ABC CALL VOLUME TREND ANALYSIS

FINAL PROJECT-4

Tech-Stack used:-Excel(MS Office Home & Student 2019)

Link for dataset analyzed:-

https://docs.google.com/spreadsheets/d/1_ma--e6is0Nchp4Kc0iDZq96vkWBj3in/edit?usp=sharing&ouid=110945409935767923714&rtpof=true&sd=true

By,
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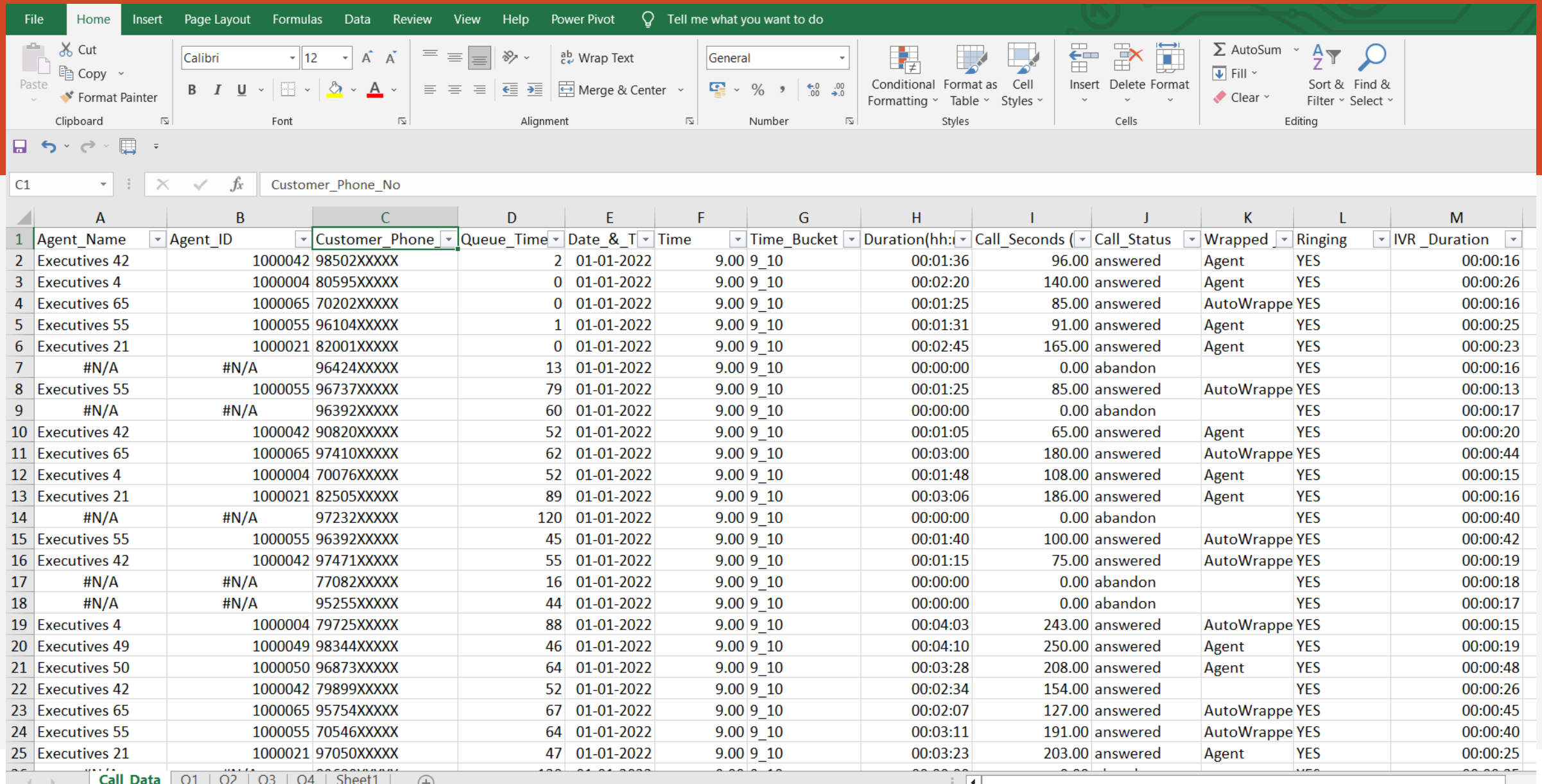
Dataset provided:-



	A	B	C	D	E	F	G	H	I	J	K	L	M
1	Agent_Name	Agent_ID	Customer_Phone_	Queue_Time	Date_&_T	Time	Time_Bucket	Duration(hh:(	Call_Seconds (	Call_Status	Wrapped _	Ringing	IVR _Duration
2	Executives 42	1000042	98502XXXXX	2	01-01-2022	9.00	9_10	00:01:36	96.00	answered	Agent	YES	00:00:16
3	Executives 4	1000004	80595XXXXX	0	01-01-2022	9.00	9_10	00:02:20	140.00	answered	Agent	YES	00:00:26
4	Executives 65	1000065	70202XXXXX	0	01-01-2022	9.00	9_10	00:01:25	85.00	answered	AutoWrappe	YES	00:00:16
5	Executives 55	1000055	96104XXXXX	1	01-01-2022	9.00	9_10	00:01:31	91.00	answered	Agent	YES	00:00:25
6	Executives 21	1000021	82001XXXXX	0	01-01-2022	9.00	9_10	00:02:45	165.00	answered	Agent	YES	00:00:23
7	#N/A	#N/A	96424XXXXX	13	01-01-2022	9.00	9_10	00:00:00	0.00	abandon		YES	00:00:16
8	Executives 55	1000055	96737XXXXX	79	01-01-2022	9.00	9_10	00:01:25	85.00	answered	AutoWrappe	YES	00:00:13
9	#N/A	#N/A	96392XXXXX	60	01-01-2022	9.00	9_10	00:00:00	0.00	abandon		YES	00:00:17
10	Executives 42	1000042	90820XXXXX	52	01-01-2022	9.00	9_10	00:01:05	65.00	answered	Agent	YES	00:00:20
11	Executives 65	1000065	97410XXXXX	62	01-01-2022	9.00	9_10	00:03:00	180.00	answered	AutoWrappe	YES	00:00:44
12	Executives 4	1000004	70076XXXXX	52	01-01-2022	9.00	9_10	00:01:48	108.00	answered	Agent	YES	00:00:15
13	Executives 21	1000021	82505XXXXX	89	01-01-2022	9.00	9_10	00:03:06	186.00	answered	Agent	YES	00:00:16
14	#N/A	#N/A	97232XXXXX	120	01-01-2022	9.00	9_10	00:00:00	0.00	abandon		YES	00:00:40
15	Executives 55	1000055	96392XXXXX	45	01-01-2022	9.00	9_10	00:01:40	100.00	answered	AutoWrappe	YES	00:00:42
16	Executives 42	1000042	97471XXXXX	55	01-01-2022	9.00	9_10	00:01:15	75.00	answered	AutoWrappe	YES	00:00:19
17	#N/A	#N/A	77082XXXXX	16	01-01-2022	9.00	9_10	00:00:00	0.00	abandon		YES	00:00:18
18	#N/A	#N/A	95255XXXXX	44	01-01-2022	9.00	9_10	00:00:00	0.00	abandon		YES	00:00:17
19	Executives 4	1000004	79725XXXXX	88	01-01-2022	9.00	9_10	00:04:03	243.00	answered	AutoWrappe	YES	00:00:15
20	Executives 49	1000049	98344XXXXX	46	01-01-2022	9.00	9_10	00:04:10	250.00	answered	Agent	YES	00:00:19
21	Executives 50	1000050	96873XXXXX	64	01-01-2022	9.00	9_10	00:03:28	208.00	answered	Agent	YES	00:00:48
22	Executives 42	1000042	79899XXXXX	52	01-01-2022	9.00	9_10	00:02:34	154.00	answered		YES	00:00:26
23	Executives 65	1000065	95754XXXXX	67	01-01-2022	9.00	9_10	00:02:07	127.00	answered	AutoWrappe	YES	00:00:45
24	Executives 55	1000055	70546XXXXX	64	01-01-2022	9.00	9_10	00:03:11	191.00	answered	AutoWrappe	YES	00:00:40
25	Executives 21	1000021	97050XXXXX	47	01-01-2022	9.00	9_10	00:03:23	203.00	answered	Agent	YES	00:00:25

Project description:-
For you final project we are providing you with 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.

Let’s look at some of the most impactful AI-empowered customer experience tools you can use today:
Interactive Voice Response (IVR), Robotic Process Automation (RPA), Predictive Analytics, Intelligent Routing

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 your business' loyal advocates. By solving your customers' problems and helping them achieve success using your product or service, you can delight your customers and turn them into a growth engine for your business.

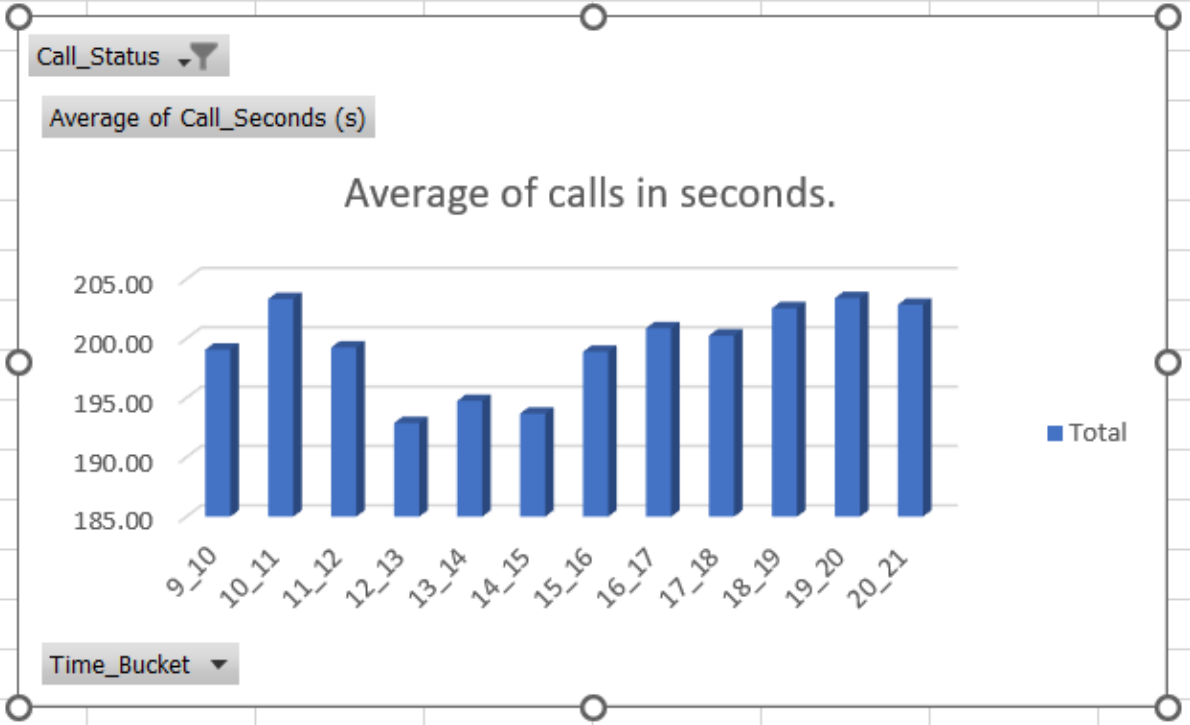
Approach:-

- The dataset consists of various columns such as queue time, Agent_Id, Agent_Name, IVR duration ,etc which are not useful for our analysis.
- In this project we are not cleaning the data i.e, we did not delete any of the redundant columns.
- Analysis done on few important columns such customer_phone_number, time_bucket,etc.
- We initiated visualization using charts such as column chart for the insights we got through our analysis.

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

The average call duration for each time bucket

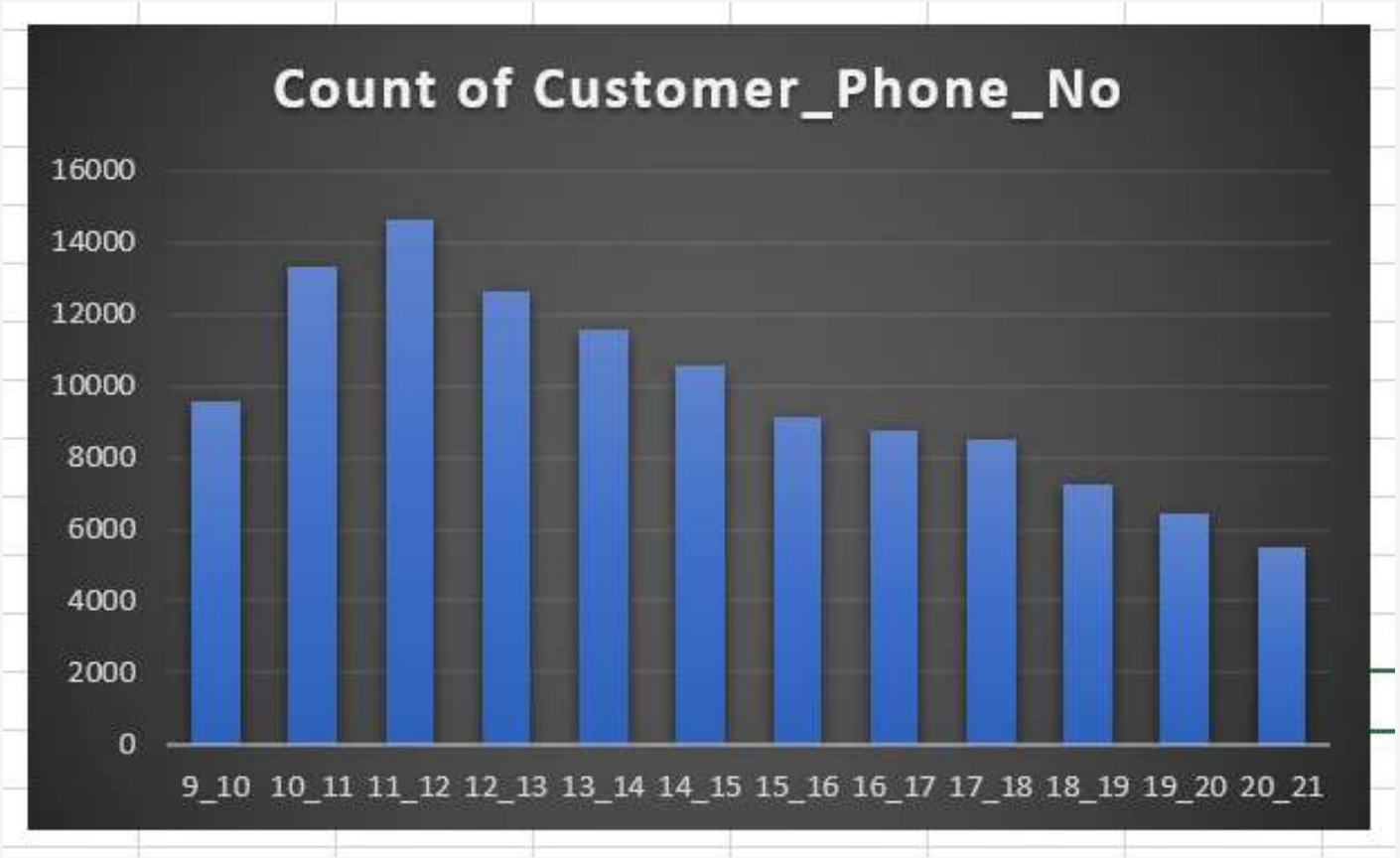
Call_Status	answered
Row Labels	**Average of Call_Seconds (s)**
9_10	199.07
10_11	203.33
11_12	199.26
12_13	192.89
13_14	194.74
14_15	193.68
15_16	198.89
16_17	200.87
17_18	200.25
18_19	202.55
19_20	203.41
20_21	202.85
Grand Total	**198.62**



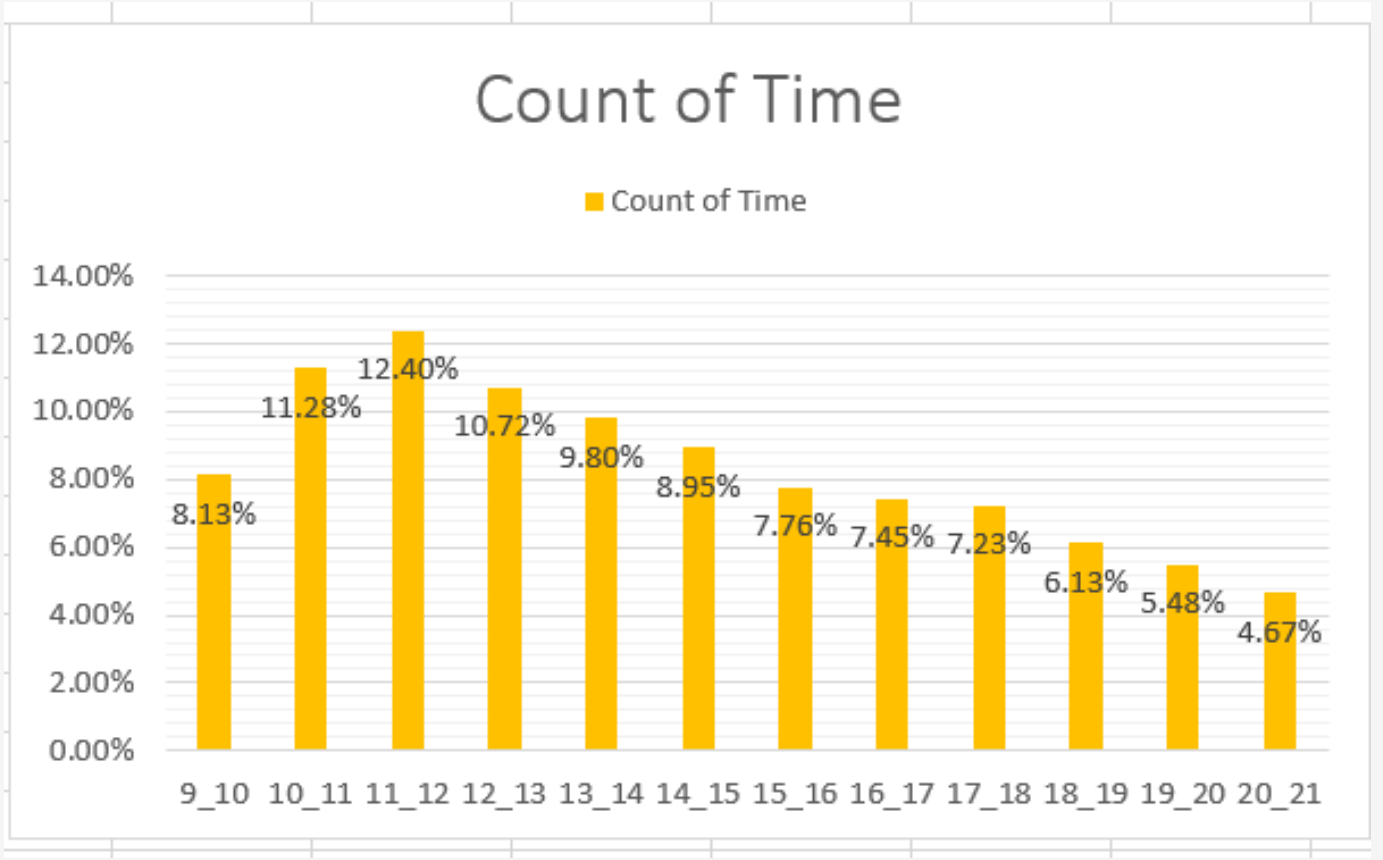
B. Show the total volume/ number of calls coming in via charts/ graphs [Number of calls v/s Time]. You can select time in a bucket form (i.e. 1-2, 2-3, …..).

Time_bucket	Count of Customer_Phone_No	Count of Time
9_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%

Count of customer phone number with respect to time_bucket.



Count of time with respect to Time_Bucket.



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.

- A manpower plan required to reduce the abandon rate to 10%. The effective working days of an employee = 20 X 7/28 = 5 and The effective working hours (60% occupation time of agent) = 7.5 X 0.6 = 4.5hours.
- total working hours = 9
- on floor working hour = 7.5
- days worked in 1 week = 5
- total time spent = 4.5
- Time requirement to answer 90% calls = (Total average calls X 198.62X 0.9)/3600 = 254.726
- Total working person required per day = Requirement to answer 90% calls/ Total time spent Total working person required per day to take 90% of calls 57

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.)

Row Labels	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
Average-	1496	3585	49	5130

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.)

Agent work- 60% of 7.5 hrs=		4.5
Average time=	198.62	
for 90% calls=	917013	
in hours=	254.726	
Persons required/day=		56.6057

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].
No. of person required (total extra hours req./ working time for one agent) 17
The actual number of agents required to attend 90% of the extra calls incoming at night is: The total number of agents required to attend 90% of all the incoming calls in a day is 57+17=74.

Calculations:-								
9am -9pm calls=	5130							
for every 100 calls 30 calls in night(9pm-9am)=				30/100				
30%of 5130=	1539							
extra time=	305676.2		in hours=	84.91005		we need 90%=		76.41905
						persons needed=		16.98201
			For day needed 57					
			for night 17					
				Total people required(57+17)=			74	

Final Insights :-

- ABC call volume trend analysis.
- Learnt how to use pivot tables.
- Excel visualization.

Conclusion:-

Learnt how Customer care support teams process and data analytics can be used to improve working efficiency of company ,how the workload can be maintained for the employees.