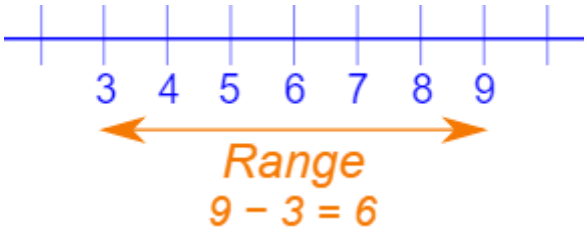
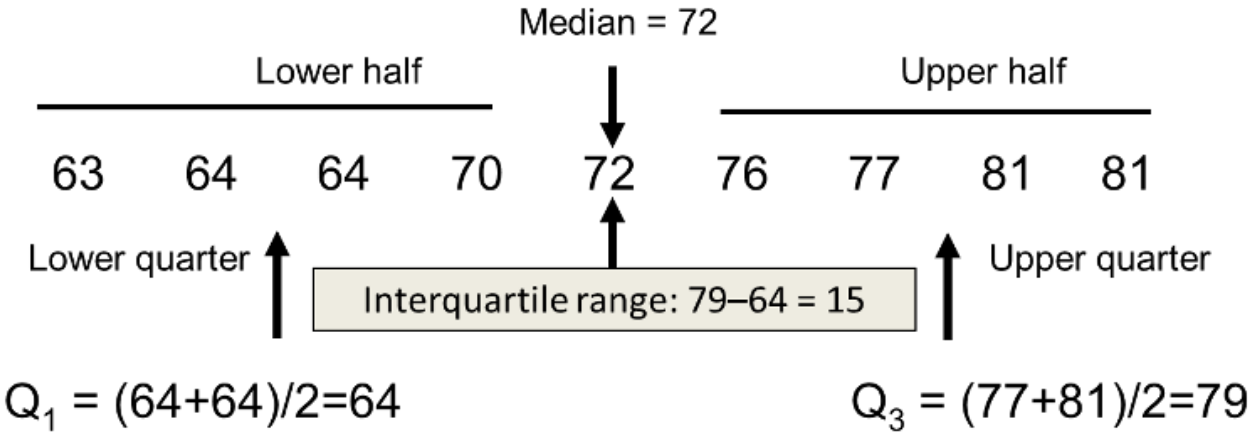
30. How to calculate range and interquartile range?

Ans.

Range is the difference between minimum value from maximum value.



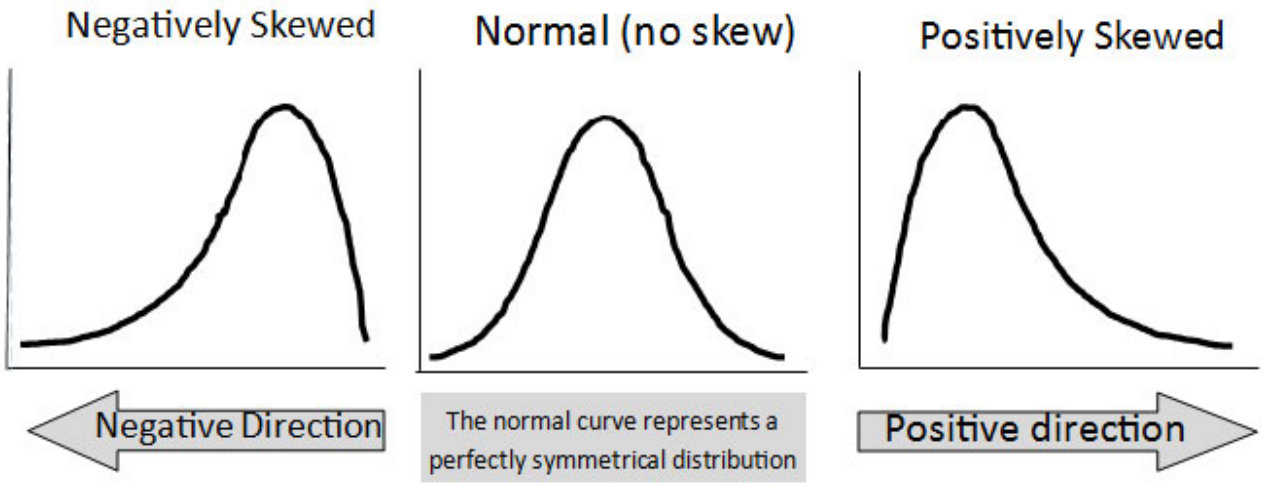
Interquartile range is the difference between Q3(75 percentile) and Q1(25 percentile).



31. What is skewness?

Ans.

Skewness is a measure which defines how the distribution is differing from the normal distribution.



32. What are the different measures of Skewness?

Ans.

1. Right Skew
2. Left Skew
3. Zero Skew

We measure skewness by using

1. Pearson mode skewness -->> is used when a strong mode is exhibited by the sample data.

$$\text{Skewness} = \frac{\overline{X} - M_o}{s}$$

- X = Mean value
- Mo = Mode value
- s = Standard deviation of the sample data

2. Pearson median skewness -->> is used if the data includes multiple modes or a weak mode

$$\text{Skewness} = \frac{3\overline{X} - M_d}{s}$$

- Md = Median value

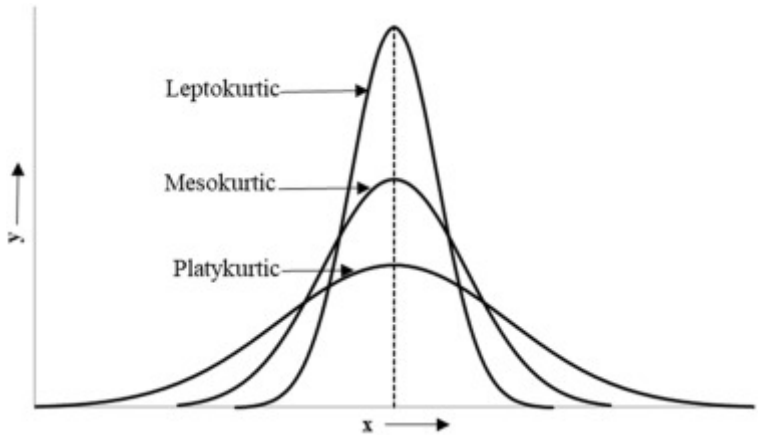
33. What is kurtosis?

Ans.

Kurtosis is a measure of tailedness(skewness) of a probability distribution. Measures of the distribution is peaked or flat.

There are 3 types of kurtosis 1) Leptokurtic 2) Mesokurtic 3) platykurtic

- Distributions with positive excess kurtosis are said to be leptokurtic.
- Mesokurtic having the same kurtosis as the normal distribution.
- Distributions with negative excess kurtosis are said to be platykurtic. It means the distribution produces fewer or less extreme outliers compared to normal distribution. (eg- Uniform distribution)

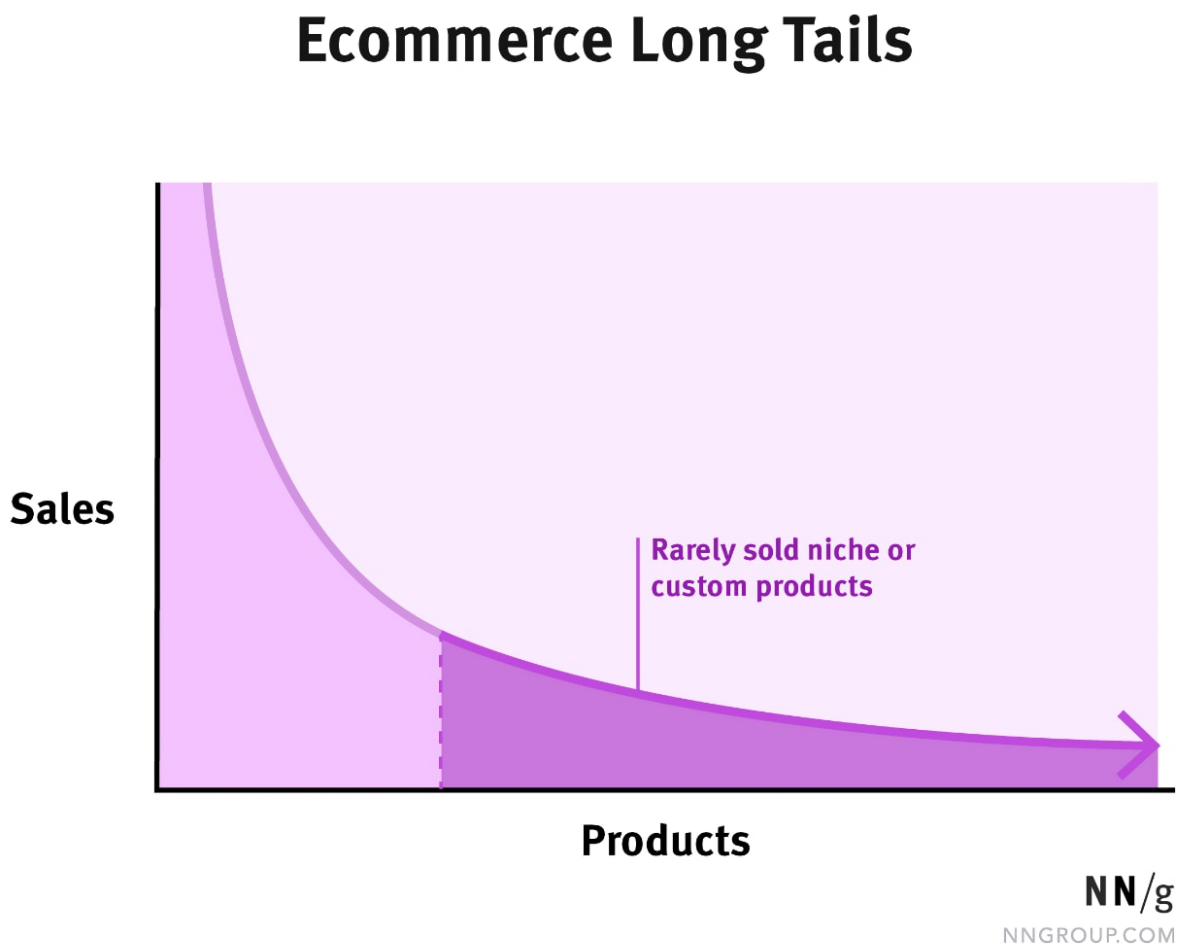


34. Where are long-tailed distributions used?

Ans.

Long-tailed distribution is mostly used to display frequency distribution of product sell in an e-commerce site.

This is a business strategy that define how much profits company are making by selling low volumes of hard-to-find items to many customers, instead of only selling large volumes of a reduced number of popular items.



35. What is the central limit theorem?

Ans.

Central Limit Theorem states that whether you have population data (with mean μ and standard deviation σ) is Gaussian/Normally Distributed or Log normally distributed or Left skewed distributed, if we will take a sample data of size n >= 30 for m number of times then the plotted Histogram will be normally distributed.

36. Can you give an example to denote the working of the central limit theorem?

Ans.

The example for working of Central Limit Theorem is: Exit poll in a general election. Where the most supported candidate is seen as winning candidate with probability.

37. What general conditions must be satisfied for the central limit theorem to hold?

Ans.

- The data must be sampled randomly.
- The sample values must be independent of each other
- The sample size must be sufficiently large, generally it should be greater or equal than 30.

38. What is the meaning of selection bias?

Ans.

Selection bias occurs when the selection of population for study leads to a result that differs from target population.

Eg: Vaccine test on young healthy persona, instead of random elderly.

39. What are the types of selection bias in statistics?

Ans.

There are 4 types of selection bias

i. Sampling Bias

- It is the type of selection bias where we select the samples non-randomly for a specific research, which leads false representation of actual population.

ii. Survivorship Bias

- Survivorship Bias means when the researcher applies some pre-selection contest for population and chooses the one who will pass the contest successfully even if they don’t have knowledge on study.

iii. Exclusion Bias

- This happens when researcher intentionally removes some sub-group of people from a particular study.

iv. Volunteer or self selection Bias

- It is a systematic error due to difference between those who choose to participate in the study.

40. What is the probability of throwing two fair dice when the sum is 8?

Ans.

For each dice possible outcome = 6

For two dices total outcomes = 6x6 = 36

To get 8 from two dices possible outcomes= 5 (2+6, 3+5, 4+4, 5+3, 6+2)

Probability = 5/36 = 13.89%

In [ ]:

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1
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Thanks

github: https://github.com/saisubhasish (https://github.com/saisubhasish)

In [ ]:

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