



NCRMP Socioeconomic Monitoring For South Florida



Presented By: Maria Dillard

**NOAA Coral Reef Conservation Program
& National Centers for Coastal Ocean Science**

for more information, visit the web-portal at:
http://www.coris.noaa.gov/activities/projects/ncrmp_socio/



June 5, 2015

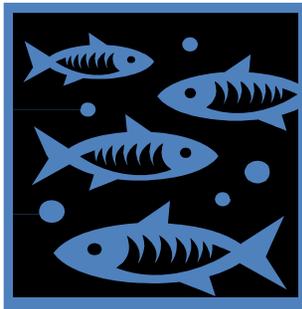




Outline

- ❖ Background on the National Coral Reef Monitoring Program's Socioeconomic Component
- ❖ Social survey for South Florida
 - ❖ Methods
 - ❖ Results
 - ❖ Applications
- ❖ Next steps

National Coral Reef Monitoring Plan



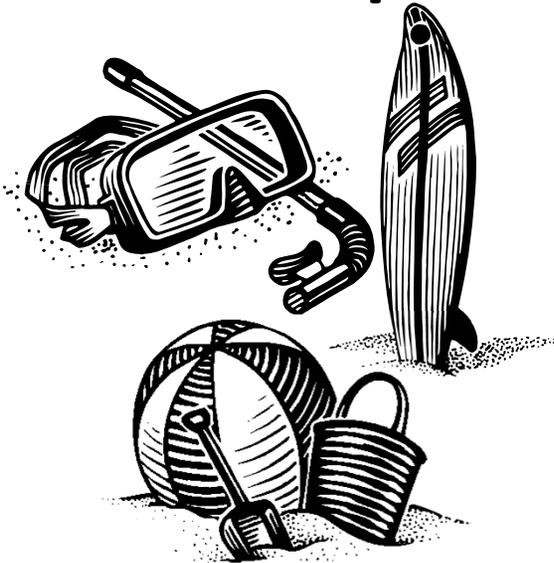
Biological
Indicators

Climate
Indicators

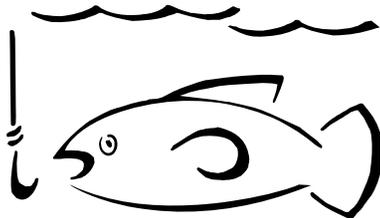


Socioeconomic
Indicators

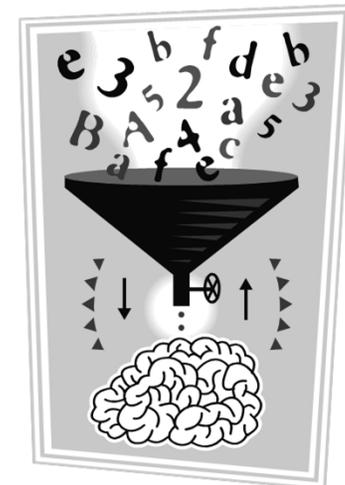
Socioeconomic Component: Examples of the types of data we collect



Use of coral reef resources



Population change

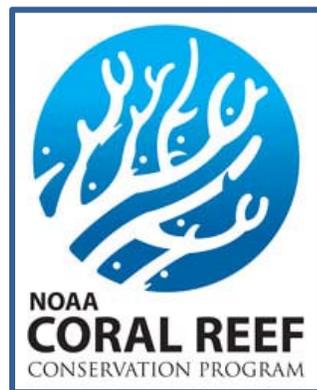


Knowledge, attitudes, & perceptions of coral reefs and coral reef management



Project Team

- ❖ Peter Edwards
- ❖ Arielle Levine
- ❖ Maria Dillard
- ❖ Jarrod Loerzel
- ❖ HML social science team
- ❖ Jurisdictional management agencies
- ❖ Key jurisdictional stakeholders
- ❖ CRCP and NMFS management liaisons



MONITORING METHODS: Survey



Indicators for NCRMP Social Monitoring

Participation in reef activities

Perceived resource condition

Attitudes towards coral reef management strategies and enforcement

Awareness and knowledge of coral reefs

Human population changes near coral reefs

Economic impact of coral reef fishing to jurisdiction

Economic impact of dive/snorkel tourism to jurisdiction

Community well-being

Cultural importance of reefs

Participation in behaviors that may improve coral reef health

Physical infrastructure

Awareness of coral reef rules and regulations

Governance



Survey Methodology

- ❖ Core module vs. jurisdiction specific module:
 - ❖ Asking some of the same questions in all areas allows comparisons across jurisdictions
 - ❖ Asking some specific questions for each area allows jurisdictional management and resource issues to be addressed
- ❖ Survey sample:
 - ❖ Random sample of adult residents in the jurisdiction
 - ❖ Representative of population demographics (age, race, sex, income)
- ❖ Survey implementation:
 - ❖ By a contracted entity with experience conducting surveys in the jurisdiction
 - ❖ Survey mode for FL was phone (included cell and landline) and in English or Spanish language



Social Monitoring by Geography and Year

Jurisdiction	Geographic scope	Year
American Samoa	Island of Tutuila	2013-14
Florida	Martin, Palm Beach, Broward, Miami-Dade, Monroe Co.	2013-14
Hawai'i	Islands of Kauai, Maui, Moloka'i, O'ahu, Hawai'i, Lana'i	2014-15
Puerto Rico	Islands of Puerto Rico, Vieques, Culebra	2014-15
CNMI	Islands of Saipan, Tinian, Rota	2015-16
Guam	Entire island of Guam	2015-16
USVI	Islands of St. Croix, St. Thomas, St. John	2016-17

MONITORING RESULTS: Survey

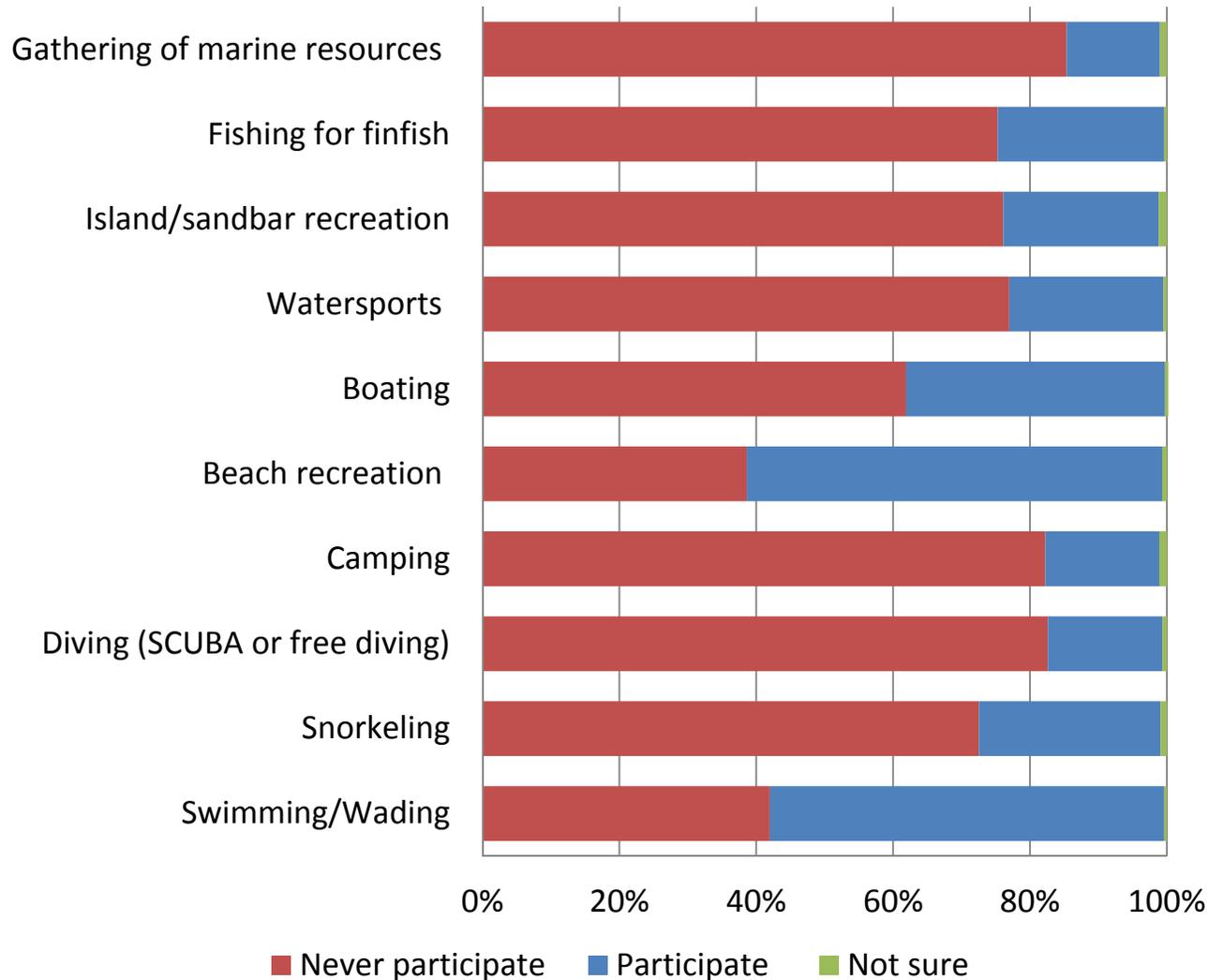


Sample for Florida

County	Percent of Sample	Total Responses
Palm Beach	32%	388
Broward	30%	361
Martin	3%	38
Miami-Dade	28%	343
Monroe	7%	80
TOTAL	100%	1210

- Due to over-representation of some demographic subgroups, post-stratification sampling weights are used for all advanced analyses.
- Please note: the sample sizes do not allow for the survey results to be representative of each county or of the FL coral reef management regions (SEFCRI and FKNMS).

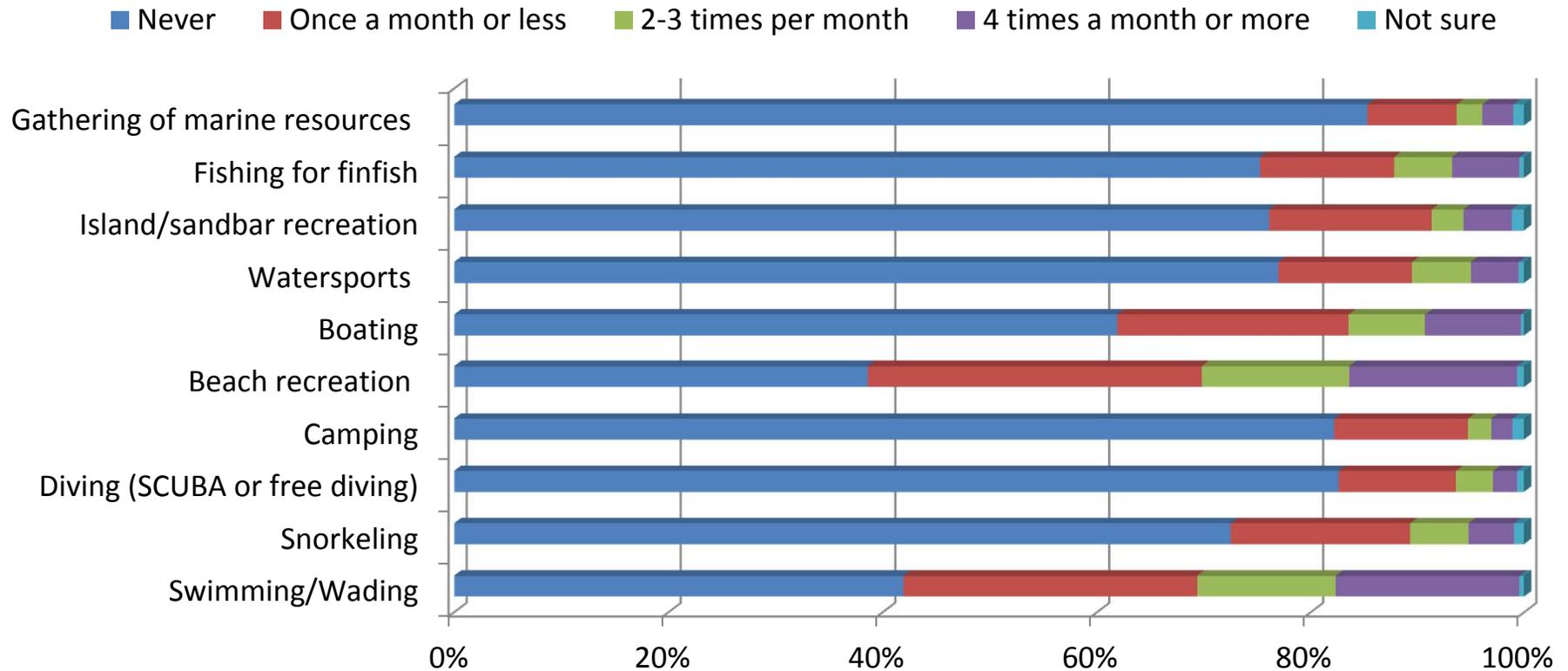
Respondents' Participation in Coral Reef Activities



➤ The recreation activities with the highest level of participation were beach recreation (60.73%) and swimming/wading (57.62%).

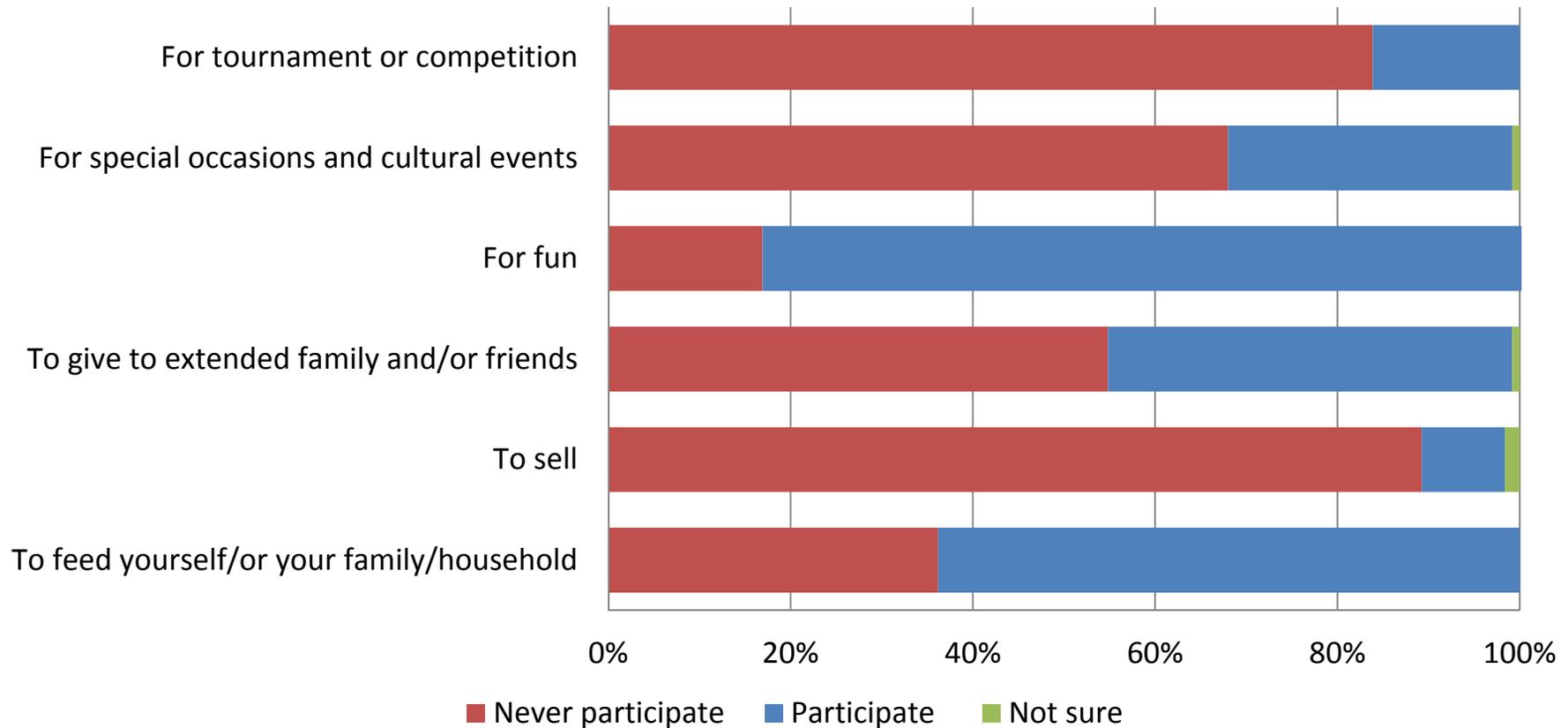
➤ The recreation activities with the lowest level of participation were gathering of marine resources (85.35%), diving (82.62%) and camping (82.24%).

Respondents' Participation in Coral Reef Activities



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- The recreation activities with the lowest level of participation were gathering of marine resources (85.35%), diving (82.62%) and camping (82.24%).

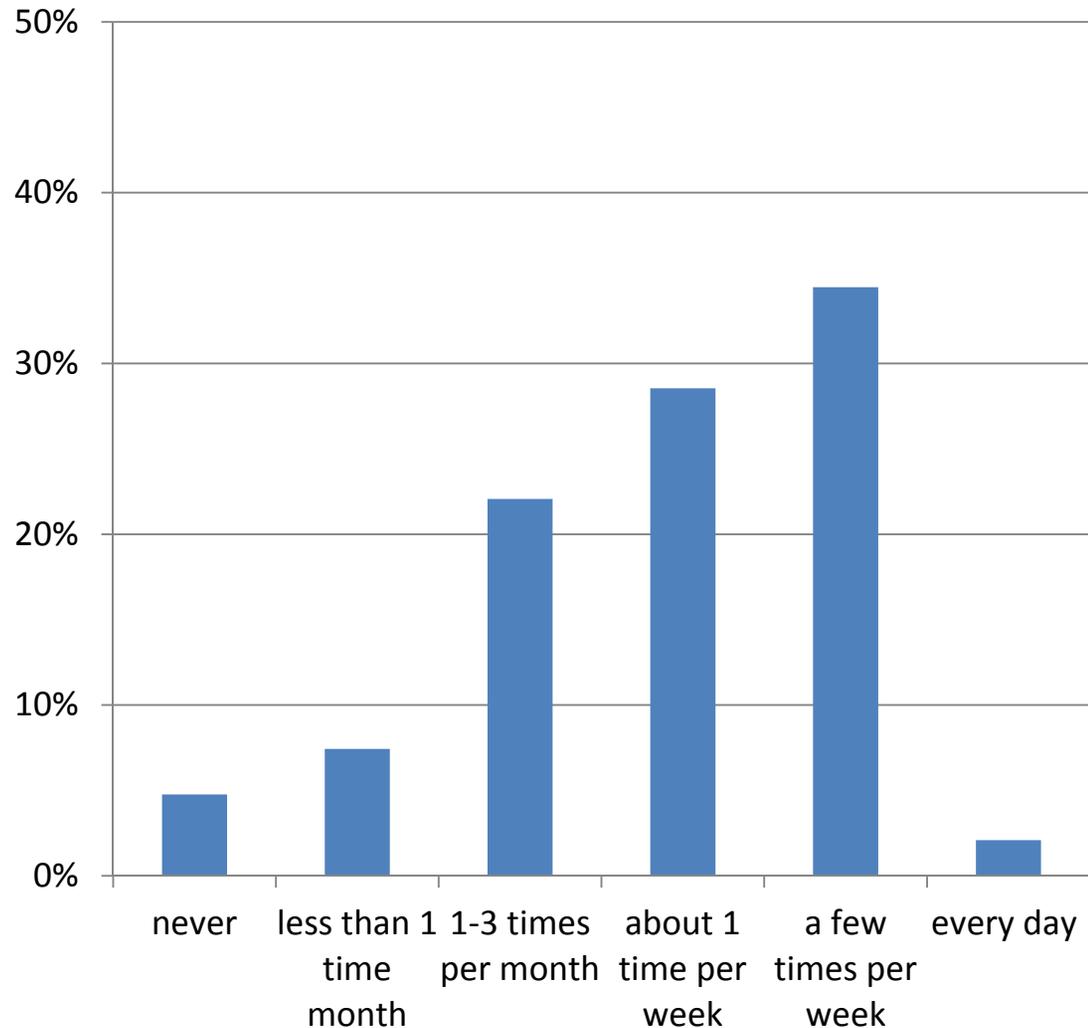
Participation in fishing or harvesting marine resources for varying reasons



- The reasons for fishing or harvesting marine resources with the highest level of participation were “For fun” (83.79%) and “To feed yourself/or your family/household (63.81%).
- The reasons for fishing or harvesting marine resources with the lowest level of participation were “To sell” (89.25%) and “For tournament or competition (83.87%).

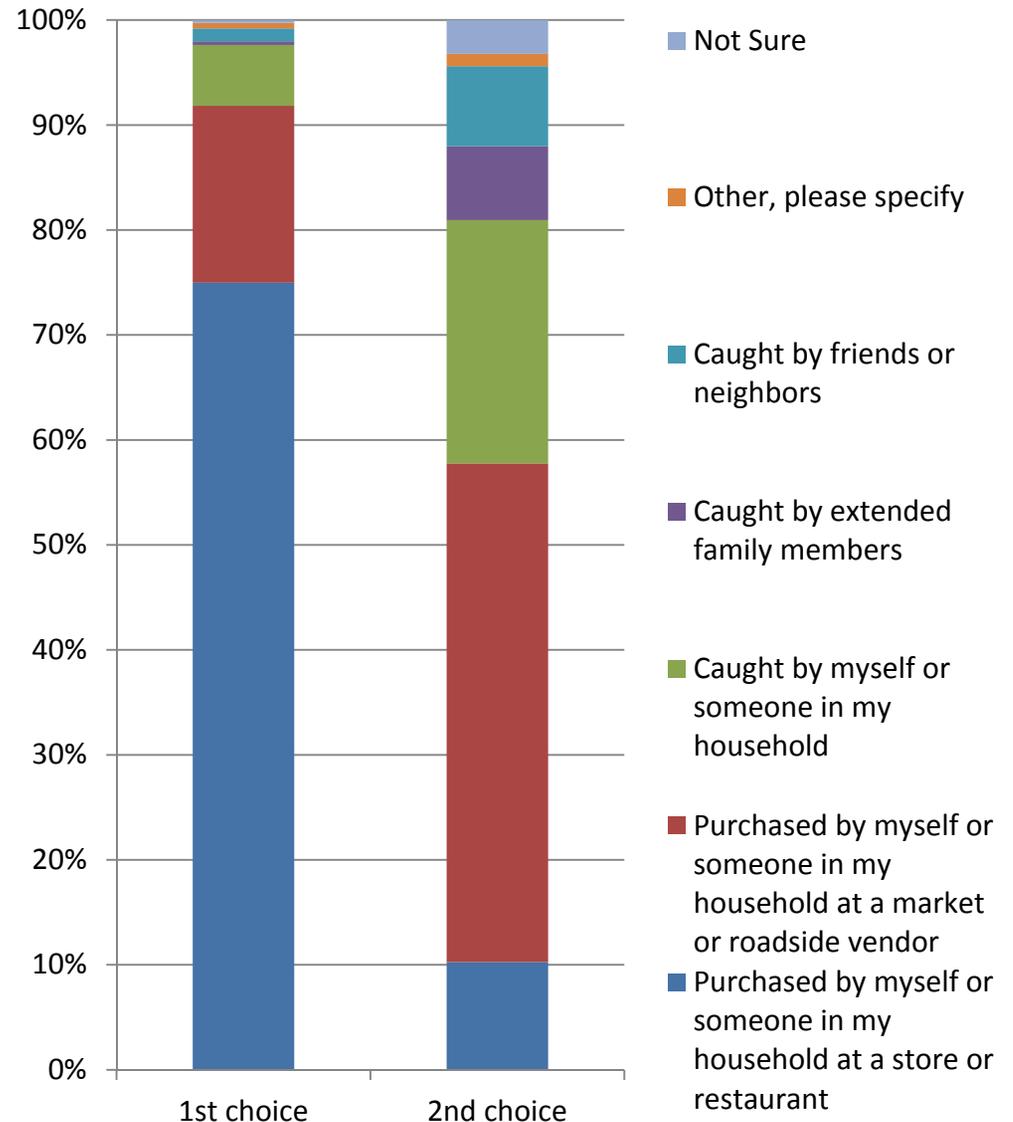
Frequency of Fish/Seafood Consumption for Respondents and their Families

- The majority of respondents (65.11%) ate seafood at least once a week.
- A very large proportion of respondents (87.81%) ate seafood at least once a month.

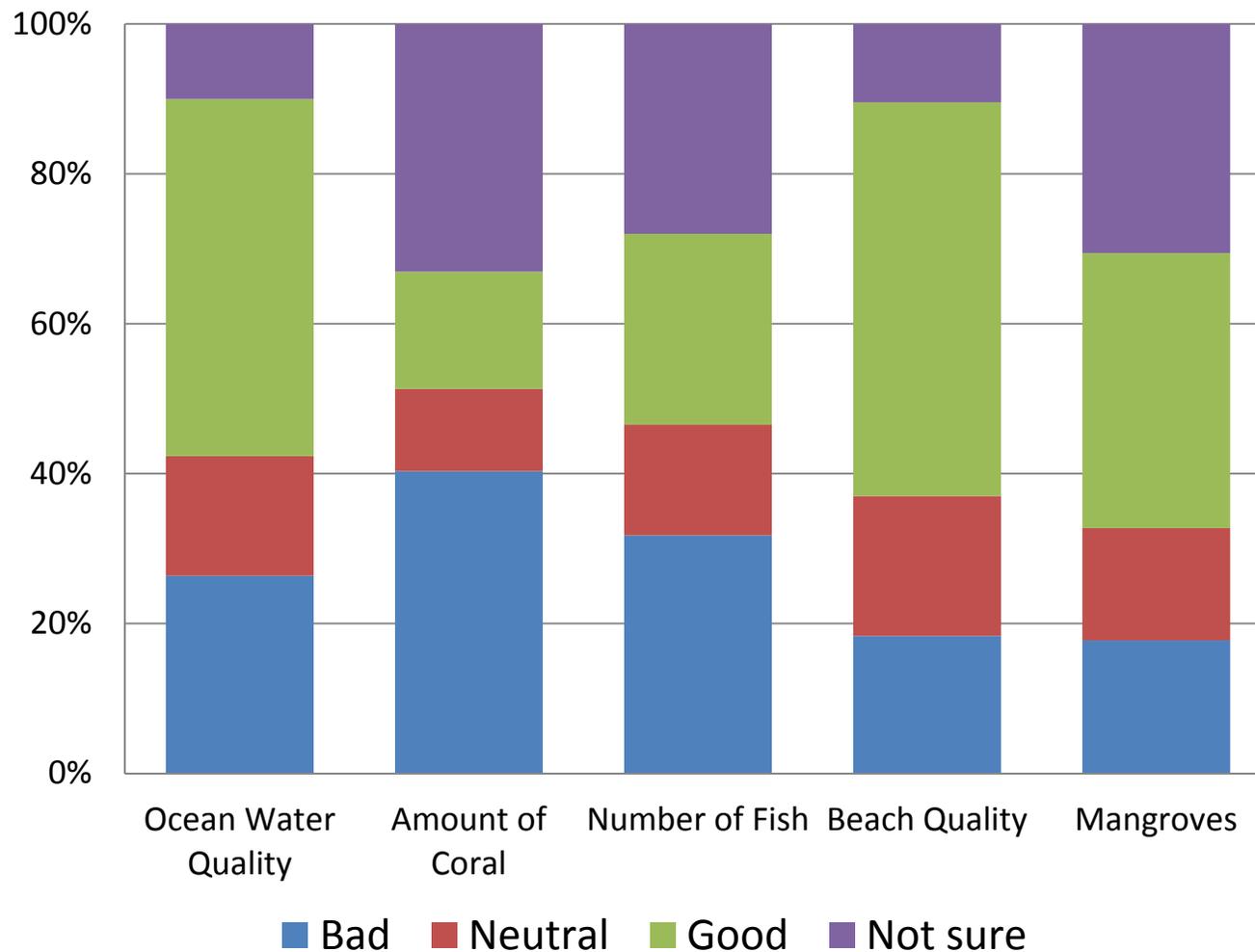


Respondents' First and Second Choices for the Main Source of Fish and Seafood for Personal and Household Consumption

- The source chosen most as a main source of fish and seafood (1st plus 2nd choice) was “Purchased by myself or someone in my household at a store or restaurant” (84.95%).
- The source chosen least as a main source of fish and seafood (1st plus 2nd choice) was “Caught by extended family members” (7.33%).



Respondents' Perceptions of Current Resource Conditions

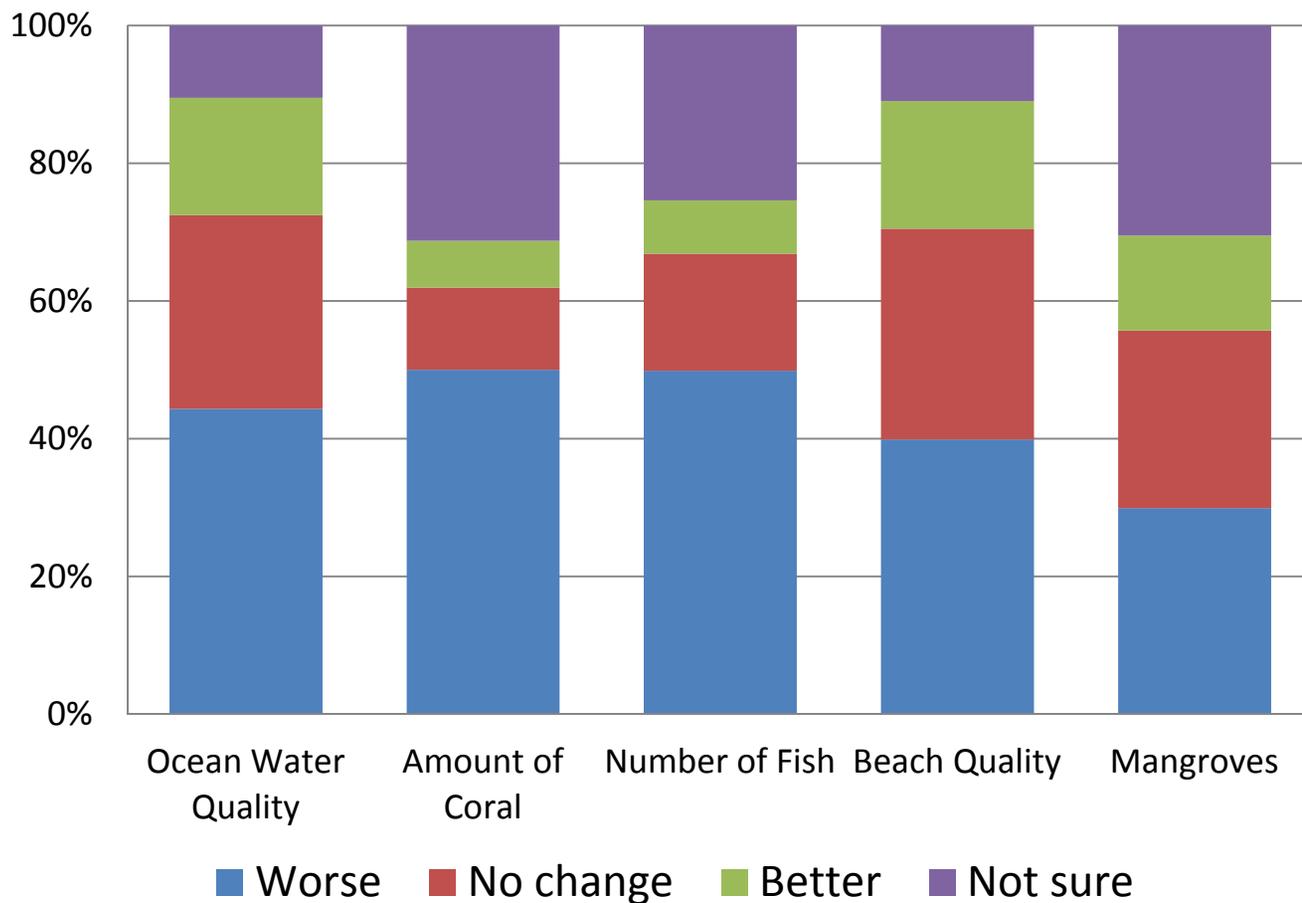


➤ The resources considered to be in the best condition were Beach Quality (52.51%) and Ocean Water Quality (47.62%).

➤ The resource considered to be in the worst condition was Amount of Coral (40.33%).

➤ A high proportion of respondents were “Not Sure” about the current condition of Amount of Coral (33.05%), Mangroves (30.56%), and Number of Fish (28.00%)

Respondents' Perceptions of Change in Resource Conditions Over the Last 10 Years

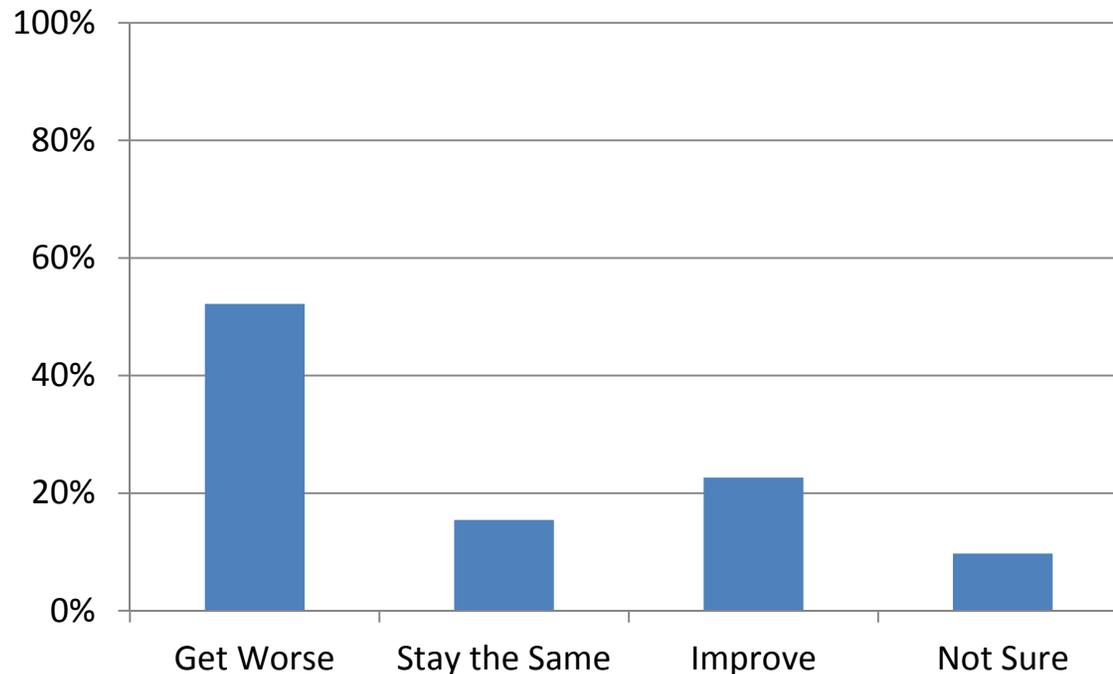


➤ The resources considered to be most stable or changing for better over the last 10 years were Beach Quality (49.61%) and Ocean Water Quality (45.17%).

➤ The resources considered to have gotten worse by the greatest proportion of respondents were Amount of Coral (50.00%) and Number of Fish (49.87%).

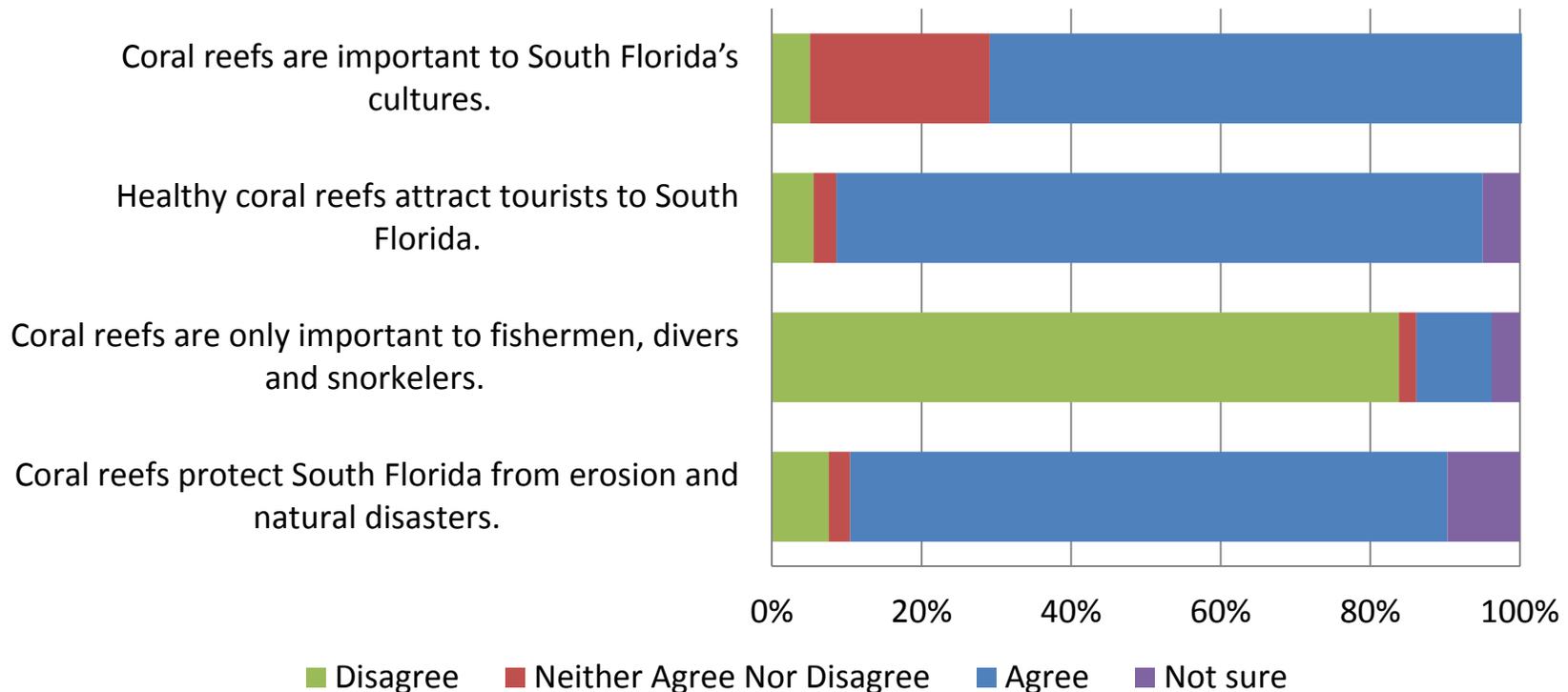
➤ A high proportion of respondents were “Not Sure” about the change in condition of Amount of Coral (31.26%), Mangroves (30.50%), and Number of Fish (25.40%)

Respondents' Perceptions of Anticipated Change in Resource Condition Over the Next 10 Years



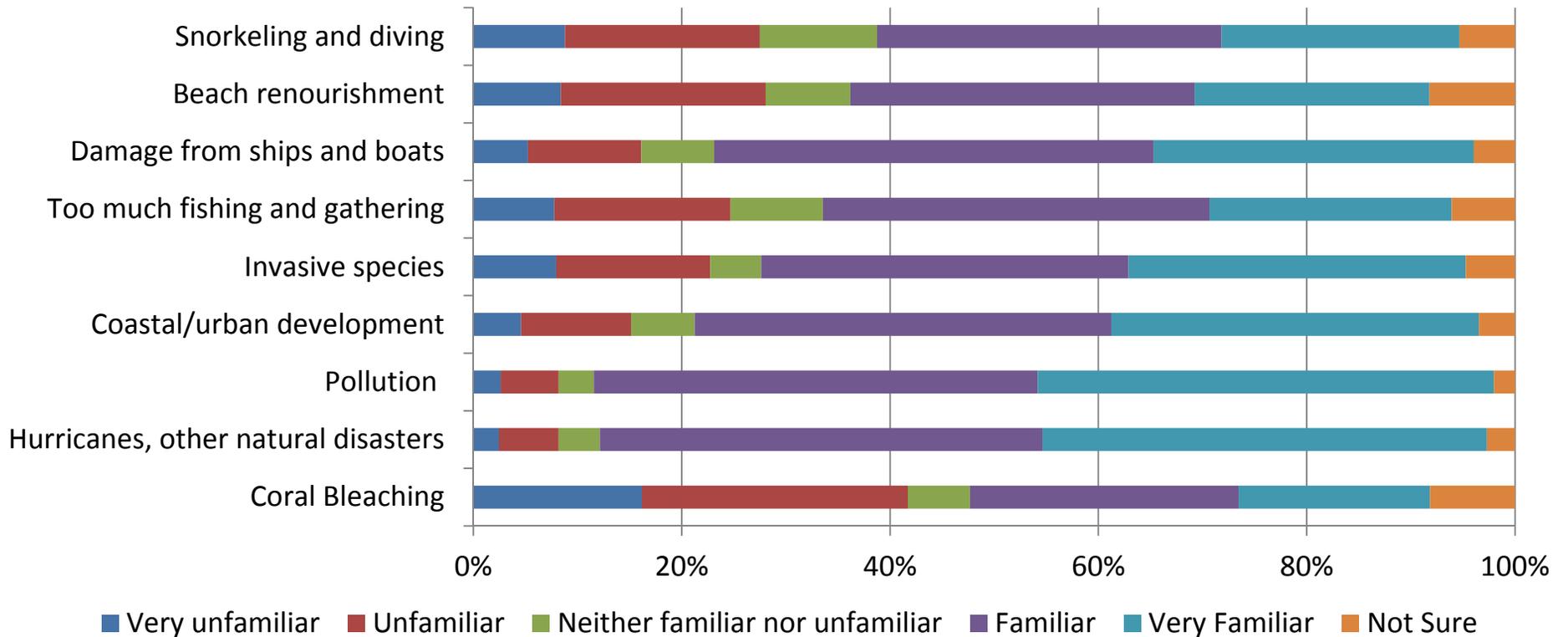
- Over half of respondents (52.18%) anticipated the overall resource condition would get worse over the next 10 years.
- 15.44% of respondents anticipated the resource condition would stay the same.
- Almost one quarter of respondents (22.65%) anticipated the resource condition would improve, while 9.73% were not sure.

Respondents' Agreement with Statements of Value Concerning Coral Reefs



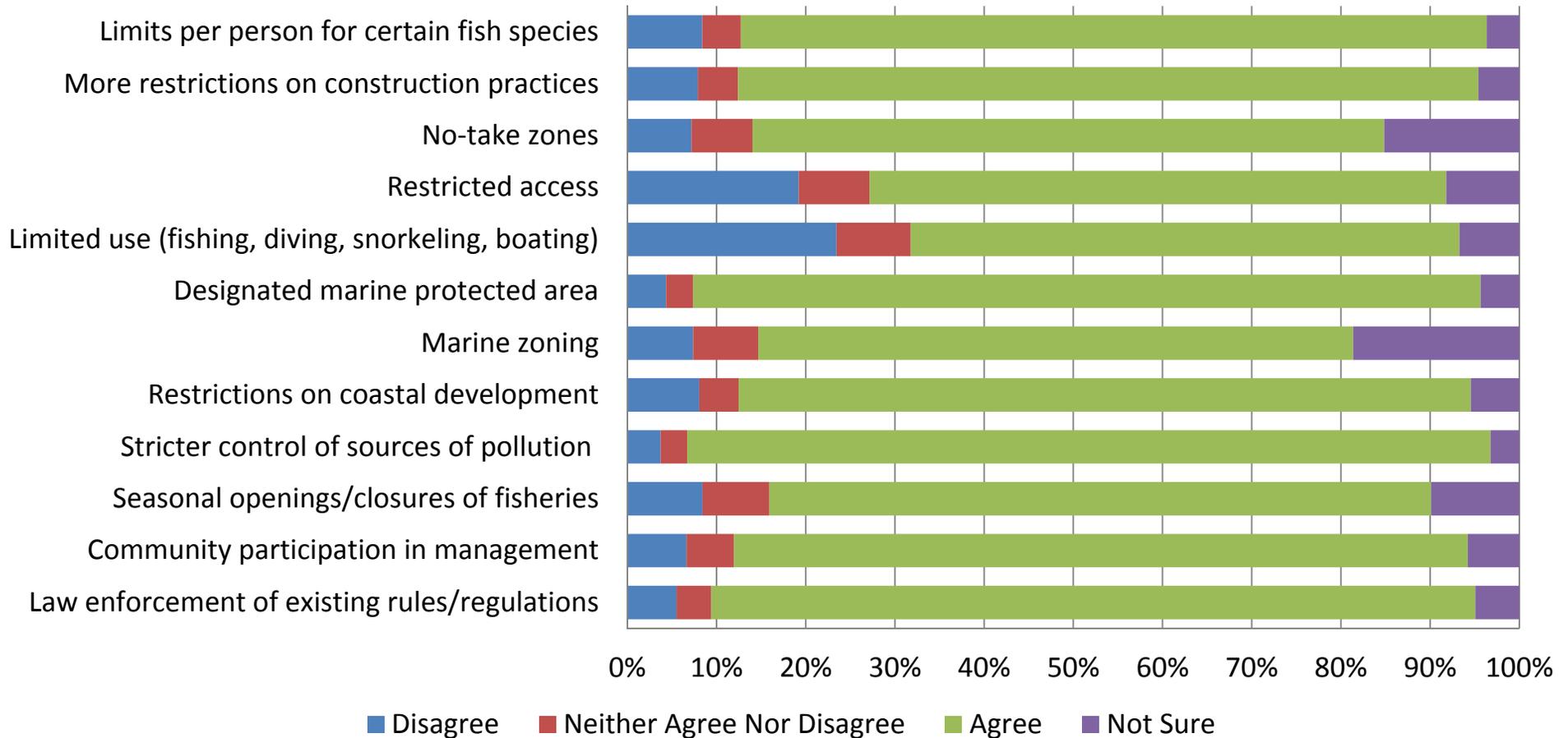
- The statement that respondents agreed the most (“agree” plus “strongly agree”) with was “Coral Reefs are important to South Florida’s cultures” (86.48%).
- The statement that respondents disagreed the most (“disagree” plus “strongly disagree”) with was “Coral reefs are only important to fisherman, divers, and snorkelers” (83.81%).

Respondents' Familiarity with Threats Facing Coral Reefs



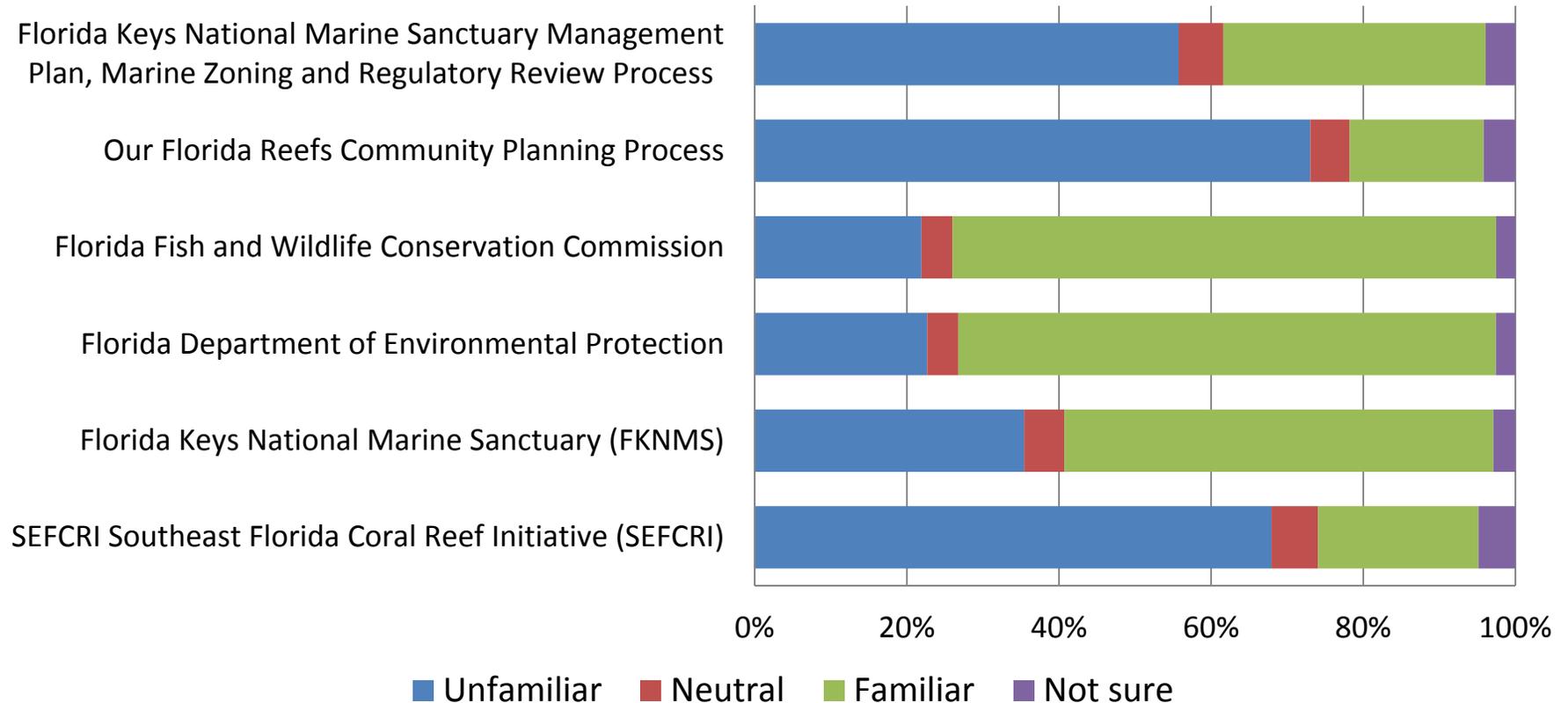
- The majority of respondents (>50%) were familiar with each of the threats facing coral reefs except Coral Bleaching (44.14%). Coral Bleaching had the highest proportion of respondents who were unfamiliar with the threat (41.70%).
- Respondents were most familiar with Pollution (86.41%) and Hurricanes and other natural disasters (85.16%)

Respondents' Support for Management Strategies



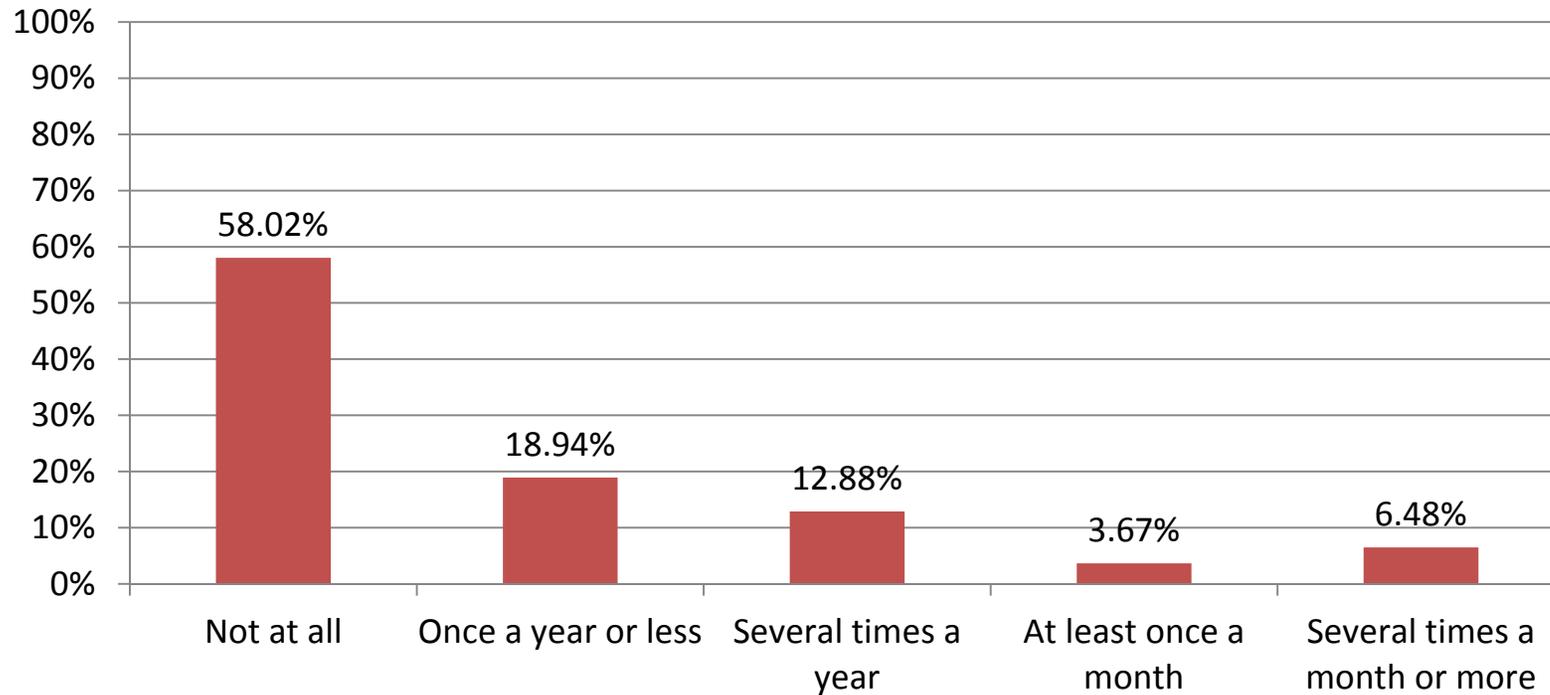
- Respondents agreed the most with “Stricter control of sources of pollution to preserve water quality” (90%).
- Respondents agreed the least with “Limited use (fishing, diving, snorkeling, boating)” (62%).
- The management option with the highest proportion of “not sure” responses was “marine zoning” (19%).

Respondents' Familiarity with Coral Reef Management Organizations



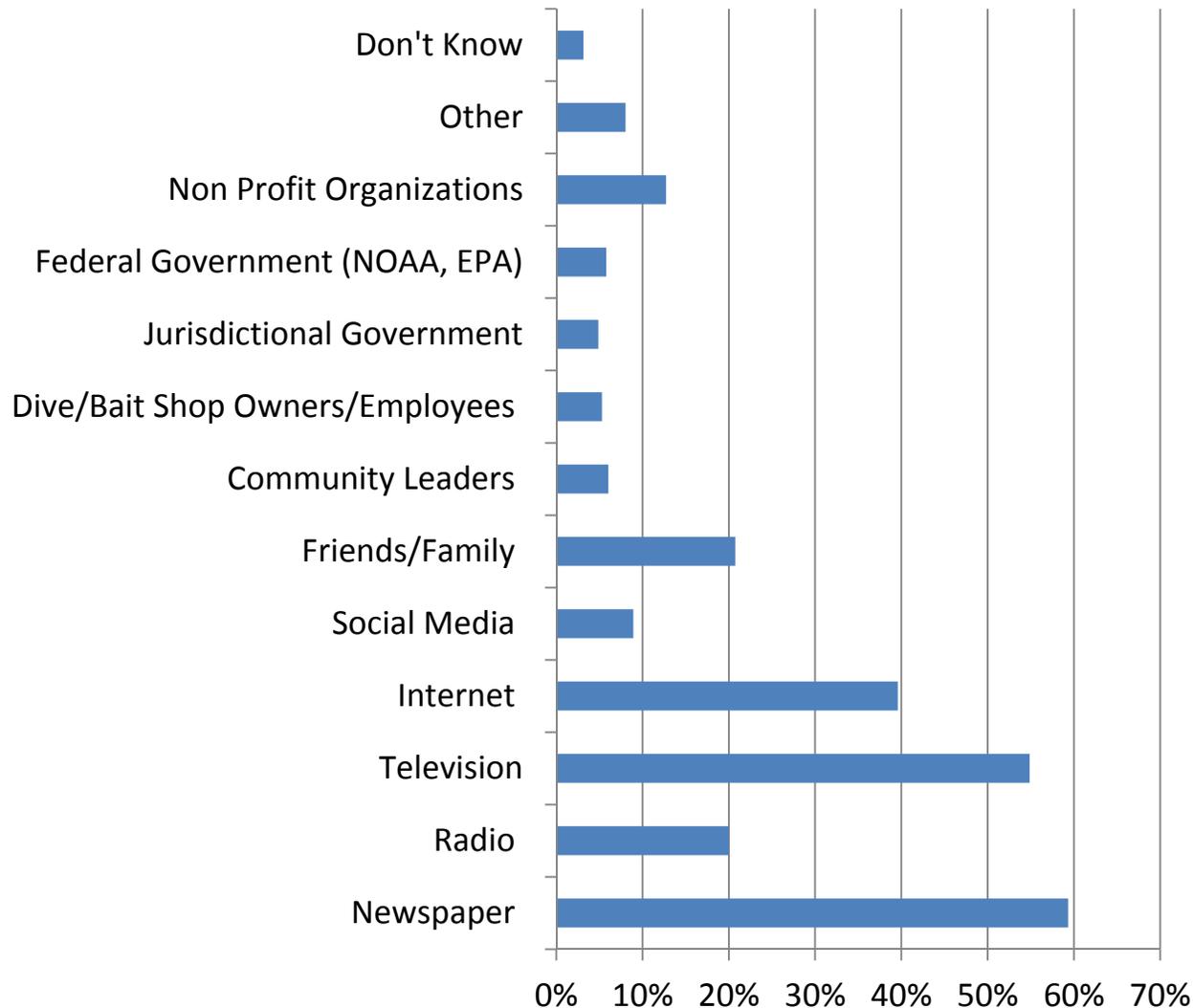
- Respondents were most familiar with the Florida Fish and Wildlife Conservation Commission (71.46%) and Florida Department of Environmental Protection (70.69%).
- Respondents were least familiar with Our Florida Reefs Community Planning Process (73.04%) and the Southeast Florida Coral Reef Initiative (67.94%).

How Often Respondents Participate in Any Activity to Protect the Environment



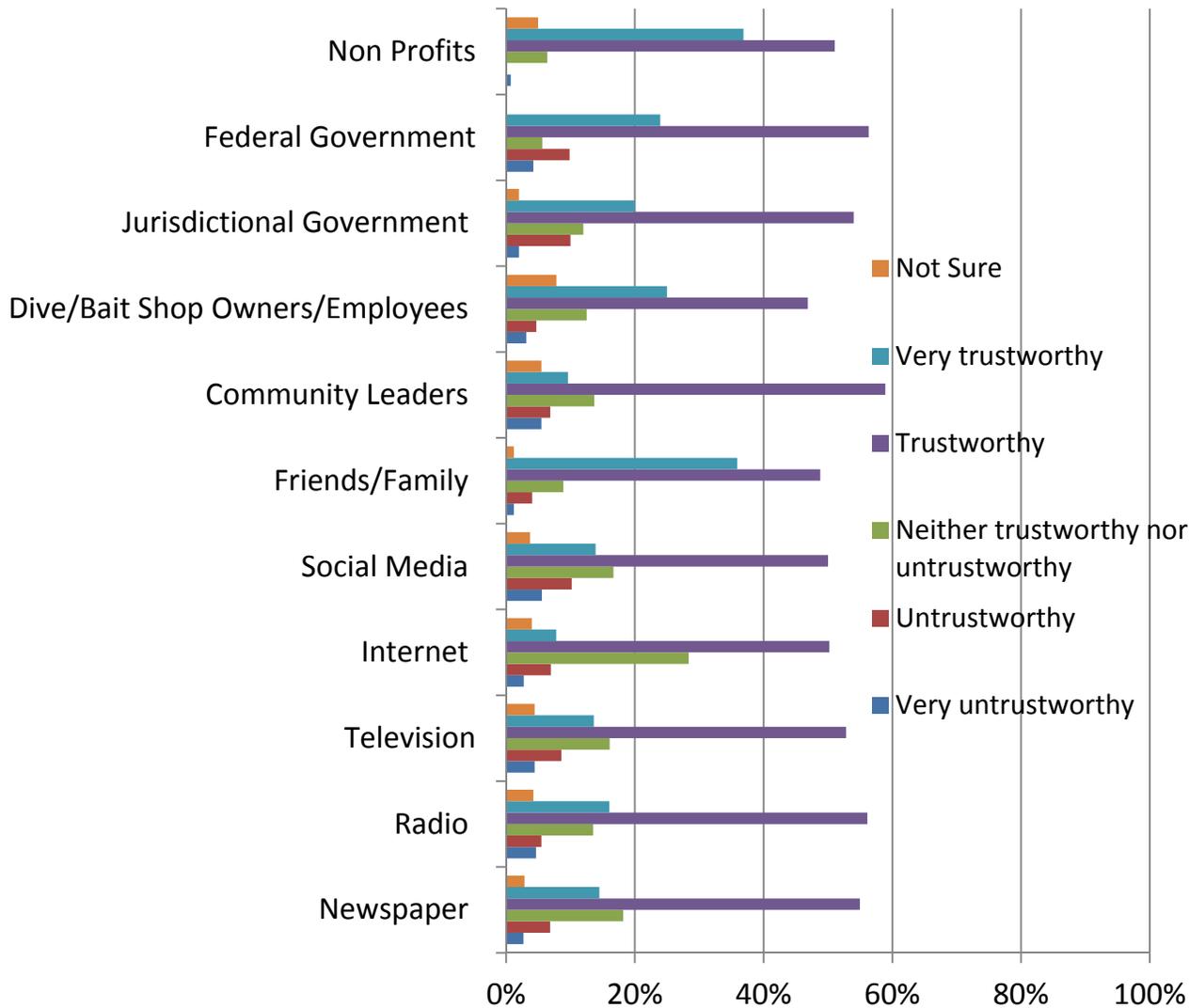
- Over half of respondents (58.02%) did not participate in any activities to protect the environment
- 18.94% participated once a year or less
- Almost one quarter of respondents (23.04%) participated in any activity to protect the environment at least several times a year (“Several times a year” plus “At least once a month” and “Several times a month or more”).

Respondents' Top Sources for Information about Coral Reefs and the Environment



- The sources of information chosen most by respondents were Newspapers, other print publications (59.34%) and TV (54.88%)
- The sources of information chosen least by respondents were State and/or County (jurisdiction) governments (4.88%) and Dive and bait shop owners/employees (5.29%).

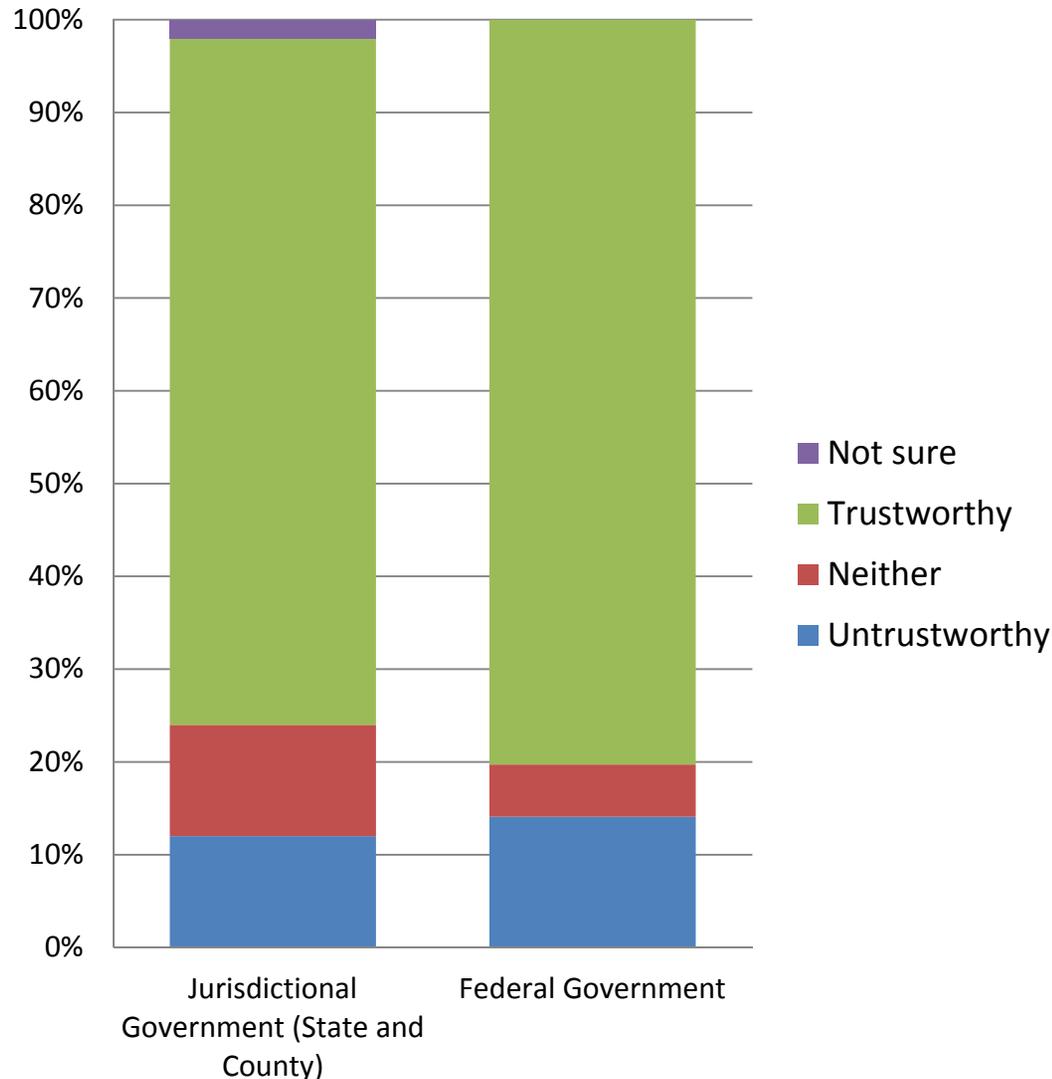
Respondents' Level of Trust for their Top Sources for Information about Coral Reefs and the Environment



- The sources considered most trustworthy by respondents were Non-profit organizations (87.94%) and Friends and Family (84.68%)
- The sources of information considered most untrustworthy by the largest proportion of respondents were Social media (15.74%) and Federal government agencies (NOAA, EPA) (14.09%).

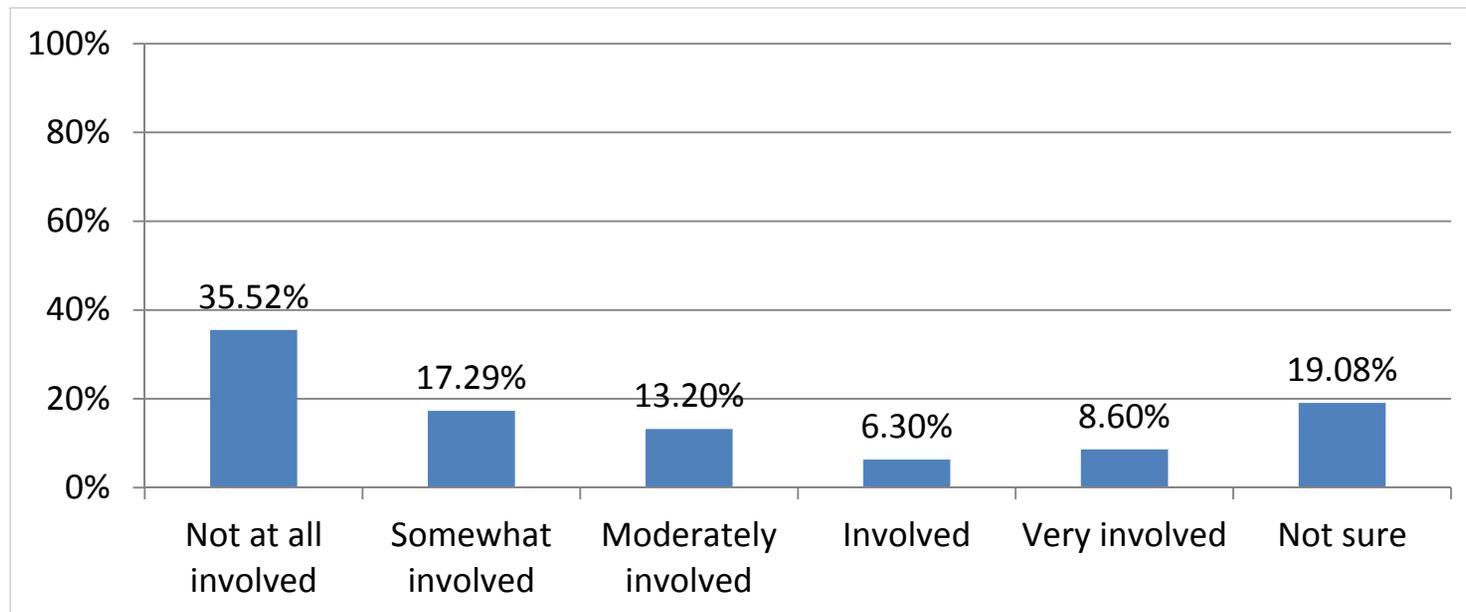
* Only respondents who chose the source as one of their top three provided their level of trust for the source.

South Florida: Trust in Government for Coral Reef Information



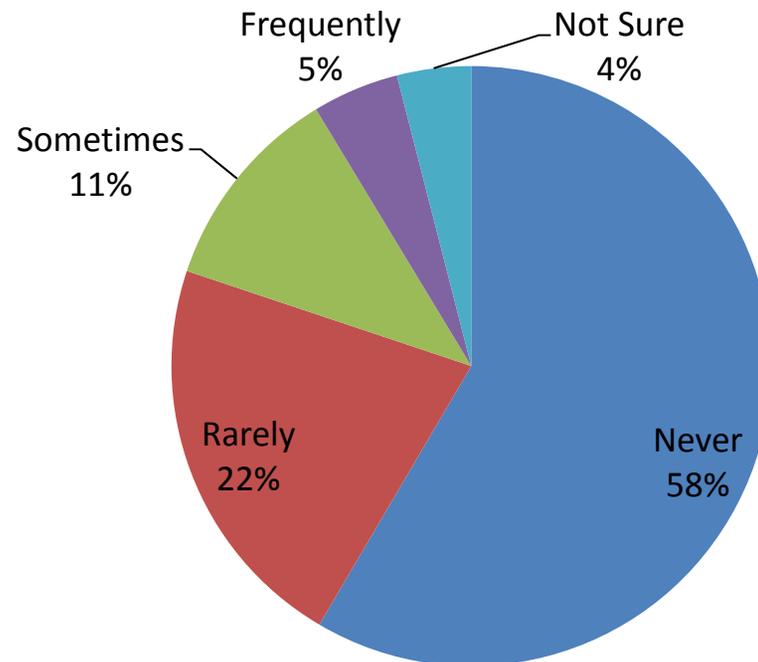
- **4.88% of respondents** indicated that the **state and county government** was a top source for information concerning coral reefs or reef related topics.
- **5.79% of respondents** indicated that the **federal government** was a top source for information concerning coral reefs or reef related topics.
- However, **most respondents who rely on the government** as an information source also feel these sources are trustworthy.

Respondents' Perception of How Involved Their Local Community is in Protecting and Managing Coral Reefs



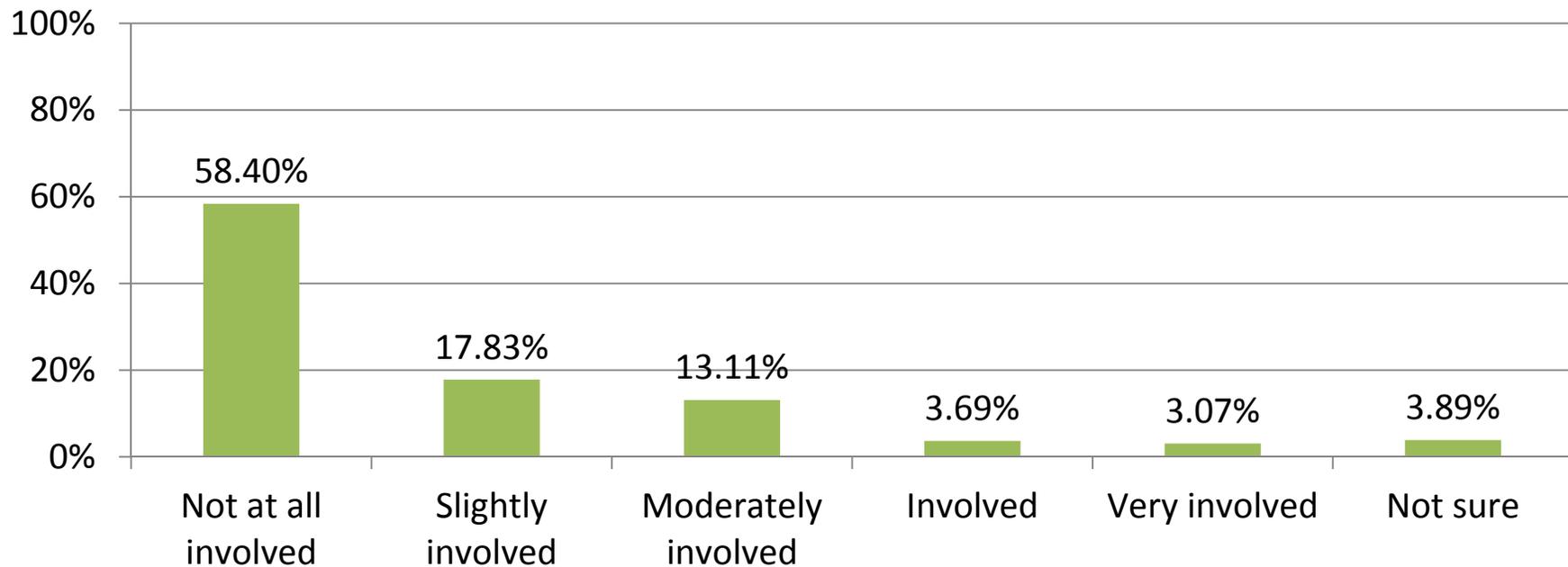
- 35.52% of respondents felt their local community was not at all involved in protecting and managing coral reefs
- Almost half of respondents (45.39%) felt their local community was at least "Somewhat involved" in protecting and managing coral reefs

How Often Respondent Feels They are Given the Opportunity to be Involved in Making Decisions Related to the Management of Coral Reefs



- Over half 58.45% of respondents felt they were “Never” given the opportunity to be involved in making decisions related to the management of coral reefs
- 37.55% of respondents felt they were at least “Rarely” given the opportunity to be involved in making decisions (“Rarely” plus “Sometimes” and “Frequently”) related to the management of coral reefs

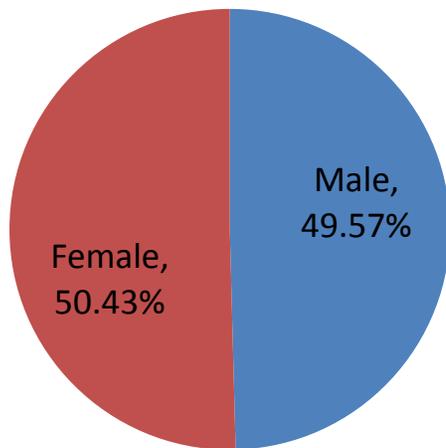
Respondents' Perception of How Involved They Are in Protecting and Managing Coral Reefs



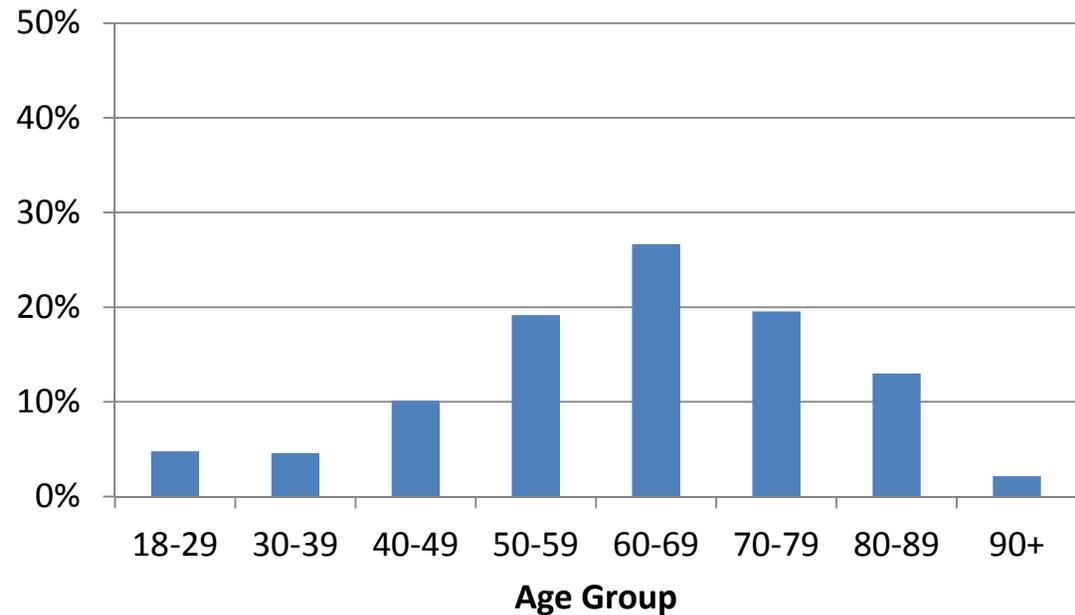
- Over half 58.45% of respondents felt they were “Not at all involved” in protecting and managing coral reefs
- 37.7% of respondents felt they were at least “Slightly involved” (“Slightly involved” plus “Moderately involved”, “Involved”, and “Very Involved”) in protecting and managing coral reefs

Respondent Demographics

Gender

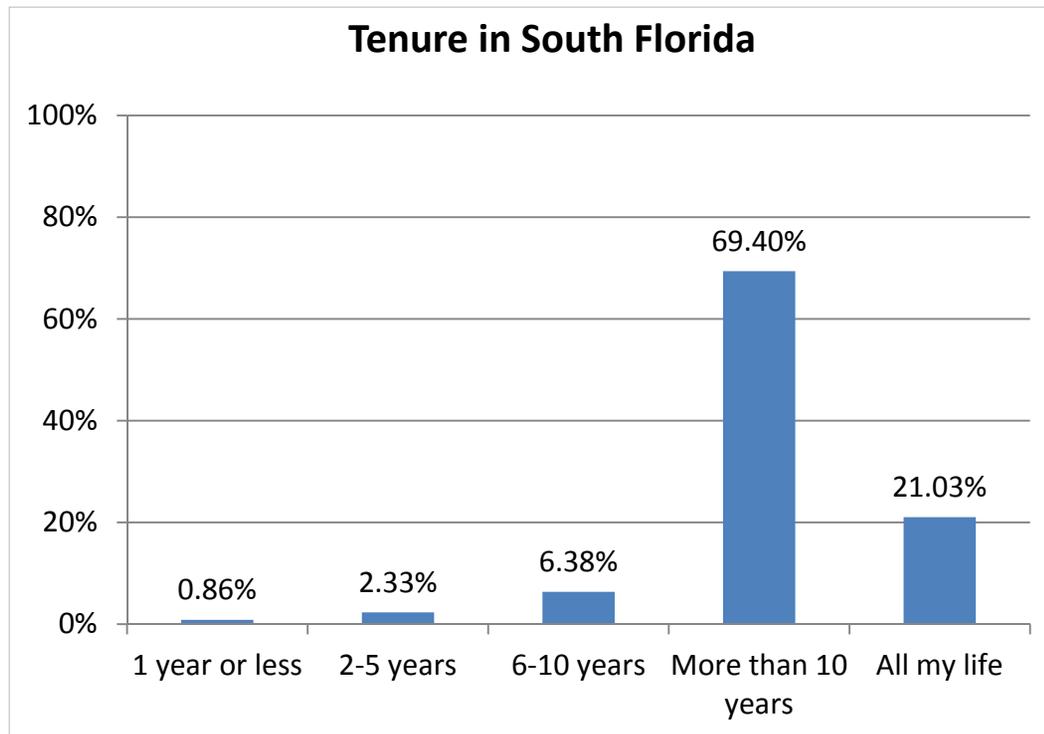


Respondent Age



- Respondents were almost equally split between Male and Female
- Most respondents fell into the 60-69 year old age range (26.66%)

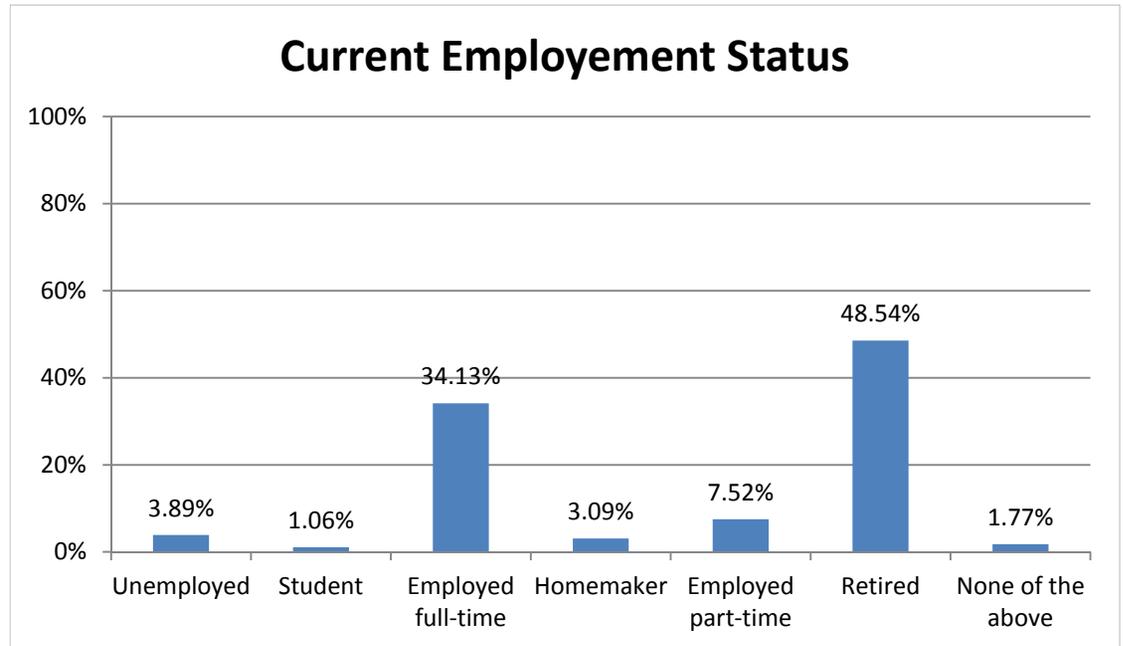
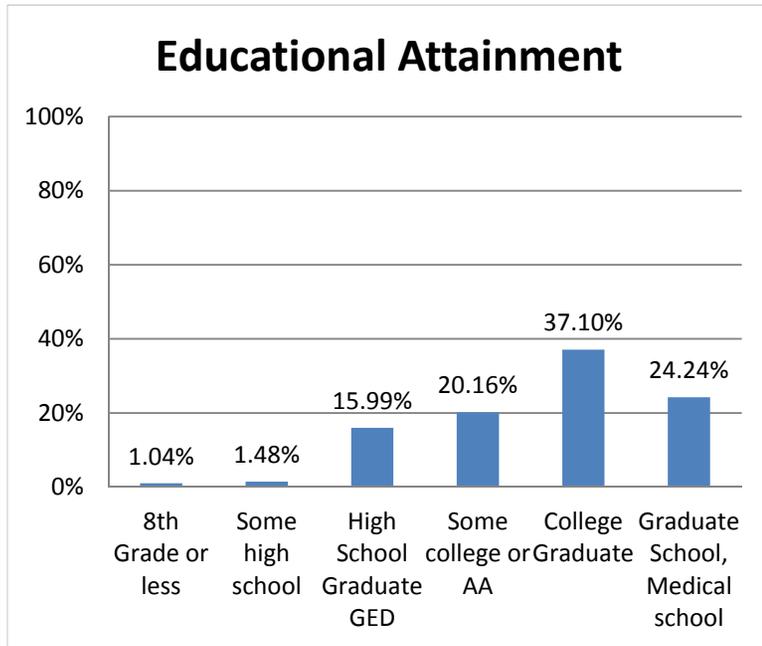
Respondent Demographics



Language	Frequency	Percent
English	1121	95.20%
Spanish	264	22.40%
Other	58	4.90%
German	40	3.40%
Italian	28	2.40%
Portuguese	13	1.10%
Creole	8	0.70%
Japanese	4	0.30%
Arabic	3	0.30%
Korean	3	0.30%
Hindi	2	0.20%
Chinese	1	0.10%
Tagalog	1	0.10%

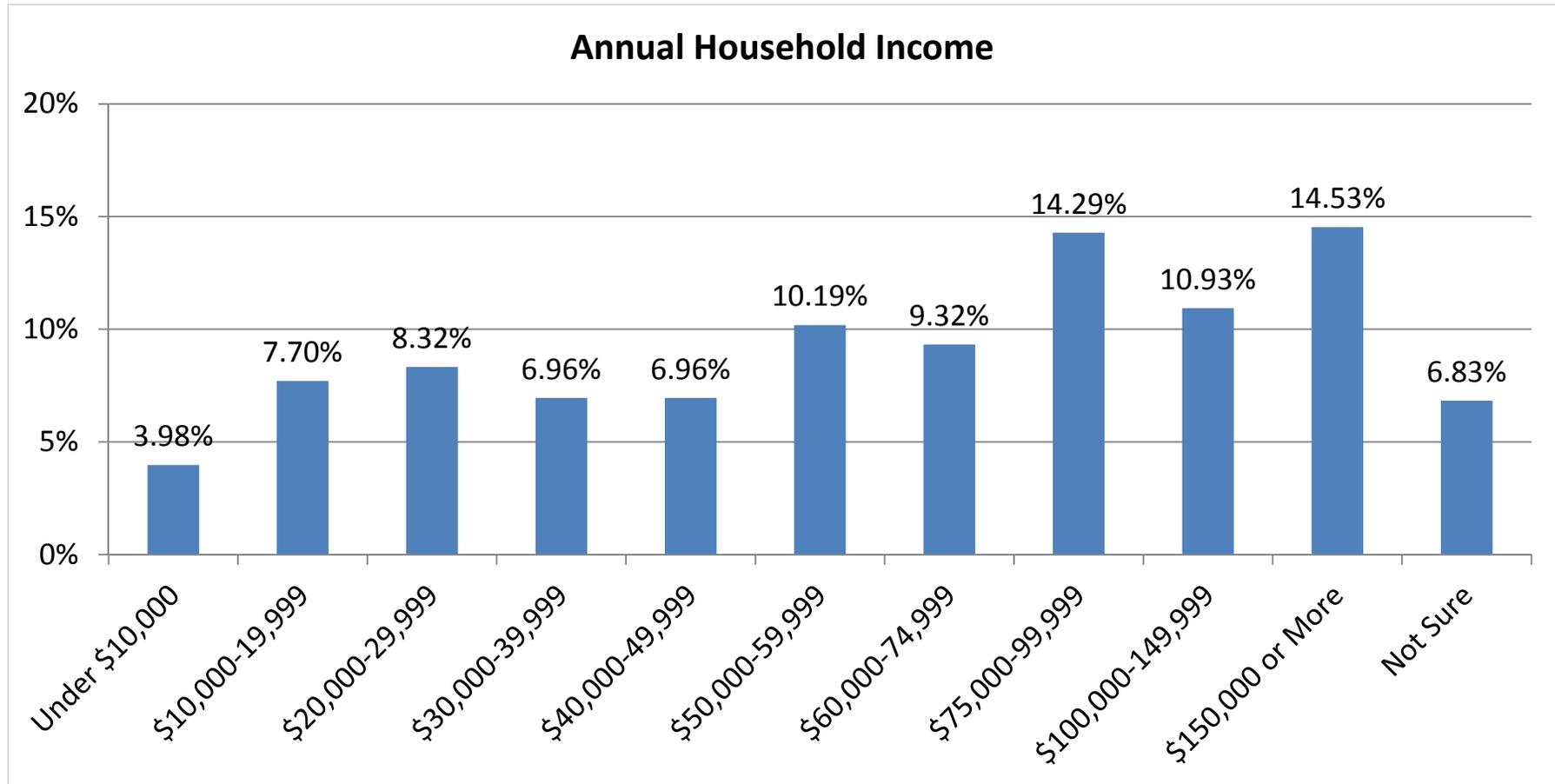
- The majority of respondents (69.40%) lived in Florida for more than ten years (but less than all of their lives)
- Almost a quarter of the respondents (21.03%) had lived in Florida their whole life
- The most predominant language chosen as a primary language was English (95.20%) with almost a quarter of respondents (22.40%) also choosing Spanish as a primary language

Respondent Demographics



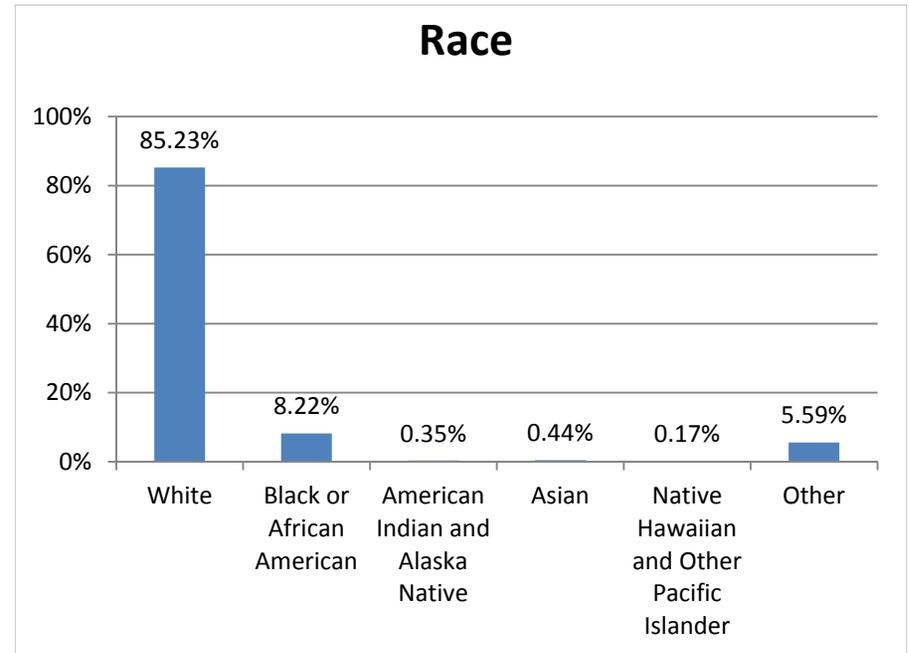
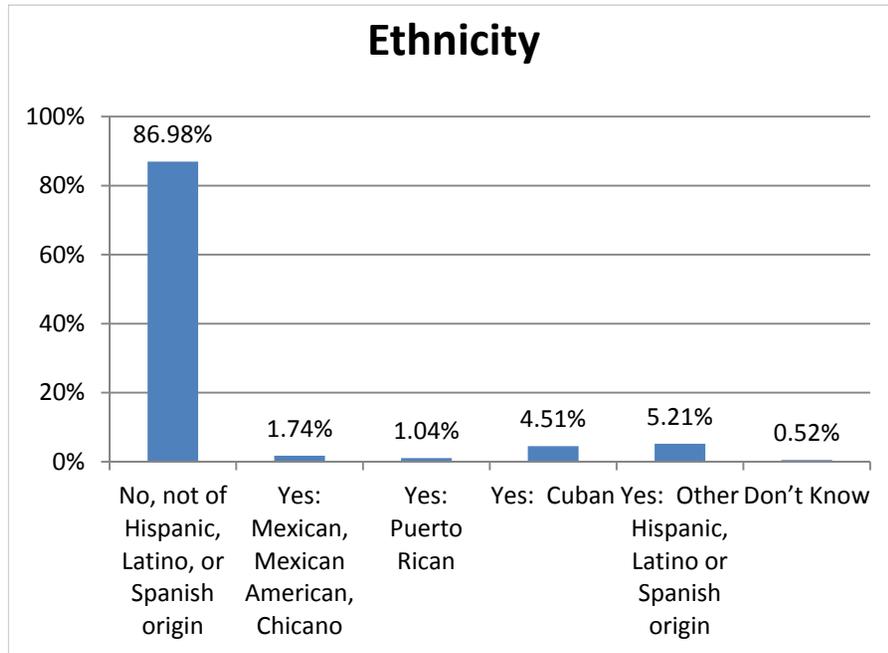
- There was a fairly even spread of educational attainment among respondents with College Graduates representing 37.10% of the total
- Almost half of respondents (48.54%) were retired
- 34.13% were employed full-time

Respondent Demographics



- There were a fairly even spread of annual household incomes among the respondents
- 39.75% of respondents had an annual household income of greater than \$75,000

Respondent Demographics



- The majority of respondents (86.98%) were not of Hispanic, Latino, or Spanish origin
- Of those respondents, the majority (85.23%) were white
- 8.22% of those respondents were Black or African American



Representativeness of Sample

- ❖ There are a few key demographic characteristics that are under-represented in the sample:
 - ❖ Younger people
 - ❖ Hispanic people
 - ❖ Non-White people
 - ❖ Lower income people
 - ❖ Less educated people
- ❖ To alleviate these disparities, post-stratification sampling weights were applied to the data in all statistical analyses



MONITORING APPLICATIONS: Survey



Does length of residence in South Florida correlate with different perceptions of resource condition?

Resource	Lived in Florida for 10 years or less		Lived in Florida for more than 10 years		Statistical test for difference	
	Weighted n	Mean	Weighted n	Mean	t	p
<i>Current Conditions</i>						
Ocean water quality	131	3.53	949	3.24	2.60***	0.01
Amount of coral	98	2.58	706	2.48	0.69	0.49
Number of fish	100	3.19	770	2.78	3.13***	<0.01
Beach quality	137	3.58	924	3.40	1.75*	0.08
Mangroves	88	3.10	729	3.28	-1.25	0.22
<i>Change in conditions over last 10 years</i>						
Ocean water quality	116	2.89	951	2.51	3.36***	<0.01
Amount of coral	79	2.29	754	2.08	1.70*	0.09
Number of fish	92	2.53	820	2.20	2.89***	<0.01
Beach quality	118	3.00	935	2.66	3.02***	<0.01
Mangroves	93	2.60	737	2.63	-0.25	0.80

*=significant at 10% level, **=significant at 5% level, ***=significant at 1% level

- Higher mean values indicate a more positive perception.
- Respondents who have lived in Florida for 10 years or less had a more positive perception concerning the condition of marine resources. Particularly, ocean water quality, number of fish, and beach quality.

Does Fishing/Harvesting Marine Resources for Sustenance Affect Perceptions of Management Options?

Management Approach	Fish/harvest marine resources to feed myself/my family "sometimes" or more		Fish/harvest marine resources to feed myself/my family "rarely" or less		Statistical test for difference	
	Weighted n	Mean	Weighted n	Mean	t	p value
Law enforcement of existing rules/regulations	168	4.01	183	4.15	-1.33	0.18
Community participation in mgmt	175	3.88	177	4.23	-3.53***	<0.01
Seasonal openings/closures of fisheries	187	3.93	173	3.98	-0.57	0.57
Stricter control of sources of pollution	185	4.29	182	4.40	-1.22	0.22
Restrictions on coastal development	180	3.97	183	4.13	-1.55	0.12
Marine zoning	156	3.69	147	4.00	-2.82***	<0.01
Designated marine protected area	183	4.09	179	4.18	-1.09	0.28
Limited use	180	3.08	178	3.40	-2.47**	0.01
Restricted access	180	3.16	175	3.66	-3.95***	<0.01
No-take zones	167	3.57	165	4.09	-4.55***	<0.01
More restrictions on construction practices	173	4.01	175	4.25	-2.22**	0.03
Limits per person for certain fish species	187	3.86	183	4.26	-3.86***	<0.01

*=significant at 10% level, **=significant at 5% level, ***=significant at 1% level

- Higher mean values indicate more agreeability with the management option.
- Respondents who fish/harvest marine resources for sustenance “sometimes” or more tended to respond less favorably to the various management options proposed in the survey when compared to respondents who fish/harvest for sustenance “rarely” or less.

Who is your audience?

Examining information source by demographics

Coral Reef Information Source	Demographics												
	Male	Female	Older Age	Younger Age	Lived in Florida 10 yrs or less	Lived in Florida more than 10 yrs	Completed College	Did Not Complete College	More Annual Income	Less Annual Income	White	African American	Hispanic
Newspaper/Print			✓				✓		✓		✓		
Radio		✓	✓							✓		✓	
TV			✓		✓					✓			
Internet				✓	✓		✓		✓				✓
Social media		✓		✓						✓			✓
Friends and family		✓				✓							
Community leaders	✓												
Dive and bait shop owners/employees	✓						✓		✓				
State/county government					✓								
Federal government agencies (NOAA, EPA)		✓				✓			✓				
Non-Profit Organizations				✓				✓					

Next Steps

- ❖ Additional products in development
 - ❖ Tech memo, Posters, Infographics with key results
- ❖ Analyses are ongoing
 - ❖ Linkages between biological, climate, and socio data will be explored
- ❖ Input needed
 - ❖ Are there results you would like to see further examined?
 - ❖ Are there information products that would be especially useful?
- ❖ Need more information?
 - ❖ Contact: Maria Dillard maria.dillard@noaa.gov or Peter Edwards peter.edwards@noaa.gov
 - ❖ And visit http://www.coris.noaa.gov/activities/projects/ncrmp_socio/

