

Dr Felicity Powell

PhD (Human Geography)
Principal Researcher, Opus Central Laboratories

Felicity is an economic geographer specialising in business location decisions, community resiliency, and scalar issues in strategic spatial planning. On the FRST-funded research programme Social and Economic Recovery from Natural Disasters through Community Resilience (2004-2010) her research has focused on the economic aspects of post-disaster recovery.

Dr Abigail Harding

PhD (Natural Resource Management)
Research Scientist, Opus Central Laboratories

Abigail works on the same research programmes as Felicity. Her research has focussed on the influence of retail types on urban form, the sustainability of neighbourhood shopping centres, and business recovery following the Gisborne Earthquake.

1 Introduction

Over the past fifteen years or so, a body of research has developed that looks at how private sector entities prepare for, respond to, and recover from disasters (for examples refer to Appendix I). The research on business recovery following natural disaster events is dominated by work undertaken in North America, namely the USA. However, little research has been undertaken on business recovery or organisational learning in Australasia. The Gisborne earthquake provided us with an opportunity to observe actual, rather than predicted, business behaviour following a real event.

Through our research in Gisborne we set out to address four questions: (1) What was the initial recovery experience of businesses? (2) What preparedness measures did businesses have in place? (3) What catalysts and barriers to recovery did businesses experience? and (4) What have business owners learnt from the experience of recovery? We collected data on business recovery in Gisborne over a 21 month period.

Following Elliot, Harris & Baron (2005) and Runyan (2006), we describe the process of business recovery as having four phases:

- I. Crisis prevention – preparation and risk assessment prior to a crisis occurring;
- II. Crisis response – the period after an emergency or disaster when people are saved (if needs be) and damage is assessed. This is typically the period that the media focuses on;
- III. Crisis recovery – the longer-term reconstruction phase and the period of socio-economic recovery; and,
- IV. Learning and implementation – the lessons learned from the experience of the event are applied to the business, feeding back into the crisis prevention phase.

As shown in Figure 1, these phases are not discrete, but rather a continuum where each phase merges into

the next (aside from phases I and II which are separated by the crisis event). With this overlap in mind, we use these four phases to frame our study and findings, which are based on well-established methods.

First we provide an overview of the findings in the business recovery literature. Second, we outline our methodology, focussing on how we collected our data. Third, we discuss our findings in the context of the four phases of organisational recovery. Fourth, we explain what this means for other New Zealand towns and cities. We then conclude with recommendations.

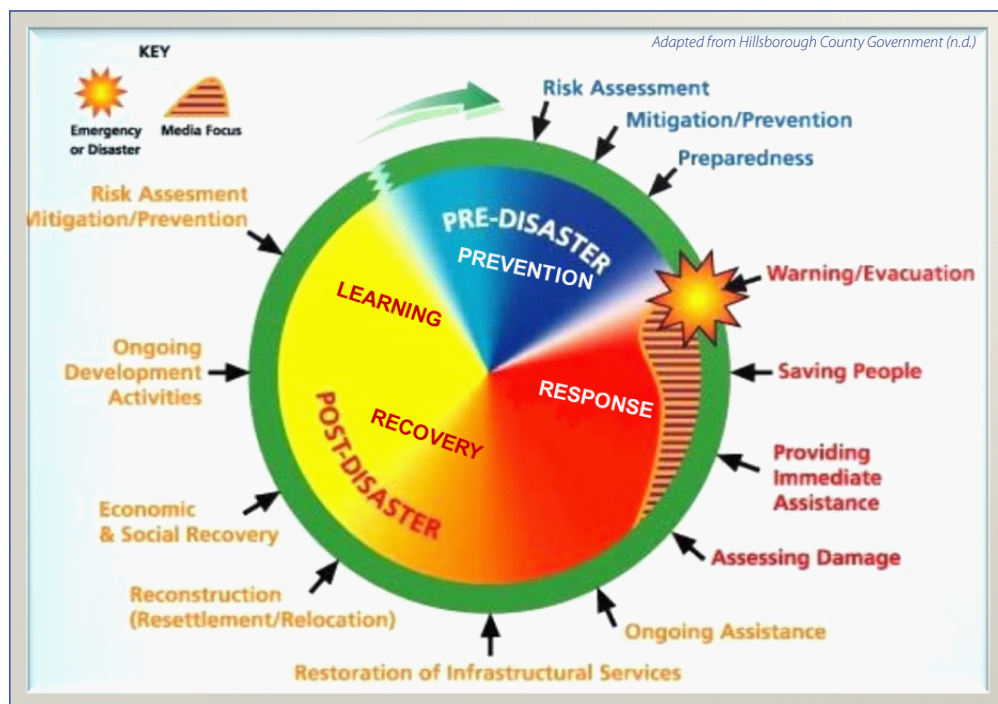


Figure 1: Organisational Recovery Cycle

2 Summary of Business Recovery Literature

2.1 Phase I. Crisis Prevention

There are a wide range of disaster preparedness measures available to firms, including obtaining first aid supplies, purchasing earthquake or business interruption insurance and making arrangements for business relocation. Generally, studies have found that there are low levels of business preparedness in areas affected by a natural disaster (Chang and Falit-Baiamonte 2002; Webb, Tierney and Dahlhamer 2000, 2002). The preparedness measures taken by companies tend to relate more to addressing the immediate effects of the disaster, e.g. the supply of first aid kits, and less with helping the business recover (Webb et al. 2000, 2002).

Whilst many businesses take out insurance, it is often found to be inadequate (Alesch, Holly, Mittler and Nagy, 2001; Chang and Falit-Baiamonte, 2002; Webb et al., 2000). A recent study in New Zealand found more than 80% of small to medium businesses are inadequately, or inappropriately insured (NBR, 2009). For many business owners, recovery has to be financed out of their own savings or by taking on additional indebtedness (Alesch et al. 2001). As a result, for many businesses recovery comes at a high personal cost.

Chang and Falit-Baiamonte (2002) estimated that after the Nisqually earthquake approximately 80 per cent of businesses financed their recovery from business reserves, self insurance or out of their own pockets. Even when businesses had insurance, they did not report receiving assistance with the indirect costs of the earthquake, such as those arising from temporary business closure (Meszaros and Fiegenger, 2002).

The amount of emphasis that individual business owners place on preparing for hazard events depends on their 'locus of control'. Spittal, McClure, Siegert and Walkey (2008) tested the demographic and psychological predictors of earthquake preparation for a group of residents in Wellington, New Zealand. They found that people with an internal locus of control (the perception that they have some degree of control over the way external circumstances affect their lives) are more inclined to undertake damage-mitigation measures like strengthening the building or securing furniture and fixtures. Those with a high external locus of control (the perception that they have no control over the way external circumstances affect their lives) tend to undertake fewer measures because they have a perception that they have little control over how external circumstances affect their lives. The authors suggest that those with more community relationships may be more likely to have a stronger internal locus of control.

2.2 Phase II./III. Crisis Response/Recovery

Some of the findings for the crisis response and recovery phases merge. Particular findings about business factors affecting recovery following a natural disaster event are given in Appendix I. The body of literature investigating these phases of businesses recovery is dominated by empirical studies undertaken in the USA for a range of crisis events, including hurricanes, earthquakes, and floods.

The more vulnerable businesses tend to be those that: are small; are reliant on discretionary income, such as retailers; are tenants rather than building owners; experience more severe damage; and/or, are closed for a longer period of time. The businesses with a better chance of surviving are those that: are financially robust prior to the disaster; sustain less damage; and/or, do not close/close for only a short period of time. Businesses linked to repairs/rebuilding tend to fare well in the aftermath of an event because it generates work for them.

2.3 Phase IV. Learning and Implementation

After dealing with the recovery phase, organisations may seek to actively learn from their experience, altering their behaviour to become more resilient to future events (Elliott et al. 2005; Toft and Reynolds 1992). However empirical studies investigating the relationship between disaster experience and organisational learning are rare (Deverell and Hansén 2009; Runyan 2006). Our studies in Gisborne sought to identify what owners learnt from the earthquake that they might reduce the likelihood of a similar outcome arising from a future event.

Research findings have shown that those most likely to undertake preparation measures after a crisis event are those that already had some preparation measures in place prior to the event. While the careful become more careful, those that had no measures in place prior to the event are less likely to employ measures afterwards (Forsyth and Johnston, 2005; Meszaros and Fiegenger, 2002; Tierney, 1997).

Burger and Palmer (1992) found that unrealistic optimism about the likelihood of experiencing a natural disaster returned just three months after the 1989 California earthquake. Similarly, research on the Mt

Ruapehu eruptions of 1995-96 found that it was possible that people close to the eruptions that had not suffered negative impacts, appeared to develop a belief that future eruptions would not affect them or that they would be able to cope (Becker, Smith, Johnston and Munro. 2001; Johnston, Bebbington, Lai, Houghton and Paton, 1999). This optimistic bias can be a barrier to learning and implementation following a crisis event.

The learning and implementation phase may also include scapegoating, where someone is blamed for the outcomes of the crisis (Elliott et al. 2005; Smith and Sipika 1993). The scapegoating process in organisations after a crisis is usually dominated by internal restructuring and the removal of the management in place prior to the crisis (Smith and Sipika 1993).

3 Methodology

In this presentation, we report on our findings from two postal questionnaires undertaken three and 16 months after the earthquake, and from semi-structured interviews conducted 21 months after the earthquake (see Table 1). The questionnaires and interviews collectively investigated the recovery of the local business community.

Date	Research method	Phase	Number of businesses	Returned/undertaken	Response rate
March 2008 (+3)	Postal questionnaire	Prevention (I) and Response (II)	925	286	31%
April 2009 (+16)	Postal questionnaire	Recovery (III) and Learning (IV)	286	143	50%
Sept. 2009 (+21)	Semi-structured interviews	Recovery (III) and Learning (IV)	14	14	100%

Table 1: Data Collection Methods used in this Study

Questionnaires were sent to 925 businesses throughout the Gisborne region in March 2008, three months after the earthquake. A response rate of 31% was achieved, with 286 completed surveys returned. This first survey sought information about initial perceptions of damage, interruption to trade, and recovery after the earthquake. A second survey was sent in April 2009 to the same 286 businesses and 143 completed surveys were returned, giving a response rate of 50%. The follow-up survey sought deeper insight into business recovery. The postal questionnaires used a combination of open and closed questions. The questions were based on other surveys from the well-established body of literature in the USA. Some of the questions were similar to those used in studies by Webb et al. (2002) and Chang and Falit-Baiamonte (2002) to enable comparisons with research completed on similar issues.

The response rate for open questions in the second survey was low, with some respondents leaving boxes blank or indicating that the questions were not applicable to them. It was also observed in the later survey that some owners, whose buildings had sustained structural damage, were still waiting for repairs to be completed. For these reasons, it was decided that conducting interviews with individuals at different stages in the recovery process would reveal more detailed information on their recovery. Fourteen semi-structured interviews were conducted in September 2009 with owners of commercial buildings in Gisborne that had sustained structural damage in the earthquake; four of these owners were still waiting for rebuilding to

commence. In addition to being at different stages of recovery, interviewees were selected that represented a cross-section of: building ages, usage by a diverse set of industry sectors (e.g. retail, engineering or office), locations (i.e. inside or outside the CBD), and whether the building was owner-occupied or leased to tenants (11 owner-occupiers and 3 landlords).

Key aspects of the demographic information from the postal questionnaire sample are that:

- » Small businesses dominate (50% < 5 employees, 87% < 15 employees);
- » Many businesses are well-established (65% > 10 years old, 44% > 20 years old);
- » Independent businesses dominate (80% owner operated, 20% franchises/chains);
- » About half lease and half own their building; and,
- » Businesses are located in the CBD (45%), other parts of the city (43%), and beyond the city (12%).

As shown in Figure 2, though Gisborne is a small provincial city, its business size profile mirrors New Zealand's six largest cities. This means that findings from our study are relevant to other New Zealand centres. A key feature of New Zealand's business community is the high proportion of small businesses (businesses with 1-5 employees).

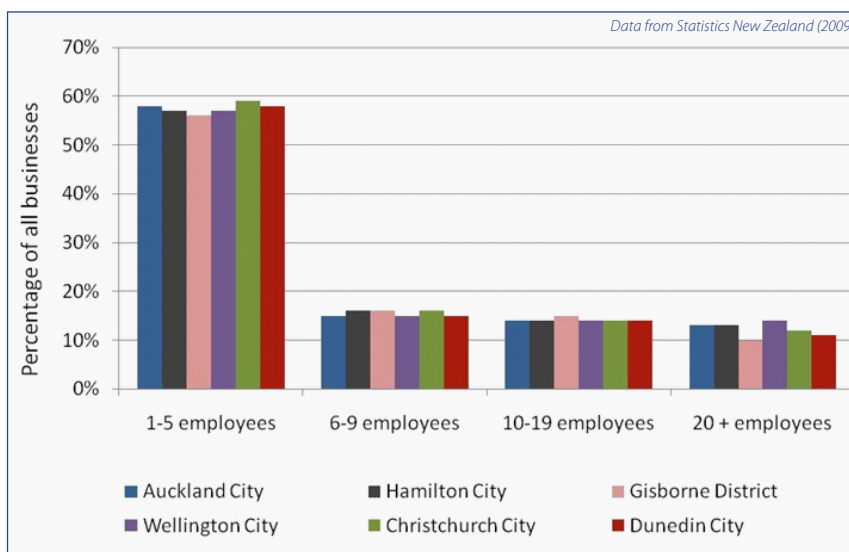


Figure 2: Business Size in New Zealand Cities (2008)

4 Results and Discussion

The results relating to the crisis prevention and crisis response phases come primarily from the first postal questionnaire, with some retrospective insight gained from the second questionnaire. The findings for the crisis response and learning and implementation phases come from the information gained from the second questionnaire and the semi-structured interviews.

4.1 Phase I: Crisis Prevention

Key findings about the preparation measures businesses had in place are that:

- » 82% of respondents had at least one measure in place;
- » 64% of total measures were mitigation measures and 35% were survival measures; and,
- » measures were dominated by insurance policies and first aid.

Details of the mitigation and survival measures employed prior the event are given in Figure 3 and Figure 4. Here, measures to mitigate damage include different types of insurance policies, structural reinforcement of the building to help it withstand earthquake damage, non-structural measures like fastening cupboards to walls and moving heavy stock to lower shelves, and intentionally carrying excess capacity in the business. Survival measures include storing water, stocking first aid kits and training staff in first aid, and undertaking earthquake drills (Spittal et al., 2008).

The high consumption of insurance policies and first aid obscures the vulnerability facing many businesses in the region from not having in place a range of effective measures to prepare for earthquakes. It also indicates that businesses appear to have a preference for low-effort preparedness measures that are simple to acquire over measures that are resource intensive or time-consuming to implement.

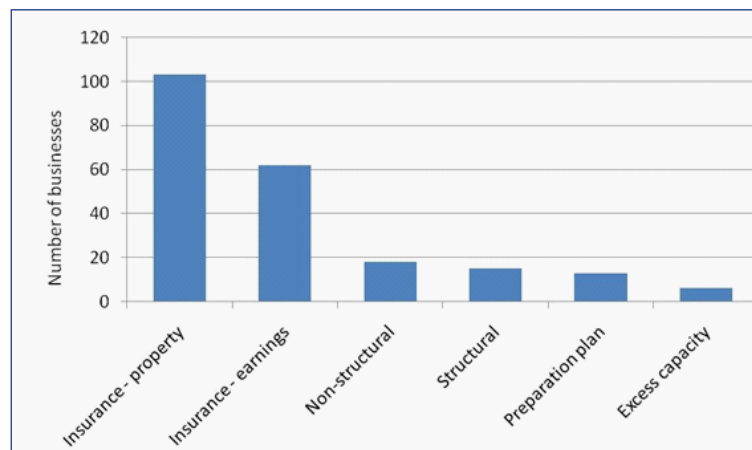


Figure 3: Mitigation Measures in Place Prior to the Earthquake

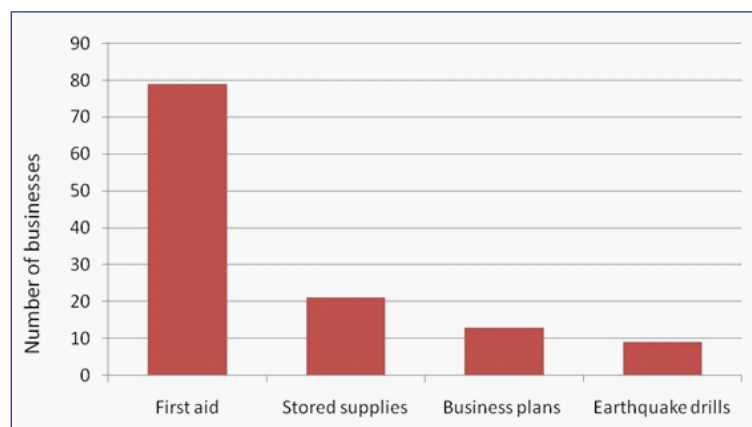


Figure 4: Survival Measures in Place Prior to the Earthquake

Retrospectively, insurance was considered the most useful measure for people that were in a position to claim on their insurance policies. This was followed by assistance from staff/head office, having computer back-up systems in place, and having excess capacity to facilitate successful trading post-earthquake.

4.2 Phase II: Crisis Response

Contrary to findings in other studies (Alesch et al. 2001; Chang and Falit-Baiamonte 2002; Dahlhamer 1998; Kroll et al. 1991), there was no evidence to suggest that smaller companies in Gisborne were more vulnerable to the effects of this earthquake. Businesses in the retailing and wholesaling sectors, were amongst the sectors most likely to have received damage or to close temporarily after the earthquake. Various retailers and fast food outlets lost revenue while the CBD was closed for the day following the earthquake. The days leading up to Christmas are financially lucrative for such businesses, so the timing of the earthquake meant that revenue loss was higher than it would have been at any other time of the year. Some businesses associated with the recovery and rebuilding process, including retailers/wholesalers of furniture and building supplies, benefitted from the earthquake with short- and longer-term increases in revenue, and this is a fairly typical experience after a natural disaster event (Dahlhamer 1998; Kroll et al. 1991; Meszaros and Fiegenger 2002; Tobin 1999). In addition, many businesses (c.77%) self-financed the costs of the earthquake and there may be implications for the long term viability of these businesses.

4.2.1 Type of Damage

The types of damage experienced by businesses are shown in Figure 5, where non-structural damage and damage to stock were the most prevalent.

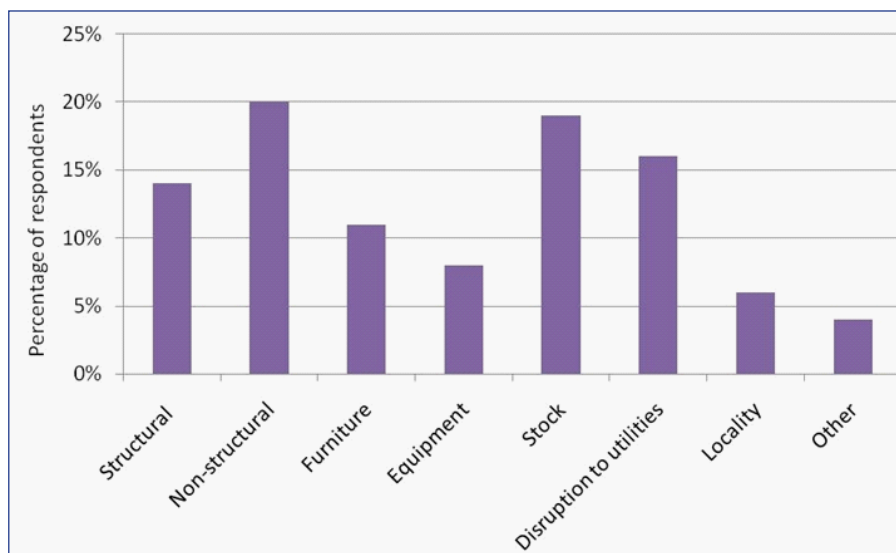


Figure 2: Business Size in New Zealand Cities (2008)

4.2.2 Closure and Repairs

As shown in Figure 6, the majority of businesses surveyed did not need to close, while 20% closed for one day – most of these businesses were located in the CBD and affected by compulsory closure. Figure 7 shows

the time businesses waited for repairs to be completed. About a third of businesses were operating in compromised premises, probably due to the minor nature of the damage, or the imperative to open quickly for Christmas trade. Sixteen months out from the earthquake, 8% of businesses were still waiting for repairs.

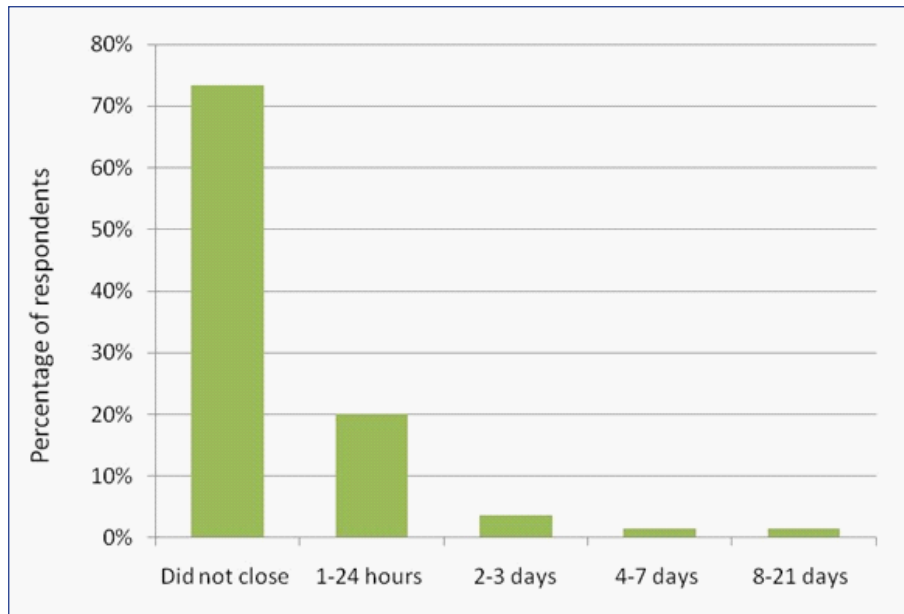


Figure 6: Length of Time Closed

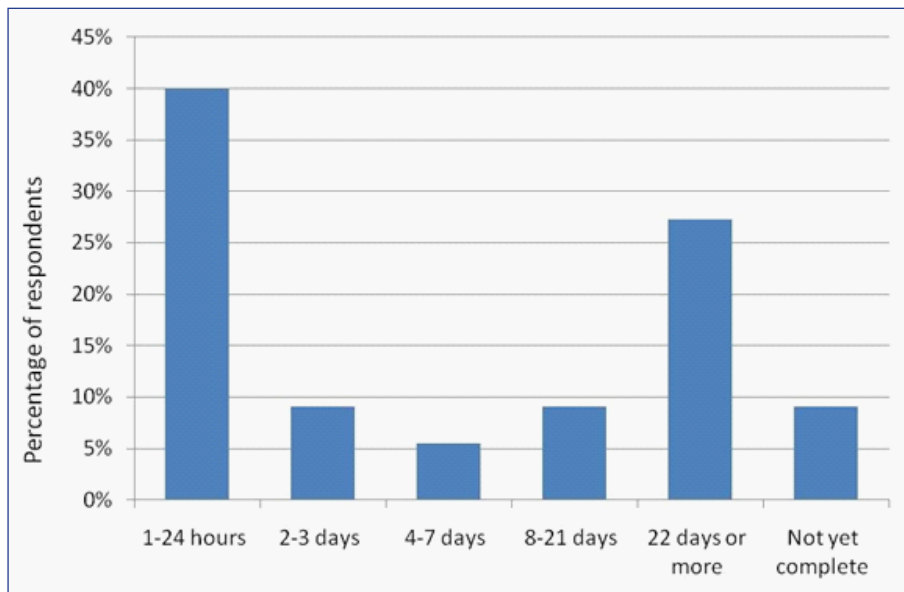


Figure 7: Time to Complete Repairs (as at 16 months after the earthquake)

4.2.3 Catalysts and Barriers to Recovery

In the first postal questionnaire, we asked respondents about what they felt had helped and hindered their recovery so far. The factors that helped businesses in the crisis response phase are shown in Figure 8. Two factors dominate: community support and financial urgency. Community factors included the way in which people pulled together or worked hard to facilitate recovery, the importance of community spirit or support from the community, and the special character or resilience of Gisborne people. Financial urgency relates to the timing of the earthquake. As discussed previously, the earthquake occurred just before Christmas, which is the most profitable time for many of the businesses affected, particularly retailers.

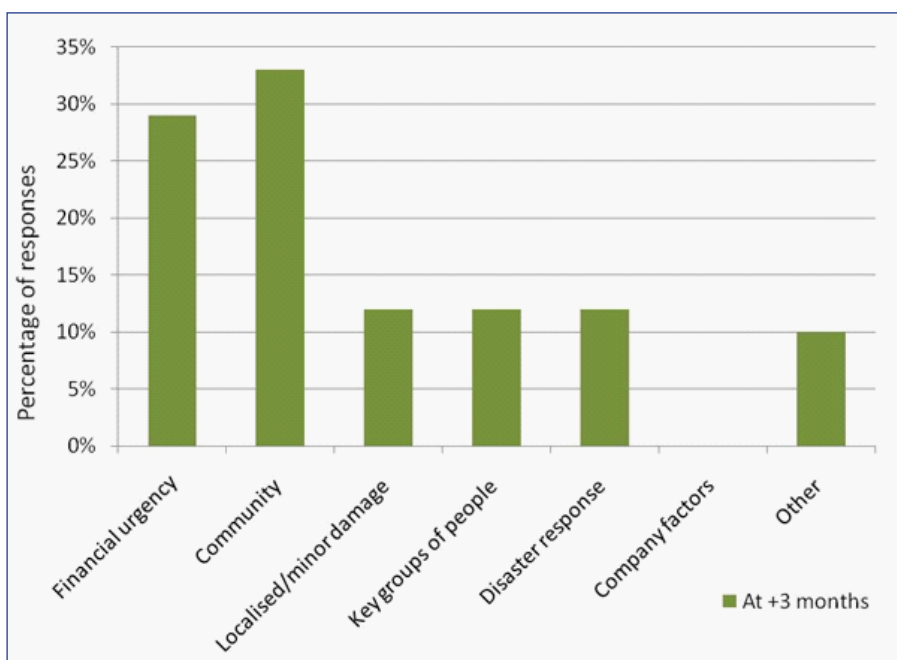


Figure 8: Catalysts to Recovery as Cited in the Initial Survey

For some businesses, power supply problems and having restricted access to the building in the immediate aftermath of the earthquake were viewed as barriers to business recovery in the Crisis Response phase.

4.3 Phase III: Crisis Recovery

In the second questionnaire, we sought information on the catalysts and barriers to medium term recovery. The response rate for these questions was considerably lower than for the similar questions in the first survey, but it was evident that delays in some form or other were identified as significant barriers to recovery. We decided to gain further insight into the nature of these delays via one-to-one interviews with business owners.

4.3.1 Catalysts to Recovery

As in the initial survey, community-related factors were identified as the most significant aid to business recovery in Gisborne (Figure 9). Perhaps reflecting with hindsight on the city's lucky escape from a more

damaging earthquake, the second most important factor was that the damage to respondents' buildings or stock was either localised or relatively minor in nature. Financial urgency was important in the crisis response phase, but this was barely cited as aiding longer term recovery. This difference may be attributed to the strong financial imperative to open for Christmas trade immediately after the earthquake.

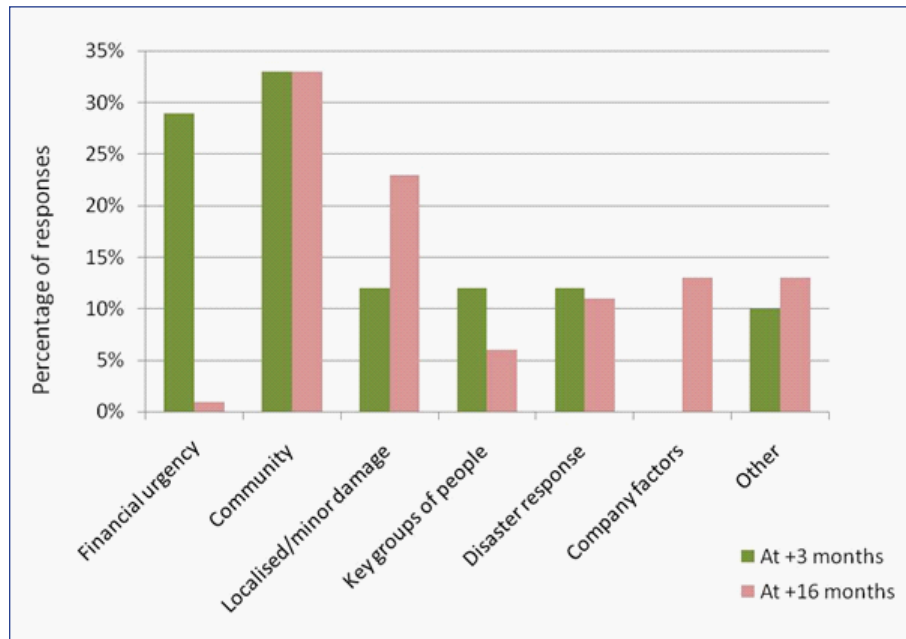


Figure 9: Catalysts to Recovery Showing Responses to Both Surveys

4.3.2 Barriers to Recovery

In the second survey, business owners observed that delays were an impediment to the recovery process. These delays fell into three categories: the time it took to process insurance claims, to fix adjacent buildings and to undertake repairs. The economic downturn was also suggested as a possible cause for the slow return to normal trading conditions after the earthquake.

The causes of delay were investigated in more detail during the interviews with building owners. The length of time taken to reach a settlement with their insurers was the most frequently cited hindrance experienced by this group. Nearly half of interviewees had experienced delays due to protracted negotiations, usually over agreeing who was to pay for what. Some people blamed their insurance companies, whilst others blamed the insurance assessor who had handled their claim. For example:

“The assessor was looking for an out, and in my opinion was looking for more work to extract money from the insurance company when very firm decisions could be made early ... They were more looking for ways to get out of it than looking for ways of a settlement” (Interviewee #10).

A second category of delay was due to waiting for tradesmen to become available to undertake repairs/rebuilding. Most interviewees had not experienced a problem of this type, as they had used members of

the family or their regular builder to do the work. Other problems with tradesmen were also identified. For example, one owner experienced poor conduct when a builder was left to undertake essential weather proofing on his building. When the owner returned from holiday, he found the builder had left for work in Australia without notice and without completing the work on his building. The owner then had to wait until a different builder became available. In addition, the first builder's work was of such poor quality that more damage was done to the building when it rained than by the earthquake, increasing the amount of remedial work required. A different owner found his builder did not have the technical skills required for a particular product specified in the repair of his building. Consequently, work halted on several occasions while the builder gained specialist advice from a company based in Napier.

Professional advice was a third source of delays. Once again, most interviewees had not experienced problems with professionals, such as earthquake engineers or architects. When delays did occur, they were often due to having to wait for reports or specifications being written, with one owner claiming that it took about a year for a detailed report to be compiled by his engineer. A few building owners complained about the shortage of professionals to undertake the work. One owner languished for months on his engineer's waiting list until his assessor appointed a different engineer. Within a week or two of the new engineer's appointment, builders were on site to undertake urgent repairs.

Even with professionals, there were accounts of poor conduct; two owners told a similar tale of the engineer assigned to their case leaving his employer and no-one informing them of his departure. After weeks of these owners trying to find out what was happening, they eventually learnt he had left the company, taking their files with him. The frustration of people who felt they had been let down by professionals was palpable, and is evidenced in this quote:

"It's just dragged on and on and on. Every time we asked him 'Where is it?', 'Oh, we're getting there', and all sorts of lame excuses. It's just been frustrating waiting" (Interviewee #4)

Gisborne District Council was also blamed for holding up rebuilding, although the vast majority of interviewees made no complaints. A few interviewees talked about their irritation at the current Building Code or urban design requirements, which prevented them from returning their building to its pre-earthquake state. We suggest that in some way owners believed that these new requirements were inhibiting their return to 'normality', and that they regarded the Council as interfering unnecessarily. One owner talked about his frustration at the slow progress of paperwork as it was passed from one department in the Council to another. He also believed that the Council was making him apply unnecessarily for permits, slowing his rebuilding plans.

4.3.3 Reflections on Recovery

We asked interviewees how satisfied they were with the recovery outcome that had been achieved. Eight owners, whose repair work was complete, were pleased with the outcome. Another owner took the decision not to repair the minor damage her building sustained because she did not have adequate funds to pay the excess fee on an insurance claim. She later regretted this decision as the damage was greater than thought at first. For the four owners still waiting for their work to be completed, the outcome was even less satisfactory. Three of these owners were landlords, who complained about the money they lost while their buildings were untenanted. One landlord had not taken out income

protection insurance and stood to lose in the order of \$150,000 in lost rent. The other two landlords had taken out income protection insurance, but the period covered by their policies had since passed. These four owners also cited the large amount of paperwork in relation to their insurance claims and repairs/rebuilding as hindrances directly impacting their ability to run their businesses.

Reflecting on the information divulged in the interviews, it is apparent that the businesses that suffered the worst hardship had brought about some of the misfortunes they faced. Managerial decisions taken prior to the earthquake that could have reduced the impact of the earthquake and eased recovery had not been taken, suggesting that the owners had themselves played a significant role in 'incubating the potential for failure' (Elliott et al. 2005, p.338). Nearly half the owners we interviewed admitted that they had decided not to strengthen their buildings to current standards. Either the deadline for doing so was some way off, or regulations had changed so their building was no longer officially regarded as earthquake prone. Several owners also disclosed that they had made choices regarding their insurance policy which resulted in their cover being insufficient to cover their losses from this earthquake.

Returning to the survey data, we asked business owners about their present position in relation to numbers of staff and clients/customers, and the profitability of their business, and also their views of the general business climate. Using this information we wanted to discover whether owners believed that their business had recovered to its pre-earthquake status, or if indeed the situation was better or worse than in December 2007 (see Figure 10). The overwhelming perspective is that owners believe their business has returned to the pre-earthquake position in all of the categories. A few owners think things have become worse, but this is offset by a similar number of people who believe that the situation has improved.

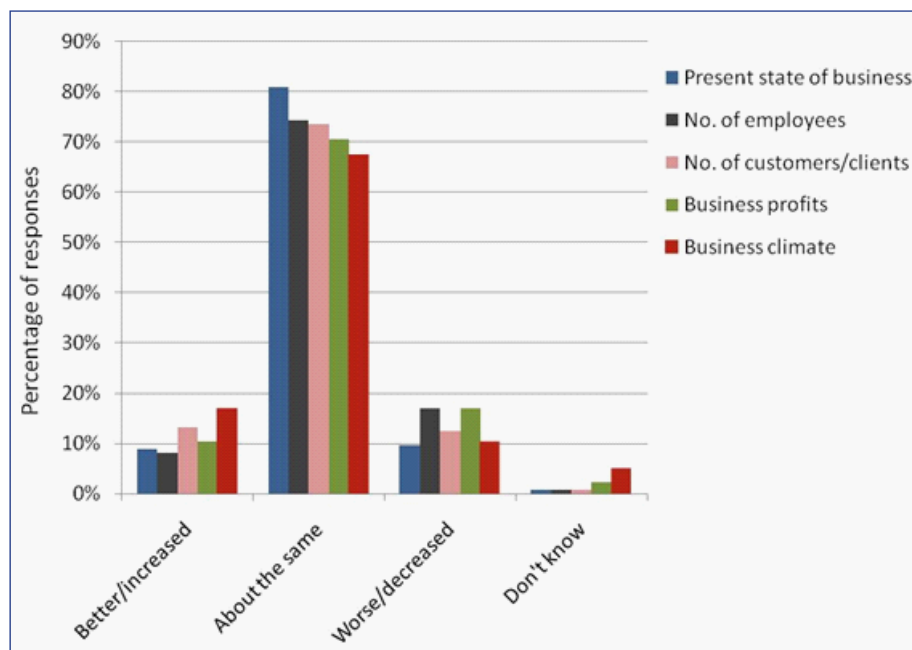


Figure 10: Perceptions of Recovery

4.4 Phase IV: Learning and Implementation

After dealing with the recovery phase, businesses may seek to actively learn from their experience, and alter their behavior to become more resilient to future events (Elliott et al. 2005; Toft and Reynolds 1992). We used information from questionnaires and interviews to investigate how Gisborne business owners had learnt from the 2007 earthquake and built more resilience into their businesses. In the second questionnaire, we asked owners about the mitigation measures they had taken since the earthquake. We then used one-to-one interviews to ascertain what features of buildings would be important to owners should they wish to buy another commercial building. We also enquired whether owners would act differently in a future earthquake event. The responses to these questions are discussed below.

4.4.1 New Prevention Measures

The earthquake in Gisborne stimulated about a third of business owner/managers to better prepare for earthquakes, engaging in new preparedness measures (see Figure 11 and Figure 12). More effort was made by owner-managers to implement mitigation measures than survival measures. New mitigation actions like securing furniture and fittings, checking and/or increasing insurance cover, and organising a disaster preparation plan were the most frequently cited mitigation measures. Earthquake evacuation drills were the most popular new survival measure implemented by businesses.

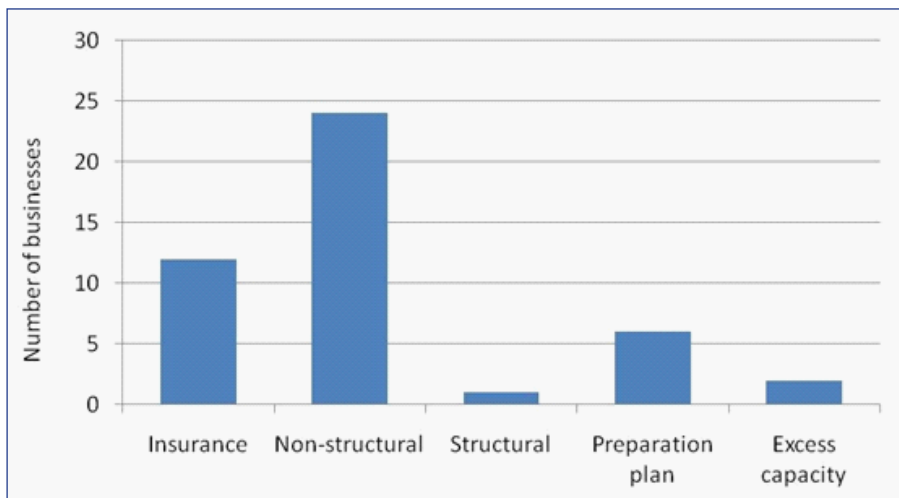


Figure 11: New Mitigation Measures

As observed elsewhere (Forsyth and Johnston 2005; Meszaros and Fiegner 2002), those most likely to add preparations were not the businesses that experienced the most damage, but those that had already taken some precautions prior to the earthquake. Ninety percent of those undertaking new measures after the earthquake had preparation measures in place prior to the earthquake, supporting the notion that the careful become more careful.

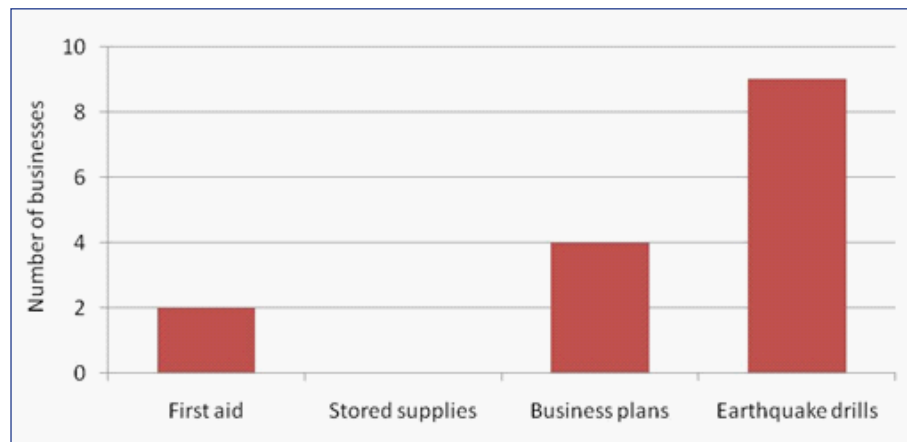


Figure 12: New Survival Measures

4.4.2 The Importance of Resilient Buildings

From the interviews, a further example of modified decision-making is evident, as owners of earthquake damaged buildings acknowledged that they would pay more attention to the resilience of buildings in the future. Owners were asked what characteristics they would look for in a commercial building if they were to acquire another one. Ten owners said that they would pay more attention to the strength or structure of a prospective building, with a number of people emphasising that this would be especially important if the building is an older building. For example:

"I'd definitely take a long hard look at the actual structural condition of the building, and where it stands in that whole strengthening process if it's an older building" (Interviewee #7).

"Buildings that were strengthened before the earthquake, most of those have come through with flying colours. The buildings haven't been badly affected at all, so obviously the strengthening helps considerably, keeping it safe" (Interviewee #4).

4.4.3 Locus of Control

Results from the questionnaires and interviews suggest that business owners have built more resilience into their business since the Gisborne earthquake. However, when asked how they would react if another earthquake was to hit Gisborne, not one interviewee said they would act differently.

Four people, exhibiting a high internal locus of control, were confident that they would experience less damage due to the repairs and strengthening work undertaken after the 2007 earthquake.

"Hopefully I wouldn't have to fret nearly as much as my building would be so much stronger" (Interviewee #7).

Four others presented a more fatalistic outlook, indicating a high external locus of control.

"I think they [earthquakes] are just part of the rich fabric of life, and every now and again they're going to happen" (Interviewee #6).

4.4.4 Who's Responsible?

As organisations seek to learn from an event, managers may apportion blame for the situation they had to deal with in its aftermath (Elliott et al. 2005; Smith and Sipika 1993). Within organisations, this scapegoating usually takes the form of internal restructuring or the removal of the relevant manager/s in place prior to the crisis. We found that business owners in Gisborne tend to blame other organisations or individuals for their hardship instead of taking responsibility for their own poor managerial decisions. Business owners are accountable only to themselves, so smaller businesses may have different opportunities than those in larger organisations to actively learn from crises and to implement improved managerial practices.

We are in no doubt that the ordeals faced by these owners are genuine, and that for some people the personal financial cost of putting things right is significant, but the unfortunate reality is that if they had made better managerial decisions prior to the earthquake they would not be in this predicament.

5 Conclusion and Recommendations

Whilst Gisborne is not amongst the largest of New Zealand's cities, the findings of this study remain relevant to other large and small places. In the first place, the experiences of Gisborne's businesses indicate that recovery from earthquakes is a slow process. The December 2007 earthquake was of moderate strength causing relatively minor damage to most of the properties affected, and yet nearly two years later there are buildings which are still waiting for repairs to commence. This suggests that in an earthquake causing more damage or in a larger centre, the ensuing recovery would take a considerable amount of time.

In a way it was fortunate that at the time of Gisborne's earthquake the region was already suffering from an economic downturn, resulting in a number of vacant commercial properties being available in the CBD to accommodate tenants displaced from unsafe buildings. Should an earthquake occur in Wellington, for example, where would businesses relocate to if their premises were deemed unsafe? What would be the impact on that city's CBD if businesses were forced to relocate to the fringes of the city should these be the only places fit for occupation?

Our research also identified that obstacles exist within the organizations or industries that are in a position to facilitate business recovery. We anticipate that these obstacles are universal and would affect businesses in any location. These can be summarized in the following ways:

- » insufficient capacity or resources to cope with a sudden increase in demand for their services or products;
- » poor conduct;
- » for tradesmen, a scarcity of expertise in the use of new building products and techniques; and,
- » a lack of urgency to deal quickly and effectively with businesses' recovery.

A further feature that we propose may be common to many businesses in New Zealand is the potential for slow and painful recovery resulting from poor managerial decisions. Our research indicates several key areas in which business owner-managers make ill-informed decisions that affect the potential to reduce the impact of a natural disaster and impede recovery:

-
- » heavy reliance on low effort disaster preparedness measures that offer insufficient assistance in the event of a crisis;
 - » delaying the strengthening of property to the current local standard;
 - » underinsuring their business income and property; and
 - » there is a risk that lessons learnt after an event may not be implemented.

On the basis of our conclusions above, we make three recommendations to this afternoon's audience on how they can assist business recovery from natural hazard events: education; mentoring and support; and the removal of institutional obstacles to recovery.

5.1 Education to Improve Decision-making

We recommend that education is targeted at business owner-managers to improve their decision-making.

Owner-managers need to be better informed about:

1. Effective preparation measures to help reduce the impacts of natural hazard events and facilitate recovery;
2. The benefits from strengthening buildings that are at risk of damage from earthquakes, and at the same time the potential costs and difficulties that would be faced by not undertaking this strengthening; and,
3. Their insurance needs, e.g. having income protection cover or up-to-date property valuations.

To help improve managerial decisions on these three topics, new techniques or tools need to be developed to find ways of overcoming two behavioural traits which affect owner-managers' willingness to build resilience into their businesses, namely optimistic bias and the sense of fatalism.

5.2 Mentoring/Support for Small Businesses after a Disaster

We recommend that mentoring or other forms of advice be made available for small businesses after a natural hazard event.

Small businesses in New Zealand employ the most workers, and therefore are a significant feature of our country's economy. It is important that we recognise that small businesses may not be as well-equipped to recover from natural disasters as other larger organisations. In the interviews with owners of buildings that sustained structural damage, it was apparent that owners felt overwhelmed by the processes they had to go through to repair or rebuild their property.

5.3 Remove Institutional Impediments to Recovery

We recommend that the organisations that facilitate business recovery make efforts to streamline their processes.

For local authorities, there is a need for clearer policies and regulations to help reduce delays, e.g. local authorities having in place building policies for repairs of earthquake damaged buildings. In addition, private organisations, such as insurance companies, architects and earthquake engineers, should have systems and

processes in place to improve the timeliness of responses to and processing of reports, claims, and so forth. If these institutional inefficiencies are reduced, businesses will be able to recover more quickly.

6 Questions

Ben Thomas:

Ben Thomas from Willis. Have you, by any chance, considered making any comparisons with the 1987 Edgecombe earthquake and recovery in that time and how attitudes might have changed?

Felicity:

There was very little data gathered on business recovery. There is some data I know but, I think the comparisons might be a little difficult because there wasn't much data collection at that time.

Anon:

One of your findings at the end was just about maybe a need for reducing the time it took to make repairs or to settle insurance claims. I'm not in the business myself, but I imagine that's probably a really hard thing to do, to try and reduce some of that time. Are there any other things that you could do with communities so these things are more acceptable to people. For example, could you explain to communities like that it's going to take time, or work with communities in certain ways to do that?

Felicity:

That's exactly why we think there's a role for mentoring and support for small businesses because there was this lack of information. I did hear that there had been one meeting of a group of building owners in Gisborne who got together and shared some stories and realised that they weren't alone. This was very helpful for them, but the group only met once. I agree that information sharing is really good and this is why I think there's probably a role the Council or another organisation to convince the EQC to get involved and help small businesses because they are the bulk of our types of businesses in this country.

Fred Mecoy:

Fred Mecoy, Wellington City Council. Was there any data that you came across in your work to indicate how much of the repairs and other work required to reinstate businesses came from outside the Gisborne area? This is one of the things you hear about builders and so on flocking to area to capitalise on the event and I just wondered whether there was actually any data or evidence to prove that.

Felicity:

This wasn't part of our survey. I understand that the builders that are there now doing the bigger pieces of work are Gisborne companies, they are not outsiders.

Dennis Waters:

Dennis Waters from Geoscience Australia. Just following on from the last question, was there any evidence or any suggestion of post event inflation associated with the cost of repairs?

Felicity:

That's something we didn't collect any data from.

Dennis Waters:

Well in our experience, after Cyclone Larry and the Canberra bushfires there was a 20-40% increase built into the costing claims and cost of repairs.

Also, you concentrate on the losers in a sense and when we have an event, whether it's an earthquake or something else, those people whose building wasn't affected are in competition with the hardware store down the road that has been damaged, was there any evidence that they picked up trade? There are winners and losers in these sorts of events and in general they average out or may average out and I was wondering, when we go out to survey and if they are self selected, we get a bias of response from people who lost rather than getting a response from those people who gained. Did you get anything sense of that?

Felicity:

No, not really.

Abigail:

We did find that people that had more damage were more willing to reply to the second survey. In this regard we did some follow-up phone calls with some people and they said "look, I just didn't have much damage, I don't feel that it really applies to me". It was a very small number of people though.

We also did some regression analyses looking at people's perceptions of how they are faring now in comparison to just prior to the earthquake. More specifically, their perceptions of the number of customers they have, their financial performance, the number of employees, and the present state of the business. Following research overseas, we made up an index of recovery and checked the index scores against each businesses demographic features and qualities. No relationships are apparent. It is possible that some of those people in the same industry benefitted and dis-benefitted depending on damage.

Felicity:

We did a survey very quickly three months after the earthquake and we got some really good data and a high response rate. We then surveyed 16 months after the earthquake and it's quite likely that if we were to survey in another 12 months time or 3 or 4 years time, we would get slightly different answers. We are probably still in that recovery phase so perhaps we just haven't quite got to that final stage where we can work out which businesses are still operating and which ones have failed.

Fred Mecoy:

Fred Mecoy, Wellington City Council. You made a point earlier about some of the local authority's policies causing delays; I just wanted to get some sense of scale. I mean were you just highlighting one or two isolated incidents there or was it quite a wide spread problem?

Felicity:

I was just highlighting a few incidents. There was a lot of frustration because people wanted to get back to normal and the fact that they couldn't just rebuild as it was a cause of delay. Why did they have to comply with current regulations when what they had before was perfectly satisfactory? Insurance policies were also a factor as these didn't always allow them to replace at the insurance companies cost, and they were going to have to pay for that additional work themselves. In terms of the specific complaints about paperwork being onerous, those were just two or three owners saying, you know this is a bit painful, it was preventing

them from getting on with work because it was such a laborious, time consuming process.

Fred Mecoy:

Were the local authority's policies and processes in general, were they adequate? Or did you get any sense that they were making allowances for people to speed things up?

Felicity:

I didn't get a sense of that at all, no. It was mainly to do with this frustration of having to rebuild differently.

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Appendix 1

Table A-1: Summary of Business Factors Affecting Business Recovery following a Natural Disaster

Factor	Typical findings	References
Business size	Small businesses exhibit a greater tendency for suffering significant loss than large businesses.	Dahlhamer (1998), Dahlhamer and Tierney (1998), Kroll, Landis, Shen and Stryker (1991), Alesch et al. (2001), Chang (2001a), Chang and Falit-Baiamonte (2002), Webb et al. (2000), Runyan (2006)
Business sector	The retail sector is particularly vulnerable to natural disasters.	Meszaros and Fiegenger (2002), Webb et al. (2000)
	Firms that rely on customers' discretionary income are less likely to survive than firms that provide essential goods and services.	Alesch et al. (2001) Chang and Falit-Baiamonte (2002), Chang (2001a), Kroll et al. (1991) Webb et al. (2002)
	The construction sector typically experiences increased levels of business in the immediate aftermath of natural disasters.	Dahlhamer (1998), Kroll et al. (1991), Meszaros and Fiegenger (2002), Tobin (1999)
	Demand for insurance often increases after a disaster, so finance and insurance firms can experience increased sales.	Meszaros and Fiegenger (2002)
	Manufacturing and mining companies appear vulnerable to indirect losses such as through low employee productivity.	Meszaros and Fiegenger (2002)
Financial condition prior to the disaster	Businesses that are financially robust seem to have a better chance of surviving a disaster.	Alesch et al. (2001), Durkin (1984), Meszaros and Fiegenger (2002), Webb et al. (2000)
	However, in some instances firms in a better financial condition immediately prior to a disaster have been found to be less likely to have recovered in the long-term than those that had been in a worse condition before the disaster. This may be because affluent firms had more to lose in the disaster and that it took them longer to recover to their pre-disaster state. Alternatively, business owners in a more secure financial condition may choose to take insurance settlements and either retire or relocate.	Waugh and Smith (2006), Webb et al. (2002)

Occupancy tenure	Renters of business properties appear more vulnerable to losses than owners.	Chang and Falit-Baiamonte (2002), Durkin (1984)
Factor	Typical findings	References
Existing economic trends	Existing trends in urban or rural areas can be exacerbated by natural hazard events.	Chang (1999, 2001a, 2001b), Alesch et al. (2001), Cross (2001)
Market range	Businesses that rely heavily on a local market face the likelihood that their customers will also have been affected by the disaster, whilst those companies whose market is dispersed geographically, like manufacturers, face a reduced risk of this happening.	Chang and Falit-Baiamonte (2002), Alesch et al. (2001)
Market stability	The more competitive or unstable the market, the more likely it is that customers will move their allegiance to competitors unaffected by the disaster.	Kroll et al. (1991), Chang (2001a), Chang and Falit-Baiamonte (2002)
Number of locations	Businesses with multiple branches in the region (like banks) can relocate their activities relatively quickly, while businesses at a single location (like some retail businesses and some finance, insurance, real estate and service businesses) are more vulnerable.	Kroll et al. (1991), Tobin (1999), Alesch et al. (2001), Chang and Falit-Baiamonte (2002)
Length of time closed	Businesses that have to close for a long time are less likely to recover in the long-term. In a highly competitive market the longer businesses are closed, the less likely it is that customers will return. However if the business supplies an exclusive product or service, then customers may return even if the business is closed for some time. In the communities around New Orleans, some businesses that opened quickly after Hurricane Katrina experienced revenue growth, especially those associated with home improvements, building repairs, restaurants and other food services.	Alesch et al. (2001), Runyan (2006), Webb et al., (2000)
Physical damage	Physical damage has a variety of forms, such as damage to buildings, to plant and equipment, to inventory or stock and data losses. Certainly the amount of physical damage suffered by a business is the most obvious loss factor following a disaster, and it could be assumed that business losses are directly related to the severity of physical damage.	Meszaros and Fiegner (2002), Webb et al, (2000)