Data Analyst Roadmap 2025/26

- Job Category: `Entry level` or `Mid Level`

Understand the Role of Data Analyst

What does a Data Analyst do?

- Collect, clean, and analyze data to provide actionable insights.
- Use tools to create reports, dashboards, and visualizations.
- Collaborate with stakeholders to make data-driven decisions.

Responsibilities

- Data collection and preparation.
- Data analysis and visualization.
- Reporting and communication.

Must Watch This Video!

Step 01: Python & Python Libraries

Why Learn Python?

- Python is the most versatile language for data analysis and manipulation.
- Widely used in data analytics for automating tasks, manipulating data, and creating visualizations.
- Also used for **Statistical Machine Learning** with the `sklearn`, `SciPy` and `statsmodels` library.

What to Learn?

- **Python Basics**
  - Variables, data types, loops, conditionals, and functions.
- **Libraries**
  - **NumPy:** For numerical computations.
  - **Pandas:** For data manipulation (DataFrames, cleaning data, handling datasets).
  - **Matplotlib/Seaborn:** For creating visualizations.
  - **Plotly:** For interactive visualizations.
  - **Jupyter Notebooks:** These are used for organizing and presenting your code.

Resources

- Official Docs
- This Python Playlist is Sufficient for Data Analyst

- Pandas Tutorials
- Practice with Python datasets.

R Language (Optional)

Why Learn R?

- Excellent for statistical computing, data visualization, and academic research.
- Ideal for creating interactive dashboards with **R Shiny**.

What to Learn?

- **Basics:** Variables, data types, loops, functions.
- **Data Manipulation:** `dplyr`, `tidyr`.
- **Visualization:** `ggplot2`, `plotly`.
- **Statistical Modeling:** Regression, hypothesis testing.
- **Dashboards:** Build interactive apps with **R Shiny**.

Resources

- Complete Applied Statistics for Data Scientists with R

Step 02: Statistics

Why Learn Statistics?

- Provides the foundation for understanding data, patterns, and trends.
- Core skills for hypothesis testing and decision-making.

What to Learn?

- Descriptive Statistics: Mean, median, mode, variance, standard deviation.
- Inferential Statistics: Hypothesis testing, confidence intervals, t-tests.
- Probability: Probability distributions, Bayes' theorem.
- Data Distributions: Different kinds of distributions.
- Correlation vs. Causation: Understand relationships between variables.

Resources

- Statistics for Data Analytics, Data Science & AI.
- Complete Statistics for Data Science
- Statistics Module of Data Analysis Specialization
- Practice using Python (NumPy and SciPy) or Excel.

Step 03: Excel

Why Learn Excel?

- A widely used tool for quick data analysis and reporting.
- Versatile for creating dashboards and handling structured data.

What to Learn?

- Basics: Data cleaning, sorting, and filtering.
- Advanced: Pivot tables, VLOOKUP, HLOOKUP, and conditional formatting.
- Formulas: SUM, AVERAGE, IF, COUNTIF, etc.
- Data Analysis ToolPak: Regression, histograms, and other statistical tools.

Resources

- Microsoft Excel for Data Analysis
- Excel Module of Data Analysis Specialization
- Practice creating small dashboards and reports.

Step 04: Power BI

Why Learn Power BI?

- A powerful business intelligence tool for creating dynamic dashboards and reports.
- Helps in visualizing and sharing insights interactively.

What to Learn?

- Importing data from multiple sources.
- Building and customizing dashboards.
- Creating calculated columns and measures (using DAX).
- Designing interactive reports with filters and slicers.

Resources

- Power BI's tutorials.
- PowerBi Module of Data Analysis Specialization
- Practice by replicating real-world dashboards using sample datasets.

Step 05: Tableau / Data Studio

Why Learn Tableau or Data Studio?

- Both are user-friendly visualization tools widely used for creating impactful reports.
- Google Data Studio integrates well with Google's ecosystem (Sheets, BigQuery).

What to Learn?

- Tableau: Data blending, creating charts, and dashboards.
- Data Studio: Connecting Google Sheets, customizing reports, and sharing insights.
- Advanced: Adding calculated fields, and creating interactive visuals.

Resources

- Tableau.
- Google Data Studio.
- Tableau/Looker Studio Module of Data Analysis Specialization

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Step 06: Statistical Machine Learning for Advanced Analytics (Recommended)

Why Learn Statistical Machine Learning?

- To understand predictive analytics, regression, and time series forecasting.
- Provides a statistical foundation for machine learning models.

What to Learn?

- **Regression Analysis**:
  - Linear, Non-Linear, and Polynomial Regression.
  - Multivariate Regression techniques.
- **Time Series Analysis**:
  - Forecasting trends and seasonality.
  - ARIMA models and other time series techniques.
- **Classification**:
  - Logistic Regression.
  - Decision Tree, Random Forest, SVM, etc.

Resources

- Statistical Machine Learning Playlist
- Practice with Python's `sklearn` and `statsmodels` libraries.

Step 07: SQL
Why Learn SQL? - Essential for querying and extracting data from databases. - Most companies store their data in relational databases like MySQL, PostgreSQL, or SQL Server.
What to Learn? - Basics: SELECT, INSERT, UPDATE, DELETE. - Intermediate: Joins (INNER, LEFT, RIGHT, FULL), subqueries. - Advanced: Window functions, CTEs (Common Table Expressions), and optimizing queries.
Resources - SQL Learning Playlist - Programming with Mosh - SQL Playlist - SQL Module of Data Analysis Specialization - Tools like MySQL Workbench, SQLite, or PostgreSQL.

Step 08: Projects

Why Work on Projects?

- Practical experience to apply all the skills learned.
- Helps in building a strong portfolio for job applications.

Ideas for Projects

1. **Python:**
   - Analyze sales data to find trends and patterns.
   - Clean and visualize COVID-19 datasets.
2. **SQL:**
   - Create queries to analyze e-commerce sales or HR databases.
3. **Excel:**
   - Build a sales or financial dashboard.
4. **Power BI/Tableau:**
   - Design an interactive dashboard for customer segmentation or marketing performance.
5. **End-to-End Project:**
   - Use Python for data cleaning, SQL for data extraction, and Power BI/Tableau for visualization.

More Project Ideas for Data Analyst/BI Analyst

1. **Sales Trend Analysis**: Use **SQL** and **Tableau/PowerBi** to analyze sales trends and visualize top-performing products.

2. **Customer Segmentation**: Perform clustering with **Python (Pandas, Scikit-learn)** and visualize results in **Tableau/PowerBi**.

3. **Website Traffic Analysis**: Analyze Google Analytics data with **Excel** and create dashboards in **Looker Studio/Tableau/PowerBi**.

4. **Retail Inventory Optimization**: Use **R** for inventory analysis and visualization to improve stock management.

5. **Marketing Campaign Analysis**: Evaluate campaign performance using **Tableau/PowerBi** and statistical analysis in **Excel**.

6. **HR Attrition Dashboard**: Build an interactive dashboard using **Power BI** with data insights from **SQL**.

7. **Financial Statement Analysis**: Perform financial ratio analysis in **Excel** and automate reporting with **Python**.

8. **Logistics and Supply Chain Analysis**: Use **Tableau/PowerBi** to visualize supply chain delays and **SQL** for querying data.

9. **Customer Support Ticket Analysis**: Analyze customer support trends with **Python (Pandas, Matplotlib)** and create KPIs in **Power BI**.

10. **Stock Market Trend Analysis**: Perform stock trend analysis using **Python (yFinance, Matplotlib)** and dashboards in **Tableau**.

Where to Find Data?

- Kaggle
- UCI Machine Learning Repository
- Data.gov
- World Bank
- GitHub Repo

Final Note: Workflow Integration

1. Extract data using **SQL**.
2. Clean and manipulate it using **Python** or **Excel**.
3. Analyze the data using **Statistics**.
4. Visualize insights with **Power BI**, **Tableau**, or **Data Studio**.
5. Showcase results in a project or portfolio.

By following this roadmap step-by-step, you'll gain the skills needed to succeed as a `Data Analyst` or `BI Analyst`. Let me know if you'd like additional resources or specific examples! Just write an `email` to me.

Recomended Courses at aiQuest Intelligence

2. SQL, Statistics & Data Analysis Tools
3. Basic to Advanced Python
4. Machine Learning & Data Science Core Concepts

Note: We suggest these premium courses because they are well-organized for absolute beginners and will guide you step by step, from basic to advanced levels. Always remember that `T-shaped skills` are better than `i-shaped skill`. However, for those who cannot afford these courses, don't worry! Search on YouTube using the topic names mentioned in the roadmap. You will find plenty of `free tutorials` that are also great for learning. Best of luck!

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