DRAFT REPORT

U.S. Virgin Islands Residents' Knowledge of, Attitudes Toward, and Perceptions of Coral Reefs and Coral Reef Management

August 2017

Responsive Management
Harrisonburg, VA

Written under contract for the
NOAA Office for Coastal Management
www.coast.noaa.gov

Responsive Management™

NOAA's Office for Coastal Management

"Coastal management" is the term used by communities and organizations striving to keep the nation's coasts safe from storms, rich in natural resources, and economically strong. The national lead for these efforts is NOAA's Office for Coastal Management, an organization devoted to partnerships, science, and good policy. This agency, housed within the National Ocean Service, oversees major initiatives that include the National Coastal Zone Management Program, Coral Reef Conservation Program, Digital Coast, and National Estuarine Research Reserve System.

Table of Contents

Executive Summary

Introduction and Methodology

This study was conducted for the National Oceanic and Atmospheric Administration's Coral Reef Conservation Program (CRCP) to determine U.S. Virgin Islands (USVI) residents' knowledge of, attitudes toward, and perceptions of coral reefs and coral reef management. The study entailed a scientific dual-mode survey administered by telephone and through in-person surveys conducted on site.

For the survey, two modes of survey delivery were selected: telephones and on-site in-person surveys. The use of two modes of data collection was essential in ensuring representative, unbiased data collection; the in-person surveys were needed because of the relatively high proportion of USVI residents without functioning telephones.

The survey questionnaire was developed by the CRCP. Responsive Management conducted pre-tests of the questionnaire to ensure proper wording, flow, and logic in the survey for both the telephone and in-person surveys.

The telephone surveys used a dual-frame sampling plan. This plan incorporated both landline and cellular telephone numbers to ensure maximum coverage and representation of those with telephones, including young adults, singles, and mobile-only households.

The researchers collected approximately 70% of responses using in-person interviews. This sampling plan accounted for the high proportion of USVI residents without functioning telephones. For the in-person interviews, a team of professional interviewers from InsideHeads, a USVI-based company, conducted all in-person interviews with residents of St. Thomas, St. John, and St. Croix. The in-person interviewers were conducted as intercept surveys, conducted at more than 30 sites frequented by USVI residents. These sites were selected to be geographically distributed around the islands in locations designed to capture residents of all ages, ethnicities, and income strata.

The software used for telephone data collection was Questionnaire Programming Language (QPL). Although the QPL system automates the telephone survey process and data entry, it is *not* a fully automated system. A live, professionally trained interviewer conducted each telephone survey. The telephone interviews were conducted in both English and Spanish (as necessary).

Telephone surveying times are Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday from noon to 5:00 p.m., and Sunday from 5:00 p.m. to 9:00 p.m., local time. The telephone portion of the survey was conducted in February 2017.

The on-site in-person surveys were conducted from 9:00 a.m. to 5:00 p.m. local time. The in-person portion of the survey was administered from February to April 2017.

In total, 1,188 completed interviews (436 in St. Thomas, 362 in St. John, and 390 in St. Croix) were obtained through telephone and in-person modes. The analysis of data was performed using IBM SPSS Statistics as well as proprietary software developed by Responsive Management. The results were weighted by demographic and geographic characteristics so that the sample was representative of residents of the USVI as a whole.

ATTITUDES ON THE IMPORTANCE OF CORAL REEFS

- Three questions delved into residents' opinions on the *importance* of coral reefs as protection from coastal erosion and natural disasters, as a source of food, and culturally. The top-ranked aspect is the *cultural* importance: an overwhelming majority agree that coral reefs are important to their island's culture (92%). Just below that are the provision of food and protection aspects: a large majority agree that coral reefs in good condition provide food for island communities to eat (81%) and that coral reefs protect the USVI from coastal erosion and natural disasters (also 81%).
  - Disagreement is low: only 2% to 6% disagree with any of the three statements, and almost nobody *strongly* disagrees.

- An overwhelming majority of residents (80%) *disagree* that coral reefs are *only* important to fishermen, divers, and snorkelers. In other words, feeling exists that the coral reefs have importance beyond only those people who have close physical ties to the reefs.

Knowledge of and Attitudes toward Threats to Coral Reefs

- Ten potential threats to coral reefs were presented to residents. For each, residents indicated their level of familiarity with it, on a scale from *very unfamiliar* to *very familiar*.
  - In the first tier are the two highest on the list (ranked by those *familiar* or *very familiar* with each): hurricanes and other natural disasters (87%) and pollution and runoff, such as stormwater, wastewater outfall, sediment, and marine debris (79%).
  - A middle tier, with large majorities of 60% to 72% being familiar or very familiar, are open dumping and littering (72%), climate change (70%), invasive species such as lionfish (63%), and damage from ships and boats (60%).

- After the list above was presented and rated, residents were asked to rate the threats to coral reefs in general: 44% say that the threats are *large* or *extreme*, a slightly greater percentage than say *moderate* or lower (41%).

Perceived Resource Conditions

- The survey asked about the condition of the islands' natural resources.
  - The ocean water quality has a much higher percentage of residents rating it good or very good (69%) than bad or very bad (7%). All other aspects of the natural resources are not rated as highly. The number of fish (47% giving an overall good rating; 16% giving an overall bad rating), the amount of coral and invertebrates (29% to 18%), and the health of the coral (25% to 25%) are in the middle. The worst ratings are for the amount of marine debris and trash, where bad ratings exceed good ratings (only 29% rate it on the good side, while 40% rate it on the bad side).

- Following those ratings discussed above, residents were asked to rate the trend in those same items—in other words, if they got worse or better over the past 10 years. For all items except one (ocean water quality), a greater percentage of residents think the condition got worse than think the condition got better.
  - The greatest disparity shows up in the ratings of the number of fish (16% say it got better, compared to 36% who say it got worse—a difference of 20 percentage points) and the health of the coral (14% better, 34% worse—also a difference of 20 points). Also with negative ratings is the amount of coral and coral reef invertebrates (14% better to 31% worse—an 18-point difference). The amount of debris and trash has more even ratings, but still tilted toward worse:

27% say it got better, but 35% say it got worse. Finally, regarding ocean water quality, 26% say it got better, while 23% say it got worse.
  - A final question in this section asked residents to say what they think will happen in the next 10 years, and they fall out roughly into thirds: 34% say the condition of marine resources in the islands will get worse, 37% say the condition will improve, and 28% give a neutral or "not sure" response.

Knowledge of and Attitudes toward Marine Protected Areas

- Residents are about evenly divided in their knowledge of Marine Protected Areas (MPAs), with 52% being familiar or very familiar and 43% being unfamiliar or very unfamiliar.

- Those who were familiar or very familiar or who answered "neither familiar nor unfamiliar" in the above question were then asked about various aspects of MPAs. For each of ten statements, respondents were asked if they agreed or disagreed with the statement.
  - Overwhelming majorities of residents agree that MPAs protect coral reefs (90% agree or strongly agree), that they (the residents themselves) support the establishment of locally managed MPAs (87%), that they (the residents themselves) would support adding new MPAs if there is evidence that the MPAs are improving the marine resources (84%), and that MPAs increase the number of fish (80%).
  - In the next tier down, from 60% to 71% agree or strongly agree that there should be more locally managed MPAs (71%), that MPAs help increase tourism (68%), that MPAs increase the likelihood that people will vacation in the islands (also 68%), and that there has been an economic benefit to the islands from the establishment of the MPAs (60%).

Attitudes toward Coral Reef Management Strategies and Enforcement

- The survey asked about support for or opposition to six regulations or regulatory actions. For each, support far exceeds opposition. Overwhelming majorities support increased enforcement of wastewater and stormwater regulations to preserve water quality (91% support, only 3% oppose) and more restrictions on construction practices to prevent sediment from going into the sea (87% to 5%). There is also fairly high support for size limits for harvesting certain fish species (79% to 8%) and for amending building regulations to consider sea level rise and climate impacts (74% to 6%). Still with a majority in support is charging a small fee to non-residents visiting MPAs to fund conservation (65% to 19%). Just under half support imposing a license requirement and fee for land-based recreational fishers (49% support, which is still higher than opposition, which is at 33%—neutral and "not sure" responses making up the remainder).

- Two questions asked about community involvement in protecting and managing coral reefs and personal involvement in decisions about management of coral reefs in the islands.
  - While a majority of residents feel their community is involved (70%), compared to only 12% saying that their community is not at all involved, most commonly, those saying "involved" are saying only *moderately* or *slightly* involved (together at 50%).
  - Personal involvement is deemed to be much lower than community involvement: a majority (55%) say that they are not at all involved in the decisions related to management of the reefs. In particular, only 13% feel that they are very involved or involved.

Sources of Information about Coral Reefs

- Residents were asked to name the three sources of information about coral reefs and the environment that they use most often in the Virgin Islands.
  - Putting the three questions together, 46% indicate that they use newspapers and other print publications, 46% use the Internet, 38% use TV, and 34% use radio.

- Residents then rated the trustworthiness of the sources that they use.
  - The top-ranked source is non-profit environmental organizations as a whole (91% of those who use them consider them trustworthy or very trustworthy), followed by friends and family (81%), federal government agencies (80%), jurisdictional agencies (75%), and radio (73%)—all over 70%.

Participation in Behaviors that May Improve Coral Health

- A little more than a third of residents (36%) participate in an activity to help protect the environment several times a year or more. Another 28% participate, but only once a year or less, a sum of 64% who participate at all. Finally, 33% do not participate in such efforts.

Participation in Reef Recreational Activities and Motivations for Participating

- The most popular of the 11 activities the survey asked about are beach recreation, such as sports or picnics (80% of residents do this activity at some time) and swimming or wading (79%). These are by far the most popular activities.
  - In a second tier are snorkeling (43% do this at some time), motorized boating not for fishing (41%), and waterside or beach camping (35%).

- For fun/personal enjoyment and for food are two of the top reasons that residents fish or gather marine resources. A follow-up series was given to those who fish or gather marine resources that presented five possible reasons for doing so, and they were asked how often they fish or gather marine resources for the reason. The top reason, when ranked by the percentage who say they fish/gather for the reason frequently, sometimes, or rarely (i.e., at any threshold at all) is for fun or personal enjoyment (66%), but this is closely followed by doing so to feed himself/herself and his/her family or household (61%).
  - Of lesser importance are doing so to give seafood to extended family and friends (46%) and for special occasions or religious cultural events (31%). Very few do so to sell (13%).

Consumption of Seafood

- The overwhelming majority of residents' families eat seafood at least once in a while (95% do so). Additionally, 87% do so at least monthly, and 63% do so at least weekly.
  - A follow-up question then asked how often the respondent's family eats fish or seafood that is *harvested from coral reefs* (the examples given were snapper, grouper, parrotfish, old wife, trigger fish, lobster, or conch): 72% do so at some time, 48% do so at least monthly, and 24% do so at least weekly.
  - Another question asked about consumption of lionfish: only 10% of residents consume it.

- The top sources of seafood eaten by residents are through purchase at a store or restaurant (59% say this is one of the two primary ways that they get seafood that they eat) or purchase at a market or roadside vendor (57%). Meanwhile, 14% include as one of their two primary sources that they or someone in their household catches the fish themselves.

Summary of Omnigraph Findings

The data collected during this study of the USVI were crosstabulated to evaluate how various responses correlate to different segments of survey respondents. Different groups within the survey sample were categorized based on their demographic, behavioral, and attitudinal characteristics. By analyzing survey responses among these different groups, several recurring themes and findings emerged from the study, as discussed on the following pages.

Those who participate in *any* ocean-related recreational activity are more likely to participate in the other activities

In all, 42% of survey respondents go fishing or gather marine resources, yet these activities are undertaken by over 60% of those who go snorkeling and/or SCUBA diving, waterside or beach camping, or boating (motorized and non-motorized alike). This is noteworthy because participants in these activities are generally like-minded in their attitudes and concerns regarding the coral reefs of the USVI. The one exception is among those who go swimming or do beach activities: because these activities are much more common, the responses from this group do not vary as much from the sample overall. For simplification, participants in these various activities (except swimming/beach activities) will be referred to collectively as "recreationists" in this section.

Recreationists are more likely to be concerned with the health of coral reefs than non-active residents

There were several measures of concern about coral reefs in this study, and recreationists consistently expressed concern about the reef's health. For example, 51% to 61% of recreationists believe that there are large or extreme threats to coral reefs, compared to just 44% of all residents. Recreationists are also closely aligned with those who think that the condition of the marine resources in the USVI will get worse in the next 10 years, those who do *not* think the ocean water quality is good, and those who do *not* think the health of the coral is good.

In addition, recreationists appreciate the value provided by healthy coral reefs: 85% to 89% agree that coral reefs protect the islands from coastal erosion and natural disasters, and 86% to 89% agree that healthy coral reefs provide food for island communities (both statements received 81% in agreement from all respondents).

Increased seafood consumption corresponds to greater concern over the health of coral reefs

A strong majority of island residents (87%) belong to families that eat seafood monthly or more often, and differences can be observed between this group and those whose families eat seafood less frequently or not at all. Those who frequently consume seafood are more likely than their counterparts to think that there are great threats to the coral reefs, that conditions will get worse, that the coral reef is *not* healthy, and that the ocean water quality is *not* good. At a glance, it might seem that people who think the ocean water quality and coral reefs are in good shape would be more inclined to eat seafood, but in fact those who consume seafood apparently have more incentive to be concerned about these issues.

Residents with higher levels of education are more concerned about coral reefs than less educated residents

Residents with a bachelor's degree (with or without a higher degree) were more likely than those without a bachelor's degree to believe that coral reefs protect the USVI from erosion and natural disasters (88% compared to 78%, respectively) and that coral reefs provide food for island communities (85% compared to 79%). These are not large differences, but substantially more contrast is observed between these

groups on the question of whether there are large or extreme threats to the coral reefs: 60% of those with a bachelor's degree believe this, compared to just 37% of those without a bachelor's degree.

Those who think coral reefs are threatened have the most support for regulatory action in other areas of conservation

The survey included questions of support for or opposition to regulatory actions in six other areas of conservation. The group who believes that threats to coral reefs in the USVI are large or extreme had the top level of support for *all regulations or actions*:

- Size limits for harvesting certain fish species: 90% of this group (those thinking that threats are large or extreme) support size limits, compared to 79% of the total.
- A license requirement and fee for land-based recreational fishers: 55% of this group; 49% of the total.
- A small fee to non-residents visiting locally managed MPAs to fund conservation: 73% of this group; 65% of the total.
- Amending building regulations to consider sea level rise and climate impacts: 83% of this group; 74% of the total.
- More restrictions on construction practices to prevent sediment from going into the sea: 92% of this group; 87% of the total.
- Increased enforcement of wastewater and stormwater regulations to preserve water quality: 97% of this group; 91% of the total.

Clearly, those who believe that the coral reefs are threatened are not "single issue" in their environmental concerns.

Residents of St. John participate in activities to protect the environment more often than those from the other islands

Over a third of USVI residents (36%) participate in activities more than once a year to benefit the environment, such as participating in beach clean-ups or volunteering with an environmental group. Crosstabulations of the three islands show that St. John residents take action the most (46% do so), followed by residents of St. Croix (40%) and St. Thomas (32%). Note that recreationists top the list (46% to 57%).

Age and especially gender are inconclusive as factors in predicting residents' attitudes toward coral reefs and conservation issues

For these analyses, residents were divided into three age categories: 18-34, 35-54, and 55 and older. Looking at the six regulatory actions previously discussed, the oldest age group was the least likely to support five of the six regulations (the highest level of support alternated between the middle and youngest age categories). Also, the oldest group was most likely to agree that coral reefs are only important to fishermen, divers, and snorkelers (15% of this group agree, compared to 12% of the 35-54 age group and 8% of the 18-34 age group). On the other hand, the oldest residents are most likely to agree that coral reefs protect the USVI from coastal erosion and natural disasters: 85% of the 55 and older group, 83% of the 35-54 group, and 77% of the 18-34 group agree with this statement. The oldest group was also the most likely to say that their community is involved in protecting coral reefs. Although differences are observed between the age categories, no single group consistently comes down on the side of concern about coral reefs and conservation.

Gender was even more inconclusive as a demographic factor regarding these issues. Males are more active than females in ocean-related recreation, particularly fishing and boating. Recall that recreationists express more concern about coral reefs than non-active residents. Yet more females (47%) than males (40%) think coral reefs face large or extreme threats; residents with this opinion regarding threats being large or extreme are consistently the most supportive of regulatory actions to protect the environment. Just looking at gender, the percentages of males and females giving the same response are often close together (and hence close to the total, which would be between them).

Introduction and Methodology

This study was conducted for the National Oceanic and Atmospheric Administration's Coral Reef Conservation Program (CRCP) to determine U.S. Virgin Islands (USVI) residents' knowledge of, attitudes toward, and perceptions of coral reefs and coral reef management. The study entailed a scientific dual-mode survey administered by telephone and through in-person surveys conducted on site. Specific aspects of the research methodology are discussed below.

Survey Mode

For the survey, two modes of survey delivery were selected: telephones and on-site in-person surveys. The use of two modes of data collection was essential in ensuring representative, unbiased data collection; the in-person surveys were needed because of the relatively high proportion of USVI residents without functioning telephones.

Questionnaire Design

The survey questionnaire was developed by the CRCP and was approved by the Congressional Budget Office. Responsive Management conducted pre-tests of the questionnaire to ensure proper wording, flow, and logic in the survey for both the telephone and in-person surveys.

Survey Sample

The telephone surveys used a dual-frame sampling plan. This plan incorporated both landline and cellular telephone numbers to ensure maximum coverage and representation of those with telephones, including young adults, singles, and mobile-only households. To ensure representative sampling, the researchers purchased a representative telephone database from Marketing Systems Group (a firm specializing in the development of telephone survey samples) that included both landline and cellular records for residents of the USVI.

The researchers collected approximately 70% of responses using in-person interviews. This sampling plan accounted for the high proportion of USVI residents without functioning telephones. Although this sampling plan was most rigorous from a statistical point of view, it was labor- and resource-intensive.

The in-person surveys did not use a set sample but were conducted as intercept surveys, as explained further on.

Telephone Interviewing Facilities

A central polling site at the Responsive Management office allowed for rigorous quality control over the telephone interviews. Responsive Management maintains its own in-house telephone interviewing facilities. These facilities are staffed by interviewers with experience conducting computer-assisted telephone interviews on the subjects of natural resources and outdoor recreation.

To ensure the integrity of the telephone survey data, Responsive Management has interviewers who have been trained according to the standards established by the Council of American Survey Research Organizations. Methods of instruction included lecture and role-playing. The Survey Center Managers and other professional staff conducted a project briefing with the interviewers prior to the administration of this survey. Interviewers were instructed on type of study, study goals and objectives, handling of survey questions, interview length, termination points and qualifiers for participation,

interviewer instructions within the survey questionnaire, reading of the survey questions, skip patterns, and probing and clarifying techniques necessary for specific questions on the survey questionnaire.

Telephone Interviewing Procedures

The software used for telephone data collection was Questionnaire Programming Language (QPL). Although the QPL system automates the telephone survey process and data entry, it is *not* a fully automated system. A live, professionally trained interviewer conducted each telephone survey. The survey data were entered into the computer as each interview was being conducted, eliminating manual data entry after the completion of the survey. The survey questionnaire was programmed so that QPL branched, coded, and substituted phrases in the survey based on previous responses to ensure the integrity and consistency of the data collection. Additionally, the survey questionnaire itself contained error checkers and computation statements to ensure quality and consistent data.

The Survey Center Managers and statisticians monitored the telephone data collection, including monitoring of the actual telephone interviews without the interviewers' knowledge to evaluate the performance of each interviewer and ensure the integrity of the data. This monitoring of interviewers allowed supervisors to ensure high-quality data collection in terms of:

- Properly making initial contact and properly administering screening procedures.
- Reading questions as written, fully and completely.
- Reading response categories fully and completely (or not reading responses, according to question specifications).
- Properly probing when questions required it to be done.
- Clarifying ambiguous or confused responses.
- Properly administering questions without alienating the respondent or biasing the responses.
- Avoiding bias by comments or vocal inflection.
- Persuading wavering, disinterested, or hostile respondents to continue the interview.
- Generally conducting the interview professionally.

The telephone interviews were conducted in both English and Spanish (as necessary).

On-Site Surveying Procedures

For the in-person interviews, a team of professional interviewers from InsideHeads, a USVI-based company, conducted all in-person interviews with residents of St. Thomas, St. John, and St. Croix. The in-person interviewers were conducted as intercept surveys. Using the local knowledge of USVI-based team member InsideHeads, in-person surveys were conducted at more than 30 sites frequented by USVI residents, as shown in the tabulation that follows on the next page. These sites were selected to be geographically distributed around the islands in locations designed to capture residents of all ages, ethnicities, and income strata.

Table 1: Sites for in-person survey intercepts

St. Thomas	St. John	St. Croix
Downtown Red Hook	The Marketplace Complex	Salt River Marina
Red Hook Ferry Terminal	Starfish Market	Cane Bay
Bureau of Motor Vehicles	Cruz Bay Park	DIVI Carina Bay
Frenchtown Park	Human Services Building	Christiansted Boardwalk Waterfront
Tutu Park Complex	Coral Bay—Coral Harbor	Sunny Isle Mall
Cost-U-Less	Westin Resort	Gallows Bay Stores
Bolongo Bay	Ferry Dock	Christiansted Downtown
Magens Bay	Wharfside Village Complex	Rainbow Beach
Downtown Charlotte Amalie	Mongoose Junction Complex	Purple Papaya
Airport	The Lumberyard Complex	Dorsch Beach
	Fire Department East	Crusian Gold Store
	Fire Department West	
	National Park Visitors Center	

Note that these survey sites were selected based upon InsideHeads' knowledge of residents' habits, which change considerably during periods of high tourism. To encourage participation, information was disseminated in advance about survey locations through local news outlets, and surveys were conducted at multiple locations each day. Each site was manned for six hours per day, including the highest traffic hours with daylight at each location.

To maximize response rates, the deployment of attractive and comfortable survey stations was essential. At all sites, surveyors identified themselves as InsideHeads staff, and all permanent equipment (e.g., clipboards, shade tents, electronics) were branded with InsideHeads logos. Each location was staffed by a minimum of two professional interviewers at all times, and each island had a full-time supervisor. The supervisor traveled between sites on a daily basis to assist and monitor interviewers, to set-up and take-down site equipment, to ensure that any permits and/or permissions were obtained before sampling occurred, and ensured that data were handled appropriately.

To ensure safety, all surveyors underwent training and were identified with name badges. All sites used for data collection were publicly accessible and well-lit. Surveys were conducted only during daylight hours.

Ensuring the accuracy and quality of the data provided by respondents was crucial. Accordingly, the professional interviewers assisted respondents with questions and provided all necessary instructions via the questionnaire script to ensure the successful completion of each survey. To ensure high-quality data collection, only those individuals who met study criteria were interviewed. One of the criteria was that the on-site respondent had not previously taken the survey by telephone.

In-person surveys were administered using tablets and/or laptops, with the data being inputted directly in real-time using data collection software. The use of electronic data entry methods enhanced the flow of data entry by eliminating unnecessary questions (e.g., follow-up questions were shown only when they applied). Data entry systems were programmed to automatically code and/or substitute phrases in

the survey based on previous question entries, and skip patterns were programmed to ensure smooth survey flow and comparability with the telephone surveys. In addition to electronic data entry hardware, paper-based questionnaires were also made available to all surveyors in case unforeseen information technology issues arose.

To minimize nonresponse, surveyors always began interviews with a brief introduction. This introduction included his/her name, affiliation (i.e., working for InsideHeads, conducting a survey for the National Oceanic and Atmospheric Administration), the purpose of the survey, and its length. Interviewers also conveyed that they were not selling anything and that all responses would be confidential. If a candidate was willing to take the survey but currently unavailable (e.g., due to personal commitments), the surveyor communicated the location of the survey sites that would be manned in upcoming days.

Interviewing Dates and Times

Telephone surveying times are Monday through Friday from 9:00 a.m. to 9:00 p.m., Saturday from noon to 5:00 p.m., and Sunday from 5:00 p.m. to 9:00 p.m., local time. A five-callback design was used to maintain the representativeness of the sample, to avoid bias toward people easy to reach by telephone, and to provide an equal opportunity for all to participate. When a respondent could not be reached on the first call, subsequent calls were placed on different days of the week and at different times of the day. The telephone portion of the survey was conducted in February 2017.

The on-site in-person surveys were conducted from 9:00 a.m. to 5:00 p.m. local time. The in-person portion of the survey was administered from February to April 2017.

Response Rate

For the telephone survey, the response rate is 28% overall. The calling effort and response rate are shown in the tabulation below.

Table 2: Telephone survey response

	Total potentially eligible respondents	Total completed telephone surveys	Response rate
St. Thomas	479	136	0.284
St. John	336	112	0.333
St. Croix	511	120	0.235
Overall	1326	368	0.278

For the in-person surveys, the estimated response rate is between 15% and 20%. In-person interviewers were on the move and pursuing potential respondents as frequently as possible, as well as making adjustments to location and approach in an effort to maximize response. As a result, the precise response rate is not known. However, approximately one out of every five potential respondents started the survey, with a large majority of those who start—about 75% to 80%--completing the entire survey.

Data Analysis

After the surveys were obtained by the interviewers, the Survey Center Managers and/or statisticians checked each completed survey to ensure clarity and completeness. In total, 1,188 completed interviews (436 in St. Thomas, 362 in St. John, and 390 in St. Croix) were obtained through telephone and in-person modes.

The analysis of data was performed using IBM SPSS Statistics as well as proprietary software developed by Responsive Management. The results were weighted by demographic and geographic characteristics so that the sample was representative of residents of the USVI as a whole.

Sampling Error

Throughout this report, findings of the survey are reported at a 95% confidence interval. For the entire sample of USVI residents, the sampling error is at most plus or minus 2.82 percentage points. Sampling error was calculated using the formula described below, with a sample size of 1,188 and a population size of 79,379 adult USVI residents. The sampling error for each island is shown in the tabulation below.

Sampling error equation

$$B = \left(\sqrt{\frac{\frac{N_p(.25)}{N_s} - .25}{N_p - 1}} \right)(1.96)$$

Where: B = maximum sampling error (as decimal)
N_P = population size (i.e., total number who could be surveyed)

Derived from formula: p. 206 in Dillman, D. A. 2000. *Mail and Internet Surveys*. John Wiley & Sons, NY.

Note: This is a simplified version of the formula that calculates the maximum sampling error using a 50:50 split (the most conservative calculation because a 50:50 split would give maximum variation).

Table 3: Sampling error by island

	Sample	Population	Sampling error
St. Thomas	436	39,463	4.67
St. John	362	3,346	4.86
St. Croix	390	36,570	4.94

Weighting the Data

Results of the study were weighted by age and gender by island, meaning that within each island the data are weighted to be representative of the demographics of the total population. Note that age and gender weights are based on census data for the age 18 and older population of the Virgin Islands. Additionally, the data for each island are weighted to match the island's proportion of residents with the three islands total. It should be noted that St. John has lower weights than the other islands due to its substantially smaller population. The weights applied are shown in the tabulation that follows on the next page.

Table 4: Weights used by island and demographic

St. Croix, M, 65+	1.56
St. Croix, M, 55-64	1.09
St. Croix, M, 45-54	1.46
St. Croix, M, 35-44	1.56
St. Croix, M, 25-34	1.64
St. Croix, M, 18-24	1.81
St. Croix, F, 65+	0.99
St. Croix, F, 55-64	1.44
St. Croix, F, 45-54	1.49
St. Croix, F, 35-44	1.7
St. Croix, F, 25-34	1.47
St. Croix, F, 18-24	1.36
St. John, M, 65+	0.09
St. John, M, 55-64	0.18
St. John, M, 45-54	0.18
St. John, M, 35-44	0.17
St. John, M, 25-34	0.11
St. John, M, 18-24	0.32
St. John, F, 65+	0.09
St. John, F, 55-64	0.11
St. John, F, 45-54	0.13
St. John, F, 35-44	0.19
St. John, F, 25-34	0.13
St. John, F, 18-24	0.48
St. Thomas, M, 65+	0.78
St. Thomas, M, 55-64	1.18
St. Thomas, M, 45-54	1.73
St. Thomas, M, 35-44	1.51
St. Thomas, M, 25-34	1.06
St. Thomas, M, 18-24	2.27
St. Thomas, F, 65+	0.84
St. Thomas, F, 55-64	1.38
St. Thomas, F, 45-54	1.75
St. Thomas, F, 35-44	1.88
St. Thomas, F, 25-34	1.73
St. Thomas, F, 18-24	2.44

Additional Information about the Presentation of Results in the Report

In examining the results, it is important to be aware that the questionnaire included several types of questions:

- Single or multiple response questions: Some questions allowed only a single response, while other questions allowed respondents to give more than one response or choose all that applied. Those that allowed more than a single response are indicated on the graphs with a label, such as "Multiple Responses Allowed" or "Two Responses Allowed."
- Scaled questions: Many closed-ended questions (but not all) used a scale, such as frequently-sometimes-rarely-never.
- Series questions: Many questions were part of a series. The results of series questions are primarily intended to be examined relative to the other questions in that series (although results of the questions individually can also be valuable). Typically, results of all questions in a series are shown together.

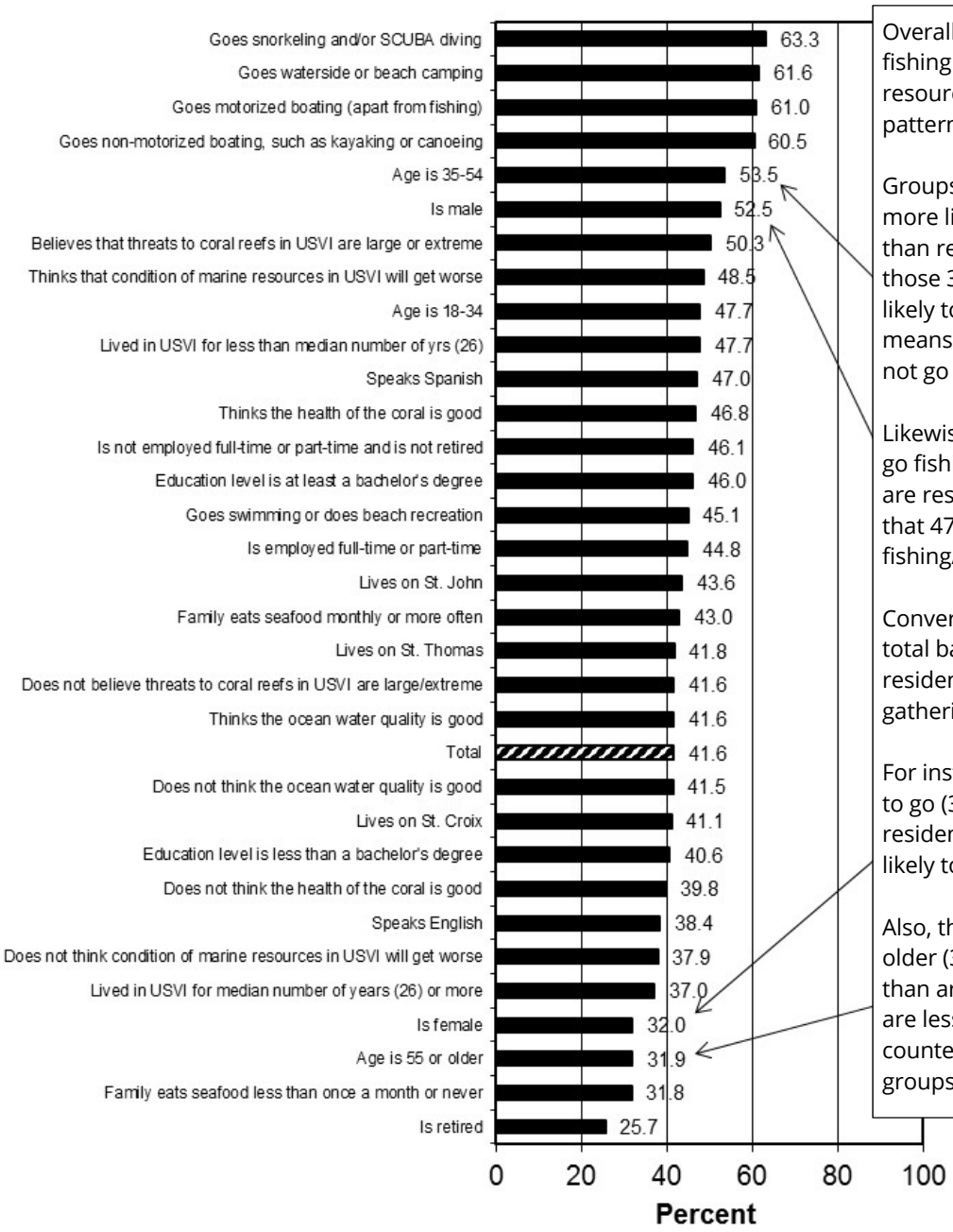
Most graphs show results rounded to the nearest integer; however, all data are stored in decimal format, and all calculations are performed on unrounded numbers. For this reason, some results may not sum to exactly 100% because of this rounding on the graphs. Additionally, rounding may cause apparent discrepancies of 1 or 2 percentage points between the graphs and the reported results of combined responses (e.g., when "a lot worse" and "somewhat worse" are summed to determine the total percentage who think the resource is worse).

One type of graph included in this report is called an "omnigraph" because it includes many demographic and other characteristics on a single graph. These omnigraphs show the characteristics of respondents who hold certain beliefs or practice certain behaviors. Those groups above the total bar have a higher likelihood to hold the belief or practice the behavior, while those groups below the total bar have a lower likelihood to do so (see the example on the following page, which has a full explanation of how to interpret these graphs).

The example shows the percentages of various groups who go fishing and/or gathering marine resources. Among respondents as a whole, 41.6% go fishing/gathering, as shown by the patterned total bar. Those groups above the total bar have a higher percentage who go fishing/gathering (i.e., they are more likely than respondents overall to go fishing/gathering). This includes those who also go snorkeling and/or SCUBA diving (the top item), those who go waterside or beach camping (the second item), and all the rest of the groups above the patterned total bar.

Conversely, those groups below the patterned total bar have a lower likelihood to go fishing. This includes retired residents (the lowest bar), those whose families eat seafood less than once a month or never (the next-to-last bar), and all the rest of the groups below the patterned total bar.

Generally, when one group is above the total bar (in this example, males), its counterpart group will be below the total bar (in this example, females). The exception is when a segment of the population is not in either group. For instance, those who "believe that the threats to coral reefs in the USVI are large or extreme" are above the bar. However, so is the group that "does not believe that the threats to coral reefs in the USVI are large or extreme." This happened because those who answered "not sure" on the threat question make up a third group, and that group would be below the total bar if they were shown on the graph (however, the "not sure" portion was *not* shown to make the graph more legible). A full explanation of how to read the graph is included on the following page.



Overall, 41.6% of all residents go fishing and/or gathering marine resources, as shown in the patterned total bar.

Groups above the total bar are more likely to go fishing/gathering than residents overall. For instance, those 35 to 54 years old are more likely to go (53.5% do so). (This means that 46.5% of this group do not go fishing/ gathering.)

Likewise, males are more likely to go fishing/ gathering (52.5%) than are residents overall. (This means that 47.5% of males do not go fishing/gathering.)

Conversely, those groups below the total bar are less likely than residents overall to go fishing/ gathering.

For instance, females are less likely to go (32.0% do so) than are residents overall, and they are less likely to go than are males.

Also, those who are 55 years old or older (31.9%) are less likely to go than are residents overall, and they are less likely to go than their counterparts in the other age groups.

Figure 1: Percent of each of the above groups who go fishing, from shore or by boat or other floating device, or who gather marine resources

The following tabulation shows all the omnigraph variables that were used, and it notes when portions of the sample are not shown in the graphs for legibility. Note that some participation variables were combined into one, again for legibility, as too many variables can make the graphs difficult to read. For instance, "goes snorkeling" and "goes SCUBA diving" were combined into one variable: "goes snorkeling and/or SCUBA diving."

Variable shown on graphs	**Notes**
Goes snorkeling and/or SCUBA diving	The counterpart is "Never goes snorkeling and/or SCUBA diving," but it is not shown.
Goes swimming or does beach recreation, including paddle boarding, etc.	The counterpart is "Never goes swimming or does beach recreation, including paddle boarding, etc.," but it is not shown.
Goes fishing, from shore or by boat or other floating device, or gathers marine resources	The counterpart is "Never goes fishing, from shore or by boat or other floating device, or gathers marine resources," but it is not shown.
Goes waterside or beach camping	The counterpart is "Never goes waterside or beach camping," but it is not shown.
Goes motorized boating NOT for fishing purposes	The counterpart is "Never goes motorized boating NOT for fishing purposes," but it is not shown.
Goes non-motorized boating, such as kayaking or canoeing	The counterpart is "Never goes non-motorized boating, such as kayaking or canoeing," but it is not shown.
Family eats fish or seafood monthly or more often	For both of these, a third group exists of those who were not sure on the question; this "not sure" group is not shown.
Family eats fish or seafood less than once a month or never	
Thinks the ocean water quality is good	
Does not think the ocean water quality is good	This includes those who answered very bad, bad, neither bad nor good, and not sure.
Thinks the health of the coral is good	
Does not think the health of the coral is good	This includes those who answered very bad, bad, neither bad nor good, and not sure.
Thinks that, in the next 10 years, the condition of the marine resources in the USVI will get worse	Note that this needed to be abbreviated on the graphs; the phrase "in the next 10 years" was dropped from the label but still applies.
Does not think that, in the next 10 years, the condition of the marine resources in the USVI will get worse	This includes those who answered stay the same, improve, and "not sure." See note about abbreviation above.
Believes that the threats to coral reefs in the USVI are large or extreme	The "does not believe" group includes those who answered moderate, minimal, and none. Those who answered "not sure" were a third group based on this variable, but this group is not shown.
Does not believe that the threats to coral reefs in the USVI are large or extreme	
Is male	
Is female	

Variable shown on graphs	Notes
Is 18 to 34 years old	Another group is composed of those who do not know their age, but it is not shown.
Is 35 to 54 years old	
Is 55 years old or older	
Has lived in the USVI for less than the median number of years	Another group is composed of those who do not know how long they have lived in the USVI, but it is not shown.
Has lived in the USVI for the median number of years or more	
Lives on St. Thomas	
Lives on St. John	
Lives on St. Croix	
Education level is less than a bachelor's degree	Another group is composed of those who were not sure regarding their education, but this group is not shown.
Education level is bachelor's degree or higher	

Attitudes on the Importance of Coral Reefs

- Three questions delved into residents' opinions on the *importance* of coral reefs as protection from coastal erosion and natural disasters, as a source of food, and culturally. The top-ranked aspect is the *cultural* importance: an overwhelming majority agree that coral reefs are important to their island's culture (92%). Just below that are the provision of food and protection aspects: a large majority agree that coral reefs in good condition provide food for island communities to eat (81%) and that coral reefs protect the USVI from coastal erosion and natural disasters (also 81%).
  - When examining *strong* agreement, the importance is ranked with cultural first (38% *strongly* agree), protection second (30%), and food third (25%).
    - Along with the graphs showing agreement, graphs are included of those who disagree. Disagreement is low: only 2% to 6% disagree with any of the three statements, and almost nobody *strongly* disagrees.
  - The crosstabulation of the above questions by island shows that opinions on these three questions do not greatly differ from island to island. While the most agreement on these three questions is from St. Croix residents, the differences are small.

- Omnigraphs were produced for all of these questions.
  - Those most likely to agree or strongly agree that the coral reefs are important are:
    - Those who believe that the threats to the coral reefs are large or extreme.
    - Those who are active in the activities asked about in the survey, particularly non-motorized boating, snorkeling and/or SCUBA diving, waterside/beach camping, and fishing and/or gathering marine resources.
    - Those in the upper education bracket.

- An overwhelming majority of residents (80%) *disagree* that coral reefs are *only* important to fishermen, divers, and snorkelers. In other words, feeling exists that the coral reefs have importance beyond only those people who have close physical ties to the reefs.
  - Strong disagreement is markedly high among St. John residents (33%), compared to 24% and 25% among residents of the other two islands. Note, however, that total disagreement is about the same among residents of the three islands, ranging from 79% to 82%.
    - Omnigraphs were produced for this question. *Not* agreeing that the coral reefs are only important to fishermen, divers, and snorkelers (i.e., thinking they are important for others) is associated with showing high concern for the reefs (thinking that the reefs' condition will worsen, believing that the threats to the reefs are large or extreme), being in the upper educational bracket, being younger, being female, and going snorkeling and/or SCUBA diving, motorized boating, and waterside/beach camping.

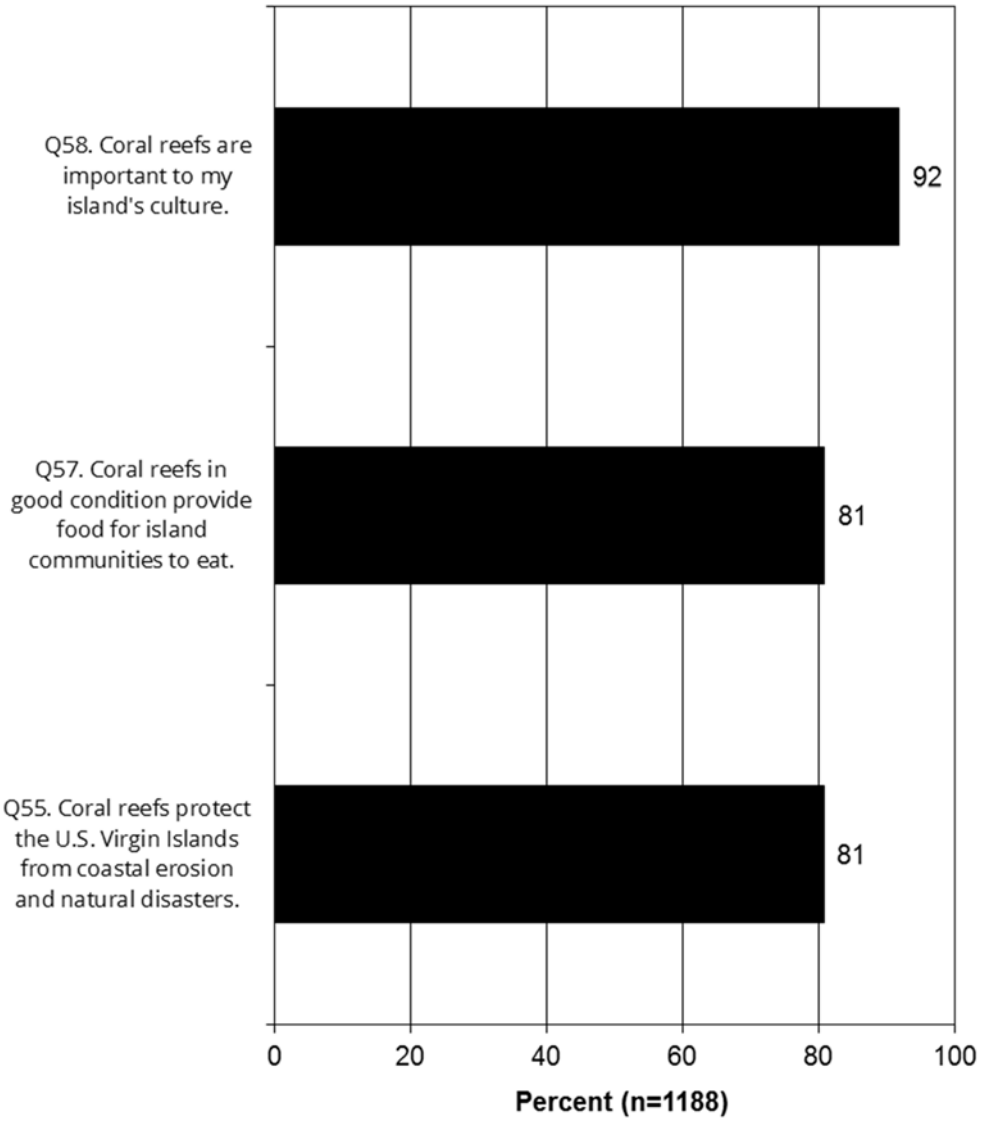


Figure 2: Q55, Q57, Q58. Percent of respondents who agree or strongly agree with each of the above statements

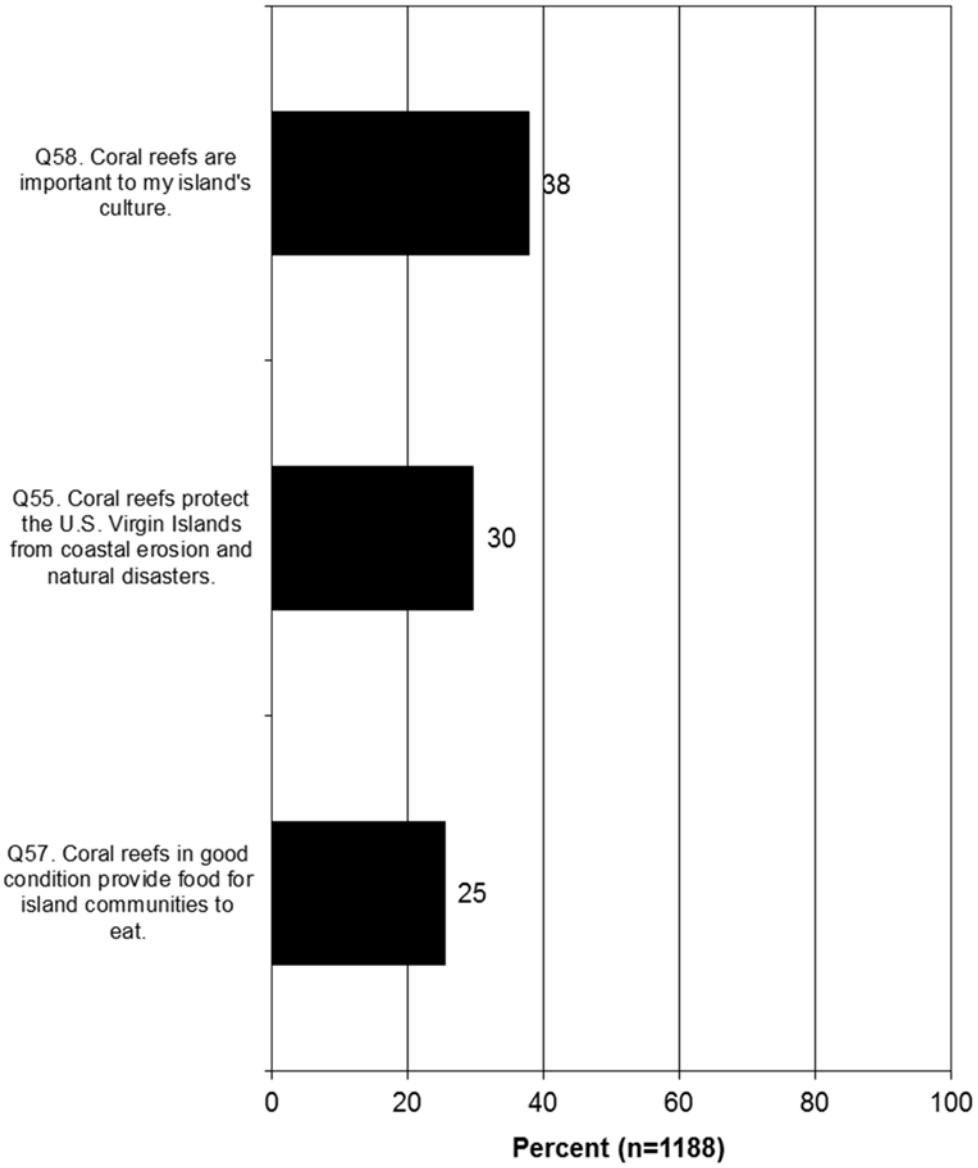


Figure 3: Q55, Q57, Q58. Percent of respondents who strongly agree with each of the above statements

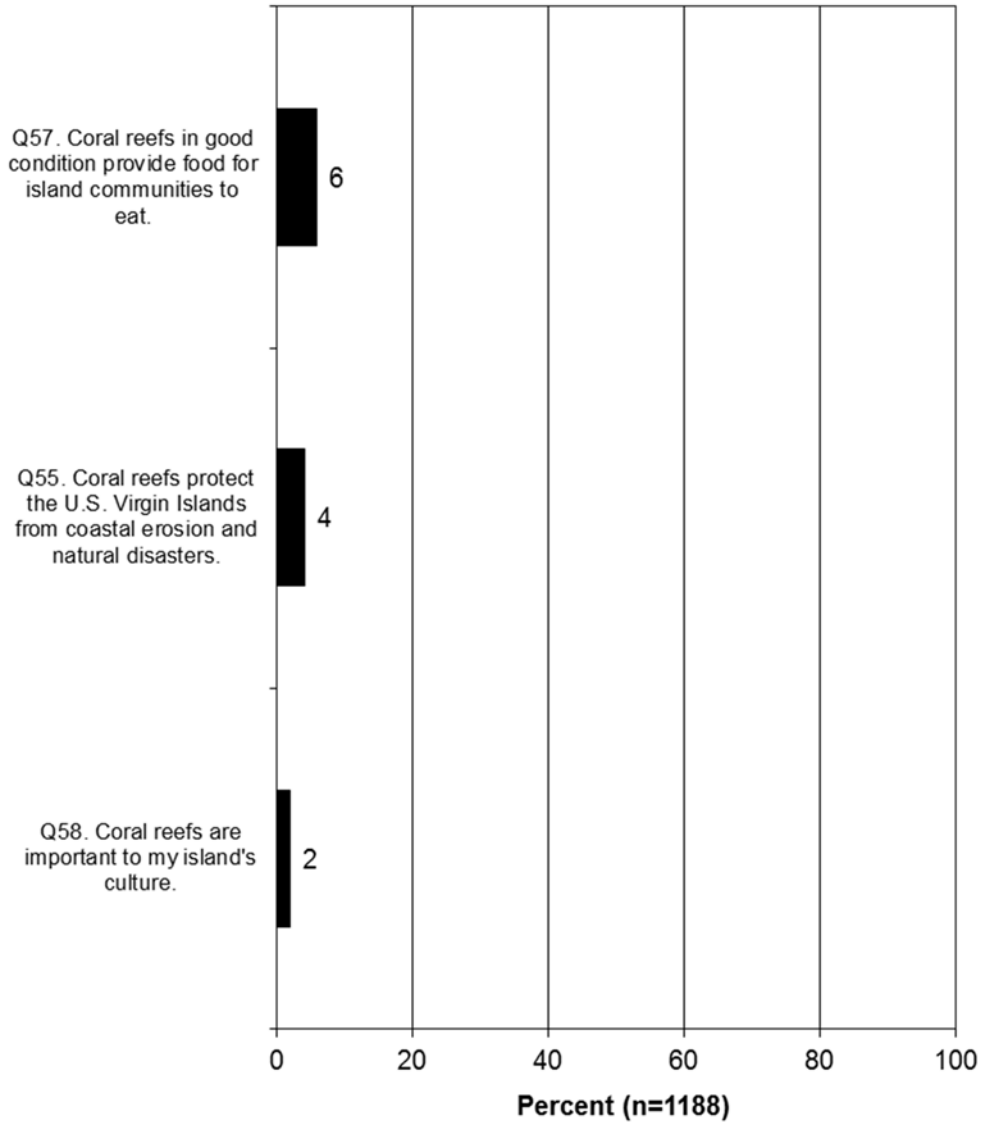


Figure 4: Q55, Q57, Q58. Percent of respondents who strongly disagree or disagree with each of the above statements

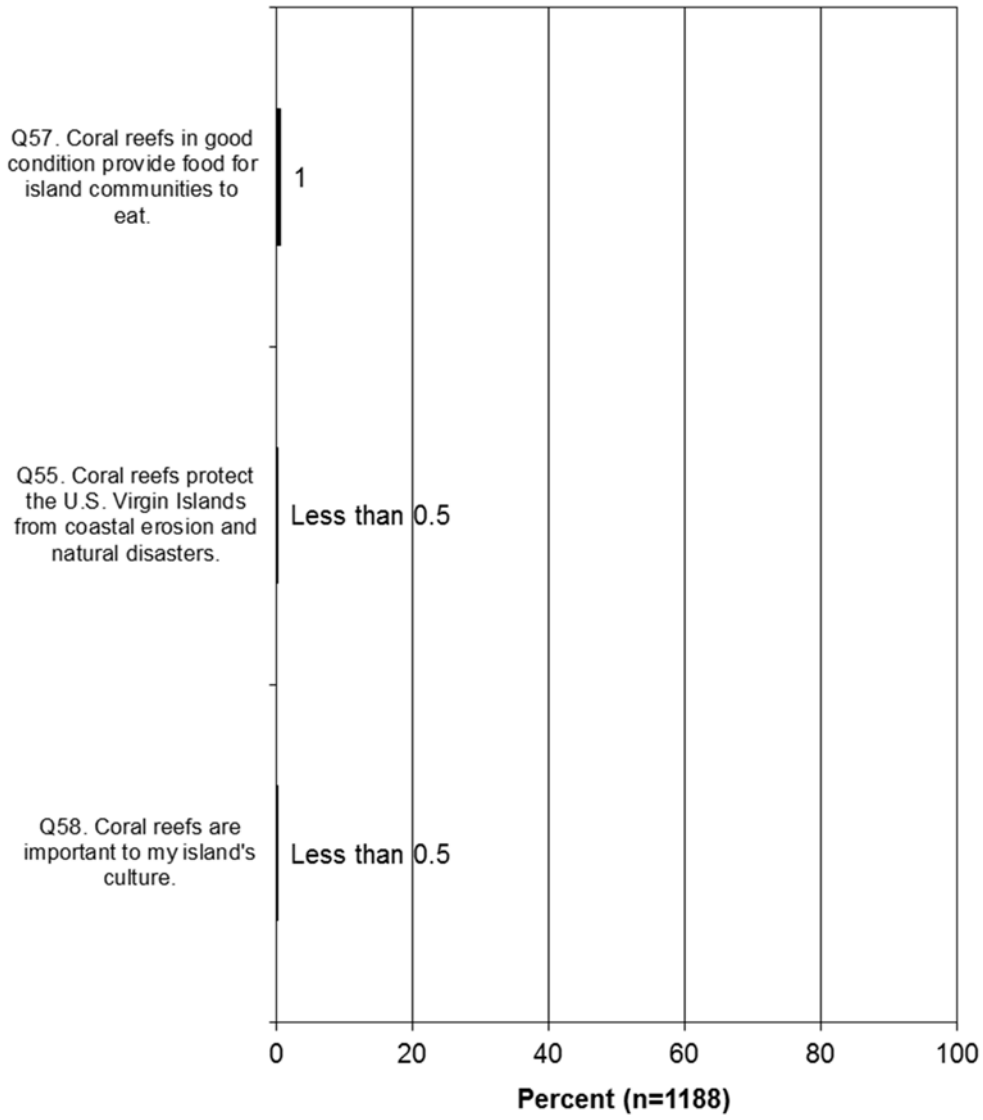


Figure 5: Q55, Q57, Q58. Percent of respondents who strongly disagree with each of the above statements

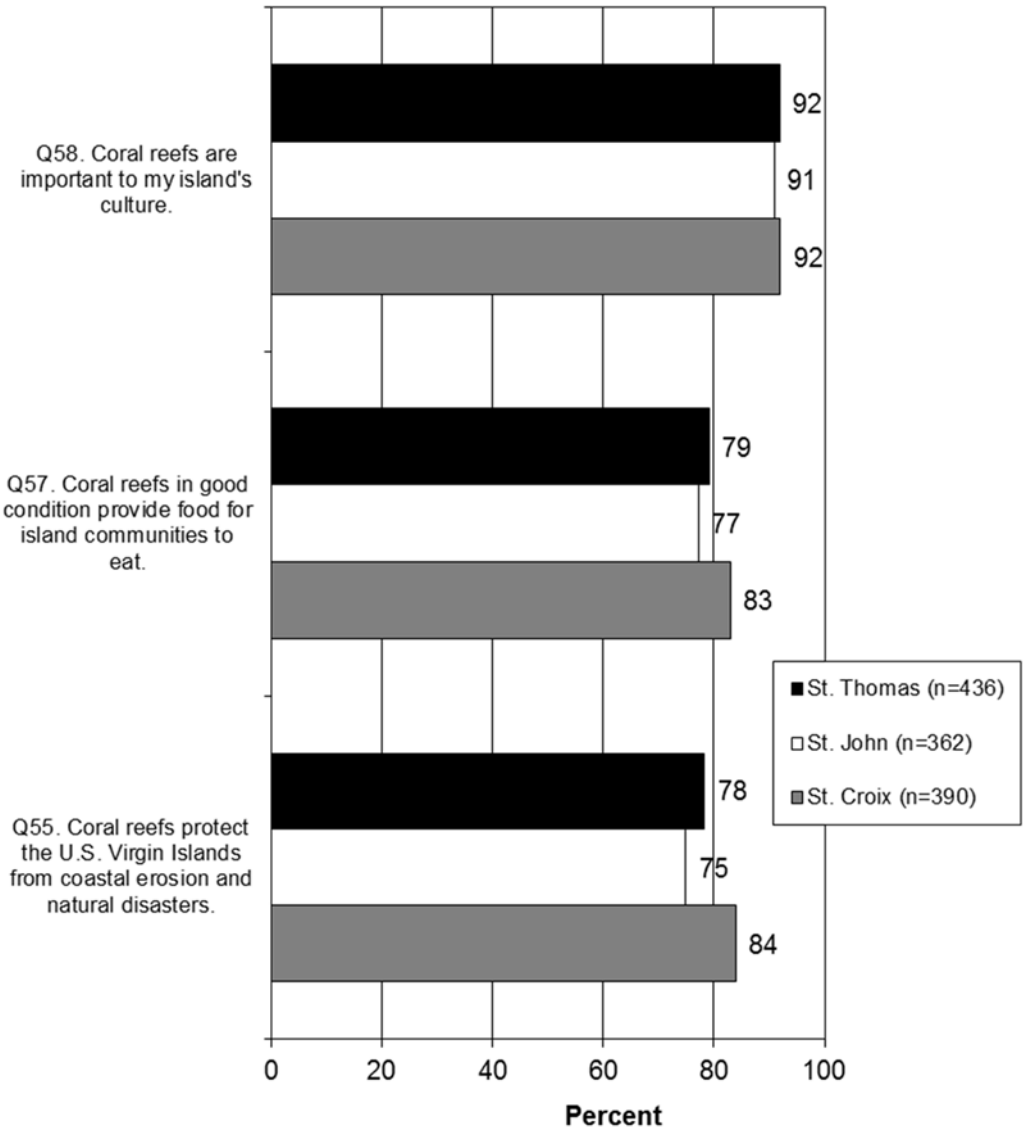


Figure 6: Q55, Q57, Q58. Percent of respondents who agree or strongly agree with each of the above statements

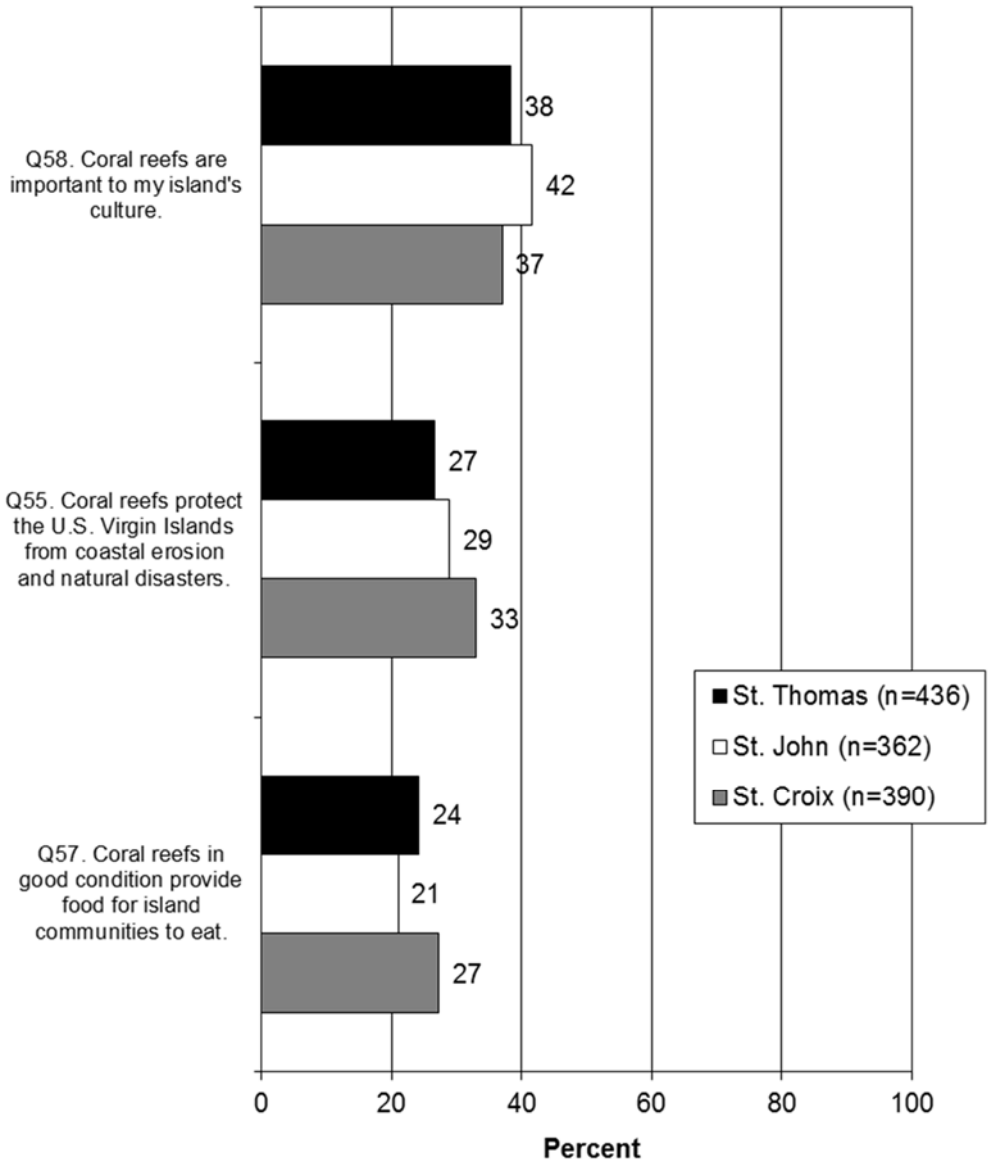


Figure 7: Q55, Q57, Q58. Percent of respondents who strongly agree with each of the above statements

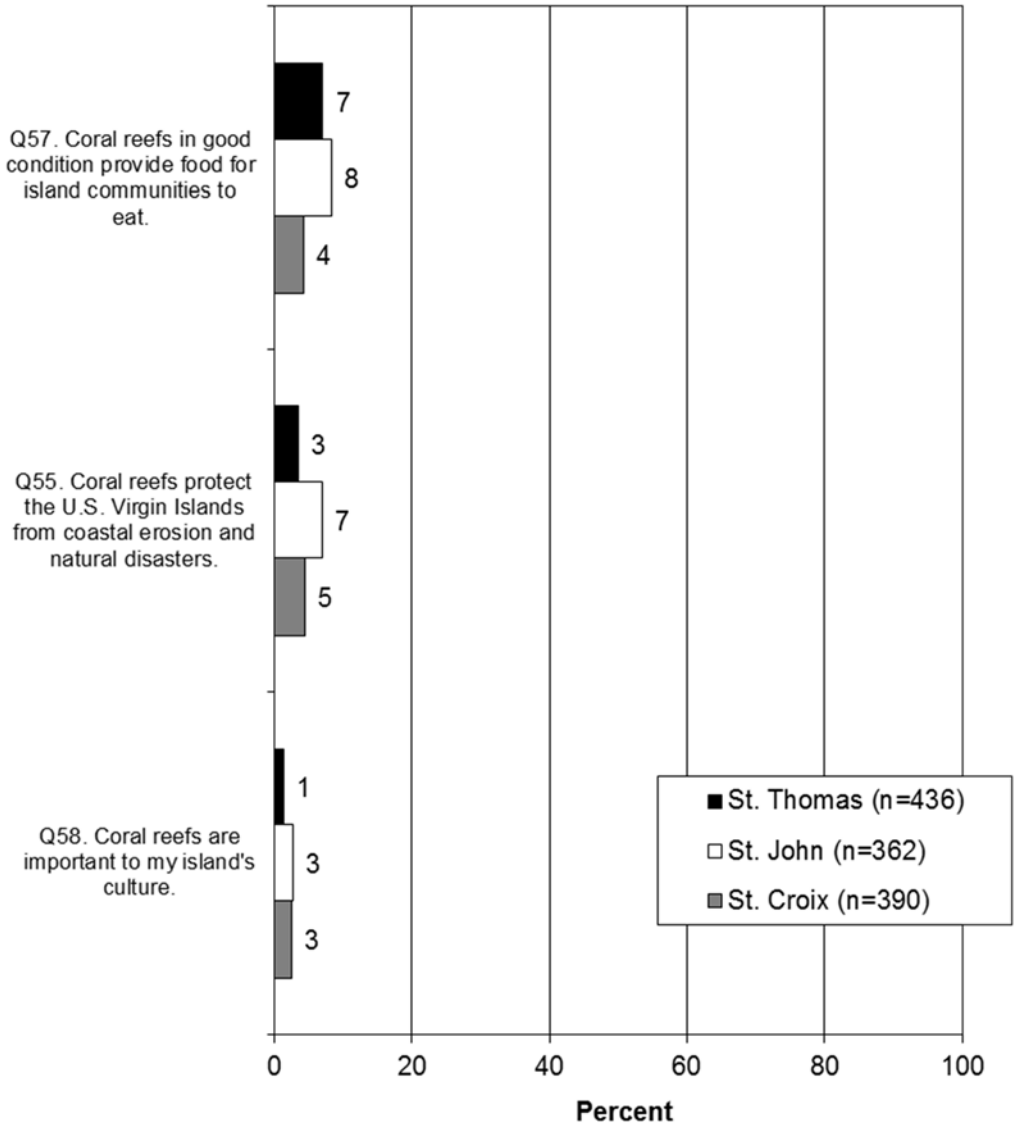


Figure 8: Q55, Q57, Q58. Percent of respondents who strongly disagree or disagree with each of the above statements

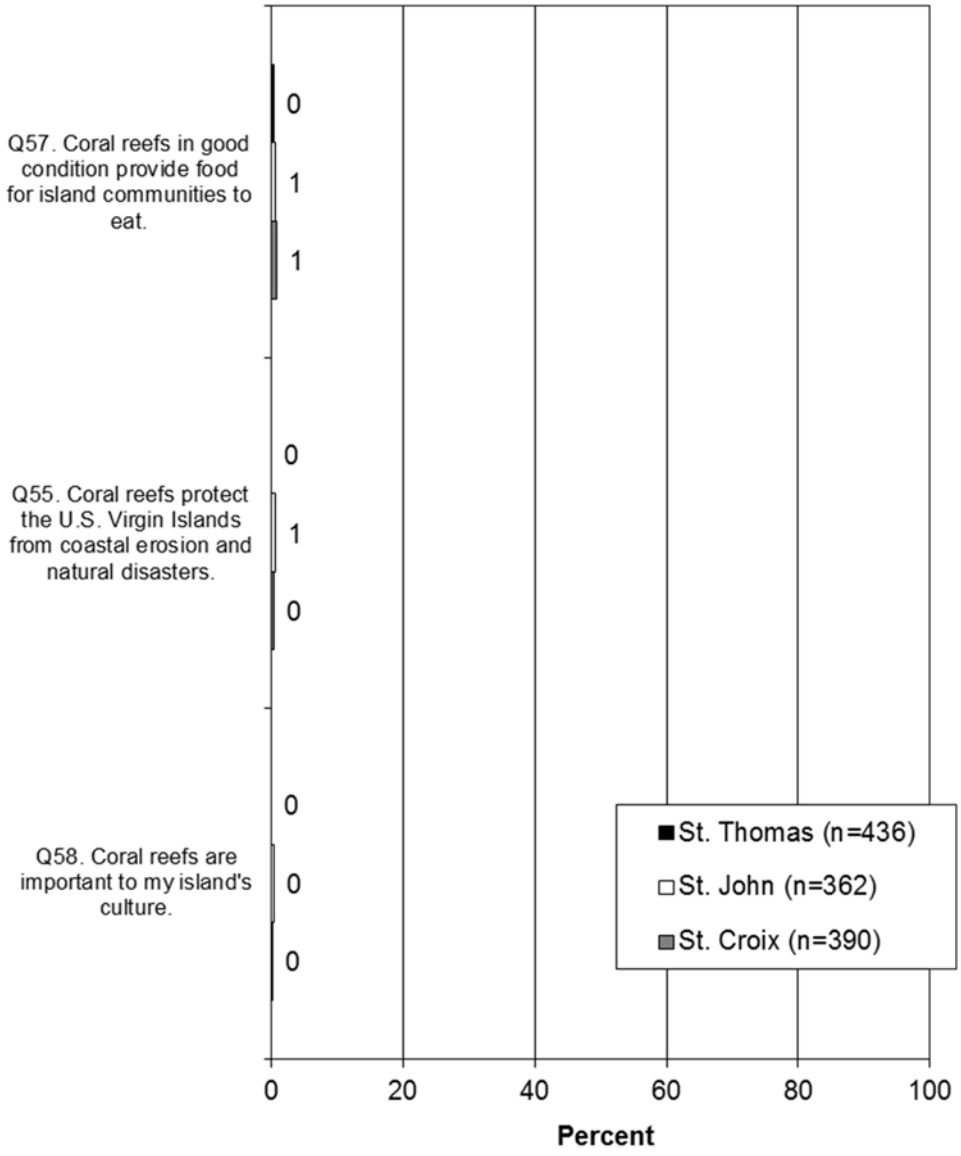


Figure 9: Q55, Q57, Q58. Percent of respondents who strongly disagree with each of the above statements

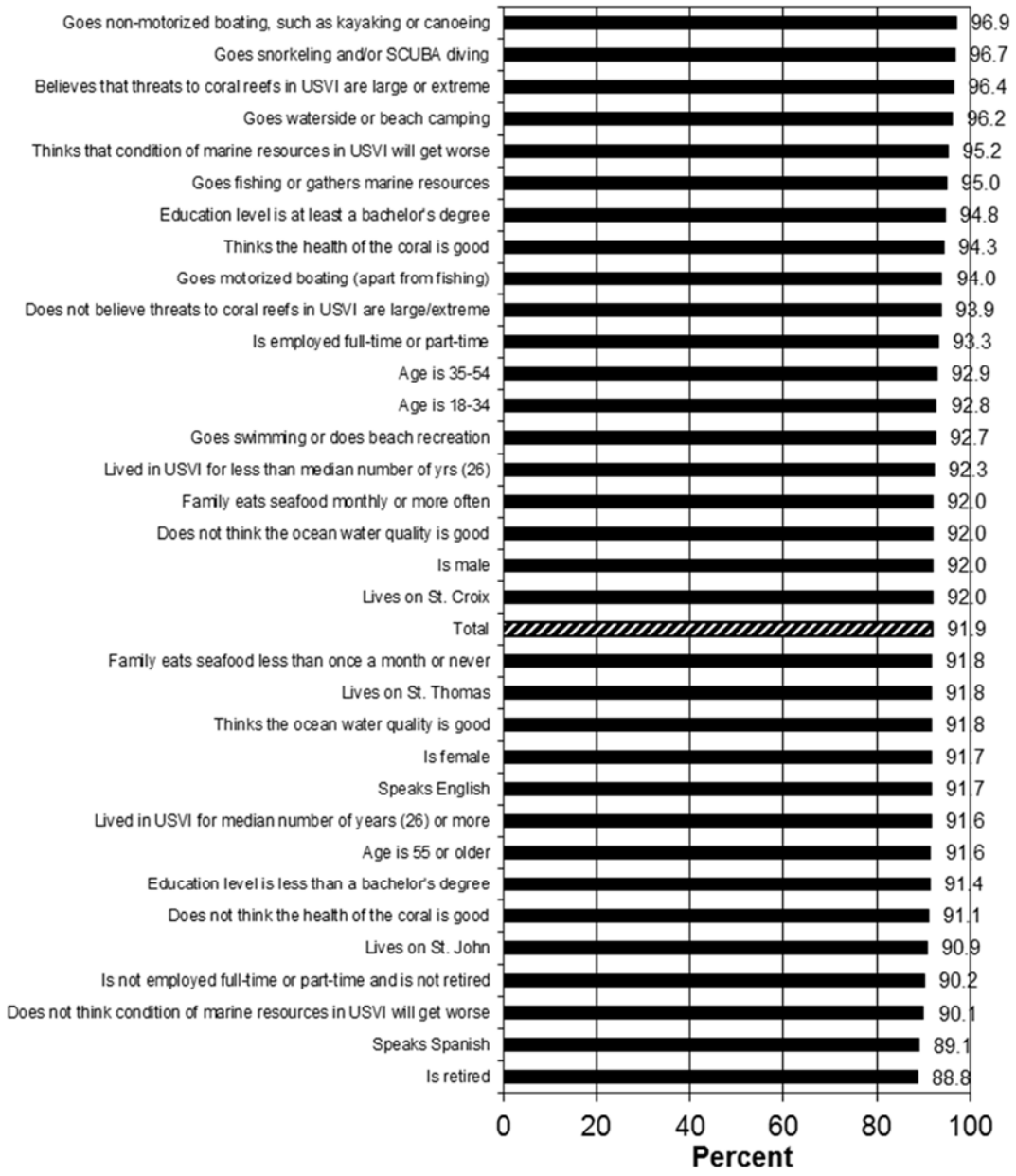


Figure 10: Percent of each of the above groups who agree that coral reefs are important to their island's culture. An explanation of how to interpret omnigraphs is included on pages 12-15.

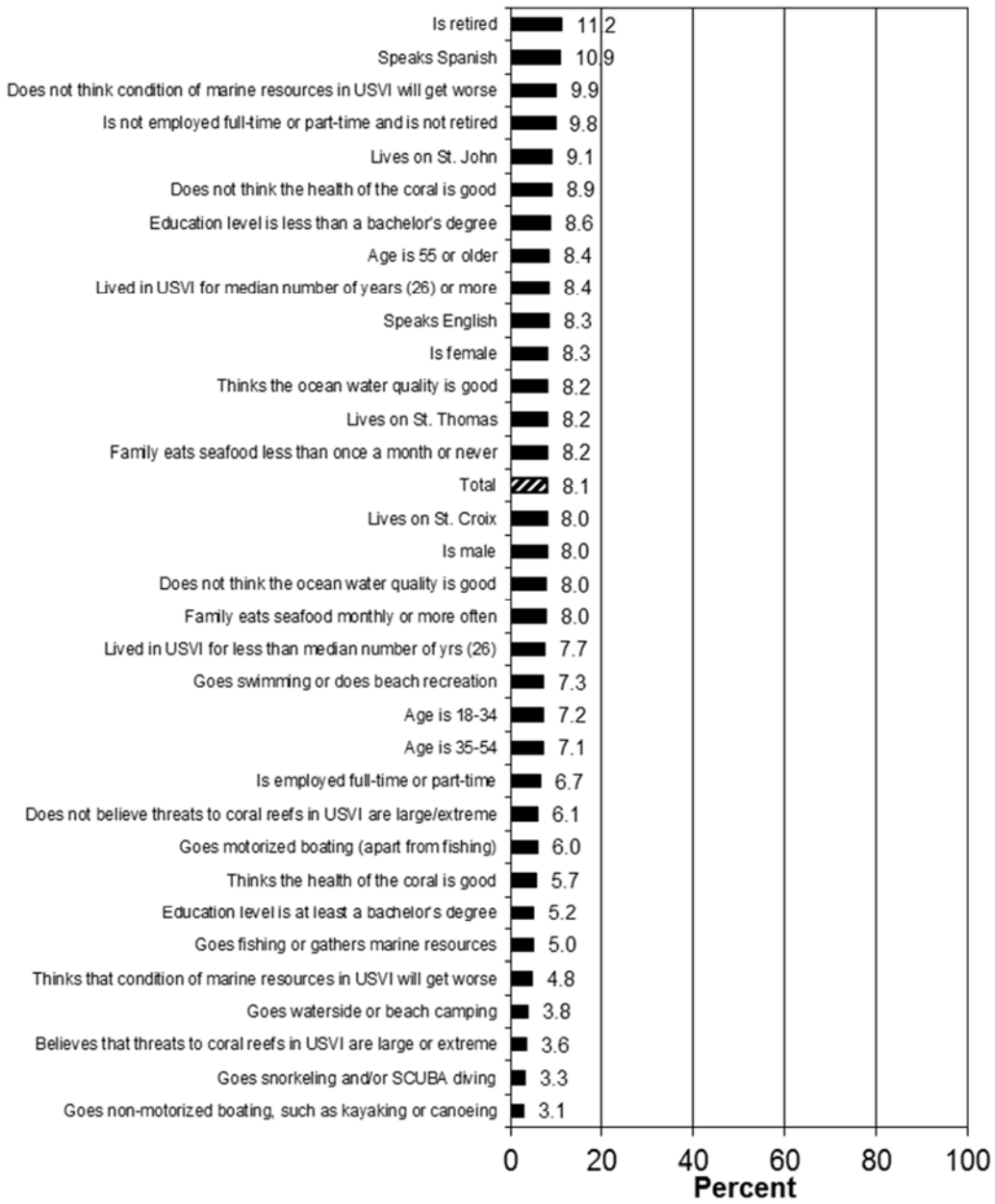


Figure 11: Percent of each of the above groups who do not agree that coral reefs are important to their island's culture. An explanation of how to interpret omnigraphs is included on pages 12-15.

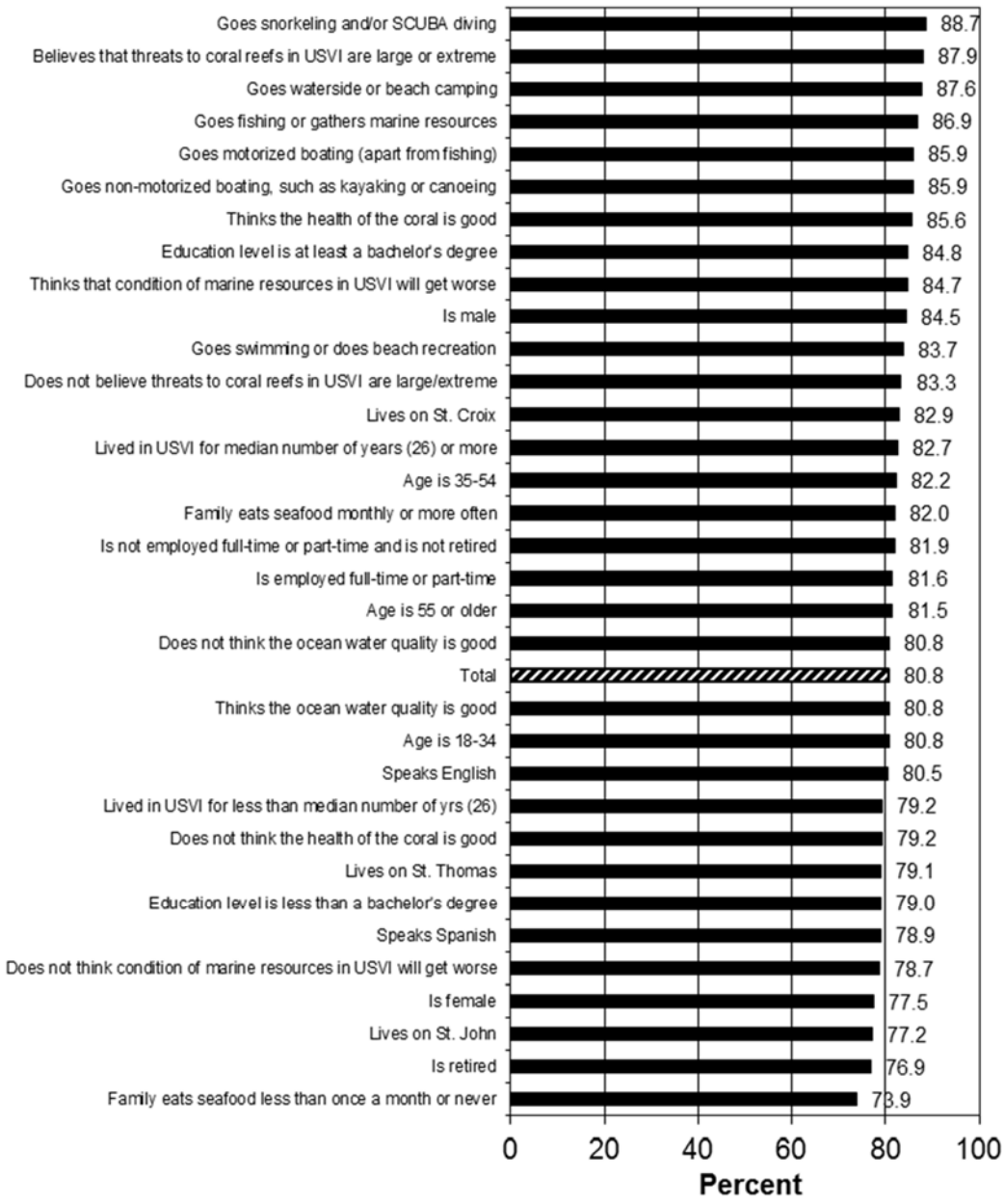


Figure 12: Percent of each of the above groups who agree that coral reefs in good condition provide food for island communities to eat. An explanation of how to interpret omnigraphs is included on pages 12-15.

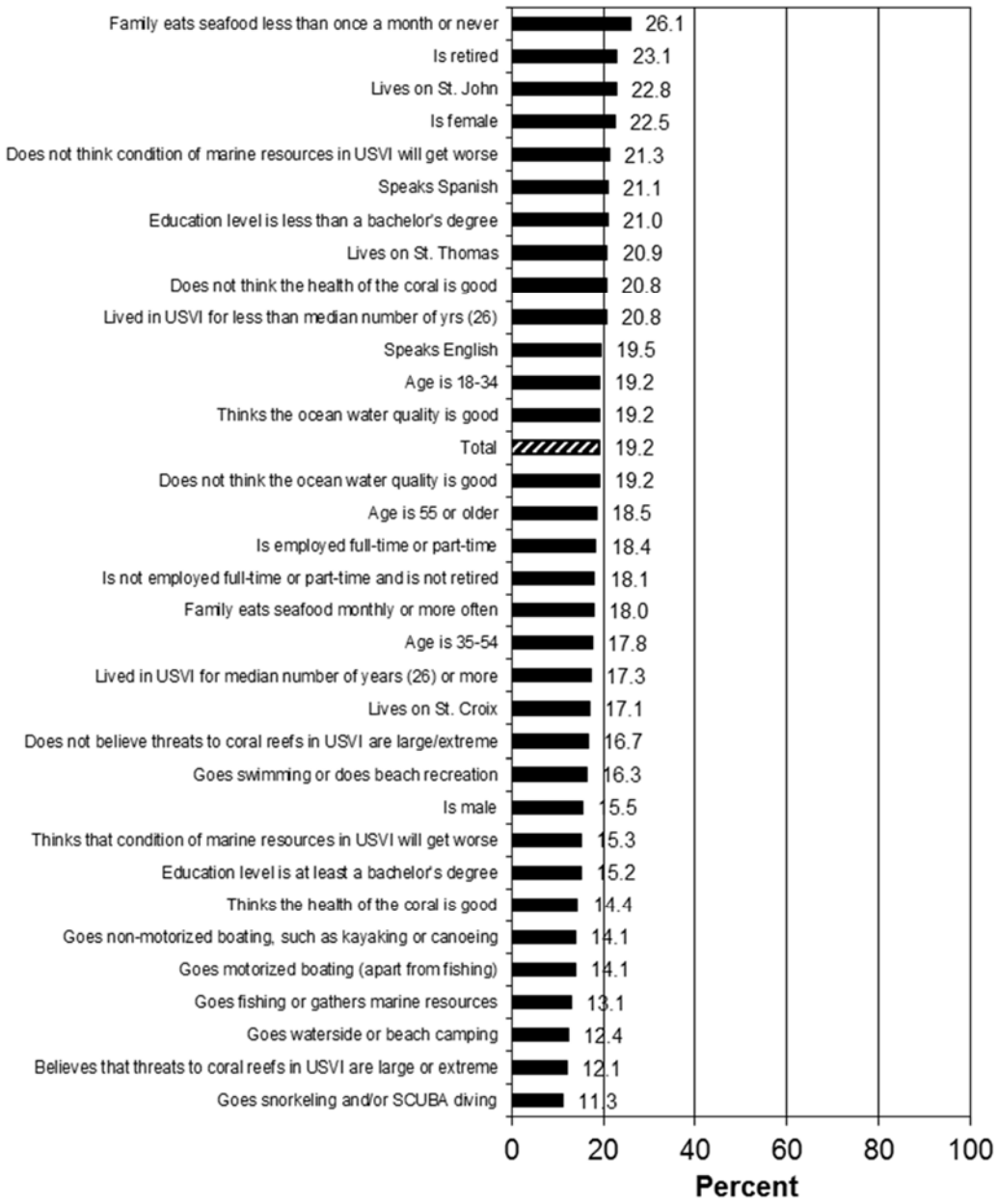


Figure 13: Percent of each of the above groups who do not agree that coral reefs in good condition provide food for island communities to eat. An explanation of how to interpret omnigraphs is included on pages 12-15.

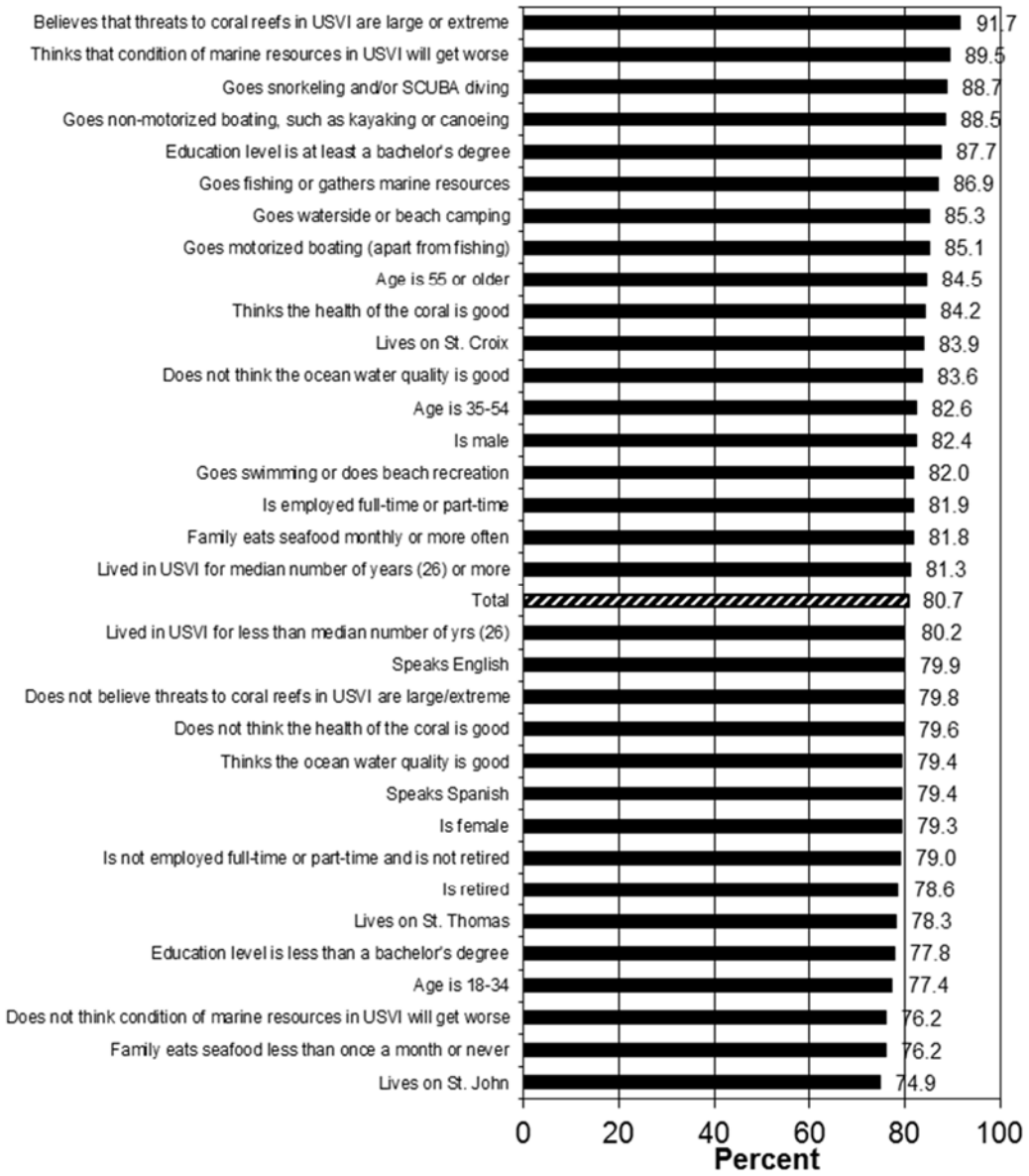


Figure 14: Percent of each of the above groups who agree that coral reefs protect the U.S. Virgin Islands from coastal erosion and natural disasters. An explanation of how to interpret omnigraphs is included on pages 12-15.

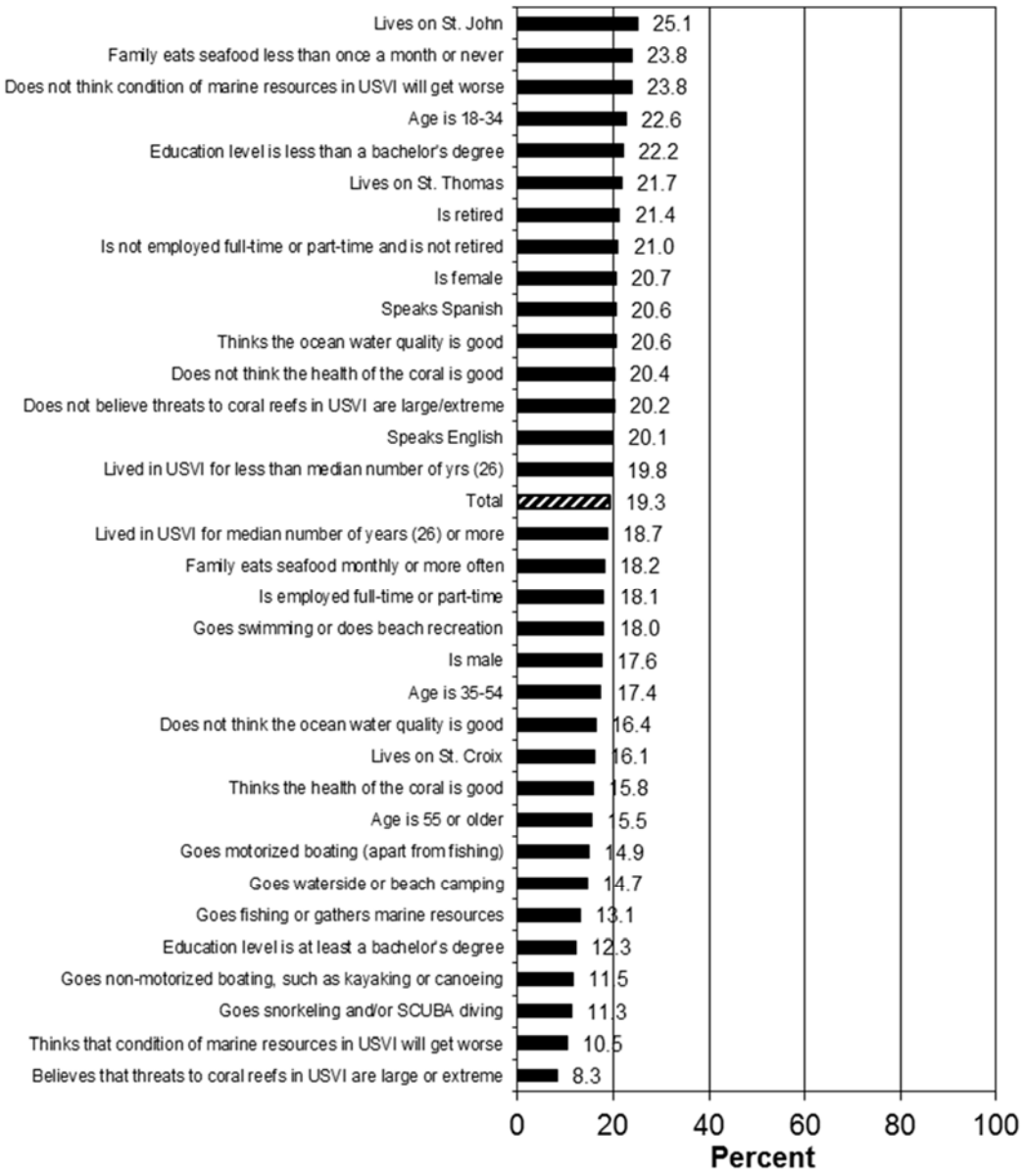


Figure 15: Percent of each of the above groups who do not agree that coral reefs protect the U.S. Virgin Islands from coastal erosion and natural disasters. An explanation of how to interpret omnigraphs is included on pages 12-15.

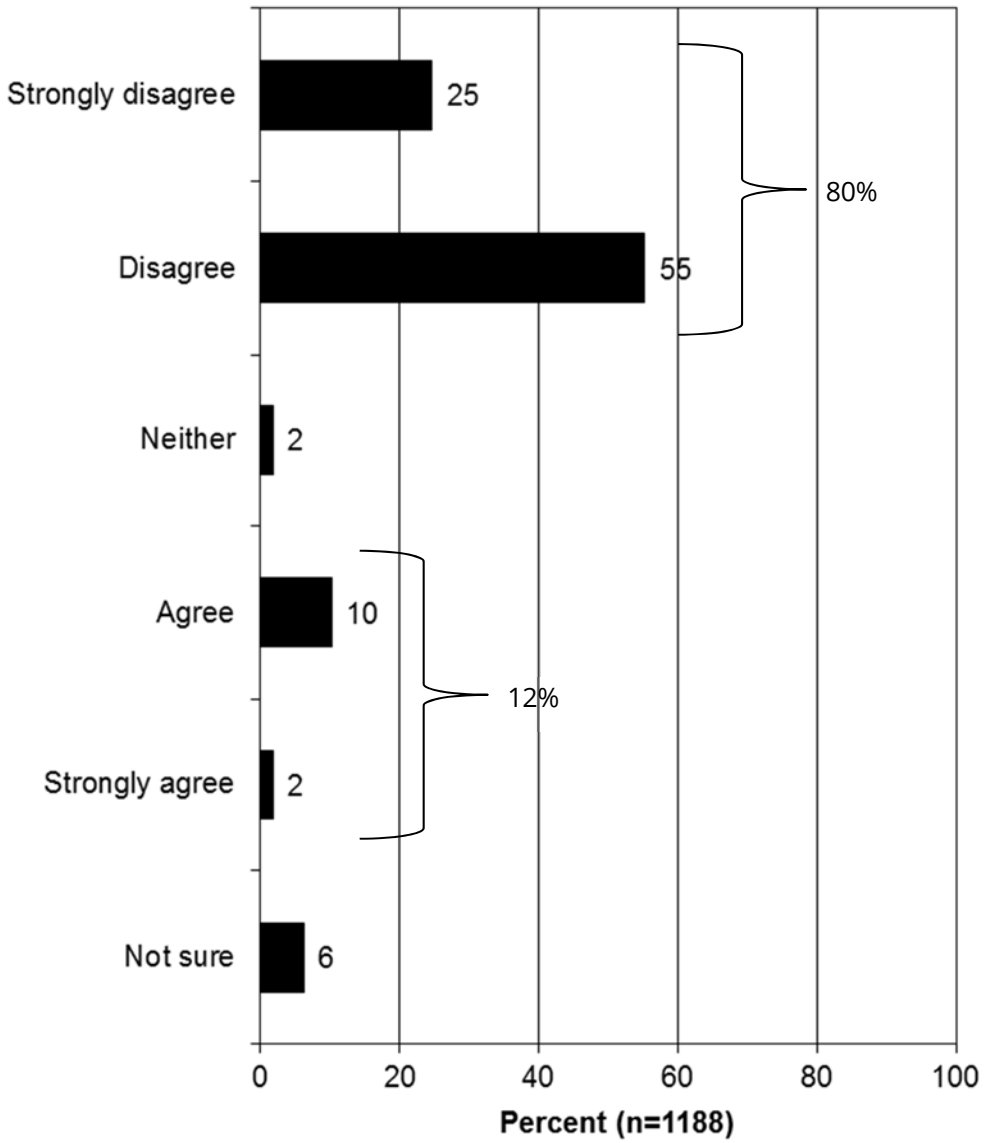


Figure 16: Q56. Coral reefs are only important to fishermen, divers, and snorkelers. (Please indicate the extent to which you disagree or agree with this statement.)

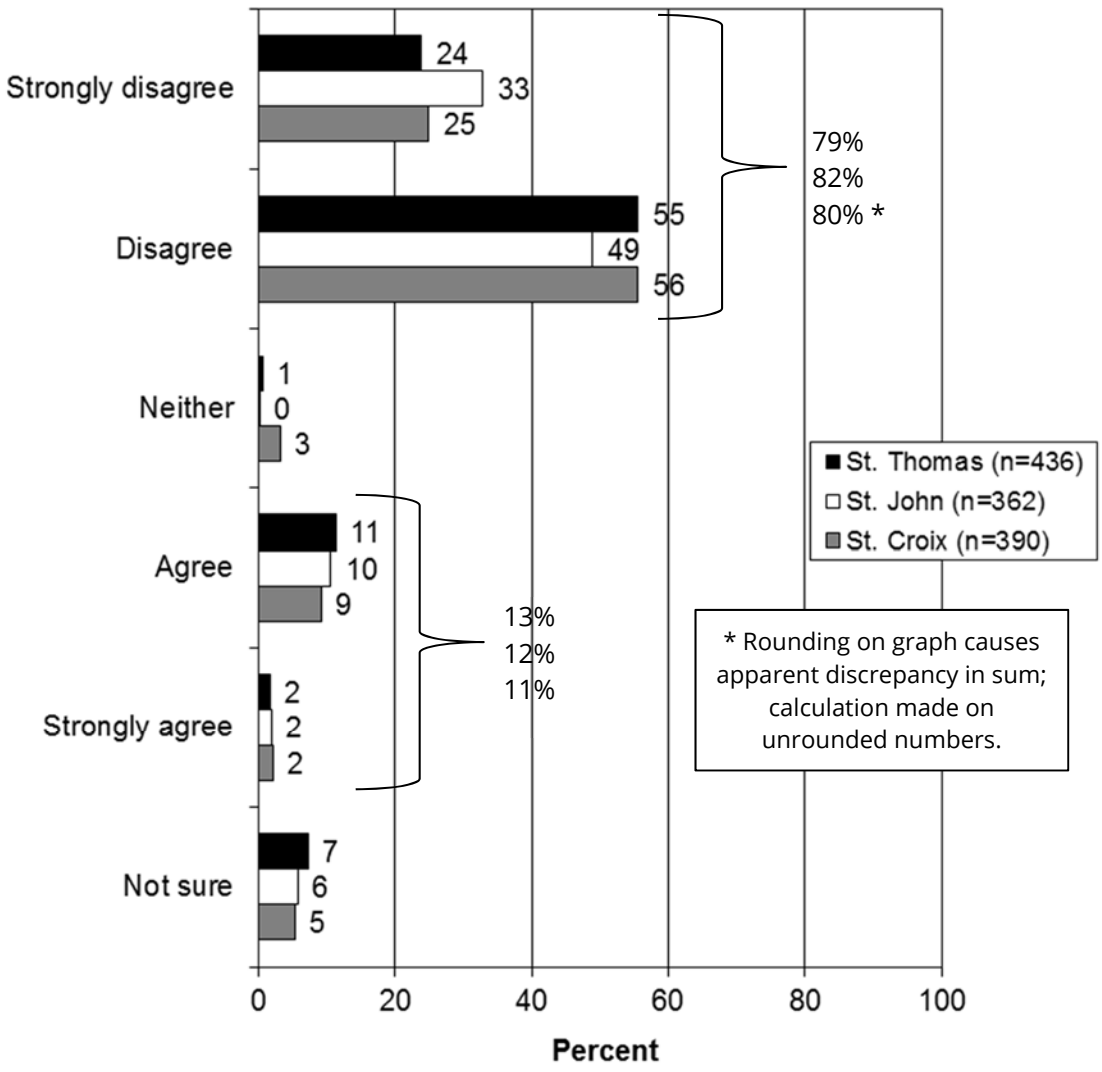


Figure 17: Q56. Coral reefs are only important to fishermen, divers and snorkelers. (Please indicate the extent to which you disagree or agree with this statement.)

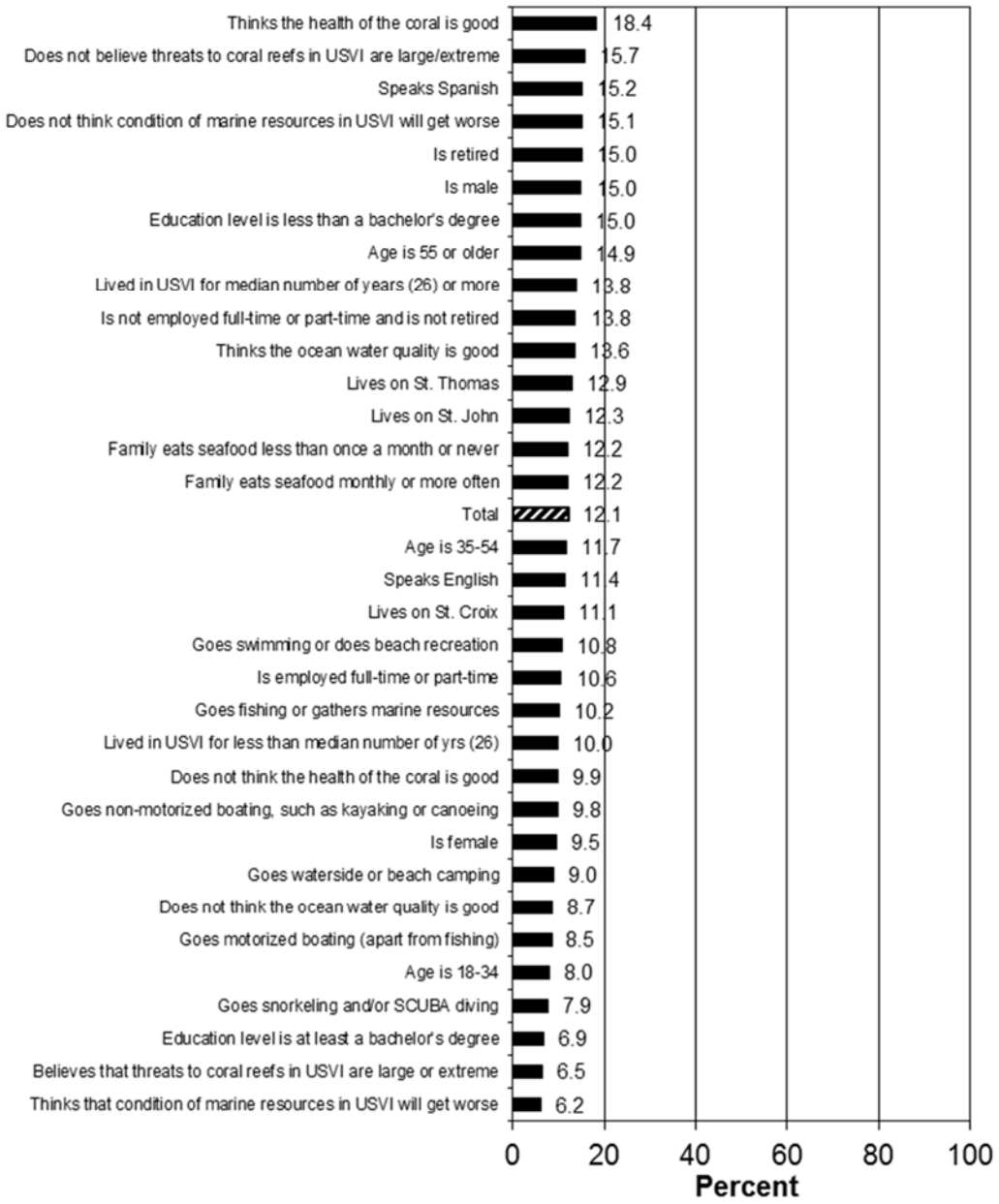


Figure 18: Percent of each of the above groups who agree that coral reefs are only important to fishermen, divers, and snorkelers. An explanation of how to interpret omnigraphs is included on pages 12-15.

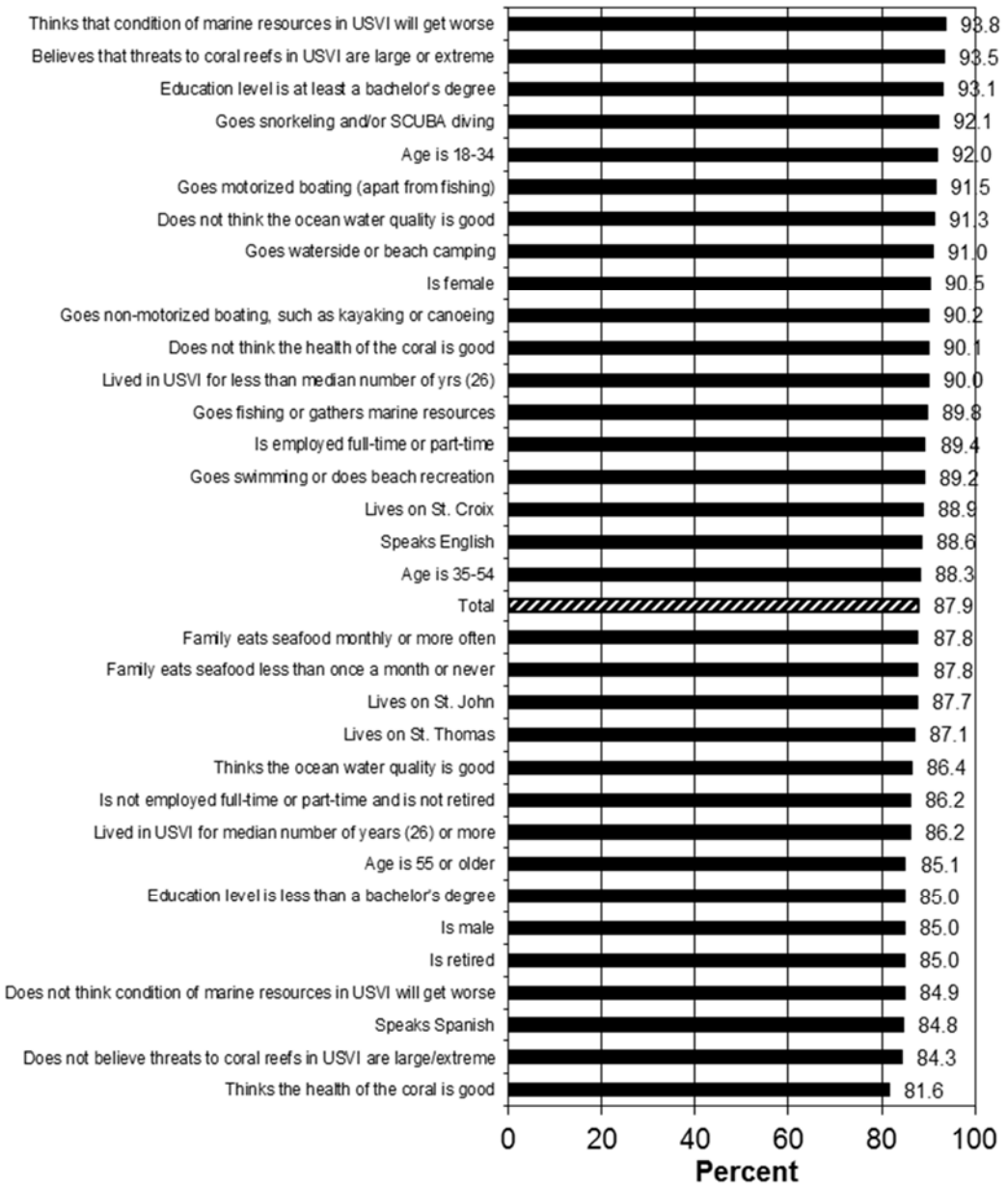


Figure 19: Percent of each of the above groups who do not agree that coral reefs are only important to fishermen, divers, and snorkelers. An explanation of how to interpret omnigraphs is included on pages 12-15.

Knowledge of and Attitudes toward Threats to Coral Reefs

- Ten potential threats to coral reefs were presented to residents. For each, residents indicated their level of familiarity with it, on a scale from *very unfamiliar* to *very familiar*.
  - In the first tier are the two highest on the list (ranked by those *familiar* or *very familiar* with each): hurricanes and other natural disasters (87%) and pollution and runoff, such as stormwater, wastewater outfall, sediment, and marine debris (79%).
  - A middle tier, with large majorities of 60% to 72% being familiar or very familiar, are open dumping and littering (72%), climate change (70%), invasive species such as lionfish (63%), and damage from ships and boats (60%).
    - Note that familiarity with a potential threat does not mean that the resident thinks it is a threat, only that he/she is familiar with the threat as a concept. For instance, one could be very familiar with climate change as an issue yet not think that it is happening. A crosstabulation was run of the familiarity question regarding climate change and the question that asked residents to assess the severity of threats: of those who say that threats are minimal, more than half say that they are familiar or very familiar with climate change, and of those who say that the level of the threats is "none," half of them indicate being familiar or very familiar with climate change. This suggests that some of the people familiar with climate change may not believe it is a threat or that it is happening.

- After the list above was presented and rated, residents were asked to rate the threats to coral reefs in general: 44% say that the threats are *large* or *extreme*, a slightly greater percentage than say *moderate* or lower (41%).
  - Residents of St. John have a little higher percentage, relative to residents of the other islands, who think that the threats are large or extreme.
    - Thinking that the threats are large or extreme is associated, as shown in an omnigraph, with participation in many of the activities asked about in the survey (particularly snorkeling and/or SCUBA diving, non-motorized boating, and fishing/gathering marine resources), as well as with being in the upper education bracket, living in the USVI less than the median number of years, and being in the middle age bracket.

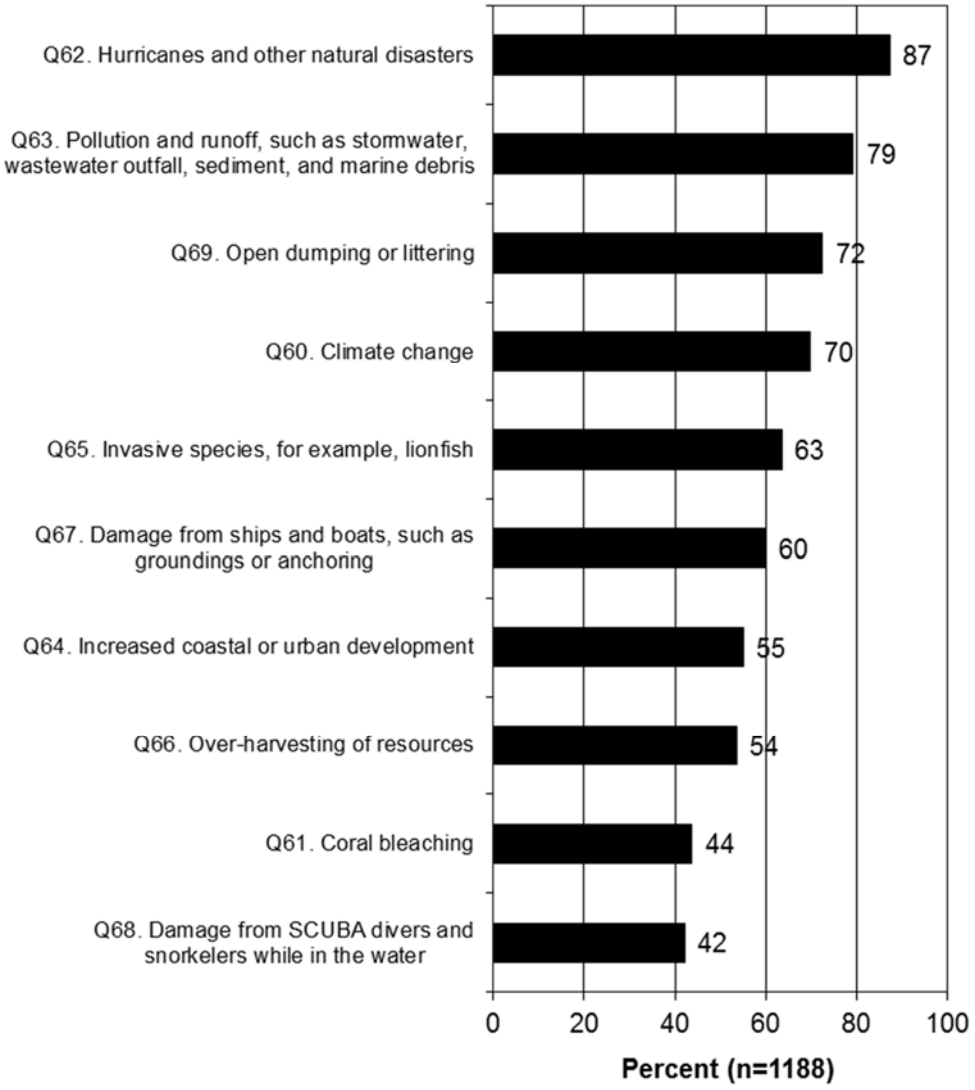


Figure 20: Q60-Q69. Percent of respondents who are familiar or very familiar with each of the above potential threats to the coral reefs in the USVI

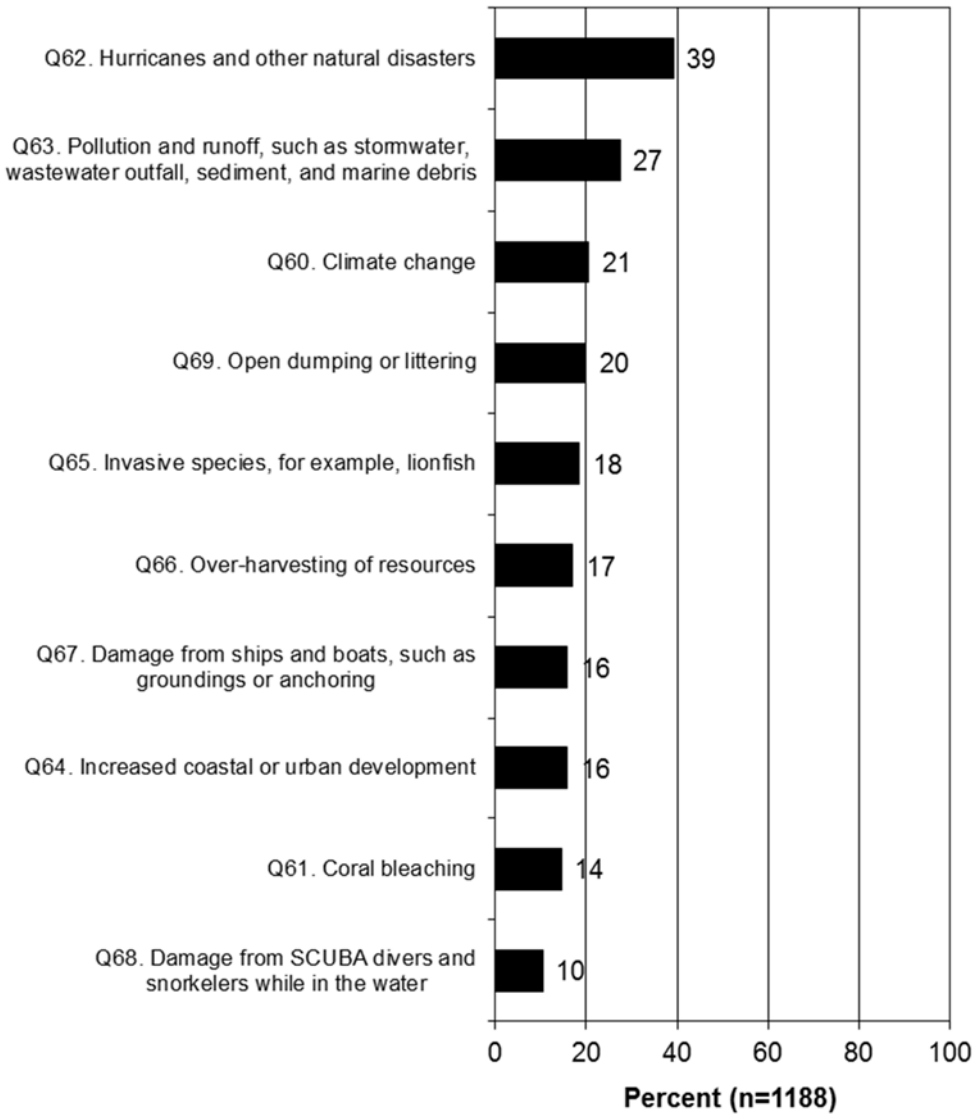


Figure 21: Q60-Q69. Percent of respondents who are very familiar with each of the above potential threats to the coral reefs in the USVI

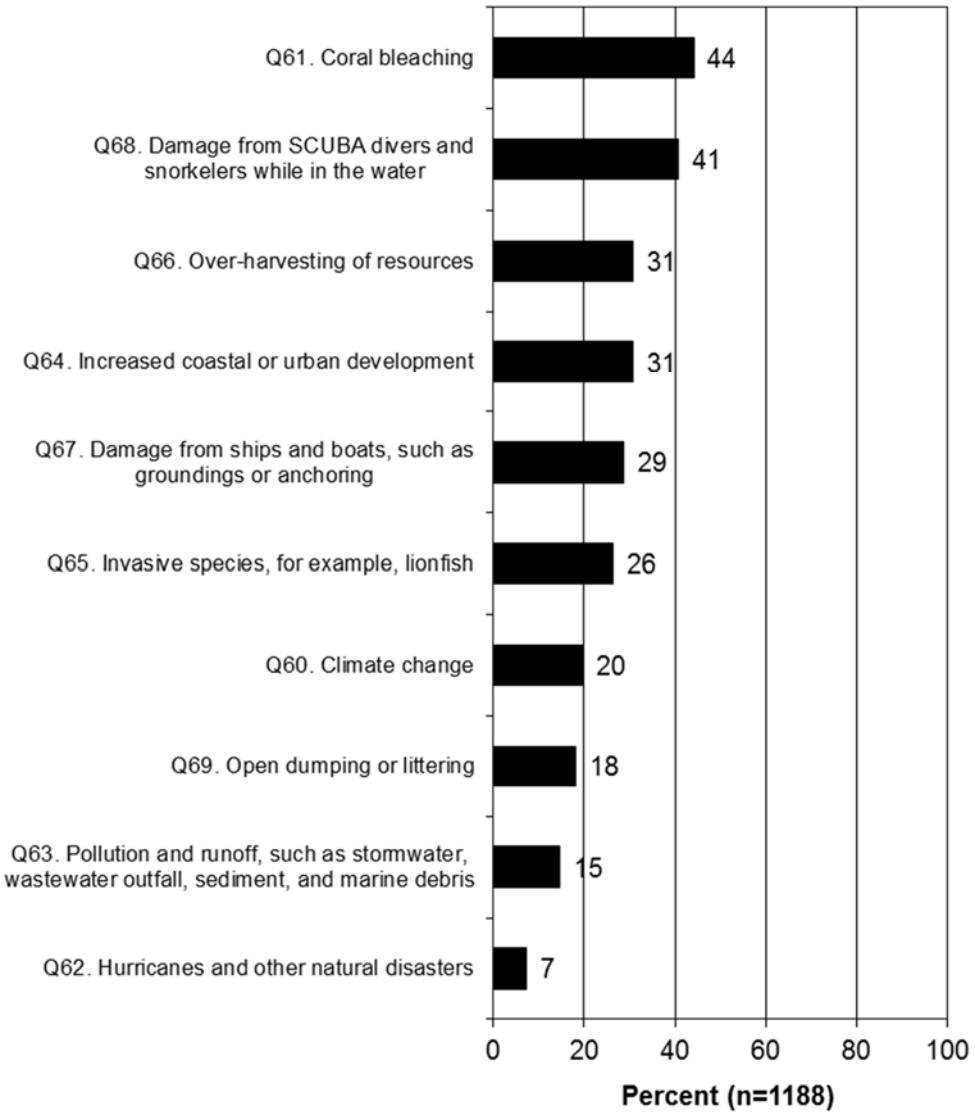


Figure 22: Q60-Q69. Percent of respondents who are very unfamiliar or unfamiliar with each of the above potential threats to the coral reefs in the USVI

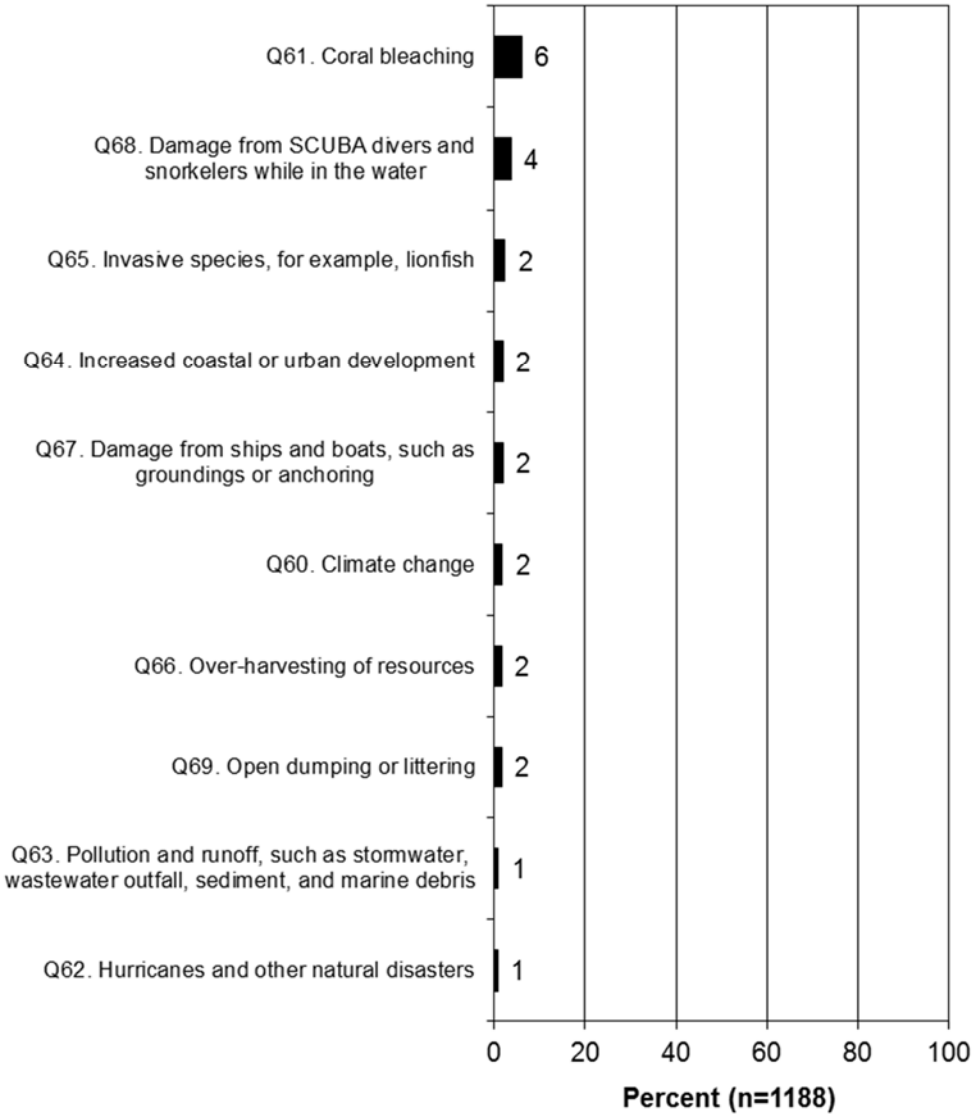


Figure 23: Q60-Q69. Percent of respondents who are very unfamiliar with each of the above potential threats to the coral reefs in the USVI

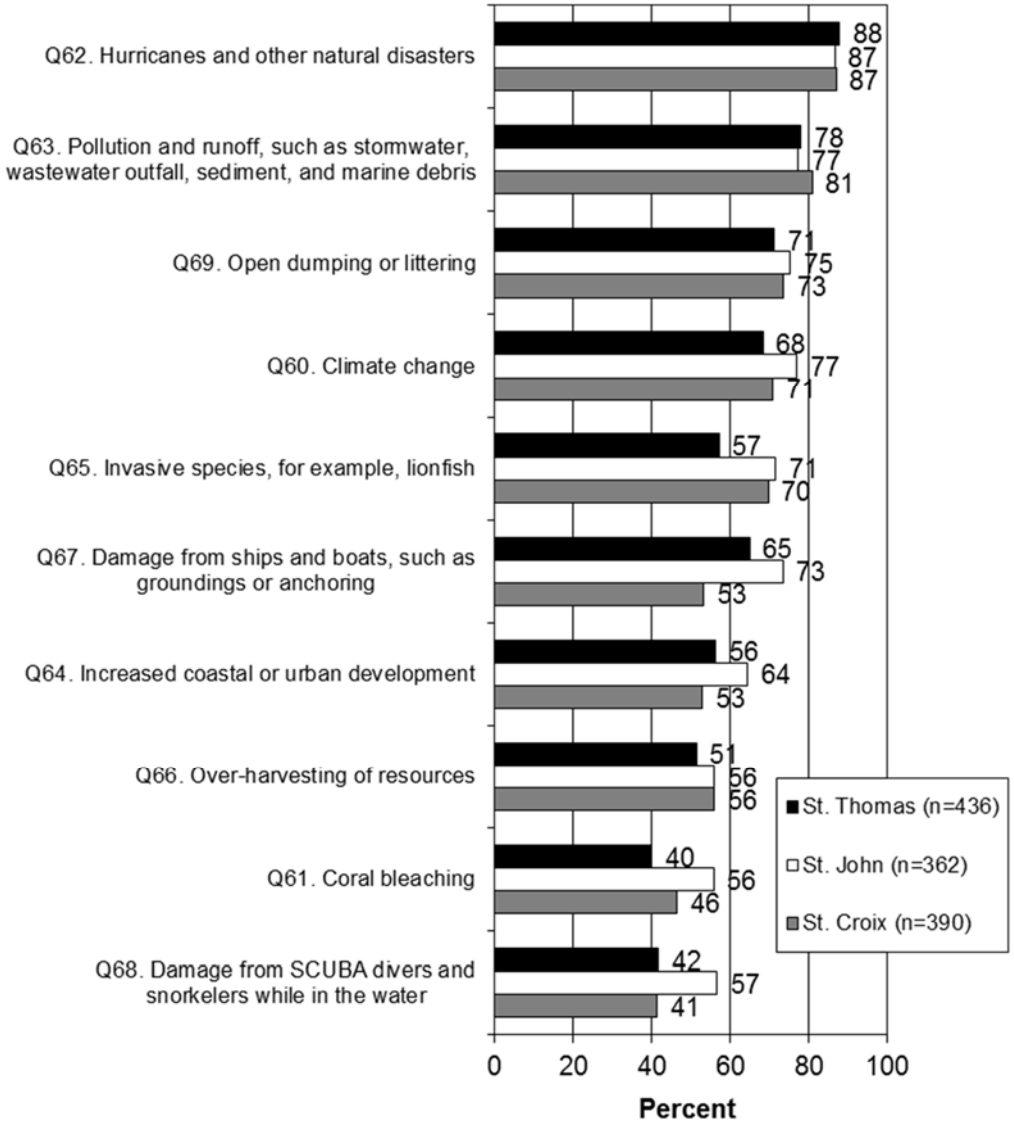


Figure 24: Q60-Q69. Percent of respondents who are familiar or very familiar with each of the above potential threats to the coral reefs in the USVI

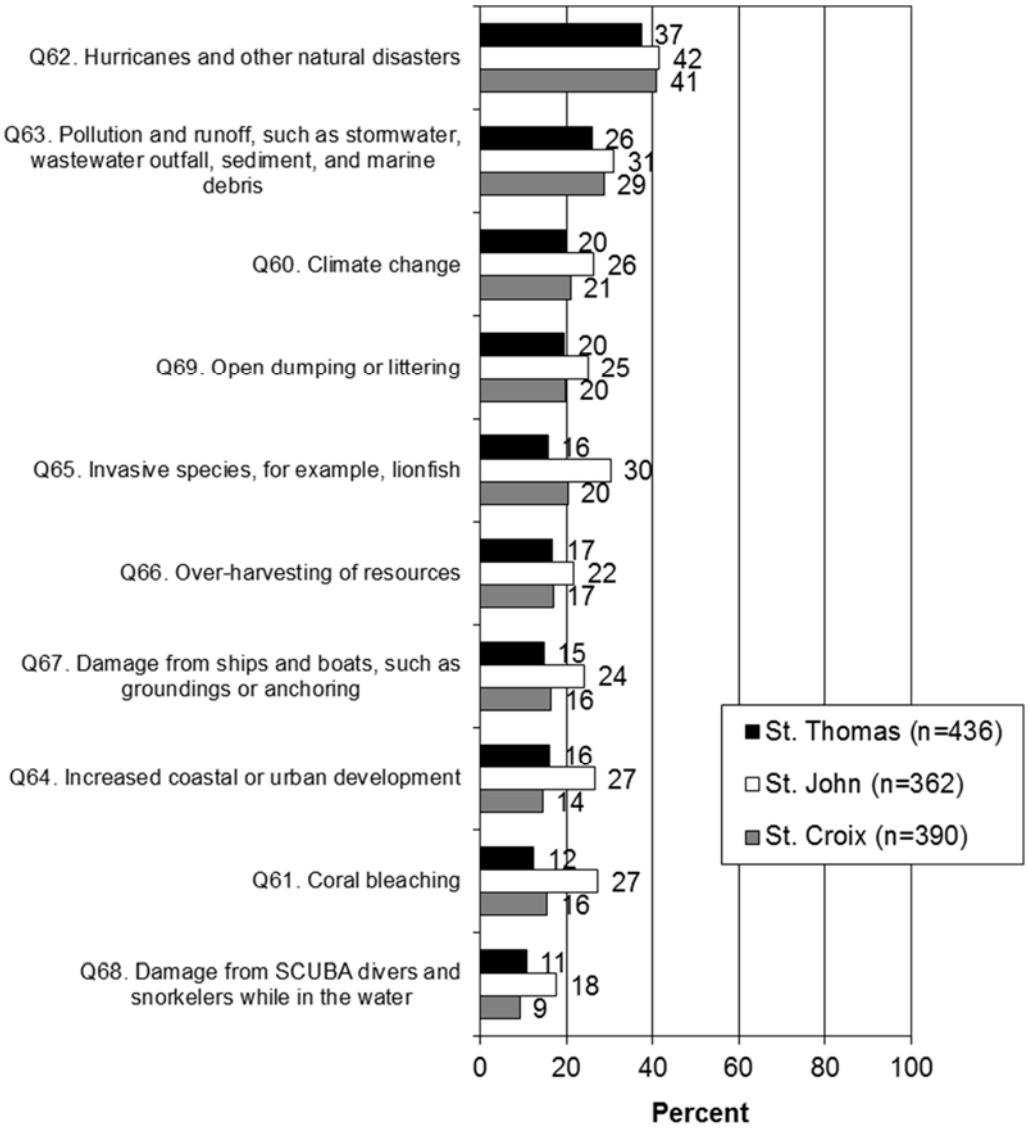


Figure 25: Q60-Q69. Percent of respondents who are very familiar with each of the above potential threats to the coral reefs in the USVI

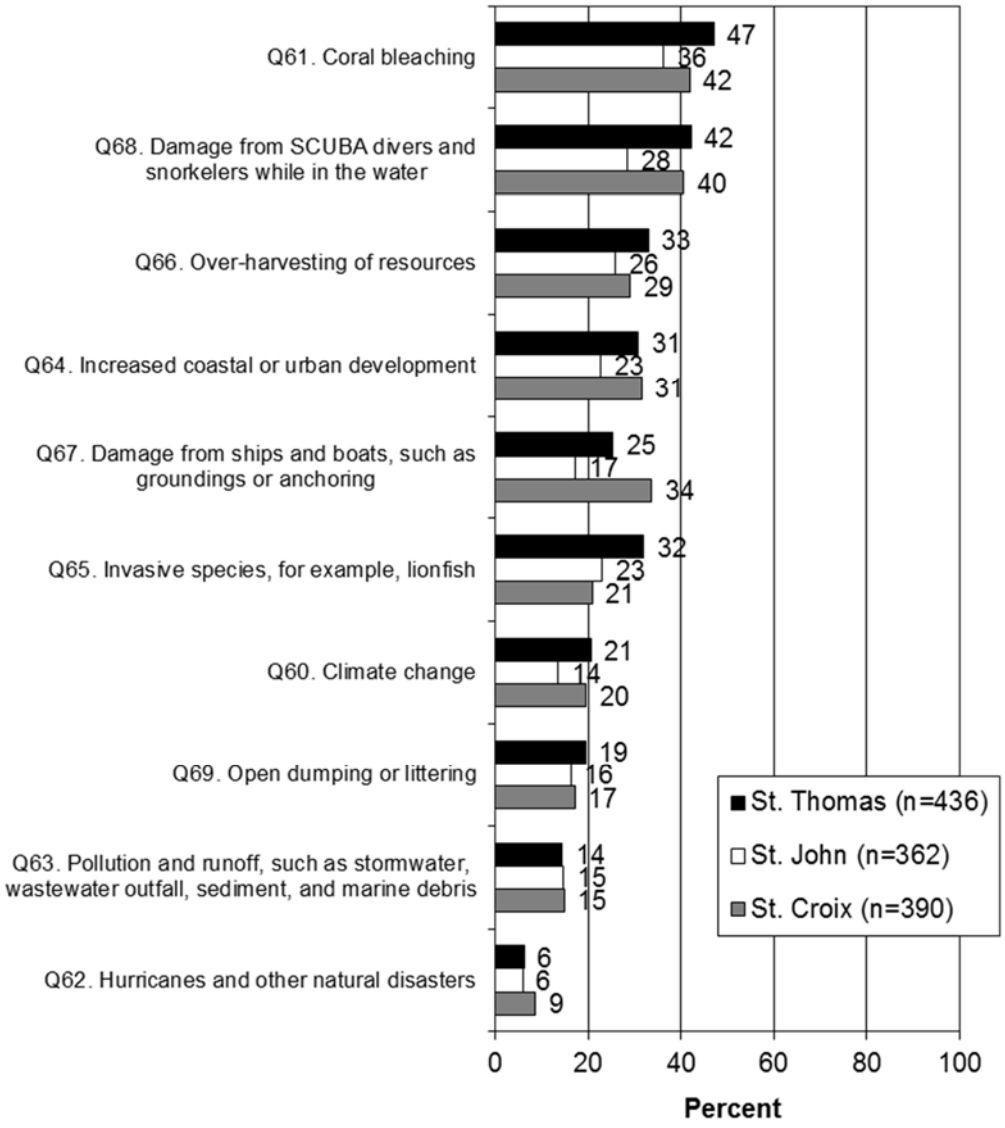


Figure 26: Q60-Q69. Percent of respondents who are very unfamiliar or unfamiliar with each of the above potential threats to the coral reefs in the USVI

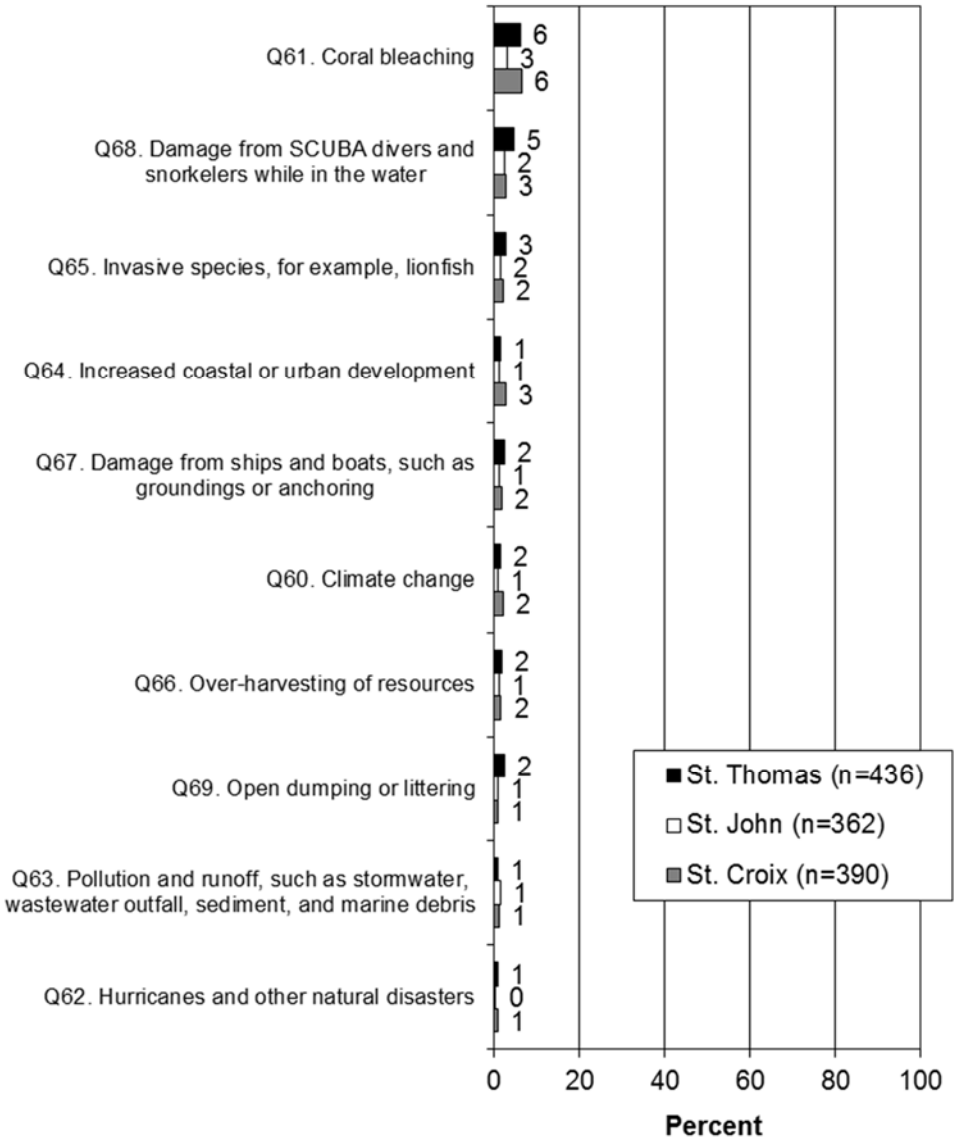


Figure 27: Q60-Q69. Percent of respondents who are very unfamiliar with each of the above potential threats to the coral reefs in the USVI

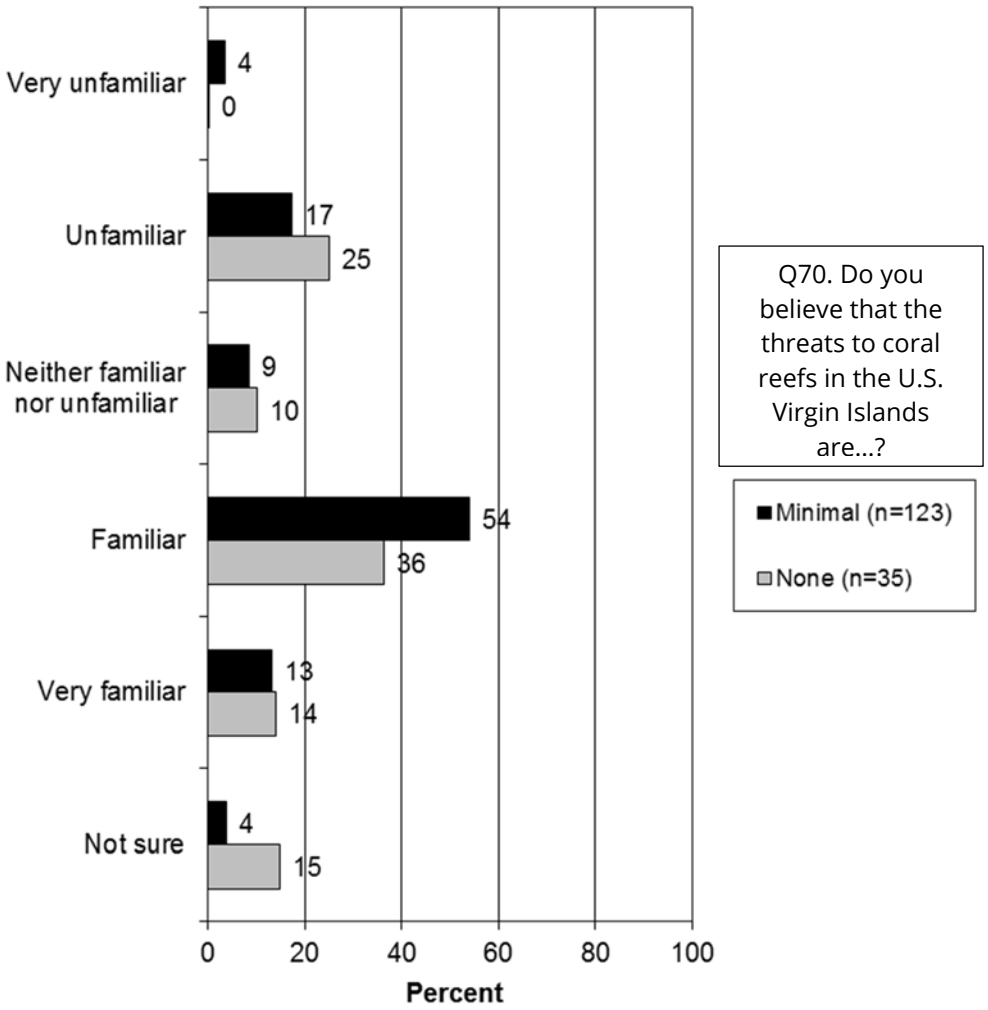


Figure 28: Q60. Climate change. (How familiar are you with this potential threat to the coral reefs in the U.S. Virgin Islands?)

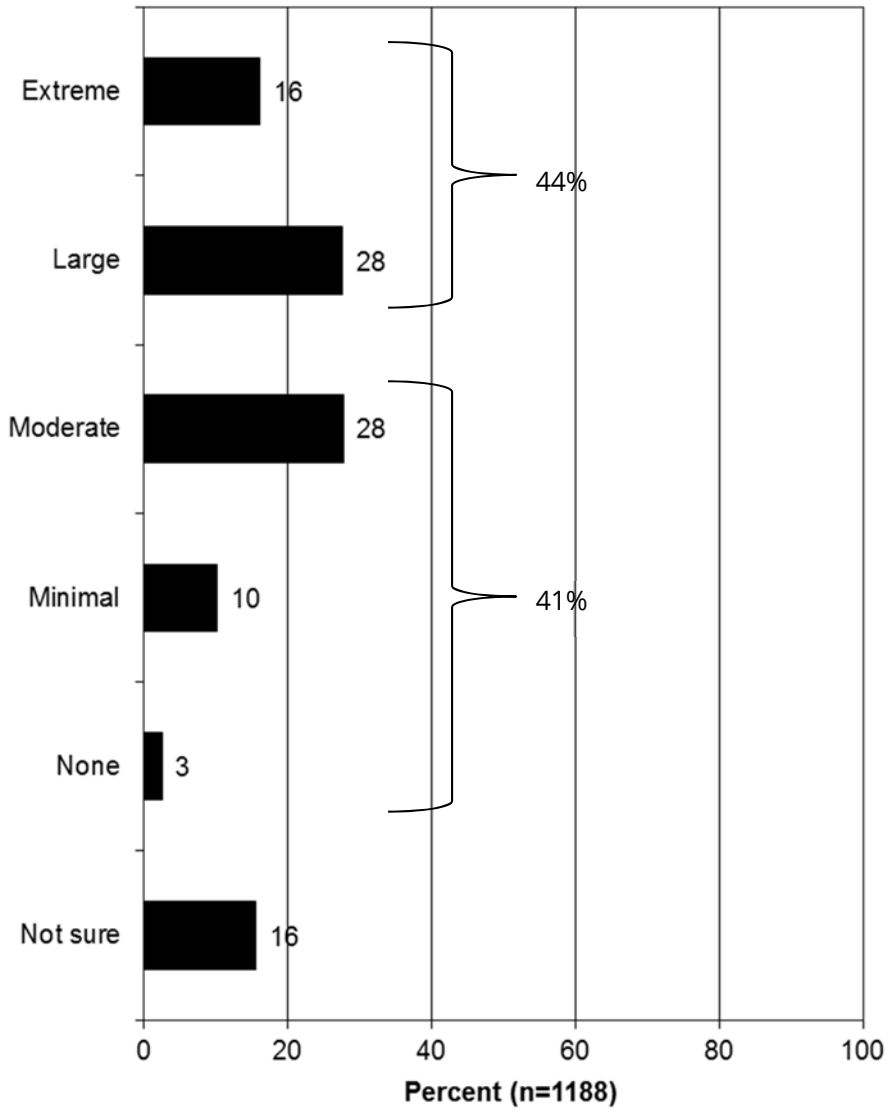


Figure 29: Q70. Do you believe that the threats to coral reefs in the U.S. Virgin Islands are…?

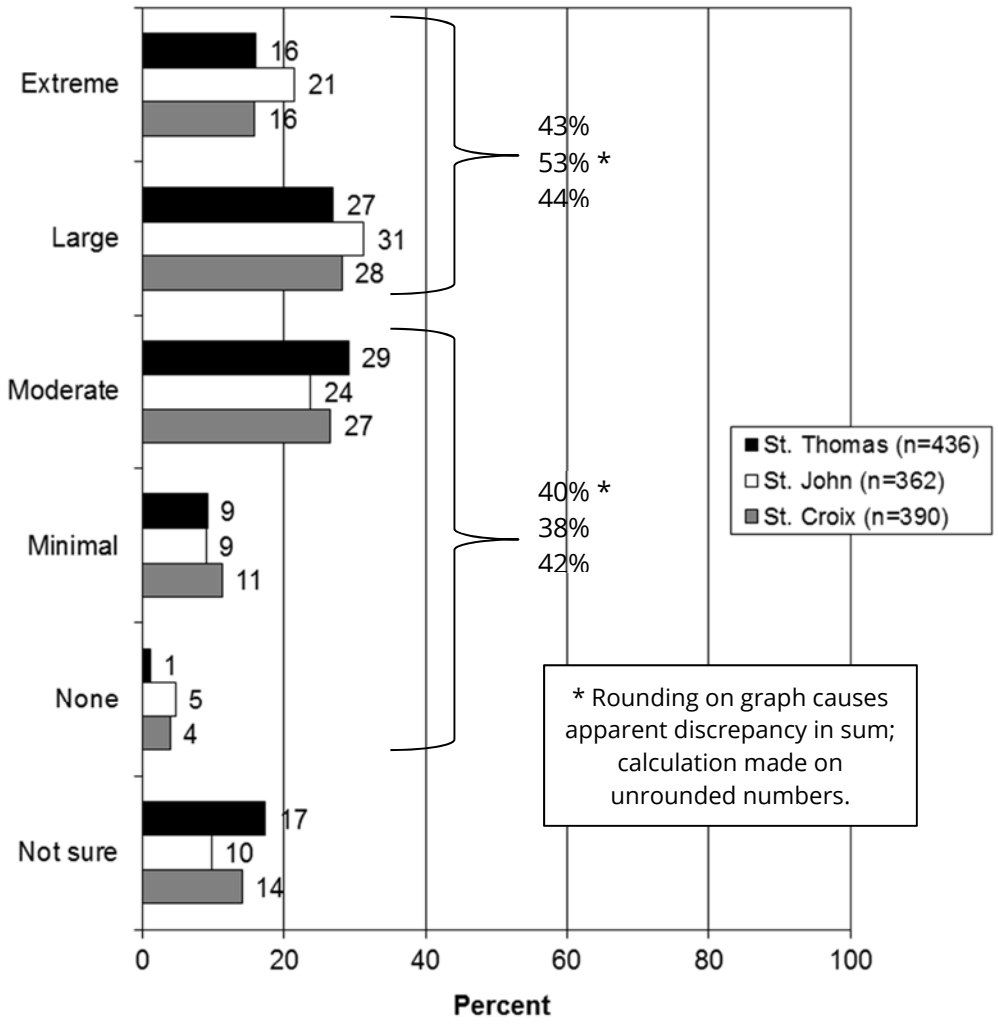


Figure 30: Q70. Do you believe that the threats to coral reefs in the U.S. Virgin Islands are…?

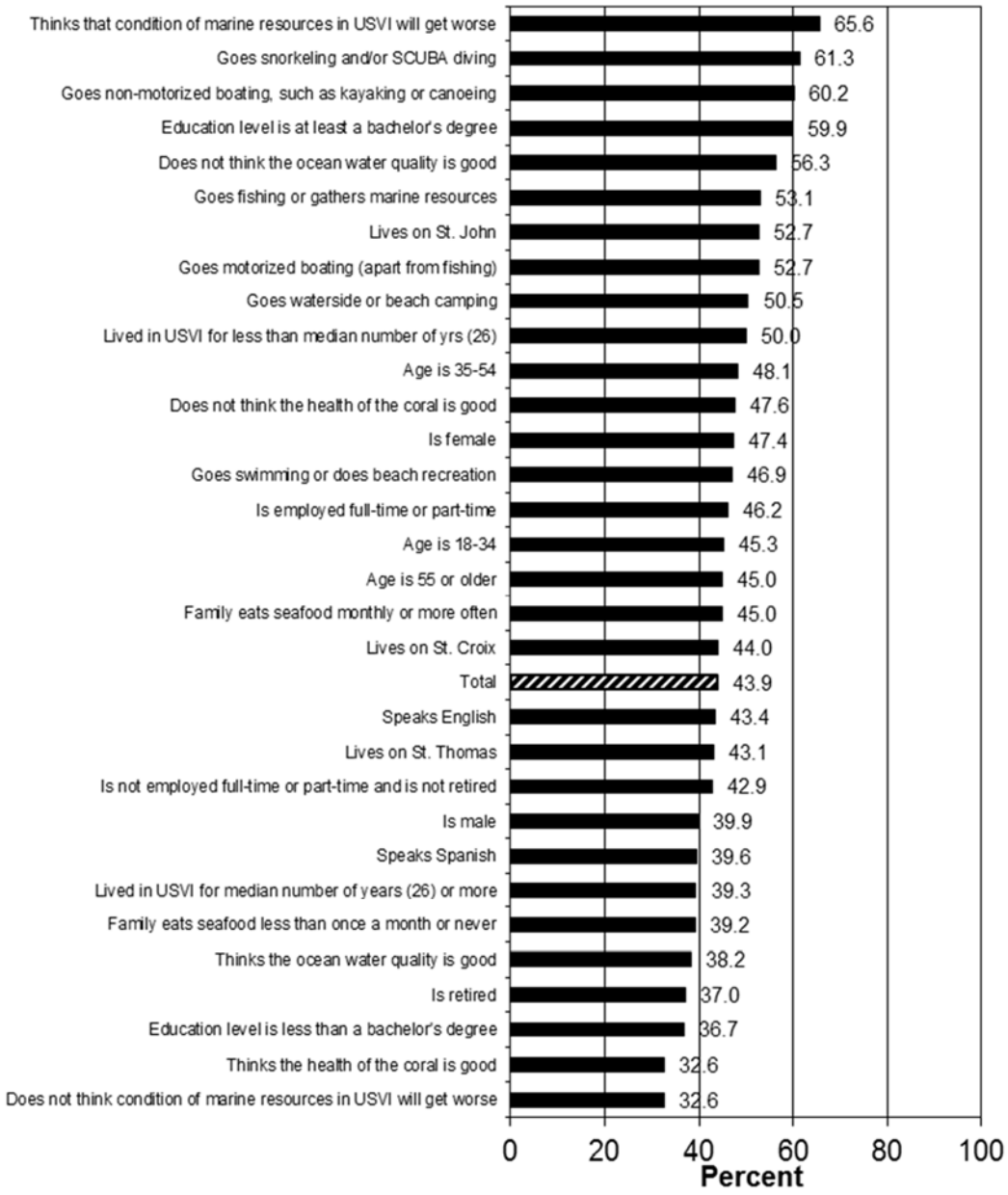


Figure 31: Percent of each of the above groups who believe that the threats to coral reefs in the U.S. Virgin Islands are extreme or large. An explanation of how to interpret omnigraphs is included on pages 12-15.

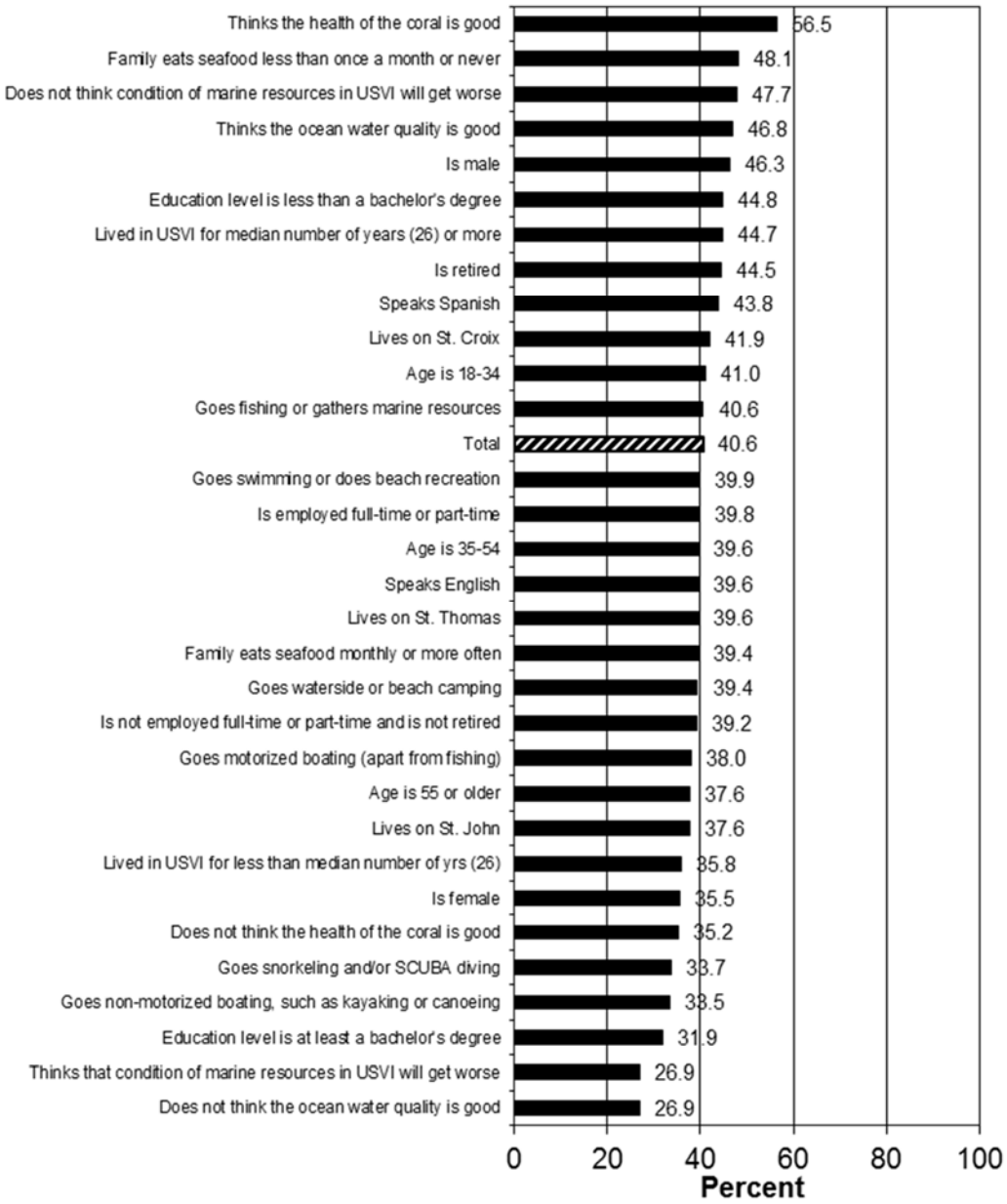


Figure 32: Percent of each of the above groups who believe that the threats to coral reefs in the U.S. Virgin Islands are moderate, minimal, or none. An explanation of how to interpret omnigraphs is included on pages 12-15.

Perceived Resource Conditions

- The survey asked about the condition of the islands' natural resources.
  - The ocean water quality has a much higher percentage of residents rating it good or very good (69%) than bad or very bad (7%). All other aspects of the natural resources are not rated as highly. The number of fish (47% giving an overall good rating; 16% giving an overall bad rating), the amount of coral and invertebrates (29% to 18%), and the health of the coral (25% to 25%) are in the middle. The worst ratings are for the amount of marine debris and trash, where bad ratings exceed good ratings (only 29% rate it on the good side, while 40% rate it on the bad side).
    - "Not sure" answers are relatively high for all except the ocean water quality and amount of marine debris and trash—residents apparently feeling more familiar with these latter items and being able, therefore, to give a rating.

- Following those ratings discussed above, residents were asked to rate the trend in those same items—in other words, if they got worse or better over the past 10 years. For all items except one (ocean water quality), a greater percentage of residents think the condition got worse than think the condition got better.
  - The greatest disparity shows up in the ratings of the number of fish (16% say it got better, compared to 36% who say it got worse—a difference of 20 percentage points) and the health of the coral (14% better, 34% worse—also a difference of 20 points). Also with negative ratings is the amount of coral and coral reef invertebrates (14% better to 31% worse—an 18-point difference). The amount of debris and trash has more even ratings, but still tilted toward worse: 27% say it got better, but 35% say it got worse. Finally, regarding ocean water quality, 26% say it got better, while 23% say it got worse.

- A final question in this section asked residents to say what they think will happen in the next 10 years, and they fall out roughly into thirds: 34% say the condition of marine resources in the islands will get worse, 37% say the condition will improve, and 28% give a neutral or "not sure" response.
  - Residents of St. John have the highest percentage saying the condition will get worse (44%, compared to 32% and 35% of the other islands' residents).

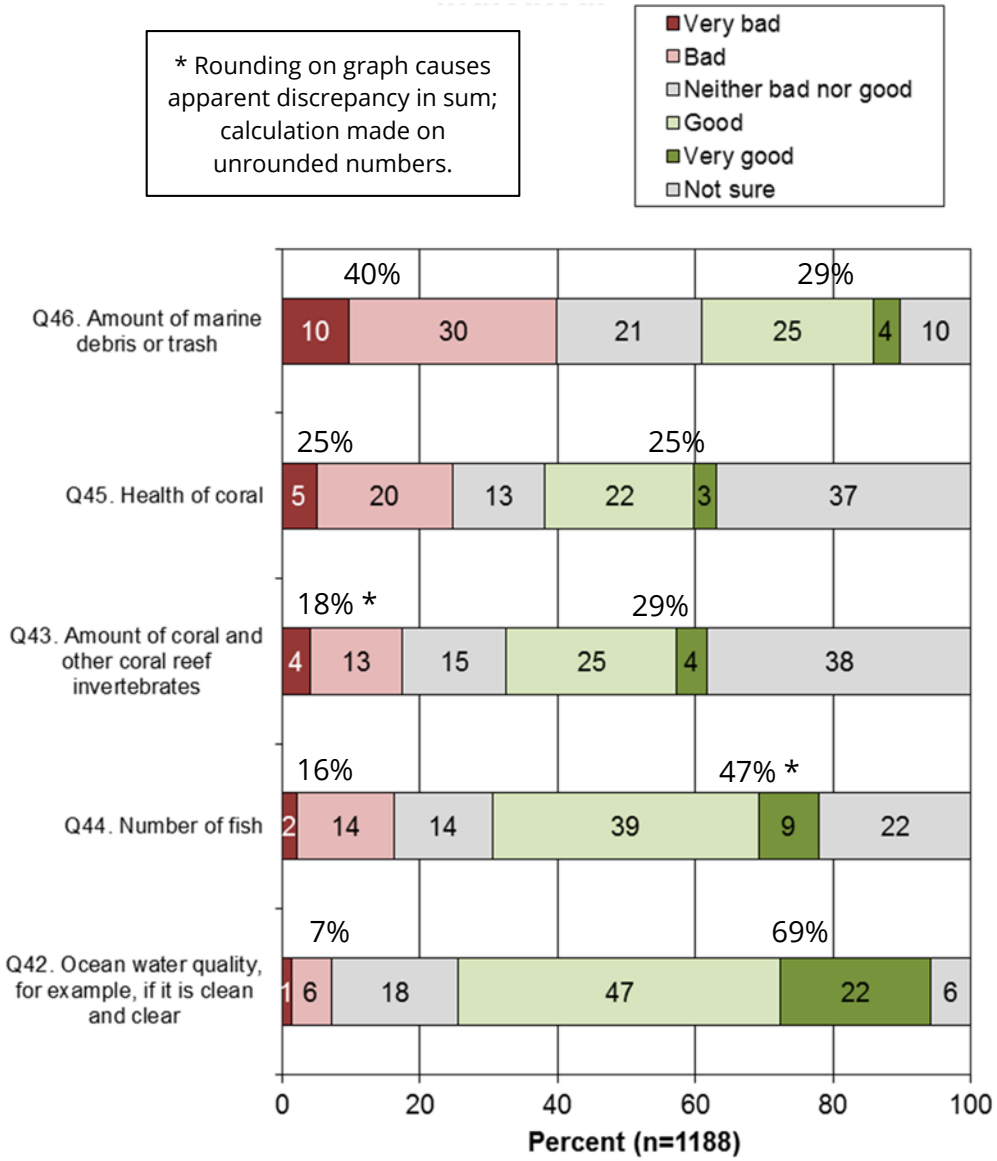


Figure 33: Q42-Q46. Percent of respondents who think that the current condition of each of the above resources on the island of their residence is as indicated

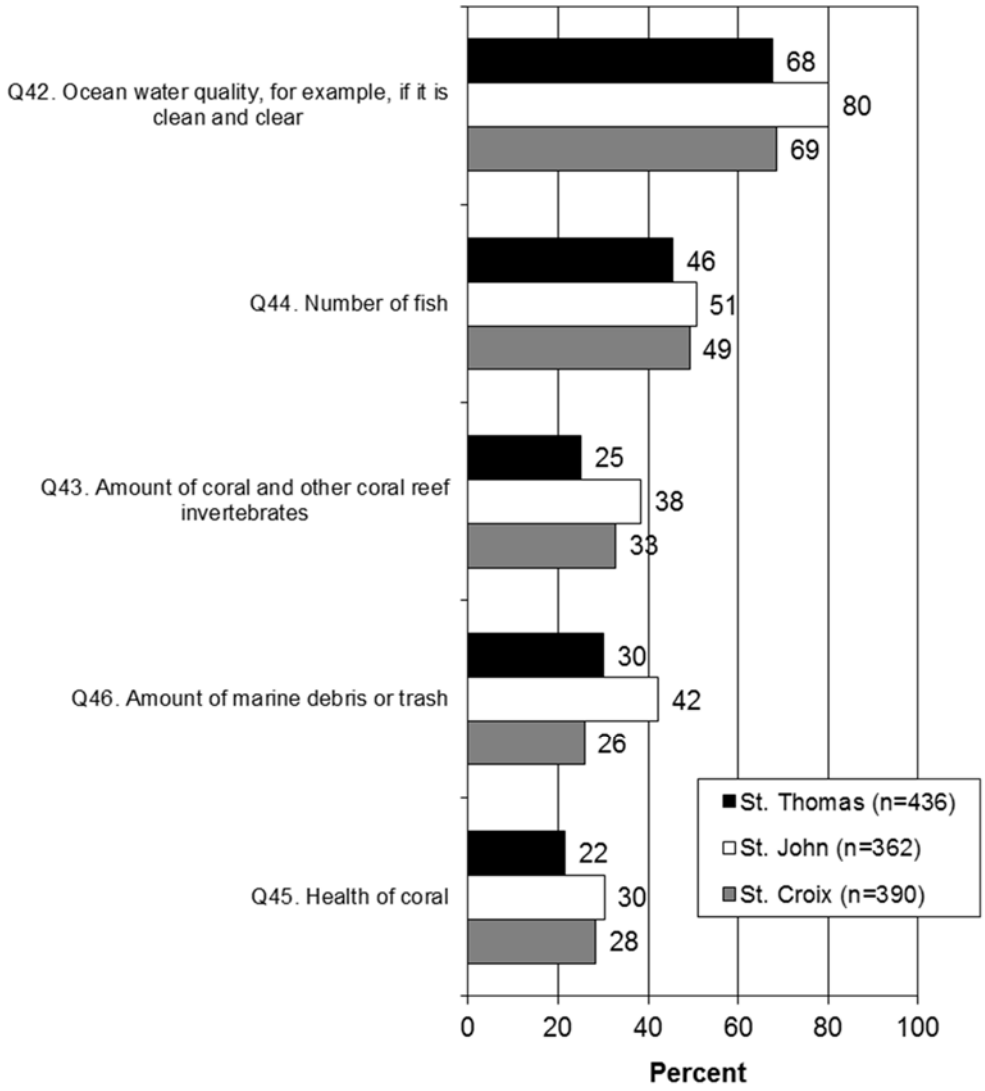


Figure 34: Q42-Q46. Percent of respondents who think that the current condition of each of the above resources on the island of their residence is good or very good

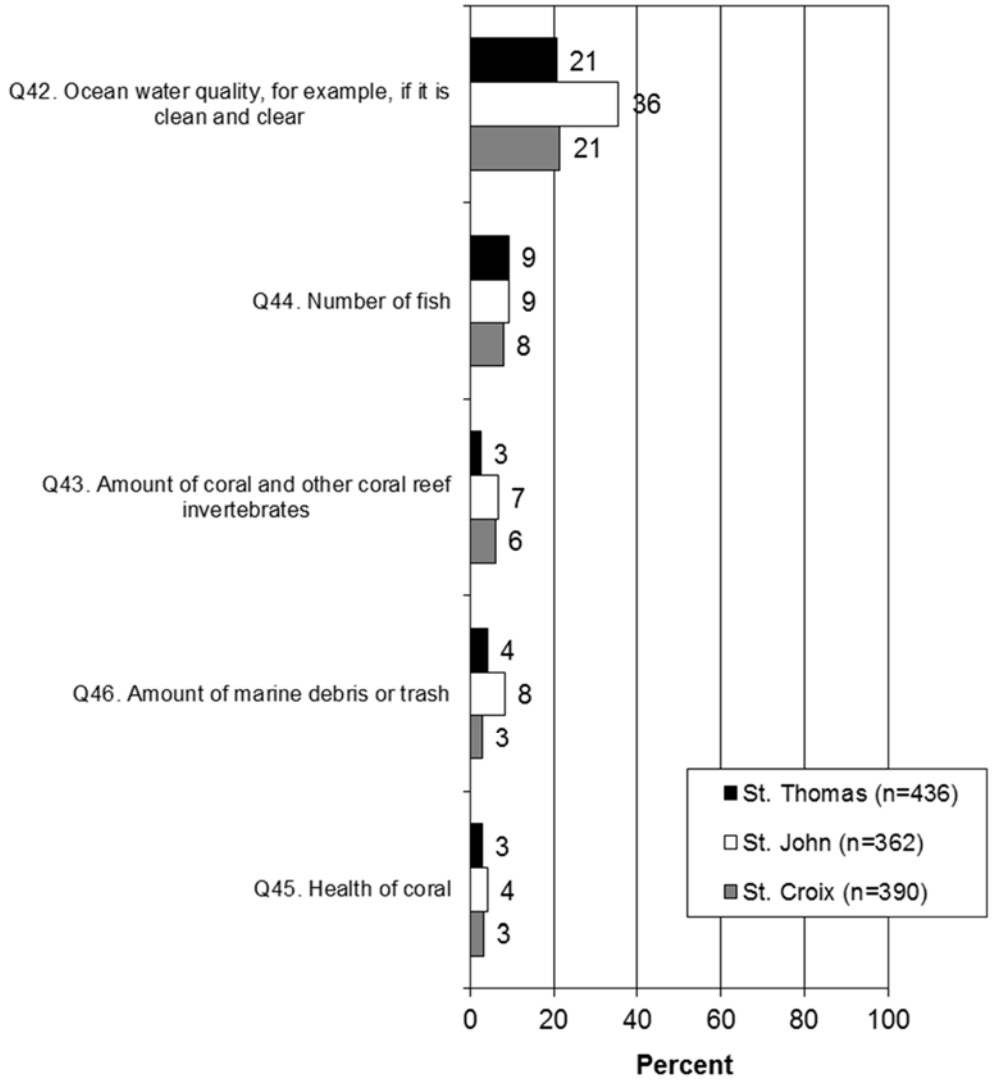


Figure 35: Q42-Q46. Percent of respondents who think that the current condition of each of the above resources on the island of their residence is very good

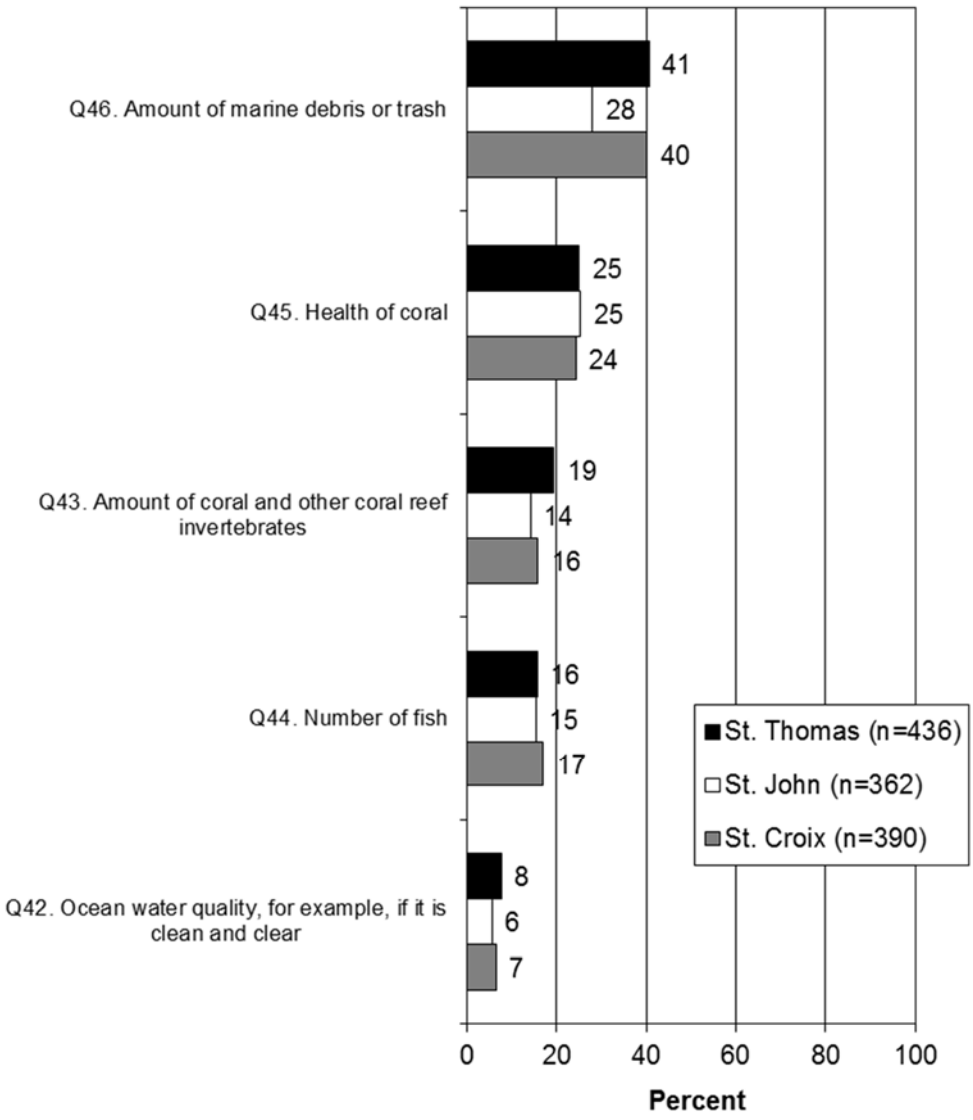


Figure 36: Q42-Q46. Percent of respondents who think that the current condition of each of the above resources on the island of their residence is very bad or bad

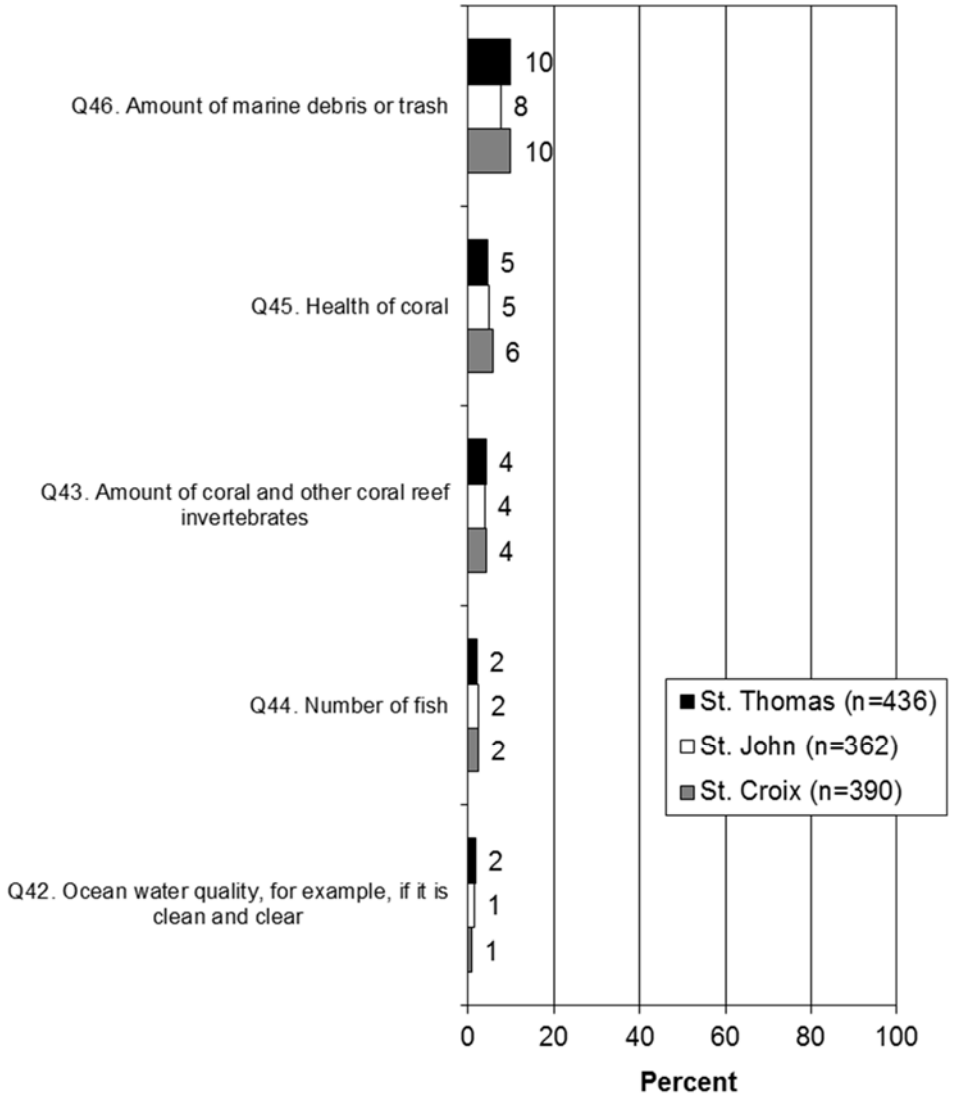


Figure 37: Q42-Q46. Percent of respondents who think that the current condition of each of the above resources on the island of their residence is very bad

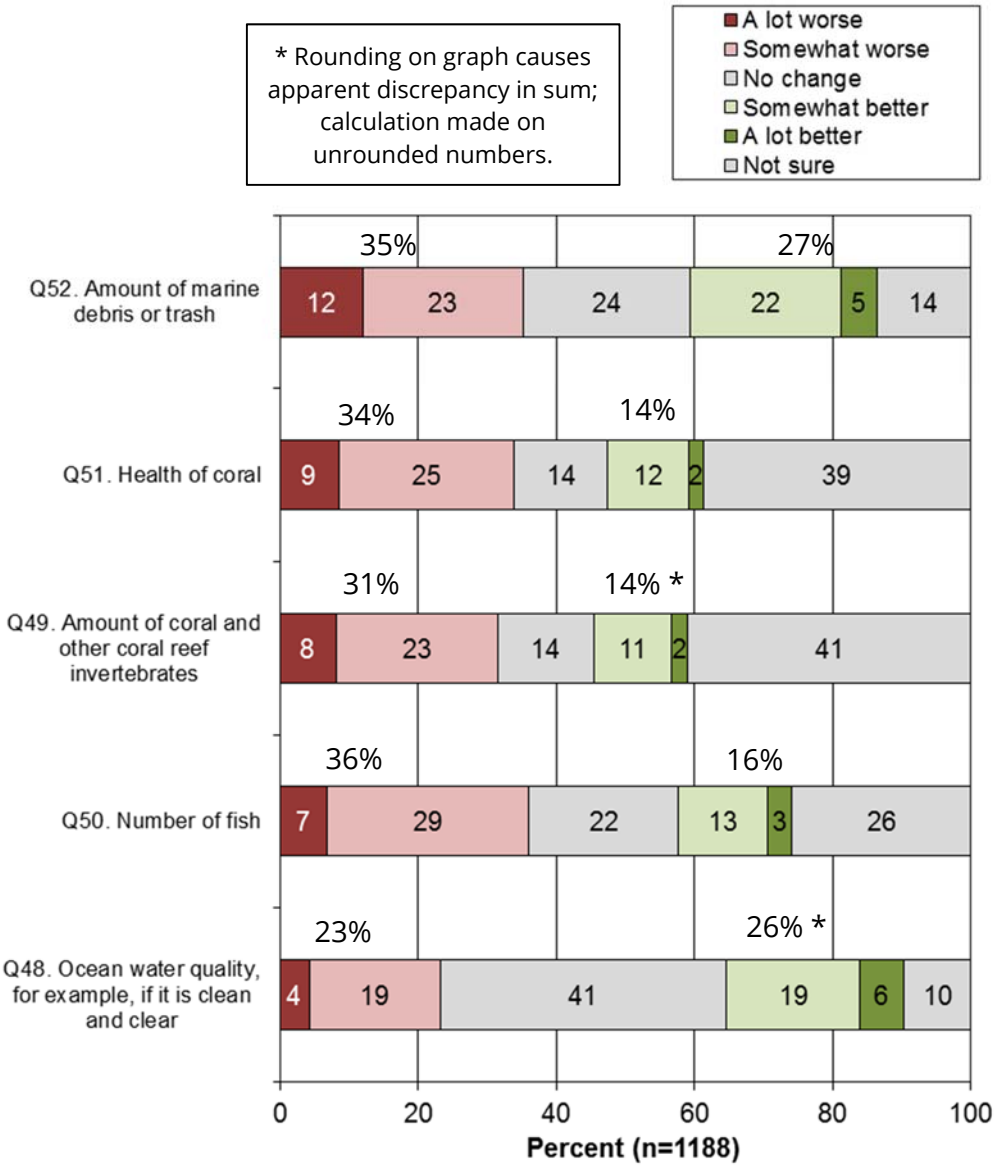


Figure 38: Q48-Q52. Percent of respondents who think the condition of each of the above resources has changed/not changed as indicated in the past 10 years

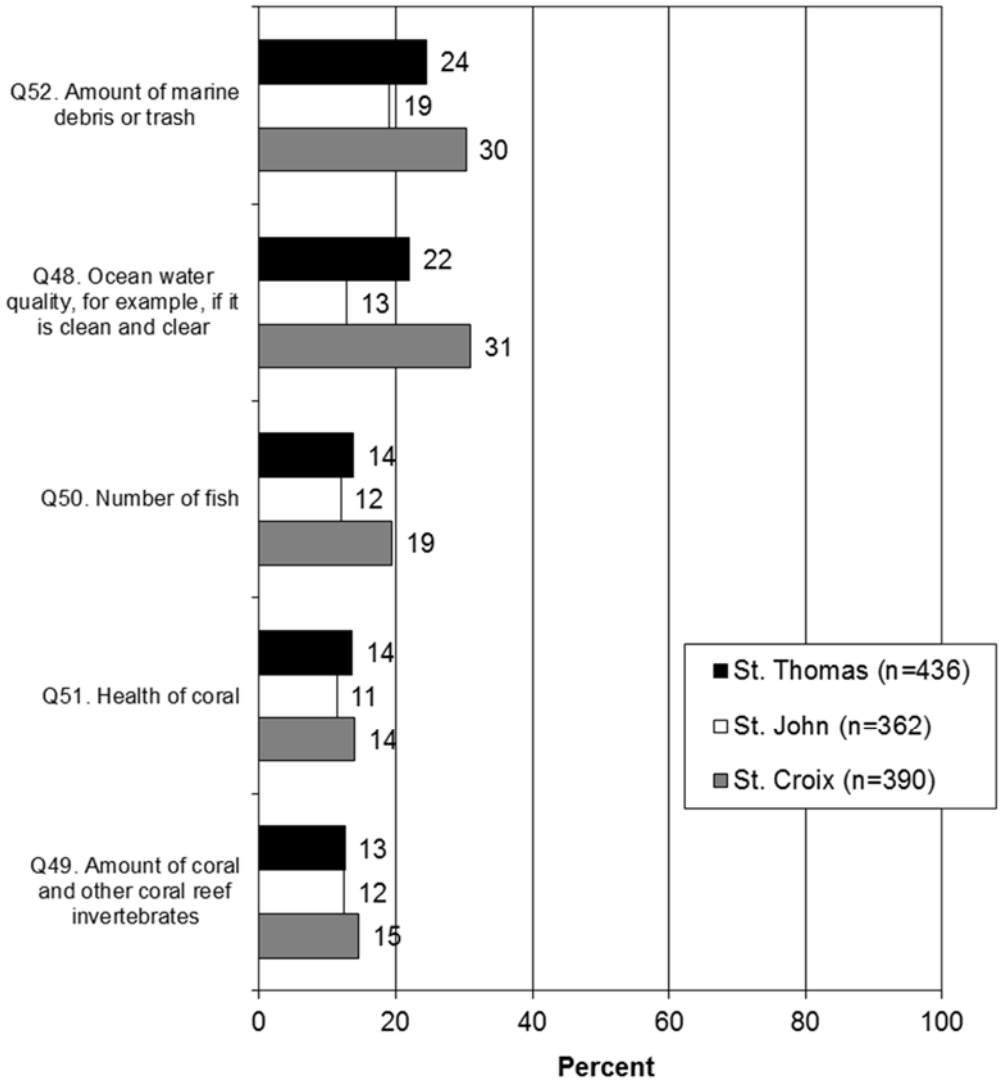


Figure 39: Q48-Q52. Percent of respondents who think the condition of each of the above resources has gotten somewhat better or a lot better over the past 10 years

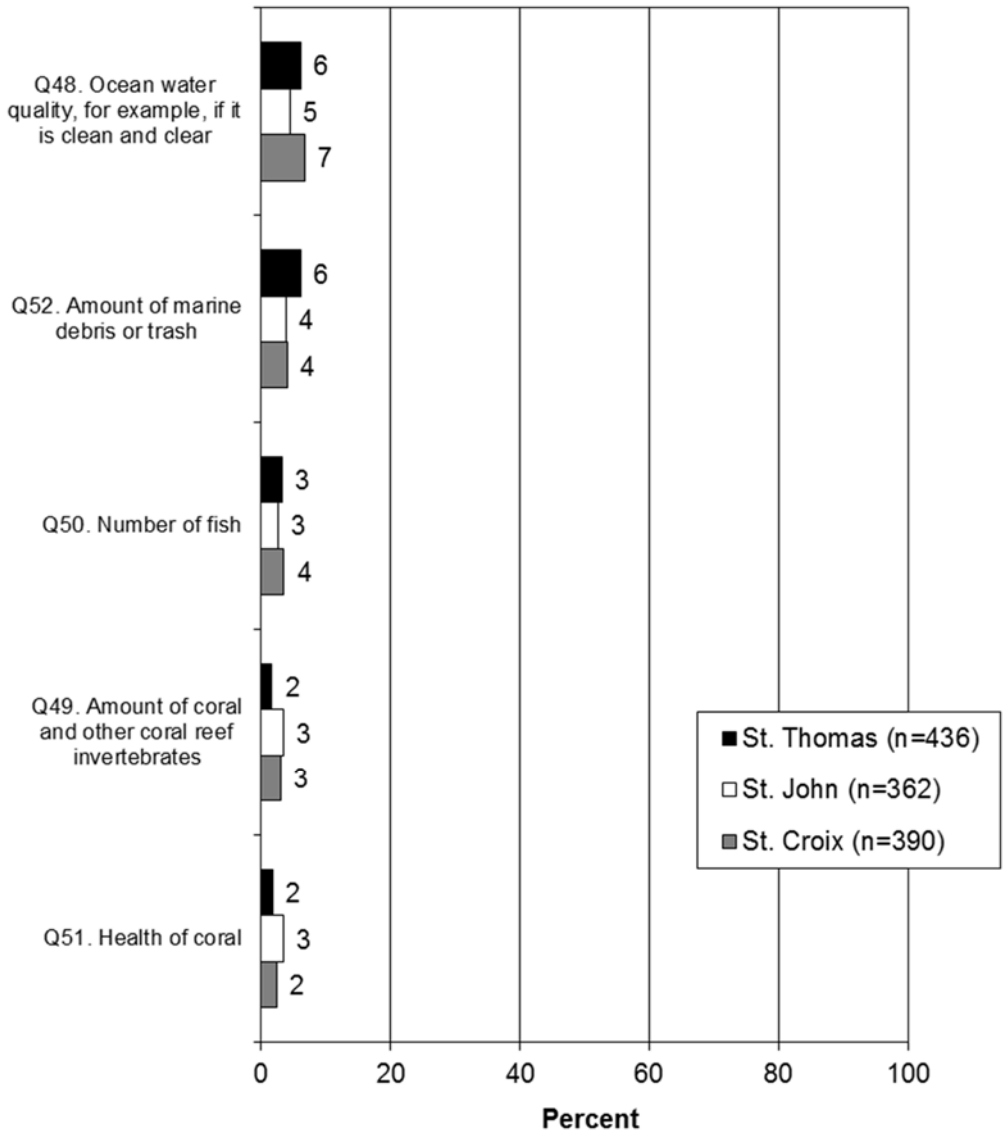


Figure 40: Q48-Q52. Percent of respondents who think the condition of each of the above resources has gotten a lot better over the past 10 years

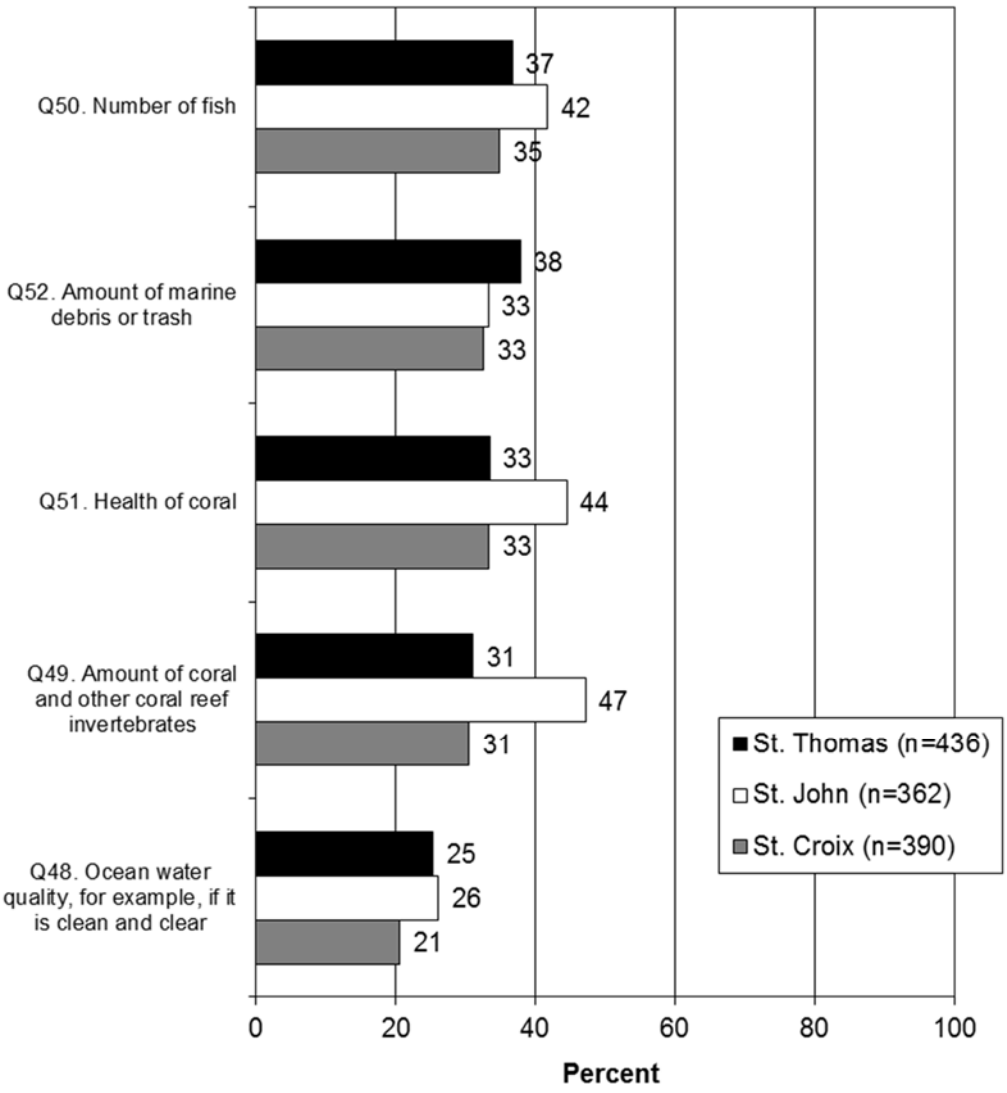


Figure 41: Q48-Q52. Percent of respondents who think the condition of each of the above resources has gotten a lot worse or somewhat worse over the past 10 years

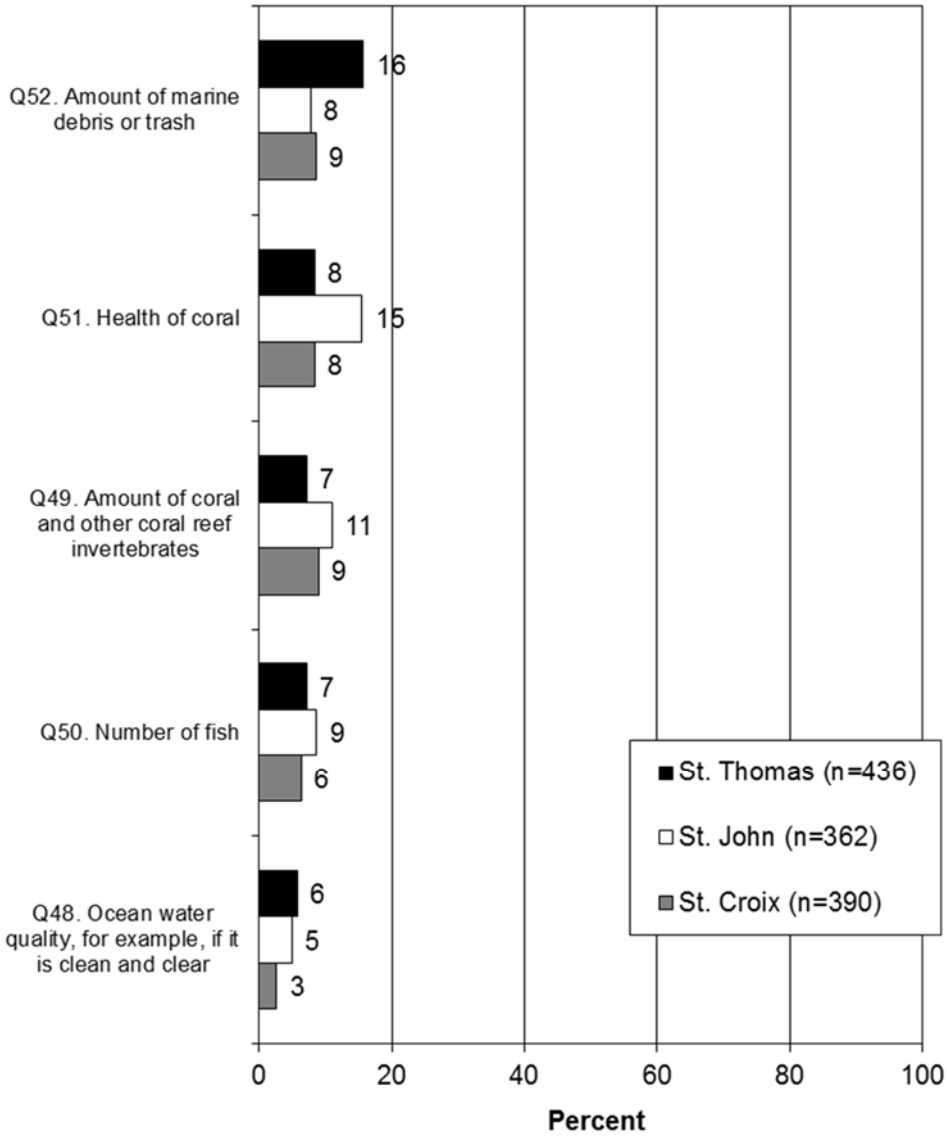


Figure 42: Q48-Q52. Percent of respondents who think the condition of each of the above resources has gotten a lot worse over the past 10 years

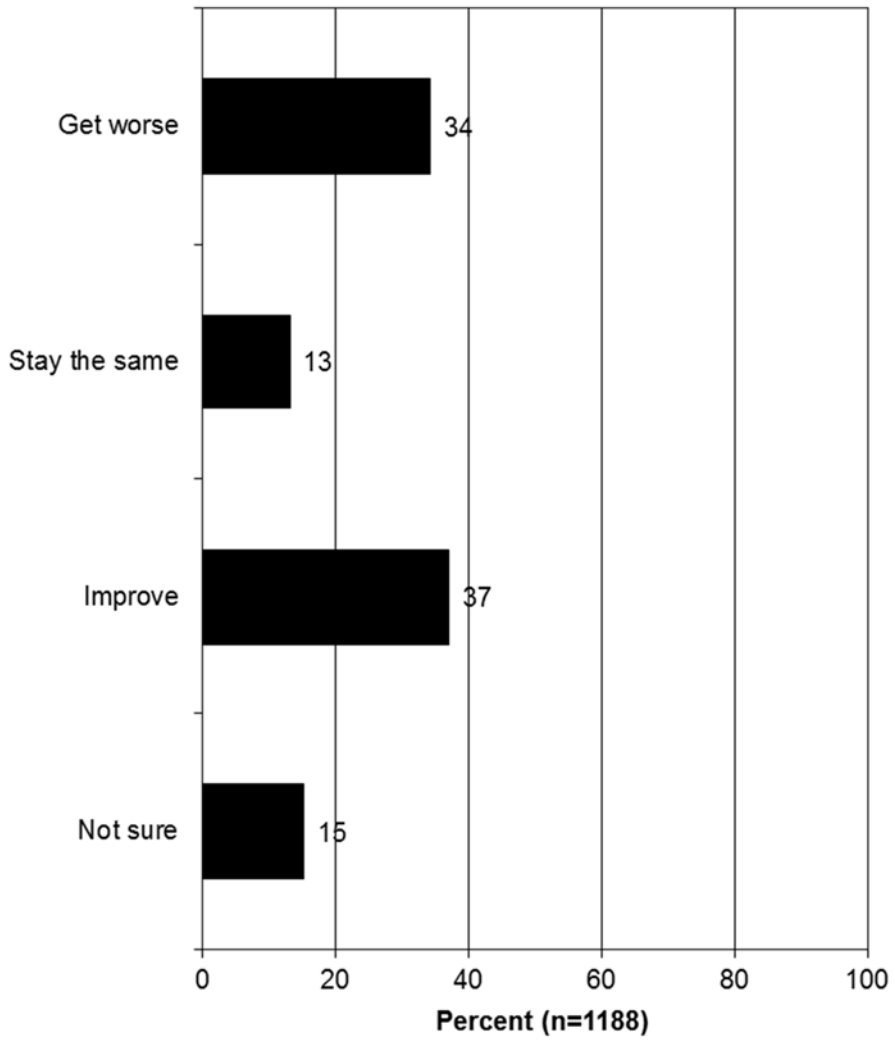


Figure 43: Q53. In the next 10 years, do you think the condition of the marine resources in the U.S. Virgin Islands will get worse, stay the same, or improve?

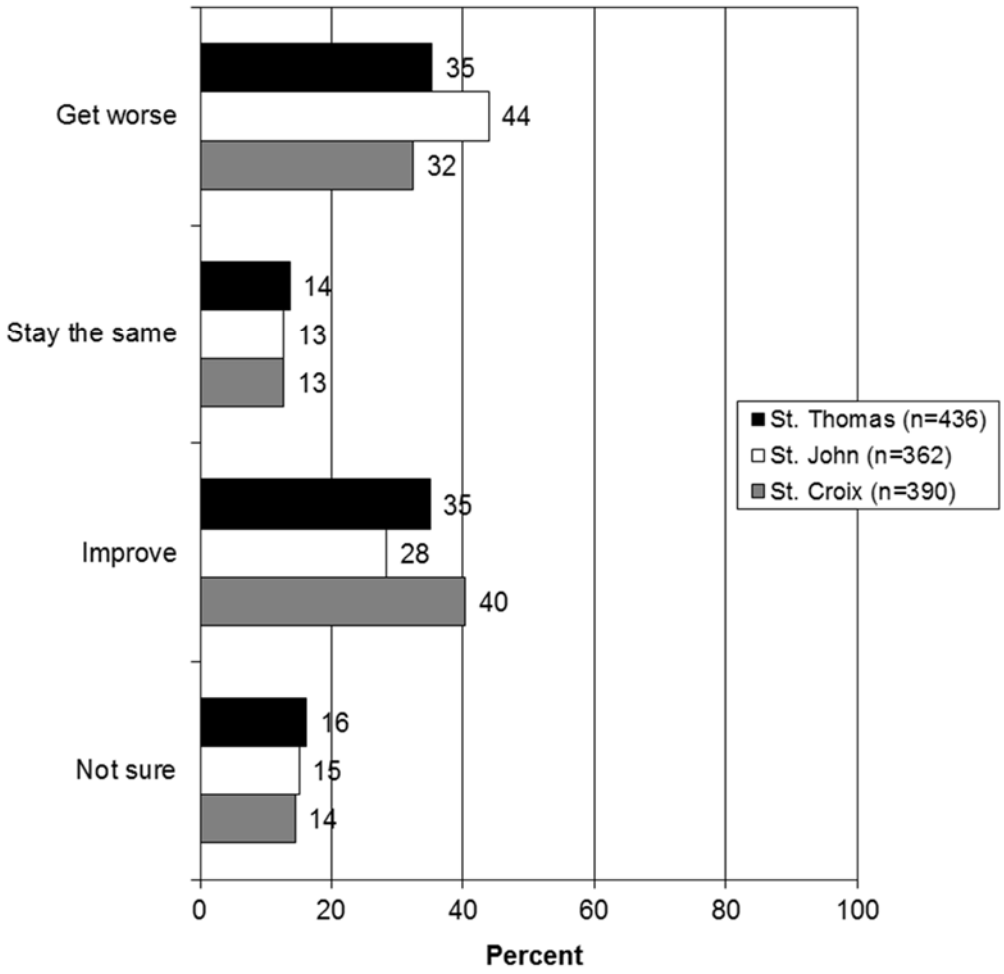


Figure 44: Q53. In the next 10 years, do you think the condition of the marine resources in the U.S. Virgin Islands will get worse, stay the same, or improve?

Knowledge of and Attitudes toward Marine Protected Areas

- Residents are about evenly divided in their knowledge of Marine Protected Areas (MPAs), with 52% being familiar or very familiar and 43% being unfamiliar or very unfamiliar.
  - There are marked differences in the crosstabulation by island, with residents of St. John being more familiar with them (64% being familiar or very familiar) than are the residents of the other islands (50% of St. Thomas residents and 54% of St. Croix residents).

- Those who were familiar or very familiar or who answered "neither familiar nor unfamiliar" in the above question were then asked about various aspects of MPAs. For each of ten statements, respondents were asked if they agreed or disagreed with the statement.
  - Overwhelming majorities of residents agree that MPAs protect coral reefs (90% agree or strongly agree), that they (the residents themselves) support the establishment of locally managed MPAs (87%), that they (the residents themselves) would support adding new MPAs if there is evidence that the MPAs are improving the marine resources (84%), and that MPAs increase the number of fish (80%).
  - In the next tier down, from 60% to 71% agree or strongly agree that there should be more locally managed MPAs (71%), that MPAs help increase tourism (68%), that MPAs increase the likelihood that people will vacation in the islands (also 68%), and that there has been an economic benefit to the islands from the establishment of the MPAs (60%).
    - All of those above statements are positive statements about MPAs. At the bottom are two statements that are negative: that fishermen's livelihoods have been negatively impacted by the MPAs (only 32% are on the agree side, about equal to the percentage who disagree with this statement—34%) and that there should be fewer MPAs (13%). In fact, regarding the latter, overall disagreement is at 70% that there should be fewer MPAs.

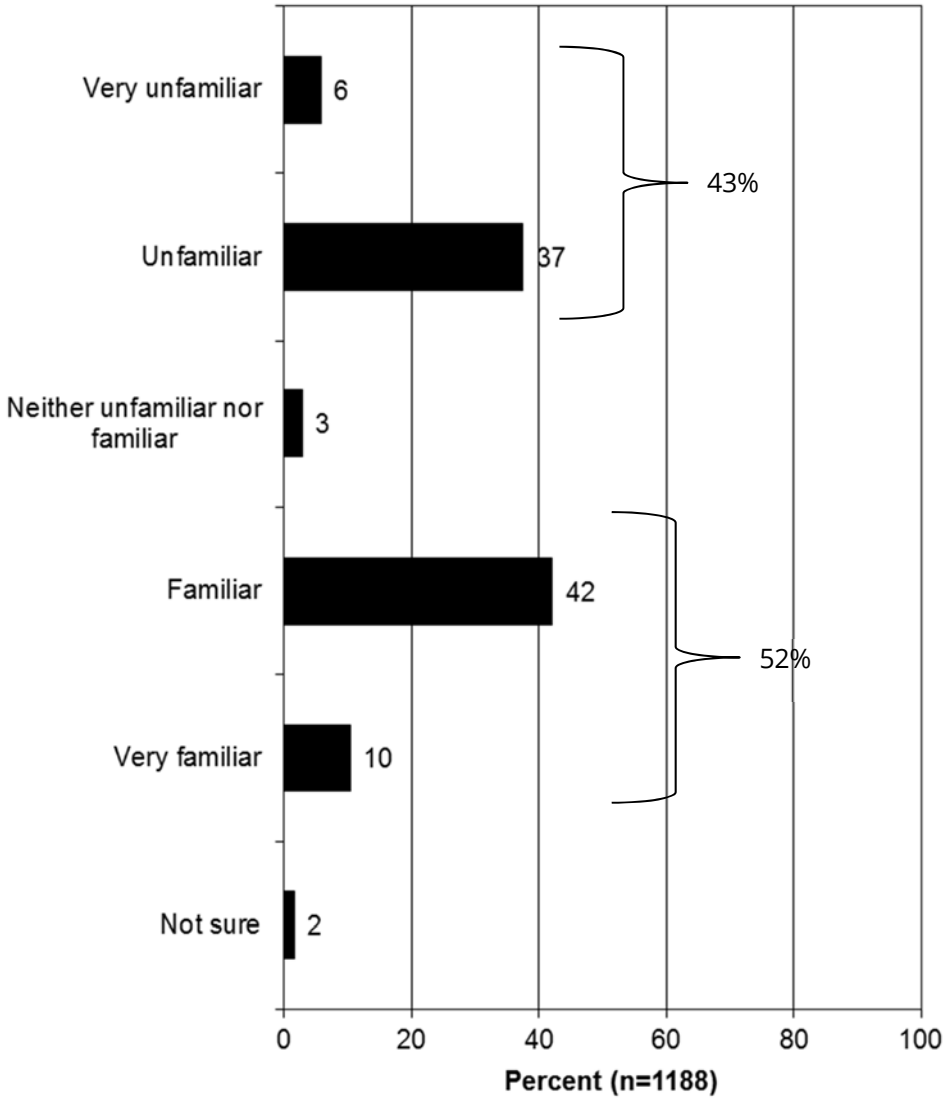


Figure 45: Q71. [Marine Protected Area was first explained to the respondent.] How familiar are you with Marine Protected Areas, also called MPAs?

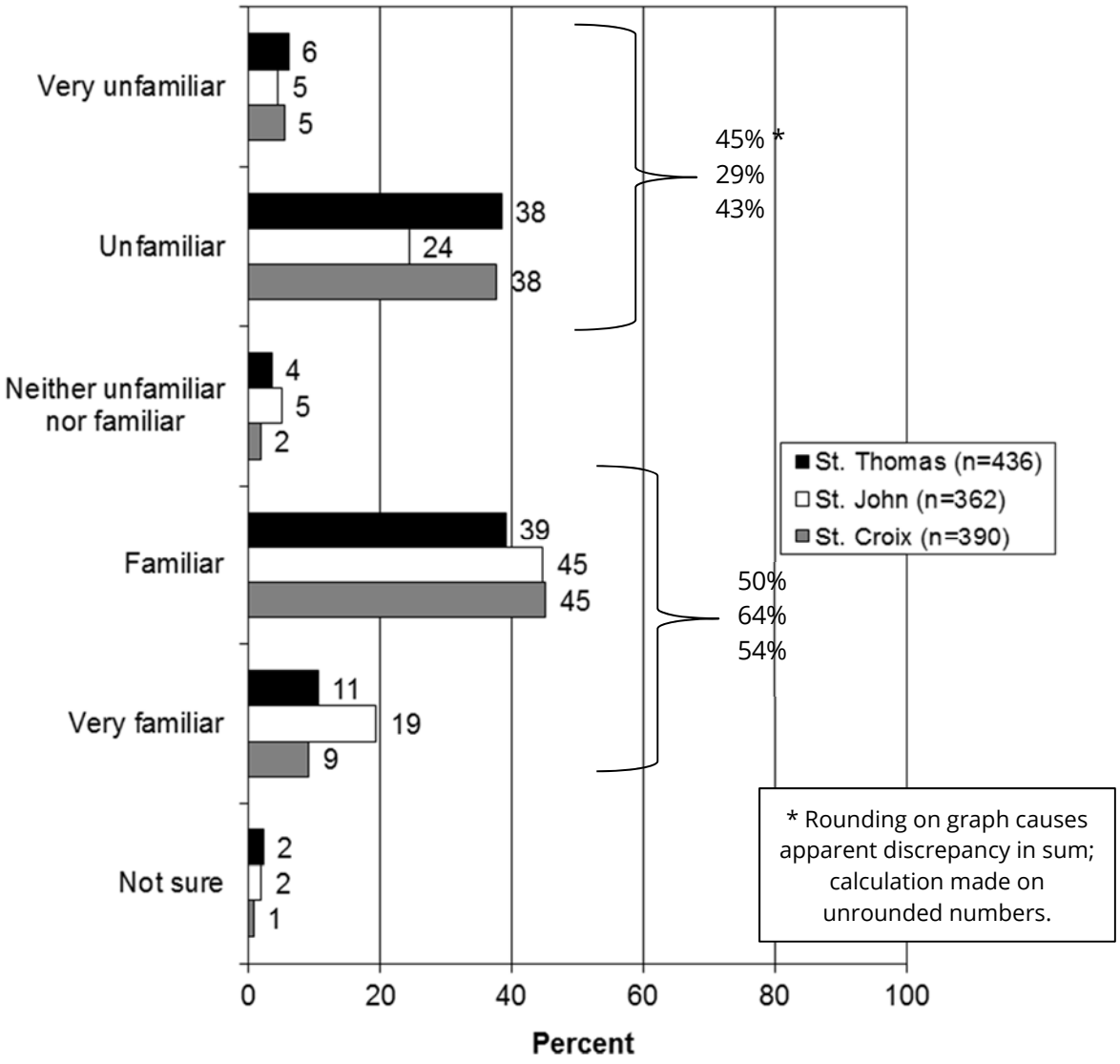


Figure 46: Q71. [Marine Protected Area was first explained to the respondent.] How familiar are you with Marine Protected Areas, also called MPAs?

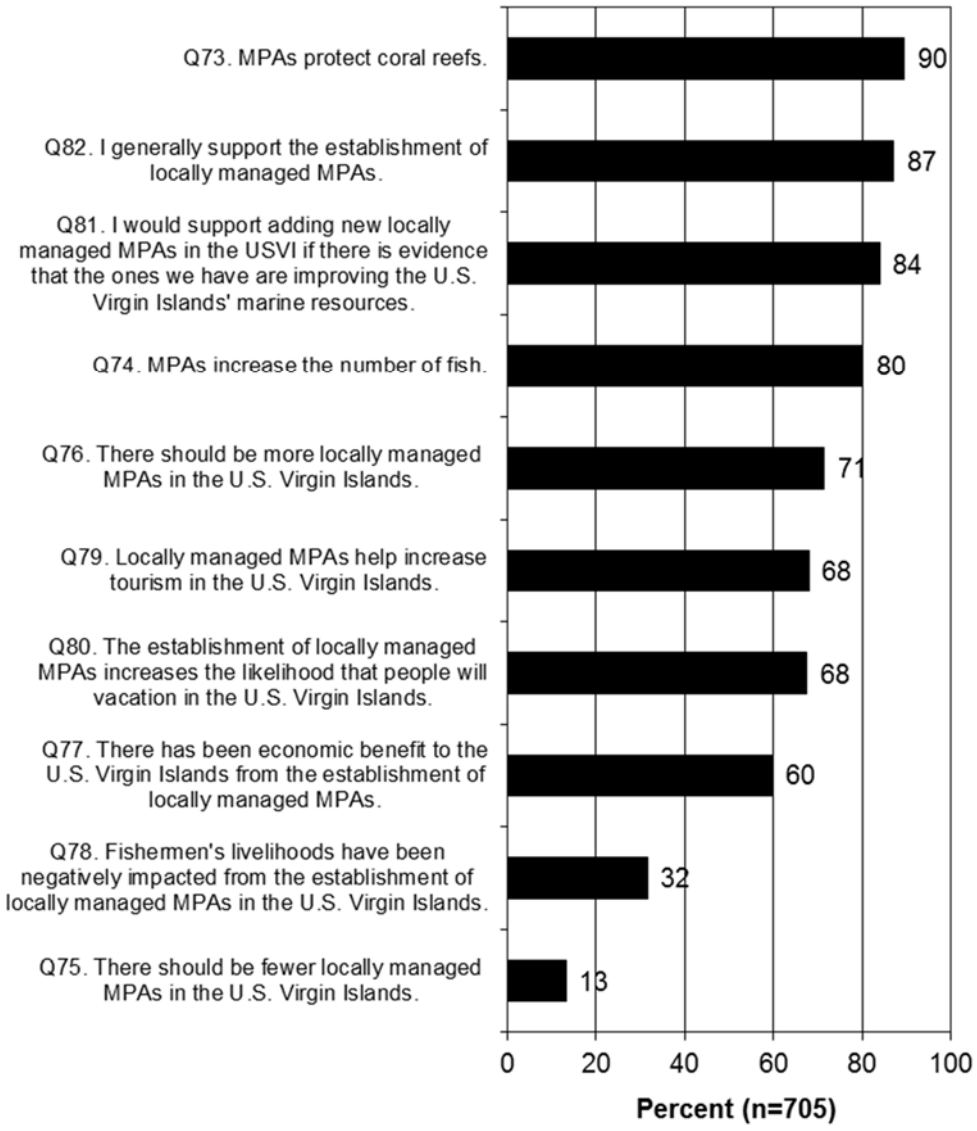


Figure 47: Q73-Q82. Percent of respondents who are not unfamiliar with MPAs who agree or strongly agree with each of the above statements

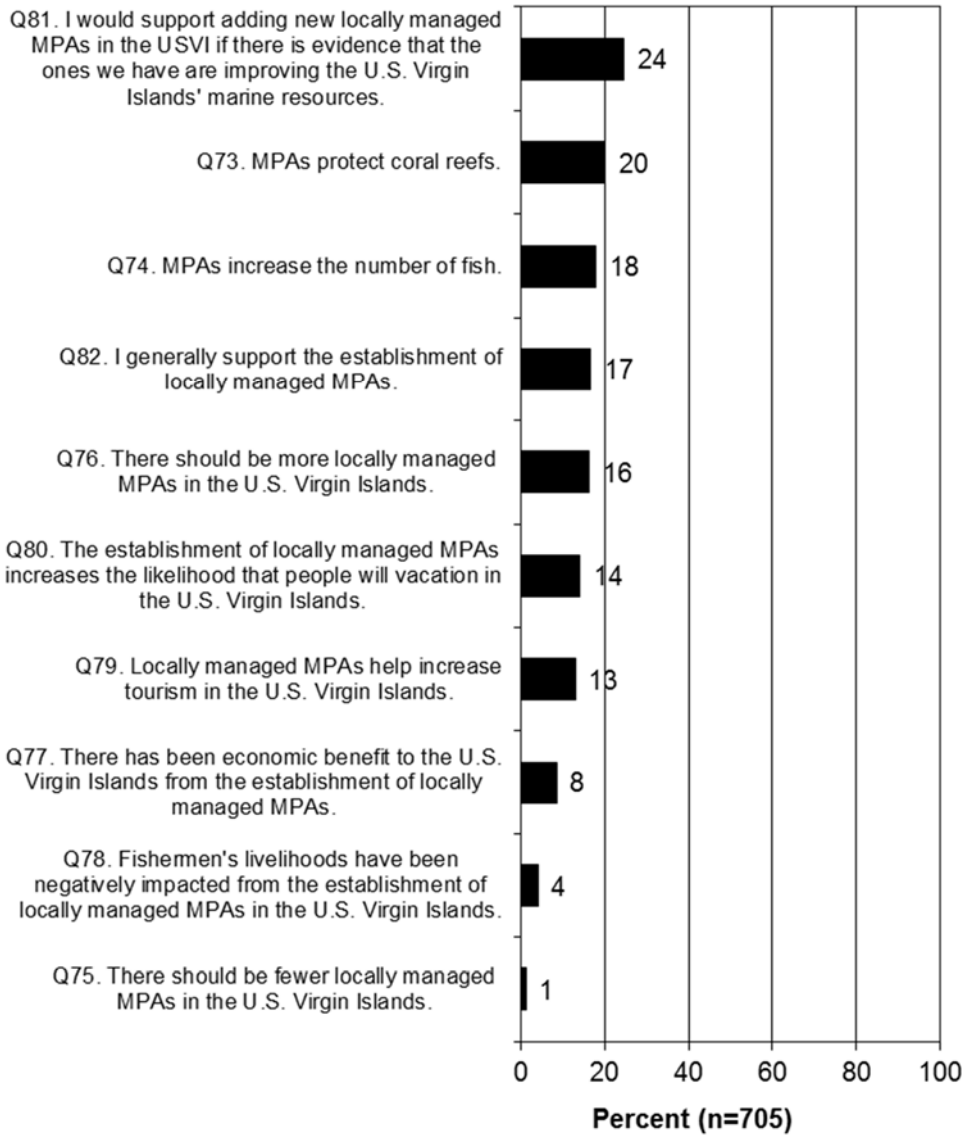


Figure 48: Q73-Q82. Percent of respondents who are not unfamiliar with MPAs who strongly agree with each of the above statements

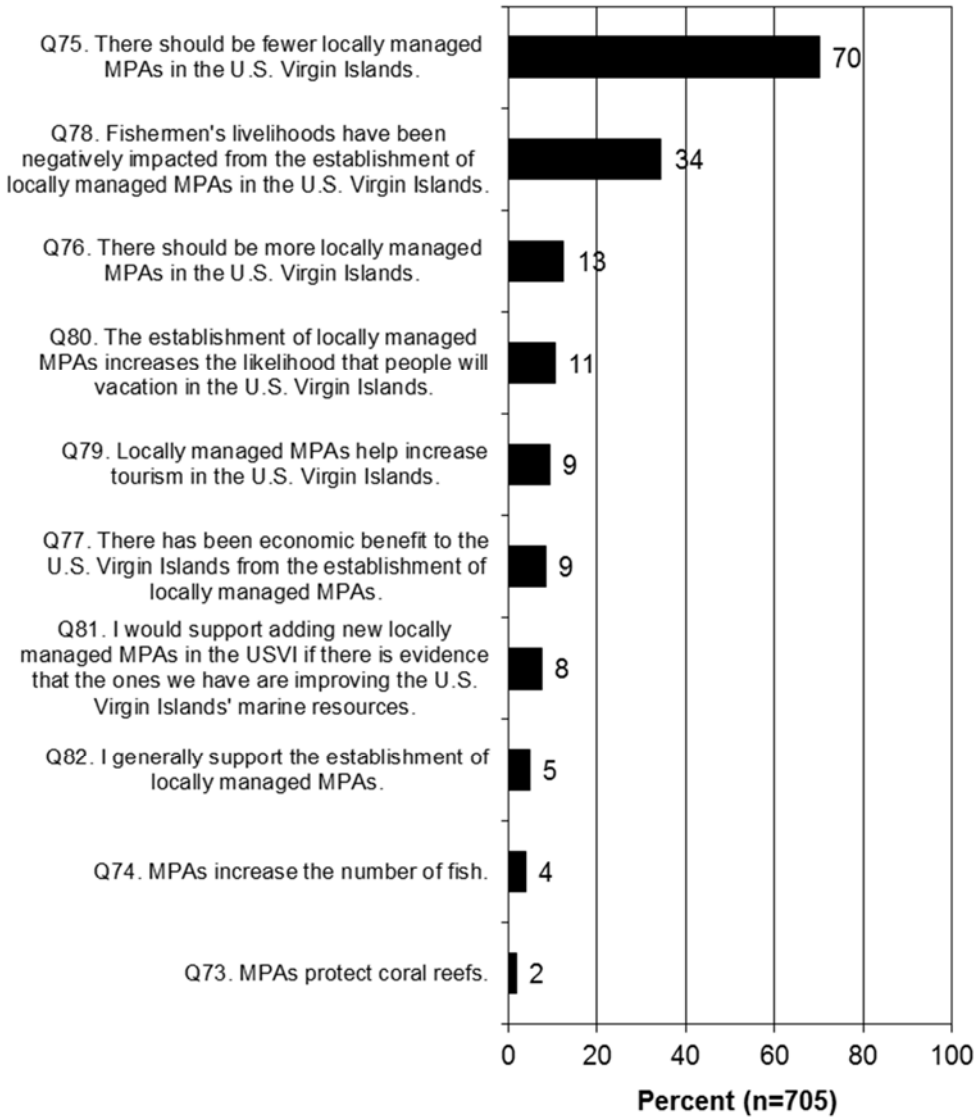


Figure 49: Q73-Q82. Percent of respondents who are not unfamiliar with MPAs who strongly disagree or disagree with each of the above statements

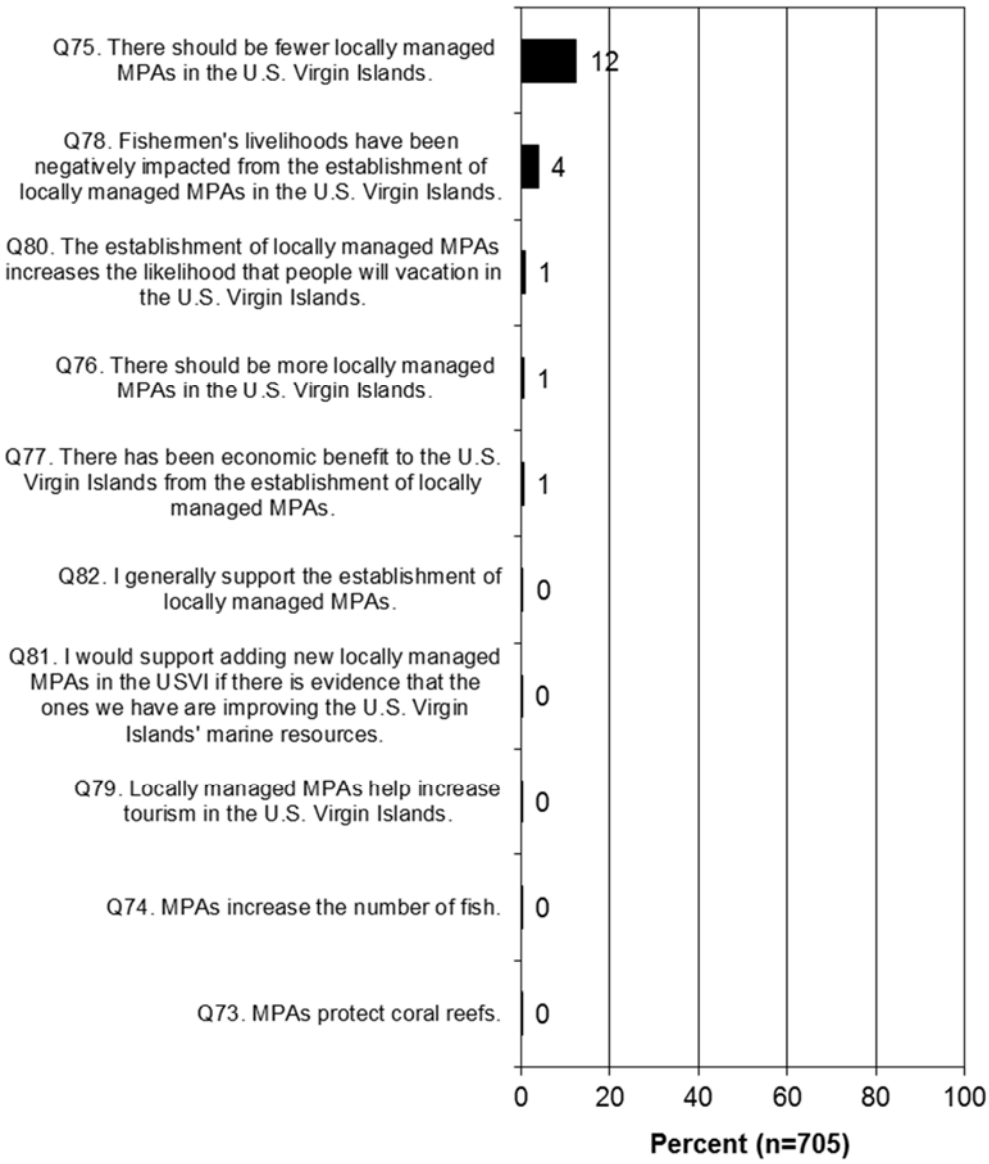


Figure 50: Q73-Q82. Percent of respondents who are not unfamiliar with MPAs who strongly disagree with each of the above statements

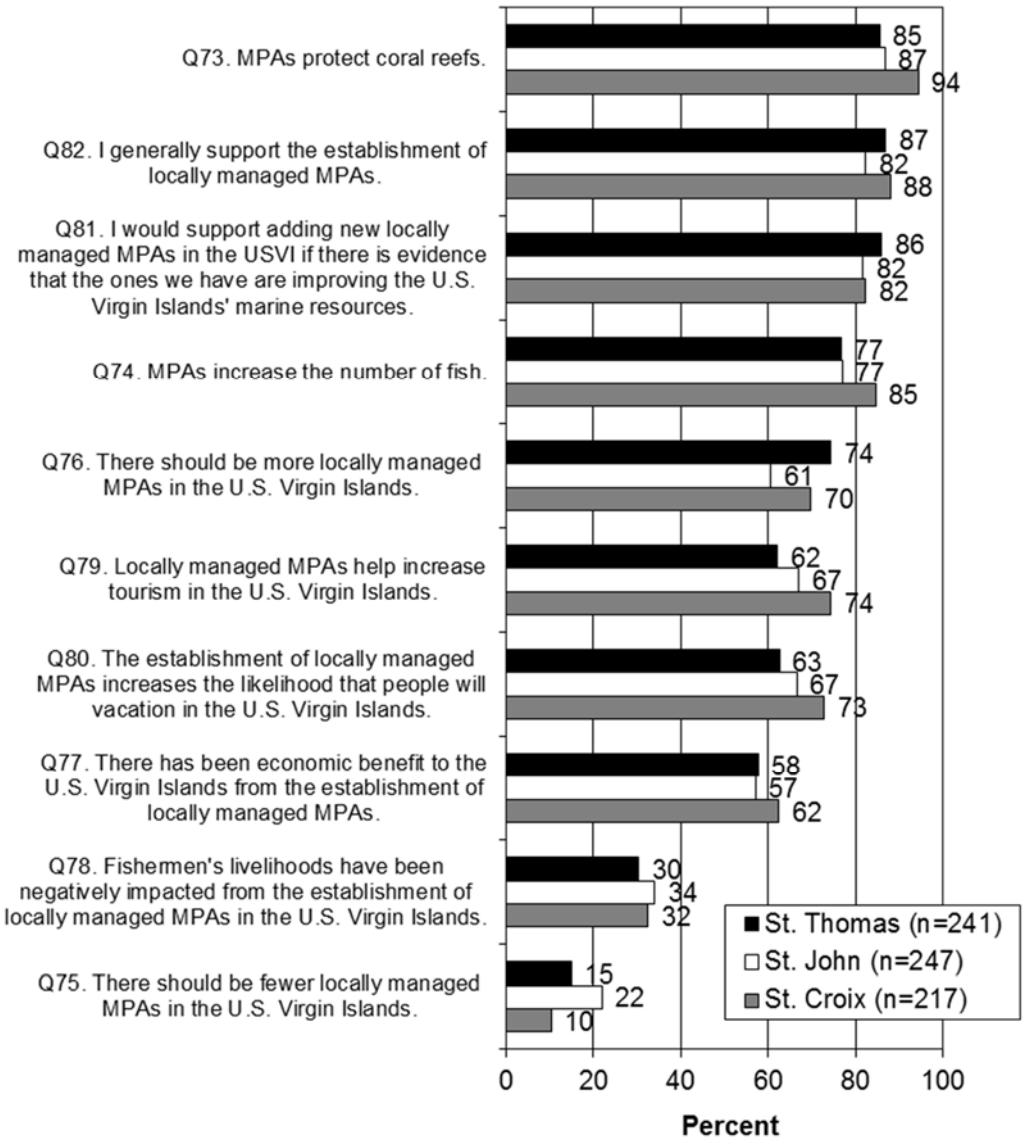


Figure 51: Q73-Q82. Percent of respondents who are not unfamiliar with MPAs who agree or strongly agree with each of the above statements

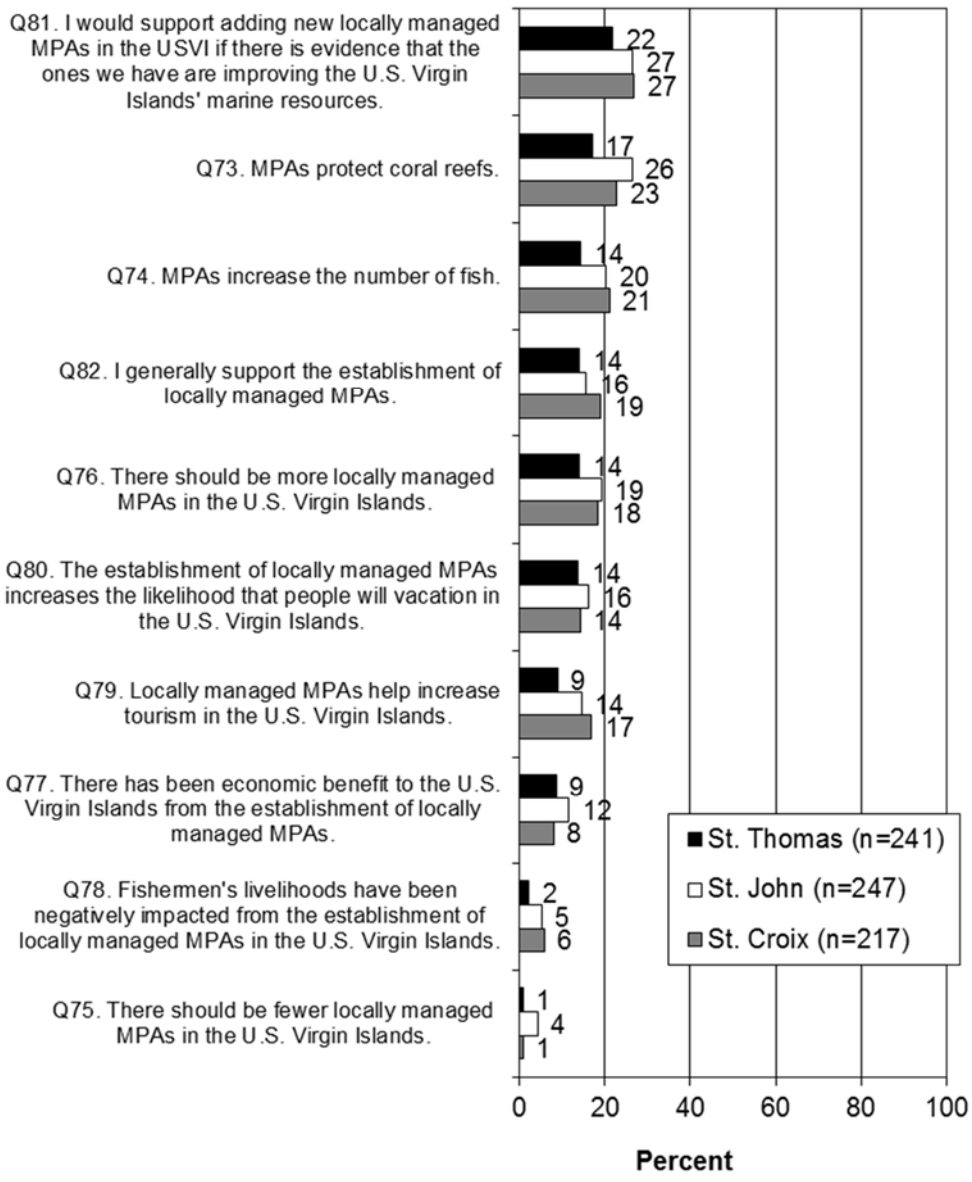


Figure 52: Q73-Q82. Percent of respondents who are not unfamiliar with MPAs who strongly agree with each of the above statements

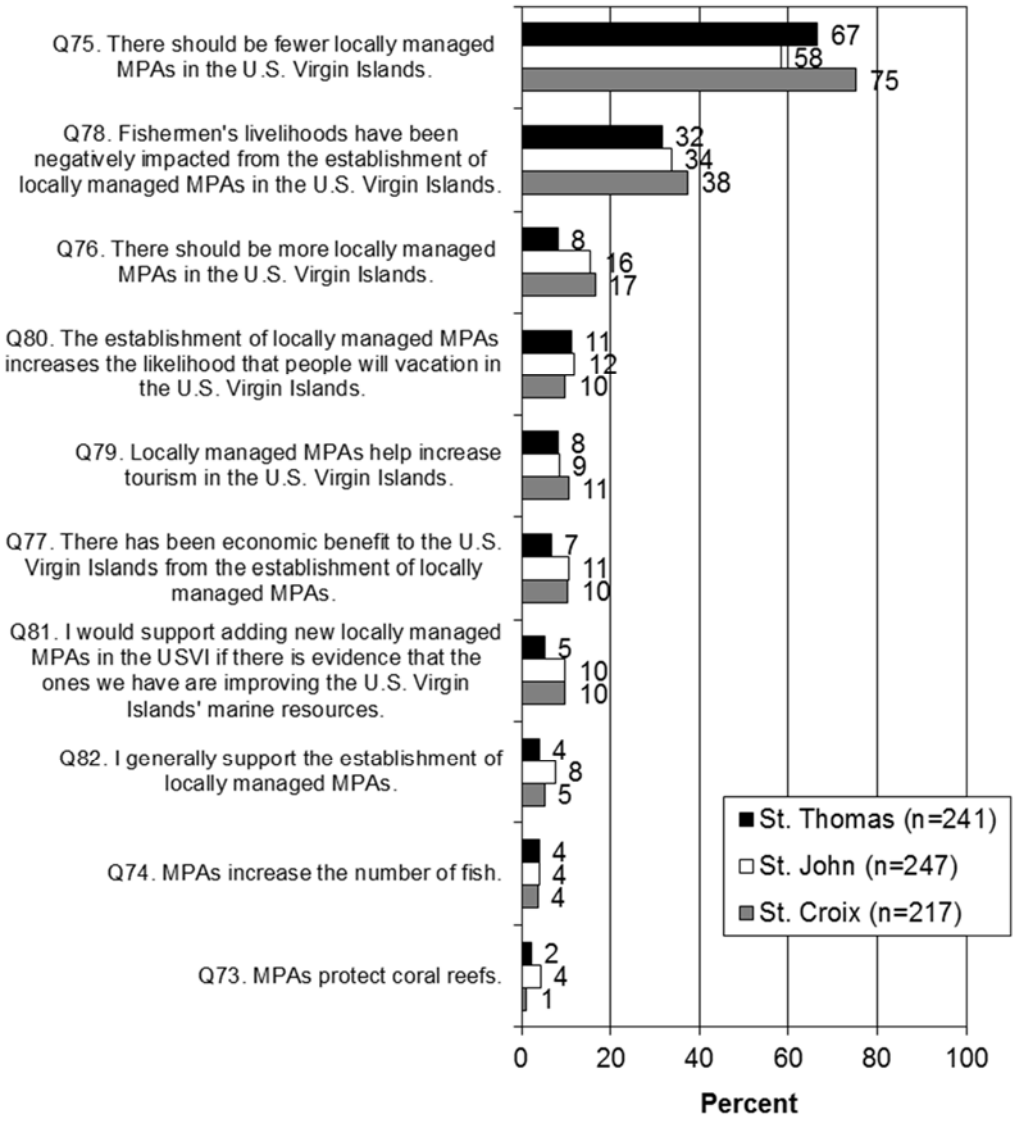


Figure 53: Q73-Q82. Percent of respondents who are not unfamiliar with MPAs who strongly disagree or disagree with each of the above statements

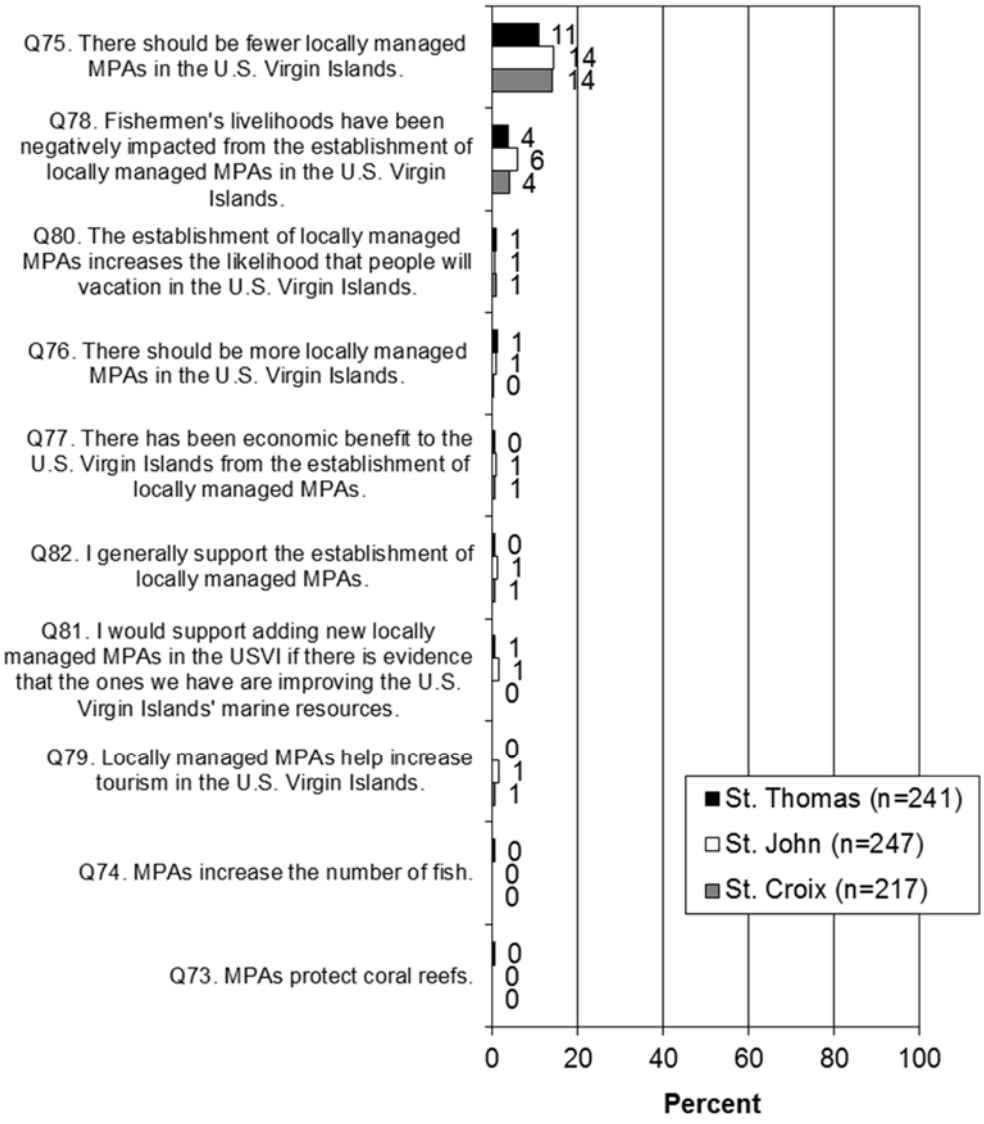


Figure 54: Q73-Q82. Percent of respondents who are not unfamiliar with MPAs who strongly disagree with each of the above statements

Attitudes toward Coral Reef Management Strategies and Enforcement

- The survey asked about support for or opposition to six regulations or regulatory actions. For each, support far exceeds opposition. Overwhelming majorities support increased enforcement of wastewater and stormwater regulations to preserve water quality (91% support, only 3% oppose) and more restrictions on construction practices to prevent sediment from going into the sea (87% to 5%). There is also fairly high support for size limits for harvesting certain fish species (79% to 8%) and for amending building regulations to consider sea level rise and climate impacts (74% to 6%). Still with a majority in support is charging a small fee to non-residents visiting MPAs to fund conservation (65% to 19%). Just under half support imposing a license requirement and fee for land-based recreational fishers (49% support, which is still higher than opposition, which is at 33%—neutral and "not sure" responses making up the remainder).
  - Omnigraphs are included for many of the questions in the above series.
    - Support for any of the items is associated with thinking that the threats are large or extreme and/or thinking that the condition of the reefs in the next 10 years will get worse. It is also associated with participation in some of the activities asked about in the survey, particularly camping, fishing/gathering marine resources, snorkeling and/or SCUBA diving, and boating (both motorized and non-motorized).
    - Lack of support for the items in general is associated with being older and retired.

- Two questions asked about community involvement in protecting and managing coral reefs and personal involvement in decisions about management of coral reefs in the islands.
  - While a majority of residents feel their community is involved (70%), compared to only 12% saying that their community is not at all involved, most commonly, those saying "involved" are saying only *moderately* or *slightly* involved (together at 50%).
    - Omnigraphs are included for this question. Feeling like their community is *not* involved is associated with speaking Spanish, being younger, thinking that the condition of the reefs will get worse, and being male.
  - Personal involvement is deemed to be much lower: a majority (55%) say that they are *not* at all involved in the decisions related to management of the reefs. In particular, only 13% feel that they are very involved or involved.

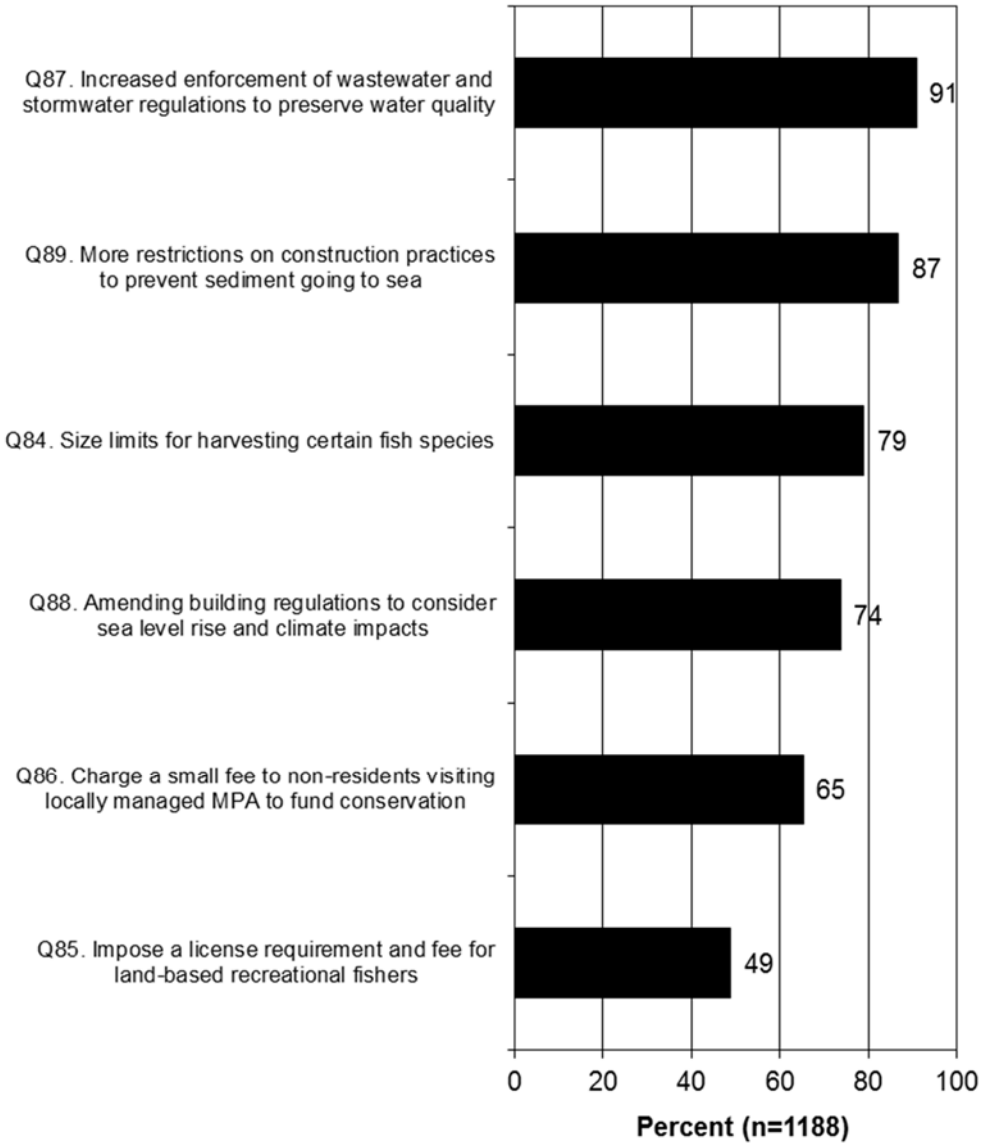


Figure 55: Q84-Q89. Percent of respondents who support or strongly support each of the above regulations

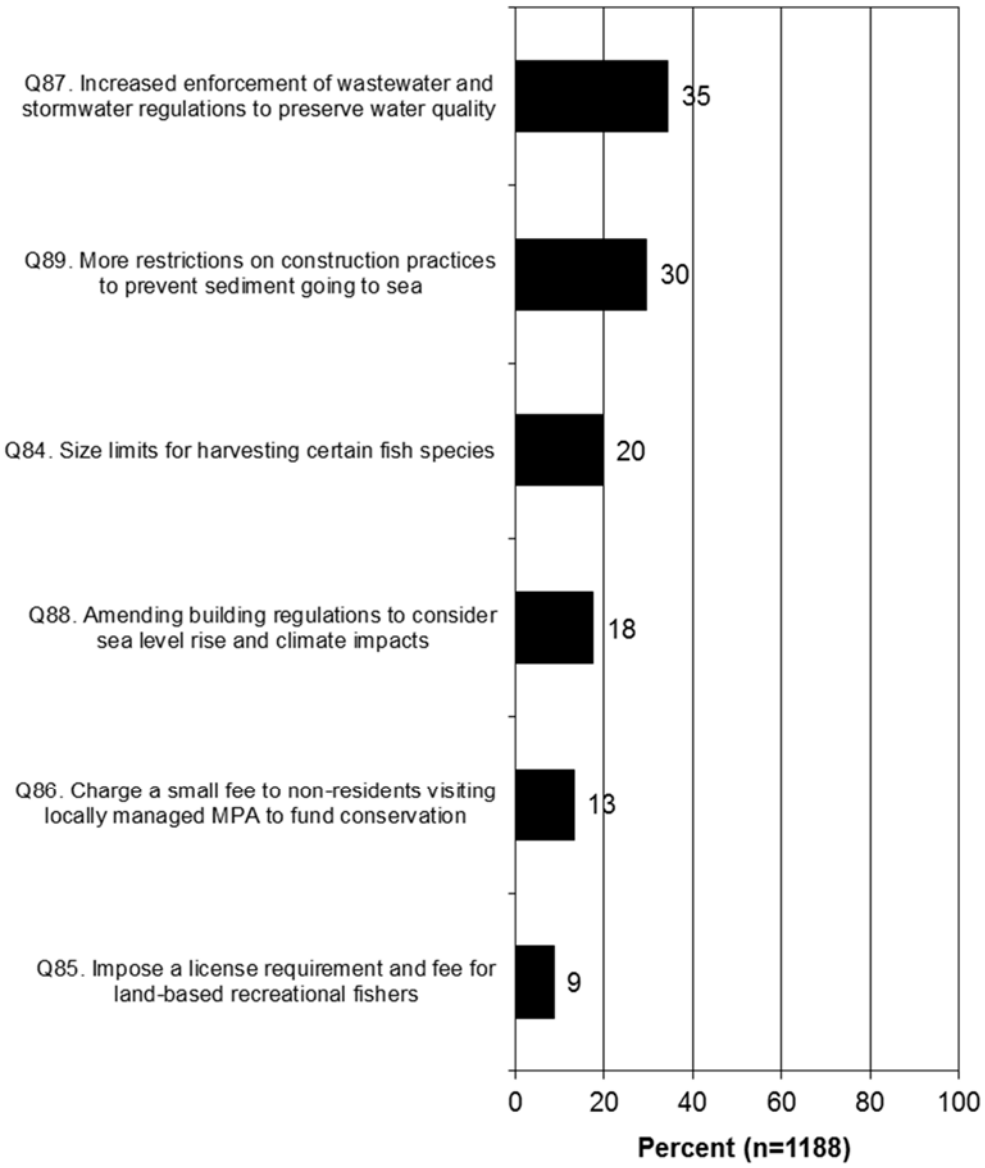


Figure 56: Q84-Q89. Percent of respondents who strongly support each of the above regulations

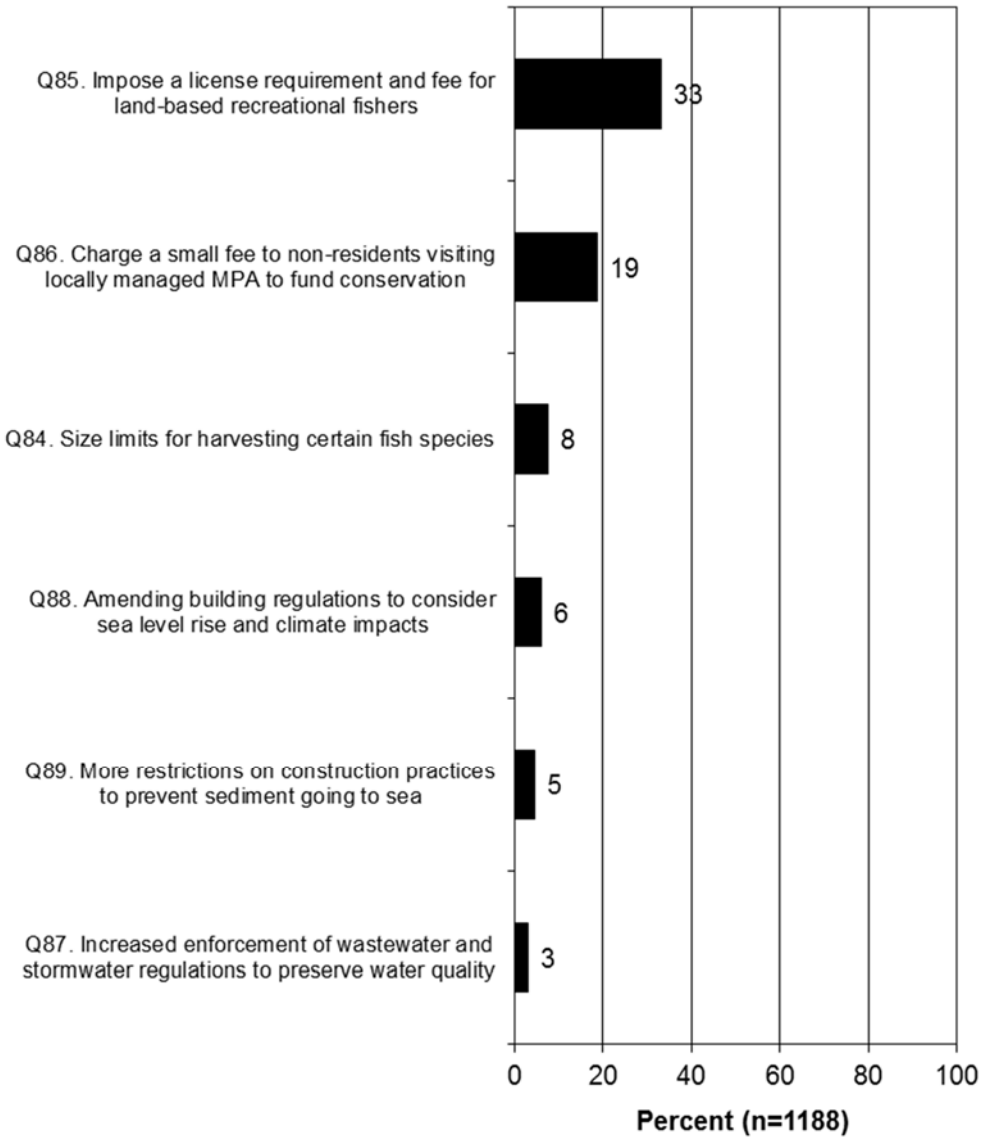


Figure 57: Q84-Q89. Percent of respondents who strongly oppose or oppose each of the above regulations

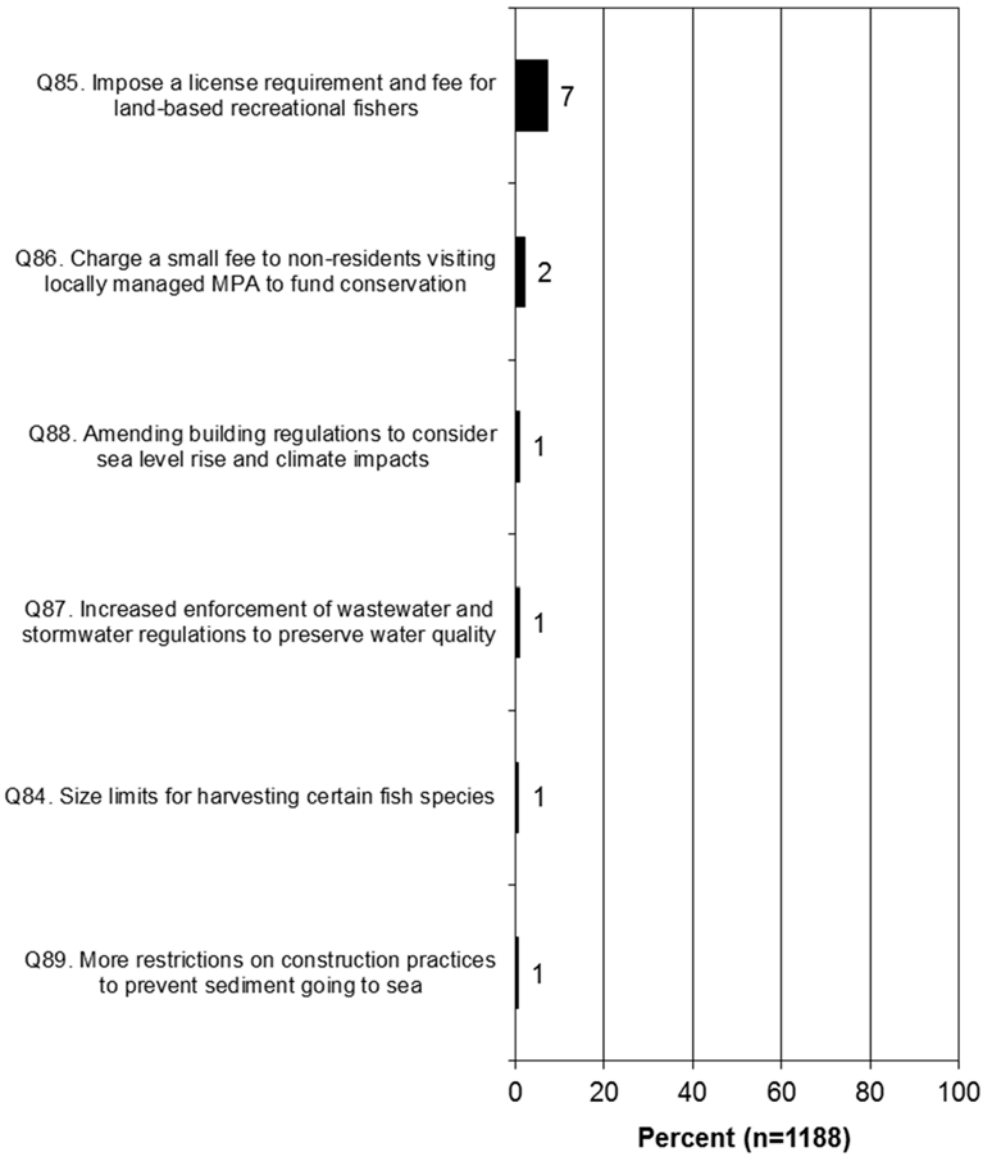


Figure 58: Q84-Q89. Percent of respondents who strongly oppose each of the above regulations

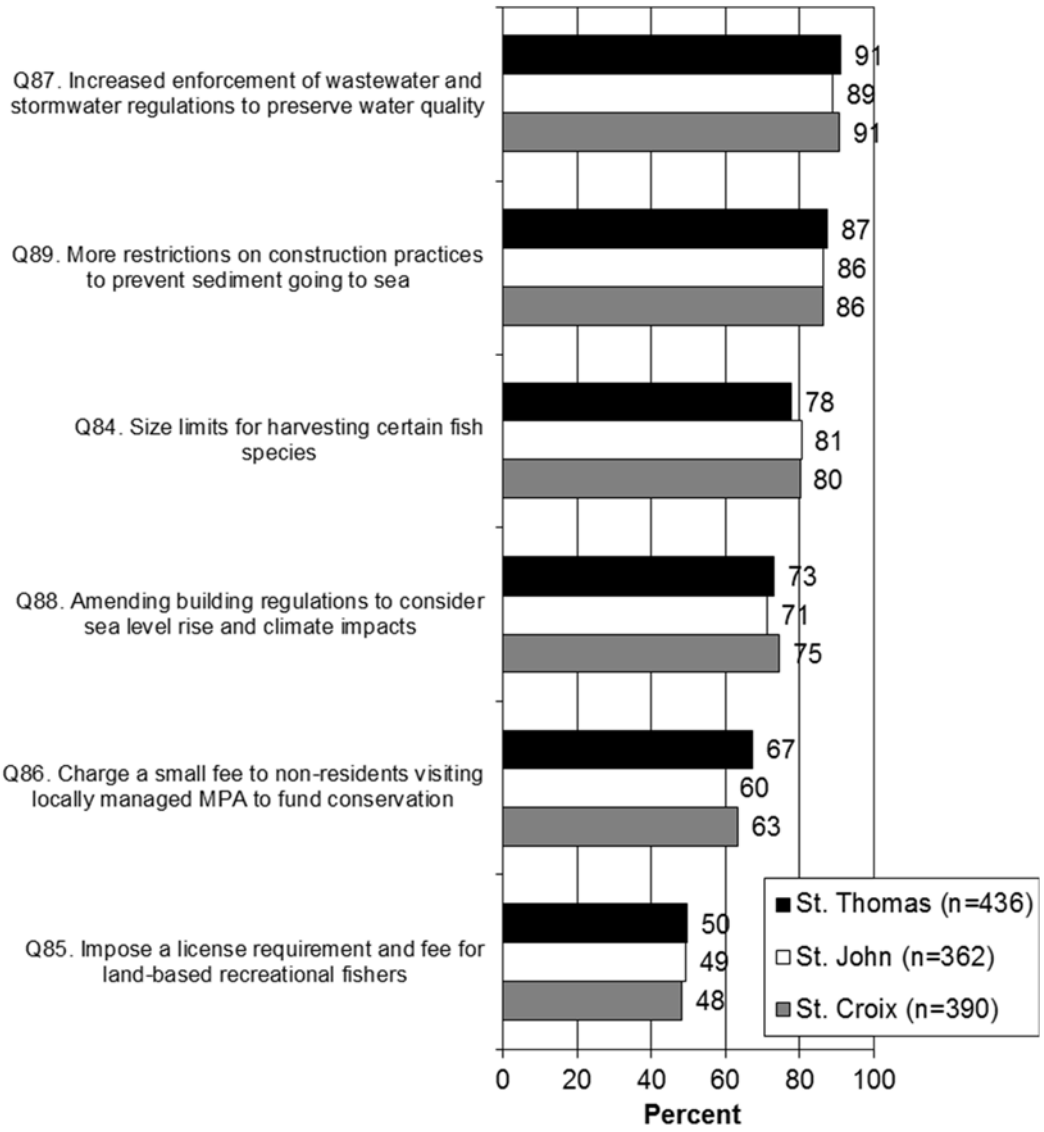


Figure 59: Q84-Q89. Percent of respondents who support or strongly support each of the above regulations

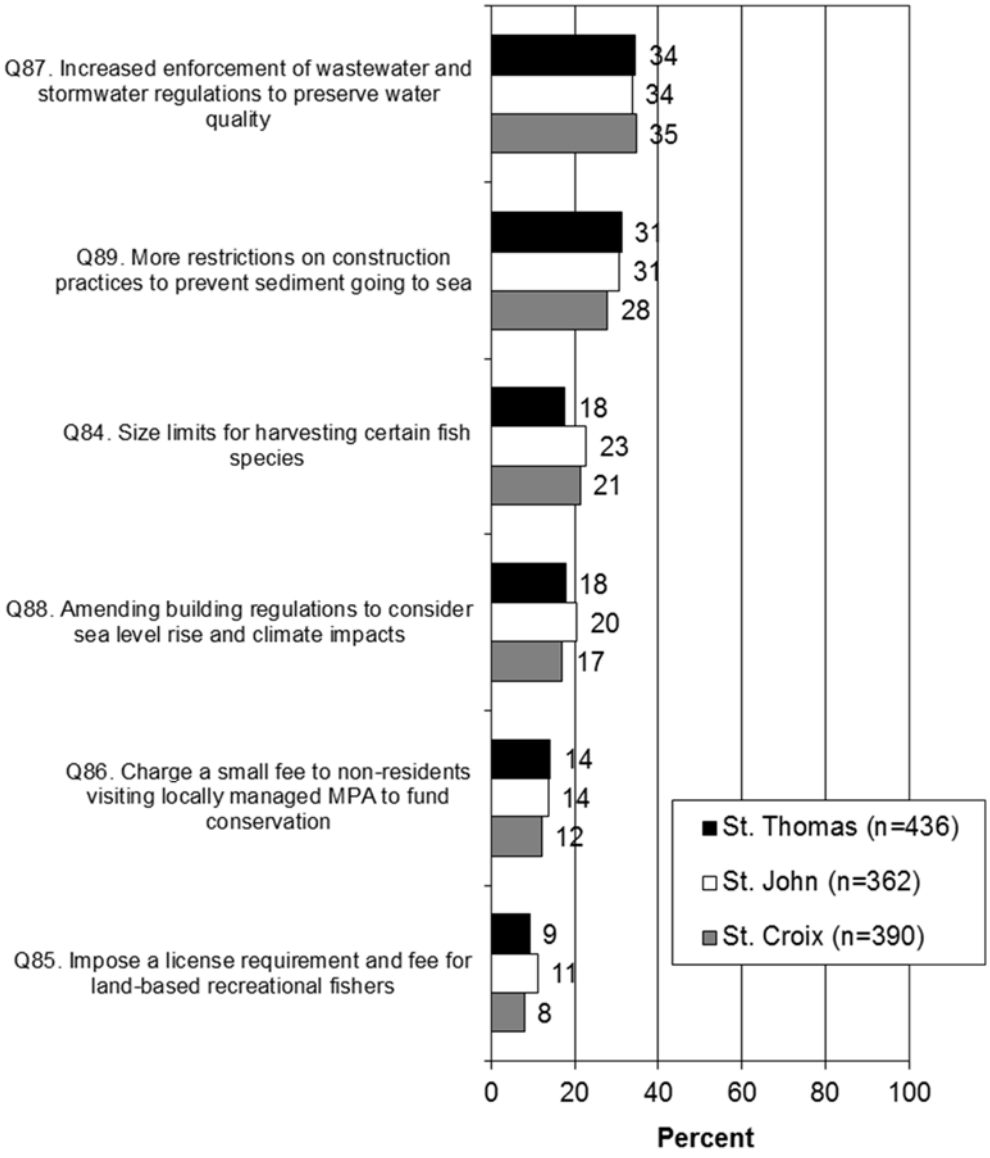


Figure 60: Q84-Q89. Percent of respondents who strongly support each of the above regulations

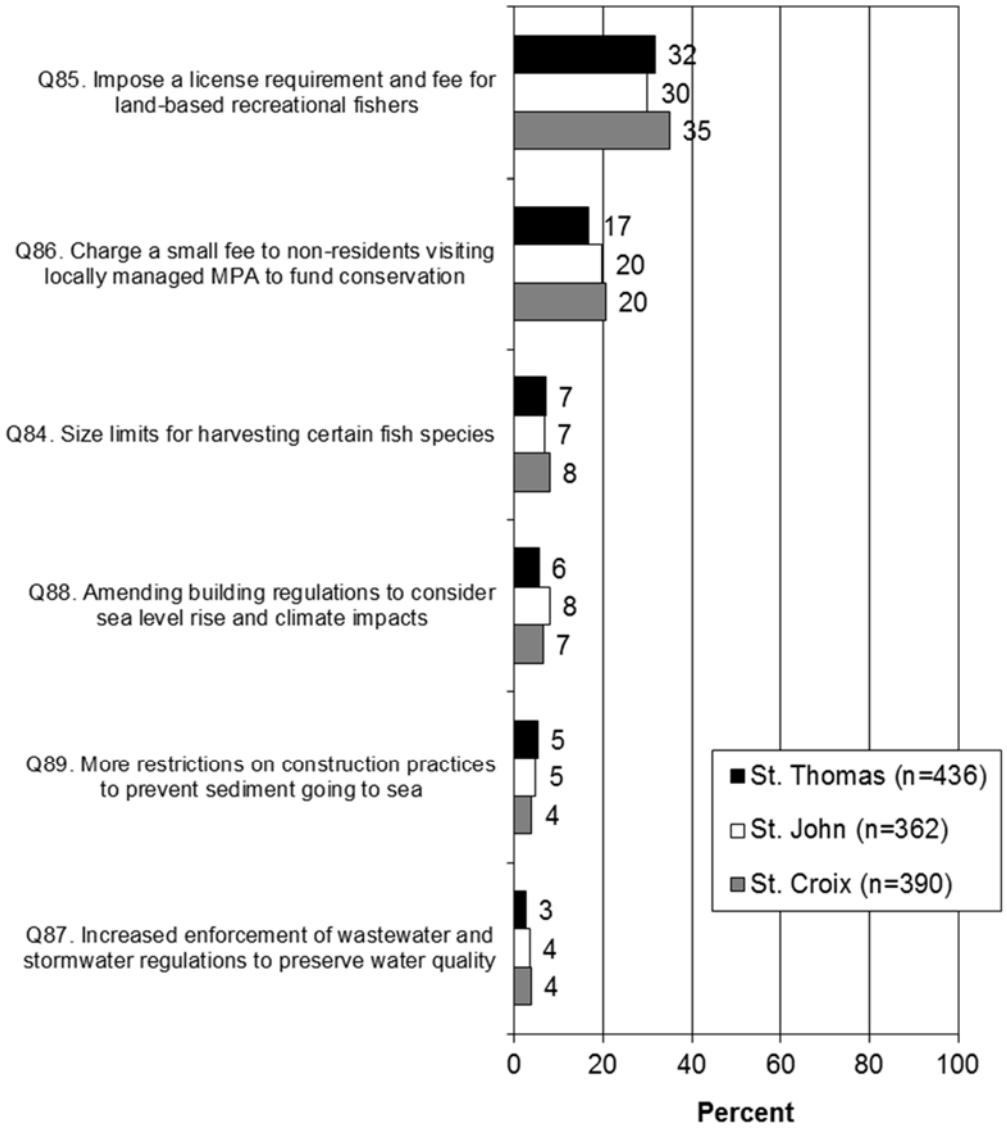


Figure 61: Q84-Q89. Percent of respondents who strongly oppose or oppose each of the above regulations

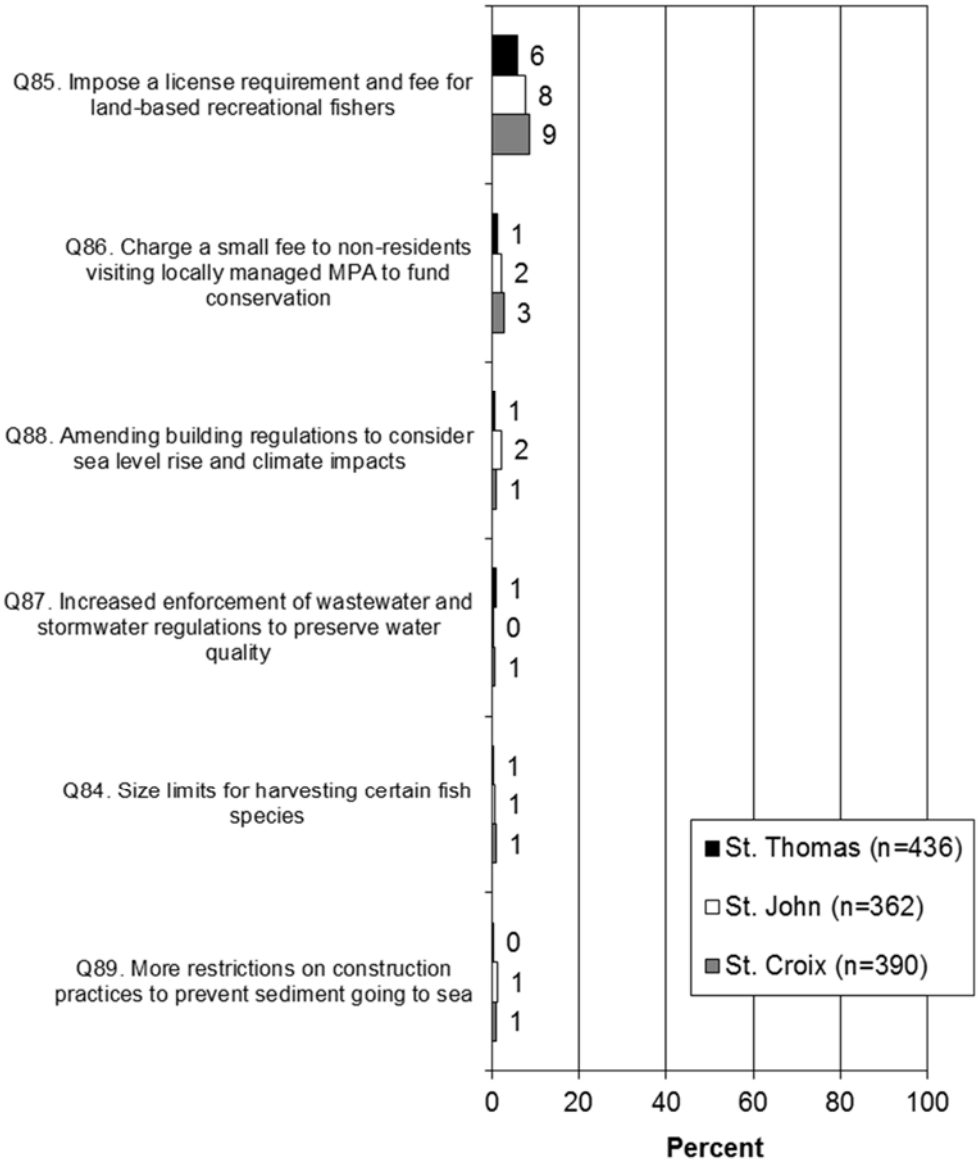


Figure 62: Q84-Q89. Percent of respondents who strongly oppose each of the above regulations

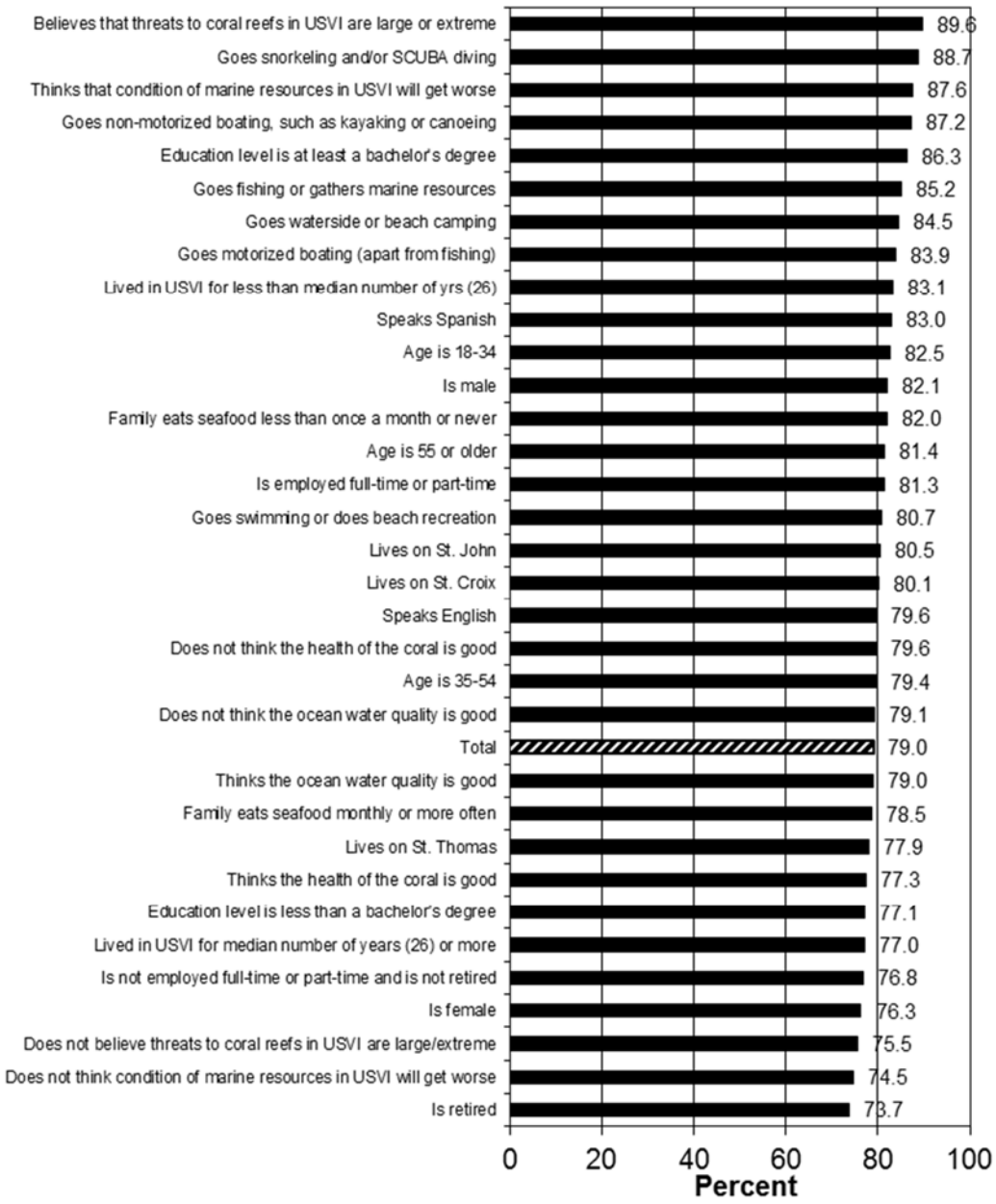


Figure 63: Percent of each of the above groups who support size limits for harvesting certain fish species. An explanation of how to interpret omnigraphs is included on pages 12-15.

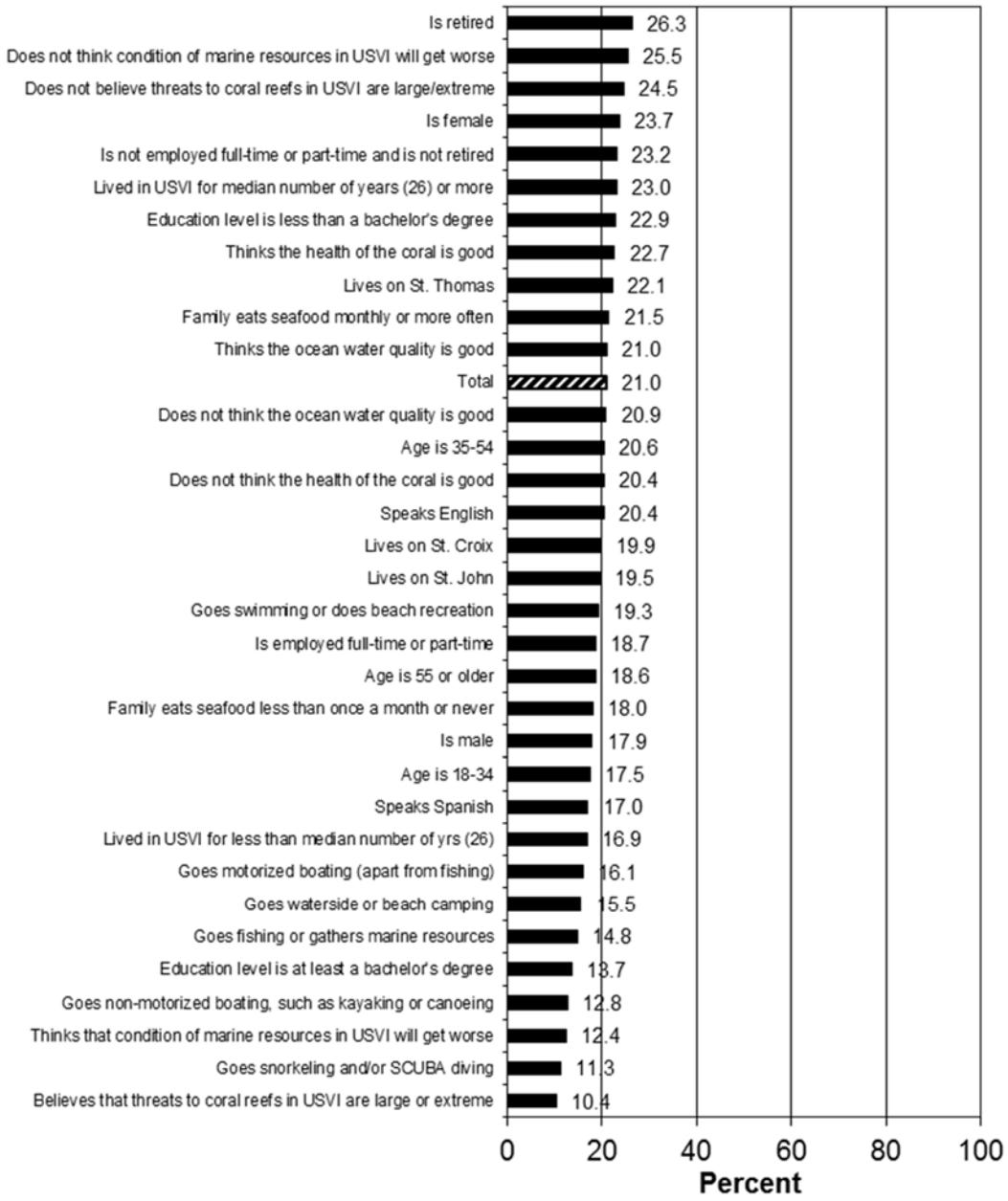


Figure 64: Percent of each of the above groups who do not support size limits for harvesting certain fish species. An explanation of how to interpret omnigraphs is included on pages 12-15.

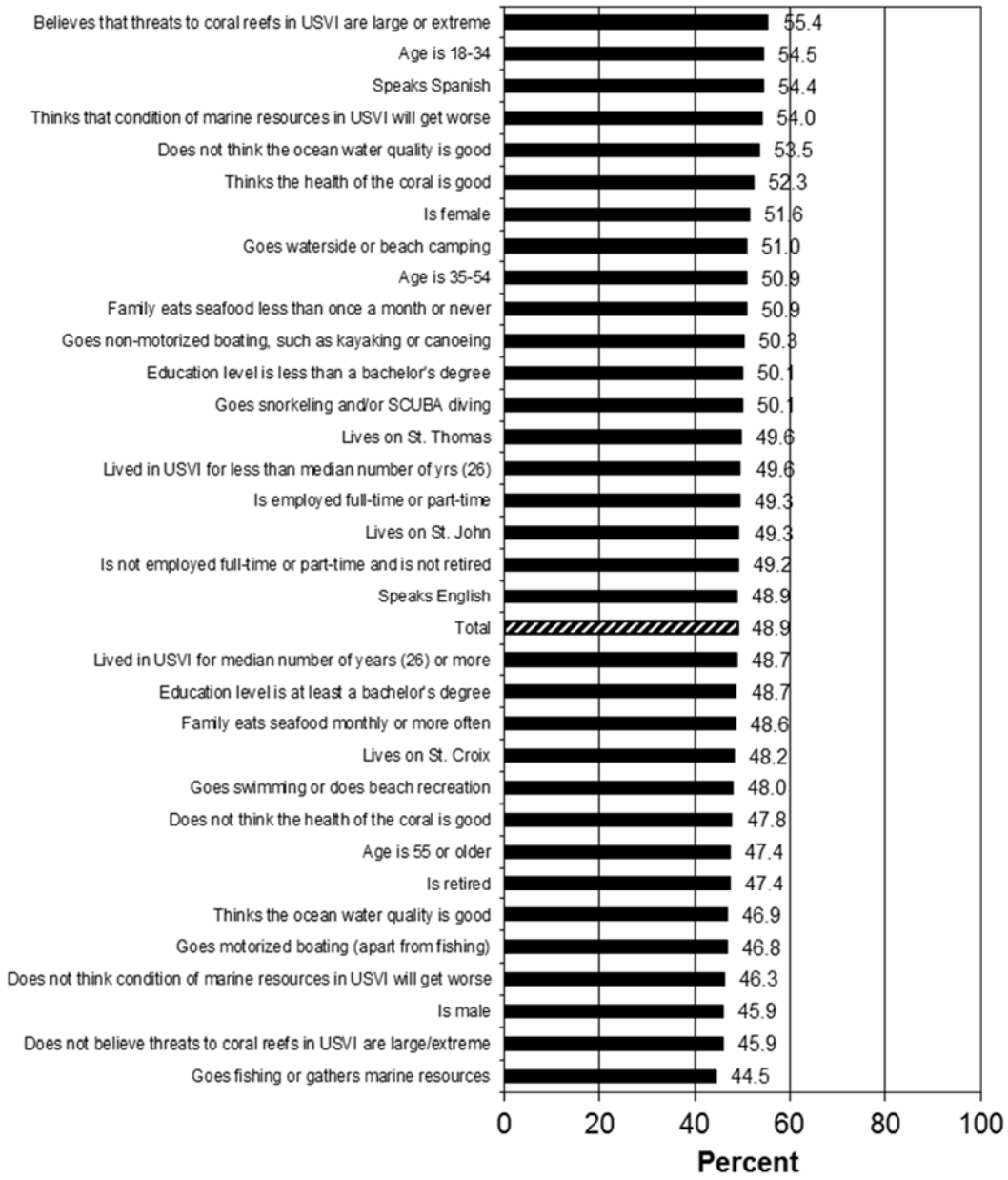


Figure 65: Percent of each of the above groups who support imposing a license requirement and fee for land-based recreational fishers. An explanation of how to interpret omnigraphs is included on pages 12-15.

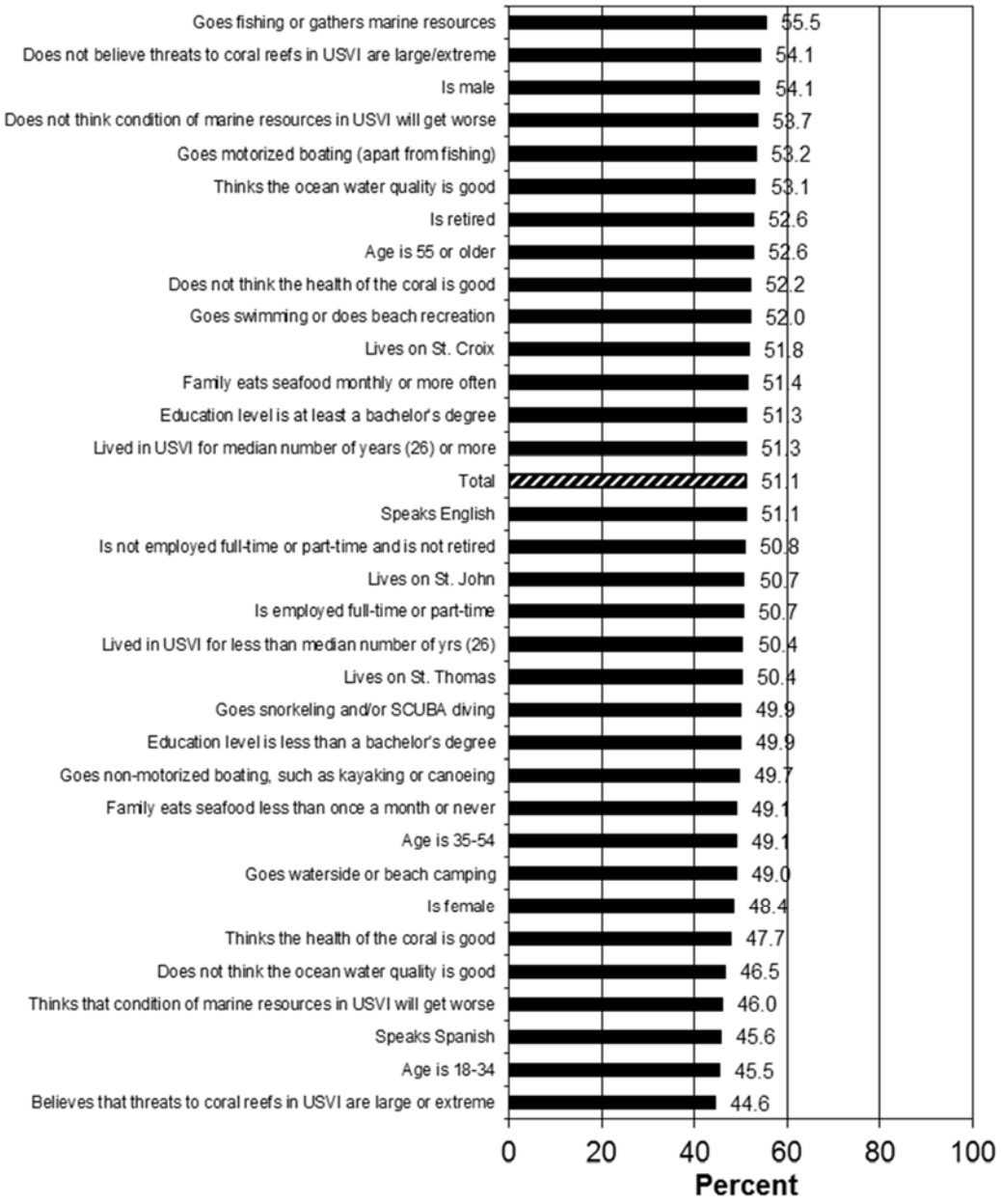


Figure 66: Percent of each of the above groups who do not support imposing a license requirement and fee for land-based recreational fishers. An explanation of how to interpret omnigraphs is included on pages 12-15.

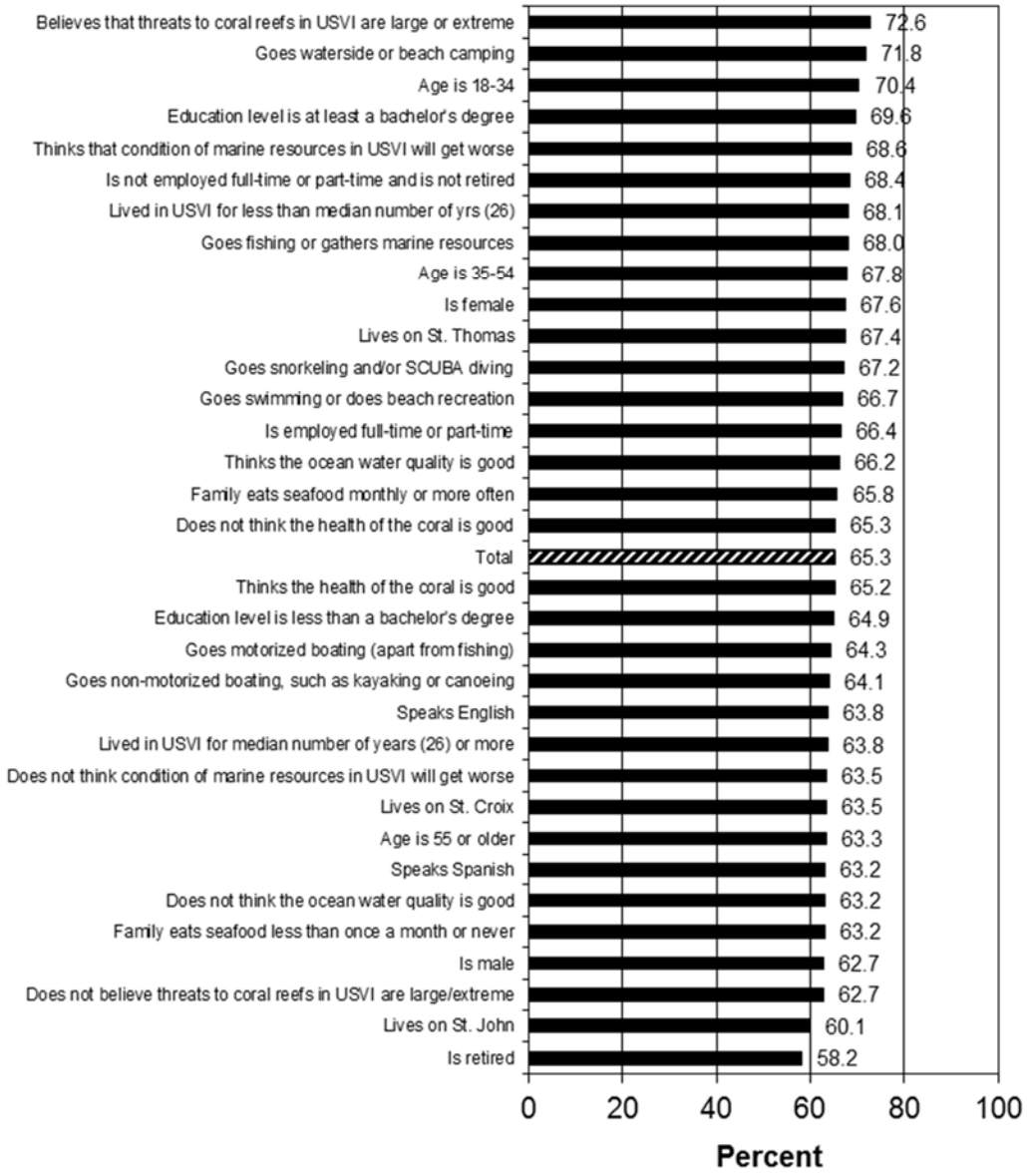


Figure 67: Percent of each of the above groups who support charging a small fee to non-residents visiting locally managed MPAs to fund conservation. An explanation of how to interpret omnigraphs is included on pages 12-15.

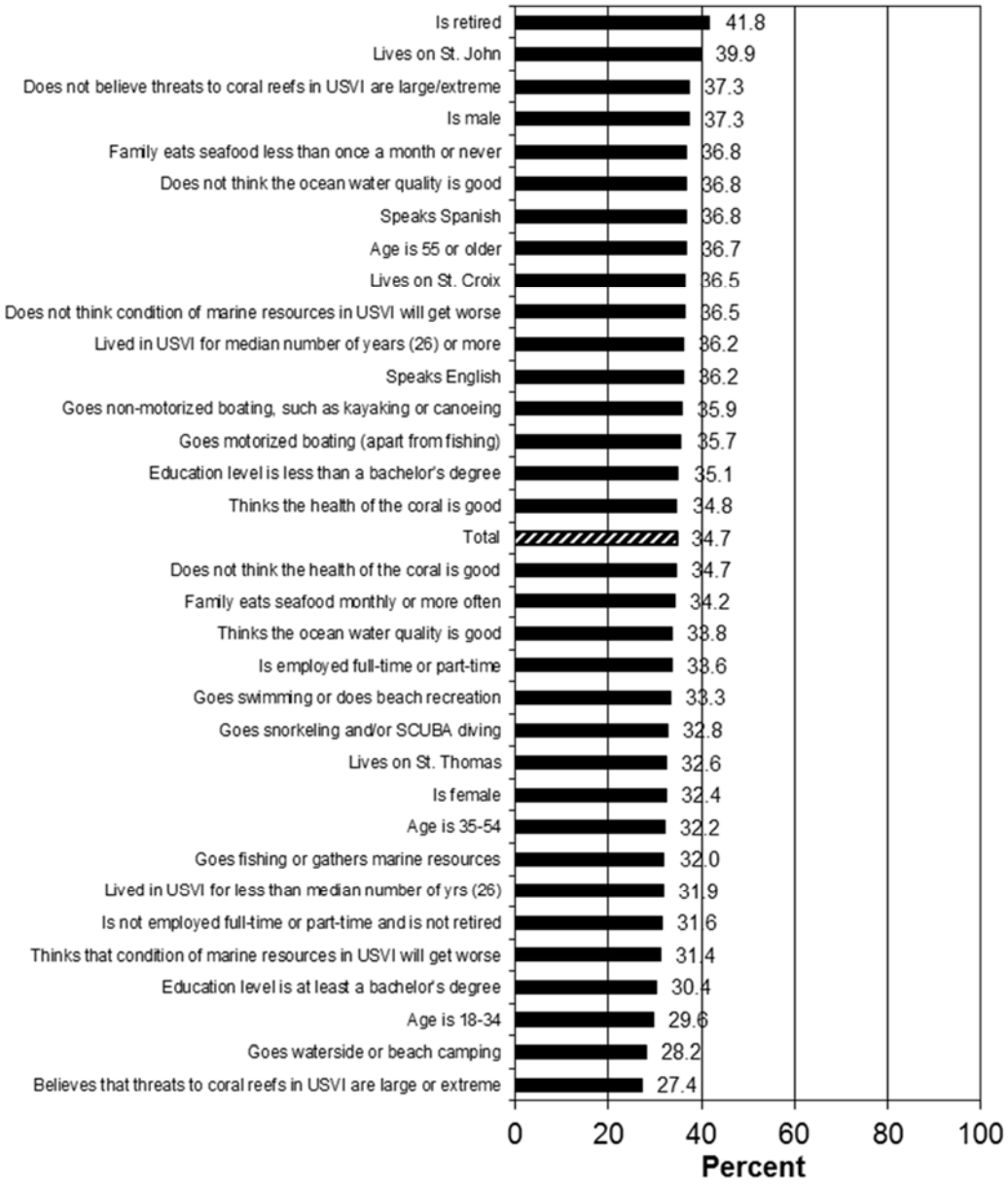


Figure 68: Percent of each of the above groups who do not support charging a small fee to non-residents visiting locally managed MPAs to fund conservation. An explanation of how to interpret omnigraphs is included on pages 12-15.

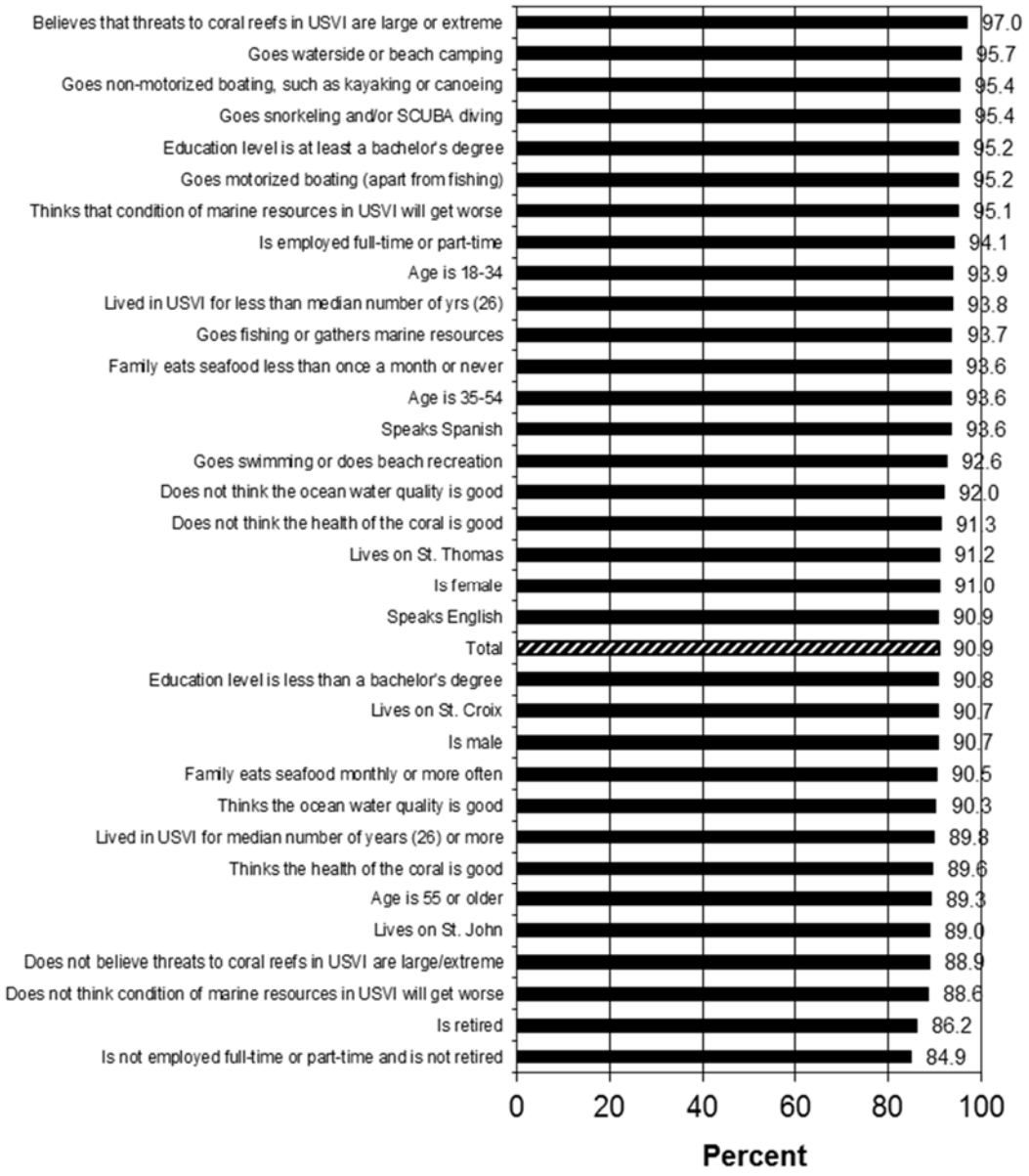


Figure 69: Percent of each of the above groups who support increased enforcement of wastewater and stormwater regulations to preserve water quality. An explanation of how to interpret omnigraphs is included on pages 12-15.

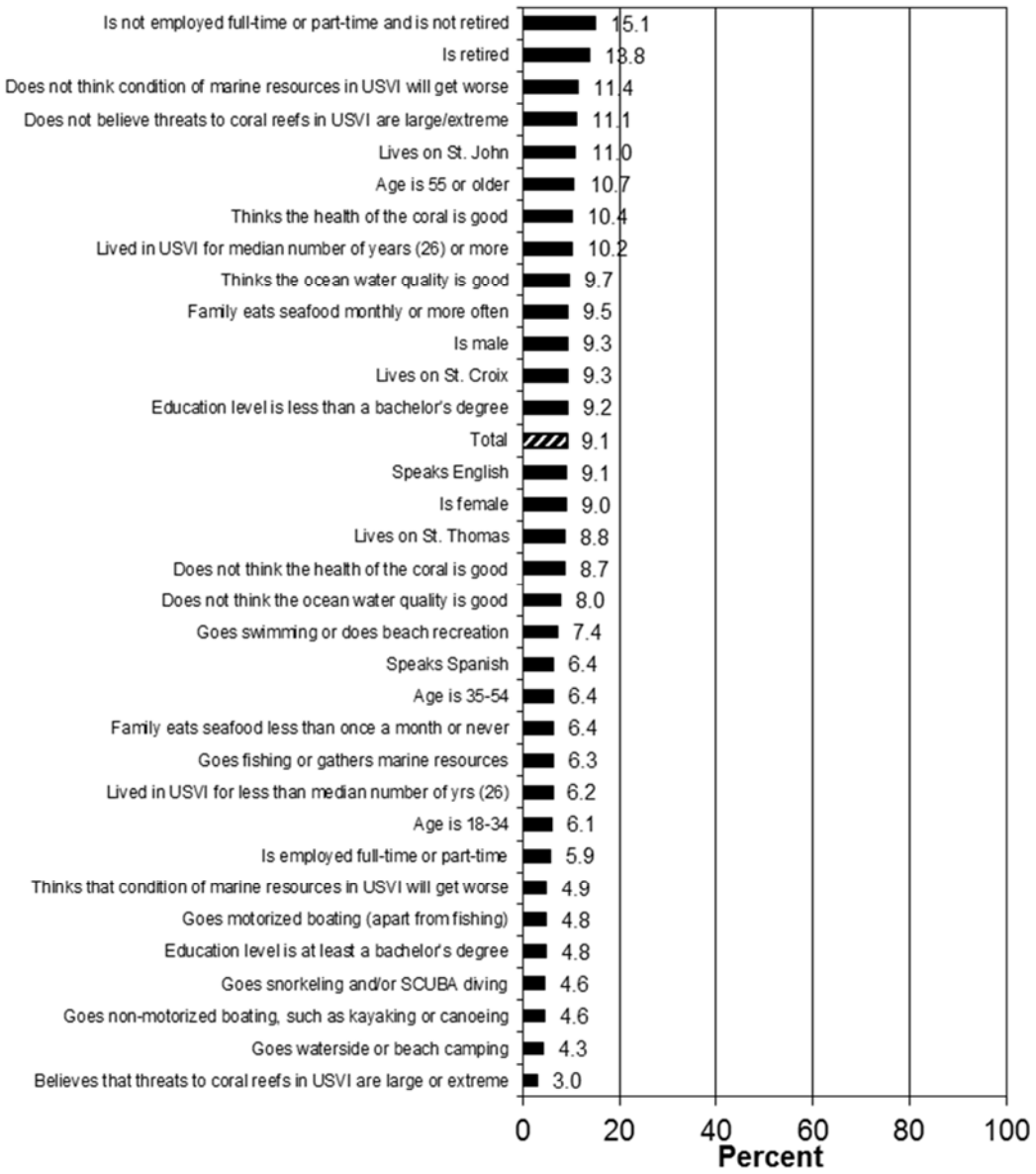


Figure 70: Percent of each of the above groups who do not support increased enforcement of wastewater and stormwater regulations to preserve water quality. An explanation of how to interpret omnigraphs is included on pages 12-15.

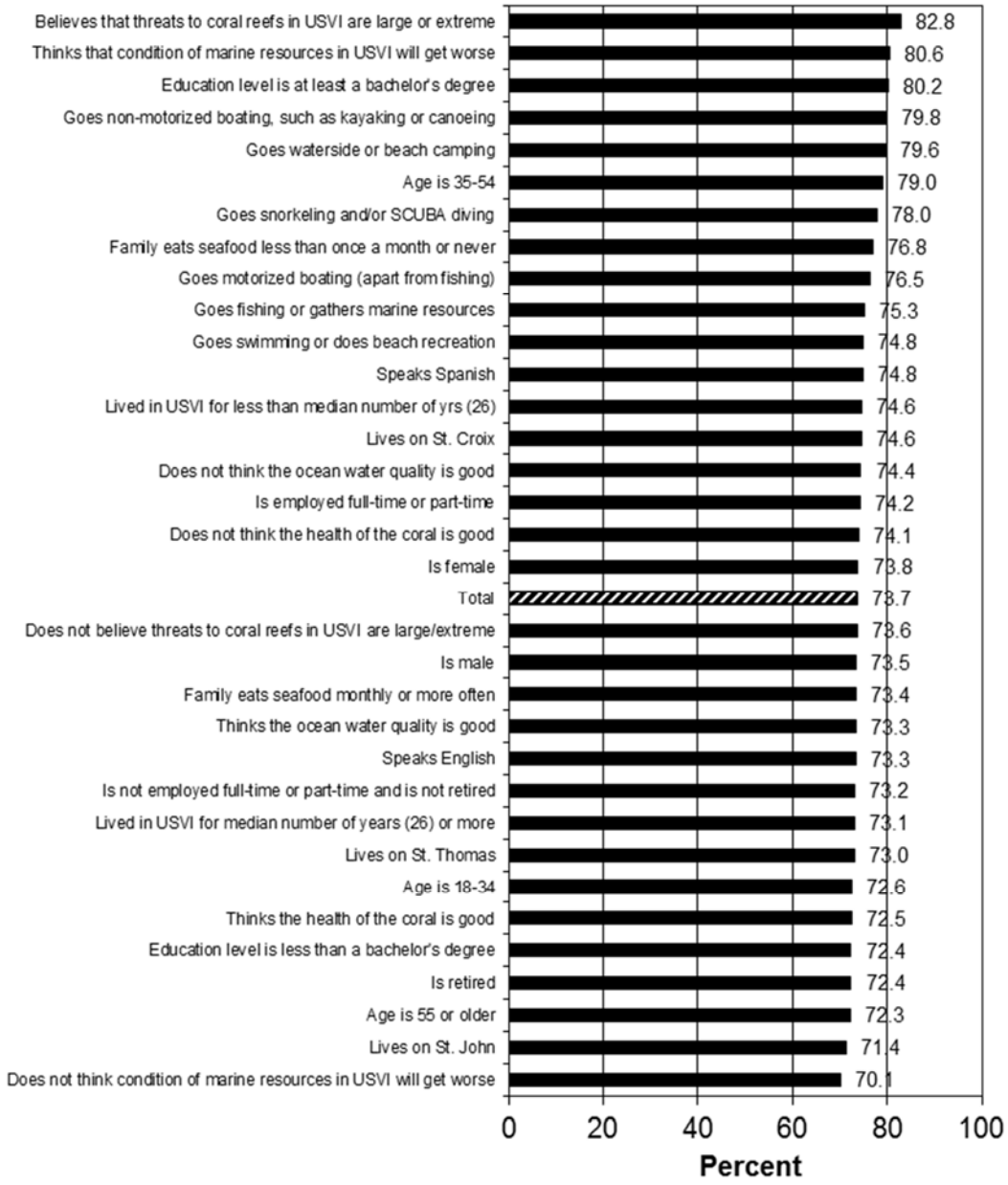


Figure 71: Percent of each of the above groups who support amending building regulations to consider sea level rise and climate impacts. An explanation of how to interpret omnigraphs is included on pages 12-15.

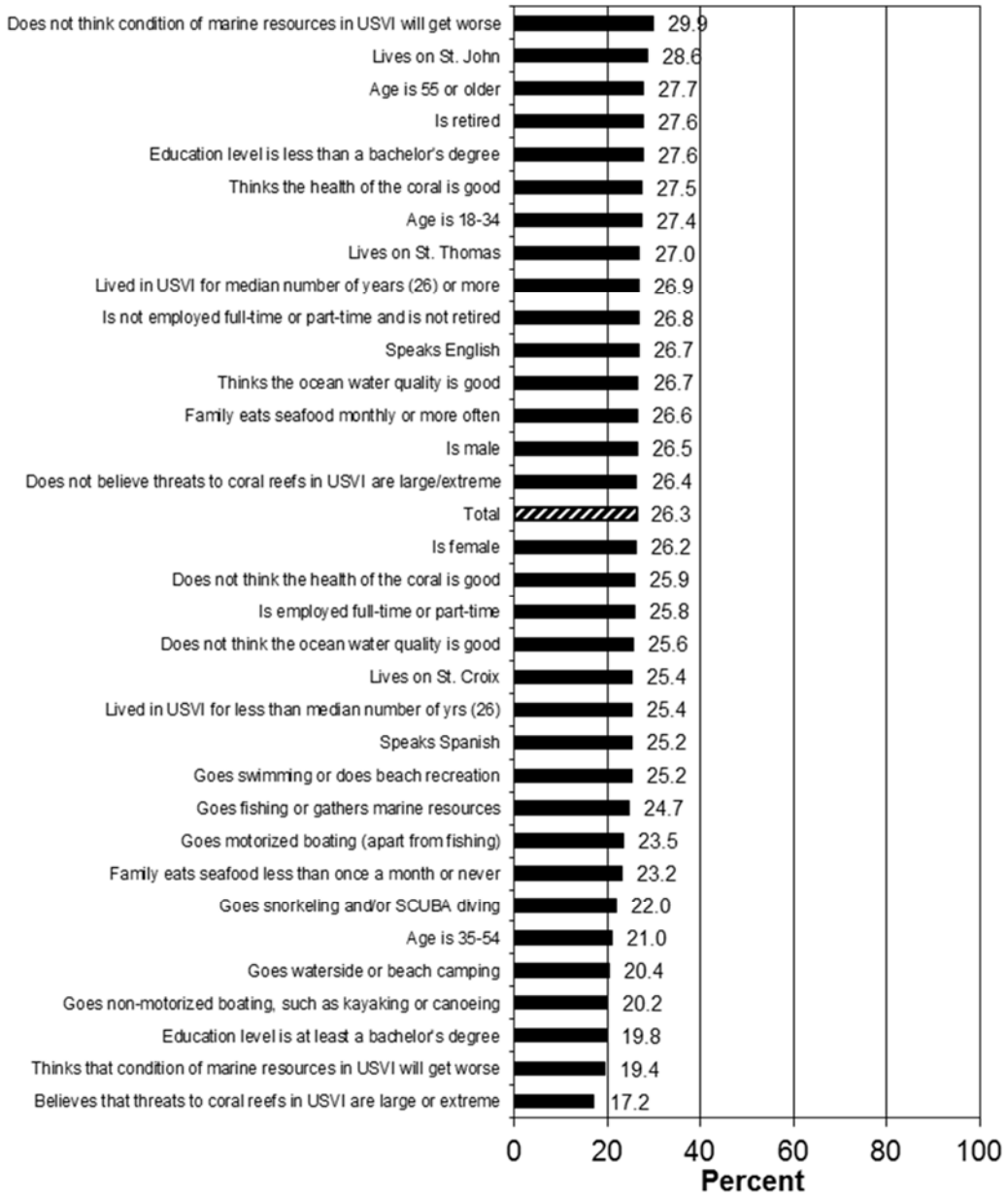


Figure 72: Percent of each of the above groups who do not support amending building regulations to consider sea level rise and climate impacts. An explanation of how to interpret omnigraphs is included on pages 12-15.

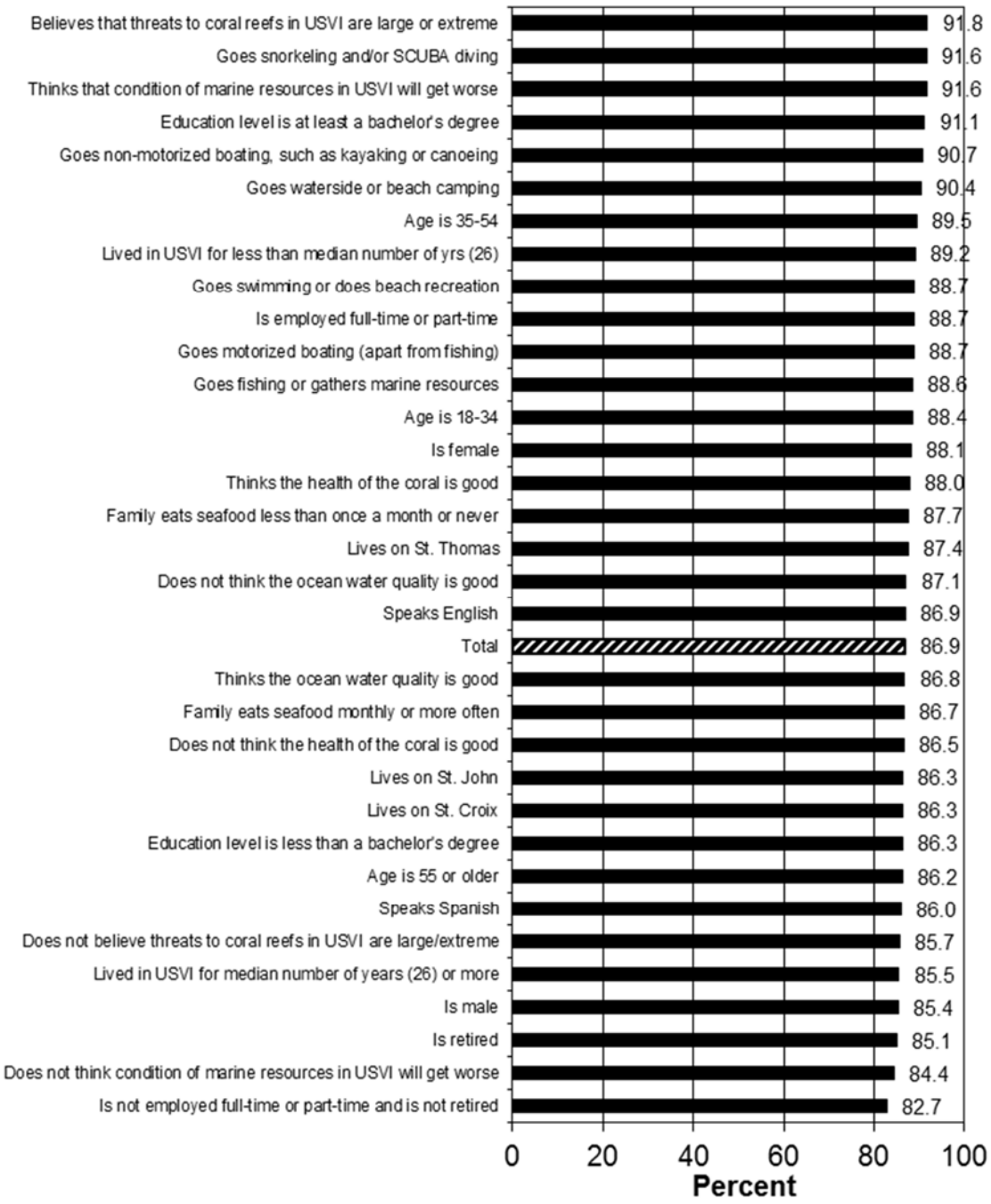


Figure 73: Percent of each of the above groups who support more restrictions on construction practices to prevent sediment from going to sea. An explanation of how to interpret omnigraphs is included on pages 12-15.

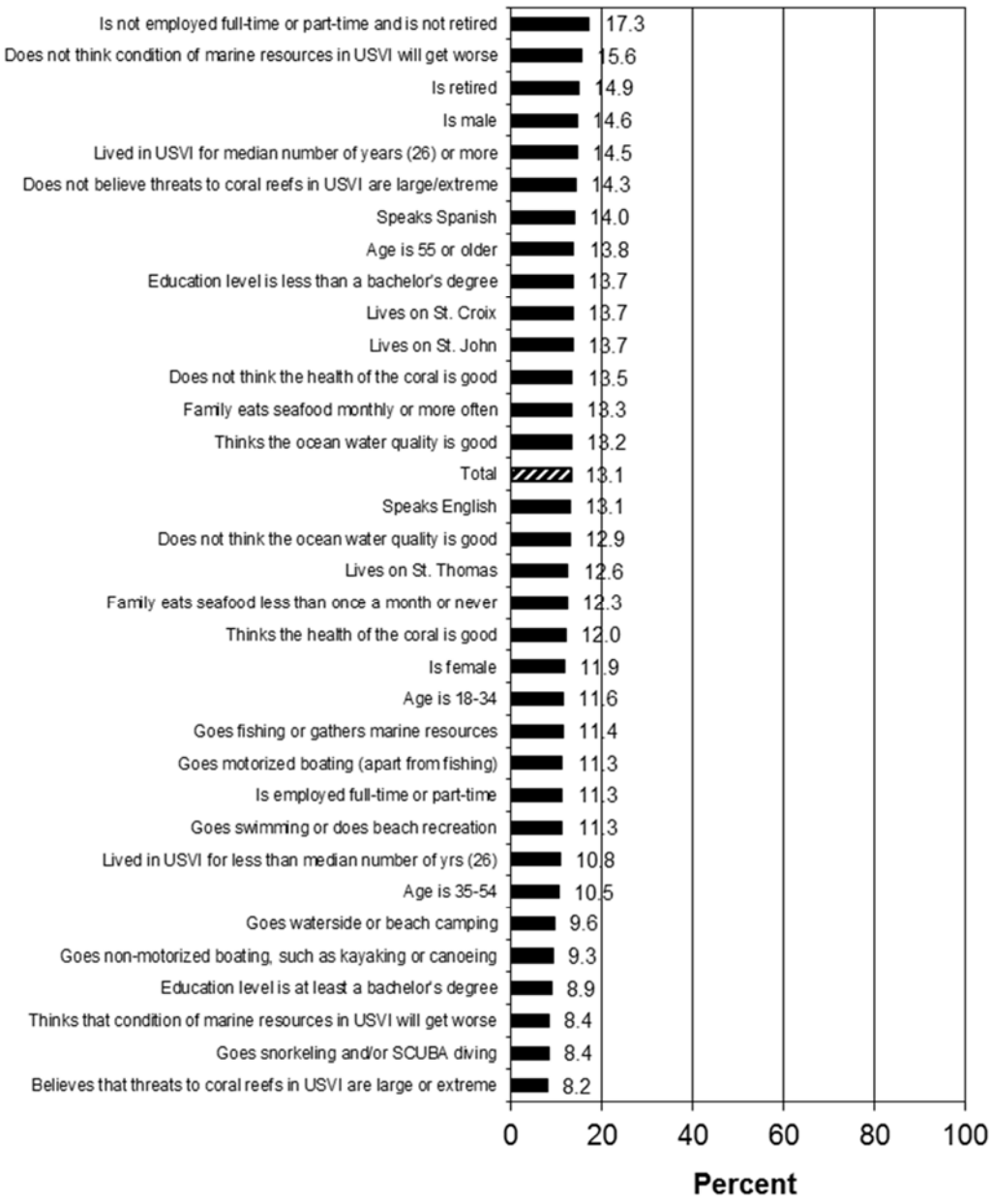


Figure 74: Percent of each of the above groups who do not support more restrictions on construction practices to prevent sediment from going to sea. An explanation of how to interpret omnigraphs is included on pages 12-15.

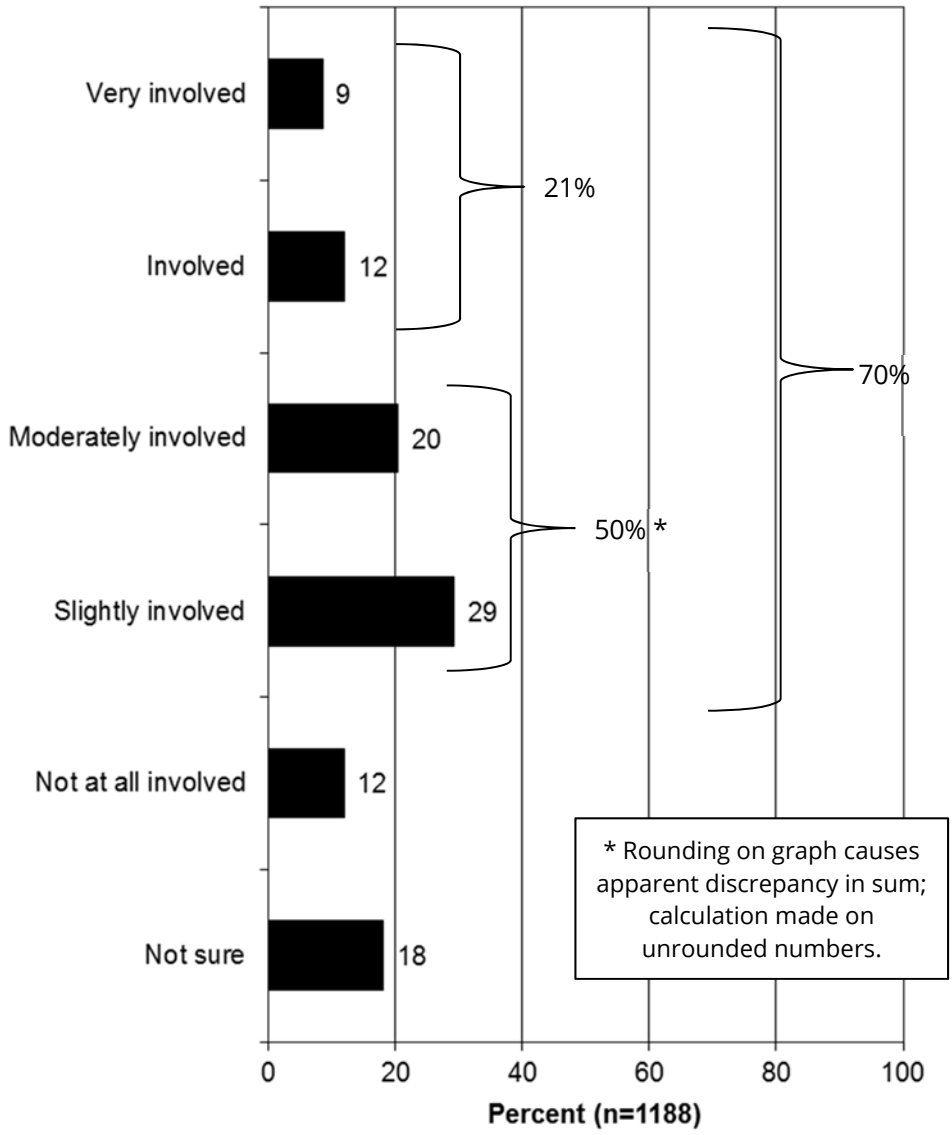


Figure 75: Q111. How involved is the local community in protecting and managing coral reefs?

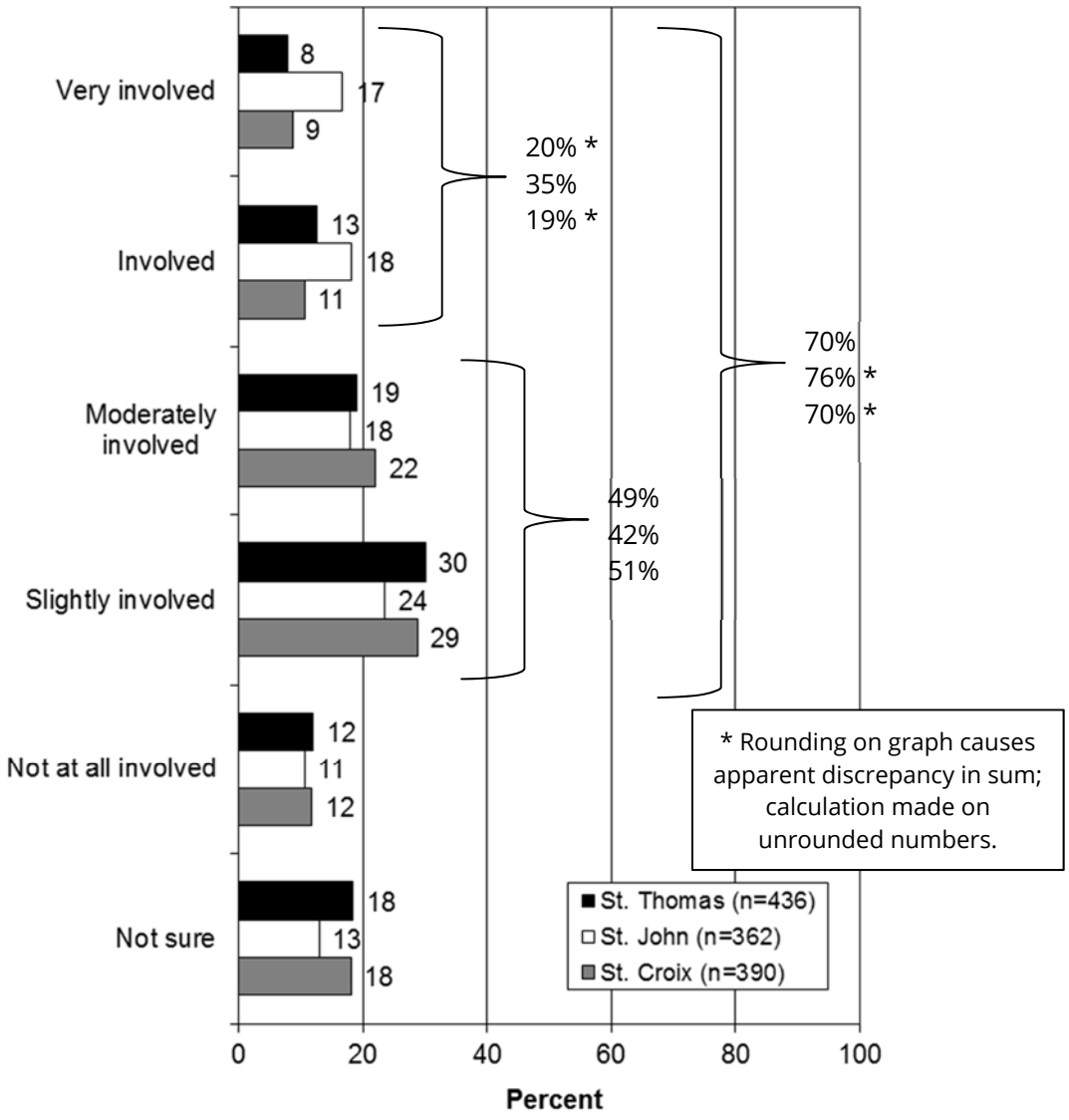


Figure 76: Q111. How involved is the local community in protecting and managing coral reefs?

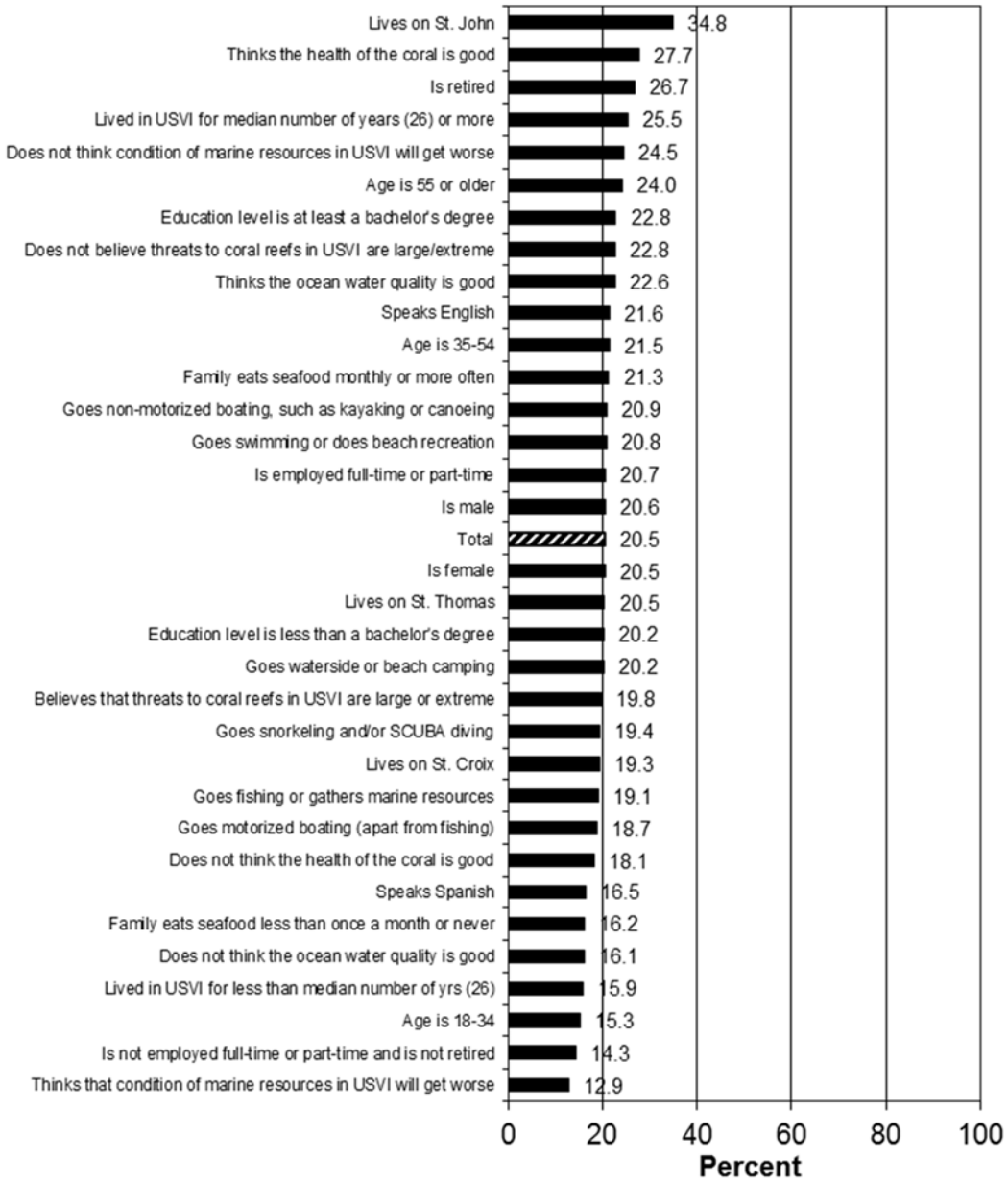


Figure 77: Percent of each of the above groups who said their local community is involved or very involved in protecting and managing coral reefs. An explanation of how to interpret omnigraphs is included on pages 12-15.

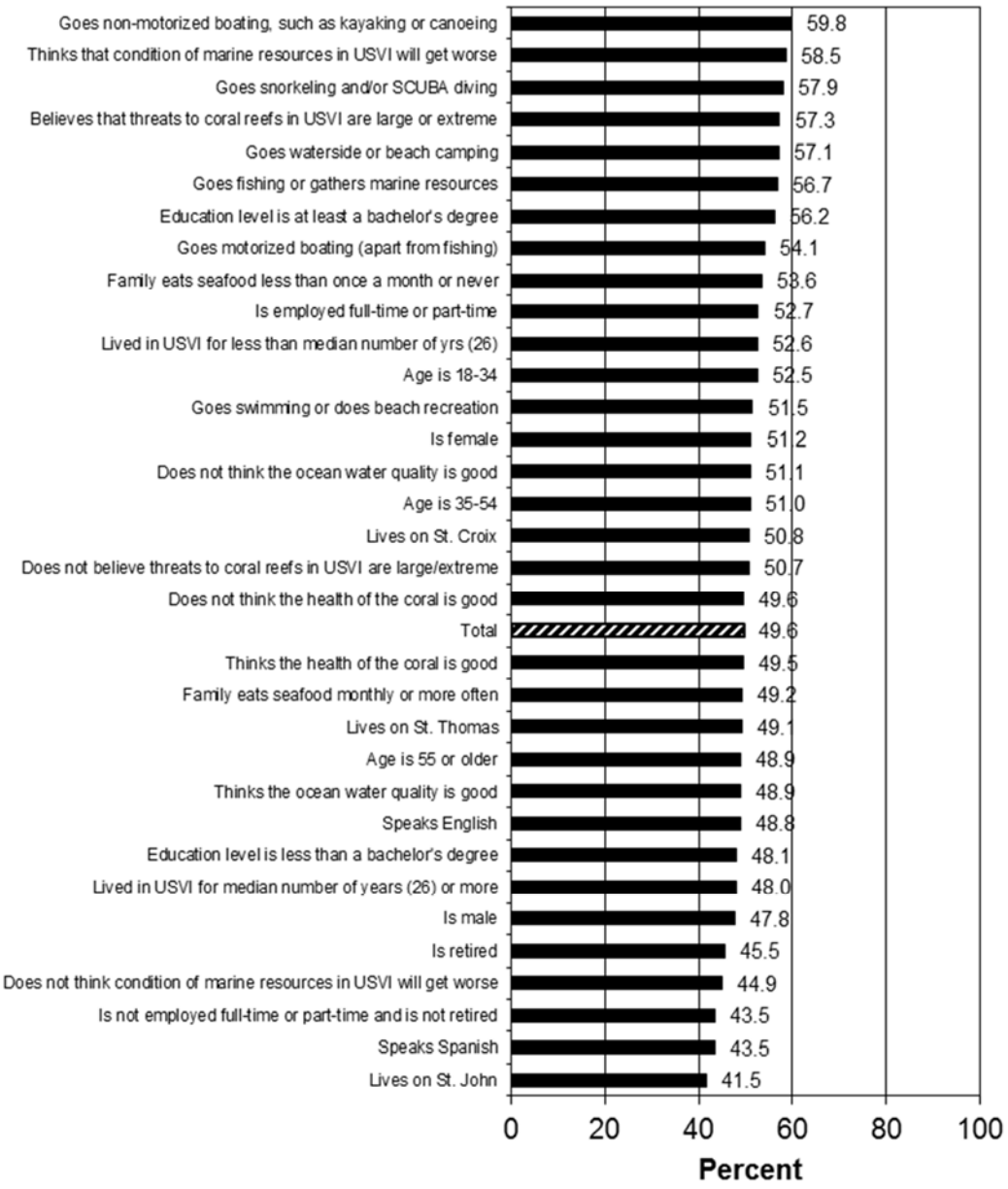


Figure 78: Percent of each of the above groups who said their local community is slightly or moderately involved in protecting and managing coral reefs. An explanation of how to interpret omnigraphs is included on pages 12-15.

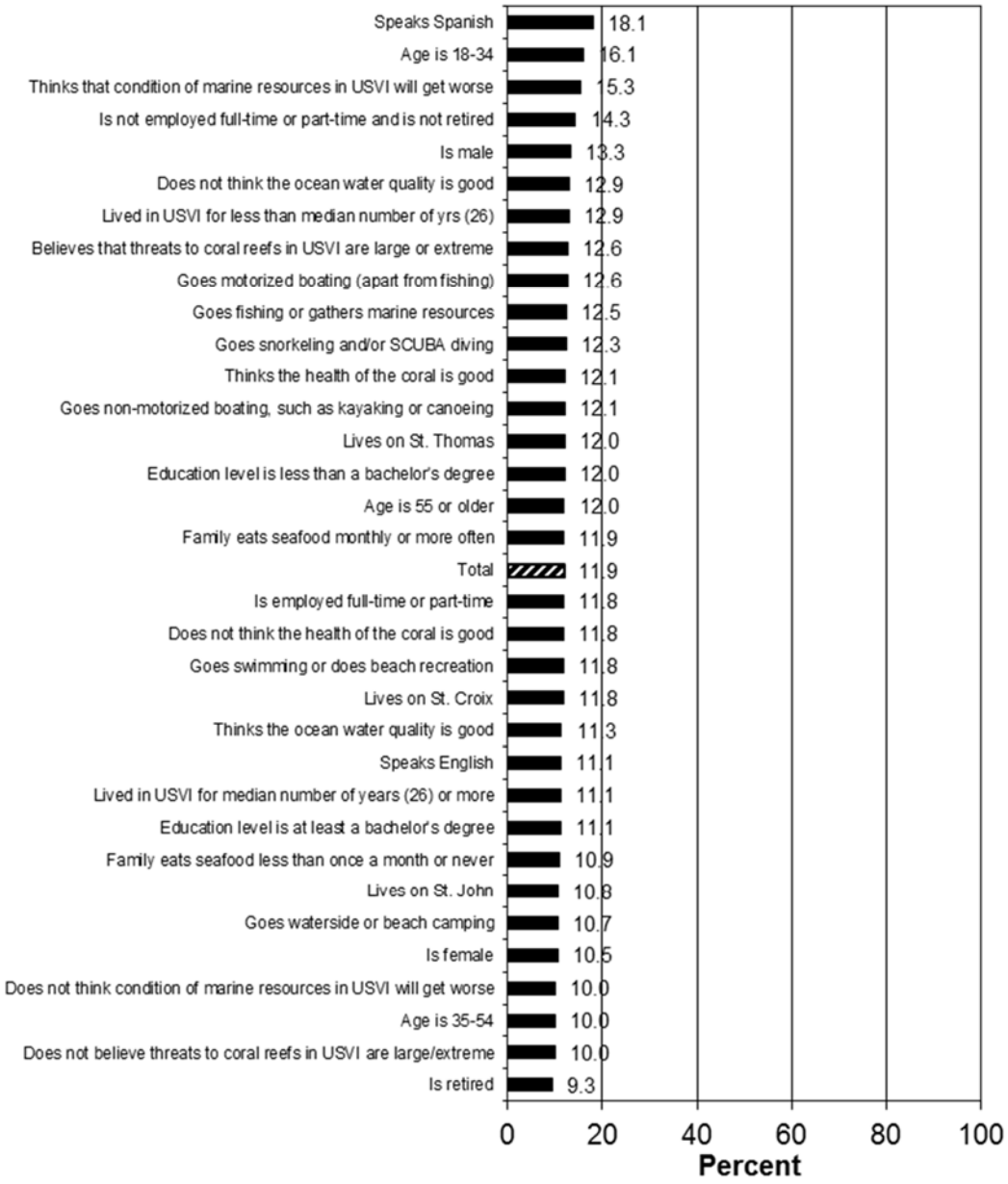


Figure 79: Percent of each of the above groups who said their local community is not at all involved in protecting and managing coral reefs. An explanation of how to interpret omnigraphs is included on pages 12-15.

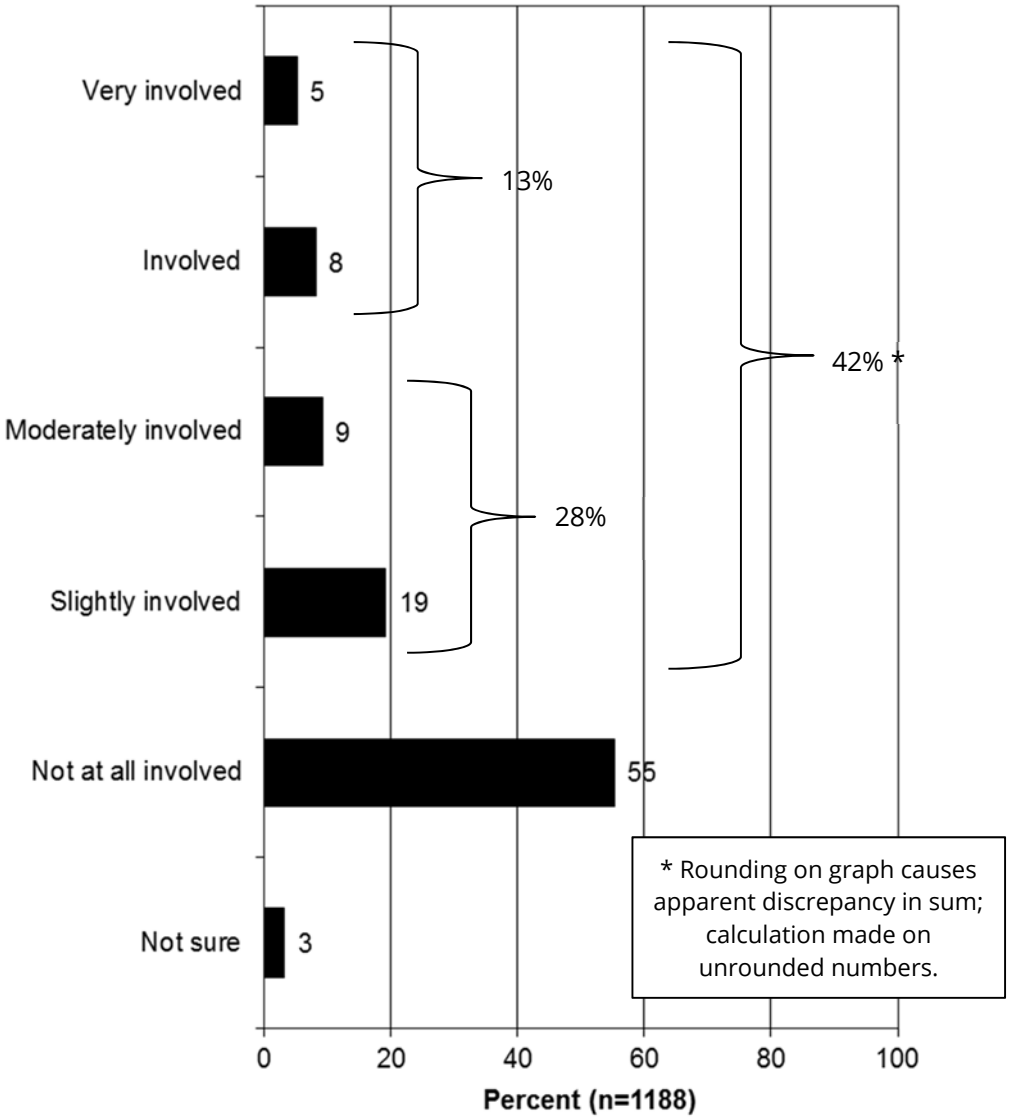


Figure 80: Q112. How involved are you in making decisions related to the management of coral reefs in the U.S. Virgin Islands?

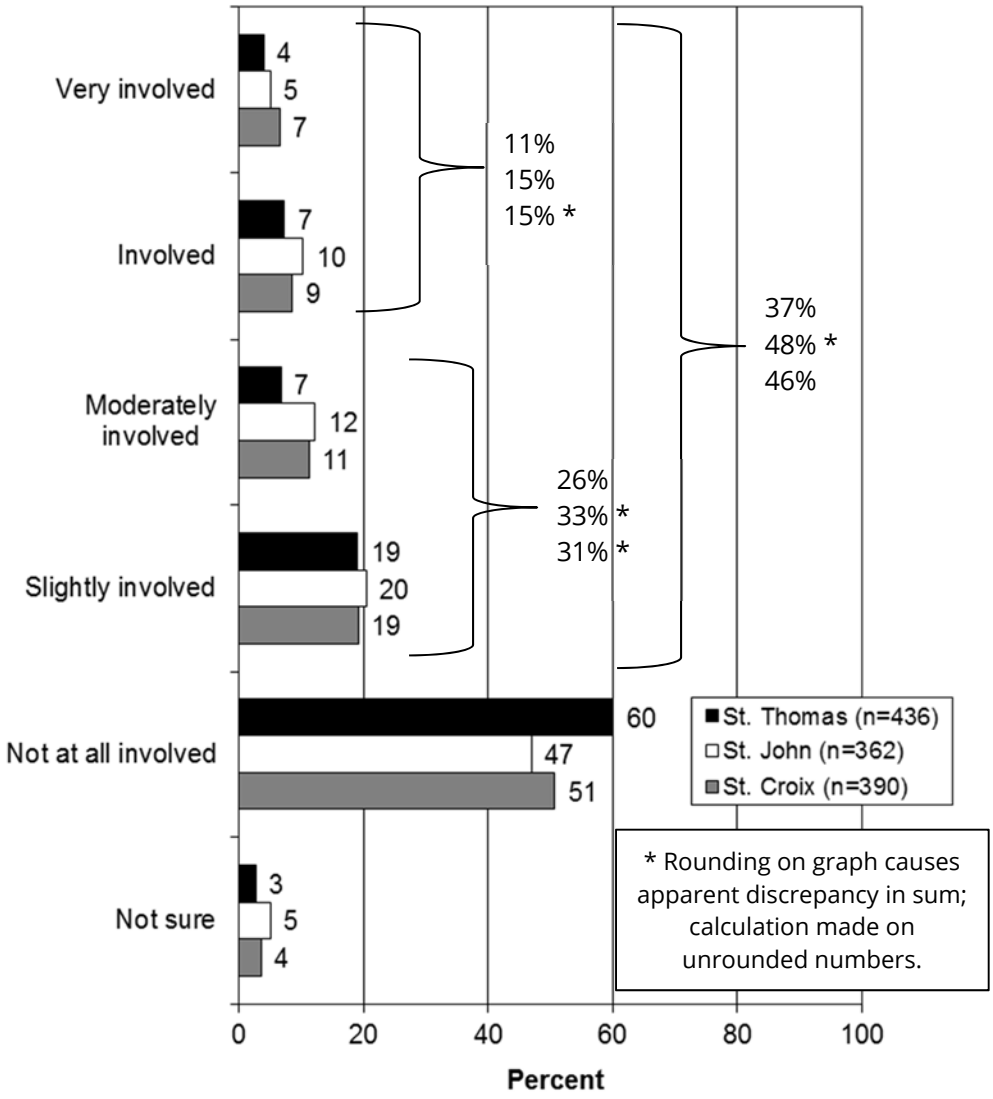


Figure 81: Q112. How involved are you in making decisions related to the management of coral reefs in the U.S. Virgin Islands?

Sources of Information about Coral Reefs

- Residents were asked to name the three sources of information about coral reefs and the environment that they use most often in the Virgin Islands.
  - Putting the three questions together, 46% indicate that they use newspapers and other print publications, 46% use the Internet, 38% use TV, and 34% use radio.
    - Internet use is slightly higher on St. Croix than on the other islands.

- Residents then rated the trustworthiness of the sources that they use.
  - The top-ranked source is non-profit environmental organizations as a whole (91% of those who use them consider them trustworthy or very trustworthy), followed by friends and family (81%), federal government agencies (80%), jurisdictional agencies (75%), and radio (73%)—all over 70%.

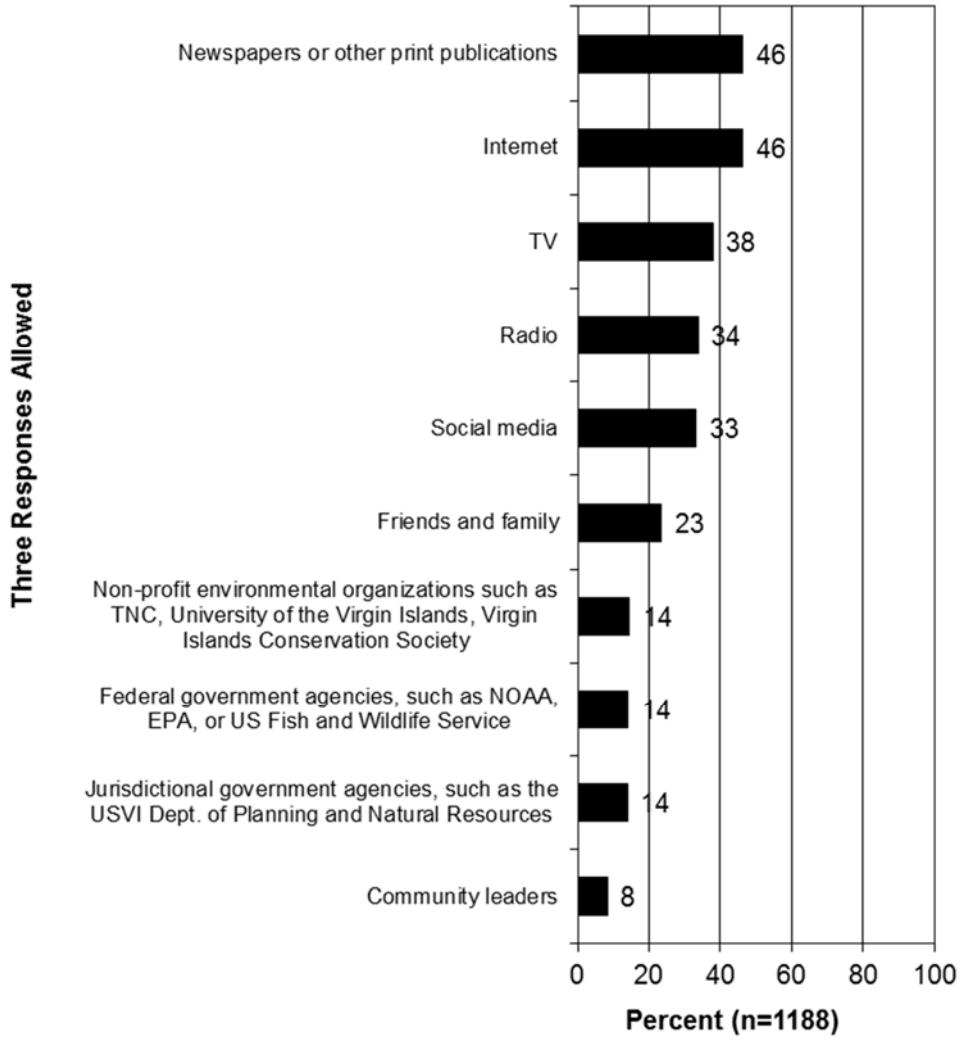


Figure 82: Q91/Q93/Q95. Which of the above would you consider to be the sources of information about coral reefs and the environment that you use most often in the U.S. Virgin Islands? You may choose up to three sources.

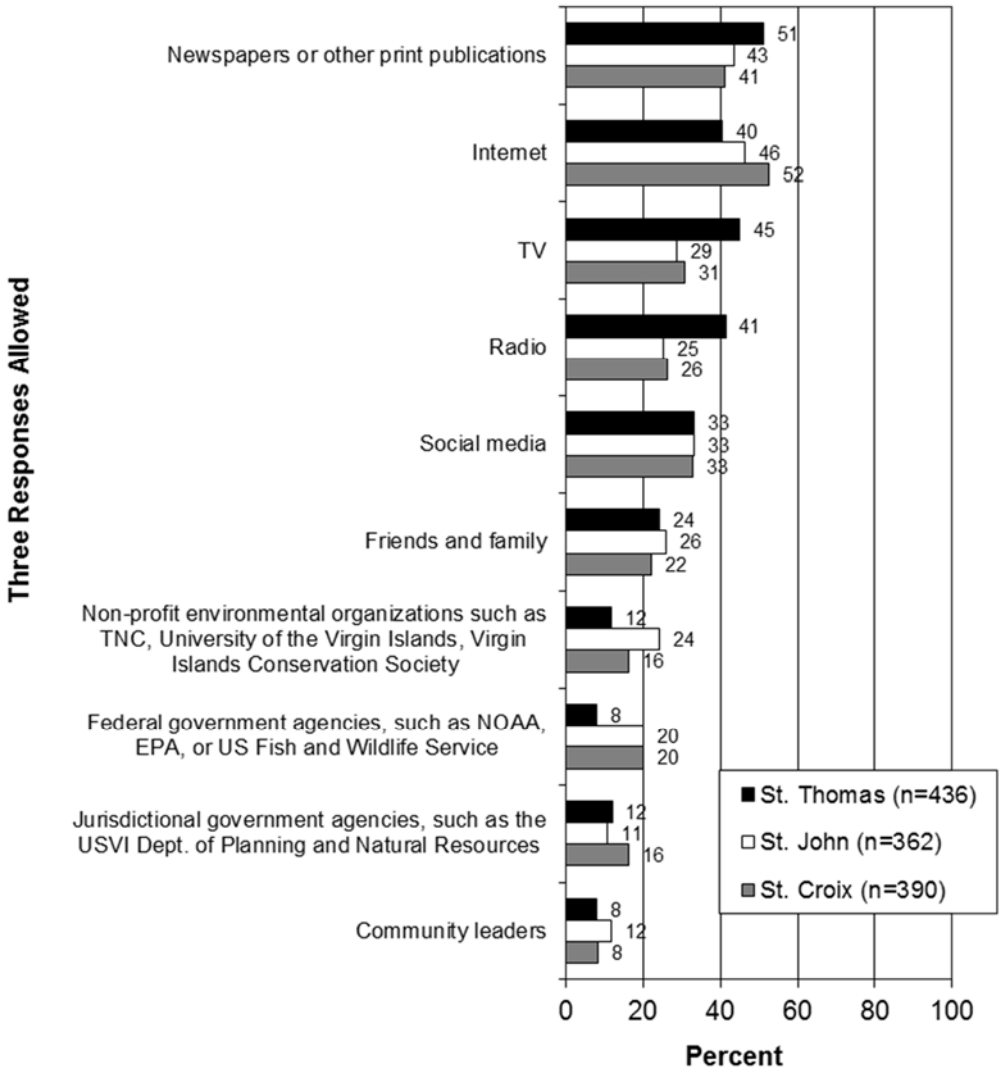


Figure 83: Q91/Q93/Q95. Which of the above would you consider to be the sources of information about coral reefs and the environment that you use most often in the U.S. Virgin Islands? You may choose up to three sources.

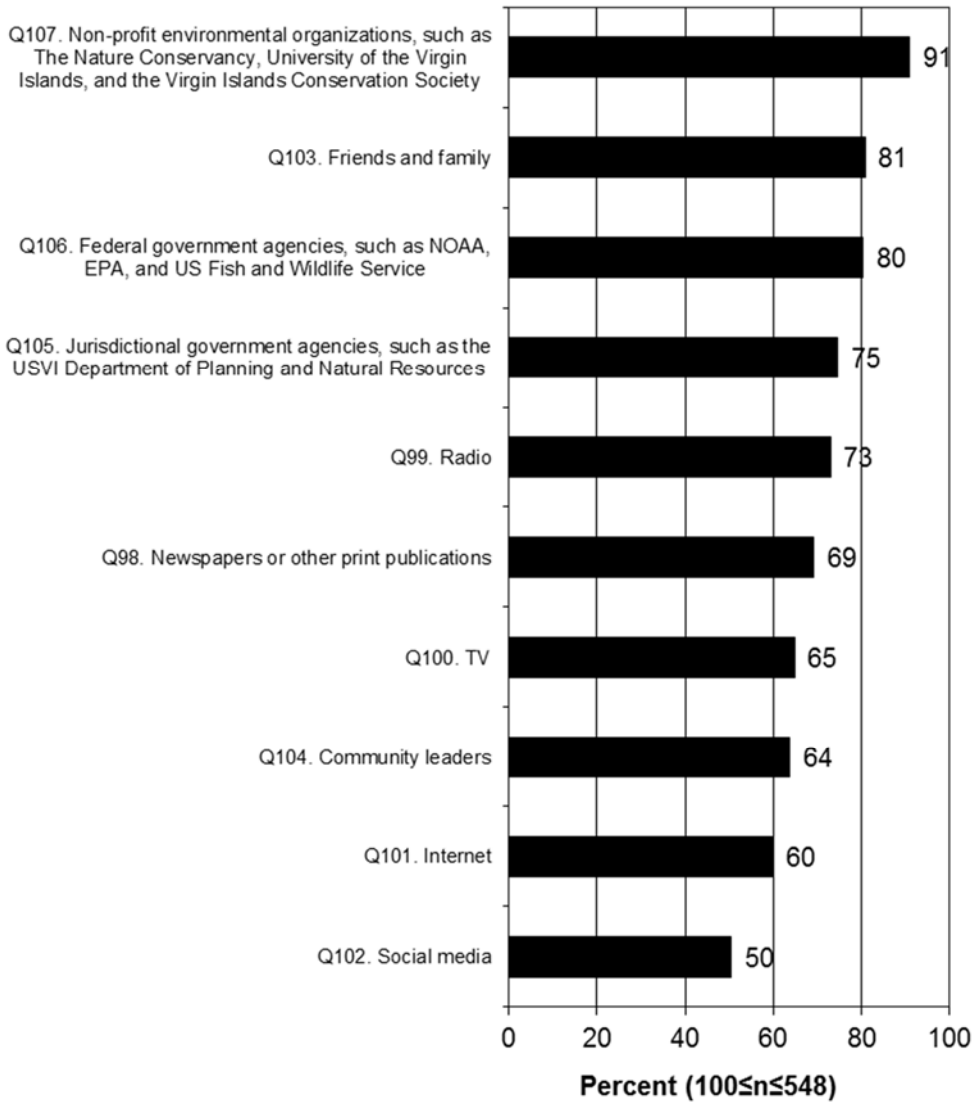


Figure 84: Q98-Q107. Percent of respondents who use each of the above as sources of information about coral reefs and the environment who find them trustworthy or very trustworthy

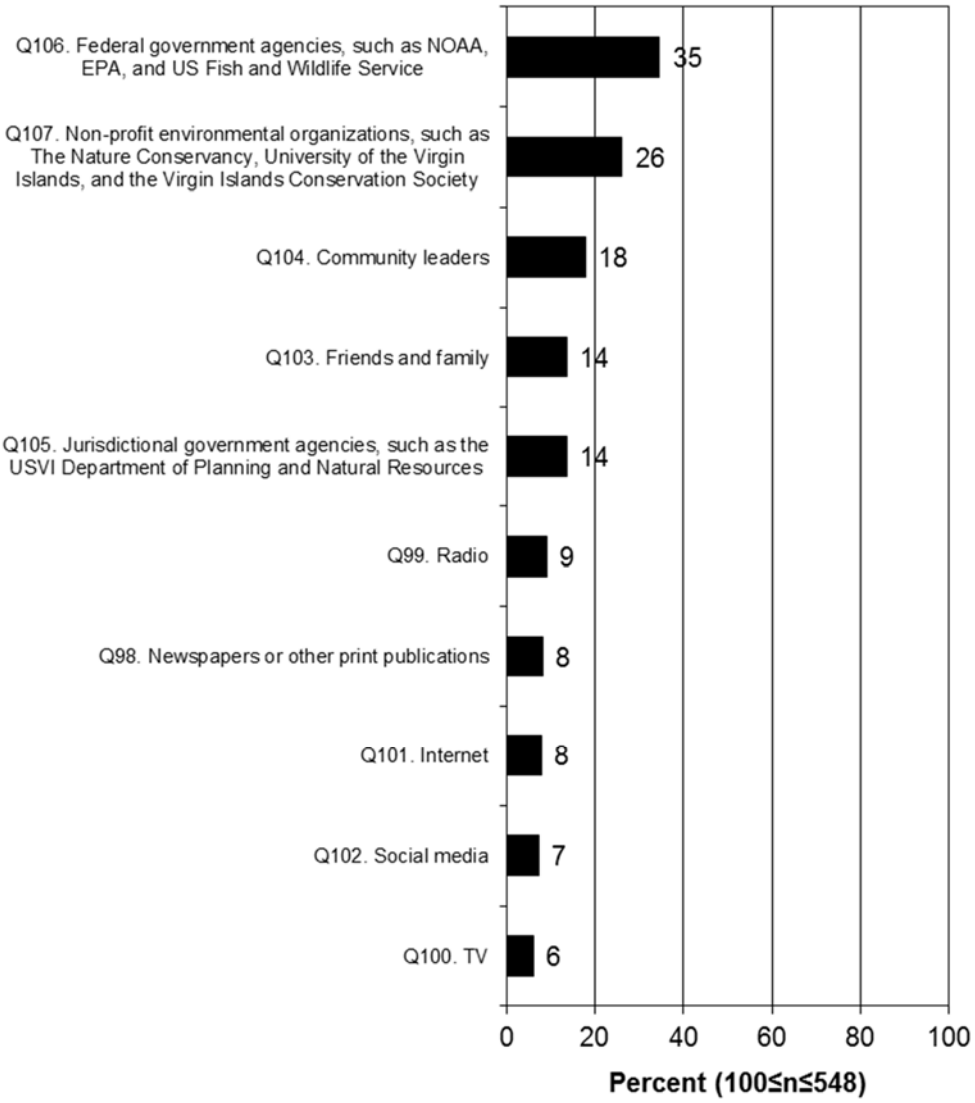


Figure 85: Q98-Q107. Percent of respondents who use each of the above as sources of information about coral reefs and the environment who find them very trustworthy

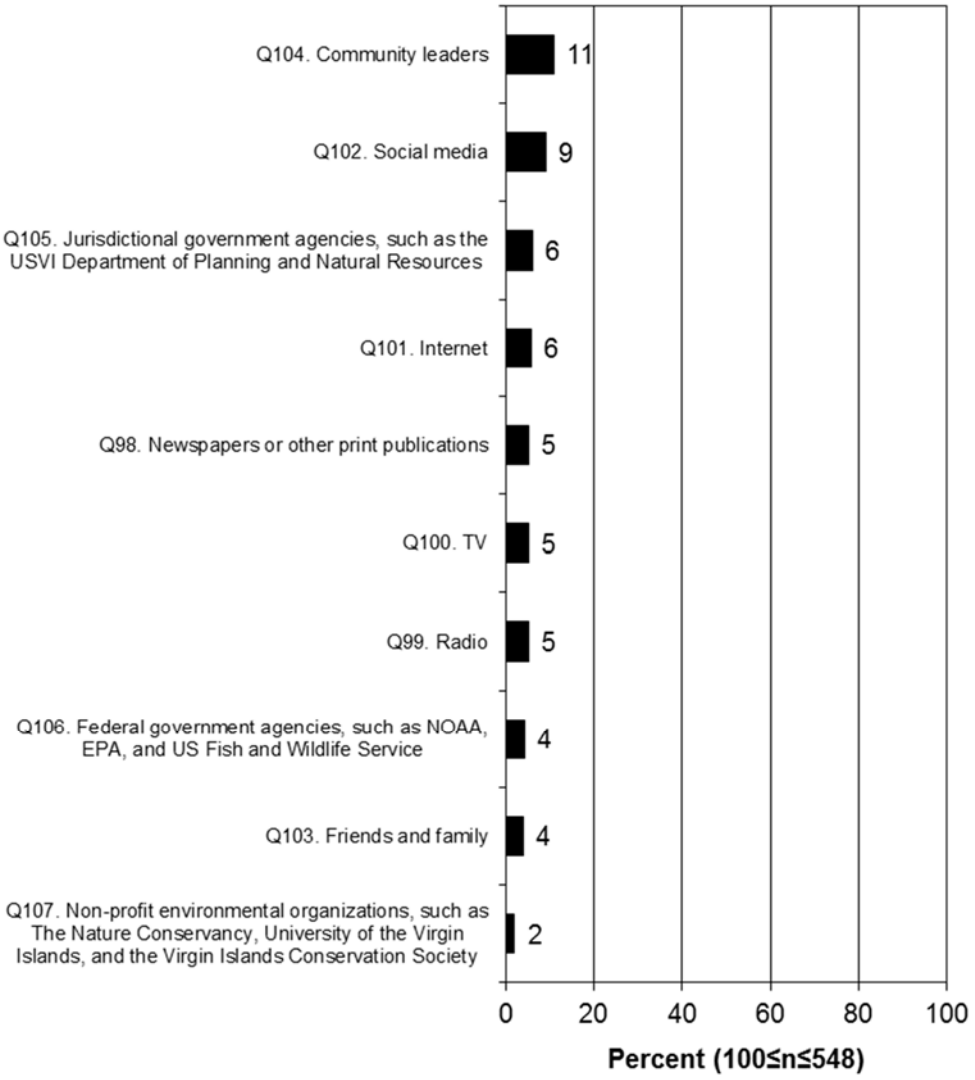


Figure 86: Q98-Q107. Percent of respondents who use each of the above as sources of information about coral reefs and the environment who find them very untrustworthy or untrustworthy

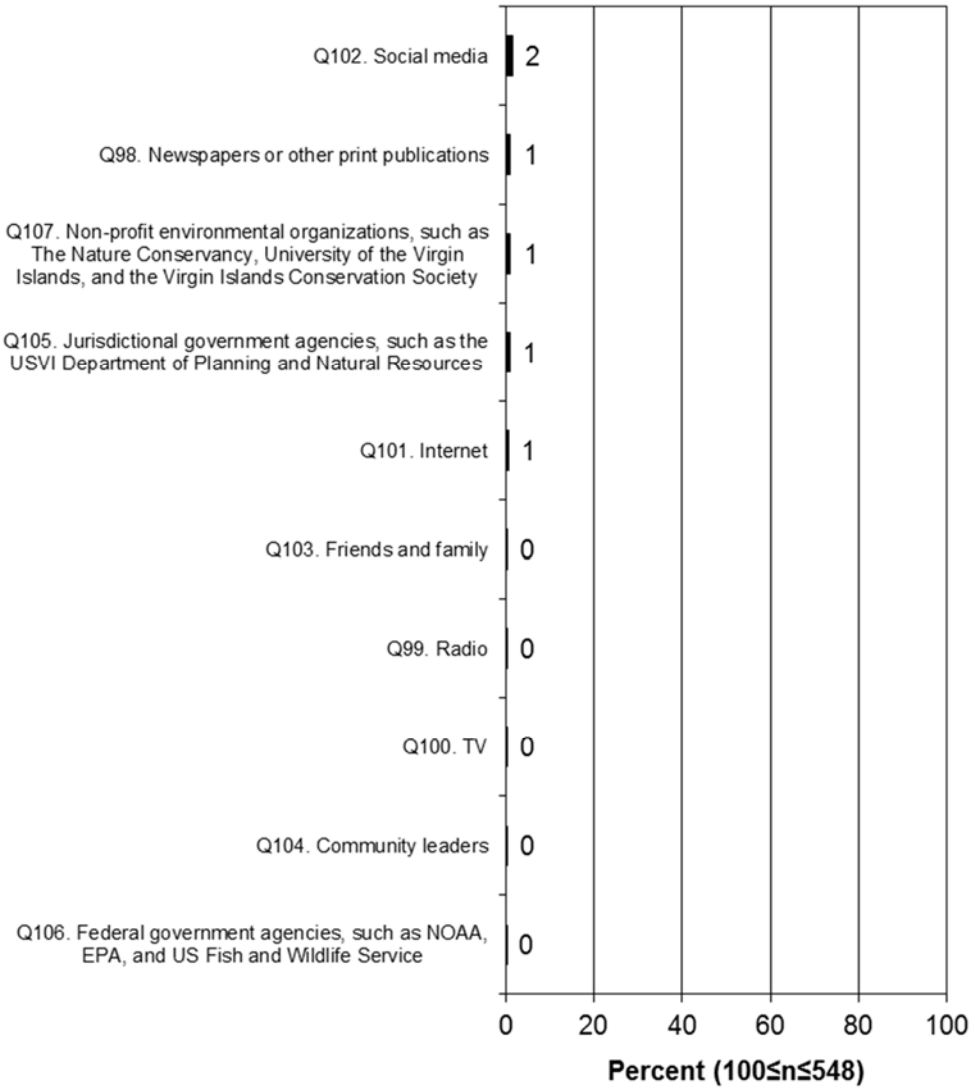


Figure 87: Q98-Q107. Percent of respondents who use each of the above as sources of information about coral reefs and the environment who find them very untrustworthy

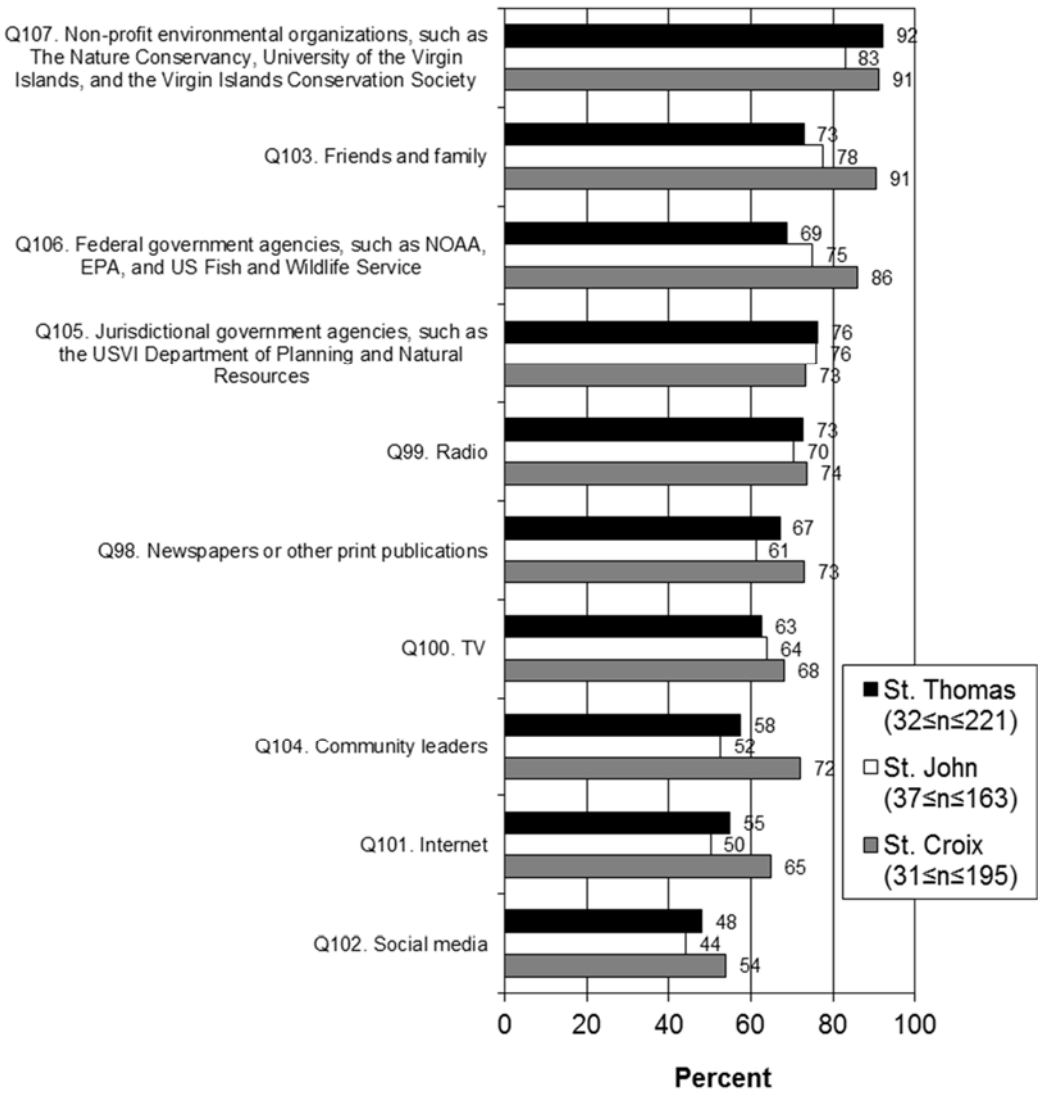


Figure 88: Q98-Q107. Percent of respondents who use each of the above as sources of information about coral reefs and the environment who find them trustworthy or very trustworthy

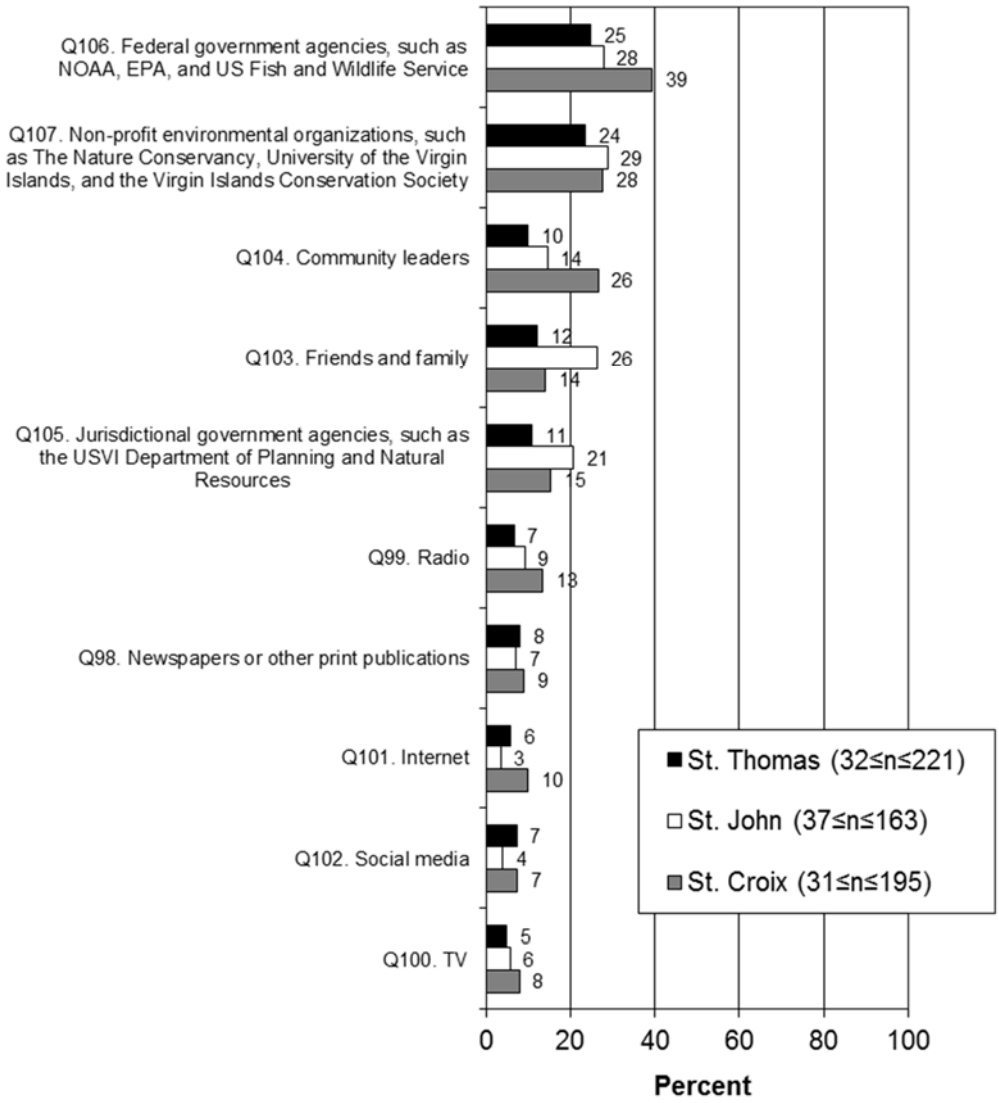


Figure 89: Q98-Q107. Percent of respondents who use each of the above as sources of information about coral reefs and the environment who find them very trustworthy

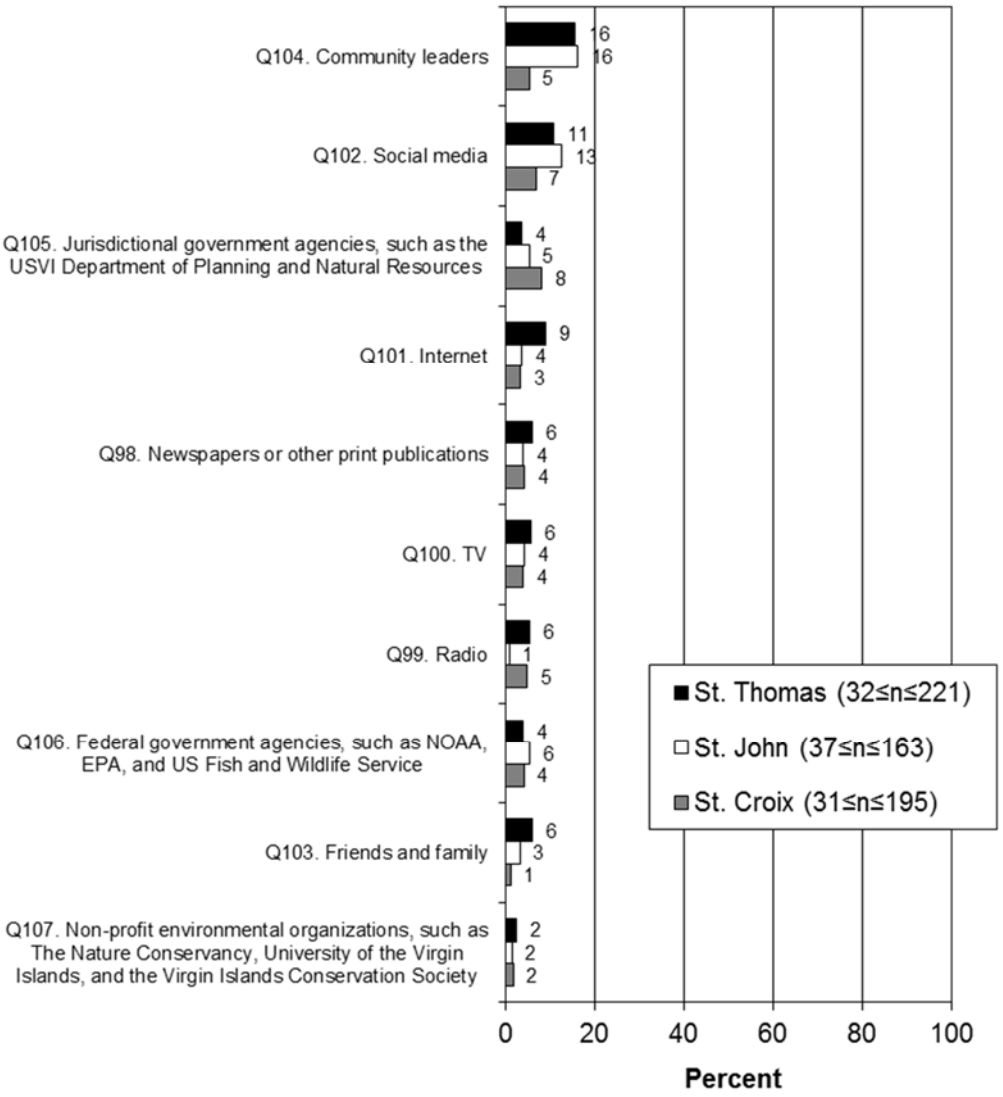


Figure 90: Q98-Q107. Percent of respondents who use each of the above as sources of information about coral reefs and the environment who find them very untrustworthy or untrustworthy

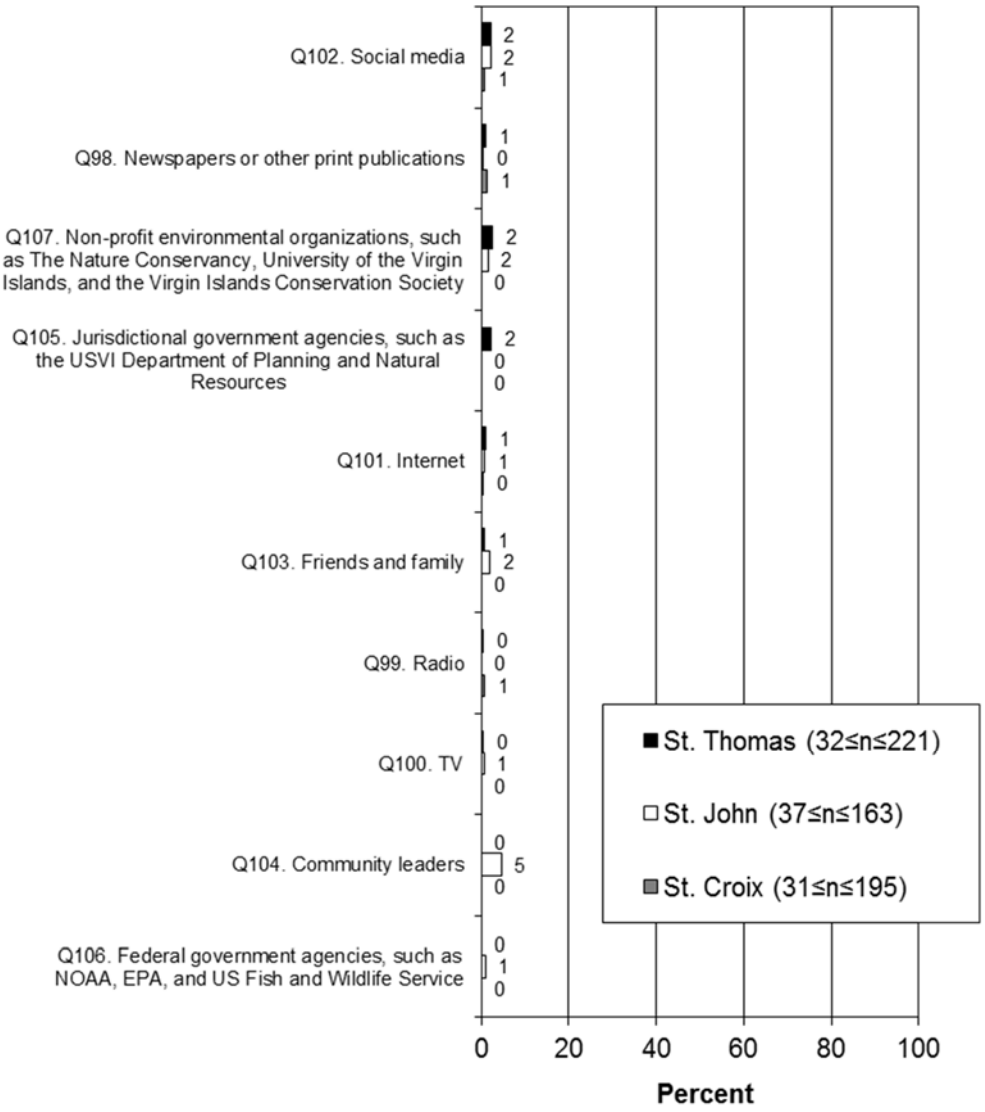


Figure 91: Q98-Q107. Percent of respondents who use each of the above as sources of information about coral reefs and the environment who find them very untrustworthy

Participation in Behaviors that may Improve Coral Health

- A little more than a third of residents (36%) participate in an activity to help protect the environment several times a year or more. Another 28% participate, but only once a year or less, a sum of 64% who participate at all. Finally, 33% do not participate in such efforts.
  - The characteristics associated with participation in activities to help protect the environment more than once a year include:
    - Going boating (both non-motorized and motorized), going snorkeling and/or SCUBA diving, fishing and/or gathering marine resources, being in the upper educational bracket, having lived in the USVI for less than the median number of years, and being in the middle age bracket.

- It is also worth mentioning in this section some results that were previously given in another section but that pertain to this section as well.
  - Recall that a majority of residents feel that their community is involved in protecting and managing coral reefs (70%), compared to only 12% saying that their community is not at all involved. However, most commonly, those saying "involved" are saying only *moderately* or *slightly* involved (together at 50%).
  - Also recall that personal involvement in decisions about management of coral reefs is deemed to be much lower: a majority (55%) say that they are *not* at all involved in the decisions related to management of the reefs. In particular, only 13% feel that they are very involved or involved.
    - These graphs were previously discussed and shown in the section, "Attitudes Toward Coral Reef Management Strategies and Enforcement."

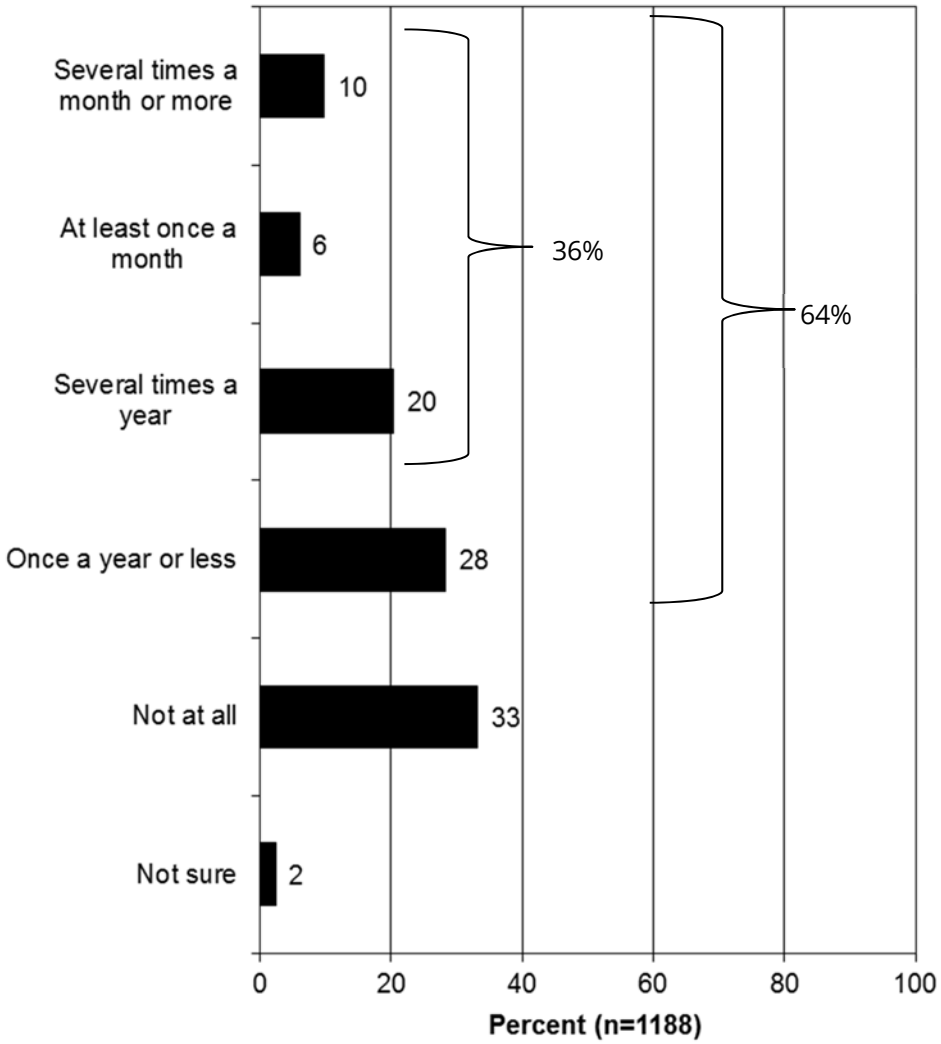


Figure 92: Q90. How often do you participate in any activity to protect the environment, for example, beach clean-ups, volunteering with an environmental group, donating to a coastal environmental charity, lionfish removal, or marine debris removal?

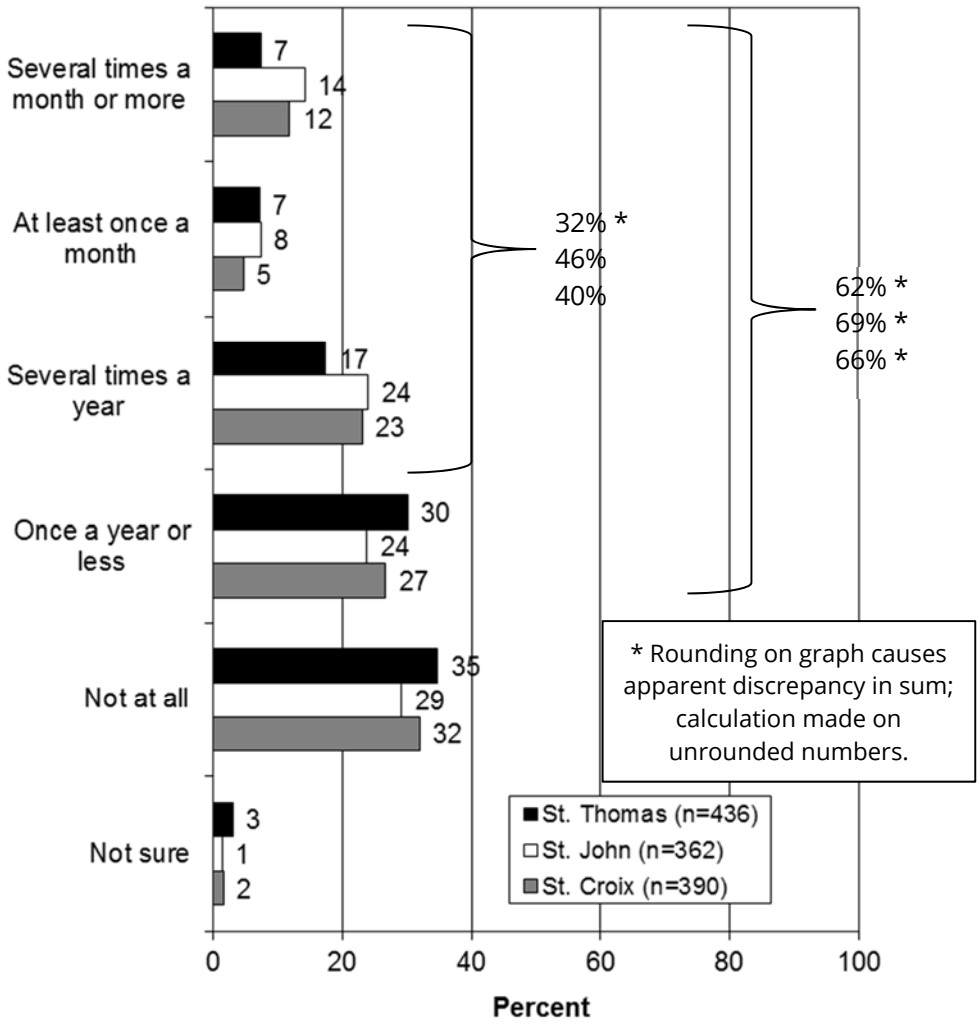


Figure 93: Q90. How often do you participate in any activity to protect the environment, for example, beach clean-ups, volunteering with an environmental group, donating to a coastal environmental charity, lionfish removal, or marine debris removal?

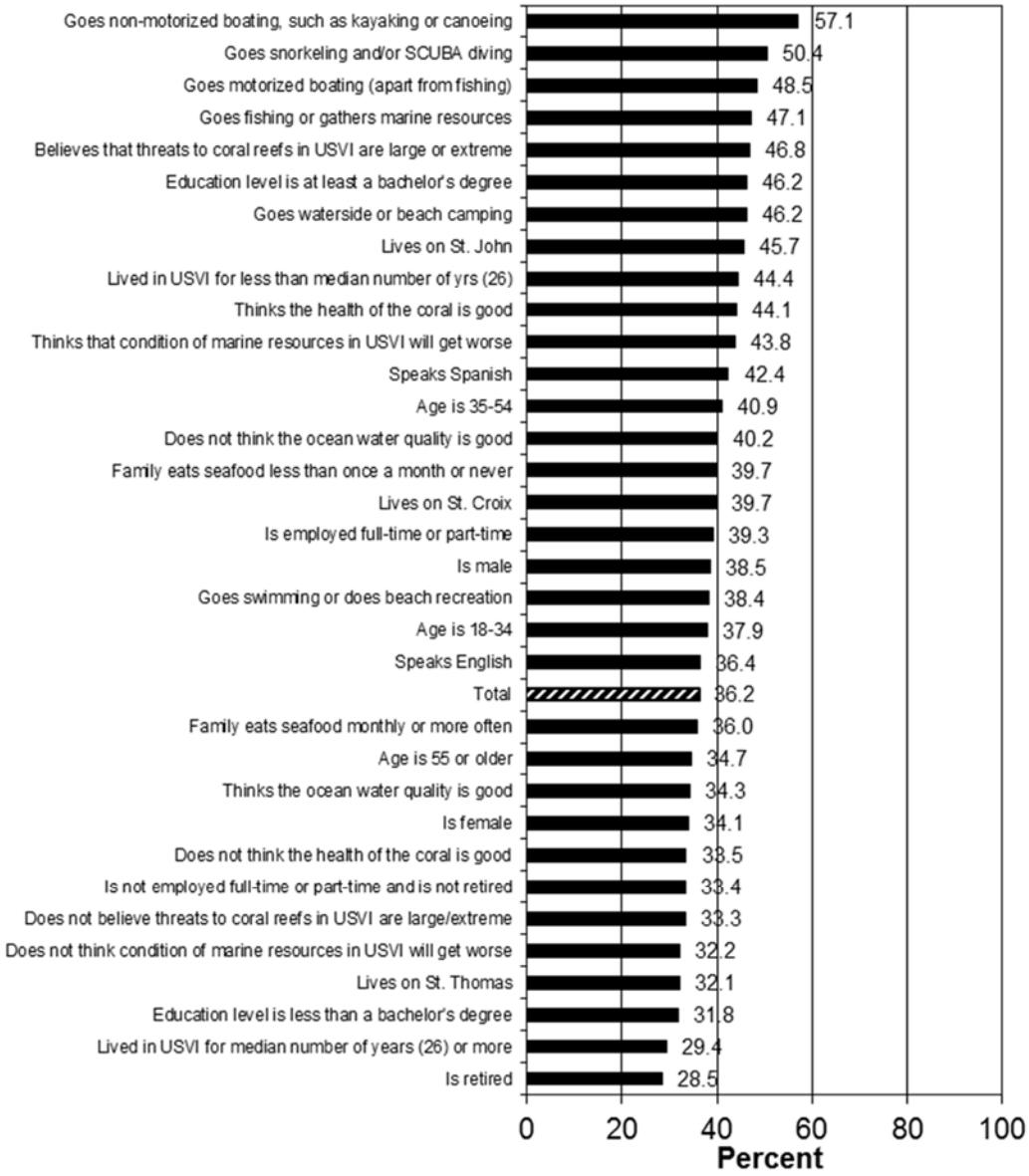


Figure 94: Percent of each of the above groups who participate in any activity to protect the environment more than once a year (for example, beach clean-ups, volunteering with an environmental group). An explanation of how to interpret omnigraphs is included on pages 12-15.

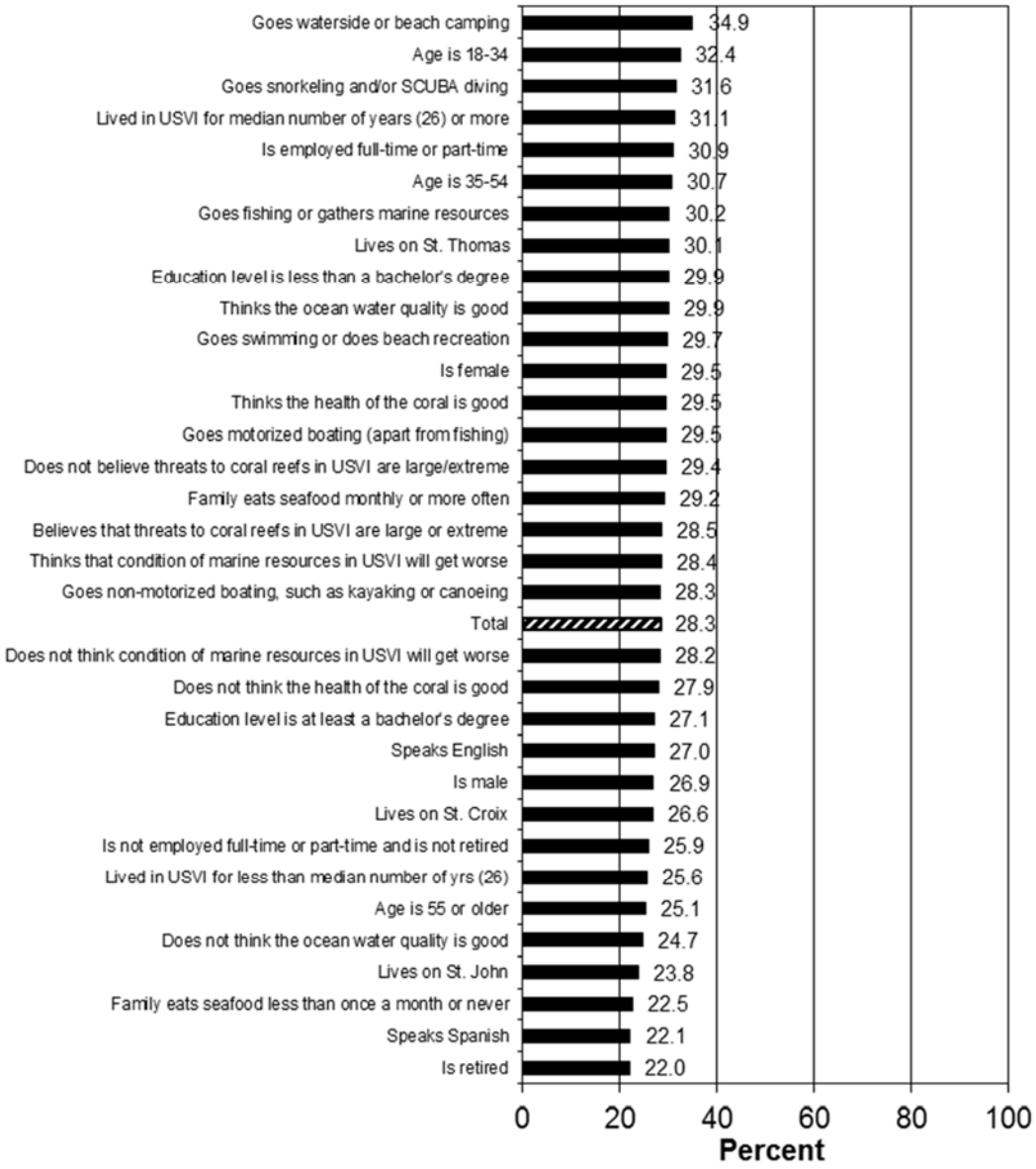


Figure 95: Percent of each of the above groups who participate in any activity to protect the environment once a year or less (for example, beach clean-ups, volunteering with an environmental group). An explanation of how to interpret omnigraphs is included on pages 12-15.

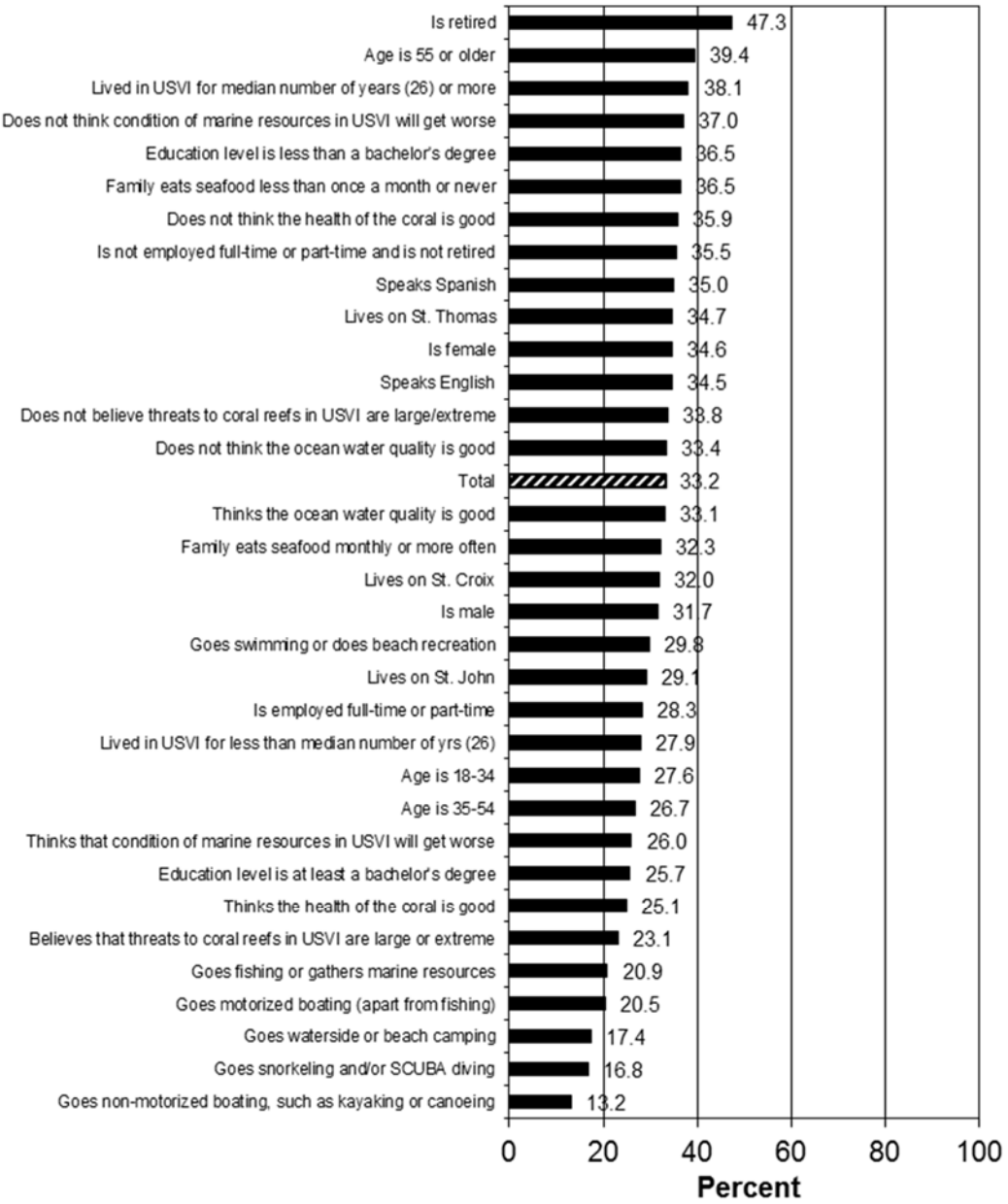


Figure 96: Percent of each of the above groups who do not participate in any activity to protect the environment. An explanation of how to interpret omnigraphs is included on pages 12-15.

Participation in Reef Recreational Activities and Motivations for Participating

- The most popular of the 11 activities the survey asked about are beach recreation, such as sports or picnics (80% of residents do this activity at some time) and swimming or wading (79%). These are by far the most popular activities.
  - In a second tier are snorkeling (43% do this at some time), motorized boating not for fishing (41%), and waterside or beach camping (35%).
  - In combining fishing and gathering marine resources, 42% did so.
    - The graph shows the full listing of activities. A graph is also shown of those who do the activities at a higher avidity threshold of four times a month or more often.
  - The crosstabulation by island of residence suggests that St. John residents are a little more active than residents of the other islands. St. John residents have a particularly higher percentage who go motorized boating not for fishing purposes and who go snorkeling.

- An omnigraph suggests that people who go fishing/gathering marine resources are positively associated with:
  - Being active in other recreation, particularly snorkeling and/or SCUBA diving, waterside or beach camping, and boating (both motorized and non-motorized).
  - Being younger, male, in the upper education bracket, and having lived in the USVI for less than the median number of years.
  - Speaking Spanish (not necessarily as the primary language—the question asked respondents to name all the languages they speak).
  - Being highly concerned about the coral reefs and the environment (thinks threats to coral reefs are large or extreme, thinks the condition of the reefs will get worse in the next 10 years), but at the same time thinking the current condition of the coral reefs is good.
    - Those things *negatively* associated—in other words, characteristics of those *less* likely to go fishing/gathering than residents overall—include being older, being retired, being female, having lived in the USVI for the median number of years or longer, and speaking English.

- For fun/personal enjoyment and for food are two of the top reasons that residents fish or gather marine resources. A follow-up series was given to those who fish or gather marine resources that presented five possible reasons for doing so, and they were asked how often they fish or gather marine resources for the reason. The top reason, when ranked by the percentage who say they fish/gather for the reason frequently, sometimes, or rarely (i.e., at any threshold at all) is for fun or personal enjoyment (66%), but this is closely followed by doing so to feed himself/herself and his/her family or household (61%).
  - Of lesser importance are doing so to give seafood to extended family and friends (46%) and for special occasions or religious cultural events (31%). Very few do so to sell (13%).
    - A graph is also shown of those who fish or gather marine resources for the reasons given at a higher threshold (i.e., they say they do so frequently or sometimes). The ranking is the same.

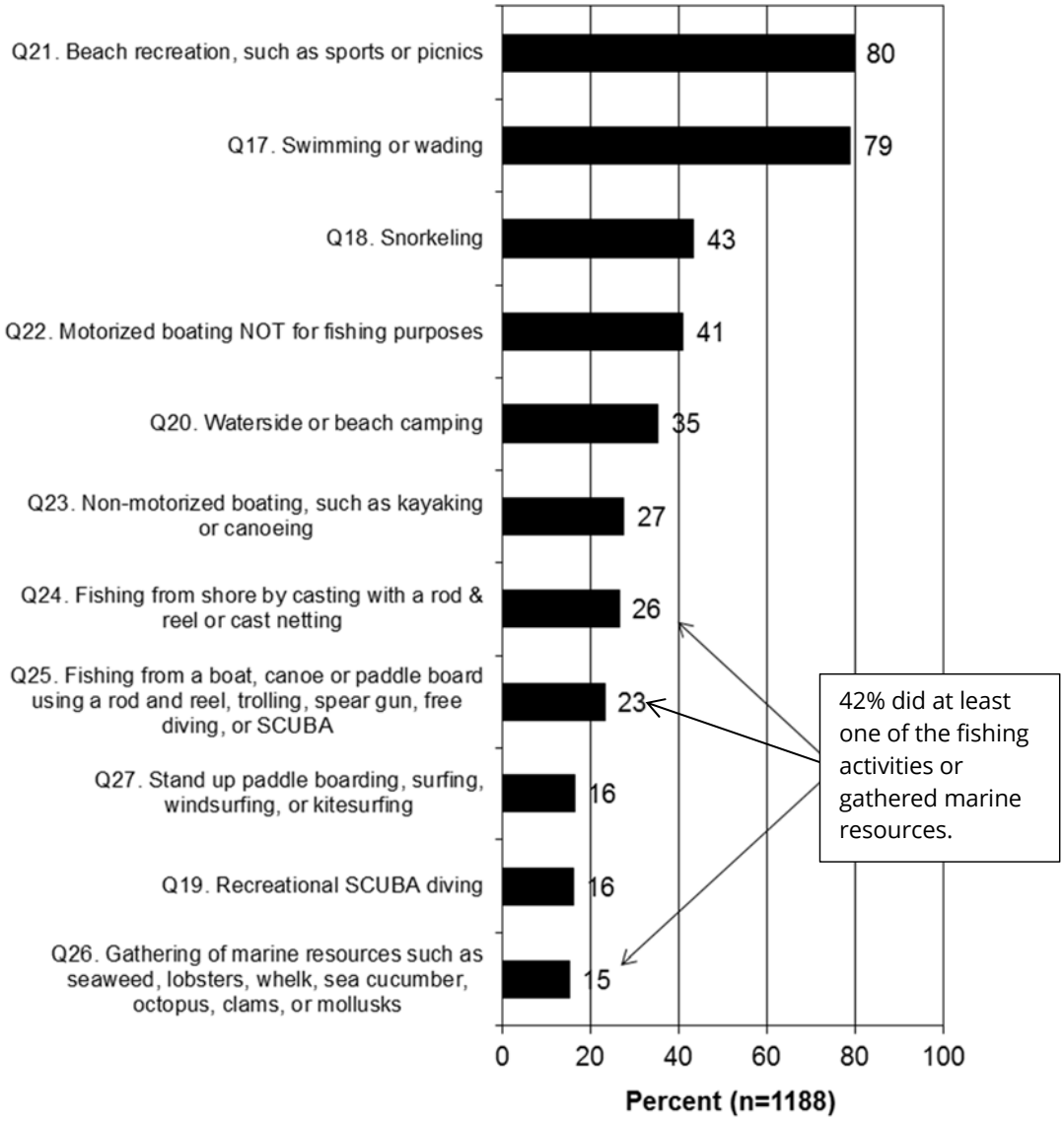


Figure 97: Q17-Q27. Percent of respondents who ever participate in each of the above reef activities

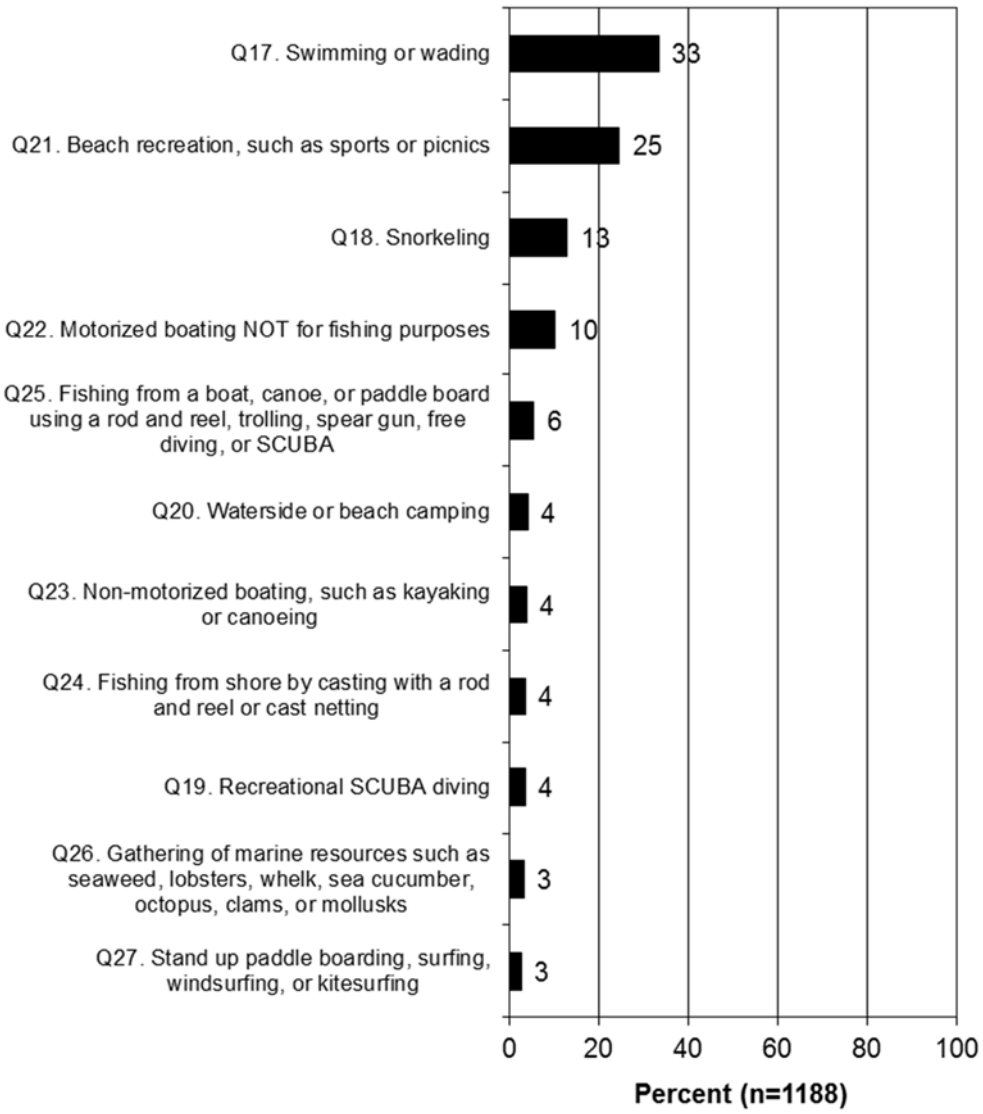


Figure 98: Q17-Q27. Percent of respondents who participate in each of the above reef activities 4 times a month or more

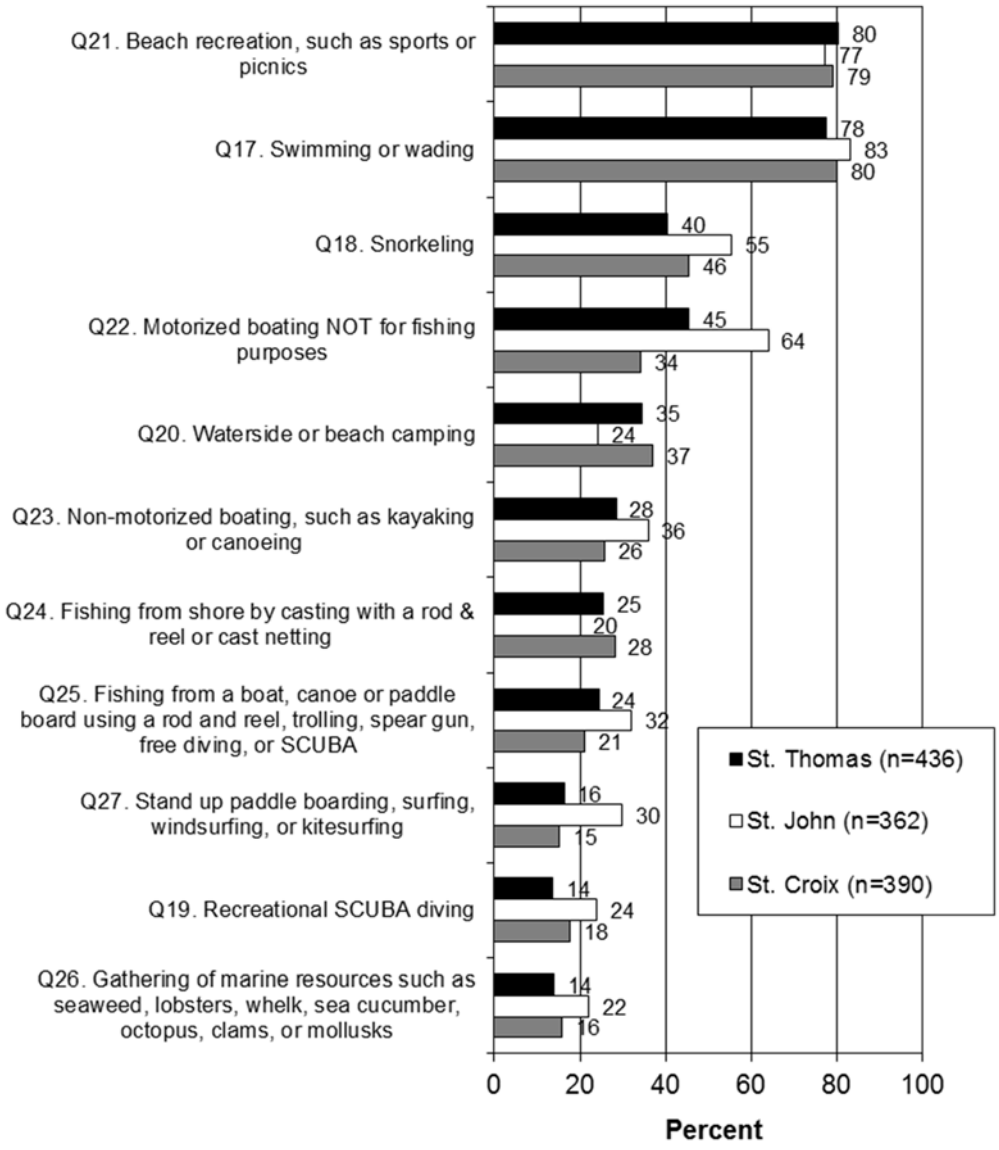


Figure 99: Q17-Q27. Percent of respondents who ever participate in each of the above reef activities

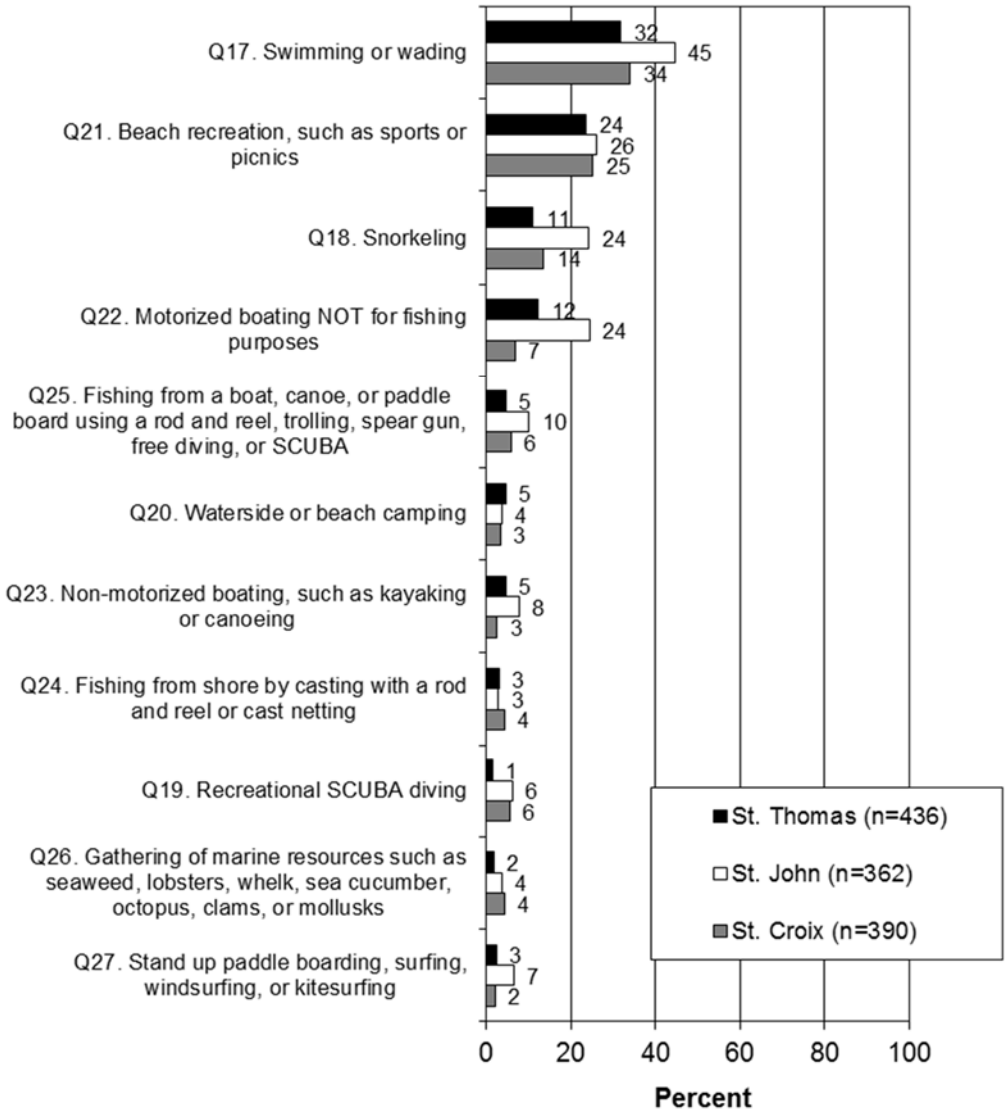


Figure 100: Q17-Q27. Percent of respondents who participate in each of the above reef activities 4 times a month or more

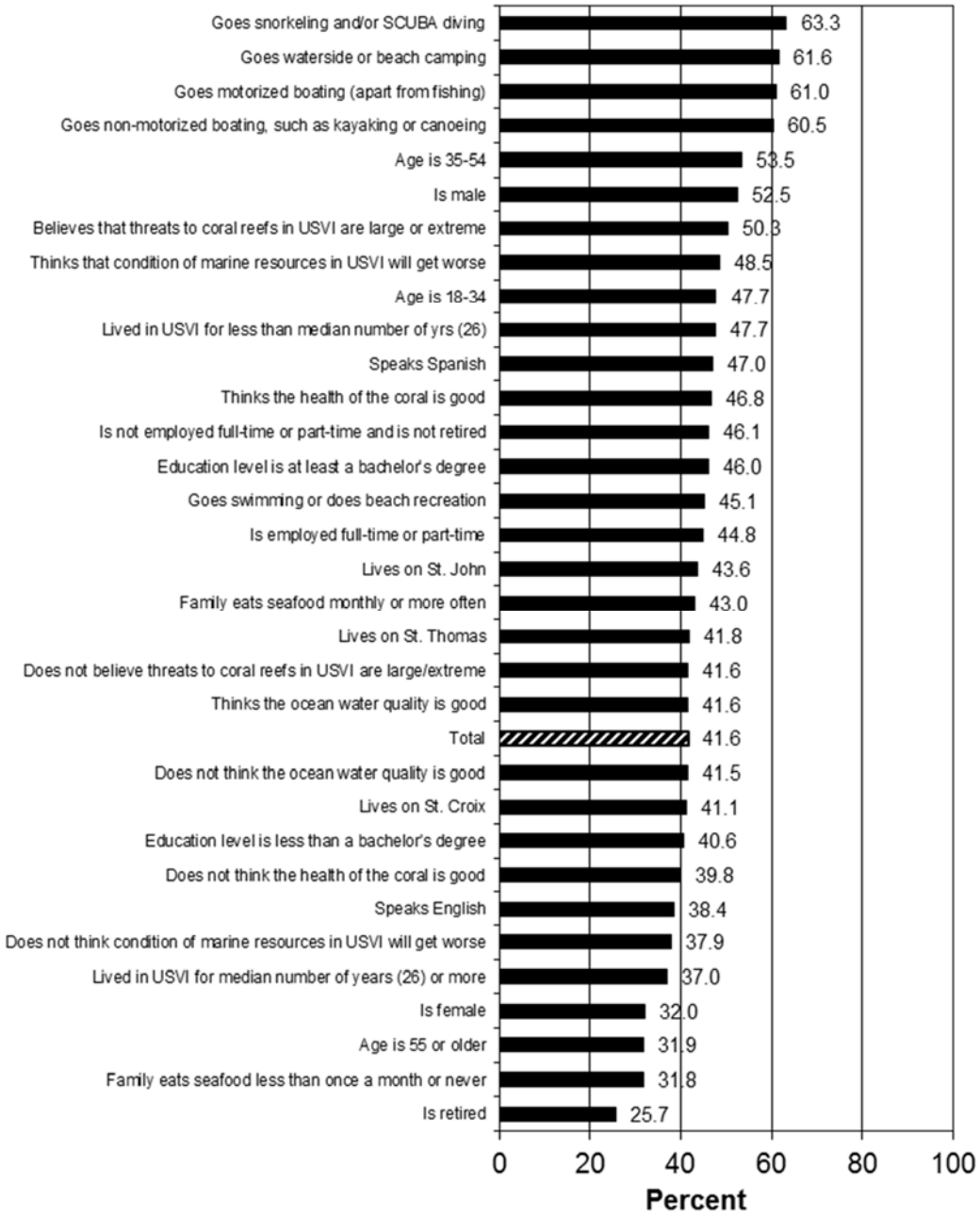


Figure 101: Percent of each of the above groups who go fishing, from shore or by boat or other floating device, or who gather marine resources. An explanation of how to interpret omnigraphs is included on pages 12-15.

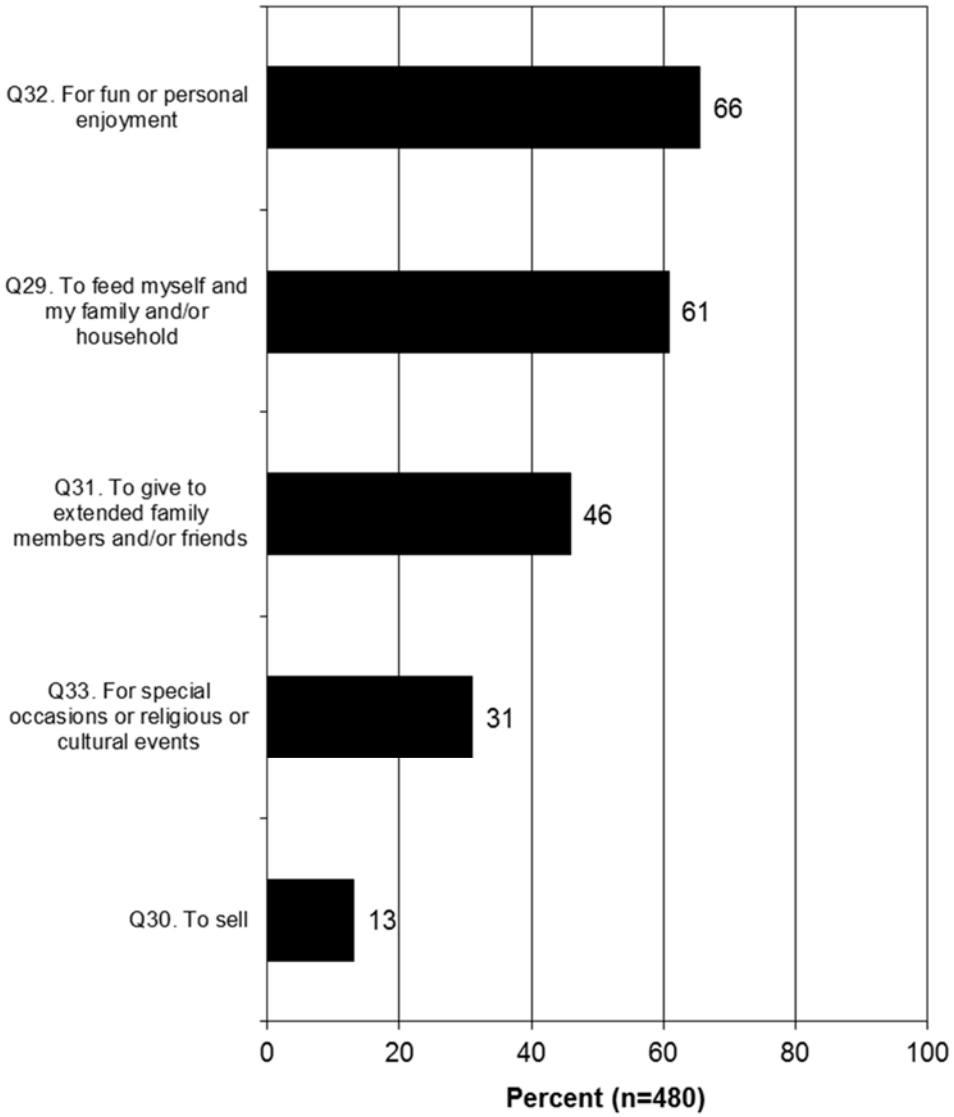


Figure 102: Q29-Q33. Percent of respondents who fish or gather marine resources who do so for each of the above reasons frequently, sometimes, or rarely

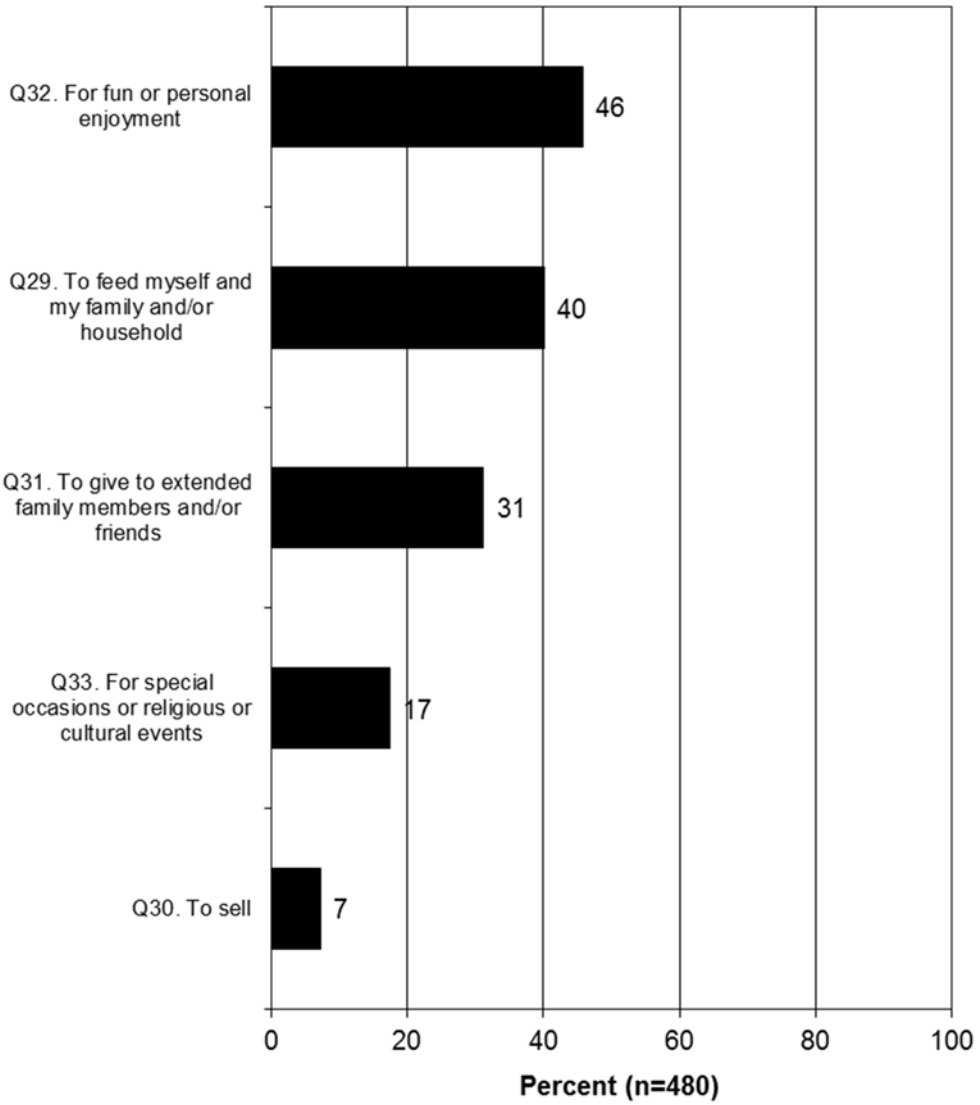


Figure 103: Q29-Q33. Percent of respondents who fish or gather marine resources who do so for each of the above reasons frequently or sometimes

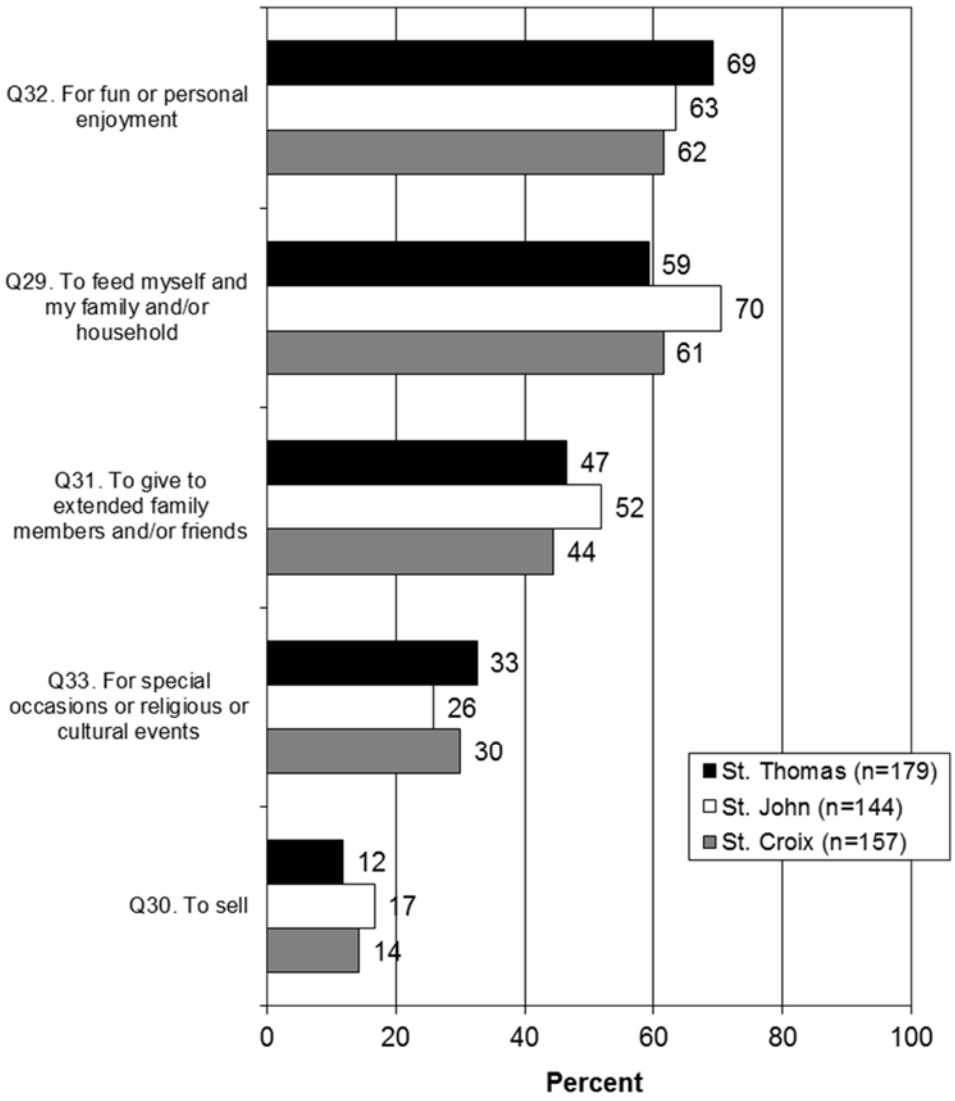


Figure 104: Q29-Q33. Percent of respondents who fish or gather marine resources who do so for each of the above reasons frequently, sometimes, or rarely

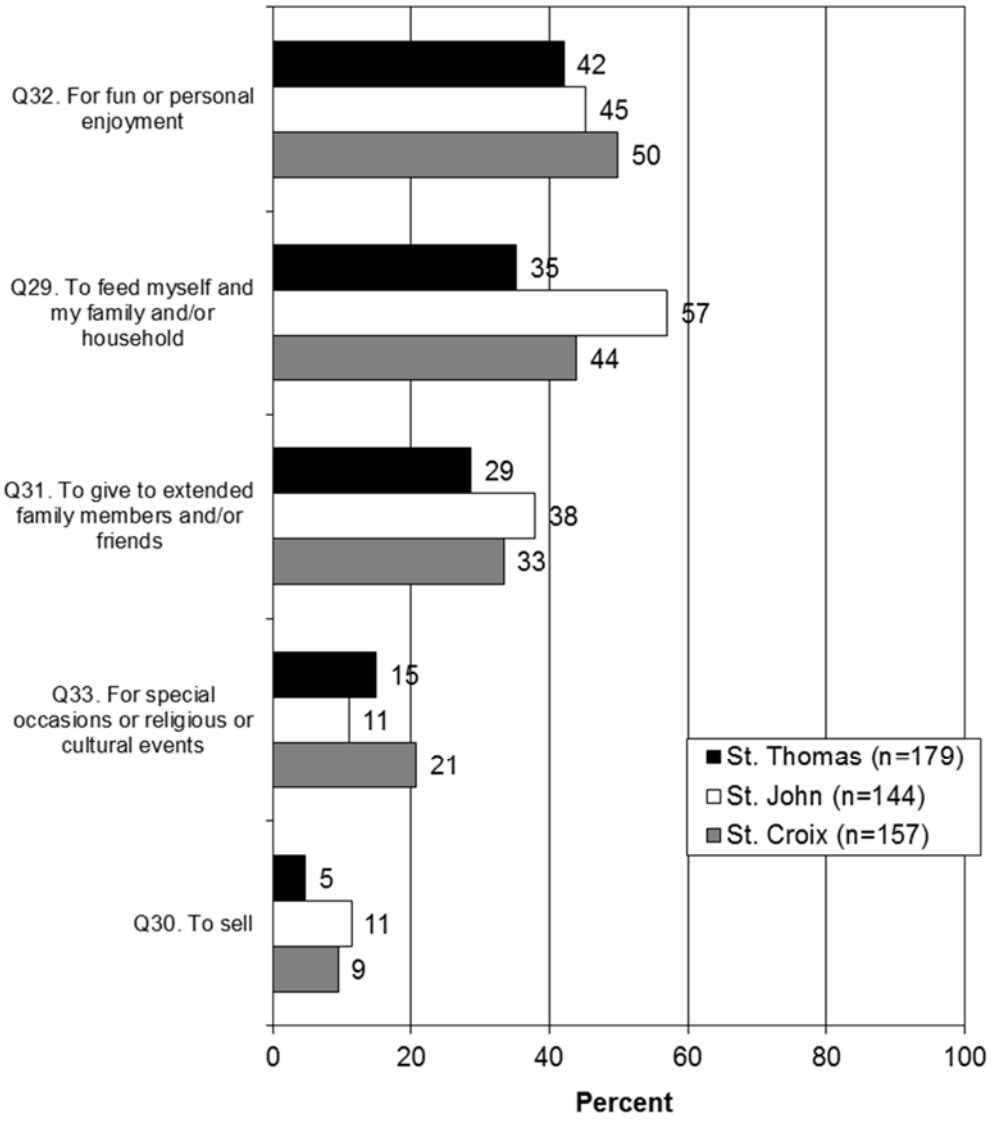


Figure 105: Q29-Q33. Percent of respondents who fish or gather marine resources who do so for each of the above reasons frequently or sometimes

Consumption of Seafood

- The overwhelming majority of residents' families eat seafood at least once in a while (95% do so). Additionally, 87% do so at least monthly, and 63% do so at least weekly.
  - An omnigraph shows that eating seafood at least monthly is associated with those who speak Spanish (not necessarily as their primary language), who do many of the activities asked about in the survey (boating, waterside/beach camping, fishing/gathering marine resources), and who believe that the threats to the coral reefs are large or extreme.
  - A follow-up question then asked how often the respondent's family eats fish or seafood that is *harvested from coral reefs* (the examples given were snapper, grouper, parrotfish, old wife, trigger fish, lobster, or conch): 72% do so at some time, 48% do so at least monthly, and 24% do so at least weekly.
    - The crosstabulation by island shows that St. John residents are slightly more likely to say that they never consume reef fish/seafood.
  - Another question asked about consumption of lionfish: only 10% of residents consume it (this question used a yes-no answer set rather than a scale of frequency).

- The top sources of seafood eaten by residents are through purchase at a store or restaurant (59% say this is one of the two primary ways they get seafood that they eat) or purchase at a market or roadside vendor (57%). Meanwhile, 14% include as one of their two primary sources that they or someone in their household catches the fish themselves.

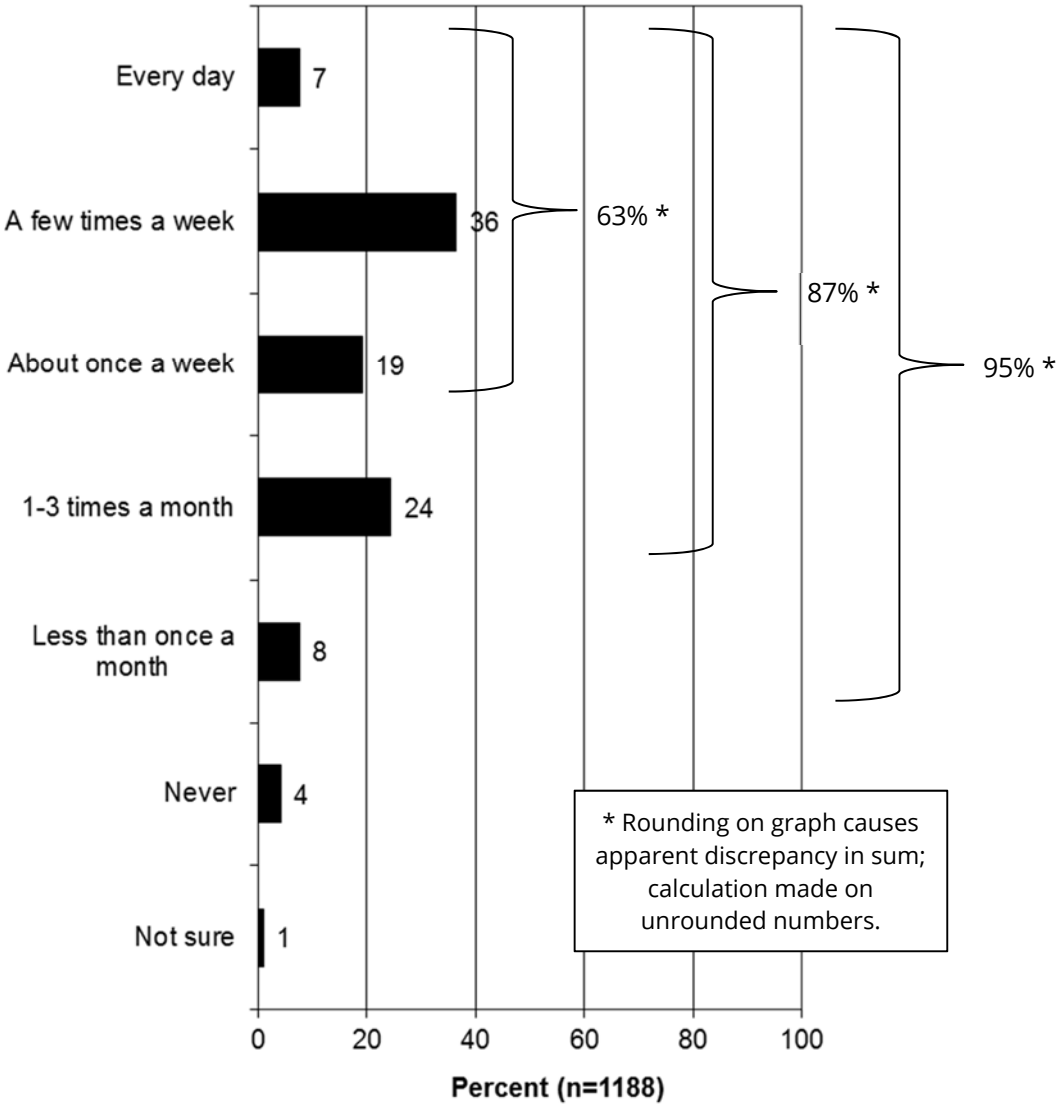


Figure 106: Q34. How often does your family eat fish or seafood? Family is defined as all persons living under the same roof.

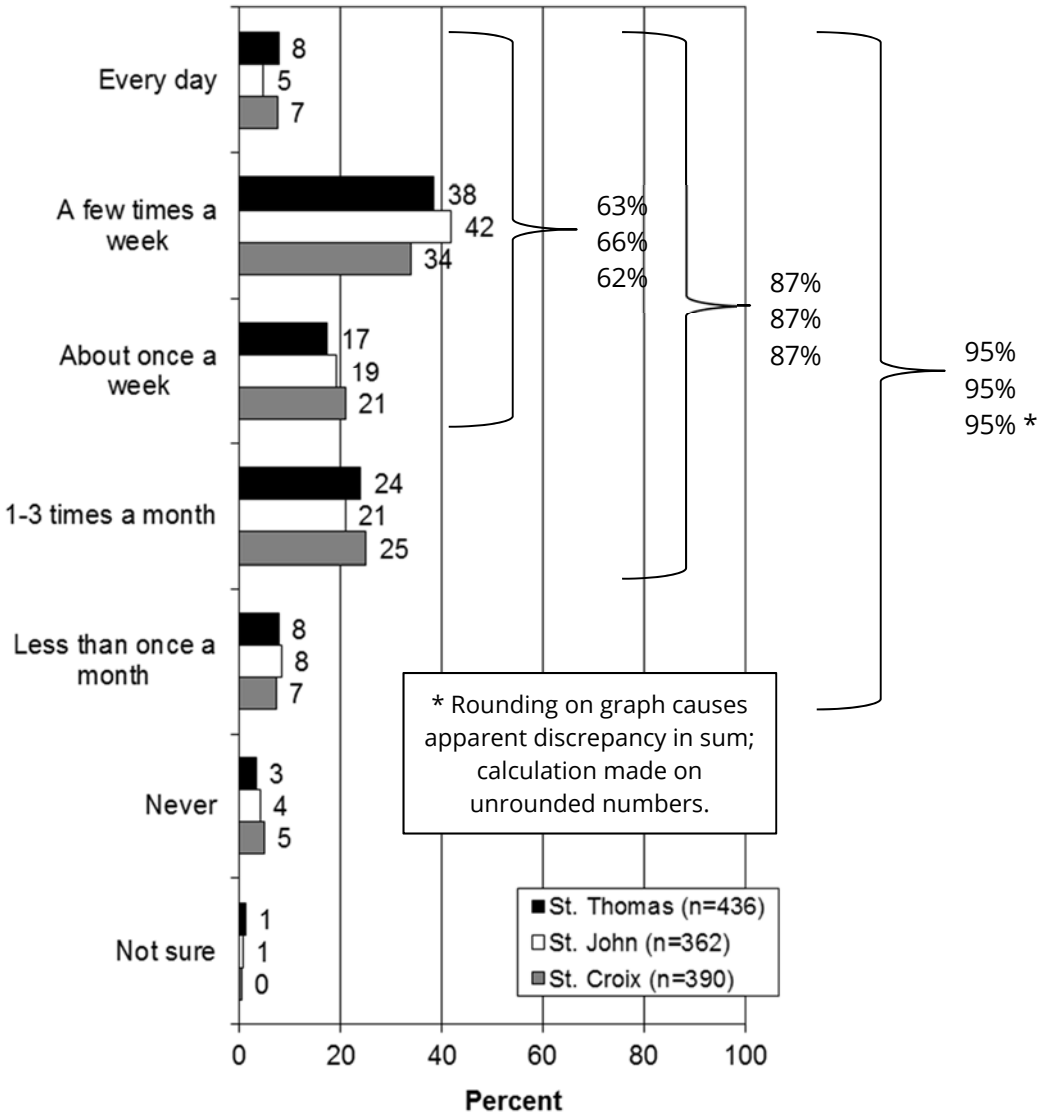


Figure 107: Q34. How often does your family eat fish or seafood? Family is defined as all persons living under the same roof.

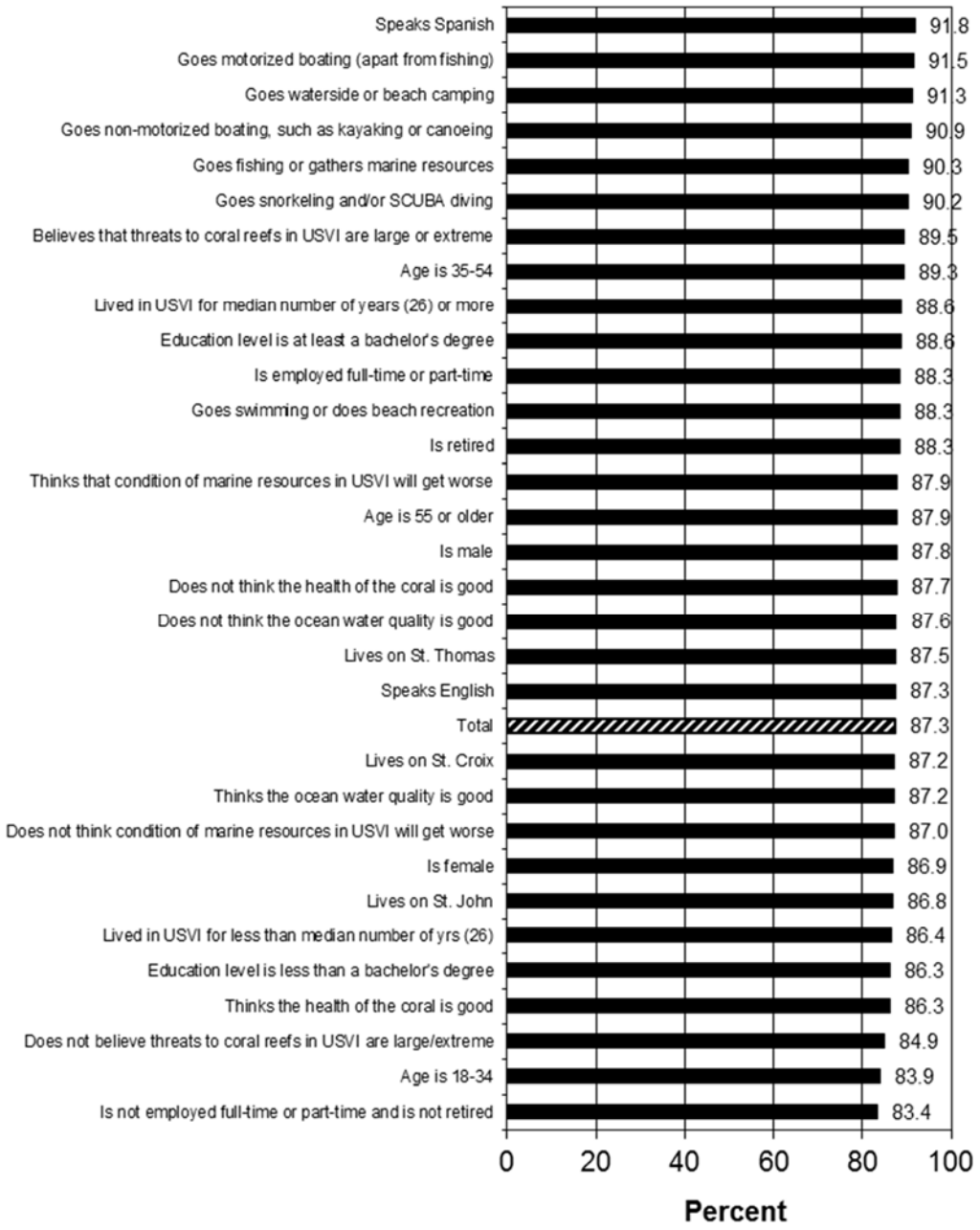


Figure 108: Percent of each of the above groups whose family eats seafood monthly or more often. An explanation of how to interpret omnigraphs is included on pages 12-15.

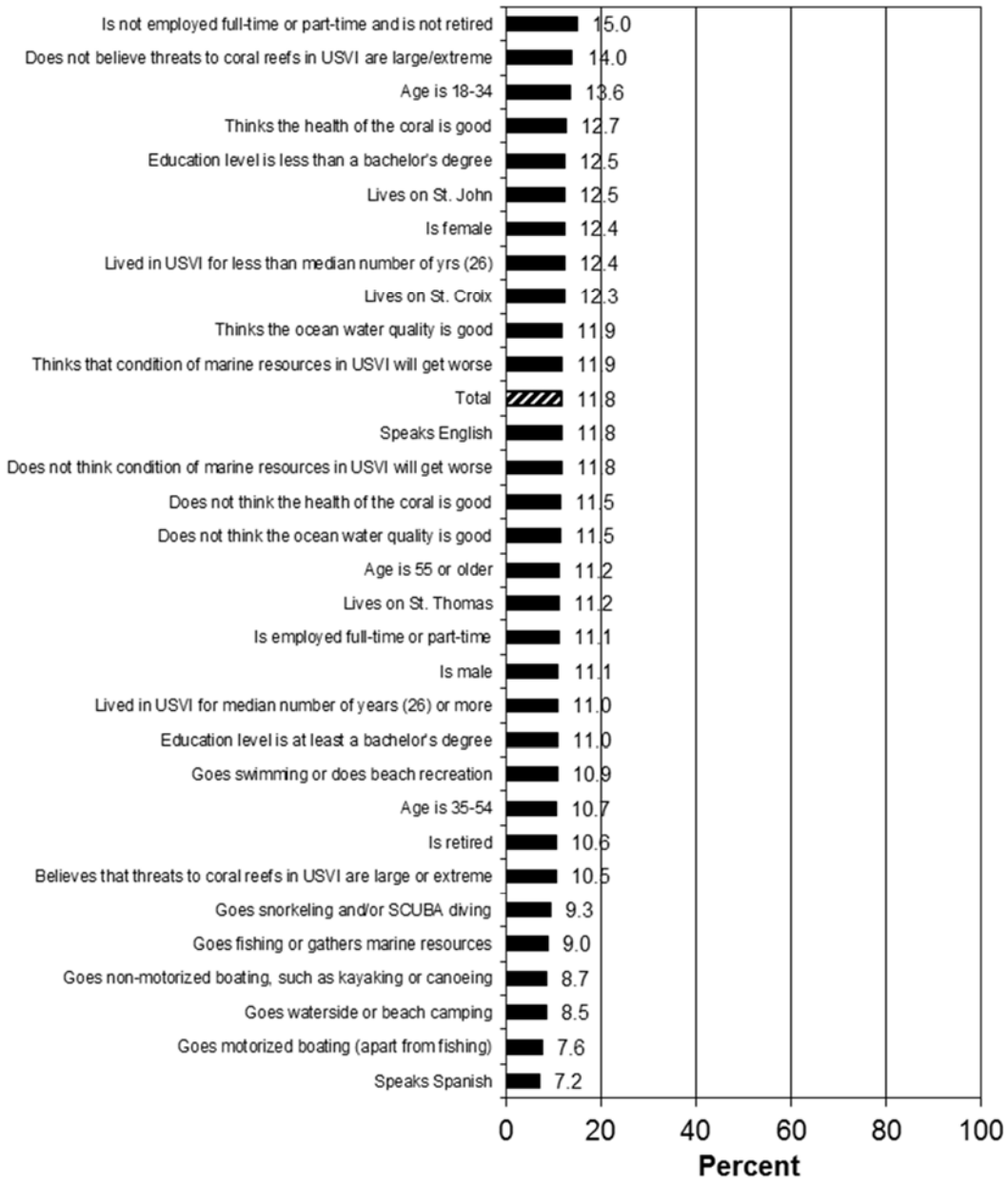


Figure 109: Percent of each of the above groups whose family eats seafood less than once a month or never. An explanation of how to interpret omnigraphs is included on pages 12-15.

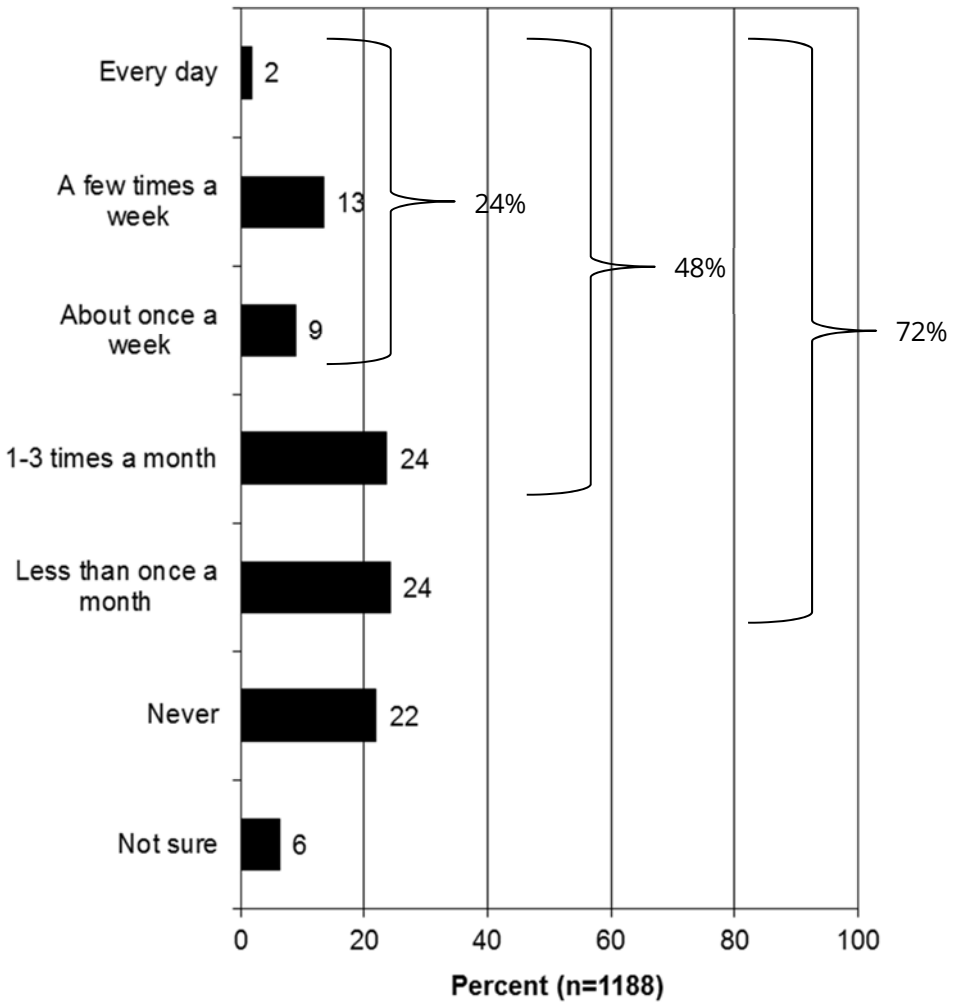


Figure 110: Q39. How often does your family eat fish or seafood that is harvested from coral reefs? For example: snapper, grouper, parrotfish, old wife, trigger fish, lobster, or conch.

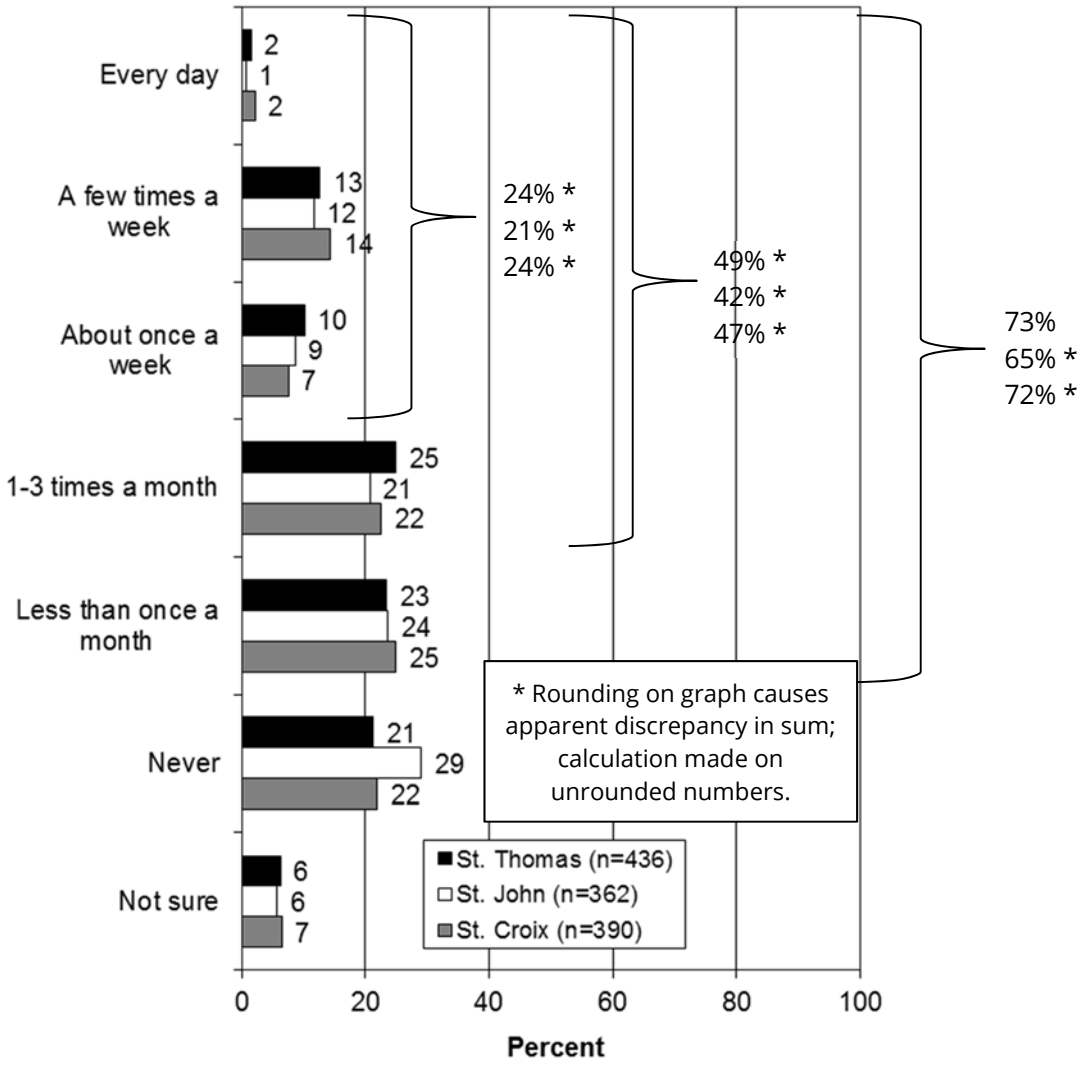


Figure 111: Q39. How often does your family eat fish or seafood that is harvested from coral reefs? For example: snapper, grouper, parrotfish, old wife, trigger fish, lobster, or conch.

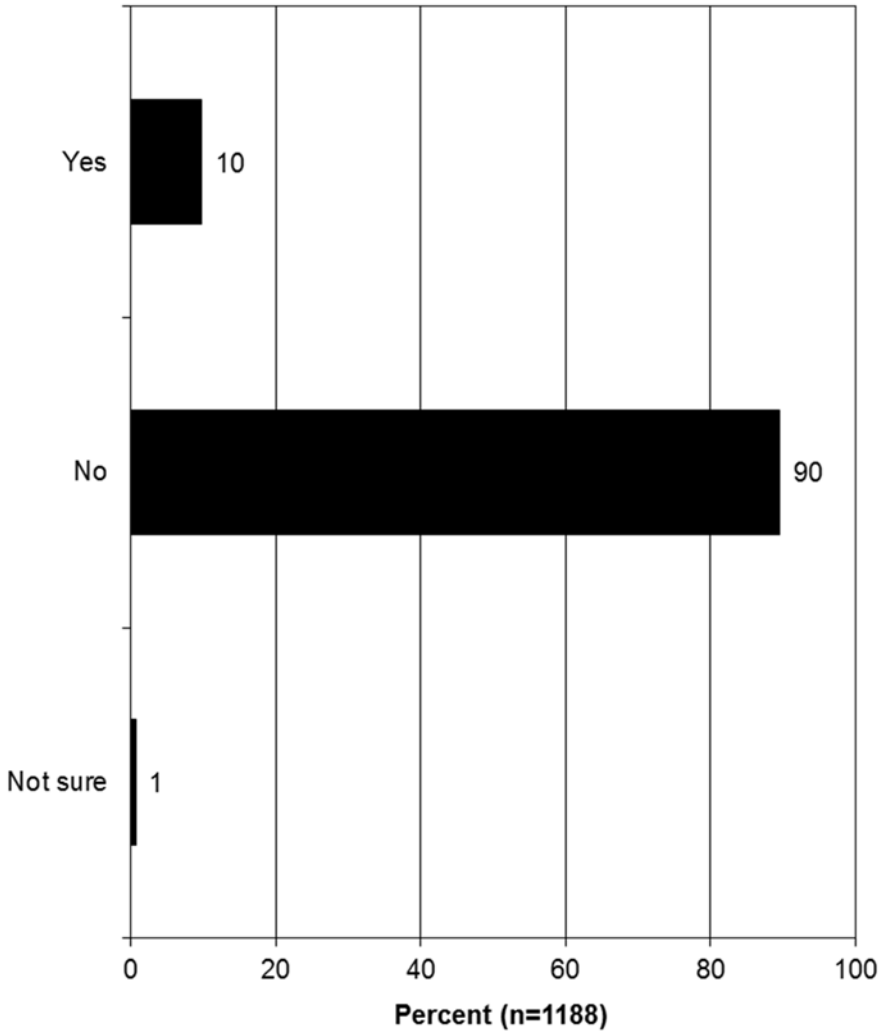


Figure 112: Q40. Do you or your family consume lionfish?

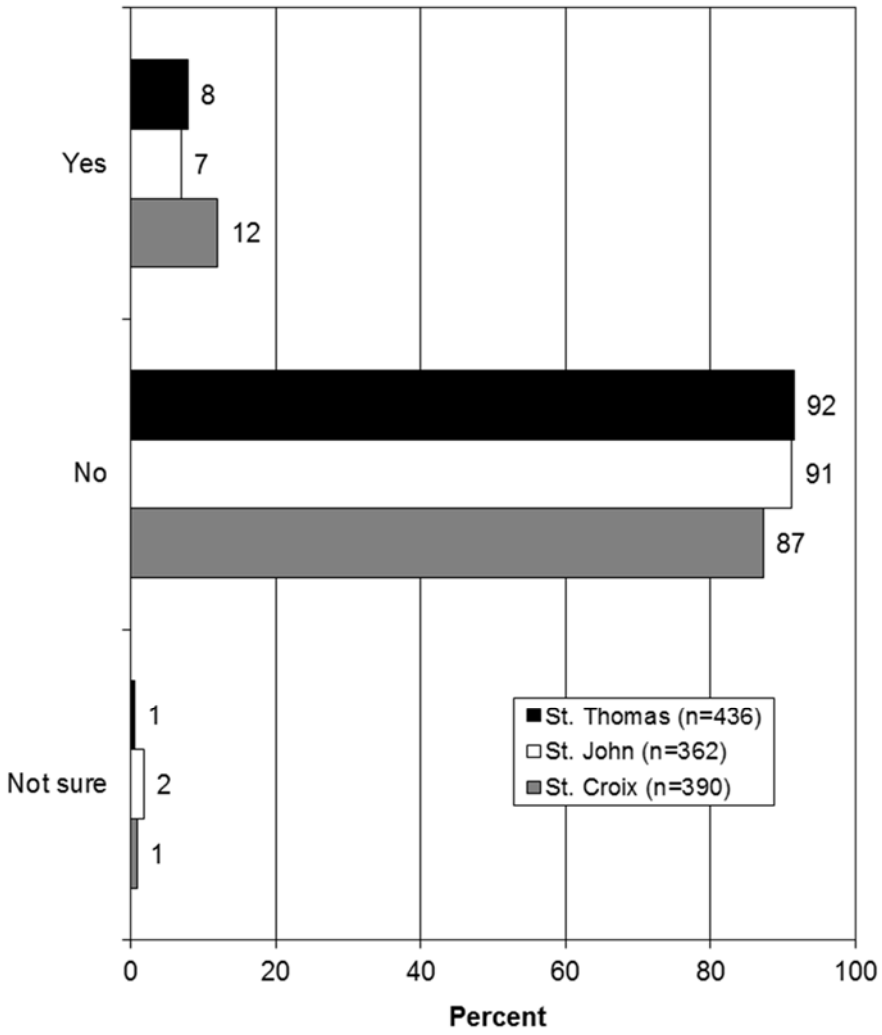


Figure 113: Q40. Do you or your family consume lionfish?

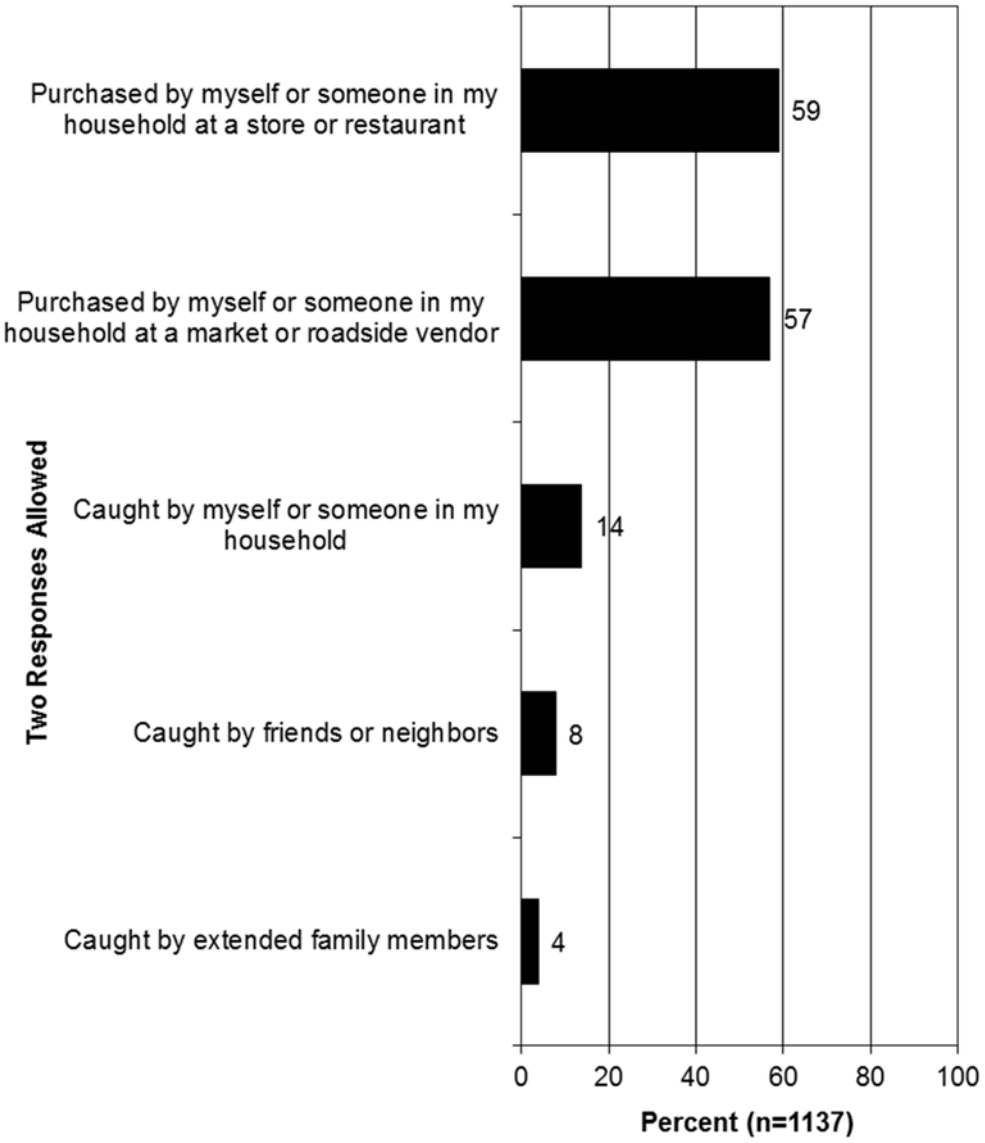


Figure 114: Q35/Q37. What are the two main sources of the fish and seafood that you and your family eat?

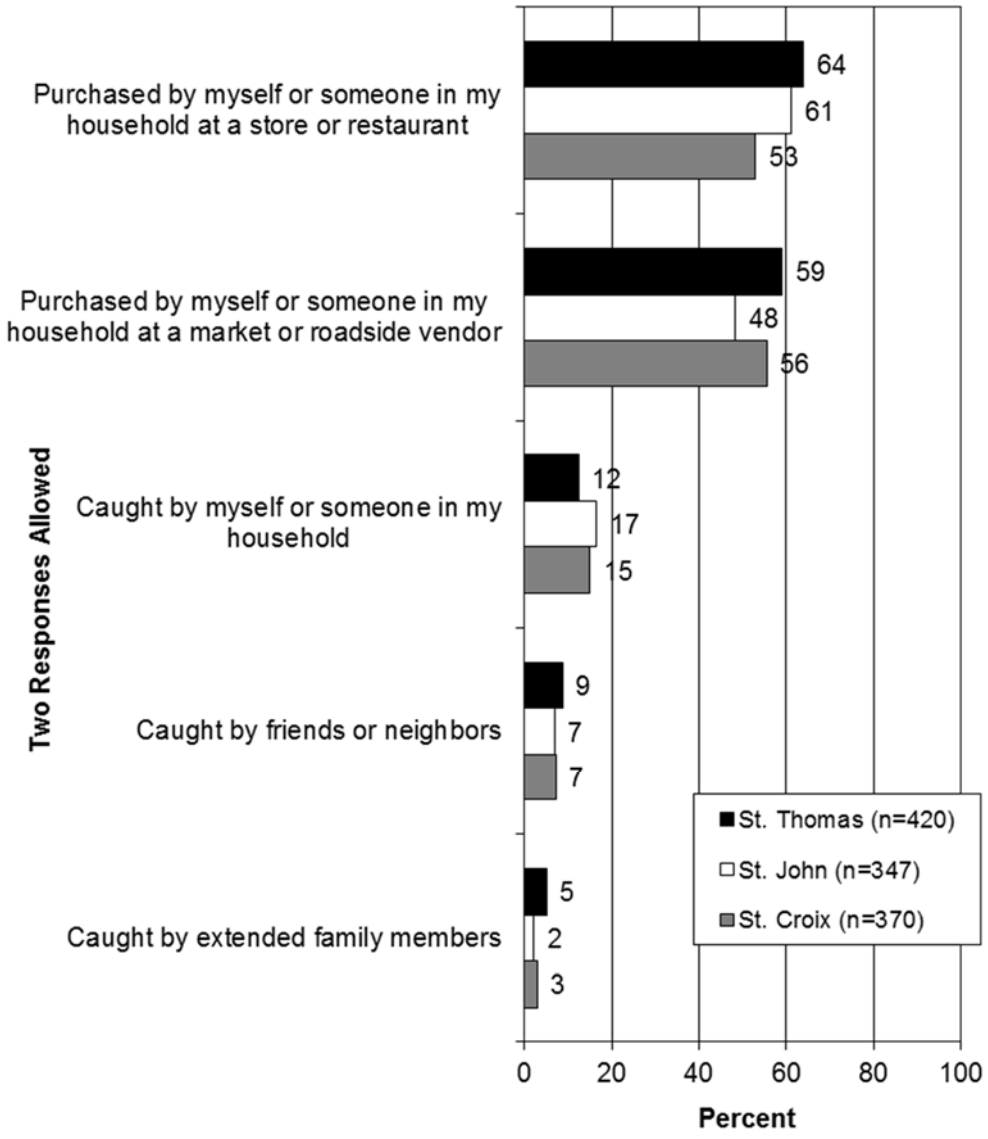


Figure 115: Q35/Q37. What are the two main sources of the fish and seafood that you and your family eat?

Summary of Omnigraph Findings

The data collected during this study of the USVI were crosstabulated to evaluate how various responses correlate to different segments of survey respondents. Different groups within the survey sample were categorized based on their demographic, behavioral, and attitudinal characteristics. By analyzing survey responses among these different groups, several recurring themes and findings emerged from the study, as discussed below.

Those who participate in *any* ocean-related recreational activity are more likely to participate in the other activities

In all, 42% of survey respondents go fishing or gather marine resources, yet these activities are undertaken by over 60% of those who go snorkeling and/or SCUBA diving, waterside or beach camping, or boating (motorized and non-motorized alike). This is noteworthy because participants in these activities are generally like-minded in their attitudes and concerns regarding the coral reefs of the USVI. The one exception is among those who go swimming or do beach activities: because these activities are much more common, the responses from this group do not vary as much from the sample overall. For simplification, participants in these various activities (except swimming/beach activities) will be referred to collectively as "recreationists" in this section.

Recreationists are more likely to be concerned with the health of coral reefs than non-active residents

There were several measures of concern about coral reefs in this study, and recreationists consistently expressed concern about the reef's health. For example, 51% to 61% of recreationists believe that there are large or extreme threats to coral reefs, compared to just 44% of all residents. Recreationists are also closely aligned with those who think that the condition of the marine resources in the USVI will get worse in the next 10 years, those who do *not* think the ocean water quality is good, and those who do *not* think the health of the coral is good.

In addition, recreationists appreciate the value provided by healthy coral reefs: 85% to 89% agree that coral reefs protect the islands from coastal erosion and natural disasters, and 86% to 89% agree that healthy coral reefs provide food for island communities (both statements received 81% in agreement from all respondents).

Increased seafood consumption corresponds to greater concern over the health of coral reefs

A strong majority of island residents (87%) belong to families that eat seafood monthly or more often, and differences can be observed between this group and those whose families eat seafood less frequently or not at all. Those who frequently consume seafood are more likely than their counterparts to think that there are great threats to the coral reefs, that conditions will get worse, that the coral reef is *not* healthy, and that the ocean water quality is *not* good. At a glance, it might seem that people who think the ocean water quality and coral reefs are in good shape would be more inclined to eat seafood, but in fact those who consume seafood apparently have more incentive to be concerned about these issues.

Residents with higher levels of education are more concerned about coral reefs than less educated residents

Residents with a bachelor's degree (with or without a higher degree) were more likely than those without a bachelor's degree to believe that coral reefs protect the USVI from erosion and natural disasters (88% compared to 78%, respectively) and that coral reefs provide food for island communities (85% compared

to 79%). These are not large differences, but substantially more contrast is observed between these groups on the question of whether there are large or extreme threats to the coral reefs: 60% of those with a bachelor's degree believe this, compared to just 37% of those without a bachelor's degree.

Those who think coral reefs are threatened have the most support for regulatory action in other areas of conservation

The survey included questions of support for or opposition to regulatory actions in six other areas of conservation. The group who believes that threats to coral reefs in the USVI are large or extreme had the top level of support for *all regulations or actions*:

- Size limits for harvesting certain fish species: 90% of this group (those thinking that threats are large or extreme) support size limits, compared to 79% of the total.
- A license requirement and fee for land-based recreational fishers: 55% of this group; 49% of the total.
- A small fee to non-residents visiting locally managed MPAs to fund conservation: 73% of this group; 65% of the total.
- Amending building regulations to consider sea level rise and climate impacts: 83% of this group; 74% of the total.
- More restrictions on construction practices to prevent sediment from going into the sea: 92% of this group; 87% of the total.
- Increased enforcement of wastewater and stormwater regulations to preserve water quality: 97% of this group; 91% of the total.

Clearly, those who believe that the coral reefs are threatened are not "single issue" in their environmental concerns.

Residents of St. John participate in activities to protect the environment more often than those from the other islands

Over a third of USVI residents (36%) participate in activities more than once a year to benefit the environment, such as participating in beach clean-ups or volunteering with an environmental group. Crosstabulations of the three islands show that St. John residents take action the most (46% do so), followed by residents of St. Croix (40%) and St. Thomas (32%). Note that recreationists top the list (46% to 57%).

Age and especially gender are inconclusive as factors in predicting residents' attitudes toward coral reefs and conservation issues

For these analyses, residents were divided into three age categories: 18-34, 35-54, and 55 and older. Looking at the six regulatory actions previously discussed, the oldest age group was the least likely to support five of the six regulations (the highest level of support alternated between the middle and youngest age categories). Also, the oldest group was most likely to agree that coral reefs are only important to fishermen, divers, and snorkelers (15% of this group agree, compared to 12% of the 35-54 age group and 8% of the 18-34 age group). On the other hand, the oldest residents are most likely to agree that coral reefs protect the USVI from coastal erosion and natural disasters: 85% of the 55 and older group, 83% of the 35-54 group, and 77% of the 18-34 group agree with this statement. The oldest group was also the most likely to say that their community is involved in protecting coral reefs. Although differences are observed between the age categories, no single group consistently comes down on the side of concern about coral reefs and conservation.

Gender was even more inconclusive as a demographic factor regarding these issues. Males are more active than females in ocean-related recreation, particularly fishing and boating. Recall that recreationists express more concern about coral reefs than non-active residents. Yet more females (47%) than males (40%) think coral reefs face large or extreme threats; residents with this opinion regarding threats being large or extreme are consistently the most supportive of regulatory actions to protect the environment. Just looking at gender, the percentages of males and females giving the same response are often close together (and hence close to the total, which would be between them).

Demographic Data

- The demographic data are primarily gathered for crosstabulations and analyses. Nonetheless, the data are shown in this section. Data were gathered on:
  - Gender.
  - Age.
  - Years lived in the Virgin Islands.
  - Ethnicity.
  - Language(s) spoken.
  - Education.
  - Occupation.
  - Income.
  - Location of residence.
    - The graphs of estate lived in on each island are to one decimal place. Note that the survey is not statistically accurate to that level, but these graphs are at that level to show the variation and so that the lower percentages do not round to 0.

Figure 116: Q114. Are you male or female?

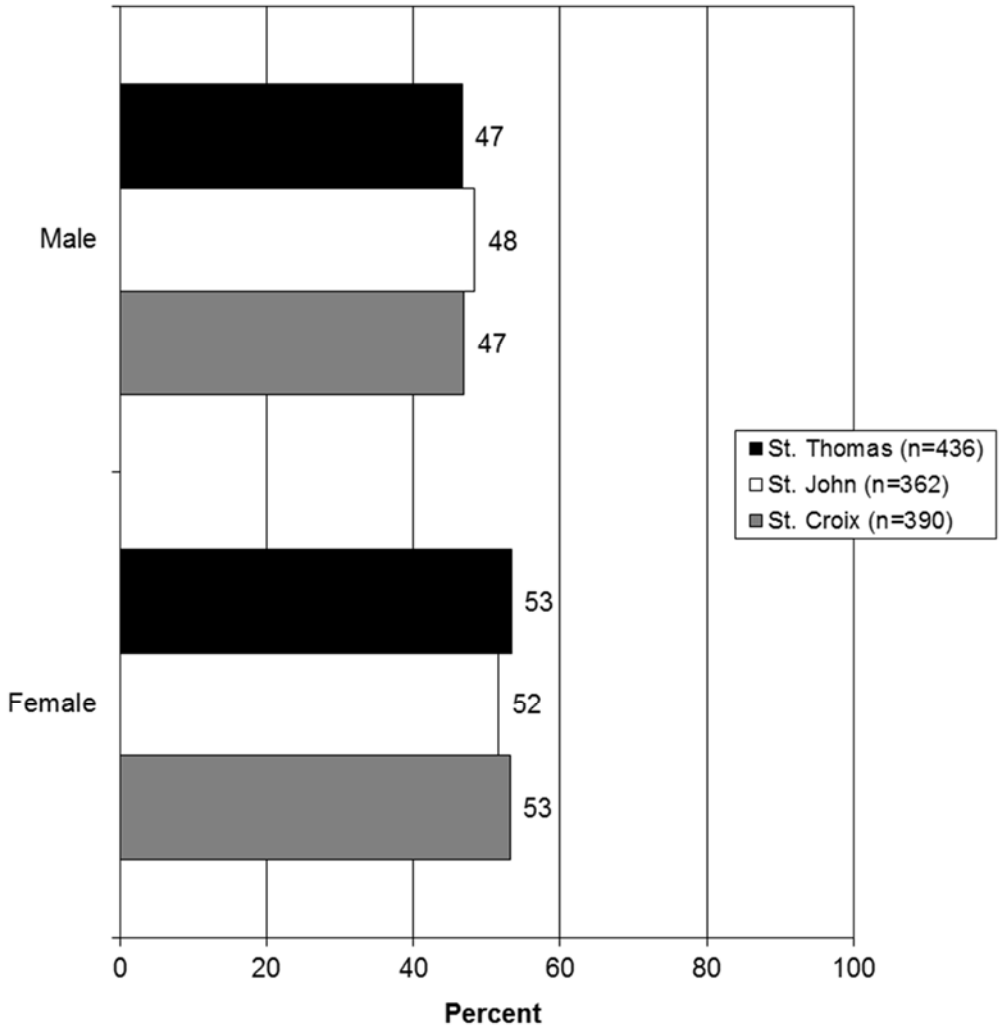


Figure 117: Q114. Are you male or female?

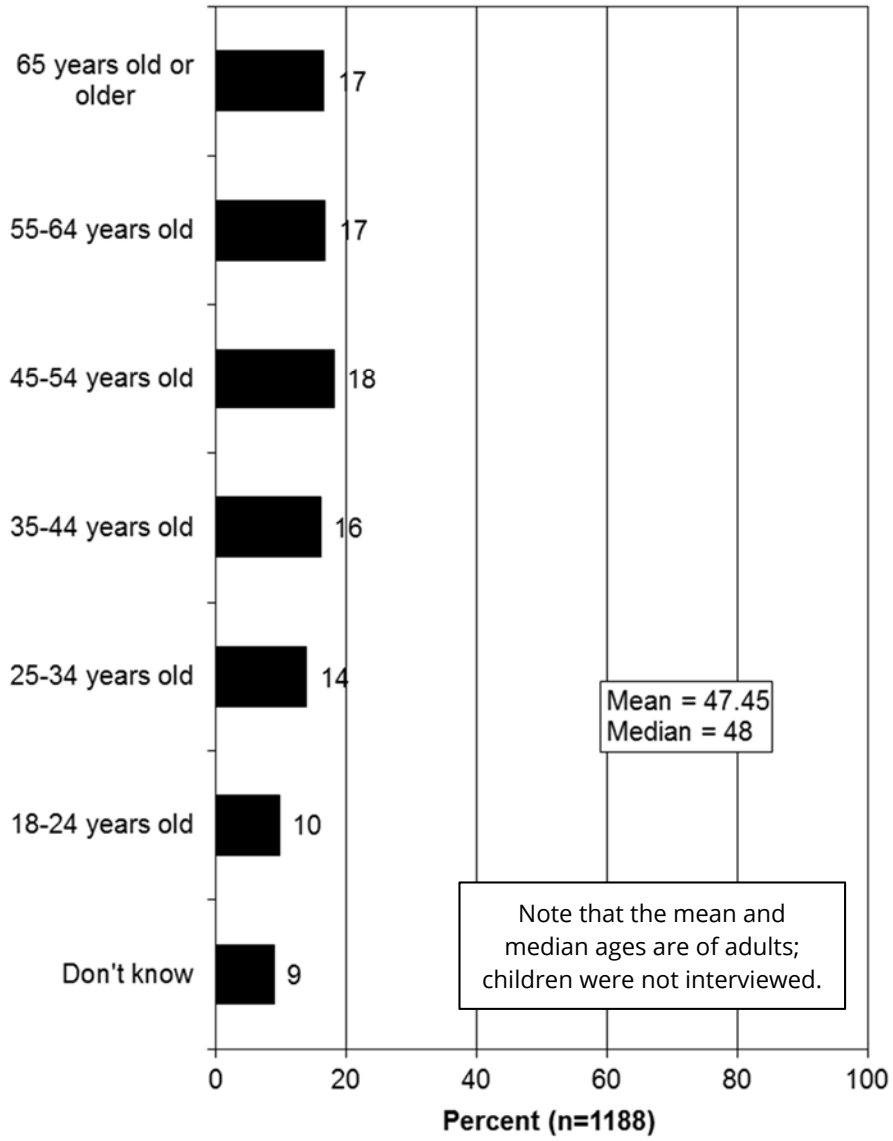


Figure 118: Q115. Respondent's age

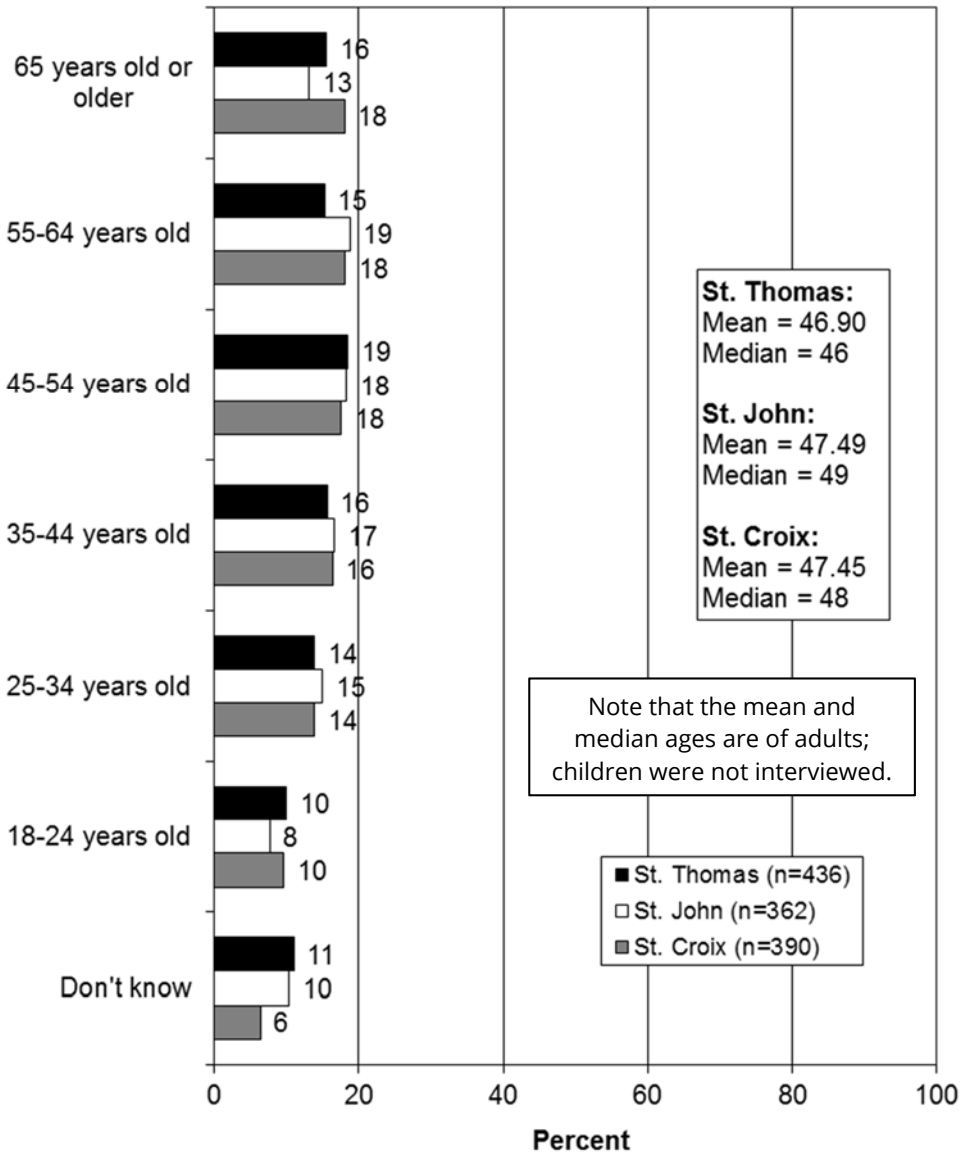


Figure 119: Q115. Respondent's age

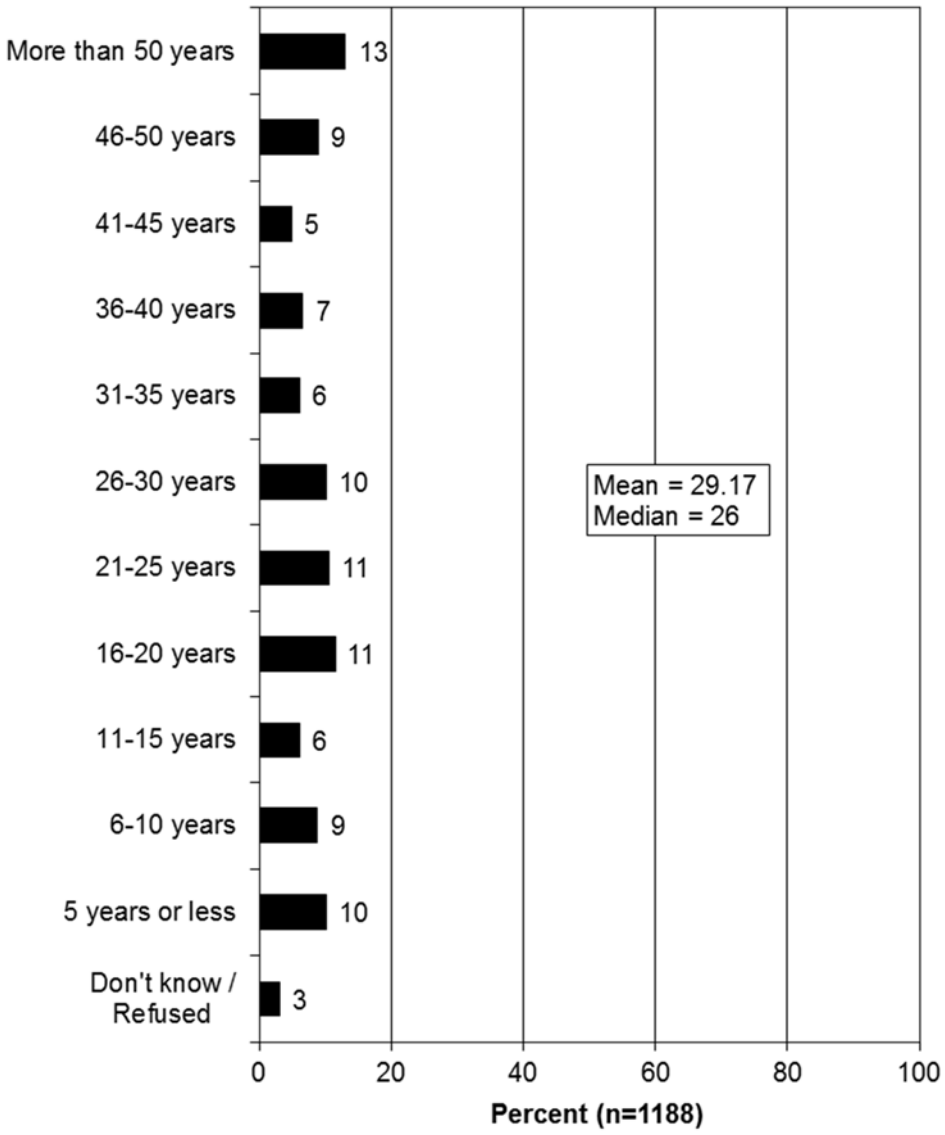


Figure 120: Q116. How many years have you lived in the U.S. Virgin Islands?

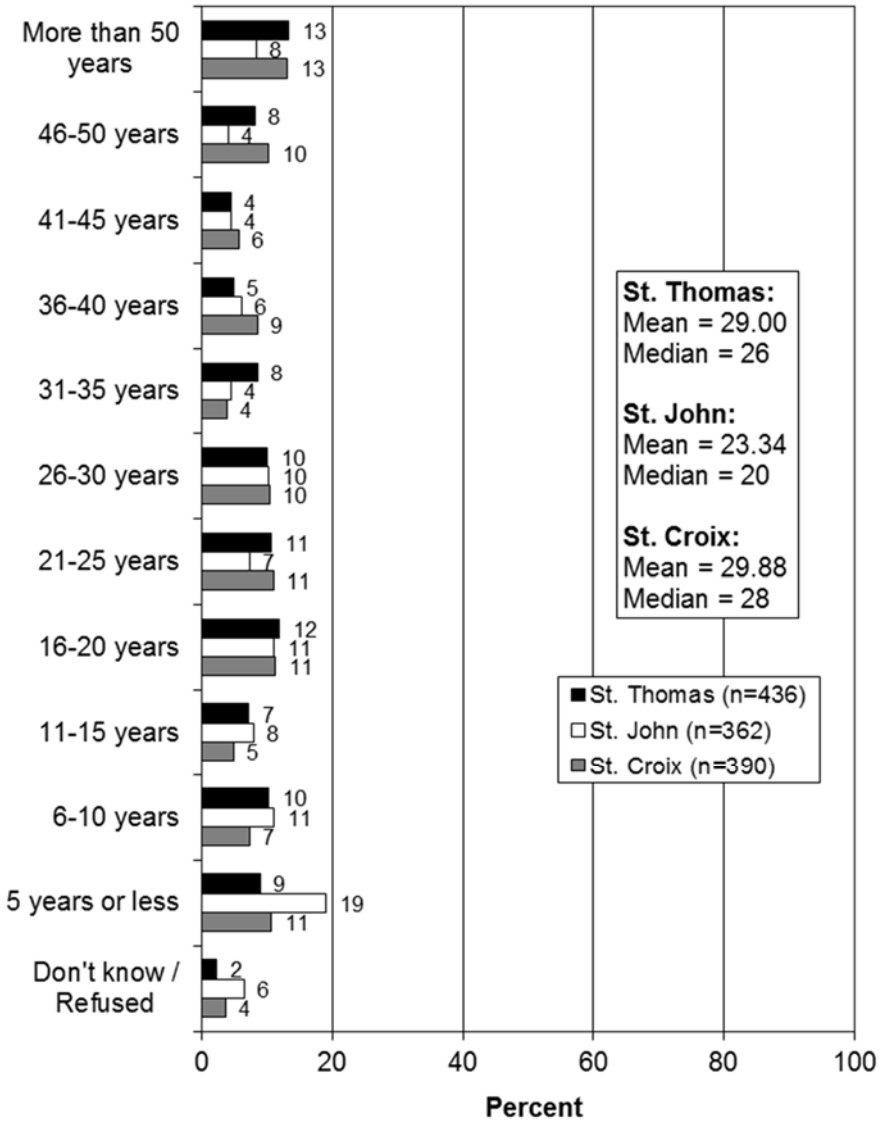


Figure 121: Q116. How many years have you lived in the U.S. Virgin Islands?

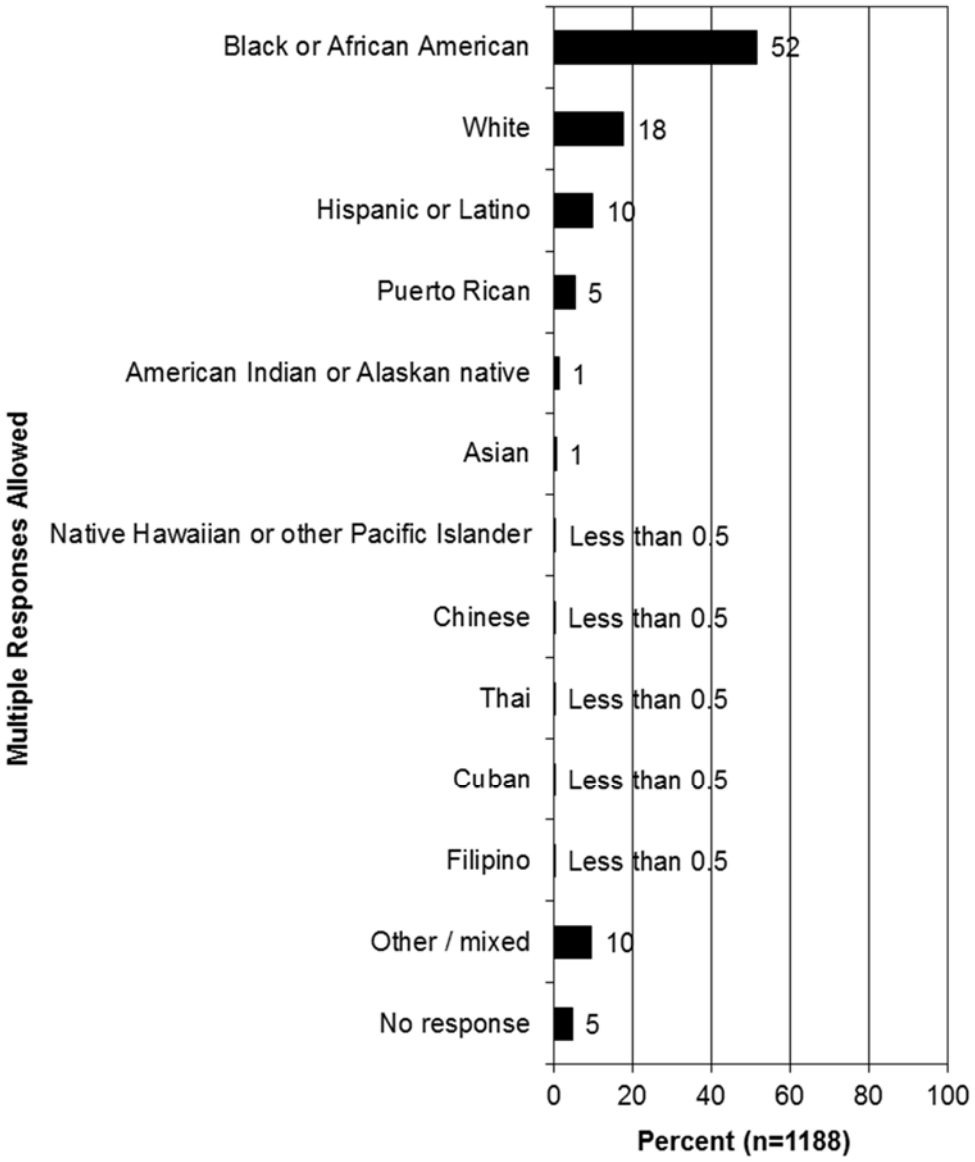


Figure 122: Q130. What race and/or ethnicity do you consider yourself?

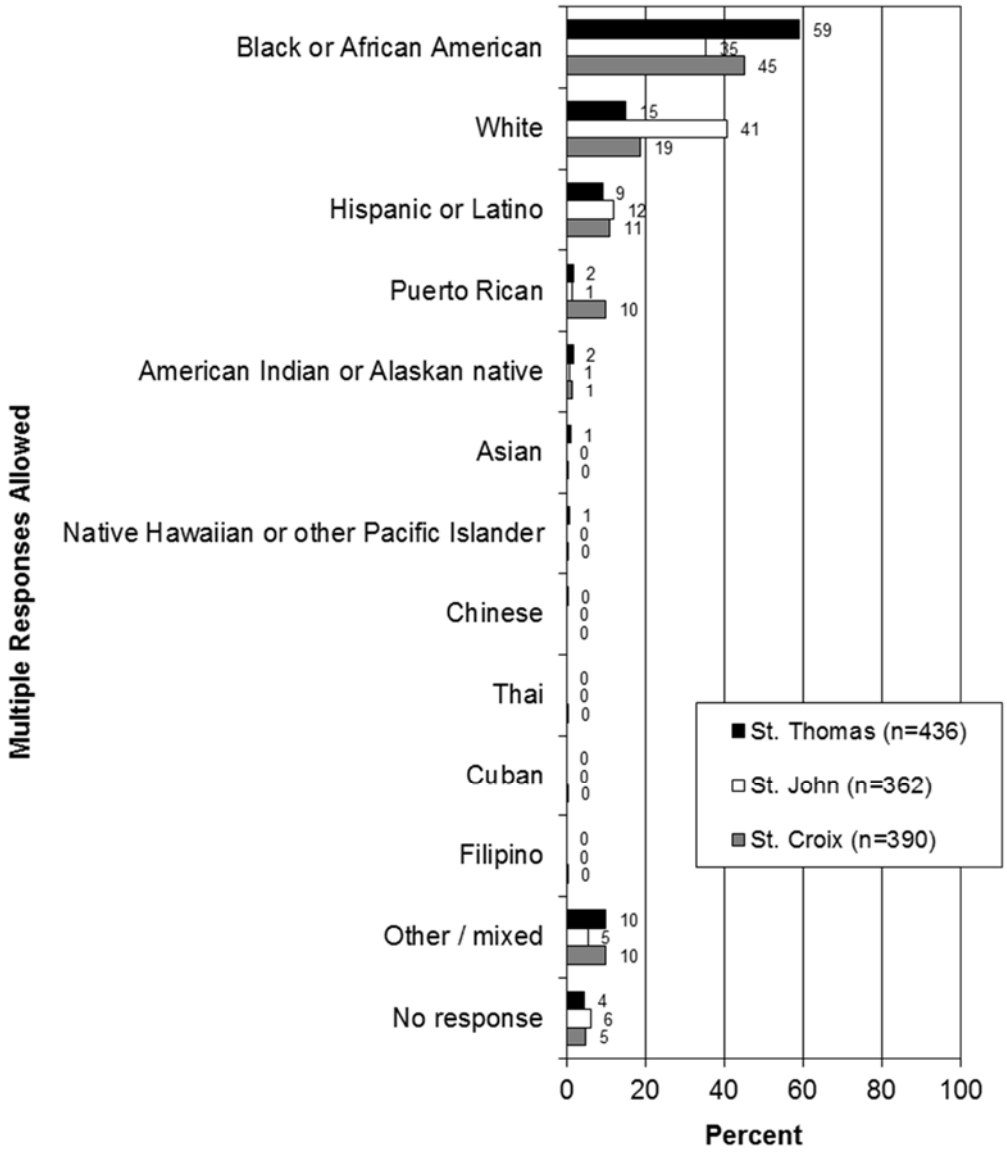


Figure 123: Q130. What race and/or ethnicity do you consider yourself?

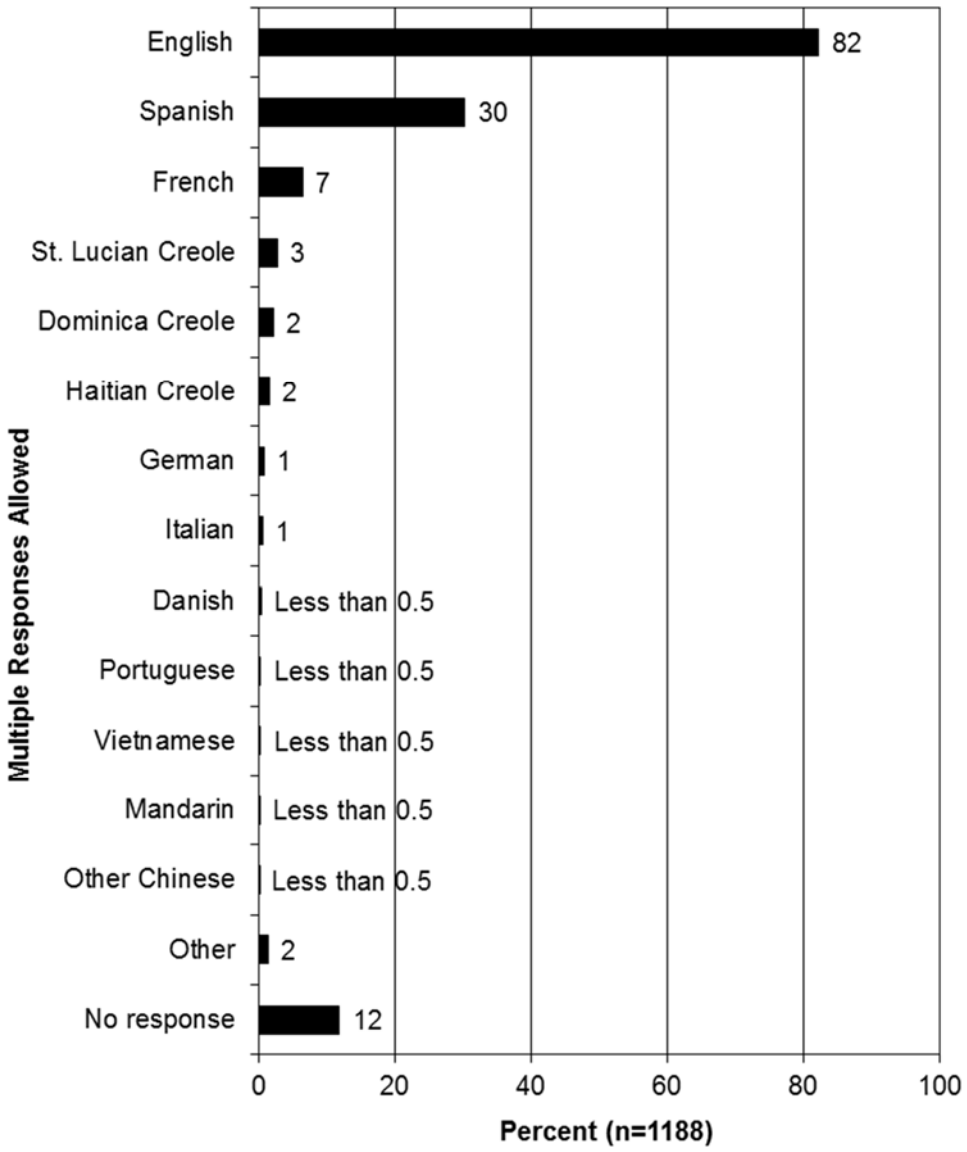


Figure 124: Q126. Including your primary language, please name each language you speak

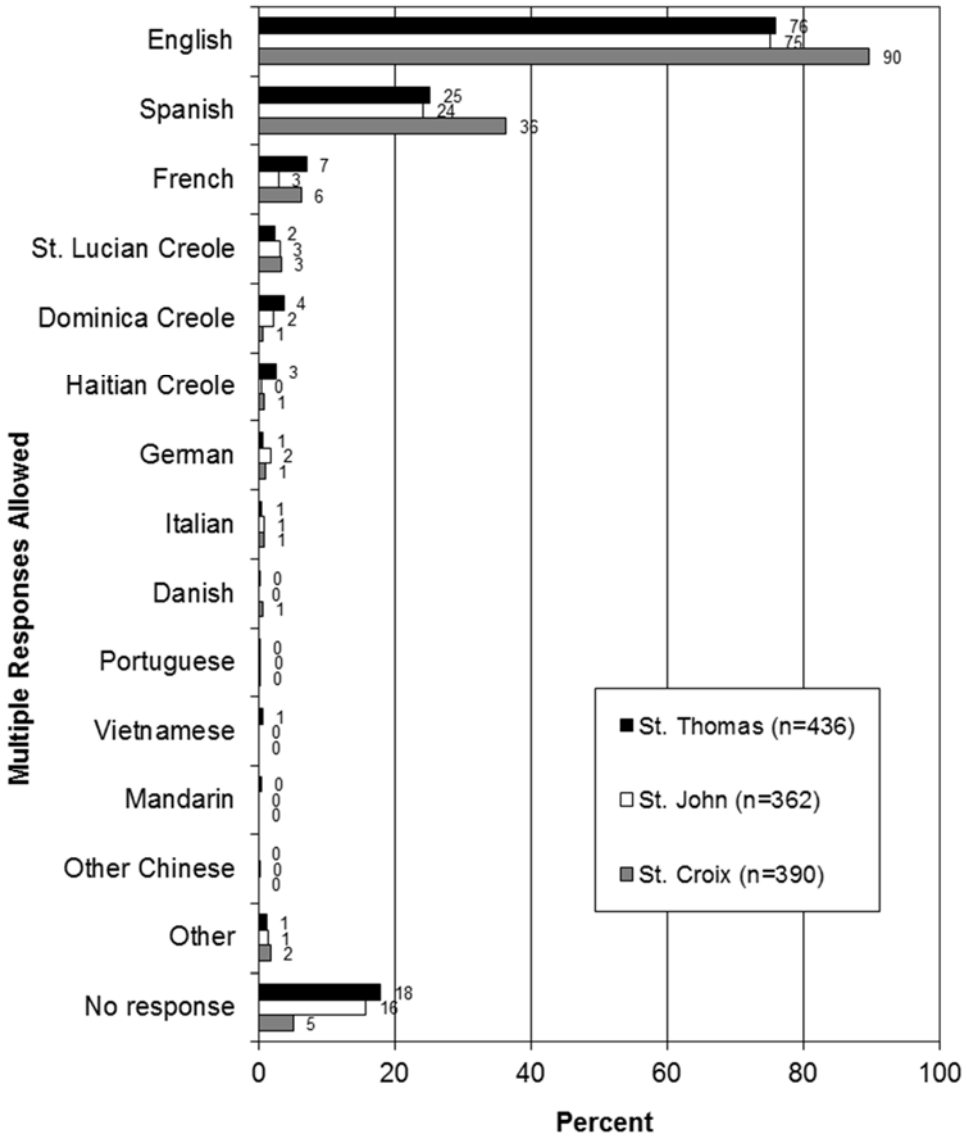


Figure 125: Q126. Including your primary language, please name each language you speak

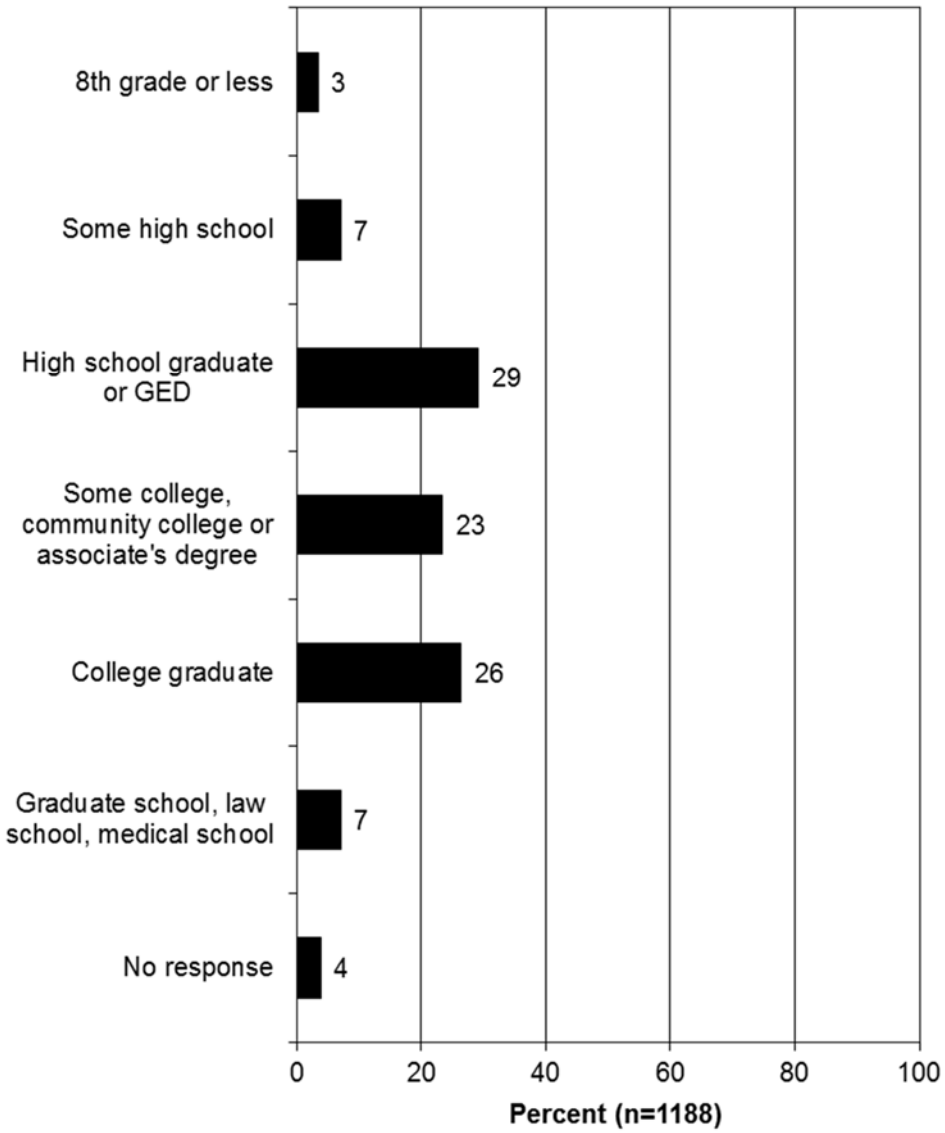


Figure 126: Q131. What is the highest level of education you have completed?

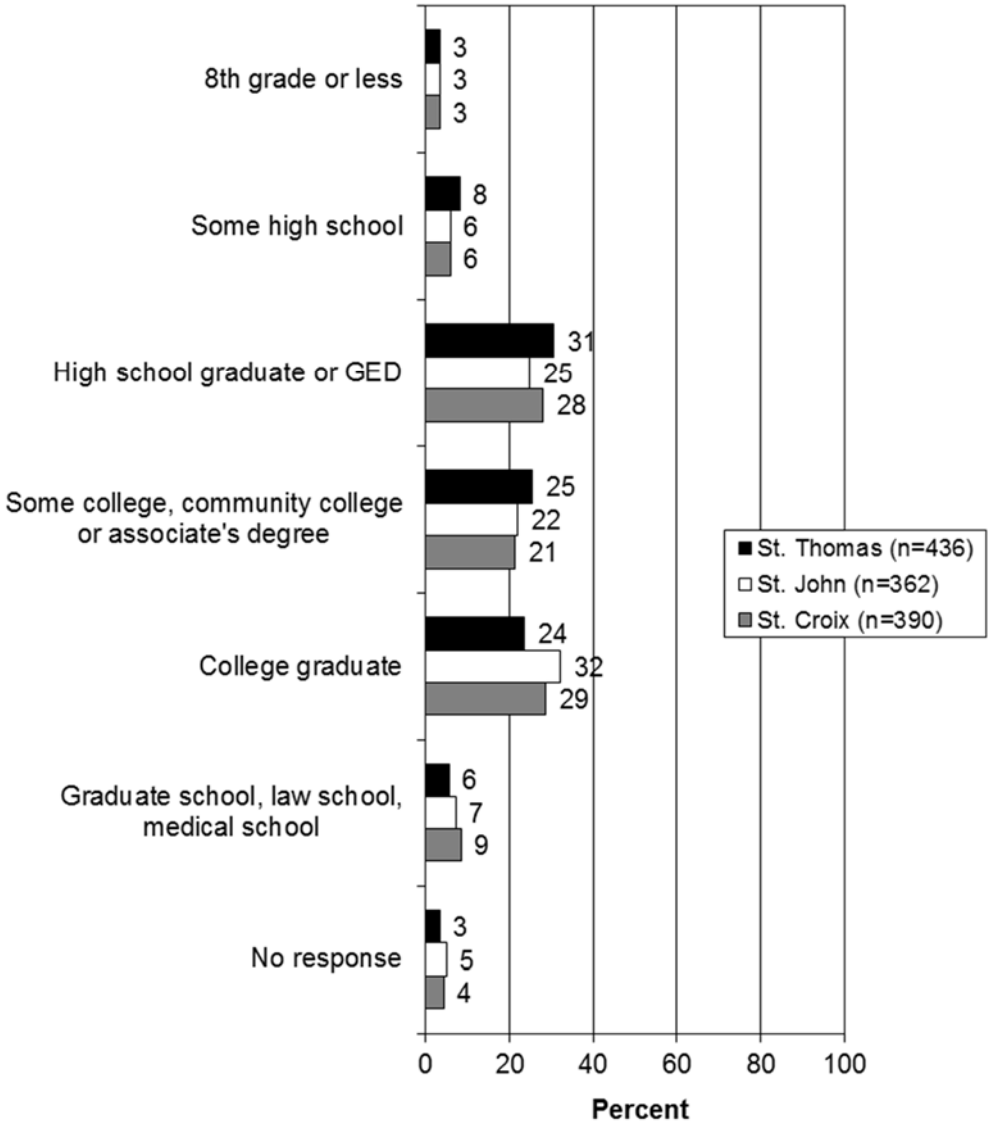


Figure 127: Q131. What is the highest level of education you have completed?

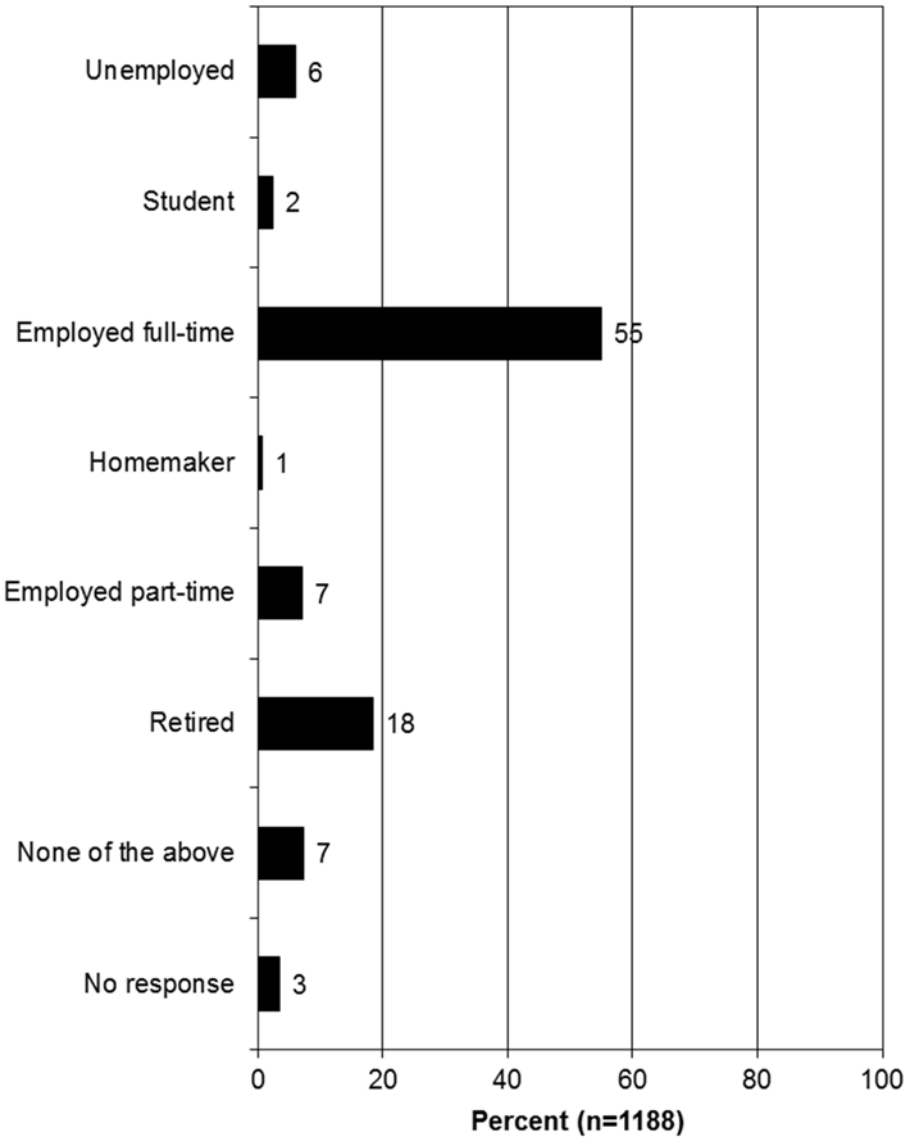


Figure 128: Q132. What is your current employment status?

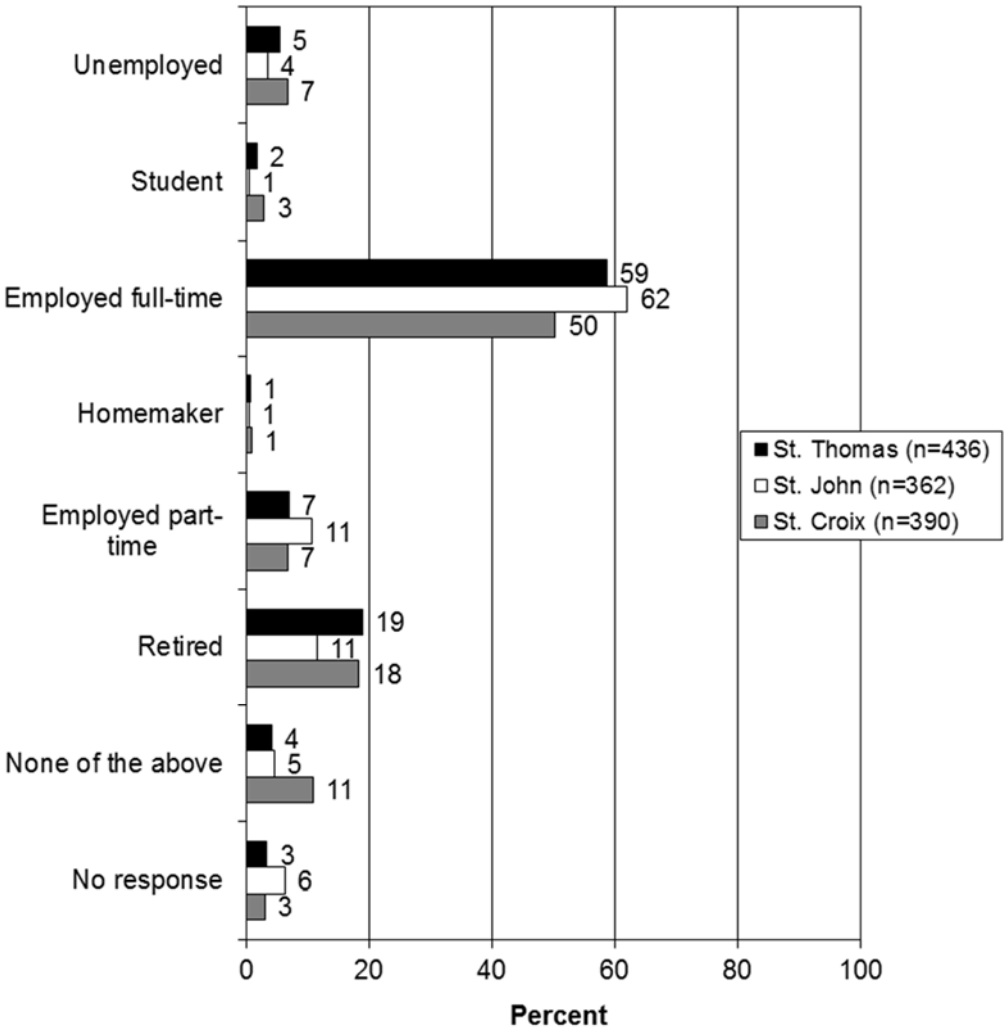


Figure 129: Q132. What is your current employment status?

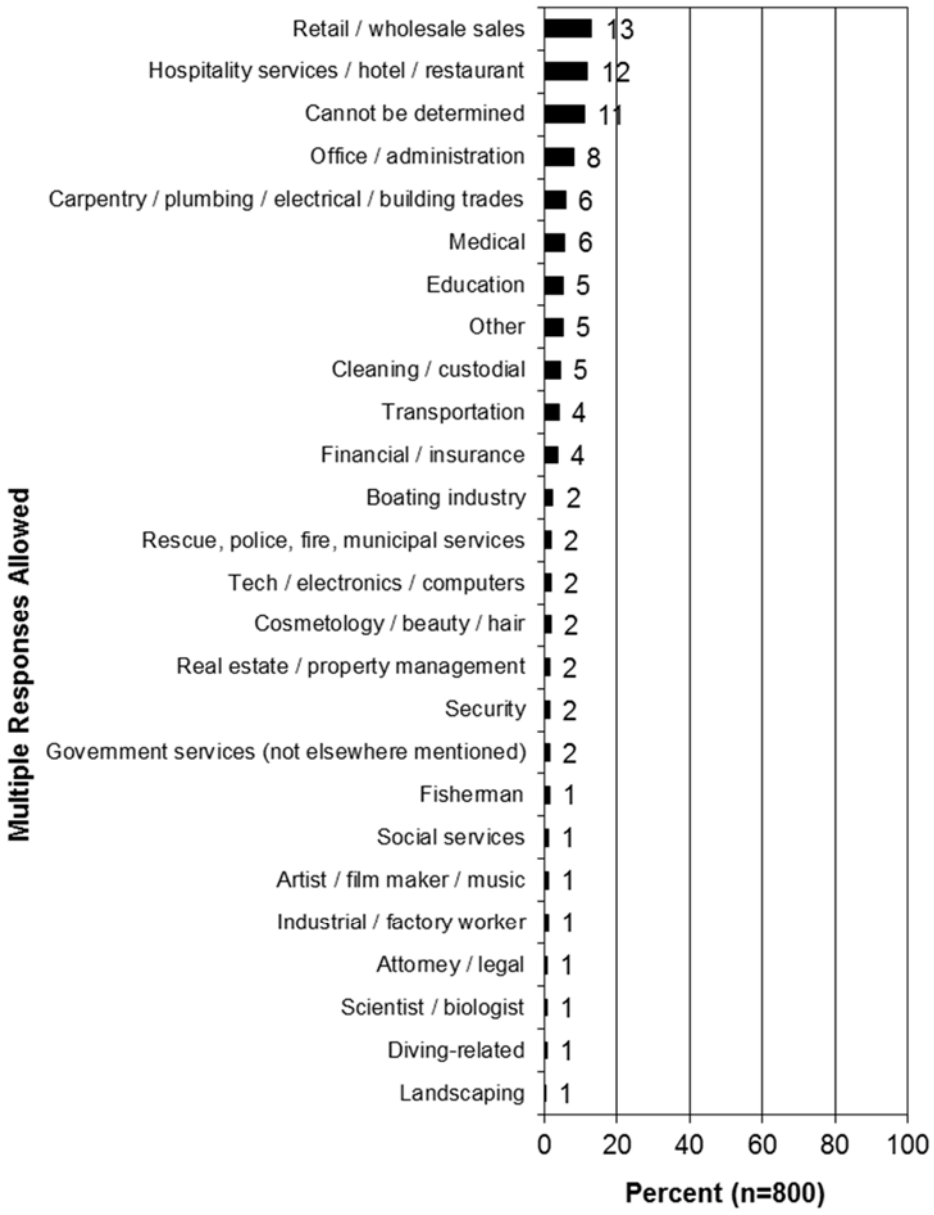


Figure 130: Q134. What is your occupation?

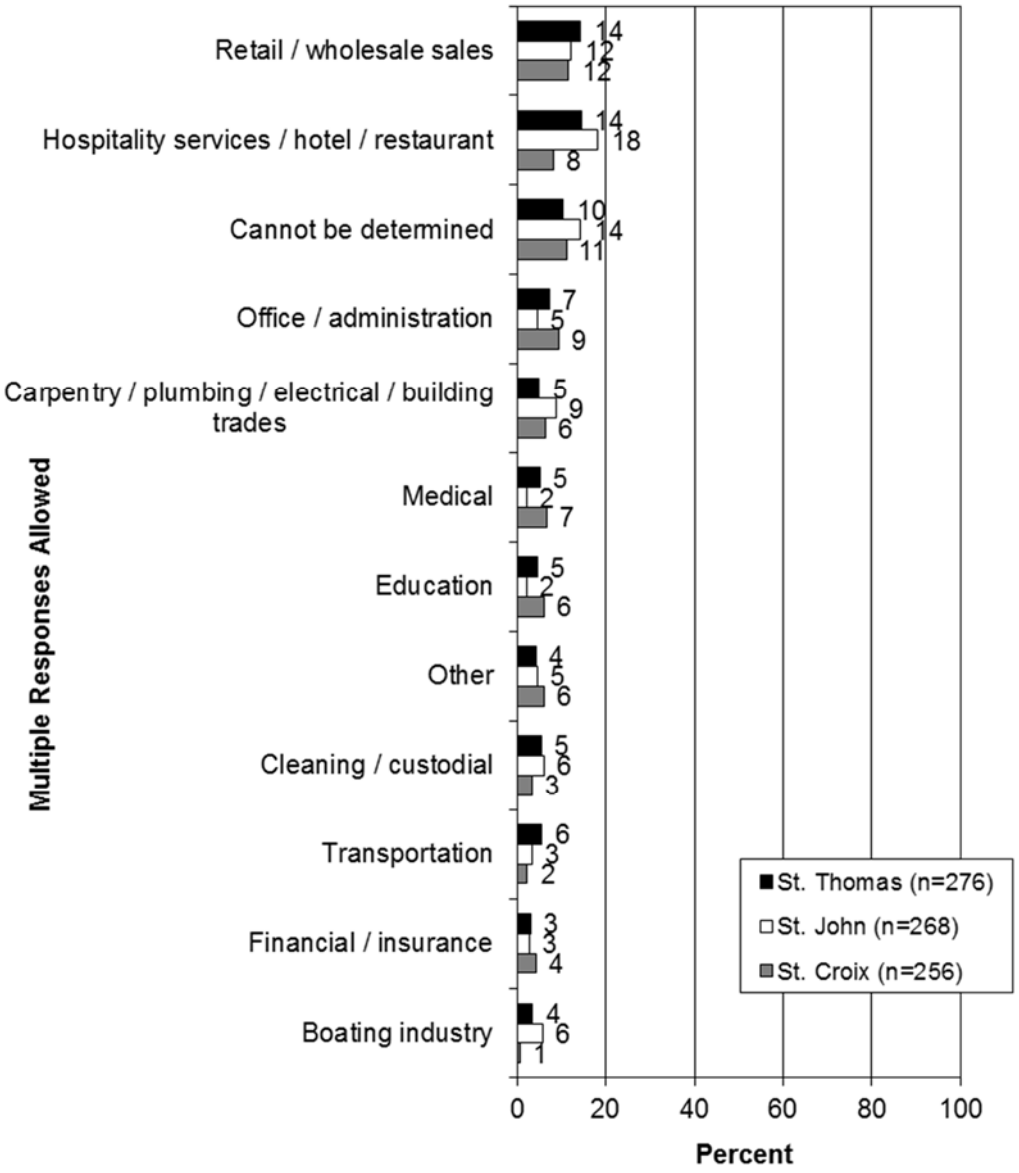


Figure 131: Q134. What is your occupation? (Shows only the top occupations.)

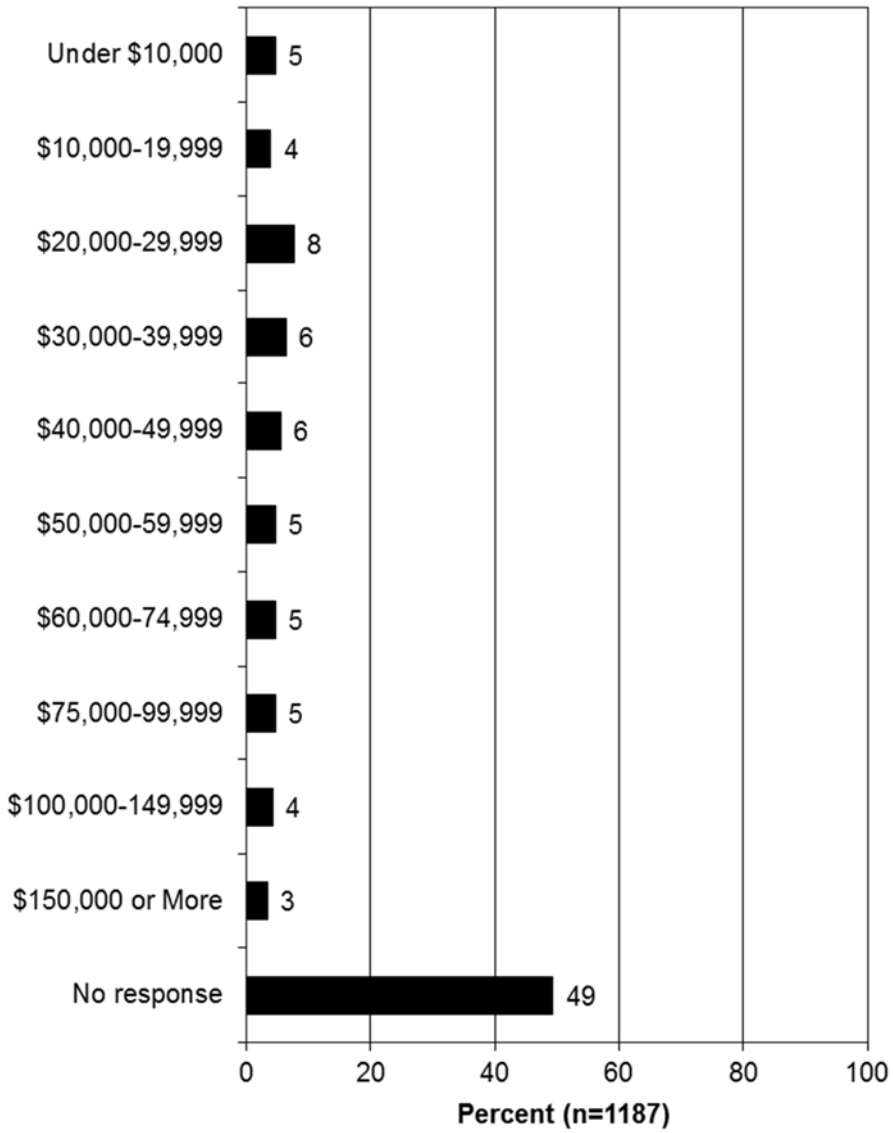


Figure 132: Q135. May I ask, what is your annual household income?

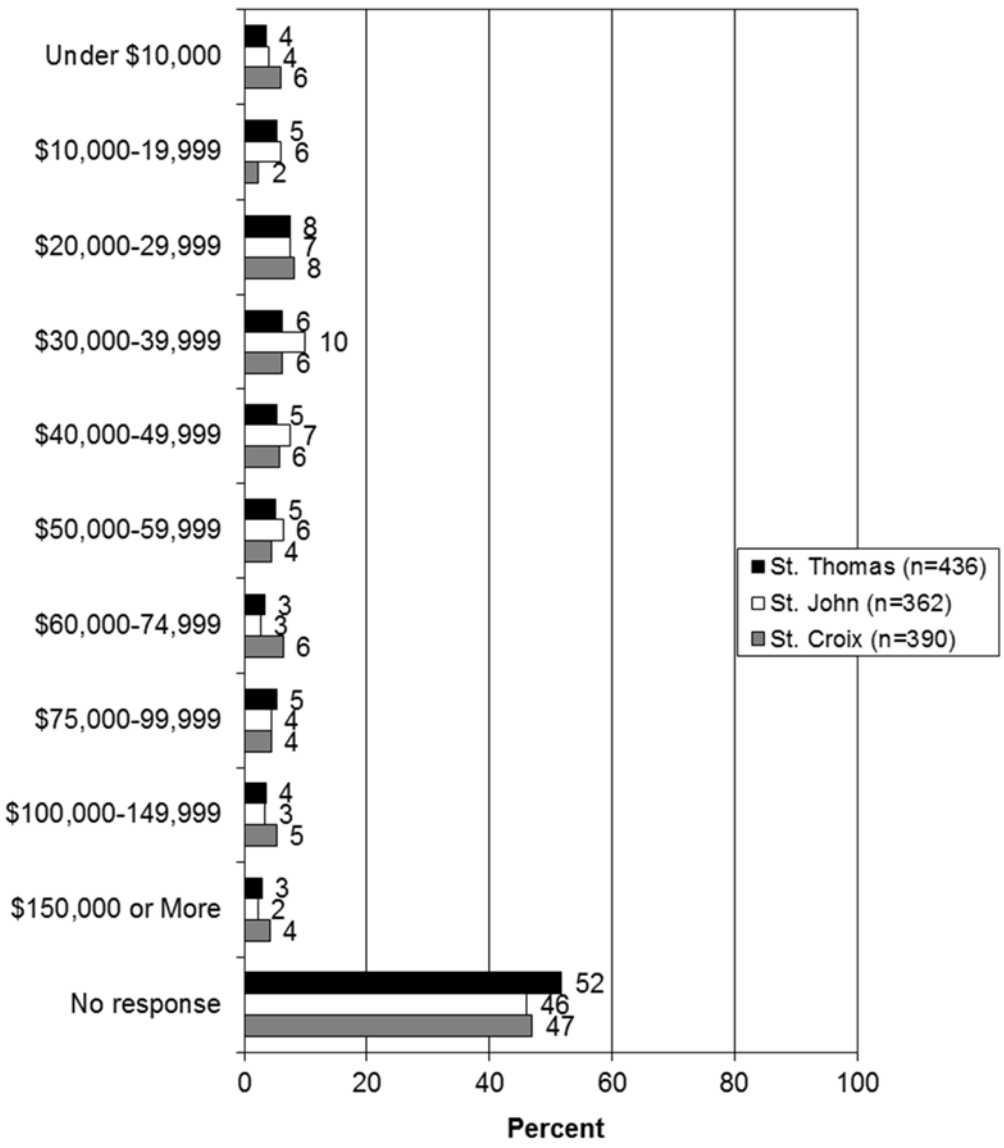


Figure 133: Q135. May I ask, what is your annual household income?

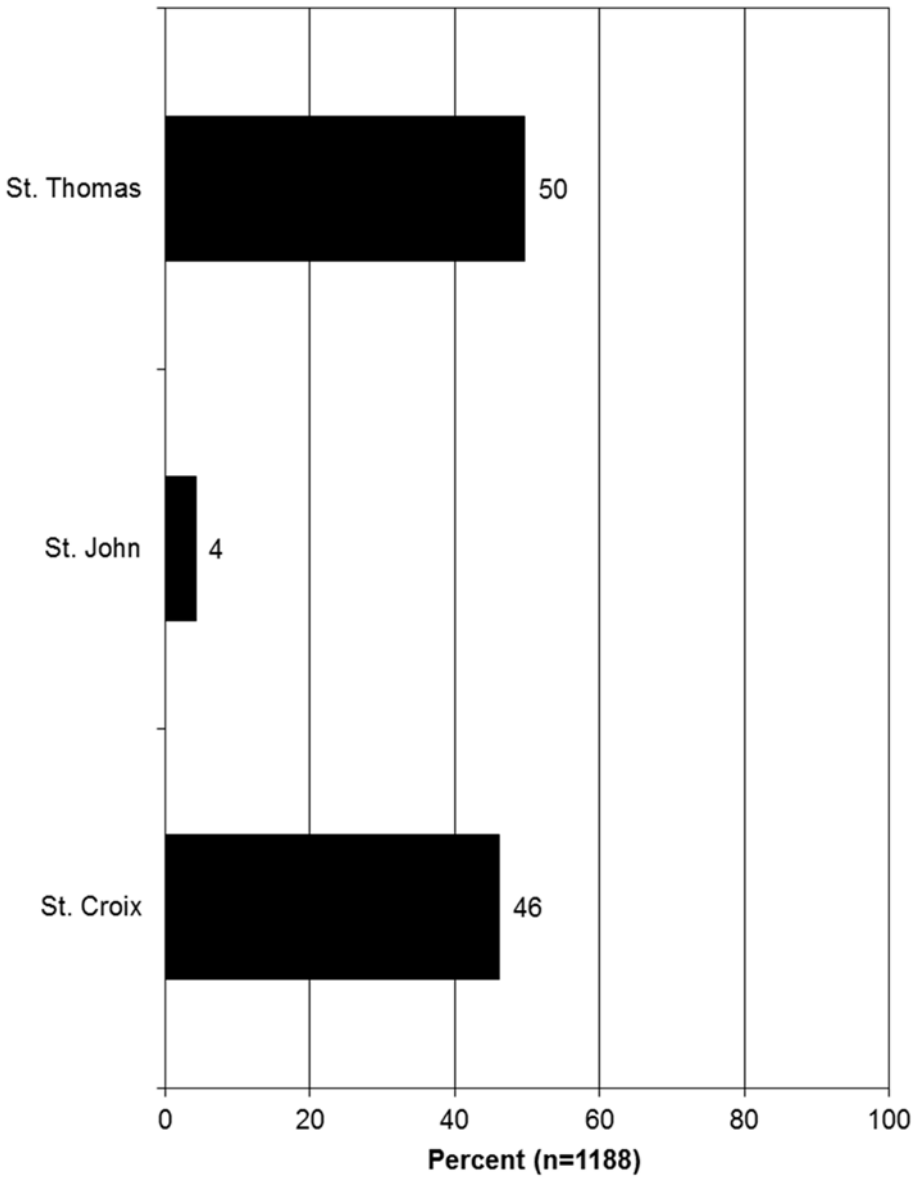


Figure 134: Island of residence

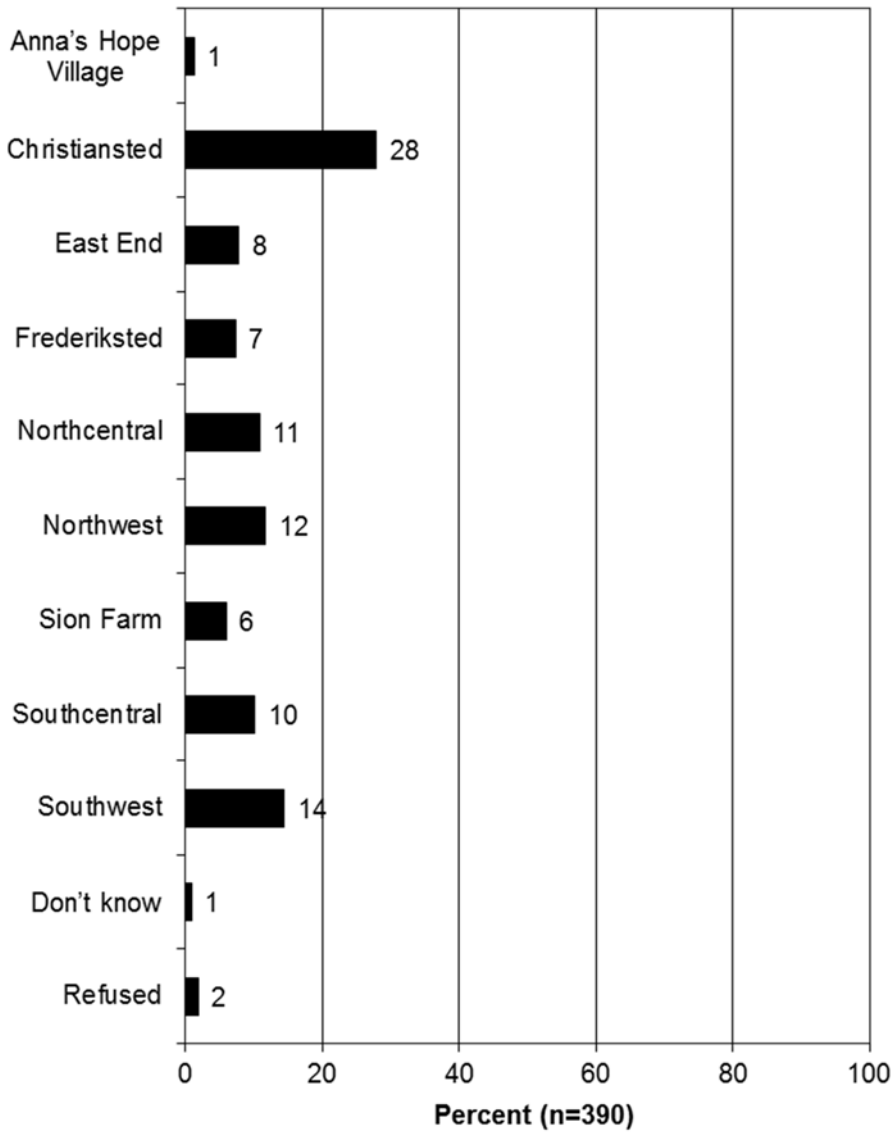


Figure 135: Q117. Which part of the island do you live in? (Asked of those who live on St. Croix.)

Figure 136: Q120. Which estate do you live in? (Asked of those who live on St. Croix.)

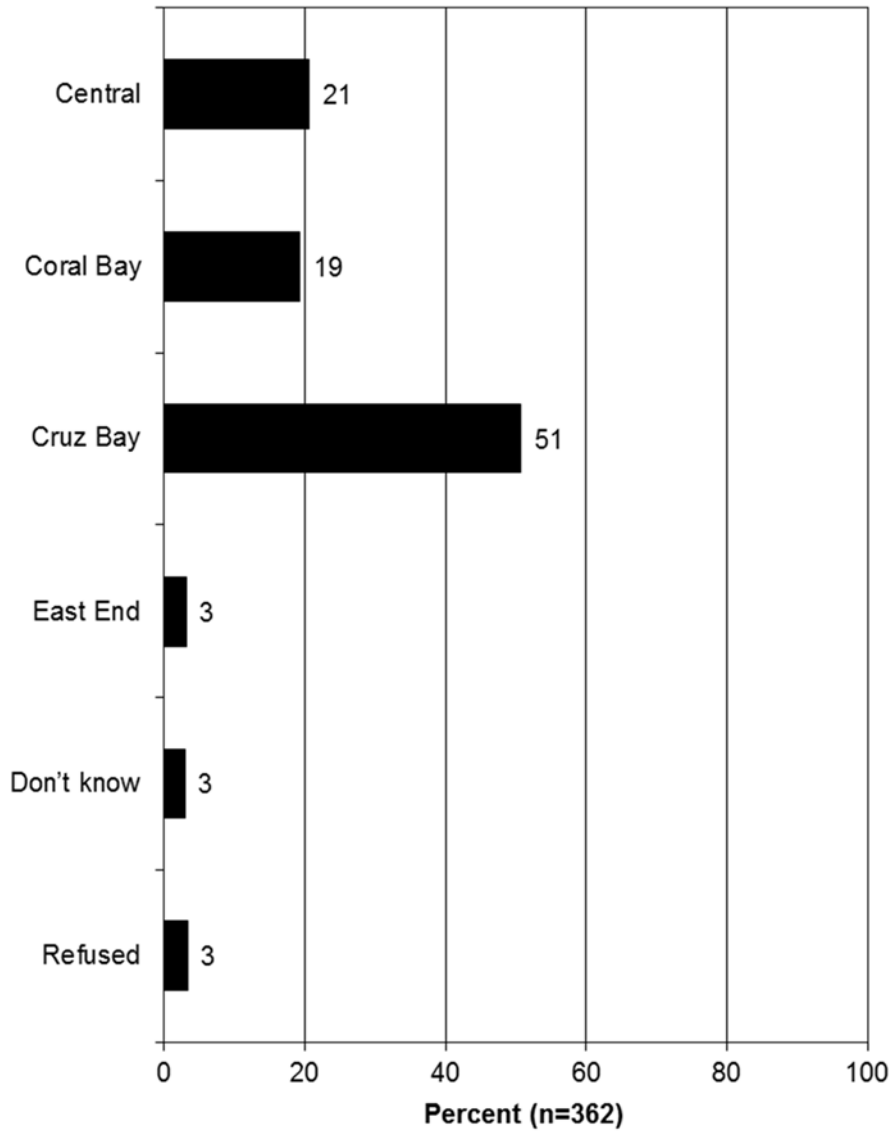


Figure 137: Q118. Which part of the island do you live in? (Asked of those who live on St. John.)

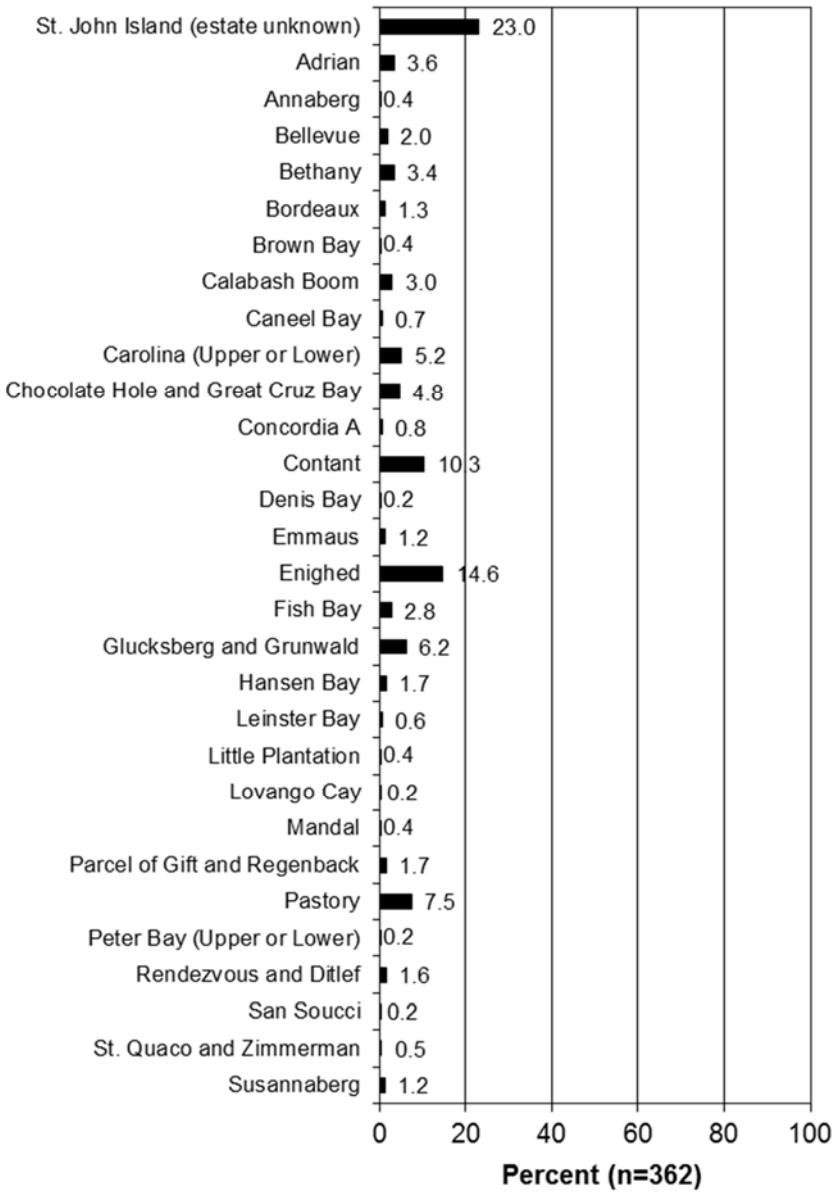


Figure 138: Q121. Which estate do you live in? (Asked of those who live on St. John.)

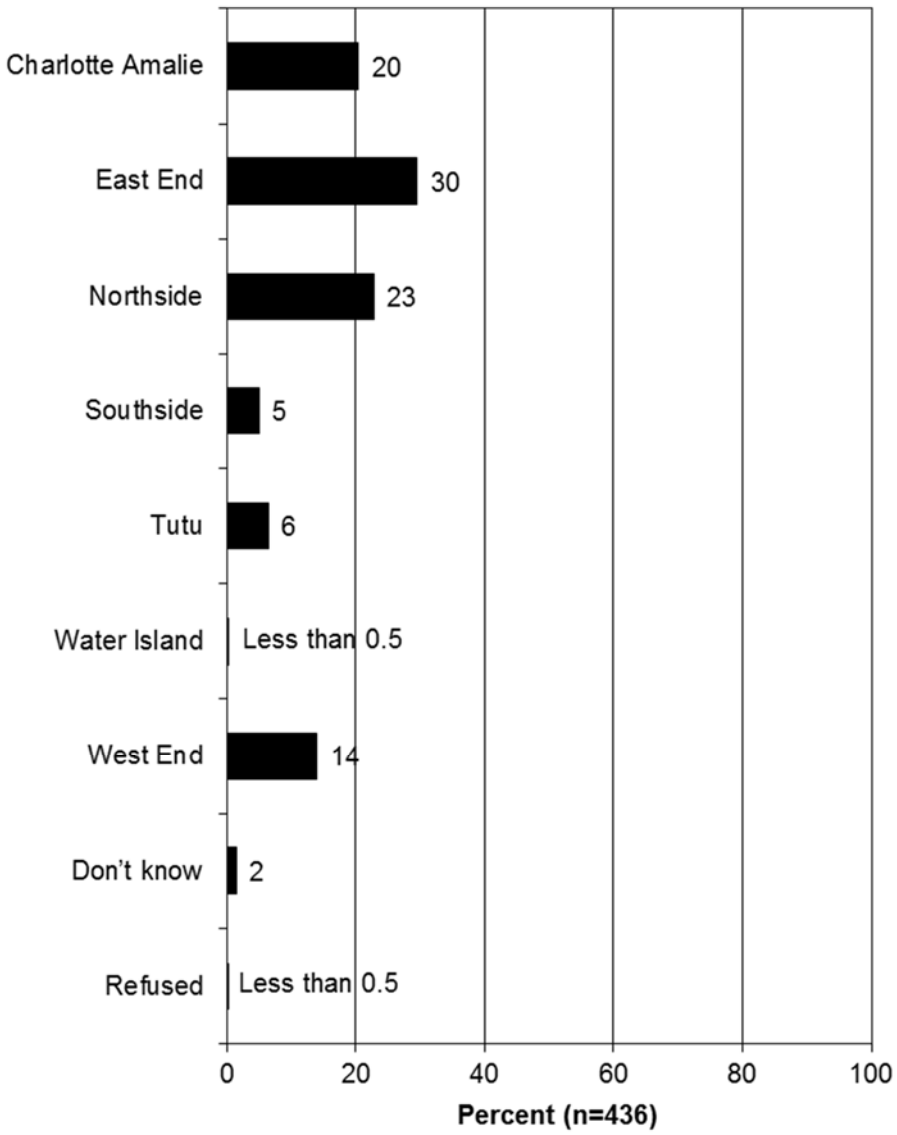


Figure 139: Q119. Which part of the island do you live in? (Asked of those who live on St. Thomas.)

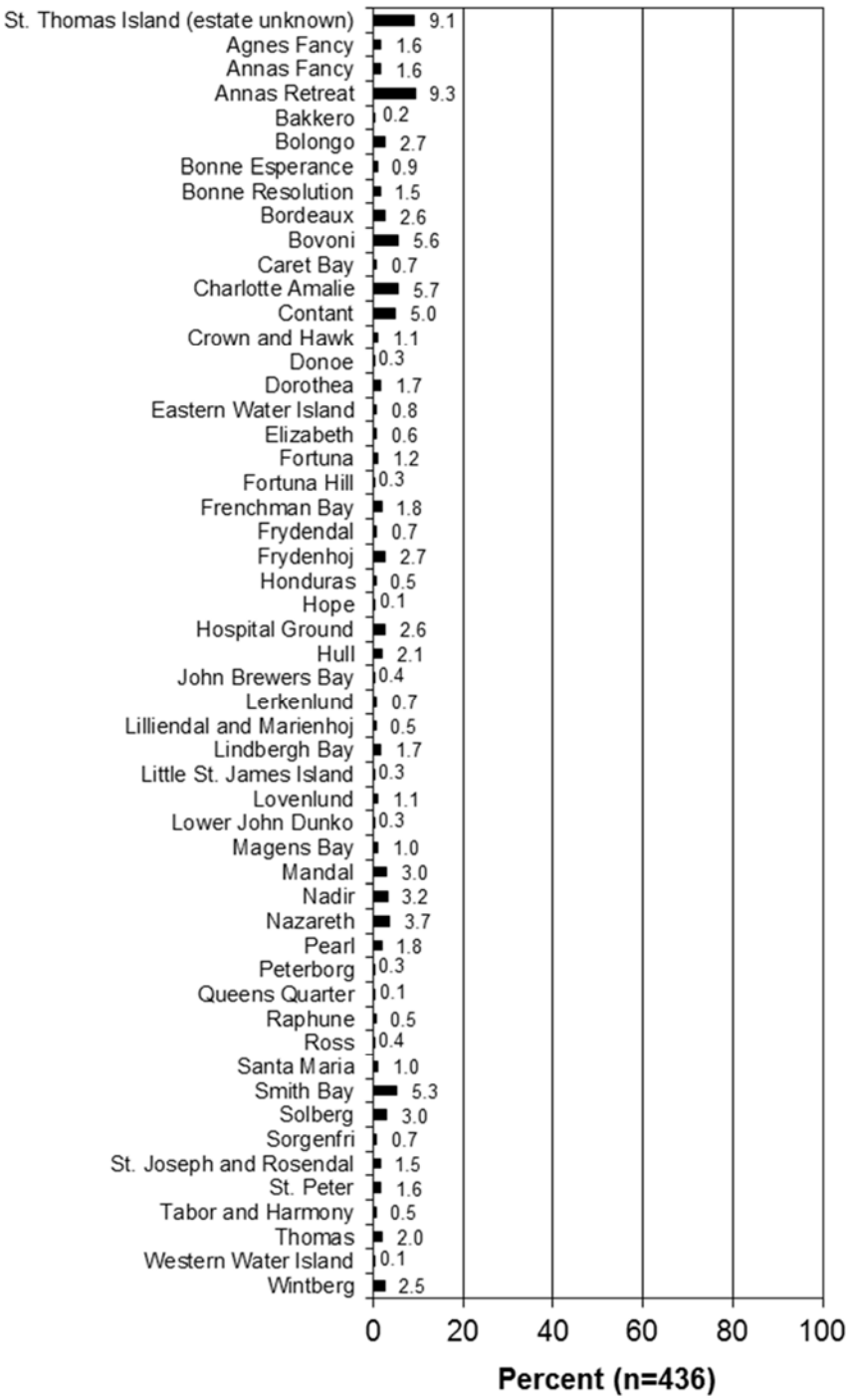


Figure 140: Q122. Which estate do you live in? (Asked of those who live on St. Thomas.)

Differences Between Telephone and In-Person Samples

This study of the U.S. Virgin Islands residents' attitudes toward coral reef management entailed a scientific dual-mode survey, which was administered by telephone and through in-person surveys conducted on site. Therefore, it was of interest to crosstabulate these two sample groups to evaluate any notable differences in the survey results, which are discussed below.

In-person survey respondents were more active in beach- and ocean-related activities than those from the telephone survey.
This was true for each activity mentioned in the survey, most notably in motorized boating (48% of in-person respondents have ever participated in this, compared to 18% of phone respondents) and snorkeling (50% to 25%). In addition, in-person respondents were more likely than their phone counterparts to eat fish harvested from coral reefs.

Phone survey respondents gave higher ratings to the current health of ocean water quality and coral than those interviewed in person.
Looking at the percentages who rated the ocean water quality as *good* or *very good*, phone respondents had a combined percentage of 80%, compared to 64% of in-person respondents. The difference is more striking when looking only at *very good* responses: 36% of phone respondents gave this answer, compared to 16% of in-person respondents. Regarding the health of coral, 33% of phone respondents and 22% of in-person respondents gave a rating of *good* or *very good*. Because the in-person group participates more in the related recreation activities, a possible interpretation is that they are more likely to observe more pollution or debris or have greater environmental concerns that those who are at the water less often.

Responses from the two groups regarding the value of coral reefs and familiarity with environmental threats were generally similar, although the phone group was consistently at the stronger end of the spectrum.
For example, when given the statement, "Coral reefs protect the U.S. Virgin Islands from coastal erosion and natural disasters," 78% of the phone group and 82% of the in-person group were in agreement; however, 36% of phone respondents *strongly agree* compared to 27% of in-person respondents. A similar pattern was observed for other questions regarding the value of coral reefs, as well as questions regarding residents' familiarity with potential threats to the Virgin Islands such as climate change, natural disasters, and pollution, development, or other human activity.

Like the previous finding, overall support for regulations to protect coral reefs or the environment is similar between the groups, although phone respondents more often expressed *strong* support.

In-person respondents indicated more awareness of Marine Protection Areas (MPAs) than those interviewed by phone.
A majority of the in-person group (56%) were *familiar* or *very familiar* with MPAs, compared to 43% of the phone group.

The in-person group was much more likely to get information on coral reef issues from the Internet, social media, or friends and family, whereas the top information source for the phone group was newspapers or other print publications.

Phone respondents were more likely than in-person respondents to say that their local community is involved in protecting coral reefs.
About twice as many phone respondents (31%) as in-person respondents (16%) stated that their community is *involved* or *very involved* in protecting or managing coral reefs.

The phone sample skews older/more retired and more female than the in-person sample.
This appears to correlate with earlier findings, in that the phone respondents were less active in ocean-related recreation and were more likely to get coral reef information through print media.

About Responsive Management

Responsive Management is an internationally recognized public opinion and attitude survey research firm specializing in natural resource and outdoor recreation issues. Our mission is to help natural resource and outdoor recreation agencies and organizations better understand and work with their constituents, customers, and the public.

Utilizing our in-house, full-service telephone, mail, and web-based survey facilities with 50 professional interviewers, we have conducted more than 1,000 telephone surveys, mail surveys, personal interviews, and focus groups, as well as numerous marketing and communication plans, needs assessments, and program evaluations.

Clients include the federal natural resource and land management agencies, most state fish and wildlife agencies, state departments of natural resources, environmental protection agencies, state park agencies, tourism boards, most of the major conservation and sportsmen's organizations, and numerous private businesses. Responsive Management also collects attitude and opinion data for many of the nation's top universities.

Specializing in research on public attitudes toward natural resource and outdoor recreation issues, Responsive Management has completed a wide range of projects during the past 25 years, including dozens of studies of hunters, anglers, wildlife viewers, boaters, park visitors, historic site visitors, hikers, birdwatchers, campers, and rock climbers. Responsive Management has conducted studies on endangered species; waterfowl and wetlands; and the reintroduction of large predators such as wolves, grizzly bears, and the Florida panther.

Responsive Management has assisted with research on numerous natural resource ballot initiatives and referenda and has helped agencies and organizations find alternative funding and increase their membership and donations. Additionally, Responsive Management has conducted major organizational and programmatic needs assessments to assist natural resource agencies and organizations in developing more effective programs based on a solid foundation of fact.

Responsive Management has conducted research on public attitudes toward natural resources and outdoor recreation in almost every state in the United States, as well as in Canada, Australia, the United Kingdom, France, Germany, and Japan. Responsive Management has also conducted focus groups and personal interviews with residents of the African countries of Algeria, Cameroon, Mauritius, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe.

Responsive Management routinely conducts surveys in Spanish and has conducted surveys in Chinese, Korean, Japanese and Vietnamese and has completed numerous studies with specific target audiences, including Hispanics; African-Americans; Asians; women; children; senior citizens; urban, suburban, and rural residents; large landowners; and farmers.

Responsive Management's research has been upheld in U.S. District Courts; used in peer-reviewed journals; and presented at major natural resource, fish and wildlife, and outdoor recreation conferences across the world. Company research has been featured in most of the nation's major media, including

CNN, *The New York Times*, *The Wall Street Journal*, and on the front pages of *USA Today* and *The Washington Post*. Responsive Management's research has also been highlighted in *Newsweek* magazine.

Visit the Responsive Management website at:
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