Statistics 1 Assignment 10 Chapter 6 Sections 5-6

1. In a California study of accidents involving SUV’a, we define the event R, that the SUV had a rollover in the accident, event F that the SUV had a frontal collision, and event D that there was a fatality from the accident.

Given this, it was found that P(R)=0.06; P(F)=0.60; P(R|D)=0.30; and P(F|D)=0.54.

Interpret P(R|D) and P(F|D)

Are the events R and D independent and why?

Is P(FႶD)=P(F)P(D) and why?

1. Approximately 30% of the calls to an airline reservation phone line result in a reservation being made.

If an operator handles 10 calls, what is the probability that none of the calls result in a reservation?

What must be assumed for the answer above to be true?

What is the probability that at least one call will result in a reservation being made?

1. A company gives a drug test to all new employees. They use a cheap test which has a false positive rate of 5% [5% of non-drug users will test positive anyway] and a false negative rate of 10% [10% of drug users will pass the test]

Assume that the population of prospective employees has a drug use of 10%

It might me helpful to construct a table or tree diagram

What is the probability that a person chosen at random will be someone who does NOT take drugs but test positive?

What is the probability that a person chosen at random will be someone who does take drugs and test positive?

What is the probability that the test will be positive for any random person chosen?

If a random person selected tests positive, what is the probability that they use drugs? [Bayes Law]