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# EXPLORATORY DATA ANALYSIS

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## **Objective:**

The objective of this Exploratory Data Analysis (EDA) is to evaluate outreach call performance across agents, countries, and time periods. The analysis aims to identify patterns, inefficiencies, and data quality issues that affect call connectivity and overall outreach effectiveness, while providing actionable insights for operational improvement.

## **Dataset Overview**

The dataset contains outreach call records including agent details, country information, call timing, and call outcomes (connected or failed). The analysis focuses on understanding

agent productivity, geographic coverage, temporal call distribution, and call success rates.

From our analysis, the KPI's are:

- **Total Number of Countries:**



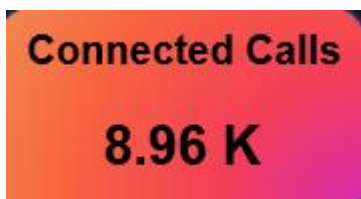
- **Agent Productivity Rate:**



- Calculation:  $\text{Total Calls} \div \text{Total Agents}$
- Total Agents: 13
- Average Calls per Agent: 2,914 calls

This metric reflects the average outreach workload handled by each agent.

- **Call Connection Rate:**



- Calculation:  $\text{Connected Calls} \div \text{Total Calls} \times 100$
- Connected Calls: 8,957
- Connection Rate: 23.65%

Only about one-fourth of total outreach attempts resulted in successful connections, indicating scope for improvement in outreach effectiveness.

- **Call Failure Rate:**



- Calculation:  $\text{Failed Calls} \div \text{Total Calls} \times 100$
- Failed / Not Connected Calls: 28,924
- Failure Rate: 76.35%

A significantly high failure rate suggests challenges such as unreachable contacts, incorrect data, or suboptimal calling windows.

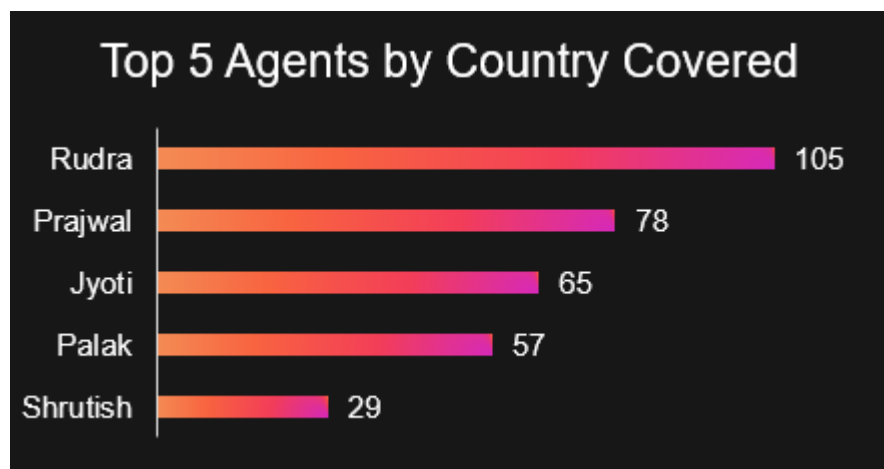
Insights gotten from our analysis include:

1. Agents With Most Calls: This chart reveals the number of calls that came from Top 5 agents with most calls.



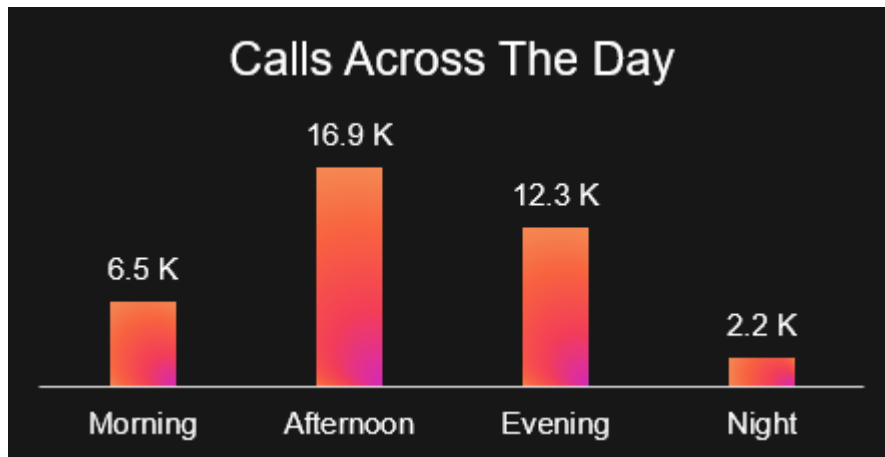
Insights: Rudra has made the most calls and leads with a huge margin; Rudra has over 14,000 calls. Second place Prajwal has a number of calls less than that of First-place Rudra.

2. Top 5 Agents by Country Covered: Now that we understand which agents have the most general calls, we also need to look into which agent covers a wider range. This visualization shows the agents with the most calls across different countries.



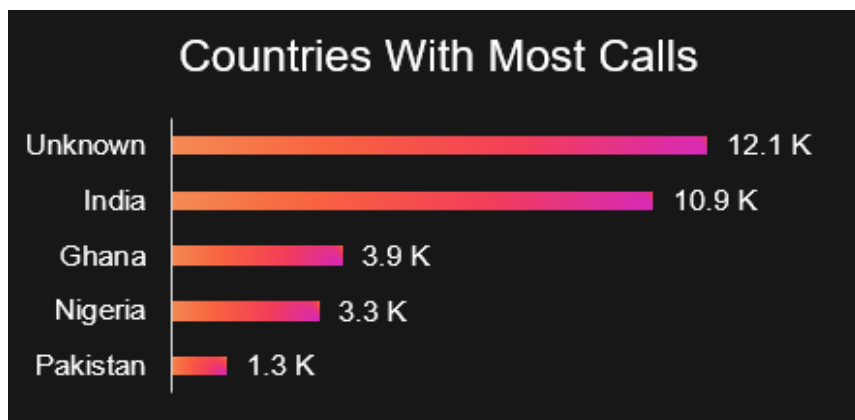
Insights: Out of 125 registered countries we have, Rudra has made calls across 106 countries making him the most active agent once again. Second place Prajwal has 78 countries while Shrutish has 29 countries.

3. Calls Across the Day: Another metric we need to understand is the volume of calls undergoing during a day and what time during the day they occur.



Insights: Having 9am-12pm as Morning, 12pm-4pm as Afternoon, 4pm-7pm as Evening and 7pm-11pm as Night. We can see that Afternoon has the highest volume of calls with almost 17,000 calls. Evening has over 12,000 calls while the least volume of calls come at night.

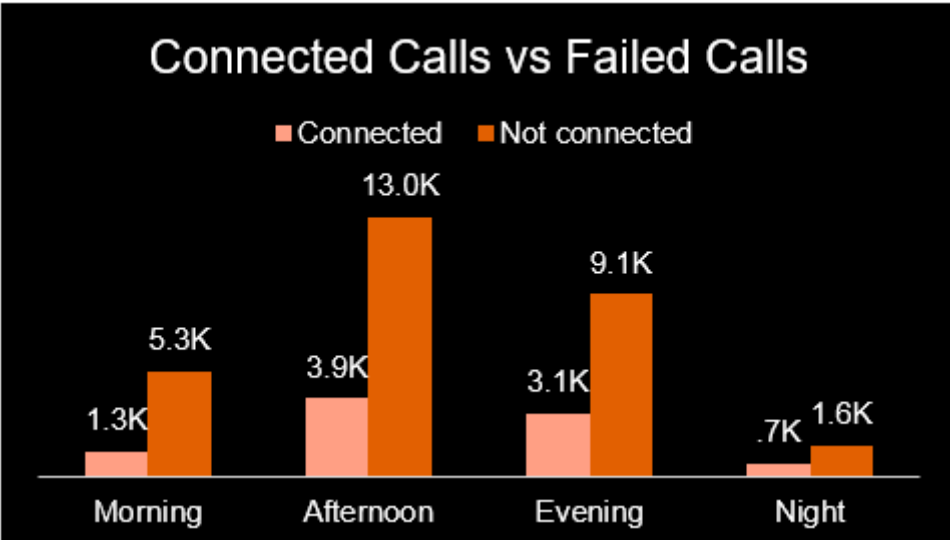
4. Countries With Most Calls: Having 125 countries, we need to know our busiest countries.



Insights: A very high and alarming records were unable to identify with any country, over 12,000 calls happened without identifying which countries were involved in the calls. India comes in second-place with almost 11,000 calls coming from them. Ghana in third place with almost 4,000 calls.

5. Connected Calls vs Failed Calls: Having understood the volume of calls occurring throughout the day, now we need to

investigate between Successful calls and the unsuccessful calls to know which has a higher percentage.



Insights: Across Morning till night, there’s always a higher number of calls that failed to connect.

Key Findings:

Area	Key Finding	Impact
Data Quality	Large number of calls missing country data	Limits geographic insights
Agent Performance	Few agents dominate call volume	Possible workload imbalance

<b>Time Analysis</b>	Afternoon has highest activity	Efficiency not guaranteed
<b>Call Outcomes</b>	Failed calls dominate	Low outreach effectiveness

## Anomalies:

KPI Area	Identified Anomaly
Country Coverage	Large volume of calls missing country data
Agent Productivity	Few agents handle majority of calls
Agent Effectiveness	High volume $\neq$ high success
Call Connection Rate	Low across all time periods
Call Failure Rate	Dominates total outreach
Time Analysis	Peak hours do not improve outcomes

## Conclusion:

The EDA reveals that while outreach activity is high, effectiveness is limited by data quality issues and a high call failure rate. A small number of agents handle most of the workload, and missing country information significantly restricts geographic insights. Addressing these issues through

better data validation, efficiency-based performance metrics, and optimized calling schedules can substantially improve outreach outcomes.