Descriptive statistics; summarizing characteristics of one variable at a time.

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| --- | --- | --- | --- | --- | --- |
| Summary Statistics  Describing a Variable | Data Type | | | | |
| Numeric | | Categorical | | |
| Continuous  (#s with infinite fractional values) | Integer  (whole #s) | Ordinal  (> 2 ranked categories) | Multinomial  (> 2 categories) | Dichotomous  (binary: 2 categories) |
| Centrality: Mean, median, geometric mean  Dispersion: Variance, standard deviation, range | (Same as continuous) + mode | Frequencies (absolute = counts; relative = proportions) | | |

Elementary analysis ; comparing two variables together in a graphical or tabular form.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Visualizing Data  Displaying 2 Variables together | | | Variable 1 | | | | |
| Numeric | | Categorical | | |
| Continuous | Integer | Ordinal | Multinomial | Dichotomous |
| Variable 2 | Numeric | Continuous | Scatter plots  (bivariate plot of 2 numeric variables) | | Boxplots  (graphical display of quartiles, range, minimum, maximum) | | |
| Integer |
| Categorical | Ordinal | Boxplots | | Contingency tables  (2-by-2 tables,  # of rows by # of columns) | | |
| Multinomial |
| Dichotomous |

Hypothesis testing for comparing two variables—optional for group projects.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Testing Association  (hypothesis testing) | | | Variable 1 | | | | |
| Numeric | | Categorical | | |
| Continuous | Integer | Ordinal | Multinomial | Dichotomous |
| Variable 2 | Numeric | Continuous | Correlation Coefficient, r  (a measure of association between 2 numeric variables) | | ANOVA  (test of difference between means for 2 or more categories) | | t-test  (test of difference between means for 2 categories) |
| Integer |
| Categorical | Ordinal | ANOVA | | Chi-square  (table of rows & columns; test of difference between 2 or more categories of 2 categorical variables; a major way to compare counts, proportions, ratios) | | |
| Multinomial |
| Dichotomous | t-test | |