**The Mode**

Mode is the most repeated value in the data set OR that observation in the data that occur most frequently

Example: The mode of the numbers 2, 5, 8, 9, 9, 9, 10 is 9

**For Grouped data:** $Mode=l\_{b}+\frac{f\_{m}-f\_{1}}{2f\_{m}-f\_{1}-f\_{2}}×h$

$$l\_{b}=lower class boundary of modal class \left(class having the greatest frequency\right)$$

$$f\_{m}=class frequency of the modal class$$

|  |  |  |
| --- | --- | --- |
| **Class limits** | **Class boundaries** | **Frequency (f)** |
| 45-49 | 44.5-49.5 | 1 |
| 50-54 | 49.5-54.5 | 4 |
| 55-59 | 54.5-59.5 | 17=$f\_{1}$ |
| 60-64 | 59.5-64.5 | 28 |
| 65-69 | 64.5-69.5 | 25=$f\_{2}$ |
| 70-74 | 69.5-74.5 | 18 |
| 75-79 | 74.5-79.5 | 13 |
| 80-84 | 79.5-84.5 | 6 |
| 85-89 | 84.5-89.5 | 5 |
| 90-94 | 89.5-94.5 | 2 |
| 95-99 | 94.5-99.5 | 1 |
| **Sum** |  | **120** |

$$Mode=l\_{b}+\frac{f\_{m}-f\_{1}}{2f\_{m}-f\_{1}-f\_{2}}×h$$

$$Mode=59.5+\frac{28-17}{2(28)-17-25}×5=63.85$$

|  |  |
| --- | --- |
| **Type of Variable** | **Best measure of central tendency** |
| Nominal | Mode |
| Ordinal | Median |
| Interval/Ratio (not skewed) | Mean |
| Interval/Ratio (skewed) | Median |

S



**Symmetric Curve:** Mean=Median=Mode

**Positively Skewed:** Mean>Median>Mode

**Negatively skewed:** Mean<Median<Mode

**Empirical relations between mean, median and mode**

$$Mean-Mode=3\left(mean-median\right)$$

$$Mean-mode=3mean-3median$$

$$3meadian-3mean+2mean=mode$$

$$Mode=3median-2mean$$