Envision Resilience Nantucket Challenge Survey Report

February 24, 2021

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ReMain Nantucket

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1. Executive Summary

ReMain Nantucket, the Envision Resilience Nantucket Challenge, and ACKlimate are conducting a series of two surveys to measure community attitudes toward climate change on Nantucket. This report summarizes the findings of the first survey, conducted in January 2021.

> When it comes to climate change, Nantucketers are **alarmed**.
>
> They are prepared to take **individual action**. They are supportive of actions by **government actors**, and **businesses** to prepare for impacts.
>
> They are **willing to talk to community members** about adaptation strategies and they are **interested in learning more about adapting to** climate change impacts.

The survey received 309 usable responses. Nearly 57 percent of respondents were year-round residents of Nantucket, although large numbers of respondents are part-time/seasonal residents or frequent visitors. Several responses came from individuals who live in Town (44) and Brant Point (8) – two important study areas for Envision Resilience Nantucket. Relative to the Nantucket population, the survey sample is older, higher-income, better-educated, and more female. However, while the survey sample overrepresents certain demographic groups, it does provide a useful cross-section of the island's population.

Using questions adapted from the Yale Program on Climate Change Communication, the survey found that participants are far more likely to be *alarmed* about climate change than the U.S. population, and much less likely to have attitudes described as *disengaged*, *doubtful*, or *dismissive*. Over 70 percent of respondents indicated that they are "very worried" about the impacts of climate change on the Nantucket community and most Nantucketers find it appropriate for government actors to prepare for climate change impacts.

The survey asked respondents about individual adaptation actions and found the greatest support for installing rain gardens, with most indicating that they would consider this action. The survey also found that 10.4 percent of respondents are already working to dry floodproof their homes – the highest level of any adaptation action. Nonetheless, the survey found some opposition to these actions, with more than half indicating that they are opposed to elevating their homes.

The survey also asked respondents about their level of support for actions at the local level that would reduce individuals' contributions to climate change. Four actions already see participation from more than half of respondents: conserving electricity, purchasing food grown on island gardens, conserving home heating costs, and making weekly trips by walking, biking, or public transportation. Conversely, only 4.8 percent of respondents had purchased offsets for carbon emissions and only 12.9 percent had used a green electricity supplier, although nearly 90 percent of respondents indicated a willingness to use green electricity if they are not already doing so.

Finally, the survey asked respondents for their opinions on four community actions that would proactively prepare Nantucket for the impacts of climate change. All four actions found the support of the majority of survey respondents, although the level of support varied. Over 90 percent of respondents support or strongly support the use of public rain gardens on Nantucket, but only 59 percent of respondents support raised sidewalks and neighborhoods. This lower level of support may be related to familiarity with this action; over one-third of respondents indicated that they were "not sure" about raised sidewalks and neighborhoods.

2. Introduction

EBP is assisting ReMain Nantucket, the Envision Resilience Nantucket Challenge, and the community organization ACKlimate with a series of two surveys that will measure community attitudes toward climate change and sea level rise on Nantucket. The surveys are designed to measure attitudes both before and after the completion of the Envision Resilience Nantucket Challenge, with the recognition that these attitudes are also informed by concurrent initiatives by the Town of Nantucket, its consultants, and a number of other organizations. Data from the survey will be shared with the public to provide baseline information to ReMain as well as its partners on community attitudes about climate change and sea level rise on Nantucket. By measuring community attitudes on climate change in advance of the spring 2021 design studio, and by surveying the community again later in the year after the studio and community outreach initiatives have concluded, the Envision Resilience Nantucket Challenge can analyze whether or not it reached its goal of empowering the community to think proactively about coastal resilience and sea level rise. This report summarizes the findings of the first survey, which was open from January 11 through February 1, 2021.

2.1 Survey Methodology

EBP constructed the survey instrument in the cloud-based survey platform SurveyMonkey based on instructions and input from ReMain Nantucket and ACKlimate. The final survey included 28 questions in 7 categories:

- Survey introduction/demographics
- Attitudes toward global climate change in general
- Attitudes toward climate change on Nantucket
- Individual actions to prepare for climate change proactively (i.e., adaptation)
- Local actions to reduce individual contributions to climate change
- Community actions to prepare for climate change
- Opting in to resources on climate change

The majority of these questions were developed specifically for the survey, although four questions were adapted from the Yale Program on Climate Change Communication's *Six Americas Super Short Survey*, which aims to distinguish unique groups who perceive and respond to climate change in different ways. These groups include alarmed, dismissive, concerned, cautious, disengaged, and doubtful.

The Nantucket survey was distributed in English and in Spanish and was made available by link and by QR code.

What is climate change?

Climate change refers to a long-term change in the Earth's weather patterns and average conditions — such as temperature and rainfall. As an island community, impacts of climate change on Nantucket may include sea level rise and the increased severity and frequency of coastal flooding, erosion, high wind events, precipitation events, and droughts.

Source: Envision Resilience Survey

To advertise the survey, EBP, ReMain Nantucket, and ACKlimate developed a marketing plan that included the following:

- A drawing for one of ten $25 gift cards to a local coffee shop as an incentive for survey respondents
- A widely distributed press release announcing the survey
- A two-week marketing campaign on 97.7 ACK FM
- Distribution in email lists from the Nantucket Chamber of Commerce, the Town of Nantucket, the Artists Association of Nantucket, ACKlimate, the Nantucket Land Council, the Nantucket Preservation Trust, the Nantucket Conservation Foundation, and the Linda Loring Foundation
- Social media posts, including through ACKlimate, the Town of Nantucket, the Nantucket Year-Round Community, and the *Nantucket Inquirer and Mirror*
- Presentation at the January 12 meeting of the Coastal Resilience Advisory Committee
- Flyers distributed at the Ferry Terminal, Information Bureau, coffee shops, and other locations on Nantucket

What is resilience?

Resilience is the ability of a community to prepare for potential disruptive incidents, to take them into account, to ward them off, to cope with them, to recover from them as quickly as possible, and to adapt to them more and more successfully. As an island community, resilience against the impacts of climate change are especially critical.

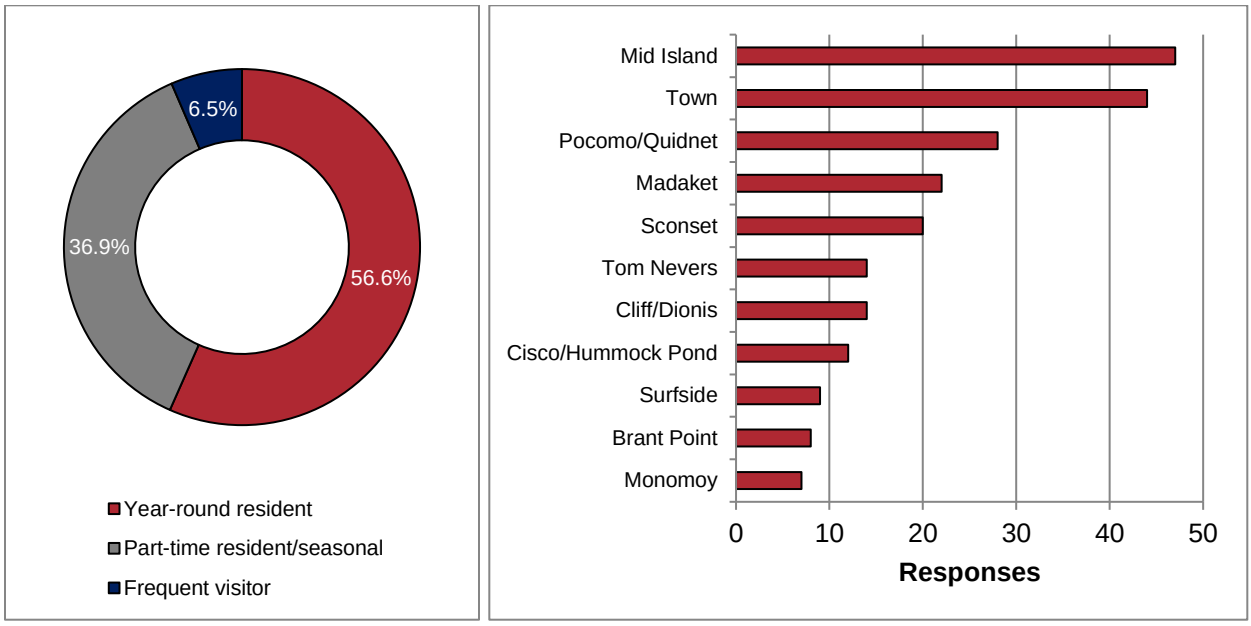
Source: EBP

Over the course of three weeks, 317 respondents had completed the survey. After the survey closed on February 1, EBP cleaned the survey results, removing answers from eight respondents who either indicated that they neither live on Nantucket nor visit the island, or left the survey incomplete. The survey cleaning left 309 usable responses.

3. Survey Respondents

Nearly fifty-seven percent of respondents are year-round residents of Nantucket, although large numbers of respondents are part-time/season residents or frequent visitors to the island (Figure 1). Of the 205 respondents who indicated what part of the island they "call home," the largest numbers live in Mid Island (47), Town (44), Pocomo/Quidnet (28), Madaket (22), and Sconset (20). Eight responses came from Brant Point – one of three study areas for Envision Resilience Nantucket, along with Town/Washington Street.

Figure 1. Respondents' relationship with Nantucket (n=309, left). The neighborhood that respondents "call home" (n=205, right)



Relative to the Nantucket population, our survey sample is older, higher-income, better-educated, and more female. Figure 2, Figure 3, Figure 4, and Figure 5 compare the demographics of survey respondents to the broader Nantucket population. One possible reason for this discrepancy is that retirees, who tend to be older and higher income, comprised 32.4 percent of our survey sample, possibly because they have more time and availability to complete surveys. Although the survey sample overrepresents certain Nantucket demographics, it does represent a diversity of populations. In addition to these demographics, the survey sample was 51 percent employed individuals, 5 percent unemployed individuals, and 1 percent students. The sample comprised 17 percent single-person households, 48 percent 2-person households, and 34 percent 3+ person households.

Thanks to the Nantucket Data Platform's Visitor Demographics dashboard, it is also possible to compare the survey sample to the demographics of typical summer visitors to the island, based on a survey of visitors in July and August 2017.[1] Figure 3 and Figure 4 present income and education levels for visitors. As with the resident population, the visitor population has generally lower incomes and lower education levels than the survey sample.

[1] Nantucket Data Platform, Visitor Demographic Visualization. Accessed 11 February 2021. https://nantucketdataplatform.com/visualizations/

Figure 2. Age of survey respondents compared to age distribution of Nantucket population (Source: American Community Survey 2015-2019 Five-Year Estimates).

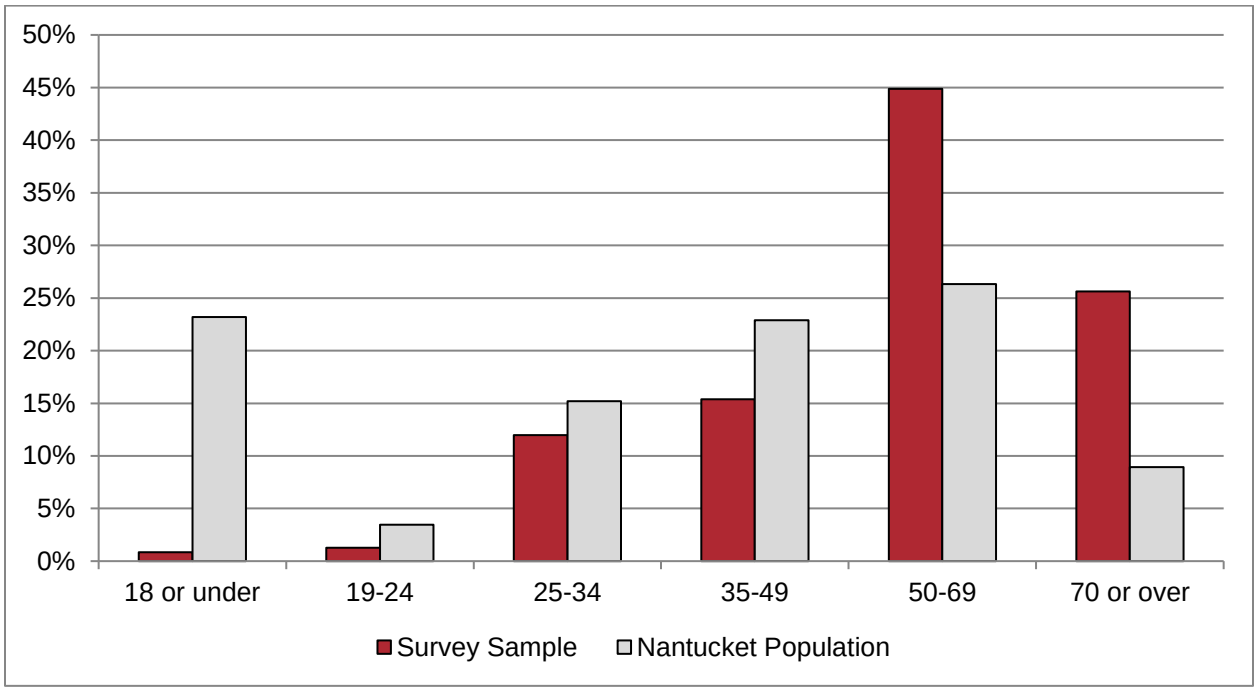


Figure 3. Annual household income of survey respondents, Nantucket residents and visitors (Sources: American Community Survey 2015-2019 Five-Year Estimates and Nantucket Data Platform Visitor Demographics Dashboard).

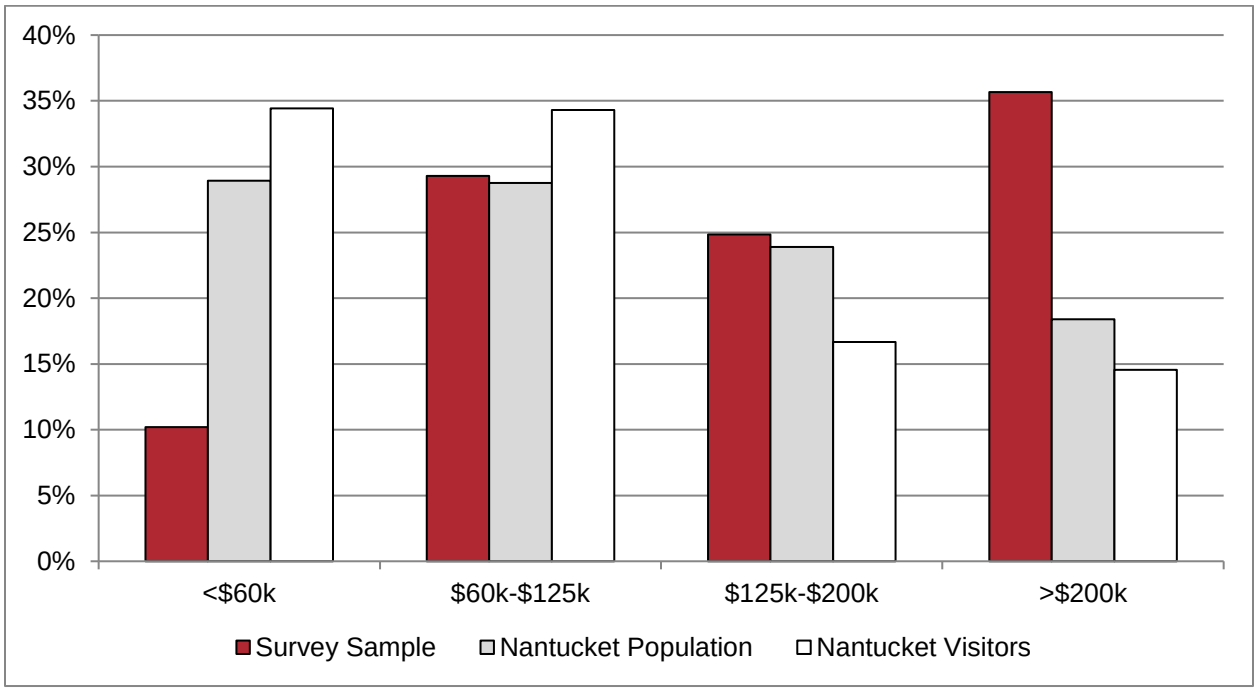


Figure 4. Highest level of education achieved for survey respondents, Nantucket residents and visitors (Sources: American Community Survey 2015-2019 Five-Year Estimates and Nantucket Data Platform Visitor Demographics Dashboard). NOTE: ACS data refer to adult population over 25 only.

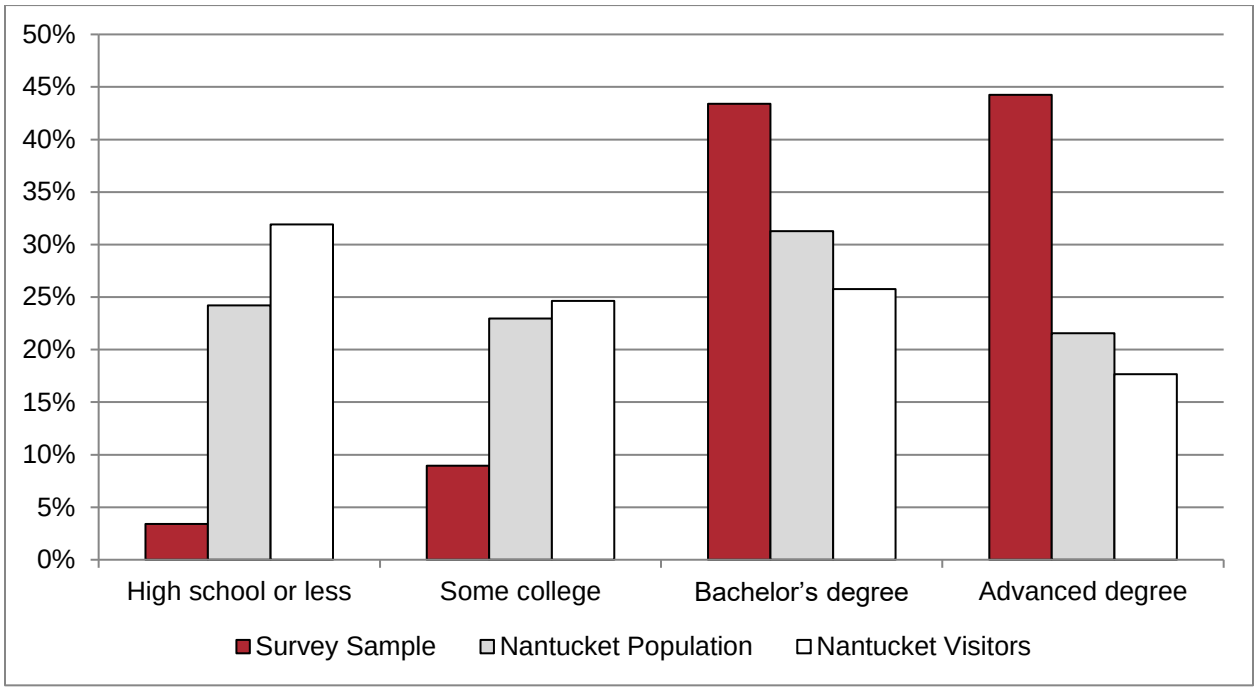
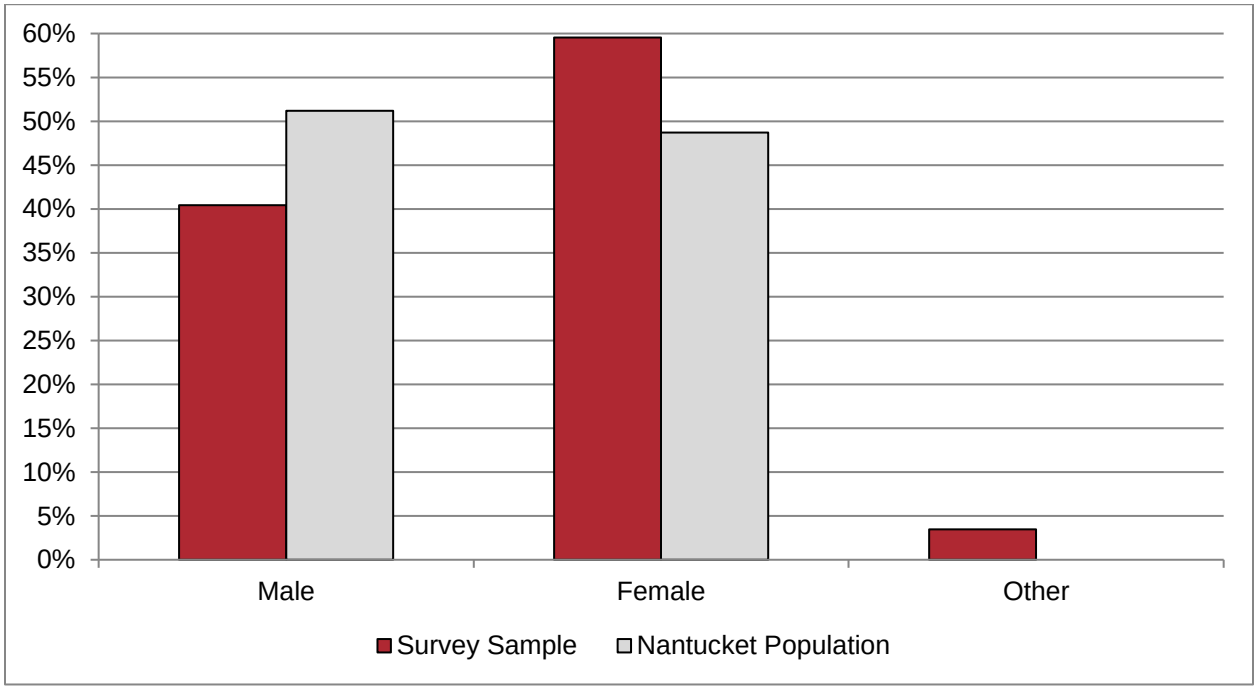


Figure 5. Gender of survey respondents compared to distribution of Nantucket population (Source: American Community Survey 2015-2019 Five-Year Estimates). **NOTE: ACS provides only two options for gender.**



4. Attitudes Toward Climate Change

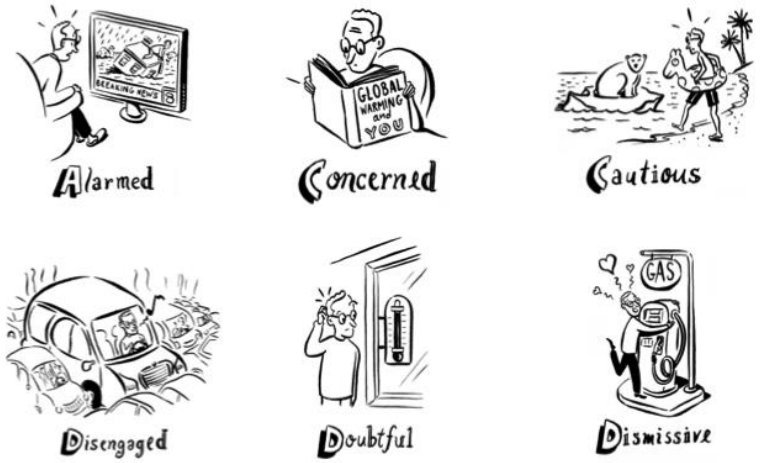
4.1 Attitudes Relative to the United States Population

Nantucketers, like all Americans, hold a broad range of opinions about climate change. Using questions adapted from the Yale Program on Climate Change Communication's Six Americas Super Short Survey, the Nantucket survey was able to estimate perceptions of climate change on the island. The four questions included on this topic were:

- How important is the issue of climate change to you personally?
- How much do you think climate change will impact you personally?
- How worried are you about climate change?
- How much do you think climate change will harm future generations of people?

The Six Americas online tool uses answers to these questions to group people into six categories, as stylistically represented in Figure 6.[2] The groups range from the *Alarmed* (very concerned about climate change and supportive of immediate political action) to the *Dismissive* (do not believe that the problem is real and oppose most climate policies). The *Concerned*, *Cautious*, *Disengaged*, and *Doubtful* are middle groups that differ in their beliefs and knowledge, risk perceptions, political engagement, and behaviors regarding the issue.[3]

Figure 6. The Yale Program on Climate Change Communication identified six unique audiences that each respond to climate change in distinct ways.

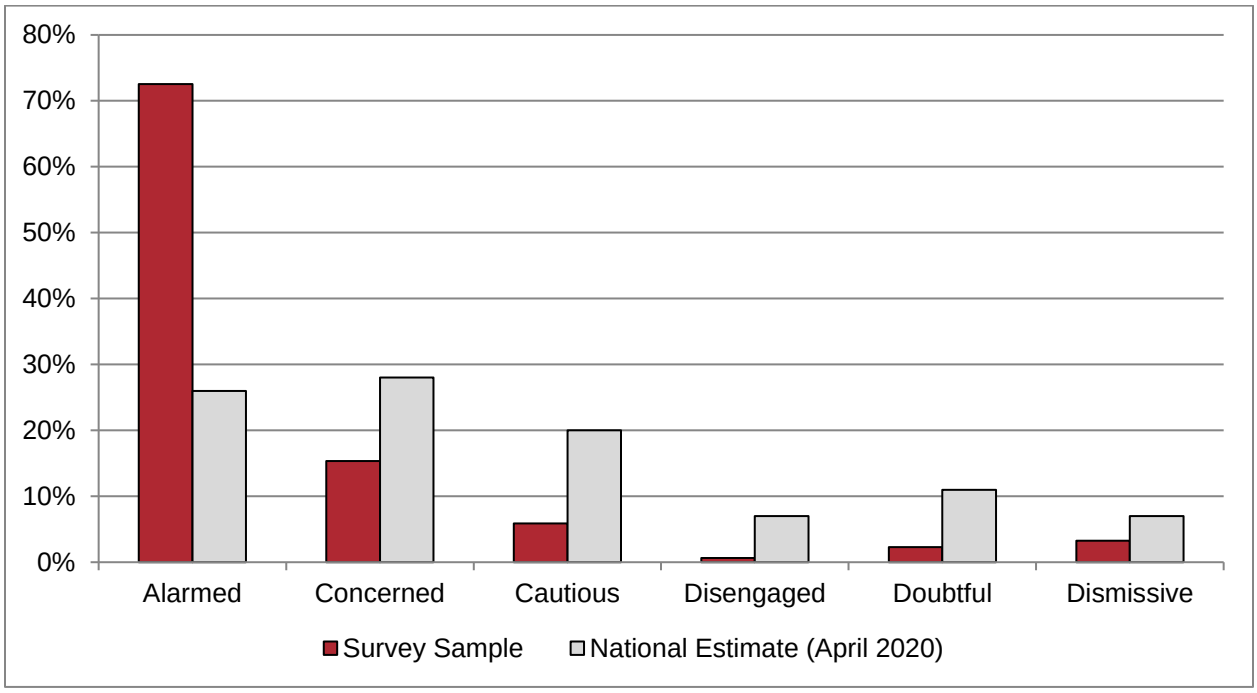


Based on the questions and categorizes described above, **Figure 7 shows that Nantucketers are far more likely to be *alarmed* about climate change than the national population**, and much less likely to have attitudes described as disengaged, doubtful, or dismissive.

[2] Yale Program on Climate Change Communication Six Americas Quiz. https://climatecommunication.yale.edu/visualizations-data/sassy/. Accessed 2 February 2021.

[3] Chryst, B. et al. 2018. "Global Warming's Six America's Short Survey: Audience Segmentation of Climate Change Views Using a Four Question Instrument." *Environmental Communication.* 12:8, pp. 1109-1122.

Figure 7. Attitude toward climate change on Nantucket compared to national estimate for April 2020 (Source: Yale Program on Climate Change Communication SASSY Survey).



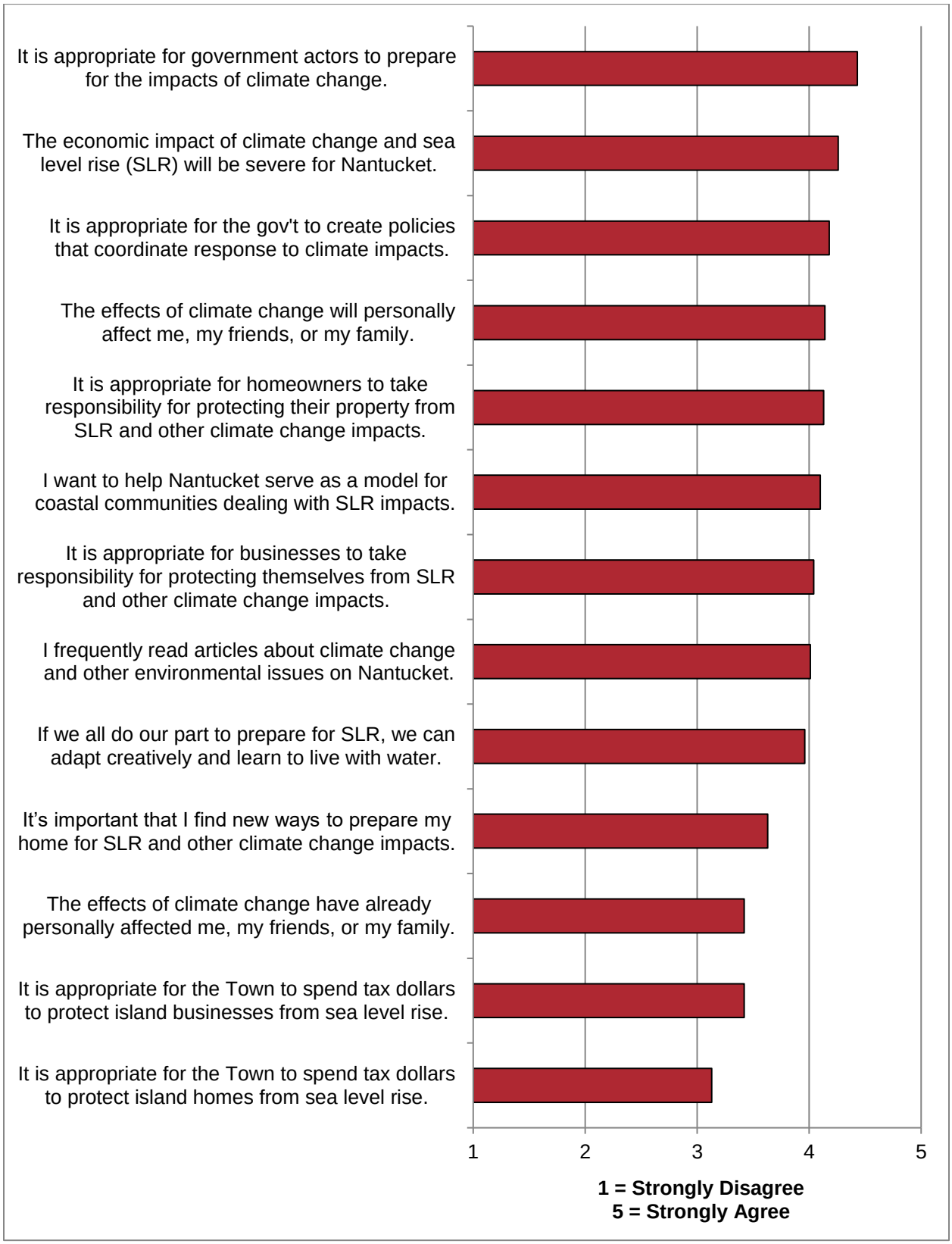
4.2 Attitudes towards Climate Change on Nantucket

Over 70 percent of respondents indicated that they are "very worried" about the impacts of climate change on the Nantucket community, with only 7.2 percent indicating that they are "not very worried" and less than 2 percent indicating that they are "not worried at all." Breaking down this overall attitude towards climate change on Nantucket into more specific components, Figure 8 summarizes the level of agreement with 13 statements about climate change.

Overall agreement is high, ranging from an average of 3.13 to 4.43 on a scale of 1 to 5 (where 1 means "strongly disagree", 3 means "neither agree nor disagree", and 5 means "strongly agree"). **Nantucketers strongly believe *it is appropriate for government actors on Nantucket to prepare for the impacts of climate change*** (4.4/5) but feel less confident that *it is appropriate for the Town of Nantucket to spend tax dollars to protect island homes from sea level rise* (3.1/5). Not surprisingly, more Nantucketers agree that *the effects of climate change on Nantucket will personally affect me, my friends, or my family in the coming years* (4.1/5) than *the effects of climate change on Nantucket have already personally affected me, my friends, or my family* (3.4/5). Finally, **there is broad agreement that *the economic impact of climate change and sea level rise will be severe for Nantucket*** (4.3/5).

The two statements that attracted the most disagreement, on the other hand, are *it is appropriate for the Town of Nantucket to spend tax dollars to protect island homes from sea level rise* (29.9 percent disagree or strongly disagree) and *it is appropriate for the Town of Nantucket to spend tax dollars to protect island businesses from sea level rise* (21.9 percent disagree or strongly disagree).

Figure 8. Level of agreement with attitudes towards climate change on Nantucket specifically (n = 278).



5. Individual Actions to Prepare for Climate Change

The survey asked respondents about adaptation actions (i.e., individual actions to prepare proactively for the impacts of climate change) and individual actions at the local level that would conserve energy or otherwise reduce individuals' contributions to climate change.

5.1 Individual Adaptation Actions

The survey asked respondents for their opinions on five individual adaptation actions:

- **Elevating your home**: Raising the height of a building by lifting it from the existing foundation, constructing a new, higher foundation, and resetting the building on the new foundation.
- **Wet floodproofing your home:** Permanent or contingent measures applied to a structure that allow water to enter the structure during a flood event and drain out as the floodwaters recede, while minimizing damage from floodwaters.
- **Dry floodproofing your home:** Any adaptation measures that keep water out of a building, by making a structure watertight and sealing any spaces below flood risk level.
- **Raising and protecting mechanical utilities:** Relocating utilities above the established flood risk level or protecting them in place with a watertight or impermeable enclosure; installing a ground fault circuit interrupter to protect electrical system and possible fires.
- **Installing rain gardens or other natural adaptions to your home:** A depressed area in the landscape that collects rain water from a roof, driveway or street and allows it to soak into the ground. Rain gardens reduce runoff, help sustain the health of brooks and ponds, and create habitat for birds and other wildlife.

Figure 9 summarizes the level of support for each adaptation action. **Installing rain gardens received the most support, with 76.3 of respondents indicating that they would consider this action** and 7.2 percent indicating that they already have**.** Meanwhile, 10.4 percent of respondents indicated that they are already dry floodproofing their home – the most of any action. However, **more than half (52.6 percent) of respondents indicated that they are opposed or would not consider elevating their homes.**

Several respondents indicated *why* they would not consider some or all of these actions. Common arguments against considering these adaptation options included concerns about cost, home location (i.e., homes already located on high ground), or ability to implement these actions (i.e., respondent rents their home or is subject to decisions from a condo association).

The survey also asked respondents what factors would motivate them to prepare for climate change impacts. The most motivating factors were "Learning of the impacts of climate change on ecosystems and biodiversity" and "Monetary

Broad Support for Landmark Status

When asked whether they would support updating the contributing and non-contributing buildings listed on the National Landmark survey so that funding opportunities and adaptation assistance could be make available to more historic buildings on Nantucket, only 3.2% of respondents indicated that they would *not* support this change.

incentives for installing climate adaptation measures." The least motivating were "Personalized suggestions for actions" and "Learning about the impact of climate change on local industries."

Figure 9. Level of support for five individual adaptation actions (n = 249).

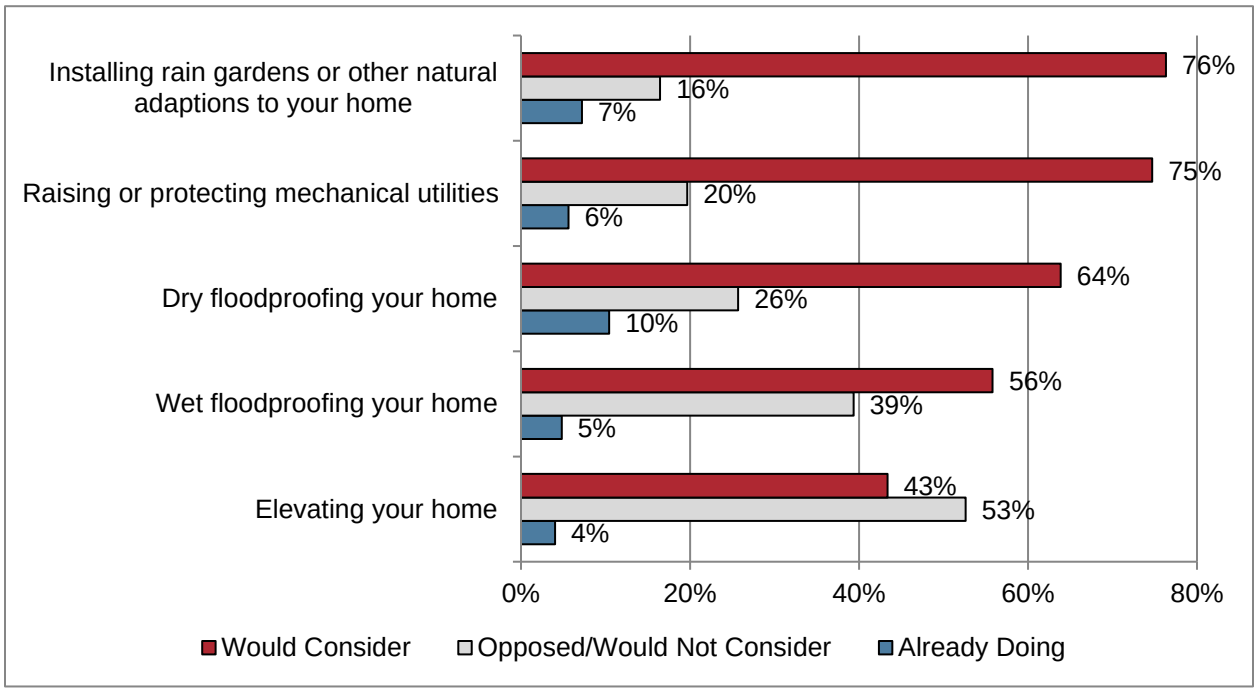
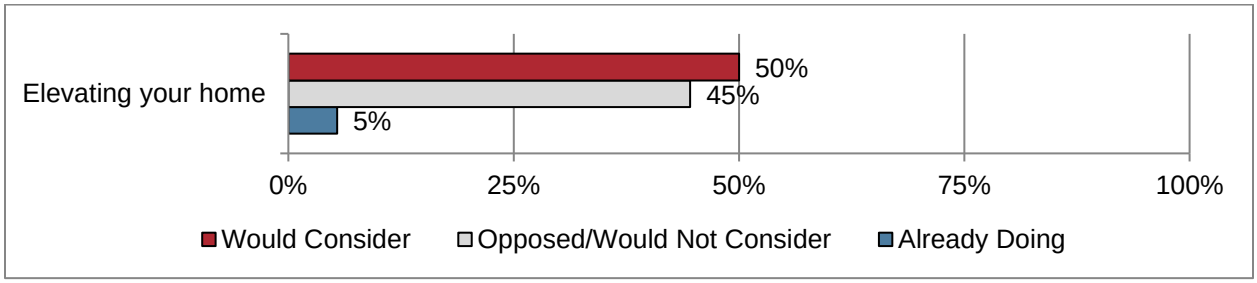


Figure 10 considers only the subset of respondents living in vulnerable areas of Nantucket (Town, Madaket, and Brant Point). Because elevating homes is the adaptation that received the least support across all survey respondents and because elevating homes is especially important in areas vulnerable to flooding and sea level rise, Figure 10 summarizes willingness to consider home elevation among these respondents. **Relative to the general survey population, residents of these vulnerable areas are slightly more willing to consider elevating their homes** (50.0 percent versus 43.4 percent). Common arguments against elevating homes again included concerns about cost, home location, or housing tenure (i.e., owners versus renters).

Figure 10. Level of support for elevating homes in areas vulnerable to flooding and sea level rise: Town, Madaket, and Brant Point (n = 74).



5.2 Local Actions that Reduce Individual Contributions to Climate Change

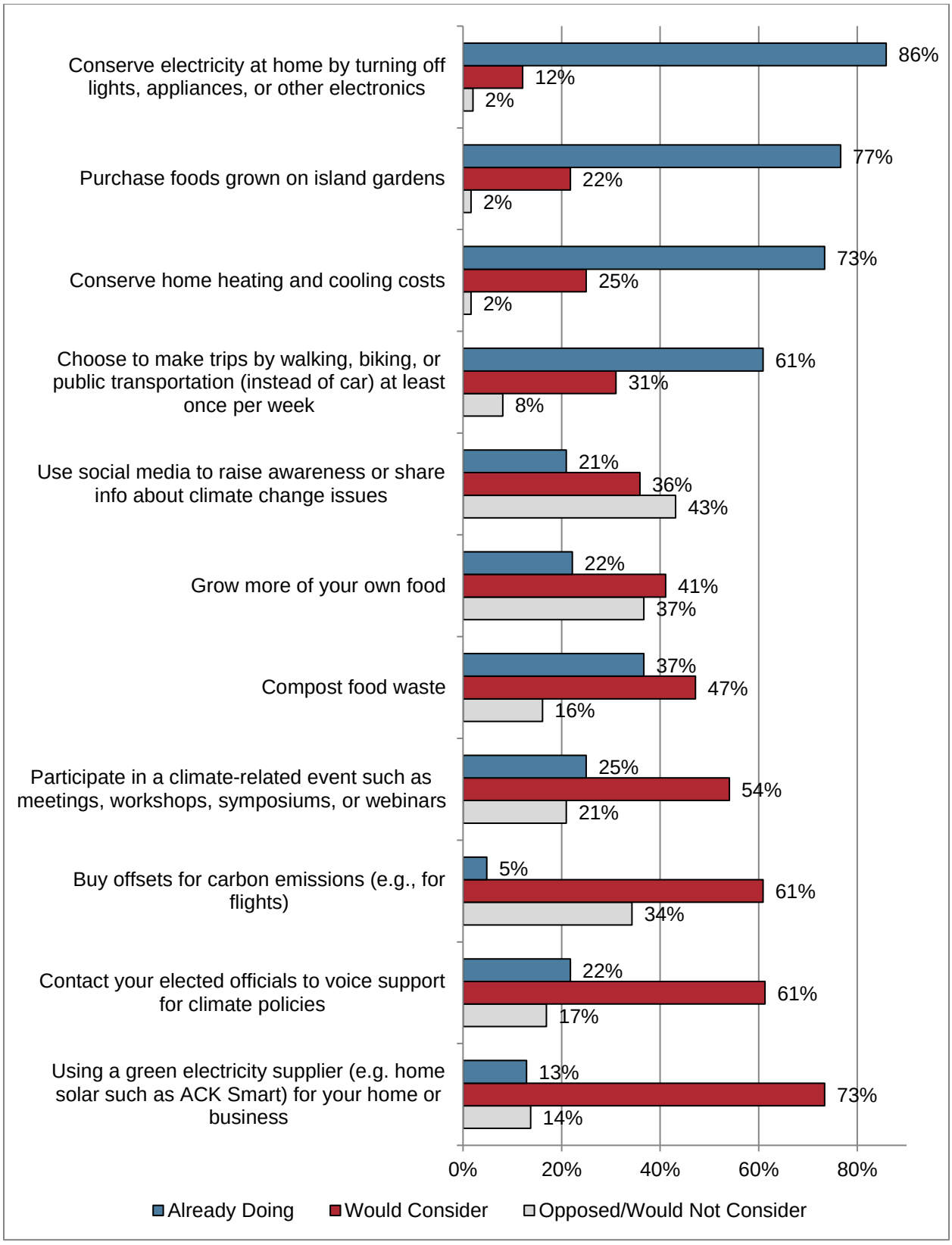
In addition to the adaptation actions discussed above, the survey asked respondents about their level of support for individual actions at the local level that would conserve energy or otherwise reduce individuals' contributions to climate change. Figure 11 summarizes participants' level of support for these actions.

Four actions already see participation from more than half of respondents: conserving electricity (86.9 percent), purchasing food grown on island gardens (76.6 percent), conserving home heating and cooling costs (73.4 percent), and making weekly trips by walking, biking, or public transportation (60.9 percent). Conversely, only 4.8 percent of respondents had purchased offsets for carbon emissions and only 12.9 percent had used a green electricity supplier.

Of those who are not already doing these actions, **respondents showed strong willingness to consider using a green electricity supplier (87.9 percent of respondents who have not already done so) and to contact elected officials to voice support for climate policies (83.1 percent).** The greatest opposition to these actions applies to using social media to raise awareness of climate change issues (with 44.5 percent of those who had not already done so opposed/not willing to consider), growing more food (48.2 percent opposed).

Several respondents indicated *why* they would not consider some or all of these actions. Common arguments against considering these actions included concerns about cost, space for/ability to garden, and lack of familiarity/comfort with social media.

Figure 11. Level of support for individual actions that limit Nantucket's contributions to climate change (n = 248).



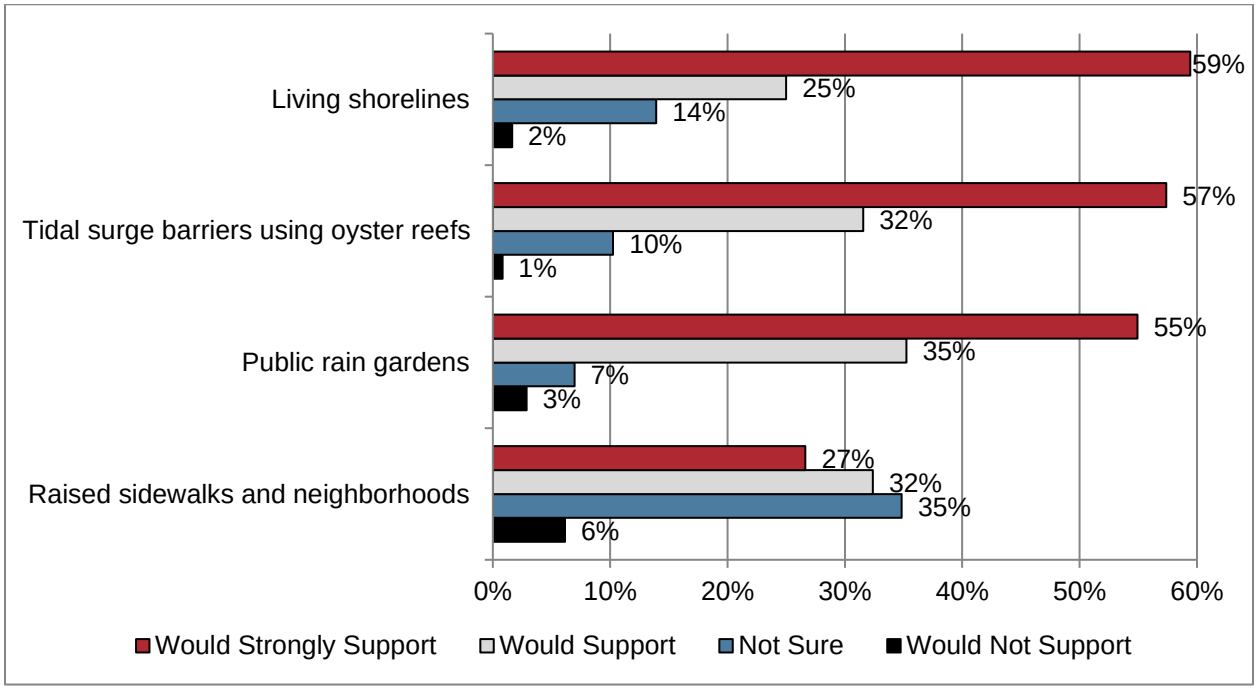
6. Community Actions to Prepare for Climate Change

Finally, the survey asked respondents for their opinions on four community actions that would proactively prepare Nantucket for the impacts of climate change:

- **Living shorelines:** Any nature-based solution to shoreline erosion, tidal flooding, and loss of vegetated shorelines/beaches by providing for the protection, restoration, or enhancement of these habitats through the strategic placement of plants, stone, sand, or other materials.
- **Tidal surge barriers using oyster reefs:** The use of oysters to create reefs as hard, natural barriers that protect shorelines from erosion, rising tides, and severe storm surge.
- **Public rain gardens:** Large, public areas that collect rain water from a roof, driveway or street and allows it to soak into the ground. Rain gardens reduce runoff, help sustain the health of brooks and ponds, and create habitat for birds and other wildlife.
- **Raised sidewalks and neighborhoods:** Raising the height of roads, sidewalks, utilities, and other assets to protect neighborhoods from rising sea levels. Road elevation has been implemented in vulnerable places such as Miami Beach, FL.

Figure 12 summarizes participants' level of support for these actions. **All four actions have the support of the majority of survey respondents,** although the strength of this support varies. Over 90 percent of respondents support or strongly support the use of public rain gardens on Nantucket, but only 59 percent of respondents support raised sidewalks and neighborhoods. This relative lack of support may be related to familiarity with this action; over one-third of respondents (34.8 percent) indicated that they were "not sure" about raised sidewalks and neighborhoods. In all four of the action, the share of respondents "not sure" exceeded the share opposed to the action.

Figure 12. Level of support for individual actions that limit Nantucket's contributions to climate change (n = 244).



In addition to these four community actions, the survey asked respondents to name other adaptation strategies that they would like to see adopted on Nantucket. 56 respondents offered additional ideas for preparing Nantucket for sea level rise and other impacts of climate change:

Other Adaptation Strategies Respondents Would Like to See on Nantucket

Erosion control and beach renourishment

Geotechnical tubes for beach stabilization

Sinking ships to create artificial reefs

Planting dune grass

Managed retreat from the most vulnerable areas

Education and information campaigns

Restricting development from vulnerable areas

Permeable sidewalks and other surfaces

Major seawall construction

7. Conclusions and Recommendations

When it comes to climate change, Nantucketers are alarmed and concerned. They are not doubtful dismissive or disengaged. They foresee the economic impacts of climate change and sea level rise, they are prepared to take individual action, and they are supportive of actions by businesses, government actors, homeowners, and other individuals to prepare for the impacts of climate change. While they are broadly supportive of most efforts discussed in this survey, they are especially supportive of private rain gardens, living shorelines, tidal surge barriers, energy conservation, and efforts to protect mechanical utilities.

It is encouraging to see the eagerness with which Nantucketers offered their ideas for preparing the island for the impacts of climate change and the willingness of more than 300 people to participate in this important study. Furthermore, roughly two-thirds of survey respondents (66.4 percent) indicated that they are **likely or very likely to talk to their fellow community members about climate adaptation strategies.** Additionally, 77.9 percent of respondents indicated that they were interested in **learning more about adaptive strategies for flooding and other climate change impacts.**

In light of these responses, it is safe to say that this population has demonstrated a willingness to learn and a willingness to share and work together – all of which is essential for a community-based approach to preparing for climate change. What's more, this is a population that is receptive to types of efforts included in the Envision Resilience Nantucket Challenge: adaptive solutions, collaborative problem-solving, and proactive approaches to living with water rather than fearing it.