Biodiversity for the National Parks

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Information on species_info.csv

- species_info.csv contains information on 5,541 unique animal and plant species found within the national parks.
- Information for each species includes: animal/plant class, scientific name, common names, and conservation status.
- Animal/Plant classes include: mammal, bird, reptile, amphibian, fish, vascular plant, and nonvascular plant.
- Conservation status is ranked as: species of concern, endangered, threatened, or in recovery. No value is entered if the species is not in conservation.
- The file includes some duplicated information

Significance Calculations: Mammal vs. Bird

- 17% of mammals are protected
- 15% of birds are protected
- A Chi Square test on the raw data tells us that this 2% difference in protection rates is <u>not</u> significant, with a p-value of 0.69 (greater than 0.05)
- These results infer that mammals and birds are equally likely to be protected.

Significant Calculations: Mammal vs. Reptile

- 17% of mammals are protected
- 6.4% of reptiles are protected
- A Chi Square test on the raw data tells us that this 10.6% difference in protection rates is significant, with a p-value of 0.04 (less than 0.05)
- We can infer from these results that mammals are more likely to be protected than reptiles.

Recommendations on Animal Class Protections

The significance calculations we performed show that certain animal classes are more likely to be protected than others. I recommend looking into factors that may be causing these animal classes, as a whole, to be more at risk than the others, in hopes of preventing future need for protection and aiding already protected species in their recovery.

Foot and Mouth Sample Size

- In order to determine if the program being run at Yellowstone to reduce the rate of foot and mouth disease among sheep is having a significant impact (relative to the rate at Bryce), we will need 870 observations at each Yellowstone and Bryce.
- This will take a little under two weeks at Yellowstone and about three and a half weeks at Bryce.
- This will let us be 90% sure the program is reducing the rate of foot and mouth by at least 33%.
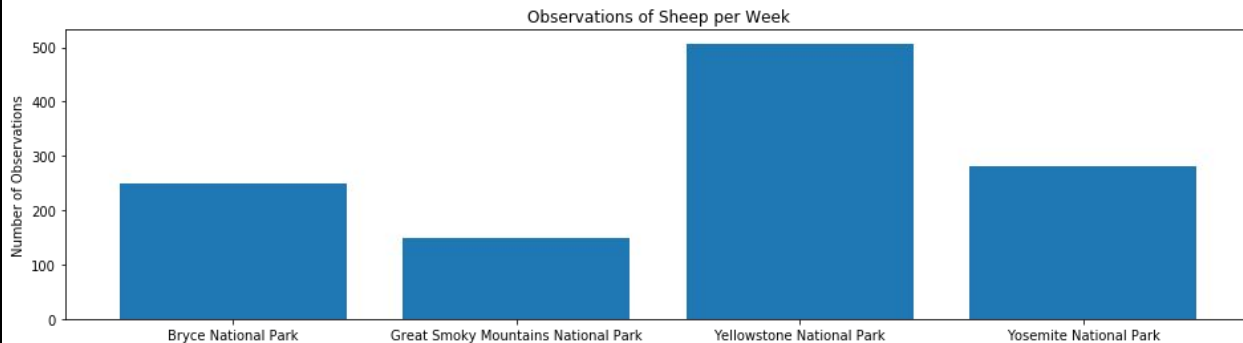
Appendix: Graphs

The graph to the right shows that the vast majority of species within the national parks are not protected (No Intervention)

Conservation Status by Species
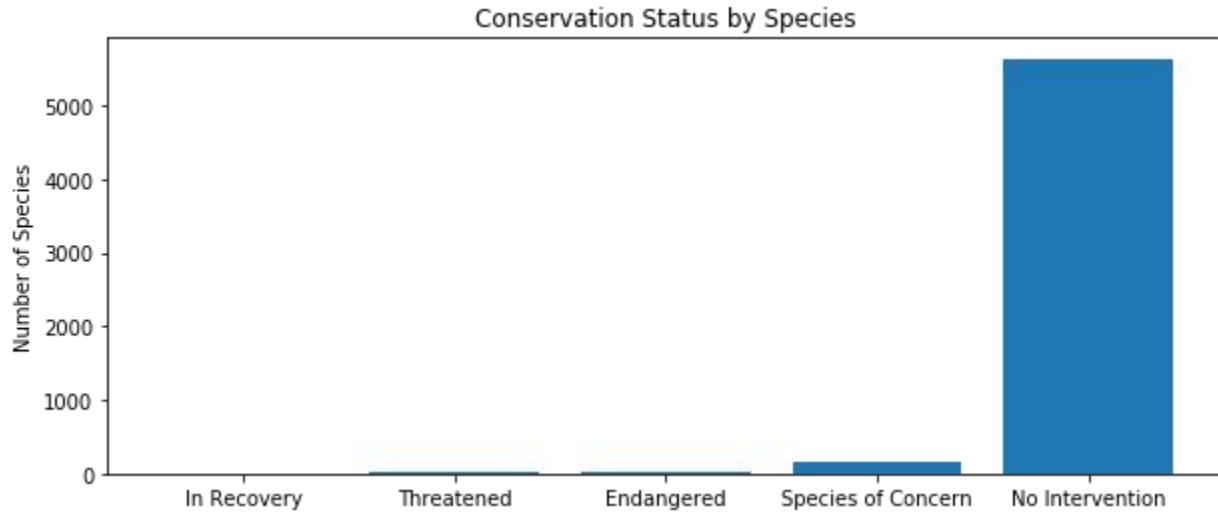
Appendix: Graphs (continued)

The graph to the right shows that Yellowstone National Park has the most observations of sheep per week.

Observations of Sheep per Week

Appendix: Note on Mammal vs. Bird Protection Rate

Both the biodiversity and biodiversity-solutions files say that a significant difference exists between these rates. However, per my calculations and the solutions file calculations, the p-value is 0.64, far exceeding the generally accepted 0.05 level.

Appendix: Note to Foot and Mouth Problem

The sample size calculator in the biodiversity-solutions Jupyter Notebook (Optimizely) gives a different output than the one in the biodiversity Jupyter Notebook (CodeCademy). I used the result from the CodeCademy calculator in this project.