Assignment 1

Answer the following two questions and provide your answers in a typed document (as well as an accompanying Excel file with your calculations, when required). The answers are to be handed by Tuesday, September 8, 2015.

Descriptive Statistics

Use the data provided in Assignment1Data.xlsx. The dataset contains four variables: These are *PR22*: Portfolio Return; *MKT_RF*: Market Risk Premium; *HML*: High-Low Risk Factor; and *SMB*: Small-Big Risk Factor. Using **_simple_** Excel functions, answer the following questions:

1. For all four variables calculate the following measures of central tendency: (a) mean; (b) median; (c) mode.
2. For all four variables calculate the following measures of dispersion: (a) variance; (b) standard deviation; (c) range; (d) interquartile range; (e) coefficient of variation.
3. Create the cross-plots of PR22 vs. MKT_RF, PR22 vs. HML, and PR22 vs. SMB. What do these show?
4. Calculate the correlations between the four variables.
5. Using the Data Analysis Tools pack, calculate as many of the above quantities (in (1) and (2)) as possible.

Probability Calculations

1. A businesswoman in Philadelphia is preparing an itinerary for a visit to six major cities. The distance traveled, and hence the cost of the trip, will depend on the order in which she plans her route.
    a. How many different itineraries (and trip costs) are possible?
    b. If the businesswoman randomly selects one of the possible itineraries and Denver and San Francisco are two of the cities that she plans to visit, what is the probability that she will visit Denver before San Francisco?

2. A local fraternity is conducting a raffle where 50 tickets are to be sold—one per customer. There are three prizes to be awarded. If the four organizers of the raffle each buy one ticket, what is the probability that the four organizers win
    a. all of the prizes?
    b. exactly two of the prizes?
    c. exactly one of the prizes?
    d. none of the prizes?

3. Cards are dealt, one at a time, from a standard 52-card deck.
   a. If the first 2 cards are both spades, what is the probability that the next 3 cards are also spades?
   b. If the first 3 cards are all spades, what is the probability that the next 2 cards are also spades?
   c. If the first 4 cards are all spades, what is the probability that the next card is also a spade?

4. Males and females are observed to react differently to a given set of circumstances. It has been observed that 70% of the females react positively to these circumstances, whereas only 40% of males react positively. A group of 20 people, 15 female and 5 male, was subjected to these circumstances, and the subjects were asked to describe their reactions on a written questionnaire. A response picked at random from the 20 was negative. What is the probability that it was that of a male?

5. Of the travelers arriving at a small airport, 60% fly on major airlines, 30% fly on privately owned planes, and the remainder fly on commercially owned planes not belonging to a major airline. Of those traveling on major airlines, 50% are traveling for business reasons, whereas 60% of those arriving on private planes and 90% of those arriving on other commercially owned planes are traveling for business reasons. Suppose that we randomly select one person arriving at this airport. What is the probability that the person
   a. is traveling on business?
   b. is traveling for business on a privately owned plane?
   c. arrived on a privately owned plane, given that the person is traveling for business reasons?
   d. is traveling on business, given that the person is flying on a commercially owned plane?