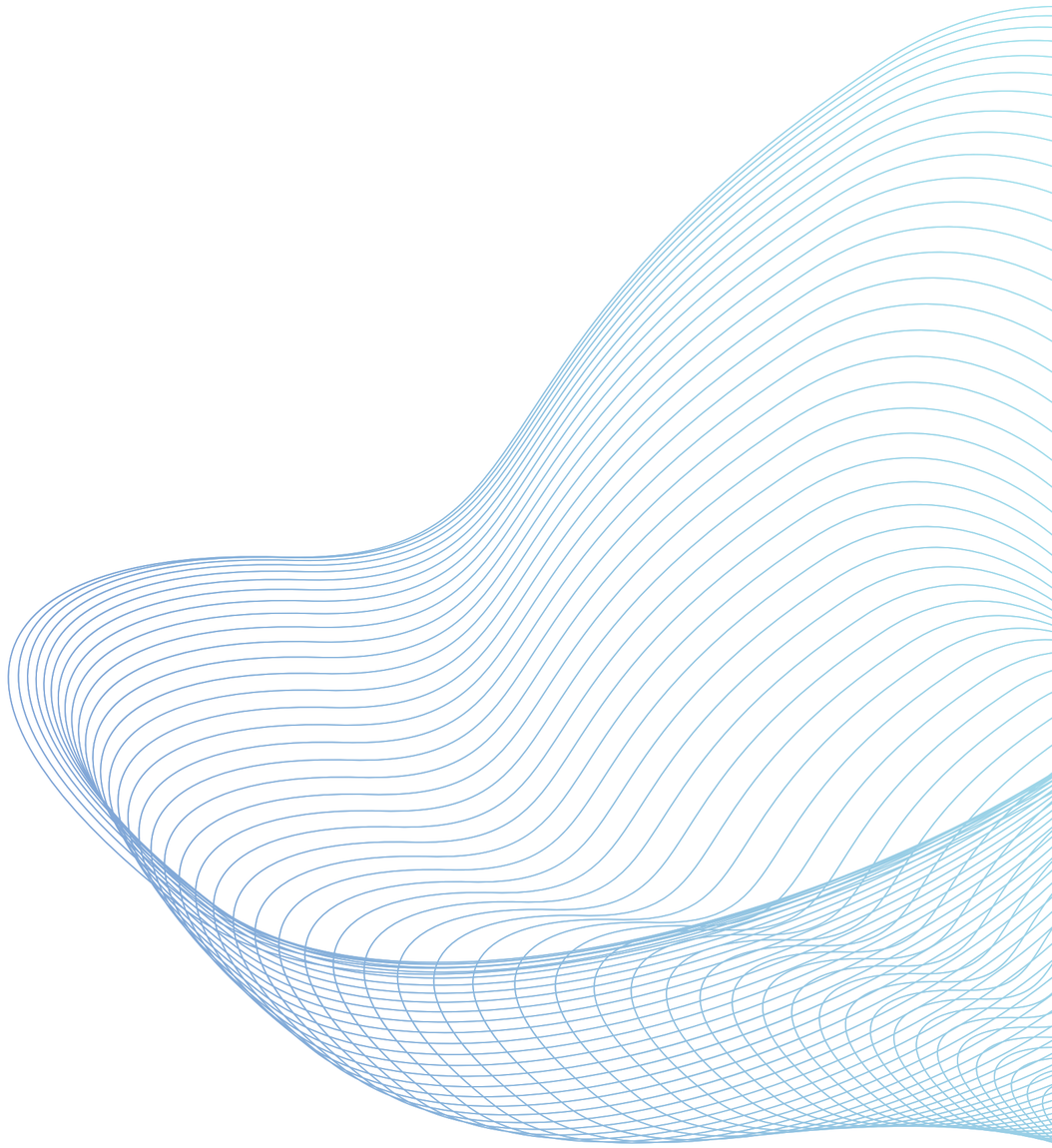
Call Center
Performance analysis



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EXECUTIVE SUMMARY

This project **analyzed call center data** to understand the causes of **long call durations**. After using tools like **Python, WordCloud, Jupyter, and Excel.** We identified that over **50% of calls** are due to four main reasons, with **irregular operations (IRROPS)** being the most frequent.

It was found that weekends have **3x more calls** , **8am - 7pm is the rush hour** and agents generally take **5-15 minutes per call on average**, showing no major performance issues.

Old customers tend to spend the most time on calls, while new members experience shorter durations. Recommendations include enhancing the **IVR system** with flight change and seat **selection options**, better monitoring of calls, and **shifting agent assignments** to busy periods.

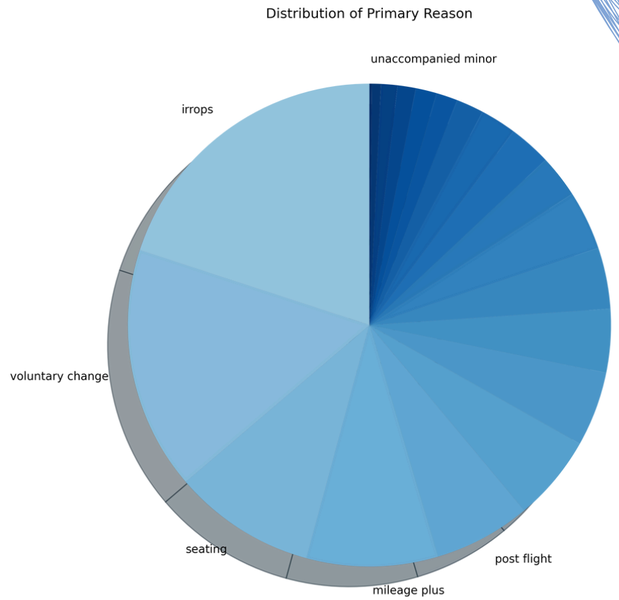
WHAT COULD BE THE CAUSE FOR HIGH VOLUME/ LONG TIME CALLS ?

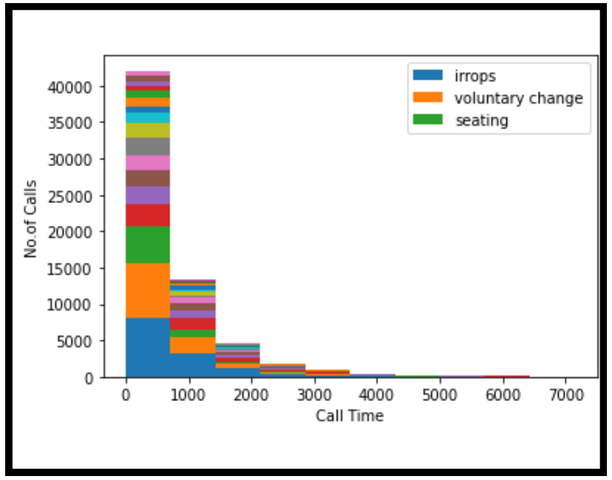
WHAT'S THE MATTER?

It was found that more **50%** of calls are due to just 4 main reasons!

Most Frequent Reason : IRROPS (Irregular Operations)

Least Frequent Reason : Unaccompanied Minor





THE **DIFFERENCE** BETWEEN AVERAGE HANDLING TIME B/W **MOST** AND **LEAST** FREQUENT REASON IS **~20 %**

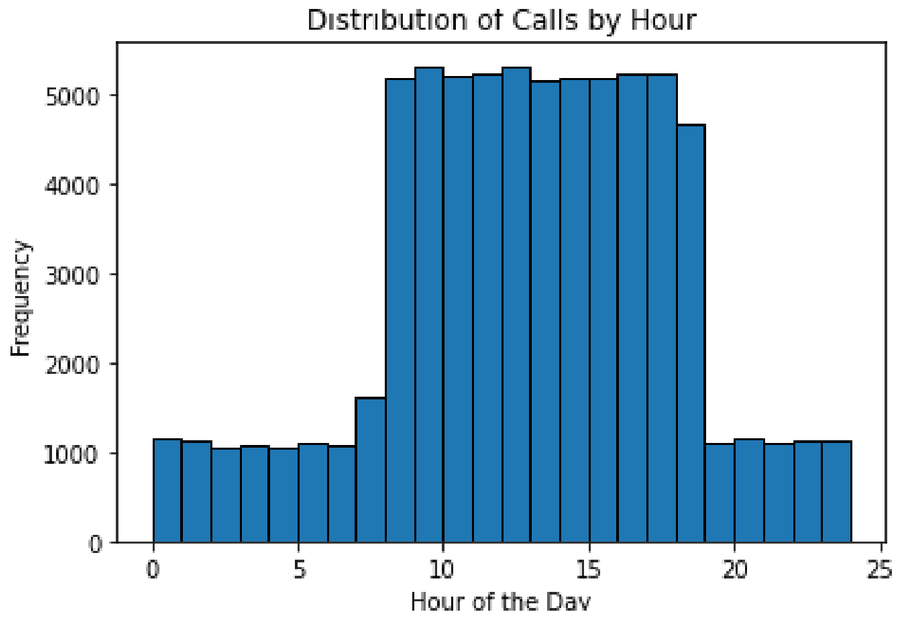
BUSY WEEKENDS!!

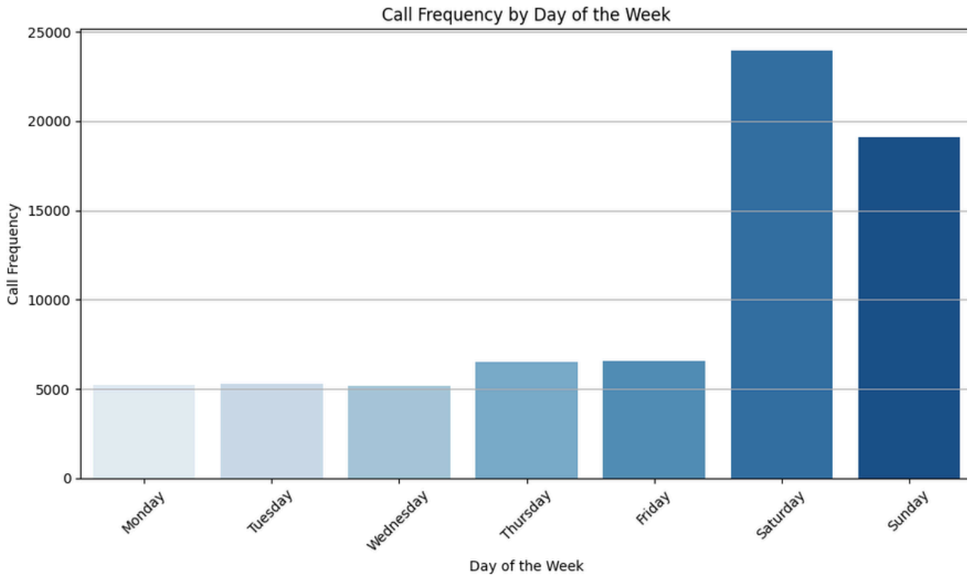
The **most amount of calls** made during the day are between 8:00 a.m. - 7:00p.m.

RUSH HOUR : 8:00 a.m. - 7:00p.m.

Now when we look at the **Call Frequency for a week** we find out that **Saturdays & Sundays** are most occupied and rest of the days are fine.

There are **3x more calls on Weekends** than on regular days.



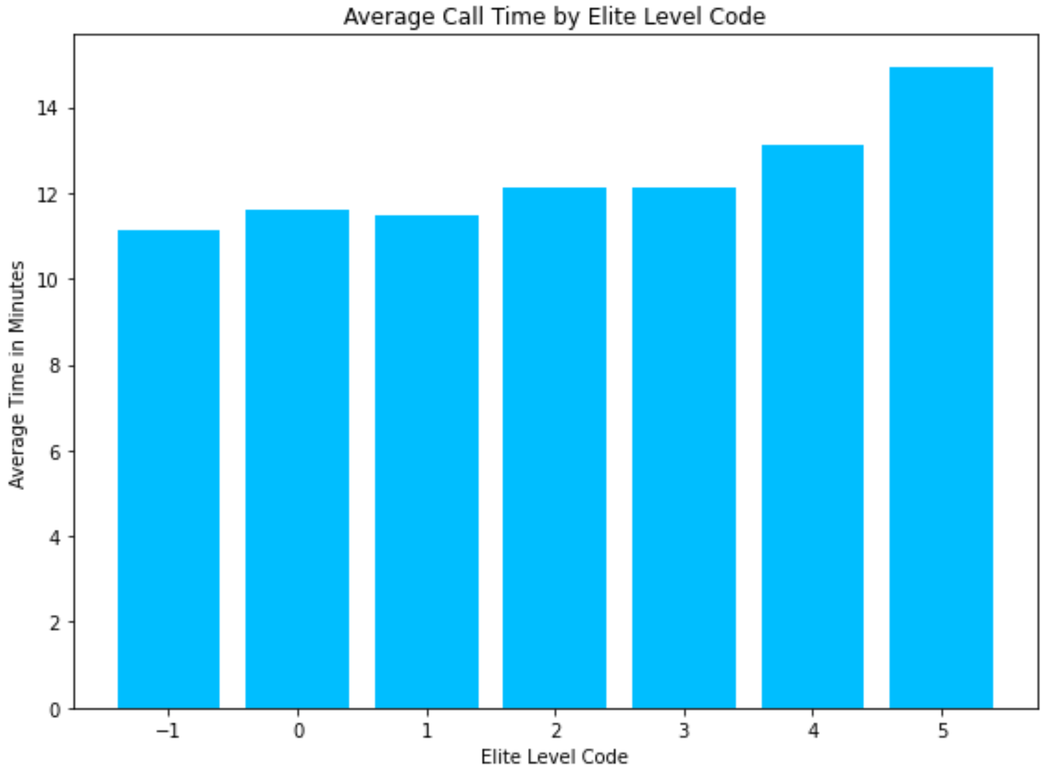


MEMBERS ONLY CLUB?

It is found that the Premium(Elite) Customers have **no advantage** with the time compared to non-members.

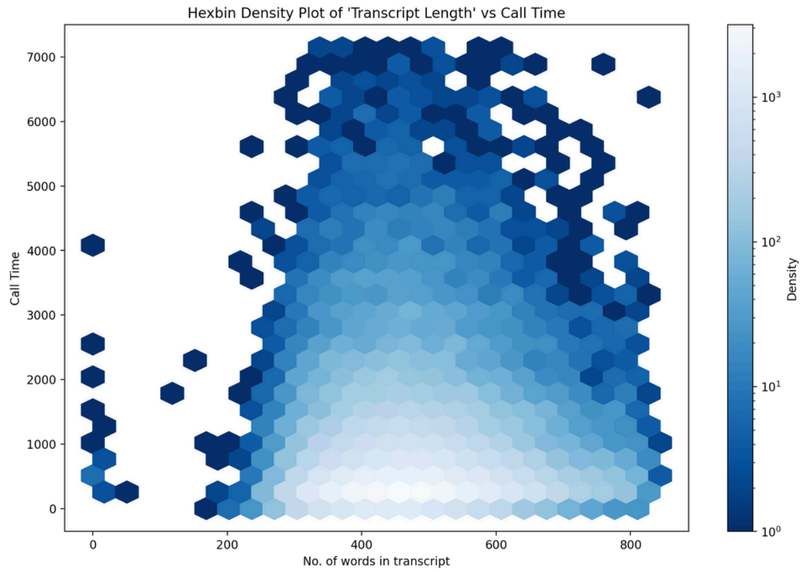
Thus the Airline is currently not able to **prioritize premium** customers calls and they **take longer!**

Providing **faster processing** of elite customers is essential for keeping **most valuable customers, happy.**



WHY ARE YOU SO QUIET?

The analysis showed that there is a significant variations in silence periods between calls. Calls that have **same-sized** transcript have **different durations**!



CAUSES

- Call **monitoring** is done erroneously.
- The **call mangement system** does not end calls.

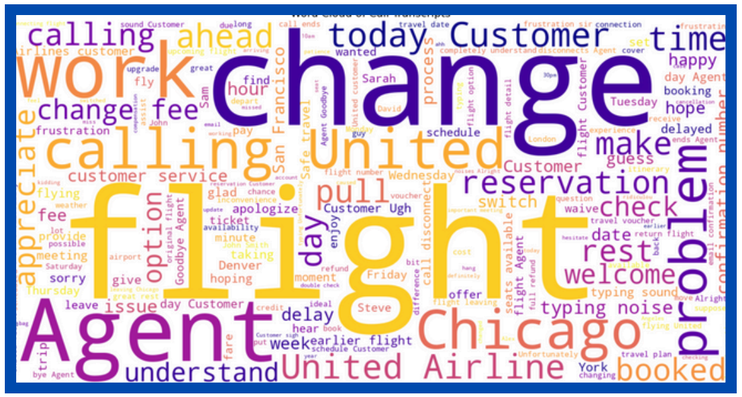
RECOMMENDATIONS

- Better monitoring of calls to ensure **proper tabbing of time.**
- Ensure that agents/IVR **closes the call** after issue is solved!

MAJOR ISSUES AND SUGGESTIONS!

HOW CAN I HELP YOU?

Identified the **granular reasons** for each call using **NLP-LDA** and **WordCloud.**



4 MAIN TYPES OF CALLS

WEATHER/ DELAY

- A significant proportion of calls are due to change in **flight timings** caused by **weather** and **other factors**

RESCHEDULE/ UPGRADE

- A lot of customers would like to **change** their flight **date** or get an aisle **seat** in the flight

LUGGAGE/ BAGS

- Customers want to get help regarding **delayed baggage** arrival or **loss of baggage**

DOUBLE CHECKERS

- A lot of customers call to **double check** flight related information

FINAL SUGGESTIONS

- **01**

Shift the agent assignments to **rush hours and weekends** to make the service more efficent.

- **02**

Add a Change Flight and Seat selection option in the IVR system to **reduce** the **traffic** to Agents.

- **03**

Add a **priority waitlist** for **fast tracking member's calls.**

- **04**

Make sure **timely notifications** are sent to ease **possible Cancellations/ Reschedulings.**

THE MODEL!

Made a model for predicting test.csv using **Random Forest Classifer!**

	precision	recall	f1-score	support
baggage	0.91	0.80	0.85	2689
booking	0.94	0.74	0.83	2609
check in	0.92	0.88	0.90	2627
checkout	0.90	0.90	0.90	2566
communications	0.82	0.74	0.78	2696
digital support	0.95	0.95	0.95	2645
disability	1.00	0.99	0.99	2652
etc	0.99	0.96	0.98	2672
irrops	0.24	0.69	0.35	2684
mileage plus	0.89	0.39	0.55	2715
other topics	0.99	0.98	0.98	2612
post flight	0.93	0.59	0.72	2670
products and services	0.53	0.72	0.62	2660
schedule change	0.99	0.98	0.99	2647
seating	0.86	0.36	0.50	2550
traveler updates	0.99	0.88	0.93	2681
unaccompanied minor	1.00	1.00	1.00	2746
upgrade	0.96	0.72	0.82	2747
voluntary cancel	0.94	0.91	0.92	2737
voluntary change	0.29	0.34	0.31	2639
accuracy			0.78	53244
macro avg	0.85	0.78	0.79	53244
weighted avg	0.85	0.78	0.80	53244

1

Feature Selection

Found no variation in the distribution of reason with respect to **time, agent, customer !** So the **main feature** was the call transcript.

2

Cleaning

Found some '**dirty entries**' in the call transcript. These were **deleted** from **train data.**

3

Resampling

Used a few encoding and **resampling** techniques for the data to better optimize the performance of the model.