Decisions with Data

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Our world is built on data. We use it to decide if we should carry an umbrella, to find the fastest way of arriving at our destination, and even to decide which version of a product to buy. We use this data because it helps us to make better decisions for our lives, but companies are also using data to make better decisions.

As more and more companies are seeking to leverage data to make better decisions, they need employees that are capable of performing analysis on that data. This is happening across all industries and departments. Sports teams are using data to evaluate players, determine training schedules, and find weaknesses in their opponents. Credit card companies are using data to identify potential fraud and prevent identity theft. Streaming services use data on your viewing history to recommend shows you might enjoy. Video game companies, healthcare providers, chain restaurants, marketers, airlines, delivery services, and web developers… all use data to make decisions.

Companies, governments, and institutions around the globe are pushing for data driven decision making because data has the power to transform the way we see the world. It allows us to find hidden patterns & relationships in the real world, then use them to improve outcomes and our lives. By driving efficiency, highlighting opportunity, and verifying the truth, data allows us to have confidence in the decisions we make. Which is why no matter where you work, the ability to make decisions from data is becoming an essential skill. In this course, we will expose you to the information you need to understand data (in all its forms) and the technologies associated with analyzing and sharing it.

But what is data? Where does it come from? And how are you supposed to use it? The term "data" can mean very different things to different people. To avoid confusion, let's start with the very basics so we're all on the same page.

Most people associate data with numeric information; measurements of the world around us. For instance, the dimensions of a chair. However, data is not limited to numeric values. We can record other aspects of the chair. It is padded and constructed from wood. It took 3 months to construct. It was made in Peru. We can even record the physical existence of the chair by taking a picture of it. All these recordings qualify as data: the numeric values, the written description, and the photograph. Data comes in many forms, and you already use it more than you know.

However, it is important to clarify the difference between data and information. It may seem like those words are synonyms but separating their meanings will be useful in the future. Data is simply a representation (a recording) of the world around you. Information is the understanding and knowledge extracted from data after it has been studied.

Imagine datapoints as letters of the alphabet. They don't have much meaning on their own. It's only when we consider their surrounding context by looking at them in relation to the other

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letters that meaning can be derived. In this case, the letters are the datapoints and the words they form provide the information.

Data analysis is the process of interpreting a collection of datapoints to understand patterns and trends which you can then use to make decisions. There are many techniques and tools that are used to analyze data and extract information, and we will cover many of them later on, but you likely already use some of these techniques and methods in your day-to-day life.

However, there are limits to what information can be extracted from data. Sometimes you just don't have enough data, or what's available is the wrong data for the question you are trying to answer. There's even a chance the data you have was corrupted or manipulated before it got to you. In the end, the best way to recognize (and even correct) potential issues in data is to build your skill and experience. Exposing yourself to new challenges provides you with more tools and strategies to maximize the information you can extract from data without crossing over to faulty conclusions.

The skills you build when capturing and analyzing data will also extend to other areas of life, whether you are presented with someone else's analysis in a news article or making a decision on an unfamiliar topic (like where is the best place for you to live). Having a good understanding of data limitations and best practices will allow you to ask the right questions to ensure you can make the most informed decision, rather than relying on someone else. Being able to use data to make informed decisions isn't limited to professional situations, it's a life skill that provides many benefits such as:

- Objective support for decisions
- Critical thinking skills that can be applied to almost any situation
- The ability to recognize & reduce bias
- Asking better questions to get better answers
- Job opportunities

Be sure to check out the other Data Essentials modules to learn more about a variety of topics that will help you build a strong foundation of knowledge around all things data!