

## Percentiles and Quantiles

- 1st step to bind outliers

- What is percentiles?

ଏକ value ଯାହା ଲାଗି ଅନ୍ୟାନ୍ୟ ନିର୍ଦ୍ଦିଷ୍ଟ % observation ଯାହା ଗ୍ରହଣ କରେ

75<sup>th</sup> Percentile → This value is more than 75% of all data

75% of all data is less than this value

→ 80<sup>th</sup> percentile  
 ଏହା ଅର୍ଥ 80% ଡାଟା ଯାହା ଗ୍ରହଣ କରେ  
 80% student ଡାଟା ଯାହା ଗ୍ରହଣ କରେ

{ 10, 15, 20, 25, 30, 35, 40, 45, 50, 55 }  
 9<sup>th</sup> value  
 $n = 45$   
 $N = 10$

$$\begin{aligned} \text{What is percentile rank of 45} &= \frac{\text{number of values below 45}}{N} \times 100 \\ &= \frac{7}{10} \times 100 \\ &= 70 \end{aligned} \quad \left| \quad \begin{aligned} \text{value} &= \frac{\text{Percentile}}{100} \times (n+1) \\ &= \frac{80}{100} \times (10+1) \\ &= \frac{80}{100} \times 11 \quad \text{index} \\ &= 0.8 \times 11 = 8.8 = 9 \end{aligned} \right.$$

45 ଗ୍ରା Percentile rank is 70<sup>th</sup>

50 = 80<sup>th</sup> percentile

Quantiles :- to divide the dataset into 4 equal parts

1st quantile ( $Q_1$ ) → 25<sup>th</sup> percentile  
 2nd Quantile ( $Q_2$ ) → 50<sup>th</sup> percentile  
 3rd Quantile ( $Q_3$ ) → 75<sup>th</sup> percentile

Interquartile range :- measure of variability based on quantiles

$$Q_3 - Q_1 = IQR$$

represents the 50% of the dataset  
 bind variability in skewed dist  
 to deal with dataset with datasets