

Evacuation, Displacement, and Post-Flood Return

Findings from The Calgary Flood Project

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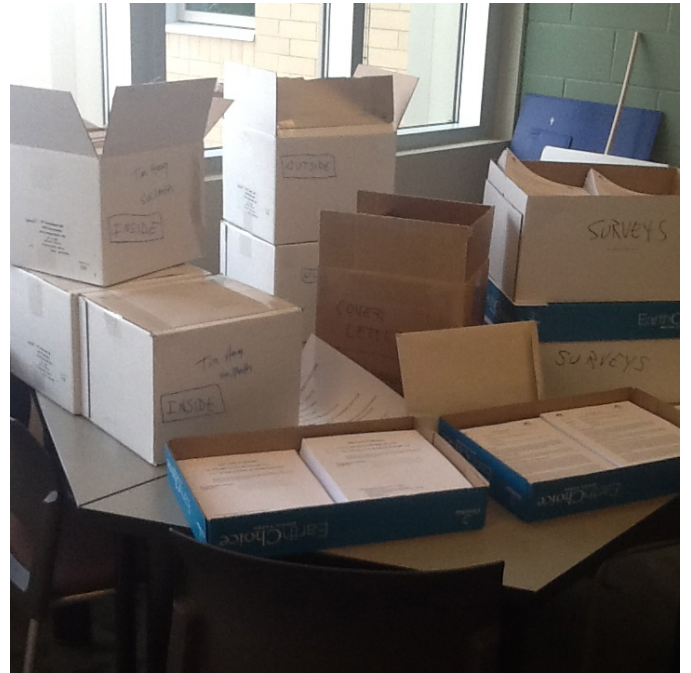
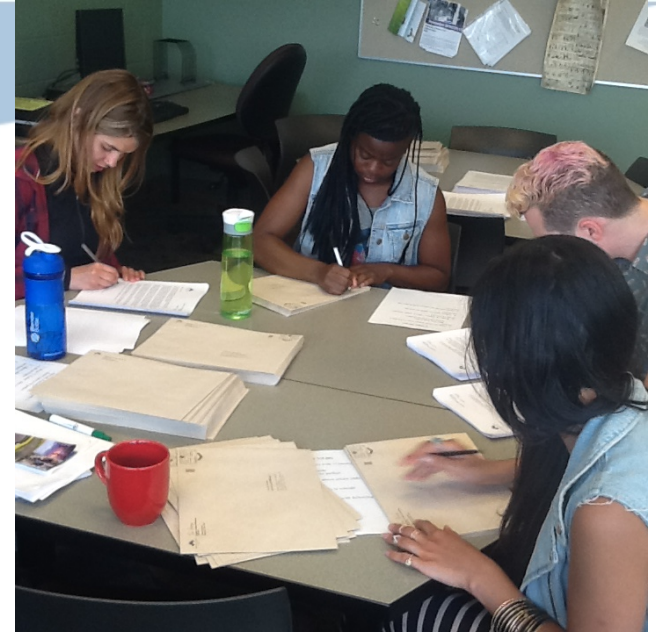
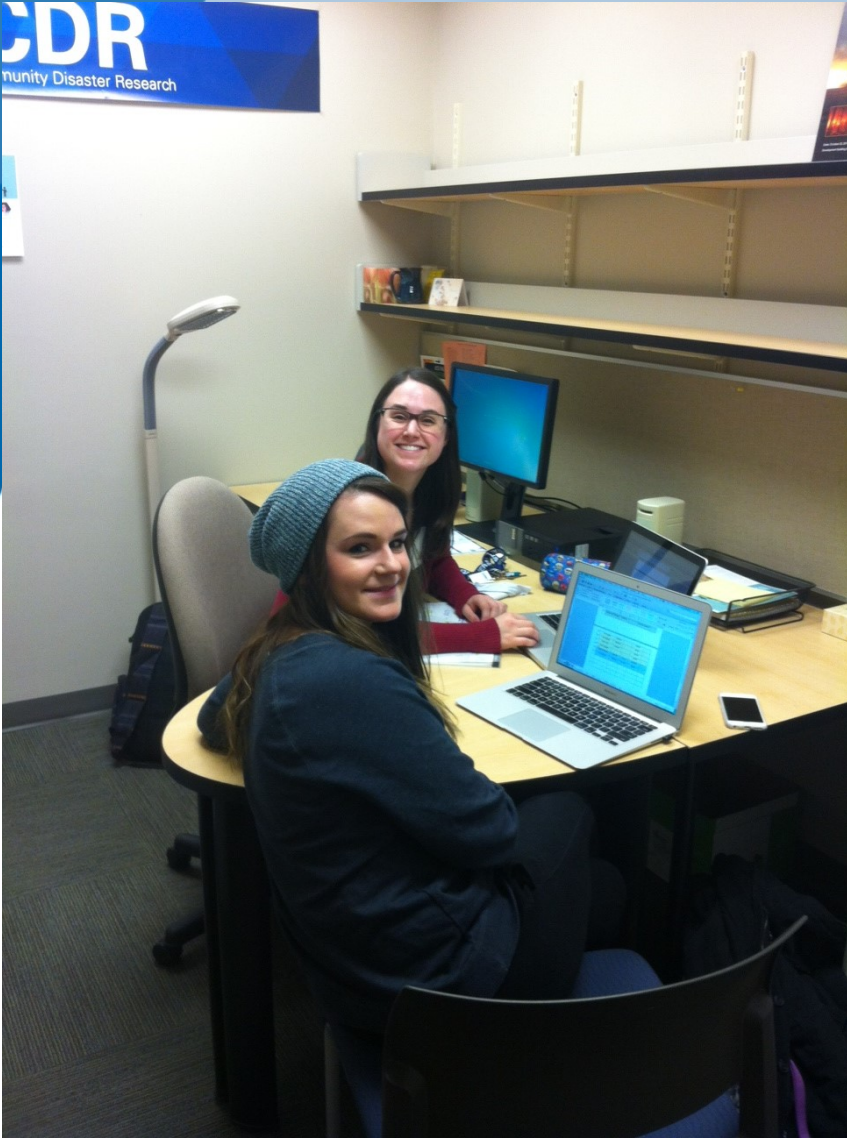
Mount Royal University

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
- Just finished doing 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%

• When cross-tabulated with whether or not home flooded in 2013:

- Not aware of risk, flooded: 11.47%
- Not aware of risk, did not flood: 56.11%
- Aware of risk, flooded: 11.22%
- Aware of risk, did not flood: 21.20%

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

- • Yes: 49.51%, No: 50.49%

How did you become 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%





Evacuation

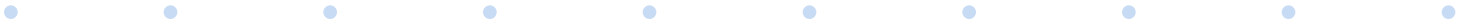
- “As officials warned of the flood risk, were you asked to evacuate?”
 - Yes: 74%
 - No: 26% (?)
- “How did you first hear about the evacuation order?”
 - Official came to door: 35.03%
 - TV: 23.86%
 - Neighbour: 10.91%
 - Radio: 9.14%
 - Social media: 8.38%
 - Family: 6.09%
 - Never heard about it: 6.60%





Evacuation

- “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

“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 flood, sick or disabled, power wasn’t out, enjoyed seeing the community preparing and evacuating, didn’t realize how critical it was



Evacuation

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%

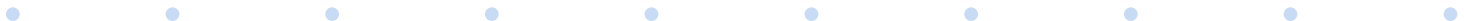
- “How did you evacuate from your home?”

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



Evacuation

- “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 none 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%

How did the flood change their place-based social capital?

- “During the flood (while you were evacuated or displaced), did you meet anyone who helped you in any way?”
 - Yes: 14.25%
 - No: 85.75%
 - How? Volunteers walking down the street, distant relatives, church, community association, strangers
- “Have you kept in contact with this person or these people since the flood?”
 - Yes: 64.91%
 - No: 35.09%

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%

Social and psychological effects...

- “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%

Re-attachment 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.

What are residents' 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%

What are residents' longer-term 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%

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.

Future directions

- Multivariate analyses of.....
 - Evacuation timing/decisions
 - Risk Awareness
 - Emergent social capital
 - Use of existing social capital
 - Change in environmental views
 - Future mobility plans
- Supplementation with qualitative interview data from 40 participants.



Gratitude

- Social Sciences and Humanities Research Council (SSHRC) of Canada

Canada

Social Sciences and Humanities
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- Student RA's: Travis Milnes, Angela Laughton, Grace Ajele, Priya Kaila, Morah Mackinnon, Victoria Stamper, Isabelle Sinclair
- Faculty, Students and Staff at the CCDR

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