

- Turning quantitative data into formation
 - Shape of the data
 - Center of the data
 - Spread of the data
- Stem-and-leaf plots
 - For quantitative variables
 - Write every stem even in gaps
- Data shapes
 - Symmetric
 - Bell shaped
 - Other
 - Asymmetrical
 - Skewed to the left
 - Skewed to the right
 - Unimodal, bimodal
 - The direction of the skew who tells you what side the outlier is on
- Outlier
 - Extreme values, far from the rest of the data
 - May occur naturally
 - May occur due to error in recording
 - May occur due to error in measuring
 - Observational unit may be fundamentally different
- Key concepts
 - Displays
 - Stem plots & histograms
 - Graph shapes
 - Symmetric
 - Skewed to left
 - Skewed to right
 - Outliers
- Turning Data into information
 - Center of the data
 - Mean
 - Median
 - Mode
 - Spread of the data (variability)
 - Variance
 - Standard Deviation
 - Range
 - IQR
- Average or Mean
 - Traditional measure of center

- Median
 - A resistant measure of the data's center
 - At least half the ordered values are less than or equal to the median value, and vice versa
 - If n is odd, the median is the middle ordered number
 - If n is even, the median will fall between two numbers
- Comparing mean and median
 - Symmetric shape
 - Same
 - Skewed
 - Mean further towards the outlier (direction of the skew)
- Spread or variability
 - If values are all the same, then they all equal the mean. There is no spread
 - Variability exists when some values are above or below the mean
- Variance and Standard Deviation
 - When variability exists, each data value has an associated deviation from the mean
 - Standard deviation is the typical deviation from the mean
- Quartiles
 - 3 data values that separate the data into quarters
 - Q1 = 25% of data below it
 - Q2 = 50% of data below it
 - Q3 = 75% of data below it
- Linear regression
 - $y = ax + b$
- Coefficient of Determination (R^2)
 - Measures the variation in the values of Y that is explained by X
- Two concepts of probability
 - Personal-Probability
 - The degree to which a given individual believes the event in question will happen
 - Relative-Frequency
 - 2 ways to determine:
 - Physical assumption
 - experimentation