**What is Data Analysis? Types, Process, Methods, Techniques**

**What is Data Analysis?**

**Data analysis** is defined as a process of cleaning, transforming, and modeling data to discover useful information for business decision-making. The purpose of Data Analysis is to extract useful information from data and taking the decision based upon the data analysis.

Whenever we take any decision in our day-to-day life is by thinking about what happened last time or what will happen by choosing that particular decision. This is nothing but analyzing our past or future and making decisions based on it. For that, we gather memories of our past or dreams of our future. So that is nothing but data analysis. Now same thing analyst does for business purposes, is called Data Analysis.

In this tutorial, you will learn:

* [Why Data Analysis?](https://www.guru99.com/what-is-data-analysis.html#2)
* [Data Analysis Tools](https://www.guru99.com/what-is-data-analysis.html#3)
* [Types of Data Analysis: Techniques and Methods](https://www.guru99.com/what-is-data-analysis.html#4)
* [Data Analysis Process](https://www.guru99.com/what-is-data-analysis.html#5)

**Why Data Analysis?**

To grow your business even to grow in your life, sometimes all you need to do is Analysis!

If your business is not growing, then you have to look back and acknowledge your mistakes and make a plan again without repeating those mistakes. And even if your business is growing, then you have to look forward to making the business to grow more. All you need to do is analyze your business data and business processes.

**Data Analysis Tools**



Data analysis tools make it easier for users to process and manipulate data, analyze the relationships and correlations between data sets, and it also helps to identify patterns and trends for interpretation. Here is a complete list of [tools](https://www.guru99.com/big-data-analytics-tools.html).

## Types of Data Analysis: Techniques and Methods

There are several types of data analysis techniques that exist based on business and technology. The major types of data analysis are:

* Text Analysis
* Statistical Analysis
* Diagnostic Analysis
* Predictive Analysis
* Prescriptive Analysis

## Text Analysis

Text Analysis is also referred to as Data Mining. It is a method to discover a pattern in large data sets using databases or data mining tools. It used to transform raw data into business information. Business Intelligence tools are present in the market which is used to take strategic business decisions. Overall it offers a way to extract and examine data and deriving patterns and finally interpretation of the data.

## Statistical Analysis

Statistical Analysis shows "What happen?" by using past data in the form of dashboards. Statistical Analysis includes collection, Analysis, interpretation, presentation, and modeling of data. It analyses a set of data or a sample of data. There are two categories of this type of Analysis - Descriptive Analysis and Inferential Analysis.

### Descriptive Analysis

analyses complete data or a sample of summarized numerical data. It shows mean and deviation for continuous data whereas percentage and frequency for categorical data.

### Inferential Analysis

analyses sample from complete data. In this type of Analysis, you can find different conclusions from the same data by selecting different samples.

## Diagnostic Analysis

Diagnostic Analysis shows "Why did it happen?" by finding the cause from the insight found in Statistical Analysis. This Analysis is useful to identify behavior patterns of data. If a new problem arrives in your business process, then you can look into this Analysis to find similar patterns of that problem. And it may have chances to use similar prescriptions for the new problems.

## Predictive Analysis

Predictive Analysis shows "what is likely to happen" by using previous data. The simplest example is like if last year I bought two dresses based on my savings and if this year my salary is increasing double then I can buy four dresses. But of course it's not easy like this because you have to think about other circumstances like chances of prices of clothes is increased this year or maybe instead of dresses you want to buy a new bike, or you need to buy a house!

So here, this Analysis makes predictions about future outcomes based on current or past data. Forecasting is just an estimate. Its accuracy is based on how much detailed information you have and how much you dig in it.

## Prescriptive Analysis

Prescriptive Analysis combines the insight from all previous Analysis to determine which action to take in a current problem or decision. Most data-driven companies are utilizing Prescriptive Analysis because predictive and descriptive Analysis are not enough to improve data performance. Based on current situations and problems, they analyze the data and make decisions.

## Data Analysis Process

Data Analysis Process is nothing but gathering information by using proper application or tool which allows you to explore the data and find a pattern in it. Based on that, you can take decisions, or you can get ultimate conclusions.

Data Analysis consists of the following phases:

* Data Requirement Gathering
* Data Collection
* Data Cleaning
* Data Analysis
* Data Interpretation
* Data Visualization

## Data Requirement Gathering

First of all, you have to think about why do you want to do this data analysis? All you need to find out the purpose or aim of doing the Analysis. You have to decide which type of data analysis you wanted to do! In this phase, you have to decide what to analyze and how to measure it, you have to understand why you are investigating and what measures you have to use to do this Analysis.

## Data Collection

After requirement gathering, you will get a clear idea about what things you have to measure and what should be your findings. Now it's time to collect your data based on requirements. Once you collect your data, remember that the collected data must be processed or organized for Analysis. As you collected data from various sources, you must have to keep a log with a collection date and source of the data.

## Data Cleaning

Now whatever data is collected may not be useful or irrelevant to your aim of Analysis, hence it should be cleaned. The data which is collected may contain duplicate records, white spaces or errors. The data should be cleaned and error free. This phase must be done before Analysis because based on data cleaning, your output of Analysis will be closer to your expected outcome.

## Data Analysis

Once the data is collected, cleaned, and processed, it is ready for Analysis. As you manipulate data, you may find you have the exact information you need, or you might need to collect more data. During this phase, you can use data analysis tools and software which will help you to understand, interpret, and derive conclusions based on the requirements.

## Data Interpretation

After analyzing your data, it's finally time to interpret your results. You can choose the way to express or communicate your data analysis either you can use simply in words or maybe a table or chart. Then use the results of your data analysis process to decide your best course of action.

## Data Visualization

Data visualization is very common in your day to day life; they often appear in the form of charts and graphs. In other words, data shown graphically so that it will be easier for the human brain to understand and process it. Data visualization often used to discover unknown facts and trends. By observing relationships and comparing datasets, you can find a way to find out meaningful information.

### Summary:

* Data analysis means a process of cleaning, transforming and modeling data to discover useful information for business decision-making
* Types of Data Analysis are Text, Statistical, Diagnostic, Predictive, Prescriptive Analysis
* Data Analysis consists of Data Requirement Gathering, Data Collection, Data Cleaning, Data Analysis, Data Interpretation, Data Visualization