How to Involve Businesses in Community Resilience Planning

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Initiative for Community and Disaster Resilience (ICDR) Speaker Series #19
June 5, 2019
Outline

• Understanding Disasters from the Urban Planning’s Point of View
• Businesses Play Important Roles in Community Resilience
• Paradox of Business Vulnerability and Economic Resilience: A Literature Review
• How to Get Businesses Ready for Disasters?
Understanding Disasters from the Urban Planning’s Point of View
What is a Disaster?

Traditional View: **Natural** vs **Man-Made** Disasters
Natural Disasters

Cedar Rapids, Iowa 2008
Source: guardian.co.uk
2008 Hurricane Ike in Galveston, Texas

- Maximum intensity: Category 4
- Landfall over Galveston, TX on September 13, 2008
- Death toll in U.S.: 20
- Damage: $19.3 billion
May 12, 2008 M7.9 Wenchuan Earthquake

- 87,149 killed or missing.
- 15 million displaced at least temporarily.
- 132,600 sq km affected area.
- 51 county level jurisdictions in three provinces (39 counties in Sichuan).
北京遭遇暴雨致地铁站进水 4条线路受影响(图)

2011-06-24 08:43 来源：北京晨报
2015-5-25, Flood in Houston
Man-made Disasters

Tianjin, Binhai Xinqu Storage, Explosion, 2015-8-12

Death*: 114
Injured: 698
Missing: 70

* Data reported on 2015-8-18

Yunnan Qujin, Sizhuang Coal Mine Explosion, 2011-11-10

Death: 43
Economic Loss: 39.7 million RMB
2001-9-11
Death: 2,998

2015-11-13
Death: 129
Injured: 352
Shooting in Las Vegas

Oct 2, 2017

59 died and over 500 injured
New View

There is **NO** Natural Disaster

**ALL** Disasters are Man-Made
Some Basic Facts

Natural Disaster Reported 1900-2010

Number of Death

Estimated Damage

Source: EM-DAT
The international Disaster Database
https://emdat.be/
Climate Change, Global Warming

No Linear Trend of Increased Land Precipitation Anomalies, 1900-2005

Source: International Panel on Climate Change, Fourth Assessment Report: Climate Change 2007
Why do we see increases in reported “natural” disasters world wide in recent decades?

No Linear Trend of Increased Land Precipitation Anomalies, 1900-2005
Disaster = Hazard + Vulnerability

Increased vulnerability due to human activities, i.e. rapid urbanization in environmentally vulnerable areas

Climate Change
Global Warming

Minor effect

Significant effect
Case 1: Hurricane Katrina

- Death: 1,464
- Economic loss: over $150 Billion
- 50 breaches in drainage canal and navigational canal levees and floodwalls in the City of New Orleans
New Orleans, Louisiana
Hurricane Katrina caused flooding in 80% of New Orleans
Limitations of Engineering Approaches

City of New Orleans Ground Elevations
From Canal St. at the Mississippi River to the Lakefront at U.N.O.
Case 2: fertilizer facility explosion in West, Texas

A massive explosion at a fertilizer retail facility, in central Texas on Wednesday night left an estimated 200 people wounded and 12 people dead, officials said. The facility sells directly to farmers in a 50- to 100-mile radius. More than 50 homes, fire trucks and an emergency medical services vehicle were destroyed by the explosion. Sen. John Cornyn (R-Tex.) said in a press briefing that 60 people are unaccounted for. Read related article.

Problem in the U.S.: Rapid Population growth in Coastal Areas

Development on barrier island
Understanding Disasters from the Urban Planning’s Point of View

There is **NO** Natural Disaster  **ALL** Disasters are Man-Made

Our actions (or lack of actions) determine our future!
Businesses Play Important Roles in Community Resilience
Jobs, Goods, and Services

Community Businesses

- Place-Making: Unique, Interesting Places
- Safety: Eyes on the Street
- Sense of Place: Community gathering places

https://traveler.marriott.com/portland/portland-street-food/
In Disaster Situation...

Information hub
Community gathering place
Places to charge cell phone
Donate food to community
Get medicine now, pay later

“The return of households and businesses are mutually dependent across space. The reopening of businesses can influence nearby households’ decisions to return to their homes and the return of households in the market area will increase the chances for businesses to return.”

(Xiao and Van Zandt, 2011)
Paradox of Business Vulnerability and Economic Resilience: A Literature Review
Understanding the business production process
Understanding the business production process and vulnerability

"Roughly 40-60 percent of small businesses never reopen their doors following a disaster…" -Federal Emergency Management Agency (FEMA)

Over 90 percent of businesses fail within two years after being struck by a disaster. -- United States Small Business Administration (SBA)

https://www.fema.gov/media-library/assets/documents/108451
https://content.govdelivery.com/accounts/USSBA/bulletins/121b1ba
Business Social Vulnerability

• *Business Size* (small being more vulnerable)
• *Organizational structure* (mom-and-pop more vulnerable)
• *Owner/manager ethnicity/race* (minority-owned more vulnerable)
• *Owner/manager gender* (woman-owned more vulnerable)
Economic Resilience

Studies of earthquakes, hurricanes, floods, and tornadoes in the United States conclude that natural disasters had only short-term effects but no—or very minimal—long-term effects on local economic indicators:

- 1993 Midwest Flood (Xiao, 2011)
- September 11 terrorist attack (Bram et al., 2002)
- 1989 Loma Prieta Earthquake (Brady and Perkins, 1991; and Kroll et al., 1991)
- 1995 Kobe Earthquake (Horwich, 2000)
Economic Resilience (cont.)

A few studies found stricken communities could be better off in GDP, housing, and labor market conditions

- Hurricane Bret (Ewing et al., 2005)
- Hurricane Katrina (Ewing et al., 2010)
- 1998 Nashville Tornado (Ewing et al., 2004)
- Moderate floods in developing countries (Cunado and Ferreira, 2014)
Economic Resilience (cont.)

One lasting-negative-impact case:

• Chang (2000, 2010) reported that although Kobe City, Japan regained its population within ten years after the quake, its port activities never recovered. However, she acknowledged that these long-run losses and structural change were not new creations of the quake but reflections of pre-disaster trends.

Cross-national study:

• Skidmore and Toya (2002) found that “climatic disasters are positively correlated with economic growth, human capital investment and growth in total factor productivity, whereas geologic disasters are negatively correlated with growth.”
Individual Businesses are vulnerable to disasters

Aggregate economies are resilient to disasters

Why?
Explanation 1: Economic Resiliency of Scale

One business

One Region

Entire Country
Primary role of entrepreneurs in the economy is to engage in a process called “creative destruction.” Through their innovations, entrepreneurs help create new industries that transform or even replace old and declining industries...

**Dr Jeff Cornwall**
Co-founder of The Entrepreneurial Mind, serial entrepreneur and professor of entrepreneurship.

- A disaster acts like a catalyst that makes what is already bound to happen, simply happen faster.
- It frees labor and resources from the weak or dying businesses to be absorbed into more productive pursuits.
- Disasters also bring opportunities for technology upgrades, which improve overall economic productivity. (Skidmore and Toya, 2002)
Explanation 3: Consumer Demand Shift

Winners:
Reconstruction-related businesses

Losers:
luxury goods, high-end products

Aggregate: No effect or even positive effect
“The study found that the post-Katrina core disaster area became a ‘doughnut hole’ of low income and employment growth, surrounded by a ring of high growth counties/parishes on the edge of the hole. The short-run adjustment in growth rates may have altered permanently the spatial distribution of employment and income both at the core and in the areas at the edge.”

Xiao and Nilawar, 2013
Explanation 4: The Measurement Issue

New Orleans Economic Indicators (Case: 2005 Hurricane Katrina)

Data source: Bureau of Labor Statistics. Data were not seasonally adjusted.
Explanation 5: There is Demand, There is Supply

If human society survives, businesses will survive, economy will survive.
How to Get Businesses Ready for Disasters?
Post-Disaster Aid is not that Effective

Post-Disaster loans and financial assistance to businesses are not effective

• Northridge earthquake: businesses that used more aid sources were less likely to report positive recovery outcomes (Dahlhamer and Tierney, 1998)

• September 11 terrorist attack: businesses were locked into their no longer profitable locations because funding requirement (Graham, 2007)

• 2008 Hurricane Ike: SBA loans are not set up to save all businesses, especially the failing ones (Watson, 2019)
Lesson learned: Evaluate Customer Base

Great Flood of 1993, Grafton, IL

Local grocery store closed after obtaining SBA loan and fighting for survival for several years. Owner filed bankruptcy.

Reason: low income community (customers) did not come back

At time of interview, business owner was employed at a car dealership, regretted the decision to take loan.
Adaptation is the Key (cont.)

Lesson learned: Evaluate Risk before Making Long-term Investment

A car repair shop struggling for survival. The car repair shop saw temporary boom in business, serving the emergency vehicles from outside of Galveston. Owner cashed out 401K to reinvest in business. However, lack of customers.

Reason: low income community (customers) did not come back

At time of interview, business owner was barely making enough money for their daily needs.
A car dealership adapted to changes. The car dealership was a family business in operation for three generations. After Hurricane Sandy, due to new insurance requirement, this business cannot get insurance any more. The owner changed the business to a used-car dealership, rented out the original business premise, and operated the business from a trailer.

At time of interview, business owner was happy about the changes he made.
Lesson learned: Business continuity should match with the pace of community recovery

2011 Christchurch Earthquake, New Zealand

Business owner shut down the business, worked for another business as employee, waiting for the market to recover and then reopen.
How should businesses prepare?

Start with Supply-Chain Management

In addition to self-preparedness, businesses with resources, i.e. large corporations and businesses in trade associations, should consider contributing to lifeline resilience.

Lifeline Services
- Utilities
  - Electricity
  - Water
  - Sewer
  - Wastewater
- Gas
- Telecommunication
- Transportation networks
- Government
Get **Everyone** Prepared and Ready!

They are your family, friends, significant others, co-workers, friends in business, etc...

They are your employees, customers, future employees, future customers, etc...

Diversity, Equity, Inclusion...
NOW is the time to take actions!
Implications for Portland and Oregon

9.0 Cascadia Subduction Zone earthquake

- Damage to 75% of all structures in Oregon
- A million buildings collapse, including 3000+ schools
- 15 out of 17 bridges in Portland collapse
- ½ of all highway bridges collapse
- Damage to 1/3 of fire stations, ½ police stations, 2/3 of hospitals

The BIG One?

https://www.newyorker.com/magazine/2015/07/20/the-really-big-one

The New Yorker, by Schulz, K., 2015
One-Day Campaign

**For Businesses:** Do you plan to serve your customers without electricity, tap water, running toilet, telecommunication, and transportation services for ONE day? If so, how do you do that?

**For Everyone in the Community:** How do you plan to survive ONE day without electricity, tap water, running toilet, telecommunication, and transportation services?
Questions? Comments?

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References


