BUSINESS MATHEMATICS

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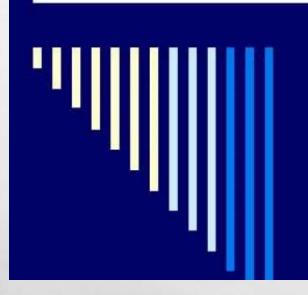ASSISTANT PROFESSOR IN MATHEMATICS

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Data

- Data – collection of numerical information
- Frequency distribution – set of data with frequencies listed
- Stem-and-Leaf Plot
- Bar graph – draw rectangles (bars) above each class (listed on horizontal axis) with height equal to the frequency of the class (listed on the vertical axis). Bars = width, do not touch.
- Histogram – used to graph a frequency distribution when the classes are continuous variable quantities*. Bars connect.

* *If a data value falls on the boundary between two data classes, make it clear whether you are counting that value in the class to the right or to the left of the data value.*

Measures of Central Tendency

Mean, Median, Mode

Outliers – affect the mean value

5 Number Summary:
- Min, Q1, Median, Q3, Max
- Box and Whisker Graph

Standard Deviation

A measure based on the distance of each data value from the mean.

SAMPLE vs POPULATION

FORMULAS

Coefficient of Variation

- Compares the standard deviation to the mean
- Expressed as a percentage
- CV= [(standard dev) / mean] * 100%
- A larger CV means that there is more variation, relatively speaking, in the data.

Normal Distribution

- The most common distribution in statistics.
- Many real- life data sets follow the normal distribution pattern
- The normal curve is bell-shaped.
- The highest point on the curve is the mean of the distribution; mean=median=mode
- The curve is symmetric with respect to its mean

More – Normal Distribution

- The area under the curve equals ONE.
- 50% of the area lies on each side of the mean.
- The curve has two POINTS OF INFLECTION – a POI is *a point on the curve where the curve changes from being curved upward to being curved downward (or vice-versa)*.
- POI are located one standard deviation on each side of the mean.

Percentages – Roughly,

- **68%** of the data values are within one standard deviation from the mean.
- **95%** of the data values are within two standard deviations from the mean.
- **99.7%** of the data values are within three standard deviations from the mean.

Note: We can use the 68-95-99.7 rule to estimate how many values are expected to fall within one, two or three standards deviations of the mean of a normal distribution. Generally, we assume the normal distributions are for an entire population rather than a sample.