



Data Analytics Tutorial for Beginners

Introduction

Ever stare at a “wall of numbers” and have no clue where to start? You are not alone. A lot of data analytics beginners get technical overwhelm: the fear of complex math, confusing software, and “dirty data” that seems impossible to clean.

After all, data analytics is the art of transforming that messy noise into clear, actionable stories. In this tutorial, we break through the jargon to give you exactly what you need to go from “clueless” to “confident.” Download our [Data Analytics Course Syllabus](#) to see your step-by-step roadmap to mastery.

Why Students or Freshers Learn Data Analytics?

Learning data analytics lets you transform raw data into a story bound to drive the business strategy. For freshers in 2026, it's the most approachable “high-growth” career path.

- **Huge Employment Opportunities:** Analysts' employment is supposed to grow 36% by 2031, with millions of new job roles opening up both in India and around the world.
- **Low Barrier to Coding:** Unlike software engineering, you can start off with Excel and SQL, making it perfect for non-tech backgrounds.
- **Industry Agnostic:** Healthcare, Finance, or E-commerce; every sector needs analysts to survive.
- **High Starting Salaries:** Freshers, on average in India, start from ₹4L to ₹7L. It scales up very fast once you master your tools related to Power BI.
- **AI-Resistant Skills:** Because AI automates the report, businesses will always have a need for a human to interpret why the numbers show what they do.

Companies don't really test your tools; they test your logical thinking and problem-solving framework. Get our [Data Analytics Interview Questions and Answers](#) Guide.

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Step-by-Step Data Analytics Tutorial for Beginners

Data analytics is the process of exploring and interpreting data for meaningful patterns that will drive decisions. It has moved from just “reporting the past” to “predicting the future” with a mix of traditional tools and AI in support. This tutorial covers the overall flow of the complete modern data analytics workflow in ten phases.

Step 1. Installation and Setting up the Environment

A data professional works with a “stack” of different tools. For the start, we would advise taking up the industry standard: Microsoft Excel, SQL, and Power BI or Tableau.

1.1. Microsoft Excel: The Hub

You probably have this. If you don't, you can use for free the online version at Office.com. Make sure you have the Analysis ToolPak activated: **File** → **Options** → **Add-ins**.

1.2. The Database: PostgreSQL & pgAdmin

SQL is the language of databases.

- **Download:** Go to postgresql.org and download the setup for your OS.
- **Setup:** It will include pgAdmin upon installation, the graphical interface you will use to write your SQL queries.

1.3. The Visualization: Power BI Desktop

Power BI is currently the leader in the industry for business dashboards.

- **Download:** Microsoft Power BI site.
- **Tip:** Power BI Desktop is free and is only available for Windows. If you are on a Mac, we recommend installing Tableau Public instead.

Step 2: Understanding the Data Analytics Lifecycle

Before you get your hands dirty, understand the process: Data analytics is not a straight line but rather a cycle:

- **Define the Question:** What is the business problem to be solved? e.g. “Why did sales drop in Q3?”
- **Data Collection:** Gathering data from sources such as CSVs, APIs, or SQL databases.
- **Data Cleaning:** This consumes about 80% of your time. You correct typos, fill missing values, and remove duplicates.
- **Exploratory Data Analysis (EDA):** By employing charts, which can be used to show trends and outliers.
- **Insights and Communication:** Development of a final dashboard or report for stakeholders.

Step 3. Data manipulation in Excel

Most of the “quick and dirty” analysis happens in Excel. You have to go beyond mere addition and master the following three areas:

3.1. Fundamental Formulae

- **=VLOOKUP() or =XLOOKUP():** Combining Data from two tables.
- **=IF() & =IFS():** To create columns based on logic, such as If sales > 1000, then “High”.
- **=COUNTIFS(), =SUMIFS():** Summarize data based on specific criteria.

3.2. Pivot Tables

The most powerful single feature in Excel: to be able to summarize thousands of rows of data in seconds, into a useful insight such as Total Sales by Region, without having to write code.

Step 4: SQL, Structured Query Language

In a real job, data doesn’t live in Excel; it lives in a database. SQL enables you to “talk” to that database to get exactly what you need.

The Basic Query Structure:

SELECT

product_name,

SUM(sales_amount) AS total_sales

FROM

sales_table

WHERE

region = ‘North America’

GROUP BY

product_name

ORDER BY

total_sales DESC;

Key SQL “Verbs” to Learn:

- **SELECT:** Choose columns.
- **FROM:** Select the table.
- **WHERE:** Filter the records.
- **JOIN:** Bring two tables together, the most key of the intermediate skills.
- **GROUP BY:** Summarises data like a kind of Pivot Table.

Step 5: Power BI and Data Storytelling

Now that you have queried and cleaned your data, you need to make it visual.

Stakeholders won't look at a SQL table; they want a dashboard.

5.1. Power Query (The ETL Engine)

Inside Power BI is a tool called Power Query. It records every step you take in cleaning, such as “Remove Nulls” or “Capitalize Names”, so that when you hit “Refresh” next month it does all the work automatically for you.

5.2. Visual Building

- **Bar Charts:** It is basically a chart used to compare the data across different categories.
- **Line Charts:** To demonstrate trends within time (e.g., Monthly Revenue).
- **Slicers:** Interactive buttons that provide users with the option to filter the entire dashboard based on Date or Region.

Step 6: Introductory Statistics

You don't have to be a math genius, but you do need to know these basics to prevent incorrect inferences:

- **Mean vs. Median:** Why a few “extreme” values can ruin your average.
- **Standard Deviation:** How “spread out” your data is.
- **Correlation vs. Causation:** Because two things occur at the same time, one does not necessarily cause the other.
- **Outliers:** These are points of data that are so unusual as to possibly be errors.

Step 7: Data Analytics with Python (Optional but Recommended)

The moment you outgrow Excel, you move over to Python. The “Pandas” library is, well, basically “Excel on steroids.”

```
import pandas as pd
```

```
# Load data
```

```
df = pd.read_csv('sales.csv')
```

```
# Filter for High Sales
```

```
high_sales = df[df['revenue'] > 1000]
```

```
# Calculate the average revenue per region
```

```
print(df.groupby('region')['revenue'].mean())
```

If you want to move into Predictive Analytics or work with huge sets that crash Excel, then Python’s sort of essential.

Step 8: Portfolio Development

You aren’t a data analyst without a project to show for it. A good starter project will include :

- **The Dataset:** Find on Kaggle something of your interest (e.g. Netflix viewing habits or Amazon sales).
- **Cleaning:** Describe how you cleaned the messy data.

- **The Viz:** Create a 3-page dashboard in Power BI.
- **The Recommendation:** Don't just show charts; say, "Based on this data, the company should invest more in Marketing for the Western Region."

Explore our [data analyst challenges and solutions](#) guide to learn more.

Real Time Examples for Data Analytics Tutorial for Learners

Real-time data analytics is not only about spreadsheets; it's about giving answers to the high-stakes questions while they are happening. Companies leverage real-time streams to outcompete. Here are some examples:

Retail: "Flash Sale" Optimization

Data from the last 60 minutes, including live website traffic, cart abandonment rates, and current inventory levels.

- **Analysis:** During analysis, the analyst identifies the trend of a particular sneaker trending in Mumbai; however, cart abandonment is very high. This has been achieved using SQL and Power BI.
- **The Action:** The analyst triggers a real-time 10% off notification in that particular region, turning window shoppers into instant buyers.

Supply Chain: Dynamic Routing for Delivery

The real-time GPS coordinates of the delivery fleets, coupled with the live weather and traffic API feeds.

- **The Analysis:** Analysts are using Python (Pandas) to track the "Estimated Time of Arrival" – actual progress:
- **The Action:** If there is something suggesting a storm is detected on a major highway, the system will automatically reroute 50+ trucks to alternate paths and save thousands in fuel, avoiding late-delivery penalties.

Health Care: Patient Vitals Monitoring

Continuous streams from wearable devices – heart rate, oxygen levels – of high-risk patients at home.

- **Analysis:** Diagnostic Analytics identifies any readings that are more than 15% off the patient's personalized "normal" baseline.
- **The Action:** This automatically sends an alert to the dashboard of an on-call nurse, who can provide telehealth intervention before a minor irregularity in results escalates into a medical emergency.

Build Your Own Real-World Portfolio The best way to get hired is by showing that you can solve these exact problems. We've compiled a list of some beginner-friendly projects, with real data sets to simulate these very industry scenarios. Download our Ultimate Guide to [Data Analytics Project Ideas](#).

FAQs About Data Analytics Tutorial for Beginners

1.What is meant by data analytics?

Data analytics is the science of analyzing raw datasets to derive meaningful insights and trends. It involves cleaning, transforming, and modeling data to support better business decision-making. Essentially, it turns numbers into a story that helps organizations understand their past performance and predict future outcomes.

2.What are the 4 types of data analytics?

Descriptive: What happened? (Historical trends)

Diagnostic: Why did it happen? (Root cause analysis)

Predictive: What is likely to happen? (Forecasting)

Prescriptive: What should we do next? (Actionable recommendations)

3.Is data analytics a IT job?

It sits at the crossroads of IT, Statistics, and Business. Though it requires technical skills like SQL or Python, it is usually in departments labeled as "Business Intelligence" or "Operations." Many data analysts work directly within Marketing, Finance, or HR departments rather than the core IT infrastructure team.

4.What are top 3 skills for a data analyst?

SQL: The language through which the programmer can draw information out of databases and manipulate it.

Data Visualization: Using tools like Power BI or Tableau to show insight.

Statistical Literacy: Understand distributions, averages, and probabilities to make sure the analysis isn't misleading or incorrect.

5.What software is used for data analysis?

Basic tools include Microsoft Excel for basic analyses, SQL for querying databases, Power BI or Tableau for dashboarding, and Python/R for advanced statistical modeling. For big data, the analysts often use Snowflake, Google BigQuery, or Apache Spark.

6.Will AI replace data analyst?

AI will almost certainly augment rather than replace analysts. Because although AI systems can perform many tasks of data cleaning and basic reporting, they don't have the "domain expertise" or "contextual judgment" to explain why a trend matters to a particular business. The analyst's role will shift toward interpreting insights generated by AI.

7.Can a data analyst earn 1 crore?

Yes, but usually at a Senior or Lead level (10+ years of experience) in high-paying sectors like Quant Finance, Big Tech (FAANG), or as a specialized consultant. Such compensation packages are usually offered in India to people who have exceptional niche skills in AI/ML or strategic leadership roles.

8.Does TCS hire data analysts?

Yeah, TCS is among the big recruiters for data professionals. They lay off to positions such as Data Analyst, Business Intelligence Associate, and Data Scientist to support their clients across the globe in banking, retail, and manufacturing sectors.

9.Is SQL used for data analysis?

Of course, SQL is widely recognized as the most important skill any data analyst should possess. SQL allows analysts to tap into relational databases in order to filter, sort, and aggregate millions of rows of data, which is essentially the first step in almost every analytic project.

10.What is TCS' basic salary?

For freshers, it typically falls into the following categories: Ninja (~₹3.36 LPA), Digital (~₹7 LPA), and Prime (~₹9 LPA). For experienced analysts, salaries are also good

according to market standards, usually starting from ₹6L and going up to ₹15L+, depending on experience. Explore [Data Analyst Salary in TCS](#).

Conclusion

It's about moving from "I think" to "I know." You learned the lifecycle of cleaning, exploring, and visualizing data-to turn raw noise into strategic clarity. Whether it's in Excel, SQL, or Power BI, it's the same: solve problems and tell stories that drive action. It means that the conversion of a novice to an expert is achieved when there is structured practice with real-life business scenarios. Enroll in our [Certified Data Analytics Course in Chennai](#).