ABC Call Volume Trend Analysis

Trainity Project No.8

Prepared By-Nilesh Kulkarni

AGENDA

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- Project Approach
- Tech Stack Used
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- Results

Project Description

Customer Experience (CX) is a priority in today's marketplace for each company. This project is about Customer Experience (CX) analytics, specifically focusing on the inbound calling team of a company. With the provided data about inbound calls to a CX team, we need to derive critical insights that can help CX team to optimize customer experience.

The provided data spans for 23 days with details like agent's name/ID, date/time of the call, the duration of the call, and the call status .The data analytics tasks/insights needed are as listed below:

- **Average Call Duration** – Calculate average call duration for all successful calls (not abandoned) for each time bucket in provided data
- **Call Volume Analysis** – Graph or chart to show call volume received in each time bucket
- **Manpower Planning (Day Shift)** - What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10% (i.e. 90% calls answered)
- **Night shift Manpower Planning** – Agents needed in night shift in each time bucket with assumption of maximum abandon rate as 10%(i.e. 90% calls answered) and 30% of total daytime calls would be received in night shift.

Project Approach

- Data cleaning/preparation – Try to understand data quality and handle missing data

- Data Analysis: Understand the given data set and it's attributes

- Insights Analysis: Analyse each insights requirement in detail and prepare MS Excel formula or functions to extract insights. Select optimal and efficient approach.

- Extract insights: Use MS Excel as a tool to extract new insights as required including visuals/charts. Create Dashboard as required using slicers.

- Review: Review and cross check output to verify it matches with the requirements/insights required

- Document: Document the insights and results to be shared across business teams

For Excel dataset containing data/charts/formula – Please refer this link **Data-set Link**

The inbound calls data has 13 columns and 117988 rows. There are very minimal data issues in the given data as listed below:

- The column 'Wrapped_By' has 47,877 rows with blank values. No action taken since the column is not referred in any tasks so no impact on analysis
- There are many rows with value '#N/A' in Agent_name & Agent_ID column, however all of those are abandoned calls so not corrected

Following assumptions/extrapolation has been done to support analysis:

- Agent's efficiency given as 60%, so it is assumed that agents would have hourly efficiency as 60% i.e. only 60% seconds in an hour agents can take calls
- The average call duration for each time bucket is take as base and used for calculating time for additional calls to be handled for maximum 10% abandon rate

Data Preparation & Assumptions

Tech Stack Used

Data Analytics tool: Microsoft Excel (Office 365) Inbound calls data has been provided in Excel format and excel is used for data cleaning, analysis and creating visuals/charts to demonstrate insights. Excel is user friendly and functionally rich tool to analyze, visualize and report the data insights.

Operating System: Microsoft Windows 11

Documentation: Microsoft office 365 (Power Point) & Acrobat PDF
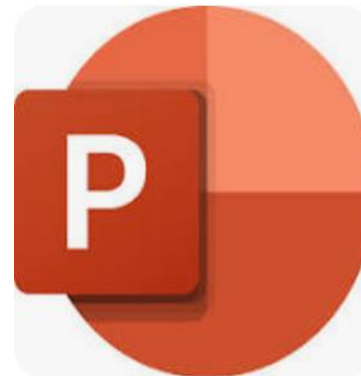
Task 1 – Average Call Duration: What is the average duration of calls for each time bucket?

The column chart shows average call duration in seconds for all time buckets along with Trendline for overall average Call time in seconds (198). Highest average call time is recorded in time bucket 10am-11am and 8 pm-9 pm

Average Call Duration by Time Buckets
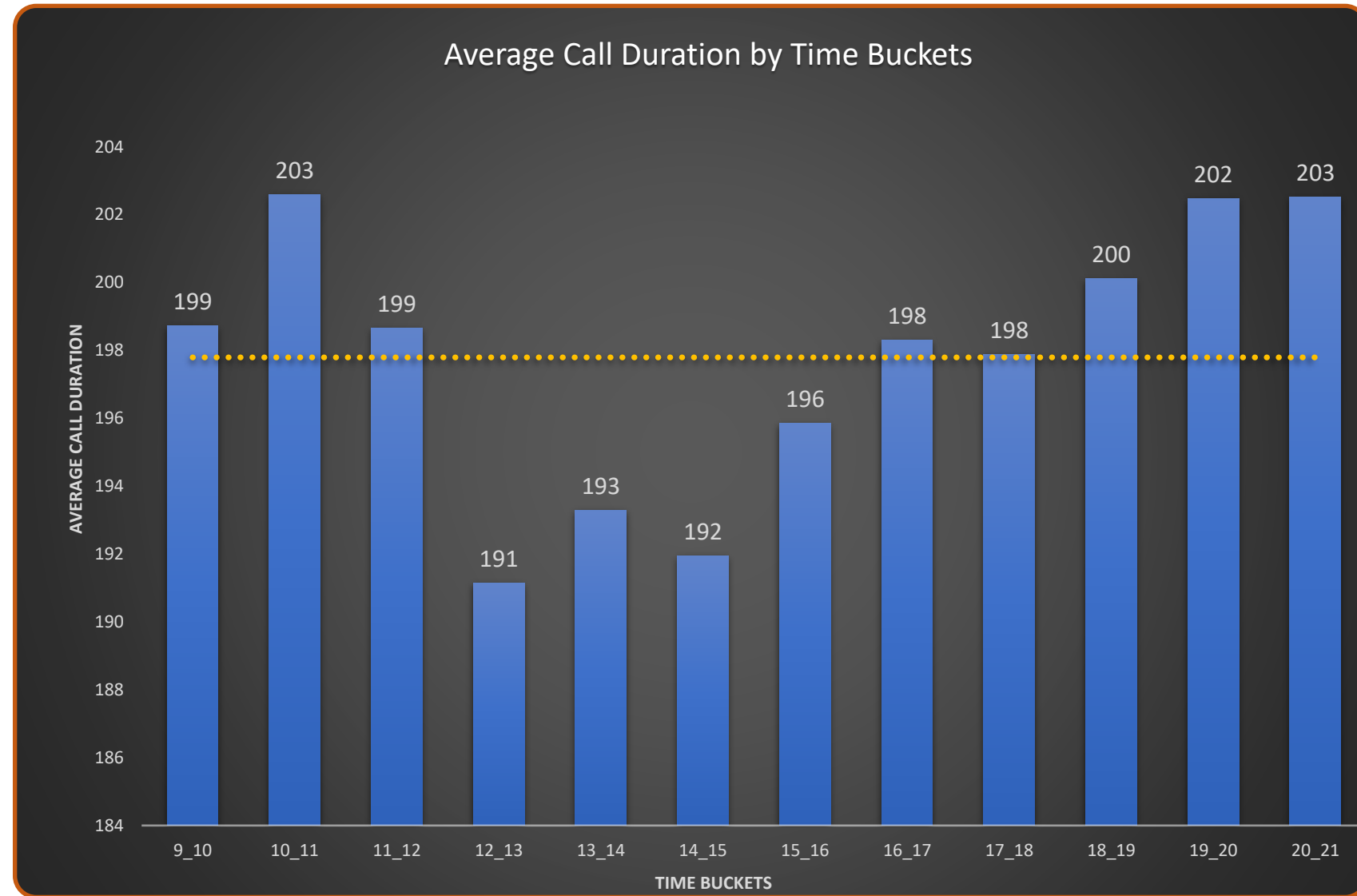
Task 2 – Call Volume Analysis: Can you create a chart or graph that shows the number of calls received in each time bucket?

The column chart shows call volume by time buckets. It shows total calls as well as calls those were successful (not abandoned).
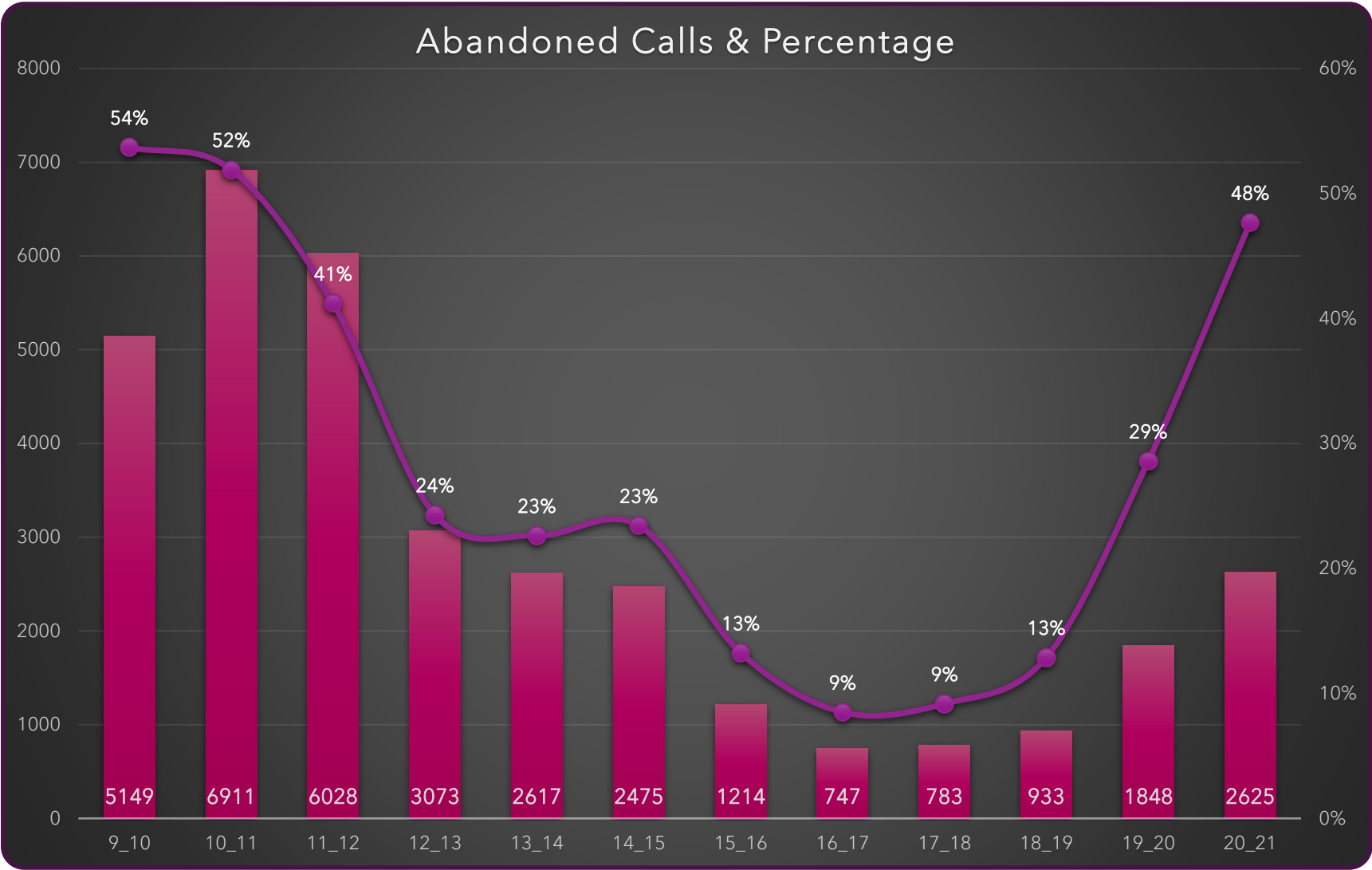
As shown, the volume of calls is generally high between 10 am to 1 pm and less towards evening after 5 pm.
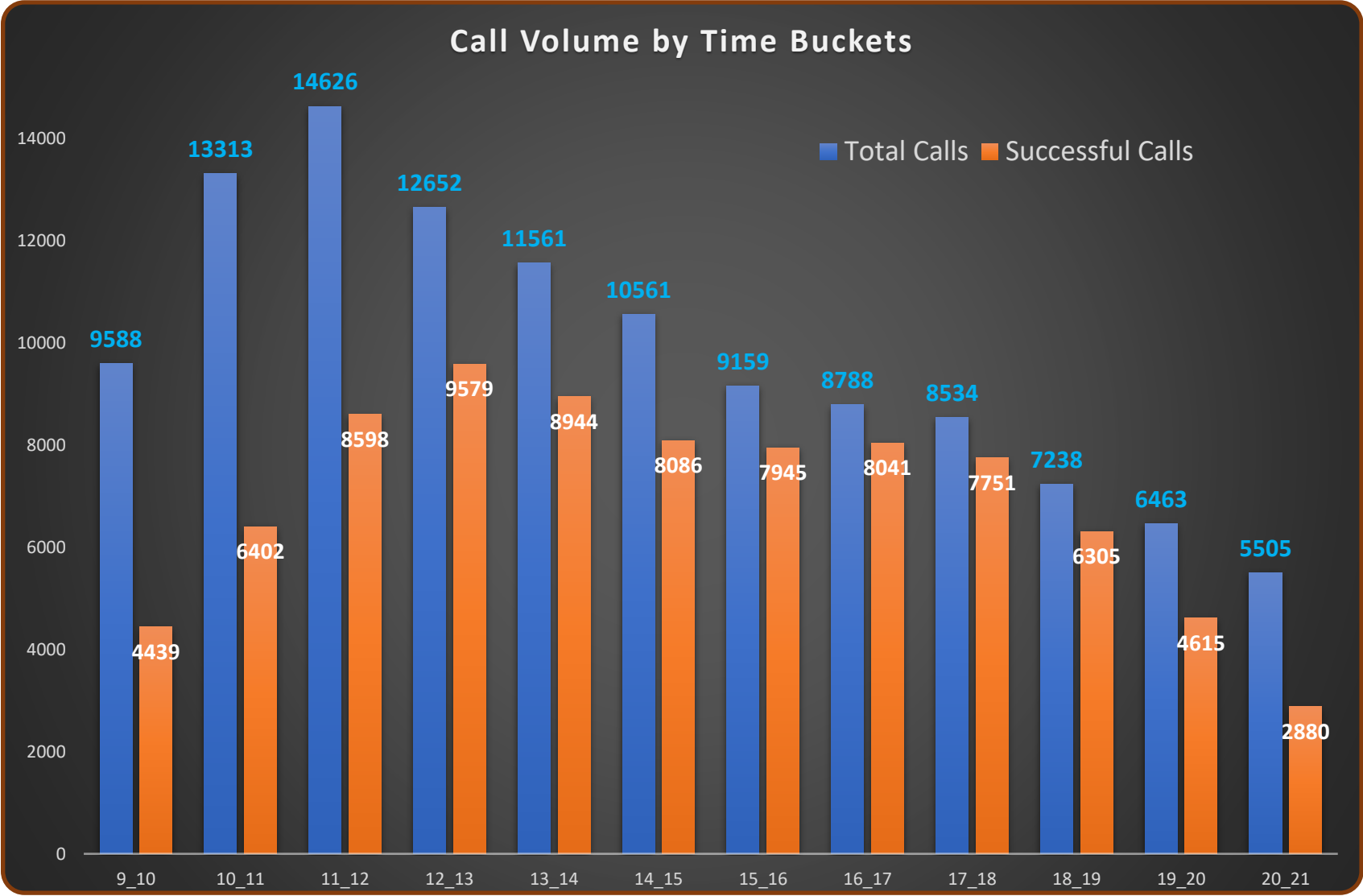
Call Volume by Time Buckets

The volume of abandoned calls across time buckets is as shown in the column/combo chart. As we can see the percentage of abandoned calls is as high as 50+% in morning hours and it is lower in afternoon/evening time buckets. The overall percent of abandoned calls is 29%.
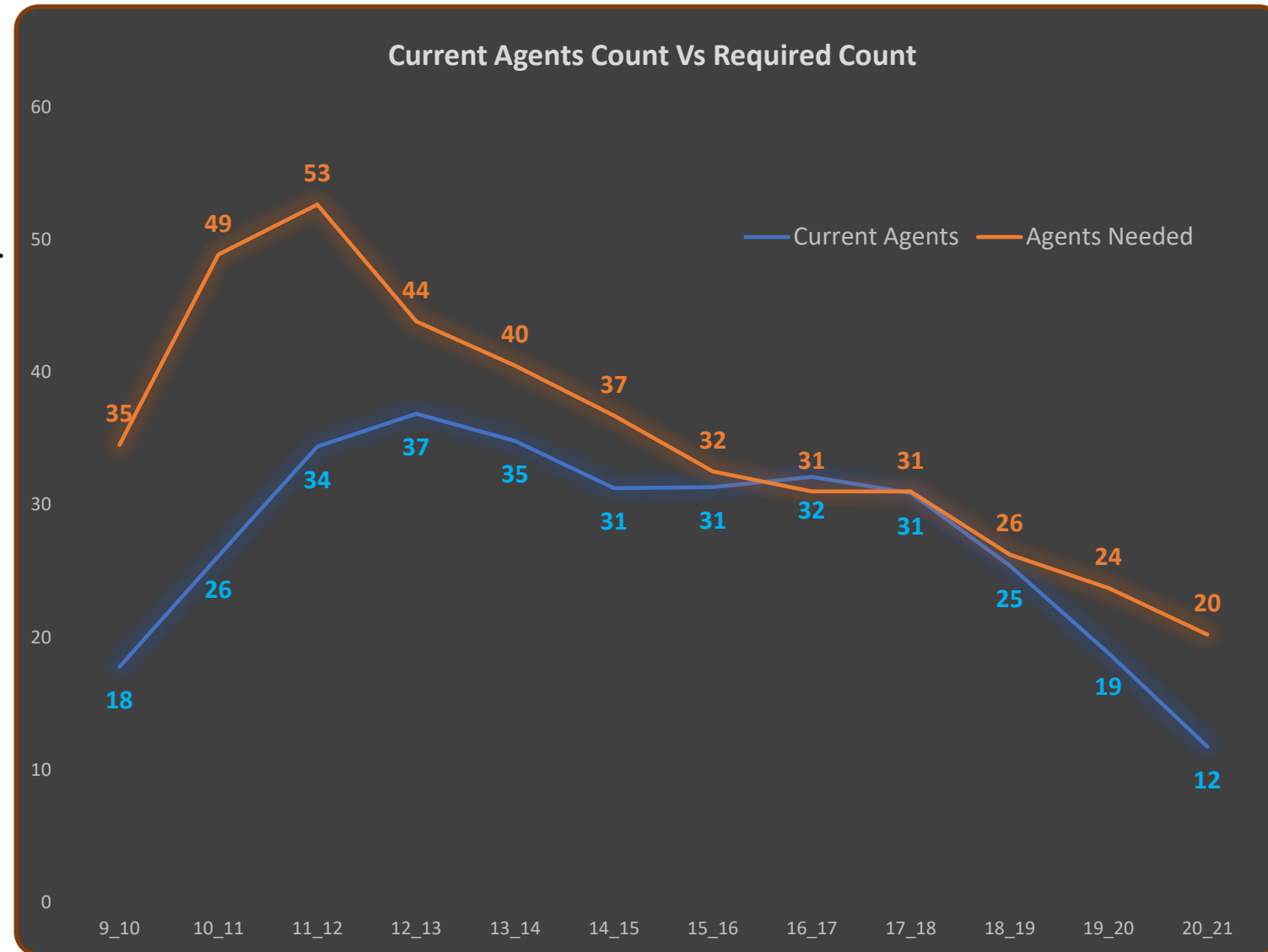

Abandoned Calls & Percentage

Time bucket	Abandoned Calls	Percentage
9_10	5149	54%
10_11	6911	52%
11_12	6028	41%
12_13	3073	24%
13_14	2617	23%
14_15	2475	23%
15_16	1214	13%
16_17	747	9%
17_18	783	9%
18_19	933	13%
19_20	1848	29%
20_21	2625	48%

The line chart shows count of agents needed Vs current count for each time bucket. As we can see more agents are needed in morning hours than evening hours to contain the abandon rate to 10%.

The calculation has below assumptions/considerations:

- Agent's efficiency is assumed 60% hourly i.e. agents spend 36 minutes/hour on attending calls

- Average daily calls calculated by dividing total calls by 23 (for days)

- Average call duration for existing calls across buckets is retained and used for extrapolating further calls, please refer to Excel file for calculations

Current Agents Count Vs Required Count

Legend: — Current Agents — Agents Needed

Agents Needed: 9_10: 35, 10_11: 49, 11_12: 53, 12_13: 44, 13_14: 40, 14_15: 37, 15_16: 32, 16_17: 31, 17_18: 31, 18_19: 26, 19_20: 24, 20_21: 20

Current Agents: 9_10: 18, 10_11: 26, 11_12: 34, 12_13: 37, 13_14: 35, 14_15: 31, 15_16: 31, 16_17: 32, 17_18: 31, 18_19: 25, 19_20: 19, 20_21: 12

The line chart shows count of agents required in each time bucket for handling overnight calls. It shows need for more agents in early morning hours than night.

The calculation has below assumptions/considerations:

- Average daily calls used as base to derive overnight calls (30%)

- Average call duration in day (overall) is used as standard call duration for all overnight calls

- Agent's efficiency assumed as 60% hourly i.e. agents would spend 36 minutes in a hour on calls. Please refer to Excel file for detailed calculations
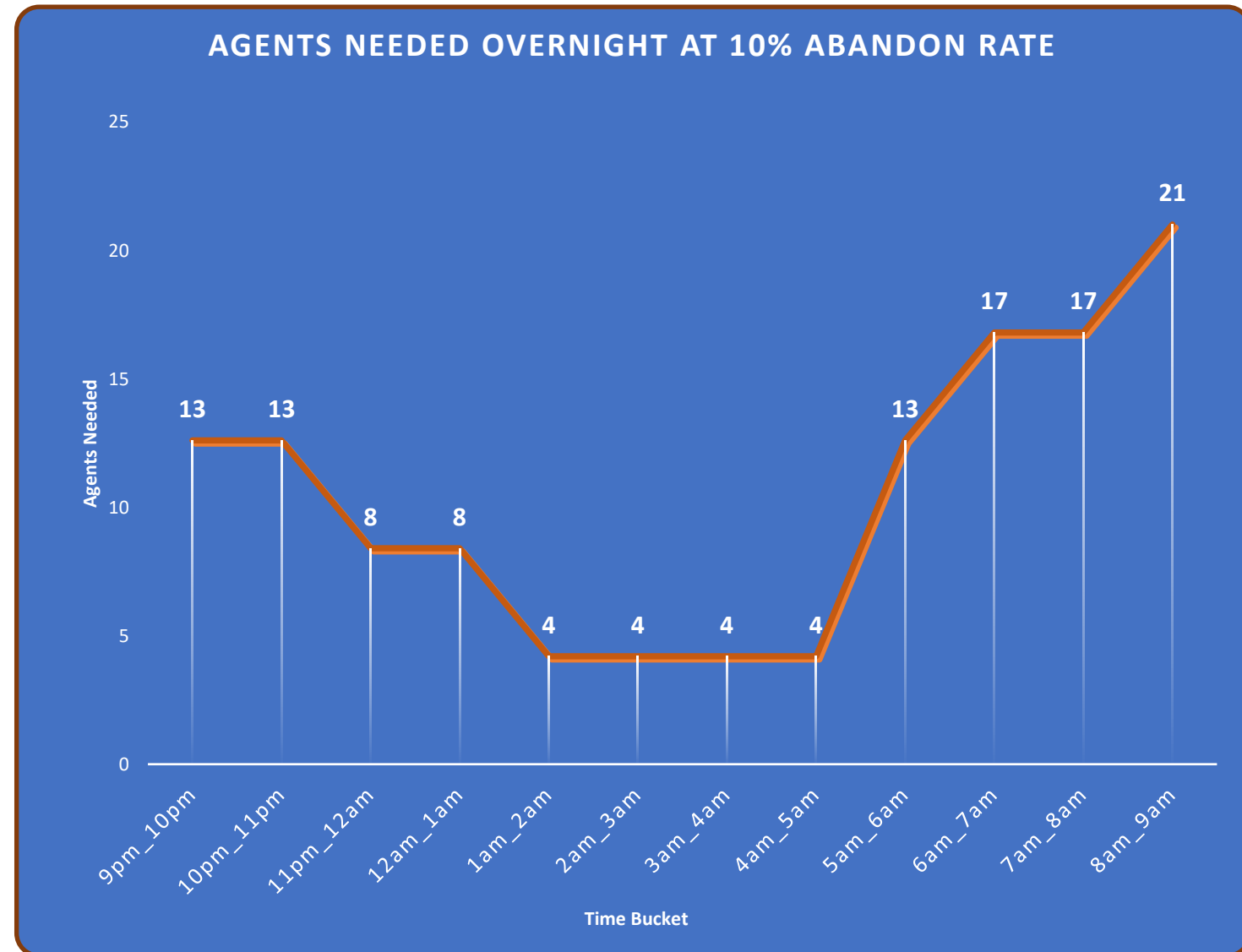
AGENTS NEEDED OVERNIGHT AT 10% ABANDON RATE

Agents needed for all 24-hours (full day) has been shown in the chart based on 10% abandon rate. As we can see, least agents needed in midnight hours (12 am to 5 am) and higher count of agents needed in morning hours 10 am to 12 pm. For detailed calculations, please refer to Excel dataset on drive.

Agents Needed – 24 Hours View
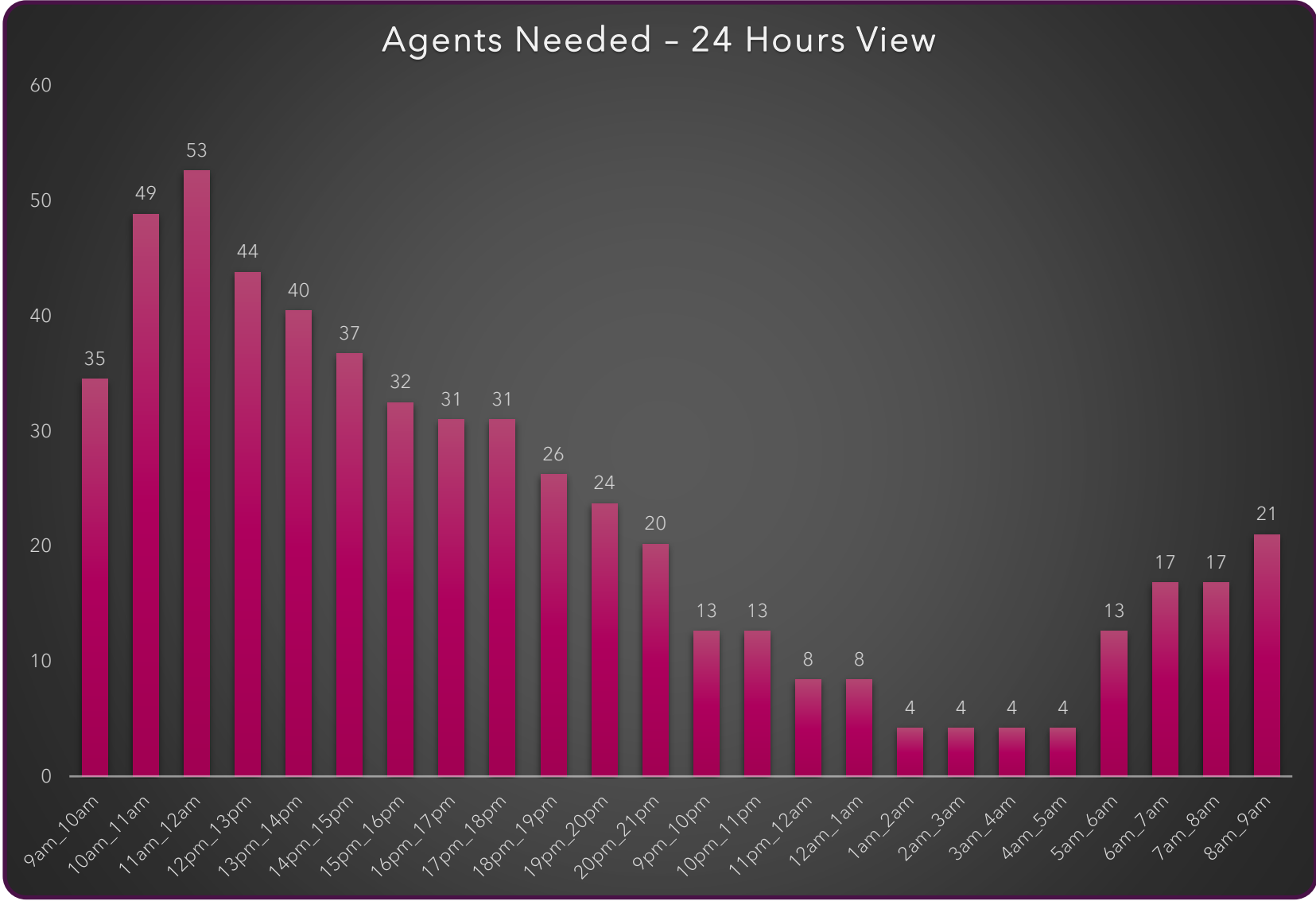
Insights - Summary

Based on analysis of given data, we can summarize the insights as listed below:

- Overall, the data quality is good at source data collection since no major data errors observed
- Average call durations range between 191 to 203 seconds. The highest call durations with answered calls occur from 6 PM to 9 PM and 10 am to 11 am
- Call volume gradually increases from 9 AM, peaking at 11-12 AM, followed by a sharp decline until 9 PM for daytime calls
- Agents needed to achieve abandon rate of 10% in day shift are higher in peak time (9 am to 10 pm) with 53 agents total needed in 11am-12pm window (current 34, extra needed 19)
- For night shift manpower planning, maximum 21 agents needed in morning time bucket (8am-9am) and minimum agents needed in midnight hours (1am to 5 am)
- The highest percent of abandon calls is in morning time buckets (9am to 12 pm)

Business team can use the insights for improving customer experience as well as planning optimized resource allocation to achieve target of maximum 10% abandon rate.

The project has been great hands-on experience with data analytics using MS-Excel – it helped me with following areas:

- Exposure to customer experience domain knowhow which is very important area in any organization
- Drawing insights like manpower planning based on assumptions and extrapolation
- MS-Excel tool knowhow with focus on data analytics and visuals as well as trends

Overall, the project has been very good learning and skill improving experience with Trainity.

Results – Personal Up-Skilling

Thank You !

Prepared By-Nilesh Kulkarni

Email - inileshkulkarni@gmail.com