5. Maths - Statistics – PART – 5

Contents

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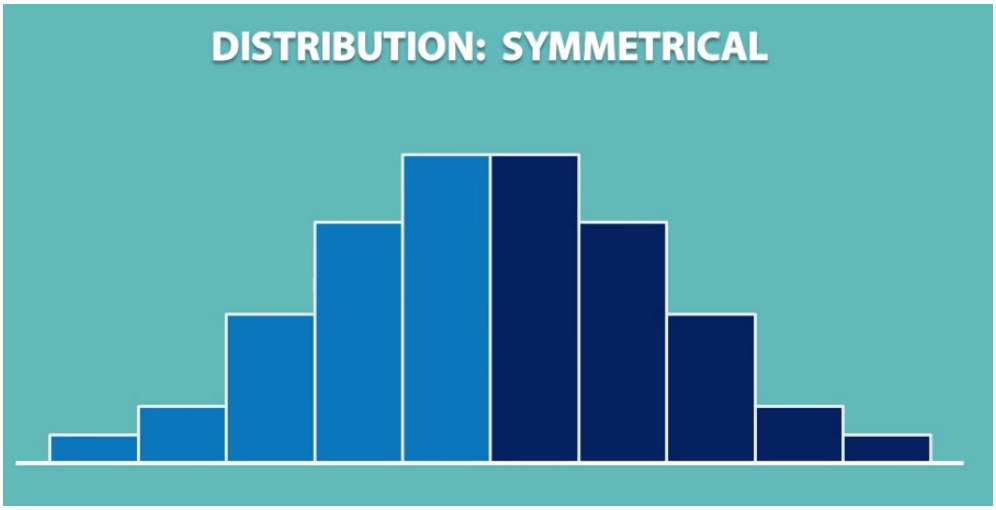
1. Symmetry and Skewness

- ✓ This concept explains about shape of a distribution

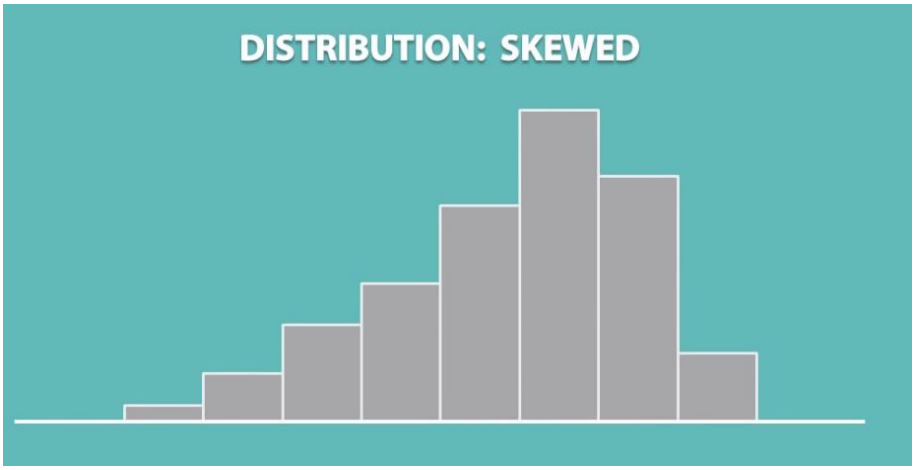
2. Symmetric distribution

- ✓ A distribution is called as symmetric, if it can be divided into two equal sizes of the same shape.
- ✓ Below histogram explains about symmetric distribution



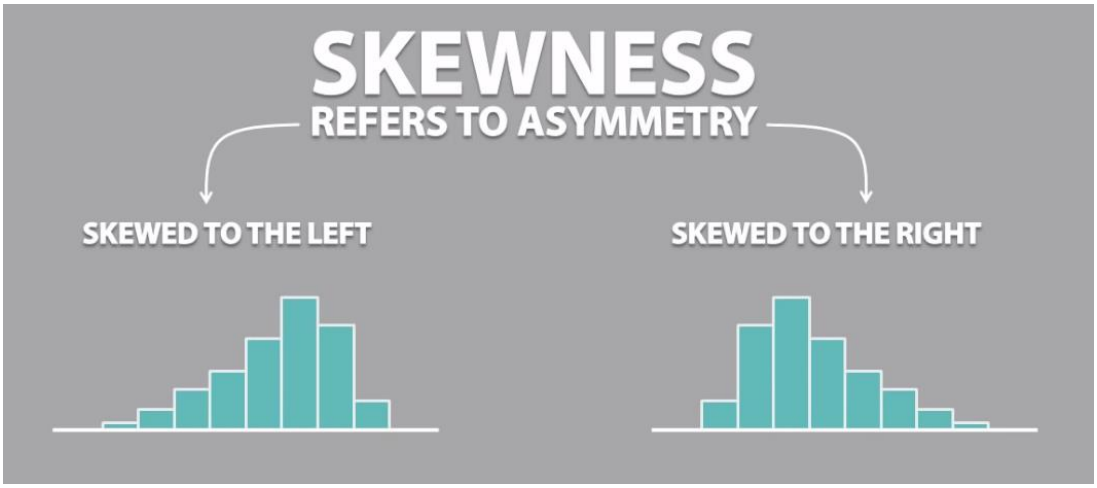
3. Distribution skewed or asymmetric distribution

- ✓ A distribution is called as skewed, if it cannot be divided into equal sizes.
- ✓ It's also called as asymmetric distribution
- ✓ Skewness refers to the asymmetry



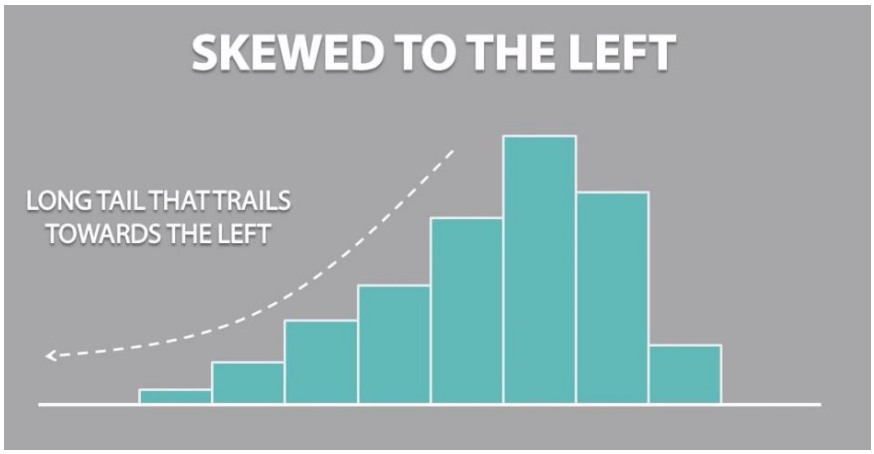
4. Types of Skewness

- ✓ We understand the skewness based on direction which the data points clustered
- ✓ There are two types
  - Skewness to the LEFT
  - Skewness to the RIGHT



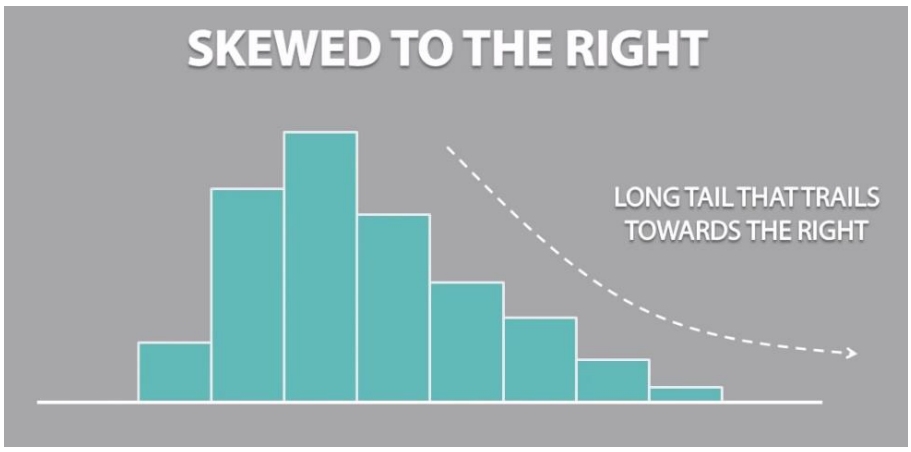
5. Skewness to the LEFT

- ✓ If the data is clustered at left hand side then it is called as skewness to the LEFT



6. Skewness to the RIGHT

- ✓ If the data is clustered at right hand side then it is called as skewness to the RIGHT

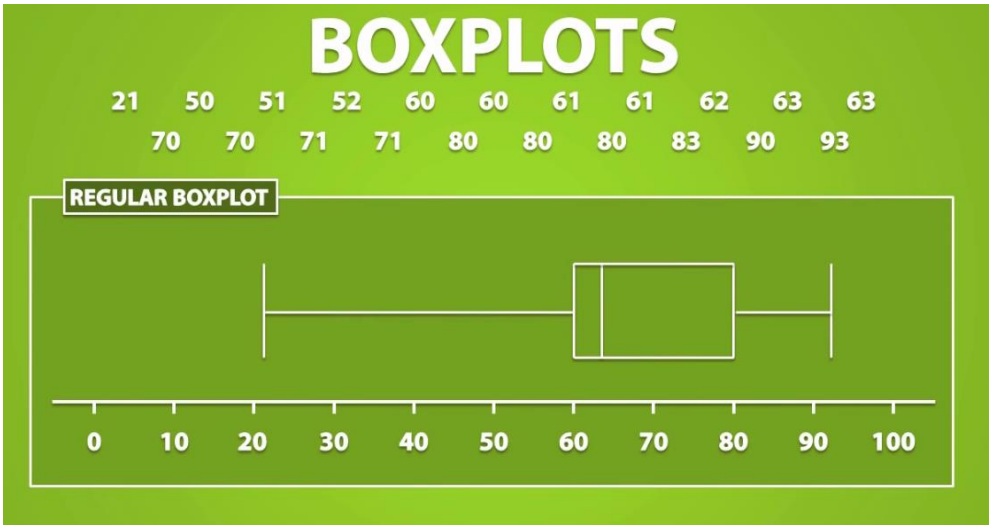


7. Boxplot

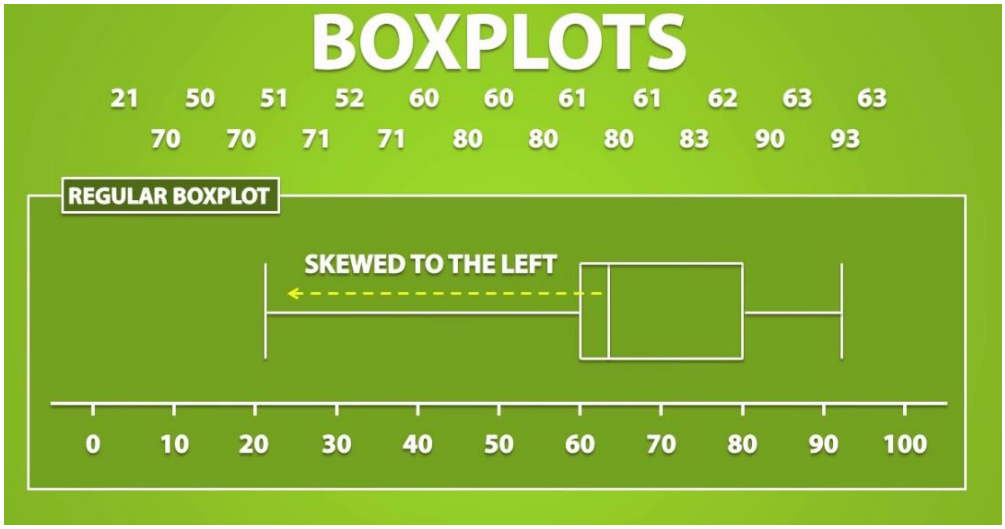
- ✓ We can determine skewness into the box plot
- ✓ The presences of outliers may effect to determine skewness

8. Boxplot skewness

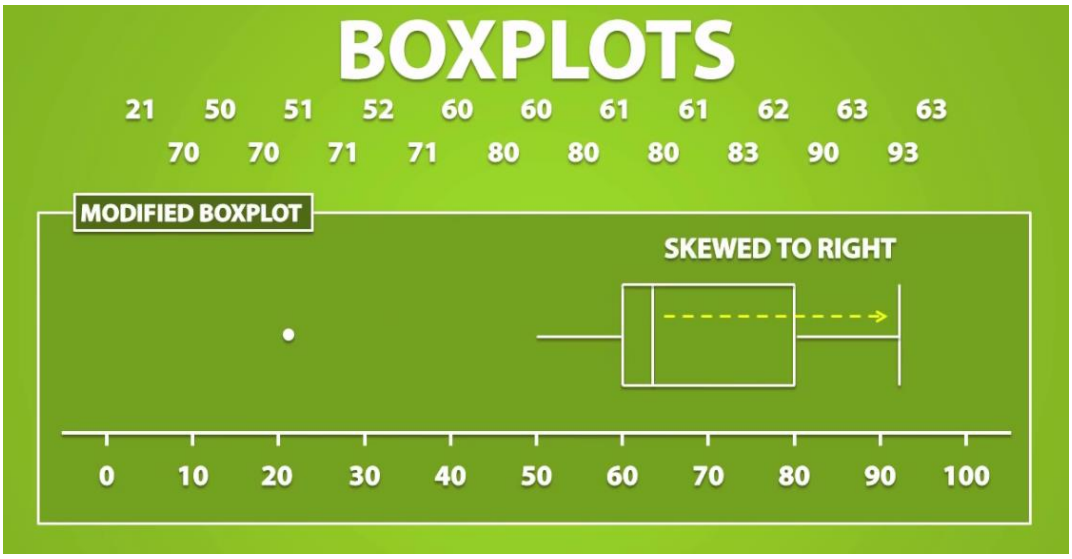
- ✓ When we construct the boxplot for the below data then we can draw below one



- ✓ According the boxplot we may think that this distribution is skewed to the left.



- ✓ But when we converted into modified box plot(because of outlier) then its directing to right side

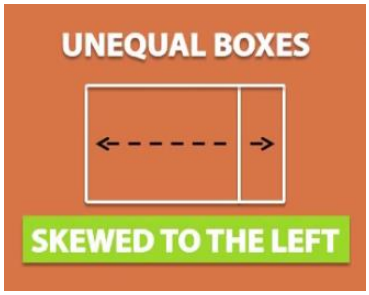


9. A strategy to find skewness in boxplot

- ✓ If we have unequal boxes, the side of the box is larger than that determines the skew

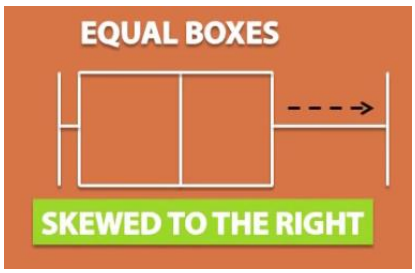
9.1. Case 1:

- ✓ If left side of the box larger than the right side, so its skewed to the left



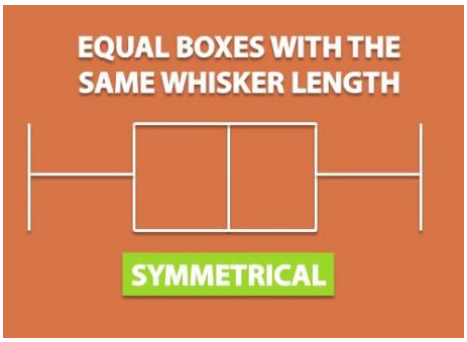
9.2. Case 2:

- ✓ If the boxes are equal in size then we need to consider the whisker size to determine this skew
- ✓ The larger whisker determines the skew
- ✓ In below case it's in right



9.3. Case 3:

- ✓ If the boxes are equal with same whisker length then the distribution is said to be symmetrical



A summary