

Shackleford Banks Visitor Learning Outcomes: Preliminary Data Analysis

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Introduction

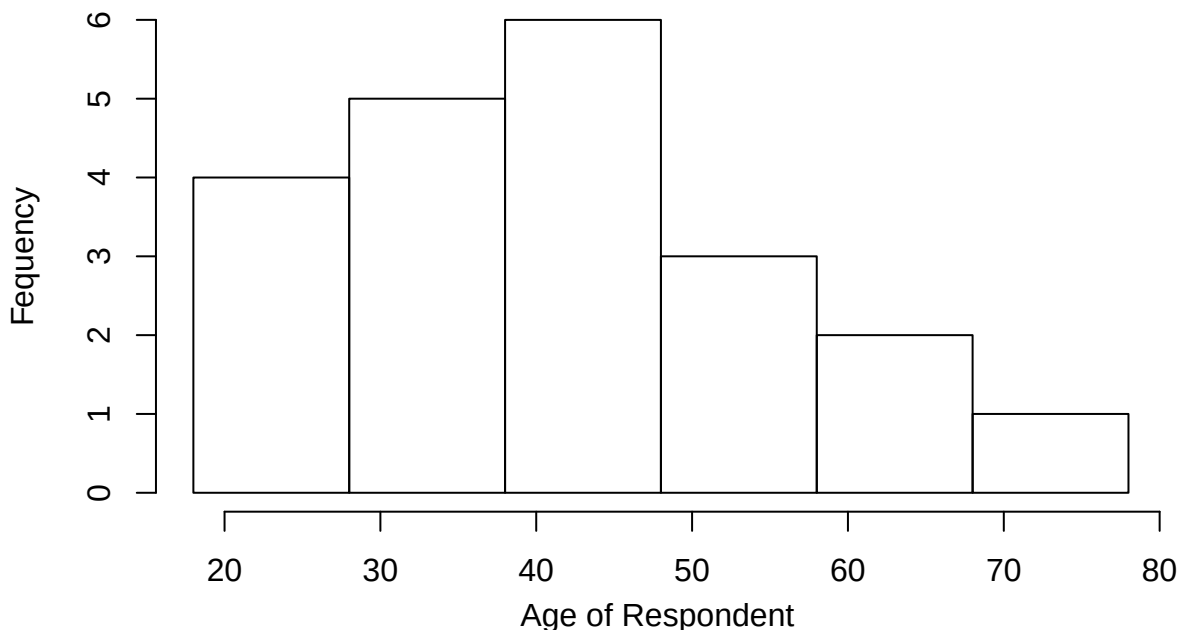
Below is a preliminary assessment of data collected on from visitors to Shackleford Banks during the summer of 2020. Data was gathered as part of an internship project, conducted in conjunction with Princeton's High Meadows Environmental Institute (HMEI) and the National Park Service (NPS). The goal of research was to measure the educational salience of visitor interactions with the island's population of wild horses.

During the months of June and July, survey responses were solicited from visitors traveling to Shackleford Banks via Island Express Ferry Service, a NPS concessionaire. Over the course of data collection, twenty-one total responses were recorded. Though the amount of collected data is insufficiently large for causal analysis, this assessment will examine the extent to which visitors understand wild horse ecology and attempt to identify potential trends in visitor interaction with wildlife and educational materials.

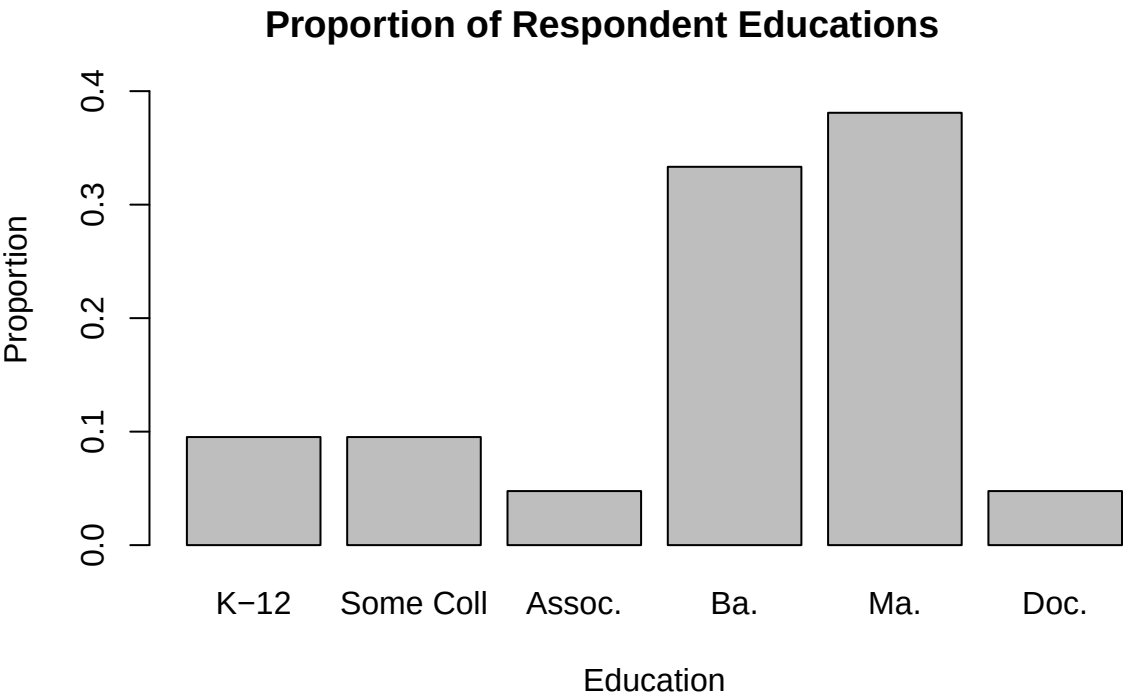
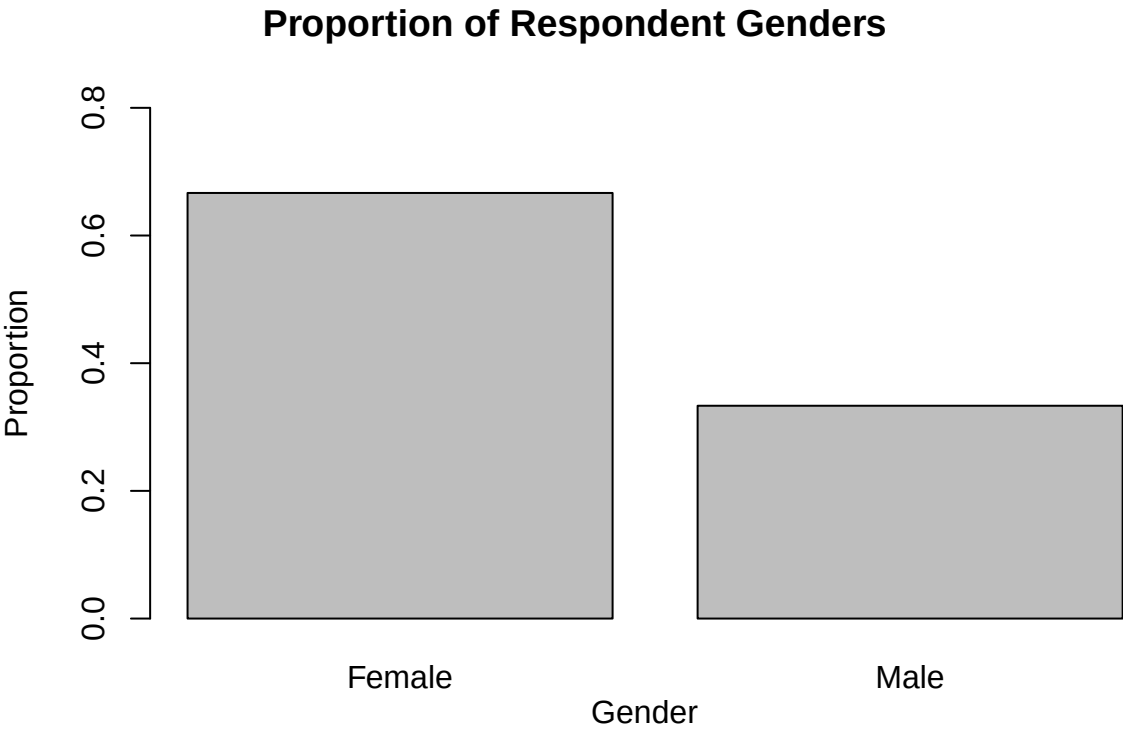
Respondent Demographics

Survey respondents were primarily middle-aged, with distribution unimodal and centered around those aged 38 to 47. The distribution of ages is skewed right, with more young respondents (<38 years old) than old respondents (>47 years old).

Distribution of Respondent Ages

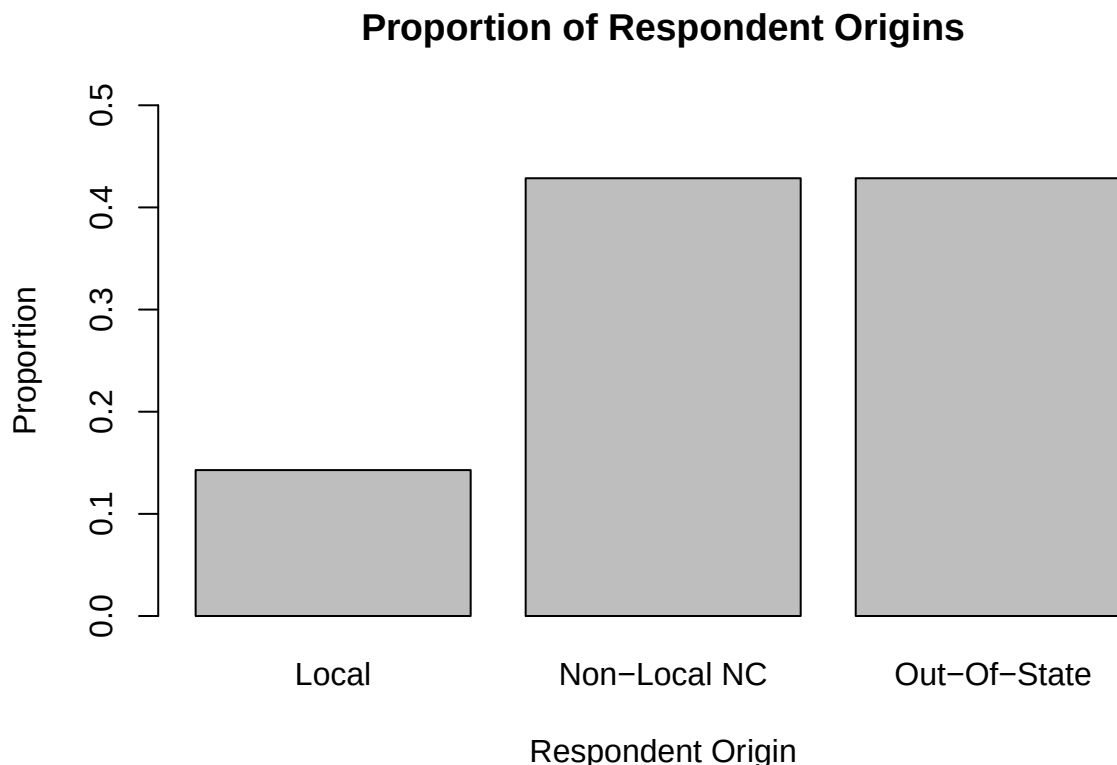


Survey respondents are primarily female. Indeed two females for every male participated in the survey. Furthermore, the majority of survey respondents are well educated, with 71% of participants having attained either a Bachelor's or Master's degree. This distribution of educational attainment is only a reflection of adult visitors, as survey participation was limited to those aged eighteen and older.



Respondents are primarily from areas not local to the study area. Indeed, only 14.3% of participants are from localities directly surrounding Shackleford Banks. The majority of participants are from either another state or portions of North Carolina that do not immediately surround the study site. Equal proportions of participants (48.9% each) hail from either an out-of-state or non-local North Carolinian zip-code.

The distinction between local and non-local North Carolinians is borrowed from a similar study of Shackleford Banks visitation (Selby, 2020). Visitors from zip codes beginning with 285—an area encompassed between Cedar Island, Kinston, and New Bern, NC—are considered local. Visitors from other North Carolina zip codes (beginning with 28 and 29) are considered “non-local” and any other zip code is considered “out-of-state.”

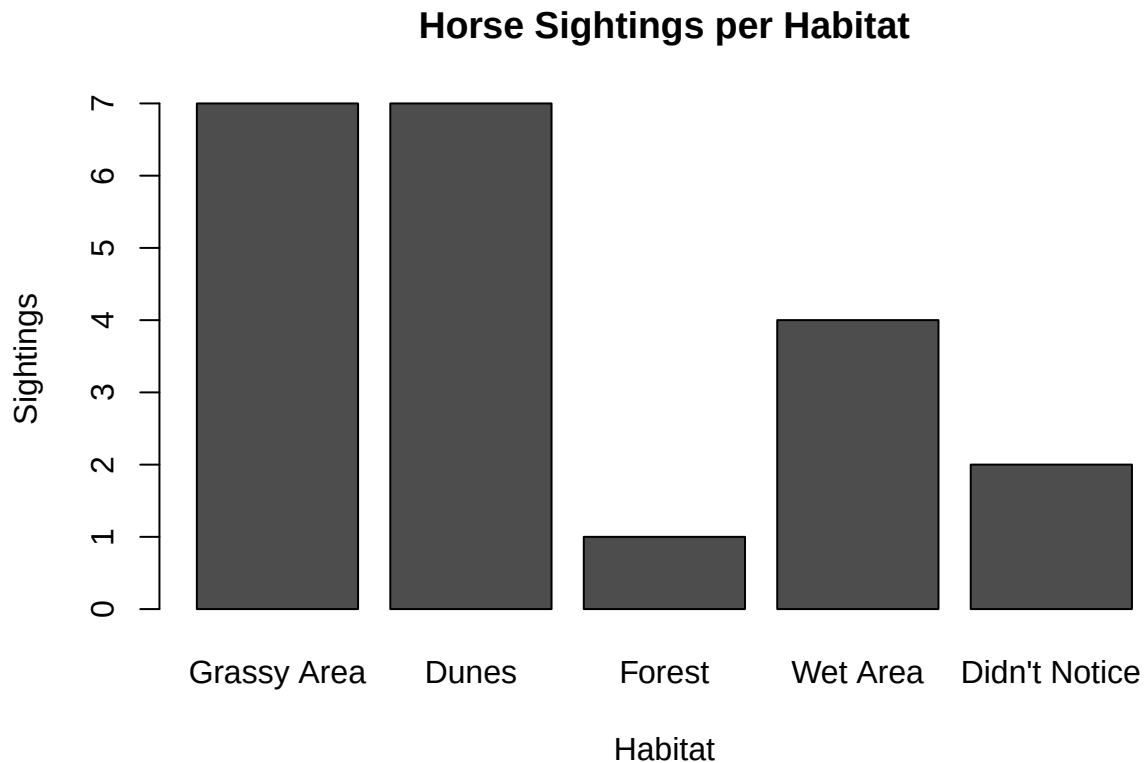


Visitor Interaction with Wild Horses and Educational Resources

Two-thirds of visitors to Shackleford Banks saw wild horses while visiting the island. Among visitors who saw wild horses, the vast majority of sightings (92.9%) involved only 1-5 horses.

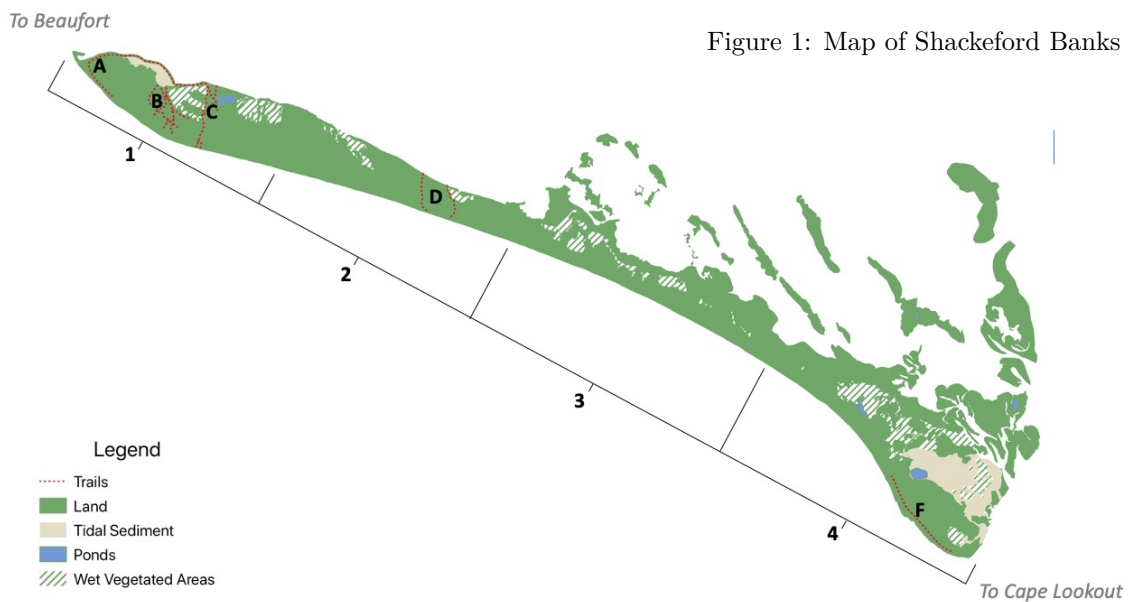
The conditions used to subset data for those who saw horses were both a response of “yes” to seeing horses and a non-zero number of horses encountered while on the island. The use of both conditions is necessary because one participant, despite responding “yes” to seeing horses, later indicated that they saw “0” horses and responded “I did not notice/did not know” to all horse-related questions.

Survey respondents were asked to identify the habitats in which they encountered horses, with the option to choose multiple habitats. An answer choice was also included for participants who did not notice the habitat in which they saw horses. Visitors most frequently encountered wild horses in grassy areas and sand dunes, with each habitat yielding 7 total sightings. Wet areas were the third most frequent habitat for encountering horses, with 4 total sightings. Visitors rarely encountered horses in forest habitats. Indeed only 1 horse sighting occurred in a forest habitat. The majority of visitors were cognizant of the habitat in which they encountered horses, with only three respondents indicating that they did not notice the habitat in which they saw horses.

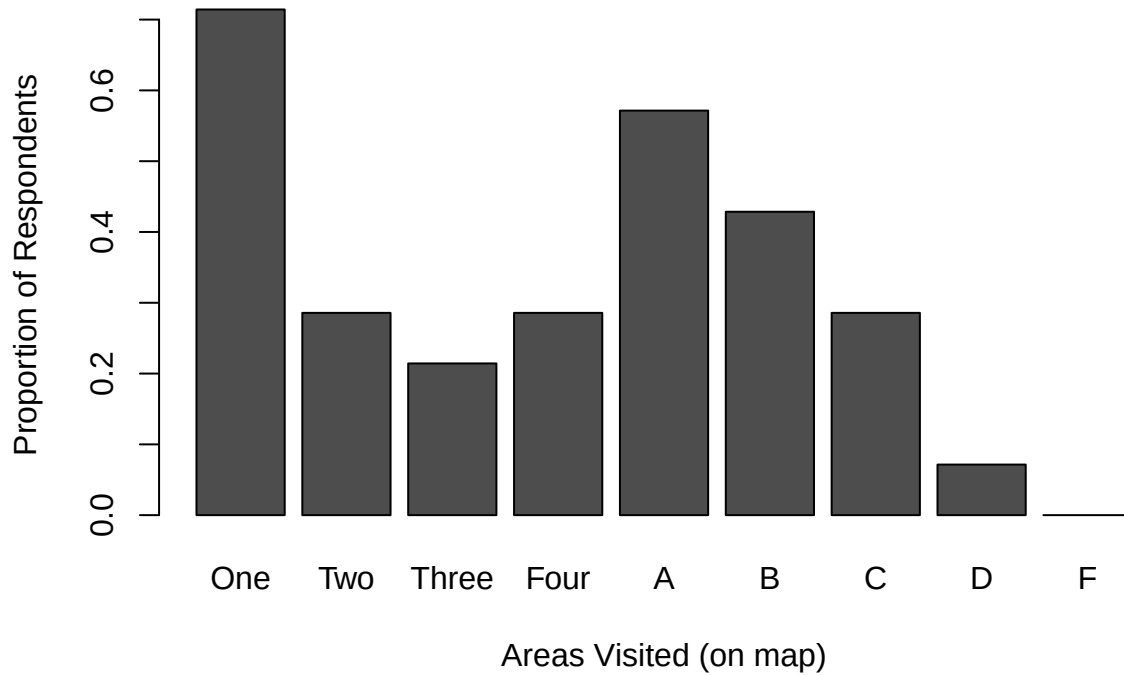


Respondents were asked to identify which portion of Shackleford Banks they visited using a labeled map of the island. Letters and numbers corresponded with different trails and portions of the island. A copy of the map is attached below.

Visitors who encountered horses primarily visited the western portion of the island, walking on routes that circled the narrow-end of the island or cut through dunes and beside wetlands. Smaller proportions (20-30%) of visitors traveled to central portions of the island and walked on trail C, which bypasses mullet pond. A minority (<10%) of respondents walked on trail D—the only labeled path in the center of the island that crosses from the North-facing to the South-facing side.

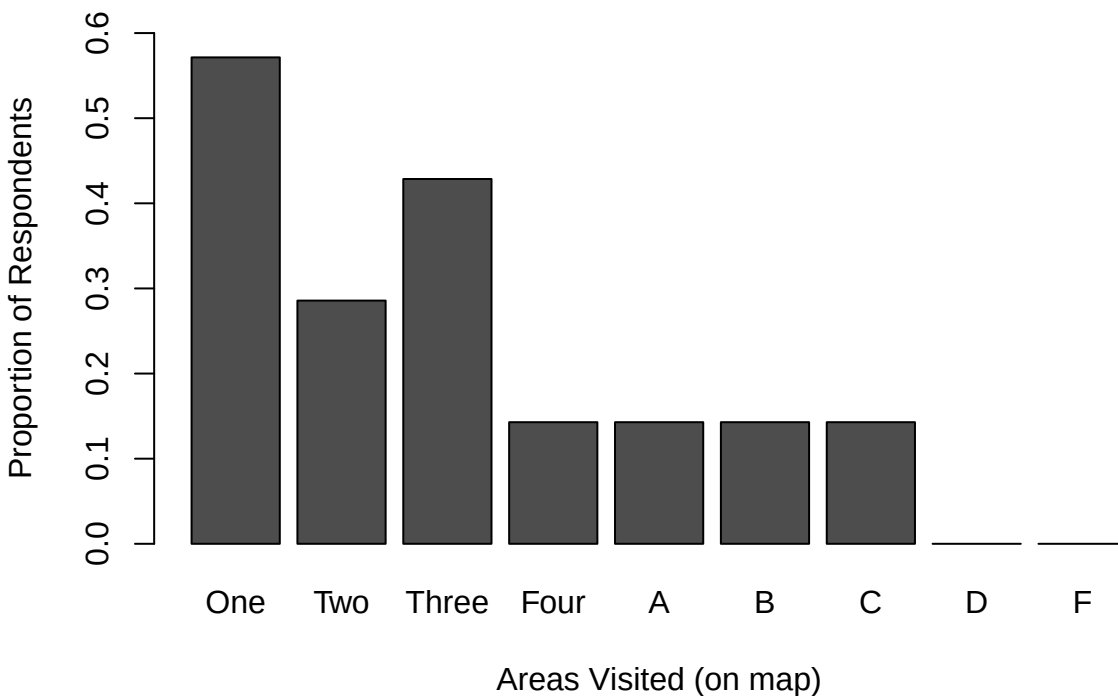


Areas of Island Visited by Those Who Saw Horses

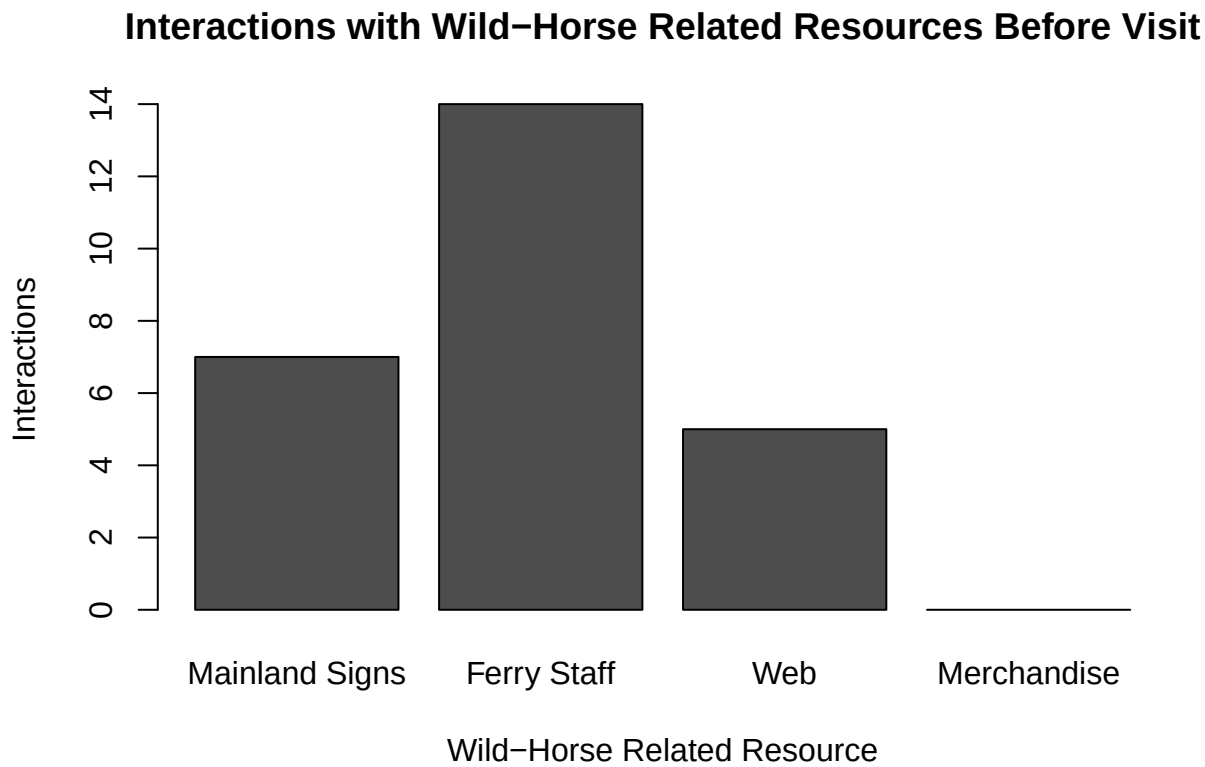


Relatively large proportions of visitors who did not encounter horses visited the westernmost and east-central portions of the island. Just over half of respondents visited the island's westernmost portion and over 40% of respondents visited the island's east-central portion. Around 28.6% of respondents visited the island's west-central portion, and around 14.3% of respondents visited the island's easternmost portion. Only trails in the island's westernmost portion were used by respondents who did not see horses. Indeed, trails A, B, and C were each used by 14.3% of respondents.

Areas of Island Visited by Those Who Did Not See Horses



Visitors who saw horses primarily recieved information about horses from ferry crews and captains prior to visiting the island, with 14 total interactions with this informational resource. The second most common source horse-related information prior to visiting the island was signage on the mainland, with 7 total interactions. Visitors interacted with horse-related websites to a similar degree, with 5 toal interactions. No visitors who saw horses interacted with horse-related merchandise.



Visitor Knowledge of Wild Horse Ecology

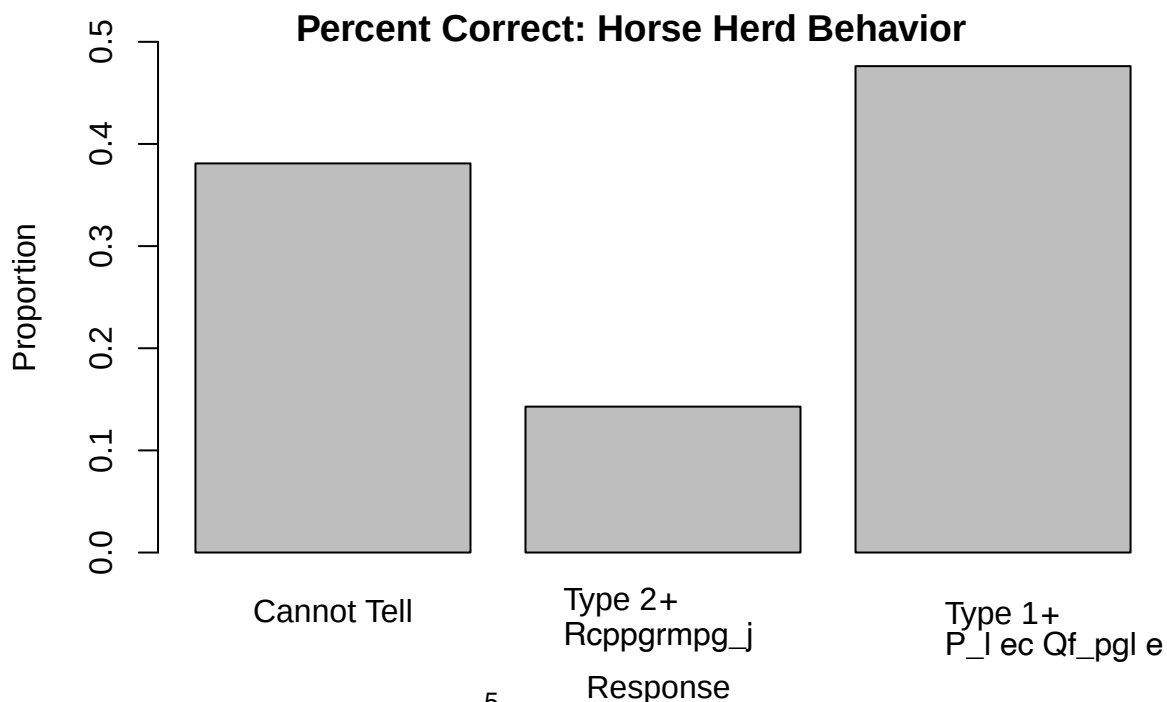
Respondents were asked three knowledge-based questions about wild horse behavior, ecology, and management. The three questions are listed below:

1. Horses are related to zebras and wild asses. Species in this so-called 'Horse Family' individuals either
1) live in groups which range widely and share a landscape with other groups, mostly peacefully; or
2) live apart from each other and defend territories by marking boundaries with dung or by fighting.
From what you've seen today do you think: A. Shackleford horses live in groups sharing habitats, mostly peacefully (type 1 above)? B. Shackleford horses live apart by defending territories (type 2 above)? C. I cannot tell and do not want to guess
2. Around 110-130 horses exist on Shackleford Banks. why does this number persist? A. The horses naturally regulate their numbers through competition for food and water B. Through management by people through selective female contraception C. Through management by people through selective male sterilization D. I do not know and do not want to guess
3. If there were more than 130 horses living on the island would this: A. Be harmful for the island's overall health and stability? B. Be OK for the island

Respondents were presented a correct answer, an incorrect answer (or answers), and an option to indicate that they did not know the correct response. Respondents, on average, answered 39.7% of questions correctly. This indicates that the average participant knew the answer to less than 2 out of 3 questions. Respondents indicated that they did not know the answer at a similar rate. Indeed, the average participant did not know the answer to 38.1% of knowledge-based questions. Respondents, on average, answered 22.2% of questions incorrectly. Thus, the average participant answered more questions incorrectly than correctly.

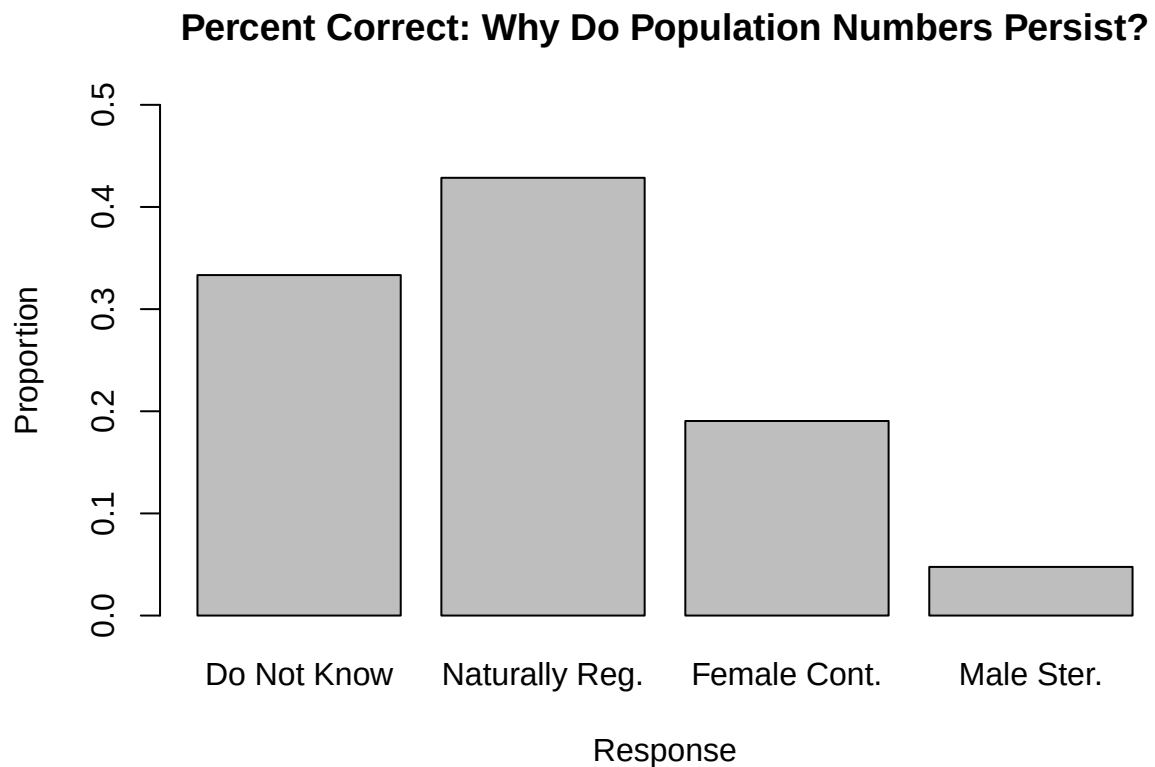
Analysis of Question 1 above

The majority of respondents answered question 1 correctly, with 47.6% of visitors indicating that Shackleford horses live in groups, share habitats, and coexist in a mostly peaceful manner. A large portion (38.1%) of respondents indicated that they could not tell the answer to this question. A relative minority of respondents answered question 1 incorrectly, with 14.3% of visitors indicating that Shackleford Horses live apart by defending territories.



Analysis of Question 2 Above

The majority of respondents answered question 2 incorrectly, indicating that knowledge about wild horse management among park visitors is lacking. The most commonly selected incorrect answer was that horses naturally regulate their numbers, with 42.9% of respondents selecting this choice. Moreover, 19% of respondents correctly answered that horses are managed through selective female contraception. A third of respondents indicated that they could not tell the answer and did not want to guess. A significant minority of respondents answered the question incorrectly, with only 4.8% of participants indicating that wild horse populations are managed through selective male sterilization.



Analysis of Question 3 Above

Respondents were relatively well-informed about the ecological significance of an increase in horse populations. A majority of respondents chose the correct answer, with 52.4% of participants indicating that an increase in horses beyond current levels would be harmful for the island's overall health and stability. A relatively large portion (42.9%) of respondents indicated that they could not tell the answer to this question. Only 4.8% of respondents chose the incorrect answer to question 3.

