



Calgary



Research Report

Bowness Flood Mitigation – Survey of Non-Riverfront Residents

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Executive Summary

Many Bowness non-riverfront residents are aware of the proposal for permanent flood barriers.

- Awareness of flood mitigation efforts is moderate, with about half of non-riverfront residents aware of any single flood mitigation initiative.
- Residents are most keenly aware of the permanent flood barriers, with 38% stating they are very aware and another 21% somewhat aware.
- Deeper understanding of the proposal for permanent flood barriers is somewhat limited, however, to “work is being done” and “I heard something/not much”.
- Non-riverfront residents’ awareness of the flood barriers comes mainly from the news/media and friends and/or neighbours.

Support for the flood barriers is high among non-riverfront residents in Bowness.

- A large majority of non-riverfront Bowness residents (74%) are in favour of having flood barriers along the Bow River. The residents who support the proposal do so because “it will prevent flooding.”
- Those who oppose having flood barriers are concerned that they will eliminate views/the scenery, won’t be effective and/or will negatively affect property values.
- Most non-riverfront residents agree that without permanent flood barriers, Bowness will be at risk if another major flood happens. Residents are also much more likely to agree than disagree that the barriers will be effective, the barriers will be good for Bowness, and extreme weather events are on the rise.
- Non-riverfront residents are divided on whether it’s unreasonable to ask riverfront homeowners to have barriers on their property, and whether upstream reservoirs alone will provide adequate flood protection.
- Consistent with these attitudes, about half of non-riverfront residents (52%) are confident that The City is taking the right steps to reduce the impacts of the next flood in Calgary.

Executive Summary

Most residents were impacted in some way by the 2013 flood, though not all properties were flooded.

- Most residents surveyed lived in Bowness during the 2013 flood. Fewer than one-in-ten (7%) non-riverfront residents say their property was flooded in 2013.
- Although not all Bowness residents were flooded in 2013, many (69%) reported that they were impacted in some way by the flood. Most commonly, non-riverfront residents (61%) were evacuated from their homes.

Many residents believe the 2013 flood was an equal mix of overland and groundwater.

- Most non-riverfront residents think the 2013 flood was an equal mix of overland and groundwater flooding (62%), or mostly overland flooding (28%).

Non-riverfront residents in Bowness believe the next major flood is coming in the next 10 years.

- Approximately four-in-ten (43%) non-riverfront residents think the next major flood is coming within the next 10 years and believe they will be greatly impacted when it happens. A minority of Bowness residents (29%) have prepared for a major flood.

The City of Calgary's website is the preferred source of information.

- Non-riverfront residents in Bowness are most likely to look for information about flood barriers on The City of Calgary website. These residents will also rely on the news/media for information.

Context

- In April 2017, City Council approved a Flood Resilience Plan for Calgary, which includes a combination of watershed-, community-, and property level mitigation solutions. Bowness was one of the communities identified in the plan that requires flood mitigation. A permanent flood barrier was one of the recommendations from this study to mitigate flood risk to the community.
- The flood barrier would work with a future upstream reservoir to protect Bowness from a 2013-level flood by protecting areas at risk of overland flooding from river flows up to 1,230 m³/s.
- Work on the proposed flood barrier is in Phase 1 – Studies and community engagement. The purpose of this phase is to explore whether a flood barrier option is feasible in Bowness through gathering feedback from the community and completing engineering studies and further analyses.
- While The City has engaged with riverfront residents there has been limited opportunities to understand the perspective from other Bowness residents on the proposed flood barriers.
- The City contracted Leger to conduct a telephone survey with non-riverfront residents in Bowness to better understand the opinions of residents to help inform future communications and engagement.

Methodology

- Leger completed a telephone survey with a random selection of n=136 non-riverfront residents.
- The telephone study targeted residents through postal codes and therefore, cell phone-only households were not included in the sampling. Given this, a limited number of landline phone numbers (865) were available. A landline was considered exhausted after making 10 attempts to reach the resident.
- The survey ran from May 21 to June 13, 2019.
- The margin of error for a sample of n=136 is $\pm 8.3\%$, 19 times out of 20.
- Results for the survey are weighted by age and gender to ensure accurate representation.



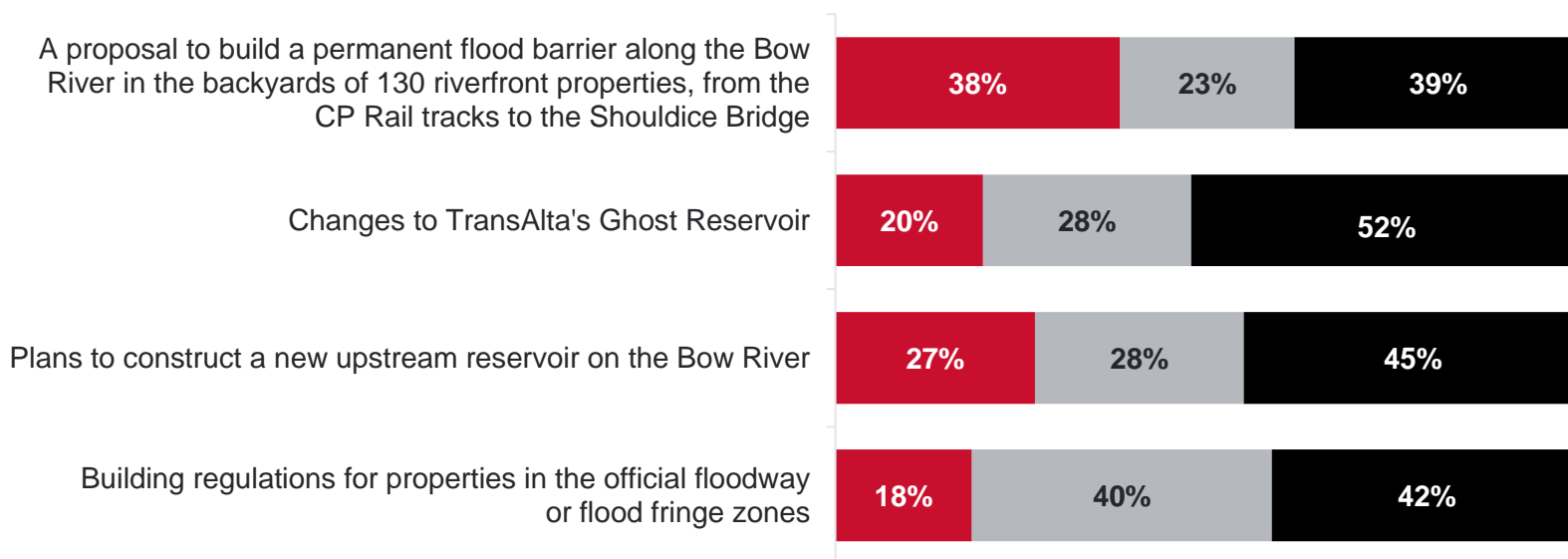
Awareness and Understanding of Flood Mitigation

Awareness of Flood Mitigation Efforts

Awareness of flood mitigation efforts is moderate, with about half of non-riverfront residents aware of any single initiative. Residents are most keenly aware of the permanent flood barriers, with 38% of residents stating they are “very aware.”

Awareness of Measures to Reduce Risk of Flooding in Bowness

■ Very aware ■ Somewhat ■ Not at all



Q. Before today, were you aware of any of the following measures to reduce the risk of flooding in Bowness? (n=136)

Understanding of Proposal to Build Permanent Flood Barriers

Non-riverfront residents' understanding of the proposal for permanent flood barriers is somewhat limited, to "work is being done" and "I heard something."

	Aware of the proposal (n=80)
Work is being done/going to be done (barriers/berms)	29%
Heard something/not much	22%
They want to cut down trees	10%
Residents are not happy	10%
I have been to meetings/website/aware of the plans	9%
They want to build barriers on residential properties	7%
Will decrease property values	7%
Higher flow rates will increase groundwater flooding	6%
I have heard enough to know that this will not protect me from flooding	5%
Does not address groundwater flooding	2%
Need to have upstream mitigation	2%
Berm will cause environmental damage	2%
Need better consultations	-
Other	3%
Nothing/not sure	17%

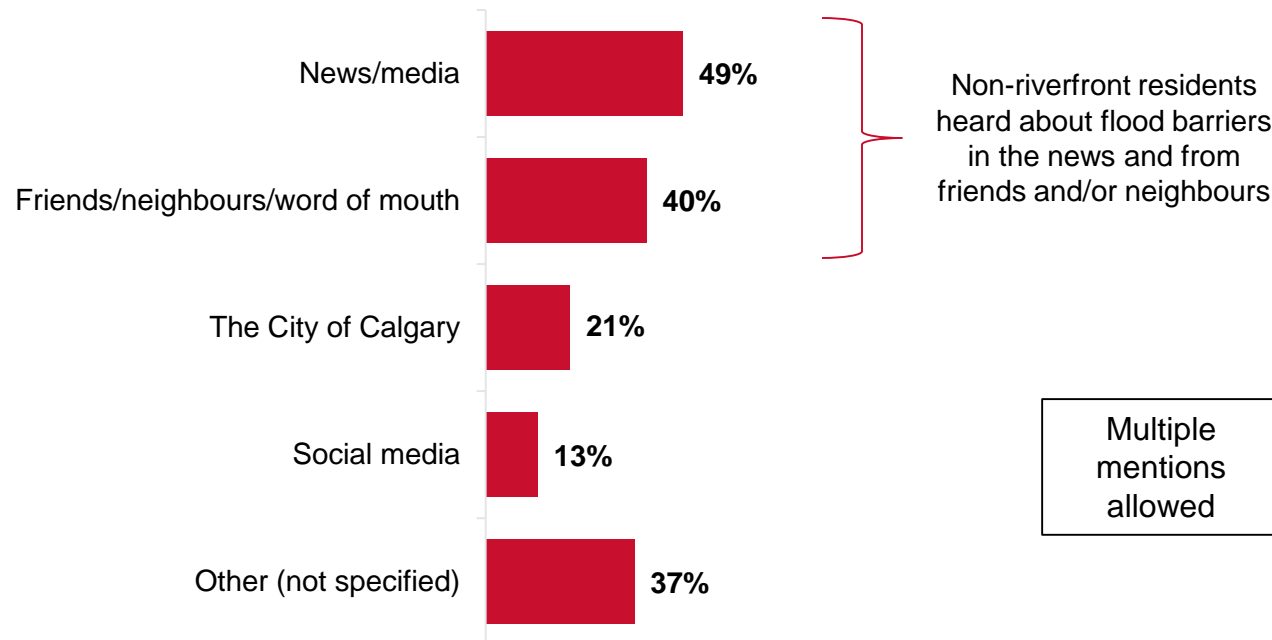
Multiple
mentions
allowed

Q. What do you know about the proposal to build permanent flood barriers in Bowness? (aware of the proposal, n=80)

Source of Information about the Flood Barriers

When asked where they heard about the proposal for permanent flood barriers, non-riverfront residents in Bowness state they heard it in the news/media or from friends and/or neighbours.

Source of Information about Proposal for Permanent Flood Barriers in Bowness



Q. Where or from whom did you get this information? (n=80)

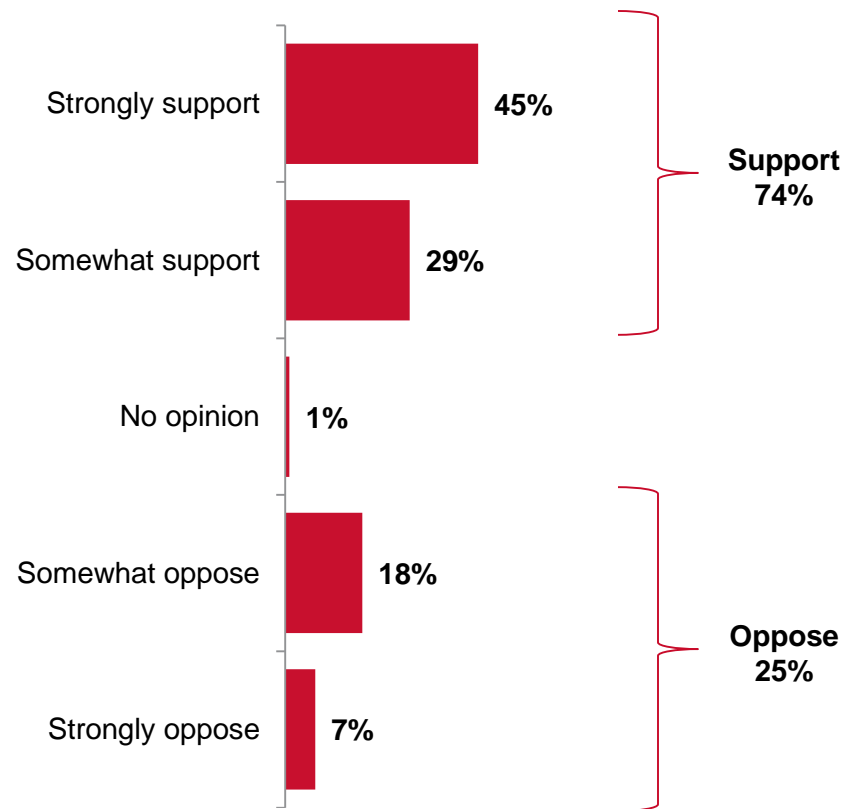


Support for Flood Barriers

Support for Permanent Flood Barriers

Many non-riverfront residents in Bowness (74%) are in favour of having permanent flood barriers along the Bow River, including 45% who strongly support this proposal.

Support and Opposition of Permanent Flood Barriers



Q. To what extent do you support or oppose having permanent flood barriers in Bowness? (n=136)

Reasons for Opposing or Supporting Permanent Flood Barriers

Non-riverfront residents who support the permanent flood barriers say it's because it will prevent flooding, it makes sense, and they don't want to be flooded. Those who oppose are concerned that the barriers will impact views and scenery; and have doubts that the barriers will be effective.

	<u>Support the barriers</u> (n=104)
It will prevent flooding	39%
Makes sense/needs to be done	14%
I don't want to be flooded	14%
Need to keep citizens safe/protected	11%
Don't know enough about it	8%
I don't think this will work/solve the problem	6%
Need to have upstream mitigation	4%
Does not address groundwater flooding	3%
Install bike path atop berm	2%
Negative impact on wildlife habitat/environment	2%
I don't think flooding will happen again	<1%
Will eliminate views/scenery	<1%
Too costly/don't want to pay for it	<1%
Other	4%
Don't know/not sure	7%

	<u>Oppose the barriers</u> (n=28)
Will eliminate views/scenery	24%
It will not work/solve the problem	18%
Will affect property values	18%
Negative impact on wildlife habitat/environment	14%
Need to have upstream mitigation	11%
Too costly/don't want to pay for it	7%
Don't know enough about it	6%
Building barriers on residential properties	5%
Does not address groundwater flooding	3%
I don't think flooding will happen again	1%
It will prevent floods	1%
Other	-
Don't know/not sure	8%

Multiple
mentions
allowed

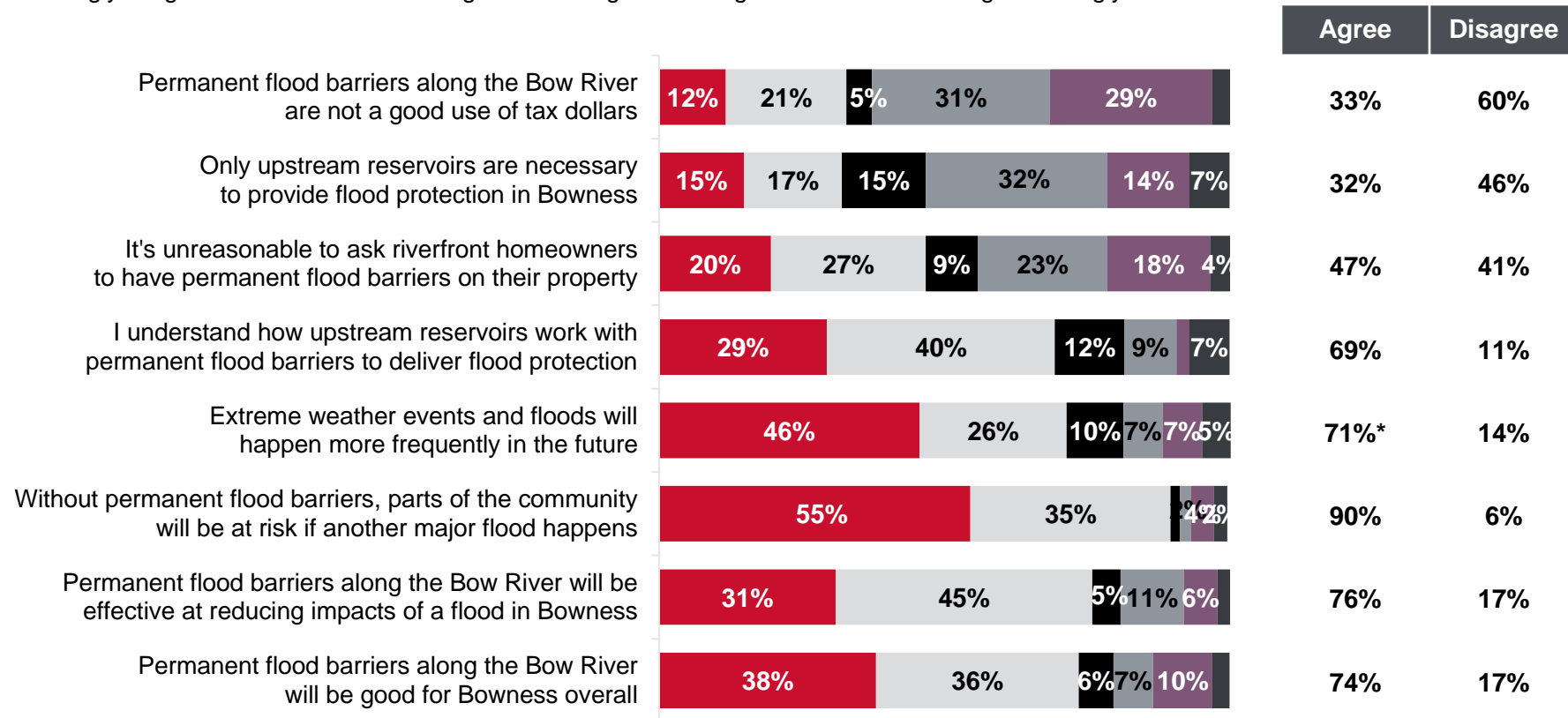
Q. What is the reason for your rating (somewhat or strongly support)? (n=104)

Q. What is the reason for your rating (somewhat or strongly oppose)? (n=28)

Attitudes & Beliefs about Flood Barriers

Most non-riverfront residents (90%) agree that without permanent flood barriers, Bowness will be at risk if another major flood happens. Residents are also much more likely to agree than disagree that the barriers will be effective, the barriers will be good for Bowness, and extreme weather events are on the rise. Residents are divided on whether it's unreasonable to ask riverfront homeowners to have barriers on their property, and whether upstream reservoirs alone will provide adequate flood protection.

■ Agree strongly ■ Agree somewhat ■ Neither agree nor disagree ■ Disagree somewhat ■ Disagree strongly ■ Don't know



Q. I will read a few statements that describe opinions that some people may have. These statements are not right or wrong, just opinions. For each one, please tell me how much you agree or disagree. (n=136)

*Rounding

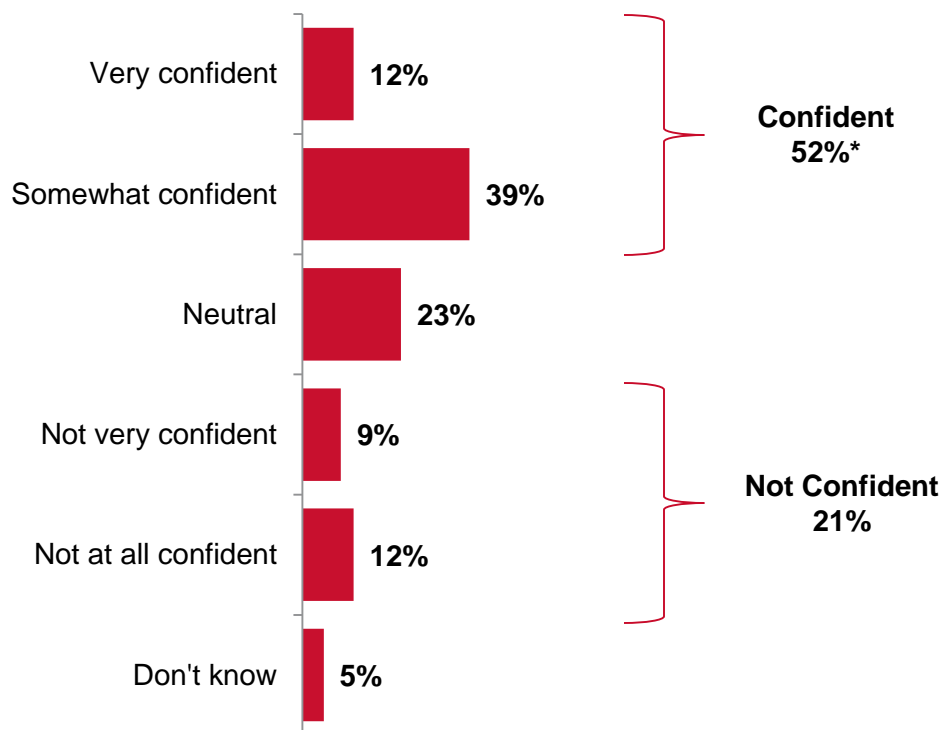


Confidence in The City

Confidence in The City to Reduce Flood Impacts

One-half (52%) of non-riverfront residents in Bowness feel confident that The City is taking the right steps to reduce the impacts of the next flood in Calgary, while about one-quarter (23%) are neutral and one-in-five (21%) are not confident.

Confidence in The City Taking the Right Steps to Reduce Impacts of Calgary's Next Flood



*Rounding

Q. How confident are you that The City of Calgary municipal government is taking the right steps to reduce the impacts from the next flood in Calgary? (n=136)



Experiences and Perceptions of Flooding in Calgary

Experience with 2013 Flood

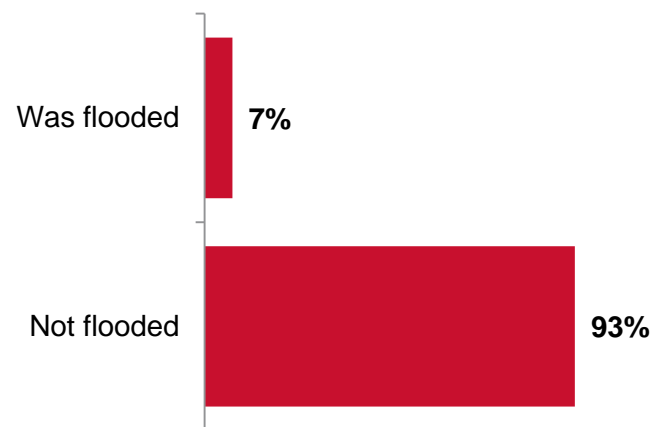
Most survey respondents lived in Bowness during the 2013 flood. Fewer than one-in-ten (7%) non-riverfront residents state their property was flooded in 2013.

Residence During 2013 Flood

	Non-riverfront Residents (n=136)
Lived in Bowness during 2013 flood	94%
Yes, lived in the same residence as I do now	92%
No, lived elsewhere in Bowness	2%
Did not live in Bowness during 2013 flood	6%
No, lived elsewhere in Calgary	2%
No, did not live in Calgary	3%
I'm not sure	1%

Q. Were you living in your current residence during the 2013 flood? (n=136)

Current Residence: Flooded vs. Not Flooded

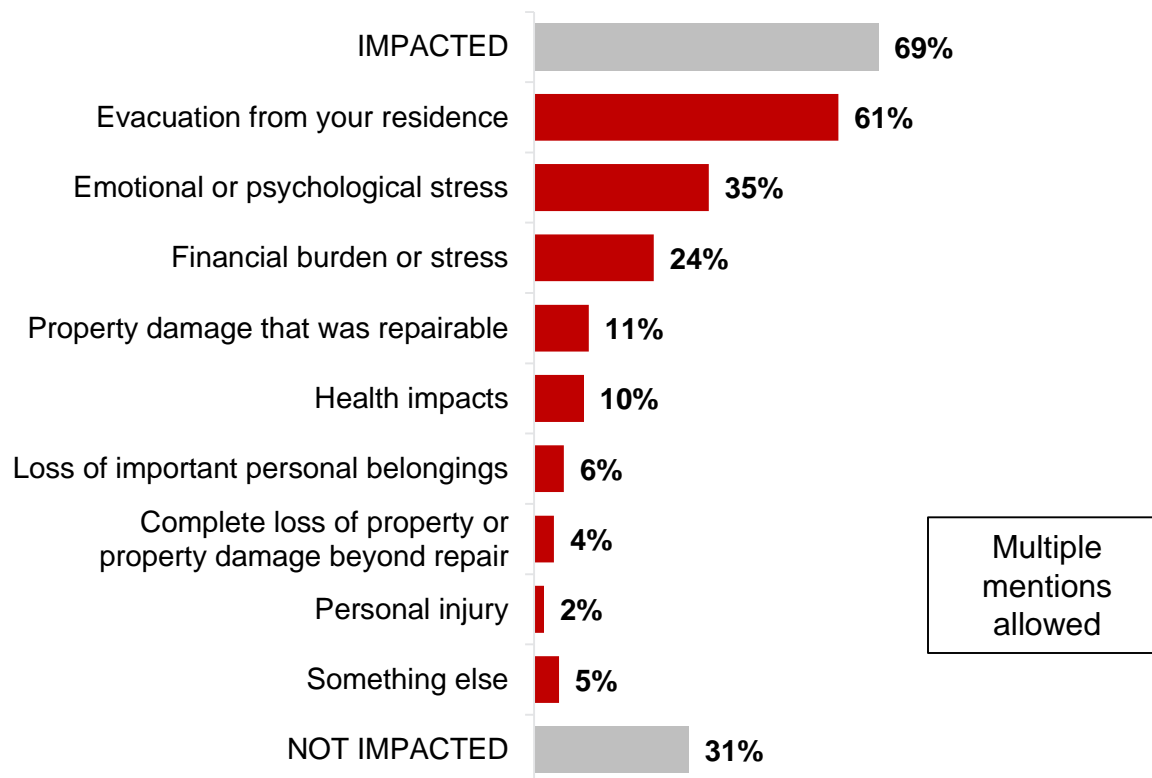


Q. Was your Bowness residence flooded during the 2013 flood? (lived in their current residence in 2013, n=127) +
Q. As far as you know, was your current property flooded during the 2013 flood? (didn't live in their current residence in 2013, n=9)

Impacts of the 2013 Flood

Although not all Bowness residents were flooded in 2013, many (69%) were impacted in some way by the flood. Most commonly, non-riverfront residents were evacuated from their homes.

Impacts Experienced as a Result of the 2013 Flood

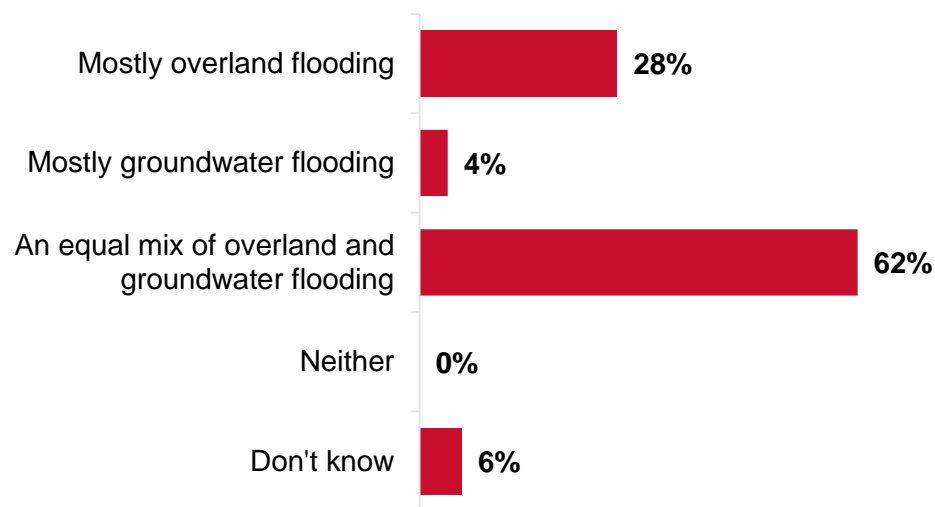


Q. Did you experience any of the following as a result of the 2013 flood? (lived in Calgary during 2013 flood, n=133)

Perceptions of the Type of Flooding in 2013

Non-riverfront residents tend to believe that the 2013 flood was an equal mix of overland and groundwater flooding (62%), or mostly overland flooding (28%).

Perceptions of the Cause of Flooding in Bowness in 2013

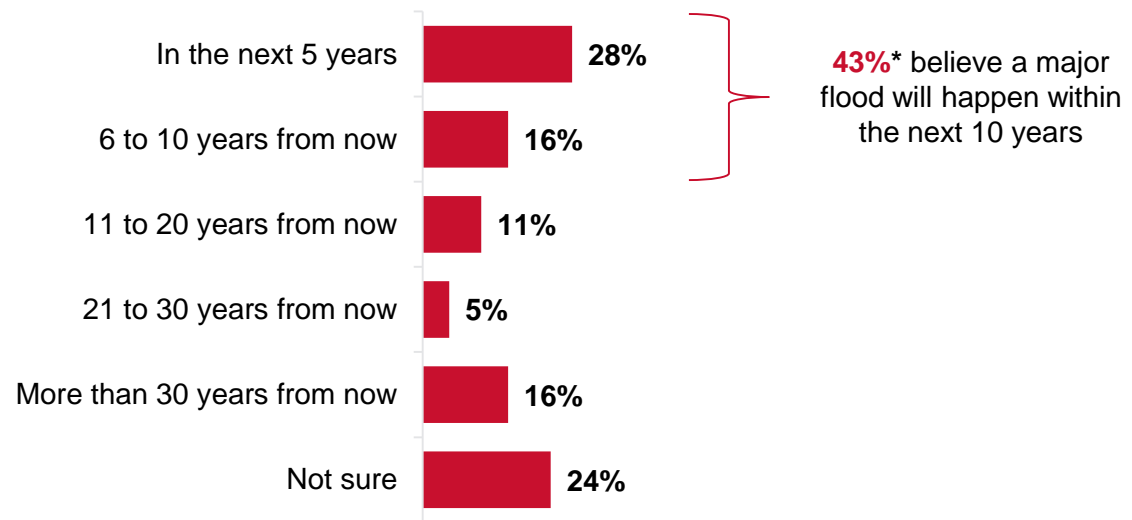


Q. Would you say the flooding in Bowness in 2013 was mainly . . . (n=136)

Predicted Timing of the Next Major Flood

Many non-riverfront residents in Bowness believe the next major flood is coming relatively soon (within the next 10 years) although one-quarter (24%) don't know .

Perceptions of the Timing of the Next Flood Event Like the One in 2013



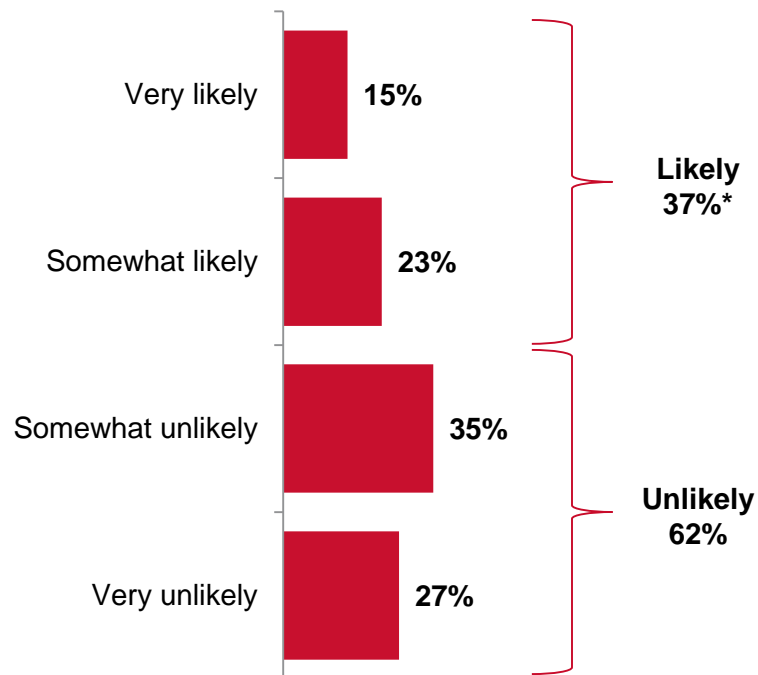
*Rounding

Q. When do you think Calgary is likely to have another flood like the one in 2013? Would you say . . . (n=136)

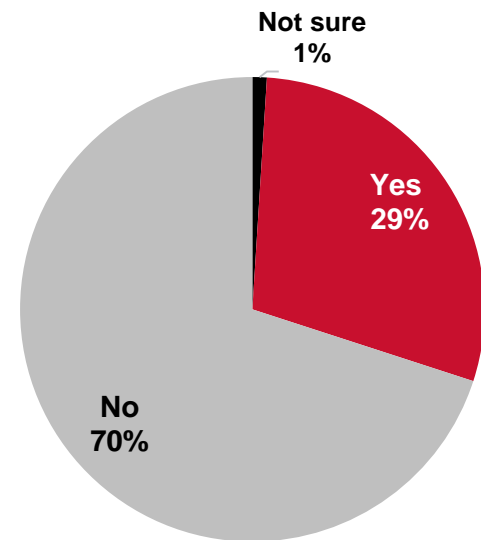
Flood Readiness

While over one-third (37%) are inclined to think they will be greatly impacted by a major flood, less than one-third (29%) has prepared for one.

Likelihood of Experiencing Major Impacts as a Result of Another Flood Like the One in 2013



Prepared for a Flood Like the One in 2013



Q. If a flood similar to the one in 2013 happened tomorrow, what would you say is the likelihood of experiencing major impacts to you and your household? (n=136)

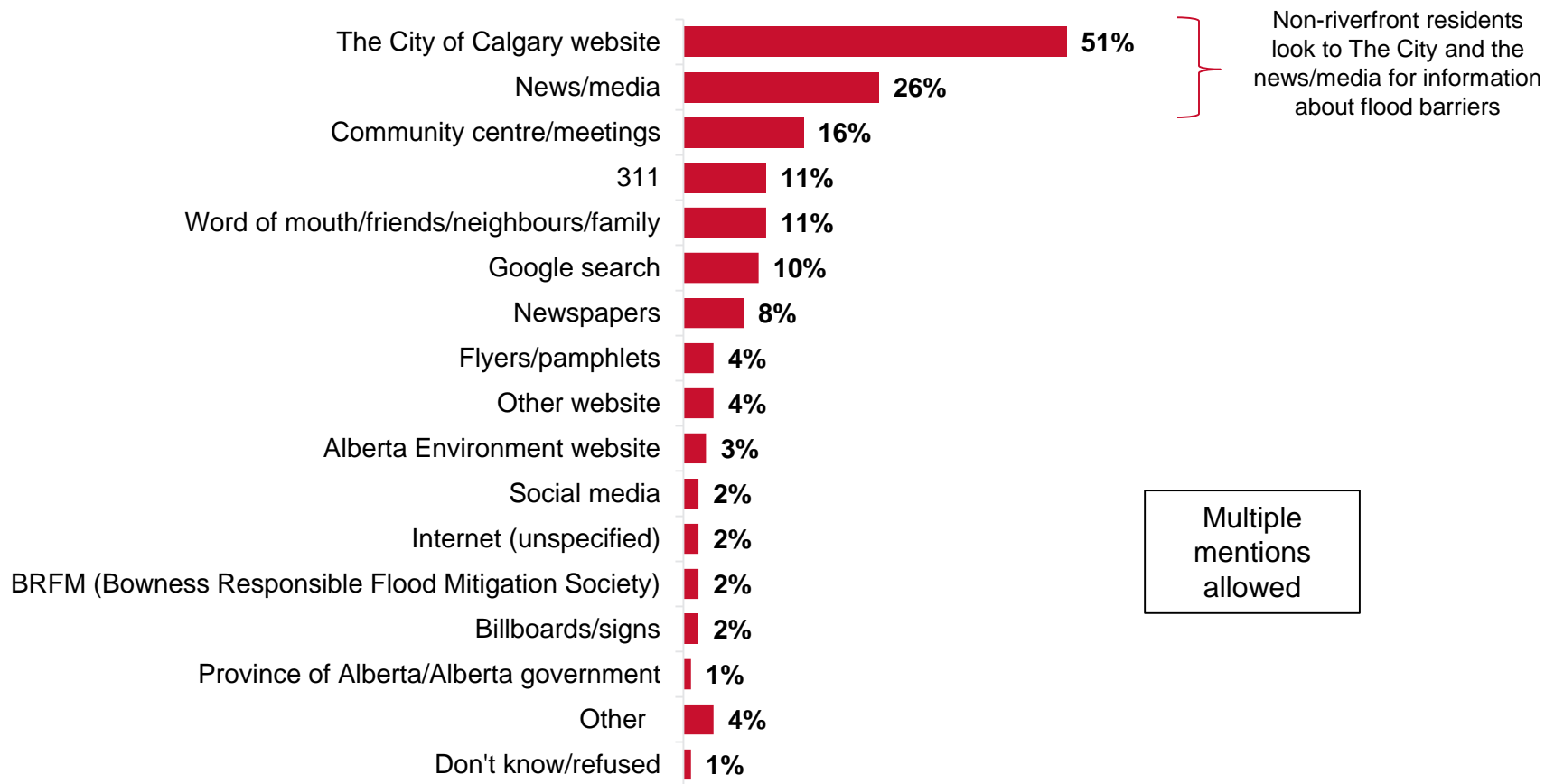
Q. Have you done anything to prepare for a major flood? (n=136)



Communication Preferences

Preferred Information Sources

Non-riverfront residents are more likely to look at The City of Calgary website than any other source of information. These residents will also rely on the news/media as an information source.



Q. Where are you most likely to look for information on permanent flood barriers in Bowness? (n=136)



Demographics

Demographics

	(n=136)
GENDER	
Male	50%
Female	50%
Other	-
Prefer not to say	-
AGE	
18 to 24 years	3%
25 to 34 years	1%
35 to 44 years	13%
45 to 54 years	51%
55 to 64	15%
65+	18%
Prefer not to say	-
HOME OWNERSHIP	
Own	76%
Rent	22%
PROXIMITY TO BOW RIVER	
Across the street from riverfront property	6%
Further away from the Bow River	94%

	(n=136)
HOUSEHOLD SIZE	
1	21%
2	41%
3 or more	38%
Prefer not to say	-
Mean	2.5
CHILDREN IN HOUSEHOLD	
Yes	27%
No	73%
SENIORS IN HOUSEHOLD	
Yes	35%
No	65%
Prefer not to say	-
TENURE IN BOWNESS	
Less than one year	-
1-5	1%
6-10	6%
11-20	26%
21-30	17%
31-40	20%
Over 40	30%
Mean	32.4
Prefer not to say	-

	(n=136)
EDUCATION	
High school or less	17%
Some college/trade school	10%
College/trade school diploma/certificate	31%
Some university	8%
University bachelor's degree	23%
University graduate degree	7%
Prefer not to say	4%
EMPLOYMENT	
Employed	65%
Not employed outside the home	8%
Retired	25%
Prefer not to say	2%