Sampling Distribution:-

* sampling distribution is a probability distribution of a statistic say mean, meadian, mode ~~of samples~~ obtained from large no. of samples drawn from a specific population.

* A Sampling distribution is a statistic that is arrived out through repeated sampling from a large population.

* It describes a range of possible outcomes that of a statistic, such as the mean or mode of some variable, as it tries exists a population.

* Majority of data analyzed by researchers are actually drawn from samples, not populations.

* Sampling distribution is which we seen in central limit theorem.

* we can also perform standard deviation and variance on samples which measure variability of sampling distribution.

* Std dev of a sampling distribution is called the standard error.

* A population or ~~on~~ sample

~~or~~ may have a normal distribution.

* But all sampling distributions will not be a normal ~~no~~ distribution.

* Sampling distribution of sample mean will ~~be~~ follow normal distribution according to Central limit theorem (if $n \geq 30$)

* ~~Sho~~ But sampling dist of sample mode, median may not follow normal dist

Sampling distribution of sample mean :-

* Taking sample from a population could produce a statistic that isn't a good estimator of the corresponding population parameter.

* So we will take more samples from the population.

* If the population is finite then we will go to take samples with replacement.

* Taking this samples will produce a probability distribution.

* Lets understand with one example

* In a class there are 30 students, I am calculating mean of ~~height~~ height of the students. Assume it as 162 cm.

* But I want to see how the heights of the students were ~~calculated~~. distributed.

* Heights of 30 students can be distributed in any way for example it may be distributed exponentially, uniformally or whatever

* I can perfectly analyse the proportion of distribution if my data is normally distributed.

* So i will ~~not~~ take sampling with replacement with sample size = 2, So i will get 30 c 3 combinations that is 4060 combinations

* So it will calculate sample means for 4060 samples and i will plot it, it will approx form normal dist.

* So now i can perfectly analyse.

* Sampling distribution mainly performed in large Population, So in case of more population we calculate sample means to analyse, which the central limit theorem depicts.