Research Report

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# Assessing Public Preferences for Offshore Wind Tourism in Ocean City, New Jersey


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## LIST OF ABBREVIATION AND ACRONYMS

| | |
|---|---|
| ASC | Alternative Specific Constant |
| BOEM | Bureau of Ocean Energy Management |
| CVOW | Coastal Virginia Offshore Wind |
| DCE | Discrete Choice Experiment |
| GW | Gigawatts |
| IRB | Institutional Review Board |
| MNL | Multinomial logistic regression |
| NJ | New Jersey |
| OWF | Offshore Wind Farms |
| OC | Ocean City |
| OCS | Outer Continental Shelf |
| WTA | Willingness to Accept |
| WTP | Willingness to Pay |
| US | United States |

## Executive Summary

Offshore wind energy is poised to feature prominently in the future energy mix of the United States. Though its ability to produce clean energy is well documented, the effect of turbines on local tourism is less established. Given the economic and social significance of tourism and rapid investments in renewable energy, understanding these effects is critical, especially in tourism-reliant regions. The purpose of this study is to explore and quantify the public preferences towards potential offshore wind tourism in Ocean City, New Jersey. This survey based study helps answer key questions such as what attributes that the tourists would value, how much the tourists are willing-to-pay for tourist activities at the offshore wind farm, and how offshore wind tourism could generate revenues for the local economy. The study further examines a policy scenario of tourists' willingness-to-pay (WTP) for Offshore Wind Farm (OWF) tourism packages, and determine the most optimal combination of different tourist activities that may be adopted as a potential tourist package.

We chose Ocean City in New Jersey as the focus area of our study due to its existing tourism infrastructure and the potential represented by the Ocean 1 and Ocean 2 wind farm development. We administered a structured survey in July 2021 covering the residents within a 200-mile radius of Ocean City, with a heavier weighting of 400 residents within a 75-mile radius and 400 potential visitors within a 200-mile radius. Qualtrics, a marketing firm engaged in this study, sent out 3600 invitations to potential participants across New Jersey, Pennsylvania, Delaware, New York, and Maryland. With 25.5% response rate, we used the data from a sample of 814 respondents with majority from New Jersey (522 respondents), followed by Pennsylvania. This sample is appropriate for our study, as nearly 116 million visitors spent $46.4 billion in New Jersey in 2019 and this has been growing at 4.9% per year for the past decade (Tourism Economics, 2020). The visitor spending continues to grow above 4% annually in the shore counties such as Atlantic County, Cape May, and Ocean. The survey was designed to seek visitors' information on their socio-demographic attributes, awareness of offshore wind tourism, recreational tendencies and preferences, recreational destinations, accommodation preferences, and distance travelled.

We use Discrete Choice Experiment (DCE) approach to quantify the impact of respondents on offshore wind tourism, as it facilitates the estimation of trade-offs between non-market goods and allows for evaluating any policy alternatives. We estimate the parameters using Multinomial Logistic regression (MNL) which assumes that unobserved factors affecting the choice of alternatives are strictly independent of each other (Independence of Irrelevant alternatives) and hence determines the probabilities of choosing on option over another. Based on the parameter estimates, we further estimate the WTP for various preference share options, determine the most optimal, and preferred tourist package.

## Key Findings

### Tourism in Ocean City

As a known tourist destination, the New Jersey shore counties alone (Ocean, Monmouth, Atlantic, Cape May, and Middlesex counties) constitute more than 55% of tourists' visitation in the state (Tourism Economics, 2020). This makes the Ocean city ideal for OWF tourism, as the new attractions can be added to existing infrastructure without the need for large marketing campaigns or significant infrastructure development. Existing tourist activities fuel a significant portion of the local economy, the effect of which can be magnified by leveraging synergies with OWFs. Increasing stay duration and associated spending on accommodation, for instance, is one of the various channels through which offshore wind tourism's effect on the economy in general and the tourism sector in particular can come about. Some of the key findings from the synthesis of trip characteristics as reveled by the respondents are as below.

- About 80% of the respondents surveyed indicated that they have visited Ocean City. Of the remaining 20% non-visitors, 62% indicated an interest in visiting the Ocean City.
- Nearly 70% responded that they would stay overnight and their average length was found to be 3.59 days. This clearly shows the potential demand for hospitality sector in Ocean City and the prospects of tourism revenue in Ocean City.
- When the respondents were asked about the frequency of their visit, 30% of them preferred to visit at least once a month, 22% would visit weekly, 23% indicated to visit one every season, and remaining visiting once or twice a year. This shows how frequent the respondents are willing to visit Ocean City, which is crucial for sustaining business for local establishments.
- The average spending per person per trip was $537, with majority spent on accommodation (22%), followed by shopping (19%), and restaurants (18%) each day. Interestingly, the median spending was $265 per person per day, suggesting that there may be an opportunity for offshore wind farm tourism to offer some sort of luxury experience.
- When the respondents were asked about the acquisition of recreation equipment (such as sports gear, fishing rods, boats, jet ski's) about 32% reported renting recreational equipment at an average of $83 per day. This may suggest opportunities for local businesses by linking these activities to OWF tourism.

### Perceptions and Attitudes towards OWFs

Though OWFs can positively affect the local economy through bolstering tourism, there remains concern that they may have the opposite effect. However, our results suggest that offshore wind farms are unlikely to have significant adverse tourism effects.

- When respondents were asked about accommodations with a view of the wind turbines, 48% were indifferent and 21% preferred a view with the turbines. This suggests that while some visitors (31%) may view OWFs as a viewshed concern, most are indifferent.
- Overall, majority of the respondents indicated that OWF would improve cleaner energy production (74%), create jobs (57%), energy security (66%), improve local tourism (38%), increase property values (29%), and better marine environment (34%).

**Discrete Choice Experiment Results and Willingness to Pay for OWF Tourism**

The results from discrete choice experiment used for analyzing the respondents' preferences for offshore wind tourism, showed that most statistically positively significant attributes were guided tour, followed by artificial coral reefs, and onshore information. Attributes with environmental benefits were more preferred by the respondents.

- The marginal WTP estimated revealed highest WTP values for the attributes such as guided tours ($37), followed by artificial coral reefs ($33), onshore information with telescopes ($28) and finally surface water sports at ($3).
- While some of the existing OWF tourism sites such as Baltic and North Seas, Bremerhaven, Germany have achieved success with a variety of packages that have bolstered local economies, it is important to note which combination of features yields the best results. We performed a policy simulation with six possible tourism packages with combination of different attributes (guided tour, fishing, surface water sports, and coral reefs) and determined the most optimal combination. The combination of these tourism packages can be structured to yield considerable revenue.
- Parameter and WTP estimates for the tourism packages indicated that the ideal combination of features among those we tested should include guided tours with surface water sports and artificial coral reefs at the cost of $20/person/hour. This option was preferred by 45% of the respondents.
- The second-best combination features a guided tour, surface water sports and coral reefs, and costs $50/person/hour, was preferred by 20% of the respondents
- Among combinations that yield positive results, the estimated revenue can range from $52.6 million to $111.98 million in the peak summer months, depending on the visitation rates assumed.
- A reduction in cost from $50 to $20 per person per hour, could increase revenue by $62 million during summer alone. This preference share analytical approach can guide decision makers in choosing an optimal and/or preferred tourist package resulting in maximum benefits to both the tourists and the local businesses.

## 1. Background

Renewable energy industry is rapidly growing, expected to grow by 20% to meet 30% of total electricity demand by 2023 in the United States. A significant portion of this demand is expected to meet by offshore wind farms (OWF) (Smythe et al., 2020). By 2020 the global capacity of offshore wind surpassed 47 GW representing 4.8% of the total offshore wind capacity (Global Wind Energy Council (GWEC), 2021). In the midst of an unprecedented global pandemic, there was a total 6.1 GW offshore wind projects commissioned during 2020, with China leading nearly half of new global offshore wind installations, followed by Netherlands, Belgium, UK, Germany, Portugal, US, and South Korea (GWEC, 2021). Other countries such as Japan, China, Vietnam, and Egypt have also entered the offshore wind energy market (Smith et al., 2018; Smythe et al., 2020).

Despite lagging behind Europe, the US is making considerable investments in offshore wind development (Bidwell, 2017; Smythe et al., 2020; Russell et al., 2020). The offshore wind gross potential in the US is four times greater than the national electric capacity, which stands at 1,118 GW largely sourced from urban-centric load centers that lack other cost-effective renewable energy resources (Lilley et al., 2020; Musial and Ram, 2010). In the short term, the US eastern seaboard is the most suitable location for utility scale offshore wind due to high-energy prices, dense populations with high-energy demands, high wind speeds, and shallow waters (Russell et al., 2020). Recently, there has also been an increase in policies supporting offshore wind projects, leading to the procurement of 15 leases by the Outer Continental Shelf (OCS) and the Bureau of Ocean Energy Management (BOEM) in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Maryland (Dalton et al., 2020; Russell et al., 2020; Parsons et al., 2020).

These supportive policies are justified in part because of the considerable economic benefits such projects are anticipated to produce. The Coastal Virginia Offshore Wind (CVOW) project, for instance, is anticipated to power 660,000 homes. An economic impact analysis reveals that the CVOW project could create up to 900 jobs during construction and 1,100 jobs during operation of the turbines, resulting in a $210 million economic impact (Dominion Energy, 2020). In 2019, 116 million visitors spent $46.4 billion in New Jersey, which has been growing at 4.9% per year for the past decade (Tourism Economics, 2020). The visitor spending continues to grow above 4% annually in the shore counties such as Atlantic County, Cape May County, and Ocean County.

Although the existing potential of offshore wind in US is huge and many developments are underway. Progress in the OWF sector is complicated by several factors, including limited existing infrastructure, competition with shipping and fishing industries, relatively high market costs due to low natural gas prices, lack of financial incentives, and convoluted regulatory programs (Firestone et al., 2018a; Russell et al., 2020). The other challenge is the negative public perceptions and the limited amount of information regarding offshore wind energy projects' impact on local tourism economies. The main opposition to offshore wind is based on residents' and policy makers' concerns on the visual impacts, resource use conflicts such as fisheries, and energy costs (Bidwell, 2017; Smith et al., 2018; Smythe et al., 2020). OWFs, for instance, can impact natural resources and human activities, including how the foundations of wind turbines may introduce new habitats, attracting marine species and increasing biodiversity. The turbines may also displace birds, fish and other wildlife by affecting their flight patterns and foraging behaviors (Dalton et al., 2020). Human activities such as commercial fishing and boating may be affected by safety concerns keeping them away from the turbines. Any alterations to the seascape of the coast could have a profound effect on the tourism as OWFs could restrict access to the site, increase safety risk and modify visual landscape (Dalton et al., 2020; Parsons et al., 2020).

On the other hand, observations from European offshore wind sites indicate that offshore wind power boosts local economies by drawing increased number of tourists and revitalizing other tourism sectors (Lilley et al., 2010; Smith et al., 2018). Offshore wind projects may also attract visitors due to the green outlook it adds to a location in terms of promoting renewable energy, it may also impact aesthetics, commercial and recreational fishing, and other ecological features (Wolsink, 2018; Russel et al., 2020; Smythe et al., 2020). Studies have also suggested that OWFs could boost tourism through increased likelihood of finding fish around turbines (Dalton et al., 2020). As compared to onshore wind, offshore wind may also mitigate human impact concerns such as noise, shadow flicker, and increased distances from homes that may affect local economies and property values (Landry et al., 2012).

Understanding these divergent perspectives, impacts, and the possible social, environmental, and economic tradeoffs is important in determining what the net effect will be (Kosensus and Ollikainen, 2013; Dwyer and Bidwell, 2018). Such a study is also timely given that offshore wind energy is taking roots in many countries, having implications for their coastal communities' economies, costal land and seascapes and cultures (Parsons et al., 2020; Smith et al., 2018).

In this report, we investigate public preferences towards offshore wind energy tourism with Ocean City as a case study. Ocean city is an excellent model given the existing and potential tourism infrastructure and the offshore wind turbines that are in development.

To address the knowledge gap in public perspectives of offshore wind tourism in New Jersey we deployed a discrete choice experiment analysis. To understand these potential impacts, we:

(1) investigated the general socio-demographic trends and characteristics of visitors and residents,

(2) assessed general awareness and perceptions towards offshore wind tourism,

(3) estimated willingness to pay for offshore wind tourism, and

(4) determined how different attributes (type of educational tours to wind farms, recreational packages, and coral reefs) affect willingness-to-pay (WTP) for offshore wind tourism.

Finally, based on the WTP values we conducted a policy simulation exercise to theorize policy components for Ocean City offshore wind energy, to highlight possible tradeoffs from six different scenarios.

## 2. Methodology and Data

In this section, we describe the methodology of primary data collection and analyses including survey design, sampling framework, survey administration, discrete choice experiment (DCE) framework, calculation of WTP, and characterization of hypothetical offshore wind tourism packages.

### 2.1 Survey Design

A stated preference original survey was designed within the context of hypothetical wind farm near Ocean City and refined through a pre-test that consisted of 6% of the responses to test for the robustness of the survey. The goal of the pre-test was to evaluate whether the respondents understood the questions, to establish the time it took the respondents to complete the questions, which is critical for the overall reliability of the survey, and to determine presence of automated responses.

The survey consisted of four parts. The first part included a brief introduction to the survey and background information on offshore wind and Ocean City as a tourism destination to help respondents understand the goal of the survey. This was followed by the second part, which had questions assessing the respondent's residences, visitation habits, sources of information of offshore wind farms, attitudes towards impact of offshore wind energy, accommodation preferences, and recreational activities. In the third part, respondents were presented with the choice experiment questions, where they were faced with four tasks, each with two offshore wind tour packages with different attributes and an opt-out (status quo). The final part contained socioeconomic information about respondent's characteristics such as gender, age, education, residence, occupation, and household income. Before deployment, the survey was approved by Montclair State University's Institutional Review Board and assigned an (IRB) Number: IRB-FY20-21-2228. At the beginning of the survey, each respondent was required to provide consent prior to completing the survey. In the survey form, respondents were notified about the length the survey, their voluntary participation, lack of anticipated risks, and the confidentiality of their responses.

### 2.2 Sampling Framework and Survey Administration

This survey was conducted in the month of July 2021 through Qualtrics, a third-party marketing firm that provides undisclosed modest compensation to survey participants. Our analysis focused on residents within a 200-mile radius of Ocean City, with a heavier weighting of 400 residents within a 75-mile radius and 400 potential visitors within a 200-mile radius (Figure 1). The marketing firm sent out a total of 3600 invitations to potential participants, from whom we received a total of 918 responses, resulting in a 25.5% response rate (Delaware = 31, Maryland =4, New Jersey =522, New York =4, Pennsylvania =357). Such a response rate is typical for online surveys with small incentives for participation (Adams et al., 2011). A total sample of 814 were considered after discarding a total of 104 responses that were considered 'non-response' and had missing values to some key survey questions. The New Jersey shore counties alone (Ocean, Monmouth, Atlantic, Cape May, and Middlesex counties) constitute more than 55% of tourists' visitation in the state (Tourism Economics, 2020).


**Figure 1: A 200-mile Radius Survey Area for Ocean City NJ**

## 2.3 Theoretical Framework of Discrete Choice Experiment (DCE)

The discrete choice experiment (DCE) approach is based on Lancaster's random utility theory (Lancaster, 1966; McFadden, 1976). The underlying assumption in the DCE is that the utility an individual derives from a good depends on its individual characteristics and the unobserved (stochastic) components (Lancaster, 1966; McFadden, 1976). The use of DCEs in this type of setting is recommended because it facilitates the estimation of trade-offs between non-market goods and allows policy alternatives to be evaluated (Kruger, 2007).

The derivation of the theoretical framework for our study is based on Brennah and Rensburg (2016), Bergmann et al., (2006), and Ku and Yoo (2010) which is summarized as follows. In each choice set, the respondent faced with a set of three alternatives defined by different attribute levels, are summarized in Table 1. In general, a respondent *q*'s utility from choosing alternative *j* in choice situation *t* in a utility function with random parameters can be defined as:

$$U_{jtq} = V_{jtq} + \varepsilon_{jtq} = \beta'_{qk} X_{jtqk} + \varepsilon_{jtq} \quad (1)$$

Where respondent $q$ ($q$=1,....$Q$) obtains utility $U$ from choosing alternative $j$ (Option A, B or C) in each of the choice sets $t$ ($t$=1,....X). The utility has a non-random component ($V$) and a stochastic term ($\varepsilon$). The non-random component is assumed to be a function of the vector $k$ of choice specific attributes: $X_{jtqk}$, with corresponding parameters $\beta_{qk}$ which may vary randomly across respondents due to preference heterogeneity with a mean $\beta_k$ and standard deviation $\delta_k$.

**Table 1: Attributes and Levels in the Choice Task**

| Attribute | Description | Levels |
|---|---|---|
| **Type of educational offshore wind tour** | An educational tour where you can see offshore wind turbines in operation. The tour could be an educational guided boat tour that takes you to see the offshore wind turbines up close, unguided boat tour that allows you to navigate close to the turbines or an onshore information centre with telescopic viewing site for the offshore wind turbines | • Guided tour of wind farm<br>• Unguided tour of wind farm<br>• Onshore information center with telescope viewing platforms |
| **Combination recreational packages** | The tour will offer access to offshore recreational activities such as surface water sports (jet skiing, snorkelling, paragliding, wake surfing, cable skiing), and opportunities for fishing. | • With fishing opportunities<br>• With surface water sports |
| **Coral reefs** | Offshore wind turbine can improve marine biodiversity by providing artificial coral reefs | • No coral reefs<br>• Has artificial coral reefs |
| **Cost/person/hour** | Will have a cost in the form of a ticket for the complete touring package that is charged hourly per person. | • $20<br>• $50<br>• $70<br>• $90 |

The utility function of the model with the error term $\varepsilon_{jtq}$ that includes the alternative specific constant (ASC) representing a dummy for respondent choosing the status quo, can be expressed as a linear function of an attribute vector (*X1, X2, X3, X4*) = (type of educational offshore wind tour, combination recreational packages, coral reefs, cost/person/hour).

$$V_{jq}= ASC_q + \beta_1 X_{1qj} + \beta_2 X_{2,qj} + \beta_3 X_{3,qj} + \beta_4 X_{4,qj} \quad \text{.......(2)}$$

The probability that an individual *q* will choose alternative *i* over any other alternative *j* belonging to some choice set *t* of:

$$Prob_{iq} = Prob\,(V_{iq} + \varepsilon_{iq} > V_{jq} + \varepsilon_{jq}) \qquad \forall\, j \in t \quad \text{.......(3)}$$

To empirically estimate the observable parameters of the utility function (3), we assume that the stochastic components are independently and identically distributed (IID). This leads to the use of multinomial logistic regression (MNL) which assumes that unobserved factors affecting the choice of alternatives are strictly independent of each other (Independence of Irrelevant Alternatives, IIA) and hence determines the probabilities of choosing *i* over option *j* (Bergman et al., 2006).

$$Prob_{iq} = exp(\mu V_{iq}) / \Sigma j exp(\mu V_{jq}) \qquad \forall\, j \in t \quad \text{.......(4)}$$

The marginal rate of substitution between any pair of attributes is obtainable from Equation 4, as the scale parameter cancels out. In cases where a cost attribute is included, the WTP can be calculated by dividing the attribute coefficient of the *β attribute a* with the coefficient associated with cost to produce an estimate of the “implicit price” *P*a* (Bergmann et al., 2006).

$$P^*a = -(\beta a/\beta cost) \quad (5).$$

## 2.4 Attributes and Optimal Choice Profiles

For our study, we referred to literature that considered attributes such as recreational attributes, environmental policies, geographic location, etc in the development of our attributes and respective levels. (Dalton et al., 2020; Ladenburgh and Dubgaard, 2009; Landry al., 2012; Westerberg et al., 2013). The attributes were selected to characterize hypothetical offshore wind tourism packages.

The attributes and levels produce 48 possible profiles or combinations (3*2*2*4), which is a feasible number to employ in a survey. We thus randomly paired the choice set profiles that were randomly paired to form 24 choice cards representing two offshore wind tourism alternatives and an additional fixed alternative described as “no offshore tourism”, which is equivalent to the status quo alternative. Based on this design, the 24 different choice sets were divided into 4 blocks of 6 choice tasks (Table 2).

**Table 2: Sample Choice Card**

<table>
<tr><th>Attribute</th><th>Option A</th><th>Option B</th><th>Option C</th></tr>
<tr><td>Type of educational offshore wind tour</td><td>Unguided tour of wind farm</td><td>Guided tour of wind farm</td><td rowspan="4">Status quo</td></tr>
<tr><td>Combination recreational packages.</td><td>With fishing opportunities</td><td>With Surface water sports</td></tr>
<tr><td>Coral reefs</td><td>Has artificial coral reefs</td><td>No coral reefs</td></tr>
<tr><td>Cost/person/hour</td><td>$20</td><td>$50</td></tr>
<tr><td>Your choice</td><td>□</td><td>□</td><td>□</td></tr>
<tr><td colspan="4">Please rate how certain you are of your choice on a scale of 1 to 10, where 1 is “Extremely uncertain” and 10 is “Extremely certain”.<br>1 □ 2 □ 3 □ 4 □ 5 □ 6 □ 7 □ 8 □ 9 □ 10 □</td></tr>
</table>

# 3. Results and Discussion

## 3.1 Representativeness of the Data

Before conducting the WTP analyses, we assessed whether the survey data we had collected was representative of the background population. This was done by comparing given variables from the survey data, including the respondents' age, gender, income, level of education, among others, against secondary data on those same variables (Table 3). This is important in ensuring that the results from this analysis can speak for the broader population and in establishing confidence in the results.

**Table 3: Socio-Demographic Information**

| Category | Group | Sample population (n=814) |
|---|---|---|
| Age | Mean Age | 45.84% |
| Race/Ethnicity | Caucasian or White | 68.35% |
| | Asian or Pacific Islander | 4.35% |
| | Hispanic or Latino | 7.29% |
| | Black or African American | 16.12% |
| | Native American or Alaska Native | 2.12% |
| Employment Status | Full-time | 40.34% |
| | Part-time | 12.42% |
| | Self-employed | 8.86% |
| | Unemployed | 33.83% |
| Income | Less than $25,000 | 16.85% |
| | $25,000-$49,999 | 24.11% |
| | $50,000-$99,999 | 30.14% |
| | $100,000-$149,999 | 17.10% |
| | $150,000-$199,999 | 7.63% |
| Household Size | Mean | 3.43 |
| Education | Less than 12th grade | 1.72% |
| | High school graduate or GED | 20.61% |
| | Some college | 22.94% |
| | Associates or technical degree | 11.90% |
| | Bachelor's degree | 25.89% |
| | Graduate or professional degree | 15.83% |
| | Other | 1.10% |
| Residence | Rural | 14.98% |
| | Urban | 29.53% |
| | Suburban | 55.50% |

The results show that our data matches the background population well. In terms of gender, whereas the demographic profile of Ocean City is 53.9% female and 46.1% male, the values from our survey are 53.45% and 46.34%, respectively. Whereas the average age for New Jersey residents is 40.2 years, the value from our survey is 45.84. Since we targeted adult age respondents to participate in this survey, it is reasonable that our mean value for age would be slightly higher than that of the average age for the state's residents.

In terms of education, whereas 3.8% of the NJ's population below 25 has less than a high school's level of education, the value for our data is 1.7%. The same comparable results are also seen in terms of residence. Whereas NJ has a relatively low share of its residents, living in rural areas (5%), Pennsylvania has a relatively higher share of its residents living in rural area (21%). The proportion of rural respondents in our survey is approximately midway between those two values. Thus, the rural/urban breakdown for our data, was 14.98% of our respondents living in rural areas, matches the breakdown of where respondents live.

In terms of income, whereas 12% of our respondents have income above $150,000, the values for the state are 25.5%. There is, thus, a slight underrepresentation of individuals from this high-income category. This suggests that the estimated WTP values are likely to be conservative as the tourists with higher income could pay more. Table 3 below summarizes the respondents' basic socio-demographic information.

## 3.2 Trip Characteristics

### 3.2.1 Ocean City as a Tourist Attraction

In the first section, we were interested in assessing the potential of Ocean City as a tourist attraction. We started by asking the respondents if they live or have visited Ocean City. Our findings indicate that approximately 80% of the respondents have visited Ocean City (Figure 2 left panel). Given that the respondents are randomly selected and only 9.51% of the respondents live in Ocean City, the high number of people saying they have visited Ocean City suggests that the city is a popular destination. Moreover, out of the 20% who have not already visited Ocean City, 62% of them do want to visit at some point, highlighting potential for future visitors (Figure 2, right panel).


**Figure 2: Visitation Rates to Ocean City**

This high visitation rate shown by our data is consistent with the high visitation rate reported for the city, which is approximately 9.44 million visitors a year and second overall in the state (OCNJ Daily, 2019, Insider NJ, 2020). This is significant for the prospect of offshore wind tourism as the existence of various other attractions and the city's preexisting popularity could make large marketing campaigns for offshore wind energy tourism less necessary.

The ideal nature of Ocean City as a site for offshore-based tourism activities is further shown by the number of times people visit the city as represented in Figure 3. The tourists that have visited Ocean City have done so more than once, on average. Specifically, 16% of the respondents visit the city weekly while 27% of respondents visit Ocean City on a monthly basis. Thus, 43% of respondents visit the city at least once a month.

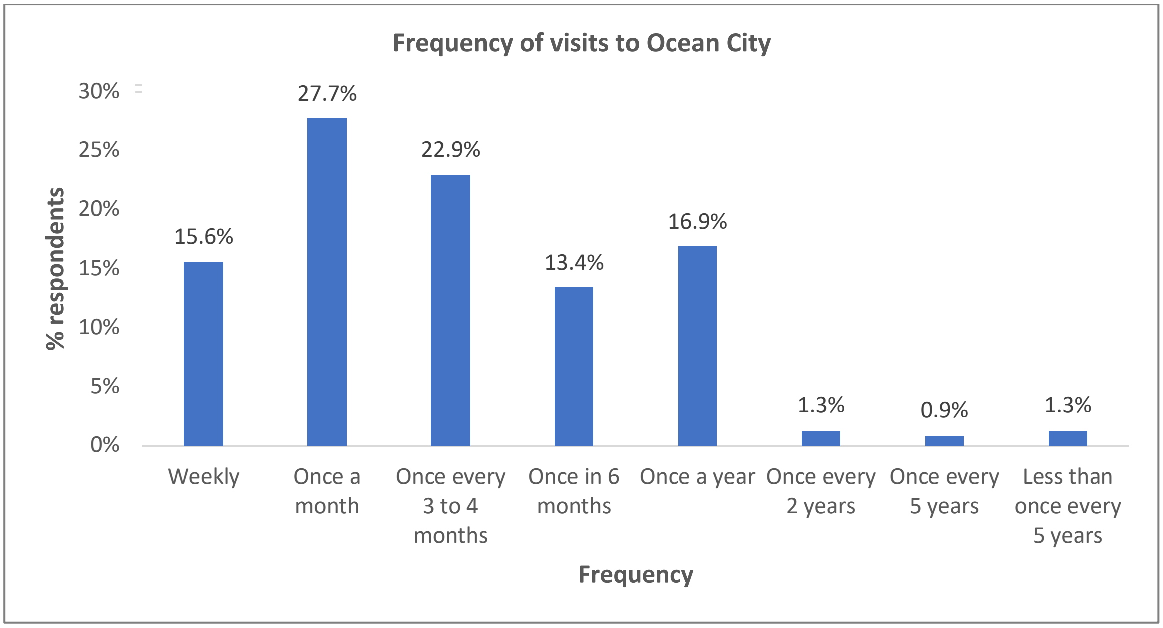



**Figure 3: Frequency of Visits to Ocean City**

### 3.2.2 Ocean City as a Primary Destination for Recreation

In a separate question, the respondents were asked if Ocean City is a primary destination for recreation; 34.9% of the respondents living within the 200-mile radius had a 'Yes' response (Figure 4). This is an indicator that the recreational potential already exists in Ocean City and that interactive and educational attractions such as the offshore wind farms could further stimulate an influx of recreational enthusiasts.

While 65.04% of the respondents answered 'No' to this question, this does not necessarily indicate that they do not intend to visit Ocean City entirely, but rather that they find its selection of recreational offerings wanting. Thus, identifying this weakness is important for marketing Ocean City as a primary destination. Further dissemination of information on the benefits of new and interactive recreational activities and increasing recreational activities that are centered around offshore wind farms could change this perception. For these respondents, we further inquired what their primary destination, with the goal of assessing what recreational features these other areas offer. For those who preferred destinations other than Ocean City, Jamaica and Texas were the most prominent primary destinations to visit, perhaps given their suitable temperatures and natural beaches with exotic coral reeves. Recreational activities such as beach recreation, cultural activities, and coral reefs, thus, can be further investigated and incorporated into future recreational activities for Ocean City.

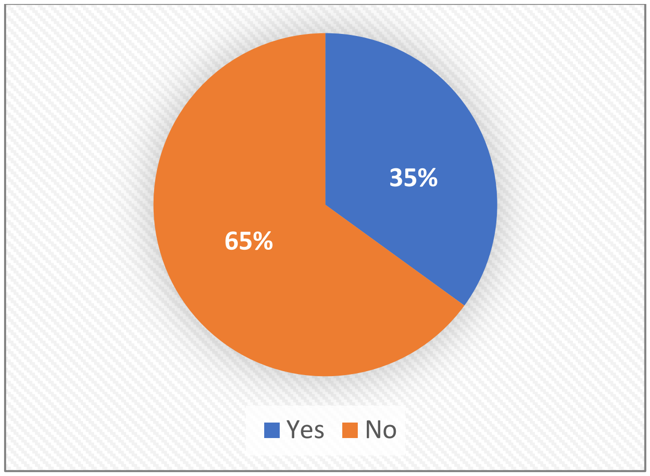



**Figure 4: Ocean City as a Primary Destination for Recreation**

We asked if respondents to Ocean City would stay overnight and 70% of them had a 'Yes' response (Figure 5). Our survey responses suggests that the average stay for tourists in the city is 3.59 days. This is significant because it is ample enough time for tourists to explore the features the city has to offer. Day-trippers, relatively speaking, have less time to explore the area and discover new things that they had not already planned for. A new attraction and associated businesses benefit greatly from tourists having ample time to explore the cities they are visiting, as tourists have the flexibility to observe and possibly visit the offshore wind farms.

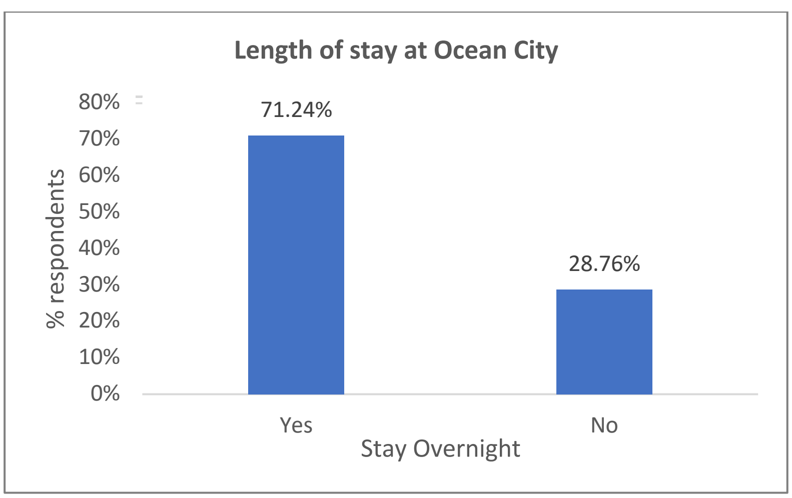



**Figure 5: Ocean City as a Primary Destination for Recreation**

### 3.2.3 Type of Accommodation used by Visitors to Ocean City

After assessing whether most visitors to Ocean City were interested in staying overnight, it was important to understand what type of accommodation they use for their overnight stays (Figure 6). The benefit to local businesses is evident, as hotel rental is the most popular means of accommodation (44%), followed by a stay at friend's/family's home (30%), and vacation rental spaces (16%). This shows that a majority of overnight stays occur in recreational establishments as opposed to family homes. The tourist spending in such accommodations could boost revenue, wages, and tax revenues. This is likely to be considerable, as the average tourist spends $153 per person per trip on accommodation and $105 on restaurants and cafes per day.

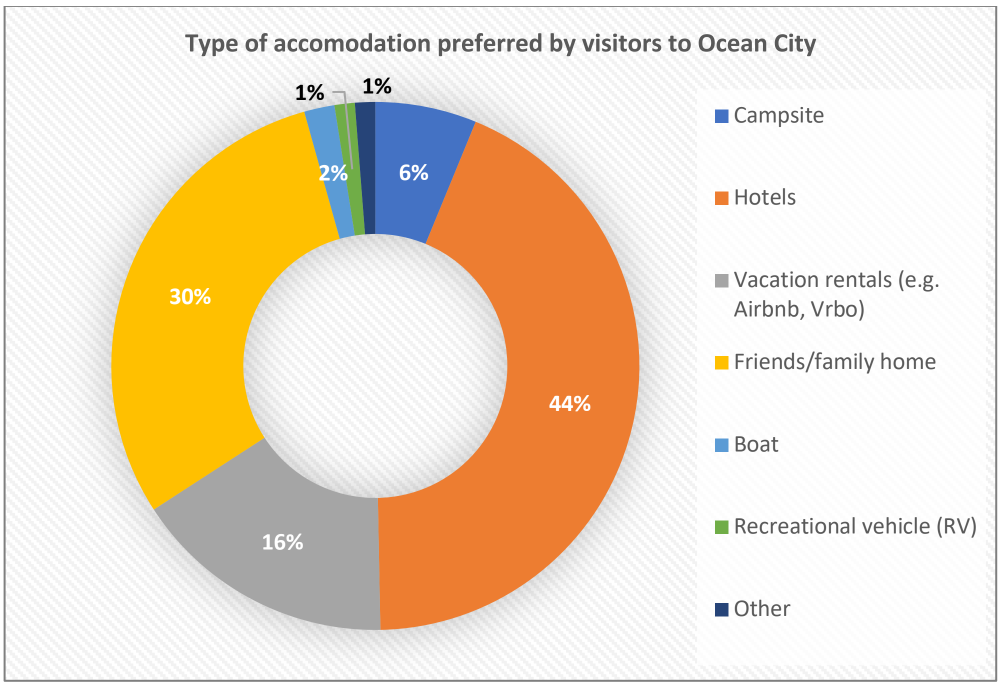



**Figure 6: Type of Accommodation Preferred by Visitors to Ocean City**

Since hotels were the most popular type of accommodation, we assessed whether the type of view that the hotel room offers would play a role in visitor experience (Figure 7). This is important, as the presence of turbines in the field of view might affect how many rooms a hotel can book. This is known as the view shade effect, and has been described as one of the adverse impacts offshore wind projects might have on local tourism economies.

When asked about accommodations with a view of turbines, 47.5% of the respondents were indifferent, and 21.4% preferred an accommodation with a view of the offshore wind turbines. Thus, only 31% of the respondents were adverse to a view of the turbines, which, while significant, is not the overwhelmingly negative effect that some fear. This suggests that the viewshed effect is not critical, in relative terms. This result is important because it will address the concern that tourists would be disinterested in hotel rooms that have a view of the wind farms and that it would negatively affect the hotels' business. This result also further confirms the interest some tourists have in seeing these attractions from their hotel room at a distance even when they might not be able to explore them up close.

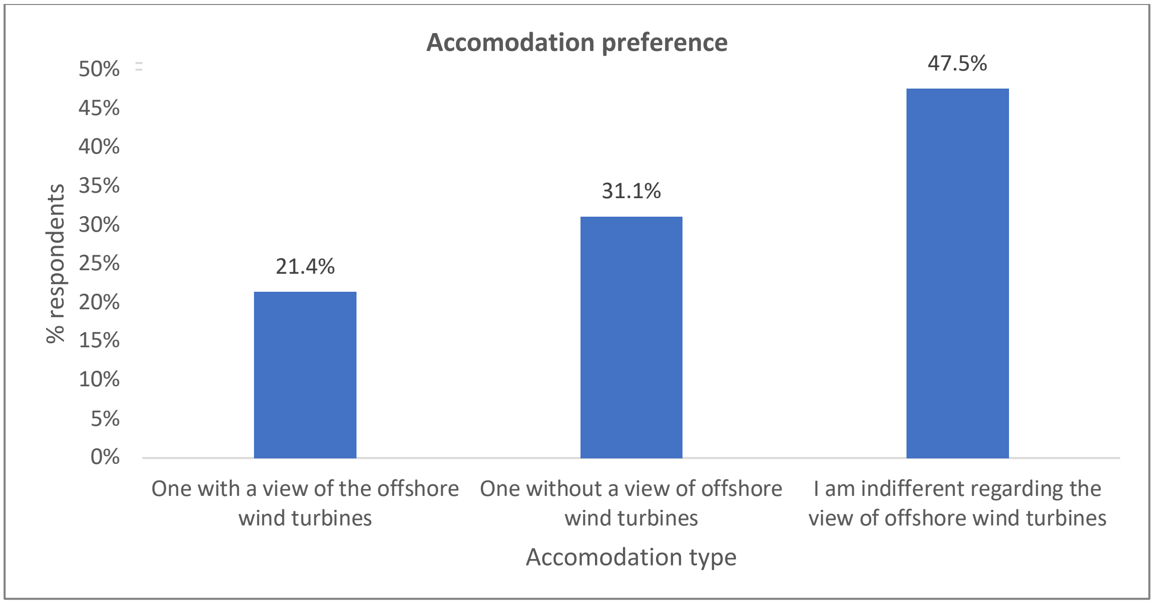



**Figure 7: Willingness to Take Accommodations with a View of Offshore Wind Farms**

### 3.2.4 Recreational Activities

In this section, we synthesize the respondents' answers to questions pertaining to their preferred recreational activities, experiences, expenditures, and tendencies. Our first section aimed to understand how important outdoor recreation was to respondents. From the results in Figure 8, 60% of the respondents say that outdoors type of recreation is important to them, which is important when developing offshore wind tourism packages. A smaller portion (40%) of the respondent were either neutral or consider recreation unimportant to them. Given that offshore wind tourism is a type of outdoors recreation, it can be said that resistance to offshore wind tourism could be partly a result of some people not being interested in outdoor activities.

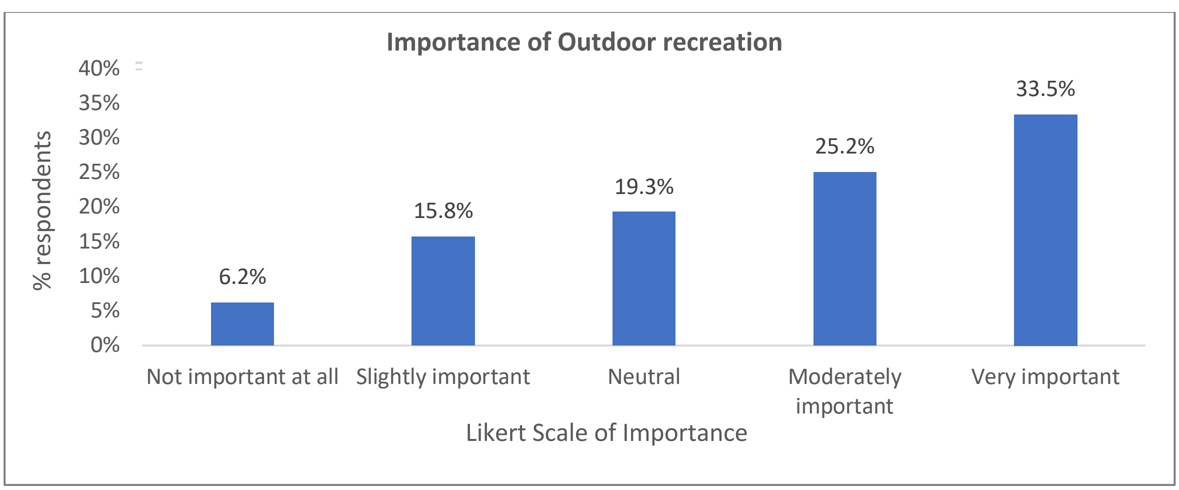



**Figure 8: Importance of Outdoor Recreation among respondents**

To further assess the interest of tourists in recreation, we asked the respondents to indicate which recreational activities they have participated in the last 12 months (Table 4). Our results show that respondents preferred hiking or walking outdoors (15.34%), which, in the case of Ocean City, can be supported by existing boardwalks on beaches. The second most preferred recreational activity was swimming (15.27%). The existence of beaches in Ocean City presents an opportunity for incorporating swimming, and other related activities such as water-based theme parks to offshore wind tourism. Furthermore, one can market Ocean City as family tourism destination, which is supported by our data from section 3.9, which shows that most visitors prefer travelling in groups of family and friends of 4.59 people.

**Table 4: Preferred Recreational Activities for Respondents**

| Recreational Activities | Percentage respondent |
|---|---|
| Viewing wildlife or other natural scenery | 12.85% |
| Hiking or walking outdoors | 15.34% |
| Camping or backpacking | 5.05% |
| Canoeing or kayaking | 4.10% |
| Motor-boating | 3.87% |
| Hunting | 1.68% |
| Unpowered boating | 1.78% |
| Bicycling | 9.59% |
| Sailing | 2.39% |
| Fishing | 7.64% |
| Swimming | 15.27% |
| Water sports (jet skiing, snorkeling, surfing, paragliding) | 3.70% |
| Picnicking, relaxing, escaping the heat | 13.62% |
| Other | 3.13% |

Next, the respondents preferred picnicking, relaxing and escaping the heat (13.62%). This presents an opportunity for developing boating tours by operators that encourage visitors to carry their beverages and snacks for an up-close tour of the offshore wind turbines, with some time for picnicking.

Finally, respondents preferred viewing wildlife and natural scenery (12.85%), which can be supported by nearby parks such as Corson's Inlet State Park, Cape May Point State Park, and Cape May Wetlands State Natural Area. This can present an opportunity to develop recreational packages that incorporate nature trails and boating experiences with corals reef and marine life viewings.

In a follow up question on recreation, we asked the respondents on how frequently they visited their preferred destination (Figure 9). Close to 30% of the respondents like to visit their preferred attraction at least once a month and more than 21% like to visit weekly. While 23% of the respondents expressed their interest to visit once every season. This is important because once the offshore wind farm tourism is established; it could enjoy a similar relatively frequent visitation rate. Being able to attract and retain tourists with such, a high repeat tourism tendency will be crucial for local establishments in sustaining businesses and lowering the need for marketing or advertising.

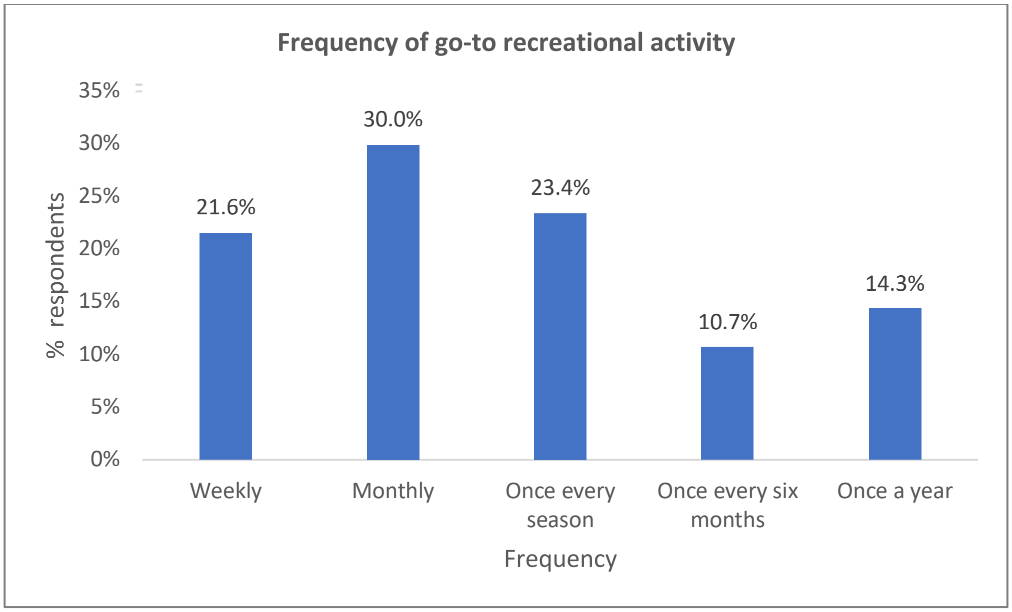



**Figure 9: Frequency of Visits to Preferred Destination among respondents**

The distance tourists cover to reach their destinations also shows their commitment to preferred recreational activity/sites. The average distance a respondent travels to get to their tourism destination is 80.2 miles, representing significant distance and time demands. The 80 miles radius around the offshore wind site hosts a large population, which is a promising prospect for the ability of offshore wind tourism to attract a considerable number of potential visitors. The average tourist's travel distance of 80 miles also confirms the validity of the radius we used in selecting the respondents for this study as a sample of the potential tourists who might come to visit the offshore wind farms that are in development (Table 5).

**Table 5: Distance Traveled by Respondents to Recreational Destination**

| Minimum | Maximum | Mean | Standard Deviation | Median | Count |
|---|---|---|---|---|---|
| 0 | 5000 | 80.2 | 303.69 | 30 | 858 |

We were interested in assessing how most visitors in Ocean City acquire their recreational equipment such as sports gear, fishing rods, boats, jet skii's for their preferred recreational activities (Figure 10). Interestingly, we found that about a third of the tourists rent recreational equipment (32.18%), while 42% of the respondents own one. This is important because the average tourist spends $83 on renting water sport gear, which can generate additional revenue for businesses once OWF tourism is synergized with such activities.

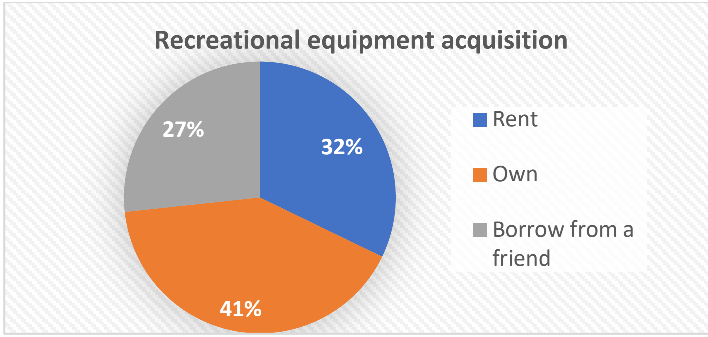



**Figure 10: How Respondents Acquire Recreational Gear for visits to Ocean City**

### 3.2.5 Importance of Different Activities in Ocean City

This study further enquired the respondents about what aspect of their tourist experience they find important during their visits to Ocean City. As the Figure 11 below shows, fishing is among the least important activities among respondents. Thus, even if these anticipated adverse impacts on fishing were to be realized, the impact on the tourism economy in the city is also likely to be limited as fishing is not the most important draw for the relevant businesses.

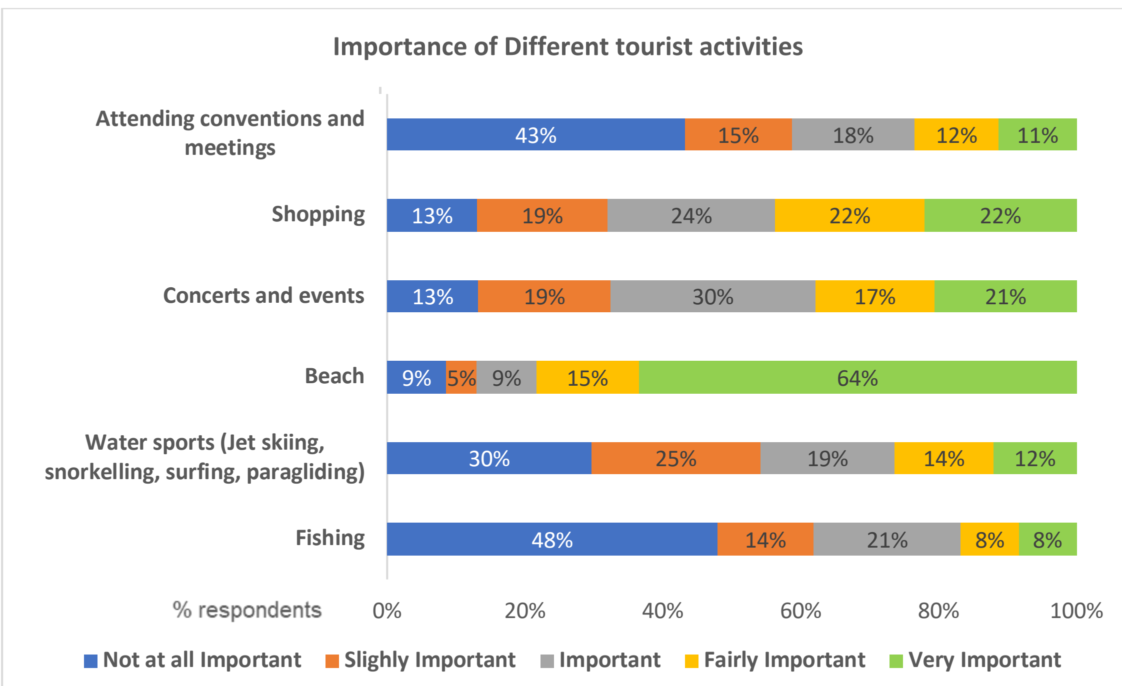



**Figure 11: Importance of Different Tourist Activities in Ocean City**

One salient finding is that visiting the beaches is a very important reason to visit, with 64% of respondents listing it as such. Given that the OWF will be 15 miles from the shore, it presents an opportunity to integrate offshore wind tourism as part of the beaching experience. Shopping was the second very important response (22%). This can be used in the development of offshore wind tourism as brochures or educational material for marketing purposes, while souvenirs or miniatures of offshore wind turbines, t-shirts, mugs, and other tourist items can be sold by local businesses.

Concerts and events (21%) were also a very important reason tourists go to Ocean City. The activities can be further strengthened as they go hand to hand with other beach related activities. In addition, concerts and events can be developed in the full view of the OWFs with a main agenda of promoting wind farms. Other activities, such as attending conventions and meetings (11%) and water sports (12%), were considered the least important. However, the presence of hotels and conference centers in Ocean City and the green outlook due to the presence of offshore wind can be used to boost the favorability of Ocean City as a potential conference center and boost educational tourism.

The low ranking of water sports is somewhat surprising, and perhaps can be attributed to financially intensive equipment and gear making the activity less favorable. Nonetheless, from an economic perspective, this presents the private sector with a business opportunity to diversify water sports and provide new opportunities. This can present a win-win situation by introducing an extra activity while also providing an extra source income for local businesses.

### 3.2.6 Visitor Expenditures

In this section, we assessed tourist spending per visit. Whereas the average spending on accommodation mentioned earlier applies to tourists staying in hotels, the breakdown for the general tourist population shows a slight change in the relative rank of the various spending categories. Specifically, the breakdown of the tourist spending among the different spending categories shows that most of the spending goes into restaurants, followed by accommodation, shopping, and entertainment (Figure 12 and Table 6).

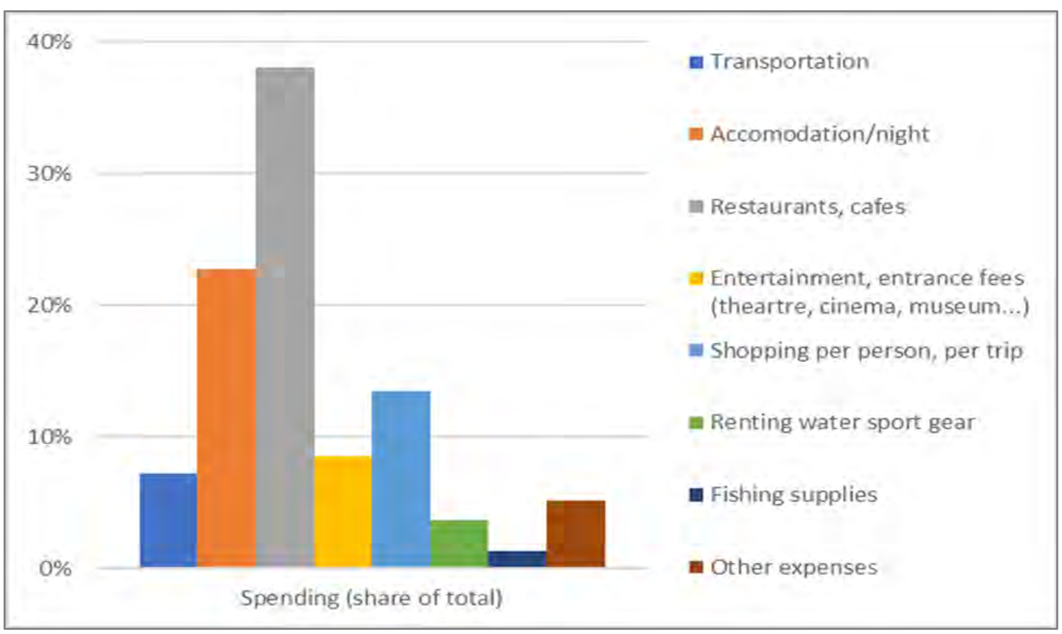



**Figure 12: Comparison of Visitor Spending as a Percentage of the Total**

**Table 6: Visitor Expenditure by Activity**

| Field | Min | Max | Mean | Standard Deviation |
|---|---|---|---|---|
| Transportation (plane ticket, bus ticket, taxi, etc.) | 0 | 5000 | 62.57 | 342.34 |
| Accommodation/night | 0 | 2600 | 115.49 | 275.15 |
| Restaurants, cafes/day | 0 | 1000 | 98.81 | 134.23 |
| Entertainment, entrance fees (theater, cinema, museum) | 0 | 1000 | 55.38 | 112.64 |
| Shopping | 0 | 1000 | 104.04 | 185.43 |
| Renting water sport gear | 0 | 2000 | 36.58 | 166.69 |
| Fishing supplies | 0 | 500 | 13.57 | 49.97 |
| Other expenses | 0 | 1700 | 50.2 | 161.55 |
| Total | | | $536.64 | |

When the various spending categories are taken together, the result shows that the average tourist spends $481 per person per trip in Ocean City. The median spending is $295 per person per trip and mean of $536.64 per person per trip. A further analysis on the total spending per person, per trip is presented in Figure 13. This figure indicates as the percent of tourists visiting Ocean City increase, their total spending also increases exponentially. That means small number of tourists tend to spend less compared to when the maximum tourists visit the Ocean City. The key take away from this trend is as more tourist activities are included in the Ocean City, it can attract more visitors and their incremental total spending raises substantially.

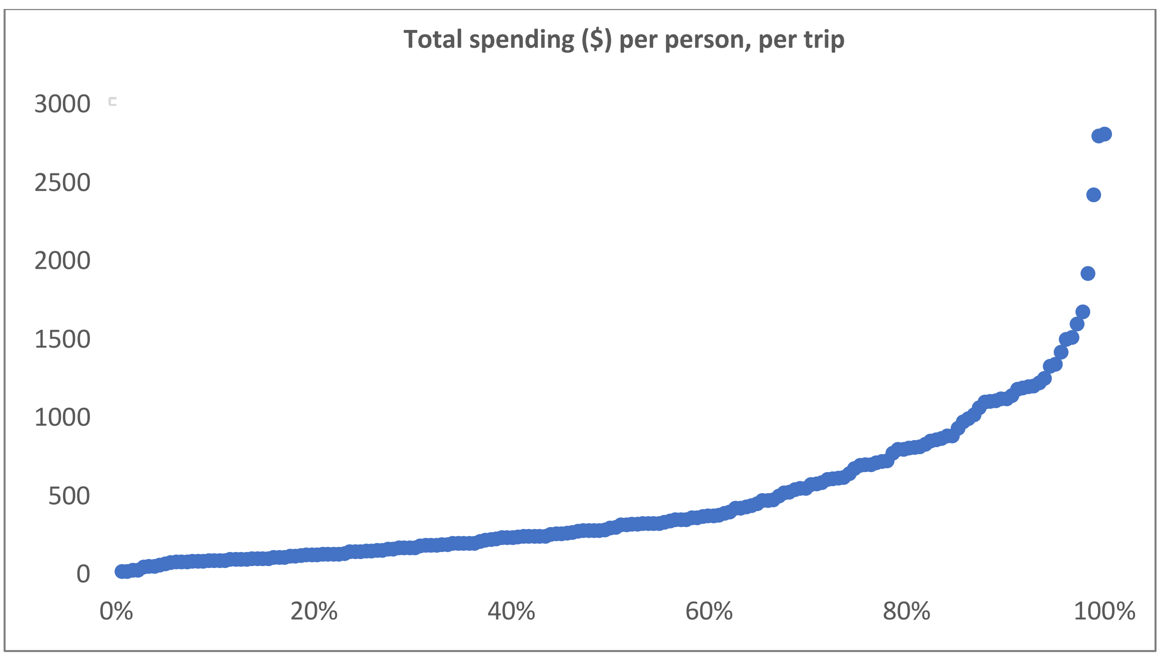
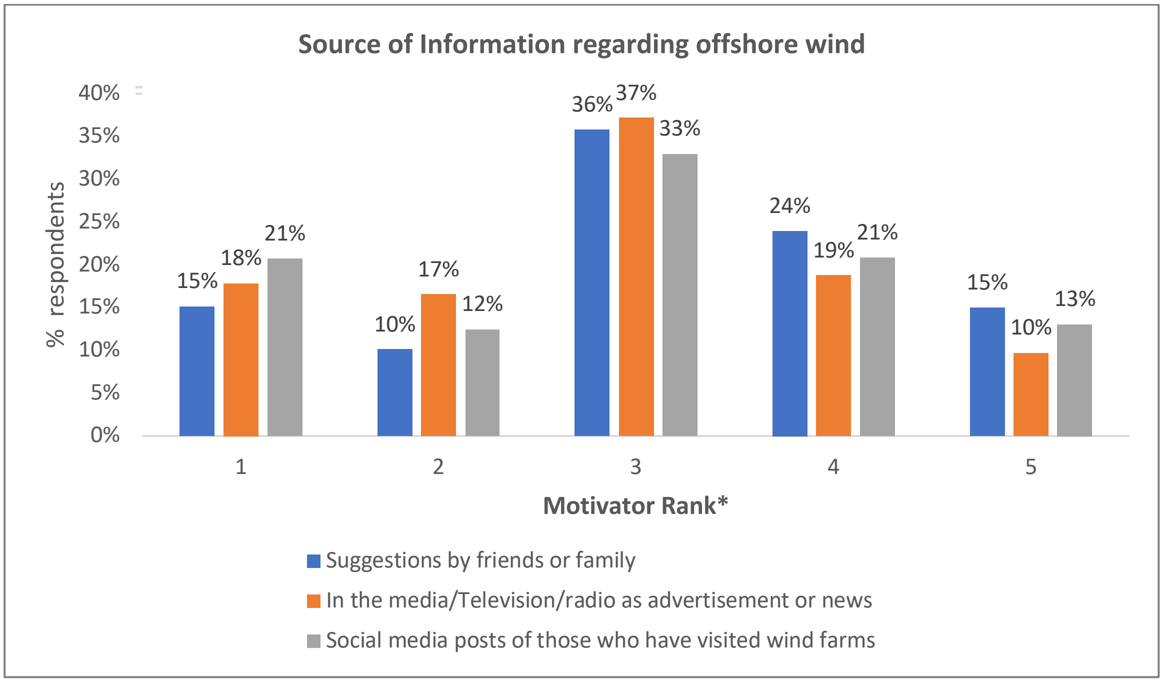



**Figure 13. Total spending per Person per Trip**

### 3.2.7 Visitor Expenditures

Tourists can get information about offshore wind tourism opportunities from various sources. Some of these sources are more trusted than others, as is their relative effectiveness. Thus, we investigated which sources of information were preferred to better prepare local operators working in offshore wind tourist related businesses (Figure 14). Different sources of information considered in the survey included 'suggestions by friends or family,' 'hearing about it in the media/television/radio as an advertisement or news,' or 'social media posts by those who have visited the OWFs.' We asked the respondents to rank order these sources as the motivating factors such that 1 is 'Strong de-motivator' and 5 is 'Strong motivator'. A synthesis of these responses as displayed in Figure 14, show that the best way to promote OWF attractions is through word of mouth as compared to television/media. These results show a slight difference in preferred sources of information for obtaining general information about offshore wind and offshore wind tourism.




Note: *The scale of 1 being a 'Strong de-motivator' and 5 is 'Strong motivator' for visiting the site

**Figure 14: Sources of Information Regarding Offshore Wind Farms**

To aid in the development of tourist packages, we were interested in assessing the group size for visitors who come to Ocean City (Table 7 and Figure 15). We found that 66.16% of tourists prefer to travel in groups of people consisting mainly of family (41.37% of groups), friends (12.15%), and both family and friends (43.84%), with work colleagues being a minority (0.88%). The group size of 57, which is the maximum value quoted and detailed in Table 7 below, could have been composed of large tourist groups (schools, conventions, and meeting attendees). This explains why future tourist packages for offshore wind should use this large and varied group size and the said sources of information in developing optimal packages.

**Table 7: Characteristics of Traveling Groups**

| Minimum | Maximum | Mean | Standard Deviation | Median | Count |
|---|---|---|---|---|---|
| 2 | 57 | 4.615 | 3.79 | 4 | 858 |

The results show that the predominant mode of tour involves groups of 4.6 people consisting mostly of family and friends. Thus, designing programs and packages such as group deals that target such tourists could be ideal for local businesses.

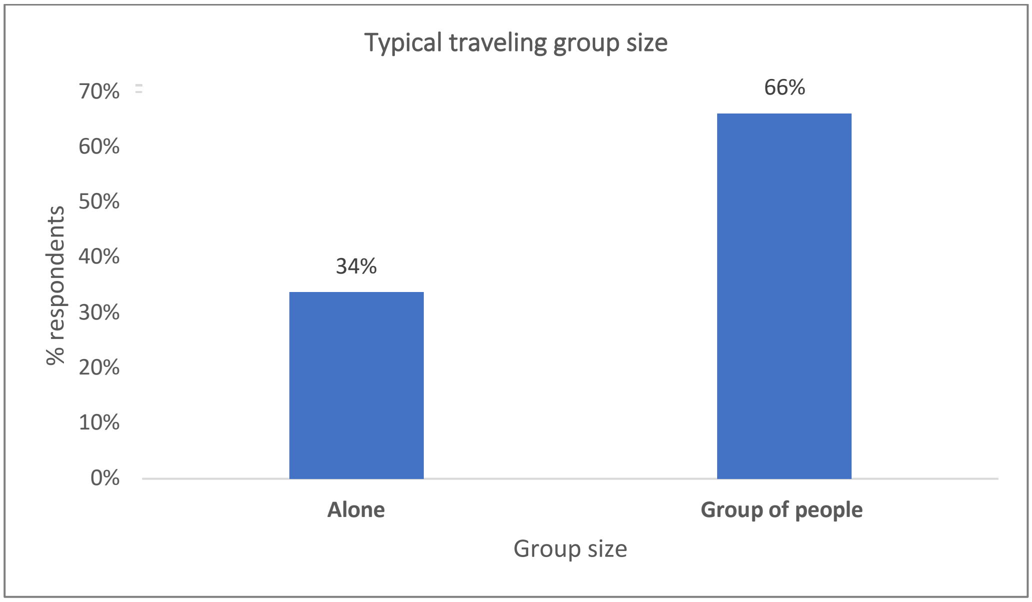



**Figure 15: Preferred Number of Travelers during Typical Visit to Vacation Destinations**

## 3.3 Awareness and Perceptions of Offshore Wind

### 3.3.1 Awareness of Offshore Wind

In this section, we were interested in assessing how informed respondents were about offshore wind, and what their primary information sources were. It was apparent that 'news' was the most important source of information on offshore wind projects (37.76%). As a result, the news media could be used as the primary medium in promoting offshore wind tourism. This was followed by the people having seen them from a distance (19.36%) and respondents having seen them up-close (8.48%). Given that many visitors have not seen offshore wind turbines, up-close tours present an opportunity that can be tapped into as a tourist activity.

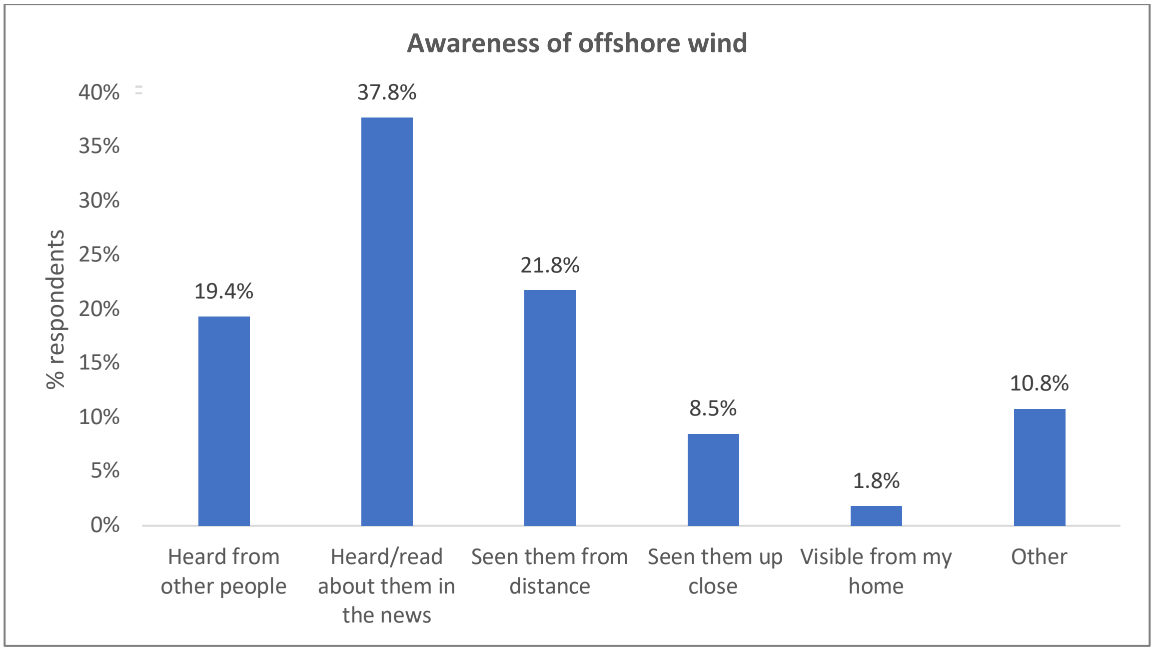



**Figure 16: Respondent's Awareness of Offshore Wind**

### 3.3.2 Anticipated Perception of Offshore Wind Projects

We identified nine areas of possible impacts offshore wind projects, and asked respondents to anticipate the effect that it would have on the environment and economic health of Ocean City. The possible areas of impact included: Creating new jobs, Producing clean energy, Scenic beauty, Energy security and independence, Local tourism and economy, Marine environment (fish and birds, coral reefs), Property values, Navigation of boats and ships, and Commercial boating/fishing. The respondents could say that offshore wind projects would make those areas of impact 'much better,' 'somewhat better,' 'neutral,' 'somewhat worse,' or 'much worse' (Figure 17).

The results displayed in Figure 17 indicate that the number of tourists having positive opinions about the impacts of offshore wind farms on various aspects of tourism and the economy far outweighs those who have concerns. Areas of impact with the largest net positive opinions include 'Creating new jobs', 'Energy security and independence', 'Producing clean energy', 'Local tourism and economy', 'Marine environment', and 'Property value'. Whereas the anticipated positive impact on such areas as 'Producing clean energy' and 'Contributing to energy security and independence' are to be anticipated, the respondents anticipated positive impact on 'Property value' was not and this suggests that most respondents think that due to OWF developments the property value impacts might be better for Ocean City.

Areas of impact with relatively neutral reactions include 'Scenic beauty'. Areas with relatively negative reactions include 'Navigation of boats and ships' and 'Commercial boating/fishing'. Given that the offshore wind site might be in the waters where anglers go fishing, this possible conflict and resulting negative attitude may be anticipated.

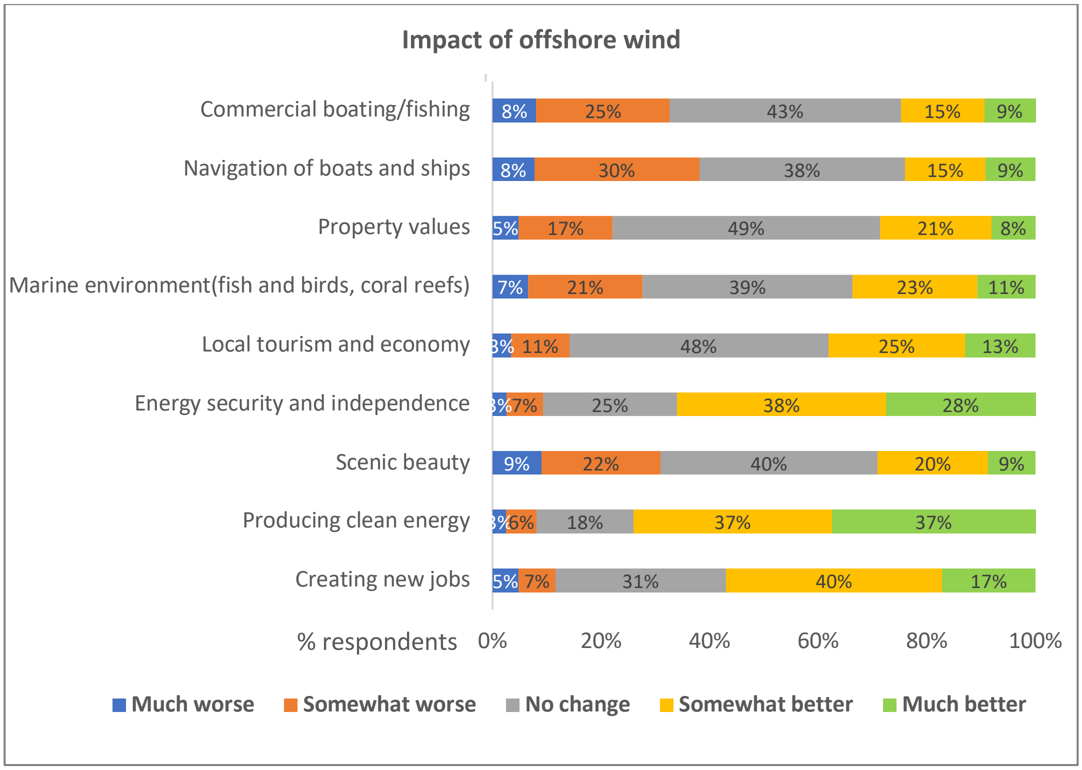



**Figure 17: Anticipated Impacts of Offshore Wind Farms**

## 3.4 Preferences for Offshore Wind Tourism using Discrete Choice Experiment

To better understand respondent preferences for offshore wind tourism, we used a discrete choice experiment (DCE), and analyzed the results using a MNL model. The estimated coefficients derived from the MNL model are shown in Table 8 below. The coefficients of the utility function for the attribute levels had the expected outcome in the model. To avoid saturated models, the attribute levels with the lowest parameter estimates were considered as the baseline/reference case. For our case, we considered the attributes of 'unguided tour,' 'fishing opportunities,' and 'no coral reefs' as our baseline levels. The results show that the most important attribute was guided tour, as it had a positive coefficient and was statistically significant. It was followed by onshore information. This outcome suggests that guided tours for offshore wind are critical, as there is still a lack of understanding of offshore wind by potential visitors.

In the case of the combined recreational packages, where fishing opportunities was the baseline attribute level, it was apparent that surface water sports was positive but not statistically significant. This suggests that watersports around the offshore wind farm are not important to the respondents, which confirms earlier findings in the survey about water sports' overall share of the recreation economy. This can be in part attributed to other important attributes such as the type of tour and the environmental benefits presented in terms of artificial coral reefs.

For the coral reefs attribute, the artificial coral reefs level was the most preferred as compared to the baseline. It had a positive coefficient and was significant at 99% confidence level. Overall, attributes with environmental benefits are more preferred by respondents as compared to others. For example, studies by Oluoch et al., (2021) and Soto et al., (2018) that used environmental quality attributes have generally found that residents tend to prefer these to other alternatives.

Table 8 below presents the parameter estimates and marginal WTP for offshore wind recreational tour packages in Ocean City. The trends in marginal willingness to pay are similar to the parameter estimates, with the highest WTP values for the attribute levels of guided tours ($36.54), followed by artificial coral reefs ($32.93), onshore information with telescopes ($27.53) and finally surface water sports at ($3.39).

**Table 8: Parameter and WTP Estimates for Offshore Wind Energy Tourism Packages**

| Attribute level | MNL Estimate | WTP Estimates ($) |
|---|---|---|
| Guided tour | 0.445 (0.064) *** | 36.54 |
| Onshore information | 0.335 (0.065) *** | 27.53 |
| Surface water sports | 0.041 (0.052) | 3.39 |
| Artificial Coral Reefs | 0.401 (0.052) *** | 32.93 |
| Cost/person/hour | -0.012 (0.001) *** | |
| Pseudo $R^2$ | 0.0357 | |
| Log-likelihood | -3447.33 | |
| No of Respondents | 813 | |
| No of Observations | 9,750 | |

Note: ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.
Values in parentheses show standard errors.

### 3.5 Policy Simulation

From the parameter estimate coefficients of the attributes in the previous section, it is possible to calculate the WTP for various scenarios and preference share options. The attributes can be combined and tradeoffs established to give information of various policy scenarios as applied in studies by Ku and Yoo (2010) and Lim et al. (2014). For our policy exercise, we go one-step further than these studies by generating six possible scenarios using the *preference share analytical tool* from Qualtrics software. The six scenarios are a combination of attributes and levels and can be studied to determine the most optimal combination that can be adopted as a tourist package. The total number of visitors was derived from US Census Bureau data, Insider NJ1 and OCNJ Daily2 information for pre-COVID data 2019 that reports an estimated 9.44 million visitors to Ocean City. In this policy simulation exercise, we multiplied the mean willingness to pay measures for all the attributes with the preference share, which is a measure of the percentage

[1] Insider NJ – News for Political Insiders in New Jersey, https://www.insidernj.com/
[2] OCNJ Daily – Ocean City's Daily News Source, https://ocnjdaily.com/

of tourist that are willing to visit the offshore wind farms. We further developed sensitivity analyses to account for the off-peak and peak tourism seasons by assuming that summer months (peak season) had 90% of tourist visits, whereas spring and fall months had 50%, and winter months had 25%. We further assumed that the preference share represented by column 4 in Table 9 determines the amount of visitors that prefer and will be attracted to a certain option.

**Table 9: Estimating the Total Revenue Expected from Visitors to Offshore Wind Tourist Sites**

| | Attributes | Mean WTP | Preference share (%) | Total Expected revenue for Visitors in Ocean City/hour | | |
|---|---|---|---|---|---|---|
| | | | | **Summer (90%)** | **Spring/ Fall (50%)** | **Winter (25%)** |
| **Option1** | Onshore, fishing, no corals, $90 | -$4.12 | 5% | -$1.76 Million | -$0.97 Million | -$0.49 Million |
| **Option 2** | Guided, surface coral, $50 | $29.52 | 20% | $50.16 Million | $27.87 Million | $13.93 Million |
| **Option 3** | Unguided, surface, no coral, $70 | - $21.87 | 3% | -$5.57 Million | -$3.09 Million | -$1.54 Million |
| **Option 4** | Guided, fishing, coral, $20 | $29.29 | 45% | $111.98 Million | $62.21 Million | $31.11 Million |
| **Option 5** | Onshore info, surface, no coral, $50 | -$3.84 | 8% | -$2.60 Million | -$1.445 Million | -$0.725 Million |
| **Option 6** | Unguided, fishing, coral, $20. | $4.19 | 19% | $6.76 Million | $3.757 Million | $1.878 Million |

From the results in Table 9, we can infer that several combinations of different options result in tradeoffs. Although Options 2 and 4 present the most optimal combinations, Option 4 is more preferred despite having a slightly higher marginal WTP value than Option 2. By choosing Option 4 as opposed to Option 2, implementers could increase preference share (which is a measure of percentage of actual tourists visiting the hypothetical OWFs) to 25% and benefit from an increased revenue of $61.82 million in the peak summer months. This was facilitated by reducing the cost/person/hour from $50 to $20. This tradeoff presents the benefits of developing programs that support greater number of visitors. In some cases, the most optimal program may be the costliest to implement. As a result, policy makers must account for certain tradeoffs.

Programs that have a negative WTP or a Willingness to Accept (WTA) suggest that policy implementers will not generate revenue but instead will have to pay potential visitors to see these sites. Option 1, 3 and 5, thus, remain infeasible, as the WTP is negative. From a closer observation on these options, it is apparent that having neither coral reefs nor onshore information generates a negative willingness to pay. Here we can infer that visitors would prefer to visit OWF that accommodates marine biodiversity through coral reefs. Cost further plays a role in negative willingness to pay, as costly programs are further shunned by the visitors.

Option 6 and Option 4 measure the tradeoff between shifting unguided tours to guided ones while all other attributes remain the same. It is apparent that visitors prefer guided tours, as the offshore wind technology is relatively unknown and as demonstrated by earlier findings in which many visitors report that they have only heard about the offshore wind from friends/family. Our results suggest that potential visitors are eager to find out more about offshore wind from an up close tour; this is reflected in the rise in revenue from $6.76 million to $111.98 million in the peak summer months

A comparison of Option 5 and Option 2 reveals that by adding corals reefs and guided tour to a program, while keeping the cost the same, revenue can be increased to $52.60 million. This converts the WTA in Option 5 to a WTP in Option 2. This highlights how key attributes can play a significant role in determining the feasibility of a given tourist package.

Overall, the results show that future programs considering attribute levels and satisfaction should consider Options 2 and 4, which are packages that require fewer resources to implement, result in maximum benefits to visitors, and retain an optimal number of visitors. Option 1, 3, and 5 represent the least optimal tourist packages, they also do not feature coral reefs and guided tours. These results suggest that environmental benefits are essential component of tourist packages.

## 4. Conclusions

Stakeholder perceptions and valuation of offshore wind tourism are critical in planning for a new industry. As a result, fully understanding potential visitor preferences, participation and support to offshore wind tourism is vital in generating revenue for the local economy and dispelling the negative view and misconceptions of offshore wind. Furthermore, visits will further educate the populations and help propagate information of offshore wind. We conducted this investigation to answer key questions on how visitors value offshore wind tourism in Ocean City, New Jersey. In this study, we performed a discrete choice experiment to examine 814 visitors' preferences for offshore wind tourism packages based on attributes of type of offshore wind tour, combined recreational packages, coral reefs and cost/person/hour.

Based on our WTP, preference share and policy simulation analysis, we deduce that visitors to Ocean City prefer offshore wind tourism packages that have guided tours, with surface water sports and artificial coral reefs and are affordable at $20/person/hour. These results show that there is a potential for offshore wind farm tourism and that people are willing to pay for it. This finding highlights the need for further engagement of potential visitors about the benefits of offshore wind. Even so, visitors are willing to visit offshore wind sites as our analysis also revealed that up to 79.3% of visitors that have previously visited Ocean City are repeat visitors with well over 90% of the respondents having visited Ocean City at least once a year, the survey results suggest that Ocean City is a popular destination, and can be developed as a potential for OWF tourism with more marketing. Furthermore, 27% of the respondents visit Ocean City on monthly basis with an average stay of 3.59 days.

Results from the survey further revealed interesting trends about opportunities for tourism in Ocean City. About 70% of visitors indicated that they would stay overnight, resulting in an additional revenue accruing to hotels and restaurants, while also giving tourists the flexibility to visit offshore wind sites. Hotel rental is the most popular means of accommodation at (44%), followed by friends/family homes (30%) and vacation rentals (16%). These results show that Ocean City is a popular destination, which is critical in lowering the marketing campaign needs of any new attractions in the area. The high percentage of visitors responding that they are either indifferent or would like a room with a view of the turbines shows the relatively limited view shade effect that can result from offshore wind projects. Thus, by not adversely affecting booking and possibly increasing the stay duration of tourists, offshore wind attractions can add value to the local tourism economy. Also, the number of visitors having positive opinions about the impacts of OWFs on various aspects of tourism and the economy outweighs those who have concerns, the areas with the largest net positive opinions including 'creating new jobs,' 'energy security and independence,' 'producing clean energy,' 'local tourism and economy,'' marine environment', and 'property values'. The survey results also suggested that respondents generally had negative opinions related to 'Navigation of boats and ships' and 'Commercial boating/fishing', while they had relatively neutral reactions related to 'Scenic beauty'.

From the policy simulation exercise, we can estimate optimal packages that require fewer resources to implement, result in maximum benefits to visitors, and retain an optimal number of visitors. We found that the ideal packages included guided tours with surface water sports and artificial coral reefs, and cost $20/person/hour. As offshore wind advances in NJ and throughout the US, economic valuation methods applying discrete choice experiment will bring new and useful information to be used in policy development. This information sheds light on the current body of knowledge at a time when offshore wind in the United States is rapidly developing. Our WTP results suggest that offshore wind tourism packages that have the best educational benefits and overall increased marine biodiversity through artificial coral reefs may be the most preferred by tourists. It is notable that other attributes, such as combined recreational packages and costs play a key role in respondent willingness to visit offshore wind tourism sites. However, we concede that this study highlights a simplified tourist package accounting for only four attributes; for further analysis, future studies can include more attributes that can accurately reflect proposed tourism packages. Future work should focus on spatially explicit valuation to identify optimal combinations to augment offshore wind packages accounting for tradeoffs.

Extension educators use knowledge to enhance local and visitor understanding of the role offshore wind tourism and dispel misconceptions. As for business owners' the information will be key in developing ownership structure, package creation and marketing modules.

Overall, the initial analysis indicates potential for OWF tourism in Ocean City. As a result, policy initiatives should focus on integrating both public participation and private partnerships through innovative marketing that will simultaneously provide energy access, security, and new sources of income through tourism auxiliary services that stand to benefit the local communities in Ocean City.

From a decision maker's perspective, this information should be used in the development of policies that increase public participation in offshore wind tourism. The success of future offshore wind tourism programs depends on effective dissemination of benefits information to potential visitors and local communities to boost support for offshore wind. Nonetheless, offshore wind in New Jersey is still in its early stages and could benefit from additional revenue that serves to benefit the local communities and tap into a new market niche that can avoid inherent market failures.

The public has an active role to play in participation and enabling development of essential tourism attributes such as recreational activities, type of tours, support to marine biodiversity and development of recreation activities that support provision of income and jobs for rural economies.

We further highlighted the intricate balance of tradeoffs between key attributes that respondents may find important and sustainable for revenue generation through the policy simulation. There is potential for OWF tourism and people are willing to pay for it. The next step is to convert the hypothetical WTP to actual WTP through revealed preferences studies to assess the level of revenues that can generate economic impacts to local businesses. Even so, there is a requirement for further subsidies from government in the form of financial incentives, can support programs to support local economies and private ventures that are vital to offshore wind tourism industry.

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