Baye’s Statistics(Baye’s Theorem):

Bayesian statistics is an approach to data analysis and parameter estimation based on Baye’s Theorem.

Baye’s Theorem:

1. Independent events

Example: Rolling a dice, Tossing a coin

One event does not impact the probability of another event

2. Dependent events

Example: Bag of 2 red marbles and 3 yellow marbles. As marbles are drawn out without being replaced, the probability of drawing a successive marble is impacted.

Pr(Red and Yelow) = Pr(Red) \* Pr(Yellow/Red)

Note: Pr(Yellow/Red) is read as the probability of yellow given that red has already occurred. It is called conditional probability.

Generic Format:

Pr(A and B) = Pr(B and A)

Pr(A) \* Pr(B/A) = Pr(B) \* Pr(A/B)

Pr(B/A) = <- Baye’s Theorem

It can also be written as:

Pr(A/B) =

Where,

A,B are events

Pr(A/B) is the probability of event A occurring given that event B has occurred

Pr(B/A) is the probability of event B occurring given that event A has occurred

Pr(A) is the independent probability of event A occurring

Pr(B) is the independent probability of event B occurring

Application:  
Let’s suppose we have a dataset where we have feature such as size of the house(x1), no. of rooms in the house(x2), location(x3) and price(y).

x1, x2 and x3 are independent or input feature

y is the dependent or output feature

Using machine learning we can predict the price based on the three parameters.

Using Baye’s Theorem:

Pr(Y/x1,x2,x3) =

This equation is a part of the naïve baye’s theorem which is through baye’s theorem