Continuous Random Variables Introduction

In the previous section, we discussed discrete random variables: random variables whose possible values are a list of distinct numbers. We talked about their probability distributions, means, and standard deviations. We are now moving on to discuss continuous random variables: random variables which can take any value in an interval, so that all of their possible values cannot be listed (such as height, weight, temperature, time, etc.)

As it turns out, most of the methods for dealing with continuous random variables require a higher mathematical level than we needed to deal with discrete random variables. For the most part, the calculation of probabilities associated with a continuous random variable, and its mean and standard deviation, requires knowledge of calculus, and is beyond the scope of this course. What we will do in this part is discuss the idea behind the probability distribution of a continuous random variable, and show how calculations involving such variables become quite complicated very fast!

We'll then move on to a special class of continuous random variables—the normal random variables. Normal random variables are very common, and play a very important role in statistical inference.

We'll finish this section by presenting an important connection between the binomial random variable (the special discrete random variable that we presented earlier) and the normal random variable (the special continuous random variable that we'll present here).