Q SCI 381: Introduction to Probability and Statistics
S. Scherba, Jr. Assignment #2: Review Exercises

The display of data (*10 points to be added to Assignment #3)*.

1. (*10 points*) Find a display of data form any source. Using the ideas form Edward Tufte or Stephen Few as presented in class, or from the readings posted on our course Canvas website, critically analyze the data display you chose. Provide a copy of the display. In your analysis, address what is good or bad about the display and why. Explicitly describe any improvements you would suggest be made. Limit your analysis to one double spaced 8½″ x 11" typed page. **Turn this in with Assignment #3. That should give you time to do a good job.**

Define the following (*12 points*).

2. (*1 point*) A population.

3. (*1 point*) A sample.

4. (*5 points*) Turkey's Five−number summary (please do this by providing a sketch clearly indicting the five components).

5. (*2 points*) The Z-score (requires a formula only with a definition of all symbols used).

6. (*1 point*) The median (several answers are possible).

7. (*2 points*) The weighted mean (requires a formula only with a definition of all symbols used).

Short answers (*12 points*).

8. (*4 points*) For each of the following, determine if the numerical value is a **parameter or a statistic**.

   a. (*1 point*) In a survey of 360 credit card holders in the U.S., the mean service fee charged last year was $42.75.

   b. (*1 point*) In the 2014-2015 academic year, 78.2% of public high school seniors from the state of Washington graduated.

c. (*1 point*) A recent study of 1,625 elementary school children in the state of Washington found that 18.3% were living in poverty as classified by the Federal government.

d. (*1 point*) The mean salary of all public college presidents in the U.S. was $428,000 in 2014.

9. (*3 points*) For each of the following, determine whether the data set is a population or a sample.

   a. (*1 point*) The eye color of every fifth person entering Hall Health during the course of one week in Winter Quarter.

   b. (*1 point*) The number of students majoring in biology at the University of Washington.

   c. (*1 point*) The amount of lead in the blood of 500 children (under the age of 18) living in King County.

10. (*4 points*) For each of the following, determine if the data are qualitative or quantitative. If qualitative, state if the data are nominal or ordinal. If the data are quantitative, state if the data are interval or ratio.

    a. (*1 point*) The fire danger rating: low, moderate, or high.

    b. (*1 point*) The number of species found per square meter in a survey of a forest.

    c. (*1 point*) Ocean tidal height measured in feet from a standard reference height called the Mean Lower Low Water (MLLW in the U.S.) and Mean Low Water (MLW in Canada). Incidentally, in Canada, distances are given in meters.

    d. (*1 point*) The biological sex of patients at the UW hospital.

11. (*1 point*) State an advantage the use of the standard deviation as a measure of spread has compared to the variance.

Problems from the text. You should not fail to do these, but they are <u>NOT TO BE TURNED IN FOR GRADING</u>. My solutions will be posted.

Please read the summation notation document posted on our course Canvas website in Files > Lecture Materials > Week 2 > SUMMATION NOTATION.

From our textbook (F&P), please do, in good mathematical form, the following problems: 2.49, 3.6, 3.27, 3.28, 3.66, 3.71, 3.72, 3.73, 4.8, 4.9, 4.25

Regarding problems 3.66 – 3.73, we will be using summation notation in class, and it is commonly used in all of the rest of the statistics you will encounter in follow-on courses or your careers. You will also find it used in biology, biochemistry, chemistry, physics, economics, and finance courses; to mention just a few.