# BIODIVERSITY FOR THE NATIONAL PARKS

CODECADEMY INTRODUCTION TO DATA ANALYSIS

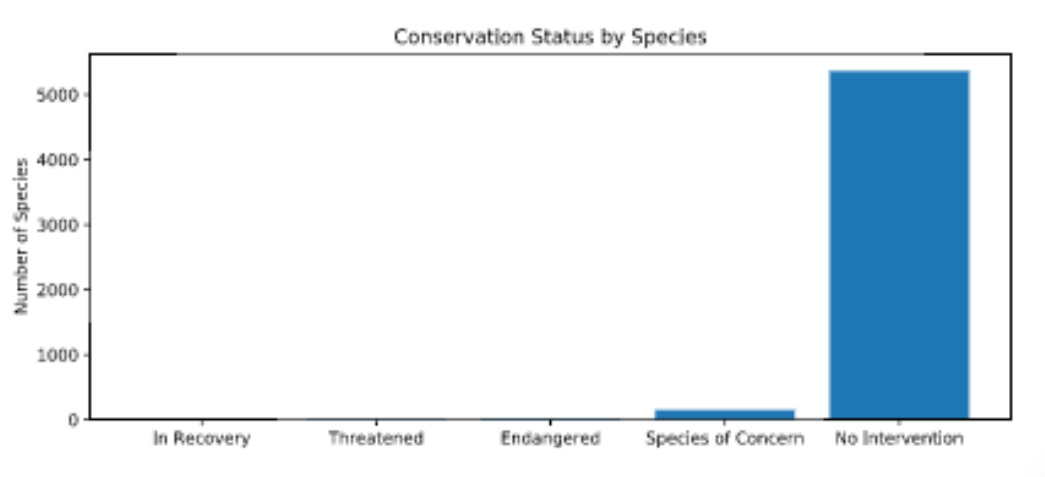
JAMES PRINCE

# SPECIES_INFO.CSV OBSERVATIONS

- There were four columns in the original species_info.csv file: category, scientific_name, common_names and conservation_status
- There were seven unique categories: Mammal, Bird, Reptile, Amphibian, Fish, Vascular Plant and Nonvascular Plant
- After some data cleaning, there were 5 unique conservation statuses: Endangered, In Recovery, No Intervention, Species of Concern and Threatened

# SPECIES_INFO.CSV OBSERVATIONS

Below are a chart and graph showing the number of species by conservation status




| | conservation_status | scientific_name |
|---|---|---|
| 1 | In Recovery | 4 |
| 4 | Threatened | 10 |
| 0 | Endangered | 15 |
| 3 | Species of Concern | 151 |
| 2 | No Intervention | 5363 |

# SIGNIFICANCE CALCULATIONS FOR ENDANGERED STATUS BETWEEN DIFFERENT CATEGORIES OF SPECIES

The following chart shows the percentage of each category of species that is protected

| category | not_protected | protected | percent_protected |
|---|---|---|---|
| Amphibian | 73 | 7 | 8.8% |
| Bird | 442 | 79 | 15.2% |
| Fish | 116 | 11 | 8.7% |
| Mammal | 176 | 38 | 17.8% |
| Nonvascular Plant | 328 | 5 | 1.5% |
| Reptile | 74 | 5 | 6.3% |
| Vascular Plant | 4424 | 46 | 1.0% |

There were two Chi-Squared significance tests that were run:

- The first test showed that the difference in the percent protected between mammals and birds is not statistically significant. The p-value of this test was ~0.688
- The second test showed that the difference in the percent protected between reptiles and mammals is statistically significant. The p-value of this test was ~0.038

# SIGNIFICANCE CALCULATIONS FOR ENDANGERED STATUS BETWEEN DIFFERENT CATEGORIES OF SPECIES

Based on our significance calculations, we can tell conservationists that a species belonging to the mammal category is more likely to be endangered than one belonging to the reptile category. They should probably focus their efforts on mammals over reptiles if they are faced with that choice.

| category | not_protected | protected | percent_protected |
|---|---|---|---|
| Amphibian | 73 | 7 | 8.8% |
| Bird | 442 | 79 | 15.2% |
| Fish | 116 | 11 | 8.7% |
| Mammal | 176 | 38 | 17.8% |
| Nonvascular Plant | 328 | 5 | 1.5% |
| Reptile | 74 | 5 | 6.3% |
| Vascular Plant | 4424 | 46 | 1.0% |

# SAMPLE SIZE DETERMINATION FOR THE FOOT AND MOUTH DISEASE STUDY

- Using the sample size calculator, it was determined that given 15% of the sheep at Bryce National Park had Foot and Mouth Disease and Park Rangers at Yellowstone National Park wanted to reduce that by 33.3% with 90% confidence, they needed to observe 510 sheep to be sure if the efforts were working.
- Given that there were 507 sheep observed at the park in the last week (graphed on the next slide), it will take about a week for the park to observe enough sheep to get the results of their study.

# OBSERVATIONS OF SHEEP PER WEEK BY PARK