1. The average waiting time for a patient at an El Paso physician's office is just over 29 minutes, well above the national average of 21 minutes. In fact, El Paso has the longest physician's office waiting times in the United States (El Paso Times, January 8, 2012). In order to address the issue of long patient wait times, some physicians' offices are using wait tracking systems to notify patients of expected wait times. Patients can adjust their arrival times based on this information and spend less time in waiting rooms. The following data show wait times (minutes) for a sample of patients at offices that do not have an office tracking system and wait times for a sample of patients at offices with an office tracking system.

Without Wait Tracking System	With Wait Tracking System
24	31
67	11
17	14
20	18
31	12
44	37
12	9
23	13
16	12
37	15

   a. What are the mean and median patient wait times for offices with a wait tracking system? What are the mean and median patient wait times for offices without a wait tracking system?
   b. What are the variance and standard deviation of patient wait times for offices with a wait tracking system? What are the variance and standard deviation of patient wait times for visits to offices without a wait tracking system?
   c. Do offices with a wait tracking system have shorter patient wait times than offices without a wait tracking system? Explain.
   d. Considering only offices without a wait tracking system, what is the z-score for the tenth patient in the sample?
   e. Considering only offices with a wait tracking system, what is the z-score for the sixth patient in the sample? How does this z-score compare with the z-score you calculated for part (d)?
   f. Based on z-scores, do the data for offices without a wait tracking system contain any outliers? Based on z-scores, do the data for offices with a wait tracking system contain any outliers?
   g. Write a five number summary for both cases.
   h. Create 2 histograms of the 2 data sets.

2. The Pew Research Center surveyed adults who own/use the following technologies: Internet, smartphone, e-mail and land-line phone (*USA Today*, March 26, 2014) and asked which of these technologies would be "very hard" to give up. The following responses were obtained: Internet 53%, smartphone 49%, e-mail 36% and land-line phone 28%.
    a. If 20 adult Internet users are surveyed, what is the probability that 3 users will report that it would be very hard to give up?
    b. If 20 adults who own a land-line phone are surveyed, what is the probability that 5 or fewer will report that it would be very hard to give up?
    c. If 2000 owners of smartphones were surveyed, what is the expected number that will report that it would be very hard to give up?
    d. If 2000 users of e-mail were surveyed, what is the expected number that will report that it would be very hard to give it up? What is the variance and standard deviation in this case?
3. Please write all your answers into a Word file as well. Upload the Excel file and the Word file to the given link.