

How hard is statistics and why doesn't it need to be?

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Statistics is a branch of mathematics that involves the collection, analysis, interpretation, and presentation of data. It is a complex subject that can be challenging for some individuals due to its use of mathematical concepts and techniques. However, statistics does not necessarily need to be considered as "hard."

The difficulty of statistics may vary for each individual based on their background, prior knowledge, and level of interest in the subject. With proper guidance and practice, anyone can develop a good understanding of statistics. Additionally, there are various tools and resources available to aid in understanding the concepts and solving problems.

Moreover, statistics plays a crucial role in many fields such as science, business, and social sciences. It helps in making informed decisions and drawing meaningful conclusions from data, thus making it an essential skill to have in today's data-driven world.

In summary, while statistics may seem challenging initially, with dedication and effort, it can be mastered. Its importance and relevance in various fields make it a valuable subject to learn, and with the right approach, it can be an interesting and rewarding subject to study.

How Hard is Statistics? (And Why It Doesn't Need to Be!)

The field of statistics revolves around collecting, analyzing, interpreting, and presenting data.

Because the world is becoming a more digital place, more data is being generated now compared to any time in human history.

This means that it's more important than ever to have a basic understanding of statistics so that you know how to work with data!

For many students in college, it is becoming a requirement to take at least one statistics course even if you aren't majoring in statistics.

For example, most students who major in healthcare, business, computer science, finance, and education will all be required to take at least one statistics course.

And each of these students tend to have the same question:

How hard is statistics?

The answer: On the surface level, statistics *looks hard* only because of all the intimidating symbols.

However, almost all of statistics can be boiled down to knowing which formula to use in different situations.

Once you're able to identify which formula to use for a specific problem, it just becomes a matter of plugging numbers into the formula to get an answer.

Example: The Importance of Knowing Formulas in Statistics

Here is an example of a typical problem you might encounter in an introductory statistics course:

Question: A manufacturer claims that a particular automobile model will get 50 miles per gallon on the highway. The researchers at a consumer-oriented magazine believe that this claim is high and plan a test with a simple random sample of 30 cars. Assuming the standard deviation between individual cars is 2.3 miles per gallon, what should the researchers conclude if the sample mean is 49 miles per gallon?

This question looks pretty intimidating.

However, the hardest part is simply identifying the formula that you need to use to solve this problem.

In this case, this problem requires you to use a with the following formula:

$$z = (x - \mu_0) / (\sigma / \sqrt{n})$$

x: sample mean
 μ_0 : hypothesized population mean
 σ : population standard deviation
n: sample size

Once you know that this is the formula to use, you can simply plug in the numbers given to you in the question:

$$z = (x - \mu_0) / (\sigma/\sqrt{n}) \quad z = (49 - 50) / (2.3/\sqrt{30}) \quad z = -2.3814$$

We can then use the to find that the p-value for a one-tailed test with $z = -2.3814$ is .0087. Since this p-value is less than .05, there is sufficient evidence to reject the manufacturer's claim.

The question looks intimidating, but the hardest part is actually just knowing what formula to use.

The good news is that the more questions you encounter like this, the better you'll be able to identify which formula to use.

Notice that we didn't have to perform any difficult calculus or complex math. We simply needed to plug values into a formula.

Why Statistics Doesn't Have to Be Hard

Here at Statology, I've made it my goal to make statistics as simple as possible to learn.

I've even created the following products that teach all of the core concepts taught in any introductory statistics course:

: An online course that includes 19 videos with 2 hours of total content that teaches you the core concepts taught in introductory statistics.

: An online study guide with over 100 practice problems and solutions that helps you understand all of the core concepts taught in any introductory statistics course.

Elementary Statistics Formula Sheet: A printable formula sheet that contains the formulas for the most common confidence intervals and hypothesis tests in Elementary Statistics, all neatly arranged on one page.

Statistics in Excel Made Easy: A collection of 16 Excel spreadsheets that contain built-in formulas to perform the most commonly used statistical tests.

Each of these resources, along with the free and , are designed to make your life easier as a student and make statistics a bit more bearable.

The following tutorials explain the importance of statistics in various fields: