	5	3.5	3	2.1
	Very great extent	5	3.5	6	4.2
<b>Total</b>		<b>144</b>	<b>100.0</b>	<b>124</b>	<b>100.0</b>
Severely damage or destroy buildings where you were located?	Not at all	85	59.9	91	64.6
	2	29	20.4	34	24.1
	3	19	13.4	8	5.7
	4	4	2.8	4	2.8
	Very great extent	5	3.5	4	2.8
<b>Total</b>		<b>142</b>	<b>100.0</b>	<b>141</b>	<b>100.0</b>
Severely damage or destroy buildings your home?	Not at all	91	63.1	97	68.4
	2	21	14.6	25	17.6
	3	22	15.3	11	7.7
	4	4	2.8	3	2.1
	Very great extent	6	4.2	6	4.2
<b>Total</b>		<b>144</b>	<b>100.0</b>	<b>142</b>	<b>100.0</b>
Injure or kill you and your family if you did not evacuate?	Not at all	96	66.6	98	69.1
	2	20	13.9	26	18.3
	3	15	10.4	8	5.6
	4	8	5.6	6	4.2
	Very great extent	5	3.5	4	2.8
<b>Total</b>		<b>144</b>	<b>100.0</b>	<b>142</b>	<b>100.0</b>

### Q13c. Statistical range

When the earthquake struck, how likely did you think it was that it would cause a tsunami that would:	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)			Friday 16th August Lake Grassmere Earthquake (M6.6, 2:31 pm)		
	Mean	Std. Deviation	Count	Mean	Std. Deviation	Count
Severely damage or destroy many homes in Wellington?	1.89	1.07	148	1.78	1.01	144
Injure or kill many people in Wellington if they did not evacuate?	1.83	1.04	144	1.74	1.02	124
Severely damage or destroy buildings where you were located?	1.70	1.04	142	1.55	0.94	141
Severely damage or destroy your home?	1.70	1.09	144	1.56	1.02	142
Injure or kill you and your family if you did not evacuate?	1.65	1.09	144	1.54	0.98	142

### Q13d.

Did you evacuate your location after the earthquake because of concern about a tsunami?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
Yes	9	5.6	7	4.3
No	153	94.4	155	95.7
<b>Total</b>	<b>162</b>	<b>100.0</b>	<b>162</b>	<b>100.0</b>

### Q14.

At the time of the earthquake, which of these did you have on hand?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
3 day supply of water	125	61.3	129	63.2
3 day supply of non-perishable food	135	66.2	119	58.3
Emergency kit filled with supplies	115	56.4	117	57.4
Household emergency plan	77	37.7	78	38.2
Battery powered radio	121	59.3	105	51.5
Predetermined place to evacuate	70	34.3	87	42.6

**Q15.**

Was anyone in your household injured in the earthquake?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid N %	Count	Column Valid N %
Yes	2	1.2	3	1.8
No	165	98.8	164	98.2
<b>Total</b>	<b>167</b>	<b>100.0</b>	<b>167</b>	<b>100.0</b>

**Q16.**

How much damage did the earthquake do to your home?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Column Valid %	Count	Column Valid %
None	142	78.0	147	79.9
Slight	37	20.3	36	19.6
Moderate	3	1.6	1	0.5
Severe	0	0.0	0	0.0
Totally destroyed	0	0.0	0	0.0
<b>Total</b>	<b>182</b>	<b>100.0</b>	<b>184</b>	<b>100.0</b>

**Q17.**

What infrastructure did the earthquake interrupt in your home?	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Row Valid %	Count	Row Valid %
Electricity	3	1.4	1	0.5
Gas	0	0.0	0	0.0
Water	0	0.0	1	0.5
Sewer	0	0.0	0	0.0
Internet access	8	3.9	3	1.4
Satellite or cable TV access	4	2.0	2	1.0
Telephone	11	5.4	7	3.4

**Q17. What infrastructure did the earthquake interrupt in your home? Other.**

**Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)**

- 3G data (1)
- Cellphone access (1)

**Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm).**

- 3G data (1)
- Cellphone access (3)
- Lifts (1)

**Q18.**

After the earthquake, did you take any of the following actions:	Sunday 21st July, Cook Strait Earthquake (M6.5, 5:09 pm)		Friday 16th August, Lake Grassmere Earthquake (M6.6, 2:31 pm)	
	Count	Row Valid %	Count	Row Valid %
Got basic needs e.g., canned food, water, emergency kit	58	28.4	33	16.2
Got basic equipment, e.g., torch, batteries, battery radio	51	25.0	24	12.3
Logistics/planning e.g., planned where to meet	41	20.1	38	18.6
Damage mitigation; quake-safed the house, or checked it is quake safe	60	29.4	45	22.1

**SECTION 2: THINKING BACK TO THE DAYS PRIOR TO THE SUNDAY 21ST JULY COOK STRAIT M6.5 (5.09 PM) EARTHQUAKE**

**Q19.**

Before the Sunday 21st July Cook Strait earthquake, did you ever experience an earthquake that...	Count	Row Valid %
Damaged property in your suburb	16	7.8
Damaged your home	8	3.9
Injured or killed a member of your family	0	0.0
Injured you	2	0.1

**Q20.**

Before the Sunday 21st July earthquake, did you ever...	Count	Row Valid %
Attend a meeting about earthquake hazard	52	25.5
Receive a brochure about earthquake hazard	126	61.8
Attend a meeting about tsunami hazard	25	12.3
Receive a brochure about tsunami hazard	89	43.6

**Q21.**

Prior to the Sunday 21st July earthquake, a M5.7 earthquake occurred on the morning of Friday 19th July at 09:06am...		Count	Column Valid %	Total
Did you feel that earlier Friday morning earthquake?	Yes	137	69.9	196
	No	59	30.1	
Did that earthquake prompt you to make any preparations for future earthquakes?	Yes	42	23.3	180
	No	138	76.7	
If yes, what preparations did you make?			Count (n=83)	Column Valid %
Got basic needs e.g., canned food, water, emergency kit			26	12.9
Got basic equipment, e.g., torch, batteries, battery radio			24	11.8
Logistics/planning e.g., planned where to meet			18	8.8
Damage mitigation; quake-safe the house, or checked it is quake safe			15	7.4

**Q21 Other preparations**

- Already had H2O, food, warm gear, tent, battery radio, camp cooker, a plan etc. in place
- Already prepared
- At work at 8 Gilmer Terrace, Wellington during earthquake. Checked basic needs and equipment after the earthquake
- Checked water containers
- Checked mains taps (tools to get out) jammed doors
- Checked supplies/left the city for the weekend
- Communications planning agreed txt not voice call
- Discussed how to locate a water source and food
- Discussed with family to meet at our address. Tent/camping food prepared prior
- Overseas
- Packed stuff for the kids in case we had to get out quickly
- Quake safety improved at work place
- Replaced water
- Replaced water, food
- Some food and water, torch and batteries, attached TV to cabinet and cleaned lounge doorway area

**Q22.**

Prior to the Sunday 21st July earthquake, a M5.8 earthquake occurred on the morning of Sunday 21st July at 7:17am...		Count	Column Valid %	Total
Did you feel that early Sunday morning earthquake?	Yes	131	68.2	192
	No	61	31.8	
Did that earthquake prompt you to make any preparations for future earthquakes?	Yes	30	18.5	162
	No	132	81.5	
If yes, what preparations did you make?			Count (n = 69)	Column Valid %
Got basic needs e.g., canned food, water, emergency kit			22	10.8
Got basic equipment, e.g., torch, batteries, battery radio			18	8.8
Logistics/planning e.g., planned where to meet			13	6.3
Damage mitigation; quake-safe the house, or checked it is quake safe			16	7.8

## Q22. Other preparations

- Already had H2O, food, warm gear, tent, battery radio, camp cooker, a plan etc. in place
- Already prepared
- Can't remember
- Can't remember if I felt it
- Checked the chimney brickwork
- Overseas
- Out of region
- None
- Packed stuff for the kids in case we had to get out quickly
- Secured items in baby's room
- Talked about it
- Tied down hot water cylinder
- Was tramping, woke up in hut, Orongorongo Valley

## SECTION 3: THINKING OF THE WEEK FOLLOWING THE SUNDAY 21ST JULY COOK STRAIT M6.5 (5:09 PM) EARTHQUAKE

### Q23. and Q24.

Q23. How concerned were you about a damaging aftershock or earthquake in the Wellington region?	Count	Column Valid %
1 Less concerned	3	1.5
2	4	2.0
3 No change	31	15.6
4	81	40.7
5 More concerned	80	40.2
<b>Total</b>	<b>199</b>	<b>100.0</b>
Q24. How concerned were you about a tsunami occurring in the Cook Strait?		
1 Less concerned	21	10.6
2	11	5.6
3 No change	89	44.9
4	54	27.3
5 More concerned	23	11.6
<b>Total</b>	<b>198</b>	<b>100.0</b>

### Q23. and Q24. Statistical range.

	Mean	Std. Deviation	Count
Q23. How concerned were you about a damaging aftershock or earthquake in the Wellington region?	4.16	0.87	199
Q24. How concerned were you about a tsunami occurring in the Cook Strait?	3.24	1.08	198

**Q25a. On the Thursday after the earthquake (25th July), GeoNet issued this statement about probability of future earthquakes in central New Zealand:**

*“GNS Science estimates that in the coming week there could be up to nine magnitude 5.0 or greater events, with an approximately 30% probability (a 1 in 3 chance) of a magnitude 6.0 or greater. The most likely period for this to occur is the next 24 hours, when the probability is approximately 20% (a 1 in 5 chance).”*

<b>Did you receive this GeoNet statement:</b>	<b>Count</b>	<b>Column Valid %</b>
Yes	146	74.1
No	51	25.9
<b>Total</b>	<b>197</b>	<b>100.0</b>

**Q25b. If YES, where did you receive it from?**

<b>Open ended responses:</b>	<b>Count</b>
• At work	1
• Cellphone	1
• Dominion Post	1
• Dominion Post Website	1
• Email and Newspaper	1
• Email, Internet	1
• Facebook	4
• Facebook, TV1 news	1
• GeoNet, Civil Defence social media posts	1
• GeoNet, News	1
• GeoNet app on iPad	1
• GeoNet website	10
• GeoNet website, radio	1
• GeoNet Website, TV News	1
• Internet, news	1
• Geonet website, Twitter	1
• GeoNet	28
• Internet, Newspaper	1
• Internet, radio and other people	1
• Internet, Stuff news	1
• Internet, TV	1
• Internet, TV News, Twitter, Facebook	1
• IPhone	1
• Media	3
• Media, Radio and NPPR	1
• Mobile phone or TV	1
• Internet, radio	1
• News	3
• News and Paper	1
• News media	1
• News, GeoNet website	1
• News, Internet	1

<b>Open ended responses:</b>	<b>Count</b>
• News, stuff.co.nz	1
• Newspaper	5
• Newspaper, TV, Radio	1
• Newspaper, Internet	1
• Other people and media	1
• Paper	1
• Radio	16
• Radio/Internet	1
• Radio, TV	6
• Radio, TV News	1
• Stuff website	4
• Stuff, website, DomPost	1
• stuff.co.nz, GeoNet, WREMO Facebook page	1
• TV	14
• TV, Internet	1
• Twitter	1
• Word of mouth, TV, newspaper	1
• Work mates	1
• WREMO	2

**Q25c. On the Thursday after the earthquake (25th July), GeoNet issued this statement about probability of future earthquakes in central New Zealand:**

*“GNS Science estimates that in the coming week there could be up to nine magnitude 5.0 or greater events, with an approximately 30% probability (a 1 in 3 chance) of a magnitude 6.0 or greater. The most likely period for this to occur is the next 24 hours, when the probability is approximately 20% (a 1 in 5 chance).”*

<b>Did this information concern you?</b>	<b>Count</b>	<b>Column Valid %</b>
Yes	119	75.8
No	38	24.2
<b>Total</b>	<b>157</b>	<b>100.0</b>

**Q25d. On the Thursday after the earthquake (25th July), GeoNet issued the above statement about probability of future earthquakes in central New Zealand for each of the days listed below:**

<b>For each of the days listed below, please indicate your perception of the likelihood of an earthquake of magnitude 6.0 or greater occurring. If you are unsure, please put your best guess.</b>		<b>Count</b>	<b>Column Valid %</b>
On the first day (the day the statement was issued)	Extremely unlikely	2	1.2
	2	6	3.5
	3	21	12.3
	Medium Likelihood	57	33.3
	5	40	23.4
	6	30	17.5
	Virtually certain	15	8.8
<b>Total</b>		<b>179</b>	<b>100.0</b>
On the second day (the day after the statement was issued)	Extremely unlikely	2	1.2
	2	11	6.5
	3	29	17.2
	Medium Likelihood	58	34.3
	5	36	21.3
	6	23	13.6
	Virtually certain	10	5.9
<b>Total</b>		<b>169</b>	<b>100.0</b>
On the third day after	Extremely unlikely	5	3.0
	2	18	10.7
	3	40	23.8
	Medium Likelihood	55	32.7
	5	25	14.9
	6	22	13.1
	Virtually certain	3	1.8
<b>Total</b>		<b>168</b>	<b>100.0</b>
On the fourth day after	Extremely unlikely	10	6.0
	2	26	15.7
	3	42	25.3
	Medium Likelihood	47	28.4
	5	20	12.0
	6	18	10.8
	Virtually certain	3	1.8
<b>Total</b>		<b>166</b>	<b>100.0</b>

For each of the days listed below, please indicate your perception of the likelihood of an earthquake of magnitude 6.0 or greater occurring. If you are unsure, please put your best guess.		Count	Column Valid %
On the fifth day after	Extremely unlikely	21	12.7
	2	29	17.5
	3	40	24.1
	Medium Likelihood	44	26.5
	5	13	7.8
	6	16	9.6
	Virtually certain	3	1.8
<b>Total</b>		<b>166</b>	<b>100.0</b>
On the tenth day after	Extremely unlikely	38	22.6
	2	35	20.8
	3	34	20.2
	Medium Likelihood	39	23.3
	5	8	4.8
	6	12	7.1
	Virtually certain	2	1.2
<b>Total</b>		<b>168</b>	<b>100.0</b>

**Q25d. Statistical range. On the Thursday after the earthquake (25th July), GeoNet issued the above statement about probability of future earthquakes in central New Zealand for each of the days listed below:**

For each of the days listed below, please indicate your perception of the likelihood of an earthquake of magnitude 6.0 or greater occurring. If you are unsure, please put your best guess.	Mean	Std. Deviation	Count
On the first day (the day the statement was issued)	4.62	1.31	179
On the second day (the day after the statement was issued)	4.33	1.32	169
On the third day after	3.92	1.33	168
On the fourth day after	3.64	1.42	166
On the fifth day after	3.36	1.52	166
On the tenth day after	2.93	1.54	168

**Q26.**

If you received this statement (or other similar statements on aftershock probabilities), how true do you think the following statements are for you?		Count	Column Valid %
Receiving this information makes me feel relieved/happy	Not at all true	40	23.4
	Slightly untrue	30	17.5
	Neutral	74	43.3
	Slightly True	19	11.1
	Very True	8	4.7
<b>Total</b>		<b>171</b>	<b>100.0</b>
Receiving this information makes me anxious	Not at all true	19	11.3
	Slightly untrue	12	7.1
	Neutral	40	23.8
	Slightly True	78	46.5
	Very True	19	11.3
<b>Total</b>		<b>168</b>	<b>100.0</b>
I want to receive more of this information	Not at all true	1	0.6
	Slightly untrue	9	5.3
	Neutral	43	25.1
	Slightly True	54	31.6
	Very True	64	37.4
<b>Total</b>		<b>171</b>	<b>100.0</b>
I find it difficult to understand this information	Not at all true	96	58.2
	Slightly untrue	24	14.5
	Neutral	30	18.2
	Slightly True	13	7.9
	Very True	2	1.2
<b>Total</b>		<b>165</b>	<b>100.0</b>

**Q26. Statistical range**

If you received this statement (or other similar statements on aftershock probabilities), how true do you think the following statements are for you?	Mean	Std. Deviation	Count
Receiving this information makes me feel relieved/happy	2.56	1.11	171
Receiving this information makes me anxious	3.39	1.14	168
I want to receive more of this information	4.00	.95	171
I find it difficult to understand this information	1.79	1.07	165

## SECTION 4: THINKING NOW ABOUT THE FUTURE:

### Q27.

Since the earthquakes, how concerned are you about a damaging aftershock or earthquake in the Wellington region?	Count	Column Valid %
1 Less concerned	3	1.5
2	8	3.9
3 No change	64	31.5
4	71	35.0
5 More concerned	57	28.1
<b>Total</b>	<b>203</b>	<b>100.0</b>

### Q27. Statistical range.

Since the earthquakes, how concerned are you about a damaging aftershock or earthquake in the Wellington region?	Mean	Std. Deviation	Count
Since the earthquakes, how concerned are you about a damaging aftershock or earthquake in the Wellington region?	3.84	.93	203

### Q28.

Since the earthquakes, how concerned are you about a future tsunami occurring in the Cook Strait?	Count	Column Valid %
1 Less concerned	7	3.4
2	8	3.9
3 No change	105	51.7
4	54	26.6
5 More concerned	29	14.3
<b>Total</b>	<b>203</b>	<b>100.0</b>

### Q28. Statistical range.

Since the earthquakes, how concerned are you about a future tsunami occurring in the Cook Strait?	Mean	Std. Deviation	Count
Since the earthquakes, how concerned are you about a future tsunami occurring in the Cook Strait?	3.44	.91	203

### Q29.

If, in the future, you felt an earthquake in the Wellington region, how likely are you to evacuate as a precaution in case of tsunami?	Count	Column Valid %
1 Not at all likely	45	22.7
2	39	19.7
3 Medium Likelihood	74	37.4
4	13	6.6
5 Almost certain	27	13.6
<b>Total</b>	<b>198</b>	<b>100.0</b>

### Q29. Statistical range.

If, in the future, you felt an earthquake in the Wellington region, how likely are you to evacuate as a precaution in case of tsunami?	Mean	Std. Deviation	Count
If, in the future, you felt an earthquake in the Wellington region, how likely are you to evacuate as a precaution in case of tsunami?	2.69	1.28	198

### Q29. If, in the future, you felt an earthquake in the Wellington region, how likely are you to evacuate as a precaution in case of tsunami? Please explain:

Open ended responses:	Count
• 300ft above sea level, Southgate – Wellington	1
• Buckley Rd	1
• Dependant on magnitude of earthquake	31
• Dependent upon magnitude and site of earthquake	1
• Depending on my location	8
• Depends how severe it felt and what GeoNet was saying	1
• Depends on how long the earthquake is	1
• Depends on location and time delay before arrival	1
• Depends on size of earthquake and if there was a warning issued	1
• Depends on the strength and duration	3
• Depends where I am at time + magnitude of quake	1
• Depends where I am/how damaged the buildings are, what's the safest to survive the immediate aftermath?	1
• Depends where the epicentre is	1
• Grandchildren at school in low lying flat areas	1
• Home is high on hill. Work 4 floors above street	1
• Home is Owhiro Bay! Probably not evacuate if in city	1
• Home is well above tsunami danger level	3
• House is approx. 75m above sea level; medium likelihood if at another low-lying location	1
• I am elderly	1
• I don't live on the beach	1
• I feel my home is high enough above sea level to probably be safe. I do not feel I have the autonomy at work to make my own decision and need to rely on my bosses permission	1
• I feel safe at home – am high up. If on waterfront, I would leave immediately	1
• I live 200m above sea level	1
• I live 60 steps up from road level	1
• I live at the top of a hill	1
• I live near the sea!	1
• I live on a hill	24
• I live on a hill and work in a high rise	1
• I live on a hill. If I was at the beach I would leave quickly	1
• I live on a hillside, but would if I was on the flat	1
• I would definitely consider it	1
• I would wait for an evacuation alert	2

<b>Open ended responses:</b>	<b>Count</b>
• I'd check for tsunami warnings	1
• If at home no (well above tsunami line), at work yes but foresee difficulty getting out of city	1
• If at home then we live on a hill so outside of tsunami zone. At work we're high up in office building so should be safe?	1
• If at sea level would go	1
• If below tsunami line in Island Bay	1
• If it was big enough to damage house we'd go to higher ground	1
• If on low ground I would evacuate	1
• If there was a warning over radio or see the sea being sucked back I would evacuate	1
• Live on South Coast	1
• Live too high. But would evacuated if lower down	1
• Live very close to sea – aware of risk	1
• More guesswork	1
• Most earthquakes are small if large, time will be available for tsunami warning	1
• My home is on high ground and at work it may be safer to remain in the building	1
• Need to know more about tsunami – time after shock etc.	1
• Not every earthquake is followed by a tsunami	1
• Only if actual site of EQ stated	1
• Only if in CBD – home is safe	1
• Only in an extreme earthquake would I consider evacuation	1
• Only likely if directed to evacuate	1
• Rarely am by the water, so unlikely to have to evacuate	1
• Ratio of quakes to tsunami occurrence appear low	1
• Safe place nearby	1
• The last one we fuffed around thinking about it and getting things like baby milk together and then though probably too late	1
• Unless there is damage to the house and street	1
• Unless there was a tsunami warning, which I would look for	1
• We are above tsunami zone and 6.0 is not likely to cause tsunami	1
• We have in plan, an evacuation process following any major earthquake	1
• We live 100m from coast and if the earthquake is severe, we will get out, even though I don't believe there is too much danger, I'd rather be safe	1
• We live high up but would evacuate if low down	1
• We live in a low lying area in Island Bay – no brainer	1
• We live right beside the sea!	1
• We would evacuate only, if advised of a tsunami risk	1
• We would get ready await info	1
• Well, would you hang around for that!	1
• Why not, to stay alive	1
• Would check location of earthquake first	1
• Would depend on strength of earthquake and GeoNet or news statements	1

**Q30. Consider this *hypothetical* scenario:**

“This morning scientists estimated the probability of an earthquake in Central New Zealand of Magnitude 6.0 or greater to be 2.3% within 7 days, and 19% within 1 year.”

Based on this statement, please indicate on the scale below how likely you think it is for an earthquake of magnitude 6.0 or greater to occur		Count	Column Valid %
Today:	Extremely unlikely	53	26.2
	2	64	31.6
	3	24	11.9
	Medium Likelihood	41	20.3
	5	10	5.0
	6	7	3.5
	Virtually certain	3	1.5
<b>Total</b>		<b>202</b>	<b>100.0</b>
In the next two months	Extremely unlikely	30	15.4
	2	68	34.9
	3	42	21.5
	Medium Likelihood	44	22.6
	5	8	4.1
	6	0	0.0
	Virtually certain	3	1.5
<b>Total</b>		<b>175</b>	<b>100.0</b>
In the next four months	Extremely unlikely	24	12.3
	2	73	37.5
	3	40	20.5
	Medium Likelihood	47	24.1
	5	7	3.6
	6	1	0.5
	Virtually certain	3	1.5
<b>Total</b>		<b>195</b>	<b>100.0</b>
In the next six months	Extremely unlikely	19	9.8
	2	60	30.9
	3	51	26.3
	Medium Likelihood	51	26.3
	5	10	5.2
	6	2	1.0
	Virtually certain	1	0.5
<b>Total</b>		<b>194</b>	<b>100.0</b>

Based on this statement, please indicate on the scale below how likely you think it is for an earthquake of magnitude 6.0 or greater to occur		Count	Column Valid %
In six to eight months	Extremely unlikely	17	8.9
	2	56	29.4
	3	51	26.7
	Medium Likelihood	52	27.2
	5	13	6.8
	6	2	1.0
	Virtually certain	0	0.0
<b>Total</b>		<b>191</b>	<b>100.0</b>
In eight to ten months	Extremely unlikely	15	7.8
	2	49	25.4
	3	48	24.9
	Medium Likelihood	55	28.5
	5	18	9.3
	6	8	4.1
	Virtually certain	0	0.0
<b>Total</b>		<b>193</b>	<b>100.0</b>
In ten to twelve months	Extremely unlikely	18	9.3
	2	40	20.6
	3	44	22.7
	Medium Likelihood	53	27.4
	5	22	11.3
	6	14	7.2
	Virtually certain	3	1.5
<b>Total</b>		<b>194</b>	<b>100.0</b>
In twelve to fourteen months	Extremely unlikely	20	10.4
	2	37	19.2
	3	38	19.6
	Medium Likelihood	54	28.0
	5	20	10.4
	6	18	9.3
	Virtually certain	6	3.1
<b>Total</b>		<b>193</b>	<b>100.0</b>

**Q30. Statistical range.**

Based on this statement, please indicate on the scale below how likely you think it is for an earthquake of magnitude 6.0 or greater to occur:	Mean	Std. Deviation	Count
Today	2.62	1.48	202
In the next two months	2.71	1.24	175
In the next four months	2.77	1.22	195
In the next six months	2.91	1.16	194
In six to eight months	2.97	1.14	191
In eight to ten months	3.19	1.25	193
In ten to twelve months	3.39	1.44	194
In twelve to fourteen months	3.49	1.55	193

**SECTION 5: DEMOGRAPHICS****Q31. Age range.**

What is your age?	Count	Column Valid %
18–25	9	4.5
26–35	24	12.0
36–45	51	25.5
46–55	53	26.5
56–65	33	16.5
66–75	18	9.0
>76	12	6.0

**Q32.**

What is your gender?	Count	Column Valid % (N = 202)
Male	70	34.7
Female	132	65.3

**Q33.**

What is your marital status?	Count	Column Valid %
In a relationship	46	22.8
Married/Civil Union	101	50.0
Single	24	11.9
Divorced	16	7.9
Widowed	15	7.4

**Q34.**

How many people in your household are:		Count	Column Valid %
Under 18 years	1	32	41.6
	2	34	44.2
	3	11	14.3
18–65 years	1	27	16.8
	2	108	67.1
	3	20	12.4
	4	2	1.2
	5	2	1.2
	6	1	0.6
	7	1	0.6
Over 65 years	1	21	63.6
	2	12	36.4
<b>Total</b>		<b>271</b>	<b>100.0</b>

**Q35.**

At the time of each earthquake below, was there anyone in your household that had a disability requiring assistance from others?		Count	Column Valid %
Sunday 21st July Earthquake (M6.5, 5:09pm)	Yes	13	6.8
	No	179	93.2
<b>Total</b>		<b>192</b>	<b>100.0</b>
Friday 16th August Earthquake (M6.6, 2:31pm)	Yes	6	3.2
	No	184	96.8
<b>Total</b>		<b>190</b>	<b>100.0</b>

**Q36.**

Which ethnic group(s) do you belong to:	Count	Column Valid %
New Zealand European	167	79.1
Māori	13	6.2
Samoan	3	1.4
Other Pacific Islander	2	0.9
Chinese	2	0.9
Indian	3	1.4
Other	22	10.0

**Q36 other.**

<b>Which ethnic group(s) do you belong to: Other (please specify)</b>	<b>Count</b>	<b>Column Valid %</b>
American	3	13.6
Australian	1	4.5
Australian/British	1	4.5
British	6	27.3
British – Permanent Resident NZ	1	4.5
Dutch	2	9.1
European	4	18.2
Irish	2	9.1
New Zealand Pākehā	2	9.1

**Q37.**

<b>What is your highest level of education?</b>	<b>Count</b>	<b>Column Valid %</b>
No school qualifications	7	3.5
Secondary school qualifications	32	15.9
Trade certificate, professional certificate or diploma	31	15.4
University undergraduate degree (e.g., Diploma or bachelor's degree)	91	45.3
University postgraduate degree (e.g., Master's, PhD)	40	19.9

**Q38.**

<b>What is your current employment status?</b>	<b>Count</b>	<b>Column Valid %</b>
Employed	143	71.1
Unemployed	9	4.5
Retired	28	13.9
At-home parent	10	5.0
Student	4	2.0
Other	7	3.5

**Q39.**

<b>What is your annual household income?</b>	<b>Count</b>	<b>Column Valid %</b>
Less than \$20,000	19	9.8
\$20,000–\$29,999	19	9.8
\$30,000–\$39,999	6	3.1
\$40,000–\$49,999	7	3.6
\$50,000 or more	142	73.6

**Q40.**

<b>Do you own or rent the home where you now live?</b>	<b>Count</b>	<b>Column Valid %</b>
Rent	39	19.5
Own	161	80.5

**Q41.**

How would you describe your home's type of construction?	Count (n = 200)	Column Valid %
Single family, detached wood frame	133	66.5
Single family, detached unreinforced brick	4	2.0
Single family, other construction	8	4.0
Multi-family, 1 or 2 story, wood frame	36	18.0
Multi-family, 1 or 2 story, unreinforced brick	2	1.0
Multi-family, 1 or 2 story, other construction	6	3.0
Multi-family, 3 or more stories	2	1.0
Other	9	4.5

**Q41. Other construction.**

- 2 storey, 3 bedroom, wood frame townhouse with concrete block separating other townhouse
- 3 level concrete lower, upper two levels timber frame with steel bracing frame
- Both – Single family, detached wood frame and Single family, detached unreinforced brick
- Concrete block with reinforced steel, single story but split level
- Part: Single family, detached wood frame and detached unreinforced brick and other construction
- Semi-detached brick 2 bedroom
- Semi-detached wood frame
- Semi-detached, brick/wood construction
- Single family, 2 story, wood frame
- There's also a wooden upstairs writing room with wooden steps going up to it

**Q42. Statistical range.**

How long have you lived in the suburb where you now reside? Years	Count	Column Valid %
0–5	70	34.3
6–10	33	16.2
11–15	29	14.2
16–20	27	13.2
21–25	9	4.4
26–30	10	4.9
31–35	8	3.9
36–40	6	2.9
41–45	3	1.5
46–50	2	1.0
51–55	2	1.0
56–60	2	1.0
61–70	2	1.0
71–80	1	0.5

**Q43. Do you have any other comments about your experiences during the earthquakes discussed in this survey? Please use this space to write about any good or bad aspects of your experiences**

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- No tsunami information on internet (went down), radio on, TV – only an hour after the event (siren warnings needed). Watched sea for 2 hours after shakes (moved cars up hill), took pets up hill to friends. Keep food, water, bedding etc. in car ready to go. Small earthquakes felt every 1/2 hour. 3–4 days after main event (21 July). Booming sounds from sea (Cook Strait)

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  - (Also: comment applies to the Canterbury earthquakes) The earthquakes were very useful to improve disaster preparedness (e.g. Council getting tougher on building owners). As such, I feel more safe and confident than before i.e. the city will be better prepared

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  - Three of us were away for the July quake. One was here (who was gone when the August quake hit). His description of the July quake prepared us for the August quake. His comments reflect those responses to the second quake. These were the longest and strongest quakes we have ever experienced. Total surprise at the lack of damage but note that the movement through our property was west-east rather than south-north and somehow this seems to indicate less damage!?

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  - A larger reply paid envelope would have been a good idea

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  - Added torches – placed in different parts of the house. Have earthquake kit (4 x 60 litre containers) water, tent etc. and 1 in my car and water

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  - After seeing what happened in Japan and Christchurch the fear of God has been put in many citizens, including me. No-one can predict earthquakes. Even 'probabilities' are a waste of time. It's all about being prepared and onto it, then whatever happens next ... no-one will know. Having my husband work in the CBD, I'm 100% worried and fearful for his life, should a seriously big one strike when he is at work. All the best.

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  - After the 21 July quake I was very frightened, didn't sleep at all that night and didn't even go to work on the Monday, was on edge for at least 2 weeks after.

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  - After the earthquake I drove around the coast. It was difficult to know what the risk of a tsunami was. Facebook was helpful for checking on how my friends were doing in other parts of Wellington. I did think that I had gone out with inappropriate footwear and didn't have flat shoes

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  - I wasn't home for either. I'm a motorcyclist so I'm used to rapidly assessing emergencies and responding promptly. I assessed both earthquakes as being about 6 or 7 and insufficiently large to be likely to cause a tsunami, and certainly not ones that were likely to cause significant damage. I'm generally aware that a major tsunami could devastate the Kilbirnie isthmus and the southern coast and possibly SH2 out of Wellington. The real problem with tsunamis is that there will probably be no warning of the most destructive ones for Wellington. Evacuation from Wellington will be difficult if not impossible after any major earthquake. There was no damage to my property on arriving home. I designed my house in the 80s and am aware the bracing for wind is far more than is required for earthquakes so my only concern in a BIG quake is that it will shift off its foundations, or be difficult to access because of slips. Can't do much about stuff rattling round inside but most of it is low, and the few breakable things that have made their way higher were put on the floor after the first one. Also packed my documents into a large envelope which is readily accessible. For the Sunday earthquake: I was just leaving a friend's doorway after deciding he wasn't home. Because of the severity of the shaking I thought it might be prudent to hold on to the corner of the building until the shaking stopped, and noticed the power line connected to the house almost directly above me so was prepared to move away. After the shaking I walked up to the road and exchanged comments about its severity with some passers-by. Then my friend came out; he was much more shaken by the quake so I stayed with him and had dinner. I eventually came home mildly curious to see how much damage had occurred but there was none. I did tie a bit of string around the wide screen TV on the theory it would probably tip over in a big one. For the Friday quake: I was sitting on the south side of Bunny St having a cigarette waiting to go into a lecture; I'm doing some study while I'm looking for work. There was a warning shake immediately at the start of the quake and I checked my
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situation; a tall metal lamppost was the only immediate threat so I watched as it swung side to side at right angles to me and noticed a walker stumbling. Again commented that that was a decent shake: I thought it was smaller than the previous one. Afterwards a building alarm went off and eventually people started streaming out. I was curious as to what civil defence procedures would be initiated (none!) I waited and watched for 10 minutes, confirmed my lecture was cancelled, then rode my motorcycle home. It occurred to me on the way that fallen trolleybus wires might be another hazard to be considered in the big one (travel from the City to Newtown/hospital might be impossible as both Adelaide Rd and Taranaki/Wallace St are trolleybus routes and alternate routes are liable to slips hopefully there will be no power!). It seemed strange that people were congregating on the waterfront (Frank Kitts Park). There should be more thought put into where central city people can go (e.g., My sister lives in Wadestown and works in Featherston St – she may not be able to cross the motorway to get home because the bridges may have collapsed). I suspect the WEMO have not developed detailed scenarios and they certainly haven't published them to the general public. Their 72 hours before response certainly means that it's everyone for themselves initially. Similar problem with the GeoNet announcement – we needed that within a day or two of the quake and it needs to tell us how much higher 1 in 3 is than normal. Although really the info is pretty useless: we know there's a constant risk of a quake all the time in Wellington: how does one occurrence indicate the likelihood of another. Also what can we do with the info?

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- Apart from the three quakes hardly feel the minor after shocks
  - Being at home it seems like we felt the Sunday earthquake way less than people who were at work for the Friday one. Glad we were on holiday and missed it. It was good that our power didn't go out and we could easily get more info
  - Being on the 6th floor of office building was very noisy with computer screens falling over, cutlery, plates etc. breaking, mobile cupboards falling. Please to report office has now made major changes to reduce in future earthquakes. Fearful making decision to leave the building as long way down and cracks in building
  - During the August 16 event I was waiting to board a flight and was primarily concerned at disruptions to my flight. Most other people in the waiting lounge appeared shocked but did not react to protect themselves. My colleagues who were at our Wellington CBD office that day were very distressed due to fallen objects but no injuries occurred
  - Earthquake was more irritating than anything, however, the media hype made me fearful and the fear mongering that followed was the worst. Would be a worse reaction if I was at work, 7th storey building, with work not disclosing the buildings earthquake rating
  - Everyone was very kind and helpful to each other in the CBD. Everyone just wanted to get home (Friday), it was very difficult to get out of the CBD – it took us hours from CBD to Houghton Bay by car but everyone driving was very calm and considerate. I had a 'get home kit' but it was under my desk on 12th floor and I was on ground floor when earthquake hit so I couldn't get to it. The adrenalin used on the Friday earthquake meant we were very tired on the Friday evening and were very drained emotionally. My employers (Public Sector) made it easier to deal with by keeping us informed and allowing us to take the time we needed to cope and put our families first. They followed up post-earthquake with a building report and advising us of CAP support if we needed it and told us it was OK to be upset or anxious. That made a big difference knowing they were sympathetic and supportive
  - Felt more unsafe in 5 storey block in town than home
  - From 16th August – Very unnerving to be away from my local area and home. Always conscious of having good walking shoes with me at all times. Keep shoes by the bed at night. Scary driving through town to get home. Never sure if there is going to be another big one. Aftershocks for 48 hours unnerving
  - Having lived in Wellington for a number of years. I do appreciate and pray that earthquakes, are part of life. Blessed so far Wellington has been shaken, we have to be prepared family aware of their whereabouts. COMMUNICATE to know where families are Kia Ora?
-

- 
- Having the quakes have made us more prepared e.g. water/food/gas cooker. Communications: Also we have offered our house as a tsunami refuge for other families who live on the South Coast
- 
- I am sensitised to any smaller earthquakes and am jumpy out of all proportion. I am concerned about not having enough in the way of independent WC, water and cooking facilities but currently cannot afford to implement changes
- 
- I believe the media coverage of the earthquakes was over-hyped. This resulted in a lot of excessive and unnecessary concern from family members not living in Wellington
- 
- I come from England and have recently moved to NZ. These were the first earthquakes I have experienced. I found it exhilarating and a bit scary. Overall my family back home were more concerned than I was though. I believe the fact that I live at the top of a very high hill played a big part in my lack of worry about my safety. I fear tsunami more than the earthquake. Thanks Matt
- 
- I did consider leaving NZ and going to live overseas due to the fact that I am living in an earthquake city. I love Wellington, will not consider Auckland, Dunedin, Christchurch etc. in New Zealand. Insurance is another big problem. The government should allocate more money to research of earthquake as it is an uncontrollable natural disaster and ensure we live in a safe and healthy environment and land
- 
- I feel very nervous now I have really experienced an severe earthquake. I found this form quite difficult to fill in clearly
- 
- I felt secure in my home during the Sunday 21 July quake. This house barely moves. We are well above sea level and have preparations made. I was napping at the time and went back to bed. During the Fri 16 Aug quake I was at work in an awkward space. It was the sound of the quake/wind (?) that caught my attention. During the quake I was reassuring myself by checking visual cues to confirm that while it felt bad, nothing was falling (a pretty studio-but nothing on the shelves fell). When I made my way out to the front studio I was surprised to find everyone under the tables. It was probably then that I began to feel panicky/fearful. I went (uneasily) back to work not even considering that I might be able to leave. I kept feeling kind of 'seasick' or more like when you've been at sea and then get back on land and everything still feels like it is rolling. Other people experienced the same thing. Boss made decision to close up. Started trip home-glad to get out of CBD and onto higher ground. The real shock reaction happened when I got home-shaking/trembling and feeling panicky/fearful I was very surprised in the days/weeks following that quake to continue to have fear/trauma response symptoms to any minor shakes (even wind against the house or cars revving or planes taking off) that previously wouldn't have bothered me or to any sound like the odd groaning sound I heard before the quake. My work place consists of 5 permanent staff (with 3–5 working in any one day) but we supply a service for anywhere between 12–36 people in a day. My boss/colleagues are very sceptical about storing any water/food etc. (worse, my boss believes – because we are in the CBD – that there is no way we would need to store food/water because we would be rescued within a day. We are on the 4th floor of an old building behind the face of Willis St. I believe we may have to fend for ourselves. However I don't feel I have any voice or that anything I say about this gets taken seriously – so while I feel fairly secure at home, I don't at work). Even if space to store enough for possibly 40 people???? (assuming that no one is even dead or injured-how would we buy/store enough medical supplies for that many people???) We have more recently discussed whether it is permissible for us to leave after a severe quake and our boss has said that would be our choice (but didn't seem too happy about it). Assuming I can get out of the building and out of the CBD (which I would emotionally want to, even if the current advice is to stay put) I always wear sturdy shoes and can usually walk home in about an hour. Even if it take me 3–5 hours to walk home I could which is likely as it is out household plan as well as most of our neighbours
- 
- I felt the information after the earthquakes was very useful. I am now more nervous of working in the city. I work in the BNZ Building on the waterfront. It's still closed and it's November!
-

- 
- I find earthquake predictions by GeoNet generally unhelpful though interesting. They are statistical and therefore guesses for individual earthquakes. Also, a low likelihood may cause people to delay getting prepared for future
- 
- I found the quakes very unsettling. I had trouble sleeping and was anxious with every aftershock that I felt. I spent a lot of time on the GeoNet website as did my friends and colleagues
- 
- I have been reasonably prepared for the big one both at home and at work for many years including food, water and good walking shoes
- 
- I have got to know my neighbours better and we have got together to discuss emergency preparedness & how we can help each other in an emergency. I have thought about leaving Wellington because of the risk of earthquake feeling more real now and also because of the major storm we had this year. My work place refined their earthquake processes and procedures
- 
- I have lived in earthquake prone areas for most of my life and have experienced a 7.0 so these earthquakes felt big, but not huge. When moving to Wellington and learning about the dramatic geological history plus seeing the Christchurch earthquakes happen made me anticipate frequent and possibly high magnitude earthquakes. Living in a timber frame home in an outside suburb is comforting. But living on a steep hillside makes me a little nervous about landslips
- 
- I have set up a neighbourhood preparedness group
- 
- I just accept we will have earthquakes. Have been in quake a few during lifetime. "Tsunami" is too stressed as likelihood. Used to call them tidal waves. The print is too small in this survey. How will anything change as answer of this survey? Good Luck
- 
- I like earthquakes, electrical storms and all types of wild weather. I find earthquakes very exciting and not frightening – I've never experienced falling masonry though. If the shaking is strong and continues for some time my partner is under strict instructions to take the baby and drive to higher ground immediately. Some of my work mates were quite worried, but I knew everything would be fine. The worst thing about the earthquake on Friday was the disruption to traffic in Wellington. I know Wellington is due for a big shake sometime, when it comes my family are prepared
- 
- I really like having the probability models being communicated! I also found some of the lecture/town meeting videos posted to you tube filled in a lot of detail that gets glossed over by the news
- 
- I stayed in the city too long waiting for my bus. Should have got on the first one that went near walking distance from my home
- 
- I was more concerned for my household members after Friday 16 August because I couldn't contact them. Neither of them felt that quake (one was driving and one was asleep at home at the time) so they did not know that I was trying to reach them or that I might have been in danger in the city. It was difficult to get out of the city – I went with a work colleague whose partner drove in to pick us up. It took us an hour in traffic to clear the city – a trip that would usually be less than 20 minutes. I kept trying to contact home during that time. In the following weeks, I got very interested in moving out of Wellington and looking for a property to retire on a long way away! Have since settled and feel "safe" again
- 
- I was sick in bed on the Sunday's earthquake
- 
- I was sitting outside near a wooden fence for the first quake. I actually reached to brace myself as we wobbled. Quake II was at work and the building jolted. Main thing that bothered me was computer monitors kept shaking before and after with minor shakes. Hard to feel comfortable. Feel for CHCH with so many of these. Definitely unnerved by second quake. Assume gets worse the more there are. I suffer from depression so was feeling the pressure. Made me edgy. Started packing a few bites and pieces but still slack getting kit organised. Cheers
-

- 
- I was surprised at how different the experience can be depending on where you are when it happens. I was at home both times and it was unsettling but not too bad, but friends who were at work for the Friday one found it very frightening. Even where you are in the house makes a big difference – I was downstairs (ground level) for the Friday one and I didn't feel anything like as much shaking as I had during the previous (Sunday) event, when I was upstairs in the living area
- 
- I was surprised at the strength and length of the earthquake, but not worried about it. I might have been more worried if I had been in the city or a high-rise building
- 
- I was surprised how jammed the telephones were after the 2nd quake – I didn't like it! Generally, I never felt like I would die – was more concerned about the house being damaged or not being able to work (we are contractors so don't get paid if we don't work!). It just creates a lot of uncertainty and makes me want to sell my house and move into rental accommodation so I don't have to worry about it!!
- 
- I work in a 'yellow stickered' building on Lambton Quay. My manager organised engineers to assess the building before anyone returned to work and let us all know the outcome, as well as checking up on how we were feeling. Being in the central city for Sunday 21st M6.5 earthquake was scary. Afterwards it was almost eerie – quiet except for sirens and building/shop alarms
- 
- I would like to know which agency has the most reliable twitter announcements about tsunami's
- 
- I'm 87. This brick/concrete house is on solid rock and I've noticed that what feels like a good thump hasn't even sent a postage stamp on my cabinet fluttering to the floor. My brick chimney hasn't come tumbling down either. If it's not too late at night, I might telephone a friend to find out if she's felt it too and we guess what it might be on the Richter scale (e.g. "between 7 and 8" turned out to be 7.5!). One day I was walking round to Island Bay, and seemed to be wobbling about rather more than usual – when someone called out from across the street. "Did you feel THAT one?" Then there are the cat-quakes – puss has begun a scratching session on my bed! But whenever there's a shake, my thoughts turn to the poor blighters in places like Seddon. I used to make a dash for the doorway, but now I don't bother. (Didn't the geologist Eiby tell us to count to 100 and if we're still here we're still here?)
- 
- I'm not too sure on the details e.g. timing of tsunami's post-earthquake and that bothers me
- 
- I've experienced two much larger quakes. This was comparatively minor
- 
- In my home, very pleased to be sitting on solid rock by the coast. The house didn't shake too much at all and felt like it could easily handle a much bigger event
- 
- It seems that I experienced less shaking because the house is built on solid rock
- 
- It was a really good wakeup call
- 
- It was our first quake and very exciting!
- 
- It's a very frightening experience for me. I watched other countries affected by earthquake especially CHCH. God knows what will happen if Wellington get hit. Yes the future can only tell. Thank you and god bless
- 
- July 21st earthquake 605 lost 3 glass candle stick which fell from a bookcase. The room I was in I headed for the sliding door as it was not so safe, was knocked off my feet and when I managed to get to the door it slammed shut. I wanted to get to a safer door to stand under and hold on. After that quake my husband and I down loaded GeoNet application to our cellphones with an alarm so we could check where and magnitude. There seemed to be approx. 5 day interval between the more severe/stronger shocks. Aug 16 earthquake on our return house was ok
- 
- Like Island Bay, I believe there should be more tsunami evacuation lines on roads to give people an indication of where safe distance might be from the shore at the time of an earthquake
- 
- More communication from areas responsible
-

- 
- More concerned about being prepared when out and about as I was on Sunday 21st. i.e.: Made me think .... do I carry a bag with me ALWAYS??
- 
- My children (4 and 7) were very nervous for a long time afterwards. We spent a lot of time talking about it, how earthquakes happen and reassuring them. This slowed down over a couple of months
- 
- My only concern is when to know when to evacuate because of tsunami
- 
- Need to know more about tsunami. How likely, how is warning issued, where to go
- 
- No point freaking out. If it hits it hits. I don't know why but I feel good about Wellington's earthquake status. As in I don't feel like one big one is imminent. If I am wrong I'm still not going to freak out
- 
- On Sunday 21st July worst earthquake felt in 5. years living in N.W. Was still shaking 2 hours later
- 
- People gathered in the street opposite the Amora Hotel after the earthquake. It seems unclear whether it's wise or unwise to evacuate a building during or after an earthquake. The Amora has big, glass windows and is that a good – construction design?
- 
- Q22. First section: we were at Akitio Beach, back in Wellington by pm Sun 21st. Q2. First section: sitting in parked car at supermarket. All cars bouncing in unison, quite funny
- 
- Question Number 35. I am disabled live along and I walk with a walker so I am unable to drop, cover and hold. I have not got supplies to last three days (I do have water). I am not sure what to buy. I do not have an emergency kit. I have a cat
- 
- Radio (ZB) unhelpful – need to relay messages, not tell the story. TV sensationalised the event and didn't pass helpful information to residents or workers
- 
- Since the earthquakes – even though the experience of them in Southgate was mild – I constantly feel tremors. Most of the times these ghost tremors are NOT substantiated by GeoNet. I did not feel the tremors during a week's visit to Auckland but they reappeared on my return to Wellington. All I am surmise is that deep down I am now HYPER VIGILANT about quakes. Good luck with the survey!
- 
- Sorry! Didn't answer all questions, particularly tsunami ones. Didn't even think about a tsunami as I live on a hill. (No doubt many people would have had problems living in lower areas) and as for the earthquakes well it's out of our control so just get on with it. (I grew up in Hawke's Bay and we were always used to a good shake)
- 
- Spent at least 3 days afterwards feeling nervous, sleepless and completely aware of any bump/movement. Was a good reminder to get prepared
- 
- Still on my mind almost daily
- 
- Sunday 21st July earthquake 5:09pm about 1 hour later checked on by grandson-in-law, very reassuring
- 
- The above questions do not apply to the house we lived in during the earthquakes, that house was a two storey wooden with split into an upstairs/downstairs flats. I was on holiday with my daughter for the first quake – from Sat 20th for a few days, which your survey doesn't seem to allow for (erosion questions etc.). Harder for renters to be aware of property damage – upstairs neighbours told me about structural damage much later, after we'd moved
- 
- The awareness it raised across the city both for households & work places
- 
- The earthquakes were very unnerving. I felt quite anxious and jumpy with any movement that occurred (whether caused by aftershock or not) for some weeks. Much more aware and prepared (I think). Depends on the magnitude and damage. Not a lot one can do with the force of nature other than be prepared and have knowledge
-

- 
- The first earthquake actually felt stronger. From memory the first was more side to side and the second was up and down. My husband was getting two young kids into car under a tree near Wellington Airport and he felt it really strong. Car was rocking and he was so nervous that the tree would fall on the kids that he drove home asap. Cheers
- 
- The Friday 16 August series of earthquakes were considerably scarier. Especially on the 7th Floor of our building. Though Environment house is very new and coped with the earthquake really well. I must get my chimney removed and piles looked at in my house. I'm also well aware of what happened in Christchurch having worked on Canterbury Earthquake Recovery for the past 2 years
- 
- The information we received from GeoNet on 25 July was initially positive in building our hopes that the likelihood of a large after shock was unlikely. However, the GeoNet App revealed we were experiencing aftershocks that did not match these predictions. The aftershocks were clearly stronger than those predicted. The large shake on 16 August frightened us as it was unexpected. Our children received many texts from friends at schools who were experiencing the shakes and they were big. We felt let down by the statement of 25 July. We felt that scientists didn't really have a clue about the nature of the shakes to come. We lost confidence in GeoNet's predictions and closely monitored the GeoNet App to try and understand what was happening with the earthquakes
- 
- This survey is too wordy
- 
- Used to live on the flat in Lyall Parade 3 years ago. Then when the tsunami from overseas occurred (can't recall where), all residents were put on high alert to evacuate if necessary. Thankfully we didn't have to. However it was an uneasy day watching the sea water rise + sink all day. After that day we sold up and moved to higher ground and now live on a hill looking down to the sea rather than living opposite it. Also, the 1st earthquake happened when visiting my dad in hospital. Wasn't scared because of where I was however my family wanted me home ASAP!!
- 
- Very aware that being in the city my natural instinct was to a) leave city, b) find family. Wonderful connection and camaraderie between people in street straight after earthquake
- 
- We based our responses, reactions to the earthquake and likelihood of tsunami on information on the GeoNet site, hence our decision not to evacuate at the time. GeoNet was a great tool for the children to use to reassure themselves that although it felt scary, nothing was damaged or fell over, so it wasn't as terrifying as they thought. It's a brilliant and useful tool and we are grateful for its informative and timely information
- 
- We were worried. Later we discovered minor damage (Geysler and fittings and fencing damage)
- 
- With two small children, one asleep and one in the lounge, on the occasion of the 2nd quake I was unclear what I should do in terms of who to go to. The older child (3yrs) didn't even realise it was an earthquake
- 
- Your website was very handy and utilised daily!
-

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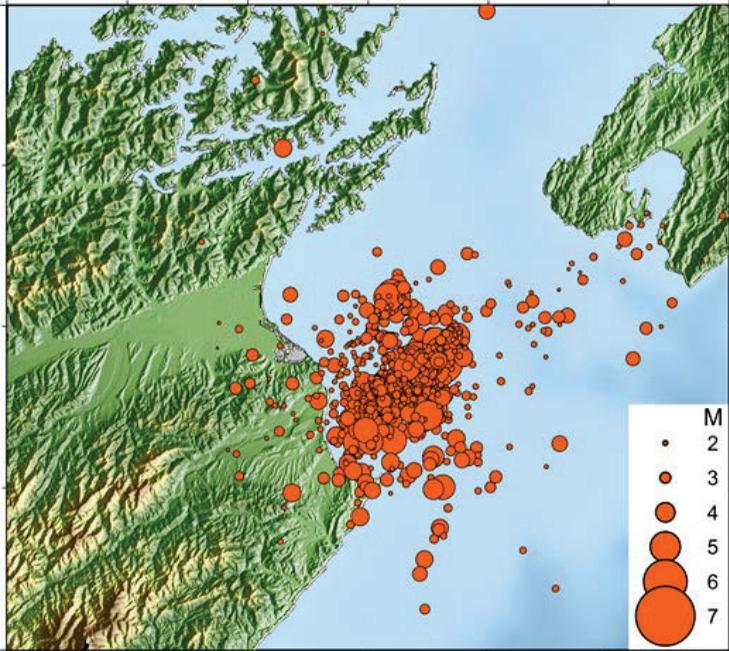
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## **APPENDIX 1**

### **Survey on Reactions to Cook Strait Earthquake Sequence**

# Survey on Reactions to Cook Strait Earthquake Sequence

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**Massey University**



# Survey on Reactions to Cook Strait Earthquake Sequence

## Section 1: Reactions during and after each earthquake

As described in our letter, we are interested in your responses and reactions to the recent large earthquakes in the Cook Strait, in particular the M6.5 earthquake that occurred at 5:09 pm on the evening of Sunday 21<sup>st</sup> July, and the M6.6 earthquake that occurred at 2:31 pm in the afternoon of Friday 16<sup>th</sup> August. For the questions below there are two answer columns, one for each of these earthquakes. Please record your responses for each earthquake in the corresponding column. If you only experienced one of the earthquakes, then answer for that earthquake only.

**Sunday 21<sup>st</sup> July  
Cook Strait  
Earthquake  
(M6.5, 5:09 pm)**

**Friday 16<sup>th</sup> August  
Lake Grassmere  
Earthquake  
(M6.6, 2:31 pm)**

1. When the earthquake occurred, in which suburb were you located?

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2. When the earthquake occurred, in which of the following places were you located? (*Tick one for each earthquake*)

At your home	<input type="checkbox"/> 1	<input type="checkbox"/> 1
At the home of friends or family	<input type="checkbox"/> 2	<input type="checkbox"/> 2
At your workplace	<input type="checkbox"/> 3	<input type="checkbox"/> 3
In a public place (e.g., shopping or recreation)	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Driving a vehicle	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Passenger in a vehicle	<input type="checkbox"/> 6	<input type="checkbox"/> 6
Other (please explain)		

3. For the purposes of our questions about tsunami response, it is helpful to know where you were located. Please list the street you were on, or describe where you were during each earthquake.

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4. When the earthquake occurred, which of the following best describes your household? (*Tick one for each earthquake*)

All household members were together	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Some household members were absent but I knew they were in a safe location	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Some household members were absent and I knew they were in danger	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Some household members were absent and I didn't know if they were safe	<input type="checkbox"/> 4	<input type="checkbox"/> 4

**Sunday 21<sup>st</sup> July**  
**Cook Strait**  
**Earthquake**  
**(M6.5, 5:09 pm)**

**Friday 16<sup>th</sup> August**  
**Lake Grassmere**  
**Earthquake**  
**(M6.6, 2:31 pm)**

**5. When the earthquake occurred, what was your social context? (Tick all that apply for each earthquake)**

I was alone	<input type="checkbox"/>	<input type="checkbox"/>
I was with children under 18 years of age	<input type="checkbox"/>	<input type="checkbox"/>
I was with adults I knew	<input type="checkbox"/>	<input type="checkbox"/>
I was with adult strangers	<input type="checkbox"/>	<input type="checkbox"/>

**6. How strong was the earthquake shaking that you felt? (Tick one for each earthquake)**

Not felt	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Weak shaking	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Mild shaking	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Moderate shaking	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Strong shaking	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Violent shaking	<input type="checkbox"/> 6	<input type="checkbox"/> 6

**7. For how long did you feel earthquake shaking? (Tick one for each earthquake)**

0-10 seconds	<input type="checkbox"/> 1	<input type="checkbox"/> 1
11-20 seconds	<input type="checkbox"/> 2	<input type="checkbox"/> 2
21-30 seconds	<input type="checkbox"/> 3	<input type="checkbox"/> 3
31-40 seconds	<input type="checkbox"/> 4	<input type="checkbox"/> 4
41-50 seconds	<input type="checkbox"/> 5	<input type="checkbox"/> 5
51-60 seconds	<input type="checkbox"/> 6	<input type="checkbox"/> 6
>60 seconds	<input type="checkbox"/> 7	<input type="checkbox"/> 7

**8. What was your first response while the earthquake was shaking? (Tick one for each earthquake)**

Continued what I was doing before the shaking	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Stopped what I was doing but stayed where I was	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Dropped, covered under a sturdy piece of furniture (e.g., table or desk), and held on to it	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Moved to a doorway	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Tried to protect other people nearby	<input type="checkbox"/> 5	<input type="checkbox"/> 5
Tried to protect property nearby (e.g., prevent things from falling)	<input type="checkbox"/> 6	<input type="checkbox"/> 6
Immediately left the building I was in	<input type="checkbox"/> 7	<input type="checkbox"/> 7
Felt earthquake, and continued driving		
Did not feel earthquake, so continued driving	<input type="checkbox"/> 8	<input type="checkbox"/> 8
Pulled over to the side of the road	<input type="checkbox"/> 9	<input type="checkbox"/> 9
Other (please explain)		

**Sunday 21<sup>st</sup> July**  
**Cook Strait**  
**Earthquake**  
**(M6.5, 5:09 pm)**

**Friday 16<sup>th</sup> August**  
**Lake Grassmere**  
**Earthquake**  
**(M6.6, 2:31 pm)**

**9. To what extent did you feel each of the following emotions *during* the earthquake shaking? Were you: (Tick one in each row for each earthquake)**

	Sunday 21 <sup>st</sup> July					Friday 16 <sup>th</sup> August				
	Not at all		Very great extent			Not at all		Very great extent		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
optimistic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
depressed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
annoyed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
nervous	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fearful	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
relaxed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
energetic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
alert	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
passive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**10. To what extent did you believe each of the following *during* the earthquake shaking? (Tick one in each row for each earthquake)**

	Sunday 21 <sup>st</sup> July					Friday 16 <sup>th</sup> August				
	Not at all		Very great extent			Not at all		Very great extent		
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
The building you were in would be severely damaged or destroyed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Your home would be severely damaged or destroyed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You and your family would be injured or killed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There would be disruption to your job that would prevent you from working?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There would be disruption to electrical, telephone, and other basic services?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**11. During the first 30 minutes after the earthquake shaking stopped, which of these did you do? (Tick all that apply for each earthquake)**

Returned to what I was doing before the shaking	<input type="checkbox"/>	<input type="checkbox"/>
Tried to find out what had happened	<input type="checkbox"/>	<input type="checkbox"/>
Turned off utilities (gas, electricity, or water)	<input type="checkbox"/>	<input type="checkbox"/>
Tried to contact household members	<input type="checkbox"/>	<input type="checkbox"/>
Cleaned up broken or fallen items	<input type="checkbox"/>	<input type="checkbox"/>
Helped people near me	<input type="checkbox"/>	<input type="checkbox"/>
Went to a clinic or hospital for treatment	<input type="checkbox"/>	<input type="checkbox"/>
Went to my home	<input type="checkbox"/>	<input type="checkbox"/>
Went to the home of a friend or relative	<input type="checkbox"/>	<input type="checkbox"/>
Went to a public shelter	<input type="checkbox"/>	<input type="checkbox"/>
Went somewhere else (please explain)	<input type="checkbox"/>	<input type="checkbox"/>
Other (please explain)		

**Sunday 21<sup>st</sup> July**  
**Cook Strait**  
**Earthquake**  
**(M6.5, 5:09 pm)**

**Friday 16<sup>th</sup> August**  
**Lake Grassmere**  
**Earthquake**  
**(M6.6, 2:31 pm)**

**12. During the first 30 minutes after the shaking stopped, which communication channels did you use? (Tick all that apply for each earthquake)**

None	<input type="checkbox"/>	<input type="checkbox"/>
Face to face conversation	<input type="checkbox"/>	<input type="checkbox"/>
Television	<input type="checkbox"/>	<input type="checkbox"/>
Radio	<input type="checkbox"/>	<input type="checkbox"/>
Telephone: voice call	<input type="checkbox"/>	<input type="checkbox"/>
Telephone: text message	<input type="checkbox"/>	<input type="checkbox"/>
Internet	<input type="checkbox"/>	<input type="checkbox"/>

**13. When the earthquake struck, did you consider that a tsunami could occur?**

Yes / No

Yes / No

**a. If Yes, how likely did you think: (Tick one in each row for each earthquake)**

	Yes					No				
	Not at all (1)	(2)	(3)	(4)	Very great extent (5)	Not at all (1)	(2)	(3)	(4)	Very great extent (5)
It was that the earthquake would cause a tsunami?	<input type="checkbox"/>									
That it would reach your location?	<input type="checkbox"/>									
That it would reach your home?	<input type="checkbox"/>									

**b. If Yes, when the earthquake struck, how soon afterwards did you think would be the earliest a tsunami might strike where you were located?**

\_\_\_\_\_ hours  
(or \_\_\_\_\_ minutes)

\_\_\_\_\_ hours  
(or \_\_\_\_\_ minutes)

**c. When the earthquake struck, how likely did you think it was that it would cause a tsunami that would: (Tick one in each row for each earthquake)**

	Yes					No				
	Not at all (1)	(2)	(3)	(4)	Very great extent (5)	Not at all (1)	(2)	(3)	(4)	Very great extent (5)
Severely damage or destroy many homes in Wellington?	<input type="checkbox"/>									
Injure or kill many people in Wellington if they did not evacuate?	<input type="checkbox"/>									
Severely damage or destroy buildings where you were located?	<input type="checkbox"/>									
Severely damage or destroy your home?	<input type="checkbox"/>									
Injure or kill you and your family if you did not evacuate?	<input type="checkbox"/>									

**d. Did you evacuate your location after the earthquake because of concern about a tsunami?**

Yes / No

Yes / No

**Sunday 21<sup>st</sup> July**  
**Cook Strait**  
**Earthquake**  
**(M6.5, 5:09 pm)**

**Friday 16<sup>th</sup> August**  
**Lake Grassmere**  
**Earthquake**  
**(M6.6, 2:31 pm)**

**14. At the time of the earthquake, which of these did you have on hand? (Tick all that apply for each earthquake)**

3 day supply of water	<input type="checkbox"/>	<input type="checkbox"/>
3 day supply of non-perishable food	<input type="checkbox"/>	<input type="checkbox"/>
Emergency kit filled with supplies	<input type="checkbox"/>	<input type="checkbox"/>
Household emergency plan	<input type="checkbox"/>	<input type="checkbox"/>
Battery powered radio	<input type="checkbox"/>	<input type="checkbox"/>
Predetermined place to evacuate	<input type="checkbox"/>	<input type="checkbox"/>

**15. Was anyone in your household injured in the earthquake?**

Yes / No

Yes / No

**16. How much damage did the earthquake do to your home? (Tick only one for each earthquake)**

None	<input type="checkbox"/> 1	<input type="checkbox"/> 1
Slight	<input type="checkbox"/> 2	<input type="checkbox"/> 2
Moderate	<input type="checkbox"/> 3	<input type="checkbox"/> 3
Severe	<input type="checkbox"/> 4	<input type="checkbox"/> 4
Totally destroyed	<input type="checkbox"/> 5	<input type="checkbox"/> 5

**17. What infrastructure did the earthquake interrupt in your home? (Tick all that apply for each earthquake)**

Electricity	<input type="checkbox"/>	<input type="checkbox"/>
Gas	<input type="checkbox"/>	<input type="checkbox"/>
Water	<input type="checkbox"/>	<input type="checkbox"/>
Sewer	<input type="checkbox"/>	<input type="checkbox"/>
Internet Access	<input type="checkbox"/>	<input type="checkbox"/>
Satellite or Cable TV access	<input type="checkbox"/>	<input type="checkbox"/>
Telephone	<input type="checkbox"/>	<input type="checkbox"/>
Other (please explain)		

**18. After the earthquake, did you take any of the following actions: (Tick all that apply for each earthquake)**

Got basic needs e.g. canned food, water, emergency kit	<input type="checkbox"/>	<input type="checkbox"/>
Got basic equipment, e.g., torch, batteries, battery radio	<input type="checkbox"/>	<input type="checkbox"/>
Logistics /planning e.g., planned where to meet	<input type="checkbox"/>	<input type="checkbox"/>
Damage mitigation; quake-safed the house, or checked it is quake safe	<input type="checkbox"/>	<input type="checkbox"/>

**Section 2: Thinking back to the days prior to the Sunday 21st July Cook Strait M6.5 (5.09 pm) earthquake**

**19. Before the Sunday 21st July Cook Strait earthquake, did you ever experience an earthquake that... (Tick all that apply)**

Damaged property in your suburb	<input type="checkbox"/>
Damaged your home	<input type="checkbox"/>
Injured or killed a member of your family	<input type="checkbox"/>
Injured you	<input type="checkbox"/>

**20. Before the Sunday 21st July earthquake, did you ever... (Tick all that apply)**

Attend a meeting about earthquake hazard	<input type="checkbox"/>
Receive a brochure about earthquake hazard	<input type="checkbox"/>
Attend a meeting about tsunami hazard	<input type="checkbox"/>
Receive a brochure about tsunami hazard	<input type="checkbox"/>

**21. Prior to the Sunday 21<sup>st</sup> July earthquake, a M5.7 earthquake occurred on the morning of Friday 19<sup>th</sup> July at 09:06 am...**

Did you feel that earlier Friday morning earthquake?	Yes / No
Did that earthquake prompt you to make any preparations for future earthquakes?	Yes / No
If yes, what preparations did you make? (Tick all as appropriate)	
Got basic needs e.g. canned food, water, emergency kit	<input type="checkbox"/>
Got basic equipment, e.g., torch, batteries, battery radio	<input type="checkbox"/>
Logistics /planning e.g., planned where to meet	<input type="checkbox"/>
Damage mitigation; quake-safed the house, or checked it is quake safe	<input type="checkbox"/>
Other (please explain)	

**22. Prior to the Sunday 21<sup>st</sup> July earthquake, another M5.8 earthquake occurred on the morning of Sunday 21<sup>st</sup> July at 07:17 am...**

Did you feel that early Sunday morning earthquake?	Yes / No
Did that earthquake prompt you to make any preparations for future earthquakes?	Yes / No
If yes, what preparations did you make? (Tick all as appropriate)	
Got basic needs e.g. canned food, water, emergency kit	<input type="checkbox"/>
Got basic equipment, e.g., torch, batteries, battery radio	<input type="checkbox"/>
Logistics /planning e.g., planned where to meet	<input type="checkbox"/>
Damage mitigation; quake-safed the house, or checked it is quake safe	<input type="checkbox"/>
Other (please explain)	

### Section 3: Thinking of the week following the Sunday 21<sup>st</sup> July Cook Strait M6.5 (5:09 pm) earthquake

23. How concerned were you about a damaging aftershock or earthquake in the Wellington region?

Less concerned		No Change		More Concerned
(1)	(2)	(3)	(4)	(5)

24. How concerned were you about a tsunami occurring in the Cook Strait?

Less concerned		No Change		More Concerned
(1)	(2)	(3)	(4)	(5)

25. On the Thursday after the earthquake (25<sup>th</sup> July), GeoNet issued this statement about probability of future earthquakes in central New Zealand:

"GNS Science estimates that in the coming week there could be up to nine magnitude 5.0 or greater events, with an approximately 30% probability (a 1 in 3 chance) of a magnitude 6.0 or greater. The most likely period for this to occur is the next 24 hours, when the probability is approximately 20% (a 1 in 5 chance)."

- a. Did you receive this GeoNet statement? Yes / No
- 
- b. If yes, where did you receive it from? (*Please describe*)
- 
- c. Did this information concern you? Yes / No
- 
- d. For each of the days listed below, please indicate your perception of the likelihood of an earthquake of magnitude 6.0 or greater occurring. If you are unsure, please put your best guess (*Circle one in each row*):

<u>Day after the statement was issued</u>	Likelihood						
	Extremely unlikely		Medium Likelihood			Virtually certain	
On the first day (the day the statement was issued)	1	2	3	4	5	6	7
On the second day (the day after the statement was issued)	1	2	3	4	5	6	7
On the third day after	1	2	3	4	5	6	7
On the fourth day after	1	2	3	4	5	6	7
On the fifth day after	1	2	3	4	5	6	7
On the tenth day after	1	2	3	4	5	6	7

26. If you received this statement (or other similar statements on aftershock probabilities), how true do you think the following statements are for you? (*Circle one in each row*)

	Not at all true	Slightly untrue	Neutral	Slightly True	Very True
Receiving this information makes me feel relieved / happy	1	2	3	4	5
Receiving this information makes me anxious	1	2	3	4	5
I want to receive more of this information	1	2	3	4	5
I find it difficult to understand this information	1	2	3	4	5

## Section 4: Thinking now about the *future*:

27. Since the earthquakes, how concerned are you about a damaging aftershock or earthquake in the Wellington region?

Less concerned (1)                      No Change (3)                      More Concerned (5)  
(2)    (4)

28. Since the earthquakes, how concerned are you about a future tsunami occurring in the Cook Strait?

Less concerned (1)                      No Change (3)                      More Concerned (5)  
(2)    (4)

29. If, in the future, you felt an earthquake in the Wellington region, how likely are you to evacuate as a precaution in case of tsunami?

Not at all Likely (1)                      Medium Likelihood (3)                      Almost certain (5)  
(2)

Please explain:

---

30. Consider this hypothetical scenario:

"This morning scientists estimated the probability of an earthquake in Central New Zealand of Magnitude 6.0 or greater to be 2.3% within 7 days, and 19% within 1 year."

1. Based on this statement, please indicate on the scale below how likely you think it is for an earthquake of magnitude 6.0 or greater to occur today:

Extremely unlikely			Medium Likelihood			Virtually certain
1	2	3	4	5	6	7

2. Based on this statement, and for each of the time windows below, please indicate your perception of the likelihood of an earthquake of magnitude 6.0 or greater occurring. If you are unsure, please put your best guess (*Circle one in each row*):

<i><u>Time Window</u></i>	Likelihood						
	Extremely unlikely			Medium Likelihood			Virtually certain
In the next two months	1	2	3	4	5	6	7
In two to four months	1	2	3	4	5	6	7
In four to six months	1	2	3	4	5	6	7
In six to eight months	1	2	3	4	5	6	7
In eight to ten months	1	2	3	4	5	6	7
In ten to twelve months	1	2	3	4	5	6	7
In twelve to fourteen months	1	2	3	4	5	6	7









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