



# Data Analyst Roadmap





# Who Is a Data Analyst?



A Data Analyst is someone who collects, analyzes, and interprets data. They work closely with raw data to generate valuable insights and help companies make decisions. Data analysts are in high demand across various industries because data analysis plays a crucial role in maximizing revenue and achieving business goals. They use statistical methods to analyze data sets and identify trends over time.

# How Do I Become a Data Analyst?

**Step 1: Understand the Field and its relevance**

**Step 2: Master Essential Skills**

- Basic mathematics and statistics
- Knowledge of Microsoft Excel
- Data visualization tools (e.g., Tableau, Power BI)
- Analytics and Business Intelligence platforms (e.g., Tableau, Power BI, Qlik Sense)
- Programming skills (e.g., Python, R)
- Familiarity with databases and SQL

**Step 3: Enroll in Data Analytics Courses**

#### **Step 4: Gain Hands-on Experience**

- Work on practical projects and real-world datasets
- Participate in Kaggle competitions or contribute to data science communities
- Seek internships, entry-level positions, or freelance projects
- Seek mentorship or guidance from experienced data analysts

#### **Step 5: Build a Portfolio**

- Create a portfolio website or GitHub repository
- Include detailed project descriptions, methodologies, visualizations, and outcomes
- Showcase diverse business problems solved using data analytics techniques

#### **Step 6: Stay Updated and Continuously Learn**

#### **Step 7: Network and Seek Job Opportunities**

- Create a portfolio website or GitHub repository
- Include detailed project descriptions, methodologies, visualizations, and outcomes
- Showcase diverse business problems solved using data analytics techniques

# Data Analyst Journey

To begin your Data Analyst journey, you need to answer the following questions:

Why do you want to become a Data Analyst?

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[Sample Portfolio 1](#) [Sample Portfolio 2](#)

[GitHub Project Upload Tutorial](#)

[How to Build Website Portfolio](#)



How can you become a Data Analyst?

What does a Data Analyst do daily?


What skills does a Data Analyst need?

What to expect from Data Analysis?

# Skills & Strength Needed as A Data Analyst

A Data Analyst needs a combination of technical and analytical skills, as well as certain personal qualities, to excel in their role. Some of the essential skills and strengths include:

- **Data Interpretation:** Ability to analyze and interpret complex data sets, identify patterns, and draw meaningful insights.
- **Statistical Analysis:** Proficiency in statistical methods and techniques for data modeling, probability, hypothesis testing, regression analysis, sampling and experiments, and predictive analytics.
- **Data Visualization:** Skill in creating visual representations of data using charts, graphs, and dashboards to effectively communicate insights to stakeholders.
- **SQL and Programming:** Strong knowledge of SQL (Structured Query Language) for data extraction, transformation, and manipulation. Proficiency in programming languages like Python or R is also valuable.
- **Data Mining and Machine Learning:** Familiarity with data mining techniques and machine learning algorithms for classification, clustering, and predictive modeling.

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- **Problem-solving:** Ability to identify problems, define analytical approaches, and develop solutions using data-driven methodologies.
  - **Attention to Detail:** A meticulous approach to data analysis, ensuring accuracy and precision in data collection, cleaning, and interpretation.
  - **Communication:** Effective verbal and written communication skills to convey complex findings to both technical and non-technical audiences.
  - **Business Acumen:** Understanding of business objectives and the ability to align data analysis with organizational goals and strategies.
  - **Curiosity and Continuous Learning:** A curious mindset to explore new technologies, stay updated with industry trends, and continuously improve analytical skills.



# Typical Tools Needed in a Data Analyst Role

As a Data Analyst, you may utilize various tools and software to perform data analysis tasks effectively. Some commonly used tools in the field of data analysis include:

- Excel: Microsoft Excel for data cleaning, basic analysis, and reporting.
- Data Visualization Tools: Tableau, Power BI, or QlikView for creating interactive dashboards and visual representations of data.
- SQL Databases: Microsoft SQL Server, Oracle, MySQL, PostgreSQL, etc., for data extraction and manipulation.
- Programming Languages: Python, R, or Julia for data analysis, statistical modeling, and machine learning.
- Statistical Analysis Software: SPSS, SAS, or Stata for advanced statistical analysis and modeling.
- Data Mining and Machine Learning Tools: RapidMiner, KNIME, or TensorFlow for data mining, predictive modeling, and machine learning tasks.
- Business Intelligence Tools: Looker, MicroStrategy, or Sisense for generating insights and reports from large datasets.
- Data Wrangling Tools: Alteryx, Trifacta, or OpenRefine for data cleaning, transformation, and preparation.

- Version Control Systems: Git or SVN for managing and tracking changes in code and data analysis scripts.
- Data Querying and Extraction: Tools like Apache Spark, Hadoop, or BigQuery for querying and extracting data from large-scale data storage systems.
- Data Cleaning and Transformation: Libraries such as pandas, dplyr, or tidyverse for cleaning, reshaping, and transforming data.
- Data Analysis and Modeling: Libraries such as NumPy, SciPy, scikit-learn, or caret for performing statistical analysis, machine learning, and predictive modeling.
- Data Visualization: Libraries such as Matplotlib, Seaborn, ggplot2, or Plotly for creating visually appealing and informative data visualizations.
- Reporting and Presentation: Tools like Microsoft PowerPoint or Google Slides for creating reports and presentations to communicate findings and insights.
- Cloud Computing Platforms: AWS, Google Cloud, or Microsoft Azure for leveraging cloud-based infrastructure and services to handle large datasets and perform distributed data processing.
- Data Storytelling: The ability to effectively communicate data-driven insights and tell a compelling story using data visualizations, narratives, and presentations.

Note: Excel and a Data Visualization Tool like PowerBI or tableau are the basic tools usually required for Data Analysis Jobs and should be the first skills you learn.

# Industry-Specific Data Analysis Tools:

As a Data Analyst, the specific tools you use may vary based on the industry you work in. Here are some commonly used tools in different industries:

- Finance and Banking: Bloomberg Terminal, Tableau, SQL, Excel, Python (Pandas, NumPy)
- E-commerce and Retail: Google Analytics, Excel, SQL, Python (Pandas, NumPy), Tableau, Power BI.
- Healthcare: SQL, Excel, Python (Pandas, NumPy), R, SAS, Tableau, Power BI.
- Technology and IT: SQL, Excel, Python (Pandas, NumPy), R, Tableau, Power BI, Apache Hadoop, Apache Spark.
- Marketing and Advertising: Google Analytics, Excel, SQL, Python (Pandas, NumPy), Tableau, Power BI, Adobe Analytics.

# Technical Transferable Skills

- **Analytical skills:** Any work experience that involves critical thinking, problem-solving skills, and data-driven decision-making can be highly relevant. This could include tasks such as conducting research, evaluating options, identifying patterns or trends, and making recommendations. .
- **Quantitative Skills:** Jobs that require working with numbers, performing calculations, or dealing with financial data can provide a strong foundation for data analysis. Example includes accounting, finance, or roles that involve budgeting and financial analysis.
- **Data Management:** Experience with managing and organizing data is crucial in data analysis. If you have worked with databases, spreadsheets, or any data management systems, you can leverage that experience in your transition to data analysis.
- **Statistical Analysis:** Jobs that involve statistical analysis, such as market research, scientific research, or quality control, can be highly relevant. Experience with statistical software, conducting surveys, designing experiments, or analyzing data for insights will be valuable.

- **Programming and Data Manipulation:** Proficiency in programming languages commonly used in data analysis, such as Python or R, is highly sought after. If you have experience in software development, scripting, or data manipulation tasks, it can be an advantage in transitioning to a data analysis role.
- **Data Visualization:** The ability to communicate insights effectively through data visualization is crucial in data analysis. If you have experience creating charts, graphs, or dashboards to present data, it will be beneficial in a data analysis career.
- **Domain Knowledge:** Depending on the industry or field you have worked in, your domain knowledge can be an asset. For example, if you have experience in marketing, healthcare, finance, or any other specific industry, combining that knowledge with data analysis skills can make you a valuable asset in that specific industry.

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### **Identify Transferrable Skills**

While specific technical skills are important, employers also value the ability to learn new tools and techniques quickly.

# Soft Transferable Skills

In addition to transferable experience, Data Analysts benefit from developing and highlighting the following skills:

- **Problem-Solving:** Strong analytical and critical thinking skills to identify patterns, uncover insights, and solve complex data-related problems.
- **Communication:** Effective communication skills to present data findings and insights to both technical and non-technical stakeholders.
- **Attention to Detail:** A keen eye for detail to ensure accuracy and reliability in data analysis, maintaining data integrity, and identifying potential errors.
- **Domain Knowledge:** Understanding of the specific industry or domain you are working in, including relevant metrics, KPIs, and business processes.
- **Critical Thinking:** The ability to analyze complex problems, evaluate different options, and make data-driven decisions
- **Problem-solving:** A systematic approach to identifying problems, developing solutions, and implementing strategies to address data-related challenges.
- **Time Management:** The ability to prioritize tasks, meet deadlines, and handle multiple projects simultaneously.
- **Collaboration:** Working effectively in a team environment, collaborating with stakeholders from different departments to understand their data needs and provide actionable insights.

- **Presentation Skills:** The ability to effectively communicate complex data findings to non-technical stakeholders through clear and compelling visualizations, reports, and presentations.
- **Attention to Detail:** A meticulous approach to data analysis, ensuring accuracy, identifying outliers, and maintaining data integrity.
- **Curiosity and Continuous Learning:** A desire to explore new techniques, tools, and methodologies to enhance data analysis skills and stay updated with industry trends.

### **You Might Be Wondering “Do I Need A Degree Or A Certificate To Be A Data Analyst?”**

While a degree or certification is not always required to become a Data Analyst, having relevant education and qualifications can enhance your prospects. Next we'll review some degrees and certifications worth considering.

# Degrees for Data Analyst

**Bachelor's or Master's Degree in Data Science, Statistics, Computer Science, Mathematics, or a related field:** These degrees provide a solid foundation in statistical analysis, data mining, programming, and data visualization.

## **What is the difference between certificate and certification?**

A certificate is an official document issued by an authorized body or institution to verify that an individual has completed a course, training program, or educational requirements. It serves as proof that someone has acquired specific knowledge or skills in a particular subject or field. Certificates are often awarded after a successful completion of short-term programs or courses.

While certification on the other hand, refers to a formal process by which an individual demonstrates their competence, knowledge, or expertise in a specific profession, occupation, or field. It involves meeting the necessary standards and criteria set by a certifying body or organization. Certification is often required for professional practice and may involve passing examinations, demonstrating practical skills. Let's take for instance; udemy is not a certification organization and customer success does not have a recognisable certification



# Certifications for Data Analyst

Course Name	Organization	Price Point	Descriptions
Tableau Desktop Specialist	Tableau	\$100	The Tableau Desktop Specialist certification validates foundational skills in using Tableau for data analysis and visualization.
SAS® Global Certification Program	SAS	\$180	The SAS Certified Data Scientist certification validates skills in data manipulation, advanced analytics, and machine learning, demonstrating proficiency in SAS software for data analysis.
Microsoft Certified: Power BI Data Analyst Associate	Microsoft	\$165	This certification validates the skills required to analyze and visualize data using Microsoft Power BI and Excel, showcasing expertise in data analysis with Microsoft tools.
Microsoft Certified: Power BI Data Analyst Associate	INFORMS	\$495 for members, \$695 for non-members	The CAP certification demonstrates proficiency in analytics and is recognized globally as a mark of excellence in the field.

## **Tableau Desktop Specialist**

## **SAS Global Certification Program**

## **Microsoft Certified: Power BI Data Analyst Associate**

## Online Data Analysis Courses

Course Name	Organization	Price Point	Descriptions
Introduction to Data analytics	Coursera	Free	This course presents you with a gentle introduction to Data Analysis, the role of a Data Analyst, and the tools used in this job. You will learn about the skills and responsibilities of a data analyst and hear from several data experts sharing their tips & advice to start a career.
Complete Data Analyst Boot camp	Udemy	\$57.90	This course provides the complete preparation you need to become a data analyst. Acquire a big picture understanding of the data analyst role. Learn beginner and advanced python, Be able to work with text file.
Introduction To Data Analysis	Alison	Free	This free online course in data analysis will help you understand problems that organizations face by exploring data in meaningful ways.
Data Analysis	Linkedin	Free	In this course, you will learn the latest quantitative and qualitative data analysis skills for effective business decision-making and explore the necessary tools, such as Microsoft Excel, Tableau, SQL, Python, R, and more.

## Online Data Analysis Courses

Course Name	Organization	Price Point	Descriptions
Data Analysis	Simplilearn	\$89.09/Month	This Data Analytics course makes you a data analytics expert. The course helps you learn analytic tools and techniques, how to work with SQL databases, R, and Python, How to create data visualizations.
Data analyst Bootcamp	Alex the Analyst	Free	This Data Analytics course makes you a data analytics expert. The course helps you learn analytic tools and techniques, how to work with SQL databases, R, and Python, How to create data visualizations.
Complete Data Analysis course	Chandoo	Free	This course takes beginners through a comprehensive journey, providing free training to master Excel data analysis skills and transform participants into proficient data analysts.

**Note: You may take Coursera courses for free through the American Dream Academy.**

**Data Analysis: Simplilearn**

**Data Analyst Bootcamp**

**Complete Data Analysis Course**

**American Dream Academy**

