Biodiversity for the National Parks

Introduction to Data Analysis Capstone

Species data

- Category
  - Indicated is species belonged to the mammal, bird, reptile, amphibian, or fish classes of the Animal kingdom. Also, indicated if species in the Plant kingdom belonged in the vascular classes or non-vascular class

- Scientific name
  - The species' scientific name in terms of *genus, species*.

- Common names
  - The species' common name. More than one was provided if applicable

- Conservation status
  - Indicated if the species is a 'Species of Concern', 'Threatened', 'Endangered', 'In Recovery', or was protected and needed no protective actions.

Conservation Status

	conservation_status	scientific_name
1	In Recovery	4
4	Threatened	10
0	Endangered	16
3	Species of Concern	161
2	No Intervention	5633

Conservation Status by Species
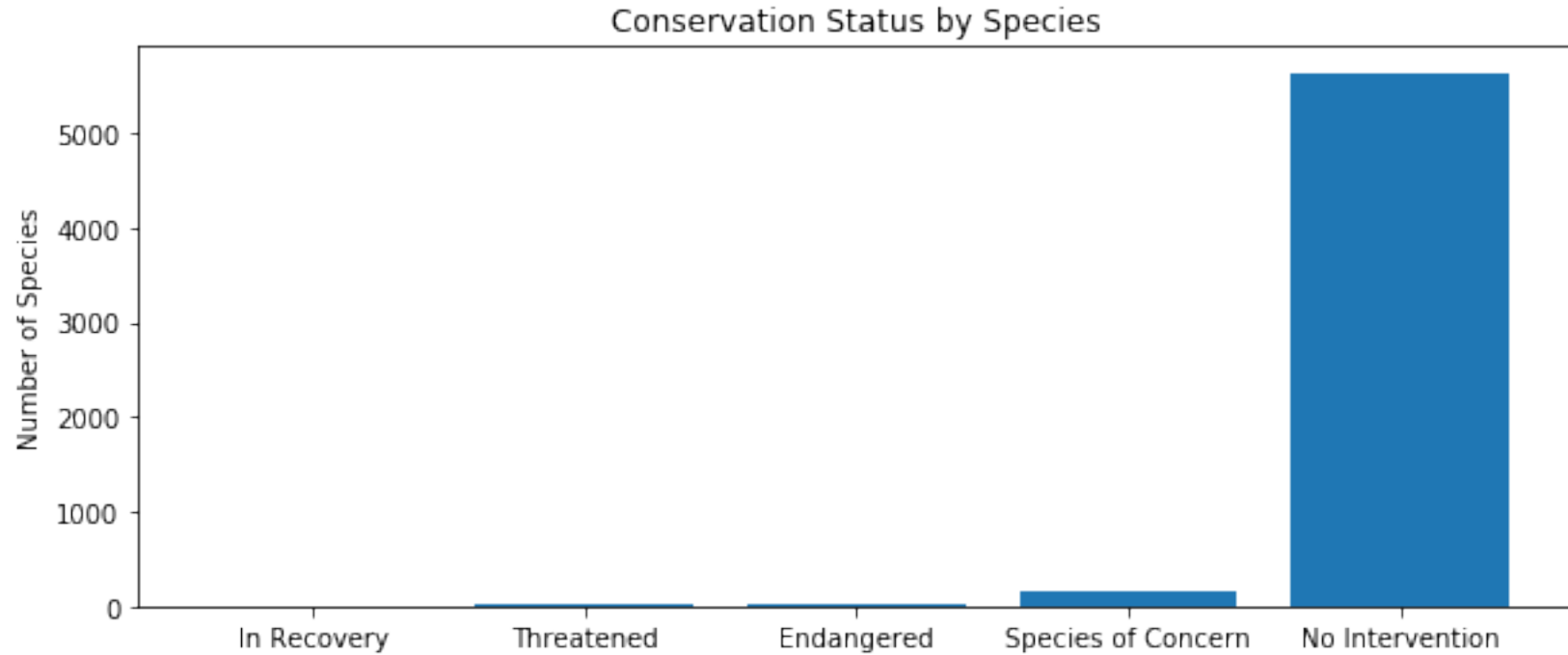
- Vast majority of species are protected
- However, specific categories of organisms may be more susceptible

Conservation Status by Species Category

- Appear to be differences between some species categories

- Statically test if differences are true

- Chi squared contingency test:
  - Mammal vs. Bird
    - Chi2 stat = 0.1617
    - p value = 0.6876
  - Mammal vs. Reptile
    - Chi2 stat = 4.289
    - p value = 0.0384

- Mammals are more likely to be endangered compared to reptiles

Percent Protected by Species Category
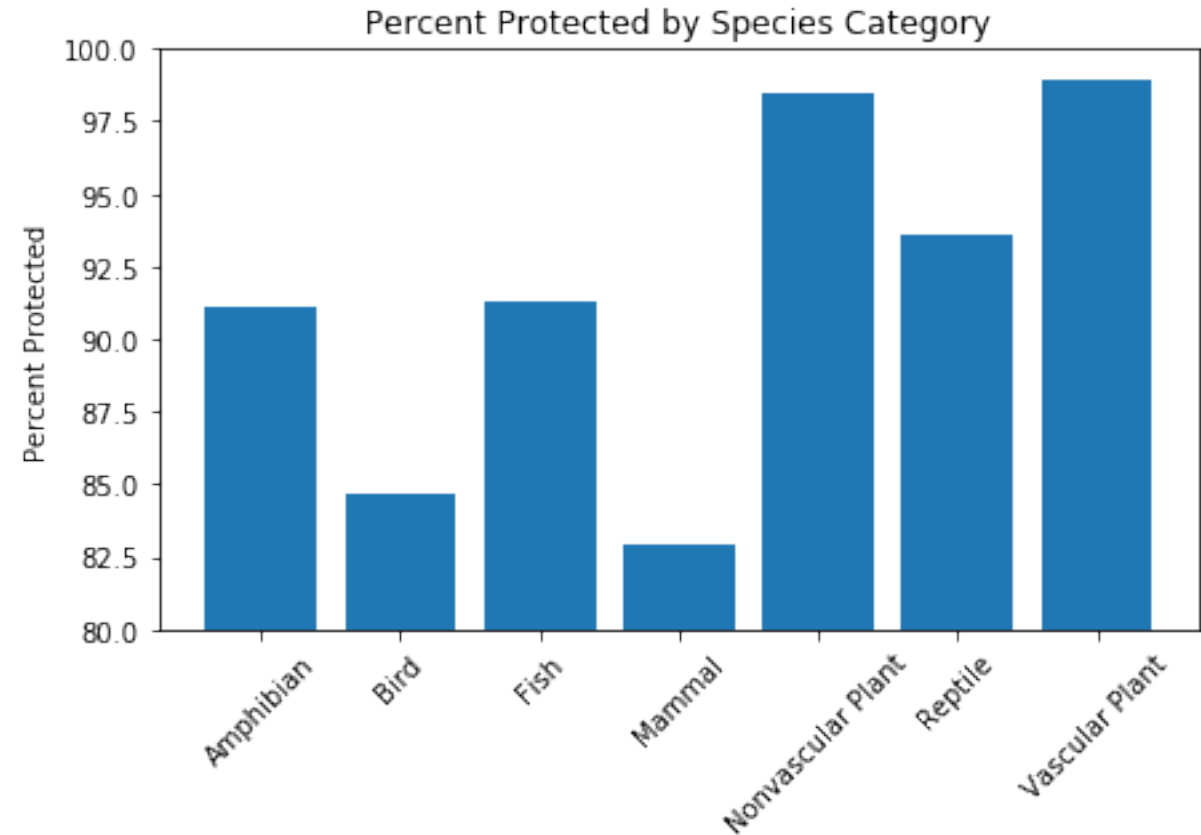
- Recommend special precautions for the protection of mammals

Sheep Hoof and Mouth Disease Program

- 15% of sheep at Bryce National Park have hoof and mouth disease
- Program developed to reduce hoof and mouth disease
    - Goal to reduce frequency of disease by 5%
    - Thus the desired minimal detectable effect is 33.33%

- Sample size needed to test statistical effectiveness of program is 870 sheep
    - Calculated with online Codecademy sample size calculator

Time to Collect Samples

Observations of Sheep per Week
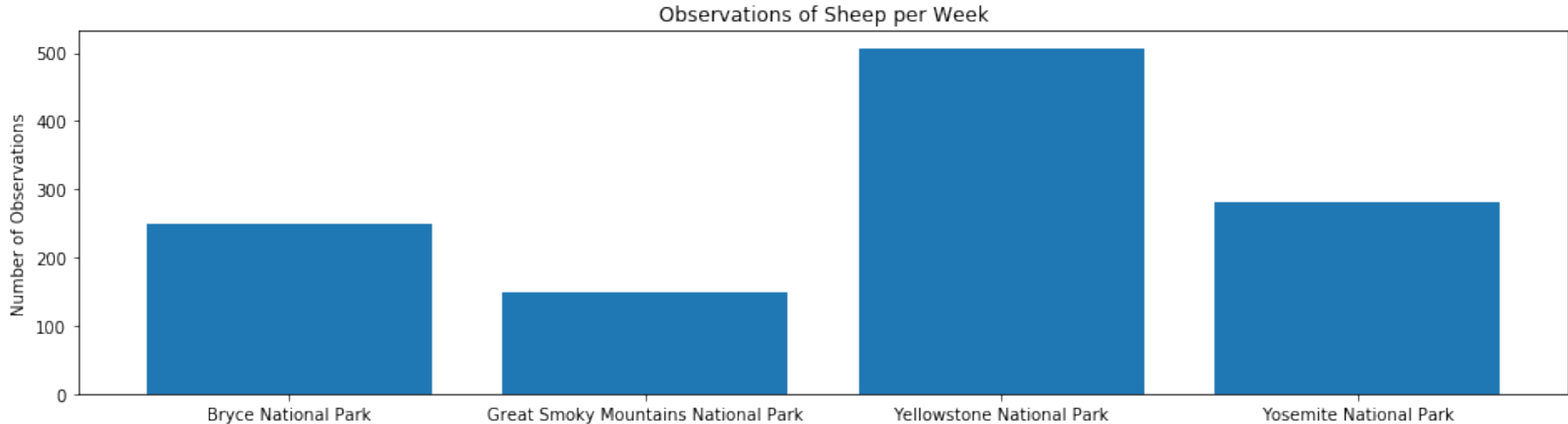
- Based on number of sheep observed each week it will take 3.48 weeks to sample enough sheep at Bryce National Park
- It will take 1.72 weeks to sample enough sheep at Yellowstone National Park