

Biodiversity Project

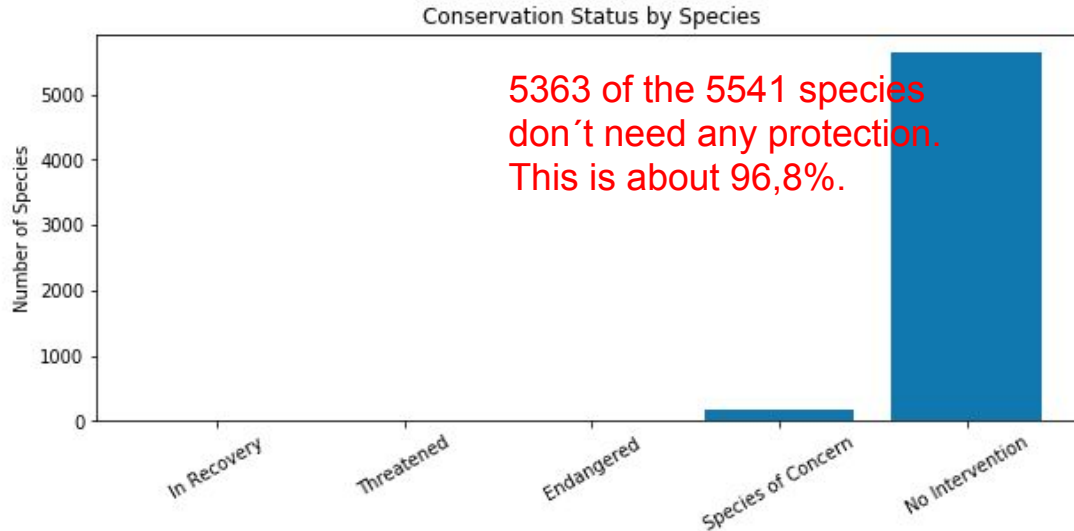
For National Parks

The given Information about Species

There are given some Information about the 5541 different species:

- 1) Category of the species
(Mammal, Bird, Reptile, Amphibian, Fish, Vascular Plant, Nonvascular Plant)
- 2) The scientific name
- 3) The common name
- 4) The conservation Status

The conservation status



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

Description:

- **No Intervention:** no Protection
- **Species of Concern:** declining or appear to be in need of conservation
- **Threatened:** vulnerable to endangerment in the near future
- **Endangered:** seriously at risk of extinction
- **In Recovery:** formerly Endangered, but currently neither in danger of extinction throughout all or a significant portion of its range

Protection Status grouped by species category

	category	not_protected	protected	percent_protected
0	Amphibian	72	7	0.088608
1	Bird	413	75	0.153689
2	Fish	115	11	0.087302
3	Mammal	146	30	0.170455
4	Nonvascular Plant	328	5	0.015015
5	Reptile	73	5	0.064103
6	Vascular Plant	4216	46	0.010793

- With 17% the Mammals are the most endangered species
- Followed by the Birds with 15,4%
- The Nonvascular and the Vascular plants need the lowest protection with about 1%

Description:

- **Non_protected** = 'No Intervention'
- **Protected** = 'Species of Concern', 'Endangered', 'Threatened', 'In Recovery'

Is the Mammal more likely to be endangered than species in Bird or the species in reptile?

To proof the statement we have done a significance test, a Chi squared test:

1) Mammal - Bird:

$$P\text{-Value} = 0.6875 > 0.05$$

So we have to accept the Null hypothesis. The difference isn't significant.

→ NO

2) Mammal - Reptile:

$$P\text{-Value} = 0.0384 < 0.05$$

So we have to reject the Null hypothesis. There is a significant difference!

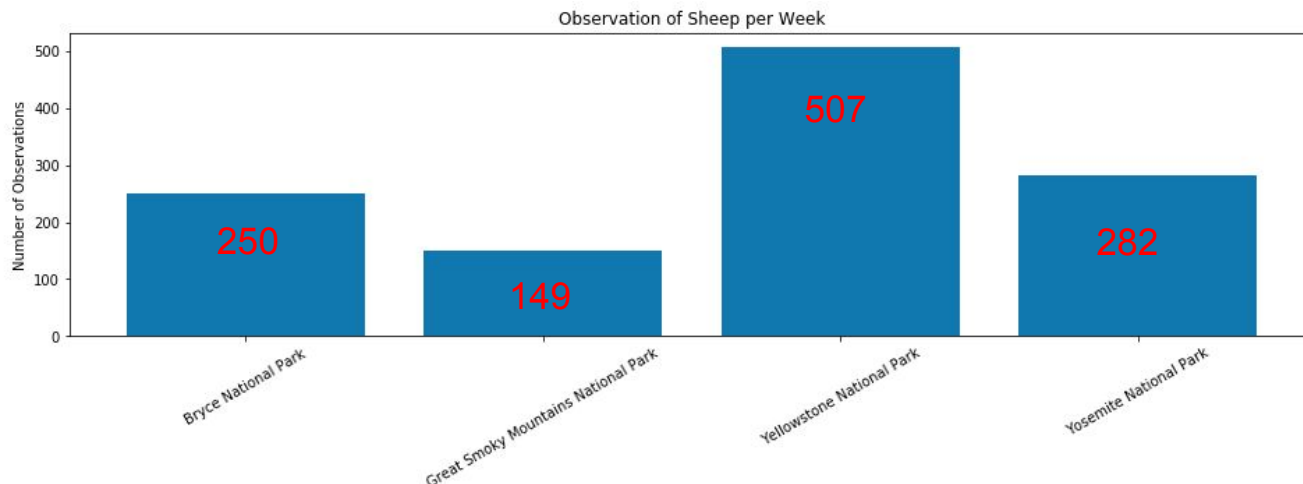
→ YES

Foot and mouth disease study - Sheep

Conservationists have been recording sightings of different species at several national parks for the past 7 days. The Conservationists observed 3 different Sheep species:

category	scientific_name	common_names	conservation_status
Mammal	Ovis aries	Domestic Sheep, Mouflon, Red Sheep, Sheep (Feral)	No Intervention
Mammal	Ovis canadensis	Bighorn Sheep, Bighorn Sheep	Species of Concern
Mammal	Ovis canadensis sierrae	Sierra Nevada Bighorn Sheep	Endangered

For the study about the Foot and Mouth disease some scientist study the number of sheep:



Program to reduce foot and mouth disease

15% of sheep in Bryce National Park have disease. In Yellowstone National Park have been running a program to reduce the rate of disease.

→ Is the program working? The scientist wanna detect reduction of at least 5% point. How many weeks we would need to observe sheep in order to observe enough sheep?

We use the sample size calculator 'Optimizely':

Minimum detectable effect = $100 \cdot 0.05 / 0.15 = 33.33$

Baseline = 15

Sample size per variation = 520

$520/507 = 1.03$ weeks are needed to observe enough sheep in Yellowstone National Park

$520/250 = 2.08$ weeks are needed to observe enough sheep in Bryce National Park