DATCB/565: Data Analysis And Business Analytics

Competency 2 - Reflection

Competency 2 Statement

Utilizing statistical probability models, you will be able to evaluate and analyze business data under uncertainty conditions. You will also be able to create and test hypotheses and draw conclusions based on samples of data.

Reflection

Consider the following:

Many business activities generate data that can be thought of as random. An example described in the textbook is the servicing of cars at an oil change shop. Each car entering the shop can be considered an experiment with random outcomes. A variable of interest in this experiment could be the amount of time necessary to service the car. Service time will vary randomly with each car. Often, we can capture the most relevant characteristics of a stochastic process with a simple probability distribution model. We can then analyze the model to make predictions and drive decisions. For instance, we could estimate the number of technicians the oil change shop needs to service demand on a Saturday afternoon.

Respond to the following questions:

- What is a random variable?
- How would you differentiate a discrete from a continuous random variable?

A laptop manufacturing company has implemented a 2-step process to test the quality of each production batch. In the first step, a technician randomly selects 15 laptops from the batch and determines whether they meet specifications. The batch is considered acceptable provided no more than 1 laptop fails to meet specifications. Otherwise, the entire batch has to be tested in the second step. Historical data shows that 95% of the laptops produced adhere to specifications.

Reflect on the following in a minimum of 500 words:

- What are the 4 characteristics of a binomial experiment?
- Can we use a binomial distribution to model this process?