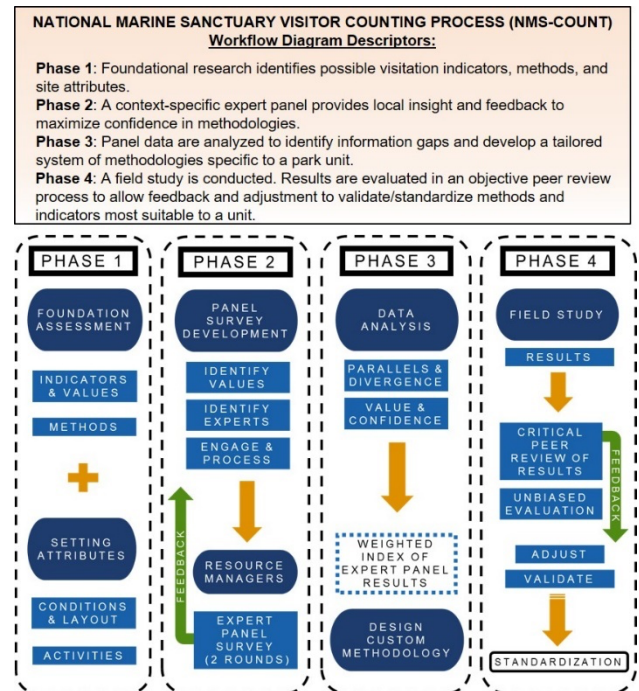


144 Social media posts: An experience from Florida Keys National Marine Sanctuary, US

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The US National Marine Sanctuaries' newly developed visitor estimation effort (NMS-COUNT, Figure 1) engages academics, agency scientists and managers in an iterative process to research and identify visitor estimation methods applicable to a specific site (NMS-COUNT, Burns et al, 2020). The NMS-COUNT process uses multiple different data sources to estimate visitation on water and along shorelines. Data sources include visitor interviews, traffic counts, satellite data, smart buoy data, and other technological methods. As a part of this study, social media was used to better understand perceptions and use by recreationists. The objective was to identify and analyze pictures posted by visitors that were geotagged with a specific location in Florida Keys National Marine Sanctuary. Researchers used screen scraping to collect the social media data for this study, searching for specific sites and popular reefs within the sanctuaries. Pictures that were geotagged were analyzed using four different social media platforms: Facebook, Google Maps, Instagram and Trip Advisor. Each method had advantages and disadvantages. Facebook and Google Maps were not able to be presented in chronological order. Trip Advisor comments were better if we want to analyze descriptive comments. Instagram allowed the researchers to search for specific sites by geolocation over a period of 2018, 2019, and 2020. Thus Instagram was the most effective method of meeting the objective of identifying the social media program that was the best fit for meeting the specific objective of estimate visitors from pictures posted online. Following this determination, data were analyzed according to the following steps:

Step 1: Collecting Raw Data: Using a hybrid approach, we located and quantified Instagram posts across time within focal location of interest. To analyze the pictures, we collected raw data and inserted the information in an Excel document containing fifteen columns. The columns were



divided in four groups, basic information (user name, post number, date and the type of post whether this was recreational or not), if it was posted by a private user, by a business/recreational operator, or by NOAA, activity type (diving, snorkeling, fishing, general boating/others). The final group was categorized in three domains: landscape, services, and activities (according to the methodology of online reputation analysis created by Albach et al., 2018). After filling the columns of the Excel table, the data was analyzed in a summary table created for each of the 8 FKNMS sites. The data from each location will be combined and summarized to create a network of estimates that cover the entire study region.

Step 2: Adding Survey Data: Data from four separate questions from a larger survey instrument were merged with Instagram data to create numbers that estimate visitation. The respondents of this survey were contacts from the Florida Fishing License Database. The questions used were the following:

1) In a typical year, approximately how many days do you spend doing ocean recreation (activities that are in the water not including swimming very close to shore) in Florida Keys National Marine Sanctuary? The result was a mean of 38.3 days.

2) How many days are spent on the following activities?

Mean = 24.8 # Days Private Fishing

Mean = 7.8 # Days Charter Fishing

Mean = 13.7 # Days Private Diving

Mean = 8.2 # Days Charter Diving

Mean = 12.9 # Days Snorkeling

Mean = 24.4 # Days General Boating

Mean = 17.0 # Days Other Activities

3) When you make a trip for ocean recreation, approximately what percentage of the time do you post about that trip on social media? The result was a mean of 20.6 % of time social media posting.

4) When you post about a recreation trip on social media, approximately what percentage of the time do you reference a location where the trip was taken? The result was a mean of 34.6 %.

Thus, the first and second questions were used to represent the number of days visitors spent on certain activities in a year. This information, along with the total number of days, was used to calculate a percentage of the days they spend on a certain activity. Then all of the data were extracted for the

social media questions 3 and 4 (presented above) and researchers summarized the percentage of social media posting rates for each group. As a result, group posting rates were created that showed people in the diving groups post on social media on average 40% of the time. People in the fishing groups post on social media on average 16.7% of the time while people in the snorkeling group post on average 28% of the time. Finally, we identified that people in the general boating and other activities group post on average 23% of the time.

Step 3/4: Creating Visitation Count Estimations: We used the Instagram data of each site and the survey data from the group posting rate in order to calculate the number of trips for each category across each time period.

We repeated this process for each location across time periods and summarized the number of visits for each group at each site across each time period. The results of the visitor count estimations segmented by activity and location will be presented and discussed. It is important to note that the Instagram posts available were only public posts and the unavailable private ones were not included in the raw data.

References

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