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Rising Waters, Difficult Decisions

FINDINGS FROM THE CALGARY FLOOD PROJECT

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About Me



- ⊗ Lived in New Orleans during Hurricane Katrina
- ⊗ Sociologist – I do research on how families, neighbourhoods, and communities prepare for, respond to, and recover from disasters
- ⊗ These have included Hurricane Katrina, BP oil spill, Southern Alberta Flood, and Fort McMurray fire.
- ⊗ Work appeared in journals such as: *Social Science Research*, *Journal of Urban Affairs*, *Environmental Sociology*, *The Sociological Quarterly*, *Journal of Public Management and Social Policy*, and several others.
- ⊗ Every 2 years, I take class of students to New Orleans

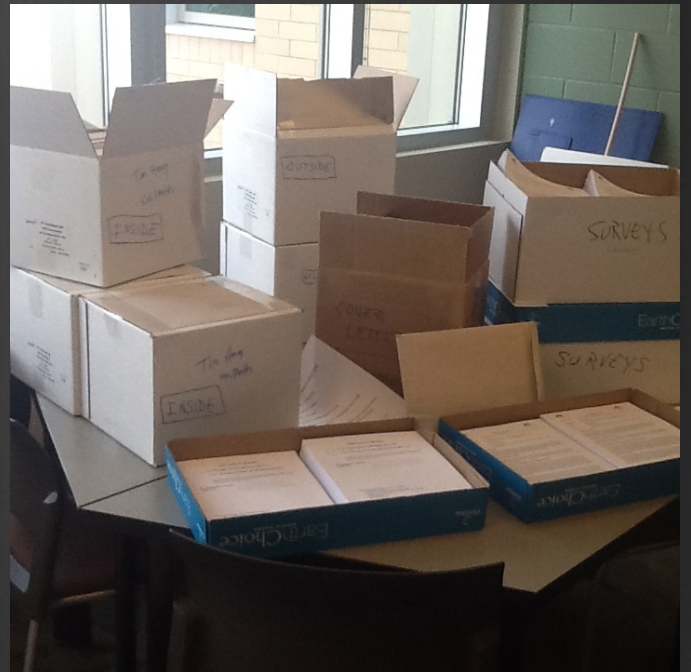
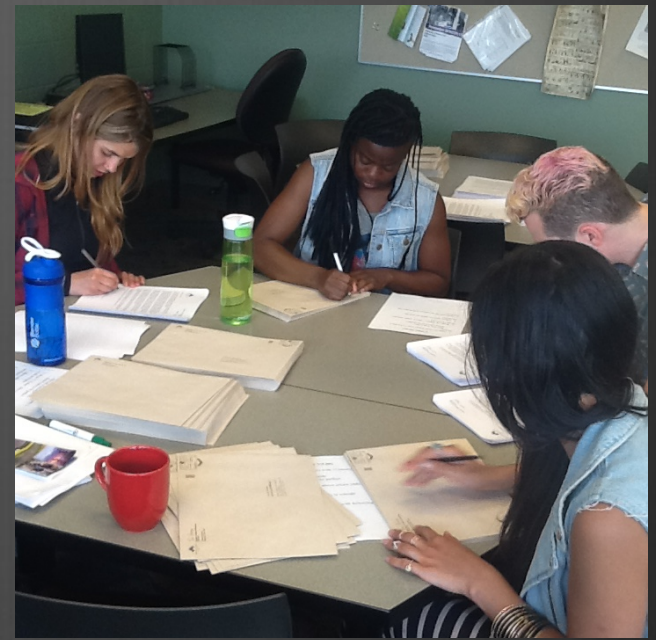
Questions

- ⊗ Were residents aware of risk beforehand?
- ⊗ How many people evacuated? Who?
- ⊗ How were evacuated/flooded Calgarians affected by the event?
- ⊗ How did experiencing the flood change them, and affect where they wish to live in the future?

What We Did....

- ⊗ Randomly sampled 1,500 households from the 26 evacuated neighbourhoods
- ⊗ All households sent survey by mail in June 2014
 - ⊗ Offered \$25 RONA gift card
- ⊗ In July, started visiting all homes on foot
- ⊗ Final sample of 407 participants
 - ⊗ 30% response rate
 - ⊗ Demographically, highly representative of the flood-affected communities
- ⊗ Conducted in-depth interviews with an additional 40 residents.

CDR
Community Disaster Research



Risk Awareness

⊗ “Before the 2013 flood, were you aware that your home may be at risk of flooding?”

⊗ Yes: 32.27 %

⊗ No: 67.73%

⊗ Multivariate Predictors: Bachelor’s degree, number neighbours known

• For only those who flooded:

• Aware of risk 49.46%

• Not aware 50.54%

Risk Awareness, cont'd

- Before the 2013 flood, were you aware that your neighbourhood may be at risk of flooding?”
 - Yes: 49.51%, No: 50.49%
- Findings consistent with recent U of Waterloo Report:
 - Of residents living in high-risk flooding areas, 74% of Canadians don't think they are vulnerable to flooding. Only 6% know they are located in designated flood risk areas
 - 78% don't know if they are covered from damage from heavy rain, riverine flooding, coastal storms, or groundwater.

Thistlewaite, Jason, Daniel Henstra, Shawna Peddle, and Daniel Scott. 2017. *Canadian Voices on Changing Flood Risk: Findings from a National Survey*. Waterloo, ON. Retrieved (https://uwaterloo.ca/climate-centre/sites/ca.climate-centre/files/uploads/files/canadian_voices_on_changing_flood_risk_fnl.pdf).

How They Became Aware of Flood Risk

- ⊗ Previous flood/evacuation experience: 21.50%
- ⊗ Flood map / geographic knowledge: 45.50%
- ⊗ Neighbours: 14%
- ⊗ Real estate agent / previous owners: 3.5%
- ⊗ Friends / Family: 6%
- ⊗ Some other way: 9.50%

Explanations for Awareness

- ⊗ Flood larger in magnitude than most expected
- ⊗ Going through smaller floods (2005). Previous flood experience usually negative predictor of awareness and worry (Burningham et al. 2008)
- ⊗ Lack of neighbourly networks for sharing information (civic disengagement)

Evacuation

- ⊗ “As officials warned of the flood risk, were you asked to evacuate?”
 - ⊗ Yes: 74%
 - ⊗ No: 26% (?)

- ⊗ “How did you first hear about the evacuation order?”
 - ⊗ Official came to door: 35.03%
 - ⊗ Neighbour: 10.91%
 - ⊗ Family: 6.09%
 - ⊗ TV: 23.86%
 - ⊗ Radio: 9.14%
 - ⊗ Social media: 8.38%
 - ⊗ Never heard about it: 6.60%

Evacuation, cont'd

⊗ “After hearing the evacuation order, how soon did you evacuate?”

⊗ Immediately:	9.77%
⊗ Within 1 hour:	18.80%
⊗ 1-2 hours:	15.29%
⊗ 3-5 hours:	13.78%
⊗ 6-8 hours:	4.01%
⊗ More than 8 hours:	5.51%
⊗ Did not evacuate:	32.83%

⊗ Key: People either evacuated within a couple hours, or not at all.

Evacuation, cont'd

- ⊗ “If you did not evacuate immediately, what is the main reason you did not?”
 - ⊗ Collect important belongings: 29.51%
 - ⊗ Wait and see how bad it would be: 19.44%
 - ⊗ Make sure family members safe: 11.11%
 - ⊗ Did not trust the warning: 3.47%
 - ⊗ No transportation: 0.69%
 - ⊗ In God’s hands: 0.69%
 - ⊗ Other reason: 35.07%
- ⊗ “Other” reasons: never believed it could be so bad, takes a long time to evacuate kids, had animals to pack up, did not have a place to go, “chilling,” helping neighbours evacuate, lived on upper floor, sick or disabled, power wasn’t out, enjoyed seeing the community preparing and evacuating, didn’t realize how critical it was

Failure to Evacuate— Why?

- ❁ Information Deficit Perspective
 - ❁ People lack information.
 - ❁ When informed and asked to evacuate, they will do so

- ❁ Contextual Perspective
 - ❁ People evaluate official information as one potential source of information
 - ❁ Filter that information through their social networks
 - ❁ Consider past disasters, imagine how bad it could be, stories they've seen in news media etc.

- ❁ Burningham, K., J. Fielding & D. Thrush (2008). "It'll Never Happen to Me: Understanding Public Awareness of Local Flood Risk." *Disasters* 32(2): 216-238.

Evacuation Accommodations

⊗ Who helped with finding a place to stay during evacuation?

⊗ Nobody:	42.26%
⊗ Family member in YYC:	32.19%
⊗ Friend living in YYC:	18.67%
⊗ Friend/Family outside YYC:	4.50%
⊗ Neighbour	1.72%

⊗ “How did you evacuate from your home?”

⊗ My own vehicle:	61.35%
⊗ Friend/neighbour vehicle:	3.50%
⊗ Public transit:	0.50%
⊗ On foot:	1.25%
⊗ Didn't evacuate:	20.42%

Evacuation Accommodations, cont'd

- ⊗ “When evacuated, where did you go?”
 - ⊗ Family member’s house in YYC: 35.26%
 - ⊗ Friend’s house in YYC: 22.92%
 - ⊗ Family/Friend outside of YYC: 5.25%
 - ⊗ Hotel: 4.53%
 - ⊗ Shelter/Reception Centre: 1.26%

- “If you stayed with a family or friend, how close were you to this person/people before the flood?”
 - Very close: 77.65%
 - Somewhat close: 17.25%
 - Not close at all: 5.10%

Where did evacuated residents get financial/material assistance?

- | | |
|---|--------|
| ❁ Family in Calgary: | 3.69% |
| ❁ Family elsewhere: | 1.47% |
| ❁ Friends in Calgary: | 2.46% |
| ❁ Friends elsewhere: | 1.47% |
| ❁ Coworkers: | 2.46% |
| ❁ Federal government | 3.69% |
| ❁ Alberta government | 15.72% |
| ❁ Red Cross | 6.88% |
| ❁ Religious organization | 0.75% |
| ❁ 76.9% received assistance from <u>none</u> of these sources | |

How Long Were They Evacuated?

- ⊗ Mean number of days evacuated (until returned for first time), for those who did evacuate:
 - ⊗ 12.5 days
- ⊗ Mean number of days (until returned for first time), for those who flooded and did not:
 - ⊗ Flooded: 29.4 days
 - ⊗ Not flooded: 5.23 days
- “Have you now (summer 2014) returned to your pre-flood home to live?”
 - All respondents: 96.80%
 - Among flooded: 92.39%
 - Among non-flooded: 98.94%

Social and Psychological Effects

⊗ Did the flood negatively impact your marriage or relationship?”

⊗ Yes: 19.19%

⊗ No: 80.81%

⊗ “Have you seen any negative changes in your children’s behaviour since the flood?”

⊗ Yes: 14.68%

⊗ No: 85.32%

Disruption of Ontological Security

⊗ “Since the flood, have you felt your usual routines have been disrupted or changed?”

⊗ Yes: 20.00%

⊗ No: 80.00%

⊗ “Since the flood, have you found it upsetting or disrupting that familiar landmarks (i.e., houses, schools, stores) are either gone or empty?”

⊗ Yes: 46.27%

⊗ No: 53.73%

Predictors: *Gender*, age, homeownership, years at address, active in n’hood, home flooded

Reattachment to Place

- ⊗ “How attached are you to your current neighbourhood?”
 - ⊗ Pre-flood
 - ⊗ Strongly: 67.57%
 - ⊗ Somewhat: 27.76%
 - ⊗ Not very: 4.67%

 - ⊗ Post-flood
 - ⊗ Strongly: 68.47%
 - ⊗ Somewhat: 26.35%
 - ⊗ Not very: 5.17%

- ⊗ Strongest predictors of higher post-disaster place attachment: having one’s home flood, having a longer evacuation, and pre-disaster place attachment.

Short-Term Mobility Plans

- ⊗ “Do you see yourself living in your pre-flood neighbourhood one year from now?”
 - ⊗ Yes: 82.06%
 - ⊗ Uncertain: 10.32%
 - ⊗ No: 7.62%

- ⊗ Among those who flooded....
 - ⊗ Yes: 78.49%
 - ⊗ Uncertain: 13.98%
 - ⊗ No: 7.53%

- ⊗ Strongest predictors are related to social networks in the community, not flood damage, income or other economic considerations

Longer-Term Mobility Plans

⊗ “Do you see yourself living in your pre-flood neighbourhood five years from now?”

- ⊗ Yes: 55.53%
- ⊗ Uncertain: 29.24%
- ⊗ No: 15.23%

⊗ Among those who flooded.....

- ⊗ Yes: 51.61%
- ⊗ Uncertain: 32.26%
- ⊗ No: 16.13%

Important predictors: Attachment to place, number of neighbours known by name, civic engagement. NOT having one's home flood or length of evacuation

Reasons for Intending to Move

- ⊗ “Which of the following describes the main reason why you may not be living there five years from now?”
 - ⊗ Fear of future floods: 22.02%
 - ⊗ Location/commuting: 5.50%
 - ⊗ Other: 69.72%
- ⊗ Other reasons included: Get out while house still has value, cost of living, ageing, want to downsize, lack of community, bought home elsewhere.

Environmental Views

- Did the 2013 flood change your views about the environment?
 - Yes 25.43%
 - No 74.57%
- ⊗ Predictors of changing environmental views:
 - ⊗ Women almost three times as likely as men
 - ⊗ *Not* whether home flooded, length of evacuation, income, age, parenthood, homeownership, education, etc.
- ⊗ Why? In follow-up interviews, men shifted conversation to oil and oil-sands: denied anthropogenic climate change, blamed others, talked about how it would be good for Alberta, or how there were no economic alternatives to oil.
- ⊗ See: Milnes, Travis & Timothy J. Haney (2017) ““There’s Always Winners and Losers: Traditional Masculinity, Resource Dependence, and Post-Disaster Environmental Complacency.” *Environmental Sociology* 3(3): 260-273.

Conclusions

- ⊗ Large gaps in terms of risk awareness and compliance with evacuation orders
- ⊗ Disasters are social events
 - ⊗ Local social networks (neighbours, family, etc.) affect whether/when residents evacuate, where they go, disruption of their lives, and their longer-term mobility plans.
- ⊗ For a sizable minority of Calgarians, flood altered their.....
 - ⊗ Relationships
 - ⊗ Security/trust in their surroundings
 - ⊗ Desire to remain in their neighbourhood
 - ⊗ Environmental views

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