Capstone Option 2

Biodiversity for the National Parks

By Kayla Bender

Data Description

The file ‘species_info.csv’ was used to conduct the analyses described on the following slides.

The file is a data frame containing information about various animal & plant species: category, scientific name, common names, and their conservation status.

There are 5541 total unique species in the table that fall into the following categories: Mammal, Bird, Reptile, Amphibian, Fish, Vascular Plant, or Nonvascular Plant.

Conservation statuses are Species of Concern, Endangered, Threatened, or In Recovery. All null values were given the status of “No Intervention.”

Significance Calculations - Process

Species were grouped by type and counted by their protection status. For example, 7 Amphibious species are protected under their conservation status, while 72 Amphibious species require no intervention.

The percentage of each category was calculated to compare, and a Chi Squared Test was conducted to prove significance between Mammals & Birds, and Mammals & Reptiles.

Results are on the following slide.

Significance Calculations - Results

The difference between protection percentages of Mammals and Birds was insignificant; this means that the difference in their numbers is likely due to chance.

The difference between protection percentages of Mammals and Reptiles, however, was significant; this means that one is more likely to be on the protection list for a reason.

Certain species should be watched more carefully than others, or even offered stricter protections, given that chances of being on the protection list are not always of equal chance.

Foot & Mouth Study

The sample size needed to detect a significant change in the occurrence of foot & mouth disease is 510 sheep from the park of interest.

To determine this, I used the current Bryce National Park disease percentage, 15%, as the baseline. To detect a 5 percentage point change, the minimum detectable effect must be 33%. Finally, the statistical significance used was the standard 90%.

Given this sample size, it would take a little over a week to conduct the study in Yellowstone National Park based on their usual 507 sheep observations per week.

Similarly, it would take about 2 weeks to conduct the study at Bryce National Park based on their 250 sheep observations per week.

Chart 1: Conservation Status Bar Graph

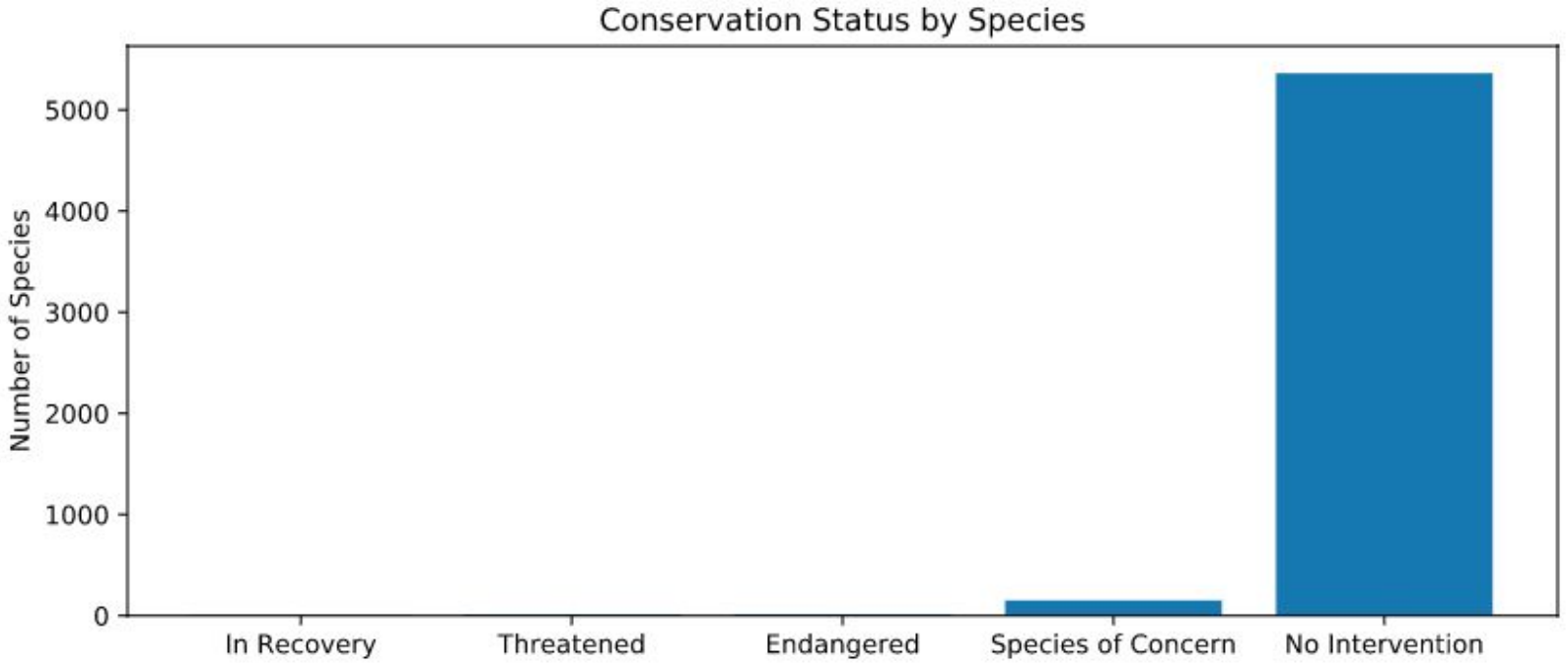

Chart 2: Weekly Sheep Observations Bar Graph