

ABC Call Volume Trend Analysis

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Project Description

The project is about the analysis of call volume trends and how it impacts the customer experience and operational analysis to perform better and reach the customer easily to solve their issues. I would like to use the excel worksheet to solve all the questions with pivot tables and charts.

Approach

- Understanding the data set
- Used excel worksheets for analysis
- Used pivot tables and charts for visualization

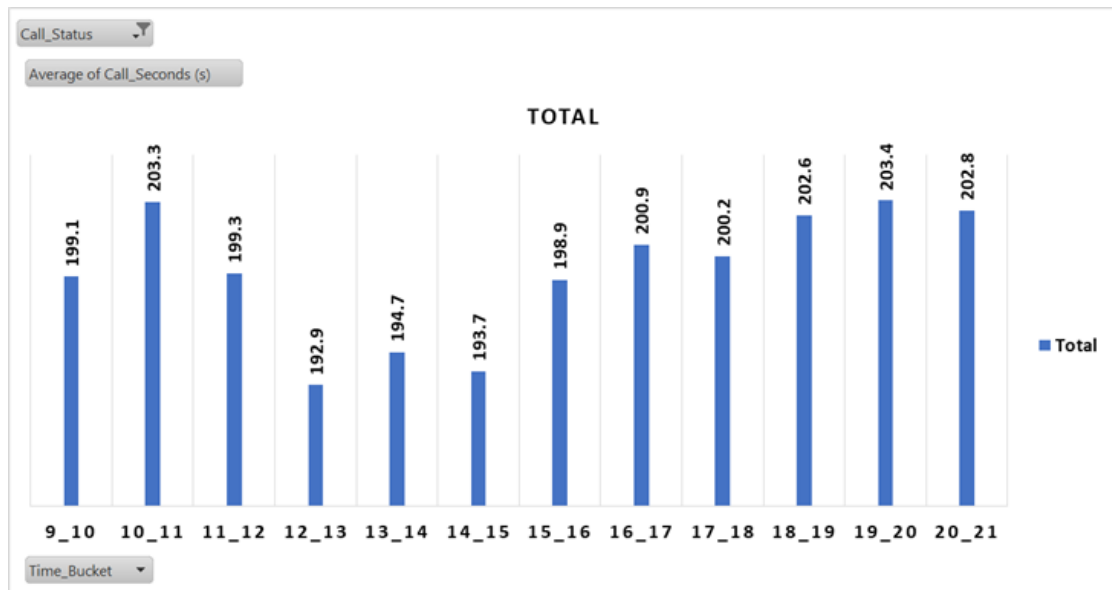
Tech stack used

- MS Excel

Insights

Calculate the average call time duration for all incoming calls received by agents (in each Time_Bucket).

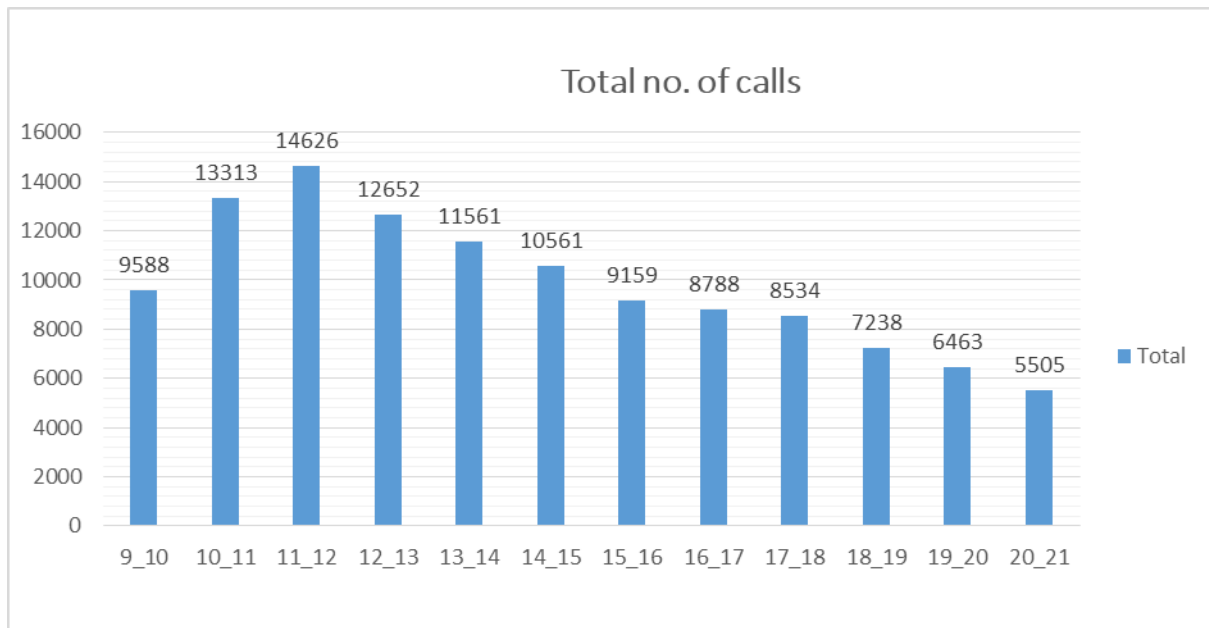
Call_Status	answered	
Row Labels	Average of Call_Seconds	
9_10	199.1	
10_11	203.3	
11_12	199.3	
12_13	192.9	
13_14	194.7	
14_15	193.7	
15_16	198.9	
16_17	200.9	
17_18	200.2	
18_19	202.6	
19_20	203.4	
20_21	202.8	
Grand Total	198.6	



From the above graph it can be identified that the average call duration from 7pm to 8pm is the highest.

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,)

Row Labels	Count of Customer_Phone_No
9_10	9588
10_11	13313
11_12	14626
12_13	12652
13_14	11561
14_15	10561
15_16	9159
16_17	8788
17_18	8534
18_19	7238
19_20	6463
20_21	5505
Grand Total	117988

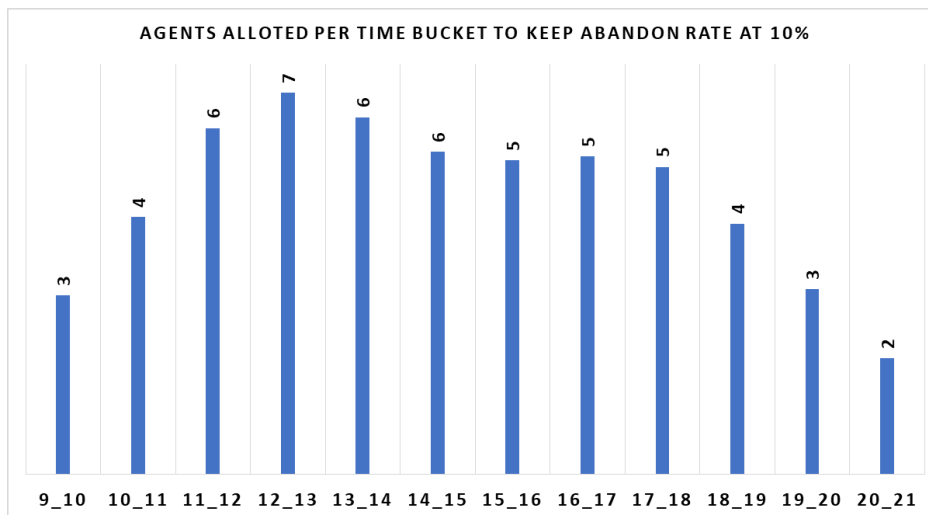


From the graph we can see that the Number of Calls increases from 9 o'clock to 12 o'clock and then decreases.

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.)

- The average calls answered per agent is 198.6 secs in each time bucket.
- We need to reduce the abandon rate by 30% (current) – 10% (desired) = 20% i.e. we need to increase call answered rate by 70% (current) + 20% (change) = 90%
- We need to have 90% of the total calls to be answered so as to reduce the abandon rate to 10%
- Total average calls incoming per day = 5130
- Average calls answered per second = 198.6
- Answered rate = 90% i.e. 0.9
- Seconds per hour = 3600
- The time required to answer 90% of the incoming calls = $5130 * 198.6 * 0.9 / 3600 = 254.7001826$
- So, new total number of agents working per day is 255 divided by the number of hours an agent actually works (on a consumer call) i.e. $4.5 = 255 / 4.5 = 56.67 = 57$ Agents working per day. Hence, to have a 10% abandon rate we need 57 Agents working per day
- The distribution of manpower plan per time bucket to keep abandon rate at 10% i.e. keeping call answered rate at 90% is as follows:-

Call_Status	answered	
Row Labels	Count of Customer_Phone_No	Agents allotted
9_10	4428.0	3
10_11	6368.0	4
11_12	8560.0	6
12_13	9432.0	7
13_14	8829.0	6
14_15	7974.0	6
15_16	7760.0	5
16_17	7852.0	5
17_18	7601.0	5
18_19	6200.0	4
19_20	4578.0	3
20_21	2870.0	2
Grand Total	82452.0	57



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

- The distribution of the total manpower available for each time bucket right from 9AM to 9 PM and then from 9 PM to 9 AM, keeping the abandon rate at 10% i.e. keeping the answered rate at 90%
- For each 100 day calls there are 30 night calls, then for 5130 day calls there will be : $5130 \times 30 / 100 = 1539$ night calls.

- So there are 1539 night calls for a total of 5130 day calls
- So, the additional working hours keeping the answered rate at 90% will be $1539 * 198.6(\text{average calls answered per sec}) * 0.9 / 3600(\text{total seconds in each hour}) = 76.41135$
- Extra agents needed by the company to answer night calls as well be $76.41135 / 4.5 = 16.98 = 17$
- We need 17 more agents to answer the night calls as well, making the total number of agents working per day keeping the answer rate to 90% will be $57(\text{day call answer } 90\%) + 17(\text{night call answer } 90\%) = 74$ agents
- Thus, we need 74 Agents per day to answer the consumer calls from day as well as the night time keeping the answered rate to 90% / Abandon rate to 10%

Night time slot	Calls per slot	Total hours needed	Agents needed	Time distribution
21_22	3	7.641135	13	0.1
22-23	3	7.641135	13	0.1
23_24	2	5.09409	8	0.066666667
00_01	2	5.09409	8	0.066666667
01_02	1	2.547045	4	0.033333333
02_03	1	2.547045	4	0.033333333
03_04	1	2.547045	4	0.033333333
04_05	1	2.547045	4	0.033333333
05_06	3	7.641135	13	0.1
06_07	4	10.18818	17	0.133333333
07_08	4	10.18818	17	0.133333333
08_09	5	12.735225	21	0.166666667
Total	30	76.41135	126	1

Result

- Number of Calls increases from 9 o'clock to 12 o'clock and then decreases.
- The agents who work during 9_10, 10_11 time bucket can be asked to work for 7_8 and 8_9 time bucket as well
- The agents who work in the time bucket 1_2, 2_3, 3_4 and 4_5 can be asked to work in time buckets 6_7, 7_8 and 8_9 so as to keep the abandon rate at 10%

Workbook link:

https://docs.google.com/spreadsheets/d/1LPq8usU_VL3SLkGUVte0KhSsNmRpUWS7/edit?usp=share_link&oid=105915985785625399872&rtfpof=true&sd=true