

# Summary of Univariate Descriptive Statistics and Graphs for the Four Levels of Measurement

## Levels of Measurement: Properties, Response Formats, Descriptives Statistics, and Graphs

Level of measurement	Properties	Response Formats and Examples	Descriptive statistics	Graphs
<b>Nominal / Categorical</b>	Discrete (D) Arbitrary (no order)	Dichotomous - Gender, Multichotomous - Religion	Mode Frequencies/Percentages	Bar/Pie
<b>Ordinal / Rank</b>	Discrete Ordered/Ranked	Ranking – Grade (F, P, CR, DI, HD)	Mode Frequencies/Percentages Min/Max/Range Median/Percentiles (if meaningful)	Bar/Pie
<b>Interval</b>	Equal distances between values 0 is arbitrary More than approx. 5 values can be treated as continuous	Likert scale – Attitude Semantic differential Composite scores	Mode (D) Frequencies/Percentages (D) Min/Max/Range Median/Percentiles Mean/SD/Skew/Kurt	Bar/Pie Stem & Leaf (if D/rounded) Boxplot/Error-bar Histogram (if Metric)
<b>Ratio</b>	Meaningful 0 Continuous/Metric (M) Ratio-type observations can be made	Numeric – Age, Height, Weight, Number of times an event occurs	Mode/Frequencies/Percentag es (if meaningful) Min/Max/Range Median/Percentiles Mean/SD/Skew/Kurt	Histogram Stem & Leaf (if rounded) Boxplot/Error-bar

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## Levels of Measurement: Appropriate Descriptive Statistics

Level of measurement	Mode/Frequencies/Percent ages	Min/Max/Range	Median/Percentiles	Mean/SD
Nominal / Categorical	✓	✗	✗	✗
Ordinal / Rank	✓	✓	If meaningful	✗
Interval	✓	✓	✓	✓
Ratio	If meaningful	✓	✓	✓

## Levels of Measurement: Appropriate Graphs

Level of measurement	Bar/Pie	Stem & Leaf	Boxplot/Error-bar	Histogram
Nominal / Categorical	✓	✗	✗	✗
Ordinal / Rank	✓	If meaningful	✗	✗
Interval	If discrete/rounded	✓	✓	✓
Ratio	✗	If discrete/rounded	✓	✓