

Business Resilience and Recovery following the Canterbury Earthquakes

Representativeness of Survey Sample

Results Bulletin 2016-2

Findings from a survey of 206 organisations in the Greater Christchurch Urban area in mid-2016

Question:

How representative is the survey sample?

The data and subsequent analysis from this survey is limited by how representative the sample (those that responded to the survey) is, of all organisations in Canterbury. Due to the longitudinal nature of the project, representativeness may differ for each analysis. For example, analysis of Resilience prior to the February earthquake involves only the partial dataset of organisations, namely those who completed both the 2011 and 2016 survey. Where representativeness is vastly different from the overall, this will be reported within the appropriate results bulletin. This bulletin looks at the overall data gathered solely from the 2016 survey, considering how representative the sample is in terms of

- Number of organisations included
- Size of organisations represented
- Age of organisations
- Sectors represented
- Nature of ownership
- Number of failed businesses

Findings:

The survey represents larger and older organisations well, but under-represents micro (less than 5 employees), younger and charitable organisations relative to the business demography of Canterbury. Of the 19 sectors as defined in the Australia New Zealand Standard Industrial Classifications (ANZSIC), Manufacturing and Art and Recreation Services are underrepresented and Agriculture Forestry Fishing and Rental Hiring and Real Estate are significantly over represented.

Results:

Number of organisations

The total number of organisations asked to participate was 881. There were 206 valid responses. This gives a response rate of 23%.

Size of organisations represented

Organisational size is commonly assessed in New Zealand based on number of full time equivalent employees. As of 2015, 85% of organisations in Canterbury are classed as small enterprises with 5 or fewer employees. These organisations are significantly under-represented in our survey results with only 45% of survey responses coming from small enterprises. Consequently, larger organisations are over represented in our sample – see Table 1 (Statistics New Zealand, 2016)

Table 1 Number of employees in Canterbury businesses

| No. of full-time equivalent employees - 2015 | Canterbury organisations (geographic units*) | % of enterprises | No. of organisations | % of survey response | Difference |
|--|--|------------------|----------------------|----------------------|------------|
| 0-5 | 59760 | 85.75% | 94 | 45.63% | -40.12% |
| 6-9 | 3849 | 5.52% | 42 | 20.39% | 14.87% |
| 10-19 | 3375 | 4.84% | 31 | 15.05% | 10.21% |
| 20-49 | 1839 | 2.64% | 20 | 9.71% | 7.07% |
| 50-99 | 528 | 0.76% | 8 | 3.88% | 3.13% |
| 100+ | 342 | 0.49% | 11 | 5.34% | 4.85% |
| Total | 69693 | 100 | 206 | 100 | |

*Data from Statistics New Zealand. A 'geographic unit' is a separate operating unit engaged in New Zealand in one, or predominantly one, kind of economic activity from a single physical location or base (Statistics New Zealand, 2016)

Age of organisations

The average age of organisations in our sample was 29 years, and median 18 years. It is unknown whether this is representative of organisations as Statistics New Zealand does not collect data on the age of businesses in New Zealand. Business birth rate data (Table 2) indicates that approximately 10% of enterprises in any given year are new organisations. It is reasonable to assume that the survey sample may not represent young businesses as much as more established businesses as young businesses may not have been on the database that businesses were randomly selected from.

Table 2 - Canterbury business birth rates

| Year | Total no. of enterprises (geographic units) | No. of births | Births as % of prior year organisations |
|------|---|---------------|---|
| 2006 | 62070 | 8208 | |
| 2007 | 63642 | 7890 | 12.71% |
| 2008 | 65067 | 7794 | 12.25% |
| 2009 | 65625 | 7077 | 10.88% |
| 2010 | 65037 | 6153 | 9.38% |
| 2011 | 64614 | 5781 | 8.89% |
| 2012 | 64356 | 6312 | 9.77% |
| 2013 | 65253 | 6393 | 9.93% |
| 2014 | 67953 | 7326 | 11.23% |
| 2015 | 69690 | 8364 | 12.31% |

(Statistics New Zealand, 2016)

Sectors represented

Table 3 provides a breakdown of organisations by sector in the Canterbury region (Statistics New Zealand, 2014). Manufacturing and Art and Recreation Services were under represented based on the normal proportion of businesses in Canterbury. Agriculture Forestry and Fishing and Rental Hiring and Real Estate are significantly over represented. There were less than five responses (<2% of total survey response) from Financial and Insurance Services, Administration and Support Services, Public Administration and Safety and Mining sectors, so these sectors are generally excluded from sector analyses of the data.

Table 3 Comparison of proportion of sectors in Canterbury and proportion of survey sample.

| Sector | Percent of total industry in Canterbury (number of geographic business units)* | Total number of responses | Percent of total survey responses | Difference |
|---|--|---------------------------|-----------------------------------|------------|
| Healthcare and Social Assistance | 4% | 16 | 7.8% | 3.8% |
| Professional, Scientific and Technical Services | 8% | 21 | 10.2% | 2.2% |
| Education and Training | 2% | 7 | 3.4% | 1.4% |
| Manufacturing | 5% | 23 | 11.2% | 6.2% |
| Transport, Postal and Warehousing | 3% | 15 | 7.3% | 4.3% |
| Construction | 11% | 13 | 6.3% | -4.7% |
| Retail Trade | 6% | 18 | 8.7% | 2.7% |
| Agriculture, Forestry and Fishing | 17% | 11 | 5.3% | -11.7% |
| Accommodation and Food Services | 4% | 7 | 3.4% | -0.6% |

| | | | | |
|---|-----|-----|-------|--------|
| Wholesale Trade | 4% | 10 | 4.9% | 0.9% |
| Information, Media and Telecommunications | 1% | 9 | 4.4% | 3.4% |
| Electricity, Gas, Water and Waste Services | 0% | 8 | 3.9% | 3.9% |
| Financial and Insurance Services | 6% | 4 | 1.9% | -4.1% |
| Rental, Hiring and Real Estate Services | 19% | 14 | 6.8% | -12.2% |
| Administrative and Support Services | 3% | 1 | .5% | -2.5% |
| Public Administration and Safety | 1% | 4 | 1.9% | 0.9% |
| Art and Recreation Services | 2% | 16 | 7.8% | 5.8% |
| Mining | 0% | 1 | .5% | 0.5% |
| Other Services | 4% | 8 | 3.9% | -0.1% |
| Total | 100 | 206 | 100.0 | |

* Data from Statistics New Zealand. A 'geographic unit' is a separate operating unit engaged in New Zealand in one, or predominantly one, kind of economic activity from a single physical location or base (Statistics New Zealand, 2016)

Nature of ownership

The distribution of ownership types in the sample and for New Zealand is given in Table 4. Statistics for Canterbury region were not readily available; however, it is assumed that New Zealand and Canterbury percentages would be similar. Overall, the distribution of business ownership types in the sample are very similar to those in New Zealand, with two exceptions: the sample slightly over represents limited liability companies and under represents charities, trusts and estates.

Table 4 - Business Ownership distribution in survey sample

| | No. of enterprises (NZ) | % of enterprises | No. of respondents | % of respondents | Difference |
|--|-------------------------|------------------|--------------------|------------------|------------|
| Individual Proprietorship | 85002 | 16.93% | 33 | 16.02% | -0.91% |
| Partnership | 62592 | 12.46% | 17 | 8.25% | -4.21% |
| Registered Limited Liability Company (non Co-op) | 270093 | 53.78% | 129 | 62.62% | 8.84% |
| Co-operative Companies | 33 | 0.01% | 1 | 0.49% | 0.48% |
| Joint Ventures and Consortia | 1215 | 0.24% | 1 | 0.49% | 0.24% |
| Branches of Companies Incorporated Overseas | 1065 | 0.21% | 3 | 1.46% | 1.24% |
| Local or central government including LATE, COE or School | 3231 | 0.64% | 12 | 5.83% | 5.18% |
| Charity/Association/Society/Trusts/Sports Club | 76992 | 15.33% | 10 | 4.85% | -10.48% |
| Other Business Types | 1950 | 0.39% | 0 | 0.00 | -0.39% |
| TOTAL | 502173 | 100 | 206 | 100 | |

Number of failed organisations

Just 7 of the respondents (3%) are no longer in operation; whereas, the average annual business death rate in Canterbury since the earthquakes have been just under 10% as shown in Table 5 (Statistics New Zealand, 2016). As reported in Results Bulletin 1, 52 organisations from the original database of 958 had definitively ceased and a further 25 were presumed ceased. This represents 8% of the potential respondents which is in line with the failure rates illustrated in Table 5. There are two reasons for the under-representation of ceased businesses in this survey. Firstly, the time required to find contact details, and secondly, the nature of the survey questions. Analysis of dropout rates, where respondents commenced but did not complete the survey found the ceased businesses were a high proportion of failures to complete due to the difficulty in interpreting questions for their specific context. All results need to be interpreted in light of this under representation of failed businesses.

Table 5 Business deaths in Canterbury

| Year | Total no. of enterprises (geographic units) – Canterbury region | No. of deaths | Deaths as % of prior year organisations |
|-------------|--|----------------------|--|
| 2006 | 62070 | 5742 | |
| 2007 | 63642 | 6345 | 10.22% |
| 2008 | 65067 | 6423 | 10.09% |
| 2009 | 65625 | 6519 | 10.02% |
| 2010 | 65037 | 6750 | 10.29% |
| 2011 | 64614 | 6204 | 9.54% |
| 2012 | 64356 | 6405 | 9.91% |
| 2013 | 65253 | 5568 | 8.65% |
| 2014 | 67953 | 4599 | 7.05% |
| 2015 | 69690 | 7062 | 10.39% |

Reference as:

Hatton, T., Brown, C., Seville, E. (2016) Business Resilience and Recovery following the Canterbury Earthquakes: Representativeness of Survey Sample . Results Bulletin 2016-2: Survey Representation. Resilient Organisations www.resorgs.org.nz

References:

Statistics New Zealand. (2014). Business Demography Statistics 2014. Retrieved 16 April, from New Zealand Government
 Statistics New Zealand. (2016). Business Demography Statistics. Retrieved 21 November 2016, from New Zealand Government <http://nzdotstat.stats.govt.nz/wbos/Index.aspx#>