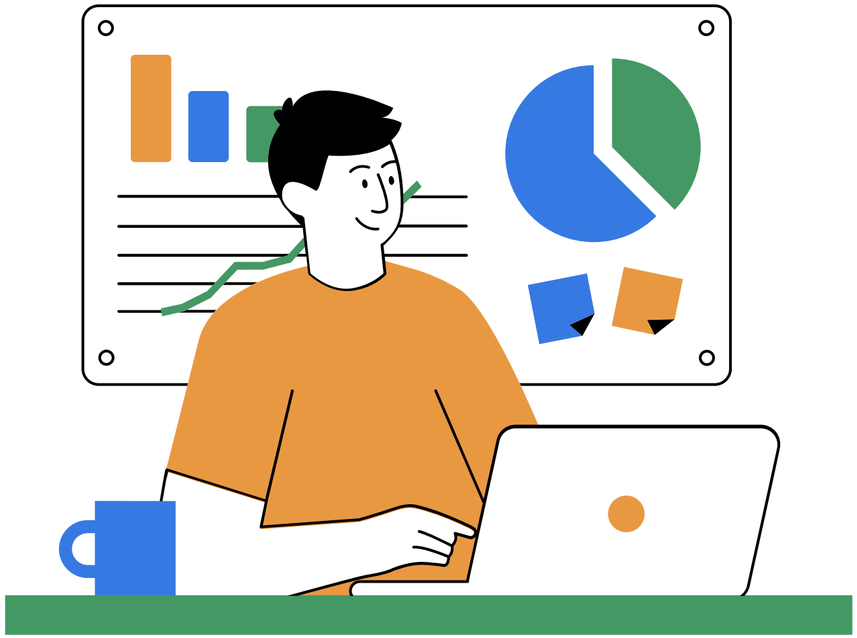
DATA ANALYSIS

This project analyzes United Airlines' call center data to uncover inefficiencies in key performance metrics affecting service quality. By identifying the factors contributing to these inefficiencies, we aim to develop strategies that improve overall operational efficiency and enhance customer satisfaction.

TEAM

THE MINIMALISTS



WORK FLOW

1. DATA CLEANING AND PREPROCESSING
2. TENTATIVE FACTORS FOR LARGE AST & AHT
3. ANALYSIS OF TENTATIVE FACTORS
4. CALL REASONS ANALYSIS FOR SOLUTIONS
5. IVR OPTIONS IMPROVEMENT

TENTATIVE FACTORS BEHIND HIGH **AST AND AHT**

01

Elite Level Code

The Elite Level Code, which indicates a customer's membership status, can play a significant role; members with higher status may have more complex inquiries that may require longer handling and speed to answer times.

02

Calling Time & Day

Additionally, the time and day of calling can impact these metrics, as certain times may see higher call volumes, leading to longer wait times and extended conversations.

03

Customer Tone & Agent Tone

Calls where customers and agents express frustration or confusion may take more time to resolve

TENTATIVE FACTORS BEHIND HIGH **AST AND AHT**

04

Sentiments and Silence Percentage

Social media provides a cost-effective and real-time way to gather insights on consumer behavior, opinions, and preferences.

05

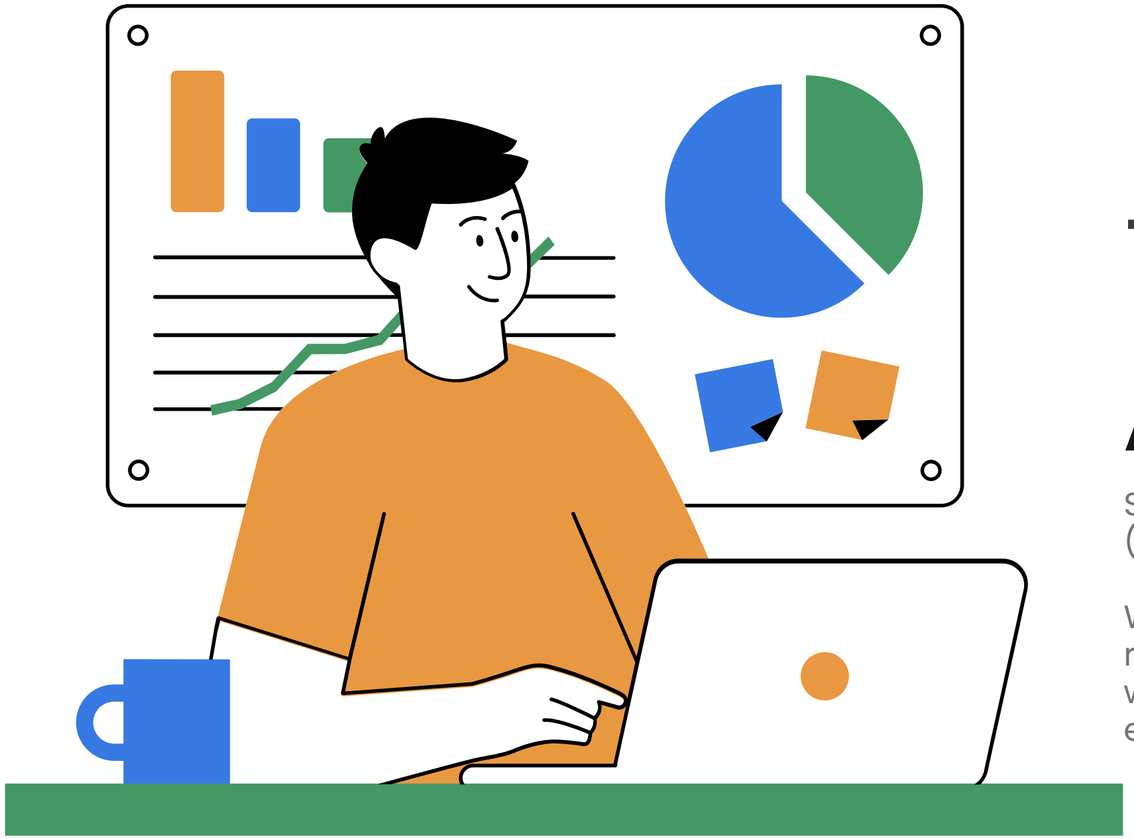
Call Reasons

Social media provides a cost-effective and real-time way to gather insights on consumer behavior, opinions, and preferences.

06

Call Transcript

Social media provides a cost-effective and real-time way to gather insights on consumer behavior, opinions, and preferences.



TENTATIVE FACTORS **ANALYSIS**

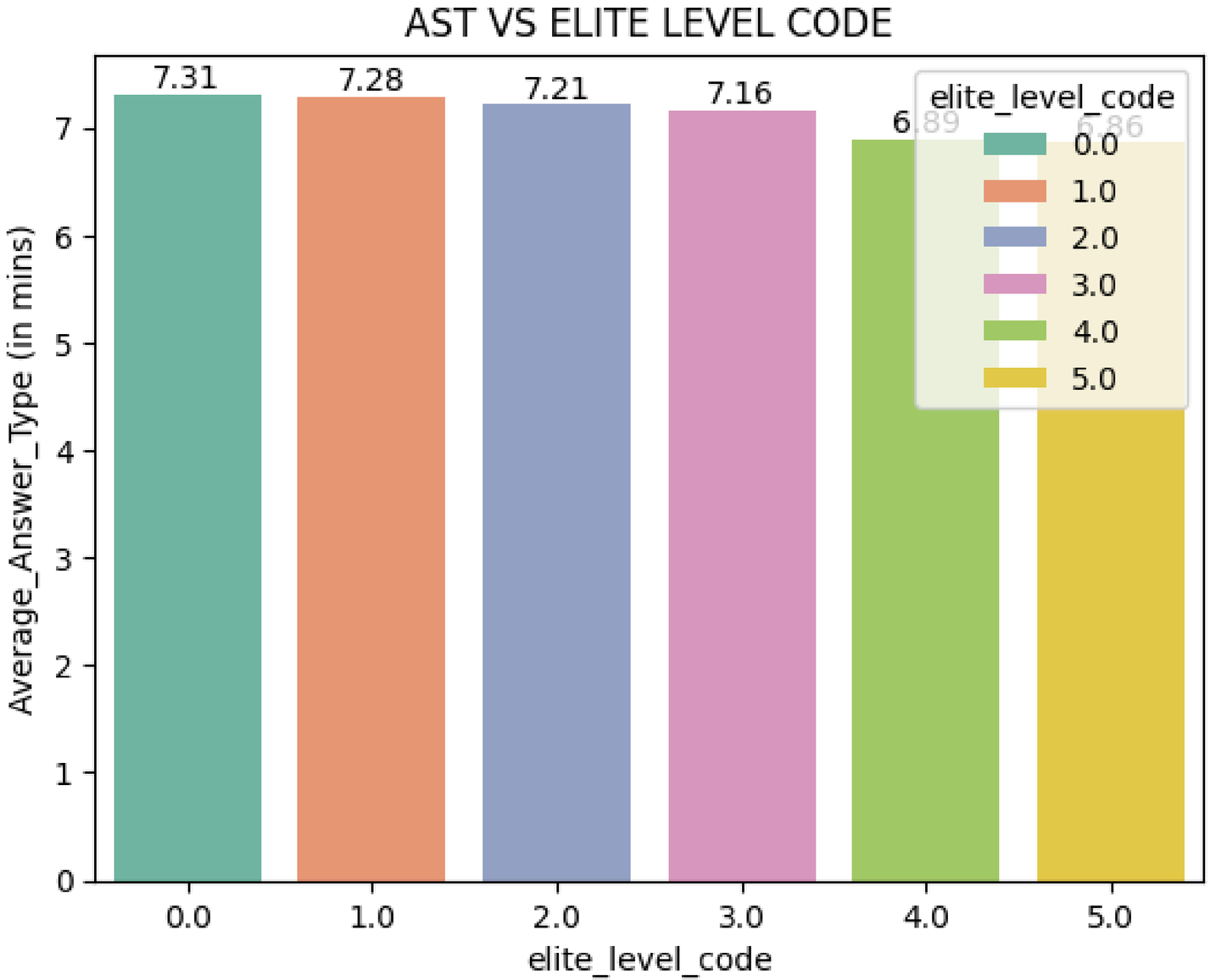
Several factors can contribute to higher Average Handle Time (AHT) and Average Speed to Answer (AST) in call centers.

We have considered some tentative factors that could be responsible for these high values. By understanding these factors, we can work towards improving customer service and increasing efficiency in handling calls.

01 Elite Level Code

AST

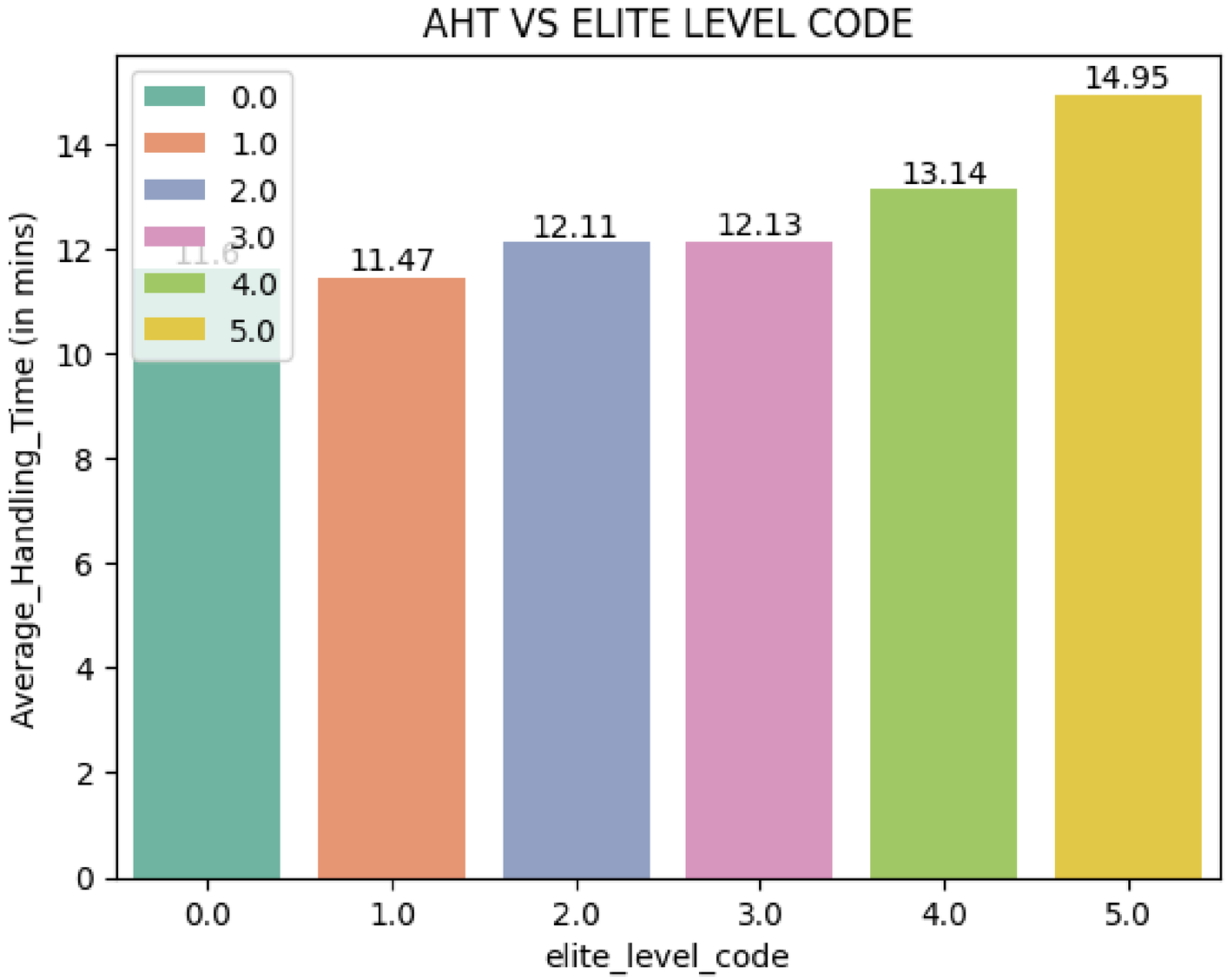
The graph shows that **higher membership levels lead to faster response times**, indicating prioritized service for elite customers**.**



01 Elite Level Code

AHT

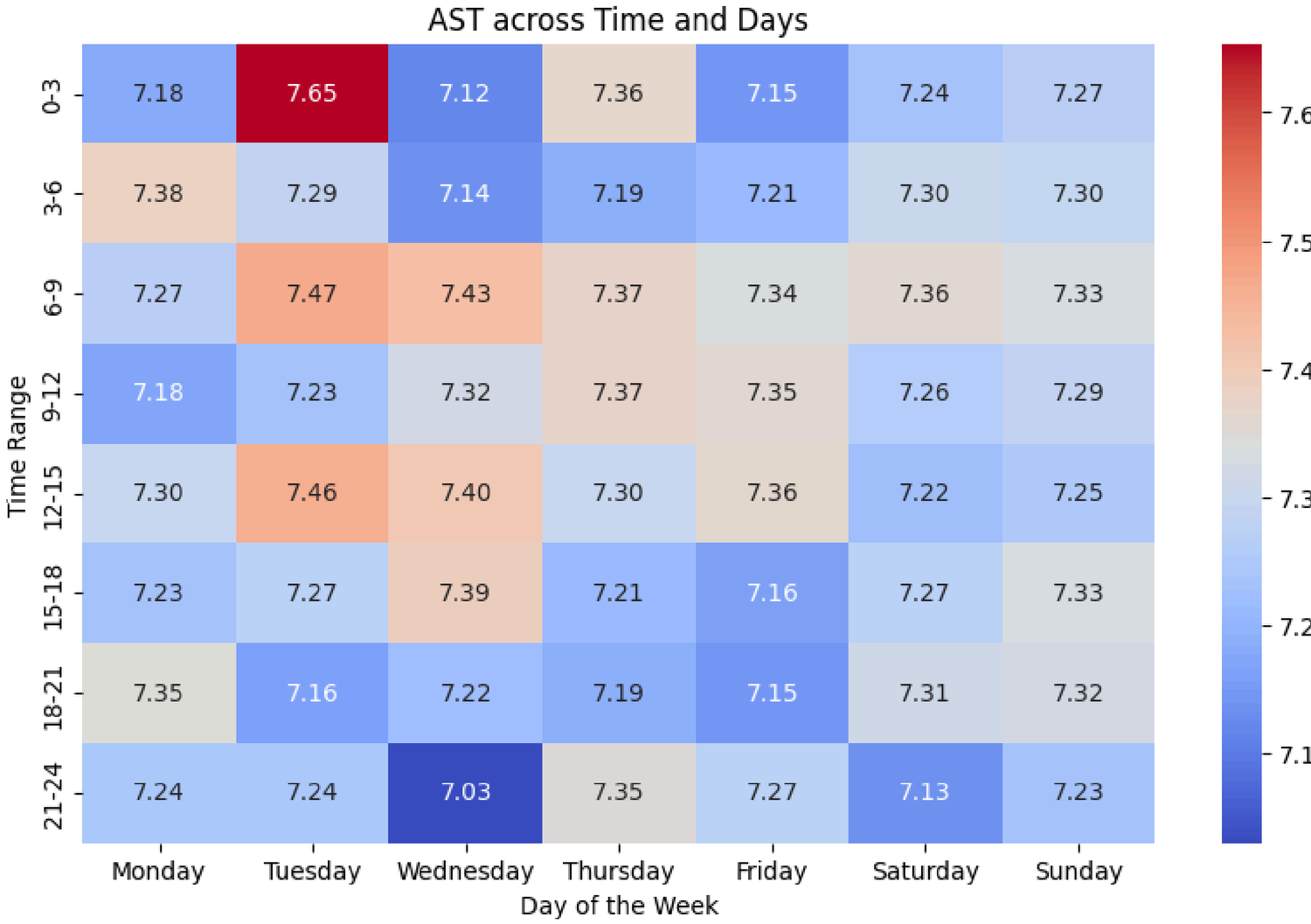
The graph shows that **higher membership levels lead to longer handling times**, indicating more complex inquiries or requests from **elite customers.**



02 Calling Time and Day

AST

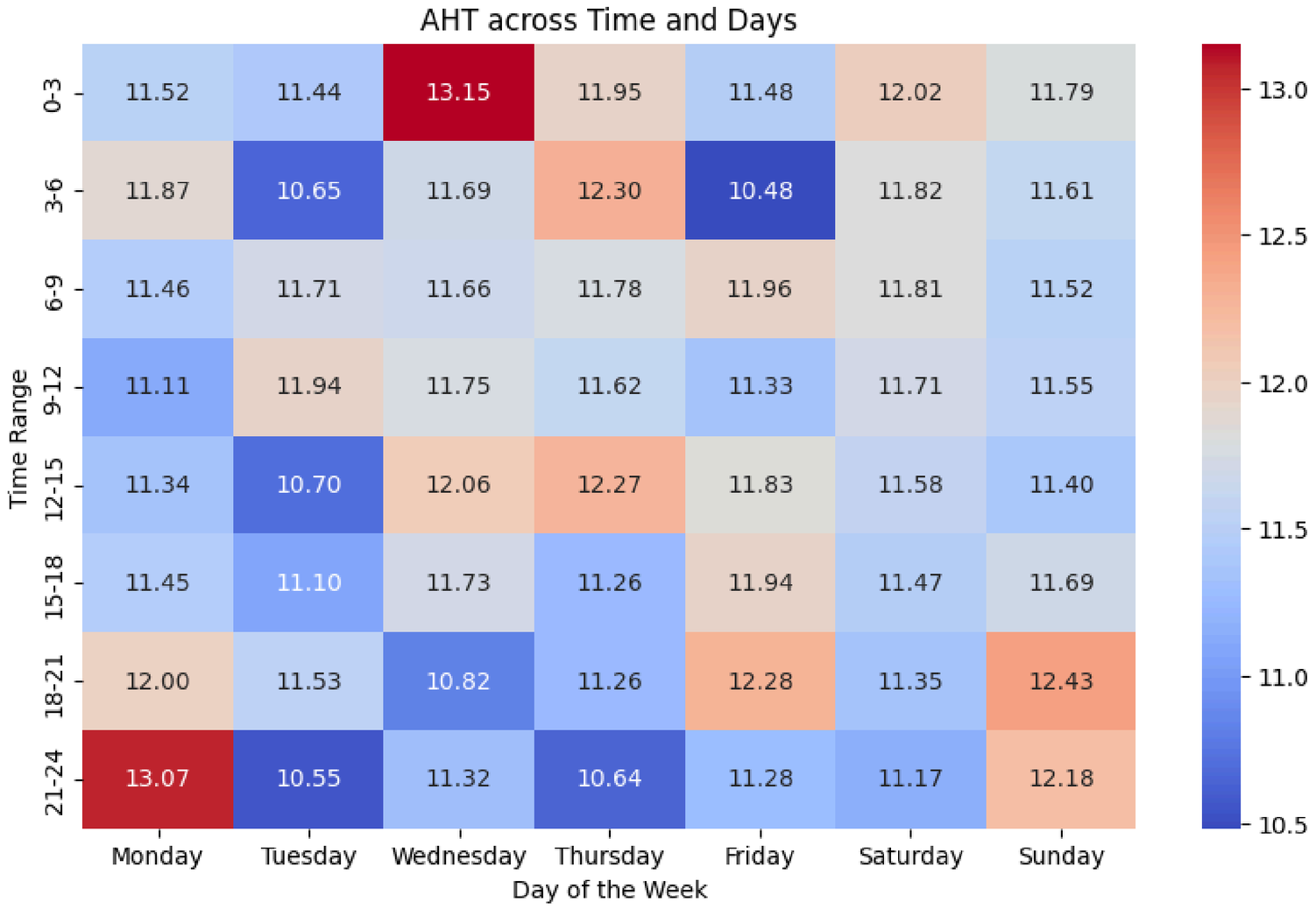
Average Speed to Answer (AST): Remains stable throughout the day and across the week, indicating **no significant dependence on time or day**.



02 Calling Time and Day

AHT

Average Handling Time (AHT): Also shows similar stability, suggesting performance is consistent regardless of morning, afternoon, evening, or weekdays vs. weekends.

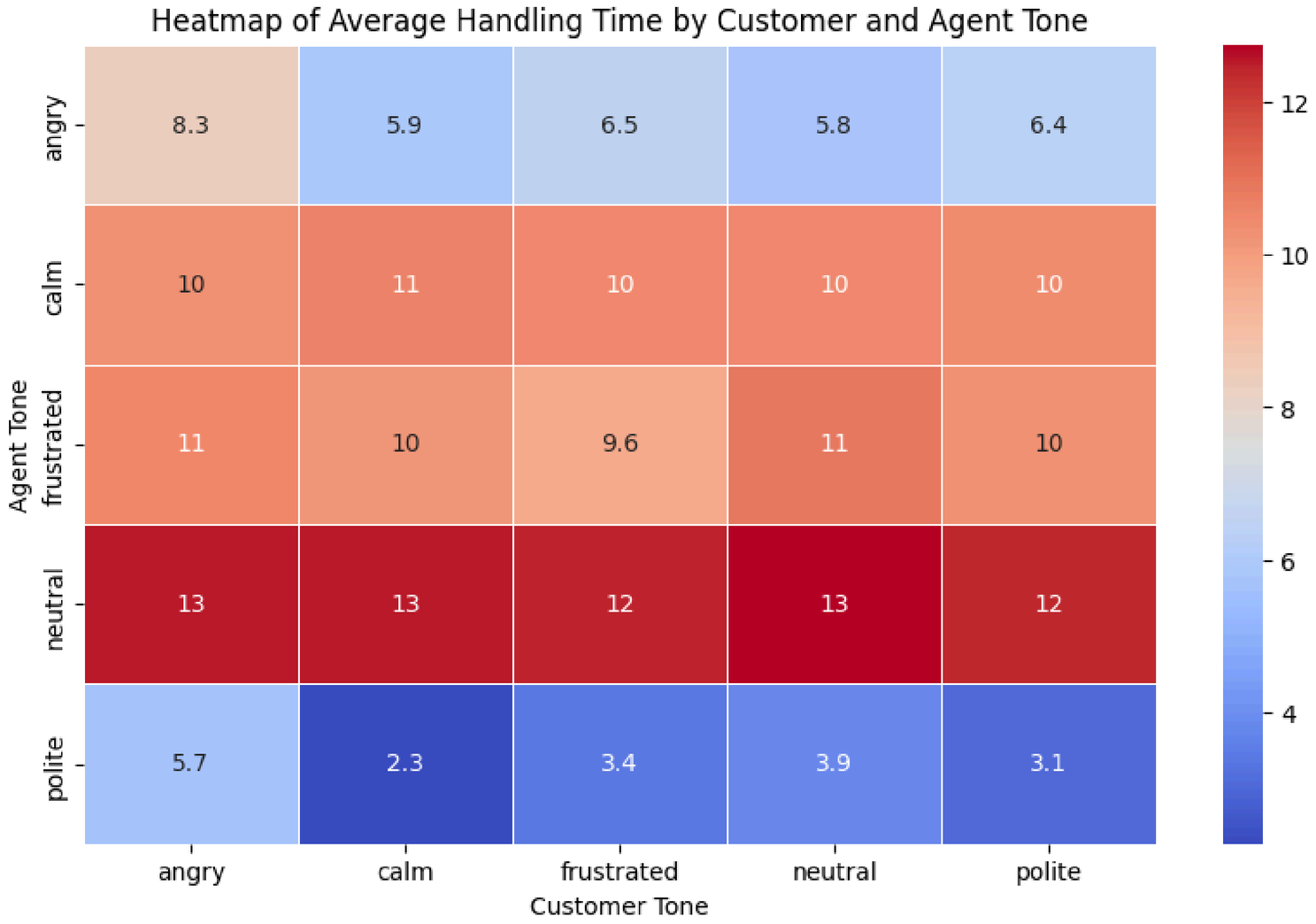


03 Customer Tone and Agent Tone

AHT : The heatmap shows that handling times vary by agent tone:

- **Neutral Tone: Peaks at 13 minutes, indicating inefficiency**.
- Polite Tone: Shortest times, as low as 2.3 minutes with calm customers, reflecting effectiveness.
- Frustrated Tone: **Consistent handling times around 10-11 minutes, showing inefficiency**.
- **Calm Tone: Moderately high times (10-11 minutes), needing improvement.**

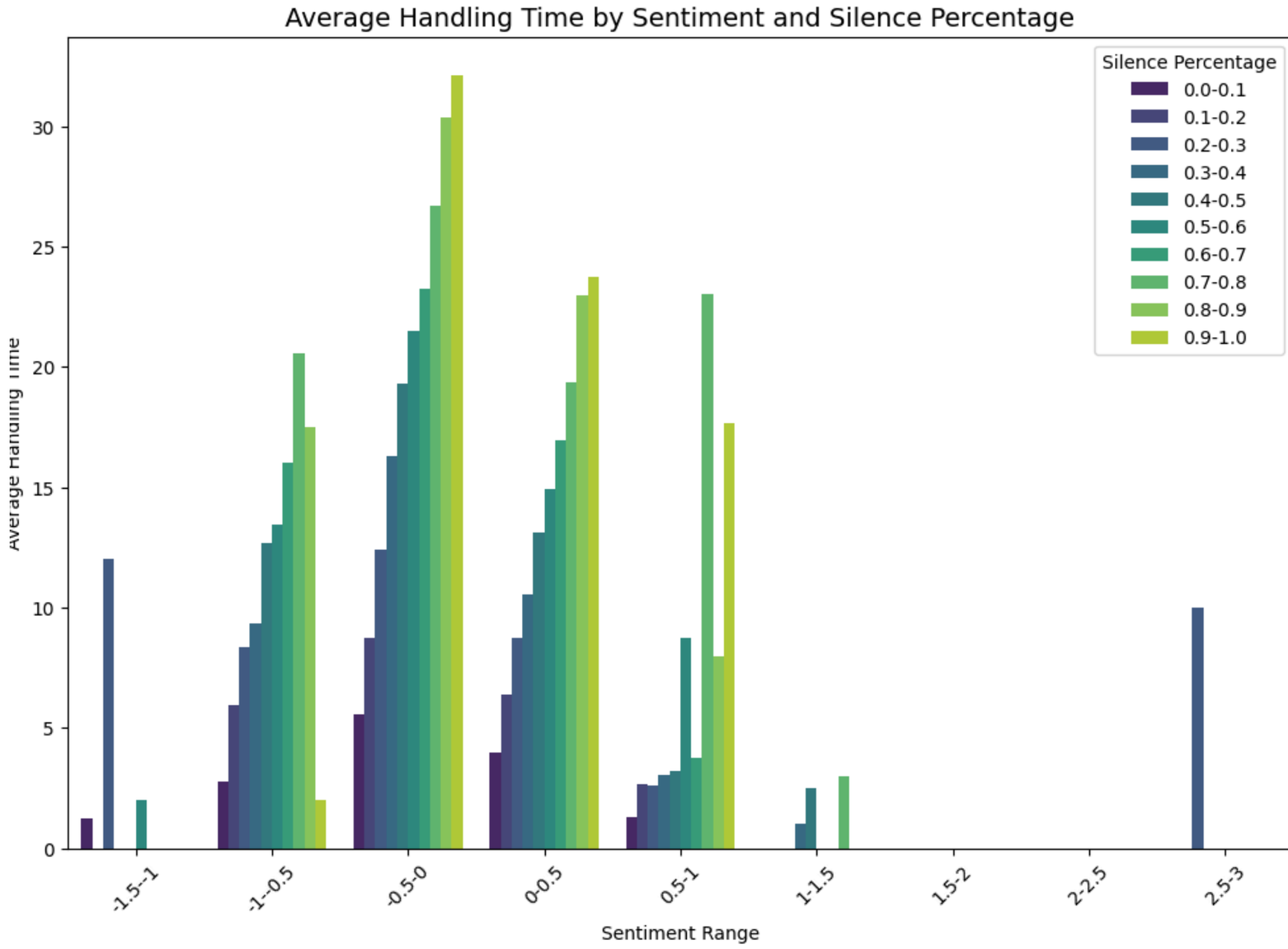
In summary, maintaining a calm and polite tone can reduce handling times and enhance customer satisfaction, underscoring the role of emotional intelligence in service interactions.



04 Sentiments and Silence Percentage

AHT

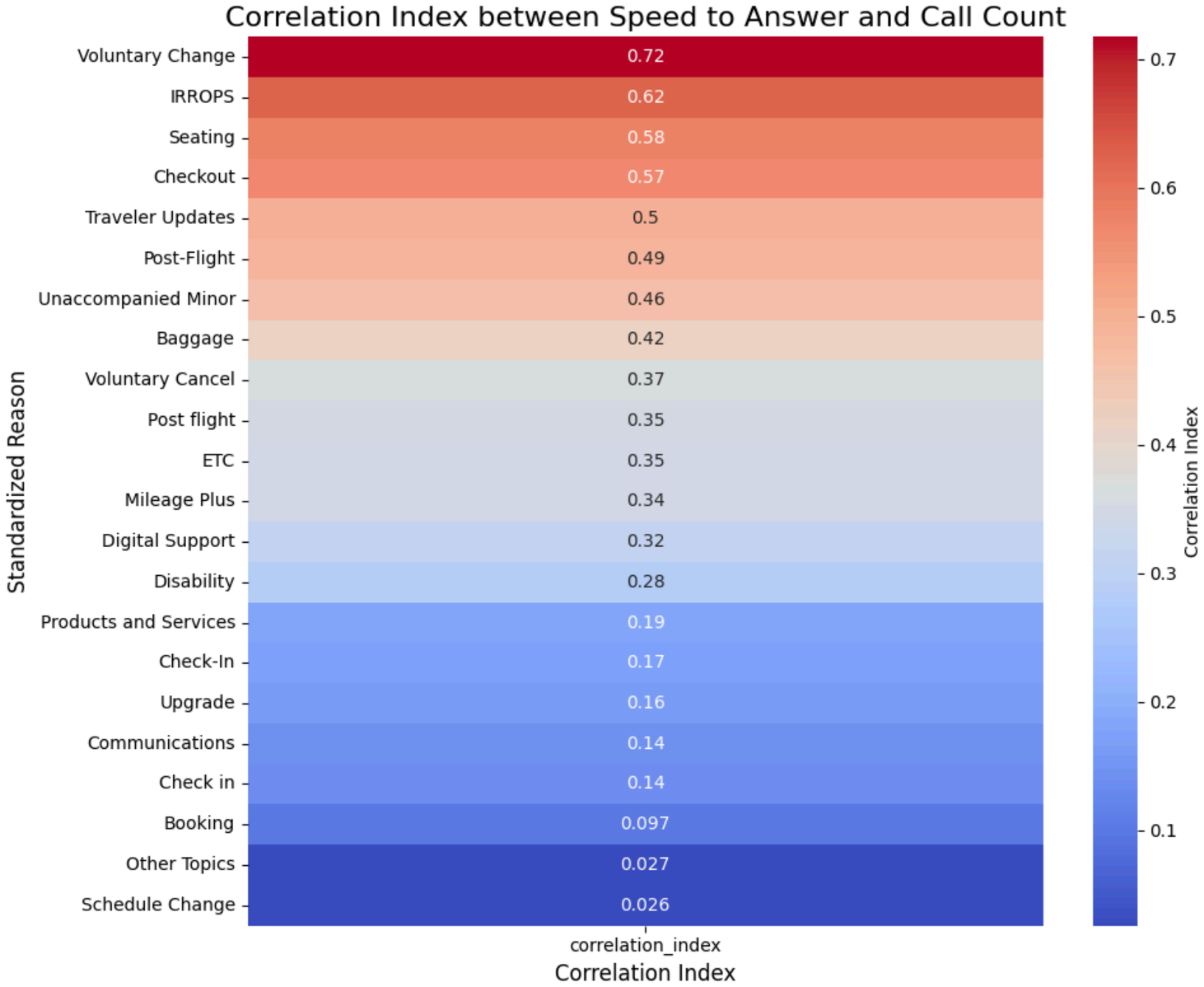
The graph shows that **higher silence percentages (0.8-1.0) lead to longer handling times**, exceeding 30 minutes, likely due to miscommunication. **Lower silence percentages (0.0-0.1) result in quicker resolutions under 10 minutes**. Mid-range silence (0.4-0.6) has mixed effects, while sentiment likely influences AHT, with **negative tones correlating with higher silence and longer call durations. Reducing silence can help decrease AHT**.



05 Call Reasons

AST

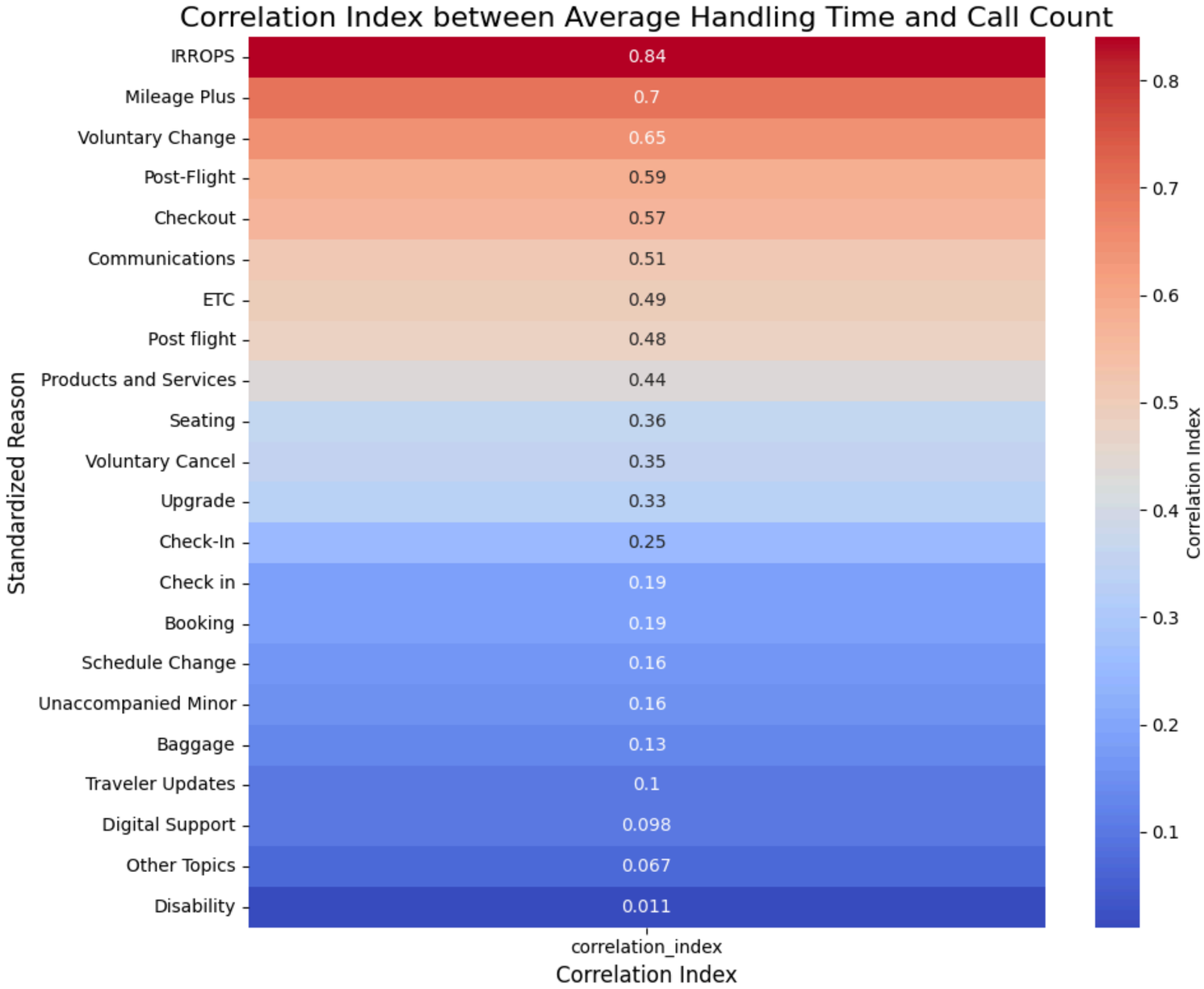
Voluntary Change (0.72) and IRROPS (0.62) correlate with faster response times, while Booking (0.097) shows slower responses.
Focusing on high-correlation areas can **improve customer experience and performance**



05 Call Reasons

AHT

IRROPS (0.84), Mileage Plus (0.70), and Voluntary Change (0.65) strongly correlate with longer handling times, while Booking (0.19) reflects quicker resolutions. Prioritizing high-correlation areas can boost efficiency



06 Call Transcripts

- **Analyzed call transcripts to identify top 10 words for sub-reason classification to further increase IVR options.**
- **Removed common stop words, but no clear patterns emerged.**
- **Further refinement or advanced techniques are needed for meaningful insights.**

```
Top 10 words for reason 'Seating':
could: 8984
reservation: 8862
see: 8763
make: 8593
fee: 8588
good: 8346
travel: 8109
check: 8068
booked: 7942
new: 7892

Top 10 words for reason 'Mileage Plus':
could: 8499
fee: 8403
make: 8264
see: 8247
reservation: 8193
good: 7691
travel: 7621
booked: 7578
name: 7325
check: 7275

Top 10 words for reason 'Checkout':
see: 2711
reservation: 2682
could: 2633
travel: 2628
make: 2527
fee: 2504
good: 2458
new: 2440
name: 2438
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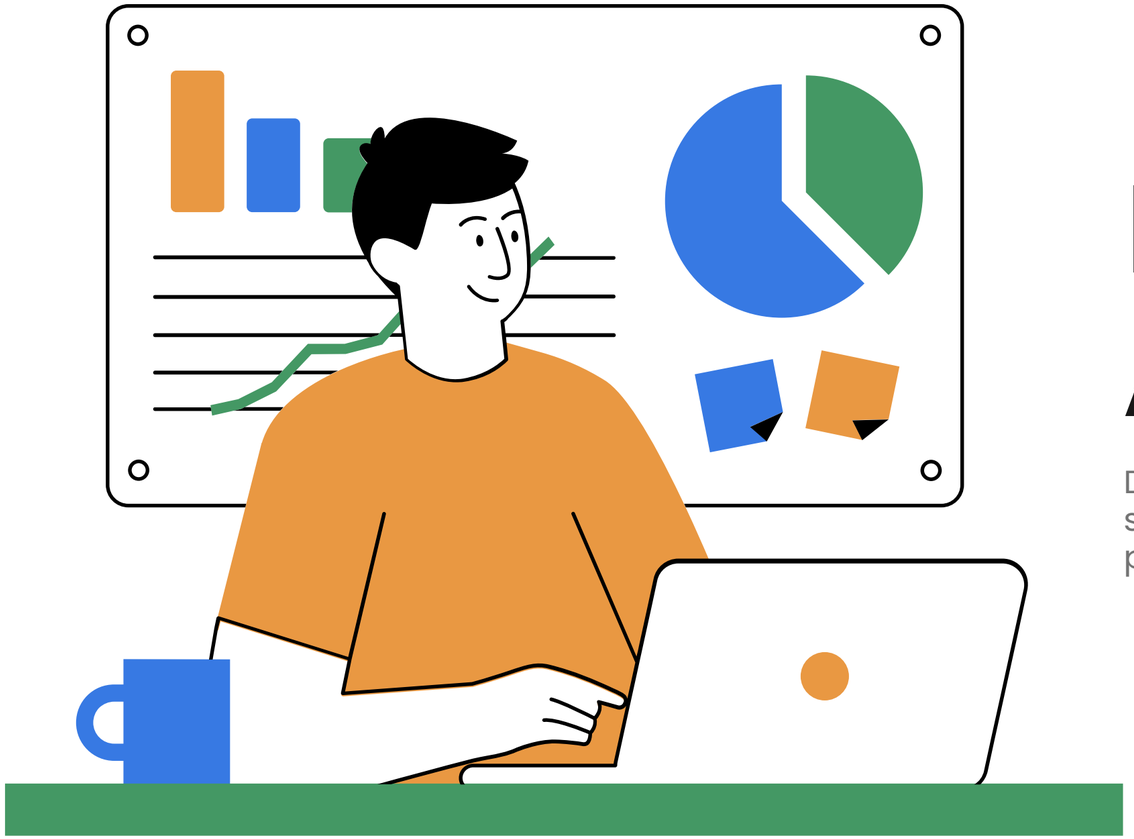
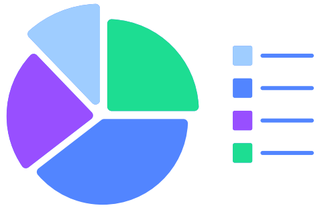


DATA INSIGHTS FROM **ANALYSIS**

Data analysis provides valuable insights, these insights not only guide strategic planning but also contribute to improving overall efficiency and performance, enabling data-driven decisions that lead to better outcomes.

Customers with higher membership levels may receive prioritized service, leading to faster response times when they reach out for assistance. It highlights the effectiveness of call centers in addressing the needs of elite members promptly, likely due to their enhanced loyalty and value to the company. As these members have access to exclusive benefits and services, call centers may allocate more resources or skilled agents to handle their inquiries quickly.



The analysis shows that the number of calls received is significantly higher during peak times, specifically from 9 AM to 6 PM, and reaches exceptionally high levels throughout the weekends for airlines. This trend indicates that many **customers prefer to reach out during traditional business hours, likely when they are free to make inquiries about their travel plans, changes, or any issues they may face**

This **observation reveals that regardless of whether it's morning, afternoon, or evening, and irrespective of the weekday or weekend, the performance in terms of answering calls and handling customer inquiries remains relatively stable.**

The heatmap illustrating **Average Speed to Answer (AST) and Average Handling Time (AHT) across different times and days** indicates a remarkable consistency, suggesting that these metrics **do not significantly depend on the time of day or the specific day of the week.**

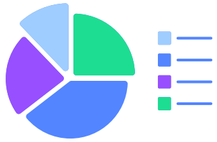
High Silence Percentage Leads to Higher AHT:

Calls where the silence percentage is between 0.8 to 1.0 (the yellow-green bars) show significantly **higher handling times, peaking above 30 minutes.**

Calls with a lower silence percentage (0.0-0.1) tend to have the **shortest handling times, generally below 10 minutes**

For silence percentages in the range of 0.4 to 0.6 (green to light green bars), there is variability in handling times.

The analysis indicates a significant variance in handling times depending on the combination of customer and agent tones. It appears that interactions with different emotional tones lead to differing durations of calls.



Calm Agent Tone: **Agents with a calm tone have moderately high handling times, around 10-11 minutes,** regardless of customer tone. Although better than neutral agents, calm agents still have room to improve compared to polite agents.

Neutral Agent Tone: **When the agent's tone is neutral, the handling time is consistently the highest across almost all customer tones, peaking at 13 minutes.** This suggests that agents with a neutral tone may not be as effective in de-escalating or managing the call efficiently, leading to longer handling times.

Polite Agent Tone: **Agents with a polite tone tend to have the shortest handling times**, especially when dealing with polite or calm customers.

Frustrated Agent Tone: Interestingly, frustrated agents don't seem to show a clear positive or negative trend. Handling times hover around 10-11 minutes regardless of the customer's tone, which might suggest that frustration from agents leads to consistent inefficiency across all types of interactions.

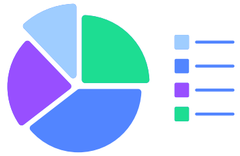
Based on the correlation index heatmap between Average Handling Time (AHT) and Call Count, here are the insights:

Strong Positive Correlation: - IRROPS has the highest correlation index of 0.84, indicating that as the number of calls regarding IRROPS increases, the AHT significantly rises, likely due to the complexity of issues handled.

Moderate Positive Correlation: - Post-Flight (0.59) and Checkout (0.57) exhibit moderate correlations, implying that calls related to these areas also result in longer handling times, possibly due to the nature of inquiries that require detailed responses.

Moderate Positive Correlation: - Seating (0.58) and Checkout (0.57) demonstrate moderate correlations, indicating that these inquiries tend to be resolved quickly when call counts rise.

Lower Correlation: - Categories like Booking (0.097) and Schedule Change (0.026) exhibit minimal correlation with AST, suggesting these inquiries are more complex or require more time to address, leading to slower response times.



Based on the correlation index heatmap between Speed to Answer (AST) and Call Count, here are the insights:
Strong Positive Correlation: - Voluntary Change leads with a correlation index of 0.72, indicating that an increase in call volume for this reason is strongly associated with faster response times, possibly due to simpler inquiries.

Lower Correlation: - Categories like Booking (0.19), Schedule Change (0.16), and Disability (0.011) show minimal correlation with AHT, suggesting that these inquiries may be more straightforward or quicker to resolve.

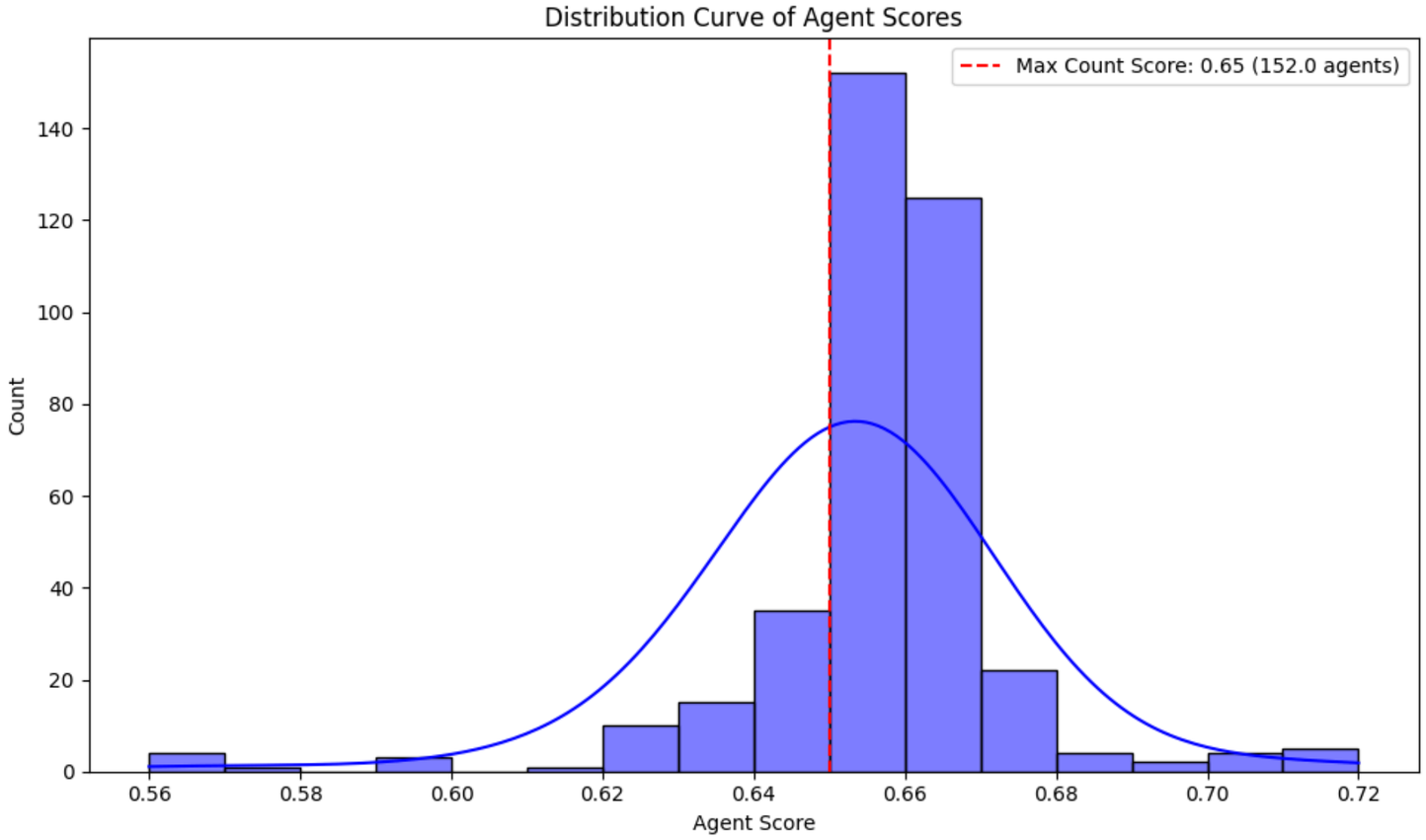
SOLUTIONS

01 **Optimizing Agent Allocation for Call Reasons**

02 **Overall Optimizations of Customer Service**

03 **Methods to Reduce AHT**

01 Optimizing Agent Allocation for Call Reasons



Agent Score Analysis:

Agent score used here is based on factors like agent tone, silence percentage, and sentiment score.

Agent Allocation:

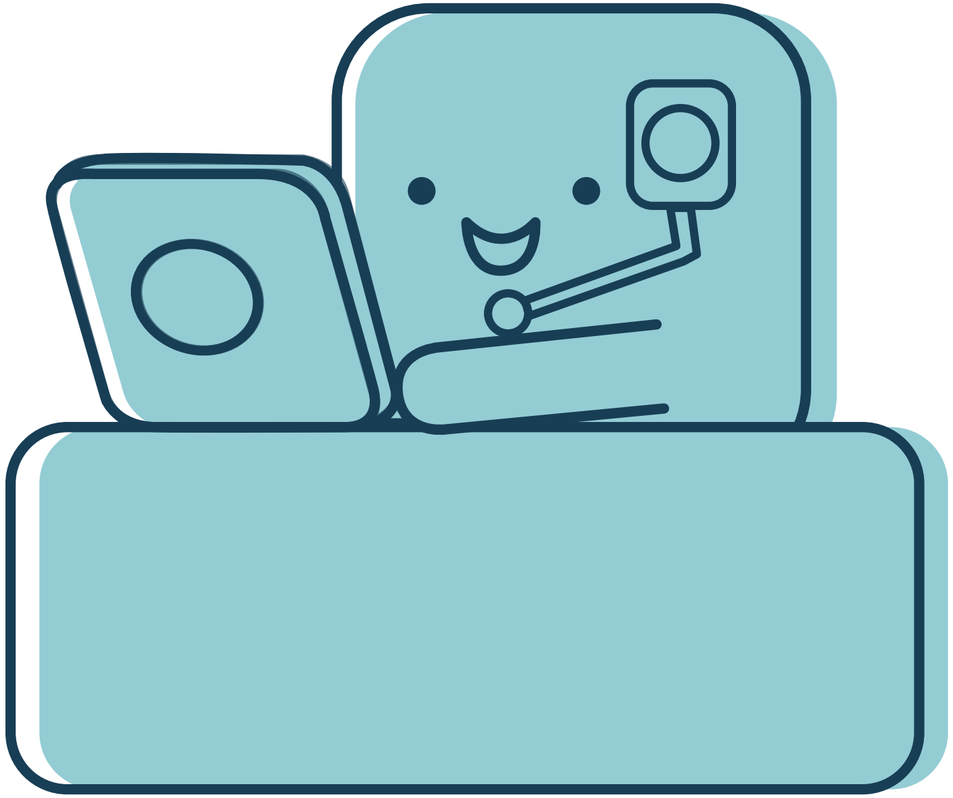
Agents with higher scores can be assigned to handle call reasons with a high correlation index for better performance.

02 Overall Optimization of Customer Service

Prioritized Service for Elite Members
Implement tiered service strategies and train agents to handle complex inquiries effectively for elite customers

Enhanced Communication Techniques
Provide training on effective communication to minimize silence and improve resolution times.

Emotional Intelligence Training:
Encourage agents to adopt calm and polite tones during interactions to enhance efficiency and customer satisfaction.



03 Methods to Reduce AHT

- Reducing silence during calls can help decrease the Average Handling Time, while higher silence percentages can significantly increase the duration of the calls, possibly due to unclear communication or issues with resolving customer concerns quickly.

- Agents should aim to maintain a calm and polite demeanor, especially when dealing with frustrated or angry customers, to enhance efficiency in call handling and potentially improve overall customer satisfaction.