Math 140 Class Questionnaire

Instructions: Your answers will become part of the class data base. Please answer each question honestly, but do not give your name. For numerical questions, give a single number answer, not a range (for example, answer 25 rather than 20-30).

1) Have you ever enrolled in a college or high school statistics course before? Yes No

2) Which of the following most closely reflects your attitude toward taking this course:

   a. Can't wait to start!
   b. I'm ambivalent
   c. I'd rather take a course on the history of garbage cans, but it's required for my major.

3) What is your class year? Freshman Sophomore Junior Senior Graduate student

4) Your gender: M F

5) Your month of birth:

6) Your height in feet and inches:

7) Your weight in pounds:

8) What is your perception of your own body? Do you feel that you are overweight, underweight, or about right?

9) Approximate number of hours you slept last night:

10) How many minutes do you typically spend in the shower? _____

11) Do you have a job?

   a. I work full time.
   b. I work part time.
   c. I currently don't have a job.

12) The <u>last digit</u> in your primary phone number:

13) Number of letters in your mother's first name:

14) The approximate distance in miles between your current residence and CSUN. Just make your best guess if you have to.

15) The amount of money you spent on your last haircut:

16) The amount of money you think your best friend would spend for your birthday gift:

17) The approximate number of pairs of shoes you own:

18) Pick a random number between 1 and 10.

19) A small ice cream shop has the following flavors. Which one would you pick?

a. Vanilla
b. Chocolate
c. Strawberry
d. Cherry
e. Chocolate chip
f. Rocky road
g. French vanilla
h. Raspberry
i. Banana nut
j. Pralines 'n cream
k. Rum raisin

20) How many hours would you prefer to spend alone on a typical day?

21) Do you believe in ghosts?

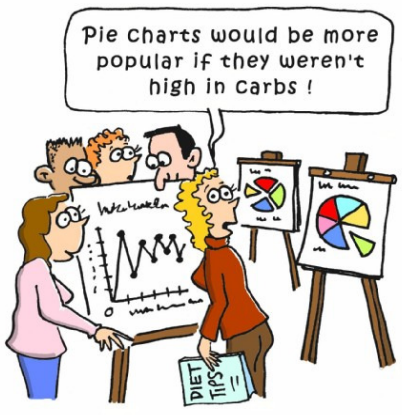
22) Have you ever had a personal encounter with a ghost?

23) Do you believe in love at first sight?

Numerical and Graphical Displays for a Categorical Variable

What you need to know:

- **Categorical variable; quantitative variable**
- **Distribution of a variable**
- **Numerical summaries for a categorical variable: category counts and percents**
- **Graphical displays for a categorical variable: bar graphs and pie charts**



Variables

Quantitative

- Numerical values
- "average" makes sense

Categorical

- Labeled values
- "average" doesn't make sense

1. For the Math 140 questionnaire, identify the variables for the following questions:

   #2:

   #10:

   #19:

2. Classify each of the 23 variables as categorical (C) or quantitative (Q):

   #1: #2: #3: #4: #5: #6: #7: #8: #9: #10: #11: #12:

   #13: #14: #15: #16: #17: #18: #19: #20: #21: #22: #23:

3. Here is the questionnaire data from another Math 140 class for Question #2: *Which of the following most closely reflects your attitude toward taking this course?* b, b, a, b, a, c, b, b, b, a, b, b, b, b, c, a, c, b, c, b, b, b, c, c, b, b, b, c, c, b, b, b, b, b, b, b, a, b, a

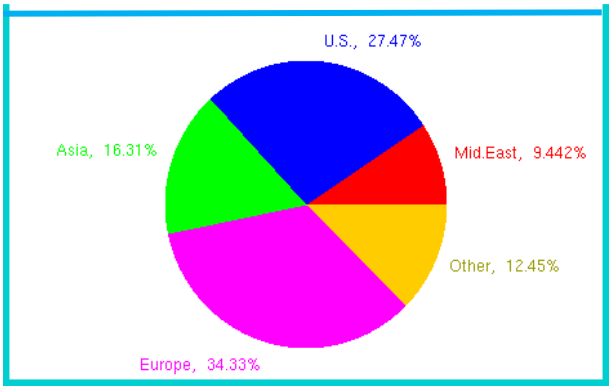
   a. Determine the percentages of students that fell into each category.

   b. What should your percentages add up to? Check this.

   c. Create an appropriate graphical display of the distribution of the variable. Make sure to label your graph appropriately.

   d. Summarize the results regarding the attitudes of this class toward taking this course. Use a well-constructed and interesting sentence or two.

4. Fortune magazine publishes the list of the world's billionaires annually. The 1992 list (Fortune, September 7, 1992. "The Billionaires." pp. 98-138) included 233 individuals or families. Their wealth, age and geographic location (Asia, Europe, Middle East, United States or Other) was reported. Look at the pie chart.

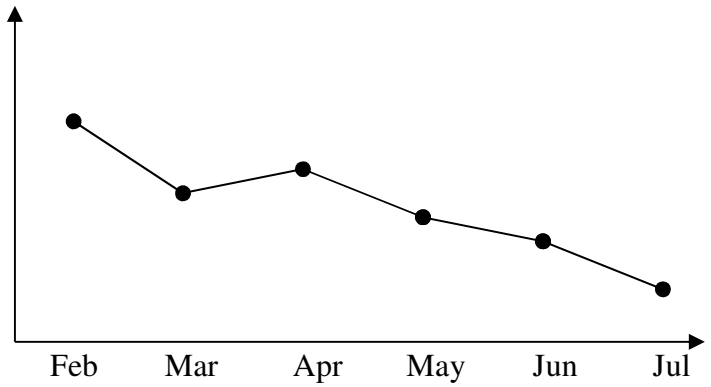


   a. What is the variable of interest?

   b. Summarize the information in the pie chart using a well-constructed and interesting sentence.

c. How could we check whether there might be any errors in the percentages given?

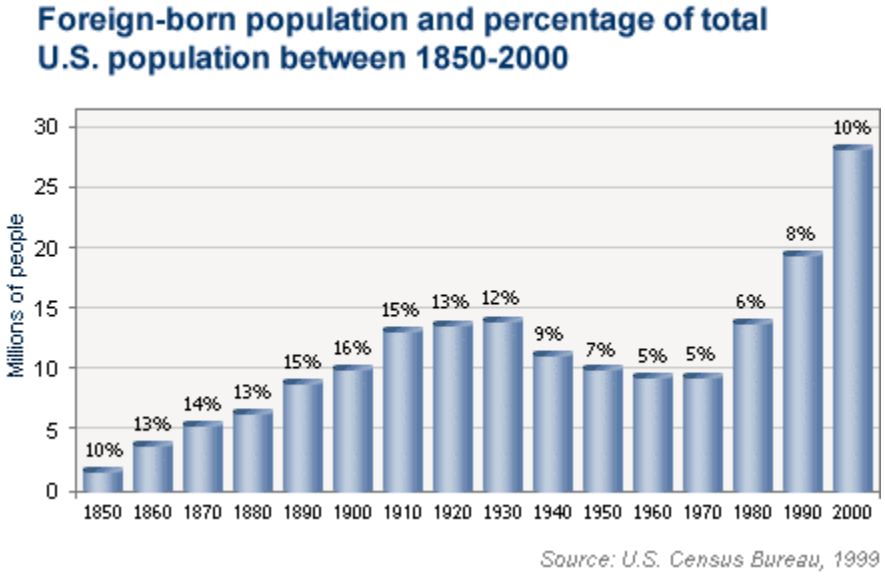
5. The graph below shows the number (in thousands) of SUV's sold by a certain company over the past six months:



a. Explain how this graph could be misleading.

b. How could the graph be improved?

6. Explain how a politician (for example) could use the information in the graph below to either argue that: (i) the number of foreign-born individuals in the U.S. has increased dramatically in the last 150 years, or (ii) the number of foreign-born individuals in the U.S. has *not* increased in the last 150 years.



(i)

(ii)

Additional Practice

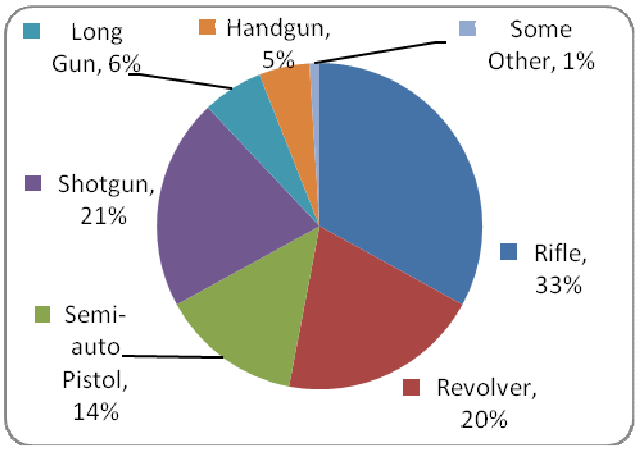
1. a. Explain what is meant by the *distribution* of a categorical variable.

2. List two ways that this distribution can be displayed visually.

3. For each of the following variables, indicate with Q or C whether it is a quantitative variable or a categorical variable.

   a. the color of an M&M candy
   b. the weight of an airplane
   c. how many miles a person walks in one day
   d. the age of a mother when her first child is born
   e. whether or not a student eats breakfast
   f. the length of a snake
   g. whether or not a car has automatic transmission or manual transmission/stick shift
   h. the number of calories in a pint of vanilla ice cream
   i. the running time of a Tom Cruise movie
   j. whether or not a state's name consists of one word
   k. the diameter of a pizza
   l. the number of dogs an animal shelter has
   m. the height of a sequoia tree
   n. the race of a person

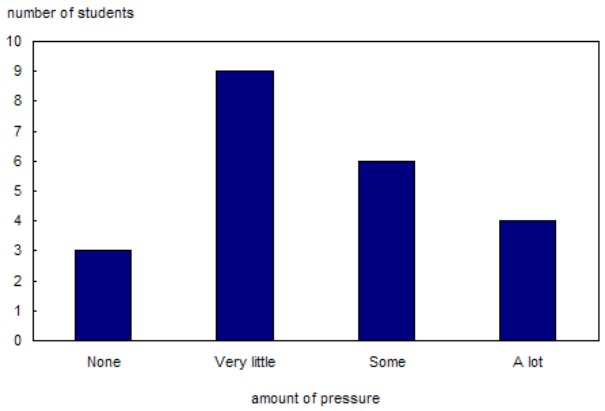
4. Consider the following pie chart:



a. What is the variable described in the pie chart?

b. Summarize what the pie chart shows.

5. The following bar graph shows the amount of pressure students experienced from schoolwork:

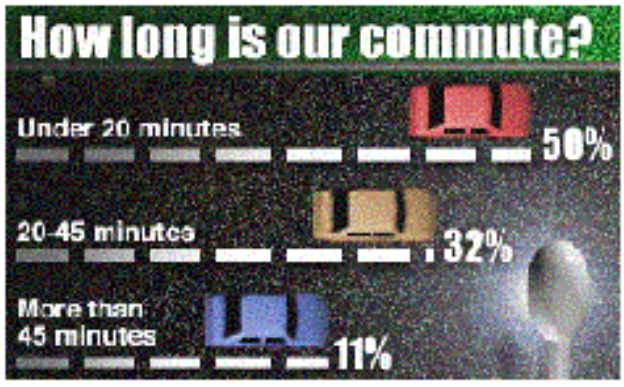


a. What is the variable described in the bar graph?

b. What percent of students feel no pressure from schoolwork?

6. In 2007, 5488 people were killed while working. Here is a breakdown of causes: transportation: 2234; contact with objects or equipment: 916; assaults or violent acts: 839; falls: 835; exposure to harmful substances or harmful environment: 488; fires or explosions:151; others: 25. (The data are from the Bureau of Labor Statistics.) Construct a bar graph.

6. The graph below came from the USA Today Snapshots: Commuting Time.



List two things that are wrong with this graph.