

1.3 Types of Data

- **Parameter:** a numerical measurement describing some characteristic of a *population*
- **Statistic:** a numerical measurement describing some characteristic of a *sample*
- **Quantitative data:** consist of *numbers* representing counts or measurements
 - **Discrete:** data which results from either a finite number of possible values or a **countable** number of possible values
0, 1, 2, 3,
 - **Continuous:** data which results from infinitely many possible values that can be associated with points on a continuous scale in such a way that there are **no gaps, interruptions, or jumps**
- **Qualitative (categorical or attribute) data:** nonnumeric data that can be separated into different non-numerical categories

Levels of Measurement

- **Nominal:** characterized by data that consist of names, labels, or categories only. Data cannot be arranged in an ordering scheme (such as low to high), or order is not meaningful.
- **Ordinal:** involves data that may be arranged in some order, but differences (obtained by subtraction) between data values either cannot be determined or are meaningless
- **Interval:** like the ordinal level, with the additional property that we can determine meaningful amounts of differences between data. However, data at this level do not have a natural zero starting point (where none of the quantity is present.)
- **Ratio:** the interval level modified to include the natural zero starting point where zero indicates that none of the quantity is present. Differences and ratios are both meaningful.
Ratio test: if one number is twice the other, is the quantity being measured also twice the other quantity? If yes, the data are at the ratio level.