

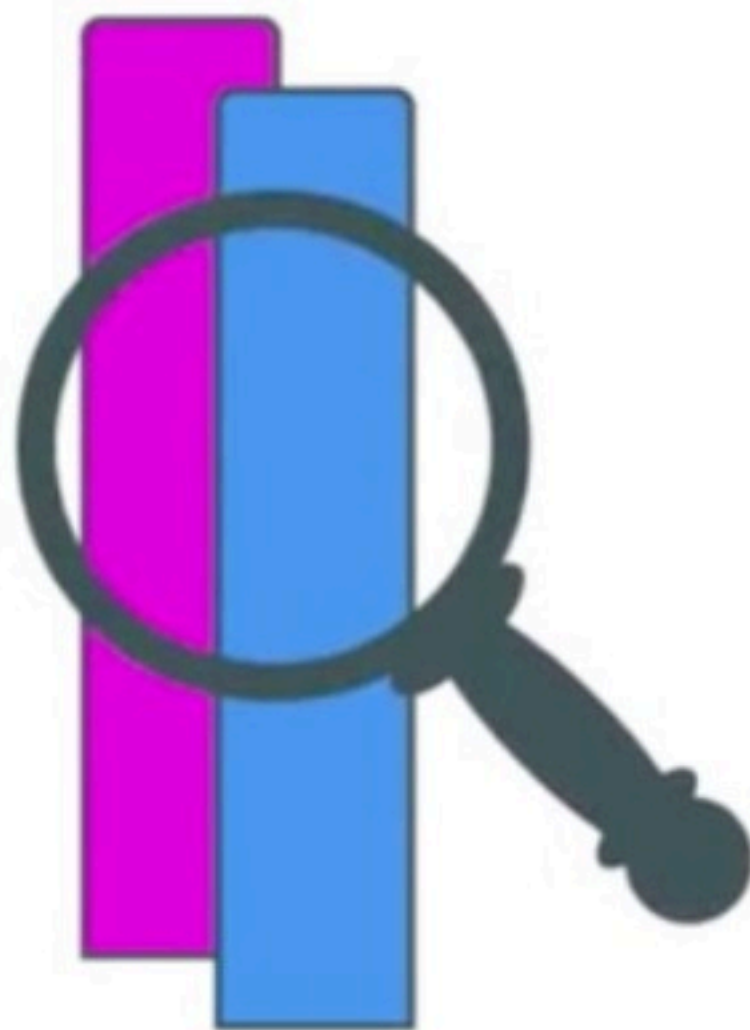
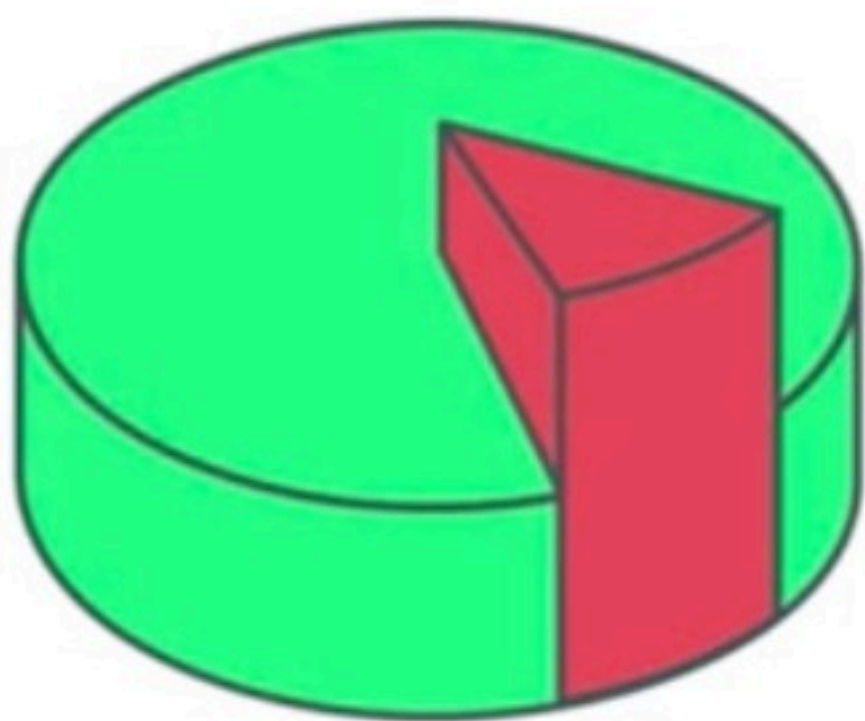
# What Are Statistics?

Statistics is a form of mathematical analysis that uses quantified models, representations and synopses for a given set of experimental data or real-life studies.

Statistics studies methodologies to gather, review, analyze and draw conclusions from data. Some statistical measures include the following:

- Mean
- [Regression analysis](#)
- Skewness
- Kurtosis
- Variance
- Analysis of variance

# STATISTICS



## KEY TAKEAWAYS

- Statistics studies methodologies to gather, review, analyze, and draw conclusions from data.
- There are many different types of statistics pertaining to which situation you need to analyze.
- Statistics are used to make better-informed business decisions.



# Understanding Statistics

Statistics is a term used to summarize a process that an analyst uses to characterize a data set. If the data set depends on a sample of a larger population, then the analyst can develop interpretations about the population primarily based on the statistical outcomes from the sample. Statistical analysis involves the process of gathering and evaluating data and then summarizing the data into a mathematical form.

Statistics is used in various disciplines such as [psychology](#), business, physical and social sciences, humanities, government, and manufacturing.

Statistical data is gathered using a sample procedure or other method. Two types of statistical methods are used in analyzing data: [descriptive statistics](#) and inferential statistics. Descriptive statistics are used to synopsise data from a sample exercising the mean or standard deviation. Inferential statistics are used when data is viewed as a subclass of a specific population.

# Types of Statistics

Statistics is a general, broad term, so it's natural that under that umbrella there exist a number of different models.



# Mean

A mean is the mathematical average of a group of two or more numerals. The mean for a specified set of numbers can be computed in multiple ways, including the arithmetic mean, which shows how well a specific commodity performs over time, and the geometric mean, which shows the performance results of an investor's portfolio invested in that same commodity over the same period.



## Regression Analysis

Regression analysis determines the extent to which specific factors such as interest rates, the price of a product or service, or particular industries or sectors influence the price fluctuations of an asset. This is depicted in the form of a straight line called linear regression.

## Skewness

Skewness describes the degree a set of data varies from the standard distribution in a set of statistical data. Most data sets, including commodity returns and stock prices, have either positive skew, a curve skewed toward the left of the data average, or negative skew, a curve skewed toward the right of the data average.

## Kurtosis

[Kurtosis](#) measures whether the data are light-tailed (less outlier-prone) or heavy-tailed (more outlier-prone) than the normal distribution. Data sets with high kurtosis have heavy tails, or outliers, which implies greater investment risk in the form of occasional wild returns. Data sets with low kurtosis have light tails, or lack of outliers, which implies lesser investment risk.



## Variance

Variance is a measurement of the span of numbers in a data set. The variance measures the distance each number in the set is from the mean. Variance can help determine the risk an investor might accept when buying an investment.

Ronald Fisher developed the analysis of variance method. It is used to decide the effect solitary variables have on a variable that is dependent. It may be used to compare the performance of different stocks over time.

# The Importance of Statistics in Psychology

So why are statistics important in psychology?

First, let's think about the importance of statistics in general. Statistics allow us to make sense of and interpret a great deal of information. Consider the sheer volume of data you encounter in a given day. How many hours did you sleep? How many students in your class ate breakfast this morning? How many people live within a one-mile radius of your home? By using statistics, we can organize and interpret all of this information in a meaningful way.

In psychology, we are also confronted with enormous amounts of data. How do changes in one variable impact other variables? Is there a way we can measure that relationship? What is the overall strength of that relationship and what does that mean? Statistics allow us to answer these kinds of questions.



Statistics allow psychologists to:

- **Organize Data:** When dealing with an enormous amount of information, it is all too easy to become overwhelmed. Statistics allow psychologists to present data in ways that are easier to comprehend. Visual displays such as graphs, pie charts, [frequency distributions](#), and scatterplots make it possible for researchers to get a better overview of the data and to look for patterns they might otherwise miss.
- **Describe Data:** Think about what happens when researchers collect a great deal of information about a group of people. The U.S. Census is a great example. Using statistics, we can accurately describe the information that has been gathered in a way that is easy to understand. Descriptive statistics provide a way to summarize what already exists in a given population, such as how many men and women there are, how many children there are, or how many people are currently employed.



- **Make Inferences Based Upon Data:** By using what's known as inferential statistics, researchers can infer things about a given sample or population. Psychologists use the data they have collected to test a [hypothesis](#), or a guess about what they predict will happen. Using this type of statistical analysis, researchers can determine the likelihood that a hypothesis should be either accepted or rejected. <sup>[1]</sup>



# Statistics in Daily Life

Now that you have a better understanding of why statistics are essential in psychology, it might be helpful to look at how taking a statistics course can help *you*. Obviously, having a solid understanding of statistical methods can help you excel in almost all other classes. No matter what type of class you are taking, whether it is [social psychology](#) or human sexuality, you will be spending a great deal of time learning about research. Your foundation of statistical knowledge will allow you to make better sense of the research you'll find described in your other [psychology courses](#).



Secondly, think about all the claims about psychology that you encounter on a daily basis outside of class. Magazines publish stories about the latest scientific findings, self-help books make proclamations about different ways to approach problems, and news reports often exaggerate or misinterpret [psychology research](#).<sup>[2]</sup> By understanding the research process, including the kinds of statistical analyses that are used, you will be able to become a [wise consumer of psychology information](#) and make better judgments of the information you come across.

Such judgment can help you determine which information is important and should be attended to and which information is safe to ignore. By understanding statistics, you can make better decisions that may affect your health and well-being.<sup>[3]</sup>