SKYHACK 2.0
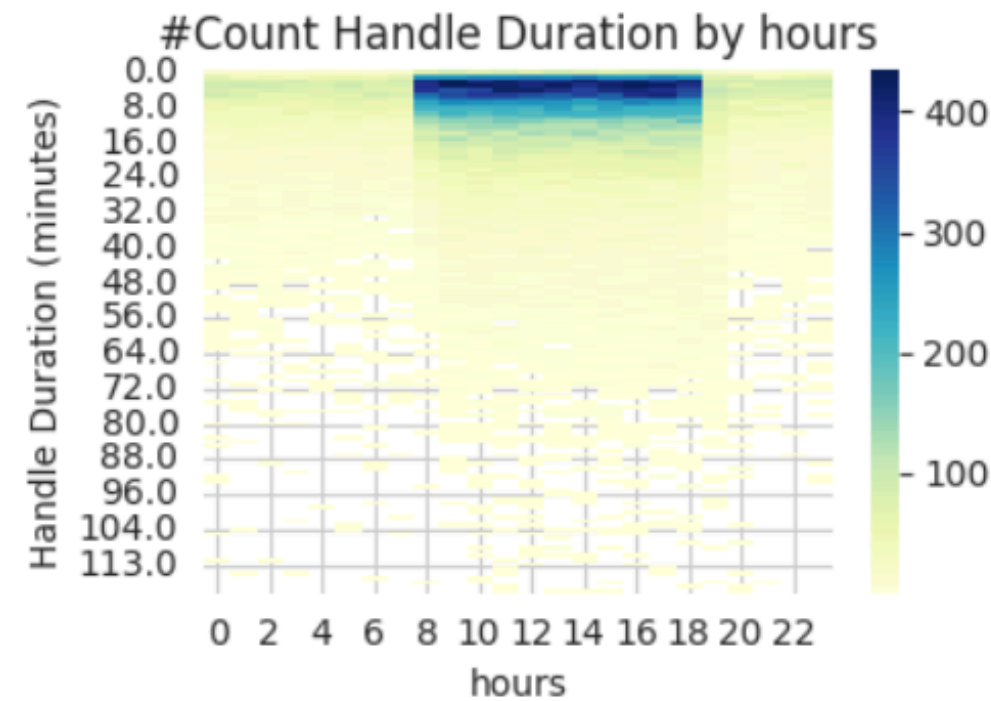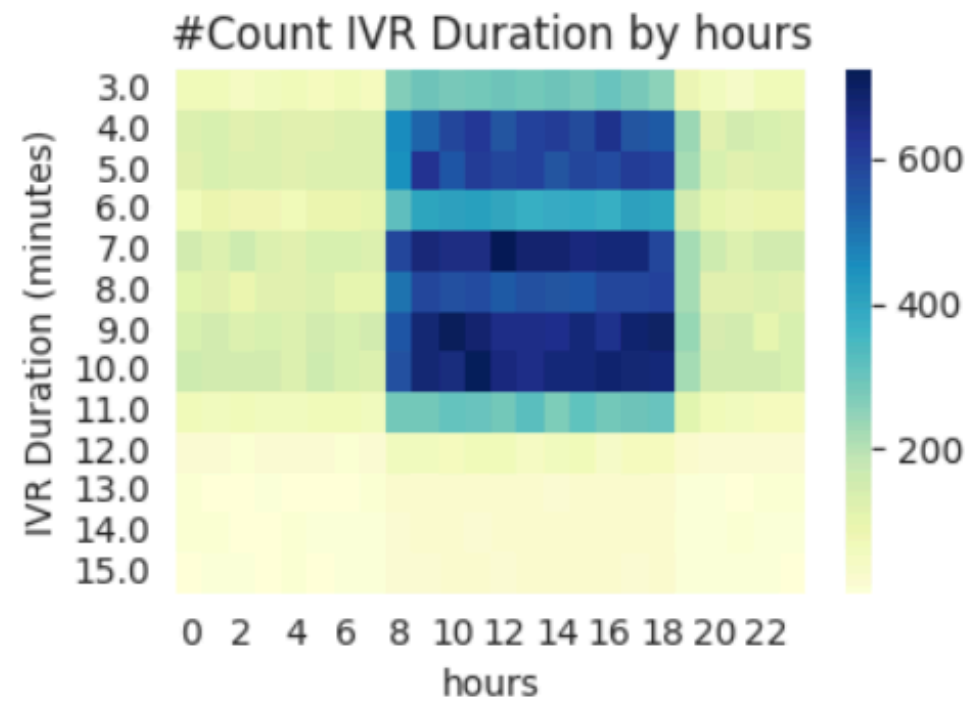
Improving Call Center
Performance by Analyzing Call
Volume Trends

Sagar Rathore
Aman Gaur
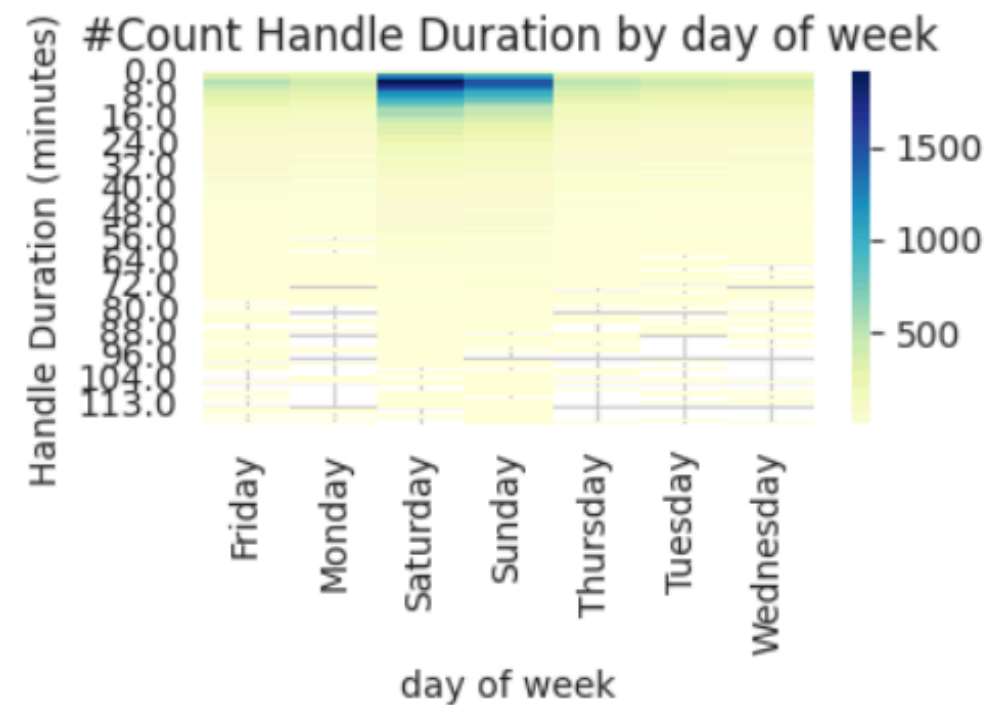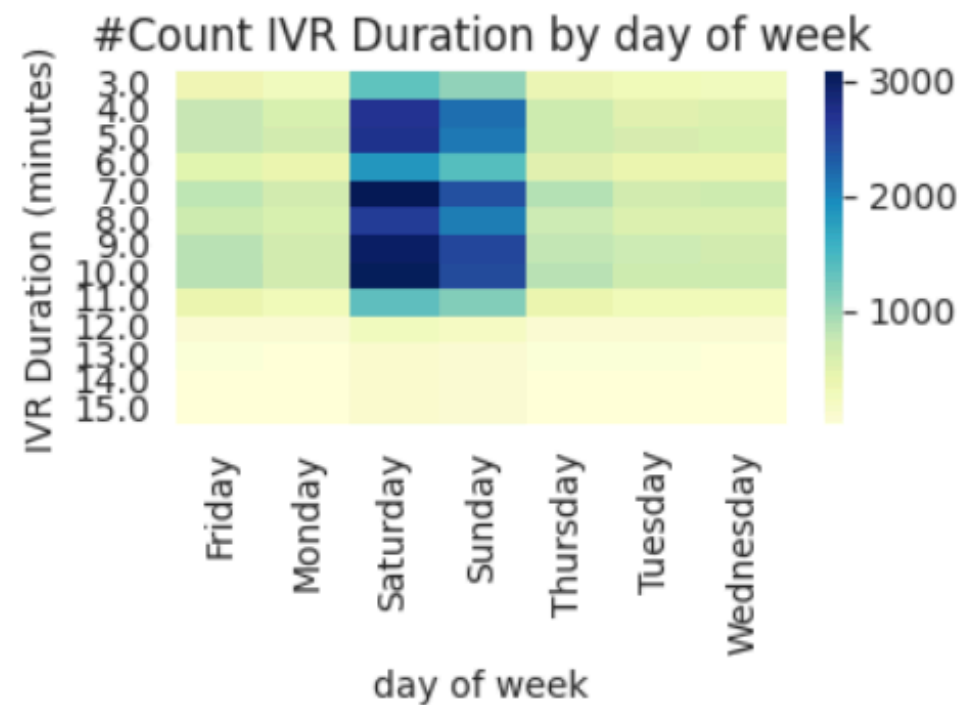
DUCS

Identifying High Volume Period

#Count IVR Duration by hours

#Count Handle Duration by hours

#Count IVR Duration by day of week

#Count Handle Duration by day of week

High Duration Calls are observed on **Saturdays and Sundays**, while daily high-volume calls occur from **8:00 AM to 6:00 PM**.

A peak call volume period occurs on Saturday and Sunday from 8:00 AM to 6:00 PM.

Approximately 31,561 calls, representing nearly ~**45%**, are made during this time frame.

Week Days Analysis AHD, AST

This table illustrates that, despite Saturdays and Sundays being peak calling periods, the Average Handling Time (AHT) remains consistent each week.

Total Number of Agents   383
Total Call Taken in a month   66653

day_of_week	number of agents
Friday	176
Monday	204
Saturday	380
Sunday	373
Thursday	184
Tuesday	171
Wednesday	173

day_of_week	Number of Calls
Friday	6071
Monday	4868
Saturday	22252
Sunday	17763
Thursday	6014
Tuesday	4888
Wednesday	4797

day_of_week	AHD	AST
Friday	11.728875	7.281832
Monday	11.542728	7.248973
Saturday	11.565477	7.264201
Sunday	11.674548	7.292406
Thursday	11.775856	7.285667
Tuesday	11.310761	7.336129
Wednesday	11.725870	7.312070

Primary Call Reasons


AHD by Primary Call Reason
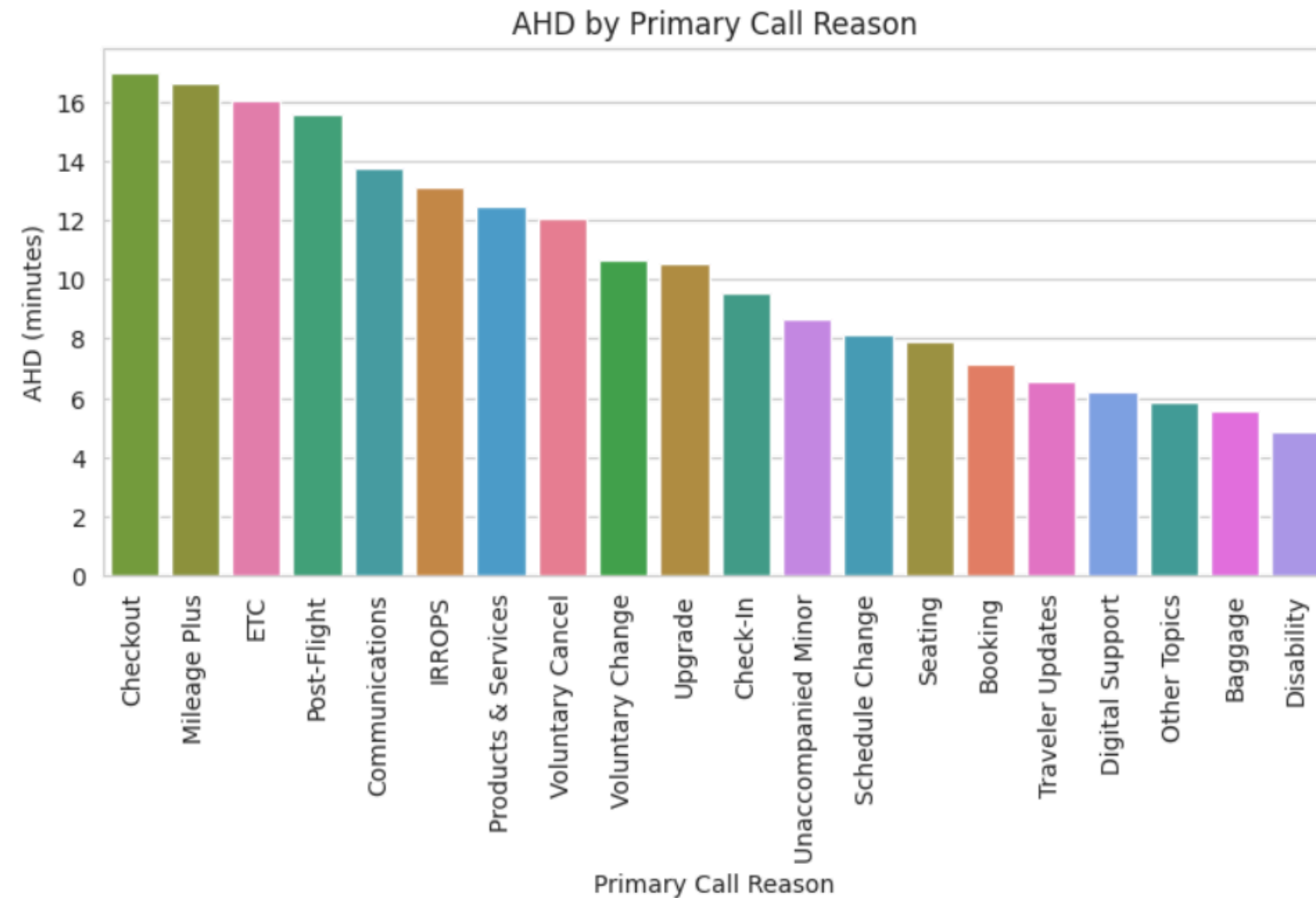
"Checkout" having a high average handling time (AHD) and average service time (AST) suggests that this area requires more interaction or processing, likely due to the complexity of transactions or customer inquiries.

In contrast, "Booking" being a less frequent reason to call but having a low IVR duration suggests that it has an easy and streamlined process with clear instructions.

Average IVR Duration by Call Type

Calls taken by Each Agent
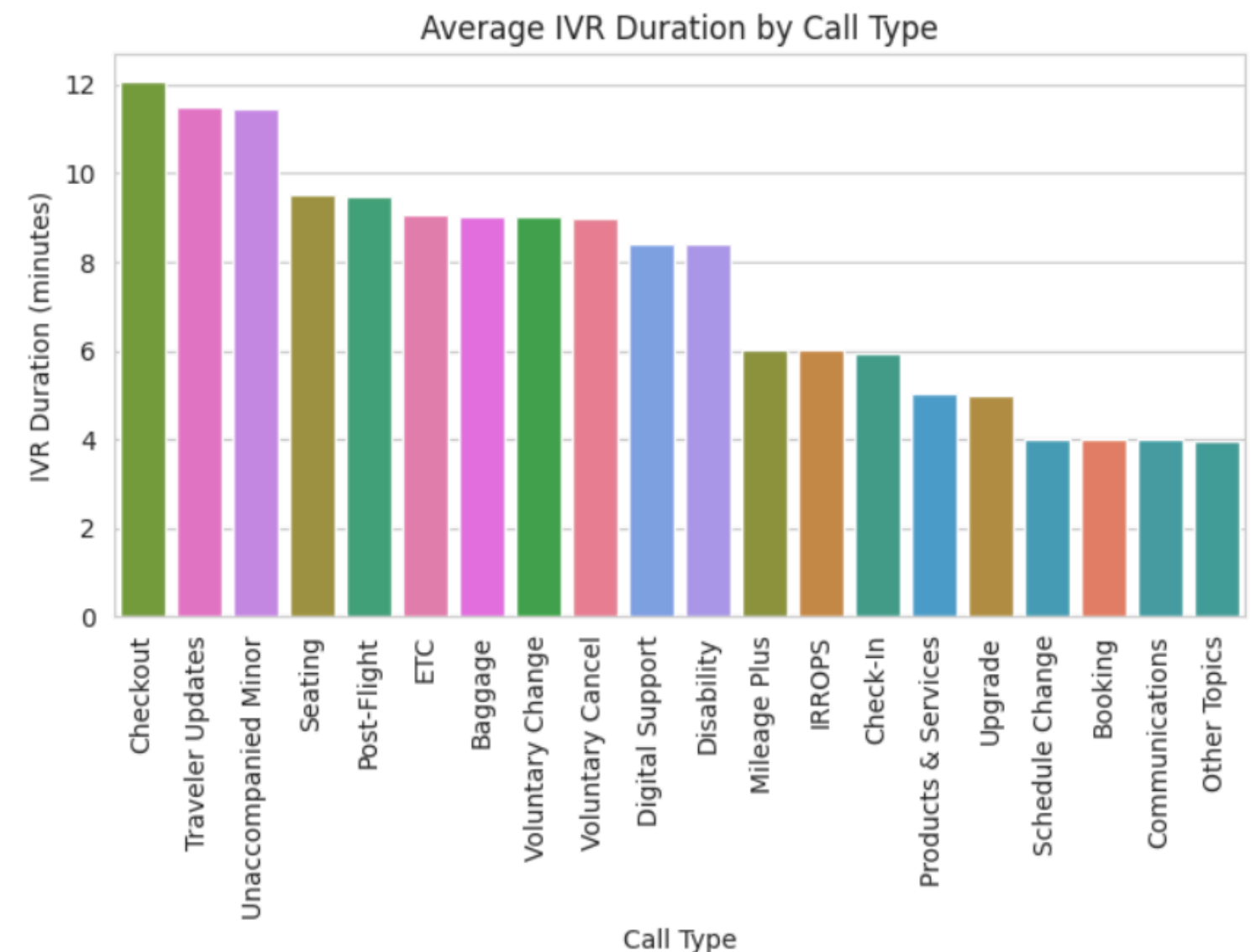
Histogram of Calls Taken by Each Agent
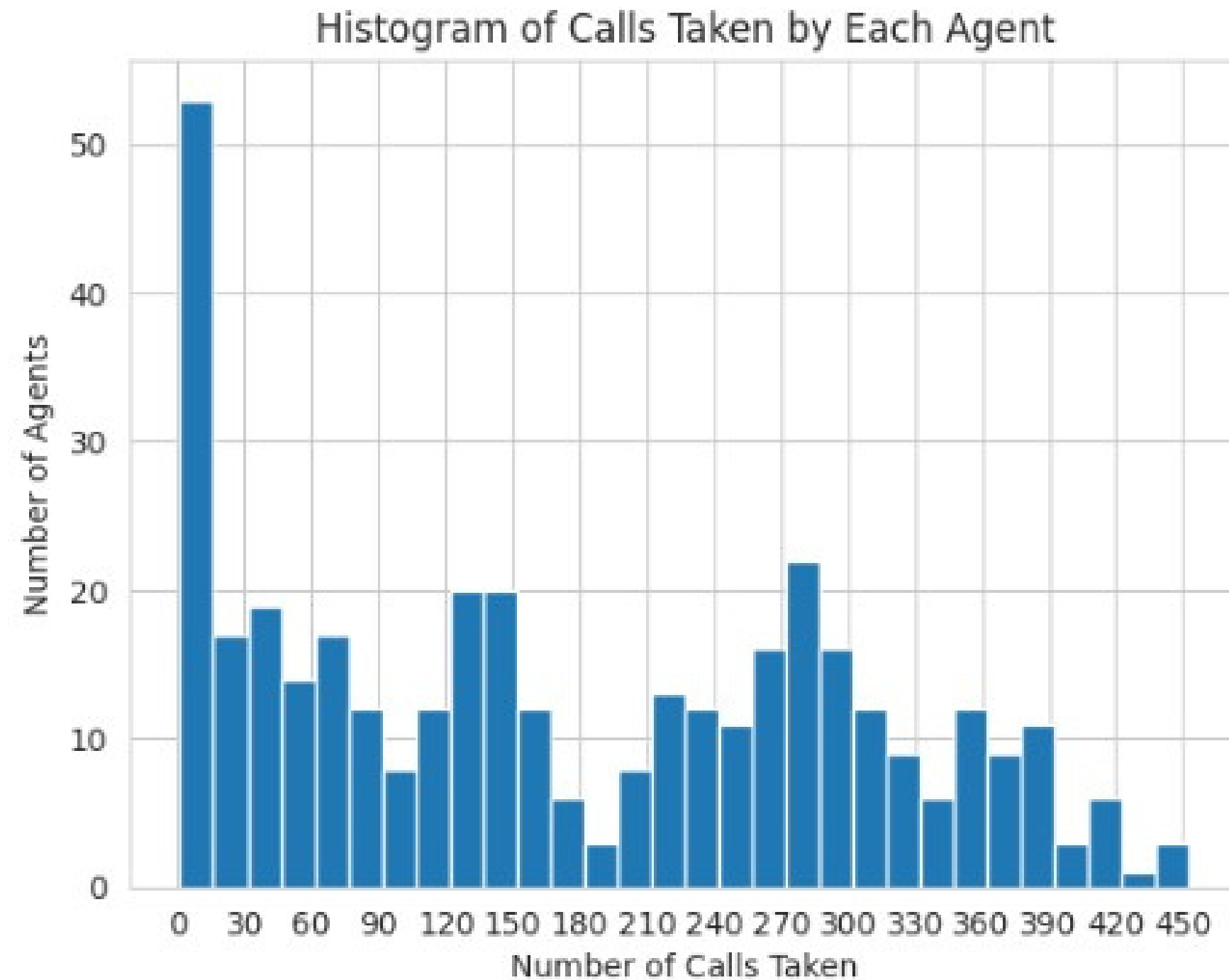
- The average number of calls an agent taken over a month is 174, which is not a good representation of data as we can see in the graph.
- About more than 50 agents have calls taken between 0 and 50 which represents a skill ga in agents
  ○

Agent Tone, Customer Tone During Peak Call Volume
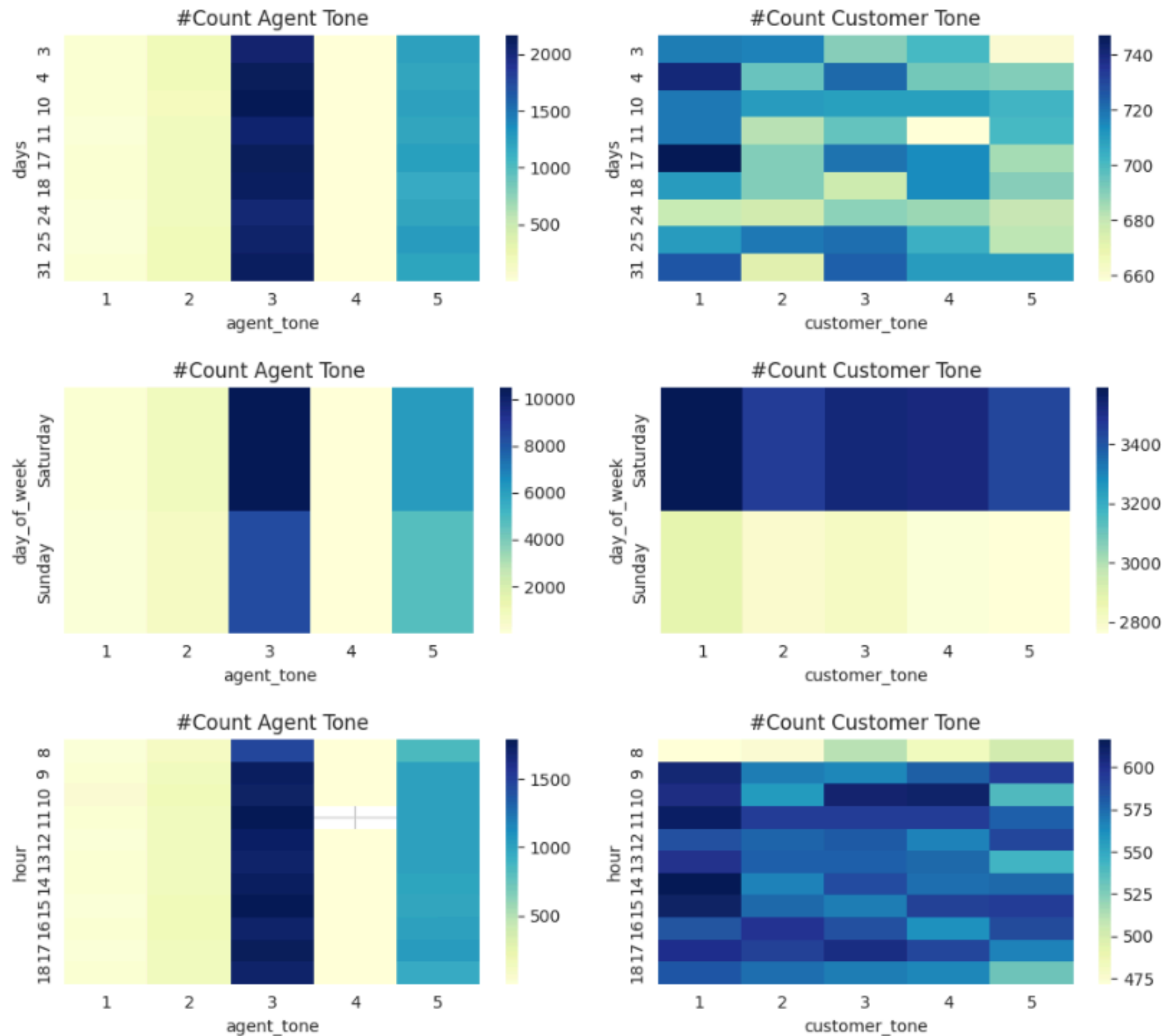
- Agent mostly uses a neutral and calm tone
- Whereas we can see Customer tones are more evenly spread across during peak hours.
- There is an indication that Customer tone may lead to longer call durations, especially if frustrated customers seek clarity from agents.

AHT: Silence Percent Average is the most crucial feature, boasting a significantly higher importance score than the others. It also have the highest correlation with Handling Duration. This indicates that periods of silence during a call greatly affect call handling time.

Average Sentiment ranks as the second most important feature, as the sentiments of both the agent and the customer during the call influence the time it takes to resolve issues.

Hour of the Day also plays a significant role, suggesting that the time when a call is made can impact its duration.

Primary Call Reason is of moderate importance, indicating that various call reasons lead to different handling times .

IVR Duration, or the time a customer spends in the interactive voice response (IVR) system before reaching an agent, also affects call handling time and customer tone.

Other features such as **Day of the Week, Customer Tone**, and **Elite Level Code** contribute smaller, yet noteworthy, impacts on the prediction of Average Handling Time (AHT).
For AST, the hour and day of the week hold greater significance in terms of feature importance.

Summary

Percentage difference in AHD, AST between the most and least frequent call reasons

1. Highest Call Reason for AHD is Checkout   :   16.95
2. Lowest Call Reason for AHD is Disablity   : 4.87

   % Difference AHD = 248.11%

1. Highest Call Reason for AHD is Checkout :   12.08
2. Lowest Call Reason for AHD is Disablity   :   3.95

   % Difference AST = 203.54%

Recommendation

- There exists a performance gap in agents, as a lot of agents perform way lower than average calls per month and implementing targeted training and development opportunities to address these gaps will undoubtedly enhance overall efficiency.
- AST combined with IVR significantly influences customer satisfaction; ensuring a streamlined process along with clear instructions will help minimize call volumes. Additionally, routing customers with long wait times to experienced agents will contribute to a reduction in handling time.
- IVR alternate like a chatbot with virtual assistant can help to lower the call volumes to agents and handle simple problems like booking and cancelling.
- An IVR system can offer customers the option to join a virtual queue or schedule a callback at their convenience. During this process, the system gathers and forwards key information to the agent, including the customer's details, the issue at hand, and a sentiment analysis of the customer's tone or emotions. This enables the agent to be better prepared and deliver more personalized and effective service.
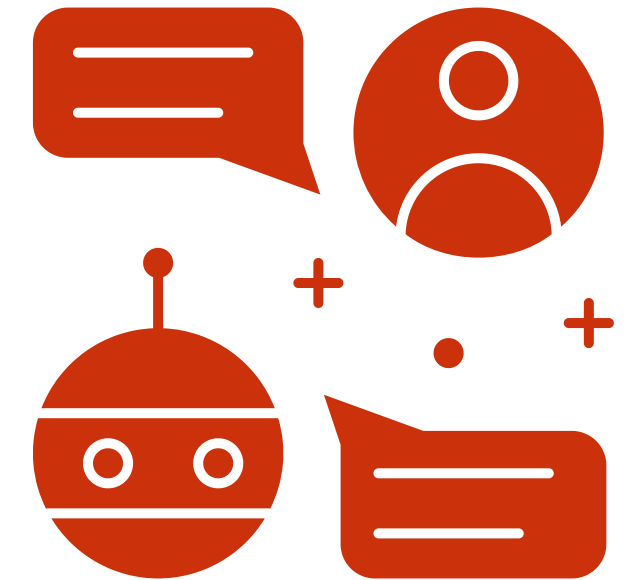
Text Analysis and Classification

Number of Words	
count	71810.000000
mean	500.854477
std	104.101949
min	30.000000
25%	426.000000
50%	490.000000
75%	565.000000
max	844.000000

Descriptive Statistic for
Number of Words of
Transcripts

Word Cloud of transcripts

Decision Tree with TF-IDF vectorization and text preprocessing

Metric	Precision	Recall	F1-Score	Support
Accuracy		0.19		13331
Macro Average	0.07	0.05	0.03	13331
Weighted Average	0.13	0.19	0.10	13331