Stat 231 - Statistics **Spring 2017**

Lecture 5: May 10th, 2017

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5.1 Measures of Symmetry

Objective : To come up with a # that would tell us whether data is symmetric

5.1.1 Skewness

A simple measure of symmetry

$$Skewness = Mean - Median$$

- If result is > 0 , then the data set is right skewed
- If result is < 0, then the data set is left skewed
- If result is $= 0$, then the data set is symmetric

$$Skewness = \frac{\frac{1}{n}\sum(y_i - \bar{y})^3}{\left(\frac{1}{n}\sum(y_i - \bar{y})^2\right)^{3/2}}$$

5.1.2 Why?

We care about symmetry because : Assumption of symmetry is need for the Gaussian model

5.2 Measures of Kurtosis

$$Kurtosis = \frac{\frac{1}{n}\sum(y_i - \bar{y})^4}{\left(\frac{1}{n}\sum(y_i - \bar{y})^2\right)^2}$$

Kurtosis compares how frequent extreme observations are when compared to the Gaussian distribution . Kurtosis for any Gaussian distribution is 3.