

Chapter 2: Data

What are Data?

- Data is systematically recorded information, whether numbers or labels, together with its context.
- If the context of the data is not provided, the data is useless.
- In order to provide the context for the data one must determine the “Five W's”. These five W's are:
 - Who- The individuals answering a survey are respondents. The people whom experiments performed on are known as subjects or participants, yet inanimate subjects are known as experimental units.
 - What-Characteristics recorded about each individual are called variables. There are two types of variables categorical variables and quantitative variables. Categorical variables are variables that name categories and answers questions about how cases fall into those categories. Quantitative variables are variables that answer questions about the quantity of what is measured.
 - When-this can help put the data in perspective and can help in comparisons with other similar data
 - Where-Can help categorize data and make comparisons between data.
 - Why-is the reason for performing the survey or experiment.
- The “How” of the data can be just as important as the Five W's because it can determine whether or not the data was collected in a biased way.
- Data can be organized in data tables in order to provide context for the data. The rows of a database are known as records. Data values in a table are observations.
- Example of a data table:

Case1	43	53	45	34	123
Case2	45	34	52	34	231
Case3	53	45	53	34	231
Case4	34	53	45	33	212
Total	123	234	231	321	

- Hair color is an example of a categorical variable, because there is only a set amount of responses and all the data fits into these categories.
- An example of a quantitative variable is height of a person in Cm, because the data is numerical and has units.
- An important thing to remember is that just because the data is numerical, does not necessarily mean the data is quantitative. An example of a categorical variable that is numerical is student ID numbers.