Measures of Central Tendency:
Gives a value that describes the dataset by identifying a central position within the data. What value is representative of the data?

Mean:
- The sum of the data points divided by the number of data points

Median:
- The value of the point which has half the data smaller than that point and half the data larger than that point.

Mode:
- The value that occurs the most.

Measures of Dispersion:
Give us information about the spread of the data. Are values close together or spread apart?

Range:
- The difference between the maximum value and the minimum value

Interquartile Range:
- The difference between the 75th percentile and the 25th percentile. (The middle 50% of the data)

Variance:
- The average squared difference from the mean

Standard Deviation:
- The square root of variance

Continuous Distributions:
These distributions are very important in performing statistical tests used to make decisions about data.

Normal:
- The most common distribution
- Has a bell-shaped curve
- Height, weight, test scores usually have a normal distribution

T-distribution:
- Has a similar shape to the normal distribution
- Used in hypothesis tests for the population mean when the standard deviation is not known.

Chi-square:
- Used to test the association between two categorical variables
- Used in goodness of fit tests of an observed distribution to a theoretical one.

Exponential:
- Used to model time between events
- Useful in modeling life cycles of products

Types and Purpose of Graphs:

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<th>Type of graph</th>
<th>Data type and Purpose</th>
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<tr>
<td>Histogram</td>
<td>Continuous data - describe distribution</td>
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<td>Box plot, stem and leaf plot, dot chart</td>
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<td>Scatterplot</td>
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<td>Time series plot, Run chart</td>
<td>Time-dependent data - describe trends</td>
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<td>Bar chart</td>
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<td>Pie chart</td>
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Discrete Distributions:
The distribution that discrete data follow will impact the choice of statistical analysis.

Binomial:
- Used to model discrete data with only two possible outcomes (success/failure)
- The trials must be independent (The outcome of one trial has no effect on the outcome of the next)
- Ex: The number of defects in a batch of 1000, Number of ER deaths.

Poisson:
- Models count data that are usually rare
- Used when estimating rates of count data
- Ex: Rate of defects, Rate of mortality