



Email from Business Analyst:

Subject: Data Analysis & Visualization Tasks – Website Traffic & Conversion Data

Dear Rahul,

I hope you're doing well. Please find attached the "**WebTraffic_Q1_2025.csv**" file containing Q1 website traffic and user interaction data. We need your help in analyzing this data to extract meaningful insights that will guide our upcoming digital marketing strategies.

Below are the requirements for this analysis:

✓ Analysis & Visualization Tasks:

1. Data Preparation:

- Parse the 'VisitDate' column into datetime format.
- Create new columns for **Month**, **Day of Week**, and **Week Number**.
- Handle any missing or malformed data entries, particularly in the 'SessionDuration' and 'PageViews' columns.

2. Traffic Trend Analysis:

- Plot the **daily number of sessions** over time for Q1.
- Generate a line chart comparing **weekly traffic trends** across January, February, and March.

3. User Engagement Metrics:

- Calculate the **average session duration** and **average page views per session**.
- Identify the **top 5 referral sources** bringing the most traffic and visualize this with a horizontal bar chart.

4. Conversion Analysis:

- Calculate the overall **conversion rate** (Total conversions / Total sessions).
- Plot a pie chart showing the **distribution of conversion sources** (e.g., Direct, Organic, Paid, Referral).

5. Device & Platform Insights:

- Group data by **device type** (Desktop, Mobile, Tablet) and show average session duration for each.
- Plot a grouped bar chart of **conversion rate by device type**.

6. Bounce Rate Pattern:

- Plot a line graph of **average daily bounce rate**.
- Highlight days where the bounce rate exceeded 70%.

Attachments:

Dataset - [WebTraffic_Q1_2025.csv](#)

Please perform all analysis using Python, Pandas, NumPy, and Matplotlib only (no seaborn or sklearn). Provide the scripts, visualizations, and any relevant observations or summaries.

Let me know if you need any clarification. We're looking forward to your insights.

Best Regards,

Anupam Shah

Marketing Insights Division

DigiData Pvt. Ltd.