



QUICK RESPONSE REPORT

Business Recovery Related to High-Frequency Natural Hazard Events

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The views expressed in the report are those of the authors and not necessarily those of the Natural Hazards Center or the University of Colorado.

Abstract

In December 2007, flooding in southwest Washington caused widespread damage to more than 200 businesses and farms. The Institute for Global and Community Resilience (IGCR) at Western Washington University's Huxley College of the Environment received a Quick Response Grant from the Natural Hazards Center at the University of Colorado to research the effects of this flood on businesses in Centralia and Chehalis, Washington. Working with local Offices of Economic Development, IGCR administered a 28-question survey to document risk perception and preparedness, impacts, and recovery strategies. Of the 63 businesses surveyed, 37 were flooded businesses and 26 were unflooded businesses. Analysis of the survey results showed that risk perception and preparedness were low prior to the flood. Preparedness was low among all businesses, but highest among those that had experienced flooding before. Questions about preparedness showed that two-thirds of the respondents who had engaged in business disaster planning ranked it as very helpful. Despite this positive ranking, disaster planning assistance was ranked as one of the least useful activities to support business sector recovery. This suggested that disaster planning is useful but currently may not be understood well or appreciated by those who have not engaged in it. The survey also documented significant indirect impacts to local businesses. Poor sales were reported by both flooded and unflooded businesses in the weeks that followed the flood and remained poor for many businesses two months after the flood. This finding shows that businesses may benefit most when protective actions are taken, not just in isolation, but across the business sector and local communities. Sector-wide business disaster planning through sponsored trainings, mentorship, and networking may be useful in reducing both direct and indirect impacts. The authors plan to use the results of this survey to further develop the ResilUS community recovery model. The Institute for Global and Community Resilience is currently seeking funding to conduct longitudinal follow-up studies with affected business.

Research Question

The purpose of this research was to evaluate perception and preparedness, flood impacts, and recovery of Lewis County, Washington, businesses affected by the December 2007 Pacific Northwest Floods. Specifically, we were interested in what type of businesses had engaged in pre-event flood preparedness and whether business owners and managers perceived these activities to have been helpful.

Brief Literature Review

Resources for recovery following a disaster are typically limited, even more so for small- and medium-sized business (Dalhamer and Tierney 1998). Post-disaster business loans require a lengthy application process and often cause indebtedness worse than before the disaster (Dalhamer and Tierney 1998; Runyan 2006). Often, both the post-disaster community sense-making process and recovery aid guidelines put subtle pressure on business owners

to remain at their same location, despite changes in the economic and risk landscape (Graham 2007; Vale and Campanella 2004). Knowing the challenges to post-disaster business sector recovery, it is important to better understand how disasters impact businesses, how they recover, and how they might better prepare for unexpected and extreme events.

Researchers in the field of disaster studies have systematically examined business sector recovery for only a short time (Alesch, Holly, Mittler, and Nagy 2001; Chang and Falit-Baiamonte 2002; Dalhamer and Tierney 1998; Flynn 2007; Furlong and Scheberle 1998; Graham 2007; Kroll, Landis, Shen, and Stryker 1991; Runyan 2006; Tierney 1997; Yoshida & Deyle 2005). This research indicates that larger businesses tend to fare better than smaller businesses in the event of a disaster, due to their increased access to resources and economy of scale. In the 2001 Nisqually earthquake, Boeing relied upon their extensive emergency plans, including the use of backup generators, activation of internal emergency operation centers, and the option to switch computing control to locations outside the region. Although Starbucks headquarters was evacuated, it was able to continue operations because of its multiple locations outside the area of strong ground motion (Freitag 2002). Often smaller businesses do not have these same options.

Small businesses have more difficulty absorbing costs associated with seeking expert advice and engaging in structural mitigation and risk reduction strategies.¹ Tierney (1997) found that the single location of a small business leaves an owner's investments more vulnerable to total destruction when compared to a chain, where risks are spread. Yoshida and Deyle (2005) found that small businesses were less likely to be knowledgeable about hazard mitigation and specialized insurance. Furthermore, retail businesses that rent their floor space are more vulnerable to loss than those that do not rent (Chang and Falit-Baiamonte 2002).

In studying small businesses, researchers have also sought factors that increase the probability of small business recovery. Smith and Welsh (2007) found that past experience with the hazard, knowledge of how to run a business and having ran one in the past, having a business continuity plan, and knowledge of taxes and regulations were significant. In researching the 1994 Northridge earthquake, Tierney (1997) also found that business that rent their space were typically less able than building owners to engage in mitigation and preparedness

activities. However, businesses that were relatively larger, older and financially stable, or had previous disaster experience were more likely to have engaged in preparedness activities prior to the earthquake. Following the earthquake, newer businesses and better-prepared firms were more likely to increase preparedness levels post-earthquake.

Study Area and Description

On December 2, 2007, a series of storms began record-breaking flooding throughout western Washington and Oregon. The first storm, on December 2, caused 14 inches of snowfall in the foothills of the Cascade Mountains. Rapidly following this storm was a second storm that delivered high winds, 10 inches of additional rainfall, and a rapid jump in temperatures. A third storm with peak gusts of over 80 mph concluded the series. Together these storms caused a series of landslides and debris build-up and release in local river systems, including the rapid flooding of the Chehalis River in southwest Washington (NWRFC 2007).

In Washington State, 75,000 customers lost power, eight people died, and a 20-mile section of Interstate 5 in Lewis County was closed to all traffic for three days due to the storms. Residential flooding and wind damage occurred throughout the Pacific Northwest region and a state of disaster was declared for 12 Washington State counties and 9 Oregon counties.

Particularly hard hit were Chehalis and Centralia, WA, located at the confluences of the Chehalis, Newaukum, and Skookumchuck Rivers. Sitting in the broad floodplains of these rivers, Chehalis and Centralia are located halfway between Portland, Oregon, and Seattle, Washington. They have historically served as a rail and stage coach stopover between the two cities and are now the site of two major commercial distribution centers for the Pacific Northwest. The rich alluvial soil has supported significant agricultural and dairy farm development; coal and timber harvesting in the nearby foothills of the Cascade Mountains have also provided significant support for the local community.

Chehalis and Centralia have experienced frequent and severe flooding. Early pioneers nicknamed the region "Sanders No Bottom," referring to the thick muddy wetlands along the rivers. They built their early settlements in the hills while farming the bottomlands. As elsewhere in the country, population growth led to attempts to reduce flooding through engineering techniques of dikes, dredg-

ing, and dams. These efforts increased a sense of security that encouraged settlement and the eventual heavy development in the floodplain. Major floods severely affected the towns in 1986, 1990, and 1996 -- each of which was record-breaking at the time. During the 2007 storms, the Chehalis River again experienced record breaking flooding, exceeding previous records.

On December 3, a wide swath of western Lewis County was rapidly flooded. Area farms and dairies were flooded and more than 200 head of cattle were killed. In central Lewis County, a 20-mile segment of the Interstate 5, the main north-south artery along the Pacific Coast, was flooded with up to 15 feet of water. Floodwaters closed the interstate for three days. The Washington State Patrol routed the heavy Portland to Seattle commercial traffic through a six-hour detour.

In Centralia and Chehalis, two major shopping centers along the I-5 corridor were hit particularly hard. A series of strip-mall retailers, including retail chains and locally owned businesses, experienced extensive floodwaters and loss of inventory. Also affected were businesses in the unflooded downtown districts of the two cities. Some experienced significant service disruptions due to the three-day closure of Interstate 5; others lost business during the 2007 holiday shopping season when local clients were focused on immediate flood recovery and out-of-town shoppers stayed away after seeing news reports of widespread flooding in the county.

In Lewis County, floodplain management is a strongly contested issue. For example, the county challenged the State Growth Management Act that requires urban development within a designated urban growth boundary. While these challenges were eventually struck down in the late 1990s, growth management plans for Chehalis and Centralia did not meet minimum state requirements and did not take into account the repeated flooding along the river basins. Strong local opposition to government regulation and anti-density sentiments linked to a sense of individual property rights led county and city planners to propose uniform low-density development throughout the region, regardless of flood risk and other hazards (Pierzga and Harris 1999). In a strongly worded letter to the county planning manager, the director of the State Flood Control Account Assistance Program noted that the county's comprehensive plan failed to consider flood risk or the protection of citizens in its development plans. Lewis County Engineer Pete Ringen said the devel-

opment of updated flood insurance maps based on recent flooding "would be 'so shocking' it would be 'politically unpalatable' to use as a basis for regulation because of the developments it could cripple." (Henderer 1998, cited in Pierzga & Harris 1999) Federal and state funding for flood management projects have frequently stalled around issues of local land use planning (Pierzga and Harris 1999).

Research Methods

Media accounts of the December 2007 floods reported widespread residential damage and significant business damage, especially in Lewis County (Szmanski 2007). In Lewis County, the floods directly affected more than 200 businesses, making it an ideal location to examine business preparedness and recovery. Three weeks after the flood event, the authors began making contact with the local business communities of Centralia and Chehalis through an initial field visit.

Following the first field visit, we developed a 32-question survey, covering basic business characteristics, preparedness activities, damage and disruption experienced, and perceptions of recoverability. We shared draft surveys with the Washington State Emergency Management Division and local economic development directors/administrators. Their comments, concerns, and interests were addressed to the best of our ability.

Working with the local Economic Development Department of Centralia and the Office of Economic Development in Chehalis, the authors decided to target two groups of businesses: those directly affected by flood water, and those indirectly affected through service disruption and an overall drop in customers. For the initial survey, we limited the scope to businesses in the downtown and Interstate 5 corridor areas, excluding agricultural, dairy, forestry and mining businesses. Two months later, four students from Western Washington University interviewed five affected farm owners.

The administrative units for economic development in Centralia and Chehalis developed a list of 102 flooded businesses in their downtown and I-5 corridor. The Centralia Economic Development Department, concerned about the potential impacts of the flood on unflooded downtown core businesses and manufacturers, also provided a list of 58 unflooded businesses. We randomized the order of each business list and made calls to 138 of these businesses. We asked each business to participate in a 15-minute survey on business disruption and

recovery. Those interested selected a two-hour time slot on Friday, February 22, 2008, in which a team would visit their business and interview the owner or business manager. Of the 138 businesses called, 11 numbers had been disconnected, and 48 were unreachable after three attempts. These included businesses phones that were busy, had no answers, or requested to be called back and were still unreachable after the third attempt. Of the 79 businesses contacted, 67 decided to participate in the survey, seven refused, and five participated directly over the phone at the time of contact.

On February 22, 2008, 15 students in the Disaster Reduction and Emergency Management (DREP) track within the Environmental Studies Department of Western Washington University’s Huxley College of the Environment guided participating businesses through the survey. Prior to the survey, students learned about the area and disaster, were taught basic social science surveying skills, and practiced administering the questionnaire. On the day of the survey, 15 businesses could not be contacted or were unable to participate. Six additional businesses from the original contact list were added through direct solicitation. In total, 58 surveys were conducted in person and 5 surveys conducted over the phone, for 63 surveys in all. Thirty-seven of these businesses were flooded by the December 2007 event, 26 remained unflooded.

Survey Results

The results of the survey are discussed below in three sections, corresponding to the major themes associated with the questionnaire. Below is a section on risk perception and preparedness, followed by a

section on impacts, and then a section on recovery experienced.

Risk Perceptions and Preparedness

The survey asked business owners a series of questions to gauge their risk awareness and flood preparedness prior to the December 2007 flood. When asked whether they believed flooding was very likely, somewhat likely, or not likely, the flooded and unflooded businesses surveyed had similar beliefs about flood likeliness despite the fact that most flooded businesses were in a higher-risk area. About 16 percent of the flooded businesses and 15 percent of the unflooded businesses surveyed thought that flooding was very likely at their business location prior to the December 2007 floods. A few more flooded businesses than unflooded businesses surveyed believed that flooding was somewhat likely, 41 percent and 35 percent respectively.

Previously flooded businesses surveyed were more likely to believe that flooding was likely before the December 2007 floods than those that had no past flood experience. Sixty-seven believed flooding was very or somewhat likely prior to the December floods and only a small number of previously unflooded businesses believed it to be likely. Yet despite being flooded in the past, 31 percent of previously flooded businesses surveyed believed flooding was not likely prior to the December floods. Table 1 shows responses to flood likeliness for flooded and unflooded businesses in columns two and three; columns four and five show the breakdown for previously flooded and unflooded businesses.

The survey also asked business owners whether they had engaged in a series of preparedness activities, listed in column one of Table 2. Sixteen percent of the flooded businesses had not done any preparedness activity, including talking to neighbors and employees about flood risk. Thirty-five percent of the unflooded businesses had not engaged in any of the preparedness activities listed in the survey.

The business survey also asked owners about insurance coverage. About the same number of flooded and unflooded businesses surveyed had insurance, 74 percent and 77 percent respectively. However, typical insurance products do not include coverage for flood damage or business interruption – two key components that can

Table 1. Perception of flood risk to business

| | Unflooded | Flooded | Previously Unflooded | Previously Flooded |
|---------------------------------------|-----------|---------|----------------------|--------------------|
| Responses | 26 | 37 | 47 | 16* |
| Believed flooding was very likely | 15% | 16% | 9% | 31% |
| Believed flooding was somewhat likely | 35% | 41% | 39% | 38% |
| Believed flooding was not likely | 50% | 43% | 52% | 31% |

*One respondent that was unflooded in the December 2007 storm indicated that the business had experienced flooding previously. They were included in the category of previously flooded businesses.

help businesses quickly recover from floods. Only 38 percent of the flooded businesses and 12 percent of the unflooded businesses surveyed had flood insurance, as shown in Table 2. For an area experiencing repeated flooding over the preceding decade, this coverage rate is low, but not surprising given low hazard insurance penetration rates nationally.

In general, flooded businesses surveyed engaged in preparedness activities more often than the unflooded businesses. For instance, 46 percent of the flooded businesses surveyed said that they had made a business emergency or recovery plan, compared to 8 percent of the unflooded businesses. Though we did not evaluate the thoroughness of these plans, a positive response suggests the business owner had given some thought to preparing his or her business for an emergency or disaster. Sixteen percent of the flooded businesses surveyed had

renovated their business to be more flood resistant, compared to four percent of the unflooded businesses. In two-sided t-tests, flooded businesses were significantly more likely (0.01 level of significance) to talk with employees about what to do in the event of a disaster and develop a business emergency or recovery plan. They were also more likely (0.05 level of significance) to make arrangements to move business or inventory to a new location in an emergency, to renovate their building for flood resistance, and carry flood insurance.

We further divided the flooded businesses into those that had experienced flooding before the December 2007 storm and those for which this storm was their first flood experience. This division showed previously flooded businesses were more likely to develop a business emergency or recovery plan or make arrangements to move business or

inventory than previously unflooded businesses (0.01 level of significance). Notably, 63 percent of previously flooded businesses surveyed had a business emergency plan before the December 2007 floods, compared to 36 percent of previously unflooded and eight percent of unflooded businesses surveyed. Three-quarters of previously flooded businesses had made such arrangements, but only about a fifth of the other categories had done so. They were more likely (0.05 level of significance) to engage in renovating their building for flood resistance and purchasing flood insurance.

To better understand which businesses had engaged in extensive preparedness activities, we weighted each preparedness activity in Table 2 based on the resources required. We ranked preparedness activities in the following manner: informing employees, reading information on flood risk, and talking with neighbors about flood risk were given a preparedness score of one; making an emergency plan and arranging to move stock were given a score of two; consulting with engineers and purchasing extra fuel or a generator were given a score of three; purchasing flood insurance was given a score of four; and finally, because of the extensive financial resources

Table 2. Percentage of businesses that engaged in pre-flooding preparedness activities, by flood experience

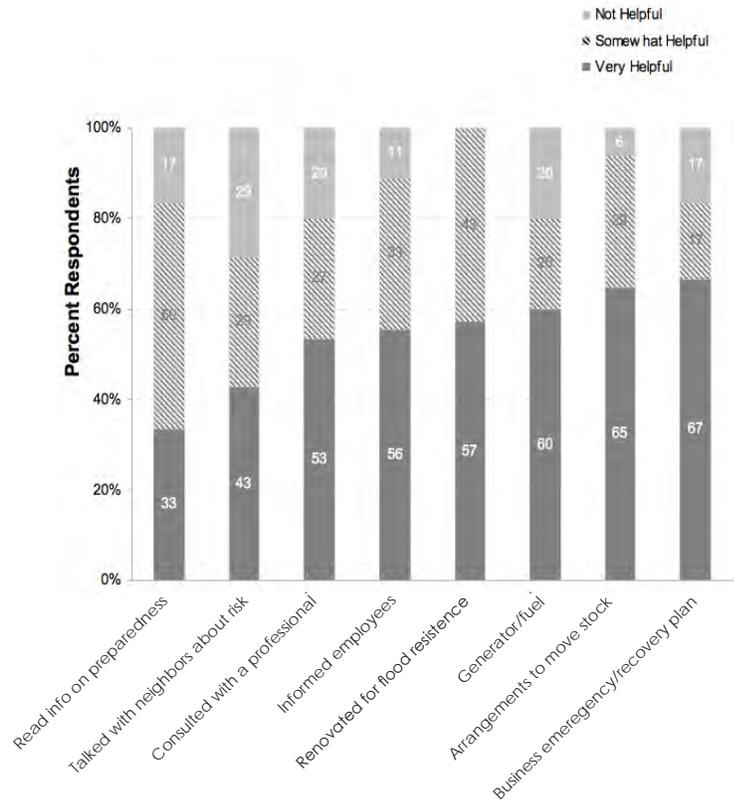
| | Unflooded | Flooded | Previously Unflooded | Previously Flooded |
|--|-----------|---------|----------------------|--------------------|
| Responses | 26 | 37 | 47 | 16* |
| Attended meetings or read information about disaster preparedness | 20% | 19% | 5% | 44% |
| Talked with others about past flooding in business location | 40% | 54% | 50% | 63% |
| Consulted with engineer or looked at flood risk maps | 28% | 24% | 9% | 44% |
| Talked with employees about what to do in the event of a disaster | 24% | 62% | 64% | 63% |
| Renovated building to make it more flood resistant | 4% | 16% | 5% | 31% |
| Store extra fuel or have backup generator | 12% | 14% | 14% | 13% |
| Make arrangements to move business or inventory to new location in case of emergency | 16% | 43% | 23% | 75% |
| Developed business emergency or recovery plan | 8% | 46% | 36% | 63% |
| Insurance coverage | 72% | 69% | 68% | 69% |
| Flood insurance coverage | 8% | 38% | 32% | 44% |

*One respondent that was unflooded in the December 2007 storm indicated that the business had experienced flooding previously. They were included in the category of previously flooded businesses.

involved, renovating for flood resistance was given a score of five. We then tallied the preparedness score of each business and conducted a linear regression analysis of business characteristics based on that score.

We then performed linear regression of four business characteristics on the business' preparedness scores. Previously, flooding was the strongest predictor of preparedness score. Locally oriented businesses, defined as those drawing more than 50 percent of their client base from a two-county region, and age of business were also predictive. Business size, as measured by the number of full-time equivalent employees, did not account for a statistically significant amount of variance in preparedness score. Regression coefficients and their standard errors are shown in Table 3. Twenty-seven percent of the variance in preparedness score was accounted for in this regression with a standard error of 4.38. When businesses had engaged in a preparedness activity, we asked respondents whether the activity had been very helpful, somewhat helpful, or not helpful. Responses are shown in Figure 1. Sixty-seven percent of the businesses that had made a business emergency or recovery plan thought this activity was very helpful. Sixty-five percent that had made arrangements to move stock thought it was very helpful. Respondents ranked talking with others about flood risk and disaster preparedness as very helpful least often. Only 33 percent of businesses that attended meetings or read information on disaster preparedness found it very helpful; 50 per

Figure 1. Perceived helpfulness of preparedness activities



cent found it only somewhat helpful.

Key findings on risk perception and preparedness were:

- Very few businesses, about 15 percent, believed flooding was likely. This was true for flooded and unflooded businesses.
- Substantially less than half of all businesses had flood insurance.
- About half the flooded businesses had made emergency plans; more than two-thirds believed this had been very helpful.
- Only 20 percent of the respondents attended meetings or read information on disaster preparedness. Of the 20 percent that had, only one-third said the activity was very helpful.

Impacts and Disruptions

To assess direct and indirect impacts of the December 2007 flooding, the survey asked businesses about floodwater height and severe disruption at their business location. The survey also asked about revenue following the flood. Finally, each business was asked if they had to close after the flood and, if so, for how long.

Flooded businesses experienced an average of three feet of water inundation. Almost all flooded

Table 3. Linear regression of preparedness score

| | Coefficients (SE) |
|--------------------------------|-----------------------------|
| Intercept | 0.747 (1.541) |
| Equivalent full time employees | 0.006 (0.0092) |
| Years in operation | 0.048 ^c (0.0278) |
| Previously flooded | 5.141 ^a (1.3490) |
| Locally oriented | 2.614 ^c (1.510) |
| N | 62 |
| R ² adj | 0.267 |
| RMSE | 4.38 |

^a significant at the 0.01 level;

^c significant at the 0.1 level

businesses were forced to close; about 40 percent of the unflooded businesses were also forced to close due to infrastructure disruption. All unflooded businesses reopened within the first two weeks of closing. A little more than 70 percent of the flooded businesses surveyed reopened within five weeks of closing. Three percent of the surveyed businesses remained closed at the time of the survey, eleven weeks after the flood event.

The flooding affected sales for both flooded and unflooded businesses, as shown in Table 4. Two weeks after the flood, more than 80 percent of the surveyed businesses had less than typical sales; this dropped to about a third of businesses two months after the flood. Using a discrete variable to represent strength of sales, a two-sided t-test showed no difference in sales strength two weeks after the flood. Both flooded and unflooded businesses typically had less than typical sales. Two months after the flood, more flooded businesses reported continued poor sales than unflooded businesses. At that time, 48 percent of the flooded businesses continued to have worse than typical sales, compared to 32 percent of unflooded businesses. This difference was also not significant.

About a fifth of the unflooded businesses reported better than average sales throughout this period; a smaller number of flooded businesses also did better than average sales after the flood. The increase in sales for some flooded and unflooded businesses was likely due to customer redistribution and recovery spending. See Table 4 for more details.

The survey asked businesses about loss of specific services. Businesses surveyed indicated that loss of road access was most detrimental to business operations. On average, businesses experienced loss of road access four days. Businesses indicated that the temporary loss of employees was the next most detrimental loss of service. On average, flooded

businesses indicated that their employees could not come to work for 11 days.

Key findings on impacts:

- Two and a half months after the flood, about 50 percent of the flooded businesses and about 30 percent of the unflooded businesses were experiencing worse than average sales.
- Businesses surveyed found road access to be the most detrimental infrastructure loss.

Recovery

In its final section, the business survey documented the status of recovery and the financial resources businesses relied on in recovering from the flood thus far. The survey also asked what government action would most support businesses recovery.

When asked the status of their recovery, 38 percent of unflooded businesses reported they had already recovered; 31 percent expected to recover within a year. Less than one-fifth believed their recovery would be more difficult and need more than two years.

Of the flooded businesses surveyed, about a quarter surveyed consider themselves already recovered. Thirty-eight percent expect to recover within a year, while 30 percent said two or more years would be necessary. A small number of businesses saw a difficult recovery that will take many years or believe recovery to be impossible.

The top ranking primary financial resource for recovery was “just absorbing their own losses.” About a quarter of the flooded businesses relied upon absorbing their own losses and another quarter relied upon personal savings as a secondary financial resource.

When asked what government action would most support business recovery, 79 percent of all businesses surveyed stated that tax breaks would be very helpful. Three-quarters of the businesses said recovery grants would also be very helpful, with a business recovery helpline coming in second, with 67 percent. About half said financial incentives for mitigation, recovery loans, and additional flood risk information would be very helpful. The majority of respondents viewed assistance in creating disaster or emergency business plans as not very helpful. This activity, along with financial literacy training and help finding temporary workers, received the lowest support. More details can be found in Figure 2.

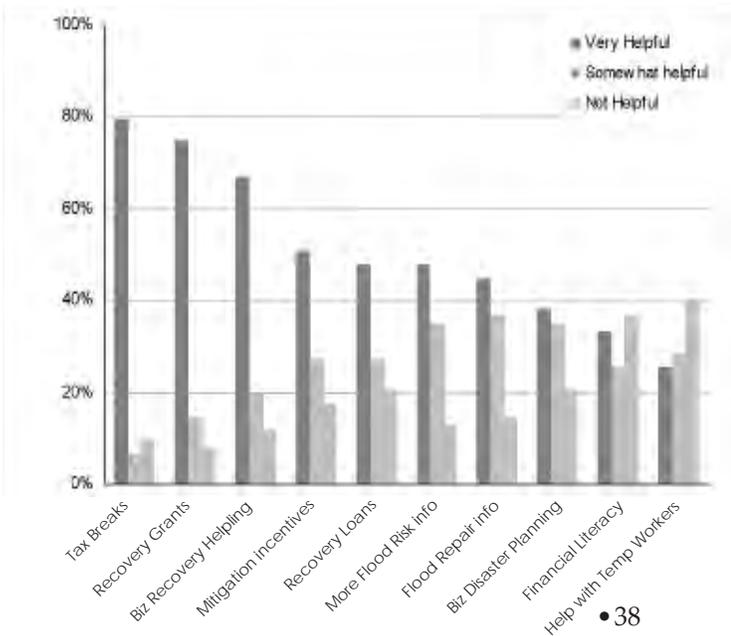
Key findings on recovery:

Table 4. Flood impact on sales

| | Two Weeks after Flood | | Two Months after Flood | |
|---------------------------|-----------------------|---------|------------------------|---------|
| | Unflooded | Flooded | Unflooded | Flooded |
| Responses* | 23 | 34 | 22 | 33 |
| Better than typical sales | 17% | 6% | 23% | 18% |
| Typical sales | 0% | 12% | 45% | 33% |
| Worse than typical sales | 83% | 82% | 32% | 48% |

* Six businesses did not answer about sales two weeks after the flood event; eight did not answer questions about sales two months after the flood event.

Figure 2. Support for government activities to aid business recovery



percent of the flooded businesses surveyed expect to recover within a year.

- Businesses ranked tax breaks, recovery grants, and a recovery helpline as most helpful to business sector recovery.

The Agricultural Sector

Following the survey of 63 businesses in Centralia and Chehalis, four Western Washington University undergraduate students interviewed five Lewis County farmers in the Adna and Boistford Valleys. The students conducted the surveys in May 2008, five months after the flood event.

The farm owners interviewed had engaged in little pre-disaster preparedness or planning. They viewed the December 2007 floods as a “freak event,” an event for which they could not plan. Only one farmer had flood insurance, though this covered only his residential structure, not his significant equipment, livestock, and outbuilding investments. Farm owners noted that few dairy and cattle farmers in the region had elevated cow pads or evacuation plans. These mitigation efforts were viewed as expensive or logistically difficult. One farmer noted that if he had more warning of rising floodwaters, he would have been able to improvise an evaluation plan by trucking weaker livestock to higher ground. Yet other farmers noted that following the flood, it took a full day and a significant number of volunteers to move his milk herd to a new facility. This,

and news reports of evacuated herds moving from hilltops back down into valleys suggests that more formal evacuation and shelter-in-place plans should be in place before flood events.

The farmers interviewed also discussed disruption to their operations during the flood. With significant loss in feed inventory, many farmers had difficulty finding feed for their cattle. Dairy farmers had difficulty finding milking facilities for their cows. Clean water was also problematic. In the Boistford Valley, the Baw Faw Grange provided farm support, linking locally affected farmers with outside donations and volunteers. One farmer noted that, had this community support system not been there, he would have moved his family elsewhere.

Despite the ad hoc volunteer support farmers received during and after the flooding, interviews also revealed the inadequacies of informal support. Several farmers recalled that as floodwaters rose, some residents evacuated without warning their neighbors. Farmers also spoke about a lack of information sharing after the flood. They were confused about governmental, insurance, and charitable sources of aid. They felt isolated from support networks, despite significant volunteer support in the first weeks following the disaster.

Conclusions

This research on risk perception and preparedness, impacts, and recovery of businesses highlights the importance of understanding and accounting for indirect impacts. It also shows an interesting juxtaposition between how business disaster/recovery planning is understood by those in the business community that have and have not created such plans.

Indirect Impacts

Sales conditions for flooded and unflooded businesses were almost equally degraded two weeks after the December 2007 floods. While unflooded businesses reported a more rapid return to typical sales conditions, many businesses reported worse than typical sales even two months after the flood. This suggests significant indirect impacts and may be discouraging for businesses that have taken the necessary flood risk precautions but whose business neighbors may have not.

During a presentation of this research to the flood-affected business community, business leaders suggested that the heavy indirect impacts on the unflooded downtowns of Centralia and Chehalis

were likely the result of three processes. First, the media portrayed the damage in Lewis County not only as heavy, but also as widespread, showing excessive images of flooded shopping malls along the Interstate 5 corridor and devastating flooding in outlying farms. They did not report on the unflooded and undamaged areas of the two downtowns. This may have dissuaded out-of-town tourist and antique shoppers—a significant portion of downtown business clientele—from coming to the area in the weeks and months after the flood. Second, local residents, many of whom were grappling with significant residential flood damage, focused on home gutting and spending for replacement essentials. Third, business leaders and community members commented that discretionary spending dropped even among households who had not experienced flooding. As one person noted, “Looking at our neighbors who had lost everything, we just didn’t feel like going out and buying lots of Christmas presents. It just didn’t feel right.”²

The initial recovery trajectory of this business community suggests that it is important to stress not only individual business disaster planning, but also wider community preparedness. The impacts experienced by the unflooded downtown businesses surveyed suggest that individual preparedness may simply not be enough when other businesses and community residents were heavily affected by a disaster. Enhanced preparedness at the individual business level may help a business reduce impacts, re-open more quickly, and take advantage of new business opportunities that arise after an extreme event. However, if this preparation is done in isolation, the effects may be unsuccessful, especially for locally-oriented businesses.

Business Disaster Planning

This research also found an interesting disconnect between those that have engaged in business disaster planning and those that have not. Those that practice this activity have found it to be helpful in their recovery, with the highest percentage of respondents stating that the action was “very helpful”. However, when all respondents were asked about actions that could help business recovery, less than 40 percent of the respondents felt that help with business disaster planning would be helpful. Some respondents, focusing on the immediate tasks of recovery from this flood event, may have been uninterested in business disaster planning support for a future event. Others, however, might not understand

what business disaster planning is or heard of its usefulness from other businesses. This research suggests the need for better targeting of business disaster planning to at-risk businesses. Given the strong preference businesses surveyed in this research had for business tax breaks and grants to support business sector disaster recovery, business emergency and recovery planning may be promoted through such support measures. Specifically, the Department of Revenue and state and federal emergency management agencies could tie business recovery grants and limited-term tax breaks to affected businesses that could show successful completion of business disaster plans.

Moreover, businesses need to better share effective business disaster planning strategies, given the interconnectedness and indirect impacts that all businesses are likely to experience in future extreme events. Chehalis and Centralia have a strong business community network yet business strategies are not being relayed between businesses. Video documentation, mentoring, forums, and other creative strategies may have a positive impact on both individual and communitywide preparedness, mitigation, and disaster risk reduction. Such strategies should be piloted, evaluated, and shared across communities facing natural hazard risk.

Continuing Work

In order to gain further insight into business sector recovery following this flood event, IGCR is considering internal and external funding to conduct a longitudinal survey one year from the event with the same businesses and possibly others. The intent will be to track closures or re-openings, continued impact on sales, and other indicators or recovery. The results of the survey will also be used to improve the community recovery model, ResilUS, developed by Miles and Chang (2006).

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The survey would not have been possible without 15 outstanding Western Washington University students who did the door-to-door administration of the survey. Their dedication and professionalism were crucial to the high participation rate achieved. Finally, we would like to thank the many local business owners and managers who took time out of their busy days to talk with us, show us their recovery efforts, and send us pictures.

Notes

¹ Restaurants and home improvement businesses are an exception; they commonly have increased revenue during a disaster due to the higher need for goods and services (Runyan 2006).

² Research from other disasters has documented similar drops in sales for businesses that rely upon discretionary income (Alesch and Holly 2004).

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