Investigation 2: Earnings by degree? (assigned on Wed Sept 30; due on Wed Oct 7)
You may work with in a group of as many as three students on this assignment, handing in one report with all names, provided that you all contribute to the work. Word-processed reports are preferred to hand-written ones. Integrate computer output into your report as appropriate.

The Minitab worksheet EarningsByDegree.mtw (available from the “data files” link on our course webpage) contains data from random samples of 50 American adults taken in the year 2000 in each of five categories of higher educational achievement:
1: some higher education
2: associate degree
3: bachelor’s degree
4: master’s degree
5: doctorate

The response variable is the individual’s yearly earnings, in thousands of dollars.

Notice that the data appear in the Minitab worksheet in two different formats:
- c1 contains all 250 earnings values, with c2 indicating the education level
- c5 – c9 contain the earnings values, with each education level in a separate column

Bachelor’s Degree

First consider only the earnings of those with Bachelor’s degrees.

a) Produce (and submit) a histogram and dotplot of the distribution of these earnings values (Graph> Histogram, Graph> Dotplot).

b) Calculate (and report) the mean, median, standard deviation, and inter-quartile range of the yearly earnings values for people with Bachelor’s degrees (Stat> Basic statistics> Display descriptive statistics).

c) Write a paragraph commenting on the distribution of yearly earnings values for people with Bachelor’s degrees.

d) Calculate and interpret the z-score for the person with the highest yearly earnings among those with Bachelor’s degrees.

e) Use the 1.5×IQR rule to determine how high a person’s earnings would have to be in order to be classified as an outlier among those with Bachelor’s degrees. Then identify any/all outliers.

Comparing Degrees

Now consider earnings across all five higher education levels.
f) Produce (and submit) boxplots for comparing yearly earnings across the five education levels, using the same scale in the same window (Graph> Boxplot, One Y With Groups if you use c1 – c2, Multiple Ys Simple if you use c5 – c9).

g) Calculate (and report) the five-number summaries of the yearly earnings values for each of the five higher education levels.

h) Write a paragraph or two comparing and contrasting the distributions of yearly earnings values across the five higher education levels.

i) Write a paragraph responding to these three questions:
   - Is more higher education associated with greater earnings?
   - If so, how much do earnings increase with higher levels of education?
   - Which degree is associated with the largest increase in earnings over the preceding degree level?
Support your responses with specific statistics.