Data:

Statistics:

Data Analysis:

WHEN COLLECTING DATA WE HAVE:
Individuals:

Variable:

WHEN LOOKING AT NEW DATA, ASK:
Who:

What:

Where:

When:

Why:

How:

ALL DATA COLLECTION HAS TWO TYPES OF VARIABLES:
Categorical variables:

Quantitative variables:

Example: Census at School

CensusAtSchool is an international project that collects data about primary and secondary school students using surveys. Hundreds of thousands of students from Australia, Canada, New Zealand, South Africa, and the United Kingdom have taken part in the project since 2000. Data from the surveys are available at the project's website ([www.censusatschools.com)](www.censusatschools.com). We used the site's Random Data Selector to choose 10 Canadian schools who completed the survey in a recent year. The table below displays the data.

Province	Gender	Languages Spoken	Handed	Height (cm)	Wrist circum (mm)	Preferred communication	Travel to school (min)
Ontario	Male	1	Right	175	175	Internet chat	25
Alberta	Female	3	Right	147	140	Facebook	20
Ontario	Male	1	Right	165	170	Internet chat	4
British Columbia	Female	1	Right	155	145	In person	10
New Brunswick	Male	8	Left	130.5	135	Cell phone	40
Ontario	Male	2	Right	170	165	In person	7
Ontario	Male	3	Left	150	100	Internet chat	10
New Brunswick	Male	2	Both	167.5	220	Text messaging	30
Ontario	Female	1	Right	161	104	Text messaging	10
Ontario	Male	6	Right	190.5	180	Facebook	10

1. Who are the individuals in this data set?

2. What variables were measured? Identify each as categorical or quantitative.

3. Describe the individual in the highlighted row.

Distribution:

Exploratory data analysis is an examination of data in order to describe its features.

WHEN EXPLORING DATA:
1.

2.

Since you have two types of variables (categorical and quantitative) there are many types of graphs that fit best with one or the other type of variable.

CATEGORIAL
-
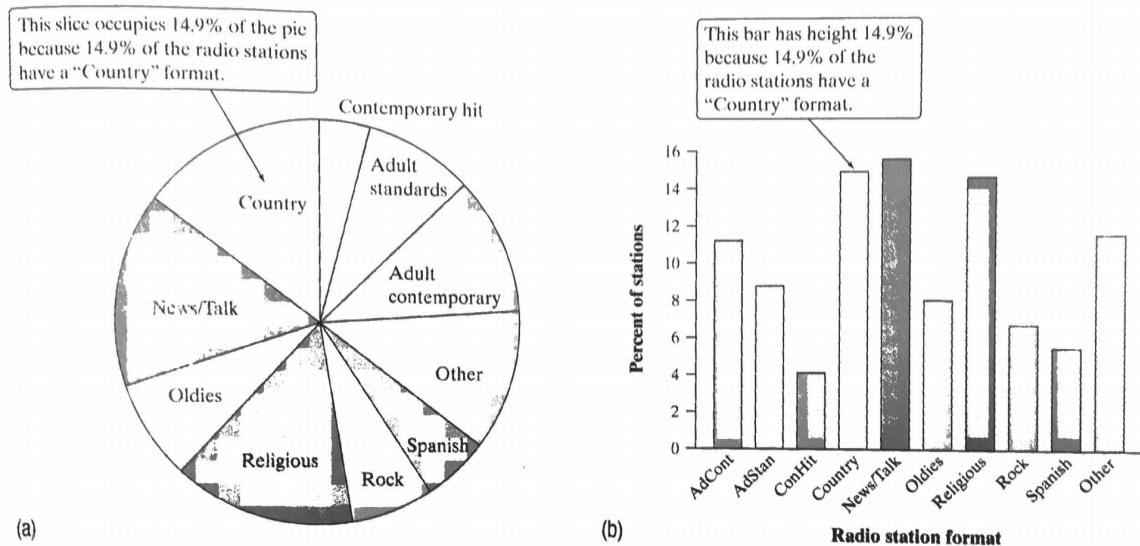
    BAR GRAPHS:

    PIE CHARTS:

FIGURE 1.1 (a) Pie chart and (b) bar graph of U.S. radio stations by format.

Example: Who Owns an MP3 Player?

Portable MP3 music players, such as the Apple iPod, are popular – but not equally popular with people of all ages. Here are the percents of people in various age groups who own a portable MP3 player, according to an Arbitron survey of 1112 randomly selected people.

Age group (years)	Percent owning an MP3 player
12 to 17	54
18 to 24	30
25 to 34	30
35 to 54	13
55 and older	5

1. Make a well-labeled bar graph to display the data. Describe what you see.

2. Would it be appropriate to make a pie chart for these data? Explain.

QUANTITATIVE VARIABLES
   DOT PLOT:

   STEM PLOT/STEM AND LEAF PLOT:

Example: Goooooooooaaaaaallllll!

How good was the 2004 US women's soccer team? With players like Brandi Chastain, Mia Hamm, and Briana Scurry, the team put on an impressive showing en route to winning the gold medal at the 2004 Olympics in Athens. Here are data on the number of goals scored by the team in 34 games played during the 2004 season.

3	0	2	7	8	2	4	3	5	1	1	4	5	3	1	1	3
3	3	2	1	2	2	2	4	3	5	6	1	5	5	1	1	5

Make a dot plot of the above data.

Example: Caffeine Content

The table below shows the amount of caffeine content (in milligrams) in an 8-oz serving of various popular soft drinks. Construct a stem-and-leaf plot of the data shown in the table. Remember to include a key.

Drink	Caffeine	Drink	Caffeine
A&W Cream Soda	20	IBC Cherry Cola	16
Barq's Root Beer	15	Kick	38
Cherry Coca-Cola	23	KMX	36
Cherry RC Cola	29	Mello Yellow	55
Coca-Cola Classic	23	Mountain Dew	37
Diet A&W Cream Soda	15	Mr. Pibb	27
Diet Cherry Coca-Cola	23	Pepsi One	37
Diet Coke	31	Pepsi-Cola	25
Diet Dr. Pepper	28	RC Edge	47
Diet Mello Yellow	35	Red Flash	27
Diet Mountain Dew	37	Royal Crown Cola	29
Diet Mr. Pibb	27	Ruby Red Squirt	26
Diet Pepsi-Cola	24	Sun Drop Cherry	43
Diet Ruby Red Squirt	26	Sun Drop Regular	43
Diet Sun Drop	47	Sunkist Orange Soda	28
Diet Sunkist Orange Soda	28	Surge	35
Diet Wild Cherry Pepsi	24	TAB	31
Dr. Pepper	28	Wild Cherry Pepsi	25