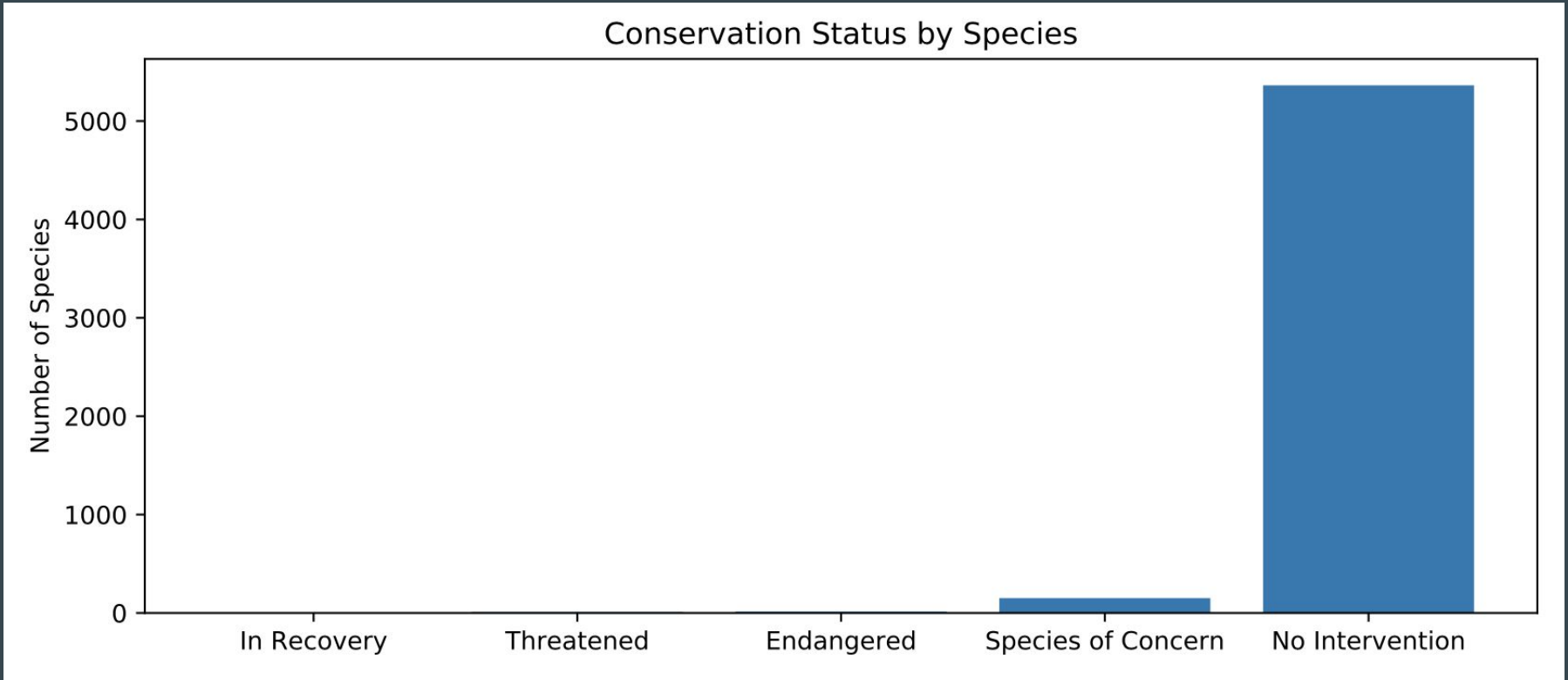
Biodiversity in National Parks

Hypothesis Testing and Sample Determination

Overview of Species in National Parks

- The data file included informations of 5,541 unique species in National Parks
- Type of species include mammal, bird, reptile, amphibian, fish, vascular plant and nonvascular plant.
- Only 180 of the 5,541 species are listed as endangered, in recovery, concerned or threatened. The rest need no intervention.
- This result is visualized in the graph on the next slide.

Graph on Conservation Status by Species



Endangered Species Status Determination

- To answer the question “Are certain types of species more likely to be endangered?”, the percentage of species being protected are calculated for each category.
    - If we run a Chi-Squared Test on Birds and Mammal, the level of significance is 0.688, which is higher than 0.05. This means that the difference is not significant.
    - If we run a Chi-Squared Test on Reptiles and Mammal, the level of significance is 0.038, which is lower than 0.05. This means that the difference is significant.
- The conclusion is that certain types of species are more likely to be endangered than others.

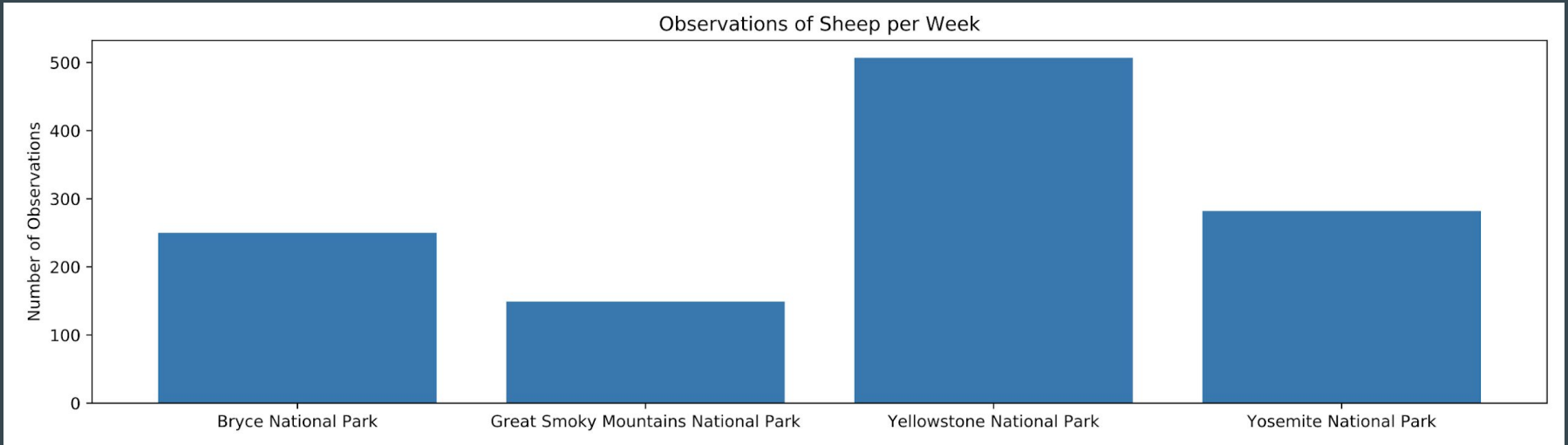
Recommendations regarding Endangered Species

- The conclusion from the hypothesis testing is that certain types of species are more likely to be endangered than others.
- The recommendation is to target species with a higher percentage being protected for conservation, for example
  - Mammals with 17.05% of its species being protected
  - Birds with 15.37% of its species being protected
- With their already high percentage being protected, the two species are likely to be in a more endangered place than other species, so it is recommended that Mammals and Birds should be conserved with priority.

Foot and Mouth Disease Study, Sample Determination

- Given a dataset of observations of different species in National Parks, we picked out sheep observations and plotted them, as seen on the graph on the next slide.
- Given a baseline of 15% occurrence of foot and mouth disease in sheep at Bryce National Park, if the scientists wanted to be sure that a >5% drop in observed cases of foot and mouth disease in the sheep at Yellowstone was significant they would have to observe at least **510** sheep.
- Then, using the observation data analyzed, we found that this would take approximately one week of observing in Yellowstone to see that many sheep, or approximately two weeks in Bryce to see that many sheep.

Graph on Sheep Observations



Thank You