Twin Cities Business Sector Flood Impacts Survey

Centralia Business and Professional Committee
May 14, 2008

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Institute for Global and Community Resilience
Western Washington University
I. Background

a. Affiliations

Institute for Global and Community Resilience (IGCR)

- Western Washington University
- Support undergraduate study of disaster reduction and emergency planning

**Mission:** The IGCR facilitates scholarship, education, and practice on reducing social and physical vulnerability through sustainable community development, as well as minimizing loss and enhancing recovery from disasters in Washington State and its interdependent global communities.

Quick Response Grant

- Natural Hazards Center
- $2500 for survey and travel expenses
I. Background

b. Research Purpose

Business Recovery Study
• Document business recovery from frequent flooding

Research Questions
• How are businesses impacted by floods?
• How do they recover?
• What types of businesses engaged in flood preparedness activities and was it helpful?

Photo Credit: The Oregonian, http://pomomusings.com/2007/12/05/chehalis-wa-floods/
II. A Bit of Context

III. Survey Results
a. Risk Perception and Preparedness
b. Impacts and Damage
c. Recovery

IV. Where to go from Here?
Recovery takes time
• Measured in years not months (Alesch 2001)

Recovery is not certain
• At least 25% of all businesses that close for a disaster never reopen
  (Institute for Business and Home Safety)

• Over 60% of businesses confronted by a major disaster close by two years
  (Assoc. of Records Managers and Administrators)

Recovery may require adaptation
• Examples from Katrina
  - superdome supplier
  - gourmet culinary institute
II. A Bit of Context
   a. What We Already Know

Business Sector Recovery  Survival

- Return to *status quo* often an illusion
- Understanding that physical repair is only part of recovery
- A struggle to achieve viability in a new and changing environment
- A function of ability to adapt to new environment
Who Will Survive?

- How much are customers affected?
  - ✓ Advantage for manufacturing, those with diverse clientele
  - ✗ Disadvantage to locally oriented businesses serving those most impacted

- Do customers still need product in post-disaster environment?
  - ✓ Advantage for suppliers of building supplies, inexpensive food and basic needs
  - ✗ Disadvantage to suppliers who depend upon discretionary income (typically diverted to remodel and basic needs)
Who Will Survive?

• How will market trends exacerbated by disaster affect business?
  
  x Disadvantage when customers do not depend upon a single supplier

  x Disadvantage when product, location or supply method or primary customer base becoming outmoded

• To what extent did the business loose critical production, inventory or capital asset?

  ✓ Advantage for businesses suffering limited loss

Damaged business, New Orleans
II. A Bit of Context
b. Who Survives

Who Will Survive?

• How able is the business owner/operator able to recognize changes in post-disaster environment and adapt?

✔ Advantage for innovative and adaptive owners/operators, especially those who can address post-disaster needs

Reopening after Hurricane Katrina, Intelligent Travel
II. A Bit of Context

III. Survey Results
   a. Risk Perception and Preparedness
   b. Impacts and Damage
   c. Recovery

IV. Where to go from Here?
II. Research Method
   a. Focus, Selection and Strategy

Research Focus
• Geography: Twin Cities
• Sector: Retail, Manufacturing, Service
• Both direct and indirect impacted

Business Selection
• Develop list of 160 businesses
  – Centralia/Chehalis Offices of Economic Development
  – Downtown Business Association
• Randomized selection from list

Research Strategy
• Phone invitation
• About 8% of numbers called were disconnected
• On site survey, February 22, 2008
• 16 student volunteers
II. Research Method

b. Businesses Surveyed

Demographics

- 63 out of 160 sample surveyed
  - 37 flooded businesses*
  - 26 unflooded businesses
- Close to 60% retail and trade; 20% service and food
- Most had a local customer base**
  - 90% of flooded businesses said they had a local customer base
  - 70% unflooded businesses said they had a local customer base

<table>
<thead>
<tr>
<th>Businesses Surveyed</th>
<th>Flooded</th>
<th>Unflooded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median No. of Employees</td>
<td>6 employees</td>
<td>3.5 employees</td>
</tr>
<tr>
<td>Avg. Length of Operation</td>
<td>19 years</td>
<td>18 years</td>
</tr>
<tr>
<td>Previously flooded</td>
<td>41%</td>
<td>4%</td>
</tr>
</tbody>
</table>

*For 22 of the flooded businesses this was their first flood experience.
**When compared to the unflooded businesses, flooded business are significantly more likely to have a local customer base (based upon 0.1 level of significance).
II. A Bit of Context

III. Survey Results

a. Risk Perception and Preparedness

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IV. Where to go from Here?
III. Survey Results
a. Risk Perception and Preparedness

Risk Perception

- Flooded vs. Unflooded:
  - Very few believed flooding was somewhat or very likely
  - No significant difference in belief in flooding between flooded and unflooded businesses

- Previously Flooded vs. Previously Unflooded:
  - Previously flooded businesses were more likely to believe flooding was likely
## III. Survey Results
### a. Risk Perception and Preparedness

**Preparedness**
- Large differences between previously flooded businesses and other businesses
  - Making business emergency plans
  - Making arrangements to move stock
- Businesses flooded for the first time hadn’t done as much as those with previous flood experience (steep learning curve)
- Insurance coverage high, flood coverage low for all surveyed

<table>
<thead>
<tr>
<th></th>
<th>Flooded, not first time</th>
<th>Flooded, first time</th>
<th>Unflooded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talked with neighbors</td>
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</tr>
<tr>
<td>Consulted with a professional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Read info on preparedness</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informed employees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business emergency plan*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make arrangements to move stock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renovate to make flood resistant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Back up fuel or generator</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Insurance coverage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flood coverage</td>
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</tbody>
</table>
III. Survey Results
a. Risk Perception and Preparedness

Ranked activities by cost/time investment

Example:
*Business ABC consulted with an engineer and read information on preparedness (Score: 3 + 1 = 4)*

Business characteristics that predict preparedness activity

- Previously flooded businesses*
- Locally-oriented businesses**
- Older businesses**
- Business size

<table>
<thead>
<tr>
<th>Activities</th>
<th>Score</th>
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</thead>
<tbody>
<tr>
<td>Inform employees</td>
<td>1</td>
</tr>
<tr>
<td>Read info</td>
<td>1</td>
</tr>
<tr>
<td>Talk w/ neighbors</td>
<td>1</td>
</tr>
<tr>
<td>Emergency plan</td>
<td>2</td>
</tr>
<tr>
<td>Move inventory/operation</td>
<td>2</td>
</tr>
<tr>
<td>Consult w/ engineer</td>
<td>3</td>
</tr>
<tr>
<td>Fuel/generator</td>
<td>3</td>
</tr>
<tr>
<td>Flood insurance</td>
<td>4</td>
</tr>
<tr>
<td>Renovate</td>
<td>5</td>
</tr>
</tbody>
</table>

Linear regression analysis:
*Significant to the 0.0001 level; **Significant at the 0.1 level
How helpful was preparation?

- Emergency/recovery business plan rated as most helpful
- Info on preparedness rated least helpful
III. Survey Results
a. Risk Perception and Preparedness
   - What’s Important?

**What we see as important**

→ Less than half previously flooded businesses with flood insurance
→ Businesses with flood experience had engaged in much more protective measures
→ Business disaster/emergency planning seen as most helpful preparedness activity

**Questions that still remain**

→ Why might flood insurance coverage be low?  
  (didn’t understand policies, bad agent advice, bad experience with insurance in the past, too expensive, something else?)
II. A Bit of Context

III. Survey Results

a. Risk Perception and Preparedness

b. Impacts and Damage

c. Recovery

IV. Where to go from Here?
III. Survey Results
b. Impacts and Disruptions

Closure and Reopening

• Almost 100% of flooded business and 40% of unflooded were forced to close*

• All unflooded businesses reopened within the first two weeks of closing

• A little over 70% of flooded businesses reopened within 5 weeks of closing; 3% remained closed at the time of the survey

* Difference between flooded and unflooded businesses significant at the p=.001 level
Flood Damage

- Flood water and debris damaged inventory, equipment, and facilities
- Closures and damage led to loss of sales

<table>
<thead>
<tr>
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<th>Average gross approximate percent annual sales for flooded businesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inventory loss</td>
<td>~10%</td>
</tr>
<tr>
<td>Equipment loss</td>
<td>~15%</td>
</tr>
<tr>
<td>Sales loss</td>
<td>~15%</td>
</tr>
</tbody>
</table>
III. Survey Results
b. Impacts and Disruptions

Sales Conditions

- Two weeks post flood
  - Flooded and unflooded had worse than normal sales
  - Significant **indirect impacts** to unflooded businesses

- Two months post flood
  - Improvement for both groups
  - Slightly less flooded businesses returning to normal sales level
III. Survey Results

b. Impact and Disruption

- What’s Important?

What we see as important

→ Significant impacts even for unflooded businesses
→ Impact on sales is not uniform, some do better

Questions that still remain

→ Was the drop in sales for unflooded businesses more a result of loss of local customer purchasing power or loss of customers due to perceived damage?

→ The survey results suggested about ~15% drop in annual sales due to the flood. Has this leveled off or continued to increase?
III. Survey Results

a. Risk Perception and Preparedness
b. Impacts and Damage
c. Recovery

IV. Where to go from Here?
Expected Recovery

- 27% of flooded businesses believe they have already recovered
- 38% of flooded businesses expect to recover within a year
- 30% of flooded businesses expect recovery will take two or more years
- Few flooded businesses deem recovery to be extremely difficult or impossible
- Many unflooded businesses expect recovery to also take considerable time

![Graph showing expected recovery time for flooded and unflooded businesses]
Resources for Recovery

- The top ranking primary financial resource was “just absorbing their own losses”
- Second ranked resource was flood insurance for flooded businesses
- Many unflooded businesses relying upon personal savings to cover losses
III. Survey Results

c. Recovery

Government Action

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<table>
<thead>
<tr>
<th>Percent Respondents</th>
<th>Very Helpful</th>
<th>Somewhat Helpful</th>
<th>Not Helpful</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tax breaks</td>
<td></td>
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<tr>
<td>Recovery grants</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mitigation incentives</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recovery loans</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>More flood risk info</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Flood repair info</td>
<td></td>
<td></td>
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<tr>
<td>Biz disaster planning</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Financial literacy</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Help w/ temp workers</td>
<td></td>
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</tr>
</tbody>
</table>

Legend:
- Very Helpful
- Somewhat helpful
- Not Helpful
Government Action

- Over three quarters of all businesses thought tax breaks would be very helpful.
- Three quarters said grants would be very helpful.
- Two thirds said a business recovery helpline would also be helpful.
- Business emergency plan was rated low.
III. Survey Results
   c. Recovery
      - What’s Important?

**What we see as important**
- Businesses overwhelmingly used internal sources to finance recovery
- Business disaster planning ranked low on list of ways government could support business community, even though those who had done it in the past found it very helpful

**Questions that still remain**
- Has recovery financing changed? Are more businesses applying for formal assistance like SBA loans now?
- Why did business owners rate information on biz disaster planning as not very helpful? (not useful now, not useful for standard business practice, don’t have time, disasters are not that hard to deal with, its intuitive so don’t need more info, something else?)
II. A Bit of Context

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IV. Where to go from Here?
Recovery is **NOT** simply rebuilding and restoring . . .

**The Seven Critical Cords of Business Survival** (Alesch)

- **Supplies**
- **Business Capacity**
- **Customers**
- **Labor**
- **Infrastructure Support**
- **Cash or access to loans**
- **Functional transportation system**

. . .recovery is reconstructing connections.
IV. Where to go from Here?

b. Questions

Where to go from here?

Q. What message do you think other business communities should hear about disasters and reducing their impacts?

Q. What message do you think policy makers should hear about businesses and disasters?
Thank You!

Rebekah Green

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www.wwu.edu/resilience