Stat 231 - Statistics **Spring 2017**

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4.1 Measures of Dispersion Continued

4.1.1 Inter-Quartile Range (IQR)

Quartiles : Divide the data set into four parts.

Q_1 = Lower Quartile : The number below which 25 % of the observations lie

Q_3 = Upper Quartile : The number below which 75 % of the observations lie

$IQR = Q_3 - Q_1$

4.1.2 Calculation of IQR

To calculate IQR you must first arrange the elements in ascending order. Then Determine the index positions using the following formula $m = (n+1) \times p$. So,

$Q_1 = y_i,$ where $i = (n+1) * 0.25$

$Q_3 = y_i,$ where $i = (n+1) * 0.75$

Once you have the values, simply plug the values into the IQR formula $IQR = Q_3 - Q_1$

Note : If the value is not an integer the convention is to take the two conflicting indexes and divide them by 2

4.1.3 Mean Absolute Deviation

$$M.A.D. = \frac{| y_1 - \bar{y} | \ + \ldots + \ | y_n - \bar{y} |}{n}$$

Note : This is a less popular measure of variability