

# Biodiversity in National Parks: An Analysis and Review

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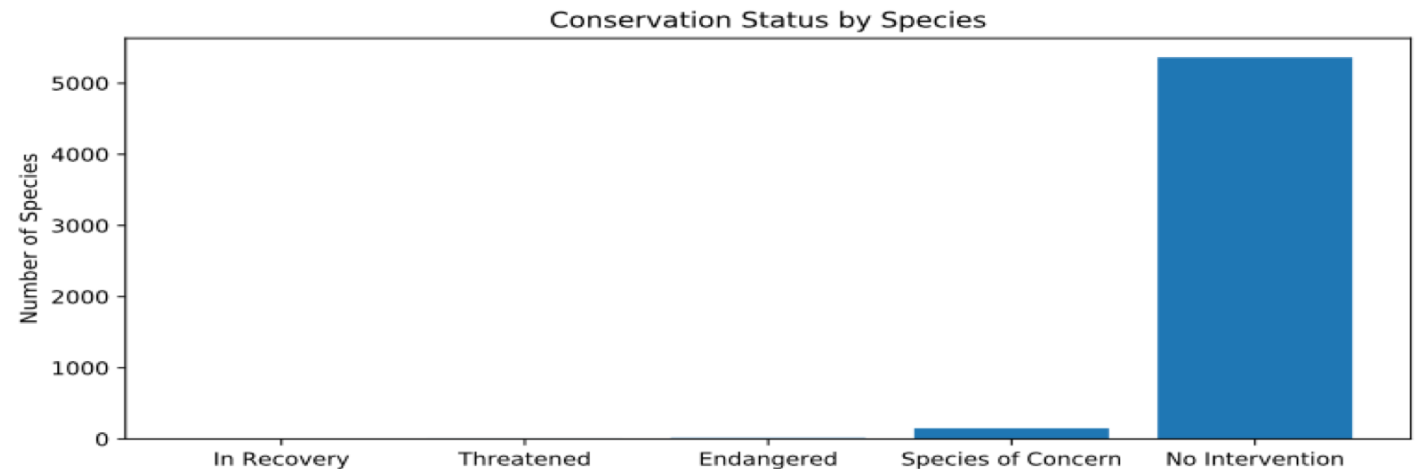
Final Project: Codecademy

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## Species Data Analysis:

- Looking at the CSV file there are 4 different categories of Species Conservation Status:
- 0. Endangered 15**
- 1. In Recovery 4**
- 2. Species of Concern 151**
- 3. Threatened 10**
- \*No Intervention 5363\***



## Are Certain Species More Likely to be Endangered?

- When we ran our chi-squared test, it showed a p-value of  $\sim 0.688$ , so we can conclude that the difference between the percentages of protected birds and mammals is not significant and is a result of chance.
- Yes, Reptiles and Vascular Plants are more likely to be endangered according to the Chi-Square Statistical Analysis that will be shown on the next slide.

## Chi-Square: A Review on Endangered Species

- `contingency = [[30, 146], [75, 413]]`  
`pval = chi2_contingency(contingency)[1]`  
`print(pval)`  
`contingency_reptile_mammal = [[30, 146], [5, 73]]`  
`pval_reptile_mammal = chi2_contingency(contingency_reptile_mammal)[1]`  
`print(pval_reptile_mammal)`
- **RESULTS:**
- 0.687594809666 (not significant)
- **0.0383555902297 (Reptiles produce a statistical significance <0.05)**

## Future Recommendations



- It is recommended that scientist pay closer to attention to reptile species and vascular plant species. These are the species which have the least protection. It is important for biodiversity to ensure all animal, plant, and fungal life is protected.

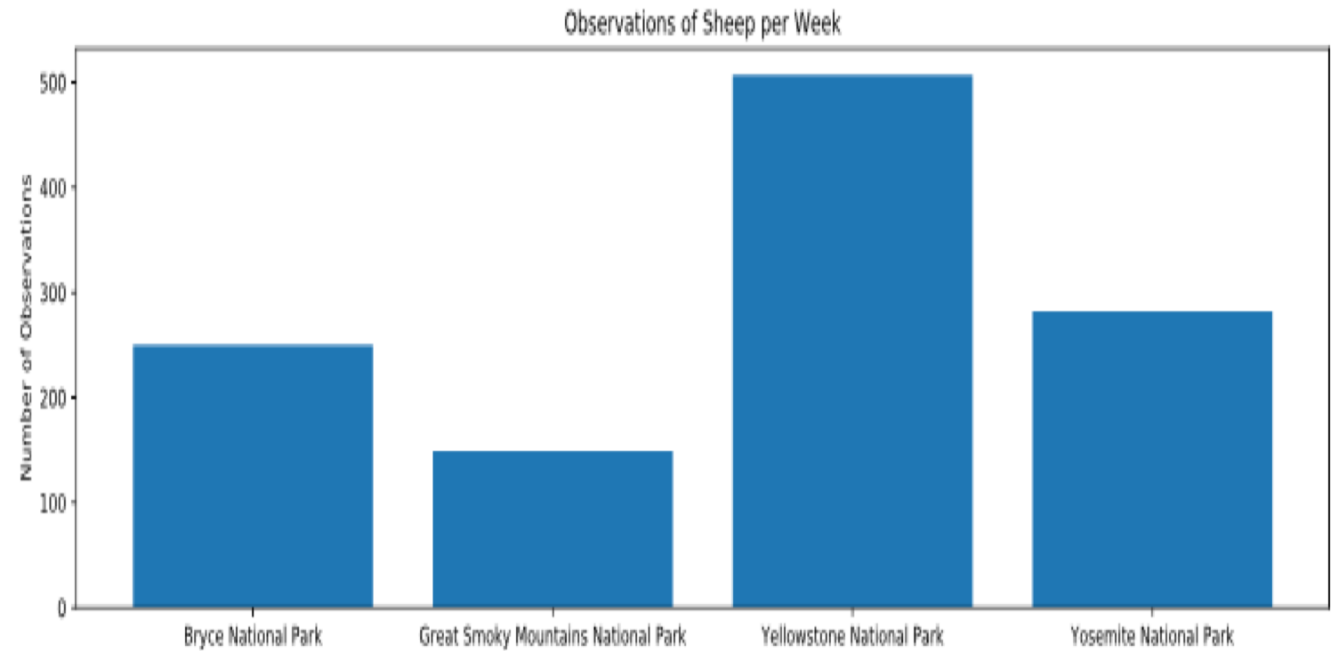


## Part II: Looking at Sheep Observation

- Using the CSV data file sent from the National Parks Service. We can see merging the Sheep and Observation Data Frames that we get the following numbers:

| park_name | observations                        |     |
|-----------|-------------------------------------|-----|
| 0         | Bryce National Park                 | 250 |
| 1         | Great Smoky Mountains National Park | 149 |
| 2         | Yellowstone National Park           | 507 |
| 3         | Yosemite National Park              |     |

# Sheep Observation by National Park:



# Foot and Mouth Disease Study

- According to the World Organization for Animal Health (OIE) **Foot and Mouth Disease** (FMD) is a severe, highly contagious viral **disease** of livestock with significant economic impact. The **disease** affects cattle and swine as well as **sheep**, goats, and other cloven-hoofed ruminants.
- **CALCULATIONS:**
- 15 (baseline)
- 33.3333333333 (minimum detectable effect)
- 870 (sample size per variant)
- 1.71597633136 (how many weekends scientists need to spend at Yellowstone)
- 3.48 (how many weekends scientists need to spend at Bryce)
- Given a baseline of 15% occurrence of foot and mouth disease in sheep at Bryce National Park, the data shows that if the scientists wanted to be sure that a >5% drop in observed cases of FMD in the sheep at Yellowstone was significant they would have to observe at least 510 sheep.



## Conclusion & Thoughts:

- Understanding biodiversity is essential for the well being of humans all living beings on this planet. We have an obligation to utilize data analytics to better understand trends and patterns in both the man-made and natural world. With the help of programs such as Codecademy, future generations of data analyst can help mankind better understand its role as stewards to this planet.

