PROJECT 8

ABC CALL VOLUME TREND ANALYSIS

TECH-STACK USED

Microsoft Excel

A MADHAVA VARMA

DESCRIPTION

1. Company ABC receives inbound calls over a 23-day period.
2. The dataset includes details such as agent names, queue times (waiting time before connecting with an agent), call timestamps, call durations, and call statuses (abandoned, answered, or transferred).
3. The Customer Experience (CX) team analyzes customer feedback and data, deriving insights to share with the organization.
4. The CX team manages customer experience programs, internal communications, customer journey mapping, and customer data.
5. AI-powered tools like Interactive Voice Response (IVR), Robotic Process Automation (RPA), Predictive Analytics, and Intelligent Routing play a significant role in enhancing customer experiences.
6. Inbound customer support focuses on handling incoming calls, aiming to attract, engage, and delight customers, ultimately turning them into loyal advocates for the business.

As part of my analytical capabilities, I'll explore call volume trends for the CX team and extract valuable insights.

ANALYSIS ON

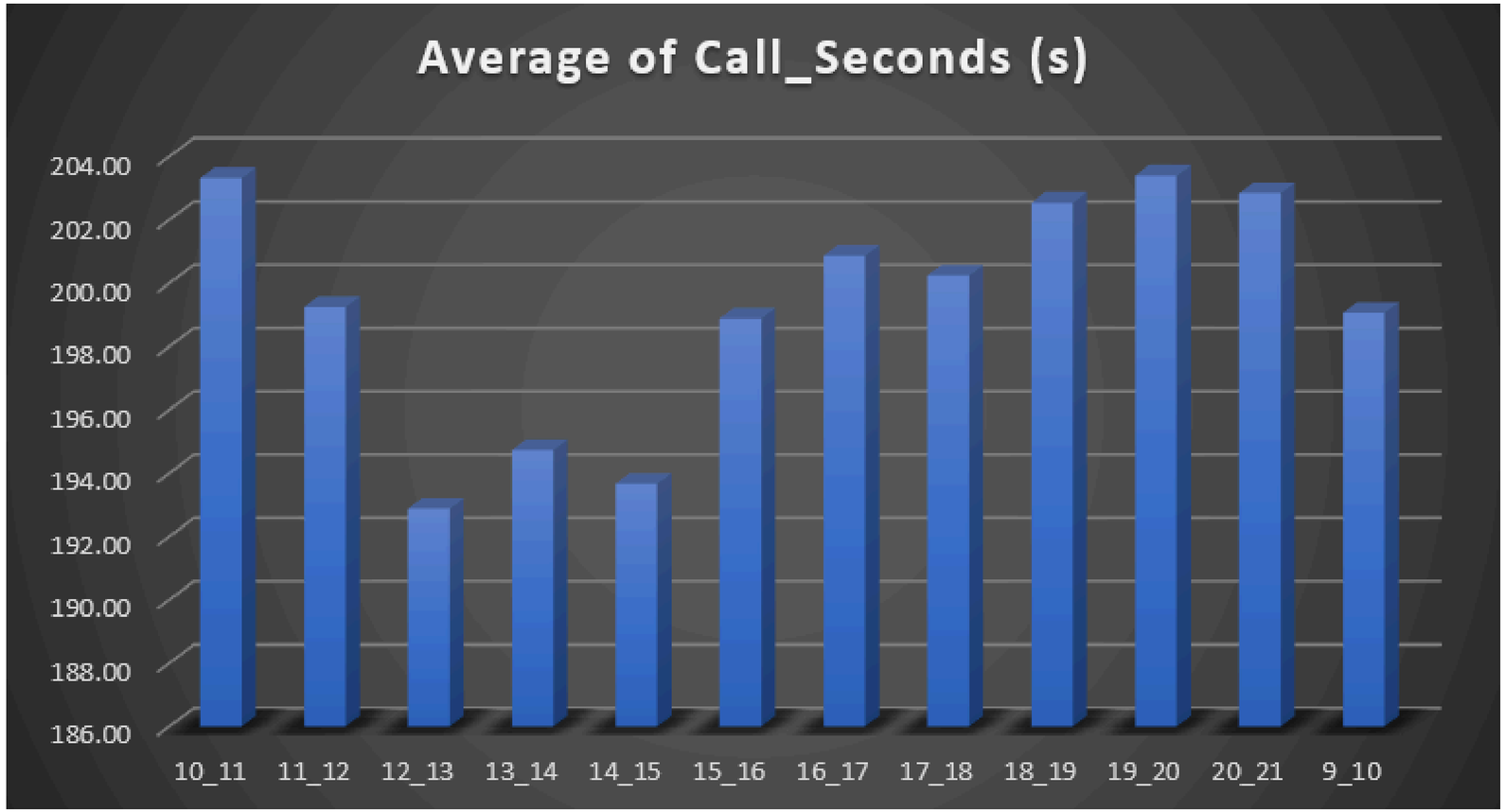
1. Average Call Duration
2. Call Volume Analysis
3. Manpower Planning
4. Night Shift Manpower Planning

1. AVERAGE CALL DURATION

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

Result:

Call_Status	answered
Row Labels	**Average of Call_Seconds (s)**
10_11	203.33
11_12	199.26
12_13	192.89
13_14	194.74
14_15	193.68
15_16	198.89
16_17	200.87
17_18	200.25
18_19	202.55
19_20	203.41
20_21	202.85
9_10	199.07
Grand Total	**198.62**



1. AVERAGE CALL DURATION

Insights:

Average Call Duration:
The total average call duration for calls answered by agents is 198.62 seconds.

Peak Call Durations:
Incoming calls have their maximum average duration during two time periods:
10 AM to 11 AM
7 PM to 8 PM

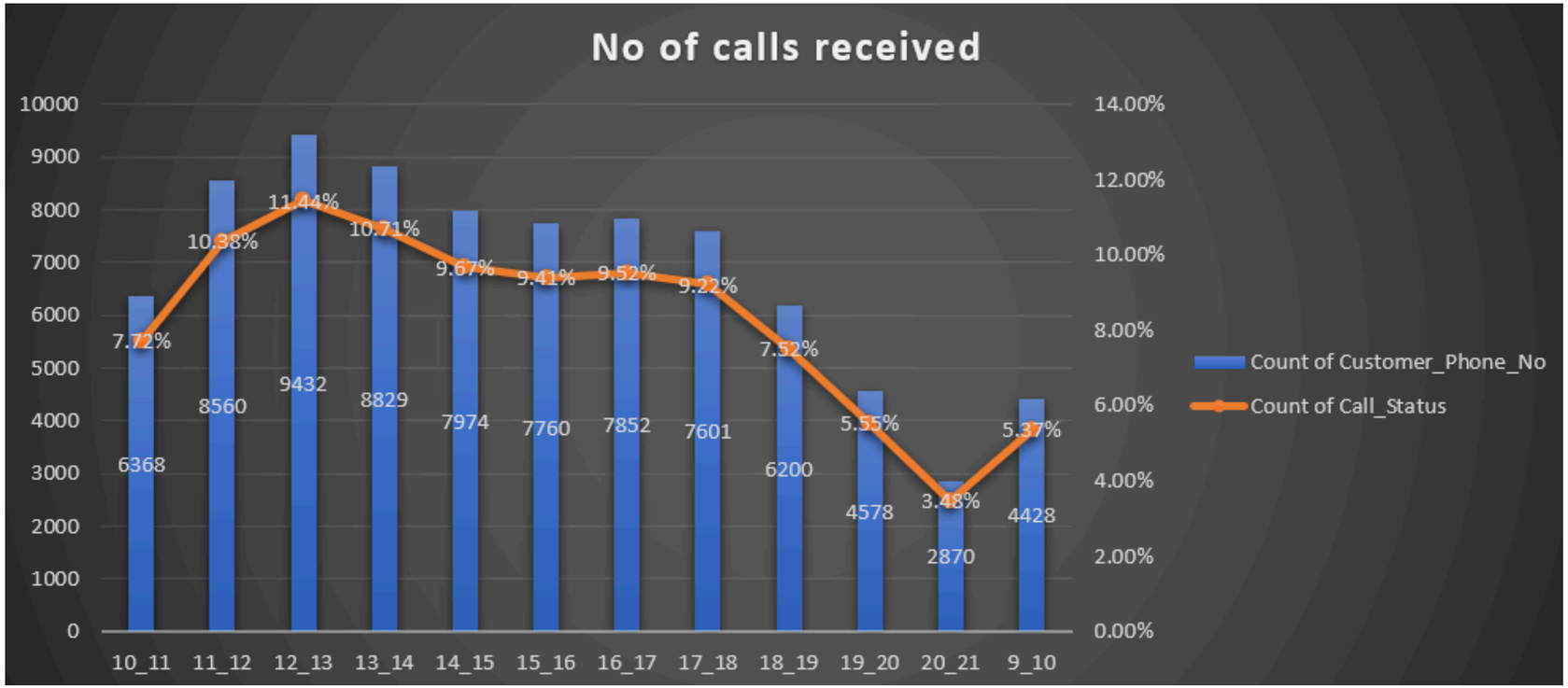
Off-Peak Call Duration:
The minimum average call duration for incoming calls received by agents occurs during the time slot:
12 PM to 1 PM

2. CALL VOLUME ANALYSIS

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

Result:

Call_Status	answered	
Row Labels	**Count of Customer_Phone_No**	**Count of Call_Status**
10_11	6368	7.72%
11_12	8560	10.38%
12_13	9432	11.44%
13_14	8829	10.71%
14_15	7974	9.67%
15_16	7760	9.41%
16_17	7852	9.52%
17_18	7601	9.22%
18_19	6200	7.52%
19_20	4578	5.55%
20_21	2870	3.48%
9_10	4428	5.37%
Grand Total	**82452**	**100.00%**



2. CALL VOLUME ANALYSIS

Insights:

1. **Call Distribution by Time:**
    - The highest number of calls is received between 12 PM and 1 PM.
    - This time slot experiences the peak call volume.
2. **Least Calls Answered:**
    - The least number of calls answered occurs between 8 PM and 9 PM.
    - During this period, call handling is at its lowest.

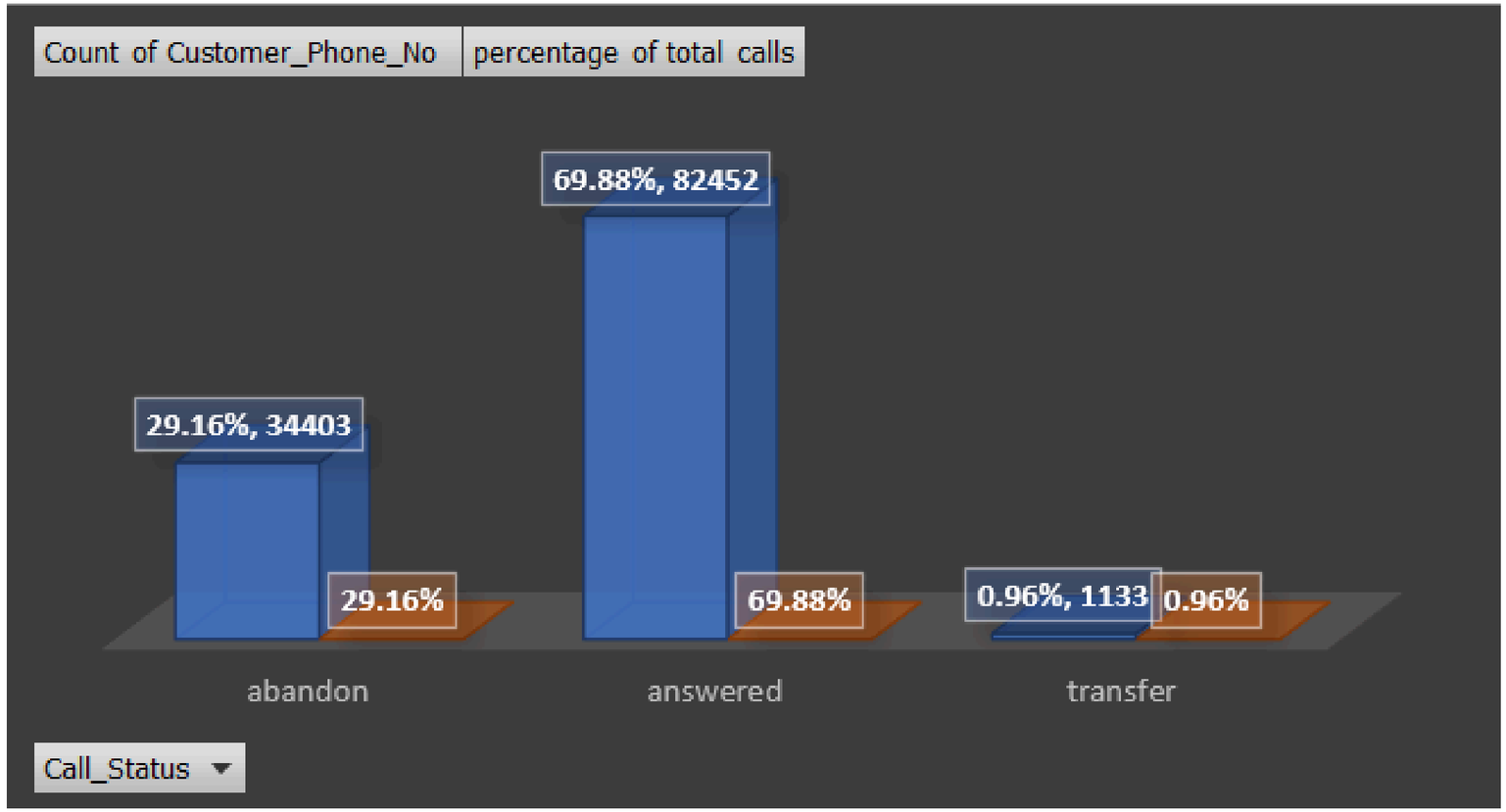
These insights help identify peak and off-peak call periods, aiding efficient resource allocation.

3. MANPOWER PLANNING

Task: The current rate of abandoned calls is approximately 30%. Propose a plan for manpower allocation during each time bucket (from 9 am to 9 pm) to reduce the abandon rate to 10%. What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

Result:

Row Labels	Count of Customer_Phone_No	percentage of total calls
abandon	34403	29.16%
answered	82452	69.88%
transfer	1133	0.96%
Grand Total	**117988**	**100.00%**



3. MANPOWER PLANNING

Result:

Total hours worked on Jan 1st

Row Labels	Sum of Call_Seconds (s)	Sum of Call_hours
1-Jan	676664	187.96

Assumption: An agent's total working hours are 9 hours. Out of this, 1.5 hours are allocated for lunch and snacks. Therefore, the actual working hours available for tasks (excluding breaks) is 7.5 hours. On average, an agent spends 60% of these actual working hours on calls with customers or users.

Total Working hrs	9 hrs
Lunch & snacks	1.5 hrs
Total actual working hrs	7.5 hrs
Actual working hrs	4.5 hrs

3. MANPOWER PLANNING

Result:

Row Labels	Count of Call_Seconds (s)	Percentage of Call_Seconds(s)	Time distribution	No of agents required for answered rate 90%
10_11	13313	11.28%	0.11	6
11_12	14626	12.40%	0.12	7
12_13	12652	10.72%	0.11	6
13_14	11561	9.80%	0.10	5
14_15	10561	8.95%	0.09	5
15_16	9159	7.76%	0.08	4
16_17	8788	7.45%	0.07	4
17_18	8534	7.23%	0.07	4
18_19	7238	6.13%	0.06	3
19_20	6463	5.48%	0.05	3
20_21	5505	4.67%	0.05	3
9_10	9588	8.13%	0.08	4
Grand Total	**117988**	**100.00%**	**1.00**	**54**

3. MANPOWER PLANNING

Insights:

Data Transformation:
The original “Date_&Time" column was converted to an integer format and then changed to the MDY (Month-Day-Year) format. The new column is named "Date&_Time2.”
Call Duration Analysis:
The sum of call durations (in seconds) on January 1st is 676,664 seconds.
Total Hours Worked:
We calculated the total hours worked using the formula:
Sum of Call_hours = (Sum of Call_Seconds (s) / 3600) = 187.96 hours.
Assumption on Working Hours:
Assuming that each person works for 4.5 hours, we proceed with this value.
Total Agents Worked:
Based on a 70% answered rate, we calculated the total number of agents who worked:
Total no. of agents worked (70%) = (Total hrs worked / Actual working hrs) = 42 agents.

These insights provide an understanding of call duration, working hours, and agent availability.

3. MANPOWER PLANNING

Insights:

Reducing Abandon Rate:

To achieve a 10% abandon rate, the required number of agents remains at 54.

Time Distribution Analysis:

We analyzed call distribution by time using the “Time_Bucket” column.

Call duration (“Call_Seconds (s)”) was measured in the “Values” section.

Call status was expressed as a percentage of the column total.

Time distribution was calculated by dividing each number of calls by the total calls.

Minimum Agents Required per Time Bucket:

To reduce the abandon rate to 10%, we calculated the minimum number of agents required in each time bucket:

Number of agents required in each time bucket = Time distribution * 54.

These insights guide staffing decisions, ensuring efficient customer service and satisfaction.

4. NIGHT SHIFT MANPOWER PLANNING

Task: Customers also call ABC Insurance Company at night but don't get an answer because there are no agents available. This creates a poor customer experience. Assume that for every 100 calls that customers make between 9 am and 9 pm, they also make 30 calls at night between 9 pm and 9 am.

Result:

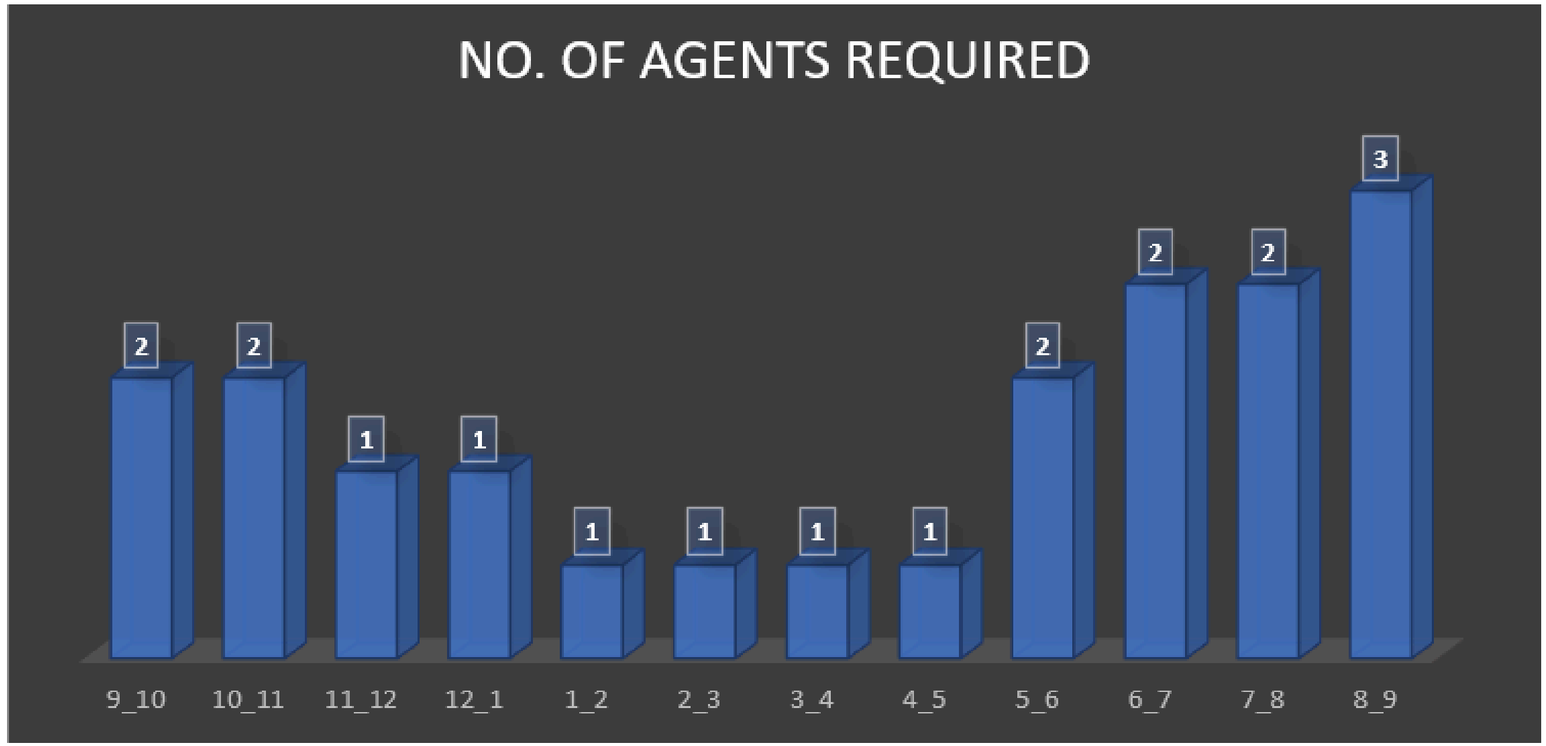
Average incoming calls	5130
Average incoming calls at night between 9 pm - 9 am (30% of 5130)	1539
Average seconds required to answer the calls (Avg incoming calls at night * Avg calls answered)	305680.4499
Average hours required to answer the calls	84.91123608
keeping the maximum abandon rate at 10%	
Actual average hours required to answer the calls	76.42011247
We know from the previous task that Actual working hrs is 4.5 hrs	
No. of agents required to answer the call	16.98224722

Total number of agents required is 17

4. NIGHT SHIFT MANPOWER PLANNING

Result:

Time_bucket	Call distribution	Time distributior	No. of agents required
9_10	3	0.10	2
10_11	3	0.10	2
11_12	2	0.07	1
12_1	2	0.07	1
1_2	1	0.03	1
2_3	1	0.03	1
3_4	1	0.03	1
4_5	1	0.03	1
5_6	3	0.10	2
6_7	4	0.13	2
7_8	4	0.13	2
8_9	5	0.17	3
Total	**30**	**1.00**	**17**



4. NIGHT SHIFT MANPOWER PLANNING

Insights:

Total Calls:

Over the 23-day period, the total number of calls received is 117,988.

Average Daily Calls:

On average, customers make 5,130 calls per day.

Night Calls:

For every 100 calls made between 9 AM and 9 PM, there are also 30 calls during the night, between 9 PM and 9 AM.

This means that 30% of incoming calls occur during nighttime hours.

Calculations:

Average incoming calls at night between 9 PM and 9 AM: 1,539 calls (30% of 5,130).

Average seconds required to answer these calls: 305,680.45 seconds (1,539 calls * 198.62 seconds per call).

Average hours required to answer the calls: 84.9 hours (305,680.45 seconds / 3,600 seconds per hour).

4. NIGHT SHIFT MANPOWER PLANNING

Insights:

Actual Average Hours to Answer Calls:
Assuming a maximum abandon rate of 10%, the actual average hours required to answer calls is calculated as **76.42 hours** (90% of the previously calculated average hours).
Number of Agents Required:
Given that actual working hours per person are **4.5 hours**, the number of agents required to answer calls is:
No. of agents required = (Actual average hours required to answer calls / 4.5) = **17 agents**.
Night Shift Staffing:
The total number of agents required to answer calls during the night (from 9 PM to 9 AM) remains at **17 agents**.
Time Distribution:
We calculated the time distribution by dividing each call distribution by the total calls (which is 30).
Agents per Time Bucket:
The number of agents required for each time bucket is calculated as **17 times the time distribution**.

EXCEL SHEET LINK

The drive link for the excel sheet is:

https://docs.google.com/spreadsheets/d/1XERympDwG9lAAmZC5FuBEkiMqvZXQ6g1/edit?usp=drive_link&ouid=110721591021029757514&rtpof=true&sd=true

Working on this project helped me understand and use Microsoft Excel more better. It helped me gain experience on handling with graphs, charts, how to use statistics effectively and how Data Analytics is implemented using it in the real world and obtain insights with the data provided as a Data Analyst. It also helped me gain experience in handling large sets of data.

THANK YOU.