ABC Call Volume Trend Analysis

Ankita Taneja

trainity

Welcome To Presentation

I'm Ankita, and I'll be sharing with you my beautiful ideas.
Follow me at @ig_she_has_no_idea to learn more.

Table Of Contents

1
Introduction

Our Company

Trainity

A Education Software Company

What we do?

Provide Education LMS to students and professionals to grow through learning.

Project Description

In this project, I will analyze inbound customer support operations, focusing on key performance metrics such as queue time, call duration, and call status. The goal is to enhance customer experience by identifying trends and areas for improvement.

- Queue time: Prolonged wait times may indicate the need for additional agents or a more efficient call routing system.
- Call duration: Extended call times could highlight training gaps or suggest the need for AI-driven solutions like IVR to streamline interactions.
- Call status: Evaluating the proportion of answered, abandoned, and transferred calls can help pinpoint service bottlenecks and customer pain points.

By utilizing predictive analytics, intelligent call routing, and automation, you can uncover insights that drive operational efficiency and improve customer satisfaction. Would you like assistance with specific data analyses or visualizations?

2

Approach

What Do We Offer?

Project Understanding & Goal Definition

Before diving into data analysis, clarify the objectives:

- Identify inefficiencies in inbound call handling.
- Improve agent performance and customer satisfaction.
- Reduce queue times, abandoned calls, and optimize call routing.
- Explore AI-powered tools for better CX.

Data Collection & Cleaning

You mentioned having a dataset with 23 days of inbound call data, including:

- Agent details (Name, ID)
- Queue time (Wait time before connecting to an agent)
- Call time (Timestamp of the call)
- Call duration (Length of the conversation)
- Call status (Answered, Abandoned, Transferred)

Steps to Clean the Data

- Handle missing or null values.
- Convert timestamps to datetime format for proper time-based analysis.
- Remove duplicates and outliers (e.g., unusually long or short calls).
- Standardize categorical values (e.g., call statuses).

What Do We Offer?

Exploratory Data Analysis (EDA)

Perform initial analysis to understand patterns in the dataset.

Key Analyses

- ✅ Queue Time Analysis:
- ✅ Call Duration Insights:
- ✅ Call Status Breakdown:
- ✅ Agent Performance Analysis:
- ✅ Time-based Call Trends:

Create Key Metrics & Visualization

Perform creating pivot tables and slicers to build interactive dashboards. Apply Conditional formatting.

Visualization Techniques

- ✅ Bar Graph
- ✅ Scattered Plots
- ✅ Box Plots
- ✅ Bubble Graph
- ✅ Stack graph


3
Tach Stack

Tech Stack

The Technologies I used in this project:

Our Team

Ankita Taneja

Data Analyst Intern

Job Role

- Data Collection & Cleaning
- Data Analysis & Insights Generation
- Data Visualization & Reporting
- SQL & Database Management
- Working with Business & Technical Teams
- Learning & Skill Development by handover the projects
- Preparing video presentation
- Upload the Project to G-drive/ Github

trainity

Timeline

Tasks

Insights

Results

Conclusion

TASKs

Elaborated the Tasks

Task 1

What is the average duration of calls for each time bucket?

Task 2

Can you create a chart or graph that shows the number of calls received in each time bucket?

Task 3

What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

Task 4

Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%.

T1 Insights

Step 1: Load & Prepare Data

1. Import the Dataset: Open the file in Excel (CSV/XLSX).
2. Ensure Proper Formatting:
   - Convert the Call Duration column into numerical format (minutes/seconds).
     (Not needed in the project)
   - Use a Time Bucket Column with other columns.

Step 2: Calculate Average Call Duration for Each Time Bucket

📌 Using Pivot Tables

1. Insert Pivot Table:
   - Select Insert → PivotTable → Choose the dataset.
   - Place Time Bucket in "Rows".
   - Place Call Duration in "Values" (Set to "Average").
   - Format the column to show results in minutes/seconds.

📊 Visualization:

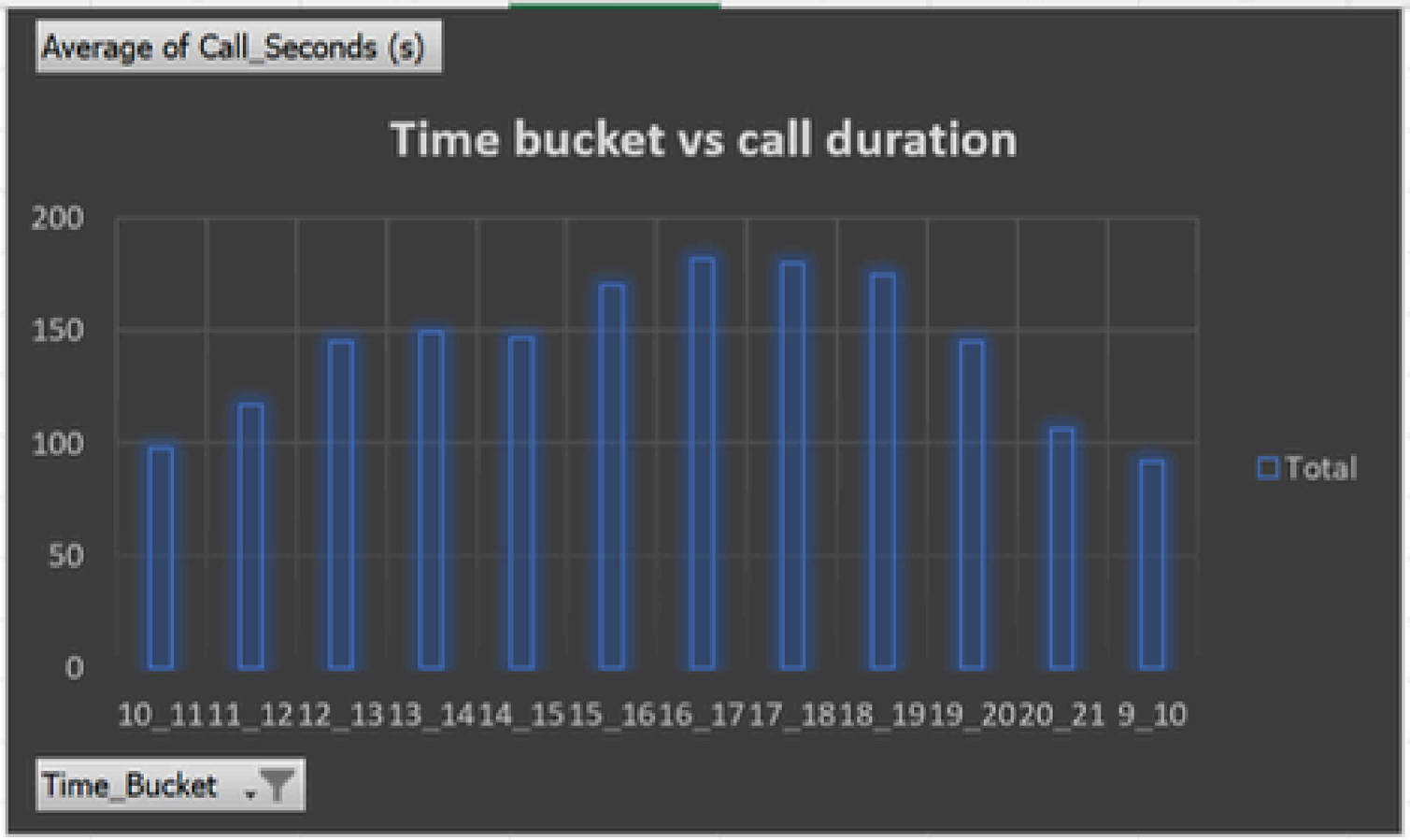
- Insert a Bar Chart or Line Chart to display average call duration by time bucket.
- Use Conditional Formatting to highlight longer durations.

Step 3: Key Insights from the Analysis

🔹 Identify which time bucket has the longest average call duration.

🔹 Determine peak hours when customers engage in longer conversations.

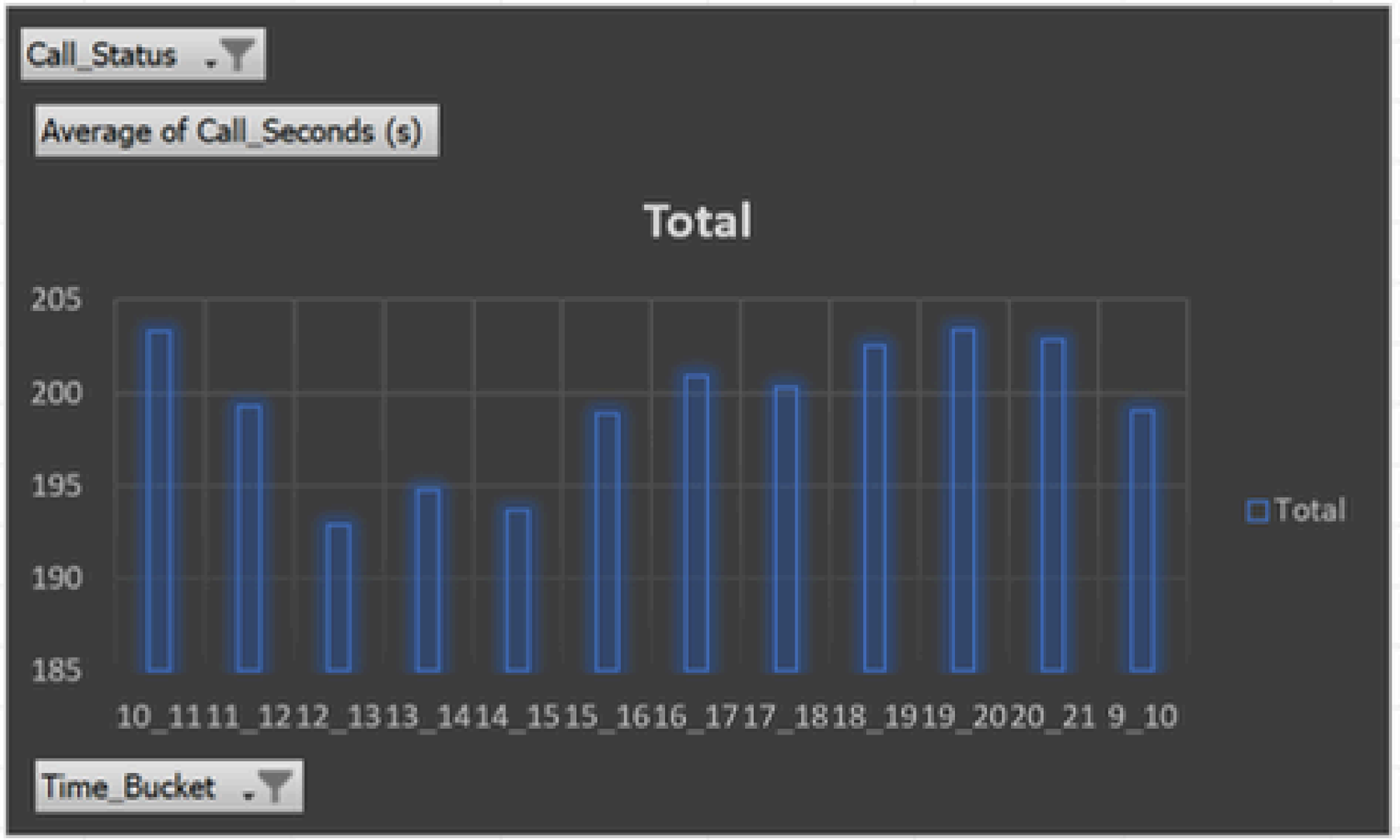
Row Labels	Average of Call_Seconds (s)
10_11	97.42402163
11_12	116.7837413
12_13	144.7250237
13_14	149.5409567
14_15	146.9693211
15_16	169.8968228
16_17	181.4393491
17_18	179.7245137
18_19	174.3246753
19_20	144.5825468
20_21	105.9491371
9_10	92.01032541
Grand Total	**139.5321473**



Most Time Taking Call bucket	16_17	Afternoon
Least Time Taking call bucket	9_10	Morning

Call_Status	answered

Row Labels	Average of Call_Seconds (s)
10_11	203.3310302
11_12	199.2550234
12_13	192.8887829
13_14	194.7401744
14_15	193.6770755
15_16	198.8889175
16_17	200.8681864
17_18	200.2487831
18_19	202.5509677
19_20	203.4060725
20_21	202.845993
9_10	199.0691057
Grand Total	**198.6227745**



Most Time Taking Call bucke	19_20	Evening
Least Time Taking call bucke	12_13	Noon

T2 Insights

Step 1: Load & Prepare Data

1. Import the Dataset: Open the file in Excel (CSV/XLSX).

Step 2: Copy the required fields i.e. Call Status for Each Time Bucket

📌 Using Pivot Tables

1. Insert Pivot Table:
    - Select Insert → PivotTable → Choose the dataset.
    - Place Time Bucket in "Rows".
    - Place Call Status in "Values" .

📊 Visualization:

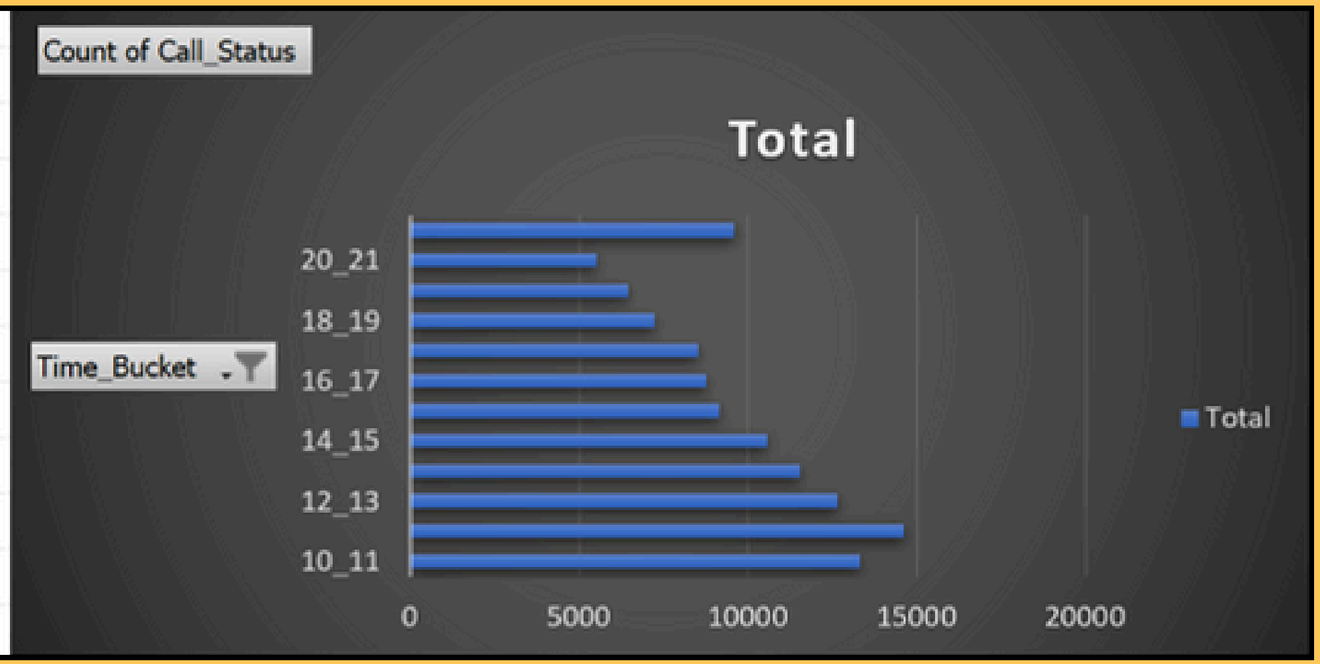
- Insert a Chart or Chart to display call duration by time bucket.
- Use Conditional Formatting to highlight longer durations.

Step 3: Key Insights from the Analysis

🔹 Identify which time bucket has the answered call status.

🔹 Determine peak hours when customers engage in longer conversations.

Row Labels	Count of Call_Status
10_11	13313
11_12	14626
12_13	12652
13_14	11561
15_16	9159
17_18	8534
18_19	7238
19_20	6463
20_21	5505
Grand Total	**117988**



Bucket with highest no. of call received	11_12	Morning
Bucket with Lowest no. of call received	20-21	Night

Time_Bucket	Call_Status
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered
9_10	answered

T3 Insights

1. Agent Availability & Productive Time

Each agent has:

- Working Days per Week: 6 days
- Total Working Hours per Day: 9 hours
- Breaks (Lunch, Snacks, etc.): 1.5 hours
- Actual Working Hours: 7.5 hours
- Time Spent on Calls (Productivity): 60% of 7.5 hours = 4.5 hours per day
- Unplanned Leaves: 4 per month
- Total Workdays in a Month: 30 days
- Effective Working Days per Agent (after unplanned leaves):30−4=26 days
- Effective Monthly Working Hours per Agent:26×4.5=117 hours per month

2. Call Volume Distribution:

- Total Calls: 3,934.5
- Answered Calls (85.33%): ~3,357.5
- Abandoned Calls (13.53%): ~532.5
- Transferred Calls (1.13%): ~44.5

3. Agent Working Hours:

- Total Working Hours: 9 hours
- Breaks (Lunch & Snacks): 1.5 hours
- Effective Working Hours: 7.5 hours
- Time Spent on Calls (60% of total work time): 4.5 hours (16,200 seconds)

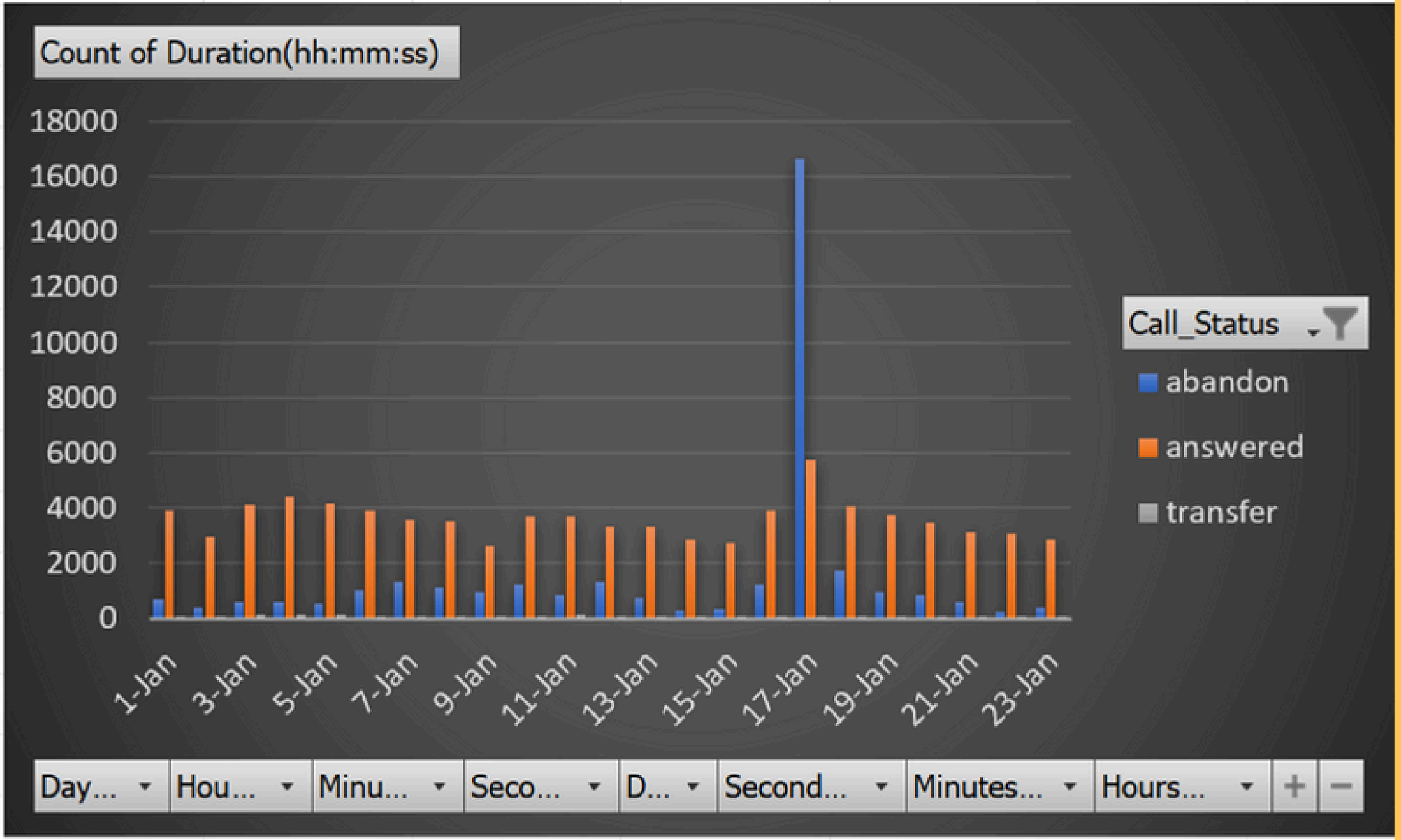
Insights

4. Call Handling Capacity:
   - Average Call Duration: 139.5 seconds (~2.3 minutes)
   - Total Handling Capacity per Agent:
     16200 sec/139.5 sec per call ≈ 116 calls per agent per day
5. Required Agents Calculation:
   - Total Call Handling Requirement (90% answered): ~3,357.5 calls
   - Total Agents Needed:3357.5116 ≈ 30 agents

Count of Duration(hh:mm:ss)	Column Labels			
Row Labels	abandon	answered	transfer	Grand Total
1-Jan	684	3883	77	4644
2-Jan	356	2935	60	3351
3-Jan	599	4079	111	4789
4-Jan	595	4404	114	5113
5-Jan	536	4140	114	4790
6-Jan	991	3875	85	4951
7-Jan	1319	3587	42	4948
8-Jan	1103	3519	50	4672
9-Jan	962	2628	62	3652
10-Jan	1212	3699	72	4983
11-Jan	856	3695	86	4637
12-Jan	1299	3297	47	4643
13-Jan	738	3326	59	4123
14-Jan	291	2832	32	3155
15-Jan	304	2730	24	3058
16-Jan	1191	3910	41	5142
17-Jan	16636	5706	5	22347
18-Jan	1738	4024	12	5774
19-Jan	974	3717	12	4703
20-Jan	833	3485	4	4322
21-Jan	566	3104	5	3675
22-Jan	239	3045	7	3291
23-Jan	381	2832	12	3225
Grand Total	34403	82452	1133	117988

Average no of calls	532.5	3357.5	44.5	3934.5
call status in %age	13.53%	85.33%	1.13%	
Working hour of agent	4.5			
Call Duration (Avg, sec)	198.62	~199		
Hours (90%)	195.3675975	~195		
Total no of agents for calls	43.41502167	~43		
Round off no of agents - max	43			

Working Hour	9	
Lunch	1.5	
Working Hours	7.5	
Working Hours (%age)	60%	
Working time in hours	4.5	
Working time in seconds	16200	
AVG Call time in sec per agent	198.62	
Total handling capacity by agent/day	81.5627832	82
Total call answered (90%)	3357.5	3358
Total agents needed -min	40.95121951	41

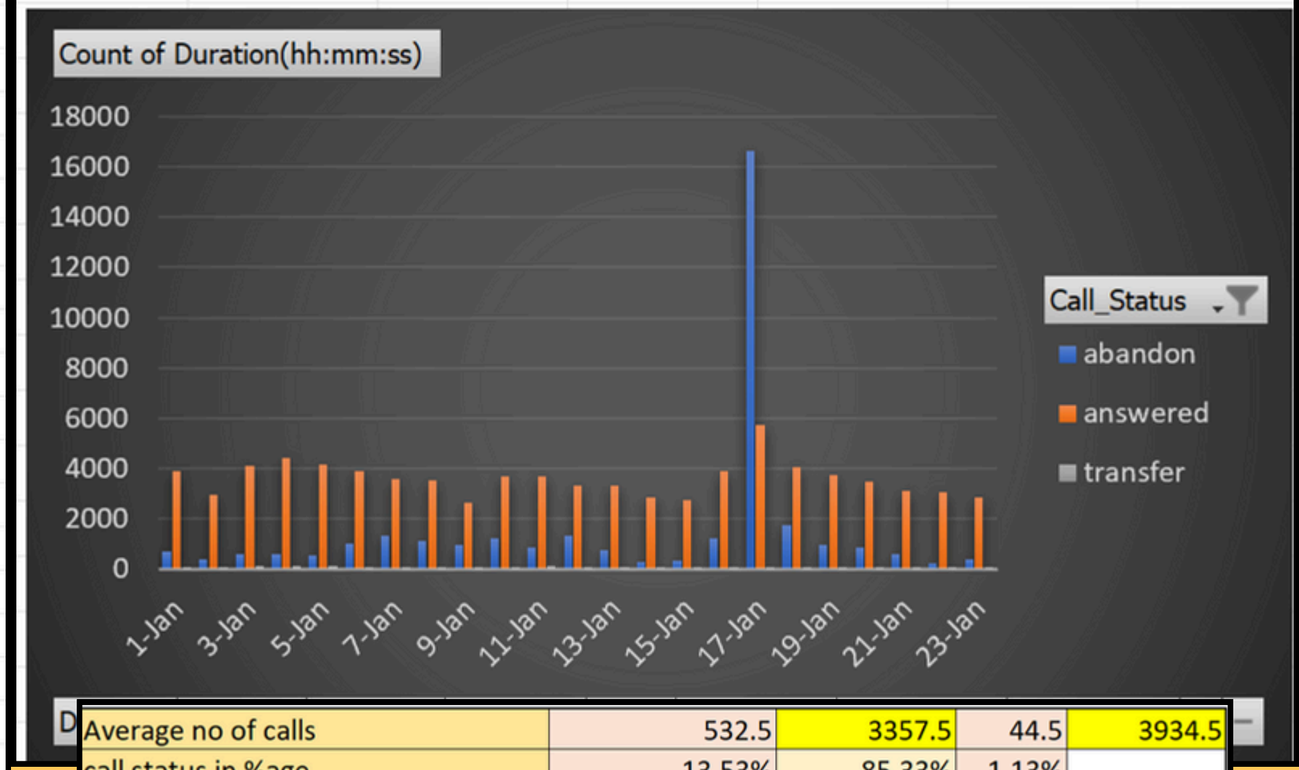

Count of Duration(hh:mm:ss)
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
1-Jan
3-Jan
5-Jan
7-Jan
9-Jan
11-Jan
13-Jan
15-Jan
17-Jan
19-Jan
21-Jan
23-Jan
Call_Status
abandon
answered
transfer
Day...
Hou...
Minu...
Seco...
D...
Second...
Minutes...
Hours...
+
−

T4 Insights

The structured approach involves:

1. Use data from the given data set.
2. Create Table and Pivot table to find the total no. of calls.
3. Then find the findings similiarily as explained in task 3 but for the night shift.
4. Agents required comes out to be : 41

Count of Duration(hh:mm:ss)	Column Labels			
Row Labels	abandon	answered	transfer	Grand Total
1-Jan	684	3883	77	4644
2-Jan	356	2935	60	3351
3-Jan	599	4079	111	4789
4-Jan	595	4404	114	5113
5-Jan	536	4140	114	4790
6-Jan	991	3875	85	4951
7-Jan	1319	3587	42	4948
8-Jan	1103	3519	50	4672
9-Jan	962	2628	62	3652
10-Jan	1212	3699	72	4983
11-Jan	856	3695	86	4637
12-Jan	1299	3297	47	4643
13-Jan	738	3326	59	4123
14-Jan	291	2832	32	3155
15-Jan	304	2730	24	3058
16-Jan	1191	3910	41	5142
17-Jan	16636	5706	5	22347
18-Jan	1738	4024	12	5774
19-Jan	974	3717	12	4703
20-Jan	833	3485	4	4322
21-Jan	566	3104	5	3675
22-Jan	239	3045	7	3291
23-Jan	381	2832	12	3225
Grand Total	34403	82452	1133	117988



Average no of calls	532.5	3357.5	44.5	3934.5
call status in %age	13.53%	85.33%	1.13%	
Working hour of agent	4.5			
Call Duration (Avg, sec)	198.62	~140		
avg no of calls - night	1180.35	~18201		
Total no of agents for calls - night	58.61027925	~635		
Round off no of agents - night - max	59			

Working Hour	9
Lunch	1.5
Working Hours	7.5
Working Hours (%age)	60%
Working time in hours	4.5
Working time in seconds	16200
AVG Call time in sec per agent	198.62
Total handling capacity by agent/nigh	58.61027925
Total call answered (90%)	3357.5
Total agents needed - min	56.90677966

	59
	57

A picture is worth a thousand words

ClickMe!

Project Folder Link

Contact Us

Delhi

7011334048

Venusgirlatwork@gmail.com

@ig_she_has_no_idea

https://www.linkedin.com/in/ankita-taneja/