

Scales of measurement

There are four different scales of measurement.

Scale	Description	Possible Statistical Operations
Nominal	Categorical <ul style="list-style-type: none"> • Unordered Example—tumor cell types categorized as “estrogen receptor positive” or “estrogen receptor negative”	Number of cases in each category Percentiles or other ratios
Ordinal	Categorical <ul style="list-style-type: none"> • Ordered • Differences between values are inconstant Example—the Likert scale, e.g., 1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, and 5=strongly agree	Number of cases in each category Mode. Sometimes it may be useful to average ordinal scores to determine a mean (if data normally distributed) or median (if data is not normally distributed). Use caution when doing so. Percentiles or other ratios
Interval	Categorical <ul style="list-style-type: none"> • Ordered • Constant scale • May not have a natural zero Example—months	Number of cases in each category Mode (especially if the data is bimodal). Sometimes it may be useful to average interval scores to determine a mean (if data normally distributed) or median (if data is not normally distributed). Percentiles or other ratios
Ratio	Quantitative <ul style="list-style-type: none"> • Ordered • Constant scale • Natural zero Example—weight	Mode (especially if the data is bimodal), mean (if data normally distributed), or median (if data is not normally distributed) Range (if data is not normally distributed) Interquartile range (if data is not normally distributed) Standard deviation (if data is normally distributed)