ABC Call Volume Trend Analysis

Description:

A customer experience (CX) team consists of professionals who analyse 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.

Business Understanding:

Advertising is a way of marketing your business in order to increase sales or make your audience aware of your products or services. Until a customer deal with you directly and actually buys your products or services, your advertising may help to form their first impressions of your business. Target audience for businesses could be local, regional, national or international or a mixture. So they use different ways for advertisement. Some of the types of advertisement are: Internet/online directories, Trade and technical press, Radio, Cinema, Outdoor advertising, National papers, magazines and TV. Advertising business is very competitive as a lot of players bid a lot of money in a single segment of business to target the same audience. Here comes the analytical skills of the company to target those audiences from those types of media platforms where they convert them to their customers at a low cost.

Tech Stack Used:

Microsoft Excel 2019 for data analysis and visualization.

Case Study Objectives:

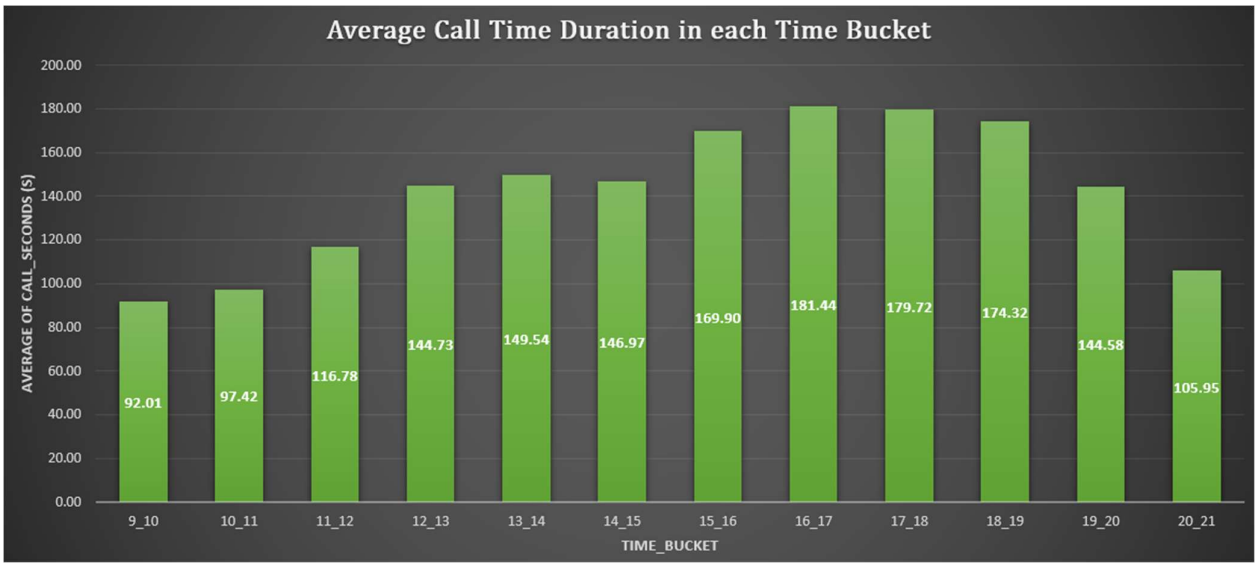
Attached is the dataset of Inbound calls of a ABC company from the insurance category. Use this data to answer the following:

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

   At first, I created a pivot table with Time_Bucket and Average of Call_Seconds columns by filtering on the Wrapped_By column as shown below:

Wrapped _By	(All)
Time_Bucket	**Average of Call_Seconds (s)**
9_10	92.01
10_11	97.42
11_12	116.78
12_13	144.73
13_14	149.54
14_15	146.97
15_16	169.90
16_17	181.44
17_18	179.72
18_19	174.32
19_20	144.58
20_21	105.95
Grand Total	**139.53**

   - The total average duration of all the calls is about 140 seconds.



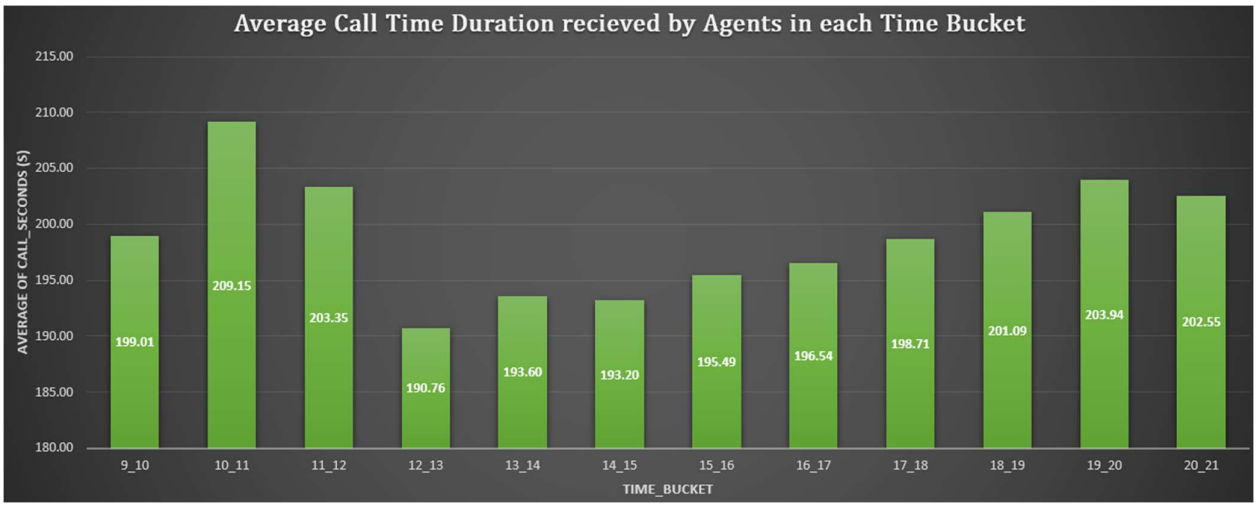
This graph displays the average call duration in seconds for each time bucket.

   - We can see that calls with the greatest durations take place in the evening time bucket, specifically between 3 and 7pm.

After that, I used a pivot table to filter out all of the calls that the agents had received, as shown below:

Wrapped _By	Agent
Time_Bucket	**Average of Call_Seconds (s)**
9_10	199.01
10_11	209.15
11_12	203.35
12_13	190.76
13_14	193.60
14_15	193.20
15_16	195.49
16_17	196.54
17_18	198.71
18_19	201.09
19_20	203.94
20_21	202.55
Grand Total	**197.71**

- The duration of each call, on average, is approximately 198 seconds, or over 3.3 minutes.



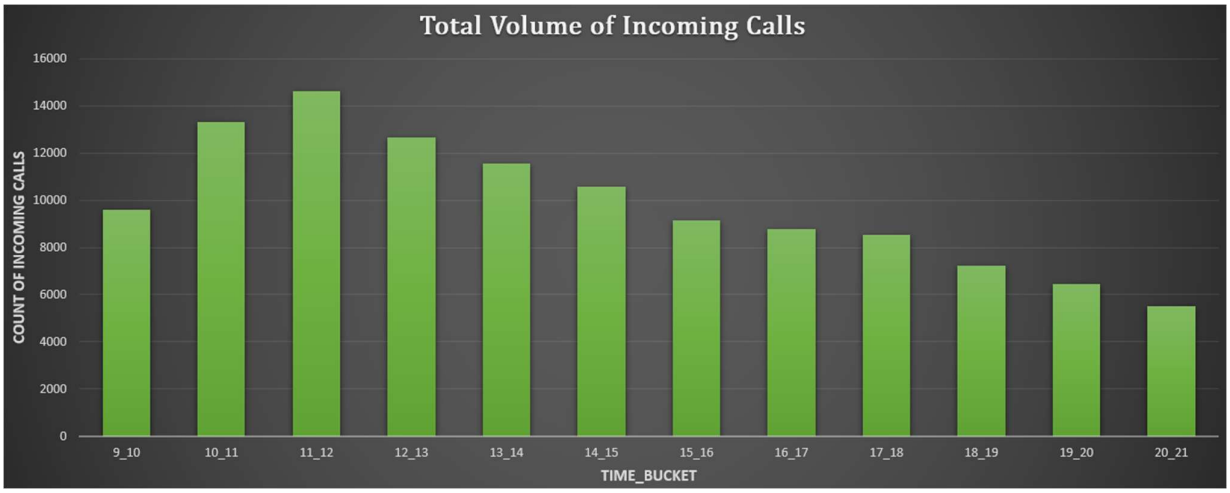
This graph displays the average number of seconds per call that the agents in each time bucket received.

- We can see that calls that last the longest fall into the time blocks of 10–11 am, 11–12 pm, and 7-8 pm.
- The average call time is shortest at noon, between 12 and 1 p.m.

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, …..)

I created pivot table for Time_Bucket columns and Count of Customer_Phone_No column which represents total number of incoming calls.

Time_Bucket	Count of Customer_Phone_No
9_10	9588.00
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**



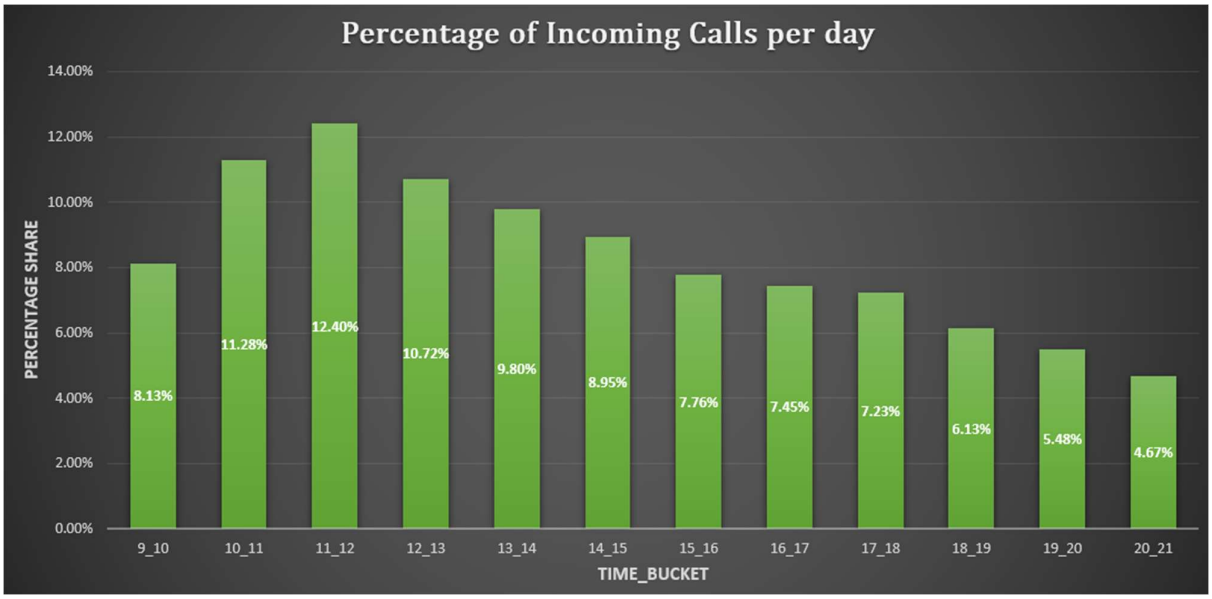
This graph displays the overall number of incoming calls for each time period.

- We can observe that the peak call volume occurs between the hours of 10 a.m. and 1 p.m., after which there is a fall in the number of incoming calls.

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.)**

I created a pivot table for Time_Bucket column and percentage of incoming calls per day as shown below:

Time_Bucket	Percentage of incoming calls per day
9_10	8.13%
10_11	11.28%
11_12	12.40%
12_13	10.72%
13_14	9.80%
14_15	8.95%
15_16	7.76%
16_17	7.45%
17_18	7.23%
18_19	6.13%
19_20	5.48%
20_21	4.67%
Grand Total	**100.00%**



Then I made another pivot table that displays the overall daily call volume for each category—abandon, answered, and transfer.

Days	abandon	answered	transfer	Grand Total
01-Jan	684	3883	77	4644
02-Jan	356	2935	60	3351
03-Jan	599	4079	111	4789
04-Jan	595	4404	114	5113
05-Jan	536	4140	114	4790
06-Jan	991	3875	85	4951
07-Jan	1319	3587	42	4948
08-Jan	1103	3519	50	4672
09-Jan	962	2628	62	3652
10-Jan	1212	3699	72	4983
11-Jan	856	3695	86	4637
12-Jan	1299	3297	47	4643
13-Jan	738	3326	59	4123
14-Jan	291	2832	32	3155
15-Jan	304	2730	24	3058
16-Jan	1191	3910	41	5142
17-Jan	16636	5706	5	22347
18-Jan	1738	4024	12	5774
19-Jan	974	3717	12	4703
20-Jan	833	3485	4	4322
21-Jan	566	3104	5	3675
22-Jan	239	3045	7	3291
23-Jan	381	2832	12	3225
Grand Total	**34403**	**82452**	**1133**	**117988**
% of Total	**29.16**	**69.88**	**0.96**	
		Average daily calls		5129.91304

- This indicates that 30% of calls are abandoned.
- The typical number of inbound calls each day is 5130.
- To lower the abandonment rate to 10%, we must raise the call responding rate by 20%, resulting in a goal answering rate of 90%.
- And according to previous calculations, an agent spends 198 seconds on a call on average.
- Assumedly, an agent is engaged for 60% of 7.5 hours per day, or 4.5 hours per day.

I calculated the necessary manpower by using all these numbers:

	G	H	I	J
17	**total average calls per day**	5130		
18	**need to answer**	90%		
19	**avg time per call in seconds**	198		
20				
21	**total time req in sec per day**	5130*0.9*198	**914166**	**seconds**
22	**total time req in hours per day**	H21/3600	**253.935**	**hours**
23				
24	**agent on call per day (hours)**	4.5		
25	**agent req per day**	H22/H24	**56.43**	

- This implies that 57 agents will be required to answer 90% of daily calls.

According to the percentage of incoming calls per day table, this suggests that these 57 agents handle 100% of the calls received each day. I determined the number of agents needed for each time bucket as follows:

C35 =ROUND(B35*57,0)

	A	B	C
33			
34	**Time_Bucket**	**Percentage of incoming calls per day**	**Agents Required**
35	9_10	8.13%	5
36	10_11	11.28%	6
37	11_12	12.40%	7
38	12_13	10.72%	6
39	13_14	9.80%	6
40	14_15	8.95%	5
41	15_16	7.76%	4
42	16_17	7.45%	4
43	17_18	7.23%	4
44	18_19	6.13%	3
45	19_20	5.48%	3
46	20_21	4.67%	3
47	**Grand Total**	**100.00%**	**57**

These are the bare minimum agents needed in each time bucket in order to answer at least 90% of incoming calls each day.

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%.

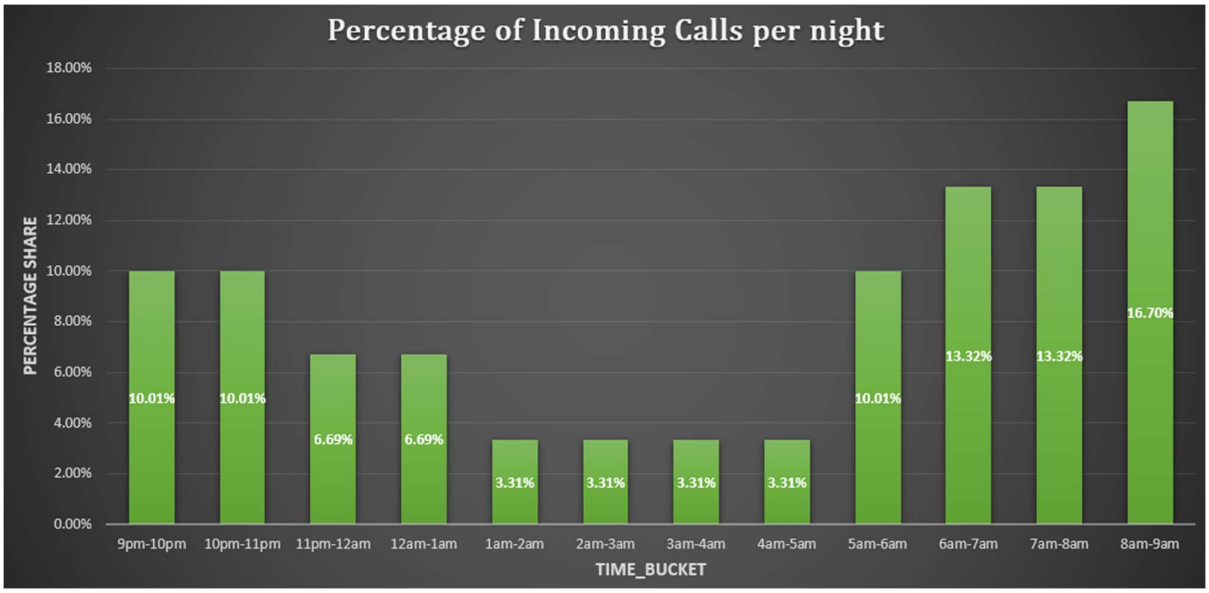
Now, for night calls, as stated for 100-day calls, there are 30-night calls, implying that 30% of daily day calls come at night, with a 90% responding rate. Calculations are therefore shown as follows for this:

	L	M	N	O
17	**night calls per day**	30% of 5130	1539	
18	**need to answer**		90%	
19	**avg time per call in seconds**		198	
20				
21	**total time req in sec per night**	1539*0.9*198	**274249.8**	**seconds**
22	**total time req in hours per night**	N21/3600	**76.1805**	**hours**
23				
24	**agent on call per day (hours)**	4.5		
25	**agent req per night**	N22/M24	**16.929**	
26				

- In order to maintain a 90% responding rate at night, we therefore require 17 agents.

I calculated the number of agents needed in each time bucket at night to maintain a responding rate of at least 90% using the distribution of 30-night calls for every 100-day calls.

Night_Time_Bucket	Incoming night calls	Percentage of incoming night calls	Agents Required
9pm-10pm	154	10.01%	2
10pm-11pm	154	10.01%	2
11pm-12am	103	6.69%	1
12am-1am	103	6.69%	1
1am-2am	51	3.31%	1
2am-3am	51	3.31%	1
3am-4am	51	3.31%	1
4am-5am	51	3.31%	1
5am-6am	154	10.01%	2
6am-7am	205	13.32%	2
7am-8am	205	13.32%	2
8am-9am	257	16.70%	3
Grand Total	**1539**	**100.00%**	**17**



- For a full 24-hour service, ABC Company needs 74 call support agents—57 during the day and 17 at night—to maintain a responding rate of 90%.

Assumption: An agent work for 6 days a week; On an average total unplanned leaves per agent is 4 days a month; An agent total working hrs is 9 Hrs out of which 1.5 Hrs goes into lunch and snacks in the office. On average an agent occupied for 60% of his total actual working Hrs (i.e 60% of 7.5 Hrs) on call with customers/ users. Total days in a month is 30 days.

Insights:

- The company can divide its agents according to the times of day and night when the amount of incoming calls is the lowest. i.e., more agents when there are plenty of calls, and fewer agents when there are few calls.
- Additionally, ABC Company can split their 24-hour service into three halves, i.e., three shifts of 8 hours each. They will benefit from this, as well as the agents who will be able to work more productively and take more incoming calls.