

# ABC Call Volume Trend Analysis

## Description:

Here we are given a dataset of a Customer Experience (CX) Inbound calling team for 23 days. Data includes Agent\_Name, Agent\_ID, Queue\_Time [duration for which customer have to wait before they get connected to an agent], Time [time at which call was made by customer in a day], Time\_Bucket [for easiness we have also provided you with the time bucket], Duration [duration for which a customer and executives are on call, Call\_Seconds [for simplicity we have also converted those time into seconds], call status (Abandon, answered, transferred).

A customer experience (CX) team consists of professionals who analyze customer feedback and data, and share insights with the rest of the organization. Typically, these teams fulfil various roles and responsibilities such as: Customer experience programs (CX programs), Digital customer experience, Design and processes, Internal communications, Voice of the customer (VoC), User experiences, Customer experience management, Journey mapping, Nurturing customer interactions, Customer success, Customer support, Handling customer data, Learning about the customer journey.

In a Customer Experience team there is a huge employment opportunities for Customer service representatives A.k.a. call centre agents, customer service agents. Some of the roles for them include: Email support, Inbound support, Outbound support, social media support.

Inbound customer support is defined as the call centre which is responsible for handling inbound calls of customers. Inbound calls are the incoming voice calls of the existing customers or prospective customers for your business which are attended by customer care representatives. Inbound customer service is the methodology of attracting, engaging, and delighting your customers to turn them into business' loyal advocates. By solving customers' problems and helping them achieve success using product or service, company can delight their customers and turn them into a growth engine for their business.

**Approach:** Here I followed below steps to get the key insights:

1. Here the data was already cleaned so data cleaning was not required.
2. I copied the original dataset just to be on the safer side to keep the original data intact.
3. Performed analysis using pivot table and visualized results in different graphs.
4. Performed some of the analysis in Power BI also. So opened the power bi application and loaded the csv data and performed analysis

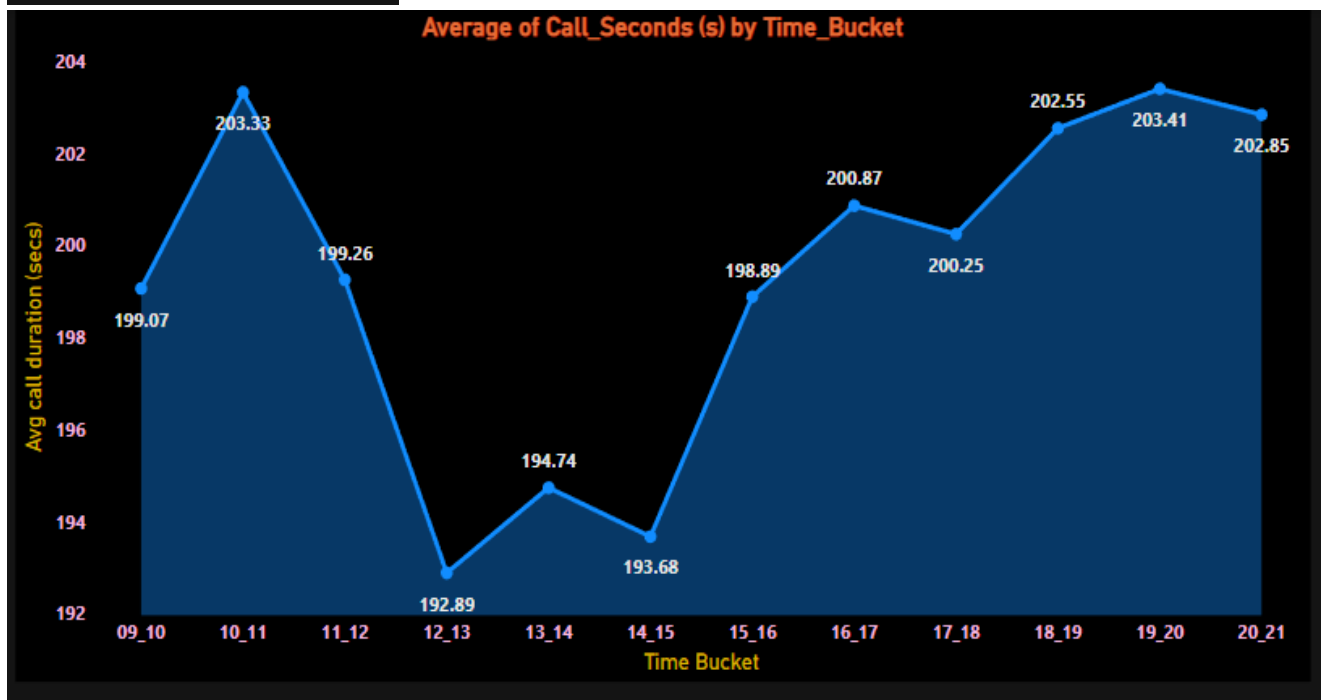
## Tech-Stack Used:

- Microsoft Excel for analysis
- Microsoft Power BI for analysis
- Microsoft Word for the presentation

## Insights:

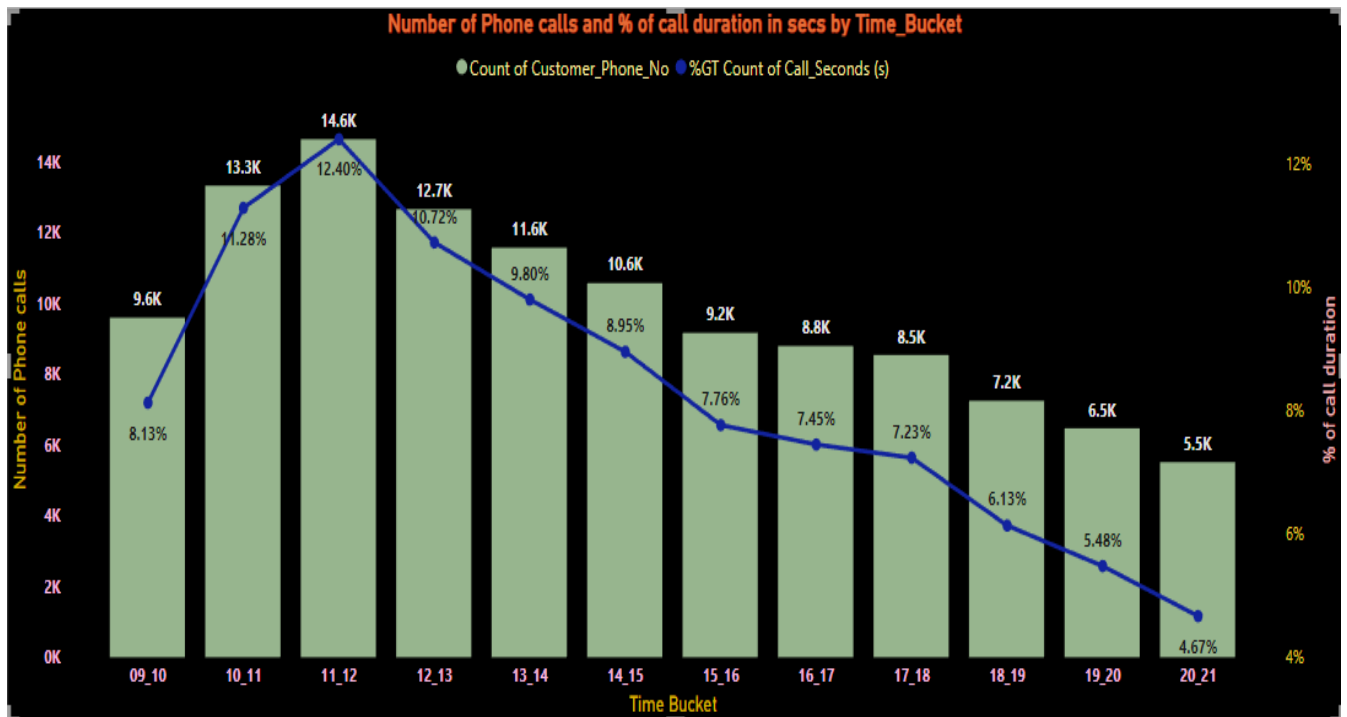
- Calculate the average call time duration for all incoming calls received by agents (in each Time\_Bucket).

Time_Bucket	Average of Call_Seconds (s)
09_10	199.07
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
Total	198.62



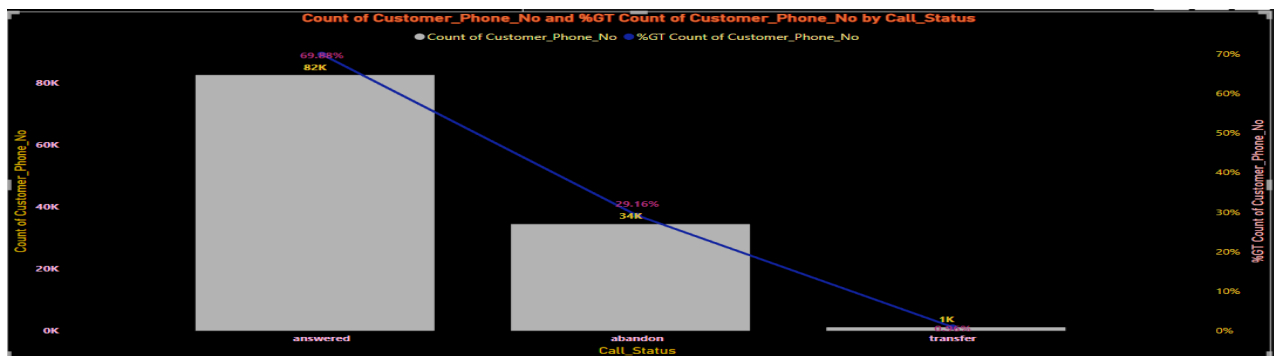
- b. Show the total volume/ number of calls coming in via charts/ graphs [Number of calls v/s Time]. You can select time in a bucket form (i.e. 1-2, 2-3, .....)

Time_Bucket	Number of Phone calls	% of call duration in secs
09_10	9588	8.13%
10_11	13313	11.28%
11_12	14626	12.40%
12_13	12652	10.72%
13_14	11561	9.80%
14_15	10561	8.95%
15_16	9159	7.76%
16_17	8788	7.45%
17_18	8534	7.23%
18_19	7238	6.13%
19_20	6463	5.48%
20_21	5505	4.67%
Total	117988	100.00%



C. As you can see current abandon rate is approximately 30%. Propose a manpower plan required during each time bucket [between 9am to 9pm] to reduce the abandon rate to 10%. (i.e. You have to calculate minimum number of agents required in each time bucket so that at least 90 calls should be answered out of 100.)

Call_Status	Count of Customer_Phone_No	%GT Count of Customer_Phone_No
abandon	34403	29.16%
answered	82452	69.88%
transfer	1133	0.96%
<b>Total</b>	<b>117988</b>	<b>100.00%</b>



Total Hour	4573.088611	hrs
Avg Hours spent in a day	198.8299396	hrs
Total Working Hours by the company	9	Hrs
Break	1.5	Hrs
Remaining Time	(9-1.5)=7.5	Hrs
Actual working hour by the agent is 60% of 7.5 hrs	4.5	Hrs
Current Agent Count= Avg Hours spent in a day/Actual working hour by the agent in a day	44.18443103	No of agent can not be in fraction so 44.1844310252281~=45
Now the current abandone rate is ~30%		
No of agent needed to make it 10%	57.85714286	No of agent can not be in fraction so 57.85714286~=58
So the company needs to hire	58-45=13 agents	

Time Bucket	% of Call duration in Seconds (s)	RATIO	Agents Needed
09_10	8.13%	0.08126	5
10_11	11.28%	0.11283	7
11_12	12.40%	0.12396	7
12_13	10.72%	0.10723	6
13_14	9.80%	0.09798	6
14_15	8.95%	0.08951	5
15_16	7.76%	0.07763	5
16_17	7.45%	0.07448	4
17_18	7.23%	0.07233	4
18_19	6.13%	0.06135	4
19_20	5.48%	0.05478	3
20_21	4.67%	0.04666	3
<b>Grand Total</b>	<b>100.00%</b>		<b>58</b>

**D. Let's say customers also call this ABC insurance company in night but didn't get answer as there are no agents to answer, this creates a bad customer experience for this Insurance company. Suppose every 100 calls that customer made during 9 Am to 9 Pm, customer also made 30 calls in night between interval [9 Pm to 9 Am] and distribution of those 30 calls are as follows:**

Distribution of 30 calls coming in night for every 100 calls coming in between 9am - 9pm (i.e. 12 hrs slot)											
9pm - 10pm	10pm - 11pm	11pm - 12am	12am - 1am	1am - 2am	2am - 3am	3am - 4am	4am - 5am	5am - 6am	6am - 7am	7am - 8am	8am - 9am
3	3	2	2	1	1	1	1	3	4	4	5

**Now propose a manpower plan required during each time bucket in a day. Maximum Abandon rate assumption would be same 10%**

Total Calls between 9AM to 9PM in total 23 days	117988	
Avg no. Of calls per day between 9AM-9PM =Total Calls between 9AM to 9PM in total 23 days(117988)/No of Days(23)	5130	
So according to the given ques 100 calls is equal to 5129.913 here. So we need to find 30% of it to know the number of calls between 9PM-9AM. So 30% of 5129.913 is	1539	
From Sheet 3A: Avg Hours spent in a day	198.8299396	hrs

Additional Hours required= No. Of Calls Received b/w 9PM-9AM*Avg Hours Spent in a day*abandan ratio	76.49981927	hrs
From Sheet 3A: Actual working hour by the agent is 60% of 7.5 hrs	4.5	Hrs
No of Agents Needed in Night Shift=Additional Hours required/Actual Working our of 1 agent	17	
Another Approach of solving the same prob is: From Sheet 3A we know that we need 58 agents to answer all the calls at 90% abandon ratio. In the night the call volume drops to 30% of the day time. So the number of agents needed in Night shift is 30% of the Dayshift i.e 30% of 58	17	

Night Shift (9pm - 9am)	Call Distribution	Ratio	Number Of Agents	Actual Case As agents are human being so has to be in whole number
9pm - 10pm	3	0.10	1.7	2
10pm - 11pm	3	0.10	1.7	2
11pm - 12pm	2	0.07	1.13	1
12pm - 1am	2	0.07	1.13	1
1am - 2am	1	0.03	0.57	1
2am - 3am	1	0.03	0.57	1
3am - 4am	1	0.03	0.57	1
4am - 5am	1	0.03	0.57	1
5am - 6am	3	0.10	1.7	2
6am - 7am	4	0.13	2.27	2
7am - 8am	4	0.13	2.27	2
8am - 9am	5	0.17	2.83	3
Total	30	1	17.01	19

**Result:**

- Understood how to work with large data sets in excel and power bi.
- How to calculate and analyse the existing data
- How to predict futuristic data based on current data