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Types of Problems

It's important to keep in mind that you can face a broad spectrum of problems. Some problems are easier to solve, and some are much more difficult. Easier problems, which tend to not be very complex, can be solved in hours or days. However, harder problems, which can have layers of complexity, might take months or even years to solve.

Whether a problem will be easy to solve or hard is also based on other criteria, such as the scope of the problem, the availability of relevant data, the nature of the cause of the problem, whether the success in solving the problem can be measured, and the complexity of the solution. Many of the easier problems are simple and straightforward to solve. The scope of the problem is limited, you have good data, and there is usually one easily identifiable root cause.

You might not need to use a rigorous problem-solving methodology to solve these easy problems. However, you should still use a data-driven approach to decision making. That is, you might be able to get to the heart of these easier problems by using basic problem-solving techniques like cause-and-effect diagrams, the 5 Whys or the Is/Is Not method. But you need to verify any conclusions you draw, and any decisions you make, with data. This is captured in a quote attributed to W. Edwards Deming: "In God we trust, all others must bring data!" Note that you learn about cause-and-effect diagrams and the 5 Whys in an upcoming lesson.

For information about the Is/Is Not method, see the Read About It for this module. Perhaps the greatest benefits from applying statistical thinking can be realized when you are trying to solve harder, more complex problems. To solve these problems, you need a structured, data-driven approach. And you most likely need a multidisciplinary team that has been collectively tasked with solving the problem.

As you learned from Roger Hoerl in the opening video, many of the problems that we encounter every day are not overly complex. They are of low to medium complexity. You won't be able to solve massive problems that are ultra-complex and multidimensional, like world hunger. However, you can apply the principles of statistical thinking to solve a majority of the problems that you will face on a day-to-day basis, including the bigger, more complex problems.

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