**Dr. Peggy Kern’s Capstone Statistics**

**Practice #1: Measures of Central Tendency & Spread**

*Statistics are learned best by doing! Here is a set of exercises to let you practice what we have covered in the past three sessions (measures of central tendency and spread). See if you can work through them before checking your responses.*

1. Select the measure of central tendency (mean, median, mode) that would be most appropriate for describing each of the following sets of data:
2. Heart rates for a group of women before they start their first aerobics class.
3. Types of phobias exhibited by patients attending a phobia clinic.
4. Amounts of time people spend solving a mathematical problem, with some unable to solve it.
5. Height in inches of a group of boys in 1st grade.
6. For each set below, circle the letter of the more variable group.
   1. Set 1
      1. 20, 40, 80, 10, 50, 60
      2. 160, 140, 150, 140, 160, 150
   2. Set 2
      1. The length of airport runways in the US
      2. The length of highways in the US
   3. Set 3
      1. The ages of University professors
      2. The ages of typical University students
7. Compute the standard deviation for the data below.

2 3 2 0 1 0 2

1. A veterinarian is interested in the life span of golden retrievers. She recorded the age at death (in years) of the retrievers treated in her clinic. The ages were 12, 9, 11, 10, 8, 14, 12, 1, 9, and 12.
2. Calculate the mean, median, and mode for age at death.
3. What is the minimum, maximum, and range of the ages?
4. After examining her records, she determined that the dog that had died at 1 year was killed by a car. Recalculate the mean, median, and mode without that dog’s data.
5. Which measure of central tendency in part b changed the most, compared to the values calculated in part a?
6. Nancy is interested in how happy people are. She gives a questionnaire to a group of people, asking them to rate how happy they feel on a 1 to 7 scale (1 = very depressed, 7 = very happy). She gets the following set of scores: 5, 6, 7, 3, 5, 6, 1, 5, 7, 6, 5, 2, 5, 5, 4, 3, 5, 7, 4, 5.
   1. On a scratch piece of paper, create a raw frequency distribution of these scores. Make a frequency polygon graph of the distribution.
   2. On average, how happy are the people?
   3. If 4 is considered an average level of happiness, would you say this sample is above average, average, or below average in happiness?
   4. What is the middle score? What score is reported most often?
   5. What is the range of happiness scores?
   6. What is the inter quartile range?
   7. Calculate the standard deviation and variance of these scores.
   8. Based on the data, write a brief descriptive report (1 or 2 sentences max). For an extra challenge, include a table describing the data (hint – usually includes the N, mean, standard deviation, minimum, and maximum).