**Objectives**:

* To begin to use your graphing calculator/ Minitab as an indispensable tool for analyzing data
* To understand the need to ask whether a variable actually measures the property that it purports to
* To recognize that elementary manipulations of variables can often produce a more appropriate variable to measure the desired property
* To appreciate the use of **rates**, **ratios** or **percentages** for making meaningful comparisons in many situations
* To recognize limitations of a variable for measuring some properties.
* To understand the idea of **statistical tendencies** and analyze their meaning
* To understand the idea of **consistency**

***Context*** is what is needed to make a number a piece of data. (Repeated for emphasis – *important*)

Since the context of the number is important in the determination of if it is data then we should always describe the context when conveying the number. *i.e.* It is better to say that “the smallest number of states visited is 12 “as opposed to “the smallest item in the data set is 12” (No context - difficult to understand meaning.)

***Rates, Ratios or Percentages:***  When a variable involves counting the number of objects that belong to categories of different sizes rates and percentages have much more meaning than the actual numbers.

***These variables were seen in Topic 1 and revisited in Topic 2 therefore I am listing them again here.***

***Variable:*** any characteristic of a person or thing that can be assigned a number or category

***Measurement variable:*** one that can assume a range of numerical values (Number of states)

***Categorical variable:*** one that records a category designation (Republican, Democrat, Conservative, etc.)

***Binary categorical variables:*** a variable that has exactly two possible categories (gender, coin flip)

***Observational unit or case:*** The person or thing that is assigned the number or category (each person in the class when asking the topic questions would be an observational unit)

***Distribution of variables:*** The pattern of variability of a set of data, much of statistics is finding way to express this distribution and analyzing the meaning or effects of the distribution.

Visual displays of distributions include:

* *dotplot - for expressing measurement variable distributions*
* *bar graph - for expressing categorical variable distributions.*

Numerical display of the spread of a distribution: *Standard deviation*.

***Frequency:*** process of tallying the individual cases into to find the number of occurrences of each possible response.

***Statistical Tendency:***When one group (categorical variable) is more likely to have a higher value (Quantitative variable) than another group

***Consistency:*** How spread out or variable a dataset is.

Hopefully, something you realized in Topic 1 and even more in Topic 2 is the importance of first analyzing a set of data using a visual display. This gives you some basic understanding of the nature, distribution and any “weird” or interesting characteristics of the data you are looking at. It also gives your mind a reference frame from which to begin your numerical analysis of the data.