I complete Discussion Forum Unit 4 in 12 of Dec, and Self-Quiz Unit 5 is completed in 13 Dec (Melbourne Time Zone).

I met some problems. First one is I’m challenge in understanding Discrete and Continuous Random Variables. Besides, there are 4 types of random variable in this week, each of them had the different formulas to compute the expectation and standard deviation. I summarized it as below:

In Discrete Random Variables

* The Binomial Random Variable

E(X)=n\*p

D(X)=sqrt(p\*(1-p)\*n)

The Poisson Random Variable

E(X)= λ

D(X)=λ

In Continuous Random Variable

* The Uniform Random Variable

E(X)=(a+b)/2

D(X)=sqrt((a-b)ˆ2/12)

* The Exponential Random Variable

E(X)=1/ λ

D(X)=1/ λˆ2

Other problems I met is in R, I did not understand the usage of function: dbinom, pbinom. It may cause mistake when I attempted self-quiz.

2. Vocabulary and R functions

We are now covering material that is not common knowledge, and it is now very important to include citations when you use an idea from another source (book, Internet, etc).  Be sure to add a citation and reference entry for the definition questions below.

a) What is an exponential distribution (include an APA citation)?

The Exponential distribution is frequently used to model times between events.

b) When would you use an exponential distribution?

times between incoming phone calls, the time until a component becomes malfunction, etc

c) What is a binomial distribution (include an APA citation)?

The Binomial random variable is used in settings in which a trial that has two possible outcomes is repeated several times.

d) When would you use a binomial distribution?

When we designate one of the outcomes as “Success” and the other as “Failure”

3. Task

Run these commands in R, then use your own words to describe what the resulting numbers represent.  You can get some information about the functions by using the help commands in R (such as ?pbinom to get information about the pbinom() command in R):

a)pbinom(q=5, size=10, prob=1/6)

[1] 0.9975618

b)

n=10  
p=.5  
x=9  
pbinom(x, n, p)

[1] 0.9990234

c) punif(5, min=1, max=10) - punif(4, min=1, max=10)

[1] 0.1111111

Reference:

Yakir, B. (2001). Introduction to statistical thinking (with R, without Calculus). The Hebrew University of Jerusalem.(pp66, pp79)