



Calgary



Research Report

Bowness Flood Mitigation – Survey of Riverfront Residents

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Prepared for The City of Calgary by:

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Executive Summary

Nearly all Bowness riverfront residents are aware of the proposal for permanent flood barriers.

- Awareness of flood mitigation efforts is high; with over one-half of riverfront residents very aware of any single initiative.
- Residents are most keenly aware of the permanent flood barriers, with 95% of residents stating they are “very aware.”
- Understanding of the proposal for the permanent flood barriers is that the barriers “won’t protect against groundwater flooding,” and that they “have been to meetings/website and are aware of the plans.”
- Riverfront residents’ awareness of the flood barriers comes mainly from The City of Calgary and friends and/or neighbours.

Support for the flood barriers is low among riverfront residents.

- The majority (88%) of riverfront residents oppose having permanent flood barriers along the Bow River.
- Riverfront residents oppose the barriers for two main reasons: the barriers will not protect against groundwater flooding and/or will not be effective.
- Most riverfront residents agree that the permanent flood barriers are not a good use of tax dollars.
- Most riverfront residents disagree that without the flood barriers, parts of the community will be at risk if another major flood happens; permanent flood barriers along the Bow River will be effective at reducing impacts of a flood in Bowness; and permanent flood barriers along the Bow River will be good for Bowness overall.
- The majority of riverfront residents in Bowness are not confident (88%) that The City is taking the right steps to reduce the impacts from the next flood in Calgary.

Executive Summary

Riverfront residents are most concerned about access to the river, maintaining animal habitats, and protecting trees.

- When asked what matters to them regarding the proposed flood barriers, riverfront residents indicate that the above issues are more important to them than protection from flooding.

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

- Most survey respondents lived in Bowness during the 2013 flood. Most (74%) riverfront residents state their property was flooded in 2013.
- Although not all Bowness residents were flooded in 2013, most were impacted in some way by the flood. Most riverfront were evacuated from their homes, and a large majority experienced emotional or psychological stress, and property damage that was repairable.

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

- Riverfront residents tend to believe the 2013 flood was mainly groundwater flooding (41%) or an equal mix of both types (38%).

Many riverfront residents believe the next major flood is coming in more than 20 years from now and just over one-half think it's likely they will experience major impacts.

- Two-in-five (40%) riverfront residents think the next major flood is more than 20 years away while just as many (41%) don't know.
- Over one-half (56%) of riverfront residents are inclined to think they will be greatly impacted by another major flood, and over three-quarters (77%) have prepared for one.

City of Calgary website is the preferred source of information.

- Riverfront residents are more likely to look to The City of Calgary website, their friends and/or neighbors, or to the Bowness Responsible Flood Mitigation Society 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.
- Riverfront residents have been provided the opportunity to meet one-on-one with a City of Calgary project team member.
- The City contracted Leger to conduct surveys with riverfront residents in Bowness to better understand the opinions of residents to help inform future communications and engagement.

Methodology

- Leger completed an online survey of n=73 riverfront residents.
- For the online survey, letters were sent to 130 Bowness riverfront addresses, each containing a unique password and link to the online survey. Of these, 121 addresses were inhabited, and the remaining were empty lots or under development.
- The survey ran from May 21 to June 13, 2019. Reminders to complete the online survey were sent to riverfront residents on June 3. The original field dates were extended by three days to achieve more completed interviews.
- Margin of error is not usually reported for a census survey.
- Results are not weighted.



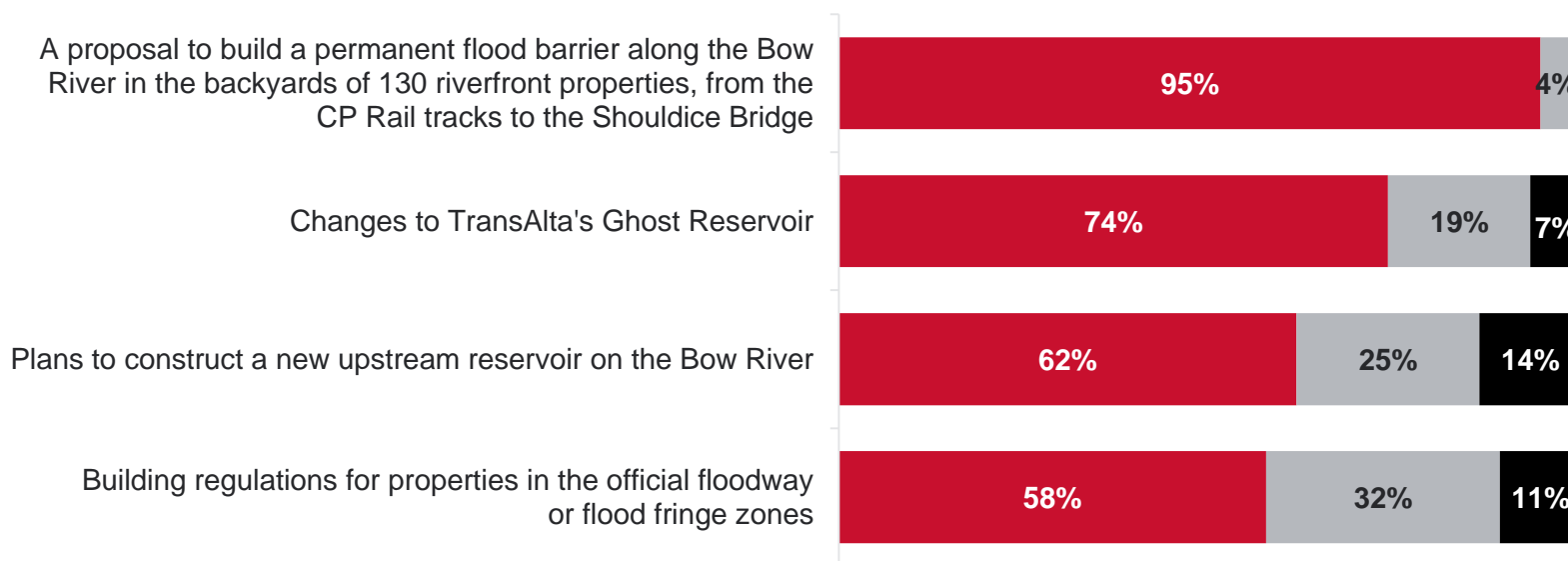
Awareness and Understanding of Flood Mitigation

Awareness of Flood Mitigation Efforts

Awareness of flood mitigation efforts is high; with over half of riverfront residents very aware of any single initiative. Residents are most keenly aware of the permanent flood barriers, with 95% 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=73)

Understanding of Proposal to Build Permanent Flood Barriers

Riverfront residents' understanding of the proposal for the permanent flood barriers is that the barriers "won't protect against groundwater flooding," and that they "have been to meetings/website and are aware of the plans."

	Aware of the proposal (n=72)
Does not address groundwater flooding	43%
I have been to meetings/website/aware of the plans	39%
They want to build barriers on residential properties	28%
I have heard enough to know that this will not protect me from flooding	25%
Residents are not happy	18%
Need to have upstream mitigation	15%
Berm will cause environmental damage	15%
Need better consultations	13%
Higher flow rates will increase groundwater flooding	10%
Work is being done/going to be done (barriers/berms)	8%
They want to cut down trees	7%
Will decrease property values	6%
Heard something/not much	3%
Nothing/not sure	10%

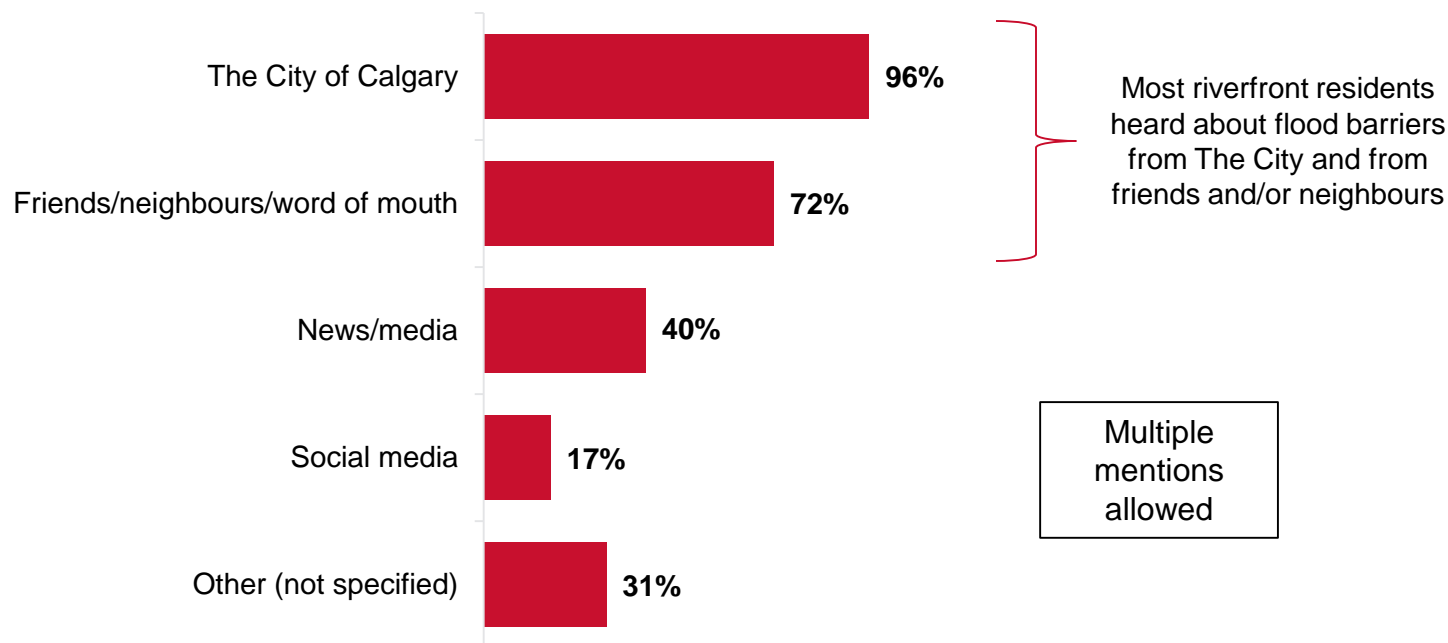
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Q. What do you know about the proposal to build permanent flood barriers in Bowness? (aware of the proposal, n=72)

Sources of Information about the Flood Barriers

When asked where they heard about the proposal for permanent flood barriers, most riverfront residents heard about the proposal from The City of Calgary.

Source of Information about Proposal for Permanent Flood Barriers in Bowness



Q. Where or from whom did you get this information? (n=72)

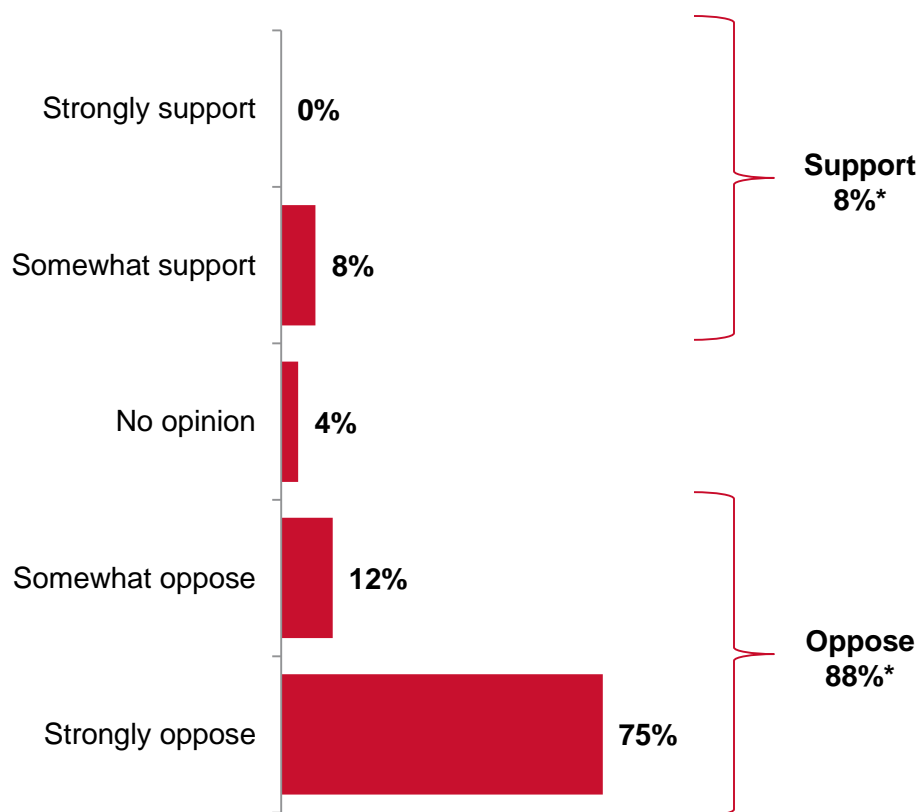


Support for Flood Barriers

Support for Permanent Flood Barriers

The majority (88%) of riverfront residents oppose having permanent flood barriers along the Bow River.

Support and Opposition of Permanent Flood Barriers



*Rounding

Q. To what extent do you support or oppose having permanent flood barriers in Bowness? (n=73)

Reasons for Opposing Permanent Flood Barriers

Riverfront residents oppose the barriers for two main reasons: the barriers will not protect against groundwater flooding and will not be effective.

Note: Only six riverfront residents reported that they support (“somewhat”) the barriers. Due to this very small sample size, their responses to this question about the reason(s) for their rating are not reported.

	<u>Oppose the barriers</u> (n=64)
Does not address groundwater flooding	53%
It will not work/solve the problem	41%
Need to have upstream mitigation	38%
Negative impact on wildlife habitat/environment	27%
Will affect property values	23%
Too costly/don't want to pay for it	16%
Will eliminate views/scenery	11%
Building barriers on residential properties	5%
Don't know enough about it	2%
Need to keep citizens safe/protected	2%
Other	16%
Don't know/not sure	5%

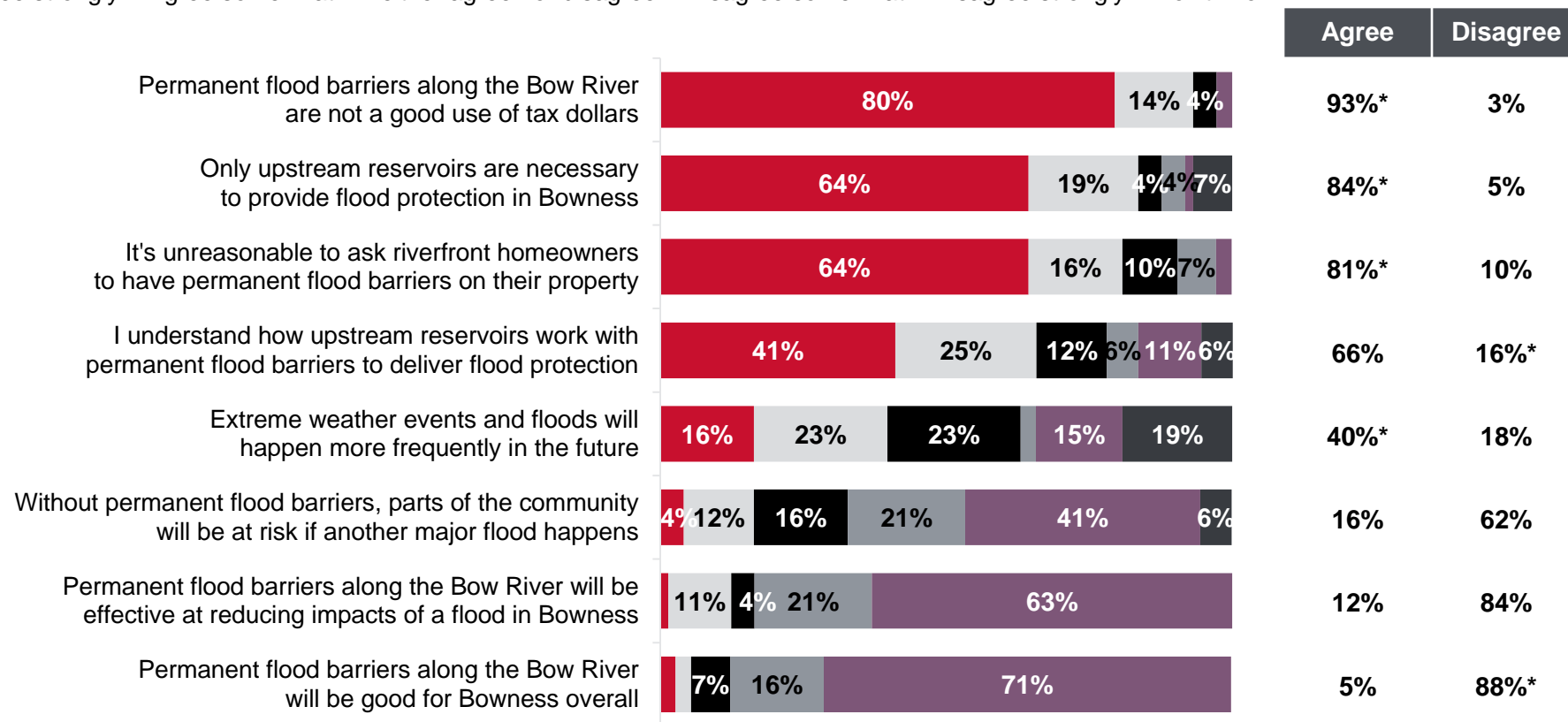
Multiple mentions allowed

Q. What is the reason for your rating (somewhat or strongly oppose)? (n=64)

Attitudes & Beliefs about the Flood Barriers

Most riverfront residents (93%) agree that the permanent flood barriers are not a good use of tax dollars. Most riverfront residents disagree that without the flood barriers, parts of the community will be at risk if another major flood happens, that permanent flood barriers along the Bow River will be effective at reducing impacts of a flood in Bowness, and that permanent flood barriers along the Bow River will be good for Bowness overall.

■ 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=73)

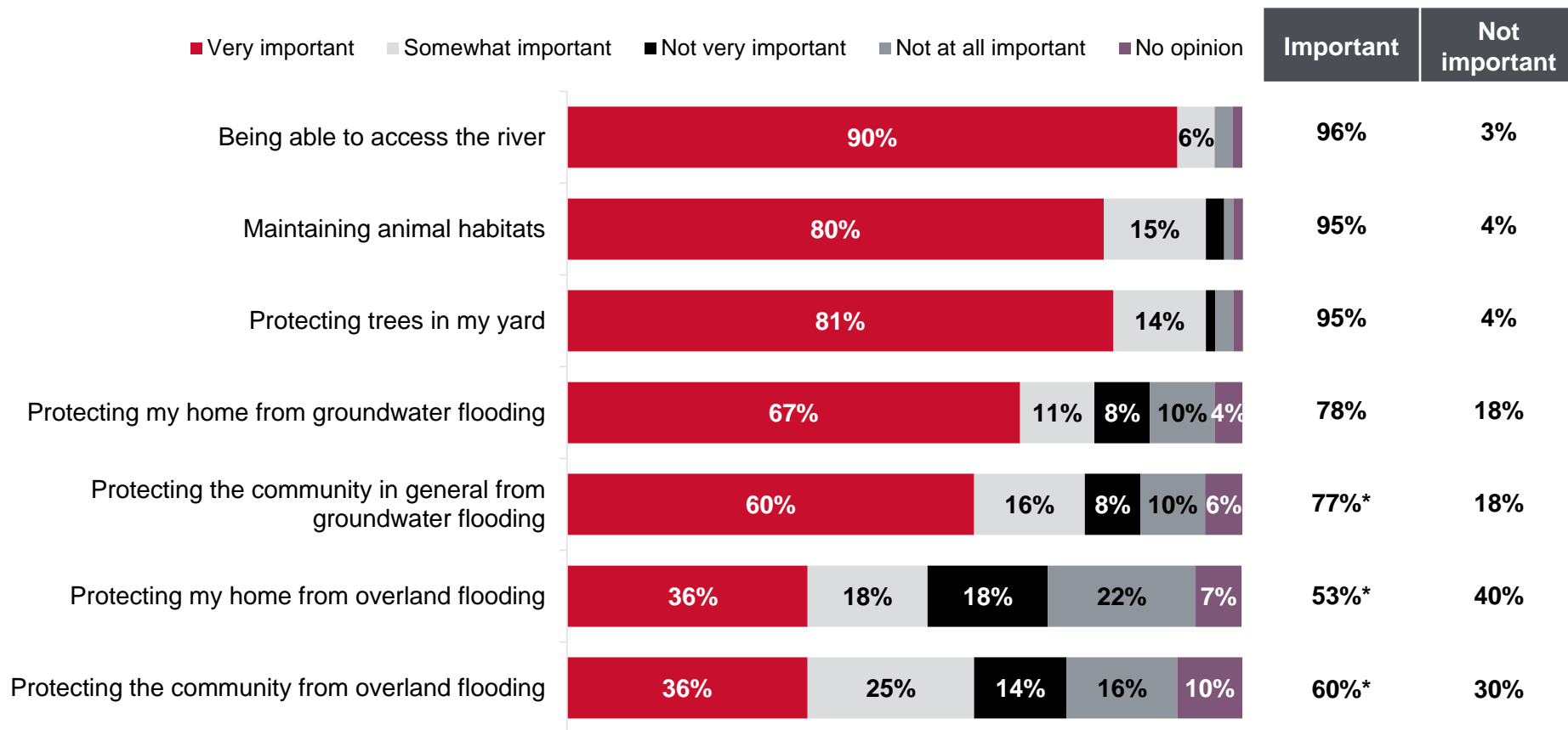
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Priorities of Riverfront Residents

Riverfront Resident Priorities

When asked what matters to them regarding the proposed flood barriers, riverfront residents indicate that access to the river, maintaining animal habitats and protecting the trees in their yard are the most important to them.



Q. To what degree is each of the following important or not important to you regarding the proposed permanent flood barriers in Bowness? (n=73)

*Rounding

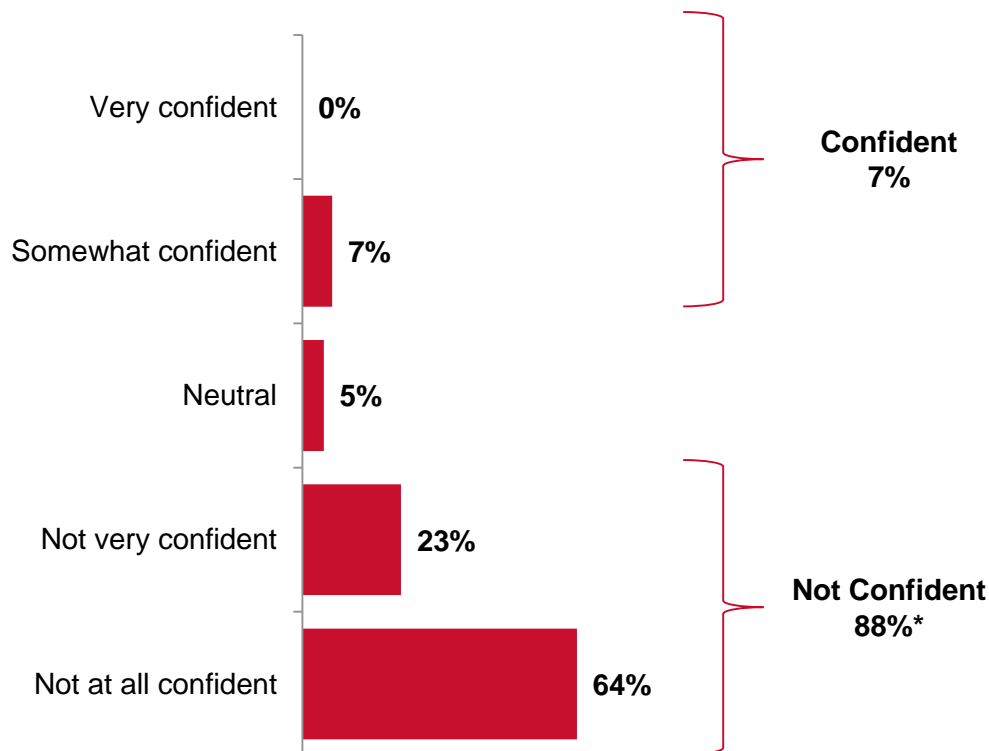


Confidence in The City

Confidence in The City to Reduce Flood Impacts

The majority of riverfront residents in Bowness (88%) are not confident that The City is taking the right steps to reduce the impacts from the next flood in Calgary.

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



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=73)



Experiences and Perceptions of Flooding in Calgary

Experience with 2013 Flood

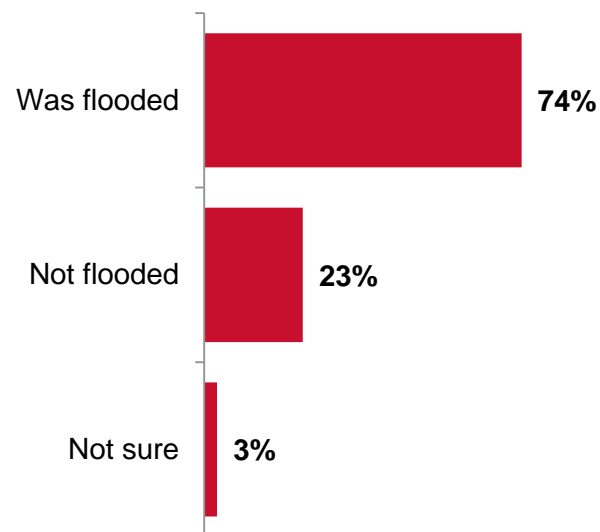
Most survey respondents lived in Bowness during the 2013 flood. Most (74%) riverfront residents state their property was flooded in 2013.

Residence During 2013 Flood

	Riverfront Residents (n=73)
Lived in Bowness during 2013 flood	82%
Yes, lived in the same residence as I do now	79%
No, lived elsewhere in Bowness	3%
Did not live in Bowness during 2013 flood	18%
No, lived elsewhere in Calgary	14%
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=73)

Current Residence: Flooded vs. Not Flooded

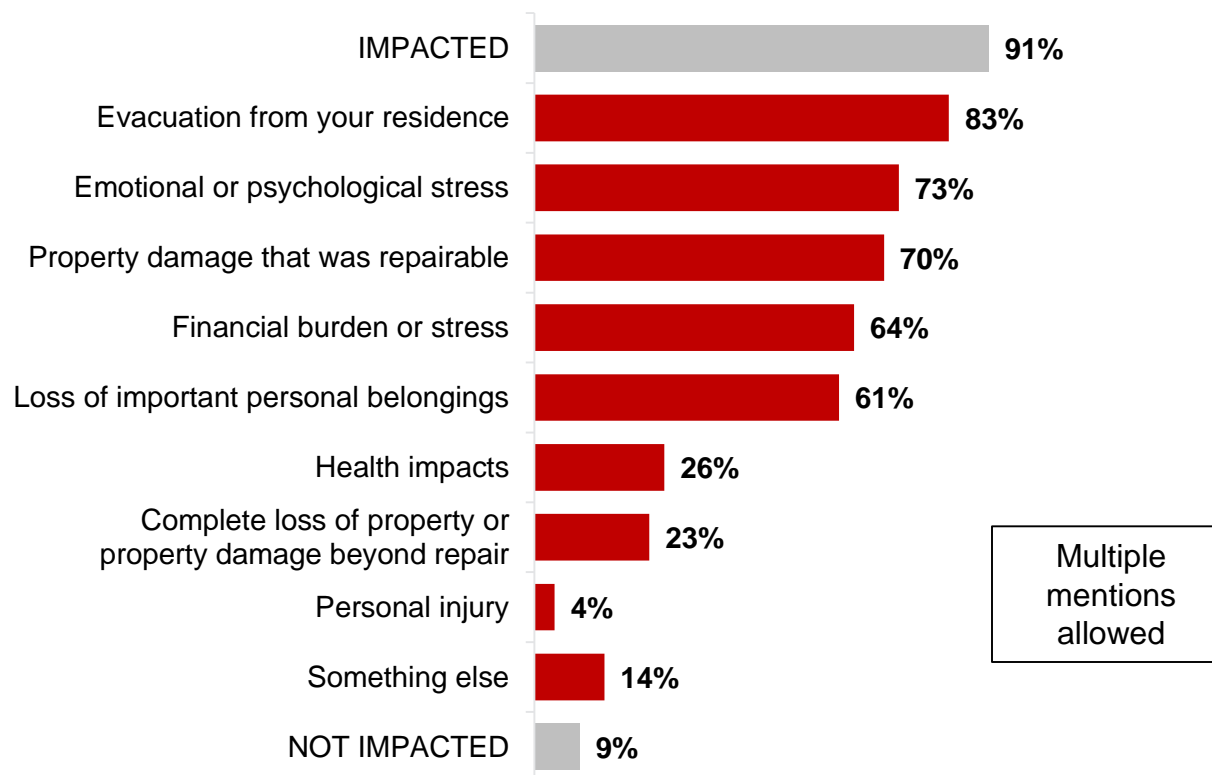


Q. Was your Bowness residence flooded during the 2013 flood? (lived in their current residence in 2013, n=60) +
Q. As far as you know, was your current property flooded during the 2013 flood? (didn't live in their current residence in 2013, n=13)

Impacts of the 2013 Flood

Although not all Bowness residents were flooded in 2013, most (91%) were impacted in some way by the flood. Most riverfront residents were evacuated from their homes, and a large majority experienced emotional or psychological stress, and property damage that was repairable.

Impacts Experienced as a Result of the 2013 Flood

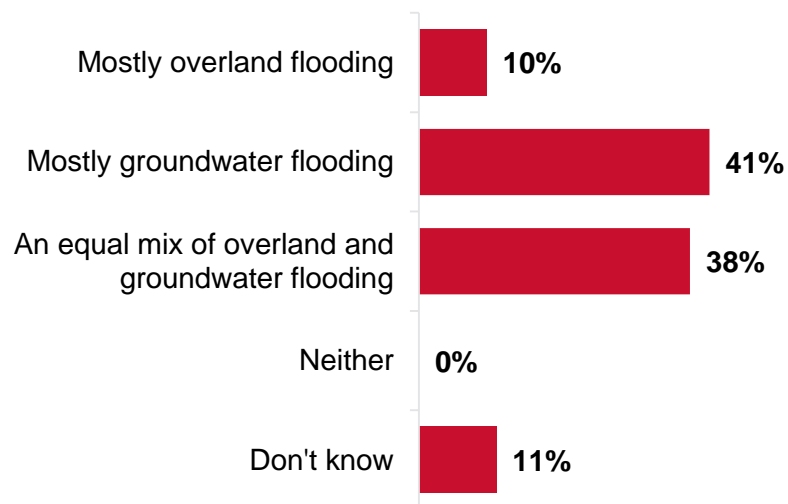


Q. Did you experience any of the following as a result of the 2013 flood? (lived in Calgary during 2013 flood, n=70)

Perceptions of the Type of Flooding in 2013

Riverfront residents tend to believe the 2013 flood was mainly groundwater flooding (41%) or an equal mix of both types (38%).

Perceptions of the Cause of Flooding in Bowness in 2013

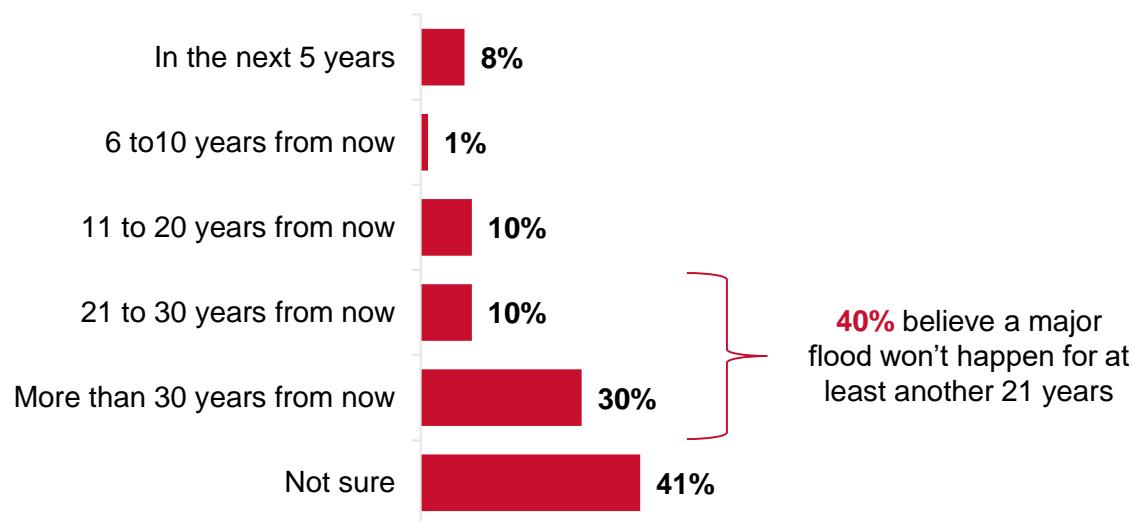


Q. Would you say the flooding in Bowness in 2013 was mainly . . . (n=73)

Predicted Timing of the Next Major Flood

Riverfront residents believe the next major flood will be at least 21 years from now, although just as many don't know.

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

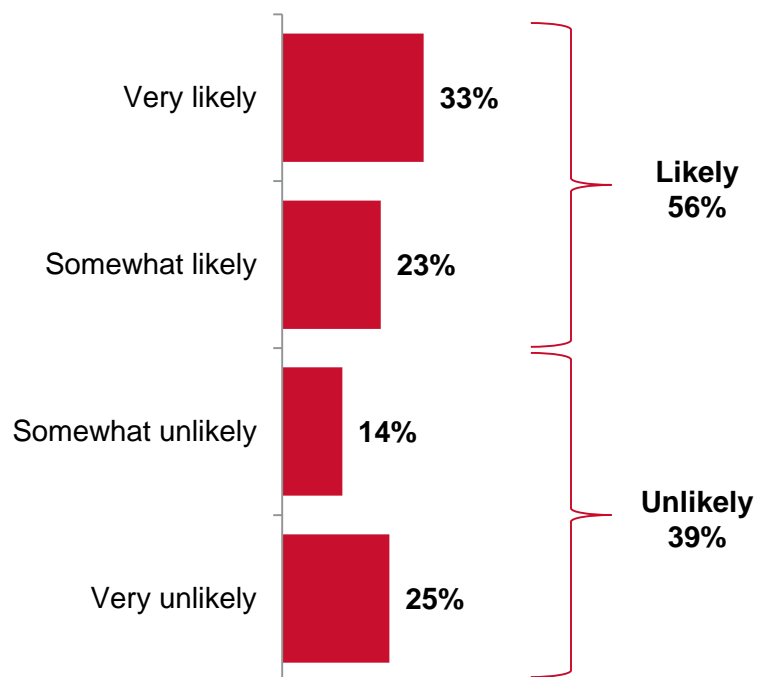


Q. When do you think Calgary is likely to have another flood like the one in 2013? Would you say . . . (n=73)

Flood Readiness

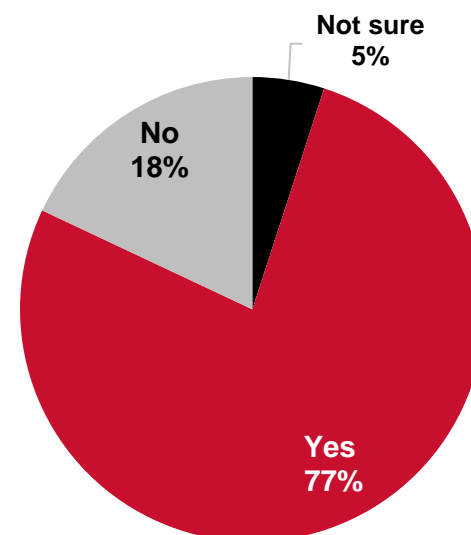
More than one-half (56%) of riverfront residents are inclined to think they will be greatly impacted by a major flood, and around three-quarters (77%) have prepared for one.

Likelihood of Experiencing Major Impacts as a Result of Another 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=73)

Prepared for a Flood Like the One in 2013



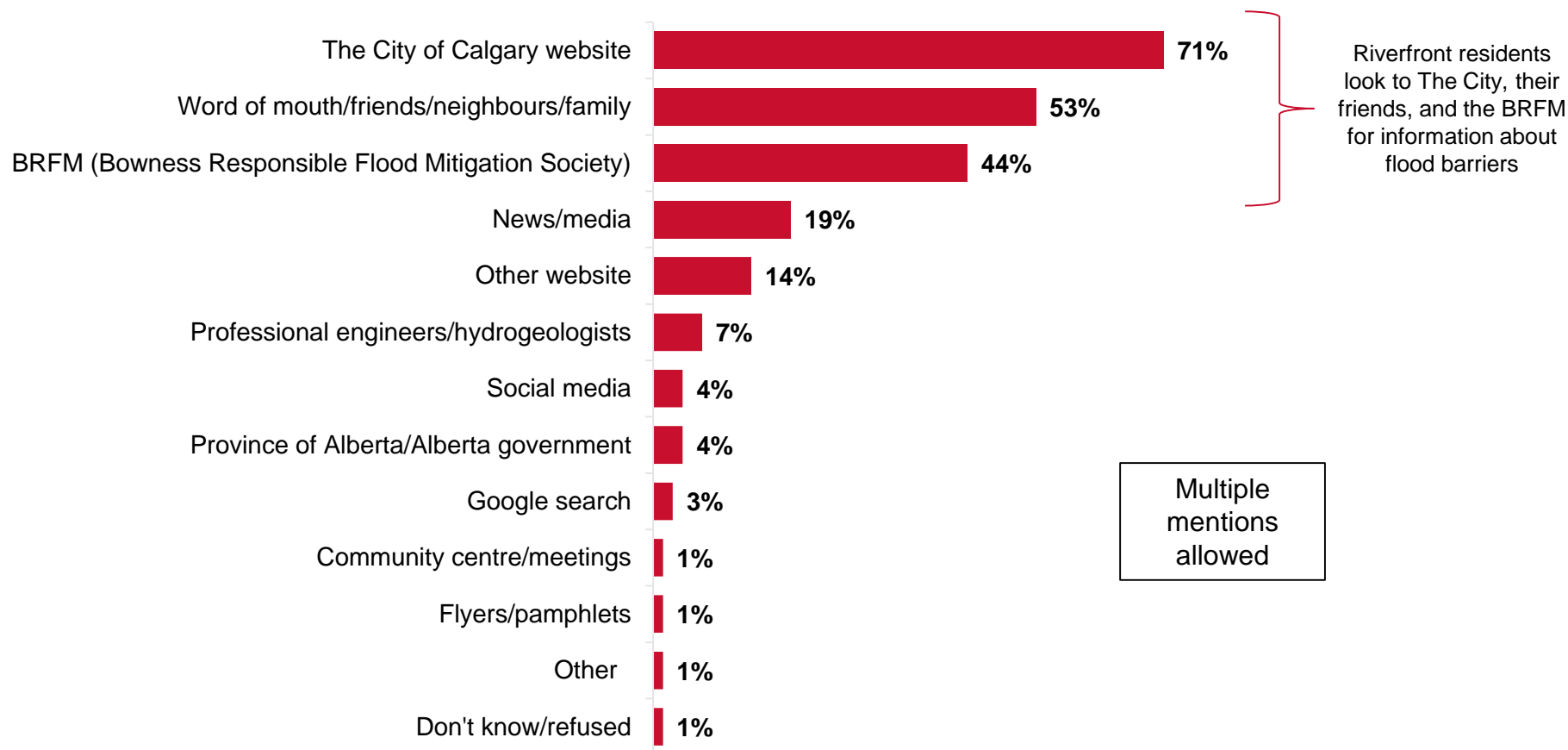
Q. Have you done anything to prepare for a major flood? (n=73)



Communication Preferences

Preferred Information Sources

Riverfront residents are more likely to look to The City of Calgary website, their friends and/or neighbors, or to the Bowness Responsible Flood Mitigation Society (BRFM) for information.



Q. Where are you most likely to look for information on permanent flood barriers in Bowness? (n=73)



Demographics

Demographics

	(n=73)
GENDER	
Male	60%
Female	34%
Other	3%
Prefer not to say	3%
AGE	
18 to 24 years	-
25 to 34 years	1%
35 to 44 years	11%
45 to 54 years	25%
55 to 64	34%
65+	27%
Prefer not to say	1%
HOME OWNERSHIP	
Own	99%
Rent	1%
Other	-

	(n=73)
HOUSEHOLD SIZE	
1	15%
2	25%
3 or more	48%
Prefer not to say	12%
Mean	3.2
CHILDREN IN HOUSEHOLD	
Yes	43%
No	57%
SENIORS IN HOUSEHOLD	
Yes	28%
No	68%
Prefer not to say	4%
TENURE IN BOWNESS	
Less than one year	1%
1-5	10%
6-10	19%
11-20	21%
21-30	16%
31-40	16%
Over 40	11%
Mean	22.2
Prefer not to say	5%

	(n=73)
EDUCATION	
High school or less	1%
Some college/trade school	-
College/trade school diploma/certificate	11%
Some university	4%
University bachelor's degree	34%
University graduate degree	45%
Prefer not to say	4%
EMPLOYMENT	
Employed	51%
Not employed outside the home	1%
Retired	37%
Prefer not to say	11%
PARTICIPATION IN ONE-ON-ONE SITE MEETING	
Yes	73%
No	22%
Prefer not to say	5%