PROJECT TITLE:

Blood Donation Analysis Report

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Question: How can we record and analyze the number of donors, blood groups, and camp

locations using Excel?

Summary: Build a donor record sheet and visualize how many donors contributed by location and blood group.

Description: Students use basic Excel formulas and charts to track participants, sort by blood.

Functional Components:

* Data input sheet with Date, Donor Name, Blood Group, Location

* COUNTIF formula to count group-wise donors

* PivotTable for location-wise summary

* Bar chart for blood group frequency

Expected Output: Chart and table showing total donors per group and per camp, helping in planning future drives.

Repo File: https://github.com/adarsh-0224/Blood-Donation-Analysis.git

Excel File:https://github.com/adarsh-0224/Blood-Donation-Analysis/blob/main/donor_dashboard.xlsx

A Comprehensive Report on Blood Donation Analysis Report

1. Overview

The Blood Donation Dashboard is designed to analyze blood donation data across different locations, genders, days, and blood groups. This analysis provides valuable insights for optimizing donation drives, identifying donor behavior patterns, and ensuring blood supply adequacy. The dashboard makes use of Excel tools like Pivot Tables, Charts, and Slicers to visualize and interact with the data.

2. Dataset Overview

The dataset includes the following columns:

Date: Date of donation

Month: Month of donation

DayOfWeek: Day name

Name: Donor's Name (anonymized)

Blood Group:

A-	**A+**	**AB-**	**AB+**	**B-**	**B+**	**O-**	**O+**

Location: Campus A, Campus B, City Center, Community Hall.

DonorID: Unique donor ID

Gender: Male/Female

Total Entries: 1050 donation records

Time Period: Covers multiple months/years (from 2024-07 to 2025-08).

3. Donor Count By Blood Group – Table Overview

Blood Group	Donor Count
A-	137
A+	146
AB-	148
AB+	142
B-	114
B+	133
O-	111
O+	119
Grand Total	1050

Location-wise Blood Group Distribution

Location	A-	A+	AB-	AB+	B-	B+	O-	O+	Grand Total
Campus A	36	22	23	20	15	28	23	34	201
Campus B	21	32	33	29	29	25	27	12	208
Campus C	19	28	35	37	33	24	18	26	220
City Center	33	33	26	21	21	32	23	26	215
Community Hall	28	31	31	35	16	24	20	21	206

4. Data Analysis

A. Blood Group Trends

Most common blood group: AB+

Least common blood group: O+

B. Gender-wise Distribution

Male Donors: 51.24%

Female Donors: 48.76%

✔ Fairly balanced gender representation.

C. Weekly Trends

Most Active Day: Friday (173 donations)

Least Active Day: Tuesday (138 donations)

D. Location-wise Total Donors

Location	Donor Count
Campus A	**201**
Campus B	**208**
Campus C	**220**
City Center	**215**
Community Hall	**206**

✔ Campus C is the most active location in terms of donations.

E. Monthly Trends

From your dashboard:

Donation peaks observed in May.

March, July, and August also show relatively high volumes.

5. Data Distribution Overview

A. Weekly Donor Distribution (Pie Chart)

DayOfWeek	Donor Count
Sunday	150
Monday	141
Tuesday	138
Wednesday	149
Thursday	155
Friday	173
Saturday	144

B. Donors by Location and Blood Group (Bar Chart)

Balanced spread of all blood types across locations.

Highest AB+ and A+ group presence in Campus C and City Center.

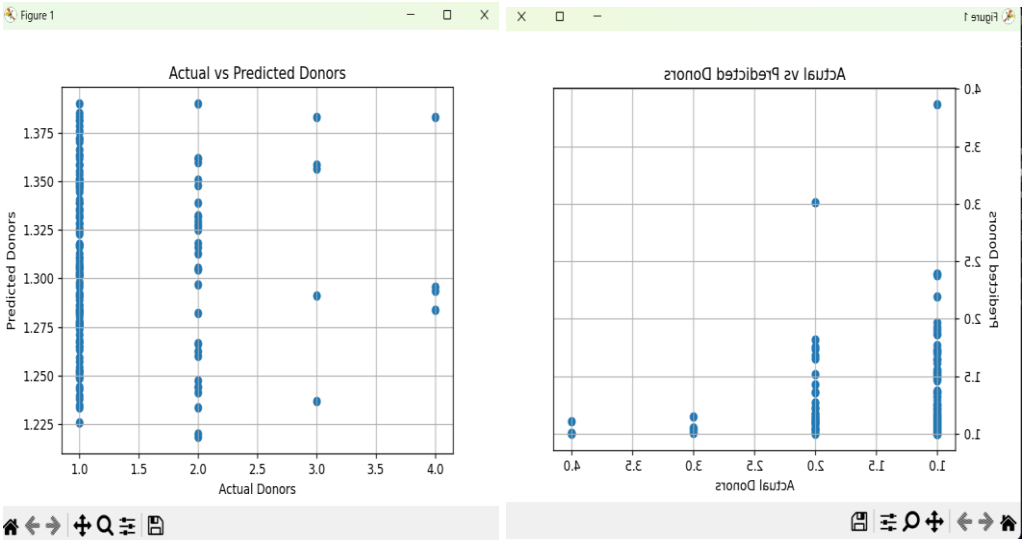
C. Gender vs. Location (Stacked Bar)

All locations show near-equal male/female participation.

Slight male dominance (~51%).

6. ML Model Development

a. ML_Model.py screenshot b. Forest_Regressor_Model.py screenshot



MAE = 0.49 MAE = 0.52

R2 score = -0.00 R2 score = -0.51

7. Integration pf SQL/Python into data workflow

This project analyzes blood donation data to create a dashboard for better insights. It involves cleaning and processing Excel data using Python, standardizing fields like name, blood group, and location, and extracting date-based patterns. The cleaned data is exported for use in visual dashboards, helping organizations track trends and improve donor management effectively.

The final result is a structured dataset saved as sql_outputs.xlsx and donor_dashboard.xlsx, ready for visualization in a user-friendly dashboard interface to help track trends in blood donation.

8. Insights and Recommendations

✅ Key Insights

Friday is best for organizing drives—highest turnout.

Campus C is the most responsive location.

AB+ is the most donated blood type; O+ is the least—need to encourage more O+ donors.

✅ Operational Suggestions

Focus campaigns on Tuesdays to improve donation on low-volume days.

Run awareness programs for rare blood types like O+ and B-.

Ensure location rotation to maintain donor engagement across centers.

9. Ethical and Bias Awareness

⚠️ Potential Biases

Gender Bias: Slight male overrepresentation. Ensure inclusivity and comfort for female donors.

Location Bias: Heavier activity in Campus C may reflect over-reliance on one location.

Sampling Bias: If this data doesn't cover all possible donors (e.g., rural areas), insights may not generalize.

✅ Ethical Considerations

Privacy: Ensure anonymized data (e.g., Donor IDs instead of names).

Inclusivity: Design outreach that respects gender, religion, age, and accessibility.

Transparency: Clearly communicate how donor data is used and stored.

Final Summary

Total Donors: 1050

Most Common Blood Group: AB+

Most Active Day: Friday

Highest Donor Location: Campus C

Balanced Gender Ratio (Slight male lead)

This dashboard is a powerful tool for decision-makers in healthcare or campus blood drives to optimize outreach, planning, and inventory management.