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Types of Data

At the heart of statistical thinking is decision making with data. It might not be intuitive, but all data are not created equal. For the purpose of analysis, data can be classified into three types: nominal, ordinal, and continuous.

Nominal data consist of unordered categories. For example, the data might fall into two categories, such as yes or no, or good or bad. Or the data might have multiple unordered categories, such as the reason for a late shipment. Ordinal data consist of ordered categories, such as severity ratings on a scale from 1 to 5. Continuous data consist of numerical data, such as measurements of dimensions or physical properties.

Why is the modeling type important? Lord Kelvin, a mathematical physicist and engineer, once said that "When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind."

Continuous data are simply much more informative than nominal or ordinal data. You can learn much more from continuous data. Consider this statement: It is 95 degrees Fahrenheit outside (or, 35 degrees Celsius). Versus this statement: It is hot outside. Which of these statements is more informative? Of course, stating the temperature, in degrees, has more context and is less subjective to interpretation than simply saying it is hot outside.

The types of data that you have also determine the statistical methods that you can use. Wherever possible, you should try to characterize your variables using continuous, numerical data rather than categorical data. You learn more about the different types of data, and see some additional examples, in the next module.

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