Print

Demo: Finding the Area Under a Curve

In this video, we show how to find the area under the curve of a probability distribution using the Distribution Calculator teaching module in the JMP Sample Data Index.

To start, we open the Distribution Calculator.

To do this, we go to the Help menu and select Sample Data. Then, under the Teaching Resources outline, we open the Teaching Scripts outline, open the Interactive Teaching Modules outline, and click the link to open the Distribution Calculator.

You can use this module to find the area under the curve for many probability distributions.

We'll use the normal distribution.

The default parameters are for the standard normal distribution, with a mean of 0 and a standard deviation of 1.0.

By default, the shaded area under the curve, and the probability of 0.84, are for the probability that the value, X, is less than or equal to 1.0.

What is the probability that X is between -2 and 2?

We select the third probability option, change Value 1 to -2 and Value 2 to 2. The probability of randomly selecting a value from the standard normal distribution between -2 and 2 is 0.9545.

What if we have a different normal distribution? Let's say that the characteristic is IQ, which is normally distributed and has a mean of 100 and a standard deviation of 15. What is the probability that a person, chosen at random, will have an IQ greater than 130? This is 2 standard deviations from the mean.

We select the second option and enter 130 into the field. You can see that the probability is 0.0228.

You can also change the type of calculation to input probabilities, or percentiles, and calculate corresponding values of the distribution.

For example, you might want to know the 90th percentile for IQ. We'll use the top percentile option for this.

The 90th percentile for IQ is 119.22.

Close