

1.6: How to Succeed in Statistics

Statistics can feel challenging at times, especially for those who are new to it. However, there are some things you should keep in mind that can help you.

First, focus on organization. There will be lots of numbers, qualitative responses, and symbols throughout your work in statistics which can get confusing and, at times, make it hard for you to identify the exact piece of information you are looking for. However, if you carefully organize the information and steps, it will make finding the information more efficient and less stressful. Imagine that there are 1,000 books about statistics all mixed up in a pile and you have to find one called “Why I Love Statistics” by Dr. Peter to do a book report. Looking for that book in the mess can be overwhelming and you might accidentally grab “Why I Loathe Statistics” by Dr. Pester instead to use for your book report. This is like having disorganized data and notes. Now imagine that instead of a pile, there are 1,000 books about statistics all nicely organized on shelves by title. You can quickly get to the book by Dr. Peter you want and even see it next to the similar book you don’t want by Dr. Pester. You can see clearly which one is the better match to what you are looking for and confidently get right to work on your book report. Let’s take this analogy a step further. Imagine you read the book and put it back in its appropriate place on the organized shelf. Then, three months later, you find out you are going to have a quiz on some topics from that book so you want to review it again. You can quickly locate it again and start refreshing your memory. Having organized and clear data and notes will benefit you as you progress through statistics. It will make it easier to follow your work and find what you need in the moment and be able to quickly return to the right information later when it is time to review.

Second, remember that the order of operations is an important process that is here to make our work easier. We will use order of operations in many places in this book. Just as organization of data and notes helps us, order of operations is a formal way of specifying the order in which the steps of formulas must be completed. This ensures that we always know what to do next and don’t get stymied in the middle of the steps to a complex formula. For a review of the order of operations, see Appendix B).

Third, go back to your foundational math skills when you get confused, frustrated, or overwhelmed. The level of statistics covered in this book uses combinations of only six basic mathematical operations: adding, subtracting, multiplying, dividing, squaring, and square rooting. That’s it. Though we will encounter new symbols for these operations and some formulas which can look quite complex, they are all just versions of the same six basic mathematical operations. For a review basic mathematical operations, see Appendix A). Fourth, consider what statistics can offer you. Statistics is an applied field focused on understanding aspects of the real world. It is used in many disciplines and careers so nearly everyone can find applicability to their academic and occupational pursuits. There are several fields and careers where the use of statistics is obvious such as mathematics, economics, biostatistics, actuarial science, and research more broadly. In addition, health statistics are important to nurses and doctors, test theory is important to educators, developmental modeling is important to child and adolescent development professionals, experimental analytics are important to the sciences, business, health, and education, and knowing how to read and explain statistics is important for journalists, meteorologists, and financial planners. In addition, several roles in the technology and engineering sectors such as user experience (UX) researcher, data scientist, data engineer, machine learning specialist, and engineering statistician require knowledge in statistics. Further, those who pursue careers as content creators are now provided with a variety of analytics that they can learn to use to potentially enhance their success. Thus, statistical skills have broad (and potentially highly valuable) application.

Fifth, statistics can help us to circumvent our biases and make better decisions. Statistics are all around us. They are used to make decisions about us but can also be harnessed to improve decisions made by us. Each of us has information available to us that is at least partially limited to or by our experiences. This in itself is not a problem; it is simply a description of an aspect of human reality. Unfortunately, however, our limited experiences can lead us to biased conclusions and poorer decision-making. Data which capture experiences beyond our own can allow us to see a bigger picture and statistics can allow us to see patterns that aren’t readily apparent through our day-to-day experiences. Thus, when used properly and thoughtfully, statistics can help us circumvent our own biases, become more knowledgeable about our worlds, and become better-informed decision makers.

Sixth, and related, take clear notes including examples to help you as you study statistics. One of the beauties of working in statistics is that we can use real world examples to help us value and think through problems. Thinking about real-world topics or questions can help you understand what the numbers represent and why the formulas include the steps that they do. This can keep you connected to the “why” of statistics at all levels: Why measure the data this way? Why do this specific mathematical operation? Why analyze the data in this way? Why are these patterns appearing in the data and what does this tell us about the world? Why bother with statistics? We will begin to answer these questions in this book.

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