

U.S. Mid Atlantic Coastal and Ocean Recreation Study

A collaborative project led by the Surfrider Foundation with Point 97, The Nature Conservancy, and Monmouth University's Urban Coast Institute.

July 2014



POINT 97



Table of Contents

1. EXECUTIVE SUMMARY	6
2. INTRODUCTION.....	1
3. METHODS	3
3.1. Study Review Team.....	3
3.2. Stakeholder Outreach and Engagement	4
3.3. Survey Methods	5
3.4. ViewPoint: Survey Mapping Tool	6
3.5. Data Analysis Methods.....	11
4. MID-ATLANTIC REGION STUDY RESULTS	13
4.1. Survey Data Results	13
4.2. Spatial Data Results	23
5. CONCLUSION	47
Appendix A: Outreach and Engagement Details.....	48
Appendix B. Coastal and Ocean Recreation Survey Questions	55
Appendix C. State Results: New York.....	58
Appendix D. State Results: New Jersey.....	64
Appendix F. State Results: Delaware.....	70
Appendix F. State Results: Maryland.....	76
Appendix G. State Results: Virginia	82

List of Tables

Table 1. Number of survey respondents and respective states.....	13
Table 2. Overall survey demographics	14
Table 3. Respondents' level of education	14
Table 4. Respondents' level of income	14
Table 5. Activity participation in each activity in the last 12 months	15
Table 6. Activity participation in each activity for the last trip.....	15
Table 7. "Primary" activity for the last trip.....	16
Table 8. Average trip expenditures per person by item across all respondents.....	18
Table 9. Average trip expenditures per item per person across respondents reporting expenditures for a certain item	19
Table 10. Mapping Feedback.....	23

Table 11. Number of markers placed for each activity by state and overall	25
Table 12. Number of markers placed for each activity grouping by state and overall.....	26
Table 13. New York: Overall survey demographics	58
Table 14. New York: Respondents' level of education	58
Table 15. New York: Respondents' level of income	58
Table 16. New York: Activity participation for the last year, last trip, and primary activity in last trip	59
Table 17. New York: Average trip expenditures per person by item across all respondents and given an expenditure on an item.....	61
Table 18. New Jersey: Overall survey demographics	64
Table 19. New Jersey: Respondents' level of education	64
Table 20. New Jersey: Respondents' level of income	64
Table 21. New Jersey: Activity participation for the last year, last trip, and primary activity in last trip	65
Table 22. New Jersey: Average trip expenditures per person by item across all respondents and given an expenditure on an item.....	67
Table 23. Delaware: Overall survey demographics	70
Table 24. Delaware: Respondents' level of education	70
Table 25. Delaware: Respondents' level of income	70
Table 26. Delaware: Activity participation for the last year, last trip, and primary activity in last trip	71
Table 27. Delaware: Average trip expenditures per person by item across all respondents and given an expenditure on an item.....	73
Table 28. Maryland: Overall survey demographics	76
Table 29. Maryland: Respondents' level of education	76
Table 30. Maryland: Respondents' level of income	76
Table 31. Maryland: Activity participation for the last year, last trip, and primary activity in last trip	77
Table 32. Maryland: Average trip expenditures per person by item across all respondents and given an expenditure on an item.....	79
Table 33. Virginia: Overall survey demographics	82
Table 34. Virginia: Respondents' level of education	82
Table 35. Virginia: Respondents' level of income	82
Table 36. Virginia: Activity participation for the last year, last trip, and primary activity in last trip	83
Table 37. Virginia: Average trip expenditures per person by item across all respondents and given an expenditure on an item.....	85

List of Figures

Figure 1. U.S. Mid-Atlantic study region (New York, New Jersey, Maryland, Delaware, and Virginia)	1
Figure 2. Survey registration web page.....	7
Figure 3. Survey screenshot: Mapping orientation	8
Figure 4. Survey screenshot: Placing activity markers	8

Figure 5. Survey screenshot: Selecting recreation activities to conducted at a location	9
Figure 6. Survey screenshot: Survey respondents are reminded of the activities they conducted in the last 12 months but have not yet mapped.....	9
Figure 7. Survey screenshot: Tracking activity markers	10
Figure 8. Survey dashboard screenshot: View summarized interim results	11
Figure 9. Activity participation for the last year, last trip, and primary activity in last trip.....	17
Figure 10. Average coastal and ocean recreation trip expenditures.....	20
Figure 11. Average coastal and ocean recreation trip expenditures per item, given expenditure made...	21
Figure 12. Influence of coastal and ocean recreation on residency.....	22
Figure 13. Miles respondents live from coast (one way)	23
Figure 14. New York: Activity participation for the last year, last trip, and primary activity in last trip	60
Figure 15. New York: Average coastal and ocean recreation trip expenditures.....	61
Figure 16. New York: Average trip expenditure per item, given expenditure made	62
Figure 17. New York: Influence of coastal and ocean recreation on residency	63
Figure 18. New York: Miles respondents live from coast (one way)	63
Figure 19. New Jersey: Activity participation for the last year, last trip, and primary activity in last trip ...	66
Figure 20. New Jersey: Average coastal and ocean recreation trip expenditures.....	67
Figure 21. New Jersey: Average trip expenditure per item, given expenditure made	68
Figure 22. New Jersey: Influence of coastal and ocean recreation on residency	69
Figure 23. New Jersey: Miles respondents live from coast (one way)	69
Figure 24. Delaware: Activity participation for the last year, last trip, and primary activity in last trip.....	72
Figure 25. Delaware: Average coastal and ocean recreation trip expenditures.....	73
Figure 26. Delaware: Average trip expenditure per item, given expenditure made	74
Figure 27. Delaware: Influence of coastal and ocean recreation on residency.....	75
Figure 28. Delaware: Miles respondents live from coast (one way)	75
Figure 29. Maryland: Activity participation for the last year, last trip, and primary activity in last trip.....	78
Figure 30. Maryland: Average coastal and ocean recreation trip expenditures.....	79
Figure 31. Maryland: Average trip expenditure per item, given expenditure made	80
Figure 32. Maryland: Influence of coastal and ocean recreation on residency.....	81
Figure 33. Maryland: Miles respondents live from coast (one way)	81
Figure 34. Virginia: Activity participation for the last year, last trip, and primary activity in last trip	84
Figure 35. Virginia: Average coastal and ocean recreation trip expenditures	85
Figure 36. Virginia: Average trip expenditure per item, given expenditure made	86
Figure 37. Virginia: Influence of coastal and ocean recreation on residency	87
Figure 38. Virginia: Miles respondents live from coast (one way)	87

List of Maps

Map 1. Mid-Atlantic Region: Spatial use patterns of shore-based activities (New York, New Jersey, Maryland, Delaware, and Virginia)	27
Map 2. Mid-Atlantic Region: Spatial use patterns of surface water activities (New York, New Jersey, Maryland, Delaware, and Virginia)	32
Map 3. Mid-Atlantic Region: Spatial use patterns of wildlife and sightseeing activities (New York, New Jersey, Maryland, Delaware, and Virginia)	37
Map 4. Mid-Atlantic Region: Spatial use patterns of diving activities (New York, New Jersey, Maryland, Delaware, and Virginia)	42

1. EXECUTIVE SUMMARY

Coastal and ocean recreation provides significant economic and social benefits to coastal communities of the Mid-Atlantic, encompassing New York, New Jersey, Delaware, Maryland, and Virginia. It is important to understand how and where people use the coast and ocean as a first step towards better management of the natural resources integral to coastal and ocean recreation.

To address this need, and to inform regional ocean planning efforts for the Mid-Atlantic Regional Council on the Ocean (MARCO) and the Mid-Atlantic Regional Planning Body (RPB), the Surfrider Foundation (Surfrider), in partnership with Point 97 (a company of Ecotrust), The Nature Conservancy (TNC), and Monmouth University's Urban Coast Institute (Monmouth) (jointly, the Team), in collaboration with MARCO, engaged “non-consumptive” recreational users such as divers, surfers, kayakers, beach goers, and wildlife viewers to carry out the Mid-Atlantic Coastal and Ocean Recreation Study (Study) in 2013-2014.

The Team used a web-based survey to collect data from respondents on recreational use patterns, trip expenditures, and demographics. The survey included a series of questions and an easy-to-use interactive mapping tool. Respondents marked places on maps where they recreated over the last 12 months. The Team then analyzed the resulting spatial data to develop maps indicating intensity of use for 16 recreational activities in the region.

To promote participation in the Study, the Team engaged coastal and ocean recreational stakeholders and regional planning partners like MARCO to collaboratively develop the survey instrument, deploy targeted outreach strategies, and review the resulting spatial data on coastal and ocean recreation use patterns.

The Team implemented a variety of outreach strategies designed to promote stakeholder engagement in all phases of the Study. Outreach efforts targeted non-consumptive coastal and ocean users and leveraged the collaboration of a broad set of recreational businesses, groups, and associations, as well as environmental organizations in the region. The Team’s outreach also incorporated information about the regional ocean planning process and opportunities for public engagement.

In total, Mid-Atlantic respondents completed nearly 1,500 surveys resulting in over 22,000 unique data points. The data show that coastal and ocean recreation encompasses a popular and diverse group of activities in the Mid-Atlantic, resulting in major economic and social benefits to coastal communities. The average respondent who visited the Mid-Atlantic coast spent an average of \$71.06 per trip.

The Team, in coordination with other relevant recreational use studies in the region, has made the data and information from the Study available on the MARCO Mid-Atlantic Ocean Data Portal (<http://portal.midatlanticocean.org/portal>) and to the Mid-Atlantic Regional Planning

Body (<http://www.boem.gov/Mid-Atlantic-Regional-Planning-Body>), as it develops a Regional Ocean Action Plan for coastal and ocean uses in the Mid-Atlantic.

For the first time, regional scale maps showing coastal and ocean recreational use patterns are available to help planners and managers make better-informed decisions in consideration of maintaining and improving recreational uses and values. The Team expects this new baseline to serve as a credible first iteration, a foundation to be updated and improved as new information on coastal and ocean recreation becomes available.

2. INTRODUCTION

Coastal and ocean recreation provides significant economic and social benefits to coastal communities of the Mid-Atlantic, encompassing New York, New Jersey, Delaware, Maryland, and Virginia. These benefits include the financial impact of direct expenditures (e.g., hotel stays, dining, shopping) as well as the enhanced human well being derived from enjoying the coastal and ocean environment. It is important to understand how and where people use the coast and ocean as a first step towards better management of the natural resources integral to coastal and ocean recreation.

To address this need, and to inform regional ocean planning efforts for the Mid-Atlantic Regional Council on the Ocean (MARCO) and the Mid-Atlantic Regional Planning Body (RPB), the Surfrider Foundation (Surfrider), in partnership with Point 97 (a company of Ecotrust), The Nature Conservancy (TNC), and Monmouth University's Urban Coast Institute (Monmouth) (jointly, the Team), in collaboration with MARCO, engaged "non-consumptive" recreational users such as divers, surfers, kayakers, beach goers, and wildlife viewers to carry out the Mid-Atlantic Coastal and Ocean Recreation Study (Study) in 2013-2014. Surfrider served as lead on community outreach and engagement and overall project oversight, Point 97 served as the technical lead providing the survey methodology, survey instrument, and data analysis, and TNC and Monmouth provided guidance on all phases of project development, outreach to increase survey participation, coordination with MARCO and the RPB, and public communications at RPB meetings.

The Study area of interest included Long Island Sound from the Connecticut-New York border south to Virginia and seaward 200 nautical miles (to the Exclusive Economic Zone boundary), including coastal bays except for the Chesapeake Bay and Delaware Bay. (Figure 1).

Figure 1. U.S. Mid-Atlantic study region
(New York, New Jersey, Maryland, Delaware, and Virginia)



3. METHODS

The methods deployed by the Team built upon a similar recreational use study carried out in 2011 by Surfrider, Ecotrust, and Natural Equity to support planning efforts in Oregon.¹ The Team engaged coastal and ocean recreational stakeholders and regional planning partners to collaboratively develop the survey instrument, deploy targeted outreach strategies, and review the resulting spatial data on coastal and ocean recreational use patterns. In the sections below we will detail stakeholder outreach and engagement efforts, the survey methodology and mapping tool, and data analysis methods.

3.1. Study Review Team

At the outset of the Study, the Team assembled a Study Review Team comprised of MARCO representatives and other agency, academic, and NGO partners (Appendix A). The Team contacted these individuals via email and phone, and subsequently hosted two webinars, on March 28 and May 21, 2013. The webinars were an opportunity to provide background on the Study, an overview of the Study methods, and to preview the draft survey instrument. The webinars were well attended by the Study Review Team, with all MARCO states represented. Surfrider staff also spoke with each MARCO representative separately before launching the Study to ensure their understanding and comfort with the approach and outreach components.

From this initial outreach, the Team received many useful and insightful comments. The State of New York suggested adding Long Island Sound to the Study area for congruity with previous studies. Experts from the University of Delaware recommended changing the demographic questions to more closely mirror U.S. census data. Finally, several State representatives provided guidance to help ensure the Study could be integrated with other recreational use data.

As the Mid-Atlantic Regional Planning Body (RPB) was just beginning to work on its founding documents in early 2013, RPB member feedback on the Study methods was not requested. However, Surfrider included information about the Study in written and oral comments to the RPB.² The Study was additionally referenced by the MARCO Portal Team as one of several key data collection efforts underway at each of the full RPB meetings in September 2013 and May 2014.^{3 4} The MARCO Portal Team and Surfrider staff also collaborated with their counterparts in the Northeast region to ensure congruity between the Study and Northeast data collection and outreach activities.

After the completion of the data collection phase, the Team held two webinars for the Study Review Team, on February 28 and July 30, 2014. These webinars were an opportunity for the Team to provide updates on the Study, present draft and final data sets and products, share the strategy to disseminate the Study results, and convey where to view and access the data

¹ Non-Consumptive Ocean Recreation in Oregon: Human Uses, Economic Impacts, and Spatial Data. Surfrider Foundation, Natural Equity, and Ecotrust. 2011. Available at http://www.surfrider.org/images/uploads/publications/OR_rec_study.pdf

² Mid-Atlantic Regional Ocean Planning Framework: Written Comments Received. Available at <http://www.boem.gov/Framework-Comments/>

³ Mid-Atlantic Regional Planning Body Meeting Slides. September 24th and 25th, 2013. Available at <http://www.boem.gov/Environmental-Stewardship/Mid-Atlantic-Regional-Planning-Body/Sept2013-RPB-meeting-slides.aspx>

⁴ Mid-Atlantic Regional Planning Body Meeting Slides. May 20th and 21st, 2014. Available at <http://www.boem.gov/May-20-21-RPB-Meeting-Slides/>

online through the MARCO Mid-Atlantic Ocean Data Portal. These webinars were also well attended. Many members of the Study Review Team expressed satisfaction with the results of the Study, and support for incorporating the information into regional ocean planning processes occurring in the Mid-Atlantic region.

3.2. Stakeholder Outreach and Engagement

The Team implemented a variety of outreach strategies designed to promote stakeholder engagement in all phases of the Study. Outreach efforts targeted non-consumptive coastal and ocean users and leveraged the collaboration of a broad set of recreational businesses, groups, and associations, as well as environmental organizations in the region. The Team's outreach also incorporated information about the regional ocean planning process and opportunities for public engagement.

In the spring of 2013, Surfrider established a stakeholder group of recreational interests to help review survey design, data collected, and draft study products (Appendix A). These contacts provided valuable feedback, complementing input from the Study Review Team. For example, a representative from the diving community suggested adding a nautical chart with depth contours to the survey tool so that divers could more easily locate their dive locations, while a representative from the kayak and canoe community focused on the need to include the back bays and estuaries.

In addition, Surfrider staff and interns conducted targeted outreach to 349 recreational groups, businesses, and associations throughout the region on the Study (Appendix A). These groups and businesses were selected to capture the breadth of activities and geographic extent of coastal and ocean recreation in the Mid-Atlantic region. Communication was conducted with key representatives or "gatekeepers" (e.g., business owners, club presidents, etc.) primarily through phone calls and emails, and focused on: describing the specific purpose and intent of the project; addressing questions or concerns regarding the handling, use, and analysis of data collected; and encouraging them to share information with their members and customers. In total, 53 recreational businesses and groups in the Mid-Atlantic promoted participation in the Study through newsletters, emails, social media, and distribution of outreach materials (Appendix A). Others may have participated without informing Surfrider of their efforts.

Surfrider staff, interns, and volunteers also conducted the following activities to promote understanding and participation in the Study:

- Provided information on the Study via Surfrider regional and chapter websites, email lists, and social media
- Created and distributed outreach materials (including over 6,000 postcards) through Surfrider chapter meetings, outreach events, and other recreational businesses and groups
- Distributed a media release to major print and online media in the Mid-Atlantic region during the data collection phase

After the data collection phase was completed, the Team conducted additional outreach to recreational stakeholders to provide an update on the Study and to validate the spatial data collected. Gatekeepers and other recreational users were contacted via phone, email, and in-person visits. Additionally, the Team held webinars on April 23 and April 26, 2014 for

gatekeepers and recreational contacts to present draft data sets. Feedback from participants was positive, indicating that the data appeared accurate.

The Team will host a final webinar in August of 2014 for gatekeepers and recreational stakeholders to present the final data products and provide instruction for accessing and viewing the data on the MARCO Mid-Atlantic Ocean Data Portal. This webinar will serve as an additional opportunity to highlight public engagement opportunities in the regional ocean planning process. Surfrider will also conduct additional outreach to gatekeepers on the final Study products through the various communication pathways described above.

3.3. Survey Methods

The online survey, a crucial component of the Study, was launched on July 1, 2013 and ended December 31, 2013. In the survey, respondents were asked to recount details of their coastal and ocean recreation trips over the previous 12 months, and separately, of their last trip, including information about participation in recreational activities, the location of activities, and expenditures made. The survey questions can be found in Appendix B.

The survey employed an opt-in or purposive-convenience sample, where anyone willing could participate. This method is optimal for increasing sample sizes to obtain sufficient data from specific user group niches (e.g., windsurfers, SCUBA divers, kayakers) that are difficult to adequately and confidently capture through a general population survey. This approach proved to be cost effective considering the large Mid-Atlantic Study area. Finally, the internet opt-in mode provided a participatory opportunity that served to engage and build stakeholder investment in regional ocean planning and policy.

Despite these advantages, data collected through an internet opt-in mode have some important limitations. Because respondents choose to participate in the survey, the sample is not random and may or may not be demographically representative of the study population. For these reasons, the Study was designed with the understanding that summaries of demographics or economic expenditures apply only to the sampled population and may not accurately reflect true values considering all of the region's recreational users.

The Study does provide useful data about coastal and ocean recreational use patterns by allowing individuals, including avid users, to participate in mapping the locations of their coastal and ocean recreational activities. This Study's approach is particularly relevant for highly economically valuable and spatially localized activities such as windsurfing, SCUBA diving, kayaking, and wildlife viewing. These types of activities are practiced by a relatively small percentage of the overall coastal and ocean recreational population yet contributes significantly to local economies.

Often the populations of these highly economically valuable and spatially intensive user groups are not well defined (e.g., a complete listing of users and contact information are not available) and so statistically targeted survey options are not feasible to create probability-based samples. Additionally, given the smaller percentage of the population that participates in these activities, the sample size needed to adequately and confidently sample across the variability in these user groups through a general population survey would be cost prohibitive and beyond the ability of internet survey providers. Given this, a possible approach is to gather data through user focus groups—however, the population size of these user groups are large

enough that this type of approach may not represent the diverse spatial use patterns associated with these type of activities.

Considering these constraints and limitations, the Study chose to leverage a participatory crowd-sourced approach to gathering spatial data on coastal and ocean recreation spatial use patterns. This approach has become increasingly popular as a method to engage citizens and stakeholders to contribute their information to directly inform local and regional management and planning processes.

3.4. ViewPoint: Survey Mapping Tool

To collect spatially explicit data on coastal and ocean recreational activities, the Team utilized Point 97's *ViewPoint* survey and mapping platform that was customized to this project and accessible through mobile phones, tablets, and desktop/laptop computers. Through the Team's outreach efforts, survey respondents were directed to a webpage to register for the survey (Figure 2). Respondents then received an email with a unique link to the online survey, which they could use at any time to return to the survey if they did not complete the survey in one sitting.

In addition to survey questions, respondents were asked to map locations where they conducted specific coastal and ocean recreational activities in the last 12 months (Figure 3). The mapping tool was designed to be user-friendly and easily navigable and could be accessed through both desktop/laptop computers as well as mobile smartphones to enable respondent to conveniently, quickly, and easily submit survey data. To map recreation locations, respondents used the survey's mapping tool, which presented satellite data from Bing Maps as well as National Oceanic and Atmospheric Administration (NOAA) nautical charts. To navigate the map, respondents could search for a specific location or navigate the map themselves (zoom in/out and pan around), similar to the Google Maps interface. Respondents then dropped activity markers to indicate the location they participated in recreational activities (Figure 4) and then associated specific recreational activities with that location (Figure 5).

Point 97 embedded several features into the mapping tool to ensure ease of use and the collection of high quality and high-resolution data, including:

- Search functions that enabled survey respondents to search for a specific location. Respondents were then zoomed into that location at the desired spatial scale for accurate placement of activity markers.
- A geo-fence was set up and visible in the mapping tool to delineate the study region and ensure that survey respondents only mapped in areas relevant to the study region. Furthermore, if respondents attempted to map outside the study region they were presented with an error message and a map of the study region to remind them of the study region boundaries.
- A zoom level of 15 (or a 1-inch to 0.25-mile map scale) was enforced to ensure accurate placement of activity markers.
- Unmapped activities reminder. To ensure survey respondents mapped all their recreational activities, if survey respondents indicated they were finished mapping they would be reminded of the recreational activities they had not yet mapped (Figure 6).

- Activity marker management. The mapping tool included a module to help survey respondents review, edit, delete, and track where they have mapped activity locations and the associated activities (Figure 7).

To monitor the progress and incoming survey data in real-time, Point 97 also developed an administrative dashboard (Figure 8) to summarize key survey analytics. Information in the dashboard included the number of respondents who have registered, started, and completed the survey by state and across the region. Furthermore, the dashboard indicated how many people had mapped certain activities and displayed an associated heat map of mapped activities. This data was then used to inform outreach efforts so that certain geographies or user groups could be targeted to increase their participation in the online survey.

Figure 2. Survey registration web page

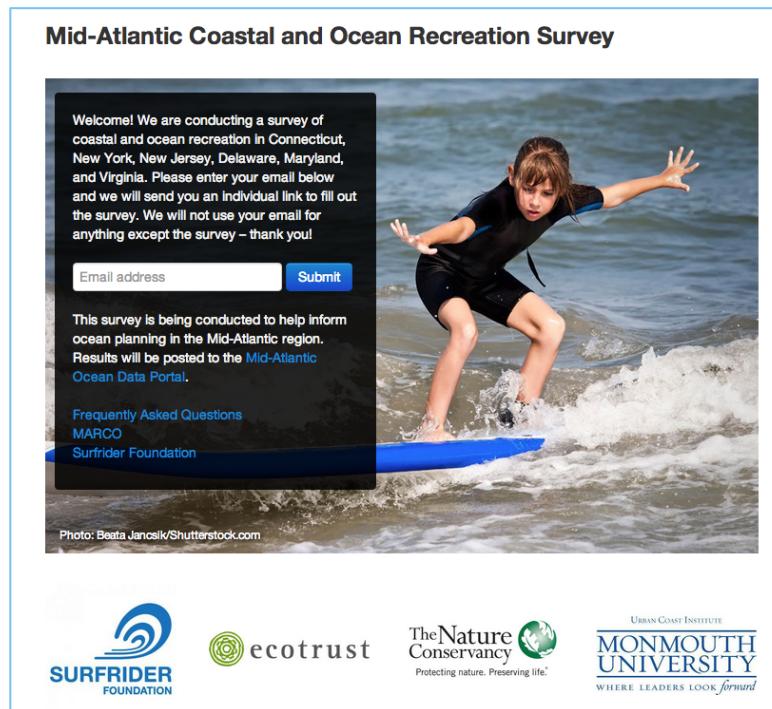


Figure 3. Survey screenshot: Mapping orientation

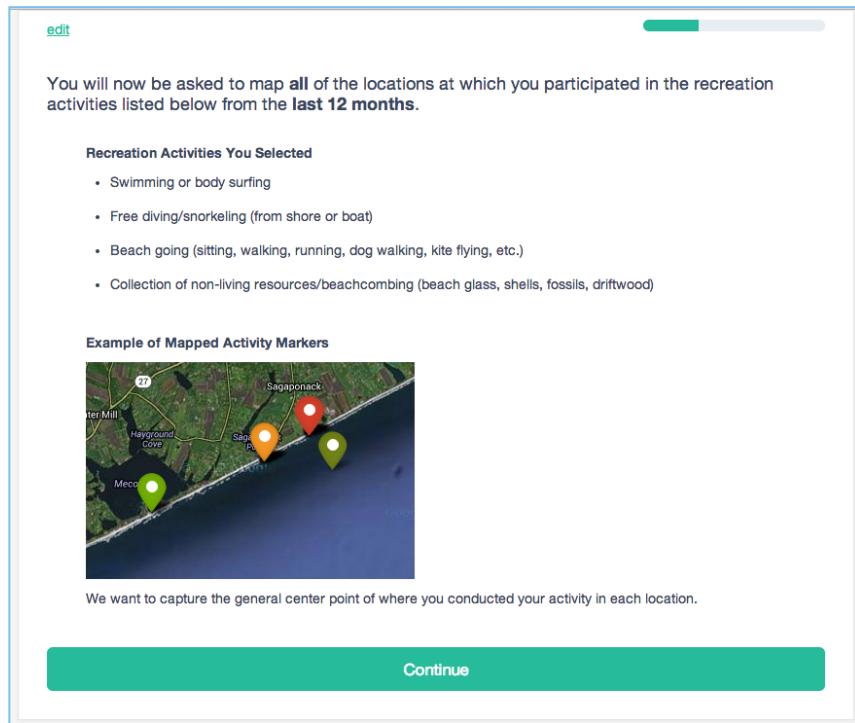


Figure 4. Survey screenshot: Placing activity markers

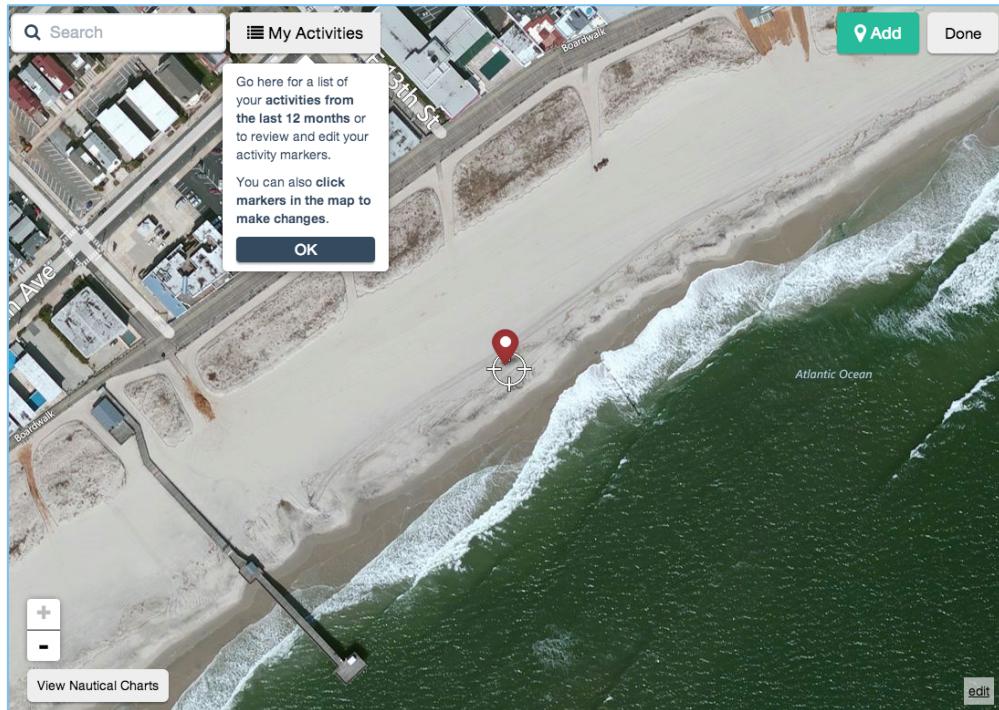
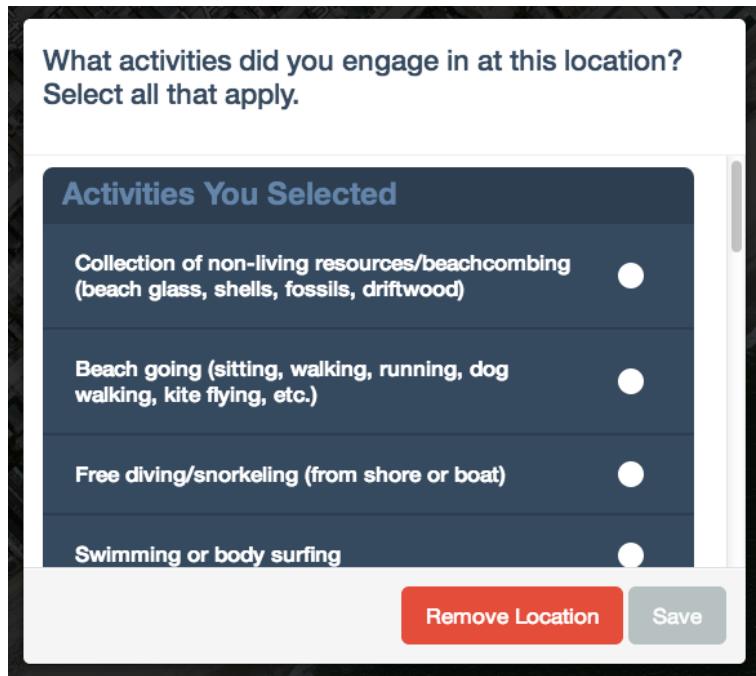


Figure 5. Survey screenshot: Selecting recreational activities to conducted at a location



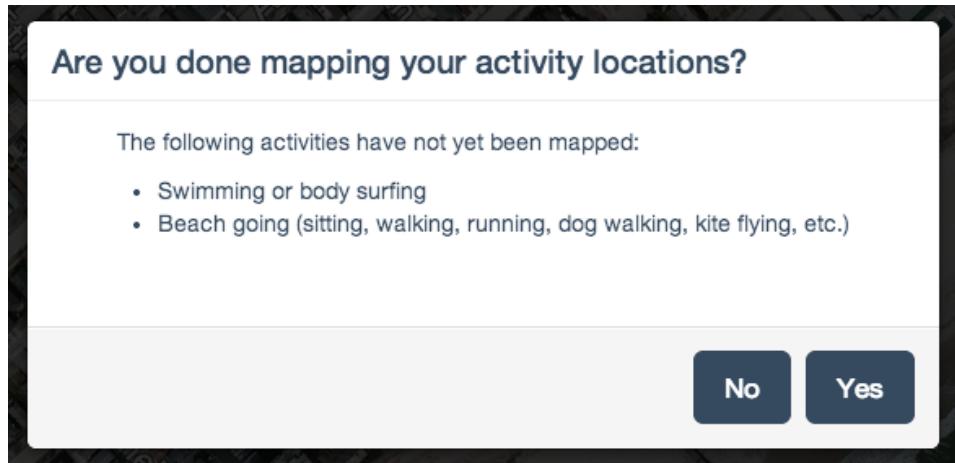
What activities did you engage in at this location?
Select all that apply.

Activities You Selected

- Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)
- Beach going (sitting, walking, running, dog walking, kite flying, etc.)
- Free diving/snorkeling (from shore or boat)
- Swimming or body surfing

Remove Location **Save**

Figure 6. Survey screenshot: Survey respondents are reminded of the activities they conducted in the last 12 months but have not yet mapped



Are you done mapping your activity locations?

The following activities have not yet been mapped:

- Swimming or body surfing
- Beach going (sitting, walking, running, dog walking, kite flying, etc.)

No **Yes**

Figure 7. Survey screenshot: Tracking activity markers

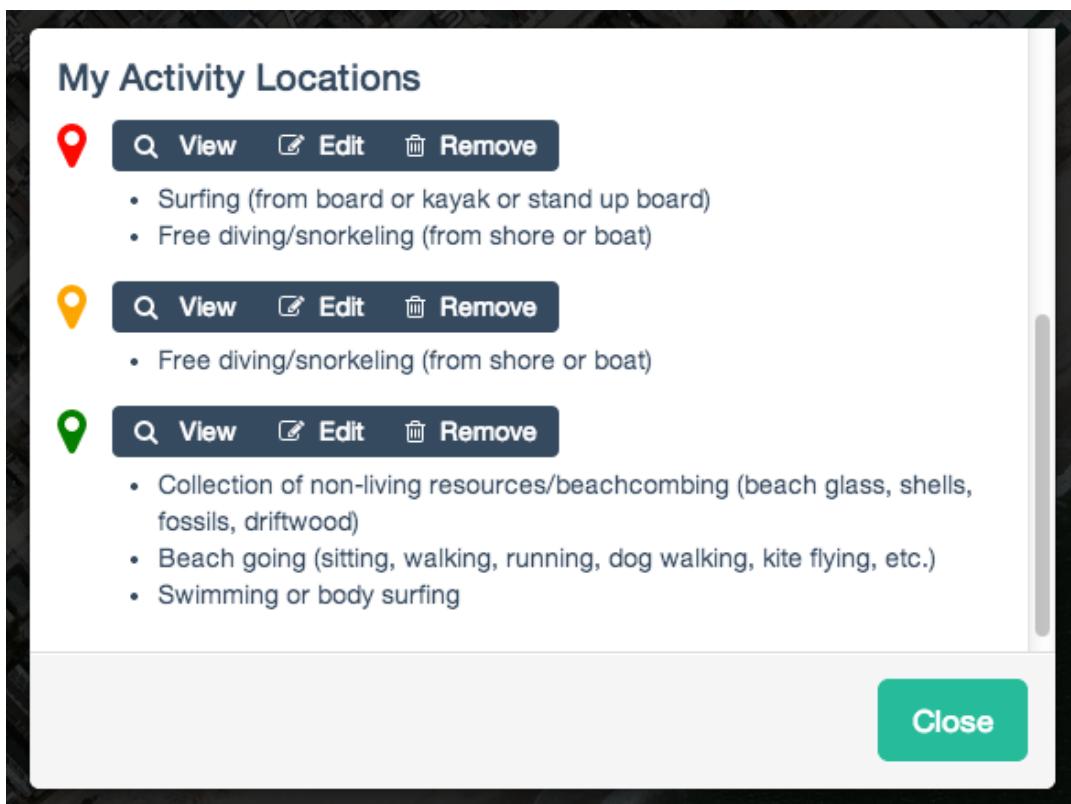
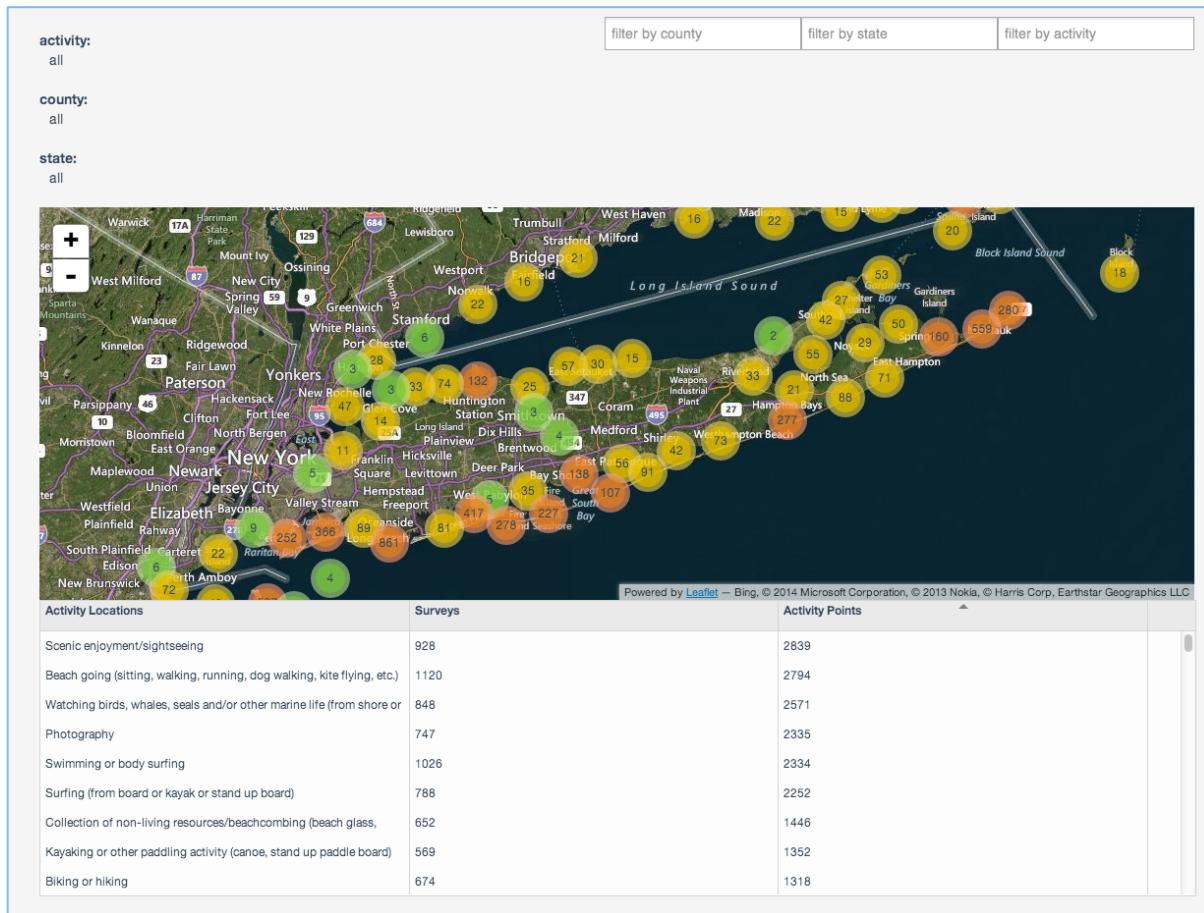


Figure 8. Survey dashboard screenshot: View summarized interim results



3.5. Data Analysis Methods

Once the online survey was closed, Point 97 compiled and summarized the results for analysis to determine recreational activity participation rates, locations, and expenditures. Analysis and summaries were performed across all respondents to provide regional results, as displayed in the main body of this report, as well as across respondents from the five MARCO states, see Appendix C through Appendix I.

To ensure that the data would be successfully integrated into the MARCO Mid-Atlantic Ocean Data Portal, the Team held a one day workshop in Arlington, VA (February 4, 2014) focused on data integration between the Study, MARCO's Mid-Atlantic Boater Survey, and the State-run Participatory GIS efforts, as all of these data collection projects focused on mapping human uses in the Mid-Atlantic region. Attendees representing each of the surveys plus MARCO representative from the Virginia and New York state agencies attended in person and via telephone. Participants discussed the integration and appearance of the data on the MARCO Mid-Atlantic Ocean Data Portal and agreed upon methods to facilitate use and comparison of data across all mapping efforts.

To create the spatial data, Point 97 utilized a kernel density analysis in ArcGIS. The kernel analysis is a nonparametric statistical method for estimating probability densities from a set of

point data. Conceptually, a smooth raster surface is fitted over each point. The surface value is highest at the location of the point and diminishes with increasing distance (i.e., search radius), eventually reaching zero. Based on previous experience conducting a similar analysis in Oregon and California and after conducting several tests, the kernel density analysis on all activities was given a search radius of one mile. The resulting dataset is a smooth raster surface depicting the intensity use or density of an activity.

There were a total of 93 activities mapped, but only sixteen activities had a large enough sample (>50 point markers) to create robust map products. Spatial data layers were created for each of these 16 activities at the state and region levels. To help facilitate the use of these data layers in the Mid-Atlantic regional ocean planning process, a set of activity groupings were developed based on the outcomes of the February 2014 Arlington workshop. Spatial data layers were then created using the activity groupings (shore based activities, surface water activities, wildlife and sightseeing activities, and diving activities) and then summarized to 1km square planning unit grids to help facilitate the comparison the spatial data from this Study to other human use mapping studies in the region. The resulting spatial data layers were then integrated into the Mid-Atlantic Ocean Data Portal (<http://portal.midatlanticocean.org/portal/>) to inform and support coastal and ocean planning in the Mid-Atlantic region.

4. MID-ATLANTIC REGION STUDY RESULTS

4.1. Survey Data Results

As the primary goals of the Study were to fill important data gaps and inform regional ocean planning efforts in the Mid-Atlantic, the following information and spatial data are provided at the state and region levels:

- Respondent participation rates for specific coastal and ocean recreational activities;
- Spatial patterns of use for overall, grouped, and specific coastal and ocean recreational activities; and
- Average overall and itemized coastal and ocean recreation trip expenditures.

Our sample included 1,436 respondents from 23 different states, with the majority of respondents from Mid-Atlantic States, see Table 1.

Table 1. Number of survey respondents and respective states

State	Number of respondents	% of total sample
NJ	445	31.0%
NY	316	22.0%
VA	181	12.6%
MD	164	11.4%
DE	156	10.9%
PA	89	6.2%
CT	28	1.9%
DC	23	1.6%
MA	6	0.4%
FL	5	0.3%
NC	4	0.3%
RI	3	0.2%
AZ	2	0.1%
OH	2	0.1%
CO	2	0.1%
MI	2	0.1%
Int.	2	0.1%
OR	1	0.1%
ME	1	0.1%
TN	1	0.1%
CA	1	0.1%
VT	1	0.1%
SC	1	0.1%
TOTAL	1,436	100.0%

Table 2 through Table 4 display demographic information about survey respondents, including gender, race, education, and income. Overall, the average respondent was 44 years old and the majority of respondents were male (60 percent), white (95.1 percent), with a Bachelor's degree (40.5 percent), and income between \$50,000–\$99,000 (29 percent).

Table 2. Overall survey demographics

Demographics	Survey respondents
Number of Respondents	1436
Average age	44
Male	60.0%
Female	40.0%
White, Non-Hispanic	95.1%
Black, Non-Hispanic	0.5%
Other, Non-Hispanic	1.9%
Hispanic	1.8%
2+ Races, Non-Hispanic	0.7%

Table 3. Respondents' level of education

School	Survey respondents
No formal education	0.1%
Less than high school	0.1%
High School	3.7%
Some college	17.7%
Bachelor's degree	40.5%
Graduate or professional degree	36.9%
No Answer	1.0%

Table 4. Respondents' level of income

Household Income	Survey respondents
Don't know	6.8%
Less than \$25,000	4.0%
\$25,000 to \$49,999	10.2%
\$50,000 to \$74,999	14.2%
\$75,000 to \$99,999	14.8%
\$100,000 to \$124,999	12.5%
\$125,000 to \$149,999	8.8%
\$150,000 to \$174,999	7.7%
\$175,000 to \$199,999	3.5%
\$200,000 and over	11.3%
No Answer	6.2%

Tables are included for "activity participation in past 12 months" and "activity participation in last trip" and "primary activity in last trip". For "activity participation in the past 12 months", respondents were asked to indicate which coastal and ocean recreational activities they conducted in the last 12 months in the Mid-Atlantic region. Respondents could select multiple activities. For "activity participation in last trip", respondents were asked to indicate which activities they conducted in their last trip to the Mid-Atlantic region that was primarily for coastal and ocean recreation purposes. A trip was defined as an intentional trip outside of the respondent's daily routine. For "primary activity in last trip" respondents were further asked to

identify the coastal and ocean recreational activity that was the primary activity of the trip. Respondents could only indicate one primary activity.

Table 5 displays the activity participation rates of survey respondents over the last 12 months. The top five most popular activities among survey respondents were beach going (91.2 percent), scenic enjoyment/sightseeing (69.8 percent), biking or hiking (58.6 percent), photography (57.7 percent), and surfing (57.2 percent).

Table 5. Activity participation in each activity in the last 12 months

Activities	% of respondents
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	91.2%
Scenic enjoyment/sightseeing	69.8%
Biking or hiking	58.6%
Photography	57.7%
Surfing (from board or kayak or stand up board)	57.2%
Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)	53.5%
Sitting in your car watching the scene	37.7%
Camping	18.1%
Free diving/snorkeling (from shore or boat)	10.2%
Watching birds, whales, seals and/or other marine life (from a charter boat)	9.2%
Skim boarding	8.4%
Windsurfing	6.8%
SCUBA diving (from a charter boat)	3.7%
Kite boarding	3.6%
Hang gliding/parasailing	0.9%

When asked specifically about coastal and ocean recreational activities conducted on their most recent trip, participant activity rates differed slightly (Table 6). The five most popular activities among survey respondents were beach going (69.5 percent), scenic enjoyment/sightseeing (48.4 percent), surfing (41.4 percent), photography (34.4 percent), and collecting non-living resources/beachcombing (30.4 percent).

Table 6. Activity participation in each activity for the last trip

Activities	% of respondents
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	69.5%
Scenic enjoyment/sightseeing	48.4%
Surfing (from board or kayak or stand up board)	41.4%
Photography	34.4%
Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)	30.4%
Biking or hiking	26.2%
Sitting in your car watching the scene	13.6%
Windsurfing	4.4%
Camping	4.3%
Skim boarding	3.8%
Watching birds, whales, seals and/or other marine life (from a charter boat)	3.3%
Kite boarding	2.3%
Free diving/snorkeling (from shore or boat)	2.2%

SCUBA diving (from a charter boat)	1.3%
Hang gliding/parasailing	0.3%

Finally, we asked respondents to select only one activity as their “primary” recreational activity over their last trip. Again, participant activity rates differed slightly, see Table 7. The five most popular primary activities among survey respondents were surfing (31.5 percent), beach going (29.8 percent), scenic enjoyment/sightseeing (4.5 percent), windsurfing (3.5 percent), and biking or hiking (2.4 percent).

Table 7. Primary activity for the last trip

Activities	% of respondents
Surfing (from board or kayak or stand up board)	31.5%
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	29.8%
Scenic enjoyment/sightseeing	4.5%
Windsurfing	3.5%
Biking or hiking	2.4%
Kite boarding	1.3%
Photography	1.2%
Collection of non-living resources/beachcombing (beach glass, shells, driftwood)	1.0%
Camping	1.0%
SCUBA diving (from a charter boat)	1.0%
Skim boarding	0.4%
Sitting in your car watching the scene	0.3%
Watching birds, whales, seals and/or other marine life (from a charter boat)	0.3%
Free diving/snorkeling (from shore or boat)	0.2%

Figure 9 shows reported activity participation rates comparing trips over the last 12 months, the last trip, and the primary activity undertaken on the last trip. For trips in the last 12 months and for their last trip, respondents were asked to indicate all the coastal and ocean recreational activities they participated in. Respondents may have participated in multiple coastal and ocean recreational activities on their last trip but were asked to also indicate the primary or main activity on their last trip. For example, 91.2 percent of respondents indicated they participated in beach going activities (often along with other activities) in the last 12 months, 69.5 percent indicated they participated in beach going activities on their last trip, and 29.8 percent of respondents indicated that on their last trip their primary activity was beach going.

Figure 9. Activity participation for the last year, last trip, and primary activity in last trip

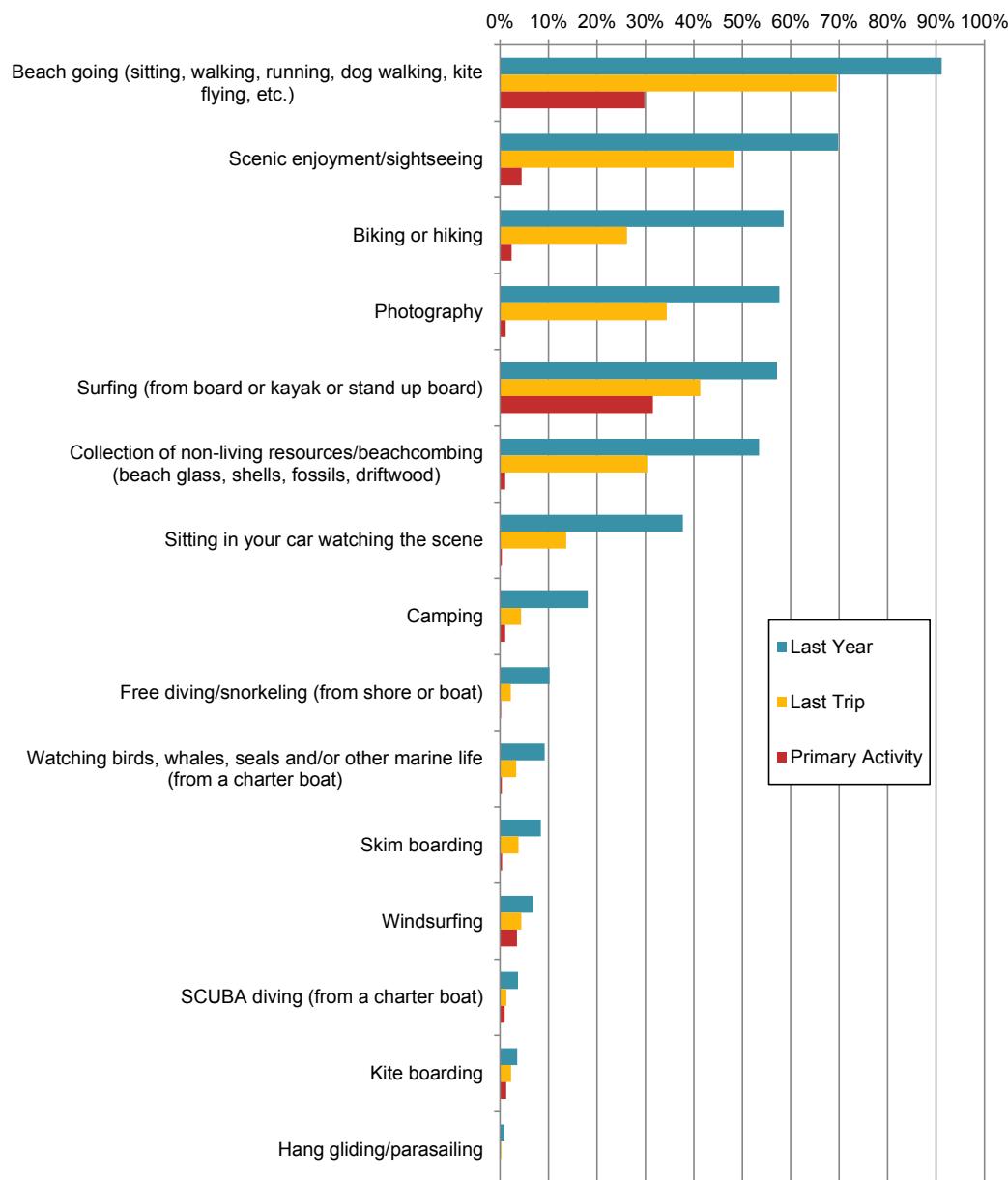


Table 8 displays the average expenditures made for each item across all respondents on their last trip. Averaged across all respondents (including those without expenses), the highest expense was food and beverage purchases at a restaurant or bar at approximately \$17.61. The most prevalent type of expenditure made was for car fuel, with 78.3 percent of respondents reporting such expenditures. The next most common expenditure per respondent was lodging, at approximately \$17.33 per trip, though only 20.3 percent of respondents reported these. Adding together the average expenditures per item across all items, we estimate a total trip expenditure figure at approximately \$71.06 per person, per trip.

Table 8. Average trip expenditures per person by item across all respondents

Expenditures Category	Average expenditure	Standard deviation	% Observed
Food & beverages: Restaurant or bar	\$17.61	\$60.41	69.4%
Lodging	\$17.33	\$153.41	20.3%
Car fuel	\$10.80	\$29.17	78.4%
Food & beverages: Store	\$10.25	\$73.06	71.1%
Shopping and souvenirs	\$4.01	\$20.17	27.2%
Sundries	\$2.41	\$11.64	33.1%
Equipment rental	\$1.53	\$19.49	6.4%
Other, please list	\$1.33	\$14.48	5.7%
Park, museum, aquarium, or other entrance fee	\$1.08	\$5.79	21.6%
Lessons, clinics, camps	\$1.06	\$12.26	3.9%
Parking	\$0.94	\$5.53	28.2%
Charter fee	\$0.91	\$9.98	2.2%
Airline flight	\$0.88	\$15.14	1.8%
Car rental	\$0.75	\$12.87	1.8%
Dive equipment rental and airfills	\$0.17	\$3.10	1.6%
TOTAL	\$71.06	\$276.62	

Table 9 displays the average expenditure for each item across only respondents who indicated expenses for that item. In other words, among all respondents who spent money on lodging expenses (20.3 percent), the average expenditure amount was approximately \$237.44 per person per last trip. Lodging expenses in fact were the highest per person per trip average expenditure out of all items. This was followed by expenditures on airline flights (\$208.50) and on car rentals (\$133.25), though only 1.8 percent of respondents indicated expenditures for these items. It is important to explicitly note that the average expenditures per item presented in Table 9 should not be added together, and only serve to indicate the average cost of such items for coastal and ocean recreational respondents at the time of this survey.

Table 9. Average trip expenditures per item per person across respondents reporting expenditures for a certain item

Expenditures Category	Average expenditure	Standard deviation	% Observed
Lodging	\$237.44	\$522.10	20.3%
Airline flight	\$208.50	\$115.47	1.8%
Car rental	\$133.25	\$116.17	1.8%
Charter fee	\$81.25	\$49.85	2.2%
Lessons, clinics, camps	\$75.61	\$73.03	3.9%
Other, please list	\$72.88	\$80.77	5.7%
Equipment rental	\$72.79	\$115.26	6.4%
Food & beverages: Restaurant or bar	\$57.96	\$98.42	69.4%
Shopping and souvenirs	\$43.32	\$52.04	27.2%
Food & beverages: Store	\$33.26	\$128.79	71.1%
Car fuel	\$32.33	\$43.05	78.4%
Dive equipment rental and airfills	\$30.44	\$30.01	1.6%
Sundries	\$19.41	\$27.64	33.1%
Park, museum, aquarium, or other entrance fee	\$14.32	\$16.09	21.6%
Parking	\$8.56	\$14.67	28.2%

Figure 10 displays the relative average expenditures made per person per trip for all items as displayed in

Table 8. Expenditures on food and beverages, lodging, and car fuel combined make up over 75 percent of the total average trip expenditure per person.

Figure 10. Average coastal and ocean recreation trip expenditures

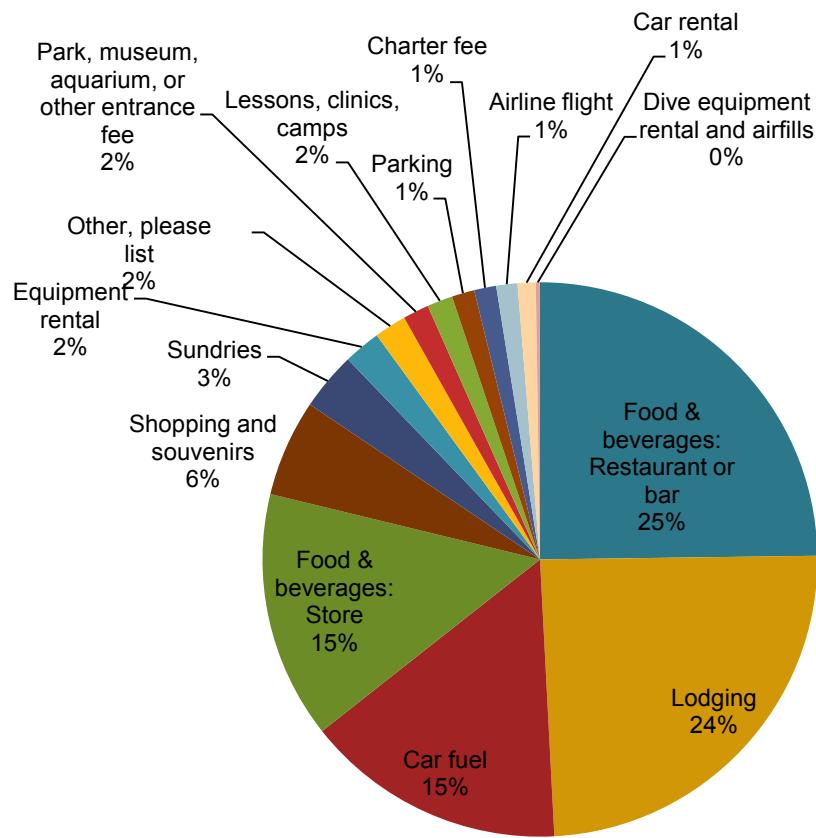
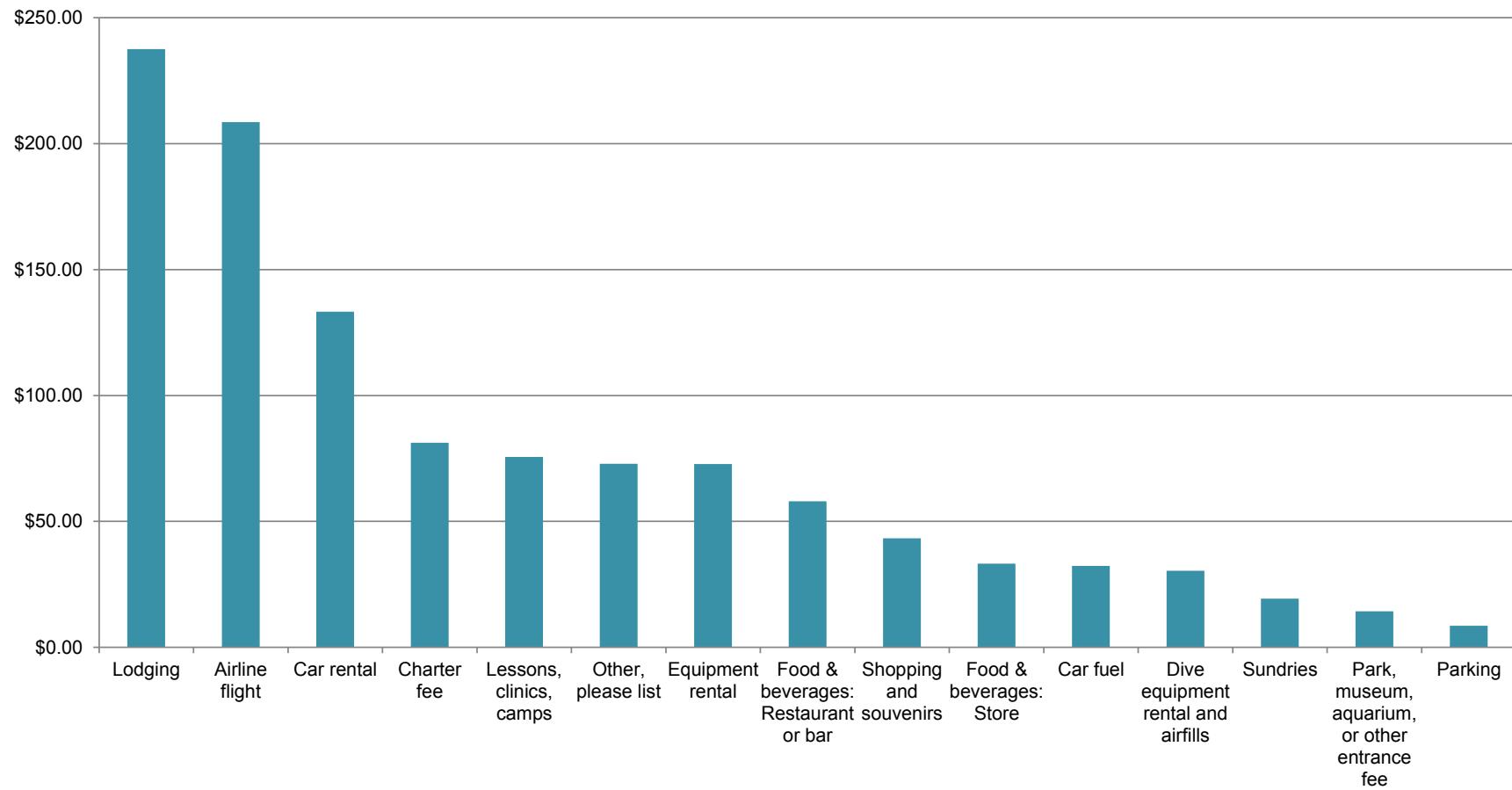


Figure 11. Average coastal and ocean recreation trip expenditures per item, given expenditure made



We asked respondents, “If you live on the coast, please tell us how much nearby coastal and ocean recreation opportunities played into your decision to live on the coast”. Figure 12 displays the results across all respondents; while 40 percent of respondents did not live on the coast, 41 percent said that the availability of nearby coastal and ocean recreation was a big motivation for their reason to live there. Figure 13 displays how many miles respondents live from the coast and indicates that a large portion of respondents (40 percent) live less than 10 miles from the coast.

Figure 12. Influence of coastal and ocean recreation on residency

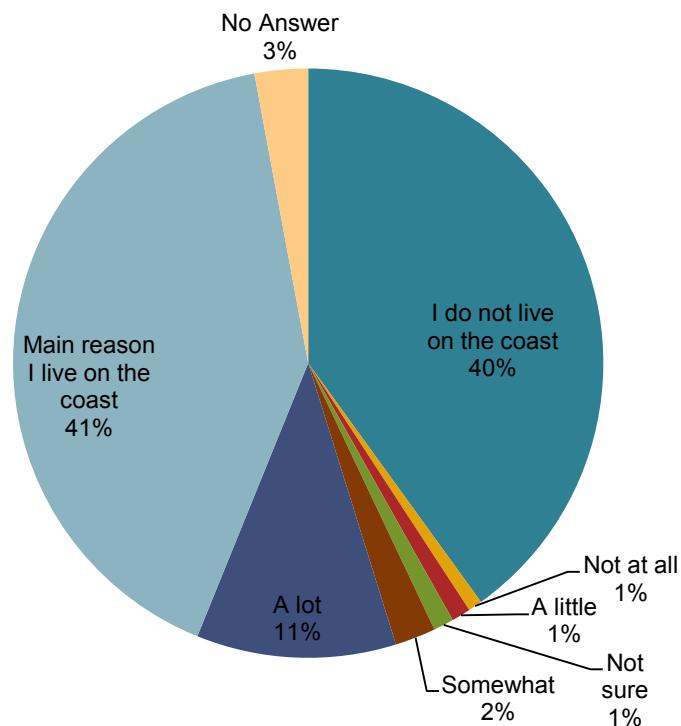
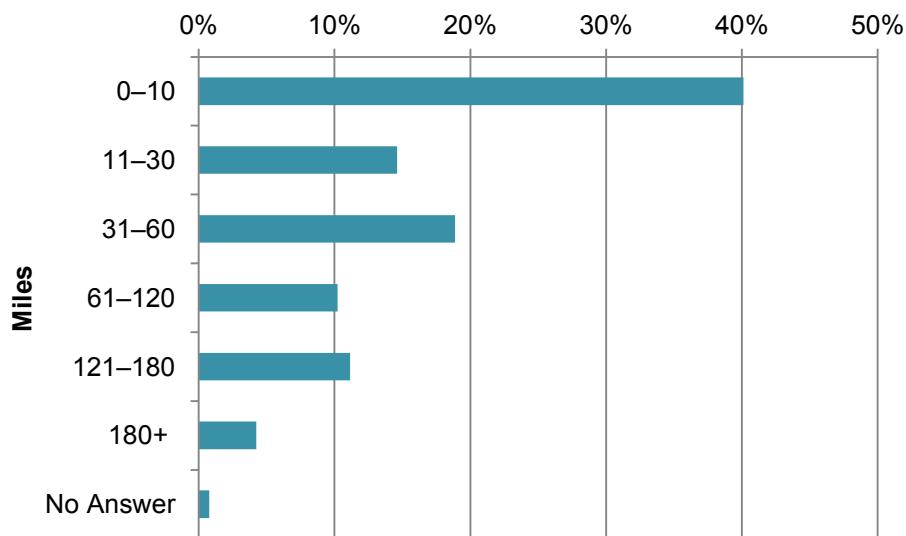


Figure 13. Miles respondents live from coast (one way)



Finally, we asked respondents to indicate if they would agree that the mapping portion of this survey easy to understand and use; the majority of respondents agreed (83.9 percent).

Table 10. Mapping Feedback

Strongly Disagree	2.6%
Somewhat Disagree	7.7%
Neither Agree nor Disagree	5.0%
Somewhat Agree	34.1%
Strongly Agree	49.8%
No Answer	0.7%

4.2. Spatial Data Results

The spatial data gathered from this Study were analyzed and summarized into several data sets. Table 11 indicates the number of activity markers placed per activity for each state and across the entire Mid-Atlantic region. A spatial data layer or map was created for each activity and for activities overall (summarizing all activity markers) for each state level as well as at the region-wide level. Table 12 indicates what activities were included in the grouped activities. Spatial data layers and maps were created for each activity grouping for each state level as well as at the region-wide level. The resulting spatial data layers developed depict the spatial patterns of use (distribution and intensity of use).

Geospatial data from this study were integrated into the Mid-Atlantic Ocean Data Portal (<http://portal.midatlanticocean.org/portal/>), a decision support tool for coastal and ocean planning in the Mid-Atlantic region. Spatial information on coastal and ocean recreational use patterns are now available for analysis and collaborative sharing with participants in the regional ocean planning process. We anticipate that this information will help the region's

ocean planners and managers make better informed decisions to help minimize potential negative impacts to recreational uses and values in the long term.

Table 11. Number of markers placed for each activity by state and overall

Activity	Number of Activity Locations Mapped					
	New York	New Jersey	Delaware	Maryland	Virginia	Region Wide
Scenic enjoyment/sightseeing	665	1,009	327	263	325	2,839
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	735	869	320	264	354	2,794
Watching birds, whales, seals and/or other marine life (from shore or boat)	511	971	320	213	333	2,571
Photography	544	871	283	196	273	2,335
Swimming or body surfing	641	711	267	227	278	2,334
Surfing (from board or kayak or stand up board)	640	739	270	183	241	2,252
Collection of non-living resources/beachcombing (beach glass, shells, driftwood)	345	514	169	125	156	1,446
Kayaking or other paddling activity (canoe, stand up paddle board)	304	463	164	127	173	1,352
Biking or hiking	325	465	151	96	168	1,318
Sitting in your car watching the scene	268	407	106	70	79	992
Windsurfing	225	96	8	18	11	396
Watching birds, whales, seals and/or other marine life (from a charter boat)	45	73	28	20	28	208
Free diving/snorkeling (from shore or boat)	79	92	10	8	8	205
Kite boarding	65	35	7	13	9	148
SCUBA diving (from shore or boat)	63	50	1*	-	6	133
SCUBA diving (from a charter boat)	17	25	1*	-	1*	50
All Activities	5,637	7,638	2,550	1,894	2,510	22,123

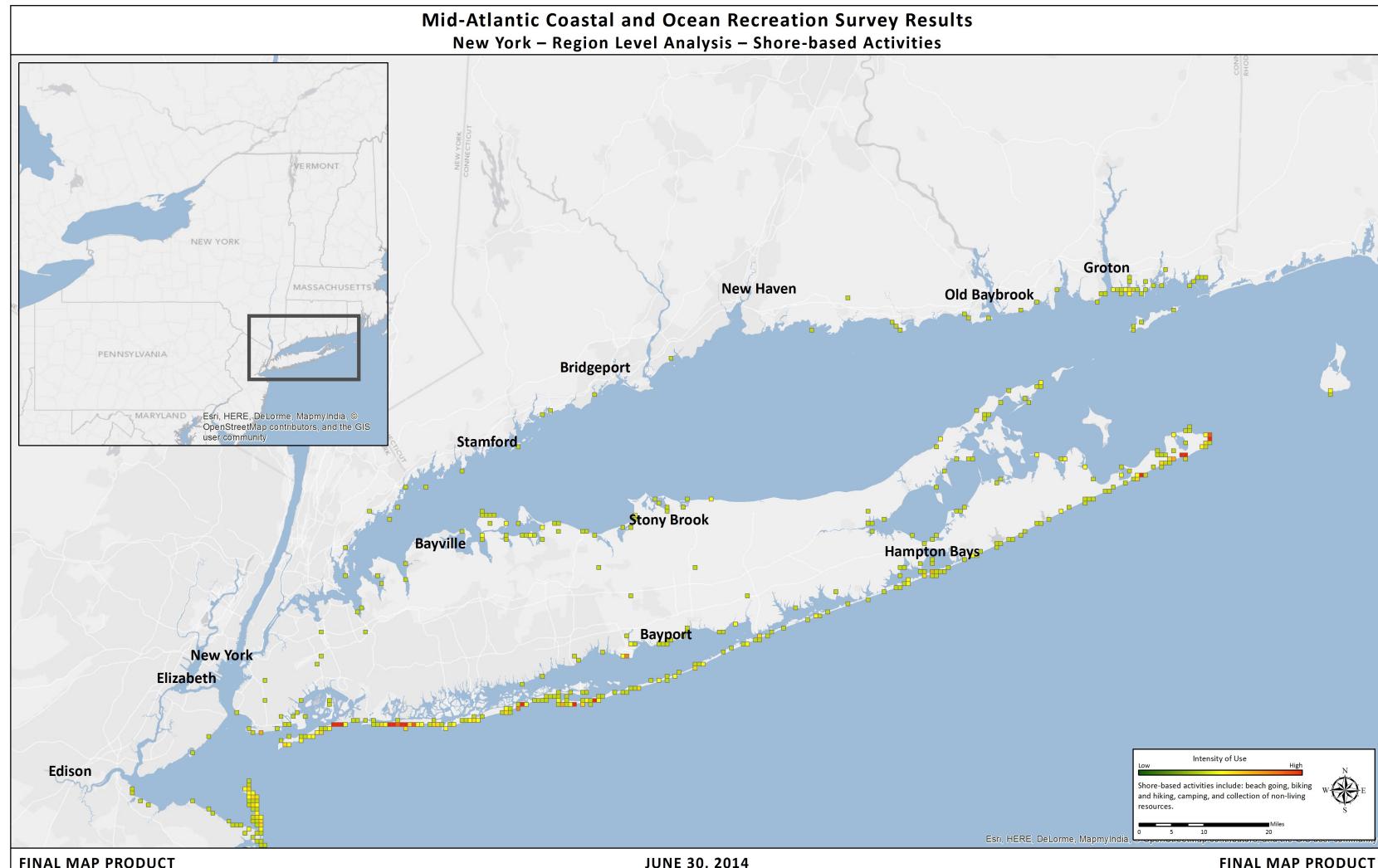
* Due to low sample size, data layers and maps were not created

Table 12. Number of markers placed for each activity grouping by state and overall

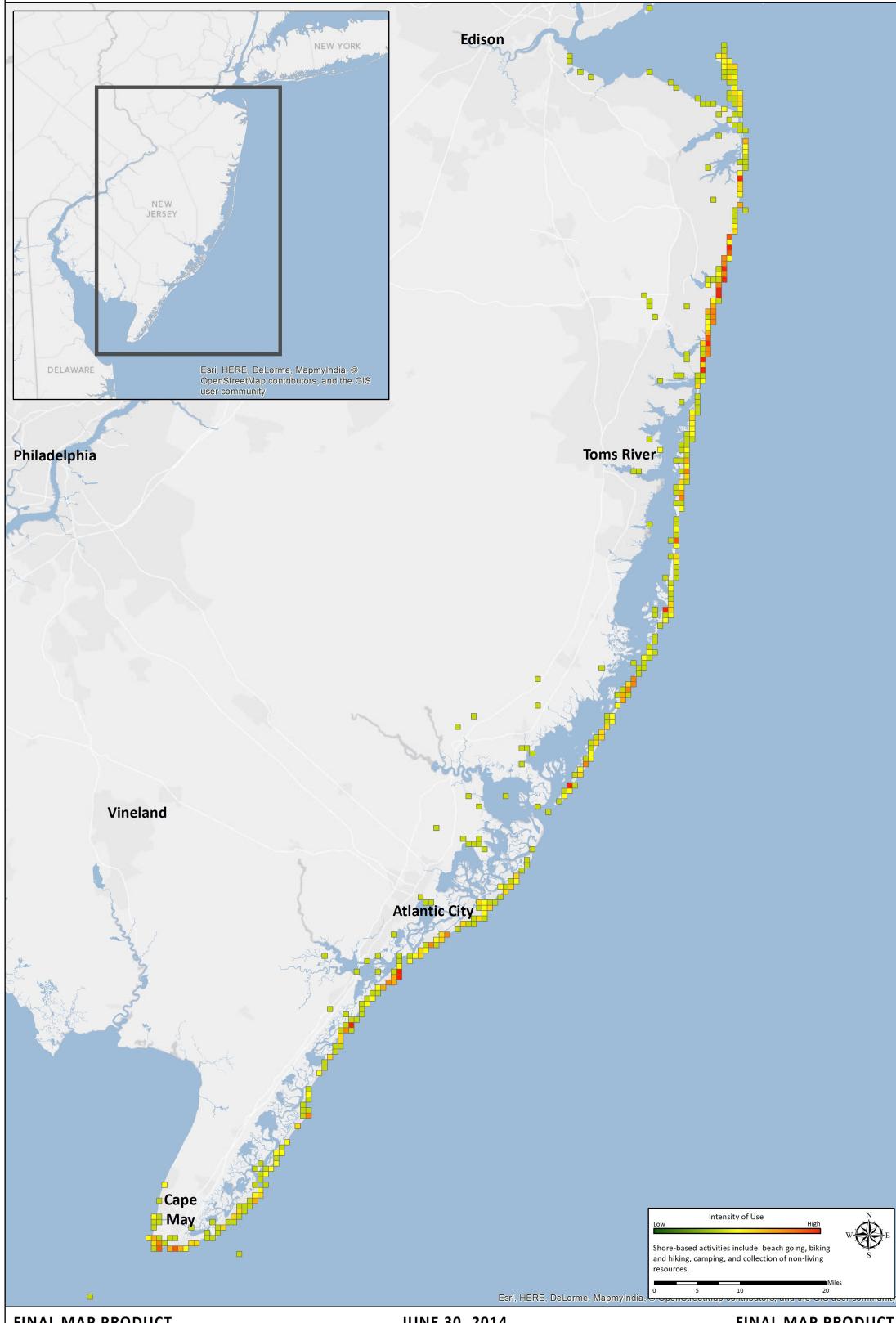
Activity Grouping	Activity	Number of Activity Locations Mapped					
		New York	New Jersey	Delaware	Maryland	Virginia	Region Wide
Shore-based Activities	Beach going (sitting, walking, running, dog walking, kite flying, etc.)						
	Biking or hiking						
	Collection of non-living resources/beachcombing (glass, shells, driftwood)	2,085	2,587	944	738	989	8,093
	Camping						
	Swimming or body surfing						
Surface Water Sports	Surfing (from board or kayak or stand up board)						
	Skim boarding						
	Kayaking or other paddling activity (canoe, stand up paddle board)	1,279	1,401	494	362	451	4,356
	Windsurfing						
	Kite boarding						
Wildlife & Sightseeing	Scenic enjoyment/sightseeing						
	Photography						
	Sitting in your car watching the scene	2,033	3,331	1,064	762	1,038	8,945
	Watching birds, whales, seals and/or other marine life (from shore or boat)						
	Watching birds, whales, seals and/or other marine life (from a charter boat)						
Diving	Free diving/snorkeling (from shore or boat)						
	SCUBA diving (from shore or boat)	159	167	12*	8*	15*	388
	SCUBA diving (from a charter boat)						

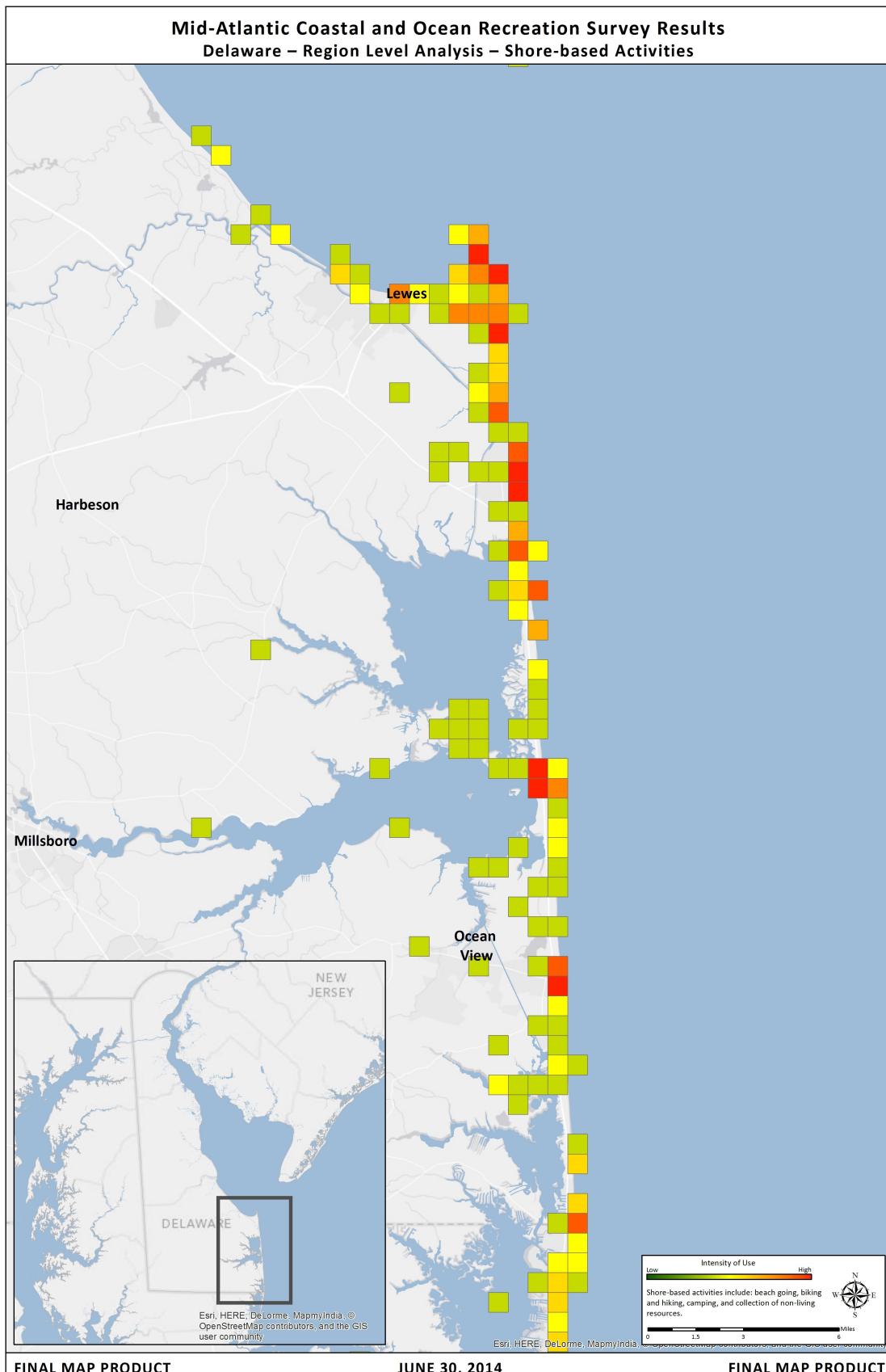
* Due to low sample size, diving activity maps were not created for MD, DE, and VA.

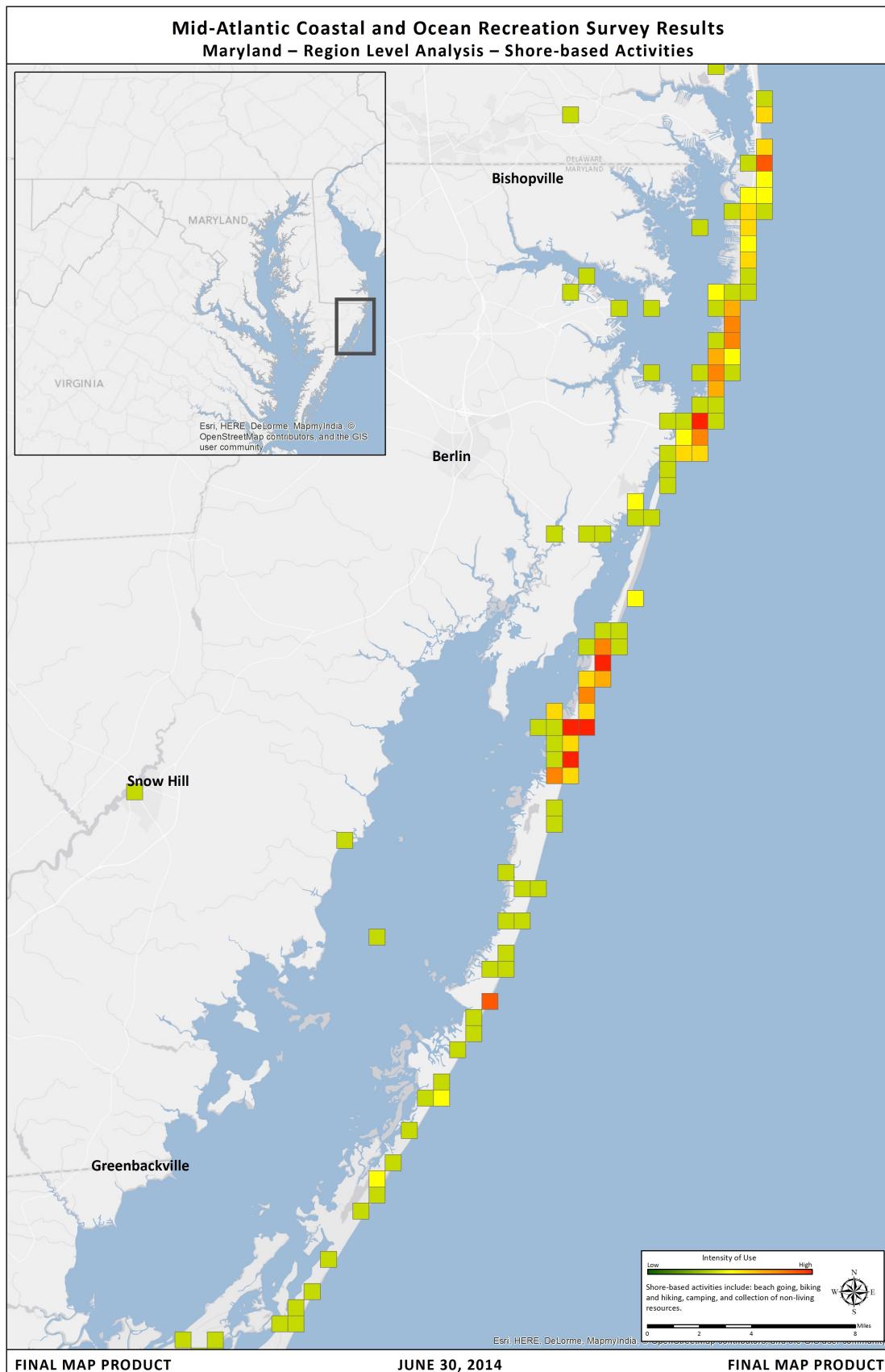
**Map 1. Mid-Atlantic Region: Spatial use patterns of shore-based activities
(New York, New Jersey, Maryland, Delaware, and Virginia)**

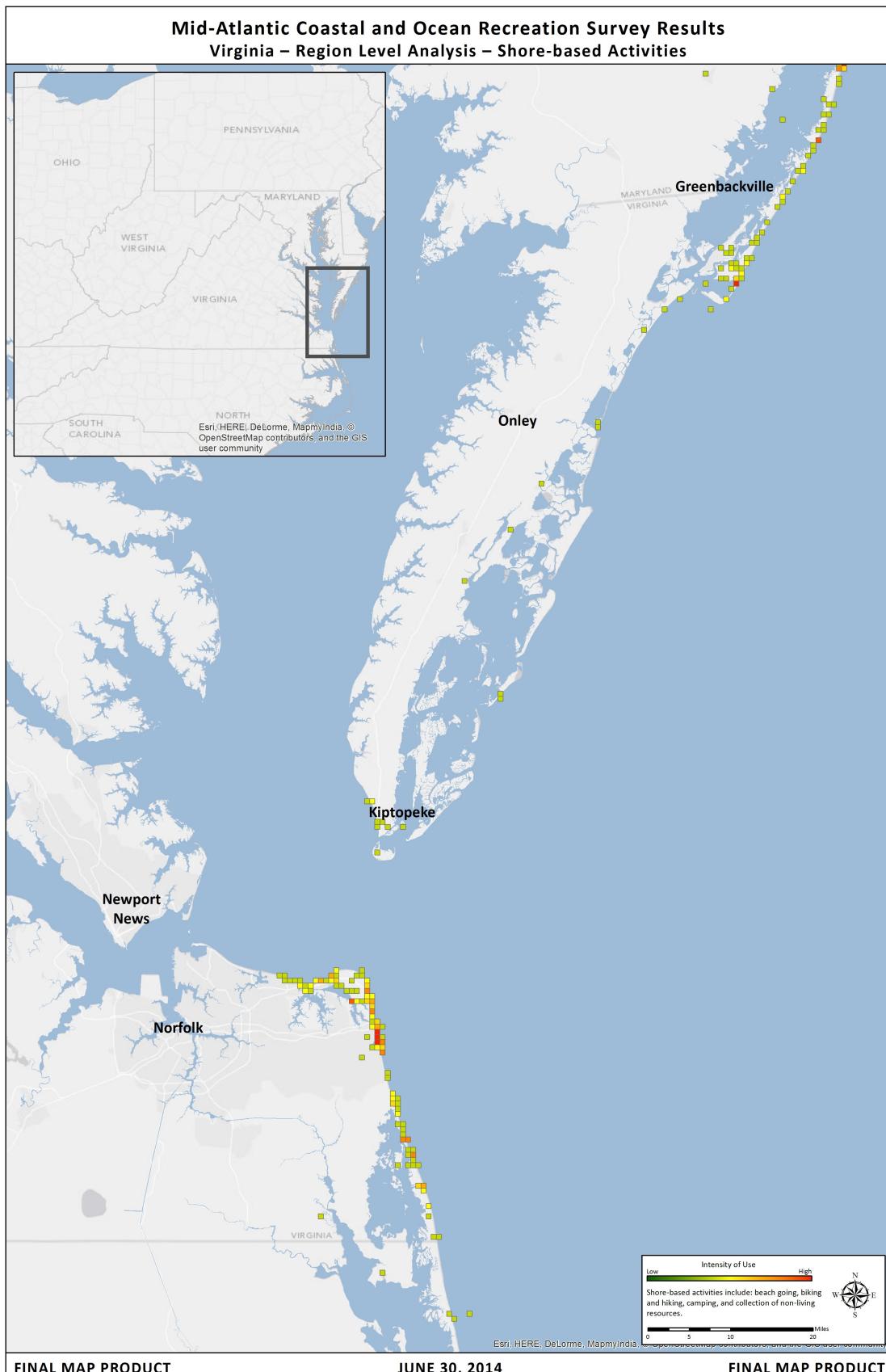


Mid-Atlantic Coastal and Ocean Recreation Survey Results
New Jersey – Region Level Analysis – Shore-based Activities

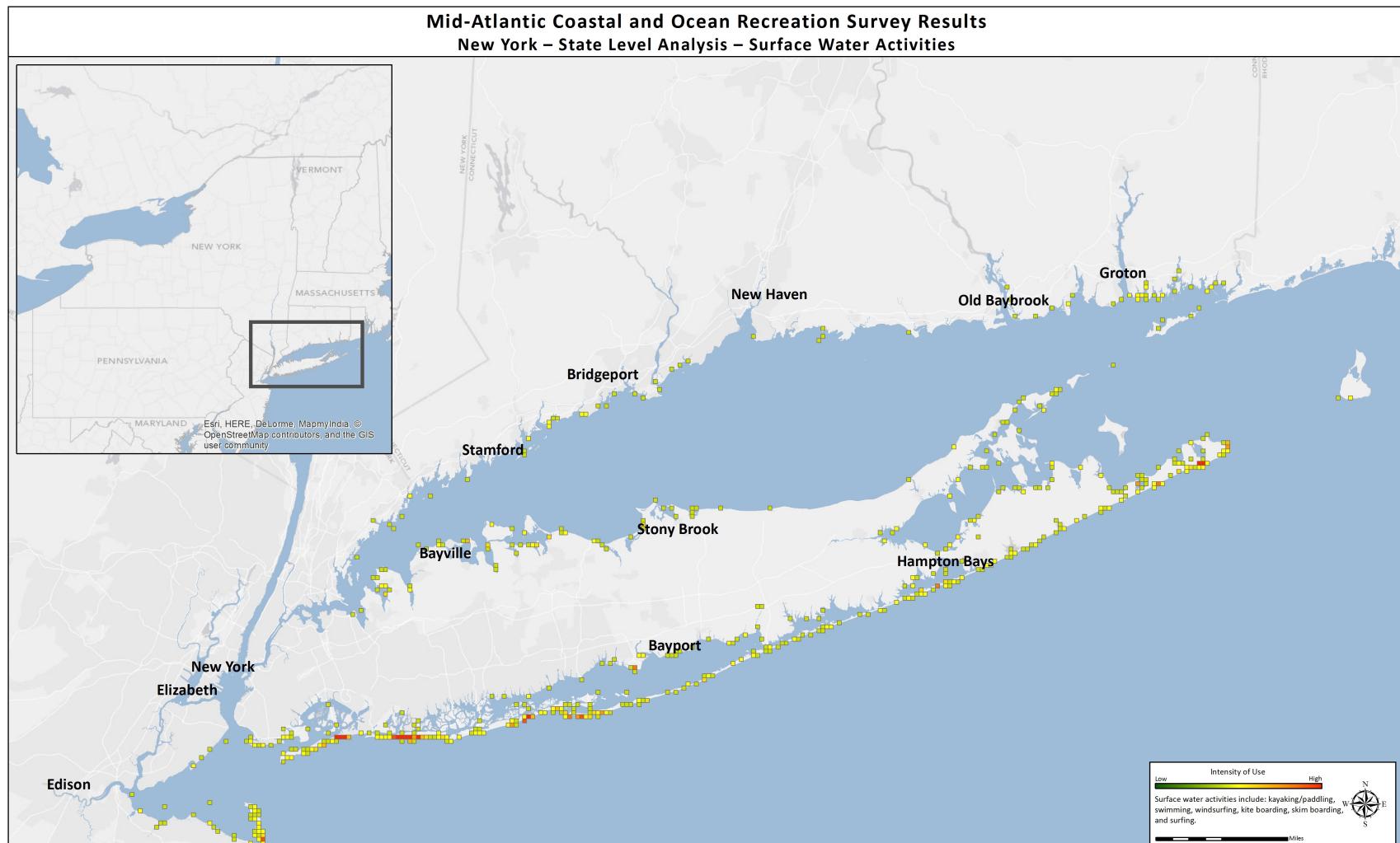




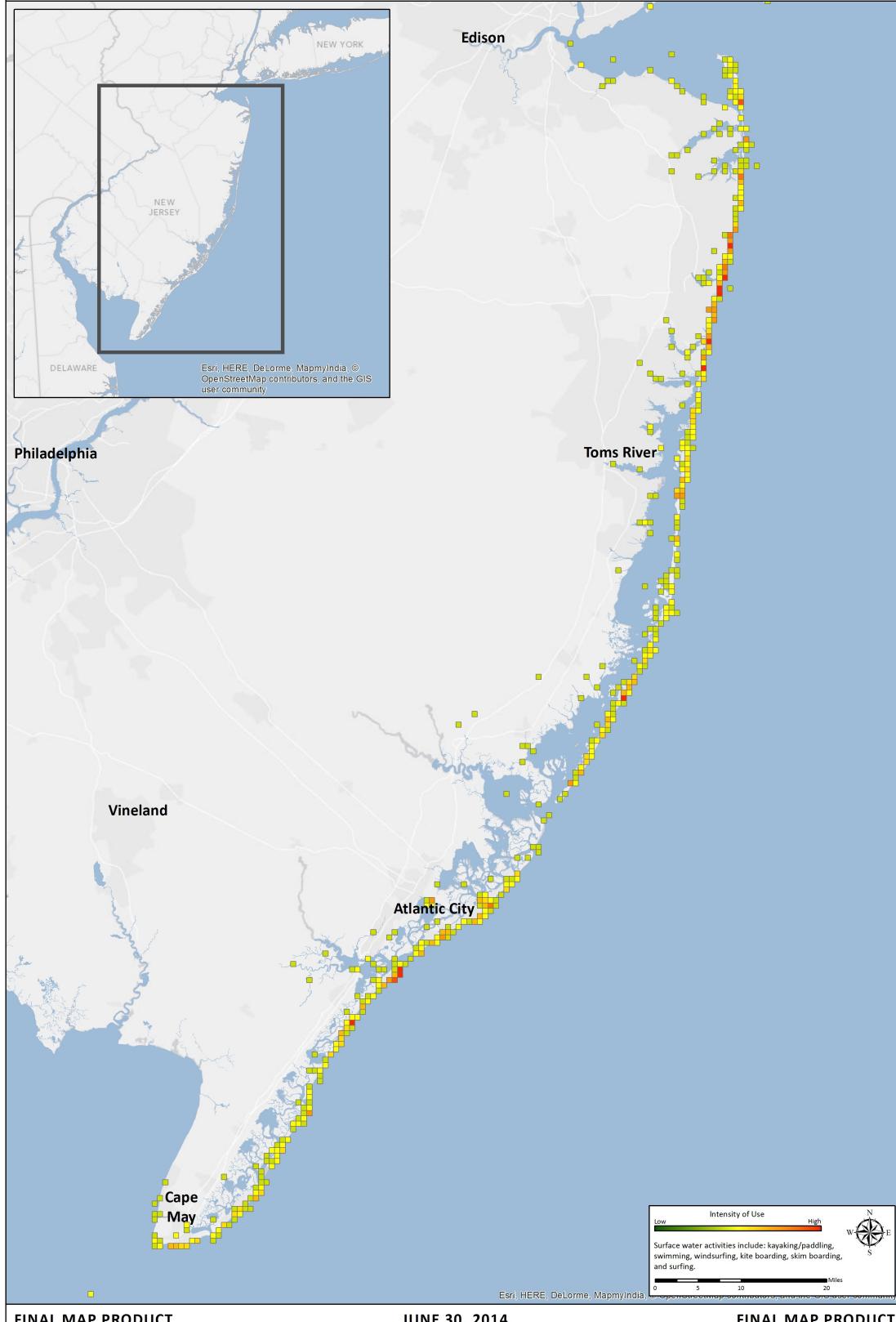




**Map 2. Mid-Atlantic Region: Spatial use patterns of surface water activities
(New York, New Jersey, Maryland, Delaware, and Virginia)**



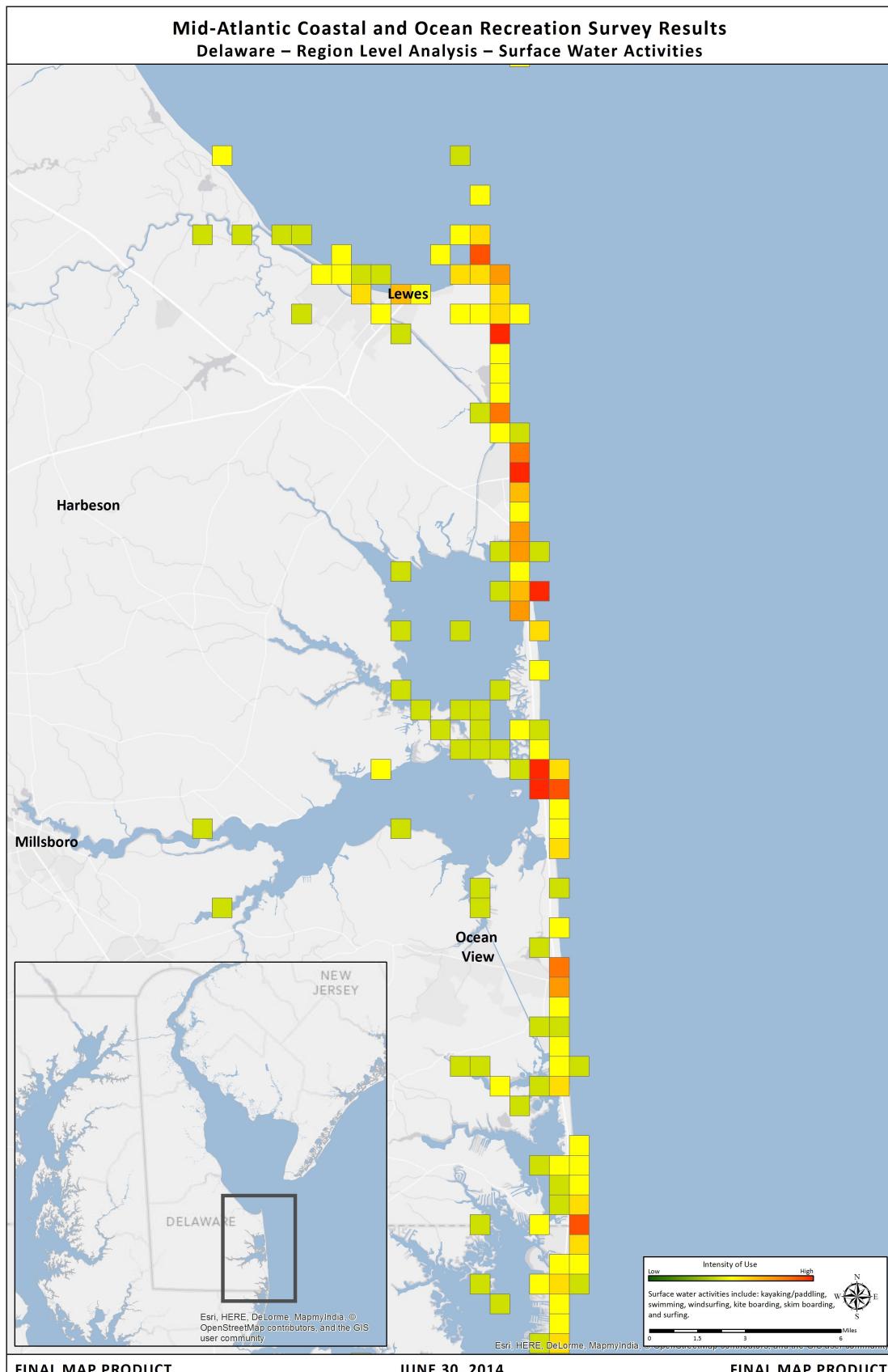
Mid-Atlantic Coastal and Ocean Recreation Survey Results New Jersey – Region Level Analysis – Surface Water Activities



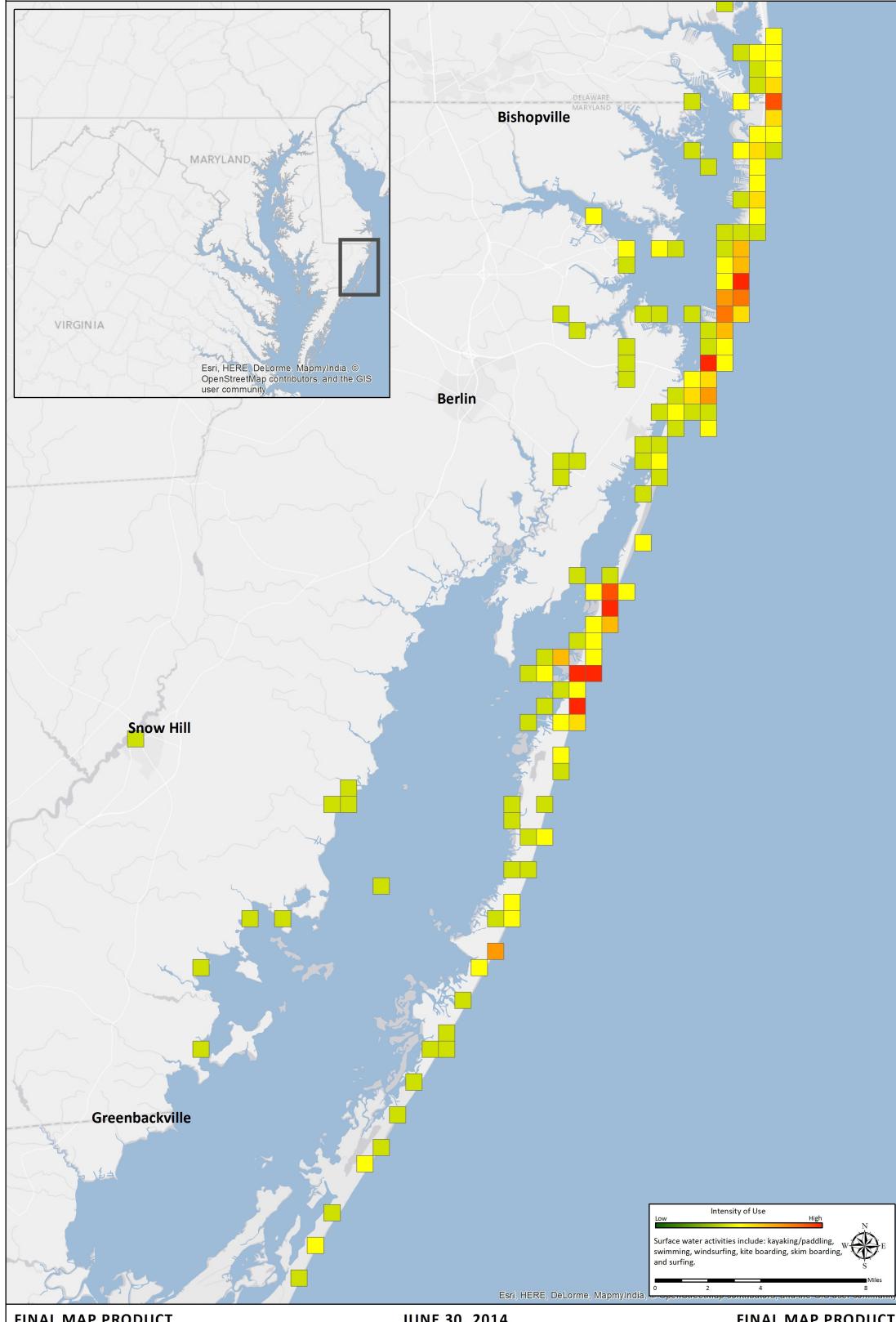
FINAL MAP PRODUCT

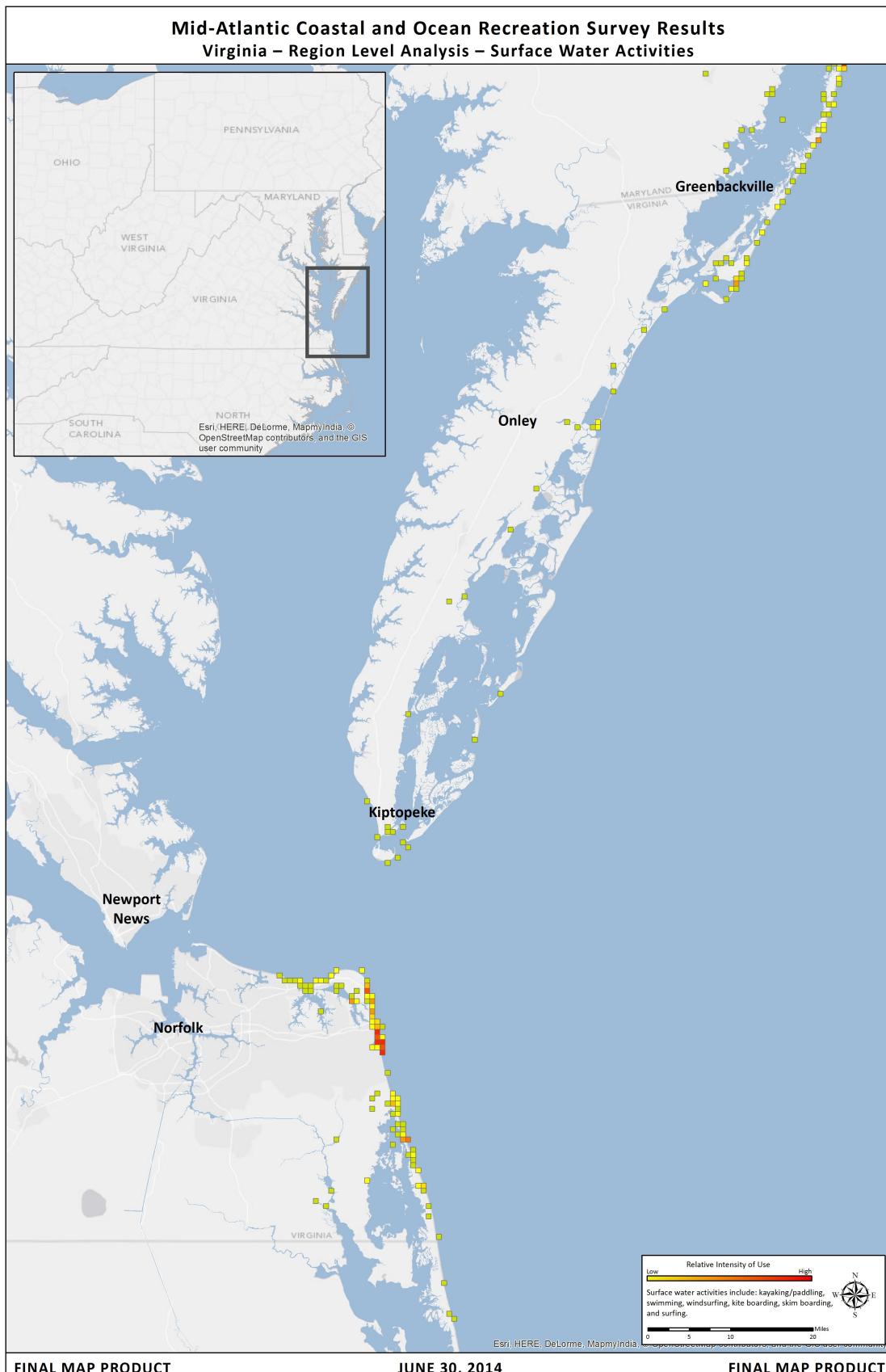
JUNE 30, 2014

FINAL MAP PRODUCT

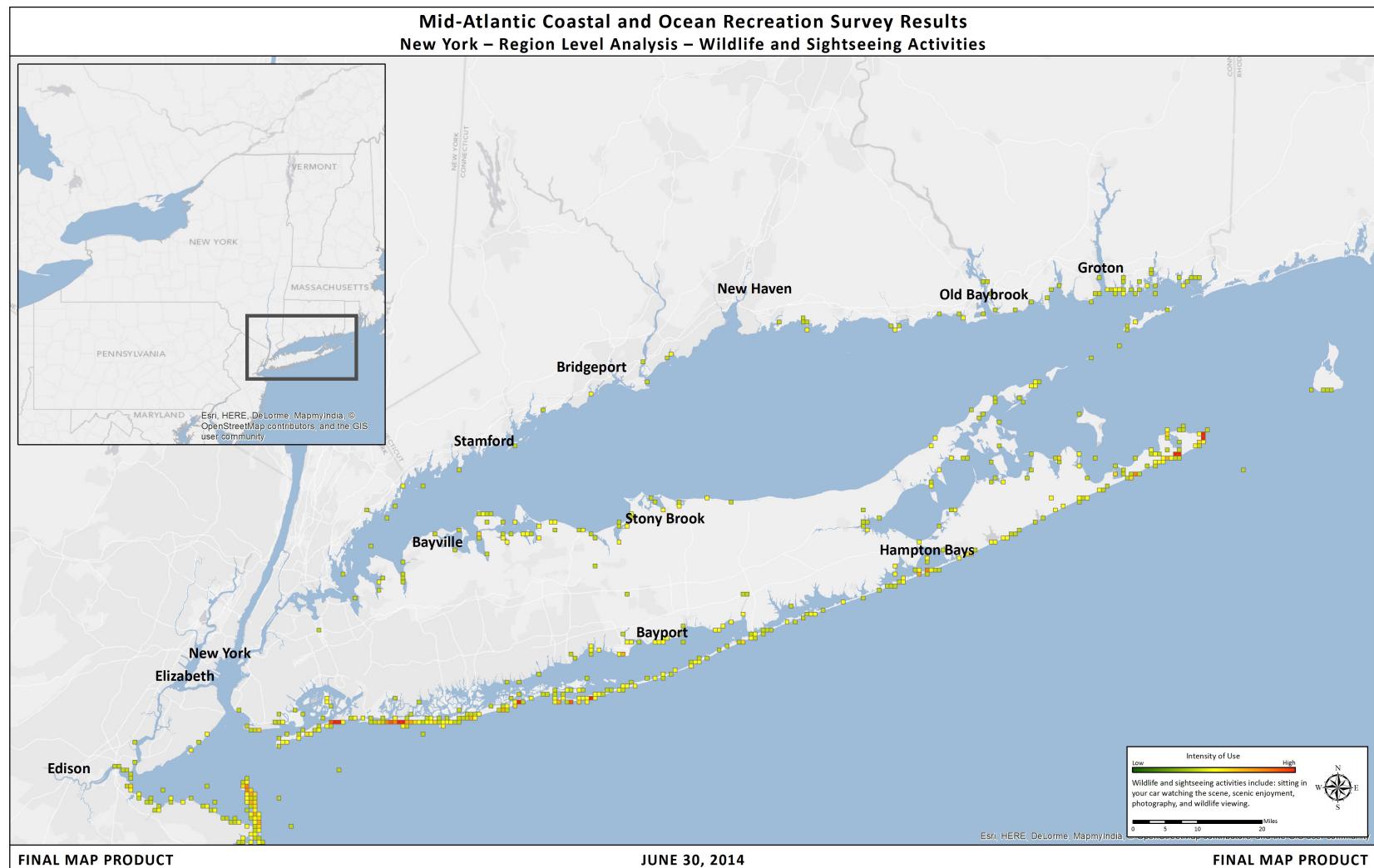


Mid-Atlantic Coastal and Ocean Recreation Survey Results
Maryland – Region Level Analysis – Surface Water Activities

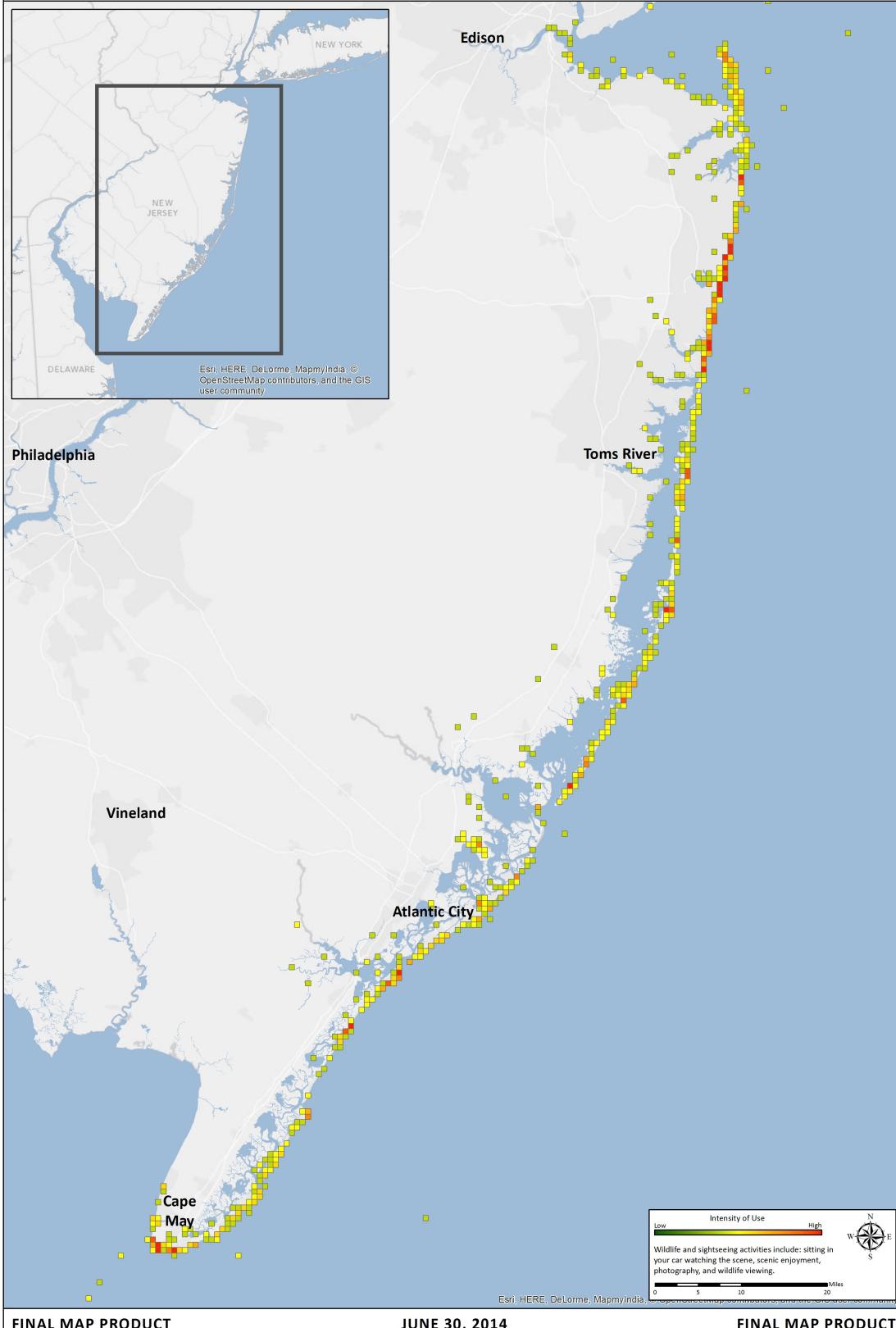




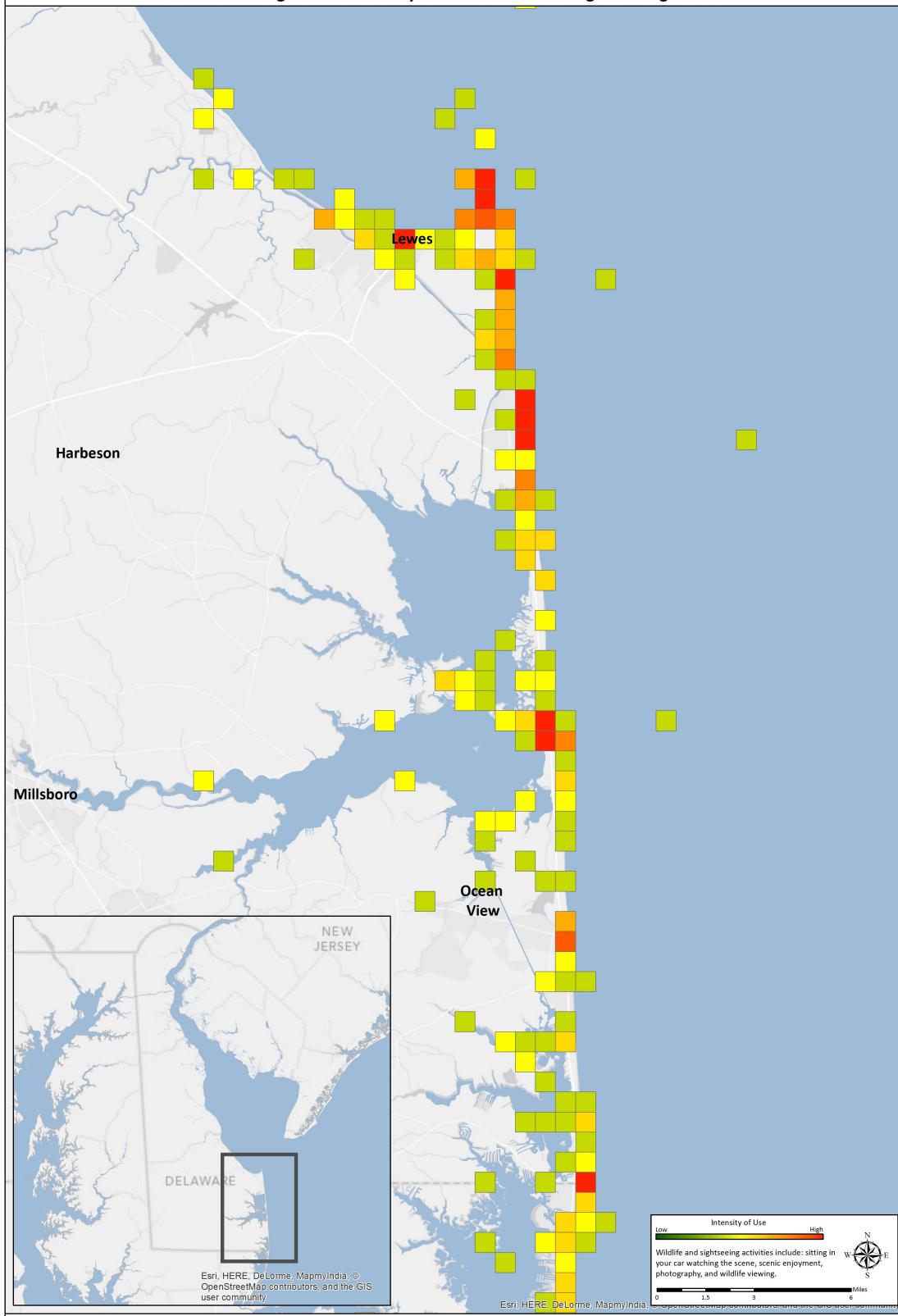
**Map 3. Mid-Atlantic Region: Spatial use patterns of wildlife and sightseeing activities
(New York, New Jersey, Maryland, Delaware, and Virginia)**



Mid-Atlantic Coastal and Ocean Recreation Survey Results
New Jersey – Region Level Analysis – Wildlife and Sightseeing Activities



Mid-Atlantic Coastal and Ocean Recreation Survey Results
Delaware – Region Level Analysis – Wildlife and Sightseeing Activities

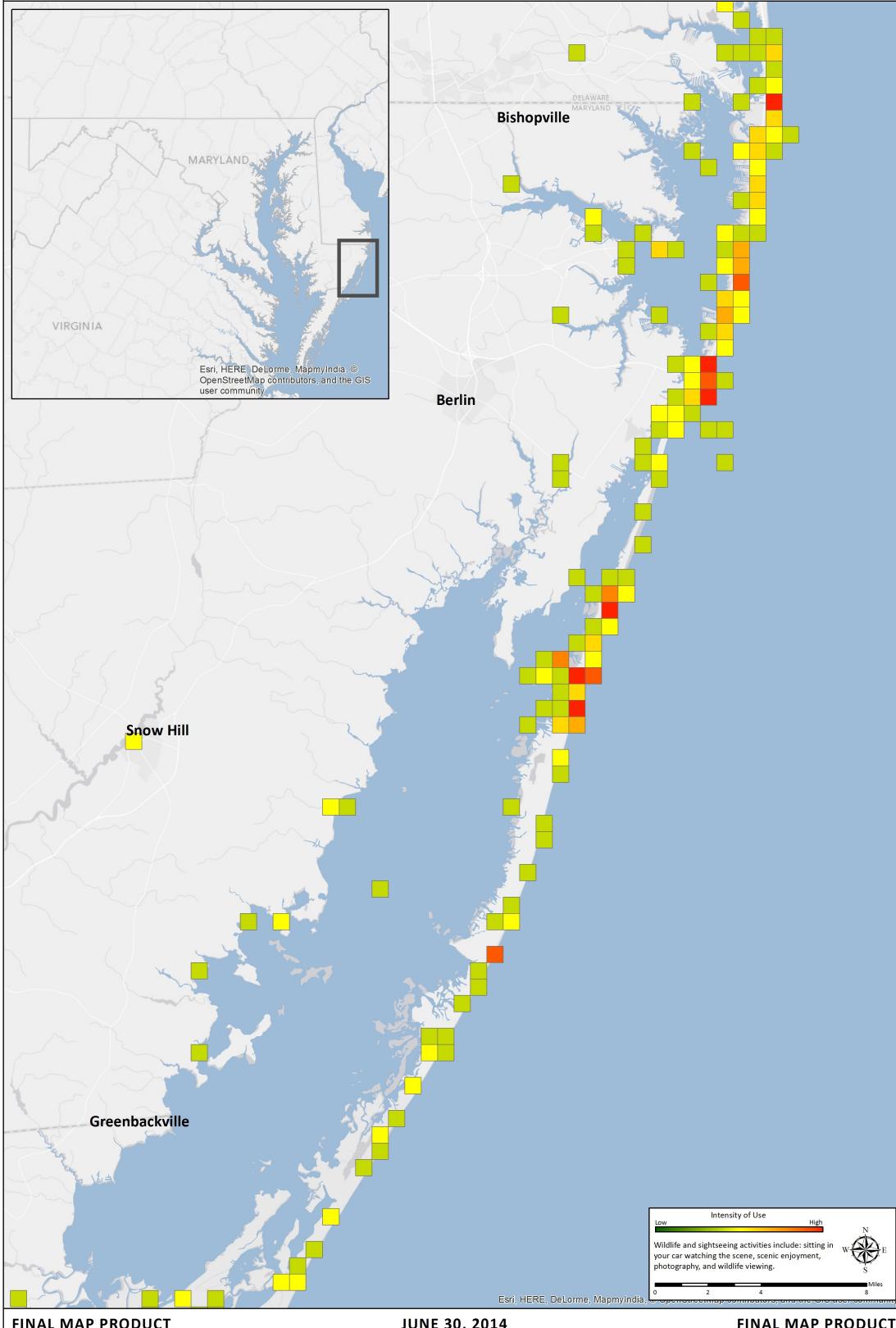


FINAL MAP PRODUCT

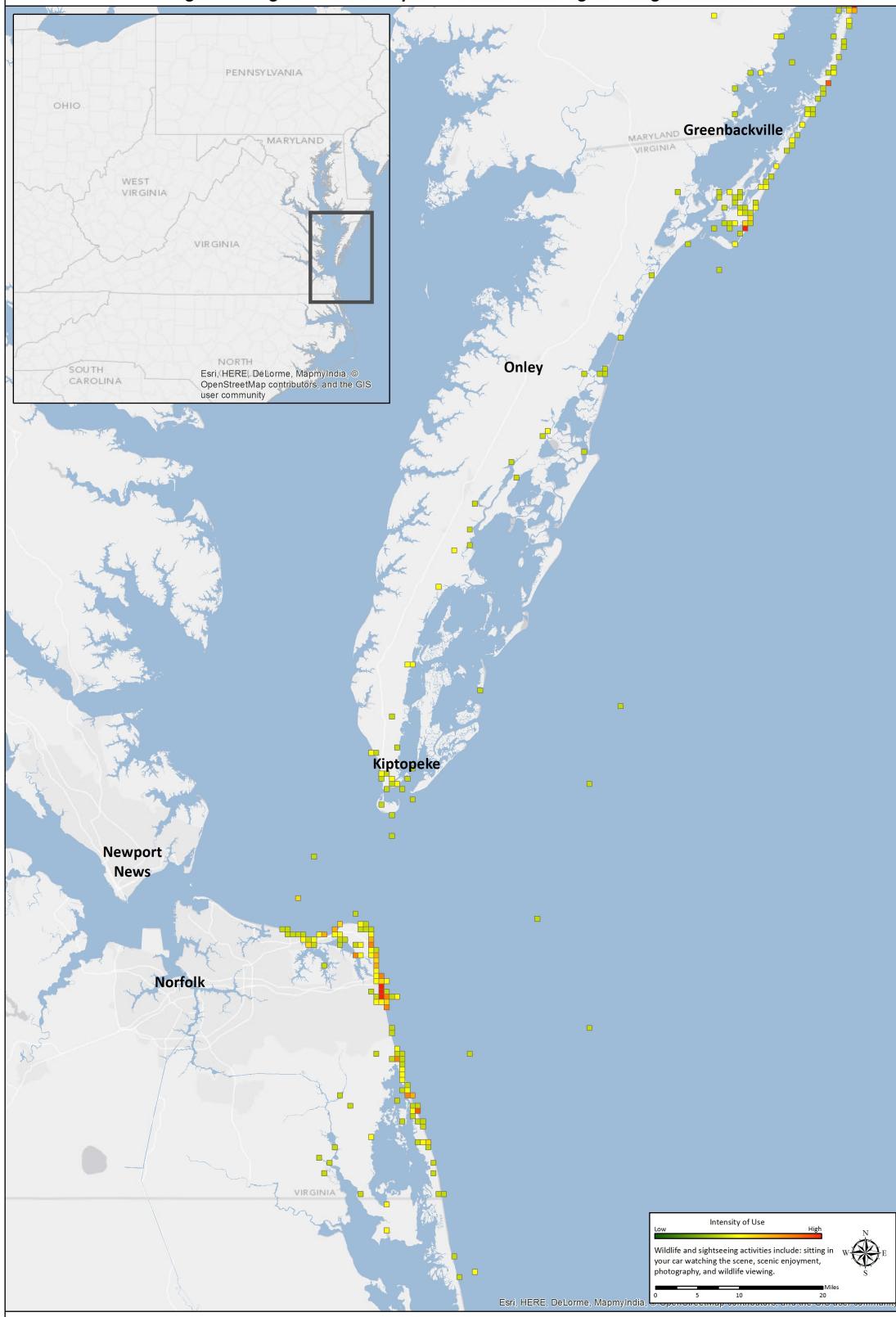
JUNE 30, 2014

FINAL MAP PRODUCT

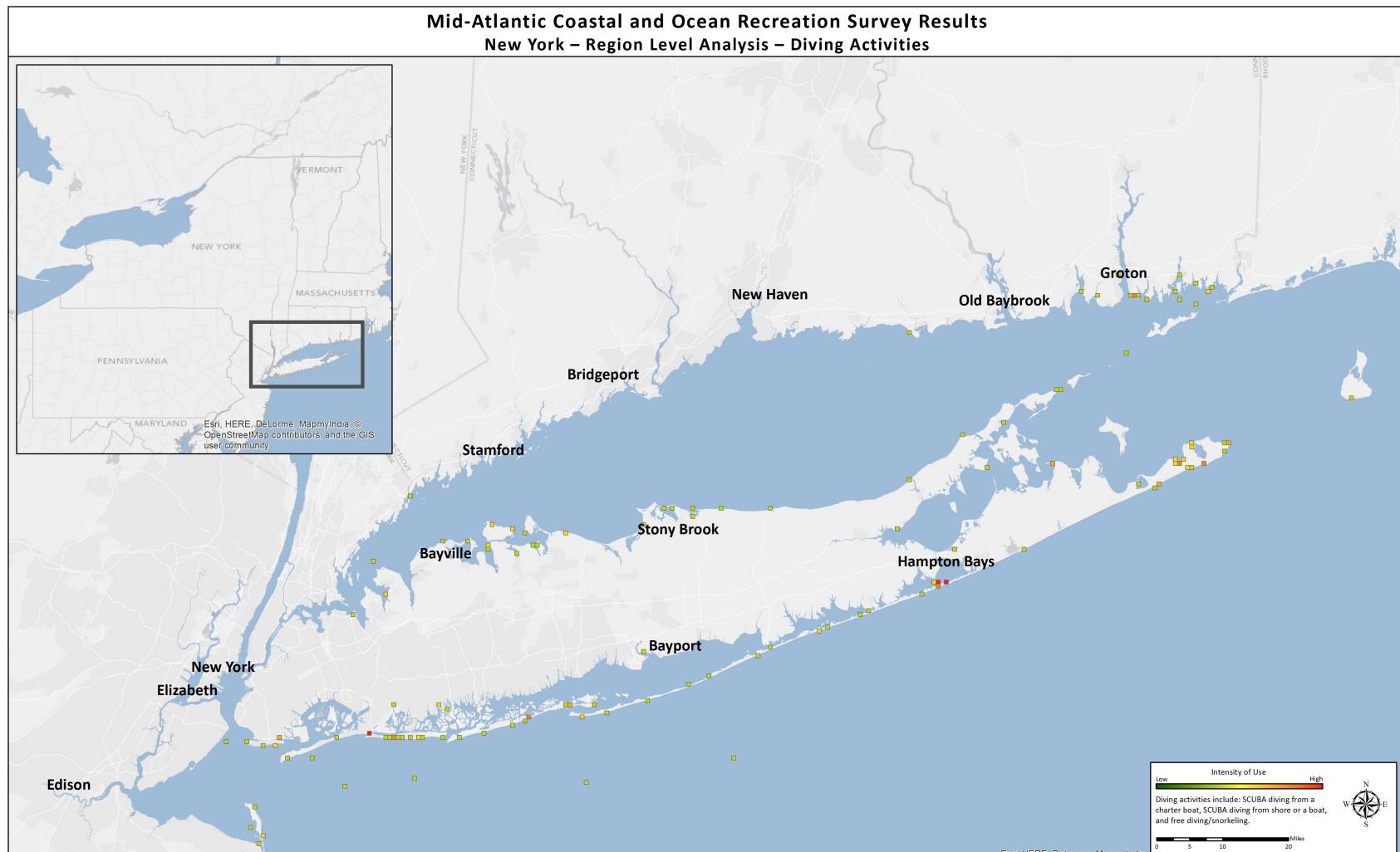
Mid-Atlantic Coastal and Ocean Recreation Survey Results
Maryland – Region Level Analysis – Wildlife and Sightseeing Activities



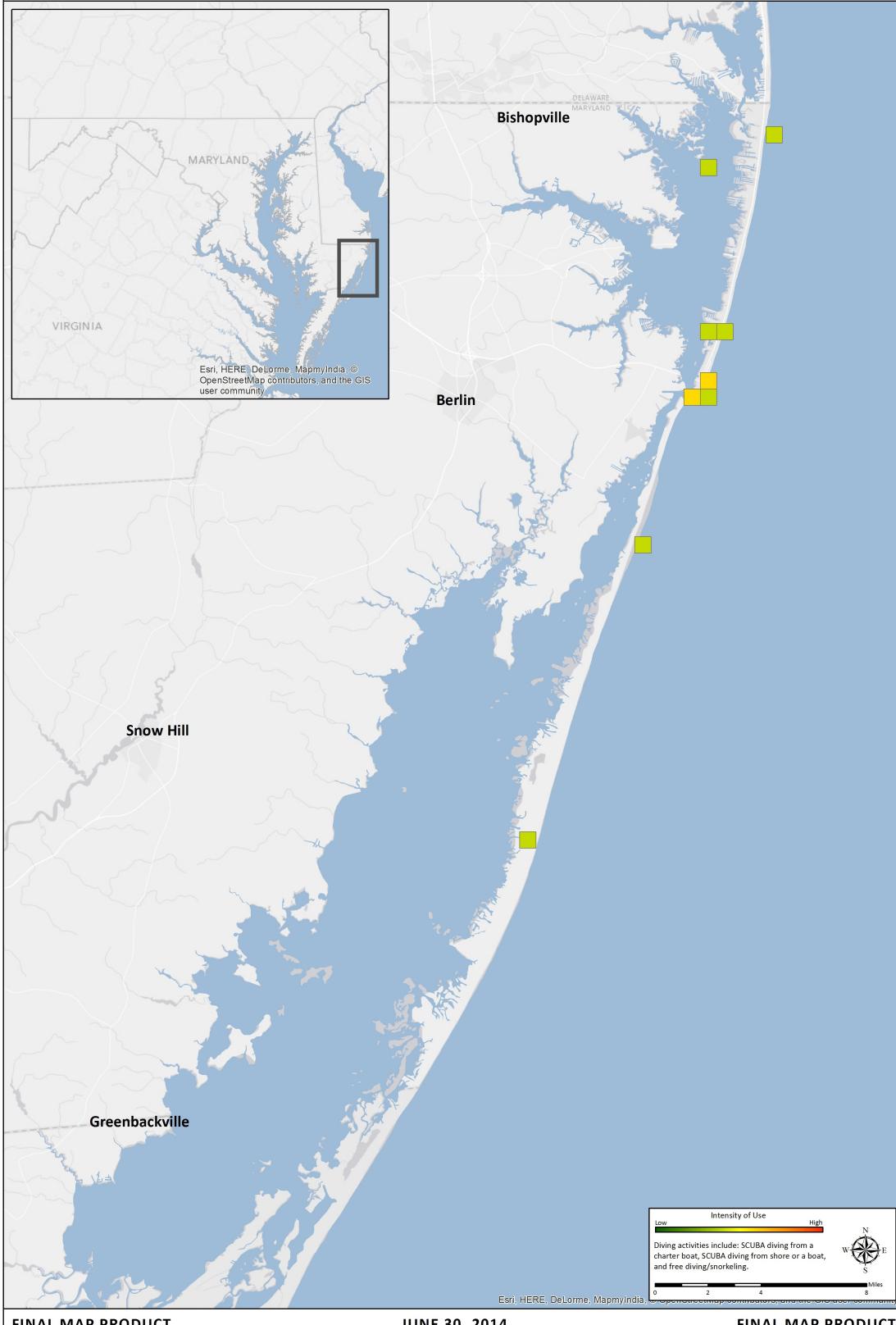
Mid-Atlantic Coastal and Ocean Recreation Survey Results
Virginia – Region Level Analysis – Wildlife and Sightseeing Activities



**Map 4. Mid-Atlantic Region: Spatial use patterns of diving activities
(New York, New Jersey, Maryland, Delaware, and Virginia)**



Mid-Atlantic Coastal and Ocean Recreation Survey Results
Maryland – Region Level Analysis – Diving Activities

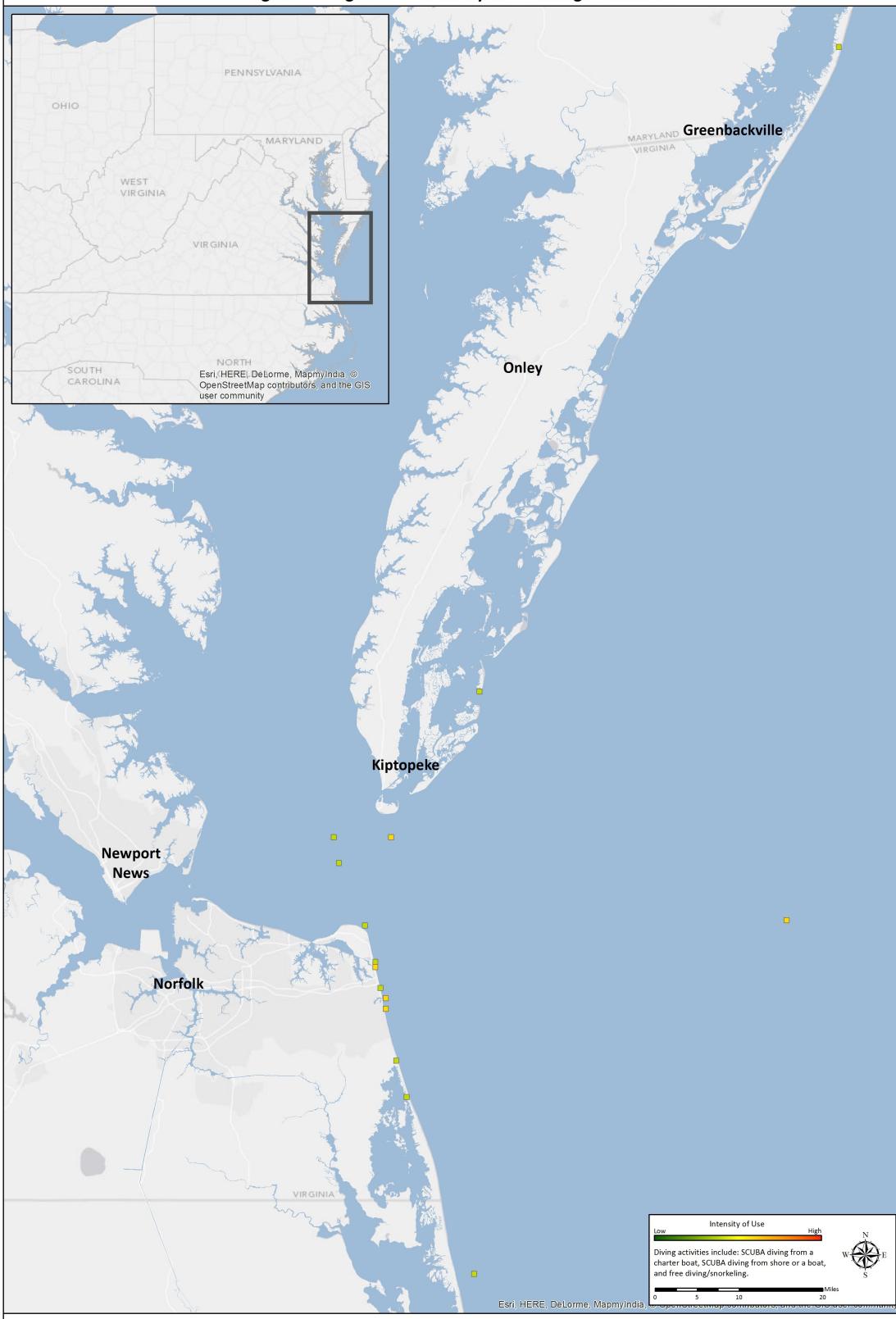


FINAL MAP PRODUCT

JUNE 30, 2014

FINAL MAP PRODUCT

Mid-Atlantic Coastal and Ocean Recreation Survey Results
Virginia – Region Level Analysis – Diving Activities



FINAL MAP PRODUCT

JUNE 30, 2014

FINAL MAP PRODUCT

5. CONCLUSION

This Study collected spatial data on coastal and ocean recreational uses in the U.S. Mid-Atlantic region using a cost-effective, internet-based survey tool. The results provide an important spatial baseline that will be used to inform the Mid-Atlantic's current and future regional ocean planning and management efforts. Furthermore, this Study will complement other coastal and ocean recreational use studies such as MARCO's Mid-Atlantic Boater Survey and the State-run Participatory GIS efforts

This Study included a strong stakeholder outreach and participatory component to enlist help from regional planners, ocean recreational business leaders, and recreational users to provide data and information that addresses a critical gap for the region. Survey respondents “dropped” over 20,000 activity markers along and beyond Mid-Atlantic shores—collectively they created the region’s first comprehensive map for non-consumptive ocean recreation--and individually each respondent will be able to see their favorite ocean places represented. This participatory approach has helped build awareness of and investment in regional ocean planning efforts among recreational users, groups, and associations.

A large and diverse group of recreational stakeholders were engaged in the development, outreach, and review of the Study’s results and map products and we believe that as a result, they will now be more likely to participate in ocean planning activities and processes. This is an important achievement and as planning efforts move forward, it will be productive to continue to engage this key group of ocean recreational stakeholders.

Appendix A: Outreach and Engagement Details

"Gatekeepers" Contacted About the Study

1. Dewey Beach Surf Shop
2. East of Maui Surf Shop
3. Quiet Storm
4. Chauncey's Surf Shop
5. Endless Summer Surf Shop
6. Quiet Storm
7. Ocean Atlantic Surfing Products
8. Coastal Surf Supplies
9. Walk on Water Paddle Board Company
10. Osprey Kite Sports
11. Right Coast Surf Shop
12. Wild Ocean Surf Shop
13. Green Hat Kiteboarding
14. Leading Edge Kite School
15. H2 Windsurfing
16. Main Beach Surf + Sport
17. Atlantic Beach Surf Shop
18. Saturdays Surf NYC
19. Pilgrim Surf + Supply
20. Breakwater Surf
21. Skudin Surf, Inc.
22. Whalebone Surf Shop
23. 17th Street Surf
24. American Lifeguard Association
25. Downunder Kayak and Surf
26. Swim and Surf Fairfield
27. Fairfiled Board Shop
28. Kite Sports CT
29. Bethany Surf Shop
30. Fenwick Island Surf Shop
31. Atlantic Shoals Surf Shop
32. Delmarva Board Sports Adventure
33. Liquid Board Shop
34. Rehoboth Beach Patrol
35. Dewey Beach Patrol
36. Delmarva Surf Club
37. US Lifesaving Assoc. Mid-Atlantic
38. Annapolis Surf Club
39. K-Coast Surf Shop
40. Malibu's Surf Shop
41. Eastern Surfing Association
42. Ocean City Beach Patrol
43. SGK Adventure Kiteboarding
44. East KB
45. Ultimate Watersports
46. Baltimore Area Boardsailing Association (BABA)
47. 48th street watersports
48. East of Maui Boardshop
49. Spellbinders Surf & Skate
50. Lightly Salted Surf Mercado
51. Beach House Classic Boardshop
52. Wooden Jetty Surf Shop
53. South-End Surf 'N Paddle
54. Eastern Lines
55. Brighton Beach Surf Shop
56. Sunrise Surf Shop
57. Ocean Hut Surf Shop
58. Wavejammer Surf Shop
59. Heritage Surf
60. 7th Street Surf Shop
61. Surfers Supplies
62. Brave New World Surf
63. Heritage Surf
64. Farias Surf & Sport
65. Farias Surf & Sport
66. Wave Hog Surf Shop
67. Suncatcher Surf Shop
68. Brave New World Surf
69. Extreme Windsurfing
70. 3rd Ave Surf Shop
71. Island Surf & Sail
72. LBI Surf School
73. AC Surf Club & School
74. Wetsuit World
75. Aloha Grove Surf Shop
76. Mantoloking Surf Camp
77. Atlantic Skate & Surf
78. Atlantic Surf Sessions
79. Ron Jon Surf Shop
80. Avalon Surf
81. Surf Shack
82. Ocean Outfitters
83. The Boarding House
84. BareWires Surf and Skate
85. Barooo Surf
86. Baja East
87. Billabong Coastline Adventures for Women
88. LG Kiteboarding of NJ
89. Ocean City Kiteboarding

90. Jersey Shore Windsurfing
 91. NJ Windsurfing and watersports Assoc
 92. Extreme Windsurfing
 93. Espo's Surf & Sport
 94. Bunker Surf Shop
 95. Sundown Surf Shop
 96. Unsound Surf
 97. Air and Speed Surf Shop
 98. Boarders Surf Shop
 99. Aloha Surf School
 100. Ahloe Cal Cruz
 101. Maritime Surf
 102. Luca Surf
 103. Minardi Training School of Surf
 104. Plaza Surf & Sport
 105. Core Surf Training
 106. East Coast Surf, Skate, Snow
 107. East End Surf
 108. Surf Shop Rockaway
 109. NY Kite center
 110. Cosmic Kites
 111. uKite Pro
 112. Hampton WaterSports
 113. Fairfax Surf Shop
 114. Surf and Adventure
 115. Freedom Surf Shop
 116. Surf 757
 117. RK's Surf Shop
 118. Seasoned Surf Boards
 119. 17th Street Surf
 120. Head High Surf
 121. 17th Street Surf
 122. Virginia Beach Surf Sessions
 123. Virginia Beach Lifesaving Service
 124. Happy Winds Kiteboarding
 125. Sailwet.com
 126. Rex Dive Center
 127. The Dive Shop
 128. Orbit Marine
 129. The Dive Shop
 130. New England Dive Center
 131. Scuba Shack
 132. Jacks dive center
 133. Diver's Cove
 134. Seaview Dive Center
 135. National Diving Center
 136. Blue Planet Diving DC
 137. Blue Planet Divers, Inc.
 138. Poseidon Adventures
 139. Salty Dog Dive Center
 140. Scuba World Inc.
 141. Atlantic Edge Dive Center
 142. Aqua Ventures
 143. Submerged, Inc.
 144. Scuba Hut of MD
 145. Divers Source
 146. Columbia Scuba
 147. East Coast Diver LLC
 148. Gopher Scuba Diving
 149. Salisbury Dive Center
 150. SPE Dive School
 151. Southern Maryland Divers
 152. S.E.A. Dive
 153. Divers Den
 154. The Dive Shop MD
 155. Hoboken Dive Center
 156. Ocean Explorers Aquatic Center
 157. Divers Two Inc
 158. Aqua-Tech Scuba Center
 159. Elite Divers
 160. Dosil's
 161. Kunuku Dive & Travel
 162. Langs Ski N' Scuba
 163. The Scuba Connection
 164. Blue Water Divers
 165. The Dive Shop-NJ
 166. Treasure Cove Divers
 167. Blue Ocean Divers
 168. NorthShore Aquatics
 169. Westchester Dive Centers
 170. Leisure Pro
 171. Oceanblue Divers
 172. Village Divers
 173. Empire Divers
 174. Stingray Divers
 175. Long Islang Scuba
 176. Sea Turtle Dive Charters
 177. Long Island Divers Association
 178. Tiedemanns Diving Center
 179. East Coast Wreck Diving
 180. Scuba Network
 181. Adventure Exploration
 182. Bad Scuba
 183. Finger Lakes Scuba
 184. National Aquatic
 185. Scuba New York
 186. NY Sea Gypsies

- 187. New York State Divers Association
- 188. Pan Aqua Diving Inc.
- 189. Hampton Dive Center
- 190. Hunts Dive Shop
- 191. Sound View Scuba Center
- 192. New York SCUBA Divers
- 193. Scuba Network
- 194. Adventure Scuba
- 195. Adventure Exploration
- 196. Captain Mikes Diving Service
- 197. The Dive Club
- 198. Port Diver Scuba Center
- 199. QC Scuba
- 200. Seascapes USA
- 201. Seahorse Scuba
- 202. Divers Unlimited
- 203. Adventure Scuba Company
- 204. Dive Quarters
- 205. Atlantis Divers
- 206. Robs Scuba
- 207. Splash Dive Center
- 208. The Dive Shop VA
- 209. The Dive Shop-Richmond
- 210. Virginia Scuba
- 211. Scuba Shack VA
- 212. Connect 2 Diving
- 213. Aquatic Adventures
- 214. Virginia Scuba
- 215. Woodbridge Scuba
- 216. Underwater Adventures
- 217. LDC Adventure Outfitters
- 218. Blue Octopus Scuba
- 219. Sterling Silver Scuba
- 220. Edison Wetlands Association
- 221. Friends of Wilmington Parks
- 222. Accokeek Foundation
- 223. Stony Brook-Millstone Watershed Association
- 224. Bronx River Alliance
- 225. Metropolitan Waterfront Alliance
- 226. The Northern VA Conservation Trust
- 227. Great Egg Harbor Watershed Assoc.
- 228. Battenkill Conservancy
- 229. Bergen Save the Watershed Action
- 230. Baltimore Bird Club
- 231. Williamsburg Land Conservancy
- 232. Raritan Headwaters Association
- 233. Center for Environmental Initiatives
- 234. Coalition Helping Organize A Cleaner Environment
- 235. DE Center for the Inland Bays
- 236. Chesapeake Bay Foundation
- 237. Delaware Audubon Society
- 238. Conserve Wildlife
- 239. Delaware Wild Lands
- 240. Hazel Outdoor Discovery Center
- 241. Maryland Coastal Bays Program
- 242. Wetlands Institute
- 243. Hackensack Riverkeeper
- 244. Citizens United to Protect the Maurice River and Its Tributaries
- 245. 1000 Friends of Maryland
- 246. Atlantic Audubon Society
- 247. Maryland Amphibian and Reptile Atlas
- 248. Outdoor Club of South Jersey
- 249. Alan Devoe Bird Club
- 250. Bay Land Trust
- 251. Bergen Swamp Preservation Society
- 252. Catskills Citizens for Safe Energy
- 253. Chautauqua Watershed Conservancy
- 254. Clean Ocean Action
- 255. Partnership for the Delaware Estuary
- 256. Delaware Nature Society
- 257. D&R Greenway Land Trust
- 258. Edison Greenways Group Inc.
- 259. Friends of Princeton Open Space
- 260. Land Trust of Virginia
- 261. MD Association of Campgrounds
- 262. Nature Visions Photography Expo
- 263. Campground Owners of NY
- 264. Back Bay Restoration Foundation
- 265. Salem County Birding Club
- 266. Lawrence Township Conservation Foundation
- 267. VA Outdoors Foundation
- 268. Clean Air Council
- 269. VA League of Conservation Voters
- 270. Delaware Shorebird Project
- 271. Alliance for a Living Ocean
- 272. Peconic Baykeeper
- 273. Kent County Conservancy
- 274. NY League of Conservation Voters
- 275. MERR Institute, Inc.
- 276. Conservation Resources
- 277. VA Conservation Network
- 278. NYC Environmental Justice Alliance
- 279. James River Association

- 280. Bergen County Audubon Society
- 281. The Piedmont Environmental Council
- 282. Pequannock River Coalition
- 283. Passaic River Coalition
- 284. Alliance For New Jersey Environmental Education
- 285. Ralph T. Waterman Bird Club
- 286. Rancocas Creek Watershed Conservancy
- 287. Eastern Shore Land Conservancy
- 288. Salem Nature Club
- 289. Barnegat Bay Partnership
- 290. Christina River Watershed Cleanup
- 291. Great Swamp Watershed Association
- 292. Sierra Club - Delaware Chapter
- 293. Flat Rock Brook Nature Center
- 294. Long Island Sound Foundation
- 295. New Jersey Sierra Club
- 296. Delmarva Birding
- 297. Virginia Campground Assoc.
- 298. Wicomico Environmental Trust
- 299. Sussex County Land Trust
- 300. Delmarva Ornithological Society
- 301. Musconetcong Watershed Association
- 302. Camera Naturalist Photo Club
- 303. Monmouth Conservation Foundation
- 304. Gloucester County Nature Club
- 305. New Jersey Campground Owners Association
- 306. Algonquin to Adirondacks Collaborative
- 307. Scenic Virginia
- 308. Washington Canoe Club
- 309. Fletcher's Boat House
- 310. Thompson Boat Center
- 311. Key Bridge Boathouse
- 312. Atlantic Kayak Company
- 313. New York Kayak Company Inc.
- 314. Manhattan Kayak
- 315. Atlantic Kayak Tours
- 316. Bob's Canoe Rental
- 317. Skips Dockside Marina
- 318. VA Sea Kayak Center
- 319. SouthEast Expeditions
- 320. Delaware & Hudson Canoe
- 321. Canton Kayak Club
- 322. Canoe Cruisers Assn. of D.C.
- 323. Sebago Canoe Club
- 324. Chesapeake Paddlers Assn.
- 325. East Coast Outrigger Racing Assoc.
- 326. Mason-Dixon Canoe Cruisers
- 327. Wanda Canoe Club
- 328. Coastal Canoeists
- 329. Ahawaga Canoe & Kayak Club
- 330. Delaware Paddle Sports
- 331. Downtown Boathouse
- 332. Float Fisherman of Virginia
- 333. Hackensack River Canoe
- 334. Mohawk Canoe Club
- 335. Potomac Paddlesports Inc.
- 336. Calleva
- 337. Liquid Adventures
- 338. The Blue Ridge Voyageurs
- 339. Hudson River Watertrail Assoc.
- 340. Indian Head Canoes & Rafts
- 341. Monocacy Canoe Club
- 342. Island Surf and Sail (ISS)
- 343. Wilmington Trail Club
- 344. Ayers Creek Adventures
- 345. Barrell Surf and Kayak
- 346. Paddlesport Kayak and Canoe
- 347. Eastern Mountain Sports
- 348. Ocean Rentals
- 349. Appomattox River Company

Study Review Team

Greg Capobianco	New York Department of State
Jeff Herter	New York Department of State
Marty Rosen	New Jersey Department of Environmental Protection
Kevin Hassell	New Jersey Department of Environmental Protection
Sarah Cooksey	Delaware Department of Natural Resources and Environmental Control
Kate Fleming	Delaware Department of Natural Resources and Environmental Control
Gwynne Schultz	Maryland Department of Natural Resources
Catherine McCall	Maryland Department of Natural Resources
Laura McKay	Virginia Department of Environmental Quality
Todd Janeski	Virginia Department of Environmental Quality
Tony Macdonald	Monmouth University's Urban Coast Institute
Jay Odell	The Nature Conservancy
Al Lombana	The Nature Conservancy
Cheryl Chen	Ecotrust/Point 97
Carolyn Holland	Ecotrust/Point 97
Michelle Lennox	MARCO
Matt Campo	Rutgers University
Jeanne Herb	Rutgers University
Tony Roman	University of Massachusetts-Boston
Jack Wiggin	University of Massachusetts-Boston
Ali Chase	Natural Resources Defense Council
Bonnie Ram	University of Delaware
Jeremy Firestone	University of Delaware

Recreational Users Who Reviewed the Survey and Preliminary Data

Adam Wolff	Virginia Beach Chapter of the Surfrider Foundation
Christine Bell	Jersey Shore Chapter of the Surfrider Foundation
Alli Candelmo	Jersey Shore Chapter of the Surfrider Foundation
Ed O' Connor	Delaware Chapter of the Surfrider Foundation
John Bonino	South Jersey Chapter of the Surfrider Foundation
Beth Kwart	South Jersey Chapter of the Surfrider Foundation
Greg Rolf	American Canoe Association
Sean Dixon	Clean Ocean Action
Byron Young	Wildlife Viewer
Julie Nace	Peconic Estuary Program
Jacob Powell	Virginia Conservation Network
Colin Breland	17th Street Surf Shop
Dave Lewis	Wave Riding Vehicles
Mike Hamell	Wave Riding Vehicles
Glenn Arthur	New Jersey Council of Diving Clubs
Jamie Pollock	Shark Angels
Steve Taylor	Ayers Creek Adventures
Randy Randazzo	Hampton Dive Center

Non-Surfrider Groups that Helped Disseminate the Survey

1. Citizens Campaign for the Environment

2. Group for the East End
3. Sea Gypsies
4. Lower Hudson Sierra Club
5. Sierra Club New York City
6. Long Island Sound Study
7. Peconic Estuary Program
8. South Shore Audubon Society
9. Great South Bay Audubon Society
10. Coastal Research and Education Society of Long Island
11. Save the Sound
12. Hudson River Estuary Program
13. nynjsurf.com
14. Concerned Citizens of Montauk
15. Operation Splash
16. New Jersey Council of Diving Clubs
17. TNC New Jersey
18. Sierra Club New Jersey
19. New Jersey Sea Grant
20. Barnegat Bay Partnership
21. Clean Ocean Action
22. Jacques Cousteau NERR
23. American Littoral Society
24. Edwin B. Forsythe National Wildlife Refuge
25. Sierra Club Delaware
26. Delaware Sea Grant
27. Delaware Inland Bays Program
28. Delaware Estuary Program
29. Delaware NERR
30. MD Sea Grant
31. TNC Maryland DC
32. Maryland Coastal Bays NEP
33. Virginia Conservation Network
34. Sierra Club Virginia
35. Virginia League of Conservation Voters
36. Audubon Virginia Beach
37. Audubon North Virginia
38. Virginia Sea Grant
39. Back Bay National Wildlife Refuge
40. Sierra Club Connecticut
41. Connecticut Sea Grant
42. Connecticut Department of Energy and Environmental Protection
43. Blue Frontier
44. The Nature Conservancy Mid-Atlantic
45. Swellinfo.com
46. Healthy Oceans Coalition
47. Scubaboard.com
48. iwindsurf.com
49. ikitesurf.com
50. Surfline.com

51. DC Marine Community
52. Open Channels
53. Natural Resources Defense Council

Appendix B. Coastal and Ocean Recreation Survey Questions

The following is an exact copy of the survey text.

Welcome! We are conducting a survey of recreation activities in the coastal and ocean areas of New York, New Jersey, Delaware, Maryland, and Virginia. This survey is being conducted to help inform ocean planning in the U.S. Mid-Atlantic region. We want to hear from you even if you have not visited the coast recently.

Please remember that all your individual information will be kept private and that survey results will be presented in summarized form. If you need to stop and come back to the survey, simply use the survey link sent to your email--all your information will automatically be saved. If you'd like to go back to any survey question, please use the browser back button.

Q1. What state do you live in? (Include all state- short list shown here)

1. New York
2. New Jersey
3. Delaware
4. Maryland
5. Virginia
6. District of Columbia
7. Other <fill in>

Q2. You indicated you live in <fill in from Q1> State. What county to you live in?

Information Page:

The following questions are about where you recreated **during the last 12 months in Mid-Atlantic coastal and ocean areas (see yellow area of map)**.

The Mid-Atlantic coastal and ocean areas include the states of New York, New Jersey, Delaware, Maryland, and Virginia and excludes **Delaware Bay, Chesapeake Bay, and the Long Island Sound**.

For the purposes of this survey, recreation includes activities such as beach going, wildlife viewing, scenic enjoyment, surfing, kayaking, etc. This survey **does not include consumptive activities** such as recreational fishing or clamming as this information is being collected through a separate survey effort.

Q3. Which of the following recreation activities have you participated in **during the last 12 months** in Mid-Atlantic coastal and ocean areas? Select all that

- b) Biking or hiking
- c) Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)
- d) Camping
- e) Photography
- f) Scenic enjoyment/sightseeing
- g) Sitting in your car watching the scene
- h) Watching birds, whales, seals and/or other marine life (from shore or private boat)
- i) Watching birds, whales, seals and/or other marine life (from a charter boat)
- j) Hang gliding/parasailing
- k) Kite boarding
- l) Skim boarding
- m) Surfing (from board or kayak or stand up board)
- n) Swimming or body surfing
- o) Windsurfing
- p) Free diving/snorkeling (from shore or boat)
- q) Kayaking or other paddling activity (canoe, stand up paddle board)
- r) SCUBA diving (from a charter boat)
- s) SCUBA diving (from shore or private boat)
- t) Other, please list: [TEXTBOX]

Q4. Please estimate how many trips you have made to Mid-Atlantic coastal and ocean areas in the **last 12 months that were primarily for coastal and ocean recreation** (e.g., beach going, wildlife viewing, surfing, kayaking, etc.). A trip is defined as an **intentional trip outside of daily routine**. Your best estimate is fine.

Q5. Mapping of coastal and ocean recreation activity locations

In the mapping component the respondent will be presented with a navigable map of the coast (e.g., Google maps) and will be ask:

- 1) Navigate the map or use search function to zoom to the areas which they conducted ocean and coastal and ocean recreation activities in last 12 months.
 - a. The user can zoom in and out and move the map around to navigate the map to specific areas
 - b. The user can also utilize a search function (similar to google maps) to zoom to specific areas

- d. The user will also receive an error message if they place an activity marker outside the study region
- 2) For each activity point the user will be asked to associate one or more activity with the activity marker they place on the map

Now we'd like you to think about your **last trip** to Mid-Atlantic coastal and ocean areas that was **primarily for coastal or ocean recreation purposes**. A trip is defined as an **intentional trip outside of daily routine**. Based on this, we'd like you to answer the following questions.

Q6. During your **last trip** to Mid-Atlantic coastal and ocean areas, what recreation activities did you participate in? Select all that apply.

- a) Beach going (sitting, walking, running, dog walking, kite flying, etc.)
- b) Biking or hiking
- c) Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)
- d) Camping
- e) Photography
- f) Scenic enjoyment/sightseeing
- g) Sitting in your car watching the scene
- h) Watching birds, whales, seals and/or other marine life (from shore or boat)
- i) Watching birds, whales, seals and/or other marine life (from a charter vessel)
- j) Hang gliding/parasailing
- k) Kite boarding
- l) Skim boarding
- m) Surfing (from board or kayak or stand up board)
- n) Swimming or body surfing
- o) Windsurfing
- p) Free diving/snorkeling (from shore or boat)
- q) Kayaking or other paddling activity (canoe, stand up paddle board)
- r) SCUBA diving (from a charter vessel)
- s) SCUBA diving (from shore or boat)
- t) Other, please list: [TEXTBOX]

Q7. Of the recreation activities you just selected, what was your **primary** recreation activity during your **last trip** to Mid-Atlantic coastal and ocean areas?

Q8. How many nights did you spend at the coast during your **last trip** to Mid-Atlantic coastal and ocean areas?

Q9a. During your **last trip** to Mid-Atlantic coastal and ocean areas please indicate if your party spent money on the following items.

- a. Parking
- b. Car fuel
- c. Airline flight
- d. Food and beverages from a store
- e. Food and beverages at a restaurant or bar
- f. Shopping and souvenirs (t-shirts, posters, gifts, etc.)
- g. Sundries (sunscreen, surf wax, motion sickness pills, batteries, camera data cards, etc.)
- h. Car rental
- i. Dive equipment rental and airfills
- j. Equipment rental (Surfboard, bike, kayak, stand up paddle, etc)
- k. Lodging (if you stayed overnight)
- l. Charter fee (whale watching, etc.)
- m. Park entrance, museum, aquarium, or other entrance fee
- n. Lessons, clinics, camps
- o. Other, please list

Q9b. During your **last trip** to Mid-Atlantic coastal and ocean areas, please estimate how much **your party** spent on the following items and the number of people it covered.

Expense item	Cost: \$	# of people covered
<ul style="list-style-type: none"> a) Parking b) Car fuel c) Airline flight d) Food and beverages from a store e) Food and beverages at a restaurant or bar f) Shopping and souvenirs (t-shirts, posters, gifts, etc.) g) Sundries (sunscreen, surf wax, motion sickness pills, batteries, camera data cards, etc.) h) Car rental i) Dive equipment rental and airfills j) Equipment rental (Surfboard, bike, kayak, stand up paddle, etc) k) Lodging (if you stayed overnight) l) Charter fee (whale watching, etc.) m) Park, museum, aquarium, or other entrance fee n) Lessons, clinics, camps o) Other, please list 		

DEMOGRAPHIC SURVEY QUESTIONS

Information Page:

We have just a few more questions for you. Please keep in mind that your answers are confidential and your personal information will be kept private. The following questions are optional, you may skip any particular question by simply clicking 'continue'.

D1. Please estimate approximately how many miles (driving miles one way) do you live from the coast?

1. 1-10 miles
2. 11-30 miles
3. 31-60 miles
4. 61-120 miles
5. 121-180 miles
6. 180+ miles

D2. If you live on the coast, please tell us how much nearby coastal and ocean recreation opportunities played into your decision to live on the coast:

1. I do not live on the coast
2. Not at all
3. A Little
4. Not sure
5. A Lot
6. Main reason I live on the coast

D3. What was your total HOUSEHOLD income in the past 12 months?

- | | |
|------------------------|----|
| Less than \$25,000 | 1 |
| \$25,000 to \$49,999 | 2 |
| \$50,000 to \$74,999 | 3 |
| \$75,000 to \$99,999 | 4 |
| \$100,000 to \$124,999 | 5 |
| \$125,000 to \$149,999 | 6 |
| \$150,000 to \$174,999 | 7 |
| \$175,000 to \$199,000 | 8 |
| \$200,000 or greater | 9 |
| Don't know | 10 |

D4. Are you...?

- | | |
|--------|---|
| Male | 1 |
| Female | 2 |

Please indicate what you consider your racial background to be. We greatly appreciate your effort to describe your background using the standard categories provided. These race categories may not fully describe you, but they

do match those used by the Census Bureau. It helps us compare our survey respondents to the U.S. population.

D5. Please check one or more categories below to indicate what race(s) you consider yourself to be.

- | | |
|----------------------------------|---|
| White | 1 |
| Black or African American | 2 |
| Hispanic, Spanish, or Latino | 3 |
| American Indian or Alaska Native | 4 |
| Asian/Pacific Islander | 5 |
| Other | 6 |

D6. What is the highest level of school you have completed?

- | | |
|-----------------------------|---|
| No formal education | 1 |
| Less than high school | 2 |
| High school | 3 |
| Some college | 4 |
| Bachelor's degree or higher | 5 |

QFEEDBACK. To help us improve future surveys, would you agree that the mapping portion of this survey easy to understand and use?

- | | |
|---------------------------------|---|
| Strongly Agree..... | 1 |
| Somewhat Agree..... | 2 |
| Neither Agree nor Disagree..... | 3 |
| Somewhat Disagree..... | 4 |
| Strongly Disagree..... | 5 |

QCOMMENTS. To help us improve future surveys, please provide any comments or feedback you may have that will help us improve this survey. Was there a specific section of the survey that you had trouble understanding? What would make it easier?

Thank you for participating in our survey. We appreciate your help and input! If you have friends or colleagues who would be interested in taking this survey as well, please direct them to:

<http://www.surfrider.org/mid-atlantic-recreation>

Results from this survey will be posted to the Mid-Atlantic Data Portal <<http://portal.midatlanticocean.org/portal/>>. For more information on the Mid-Atlantic costal and ocean recreation survey project please see our FAQ, for more information on the Mid-Atlantic marine spatial planning process please see the MARCO website, and for more information on the Surfrider Foundation please visit our website.

Appendix C. State Results: New York

This appendix contains the survey results calculated only considering responses from respondents who indicated they lived in the state of New York.

Table 13. New York: Overall survey demographics

Demographics	Survey respondents
Number of Respondents	316
Average age	44
Male	62.2%
Female	37.8%
White, Non-Hispanic	94.5%
Black, Non-Hispanic	0.6%
Other, Non-Hispanic	1.6%
Hispanic	2.3%
2+ Races, Non-Hispanic	1.0%

Table 14. New York: Respondents' level of education

School	Survey respondents
No formal education	0.3%
Less than high school	0.0%
High School	2.2%
Some college	15.8%
Bachelor's degree	39.9%
Graduate or professional degree	41.1%
No Answer	0.6%

Table 15. New York: Respondents' level of income

Household Income	Survey respondents
Don't know	5.7%
Less than \$25,000	4.1%
\$25,000 to \$49,999	10.8%
\$50,000 to \$74,999	14.2%
\$75,000 to \$99,999	11.1%
\$100,000 to \$124,999	12.7%
\$125,000 to \$149,999	10.8%
\$150,000 to \$174,999	9.2%
\$175,000 to \$199,999	3.5%
\$200,000 and over	11.7%
No Answer	6.3%

Table 16. New York: Activity participation for the last year, last trip, and primary activity in last trip

Activities	Last Year	Last Trip	Primary Activity
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	90.5%	66.8%	23.1%
Scenic enjoyment/sightseeing	69.0%	43.7%	3.8%
Surfing (from board or kayak or stand up board)	64.6%	46.2%	36.7%
Biking or hiking	60.4%	21.8%	3.5%
Photography	56.3%	31.3%	1.3%
Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)	48.7%	24.7%	0.3%
Sitting in your car watching the scene	39.9%	14.9%	0.0%
Camping	18.0%	3.5%	0.6%
Free diving/snorkeling (from shore or boat)	14.2%	2.8%	0.3%
Windsurfing	10.8%	7.3%	6.3%
Skim boarding	8.2%	3.8%	0.9%
Watching birds, whales, seals and/or other marine life (from a charter boat)	7.9%	2.8%	0.6%
SCUBA diving (from a charter boat)	6.3%	2.2%	1.9%
Kite boarding	5.4%	3.8%	2.8%

Figure 14. New York: Activity participation for the last year, last trip, and primary activity in last trip

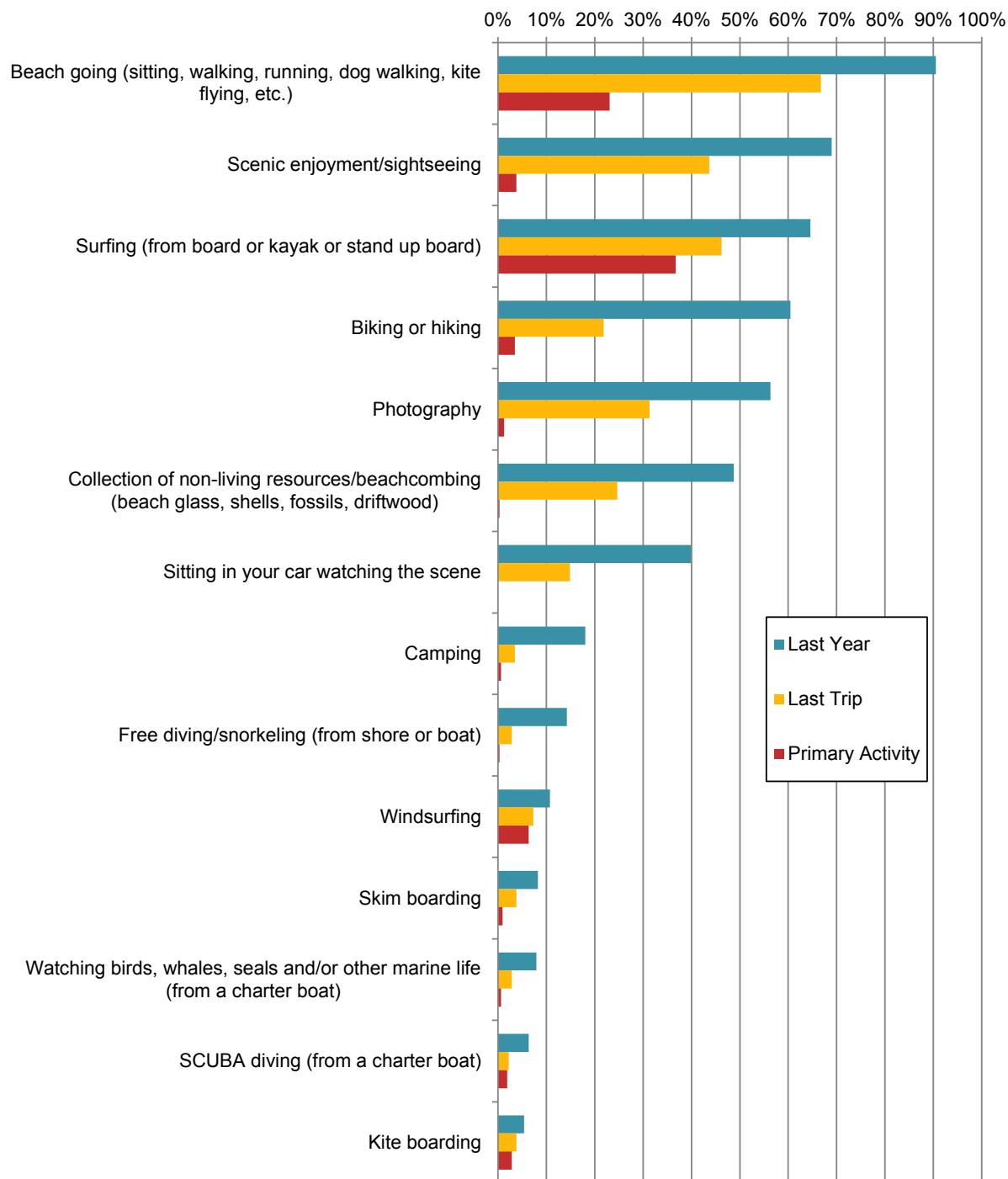


Table 17. New York: Average trip expenditures per person by item across all respondents and given an expenditure on an item

Expenditures Category	All Respondents		Given an expenditure		
	Average expenditure	Standard deviation	% Observed	Average expenditure	Standard deviation
Food & beverages: Restaurant or bar	\$13.54	\$59.29	59.7%	\$59.05	\$113.00
Lodging	\$13.25	\$72.56	19.7%	\$231.08	\$208.88
Car fuel	\$7.93	\$20.85	69.8%	\$31.93	\$31.49
Food & beverages: Store	\$6.33	\$18.79	68.6%	\$23.93	\$30.35
Equipment rental	\$3.18	\$32.13	7.3%	\$125.00	\$169.56
Sundries	\$2.58	\$15.64	33.7%	\$26.11	\$43.77
Shopping and souvenirs	\$2.45	\$11.38	18.1%	\$40.44	\$25.13
Airline flight	\$1.44	\$18.04	1.6%	\$150.33	\$131.72
Car rental	\$1.27	\$11.75	5.1%	\$100.00	\$35.36
Parking	\$1.17	\$9.48	25.7%	\$15.28	\$31.59
Park, museum, aquarium, or other entrance fee	\$0.89	\$6.80	16.8%	\$20.04	\$26.45
Lessons, clinics, camps	\$0.78	\$11.56	5.1%	\$122.50	\$109.60
Dive equipment rental and airfills	\$0.50	\$6.04	3.5%	\$39.38	\$41.95
Charter fee	\$0.32	\$5.64	1.6%	\$100.00	-
Other, please list	\$0.30	\$3.82	5.7%	\$23.88	\$27.72
TOTAL	\$55.93	\$209.44			

Figure 15. New York: Average coastal and ocean recreation trip expenditures

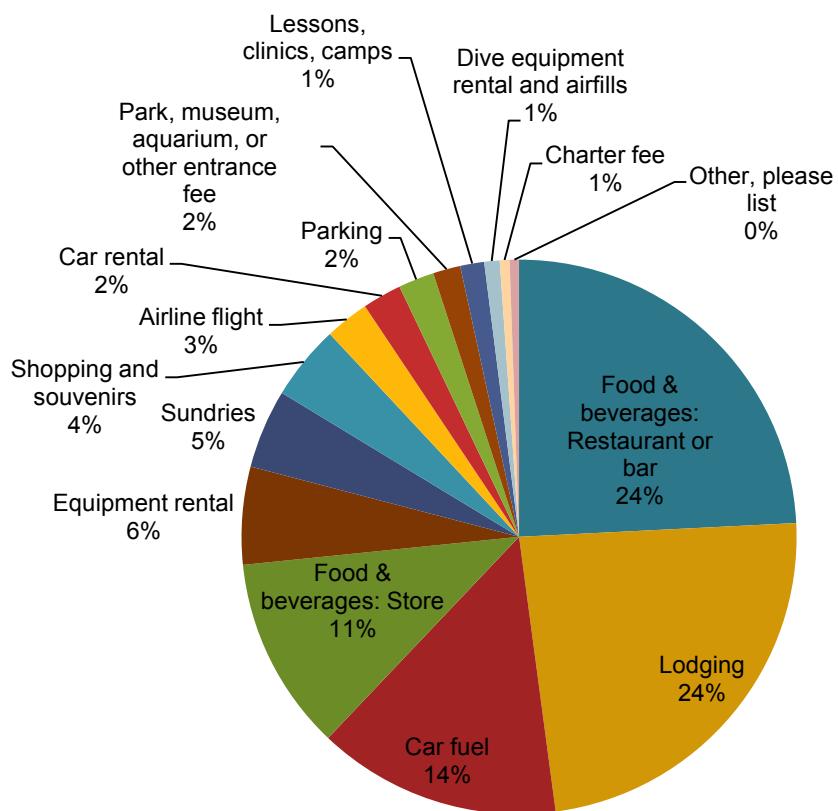


Figure 16. New York: Average trip expenditure per item, given expenditure made

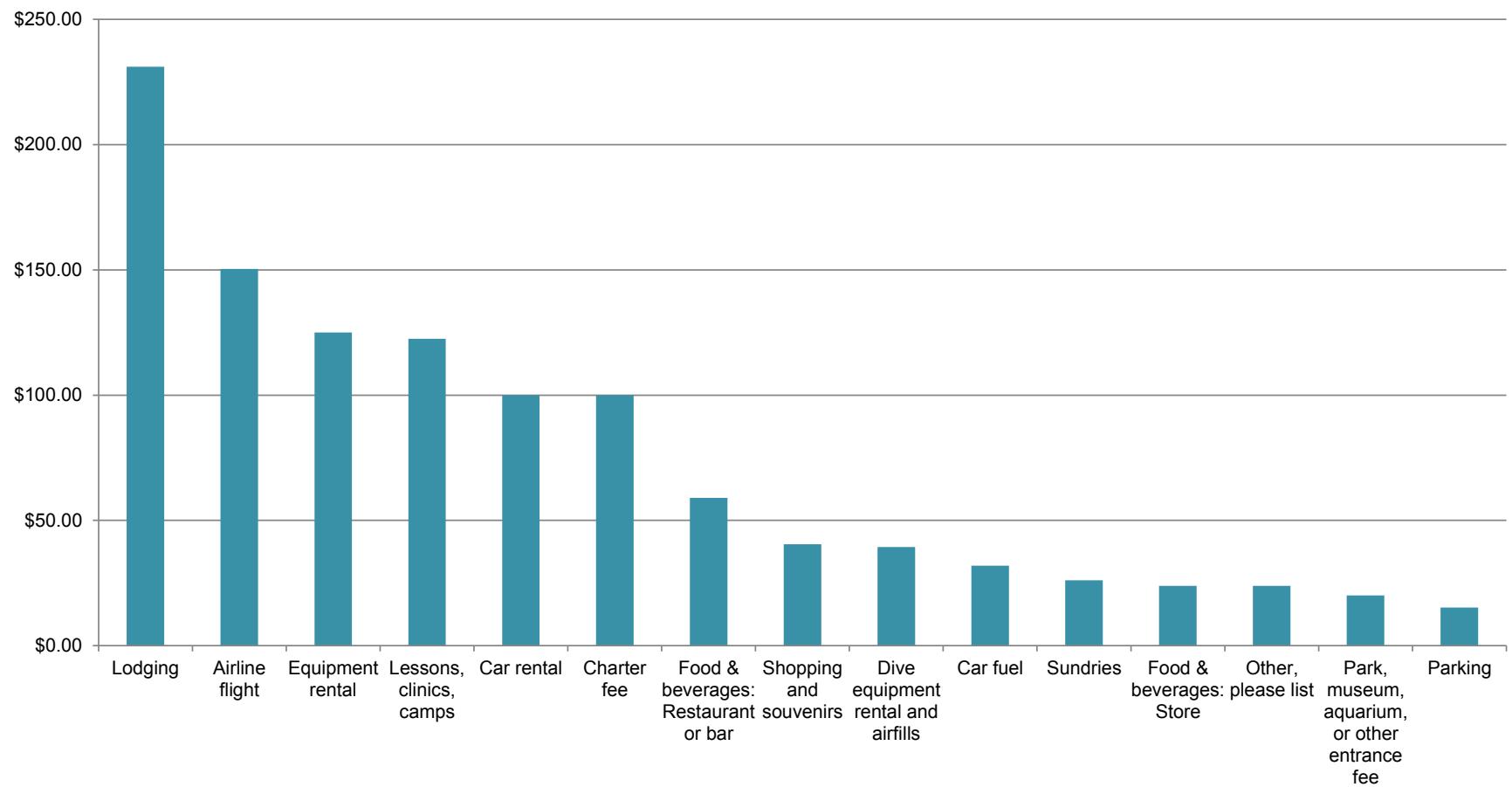


Figure 17. New York: Influence of coastal and ocean recreation on residency

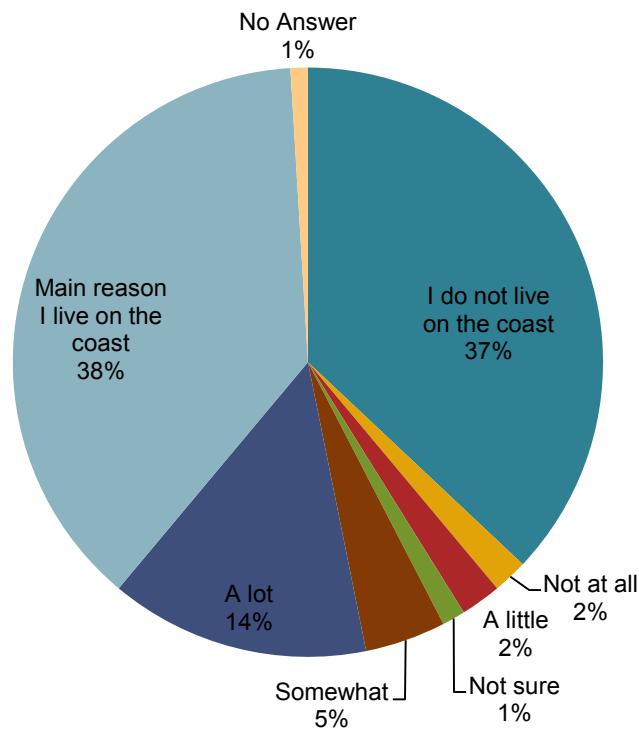
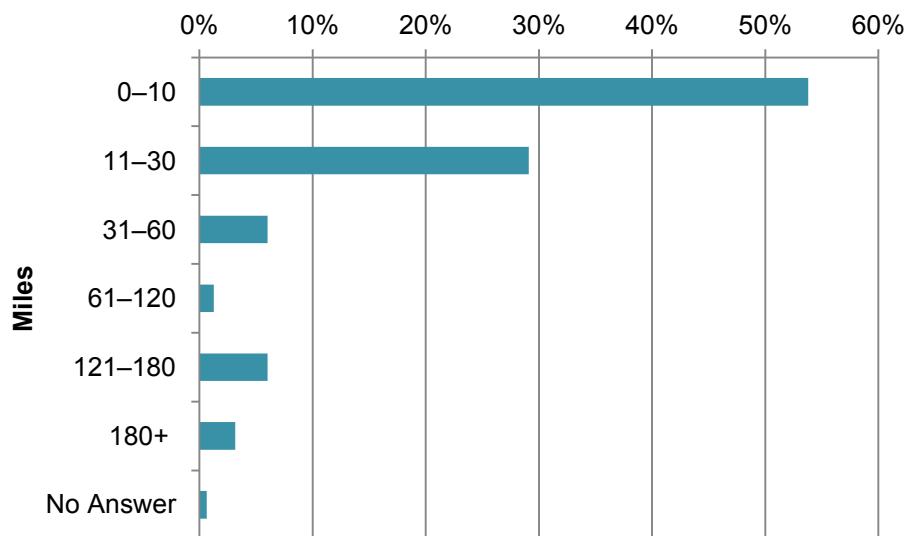


Figure 18. New York: Miles respondents live from coast (one way)



Appendix D. State Results: New Jersey

This appendix contains the survey results calculated only considering responses from respondents who indicated they lived in the state of New Jersey.

Table 18. New Jersey: Overall survey demographics

Demographics	Survey respondents
Number of Respondents	445
Average age	46
Male	58.6%
Female	41.4%
White, Non-Hispanic	95.4%
Black, Non-Hispanic	0.5%
Other, Non-Hispanic	2.1%
Hispanic	1.2%
2+ Races, Non-Hispanic	0.9%

Table 19. New Jersey: Respondents' level of education

School	Survey respondents
No formal education	0.0%
Less than high school	0.2%
High School	4.0%
Some college	16.2%
Bachelor's degree	43.6%
Graduate or professional degree	34.8%
No Answer	1.1%

Table 20. New Jersey: Respondents' level of income

Household Income	Survey respondents
Don't know	7.4%
Less than \$25,000	4.7%
\$25,000 to \$49,999	7.2%
\$50,000 to \$74,999	12.1%
\$75,000 to \$99,999	15.5%
\$100,000 to \$124,999	12.8%
\$125,000 to \$149,999	7.2%
\$150,000 to \$174,999	10.3%
\$175,000 to \$199,999	4.7%
\$200,000 and over	11.2%
No Answer	6.7%

Table 21. New Jersey: Activity participation for the last year, last trip, and primary activity in last trip

Activities	Last Year	Last Trip	Primary Activity
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	91.2%	67.0%	31.0%
Scenic enjoyment/sightseeing	71.0%	48.5%	5.4%
Biking or hiking	62.9%	27.2%	1.8%
Photography	61.8%	35.3%	1.1%
Surfing (from board or kayak or stand up board)	54.2%	38.4%	27.2%
Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)	59.1%	31.7%	1.6%
Sitting in your car watching the scene	45.8%	13.3%	0.7%
Camping	10.8%	1.3%	0.4%
Free diving/snorkeling (from shore or boat)	14.6%	2.5%	0.2%
Watching birds, whales, seals and/or other marine life (from a charter boat)	9.2%	3.1%	0.2%
Skim boarding	9.4%	3.4%	0.0%
Windsurfing	6.3%	3.6%	2.9%
SCUBA diving (from a charter boat)	4.9%	1.3%	0.9%
Kite boarding	2.5%	1.6%	0.7%
Hang gliding/parasailing	1.1%	0.2%	0.0%

Figure 19. New Jersey: Activity participation for the last year, last trip, and primary activity in last trip

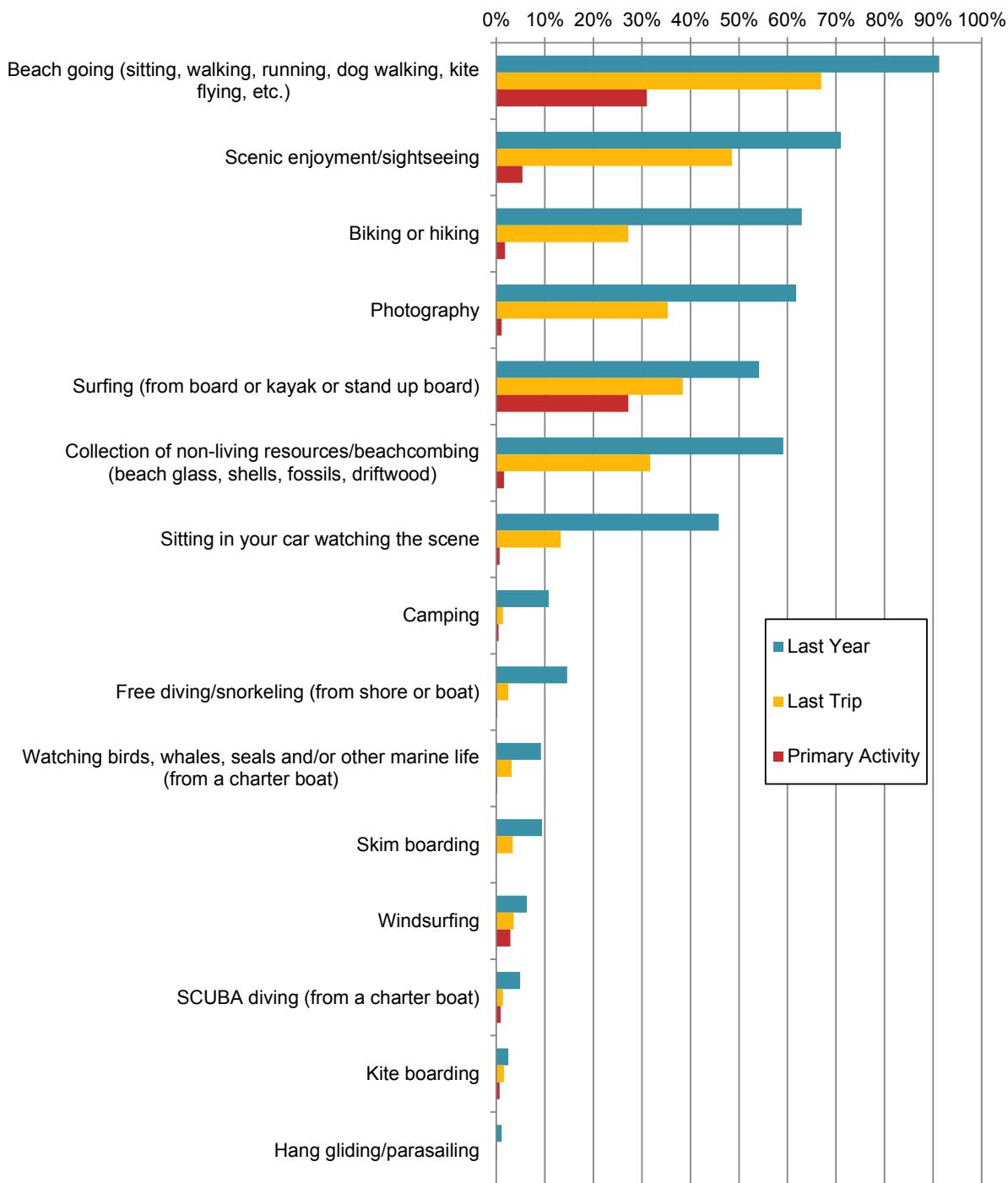


Table 22. New Jersey: Average trip expenditures per person by item across all respondents and given an expenditure on an item

Expenditures Category	All Respondents		Given an expenditure		
	Average expenditure	Standard deviation	% Observed	Average expenditure	Standard deviation
Lodging	\$23.49	\$250.33	12.9%	\$519.13	\$1,087.98
Food & beverages: Restaurant or bar	\$15.71	\$70.18	67.0%	\$56.47	\$124.42
Food & beverages: Store	\$12.89	\$125.20	68.4%	\$45.57	\$232.90
Car fuel	\$9.84	\$37.85	73.4%	\$31.75	\$62.80
Shopping and souvenirs	\$3.54	\$17.06	25.3%	\$45.97	\$43.38
Sundries	\$2.22	\$10.90	28.4%	\$22.84	\$27.68
Charter fee	\$1.96	\$14.71	3.4%	\$86.50	\$49.78
Other, please list	\$1.89	\$17.34	5.6%	\$76.08	\$83.98
Park, museum, aquarium, or other entrance fee	\$1.13	\$6.07	16.7%	\$15.20	\$16.93
Equipment rental	\$0.51	\$5.06	4.1%	\$37.77	\$23.96
Parking	\$0.48	\$2.03	23.3%	\$5.45	\$4.50
Lessons, clinics, camps	\$0.37	\$5.55	2.9%	\$54.87	\$48.07
Dive equipment rental and airfills	\$0.07	\$1.43	1.4%	\$30.00	-
Car rental	\$0.04	\$0.76	0.9%	\$16.00	-
TOTAL	\$74.15	\$418.31			

Figure 20. New Jersey: Average coastal and ocean recreation trip expenditures

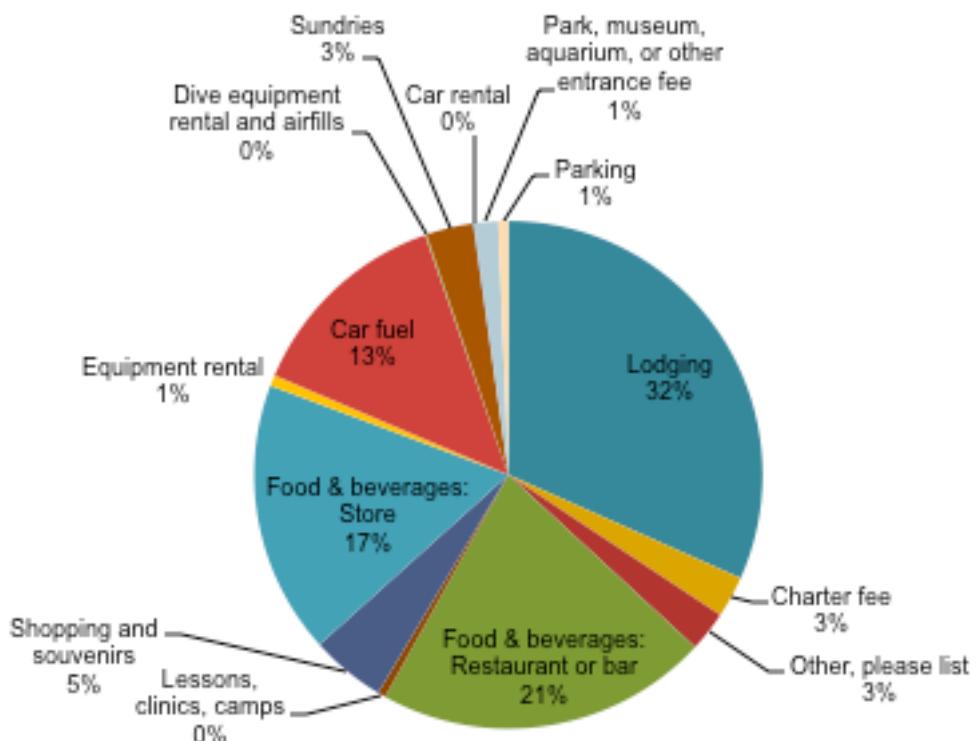


Figure 21. New Jersey: Average trip expenditure per item, given expenditure made

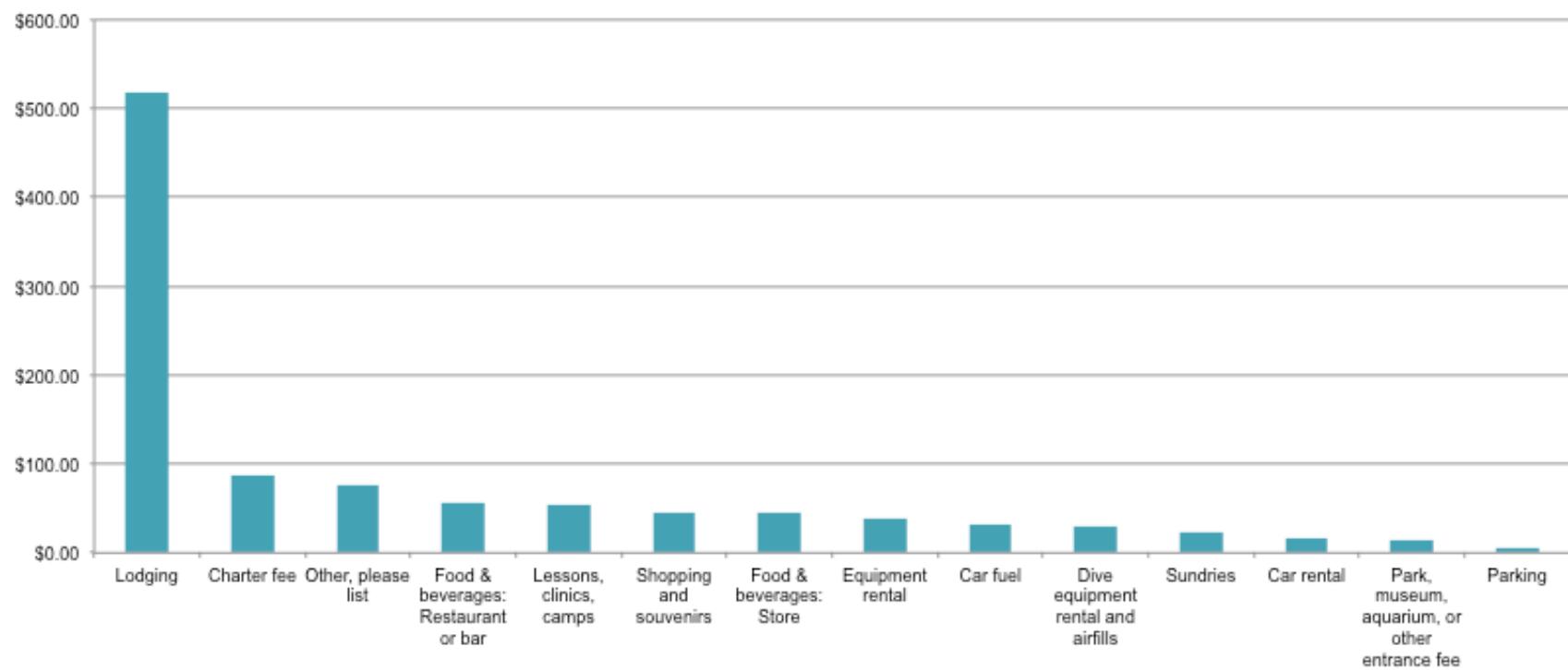


Figure 22. New Jersey: Influence of coastal and ocean recreation on residency

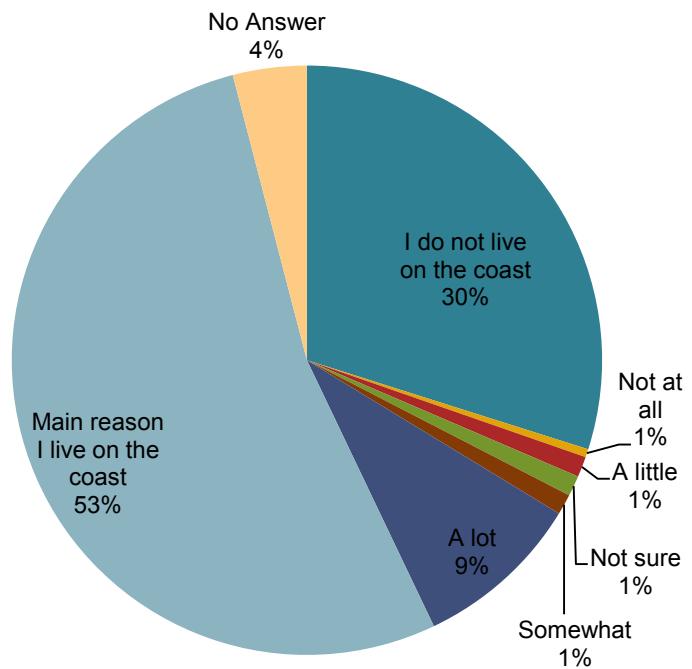
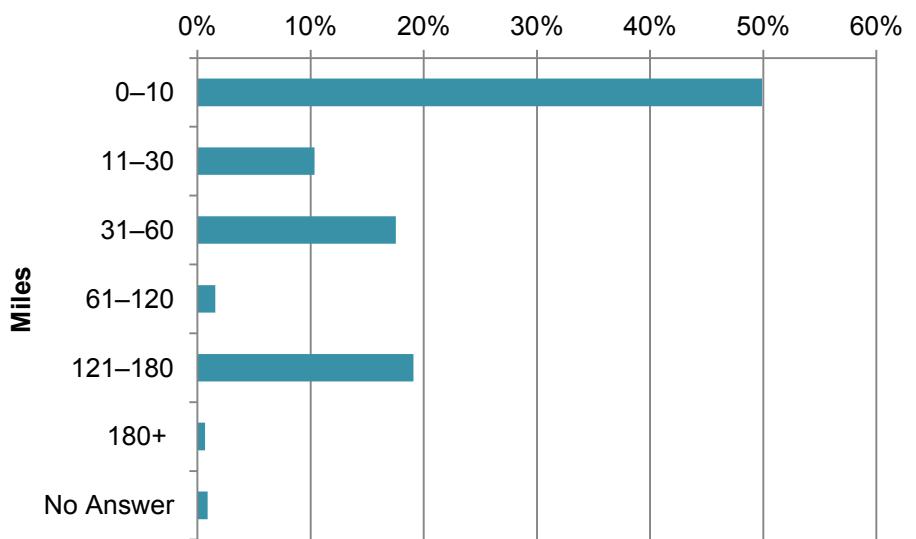


Figure 23. New Jersey: Miles respondents live from coast (one way)



Appendix F. State Results: Delaware

This appendix contains the survey results calculated only considering responses from respondents who indicated they lived in the state of Delaware.

Table 23. Delaware: Overall survey demographics

Demographics	Survey respondents
Number of Respondents	156
Average age	42
Male	66.2%
Female	33.8%
White, Non-Hispanic	97.3%
Black, Non-Hispanic	0.7%
Other, Non-Hispanic	0.0%
Hispanic	2.0%
2+ Races, Non-Hispanic	0.0%

Table 24. Delaware: Respondents' level of education

School	Survey respondents
No formal education	0.0%
Less than high school	0.6%
High School	4.5%
Some college	20.5%
Bachelor's degree	37.8%
Graduate or professional degree	34.6%
No Answer	1.9%

Table 25. Delaware: Respondents' level of income

Household Income	Survey respondents
Don't know	8.3%
Less than \$25,000	3.8%
\$25,000 to \$49,999	14.7%
\$50,000 to \$74,999	13.5%
\$75,000 to \$99,999	14.7%
\$100,000 to \$124,999	13.5%
\$125,000 to \$149,999	9.6%
\$150,000 to \$174,999	5.1%
\$175,000 to \$199,999	2.6%
\$200,000 and over	9.6%
No Answer	4.5%

Table 26. Delaware: Activity participation for the last year, last trip, and primary activity in last trip

Activities	Last Year	Last Trip	Primary Activity
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	92.9%	66.0%	33.3%
Scenic enjoyment/sightseeing	73.7%	48.1%	3.2%
Surfing (from board or kayak or stand up board)	66.7%	42.9%	33.3%
Biking or hiking	61.5%	24.4%	1.9%
Photography	60.3%	32.1%	0.0%
Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)	55.8%	31.4%	1.3%
Sitting in your car watching the scene	39.7%	12.2%	1.3%
Camping	23.7%	4.5%	1.9%
Watching birds, whales, seals and/or other marine life (from a charter boat)	15.4%	3.2%	0.0%
Skim boarding	15.4%	9.6%	1.3%
Free diving/snorkeling (from shore or boat)	6.4%	1.9%	0.0%
Windsurfing	3.2%	1.9%	0.6%
Kite boarding	1.9%	2.6%	0.0%
SCUBA diving (from a charter boat)	0.6%	0.0%	0.0%
Hang gliding/parasailing	0.0%	0.6%	0.0%

Figure 24. Delaware: Activity participation for the last year, last trip, and primary activity in last trip

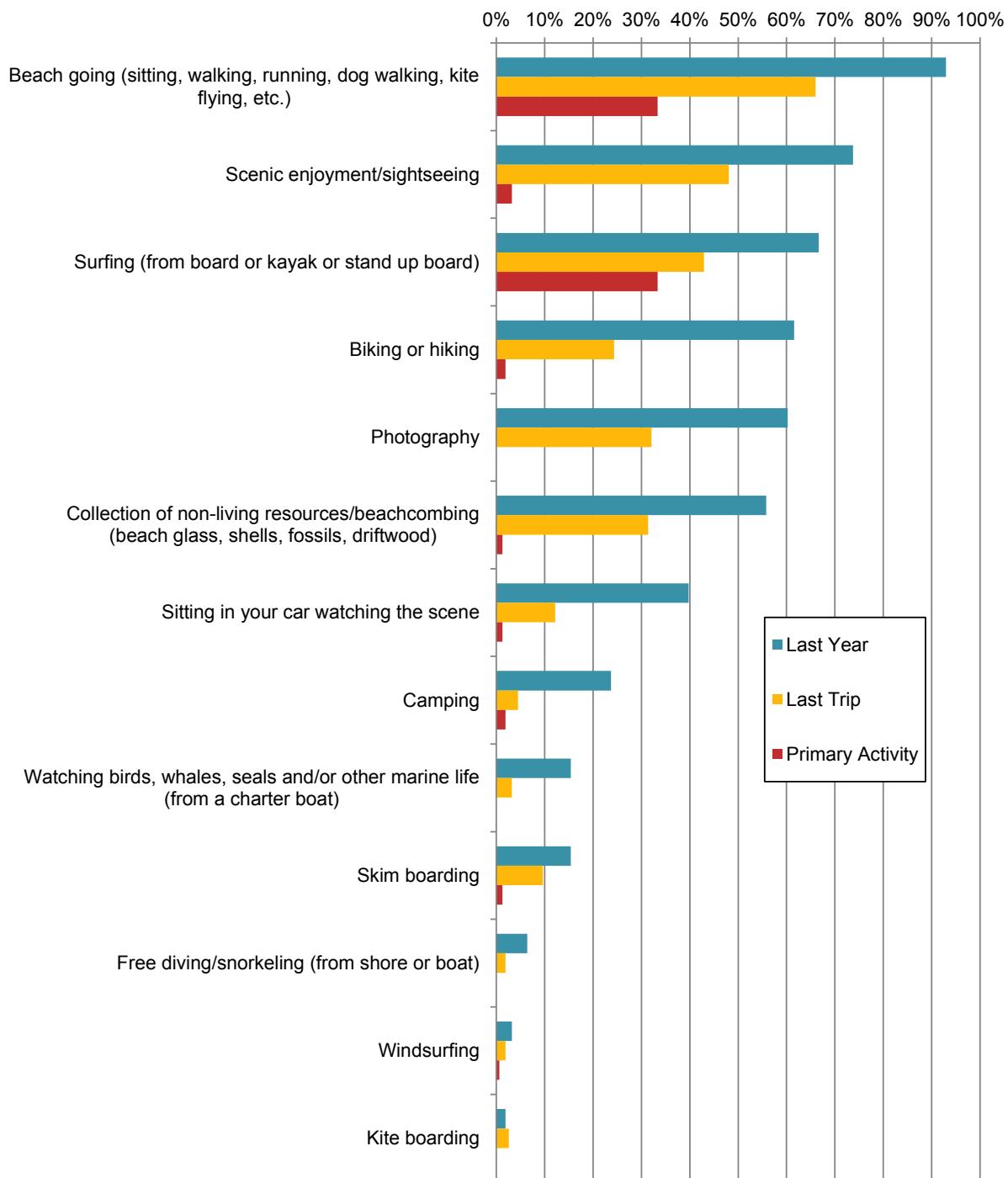


Table 27. Delaware: Average trip expenditures per person by item across all respondents and given an expenditure on an item

Expenditures Category	All Respondents		Given an expenditure		
	Average expenditure	Standard deviation	% Observed	Average expenditure	Standard deviation
Food & beverages: Restaurant or bar	\$16.12	\$67.25	66.9%	\$65.32	\$124.10
Car fuel	\$9.99	\$26.97	84.4%	\$33.45	\$40.89
Food & beverages: Store	\$8.27	\$42.11	72.1%	\$32.65	\$79.51
Lodging	\$3.43	\$20.12	13.6%	\$87.92	\$58.96
Shopping and souvenirs	\$2.38	\$12.14	25.3%	\$45.88	\$30.67
Sundries	\$1.99	\$10.68	33.1%	\$25.60	\$30.43
Other, please list	\$1.75	\$20.20	5.8%	\$135.00	\$162.63
Parking	\$1.28	\$5.47	40.9%	\$9.82	\$12.36
Park, museum, aquarium, or other entrance fee	\$0.92	\$3.99	31.2%	\$10.92	\$9.20
Equipment rental	\$0.36	\$3.14	6.5%	\$27.50	\$3.54
Lessons, clinics, camps	\$0.32	\$3.32	2.6%	\$25.00	\$21.21
Charter fee	\$0.13	\$1.61	2.6%	\$20.00	-
TOTAL	\$46.94	\$155.03			

Figure 25. Delaware: Average coastal and ocean recreation trip expenditures

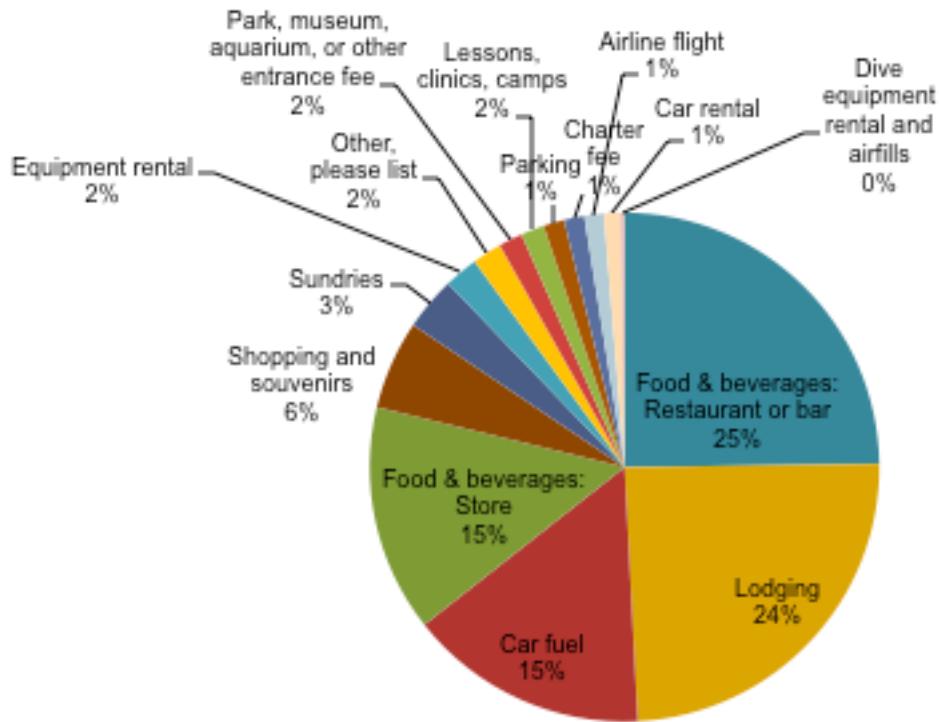


Figure 26. Delaware: Average trip expenditure per item, given expenditure made

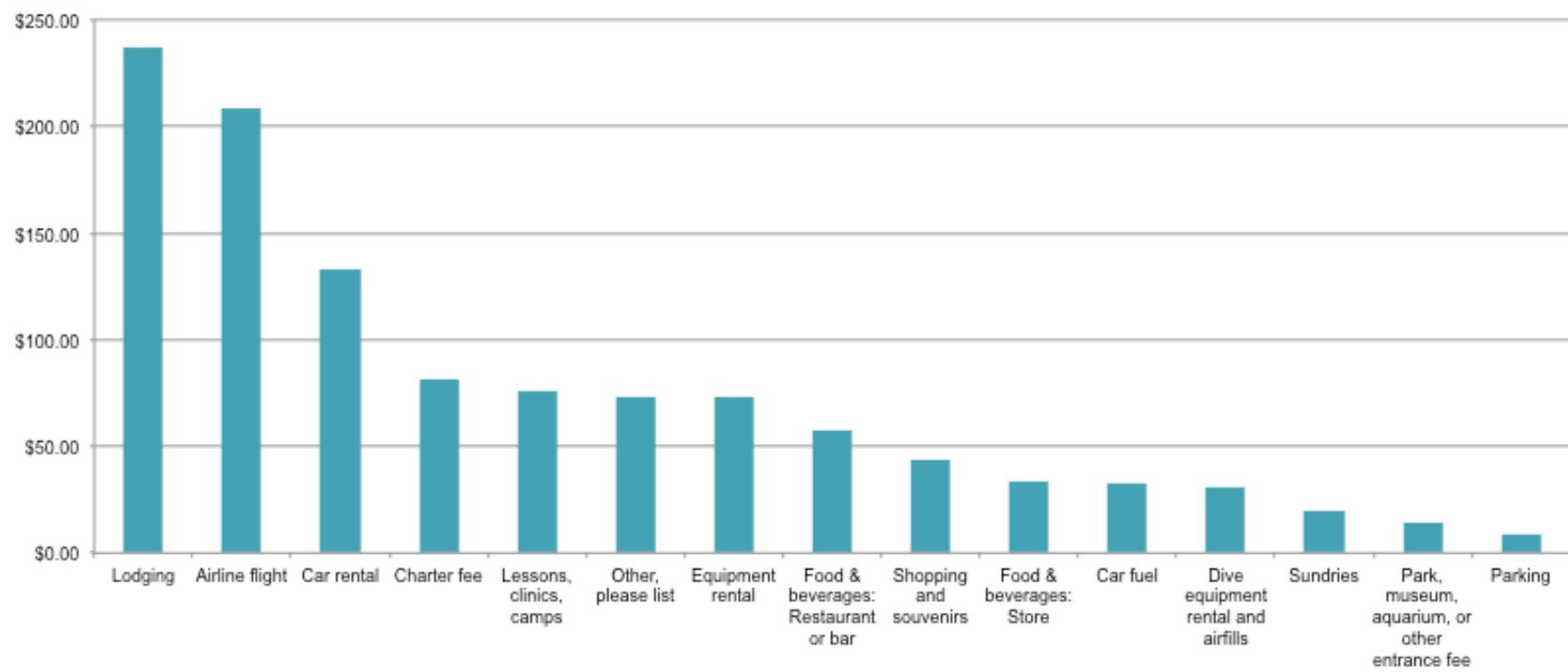


Figure 27. Delaware: Influence of coastal and ocean recreation on residency

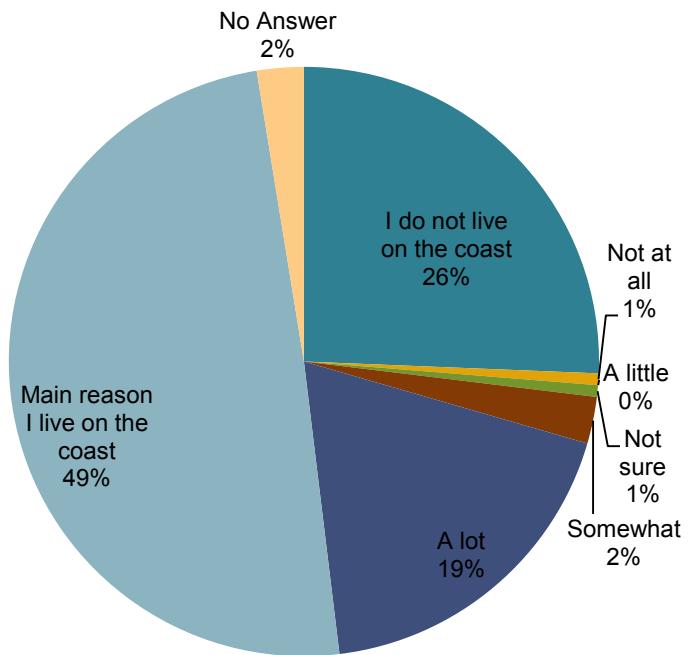
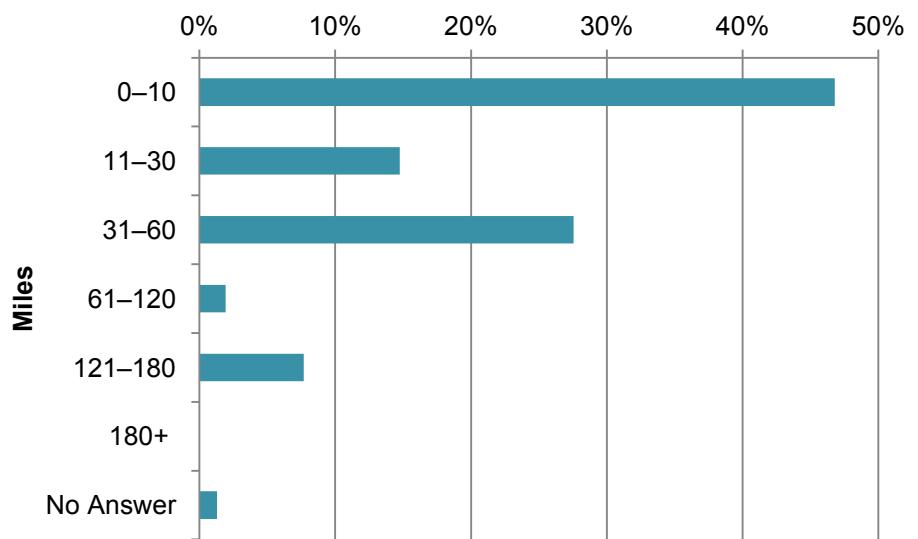


Figure 28. Delaware: Miles respondents live from coast (one way)



Appendix F. State Results: Maryland

This appendix contains the survey results calculated only considering responses from respondents who indicated they lived in the state of Maryland.

Table 28. Maryland: Overall survey demographics

Demographics	Survey respondents
Number of Respondents	164
Average age	44
Male	56.2%
Female	43.8%
White, Non-Hispanic	95.5%
Black, Non-Hispanic	0.6%
Other, Non-Hispanic	0.6%
Hispanic	1.9%
2+ Races, Non-Hispanic	1.3%

Table 29. Maryland: Respondents' level of education

School	Survey respondents
No formal education	0.0%
Less than high school	0.0%
High School	2.4%
Some college	22.6%
Bachelor's degree	31.1%
Graduate or professional degree	43.3%
No Answer	0.6%

Table 30. Maryland: Respondents' level of income

Household Income	Survey respondents
Don't know	6.7%
Less than \$25,000	3.0%
\$25,000 to \$49,999	11.0%
\$50,000 to \$74,999	12.8%
\$75,000 to \$99,999	16.5%
\$100,000 to \$124,999	15.2%
\$125,000 to \$149,999	11.0%
\$150,000 to \$174,999	4.9%
\$175,000 to \$199,999	4.3%
\$200,000 and over	11.6%
No Answer	3.0%

Table 31. Maryland: Activity participation for the last year, last trip, and primary activity in last trip

Activities	Last Year	Last Trip	Primary Activity
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	91.5%	76.8%	35.4%
Scenic enjoyment/sightseeing	69.5%	54.3%	4.9%
Surfing (from board or kayak or stand up board)	55.5%	43.3%	29.3%
Photography	54.3%	39.0%	1.2%
Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)	53.0%	31.7%	0.6%
Biking or hiking	51.2%	28.7%	1.2%
Sitting in your car watching the scene	32.9%	14.0%	0.0%
Camping	20.7%	7.3%	1.2%
Watching birds, whales, seals and/or other marine life (from a charter boat)	10.4%	2.4%	0.6%
Skim boarding	7.9%	6.1%	0.0%
Windsurfing	6.7%	4.3%	3.0%
Free diving/snorkeling (from shore or boat)	4.9%	2.4%	0.0%
Kite boarding	4.3%	2.4%	1.2%
Hang gliding/parasailing	1.8%	0.6%	0.0%
SCUBA diving (from a charter boat)	0.6%	0.0%	0.0%

Figure 29. Maryland: Activity participation for the last year, last trip, and primary activity in last trip

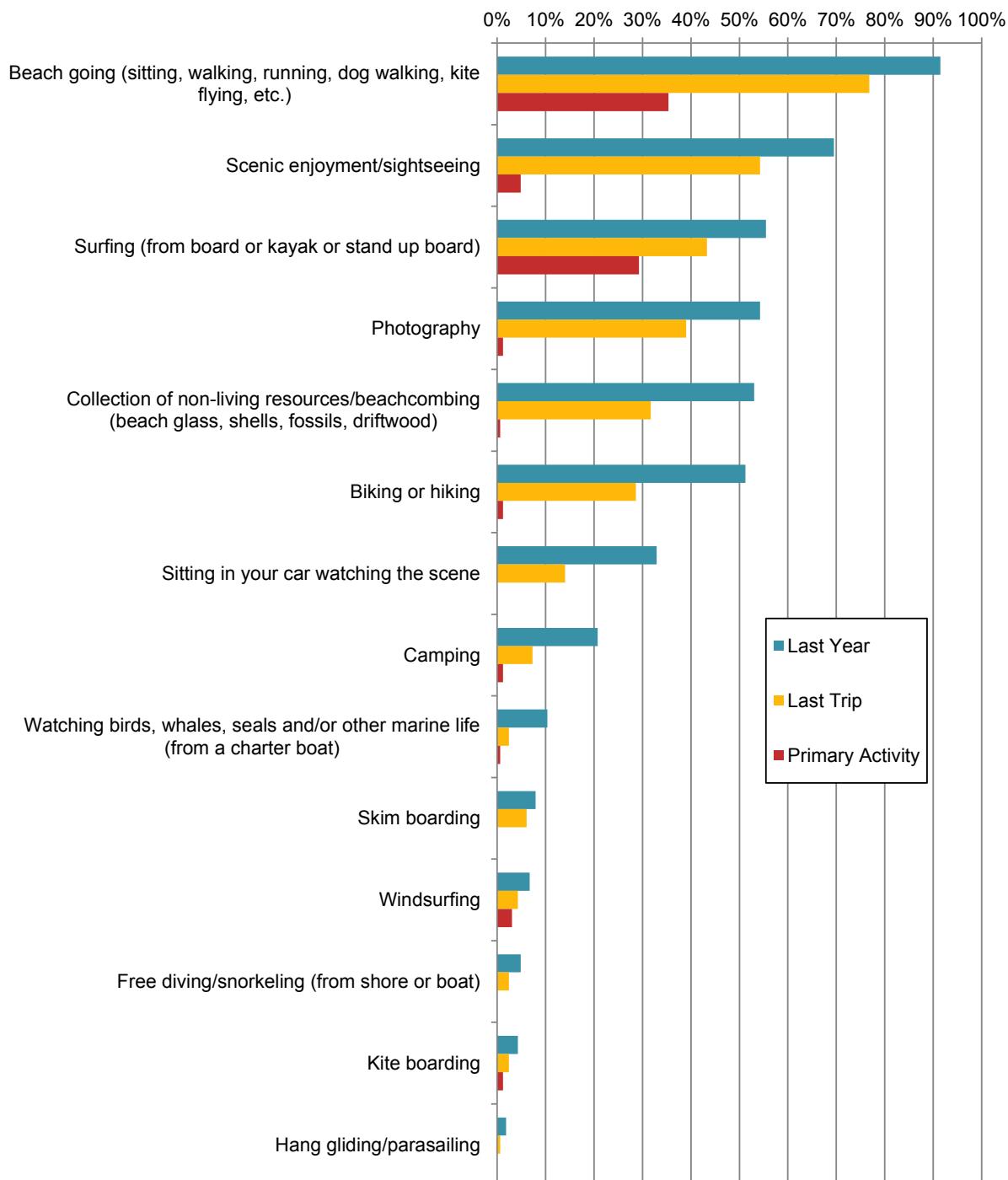


Table 32. Maryland: Average trip expenditures per person by item across all respondents and given an expenditure on an item

Expenditures Category	All Respondents			Given an expenditure	
	Average expenditure	Standard deviation	% observed	Average expenditure	Standard deviation
Food & beverages: Restaurant or bar	\$27.91	\$61.52	82.9%	\$67.31	\$80.73
Lodging	\$27.60	\$135.52	24.4%	\$226.35	\$331.96
Car fuel	\$14.65	\$25.76	88.4%	\$34.32	\$29.71
Food & beverages: Store	\$13.03	\$26.85	75.6%	\$34.48	\$34.28
Shopping and souvenirs	\$5.71	\$17.98	37.2%	\$39.03	\$30.56
Lessons, clinics, camps	\$4.33	\$26.13	6.7%	\$88.75	\$85.64
Other, please list	\$2.15	\$20.98	4.3%	\$117.50	\$124.67
Sundries	\$2.06	\$5.95	32.9%	\$12.99	\$9.10
Park, museum, aquarium, or other entrance fee	\$1.72	\$7.81	29.9%	\$18.82	\$19.12
Airline flight	\$1.22	\$15.62	0.6%	\$200.00	-
Equipment rental	\$1.01	\$6.00	11.0%	\$33.00	\$12.04
Parking	\$0.74	\$2.52	29.9%	\$6.39	\$4.37
Charter fee	\$0.34	\$3.04	1.2%	\$27.50	\$3.54
TOTAL	\$102.47	\$197.69			

Figure 30. Maryland: Average coastal and ocean recreation trip expenditures

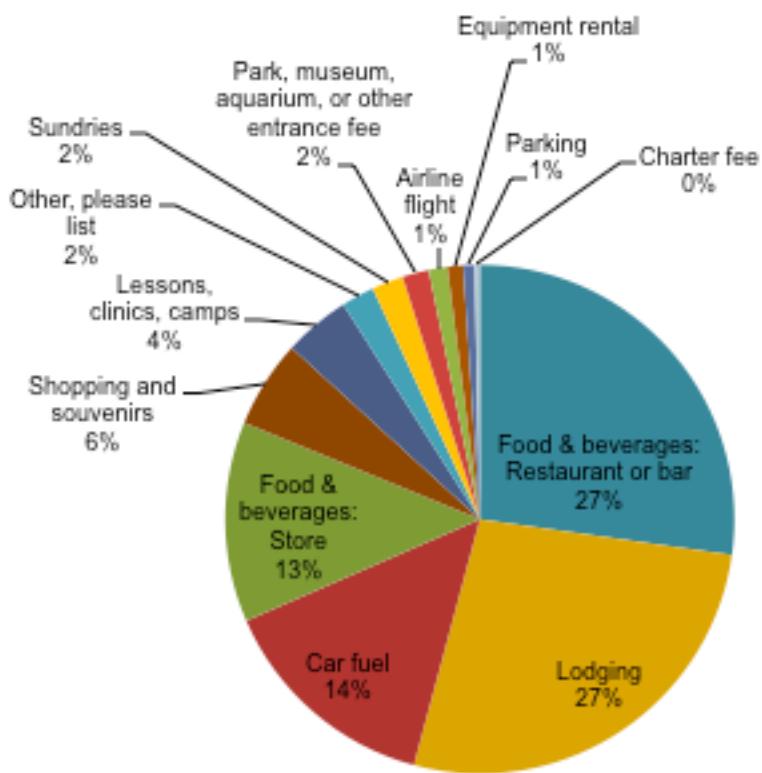


Figure 31. Maryland: Average trip expenditure per item, given expenditure made

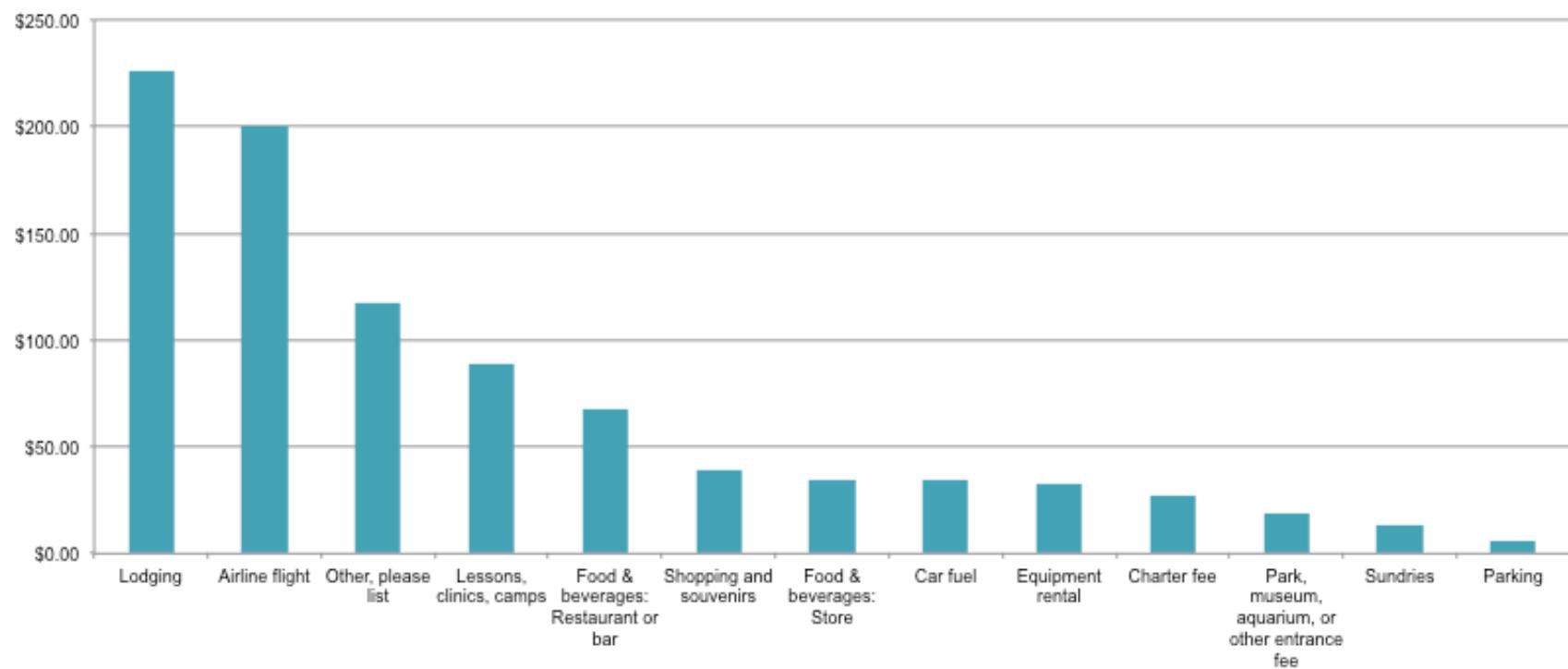


Figure 32. Maryland: Influence of coastal and ocean recreation on residency

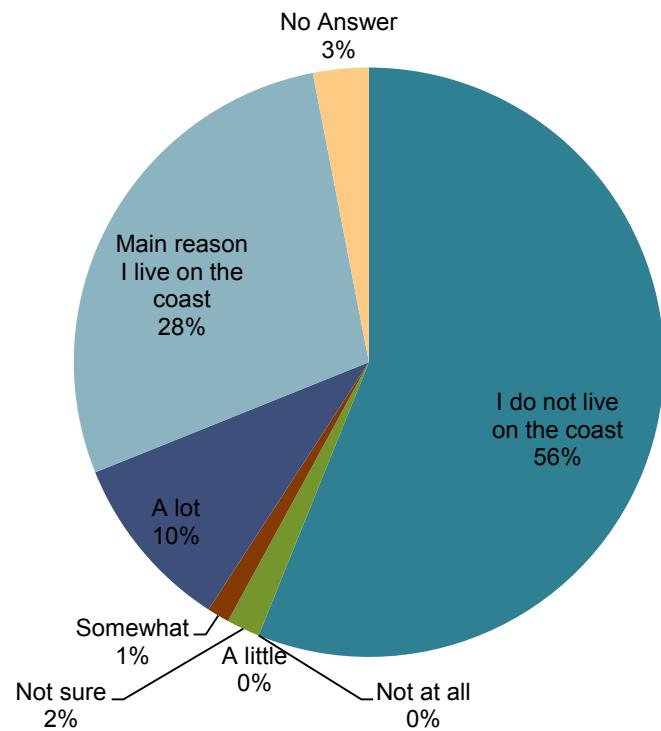
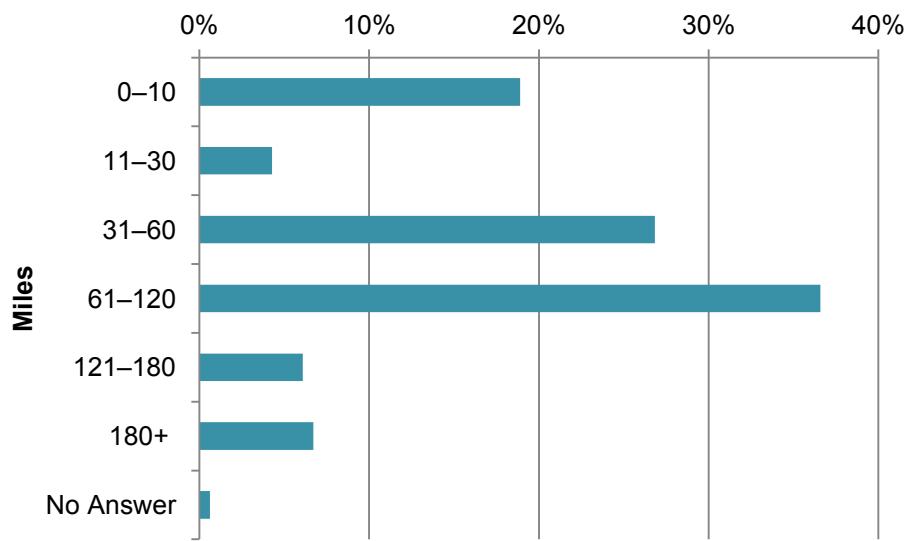


Figure 33. Maryland: Miles respondents live from coast (one way)



Appendix G. State Results: Virginia

This appendix contains the survey results calculated only considering responses from respondents who indicated they lived in the state of Virginia.

Table 33. Virginia: Overall survey demographics

Demographics	Survey respondents
Number of Respondents	181
Average age	41
Male	60.0%
Female	40.0%
White, Non-Hispanic	94.4%
Black, Non-Hispanic	0.0%
Other, Non-Hispanic	3.9%
Hispanic	1.7%
2+ Races, Non-Hispanic	0.0%

Table 34. Virginia: Respondents' level of education

School	Survey respondents
No formal education	0.0%
Less than high school	0.0%
High School	3.3%
Some college	19.9%
Bachelor's degree	44.2%
Graduate or professional degree	31.5%
No Answer	1.1%

Table 35. Virginia: Respondents' level of income

Household Income	Survey respondents
Don't know	8.3%
Less than \$25,000	3.3%
\$25,000 to \$49,999	12.2%
\$50,000 to \$74,999	18.2%
\$75,000 to \$99,999	15.5%
\$100,000 to \$124,999	9.4%
\$125,000 to \$149,999	9.4%
\$150,000 to \$174,999	4.4%
\$175,000 to \$199,999	0.6%
\$200,000 and over	12.2%
No Answer	6.6%

Table 36. Virginia: Activity participation for the last year, last trip, and primary activity in last trip

Activities	Last Year	Last Trip	Primary Activity
Beach going (sitting, walking, running, dog walking, kite flying, etc.)	96.1%	76.8%	30.4%
Scenic enjoyment/sightseeing	71.8%	52.5%	5.5%
Photography	59.1%	40.3%	2.2%
Surfing (from board or kayak or stand up board)	58.0%	43.1%	37.0%
Biking or hiking	56.4%	29.8%	2.8%
Collection of non-living resources/beachcombing (beach glass, shells, fossils, driftwood)	51.9%	32.6%	1.1%
Sitting in your car watching the scene	27.1%	11.6%	0.0%
Camping	22.7%	5.0%	1.7%
Watching birds, whales, seals and/or other marine life (from a charter boat)	8.3%	5.5%	0.6%
Free diving/snorkeling (from shore or boat)	6.1%	1.7%	0.6%
Skim boarding	5.5%	0.6%	0.0%
Kite boarding	4.4%	1.1%	0.6%
Windsurfing	3.3%	1.1%	0.0%
SCUBA diving (from a charter boat)	2.2%	1.1%	0.6%
Hang gliding/parasailing	2.2%	0.6%	0.0%

Figure 34. Virginia: Activity participation for the last year, last trip, and primary activity in last trip

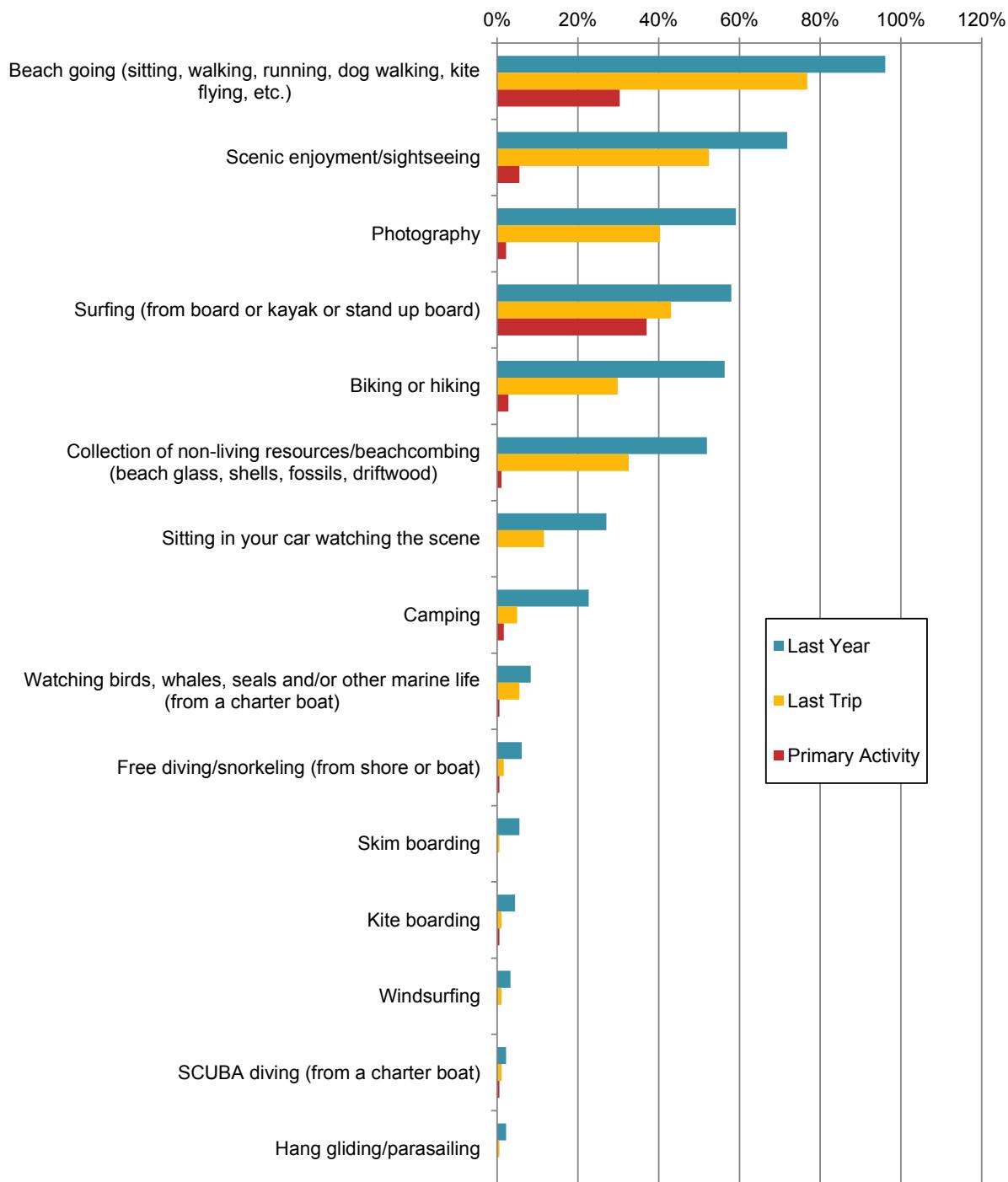


Table 37. Virginia: Average trip expenditures per person by item across all respondents and given an expenditure on an item

Expenditures Category	All Respondents			Given an expenditure	
	Average expenditure	Standard deviation	% Observed	Average expenditure	Standard deviation
Food & beverages: Restaurant or bar	\$18.36	\$33.68	71.5%	\$46.28	\$39.68
Car fuel	\$12.67	\$23.04	80.4%	\$27.66	\$27.32
Lodging	\$10.78	\$39.72	24.0%	\$107.19	\$74.66
Food & beverages: Store	\$9.09	\$18.76	68.2%	\$22.59	\$23.94
Shopping and souvenirs	\$3.66	\$12.83	27.9%	\$28.51	\$24.33
Equipment rental	\$3.36	\$32.74	4.5%	\$100.33	\$162.76
Sundries	\$2.23	\$5.93	40.2%	\$10.50	\$8.95
Airline flight	\$1.40	\$18.69	0.6%	\$250.00	-
Parking	\$1.39	\$5.23	30.7%	\$7.79	\$10.27
Charter fee	\$0.75	\$10.09	2.2%	\$135.00	-
Park, museum, aquarium, or other entrance fee	\$0.75	\$3.13	26.3%	\$8.93	\$6.82
Other, please list	\$0.56	\$7.47	3.9%	\$100.00	-
Lessons, clinics, camps	\$0.54	\$4.34	3.4%	\$32.50	\$10.90
Dive equipment rental and airfills	\$0.17	\$2.24	1.1%	\$30.00	-
TOTAL	\$65.72			\$113.82	

Figure 35. Virginia: Average coastal and ocean recreation trip expenditures

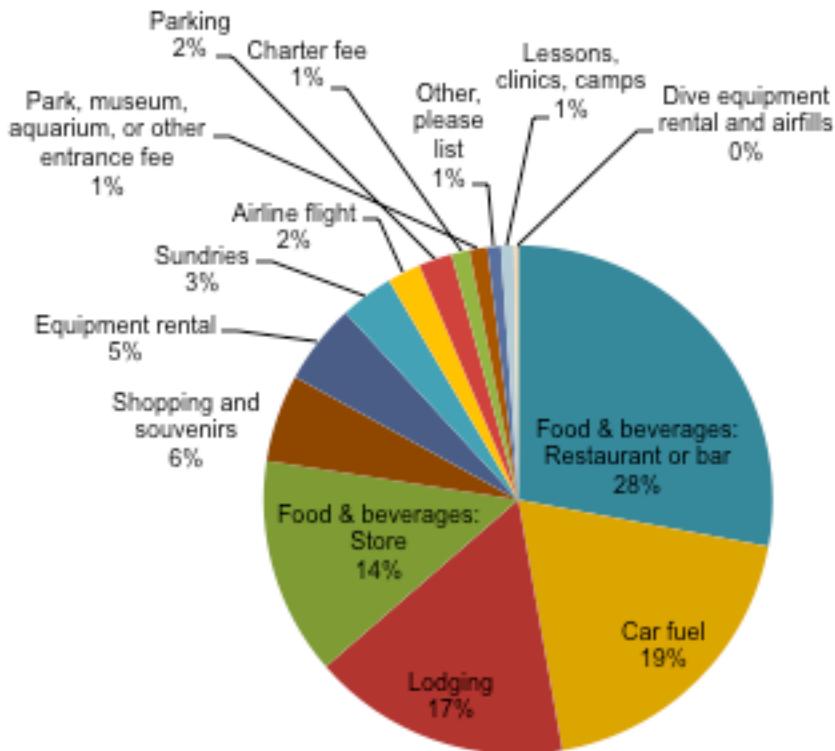


Figure 36. Virginia: Average trip expenditure per item, given expenditure made

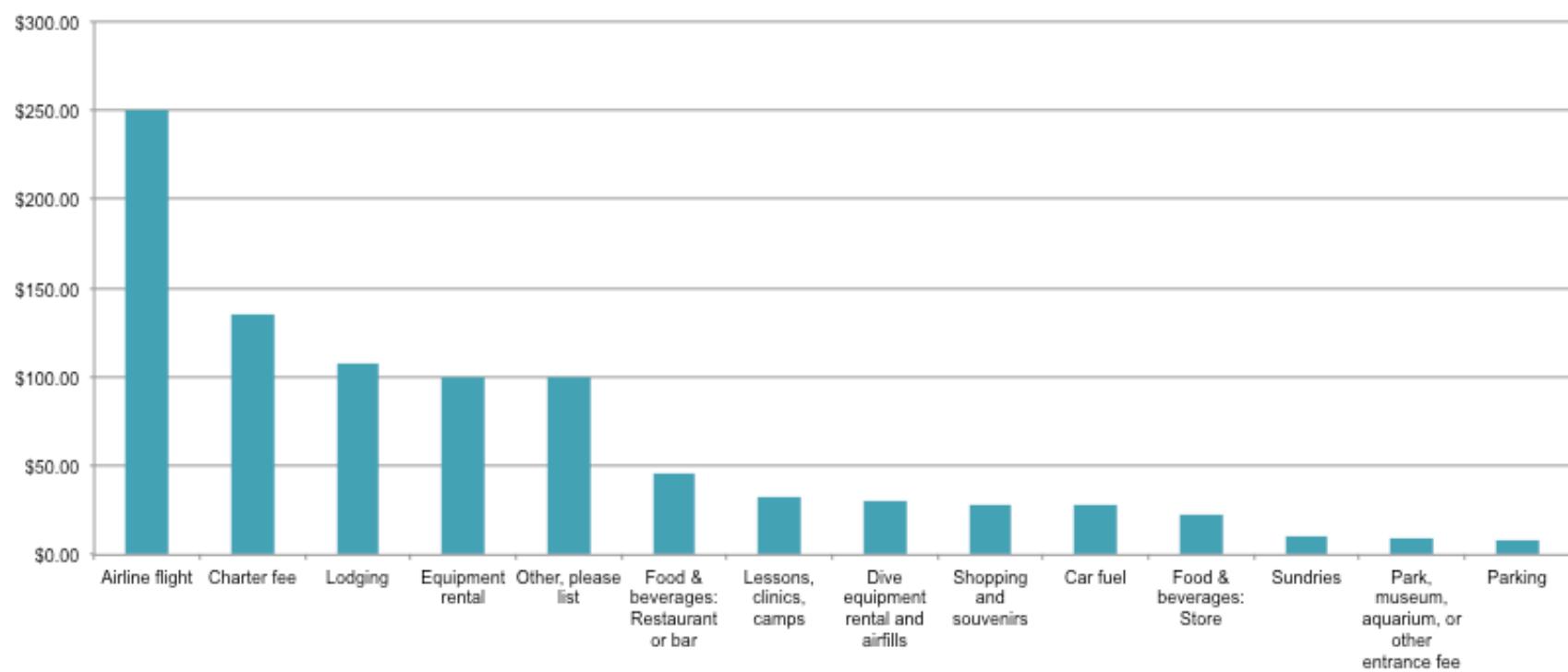


Figure 37. Virginia: Influence of coastal and ocean recreation on residency

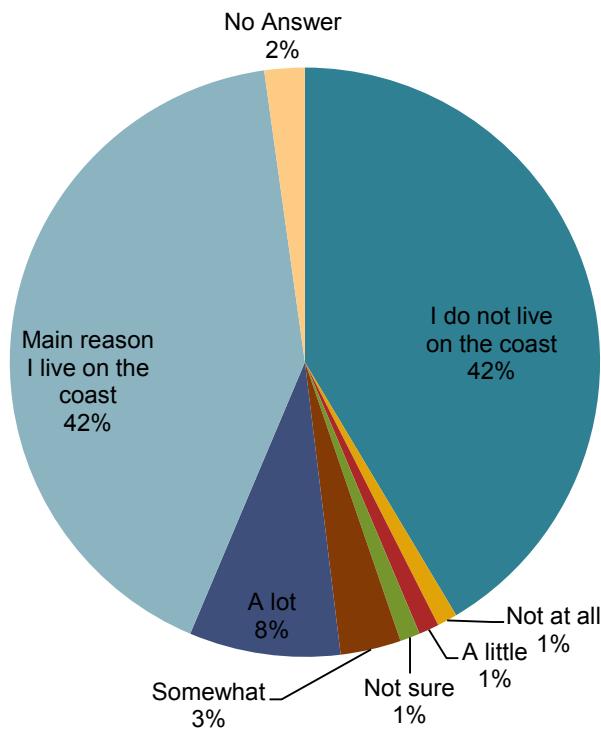


Figure 38. Virginia: Miles respondents live from coast (one way)

