

An Evaluation of the Bill Baggs Beach Preference Survey

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Introduction

Beaches are considered to be one of our nation's many natural resources. Beach visitors tend to enjoy beaches for their recreational purposes, such as swimming, sunbathing, and nature walking. Defining this recreational value can be difficult, largely because it is a non-market value. One of the tools that is used to determine the value of natural resources is the contingent valuation method (CVM). Contingent valuation uses questions that elicit a willingness to pay (WTP) for programs concerning natural resources (Turner et al, 1993). The CVM technique can also be used to obtain respondent's values for one visit to a site or visits during a season (Freeman, 1995). CVM has gained much popularity since it was approved by the NOAA panel headed by Kenneth Arrow and Robert Solow (Portney, 1994). The panel approved the use of the contingent valuation method as long as recommended guidelines were followed. It is this methodology that was used to assess the value of certain aspects of beaches on Key Biscayne, Florida.

A survey using aspects of CVM was created by Dr. David Letson and Manoj Shivlani in the Marine Affairs and Policy Division of the Rosenstiel School of Marine and Atmospheric Science. The survey was conducted at three beaches on Key Biscayne; Hobie (public), Crandon (public), and Bill Baggs (state). The survey contained thirteen questions which asked the respondents their zip code, age, beach preferences, estimated travel cost, and WTP for certain proposed policies. In addition to these questions the surveyor at each beach prepared a fourteenth question relevant to their own research.

The purpose of this survey is two fold. The first reason is to provide students with a hands on experience with implementing and carrying out a contingent valuation survey. It is a first attempt at an ongoing project in which future resource economics students may participate. In doing so, it is hoped that students will reflect upon the process and comment on the survey's success. The second reason is to collect willingness to pay data and the preferences of beach visitors on Key Biscayne in a manner which may be repeated by other students, compiling information and evolving the survey over the years. Obviously the success of the latter depends on the outcome of the former, but this is a learning process.

The following is an evaluation of the survey conducted at Bill Baggs state park on Key Biscayne, by the surveyor, focusing on both the composition of the survey and the method in which it was conducted. The effects of the proposed \$0.50 increase in the toll for the Rickenbacker Bridge will also be evaluated at Bill Baggs, taking into account socioeconomic information, travel cost, and their willingness to pay for a turtle nesting site.

Format

The format of the survey was prepared with the recommendations of the NOAA panel in mind. The first preference is that the survey be conducted in-person as opposed to telephone or mail-in. Fortunately, in-person surveying is the only technique that lends itself to a beach survey. Another preference is that the payment vehicle be clearly expressed.

This was achieved in question #11, which asked respondents, "How much more would you be willing to spend as beach entrance fee per trip if the beach contains a turtle nesting site (in parking or entrance)? [Emphasis added]. Clearly the payment vehicle is expressed as the entrance fee. Again this payment vehicle follows panel guidelines in that it avoids unfavorable payment vehicles such as taxes which implies a negative connotation. The panel also prefers the referendum format of soliciting responses to policy proposals where there is no option for a 'no opinion' response, only a yes or no. Referendum questions are familiar to respondents and reduce the variation in results.

The survey does stray in some respect with one of the more important panel recommendations, the description of the policy to be implemented. This was particularly difficult to do because of the time constraints of the survey. Providing information about a program for turtle nesting sites would extend the survey much longer than is reasonable for an activity carried out in the heat, wind, and sand of a beach. Limiting the length of the survey was a key issue in its design. In an ideal situation, a contingent valuation survey would take place in the respondent's home or some neutral place that is comfortable (Mitchell and Carson, 1989). This approach is not possible given beach conditions and the mentality of respondent while at the beach.

A second problem is that no proposed plan to create turtle nesting sites exists, leading a to the same problem as the Galveston Bay survey, our program is a hypothetical situation (Whittingtoll et al., 1995). When there is no definite program to detail, there are no success rates or scenarios that may be projected for the respondent to consider. In this

case it is necessary to consider that the population of sea turtles at Bill Baggs is uncertain. This fact could make the respondent's valuation uncertain (Whitehead, 1992). This leads to a type of error known as misspecification, or more specifically, methodological misspecification. This type of error occurs when one or more elements of the question are not adequately communicated so that the respondent does not perceive them in a way the researcher intended (Mitchell and Carson, 1989). Because the survey could not give information about the current sea turtle population or the type of nesting site that would be implemented, responses may not represent a true WTP value.

In addition to the thirteen standard questions on the survey, a fourteenth question was added by the surveyors and was specific for each beach. The question that was added at Bill Baggs was in reference to the proposed increase in the toll to cross the Rickenbacker Bridge. During the month of September, Dade County proposed an increase in the toll from \$1.00 to \$1.50. There was much debate as to whether this increase was necessary and the Board eventually decided to keep the toll at the present rate of \$1.00 per car. The survey at Bill Baggs specifically asked respondents if they were willing to pay \$1.50 toll to cross the bridge to Key Biscayne.

Methods

The survey was to be conducted on two separate weekdays and two separate weekend days, for four hours each day. It was estimated that the surveying would take approximately five minutes per person, giving a low estimate of ten surveys per hour. The

goal was to reach a total of 160 completed surveys per beach, enough to comprise a statistically viable sample population. It was decided that the survey could be completed over more than four days as long as eighty weekday surveys and eighty weekend surveys were collected.

The format for carrying out the survey was as follows. The surveys were to be conducted in person while the respondents were on the beach. The randomness of selecting the respondents was initially set at every third person. However, leeway was allowed as long as the pattern was consistent for each surveyor. The survey was to be read to each respondent and then the answers marked by the surveyor. Due to the significant number of Spanish speaking people in the Miami area, the survey was also prepared in Spanish (Appendix B). For the surveyors who did not speak Spanish, the respondents were asked to mark their own answers. It was decided that little explanation was to be given to the respondents about the questions being asked, to minimize inconsistencies in the responses.

At Bill Baggs, beach visitors were surveyed for a total of three weekdays and two weekend days. There was a total of 78 surveys completed, 66 in English, and 12 in Spanish. There were 9 non-responses, 8 of whom declined because of their inability to speak English or Spanish. The survey was conducted usually between the hours of 12.00 p.m. and 2.00 p.m. Visitors were approached if they were walking along the shore or sitting on the beach and did not appear to be sleeping. There was no attempt made to survey those who were in the water or surf

The number of visitors at the beach was greatly overestimated and it was very difficult to survey more than 10-30 people on a given weekday. To accommodate the small number of visitors, the survey was presented to every other person on the beach. The weekend days did have a higher turnout of visitors, but were still much lower than the expected. An average of 30 beachgoers was surveyed on weekend days. A total of five hours were spent surveying on weekdays and five hours on the weekend.

The language barrier did prove to be a problem in some cases. There are large numbers of European tourists visiting Miami beaches in the fall. Many of them spoke a moderate level of English or Spanish and were able to answer the questions. However, there was a certain level of explanation that was required to complete most of the surveys. This involved using hand signals and rewording the questions to simpler phrases so that the respondents could answer. Spanish speaking respondents were at a disadvantage because I could not further explain any of the questions if they spoke no English. While expansion upon the questions was limited as much as possible, it was necessary in several cases.

Analysis of Survey Questions

The representative beachgoer at Bill Baggs may be described by looking at the most frequently occurring responses in the survey (Appendix A and chart I). If you were to approach a random beachgoer on Bill Baggs, chances are the person will be from a

foreign nation and between the years of 26 and 35. He or she will be in a group of two beachgoers and own their own residence. The preferred beach activities of the average beachgoers are swimming or snorkeling, sunbathing, and nature walk or bird-watching. Beachgoers tend to visit Bill Baggs over 10 times per month and spend \$10-30 during their trip. Bill Baggs visitors tend to choose this beach for the availability of space and less crowded conditions. In comparison to Bill Baggs, there is no other beach on Key Biscayne that they visit as often. When considering programs for Bill Baggs, the typical beachgoer will be in favor of a turtle nesting site on the beach and is willing to pay an additional \$1-2 in entrance fees to enter the beach if it contains a site. The beachgoer would ban jet-skiing and powerboat use in general-use beach areas and is in favor of having an RV park in the undeveloped portion of Virginia Key.

Of the 78 beachgoers surveyed at Bill Baggs, 62% of the respondents said that they would be willing to pay the \$1.50 toll to cross the bridge (a 'yes' response), leaving 38% who said that they would not be willing to pay the increased amount (a 'no' response). There were zero instances of a 'no response' for this question. There are several ways to analyze and compare this data with other questions from the survey This paper considers: (1) demographic comparisons, (2) the average income of the 'yes' and 'no' respondents, (3) comparison with the travel cost (question #6), (4) and comparison with the willingness to pay values (question #11).

(1) Demographic Comparisons

Of the 62% who responded 'yes', 1/5 were from foreign nations. This represents a portion of the visitors who would probably be willing to pay an even steeper increase because their time spent in Florida is during vacation. The number of beach trips foreign visitors make to Bill Baggs is on the order of 2-3 per year. Foreigners are on vacation for the purpose of recreation and will pay what is needed to reach their preferred beach in Miami. To a foreigner, the difference between \$40 for a day at the beach and \$50 is comparatively small. Therefore, foreign visitors may be considered a community which would consistently vote yes to an increase in the toll fee.

Dade county composed 56% of those responding 'yes'. Of those who responded 'no', 83% were from Dade county (graph 2). These percentages may seem as if the majority of Dade county is against the proposed increase, but this is not true. Graph 2 shows that 27 Dade county respondents voted 'yes' and 25 respondents voted 'no'. This indicates that Dade county residents visiting Bill Baggs are equally divided as to their willingness to pay the increased toll.

(2) Median Income Comparison (CACI Marketing systems, 1991)

The majority of visitors at Bill Baggs are from Dade county (67%). Other visitors came from other regions of Florida as well as Maine, New Jersey, New York, Georgia, Illinois, Colorado, and California. It is possible to draw conclusions from the average income (1990 US census) from those who responded 'yes' and those who responded 'no' (graph 3). As a standard of comparison, the average of all the median household incomes

was \$38,232, with the lowest being \$10,770 and the highest being \$67,472. The average median household income for those who voted 'yes' was \$41,868. The average for those who voted 'no' was \$33,714. This data allows us to draw the conclusion that the household income may play a role in the decision to spend more money for the toll. Those with a higher income are more likely to vote 'yes' for the increased toll.

(3) Comparison With Travel Cost

Question #7 asked respondents to give their average expenditure during their trip to the beach. In comparing how much respondents paid for their visit to Bill Baggs and their willingness to pay for the increased toll, we may see some correlation between their responses (figures 4 & 5). It is important to note that any car with two or more passengers must pay a \$4 entrance fee for Bill Baggs state park. The percentage of each group that paid less than \$10 is almost equal, at 30% for those responding 'no' and 33% for those responding 'yes'. The same pattern follows for those who paid \$50-100 with both groups at about 10%. The only group that varies slightly is in the \$30-50 range, with 52% for those responding 'no' and 60% for those responding 'yes'. In general, respondents who are in favor of the increase paid more for their day at the beach, but the differences are so small that they are insignificant. I believe that there is no correlation between how much respondents spend in their travel cost and their willingness to pay the toll increase.

(4) Comparison With the Willingness to Pay Values

The WPT question (#11) asked respondents how much more they would spend as a beach entrance fee per trip if there were a turtle nesting site in Bill Baggs. This question is comparable to the respondent's WTP the increased toll because it elicits an amount that the respondent does not pay now but could possibly pay in the future to access the beach. Question #11 relates to the value that visitors place on Bill Baggs with a nesting site and how much more they are willing to pay to use the park with the site. The willingness to pay the increased toll is also measuring how much respondents value the use of Bill Baggs, although indirectly as the toll fee allows for access to much more than just the state park.

The distribution of responses shows a definite correlation between willingness to pay the increase and willingness to pay for the nesting site (figures 6 & 7). Of the beachgoers who responded 'yes', one third were willing to pay \$1-2 for the nesting site, 10% would pay \$2-3, and 21% would pay \$3-5. These numbers show a great distribution in the amount the 'yes' respondents were willing to pay. Of the beachgoers who responded 'no', 70% said that they would pay \$1-2 more for the nesting site, and 13% said that they would pay less than \$1.

Figures 8 and 9 also show a greater distribution of the WTP responses for the beachgoers willing to pay the toll increase. This distribution is not seen in those who responded 'no' as 70% showed a WTP of \$1-2 for the nesting site. What is interesting is that the group chose the \$1-2 response as opposed to the less than \$1 response. It was not the lowest dollar amount that was selected with such consistency. This factor dispels any

notion of a protest response, where respondents simply do not want to pay an increase in any of their expenses.

One question that may be considered is how representative a respondent's dollar choice is to their value of a nesting program. It is interesting to suppose that no matter what program was proposed (i.e. beach cleanup or beach renourishment), that this group would still display a high percentage willing to pay \$1-2 more for the park entrance fee. It is also interesting to consider that this group was not willing to pay for the toll because they never realize where their money is being used. On the other hand, the results of the increased entrance fee would be easily visible to beachgoers at Bill Baggs.

In contrast, the beachgoers who responded 'yes' tend to respond with greater variability in their WTP for the nesting site. These respondents may have considered more carefully the proposal of a nesting site, and their responses may reflect more accurately their WTP for the nesting site.

Suggestions for Further Surveying

Evaluation of the Individual Questions

Several questions revealed problems as the survey was conducted. There was no test sample done for this survey so these questions were not amended before the onset of the survey. The first question that posed a problem was #3 "Do you rent or own your residence?" Many vacationers wanted to know if the survey was referring to their

residence while on vacation or in their home country or state. Respondents were told to refer to the permanent residence. This distinction could not be made clear to those foreigners who were using the Spanish version, as I could not speak Spanish.

Question #4 raised a problem because people were unsure if it was asking about their trip to Florida or their trip to the beach. I informed respondents that it was a question that referred to their visit to the beach. Again, I could not explain this to those who did not speak English. Question #6 created a problem because I initially left out the response of \$30-\$50. This was corrected after the first day of surveying, but may have had an impact on the responses for the first day of surveying by forcing respondent to choose the \$10-30 or \$50-100 ranges instead of the \$30-50 range. Question #7 posed a problem for vacationers who said that they visited the beach 2-5 visits per month or more. If respondents were on vacation for 1 week and visited the beach every day, they may have responded with a more frequent answer than the question was trying to elicit. Vacationers may have been responding for this month as opposed to per month.

Question #8 provided the same reaction for many of the respondents. It asked, "What is the MOST important reason you chose this beach?" The original format of this question was to have respondents rank the order in which they valued each preference. The format was then altered to ask for only one response. About half of the respondents originally wanted to mark down two or more choices. They found it more difficult to select only one preference. It was ironically suggested by one respondent that question #8 should have ranked each of the preferences. I found this pattern to be particularly

repetitive in the Spanish surveys where I was unable to verbally ask for one response when the respondent gave 2 or more. In those situations I had to read over each survey afterwards and through hand signals or pointing to the question again, ask them to pick only one response.

Question #10 required the greatest amount of explaining. Questions asked by the respondents included, "Are there any sea turtles in this beach area ?", "How much of the beach would be closed down ?", and "Is this a plan that the park is considering to implement?" In each instance I tried to direct the respondent to the generality of the question, as there was no specific plan which I could refer to. Foreigners had a bit of difficulty in comprehending the vocabulary in this question

Question #13 was the last question that required explaining. Some respondents were unfamiliar with the concept of an RV park. It was especially difficult trying to convey this to the foreign respondents. Many respondents who were vacationing said that they really did not care if there was an RV park since it would have no effect on them. A map of the section of Virginia Key in question might make this response more decisive for those who do not live in the Dade county area. If it were not for the referendum format of this question, I believe that 20 - 30 percent of the responses would have been 'no opinion'.

Possible Future Questions

Most respondents who lived in Dade county said that they would be willing to pay the \$0.50 increase in the toll if they knew that it went towards the Key Biscayne area. The money collected at the Rickenbacker Causeway actually may be used to fund other projects in the county. If this information were presented to the respondents, it may have elicited a different reaction. Another adaptation to the toll question would be to ask what amount the respondent would be willing to pay instead of their opinion on the approval of a fixed amount. The response should be chosen from a range not open ended, and measures should be taken to guard against starting point bias.

Many respondents who were not willing to pay more than \$1 for the turtle nesting site said that they would be more willing to pay for the beach to be cleaned and maintained than they would for a turtle nesting site. This would be an interesting WTP to research in a future survey on the Key Biscayne beaches.

Methodology

This survey was started and completed in a relatively short period (about 2 weeks). The total number of surveys collected was less than expected. This resulted from not enough time spent surveying and fewer beach visitors than expected. In the future it is recommended that the survey be carried out over a minimum of four weeks. It would also be preferred that the surveyor at the beach speak the language that the surveys are prepared in. The length of the survey may also be extended. In most cases, the respondent

was surprised at how brief the survey was. At least three or more questions or, two minutes of explanation might be added to the survey length. Because foreign tourists display higher travel cost and WTP values, a survey should be conducted during different seasons to determine the number of foreign tourists during different seasons. The percentage of the year that foreigners are on the beaches may change the overall responses of the survey.

Conclusion

The beach preference survey may be considered a success. While the total number of surveys collected was not as high as anticipated or desired, the numbers generated are reasonable and allow for moderately reliable statistics. The surveys shows that the majority of visitors to Bill Baggs would be willing to pay the increased toll of \$1.50 and that this response may be elicited more from median household income than any other variable in this survey. There are several improvements that could be made to the design and implementation in the survey, but the important aspect to remember is that this was meant to be a test of the survey itself. The fact that errors were discovered proves that this exercise completed its purpose and served as a learning tool for those studying the valuation of non-market goods it is hoped that future students will collect enough responses to create reliable statistics about the beachgoers on Key Biscayne.

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