ABC Call Volume Trend Analysis

Project Description

- The project is about Call volume trend Here we are provided with the data specifically focusing on the inbound calling team of a company.
- We are provided with a dataset that spans 23 days and includes various details such as the agent's name and ID, the queue time, the time of the call, the duration of the call, and the call status (whether it was abandoned, answered, or transferred).

Analysis Done :-

- Average duration of calls for each time bucket
- Create a chart or graph that shows the number of calls received in each time bucket.
- Minimum number of agents required in each time bucket to reduce the abandon rate to 10%.
- Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%.

Data Cleaning :-

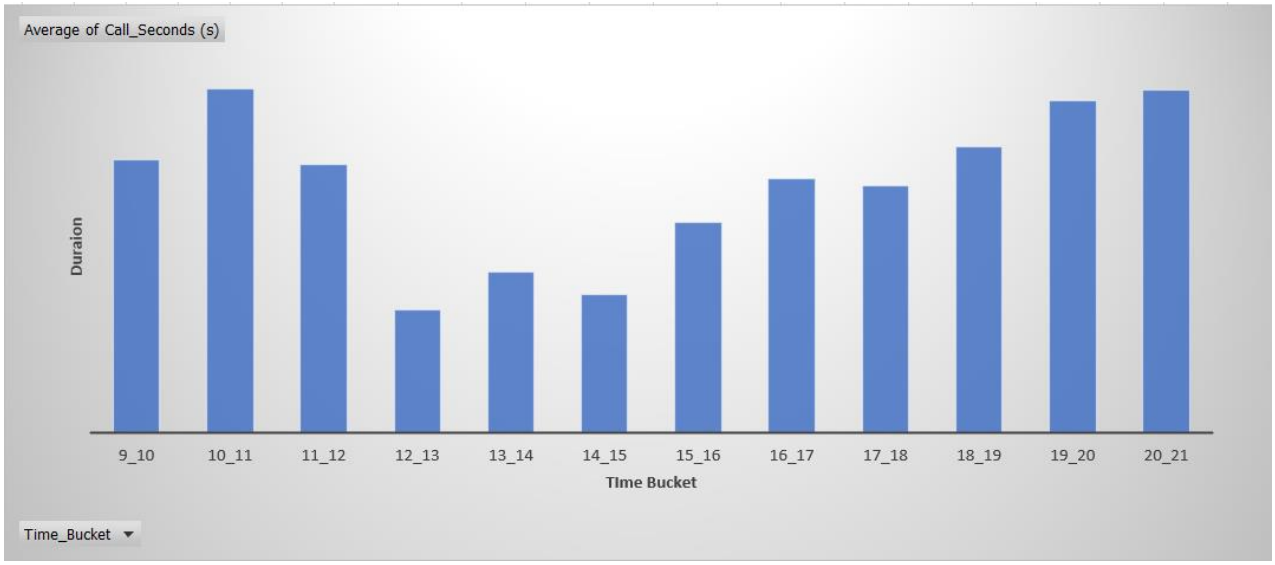
- Data Cleaning is the important task to perform Analysis on a dataset.
- Here the irrelevant data is removed in order to make the dataset suitable for analysis.
- Here in the present dataset we are removing the rows in which Agent ID is missing or mentioned as #N/A.

Task1 :- Average Call Duration.

Here we are finding the average duration of call in the particular time bucket using a pivot table.

Row Labels	Average of Call_Seconds (s)
9_10	198.6
10_11	202.5
11_12	198.4
12_13	190.6
13_14	192.6
14_15	191.4
15_16	195.3
16_17	197.7
17_18	197.3
18_19	199.4
19_20	201.9
20_21	202.4
Grand Total	**196.5**

We have created a bar chart for the following data

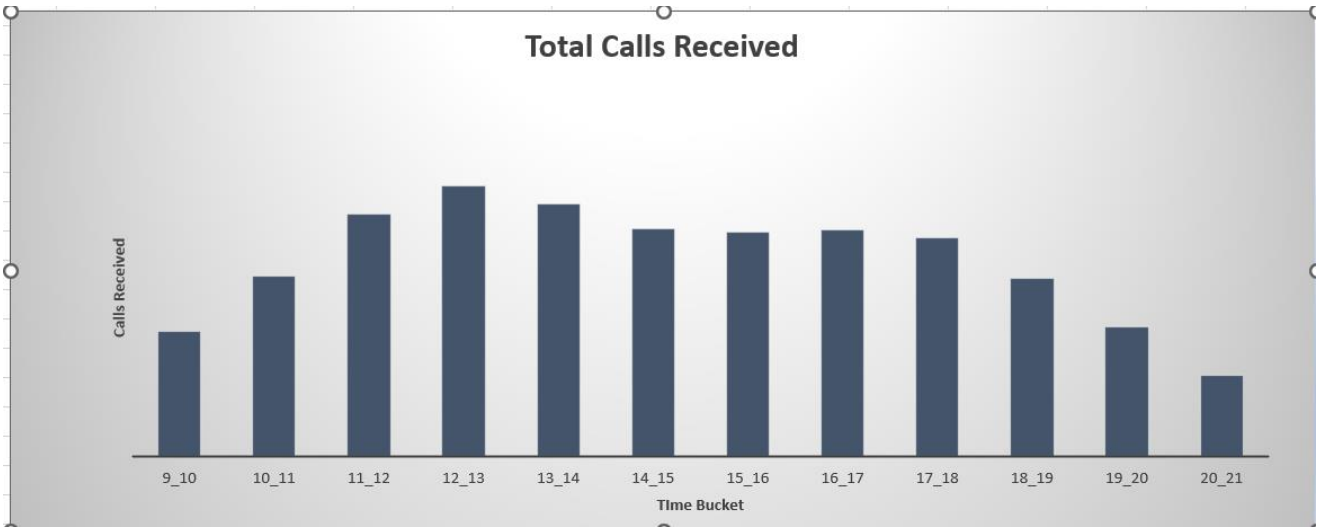


Task 2 :- Call Volume Analysis

Here we are finding the number of calls received in a particular Time Bucket
Here we are using pivot table to find the number of calls receives in a particular time bucket.

Time_Bucket	Total Calls Received
9_10	4441
10_11	6405
11_12	8609
12_13	9607
13_14	8975
14_15	8108
15_16	7967
16_17	8066
17_18	7774
18_19	6328
19_20	4629
20_21	2881

We are creating a Column chart for the following Data.



Task 3 :- Manpower Planning.

Count of Call_Status	Column Labels			
Row Labels	abandon	answered	transfer	Grand Total
01-Jan		3883	77	3960
02-Jan	3	2935	60	2998
03-Jan	3	4079	111	4193
04-Jan	9	4404	114	4527
05-Jan	11	4140	114	4265
06-Jan	11	3875	85	3971
07-Jan	16	3587	42	3645
08-Jan	12	3519	50	3581
09-Jan	14	2628	62	2704
10-Jan	13	3699	72	3784
11-Jan	24	3695	86	3805
12-Jan	18	3297	47	3362
13-Jan	15	3326	59	3400
14-Jan	7	2832	32	2871
15-Jan	4	2730	24	2758
16-Jan	18	3910	41	3969
17-Jan	7	5706	5	5718
18-Jan	4	4024	12	4040
19-Jan	8	3717	12	3737
20-Jan		3485	4	3489
21-Jan		3104	5	3109
22-Jan	3	3045	7	3055
23-Jan	5	2832	12	2849
Grand Total	205	82452	1133	83790
Average	8.9	3584.9	49.3	3643.0

- Here we have abandoned calls of 30% and my task is propose a plan to reduced the abandoned calls to 10%.
- So in present situation the average call duration is 196.5 from task 1.
- Here are we are creating a table to know the average calls received in daily basis.
- And the average calls we are receiving including abandoned, transferred and answered is 3643.0.
- Total working hours per day is 9 hours.
- After removing break 7.5 hours.
- The agent is attending 60% of working hours(after removing breaks 7.5 hours) is 4.5 hours.

- 1 hour has 3600 seconds.
- We need to decrease abandoned calls to 10 % so the in order to decrease the abandoned calls to 10% we need to answer 90% of received calls i.,e 0.9.
- The time required for answering 90% of received calls is

(3643*196.5*0.9)/3600 =179 hours

- Minimum Number of agents required is 179/4.5= 39.8 i.,e 40.

Task 4 :- Night Shift Manpower Planning.

Here we are provided with number of calls per slot.

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

And for every 100 day calls we are receiving 30 night calls.

i.,e (3643*0.3)= 1093(approx.)

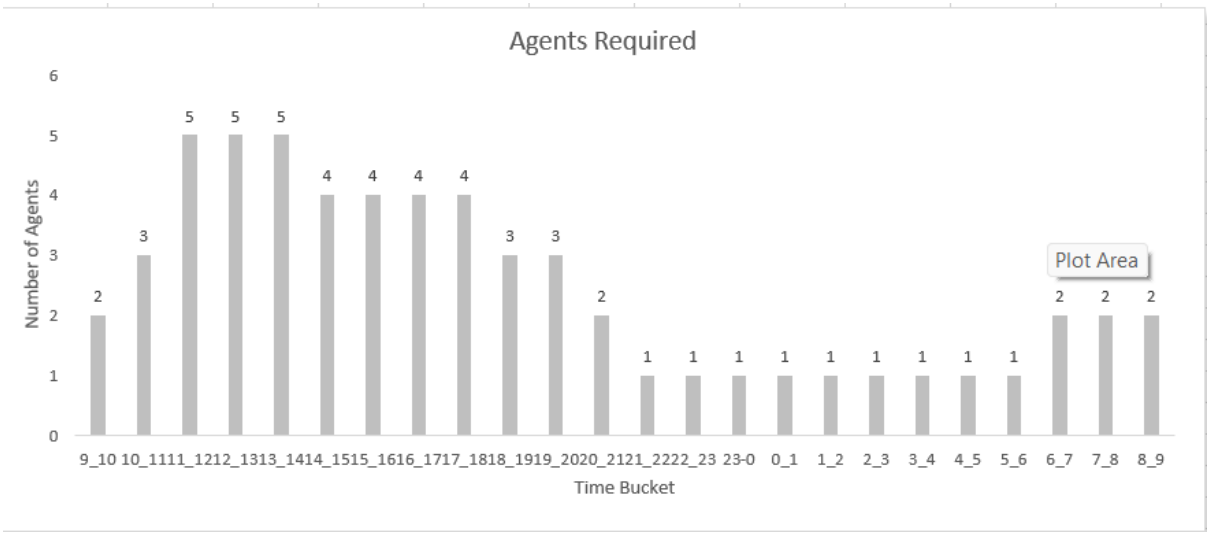
- The agent is attending 60% of working hours(after removing breaks 7.5 hours) is 4.5 hours.
- 1 hour has 3600 seconds.
- We need to decrease abandoned calls to 10 % so the in order to decrease the abandoned calls to 10% we need to answer 90% of received calls i.,e 0.9.
- The time required for answering 90% of received calls is

(1093*196.5*0.9)/3600 =53.7 hours

- Approx Agents required are 53.7/4.5=11.93.
- Number of agents required to answer night calls is 12.
- Total number of agents required for operating whole day is 40+12=52.
- This total number of agents may vary(Partially) because we are considering average value not exact value.
- Man Power planning for whole day is given based on average call seconds in the following table.

Time Bucket	Avg hours	Agents Required
9_10	10.7	2
10_11	15.7	3
11_12	20.6	5
12_13	22.1	5
13_14	20.9	5
14_15	18.7	4
15_16	18.8	4
16_17	19.3	4
17_18	18.5	4
18_19	15.2	3
19_20	11.3	3
20_21	7.0	2
21_22	3.8	1
22_23	3.8	1
23-0	2.5	1
0_1	2.5	1
1_2	1.3	1
2_3	1.3	1
3_4	1.3	1
4_5	1.3	1
5_6	3.8	1
6_7	5.0	2
7_8	5.0	2
8_9	6.3	2

A column chart is plotted for the following table.



CONCLUSION :-

- The highest call duration is in 10_11 time bucket.
- The highest calls received is in 12_13 and lowest calls received in 20_21 time buckets respectively.
- The minimum agents required to maintain 10% abandoned calls is 40.
- Agents required for whole day to maintain 10% abandoned calls is 52.

The link for datasets is given below

https://docs.google.com/spreadsheets/d/1E0lVi-IqpwiR2ZwcugHFR7QA4jVFQXx9/edit?usp=sharing&ouid=108880336182281145657&rtpof=true&sd=true