

Envision Resilience Nantucket Challenge 2022 Survey Report

ReMain Nantucket

MARCH 2022



EBP 

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1. Executive Summary

ReMain Nantucket, the Envision Resilience Nantucket Challenge (ERNC) and other partners in the community have conducted a series of two surveys to measure community attitudes toward climate change on Nantucket. This report summarizes the findings of the second survey, conducted mid-January to early February of 2022 and compares them to the results from the first survey, which was conducted mid-January to early February 2021.

The marketing and outreach done to recruit participants elicited a tremendous response. The survey received 679 usable responses, more than twice the count of the first survey. Half of respondents were year-round residents of Nantucket, a slight decline from the first survey due to greater participation in the second survey from part-time residents.

As with the first survey, the responses provide a useful cross-section of the island's population despite over-representation of some groups. Respondents to the second survey are older, list higher incomes, higher levels of education, and are more female than the island's population as a whole. More than 100 responses came from residents of both Town and Mid Island with 21 from residents of Brant Point. It is worth noting that Town and Brant are two of the three study areas reimaged by design students during the 2021 Envision Resilience Nantucket Challenge.

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*. Once again, over 70% of respondents indicated that they are "very worried" about the impacts of climate change on the Nantucket community, while support for government actors to prepare for climate change impacts increased. Respondents expressed some disagreement about using tax dollars to protect island homes and businesses, and this level of disagreement increased when compared to the first survey.

This second survey introduced a new question to explore changing attitudes about climate change and coastal resilience. The survey asked respondents if their level of engagement had changed during the past 12-18 months, and if so, to what they attribute that change. Two-thirds of those surveyed indicated that they are "somewhat more engaged" or "much more engaged." Four respondents used the write in option to attribute their increased engagement to the Envision Resilience Nantucket Challenge.

As on the first survey, respondents were asked a series of questions to better understand attitudes about:

- **Individual actions to prepare for or adapt to climate change and sea level rise** such as elevating their homes, wet and dry floodproofing, raising and protecting utilities, and installing rain gardens.

- **Individual actions to mitigate their personal contribution to climate change** such as using a green energy provider, purchasing more food grown on Nantucket, buying offsets for carbon emissions, contacting local officials to voice support for climate policies, and using social media to raise awareness or share information.
- **Community actions to prepare for climate change and sea level rise** such as living shorelines, tidal surge barriers using oyster reefs, public rain gardens, and raised sidewalks and neighborhoods.

Relatively small proportions of survey respondents are already taking action to prepare for or adapt to climate change, ranging from 12% who have installed rain gardens or other natural adaptations, to 4% who have elevated their homes. However, it should be noted that for the latter, this represents 25 survey respondents, which is not a trivial number of people to have undertaken such a significant endeavor. Furthermore, the results indicate broad willingness to consider most of these strategies such as installing a rain garden, raising or protecting mechanical utilities, and dry floodproofing their homes.

The survey also found pockets of opposition to some of these actions, chief among them the issue of raising their homes. Over half of respondents oppose or are unwilling to consider elevating their homes, an increase of 5% compared to the previous survey. This action is unpopular even among respondents from low-lying neighborhoods. This could be attributed to the cost and logistical difficulties associated with moving homes. It could also be that many of the people who were willing to elevate their home have already done so, while those who were unwilling to do so have simply sold low-lying properties and moved themselves to higher ground. Finally, it may relate to the results discussed in section 4.3 that indicate that many respondents are not yet feeling the effects of sea level rise personally or seeing impacts on their friends and family.

Key Findings

Nantucket Residents and Visitors:

- Continue to be alarmed by climate change.
- Report being more engaged on the topic of climate change and coastal resilience than they were 12-18 months ago.
- Exhibit broad willingness to consider many actions that they can take to prepare their homes for the impacts of climate change and sea level rise.
- Are already taking action to mitigate their contribution to climate change by conserving electricity, purchasing food grown on the island, traveling by foot, bike, and public transportation, and more.
- Express strong support for many community-level actions to prepare for the harmful effects of climate change and sea level rise including tidal surge barriers using oyster reefs, living shorelines, and public rain gardens.
- Are willing to talk to community members about climate adaptation strategies, and this willingness is growing.
- Are familiar with the Town of Nantucket’s new Coastal Resilience Plan and support the plan’s goal to prepare for 9’ of sea level rise by 2100.
- Overwhelmingly support the creation of a new funding model to pay for the municipal projects necessary to alleviate the impacts from sea level rise.
- Attended a variety of ERNC-sponsored events, activities, and exhibitions over the course of the past year.

In terms of individual actions to mitigate their own personal contribution to climate change, over half of respondents reported already taking action to conserve electricity, purchase food grown on the island, conserve home heating and cooling costs, and travel by foot, bike, and public transportation. While only 7% of respondents reported having purchased offsets for carbon emissions, this represented a significant increase of 4.8% over the first survey.

With regard to community-level actions to prepare for climate change, the survey found strong support for many proposed actions. Nearly 92% of respondents support or strongly support tidal surge barriers using oyster reefs, 89% support or strongly support living shorelines, and 88% support or strongly support the use of public rain gardens on Nantucket. As with the first survey, many respondents were unfamiliar with the concept of raised sidewalks and neighborhoods, and again, none of the actions elicited significant opposition.

This survey introduced questions related to the Town of Nantucket's newly released Coastal Resilience Plan, finalized by the Coastal Resilience Advisory Committee. More than 60% of survey respondents reported having read or reviewed the plan, and more than 70% agree or strongly agree with the Town's policy to prepare for nine feet of sea level rise by 2100. Among those who agree or strongly agree with the policy, many expressed concerns that nine feet may not be sufficient. When asked to identify top priorities from a list of the Plan's 18 recommendations, Steamboat Wharf Resilience and Elevation Planning, Downtown Neighborhood Flood Barrier Feasibility Study for Easy Street Corridor, Updates to Zoning By-Law to limit growth in high-risk areas, and Create a Coastal Resilience and Sustainability Program were the most popular.

When asked if they would be in favor of creating a new funding model to pay for the necessary municipal projects to alleviate some of the impacts from sea level rise, 70% responded in favor or strongly in favor of the idea. Conversely, very few were against or strongly against the idea.

Finally, respondents were asked about attendance at ERNC activities, events, and exhibitions. Just under a third of the survey population indicated having attended one of the five events listed. The most popular event was the Envision Resilience Designs for Living with Rising Seas

Potential Challenges:

- Only a small percentage of survey respondents are already taking actions such as installing rain gardens, wet and dry floodproofing, and raising/protecting mechanical utilities.
- Moderate and increasing opposition to raising homes, even among residents of low-lying areas likely to experience the greatest impacts.
- Low rate of participating in purchasing offsets for carbon emissions despite increasing willingness to do so.
- Relative lack of familiarity with the concept of raised sidewalks and neighborhoods.
- Pockets of opposition to government action related to climate change and coastal resilience and/or objection to the use of tax dollars to prepare and mitigate the impacts.
- Pockets of skepticism regarding climate change and sea level rise.

exhibition that ran July through December 2021 followed by the “Rising Above” Easy Street Art Installation Light Show in October 2021.

2. Introduction

Undertaken as part of the Envision Resilience Nantucket Challenge (ERNC), the purpose of these surveys is to better understand 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 on-island nonprofit, science and conservation organizations. By comparing the results of this survey, administered after the 2021 design studio and community outreach initiatives have concluded, ReMain Nantucket and its ERNC partners can analyze the extent to which ERNC programming served its goal of empowering the community to think proactively about coastal resilience and sea level rise. The information can also be used by the Town and other community groups on Nantucket as they move forward with coastal resilience initiatives. This report summarizes the findings of the second survey, which was open from January 18 through February 10, 2022.

2.1. Survey Methodology

As with the first survey, EBP constructed the survey instrument in the cloud-based survey platform SurveyMonkey with input from ReMain Nantucket. This survey included 34 questions in nine categories. The two new categories were added to ask questions about familiarity with the Town of Nantucket’s Coastal Resilience Plan and about awareness of organizations associated with coastal resilience and climate change on Nantucket. The sections were presented in the following order:

1. Survey introduction
2. Attitudes toward global climate change in general
3. Attitudes toward climate change on Nantucket
4. Individual actions to prepare for climate change proactively (i.e., adaptation)
5. Local actions to reduce individual contributions to climate change
6. Community actions to prepare for climate change
7. Town of Nantucket’s Coastal Resilience Plan policies and key recommendations
8. Coastal Resilience information, resources, activities, and organizations on Nantucket
9. Demographics and the opportunity to opt in to be added to the ERNC email list

The majority of these sections and questions were unchanged from the first survey. (The Appendix contains a table that describes differences between the first and second survey).

ReMain Nantucket deployed the following marketing and outreach activities to recruit survey participants:

- A drawing for one of five \$50 gift cards to a local coffee shop as an incentive for survey respondents.
- A widely distributed press release announcing the survey.
- Flyers posted throughout Nantucket's businesses, schools and shops.
- A pop-up message on the Envision Resilience website with a link to the survey.
- A mention in the monthly Envision Resilience newsletter with a link to the survey
- Paid advertising running multiple days on N-Current and DayBreak, two popular local daily email publications.
- Distribution in email lists from the Nantucket Chamber of Commerce, the Town of Nantucket, the Artists Association of Nantucket, ACKclimate, the Nantucket Land Council, the Nantucket Preservation Trust, the Nantucket Conservation Foundation, the Linda Loring Foundation, Pip & Anchor, the Nantucket Historical Association, the Builder's Association and the Nantucket Shellfish Association.
- Social media posts through ACKclimate.

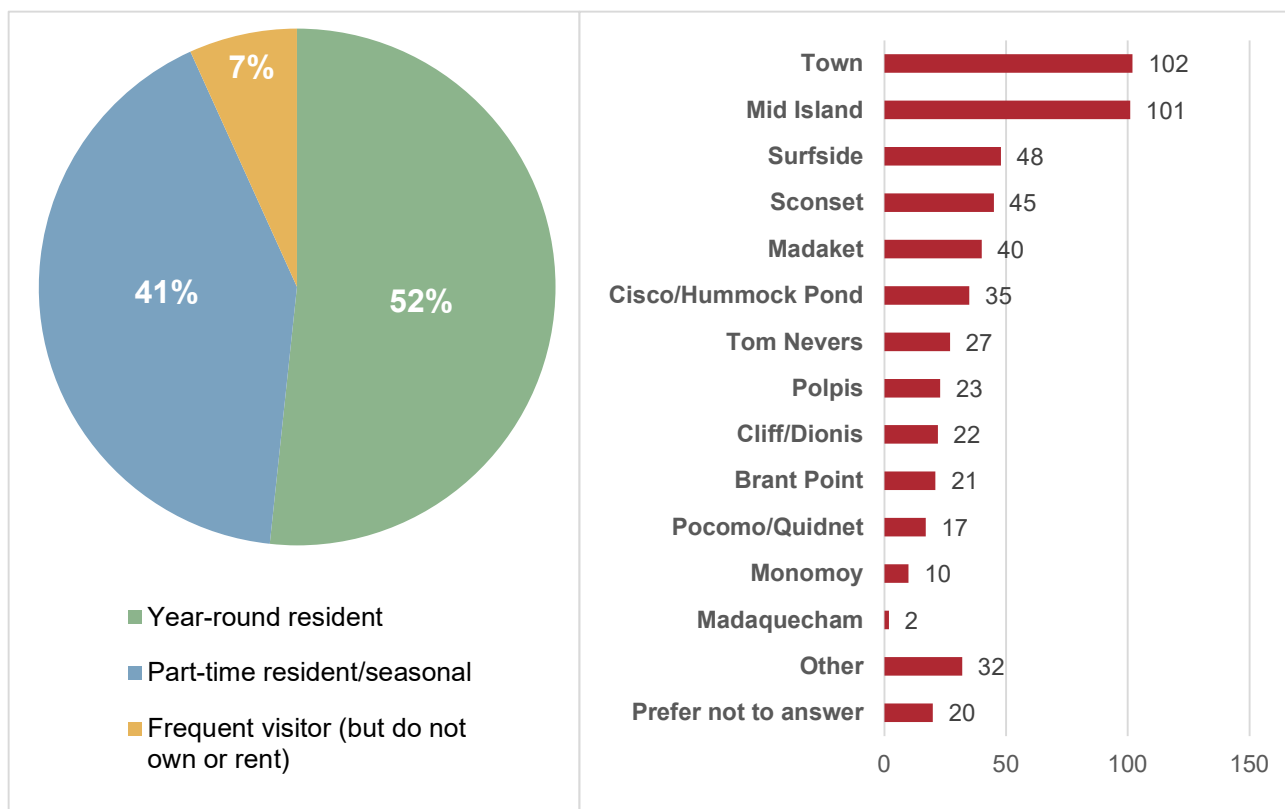
As with the first survey, the 2022 ERNC survey was distributed in English and in Spanish and was made available by link and by QR code. The English version was distributed via two separate "collectors" to distinguish how the respondent received the survey.

At the conclusion of the survey, 702 responses had been submitted (compared with 317 responses to the first survey). Once the survey officially closed on February 10, 2022, EBP cleaned the survey results to remove 16 duplicate surveys (i.e. "second" surveys completed by the same respondent, as identified by email address) and surveys from seven respondents who indicated that they do not spend time on Nantucket. In analyzing the results of the previous survey, incomplete surveys were also removed from the dataset. (Nine responses were removed from the sample, including those removed because they had no relationship with Nantucket). The second survey reached a much wider audience, which had the positive result of generating many more responses. However, this wider audience also included significantly more respondents who did not complete the entire survey. Removing incomplete responses would remove 129 partial surveys from the sample, leaving only 543 unique, complete responses. To preserve the information provided by partially completed surveys, they were not removed from analysis of the second survey. Instead, the results of each question were normalized to the number of surveys that answered that question. This yielded 679 useable surveys, compared to 309 useable surveys from the first survey.

3. Survey Respondents

Nearly 52% of respondents are year-round residents of Nantucket, although large numbers of respondents are part-time/seasonal residents (Figure 1). Only 7% of respondents identified themselves as frequent visitors to the island. Of the 525 respondents who indicated what part of the island they “call home,” the largest numbers live in Town (102), Mid Island (101), Surfside (48), Sconset (45), and Madaket (40). These five neighborhoods accounted for more than 60% of all responses to this question. Twenty-one responses came from Brant Point. Town and Brant Point are two of the three Envision Resilience Nantucket Challenge focus neighborhoods.

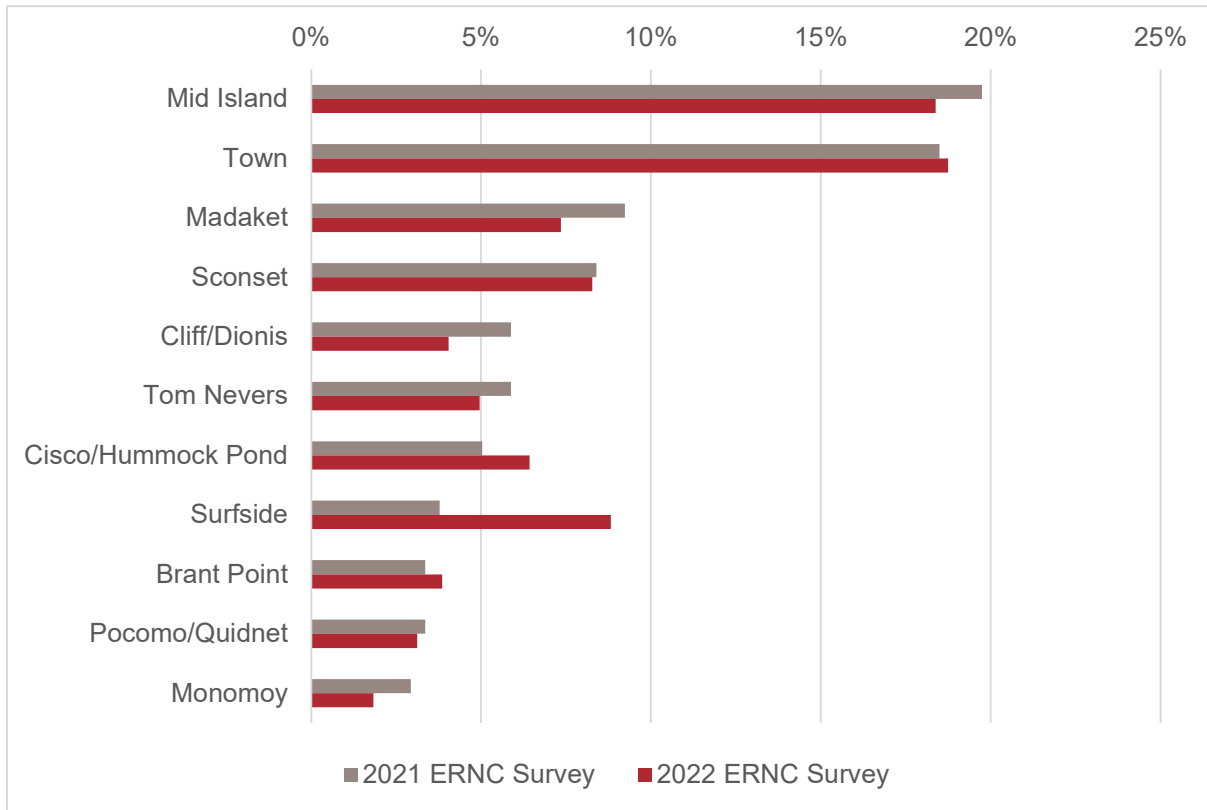
Figure 1. Respondents’ relationship with Nantucket (n=679, left). The neighborhood that respondents “call home” (n=545, right)



Source: 2022 ERNC survey.

Figure 2 shows a comparison of responses by neighborhood (as a percent of total responses for each respective survey). Representation across the various neighborhoods was similar in both surveys, relatively unaffected by the much larger overall response to the second survey. One notable exception is Surfside, which accounted for only 4% of the total for the first survey (9 respondents) and 9% of the second (48 surveys).

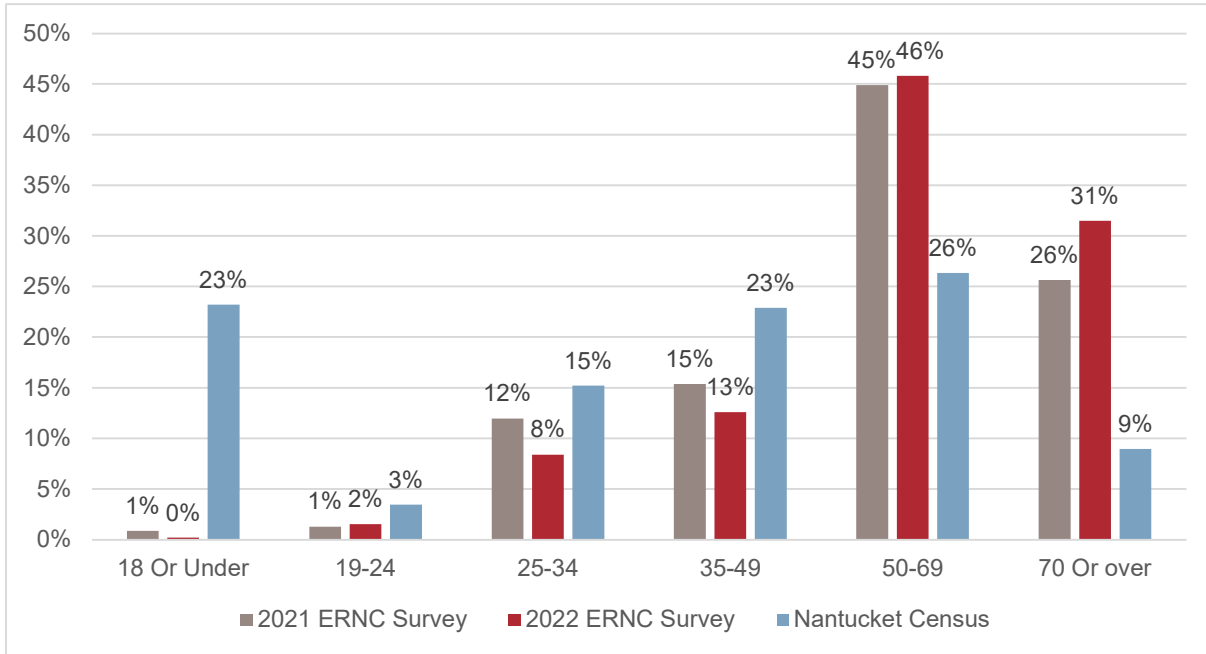
Figure 2. Comparison of Respondents by Neighborhood (2021 Survey n=225, 2022 Survey n=332)



Sources: 2021 and 2022 ERNC surveys.

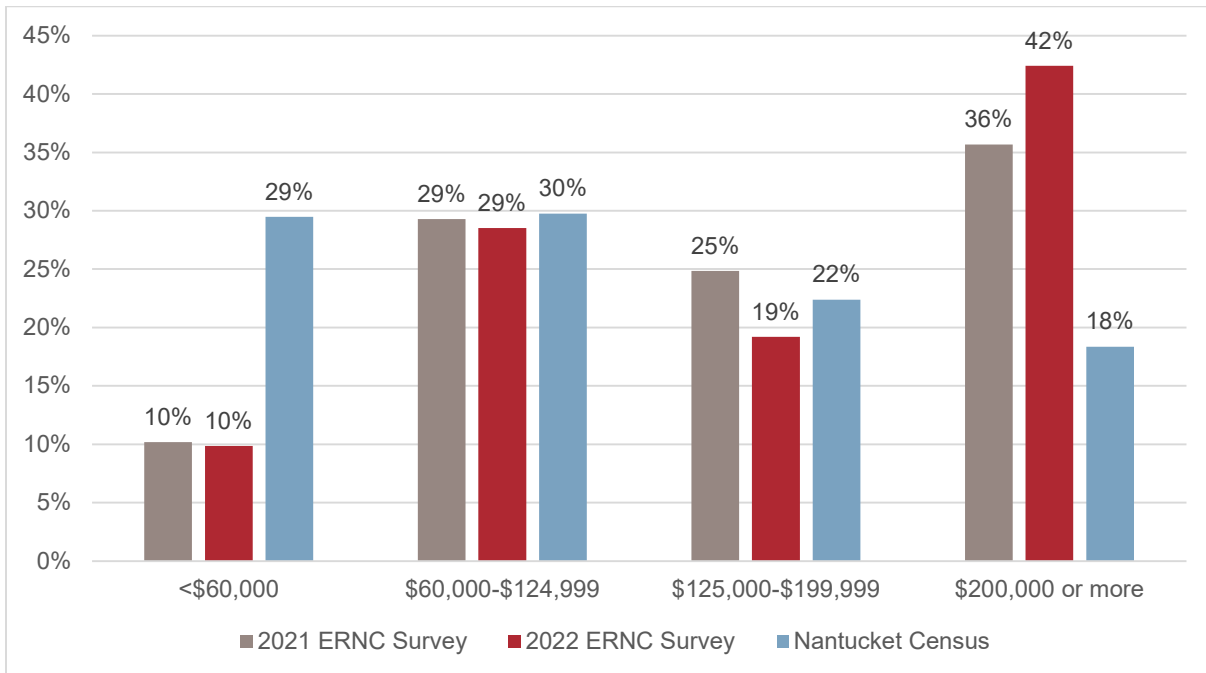
As with the first ERNC survey, respondents to the 2022 ERNC survey are older, report higher incomes and levels of education, and reflect a greater percentage of females compared to the population of Nantucket as a whole. The following four figures compare the demographics of respondents to both surveys and the broader Nantucket population in terms of age, income, education, and gender. As the figures illustrate, though the gender distribution of respondents to the second survey remained similarly skewed female, relative to the island’s population as a whole (Figure 6), the age distribution shifted older, with the 70 or older category gaining 5% of respondents (Figure 3); income distribution shifted wealthier, with the \$200,000 or more category increasing its share by 6% (Figure 4); and the percentage of respondents with an advanced degree rose by 5% (Figure 5).

Figure 3. Age of survey respondents compared to age distribution of Nantucket population (2021 Survey n=234, 2022 Survey n=524)



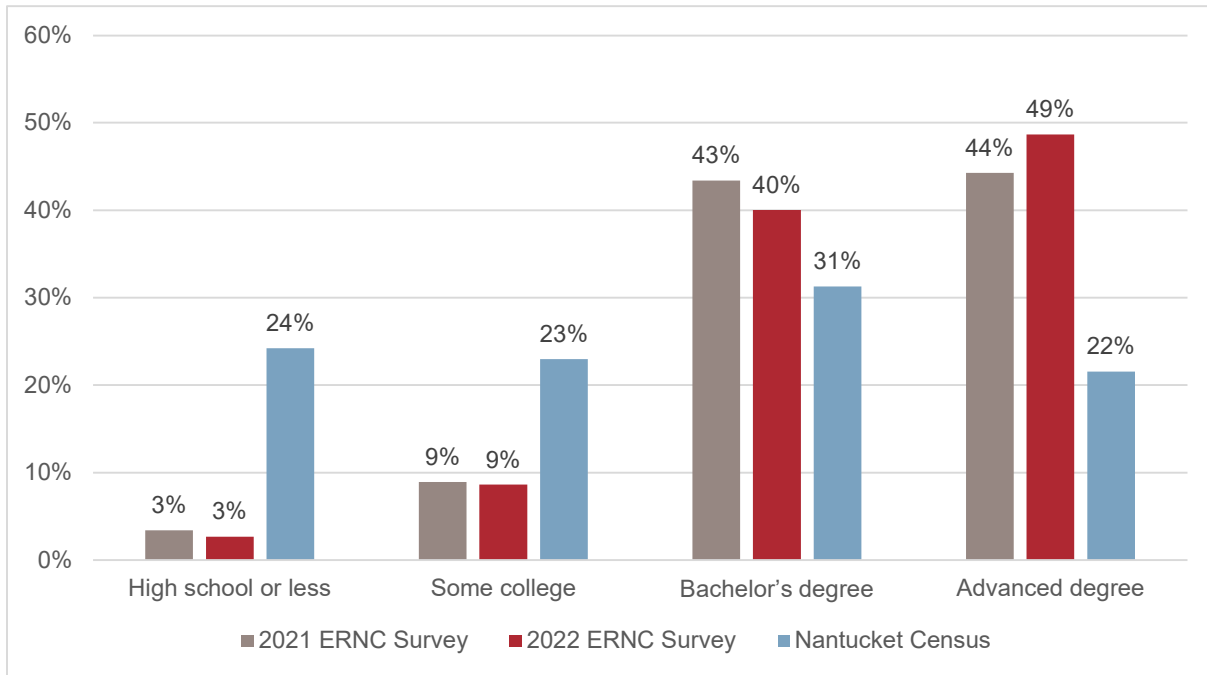
Sources: 2021 and 2022 ERNC surveys and American Community Survey 2015-2019 Five-Year Estimates.

Figure 4. Annual household income of survey respondents and Nantucket residents (2021 Survey n=157, 2022 Survey n=375)



Sources: 2021 and 2022 ERNC surveys and American Community Survey 2015-2019 Five-Year Estimates.

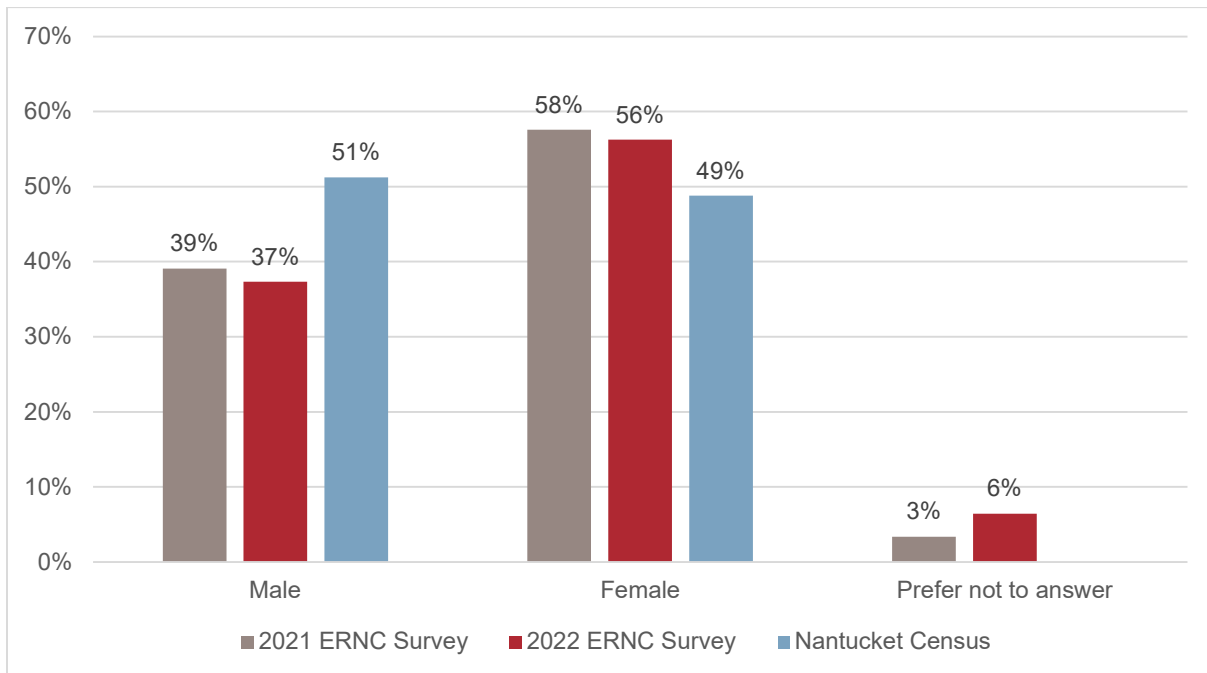
Figure 5. Highest level of education achieved for survey respondents and Nantucket residents (2021 Survey n=235, 2022 Survey n=522)



Note: The American Community Survey data report educational attainment for the adult population over age 25, while ERNC survey respondents are not limited to this age group.

Sources: 2021 and 2022 ERNC surveys and American Community Survey 2015-2019 Five-Year Estimates.

Figure 6. Gender of survey respondents compared to distribution of Nantucket population (2021 Survey n=238, 2022 Survey n=534)



Note: The American Community survey provides only two options for gender.

Sources: 2021 and 2022 ERNC surveys and American Community Survey 2015-2019 Five-Year Estimates.

As speculated by the previous report that covered the results of the first survey, this strong representation of older, wealthier, and more educated populations may be driven by retirees, who tend to be older and wealthier. Retirees may also have more time and availability to complete surveys. Responses from retirees grew to 36% for the second survey, up from 32% of the first survey, reinforcing this speculation.

The survey population provides a representative range of responses from ERNC's target population, i.e. Nantucketers who would have engaged with climate change and coastal resilience-themed exhibitions, activities, and events over the past 12-18 months. It also represents the group of Nantucketers most likely to be homeowners and to be active in local politics and civic activities. Nonetheless, because of the selection bias evident in these demographics, the survey results may not be fully representative of the entire population of island residents and visitors. For example, in under-representing population in the 25-34 and 35-49 age groups, it may under-represent the opinions and attitudes of island business owners who tend to be concentrated in these age groups. The survey responses indicated that younger respondents were more likely to be alarmed about climate change than older respondents, so capturing a more representative share of younger folks is likely to further increase the proportion of alarmed respondents. Under-representation among middle- and lower- income groups may have missed the opinions and attitudes of year-round renters, seasonal workers, and small business owners. The level of alarm among respondents from different income groups was fairly variable, indicating that a more representative range of household incomes could contain a higher share of disengaged, doubtful, or dismissive responses than was captured by the 2021 and 2022 surveys.

In addition to the populations discussed above, the surveys also captured responses from other important demographic groups. The 2022 survey encompassed 49% employed individuals, 6% unemployed individuals, and seven students (1%), similar to the 2021 survey's population. The 2022 survey also drew respondents from a variety of household sizes. Nineteen percent live in single-person households, 49% in two-person households, and three-person households dropped from 13% of the 2021 survey to 9% of the 2022 survey.

4. Attitudes Toward Climate Change

4.1. Attitudes Relative to the United States Population

As with the first survey, the second survey included a series of questions adapted from the Yale Program on Climate Change Communication's Six Americas Super Short Survey which allow us to characterize perceptions of climate change on the island. The four questions, which appeared in the section of the survey following the introduction, 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 7.¹ 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.²

The results of the second survey reinforce the findings of the first, with 74% of respondents categorized as *alarmed* versus only 26% of the national average. Though the national percentage of those who are *concerned* is about twice as high as the ERNC survey population, the combined *alarmed* and *concerned* encompass nearly 90% of survey respondents compared to just over half of the national population. While nearly a quarter of Americans can be described as disengaged, doubtful, or dismissive, only about 6% of Nantucket's residents and visitors express these views.

¹ Yale Program on Climate Change Communication Six Americas Quiz. <https://climatecommunication.yale.edu/visualizations-data/sassy/>. Accessed 2 February 2021.

² 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. The Yale Program on Climate Change Communication identified six unique audiences that each respond to climate change in distinct ways.

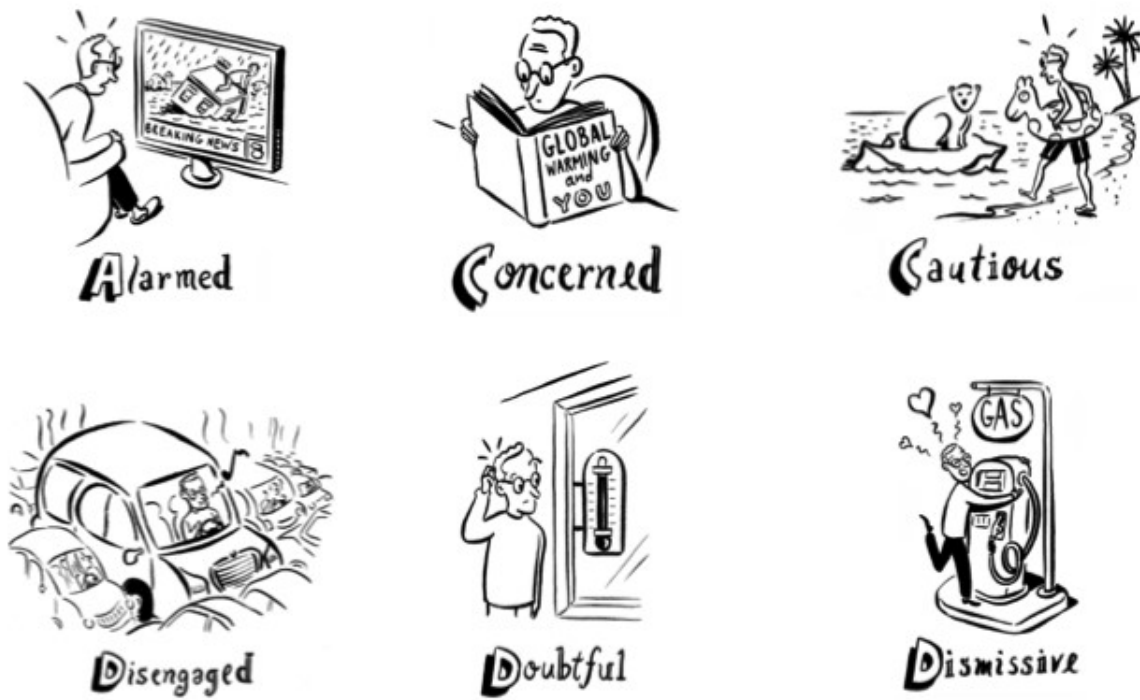
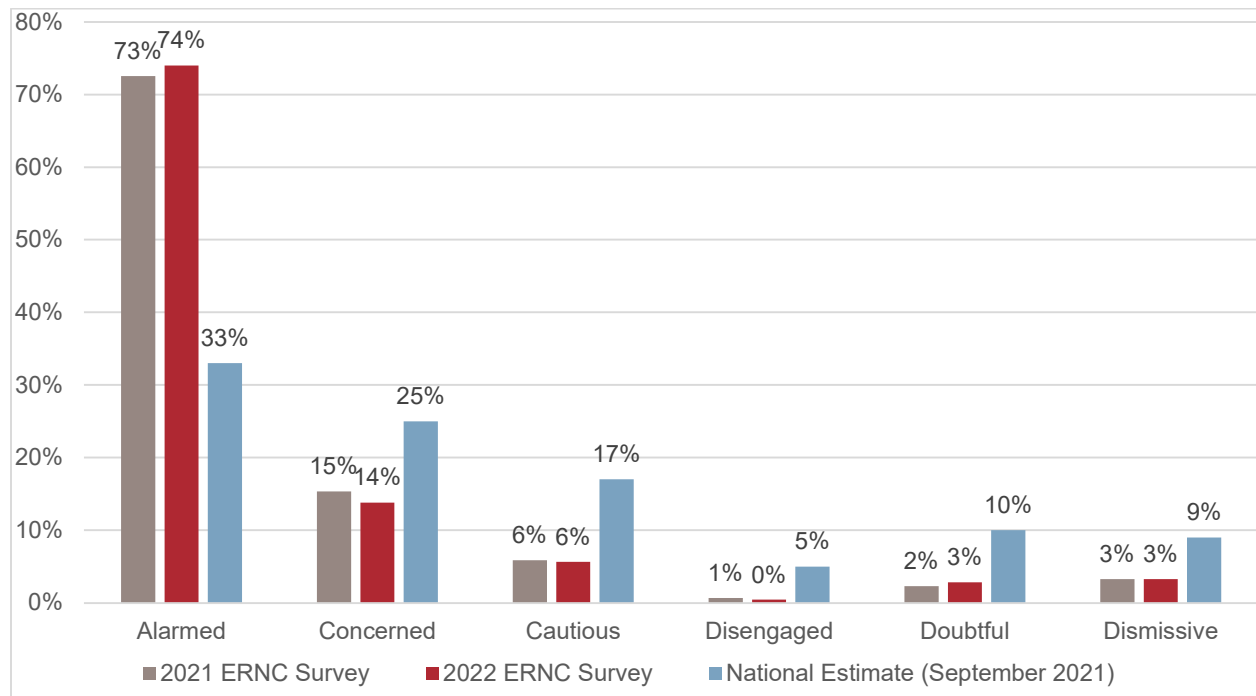


Figure 8. Attitude toward climate change on Nantucket compared with national attitudes (2021 Survey n=309, 2022 Survey n=673)



Sources: 2021 and 2022 ERNC surveys and Yale Program on Climate Change Communication SASSY Survey (September 2021).

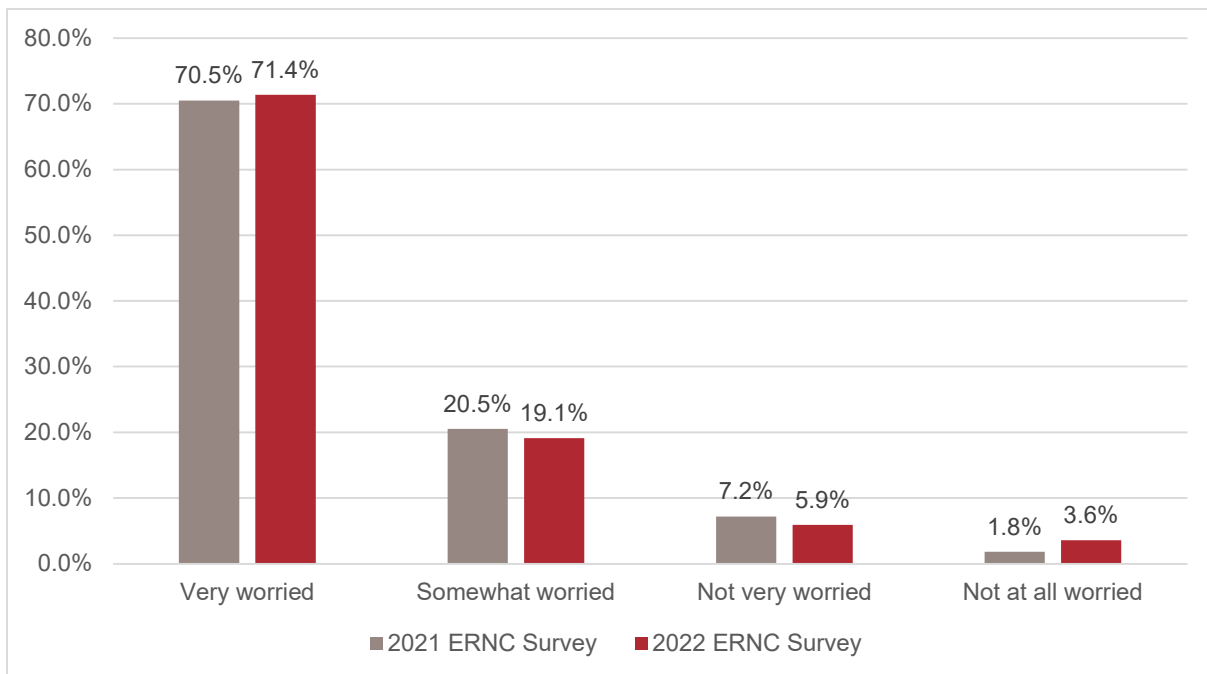
Alarm is even more prevalent among those who took both ERNC surveys. Among this subset of the 2022 survey’s total population, some 87% can be classified as *alarmed*. The population of repeat survey-takers is too small to draw conclusions from changes between the two surveys on this issue, as the differences are due to changes by only one or two survey takers. None of the repeat survey takers fell into the categories of *disengaged* or *doubtful* on either survey and only one was identified as *dismissive* (both surveys).

4.2. Attitudes towards Climate Change on Nantucket

This section of the survey asks questions about attitudes toward climate change and coastal resilience as they relate to Nantucket. Once again, over 70% of respondents indicated that they are “very worried” about the impacts of climate change on the Nantucket community (Figure 9). While the percentage of respondents indicating “not very worried” dropped somewhat, from 7.2% to 5.9%, this was offset by a slight increase in the proportion who answered, “Not at all worried”, which rose from 1.8% to 3.6%.

Among the 68 people who responded to both the first and second surveys, there was a drop in the number reporting “very worried”, offset by an increase in those selecting “Somewhat worried” and those who declined to answer.

Figure 9. How worried are you about the impacts of climate change on the Nantucket community? (2021 Survey n=278, 2022 Survey n=643)



Source: 2021 and 2022 ERNC surveys.

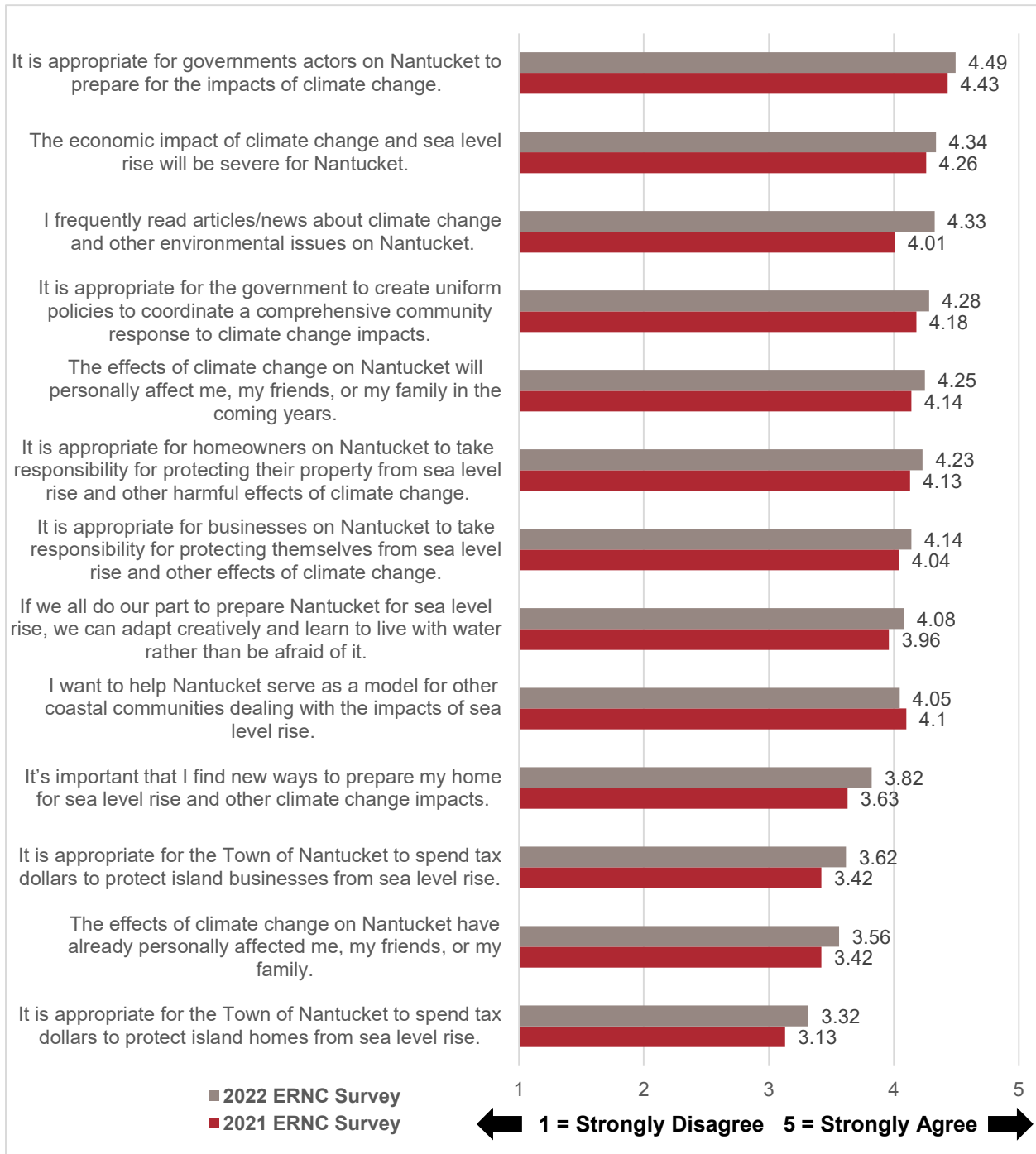
4.3. Agreement on Climate Change and Coastal Resilience

Figure 10 summarizes the level of agreement with 13 statements about climate change, on a scale of 1 to 5 where 1 means “strongly disagree”, 3 means “neither agree nor disagree”, and 5 means “strongly agree” (reported as weighted averages). The results of the previous survey are presented for comparison. Agreement with most statements remains high. Level of agreement increased from the first survey for all statements except *I want to help Nantucket serve as a model for other coastal communities dealing with the impacts of sea level rise*, for which agreement declined slightly. There is broad agreement that *the economic impact of climate change and sea level rise will be severe for Nantucket* (4.3/5) and that *the effects of climate change on Nantucket will personally affect me, my, or my family in the coming years* (4.25). However, the statement *the effects of climate change on Nantucket have already personally affected me, my friends, or my family* received the second lowest level of agreement (3.42). Together, these results indicate that although people expect to be personally affected in the future, they are not yet feeling those effects.

There is strong support for homeowners and business owners to take responsibility for protecting themselves from sea level rise and the effects of climate change (4.23/5 and 4.14/5 respectively), but less support for the statement *it's important that I find new ways to prepare my home for sea level rise and other climate change impacts* (3.82/5).

There was mixed agreement on questions relating to policy actions. On the one hand, survey respondents continue to strongly believe *it is appropriate for government actors on Nantucket to prepare for the impacts of climate change* (4.5/5), representing a higher level of agreement than any other statement. Similarly, *it is appropriate for the government to create uniform policies to coordinate a comprehensive community response to climate change impacts* received the fourth-highest level of agreement (4.3/5). But the statements *it is appropriate for the Town of Nantucket to spend tax dollars to protect island businesses from sea level rise* and *it is appropriate for the town of Nantucket to spend tax dollars to protect island homes from sea level rise* received the third lowest (3.62/5) and very lowest (3.32/5) levels of agreement, respectively. These two statements received the lowest levels of agreement on the first survey as well. The largest shift in attitudes between the first survey and the second was in response to the statement *I frequently read articles/news about climate change and other environmental issues on Nantucket*, which increased from 4.01/5 to 4.33/5.

Figure 10. Climate Change on Nantucket: What is your level agreement with the following statements? (2021 Survey n=278, 2022 Survey n=673)

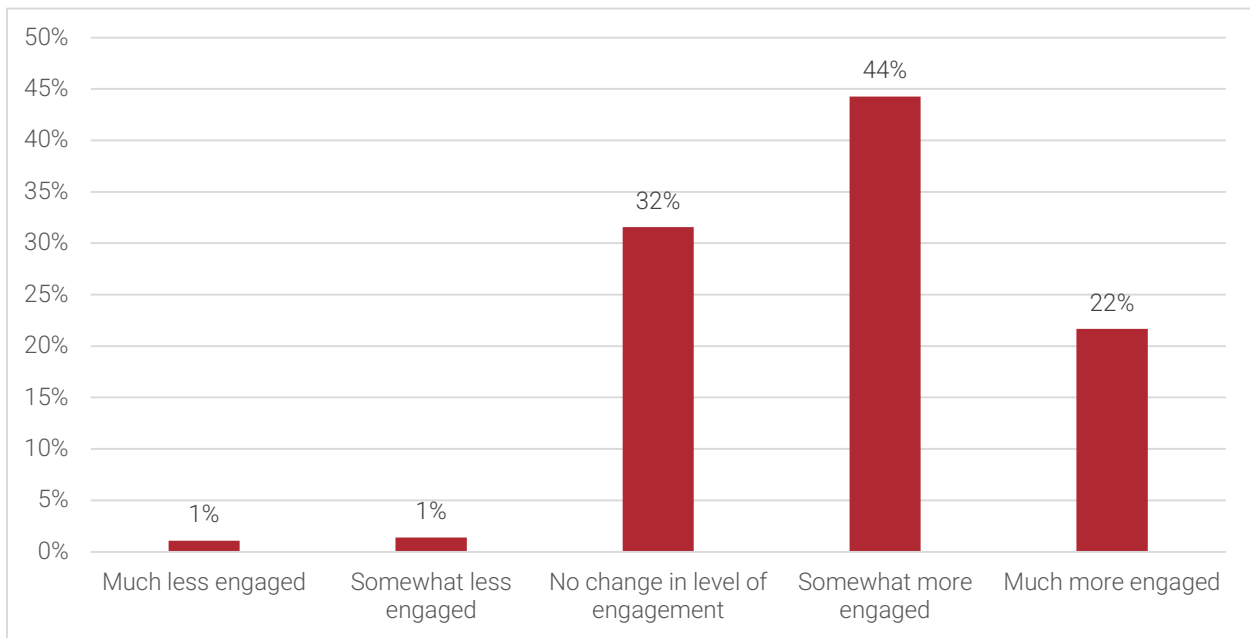


Source: 2021 and 2022 ERNC surveys.

4.4. Level of Engagement with the Topic of Climate Change and Coastal Resilience

Two new questions were added to the second survey asking respondents to self-report changes in level of engagement with the topic of climate change and coastal resilience. Respondents who indicated that their level of engagement had changed during the past 12-18 months were subsequently asked to what they attribute that change. Figure 11 presents the proportion of respondents in each category, ranging from much less engaged to much more engaged, for the survey population as well as the sub-group who took both surveys. Some 66% of survey takers indicated that they are “somewhat more engaged” (44%) or “much more engaged” (22%). Just under one-third indicated no change in level of engagement, with only 2% reporting less engagement. Among repeat survey-takers, more than one-third self-identified as “much more engaged”, a 15% greater share than among survey takers as a whole. Conversely, a much lower percentage of repeat survey takers reported no change in level of engagement, and none among this group indicated less engagement. This is consistent with the findings of the previous section indicating that the sub-group who took both surveys is particularly concerned about climate change and coastal resilience.

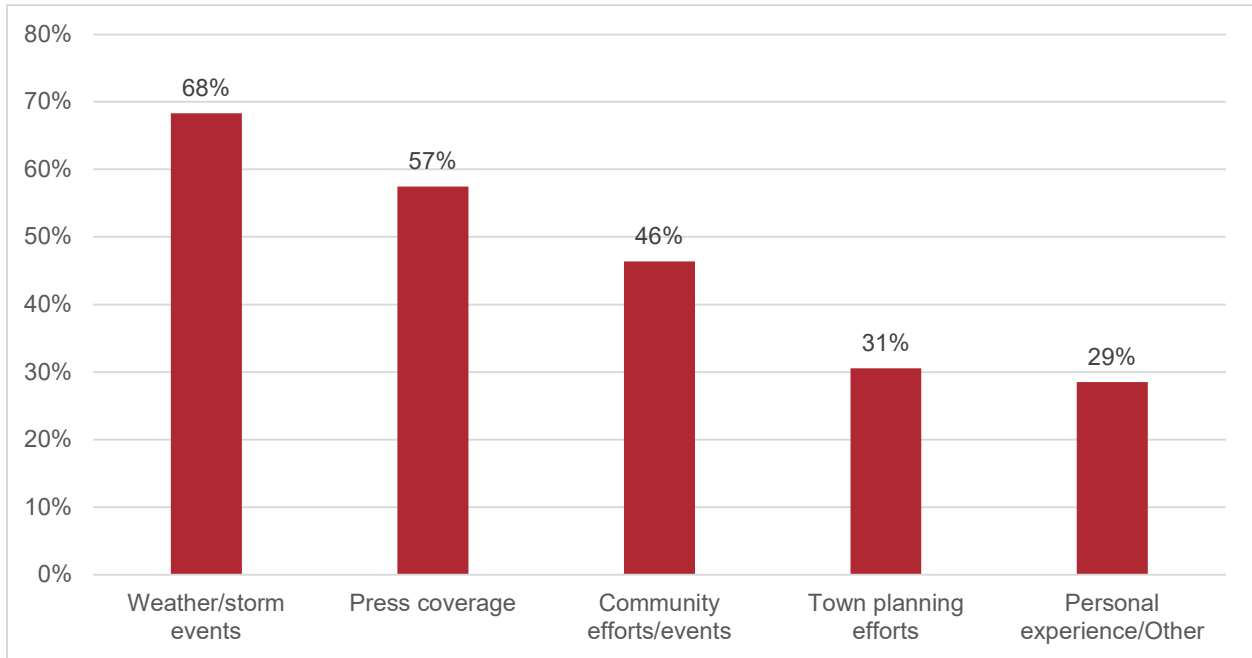
Figure 11. To what extent has your level of engagement with the topic of climate change and coastal resilience changed over the last 12-18 months? (n=646)



Source: 2022 ERNC survey.

Respondents who indicated a change in level of engagement were asked to identify the source of that change, either by checking boxes for relevant causes, or by writing in “other” reasons. The leading cause of a change in level of engagement was “weather/storm events” (68%), followed by “press coverage” (57%), and “community efforts/events” (46%).

Figure 12. If your level of engagement has changed over the last 12-18 months, to what would you attribute that change? (Choose all that apply) (n=442)



Source: 2022 ERNC survey.

Among those who wrote in an answer to describe a “personal experience/other” answer, four respondents specifically mentioned participation in the Envision Resilience Nantucket Challenge as a motivating factor for increasing their engagement. Other respondents reported having observed greater levels of flooding, both on and off Nantucket, higher summer temperatures, soil erosion, and having to repair storm damage to roofs and basements. Some respondents noted that they had been observing these effects over a period of many decades. At least one respondent reported having sold their house and left the island due to the increasing threat of rising sea levels, and one other indicated having moved their home to another location on the island.

5. Individual Actions to Prepare for Climate Change

Survey respondents were again asked 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 Actions to Adapt to Climate Change

The survey asked respondents for their opinions on the same five individual adaptation actions as the first survey:

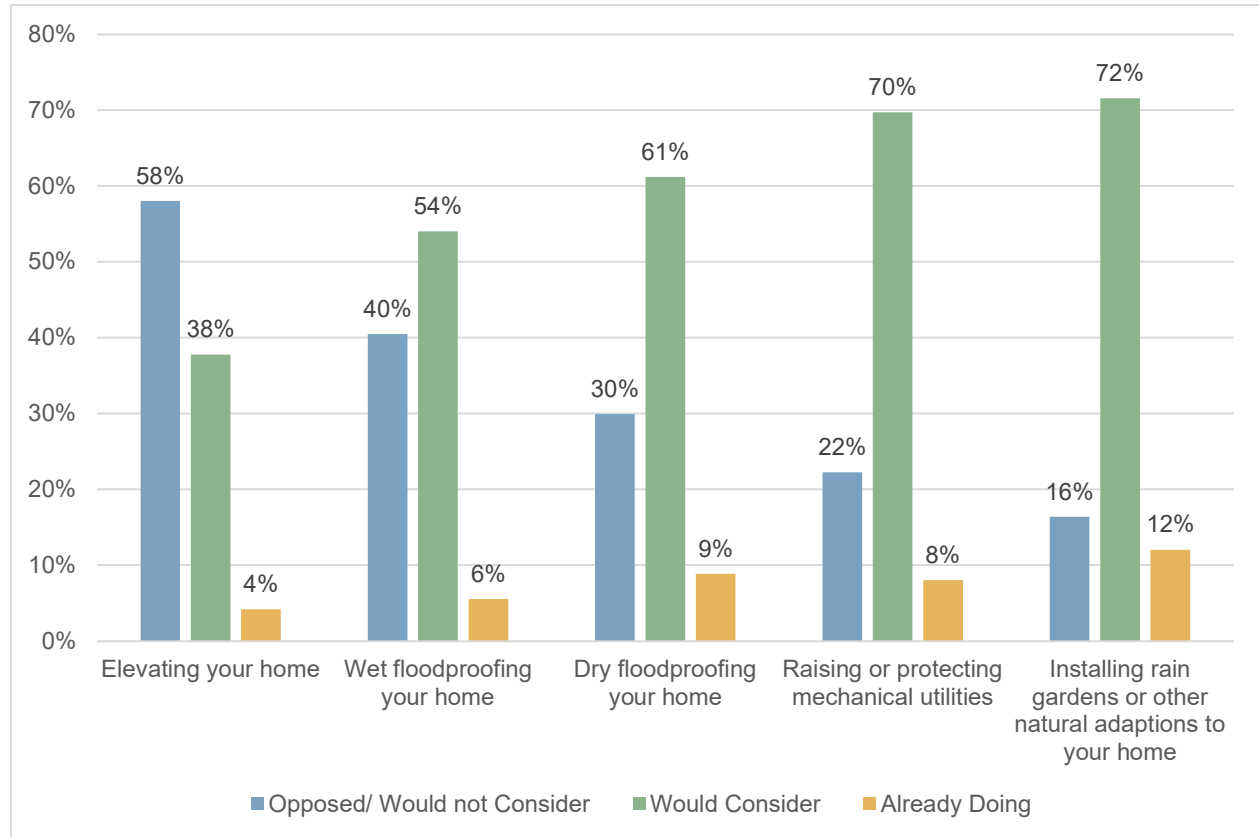
- **Elevating your home:** Raising the height of a building by lifting it from the existing foundation, constructing a new, higher foundation, and resetting the building on the new foundation.
- **Wet floodproofing your home:** Permanent or contingent measures applied to a structure that allow water 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 adaptations to your home:** A depressed area in the landscape that collects rainwater 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 13 presents the percentages of respondents to the second survey that are already doing, would consider, or would not consider/oppose each of these adaptation strategies. (Those who took both surveys responded in similar proportions). Relatively small proportions of survey respondents are already employing these strategies, ranging from 12% who have installed rain gardens or other natural adaptations, to 4% who have elevated their homes. However, it should be noted that for the latter, this represents 25 survey respondents, which is not a trivial number of people to have undertaken such a significant endeavor.

The results show relatively strong willingness to consider most of these strategies such as installing a rain garden (72%), raising or protecting mechanical utilities (70%), and dry floodproofing their homes (61%). Approximately 58% of respondents indicated an unwillingness to consider or opposition to the idea of elevating their homes, an increase from the previous

survey (53%). This is mirrored by a decrease in the proportion of survey respondents who would consider elevating their home from 43% to 38%.

Figure 13. Are you currently/would you consider each of the following adaptation strategies? (n=598)

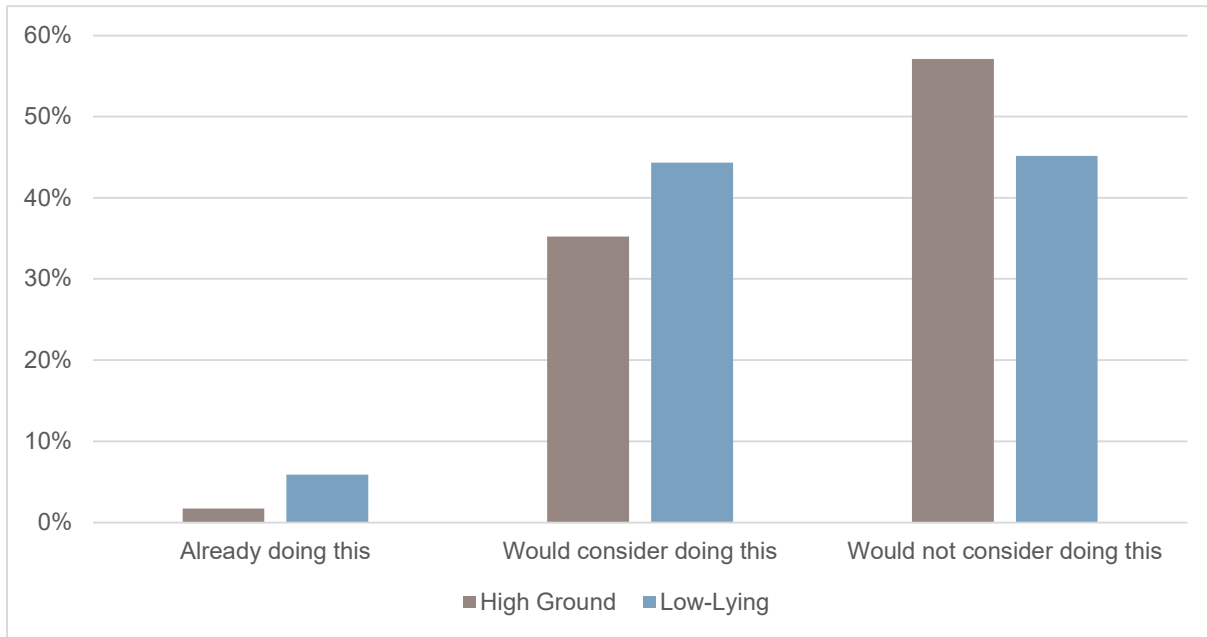


Source: 2022 ERNC survey.

Figure 14 considers only the subset of respondents living in vulnerable areas of Nantucket identified using the Climate Central Coastal Risk Screening Tool.³ Areas considered low laying are Brant Point, Cisco/Hummock Pond, Cliff/Dionis, Madaket, Pocomo/Quidnet, Town, Polpis, and Shawkemo. Madaquecham, Mid Island, Monomoy, Sconset, Surfside, and Tom Nevers are classified as high ground. 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, this comparison focuses on the relationship between home vulnerability and willingness to consider home elevation. Relative to the general survey population, residents of these vulnerable areas are somewhat more willing to consider elevating their homes (44% versus 35%). However, even among those in low-laying neighborhoods, some 45% would not consider moving their home to higher ground.

³ Climate Central Coastal Risk Screening Tool: Land Projected to be Below Annual Flood Level in 2050 ([link](#)).

Figure 14. Level of support for elevating homes in areas vulnerable to flooding and sea level rise: Respondents affiliated with high ground vs. those in low-lying areas (n=470)

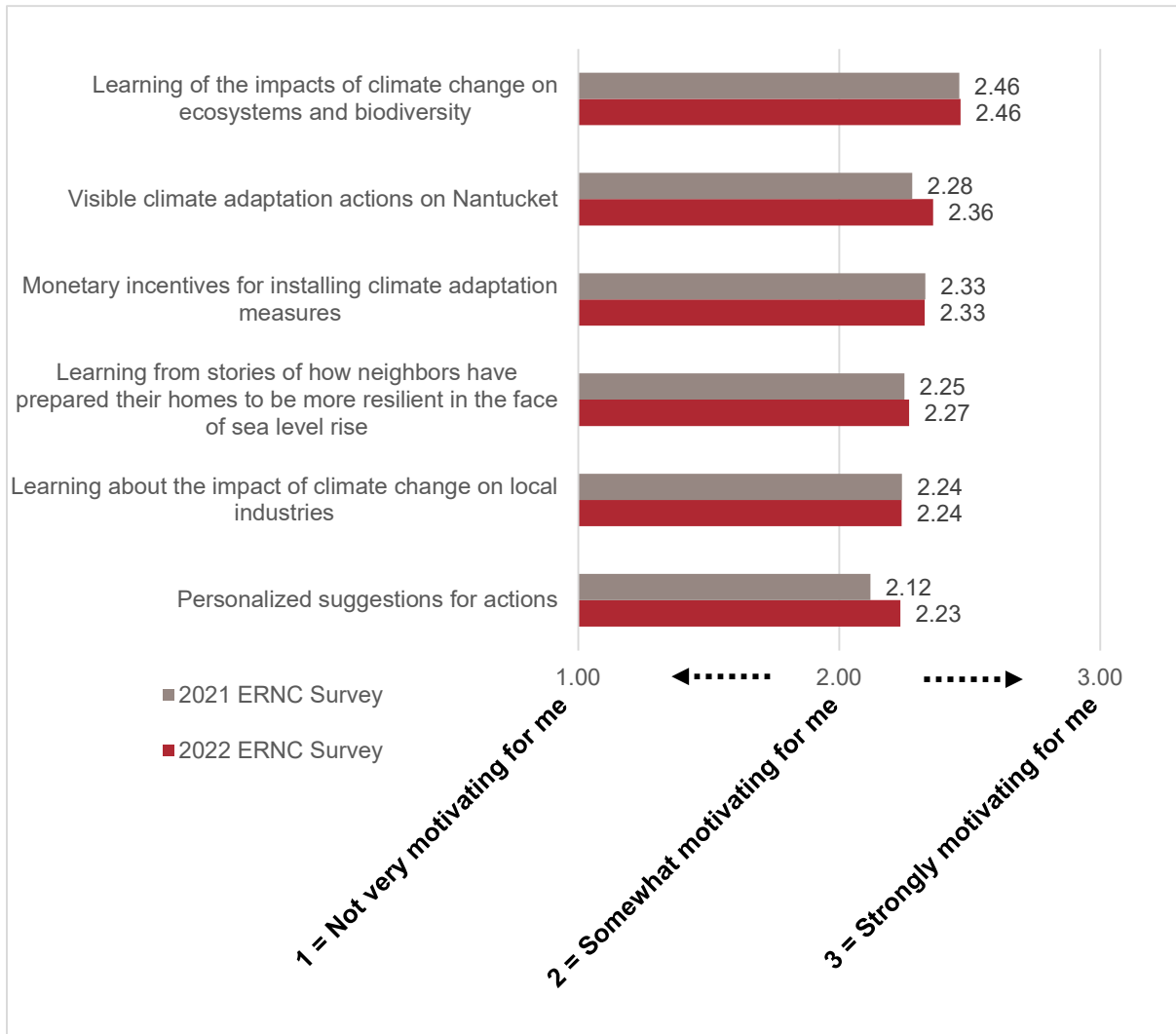


Note: High ground/low-lying areas as defined by the National Oceanic and Atmospheric Administration’s U.S. Climate Resilience toolkit tool set to 2030 ([Coastal Risk Screening Tool | U.S. Climate Resilience Toolkit](#)).

Source: 2022 ERNC survey.

The survey again 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”, “Visible climate adaptation actions on Nantucket” and “Monetary incentives for installing climate adaptation measures.” The least motivating was “Personalized suggestions for actions” and “Learning about the impact of climate change on local industries.” Levels of motivation were similar to or slightly greater than those reported by respondents to the first survey.

Figure 15. How much do you think these factors would help motivate you to prepare for climate change? (n=598)



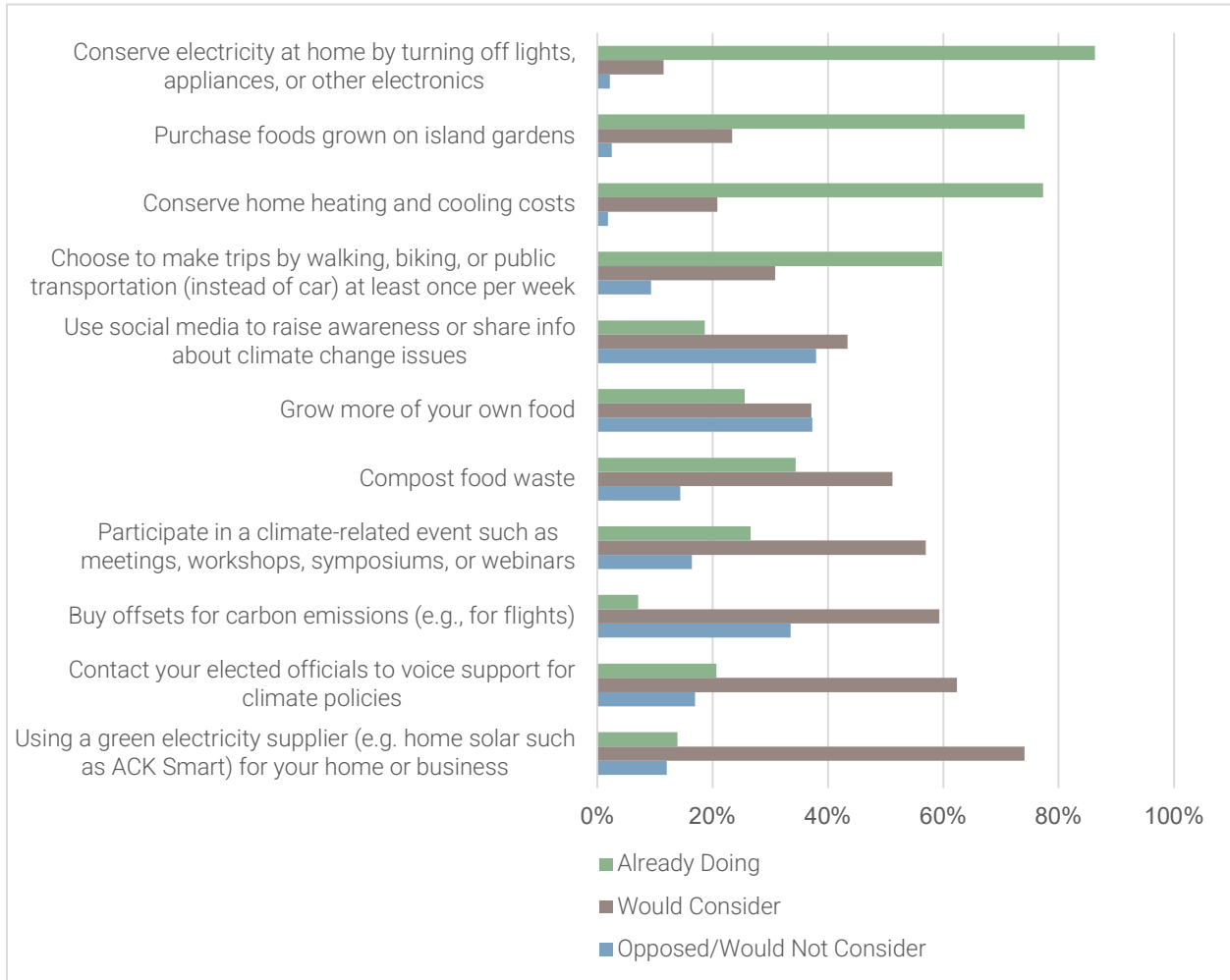
Source: 2021 and 2022 ERNC surveys.

5.2. Individual Actions to Mitigate 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 their contributions to climate change. Figure 16 summarizes the level of support for these actions. Four actions continue to be practiced by more than half of respondents: conserving electricity (86.3%), purchasing food grown on island gardens (74.1%), conserving home heating and cooling costs (77.3%), and making weekly trips by walking, biking, or public transportation (59.8%). These proportions were relatively unchanged from the previous survey, with the exception of conserving home heating and cooling costs which increased by nearly four percentage points. Heating costs have increased sharply this winter, which may have increased support for this action. While only 7.1% of respondents reported having purchased offsets for

carbon emissions, this represented a marked increase over the previous survey’s 4.8%. Despite a 1% increase in the proportion of respondents using a green electricity supplier over the first survey, it remained the second lowest action practiced by survey-takers with only 13.9% of respondents indicating that they do this.

Figure 16. Level of support for individual actions that limit Nantucket's contributions to climate change (n=590)



Source: 2022 ERNC survey.

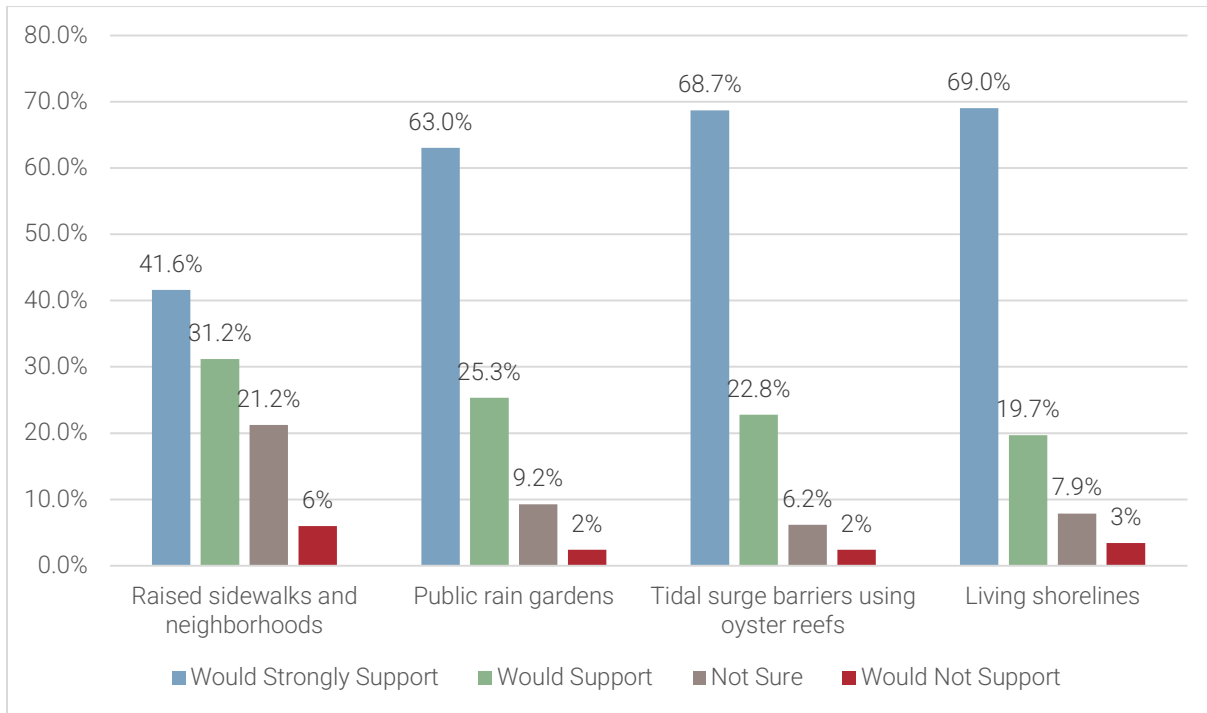
6. Community Actions to Prepare for Climate Change

Next, 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 rainwater from a roof, driveway or street and allow 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 17 summarizes participants' level of support for these actions. All four actions have high levels of support among survey respondents. Nearly 92% of respondents support or strongly support tidal surge barriers using oyster reefs, 89% support or strongly support living shorelines, and 88% support or strongly support the use of public rain gardens on Nantucket. Raised sidewalks and neighborhoods received the lowest level of support with 73% of respondents expressing support or strong support for them, up from just 59% of respondents to the first survey indicating support or strong support. As with the previous survey, the issue of raised sidewalks and neighborhoods was an area of unfamiliarity, with 21% of respondents selecting "not sure". None of the actions elicited significant opposition, ranging from 2% indicating they would not support public rain gardens and tidal surge barriers using oyster reefs, to 6% indicating they would not support raised sidewalks and neighborhoods.

Figure 17. Support for community actions to prepare for climate change proactively (n=584)



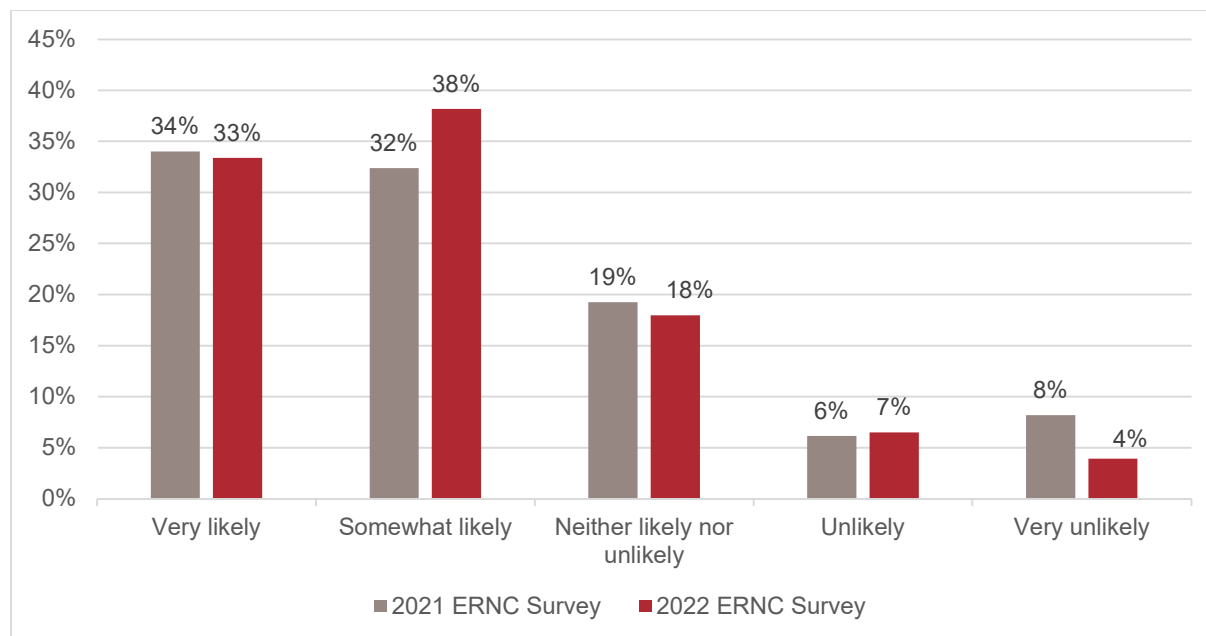
Source: 2022 ERNC survey.

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. Ninety-eight respondents offered additional ideas for preparing Nantucket for sea level rise and other impacts of climate change. Similar to the first study, these recommendations included:

- Deploy rain barrels throughout the island
- Erosion control and dune 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
- Look to the Netherlands for sea level rise solutions (e.g. buildings that can raise and lower)
- Look to Germany and Denmark for alternative energy solutions

This portion of the survey also asked respondents to indicate how likely they are to talk to community members about climate adaptation strategies. Figure 18 presents the results of the second survey compared with those of the first. Though most proportions remained the same, the share of respondents indicating that they are very unlikely to talk to community members about climate change declined by more than 5% between surveys I and II, mirrored by an increase in the percentage of respondents indicating that they are somewhat likely to do so.

Figure 18. How likely are you to talk to community members about climate adaptation strategies? (2021 Survey n=244, 2022 Survey n=584)



Source: 2021 and 2022 ERNC surveys.

The subgroup who took both the first and second survey expressed a much higher willingness to discuss climate change adaptation strategies within their community than the survey population as a whole. Nearly 84% of this group indicated they were at least somewhat likely to have such a conversation, compared to just 66% among all respondents to the second survey. Responses from this group changed little from the first to second survey, each variation accounting for a change in response from just a few respondents.

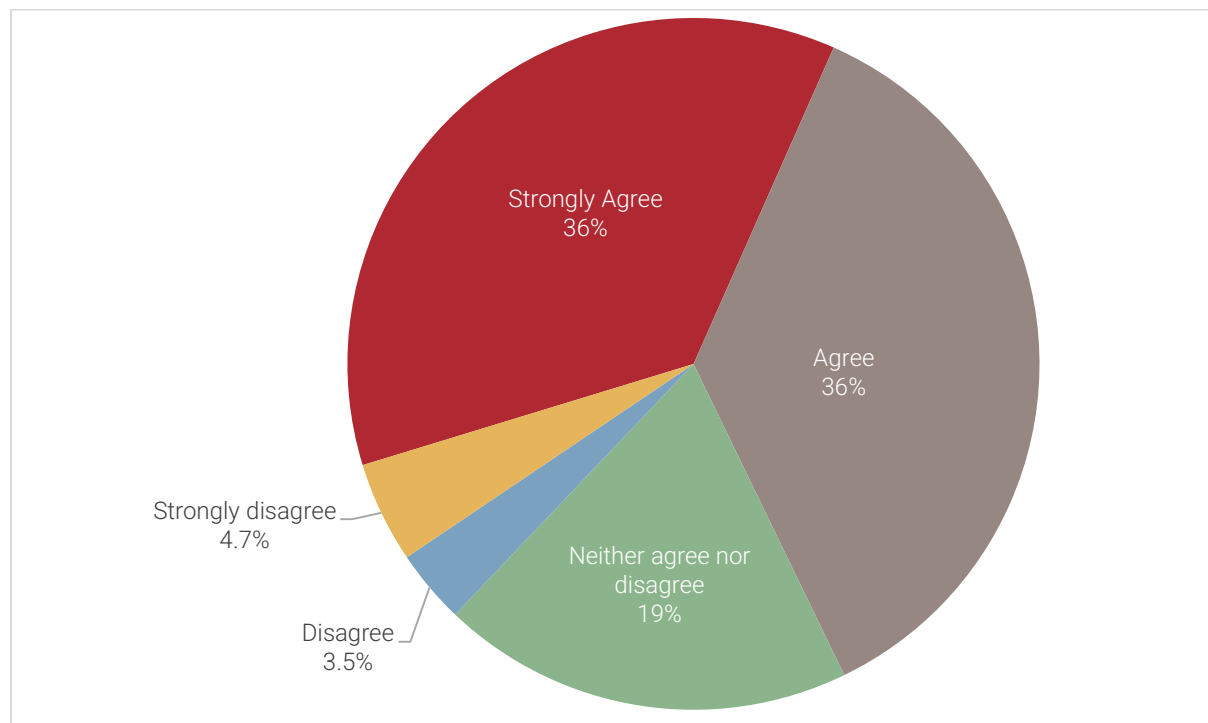
6.1. Familiarity with the Town of Nantucket’s Coastal Resilience Plan

In the fall of 2020, the Town of Nantucket began developing the Nantucket Coastal Resilience Plan (CRP). An interim report was made public in April 2020 and the final Plan was released in November 2021. This section of the survey was added to explore Nantucket resident and visitor familiarity and opinions on CRP policies and priority recommendations.

The first question in this section simply asks respondents if they have read or reviewed the plan, and more than 60% of survey respondents reported that they had done so. The survey then asks

about level of agreement with the Town of Nantucket’s policy to prepare for approximately nine feet of sea level rise by 2100. More than 70% of those surveyed reported that they agree or strongly agree with this policy, and only 8% expressed disagreement or strong disagreement.

Figure 19. Do you agree with the Town of Nantucket policy to prepare for approximately 9 feet of sea level rise by 2100? (n=553)



Source: 2022 ERNC survey.

Respondents were given the opportunity to elaborate, and 71 did so. Among those who agree or strongly agree with the policy, many expressed concerns that nine feet may not be sufficient. One respondent who strongly agreed commented “Pretty short sighted to not prepare at this point”, and other responses echoed this sentiment.

Comments from those who neither agree nor disagree were a mix of concern that nine feet wouldn’t be sufficient and that 2100 would be too late while some felt that nine feet was excessive and questioned the science. Many respondents in this group indicated that they had not yet reviewed the plan in enough detail to form an opinion.

Those who disagree or strongly disagree primarily cited skepticism about climate change and/or the resulting amount of sea level rise. Some expressed doubt that humankind is capable of “defying nature”, while others doubted the ability of government institutions to respond appropriately.

The survey presented respondents with the Plan’s 18 Priority 1 recommendations and asked respondents to identify those they felt were most necessary for the community. The top four

priorities among survey respondents were: Steamboat Wharf Resilience and Elevation Planning (selected by 32% of respondents), Downtown Neighborhood Flood Barrier Feasibility Study for Easy Street Corridor (29%), Updates to Zoning By-Law to limit growth in high-risk areas (29%), Create a Coastal Resilience and Sustainability Program (28%). Less than 5% of survey takers identified Ames Avenue Bridge Maintenance and Resilience Planning, Tom Nevers Dune Restoration, Beach Nourishment and Sand Fencing Pilot Project for Erosion Control, and Sediment Budget Study to determine sand needs for potential coastal resilience projects as top priorities. The remaining priorities were selected by between 6% and 18% of respondents.

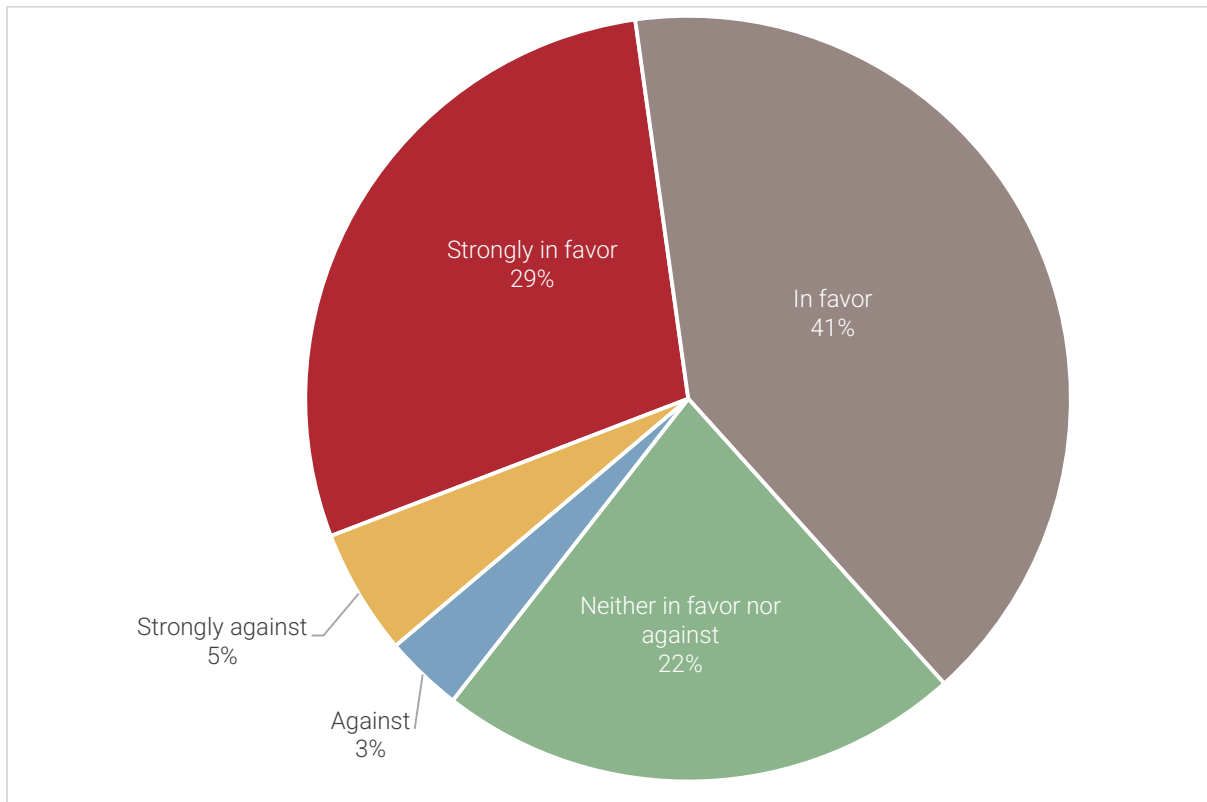
Figure 20. Top CRP Priorities (n=673)



Source: 2022 ERNC survey.

Finally, respondents were asked if they would be in favor of creating a new funding model to pay for the necessary municipal projects to alleviate some of the impacts from sea level rise. Approximately 70% indicated that they were in favor or strongly in favor of the idea, and an additional 22% was neither in favor nor against. Less than 10% of respondents selected “against” or “strongly against”.

Figure 21. Would you be in favor of creating a new funding model to pay for the necessary municipal projects to alleviate some of the impacts from sea rise? (n=545)

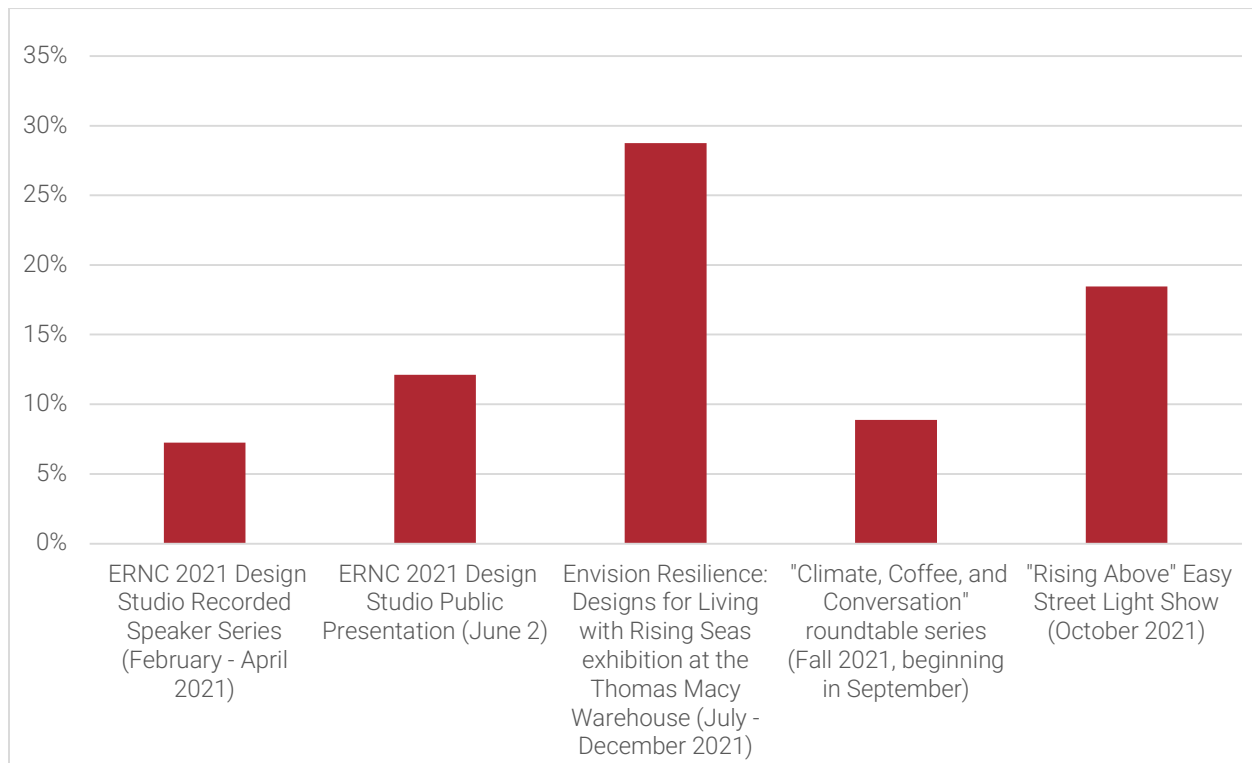


Source: 2022 ERNC survey.

6.2. Coastal Resilience Information Resources, Activities, and Organizations on Nantucket

This section was added to the second survey to evaluate respondent’s participation in ERNC activities and awareness of coastal resilience organizations and efforts on Nantucket. As shown below in Figure 22, Finally, respondents were asked about attendance at Envision Resilience Nantucket Challenge (ERNC) activities, events, and exhibitions. Just under a third of the survey population indicated having attended one of the five events listed. The most popular event was the Envision Resilience Designs for Living with Rising Seas exhibition that ran July through December 2021 followed by the “Rising Above” Easy Street Art Installation Light Show in October 2021.

Figure 22. Attendance at ERNC Activities (n=553)



Source: 2022 ERNC survey.

Finally, respondents were asked to list organizations on Nantucket that they go to as a resource for coastal resilience and see doing work related to coastal resilience. The most common organizations listed (in no particular order) were ReMain Nantucket, Envision Resilience, Coastal Resilience Advisory Committee, ACKclimate, Nantucket Conservation Foundation, Land Bank, Land Council, Massachusetts Audubon Society, Maria Mitchell Association, Linda Loring Nature Foundation, and the Town of Nantucket including the Department of Public Works, Natural Resources Department, the Board of Selectmen, and others. One respondent stated that this survey had raised their awareness of climate change and coastal resilience.

"I admire all of the conservation groups in Nantucket, I think all conservation efforts are part of the picture, reserving land and protecting open spaces, health of water sources, harbor waters, eel grass, it is all interconnected. Thank you to all groups and their employees..."

– Survey respondent

7. Conclusions and Recommendations

The second ERNC survey reinforces the findings of the first on a number of issues. First and foremost, Nantucket residents and visitors are alarmed and concerned about climate change and issues of coastal resilience. Very few are doubtful, dismissive or disengaged. Instead, they report that their level of engagement with these important topics is increasing. They demonstrate this engagement by having reviewed the Town's Coastal Resilience Plan, by attending ERNC events, and by participating in these surveys. Between the two surveys, nearly 1,000 Nantucket stakeholders took the time to weigh in on the critical issues facing their community. Many participants used the various "write in" options to share their concerns and offer their ideas for preparing the island for the impacts of climate change. Furthermore, more than two-thirds of respondents indicated that they are likely or very likely to talk to their fellow community members about climate adaptation strategies, and this number is growing.

Nantucket survey respondents are already taking action to reduce their own contribution to climate change and are prepared to take individual action to prepare their homes and businesses. They also support the efforts of their fellow homeowners, businesses, visitors, government actors, and other stakeholders in their community as they for the impacts of climate change.

Nantucket is a place of natural beauty, a place where people make their homes and make their livings, and a place where residents and visitors alike recreate while enjoying its coast and shorelines. An island-wide National Historic Landmark District, Nantucket has historic architectural and environmental features of national value. Yet it is a small island in a vast ocean. As coastal storms increase in frequency and intensity, storm surges and coastal erosion will damage homes, infrastructure, and natural resources and threaten the character of the community. The results of these surveys demonstrate that Nantucket residents and visitors value their community, recognize the challenges ahead, and are ready to take action.

Appendix. Summary of Differences Between the 2021 and 2022 Surveys

Survey Section	Summary of Changes
All sections	Changed to display options horizontally instead of vertically
1. Introduction	Changed the order of the first two questions to ask for email first, then relationship with Nantucket (year-round resident, part time resident, frequent visitor, no relationship); removed question 3 "Where did you first hear about this survey?"
2. Attitudes about climate change	Unchanged
3. Attitudes about climate change on Nantucket	Removed question about support for updating the National Landmark survey list; New Question: "To what extent has your level of engagement with the topic of climate change and coastal resilience changed over the last 12-18 months" and the optional follow up "If your level of engagement has changed during the past 12-18 months, to what would you attribute that change? Choose all that apply" followed by the options: Community efforts/events, press coverage, weather/storm events, town planning efforts, other and a text box to describe personal response or other)
4. Individual actions to prepare for climate change proactively	Removed "Why or why not" write in box from question 1, removed the question "are you interested in learning more about adaptive strategies for flooding and other climate change impacts?" (Also removed section 5 which was one question triggered by a "yes" response to this one)
5. Climate change resources (first survey)	This section, which contained only the question "You indicated that you are interested in learning more about adaptive strategies for flooding and climate change impacts. Would you like to receive a single email directing you to resources related to climate change and adaptation on Nantucket?" was removed.
5. Individual actions at the local level (second survey)	Appeared as section 6 in the first survey, now section 5 (content unchanged)
6. Community actions to prepare for climate change proactively	Unchanged
7. Town of Nantucket's Coastal Resilience Plan	New section. Questions ask about awareness and agreement with the Coastal Resilience Plan's policies, priorities, and potential funding
8. Coastal Resilience Information Resources, Activities, and Organizations on Nantucket	New section. Asks if respondents were aware of or attended ERNC events and to name organizations on Nantucket that they associate with coastal resilience and climate change
9. Demographics	Includes a new demographic question: "What is your housing status on Nantucket" with the options rent or own. The last question asks if they want to be added to the ERNC email list.