

Flood Risk Response in Two Hudson River Cities

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Overview



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- Of all natural hazards, flooding is the most costly—nationally and in New York State.
- Many Hudson River Estuary communities face growing flood risks from changing precipitation and from sea level rise, which raises river levels.
- To manage flooding effectively, it is crucial to understand residents' awareness and responses.

Overview



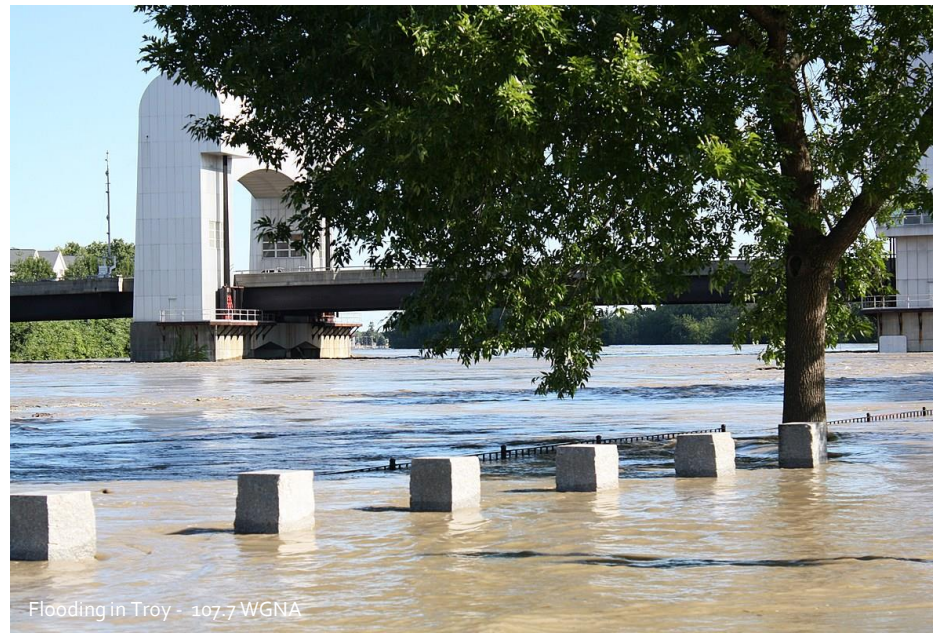
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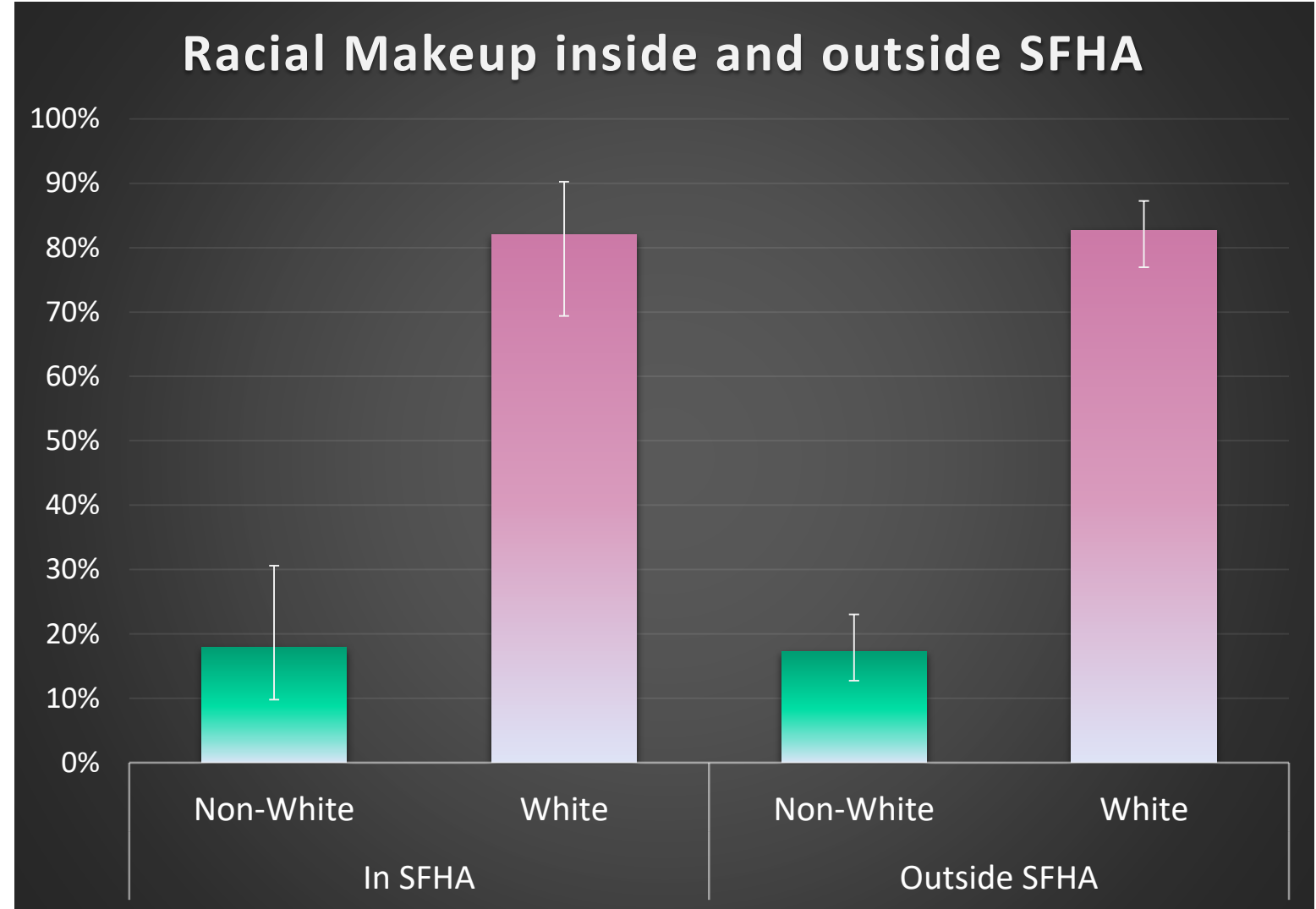
- In the summer of 2020, we sent surveys to households in Kingston and Troy to assess flood risk perceptions and protective actions.
- We analyzed responses from 499 households to examine patterns of flood risk awareness and response. This presentation highlights the results of the survey.

Demographic Patterns



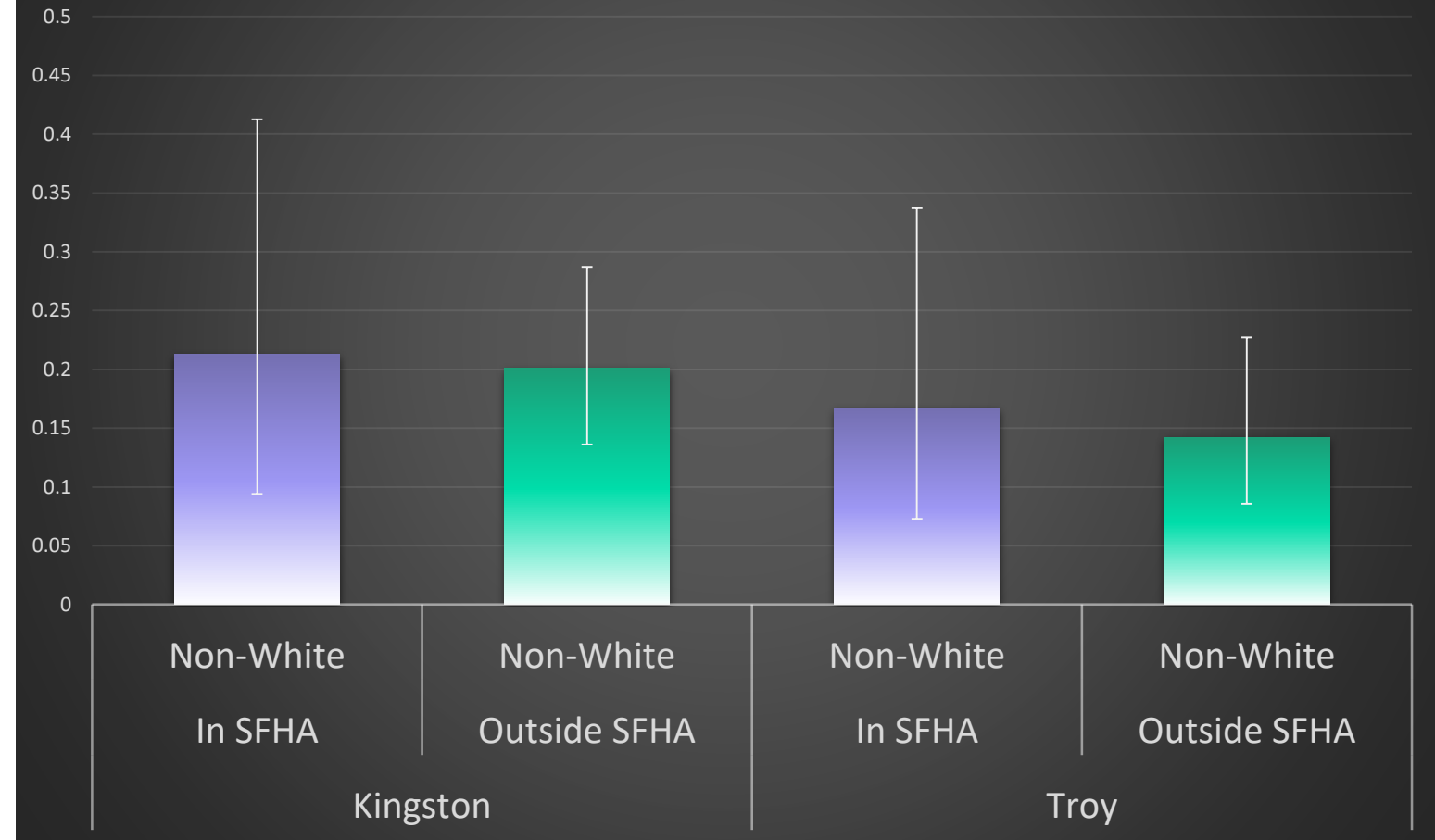
- We begin with information on how demographic attributes relate to flood risk indicated by residence in the Special Flood Hazard Area (or 1% annual flood risk zone) defined by FEMA.
- We focus on racial identification, income, and homeownership.

Racial composition does not differ markedly within and outside SFHA. Based on past studies, we had expected to see larger non-White population at risk of flooding.

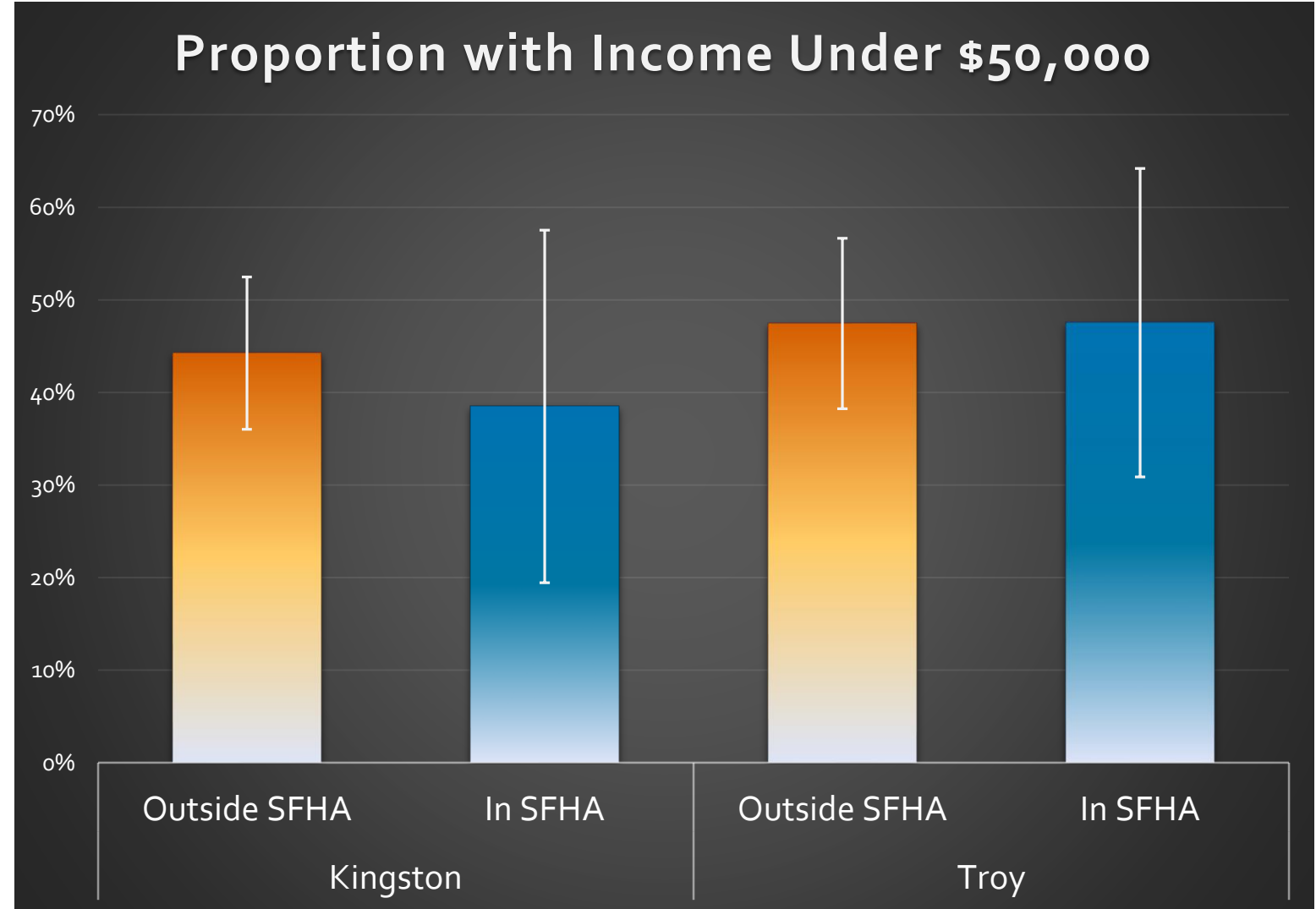


In our sample, Kingston has a slightly larger proportion of non-white respondents

Proportion Not Identifying as White Only, by SFHA and City

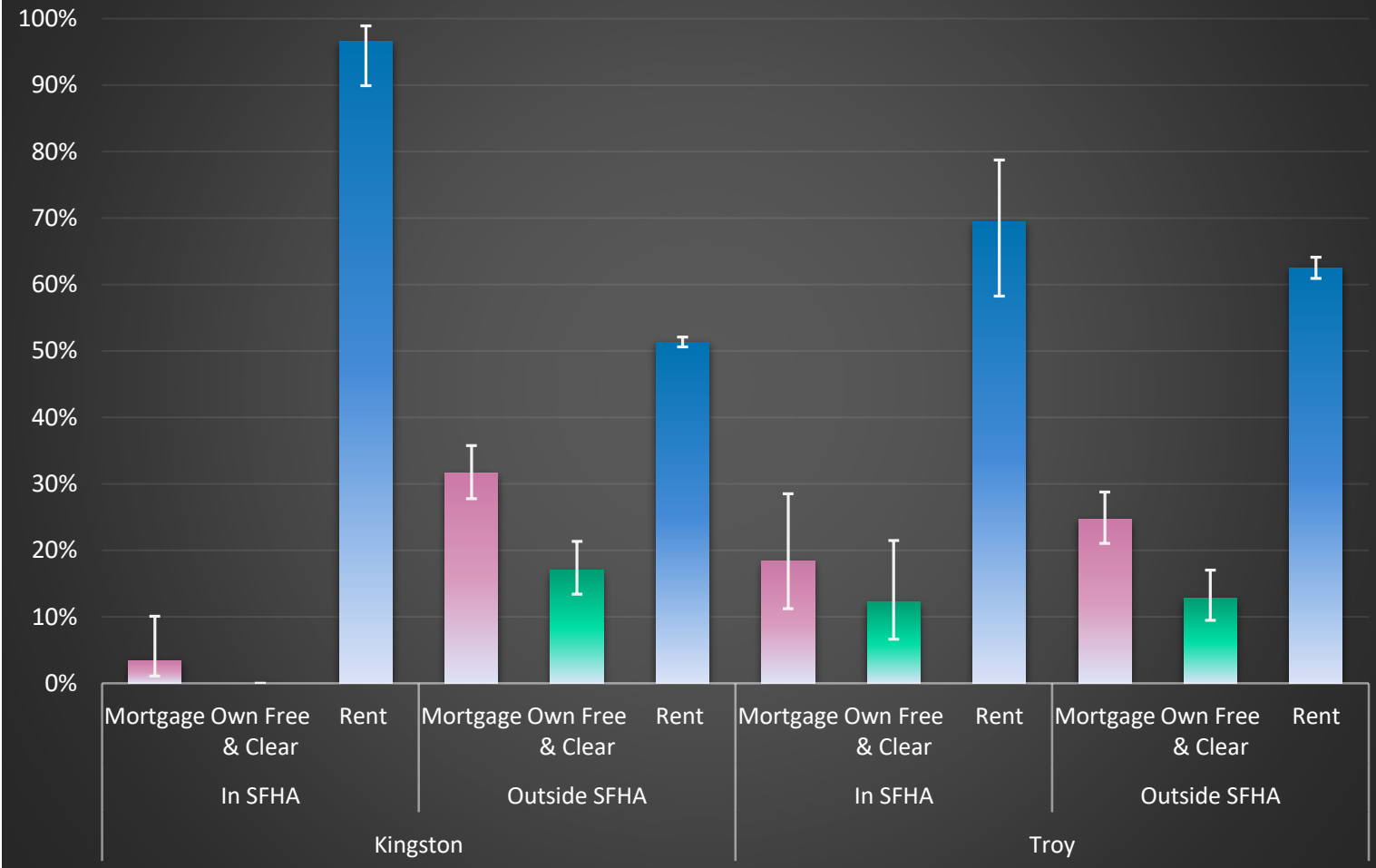


Income levels do not differ significantly inside and outside the SFHA.



In Kingston, renters predominate. In Troy, 2/3 renters and 1/3 homeowners.

Homeownership by SFHA Status



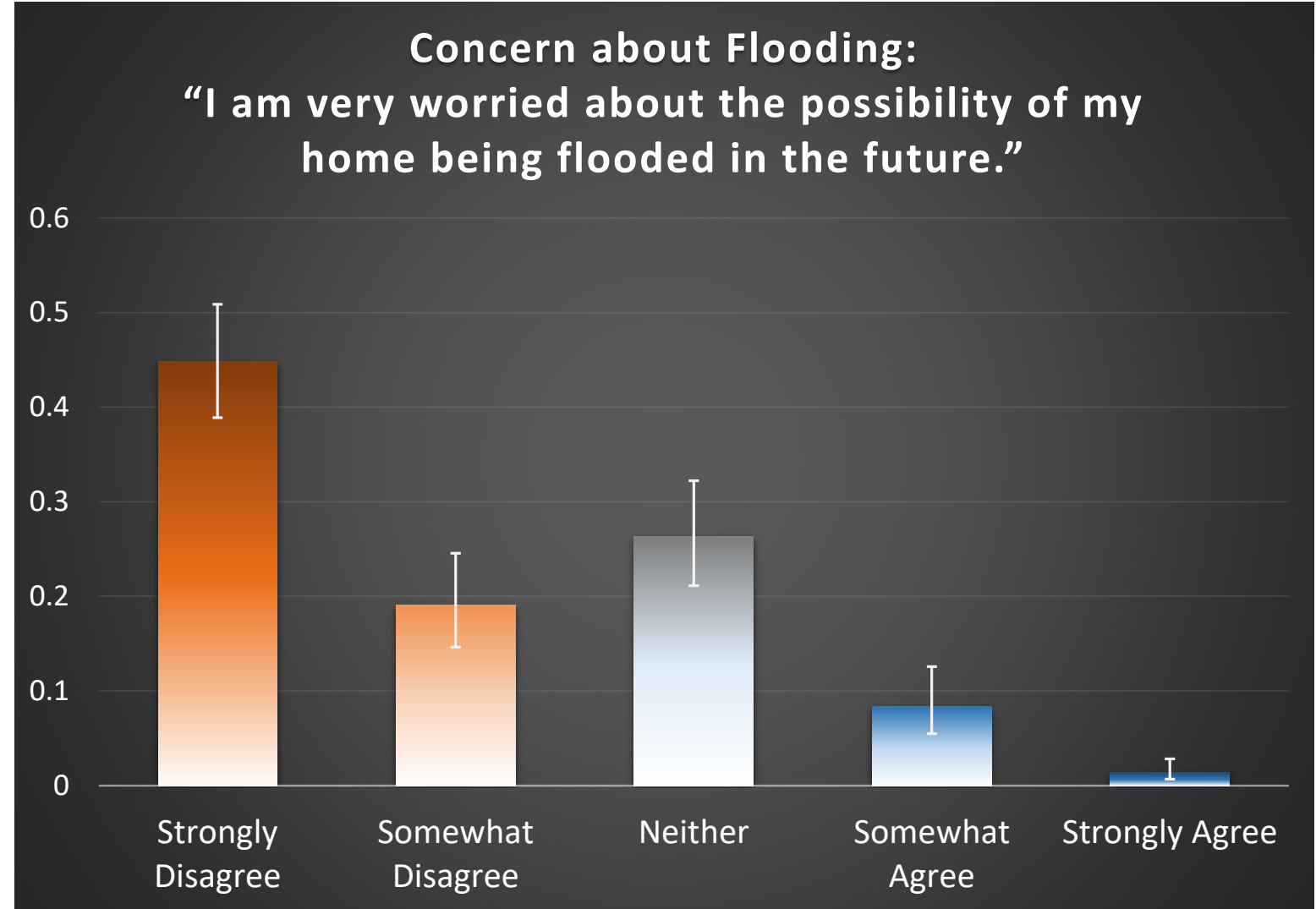
Flood Concern

- We measured concern by asking respondents to rate their level of agreement with the statement, “I am very worried about the possibility of my home being flooded in the future.”
- In general, not many people are concerned about flooding – regardless of being in a Special Flood Hazard Area (SFHA) or not.
- Among SFHA residents, non-White respondents express more concern.



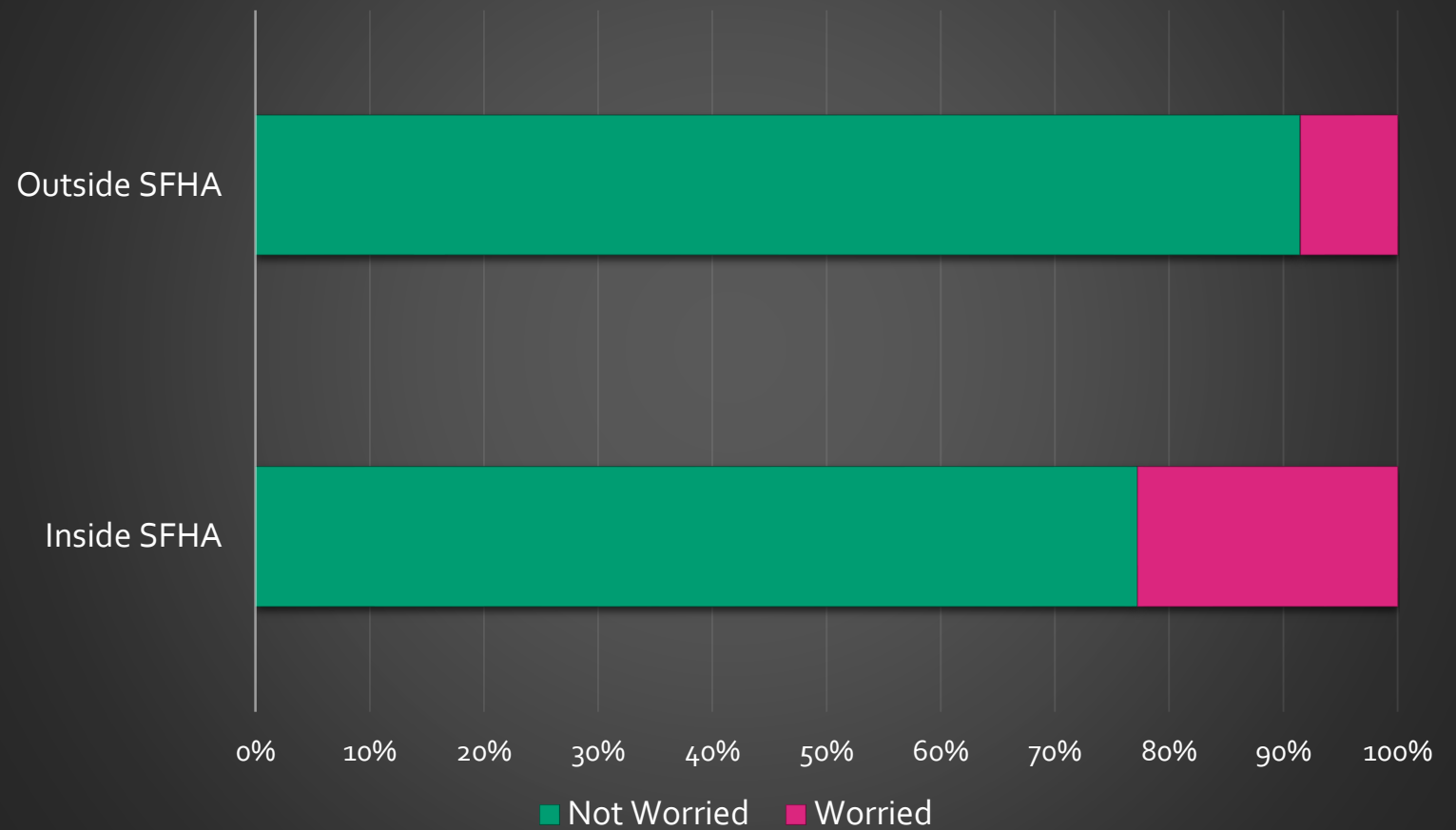
Community members mapping flood experiences at Kingston's Flood Resilience Task Force kick-off meeting (Poughkeepsie Journal)

Most people are not concerned about flooding.

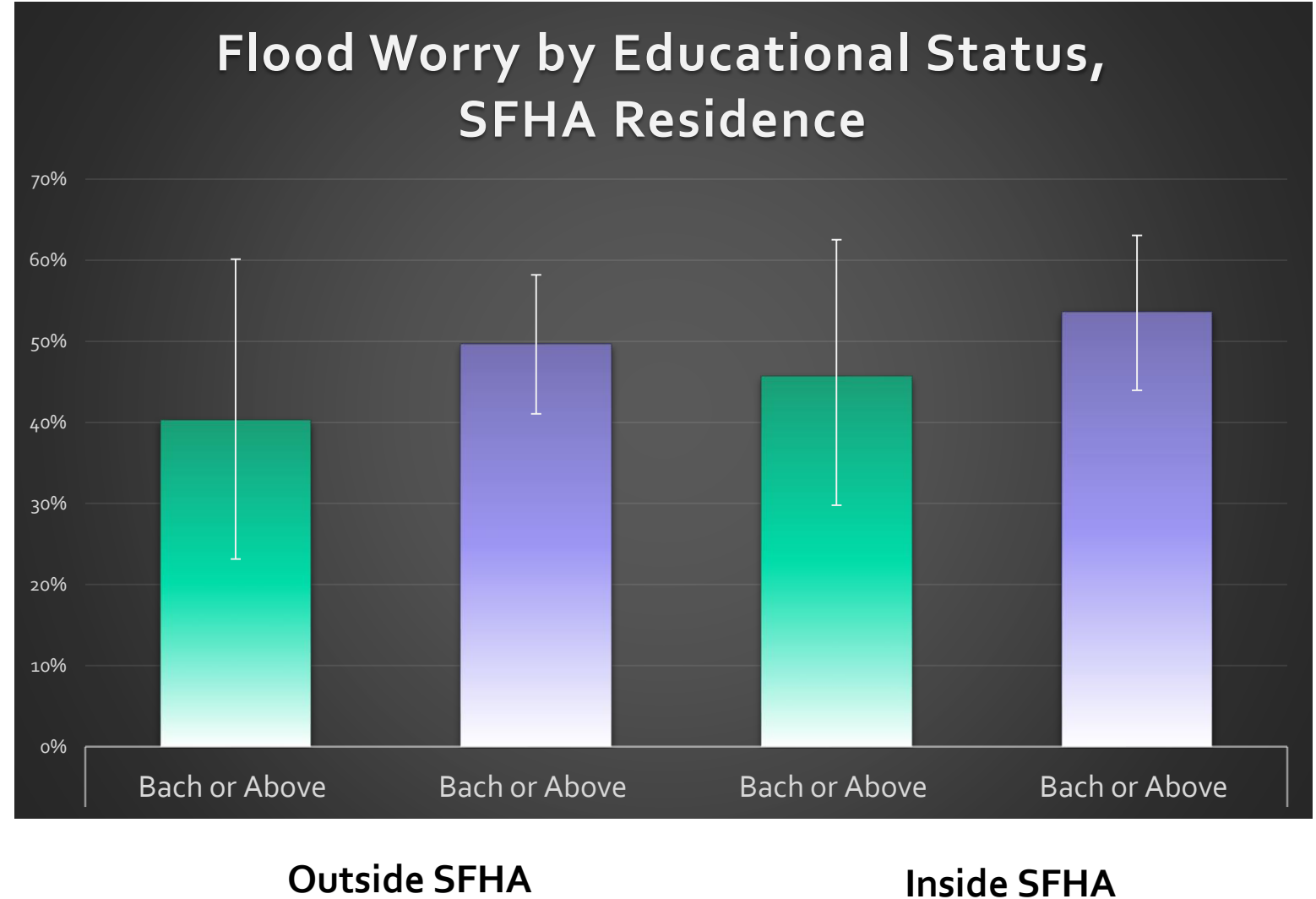


Concern is higher among flood zone residents, but not very high.

Flood Concern by Residence in or out of the Special Flood Hazard Zone



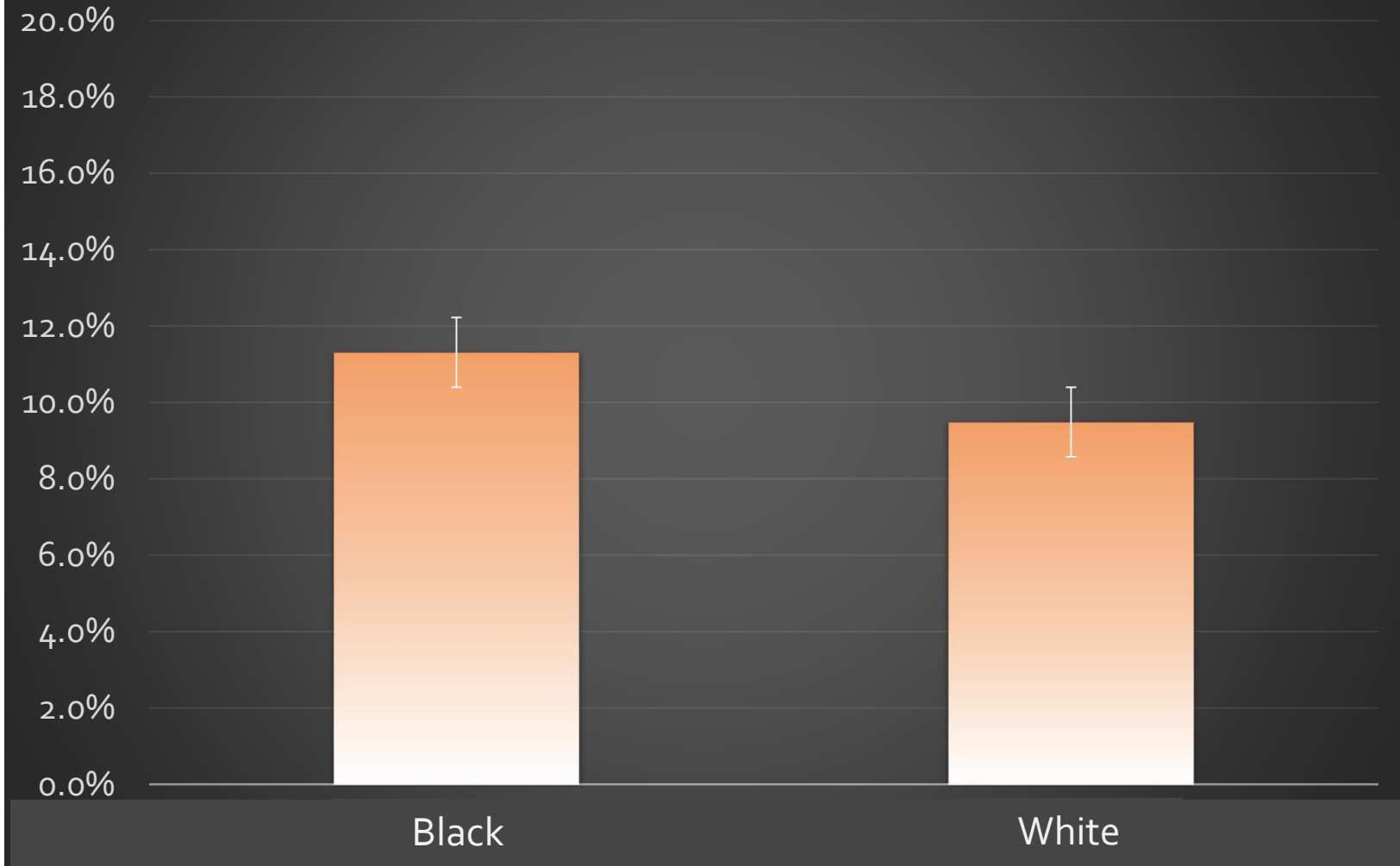
People outside the SFHA, regardless of educational status, are less likely to be worried by future flooding



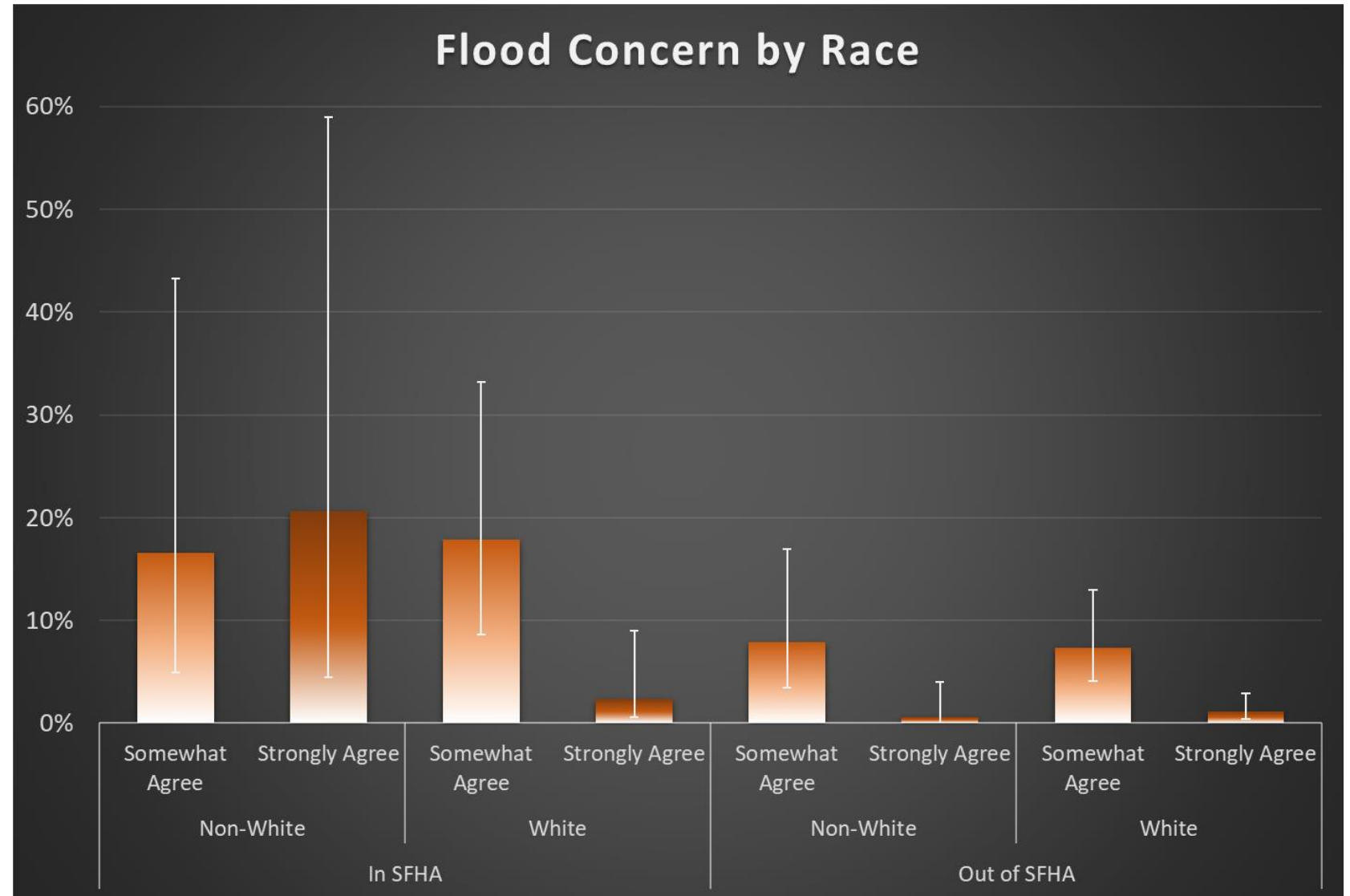
People identifying as Black are more likely to indicate concern about flooding than those identifying as White

Note: sample sizes for Latinx/Hispanic and other groups were too small to yield reliable results.

Flood Concern by Racial Identification



Racial gaps in flood concern reflect differences among people within SFHA



Preparedness Measures



- We provided respondents with a list of preparedness measures for flooding and asked them to indicate which ones their household had taken.

Measures we assessed

Please tell us whether or not you do the following to reduce flood risk in your household:

I pay attention to storm flood warnings.

I have attended information sessions about flooding.

I have learned where the circuit breaker panel is in order to turn off all electricity in my home.

I have informed myself about flood insurance.

I have planned what to do in case of flooding.

I have an emergency kit (e.g., radio with batteries, food, water).

I store important documents where I can find them quickly (e.g., identity card).

I moved valued items to upper rooms/out of the basement.

I store sandbags.

I bought protective barriers for the windows, doors, or basement openings of this home.

I have made other adaptations or modifications in the structure of my home or property to reduce flood risk.

My furnace is in a flood safe location.

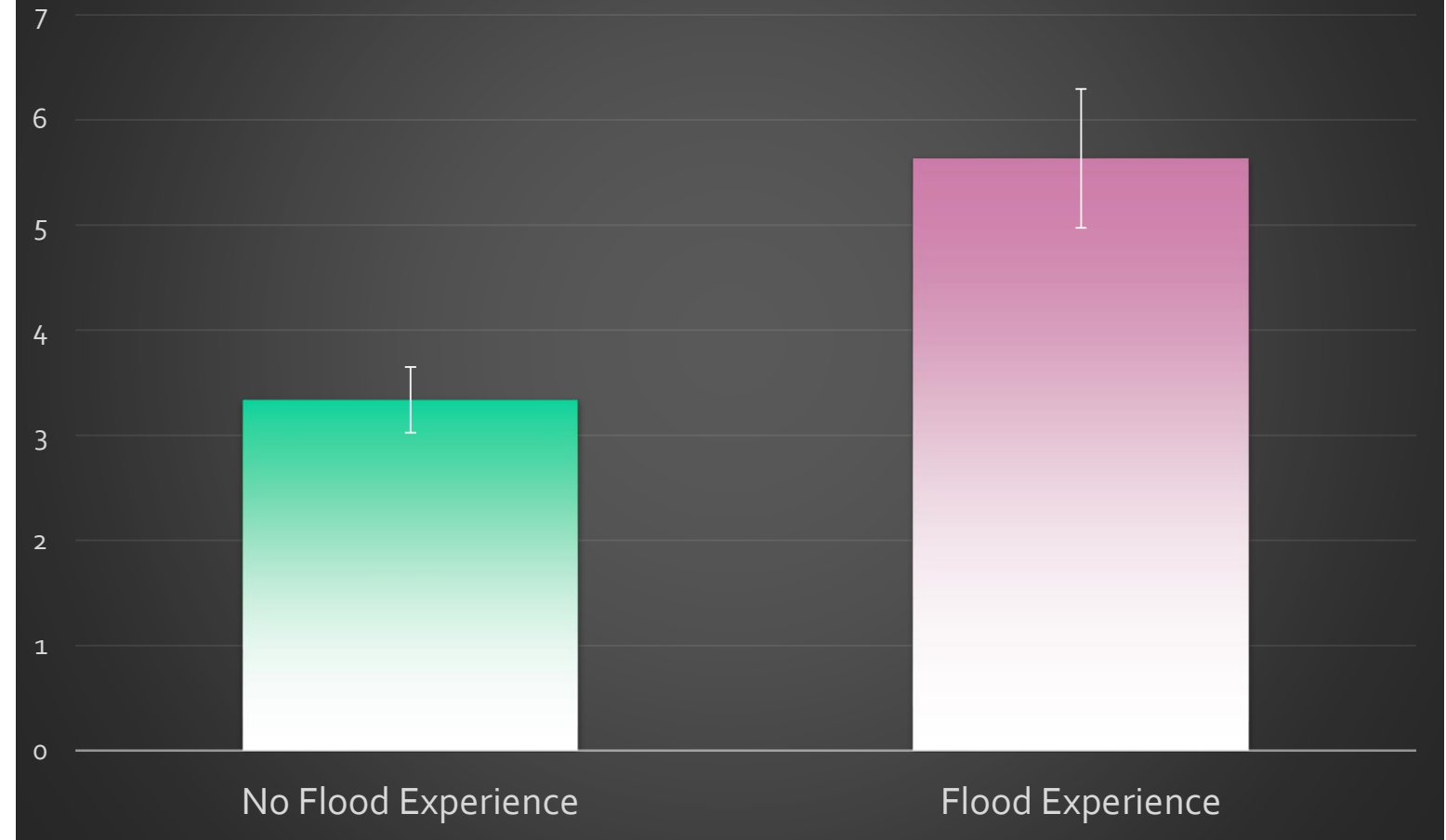
I have a sump pump.

I moved to a less risky house or apartment because of the probability of being affected by floods.

I have a plan for making sure any pet I own is safe in the event of a flood.

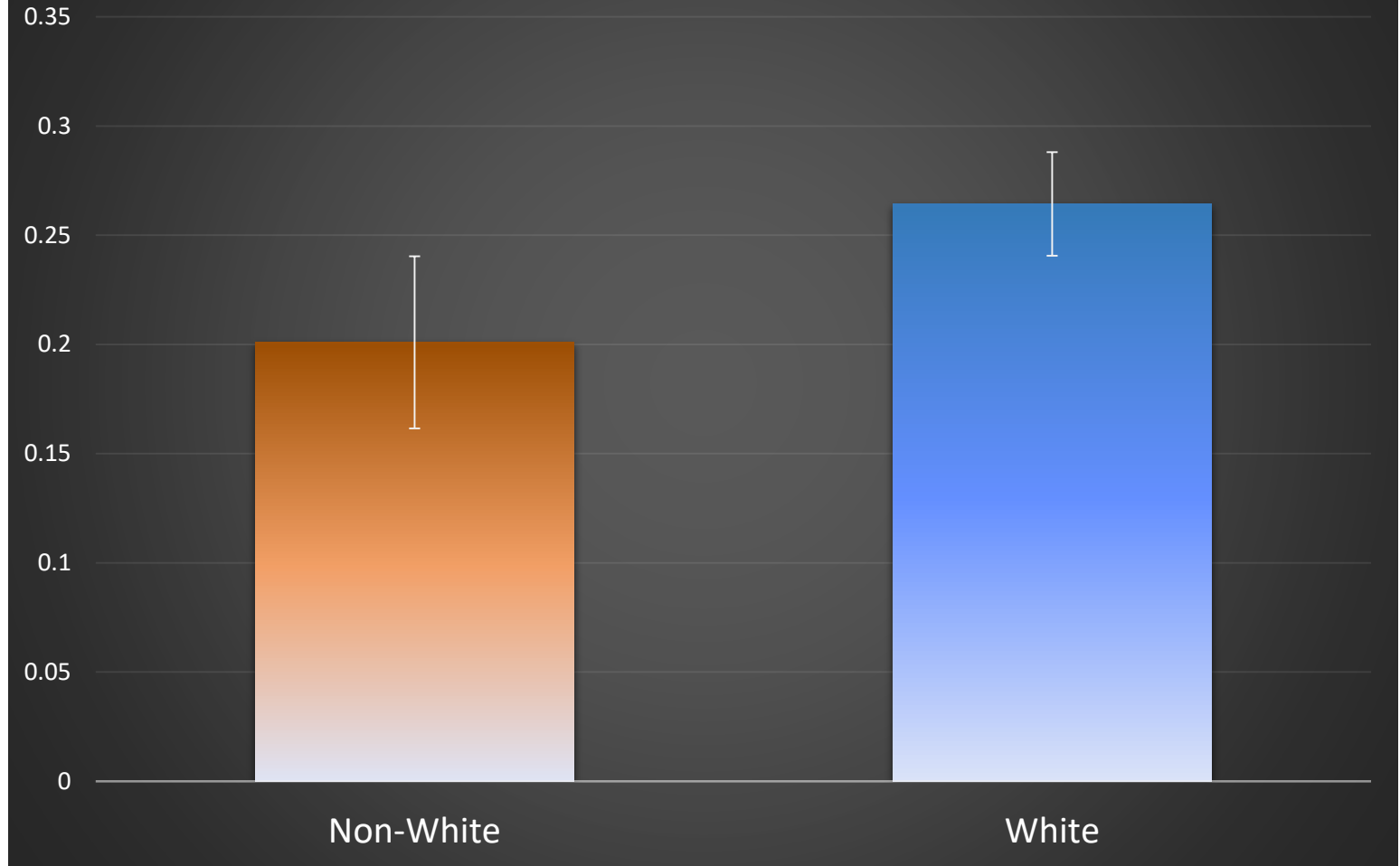
People with direct experience of flooding took more actions.

Flood Preparedness Measures by Past Flood Experience

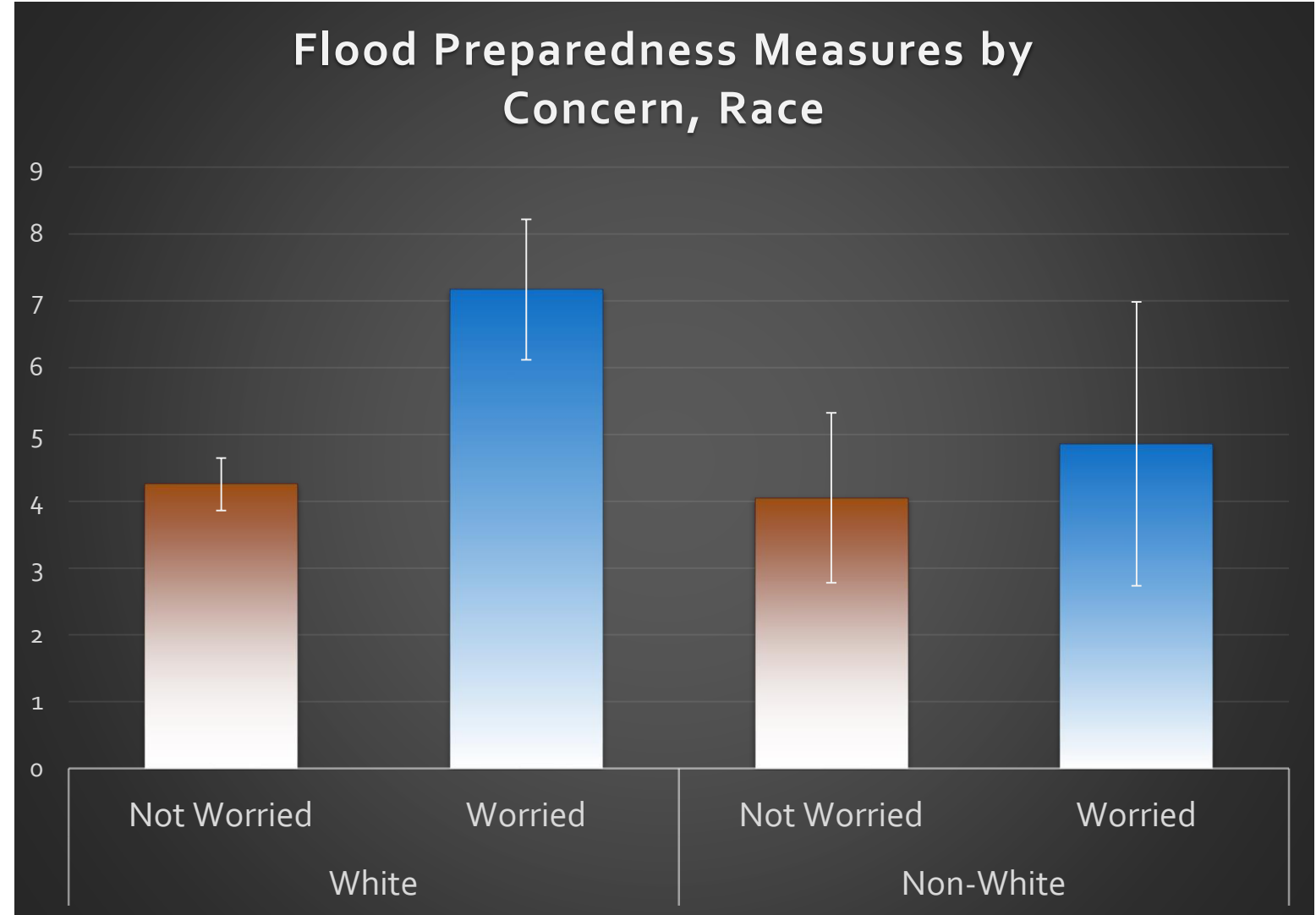


Despite lower overall concern, White respondents on average took more flood preparedness actions.

Flood Preparedness Measures by Race

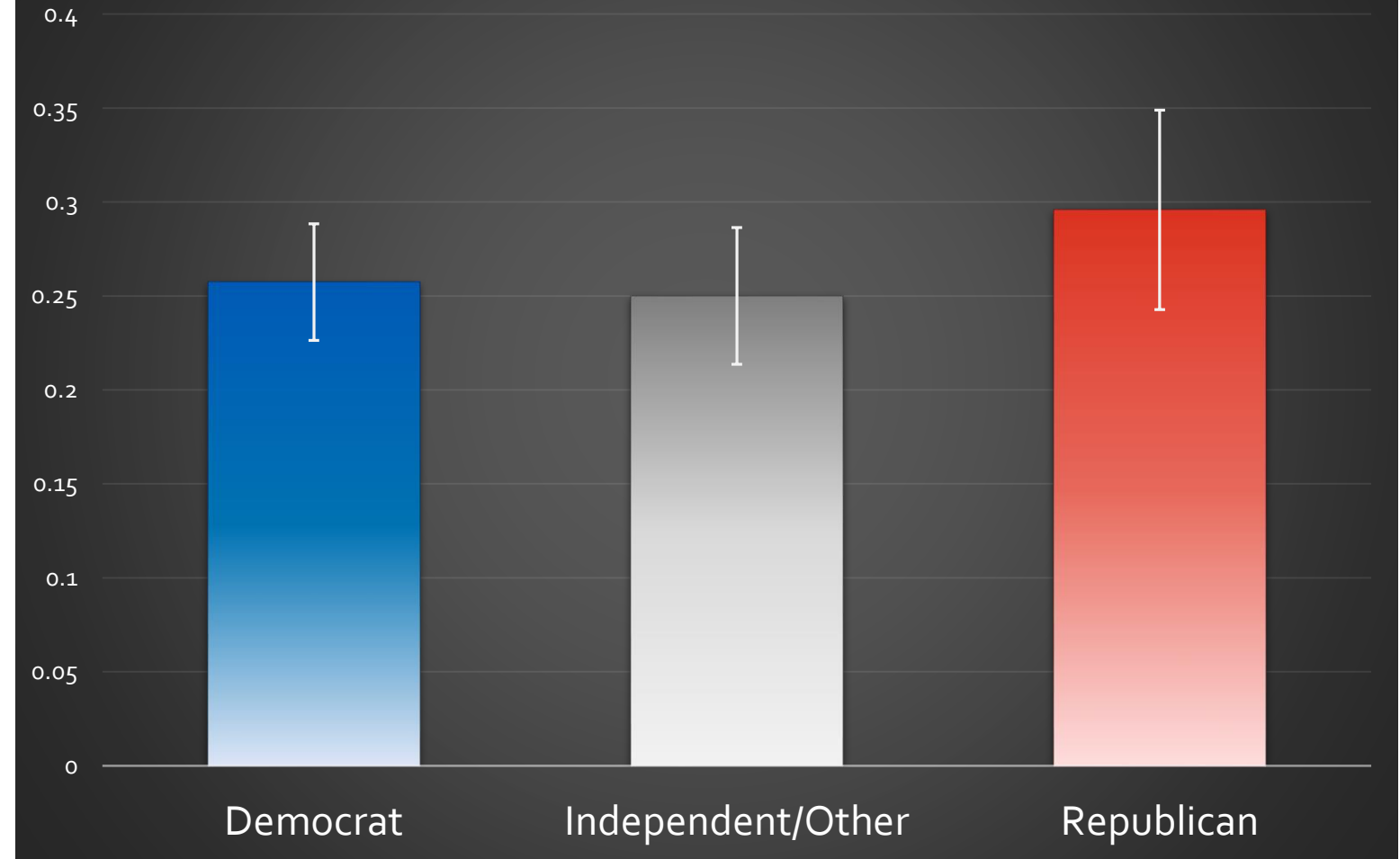


For White respondents, concern has a stronger link with protective measures than for Black respondents.



Flood preparedness is similar across political affiliations.

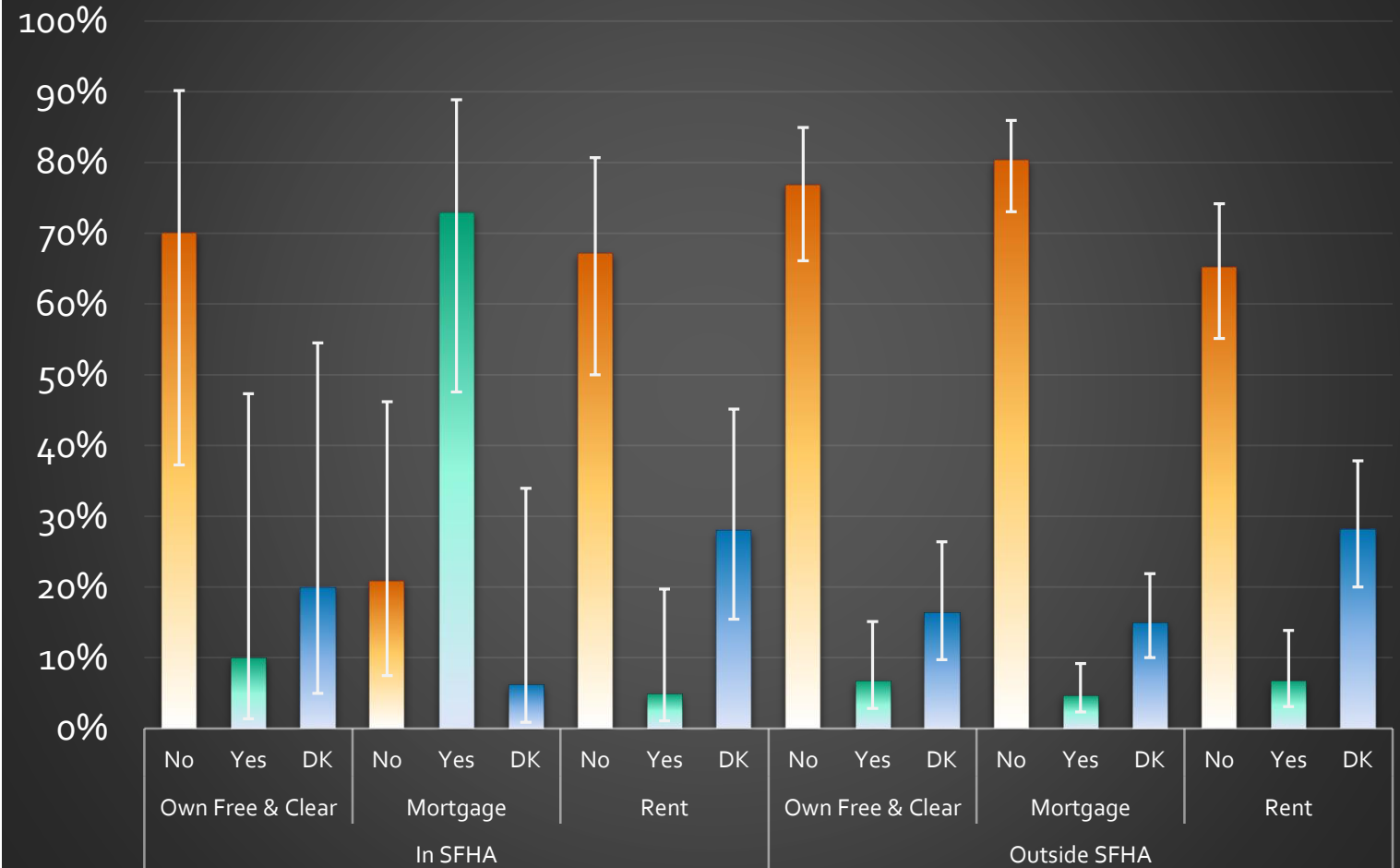
Flood Preparedness Measures by Party



Mortgage holders in the SFHA generally have policies—but 20% report that they do not!

In all other categories, 15-30% did not know whether they have flood insurance, showing that knowledge about flood insurance is not widespread.

Do you have a flood insurance policy?

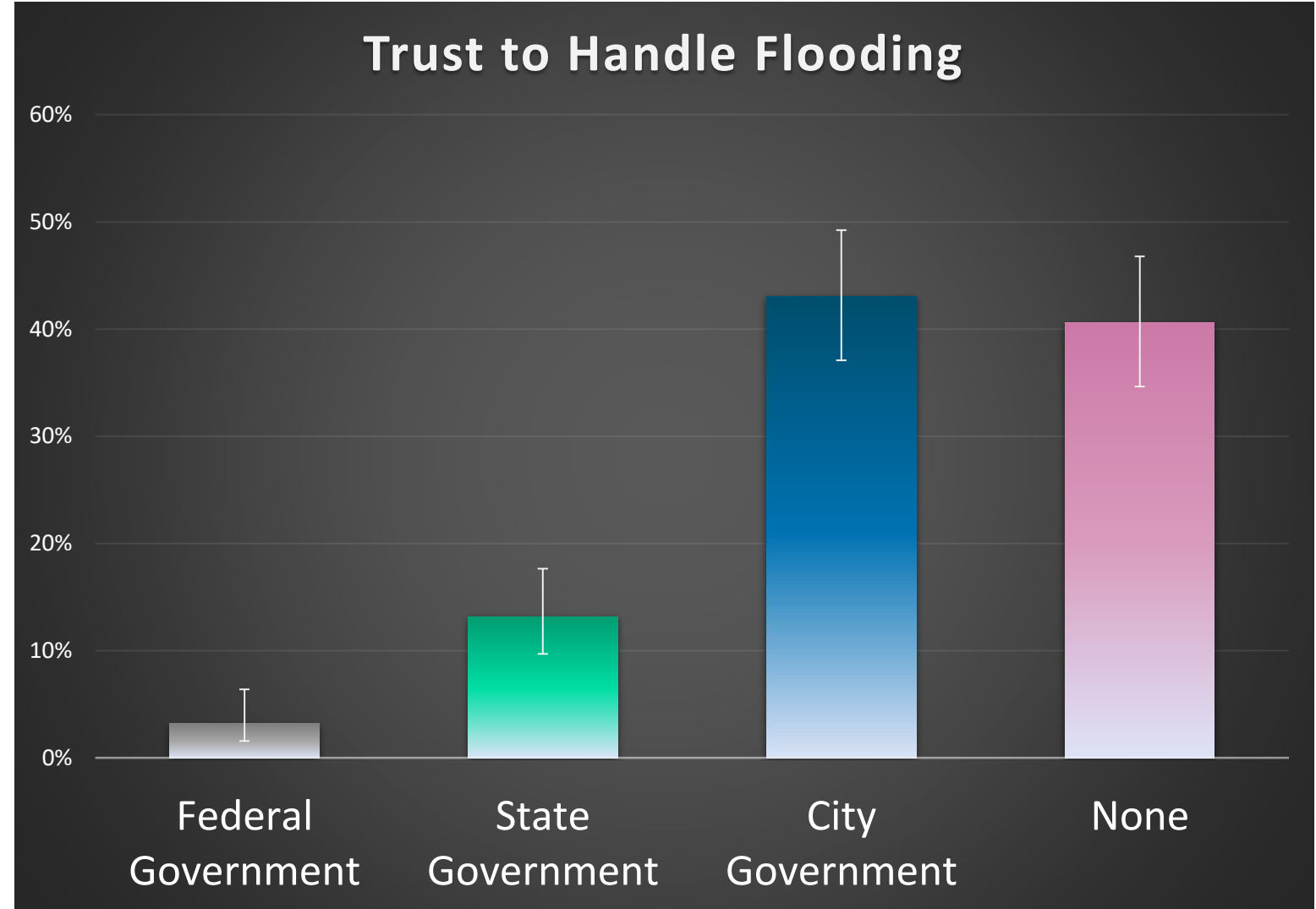


Government and Policy Preferences



- We presented respondents with brief descriptions of four flood resilience interventions currently being discussed in different circles.
- Respondents were asked to indicate their level of approval of each intervention.

Respondents trust their city government the most to handle flood issues – but 40% don't trust any government on flooding.

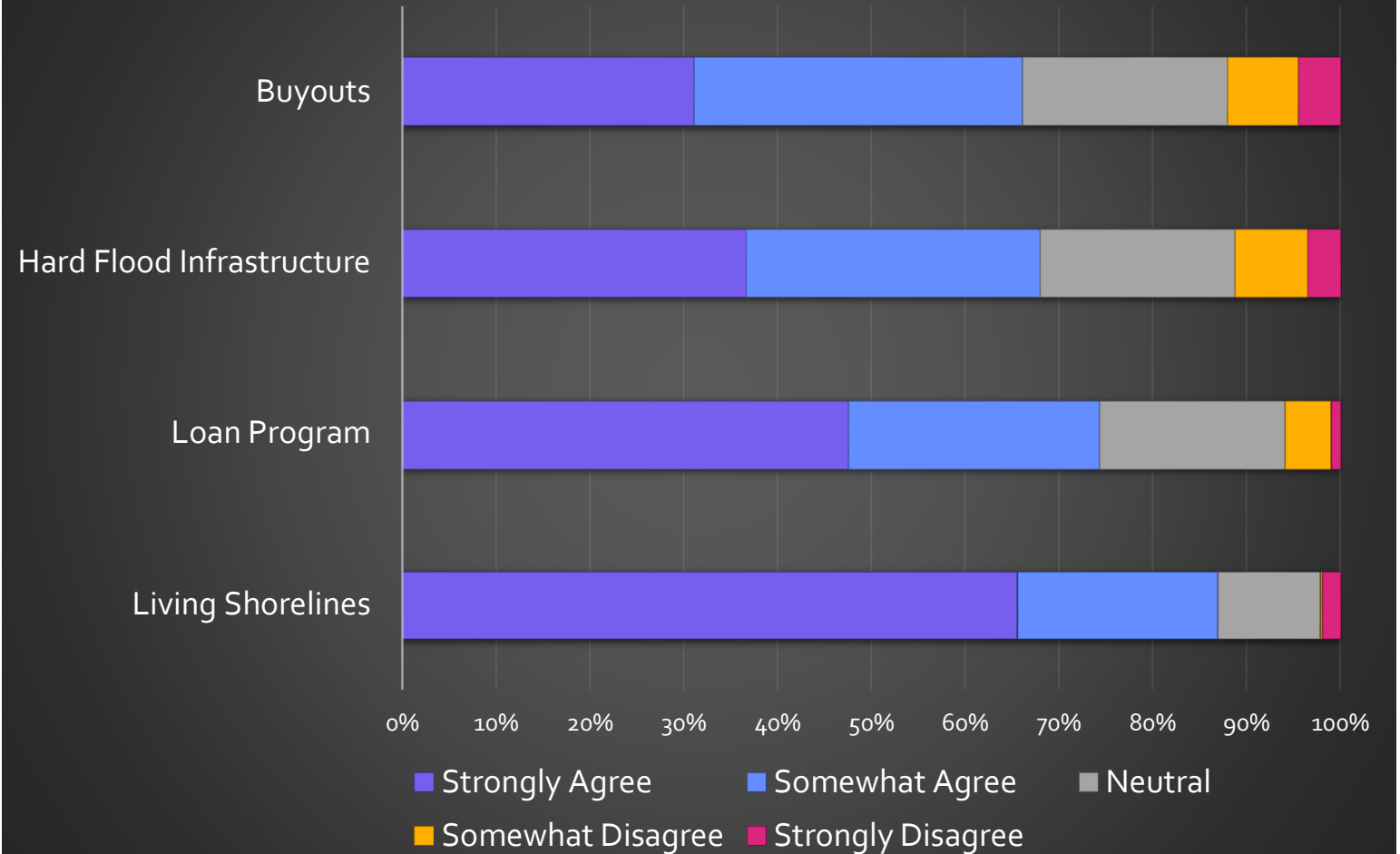


4 policy ideas were surveyed

All received support from >50%

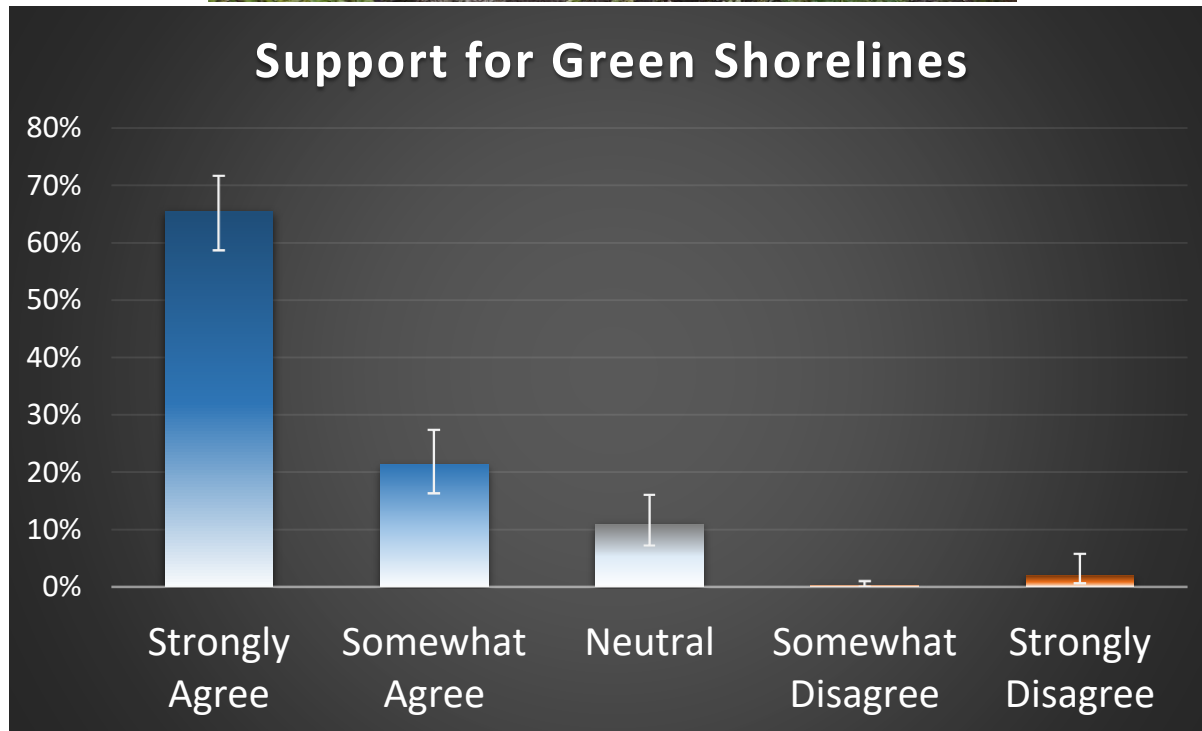
Greatest support for living shorelines

Support for Policy Interventions





Green Shoreline Example by Annette Frahm

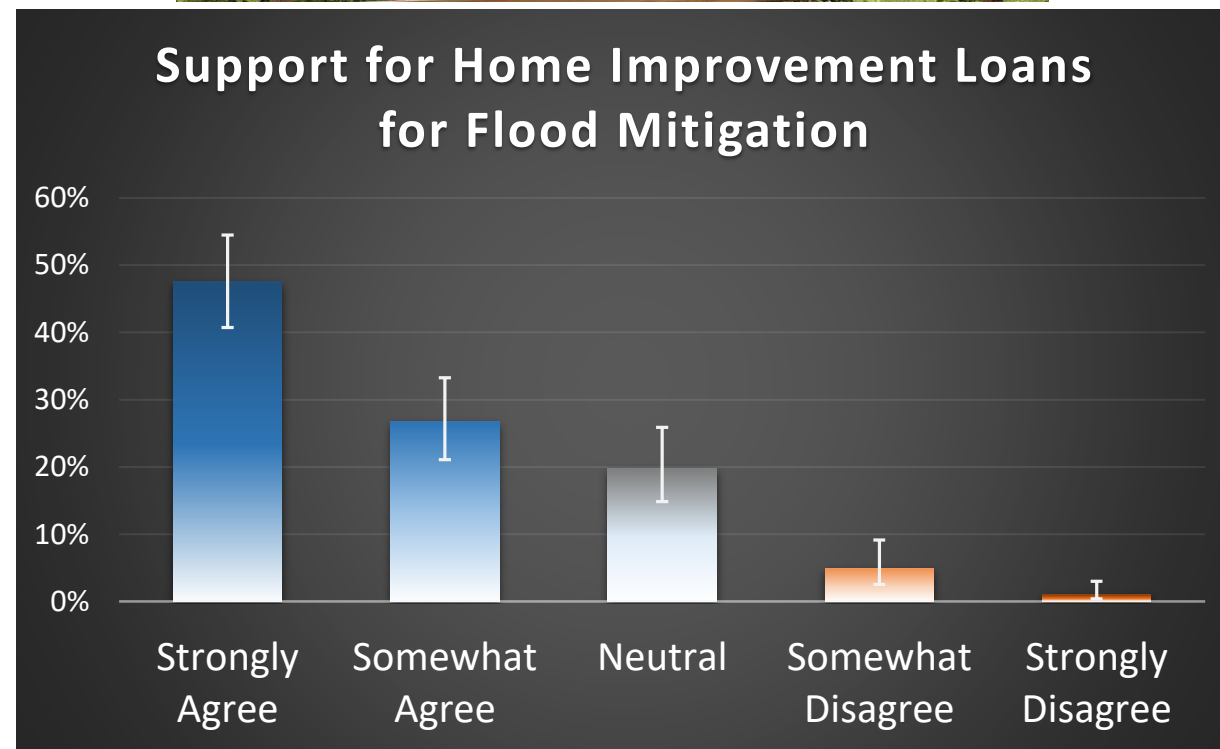


Across the sample,
an overwhelming
majority
support green
shorelines.

“The municipal government invests in “living shorelines,” which restore natural features that protect against floods and “floodable” waterfront parks that can hold flood water.”

Most support access to loans for floodproofing home improvement with flood insurance premium offsets.

“Homeowners receive low-interest loans for home-improvements that reduce risk and damage from floods, like moving utilities out of basements to places where flooding is less likely to harm them. Flood insurance premiums are reduced by an amount greater than the cost of repaying the loan.”

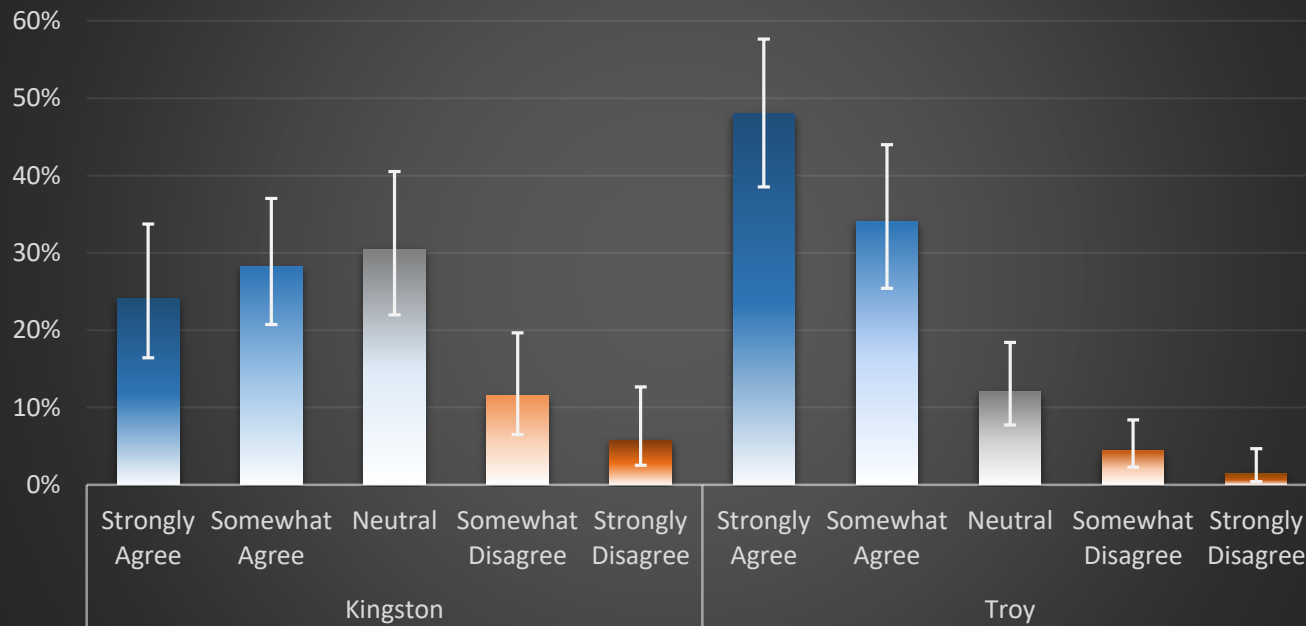




Construction of Seawall Stabilization in Troy

Support for hard infrastructure is strong in Troy, moderate in Kingston.

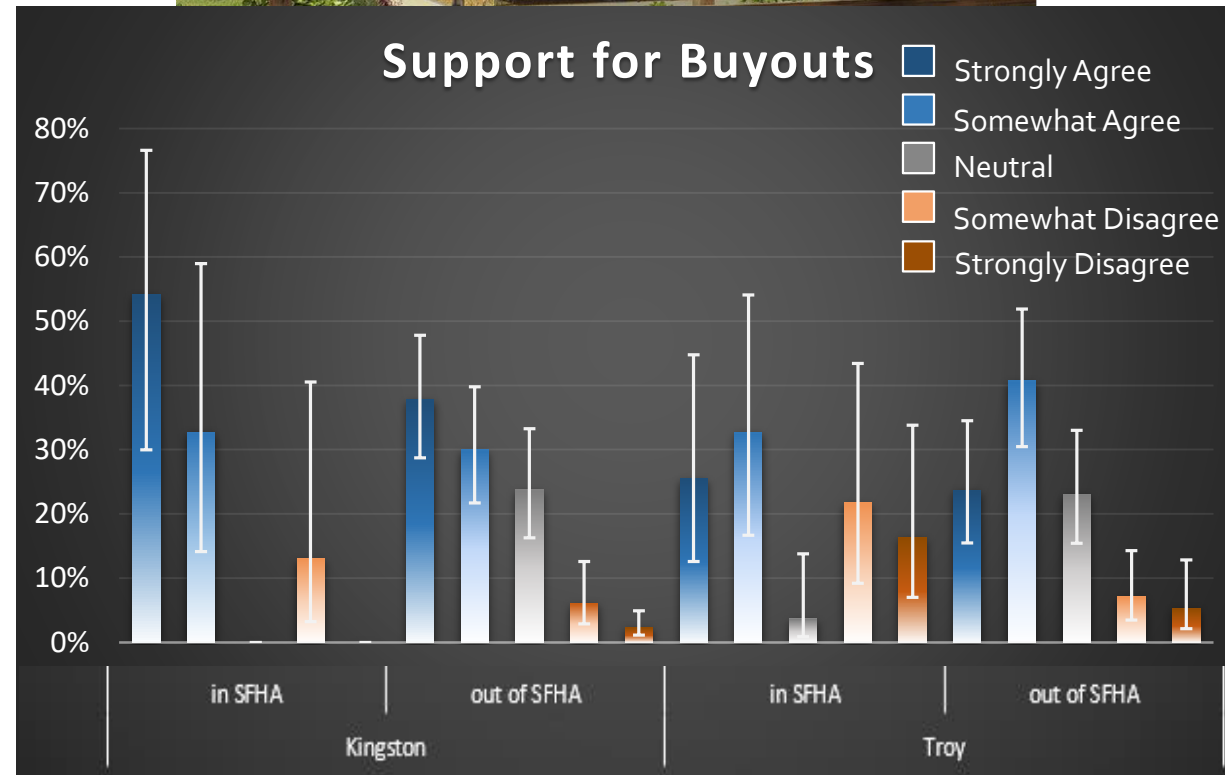
Support for Hard Flood Infrastructure



“The city invests in strengthening and extending flood protection infrastructure along the Hudson River and local waterways using concrete and stone rubble barriers.”

Support for buyouts varies: strong in Kingston, moderate outside SFHA in Troy, almost evenly split in Troy SFHA.

“With the assistance from a federal funding program, your local government offers homeowners in flood-prone areas the full market-value of their house if they agree to relocate. These homes would be demolished, and no new building would be permitted in those areas, so that the land can serve to buffer flooding.”



Implications: Targeted Outreach

- Non-White respondents express greater concern about flooding, yet White respondents take more protective measures.
- In statistical analyses, these differences hold after we control for education, income, and homeownership.
- This suggests that residents of color face specific barriers in acting on their concerns.
- It is important to learn what specific barriers exist and provide targeted outreach and support to enable all residents to protect themselves from flooding.

Implications: Beyond Experience

- People with direct experience of flooding most often take protective measures.
- Activating people who have not yet experienced a flood before the next flood happens is crucial and difficult.
- One potential way to do this is to bring community members together to learn about changing flood risks, share experiences, and work together on building resilience.

Implications: Policy Support

- Green shorelines appear to draw strong general support, though the general scenario presented may not represent concerns that could arise in practice.
- Loans for home structural improvements with insurance premium offsets are currently available from FEMA through the NFIP. It could be helpful to do outreach where appropriate.
- Views on buyouts are split. If communities pursue buyouts, a focus on equity and responsive outreach will be vital.