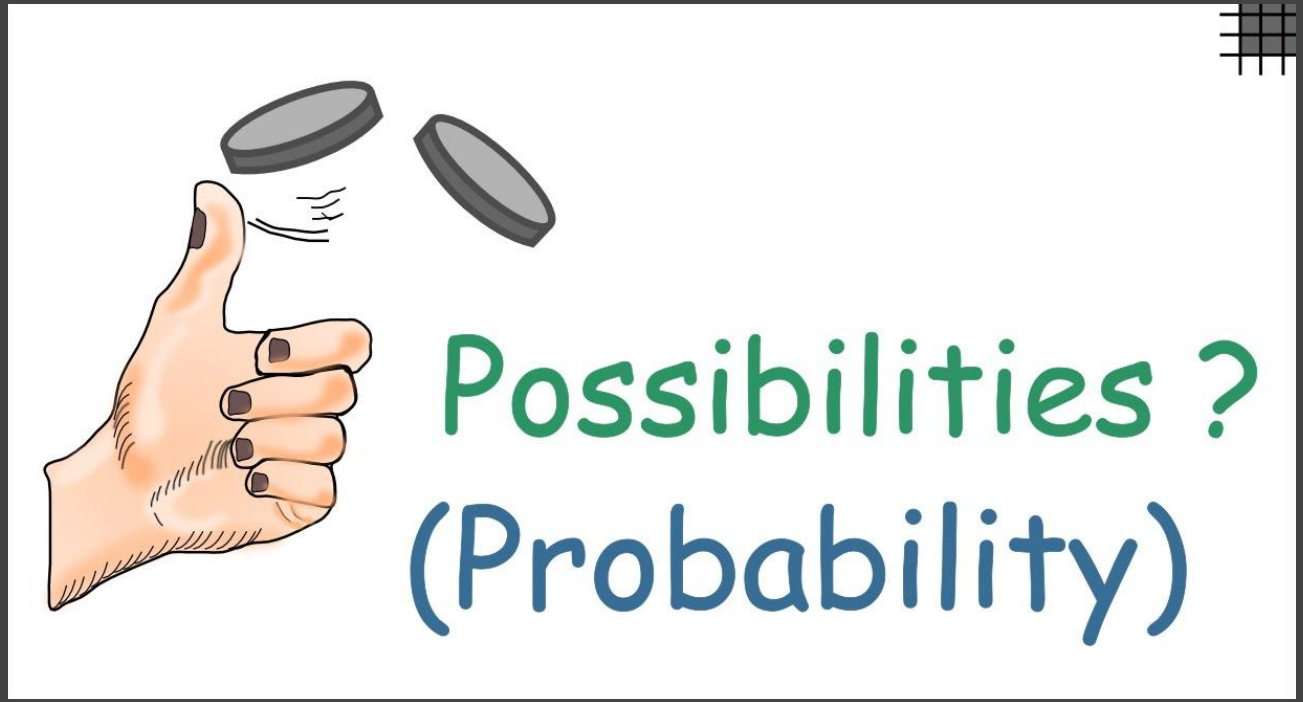
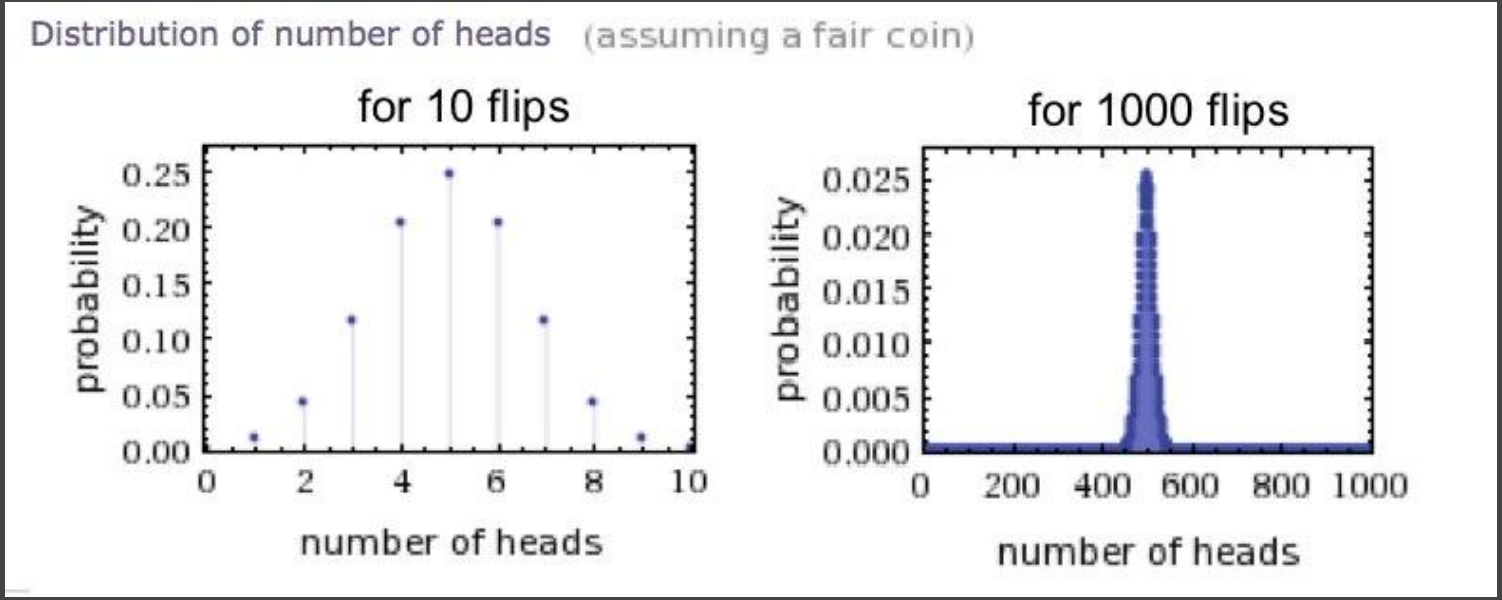
Introduction to Probabilities & Statistical Inference.

A simple case of probability



```
import sys
import random

# main params
param_1 = int(sys.argv[1])

# Return the number of heads in 10 shots
def coin_trial():
    heads = 0
    for i in range(10):
        if random.random() <= 0.5:
            heads +=1
    return heads

# Simulates the shots and then average them
def simulate():
   trials = []
   for i in range(param_1):
       trials.append(coin_trial())
   return(sum(trials) / param_1)

print(simulate())
```

A simple case of probability

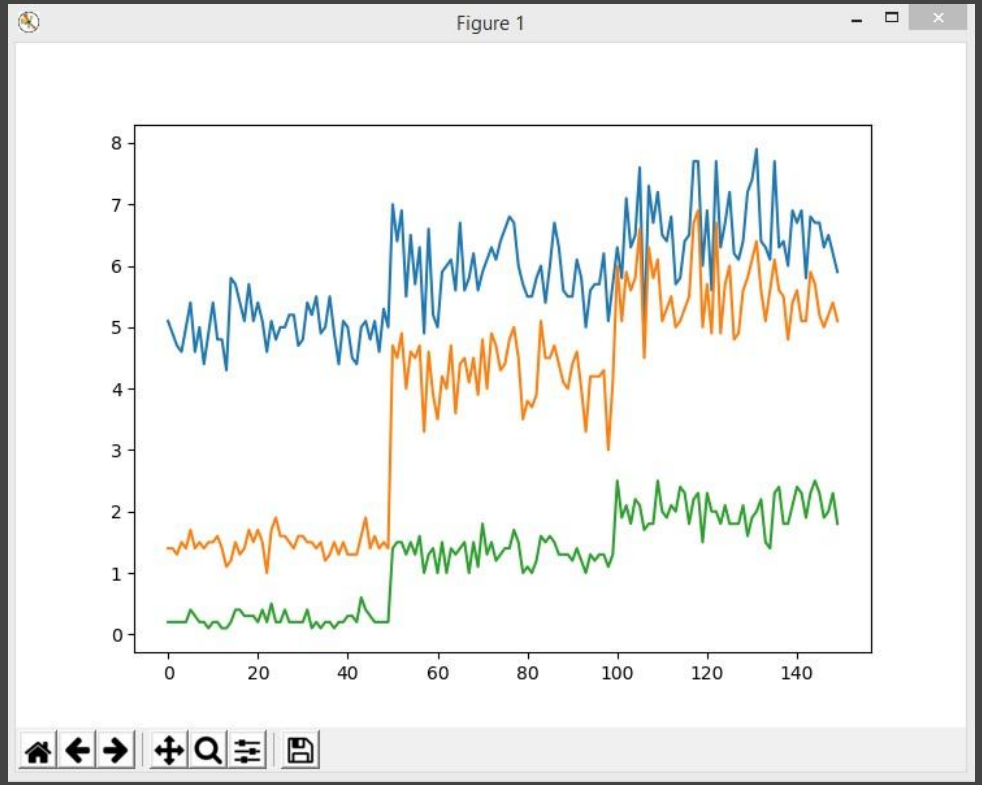


Another case of Probabilities

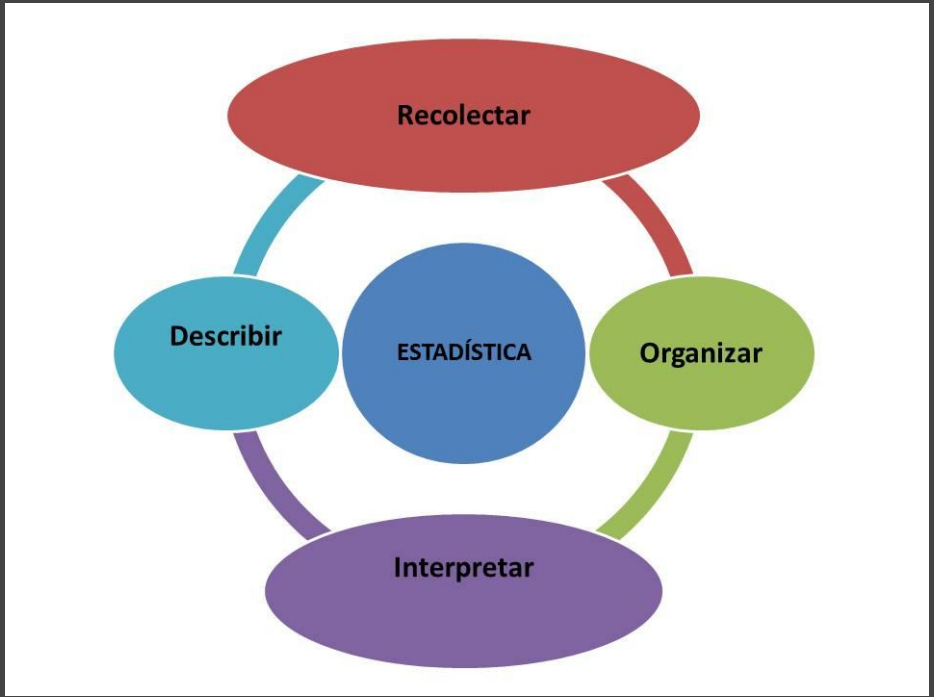
$$P(A|B) = \frac{P(A \cap B)}{P(B)}$$

```
# Use of Conditional Probability for Data Science
from sklearn import datasets
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np

data = datasets.load_iris()

df = pd.DataFrame(data.data, columns = data.feature_names)

x = np.arange(0, 150)                    # total rows for data 150

plt.plot(x, df['sepal length (cm)'])
plt.plot(x, df['petal length (cm)'])
plt.plot(x, df['petal width (cm)'])
plt.show()
```

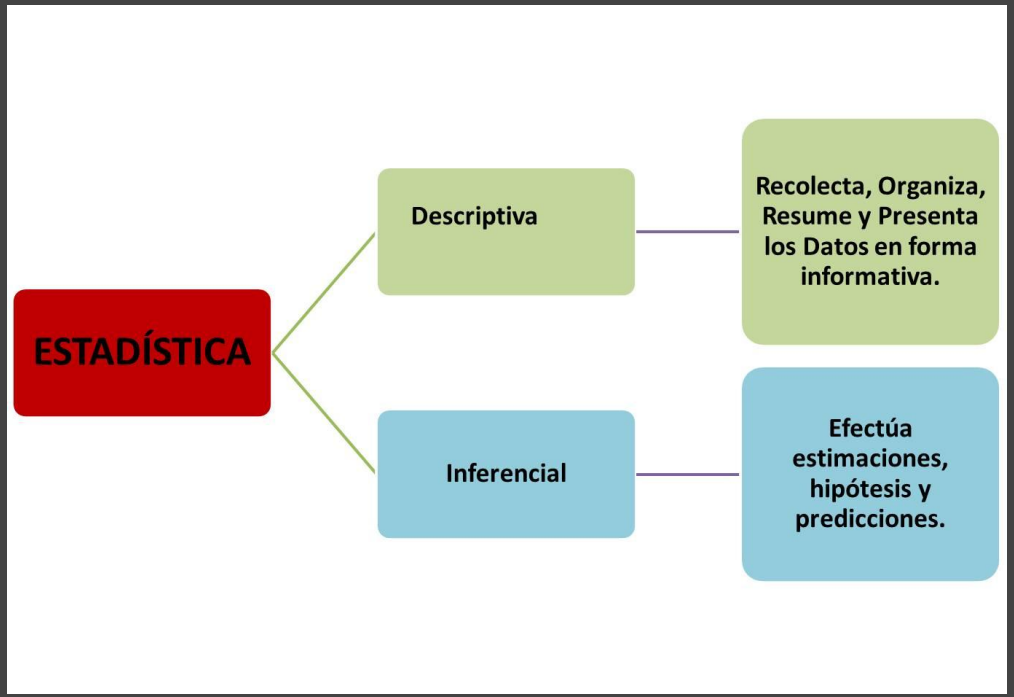
Another case of Probabilities



Statistics


Recolectar
Describir
ESTADÍSTICA
Organizar
Interpretar

Statistics


ESTADÍSTICA
Descriptiva
Recolecta, Organiza, Resume y Presenta los Datos en forma informativa.
Inferencial
Efectúa estimaciones, hipótesis y predicciones.

Some Application