

## 5.0: Introduction to Continuous Random Variables

Continuous random variables have many applications. Baseball batting averages, IQ scores, the length of time a long distance telephone call lasts, the amount of money a person carries, the length of time a computer chip lasts, rates of return from an investment, and SAT scores are just a few. The field of reliability depends on a variety of continuous random variables, as do all areas of risk analysis.



Figure 5.0.1 The heights of these radish plants are continuous random variables. (Credit: Rev Stan)

### Note

The values of discrete and continuous random variables can be ambiguous. For example, if  $X$  is equal to the number of miles (to the nearest mile) you drive to work, then  $X$  is a discrete random variable. You count the miles. If  $X$  is the distance you drive to work, then you measure values of  $X$  and  $X$  is a continuous random variable. For a second example, if  $X$  is equal to the number of books in a backpack, then  $X$  is a discrete random variable. If  $X$  is the weight of a book, then  $X$  is a continuous random variable because weights are measured. How the random variable is defined is very important.

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