

# ABC Call Volume Trend

## Project Description:

In the realm of Customer Experience (CX) analytics, analyzing a 23-day dataset of inbound calls reveals key metrics such as agent details, queue times, call timestamps, durations, and statuses (abandoned, answered, transferred). The CX team's role is pivotal, focusing on analyzing customer feedback to derive actionable insights for strategic decisions across the organization.

Responsibilities include managing CX programs, internal communications, customer journey mapping, and ensuring data integrity. AI tools like IVR, RPA, Predictive Analytics, and Intelligent Routing enhance efficiency in inbound customer support.

Call center agents are crucial in providing timely and personalized support to customers, aiming not just to resolve issues but also to build loyalty and advocacy. Analyzing the dataset will uncover patterns in call volume, peak times, agent performance, and customer satisfaction, guiding improvements in service, training, and operational workflows.

Ultimately, the goal is to enhance overall customer experience, driving positive business outcomes through informed decision-making and strategic enhancements in customer support operations.

[https://docs.google.com/spreadsheets/d/1o4susafFzIRTz6oovom1cEme1mD\\_kodl/edit?usp=sharing&oid=104301423844572907298&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/1o4susafFzIRTz6oovom1cEme1mD_kodl/edit?usp=sharing&oid=104301423844572907298&rtpof=true&sd=true)

---

**Assumptions:** An agent works for 6 days a week; On average, each agent takes 4 unplanned leaves per month; An agent's total working hours are 9 hours, out of which 1.5 hours are spent on lunch and snacks in the office. On average, an agent spends 60% of their total actual working hours (i.e., 60% of 7.5 hours) on calls with customers/users. The total number of days in a month is 30.

**1. Average Call Duration:** Determine the average duration of all incoming calls received by agents. This should be calculated for each time bucket.

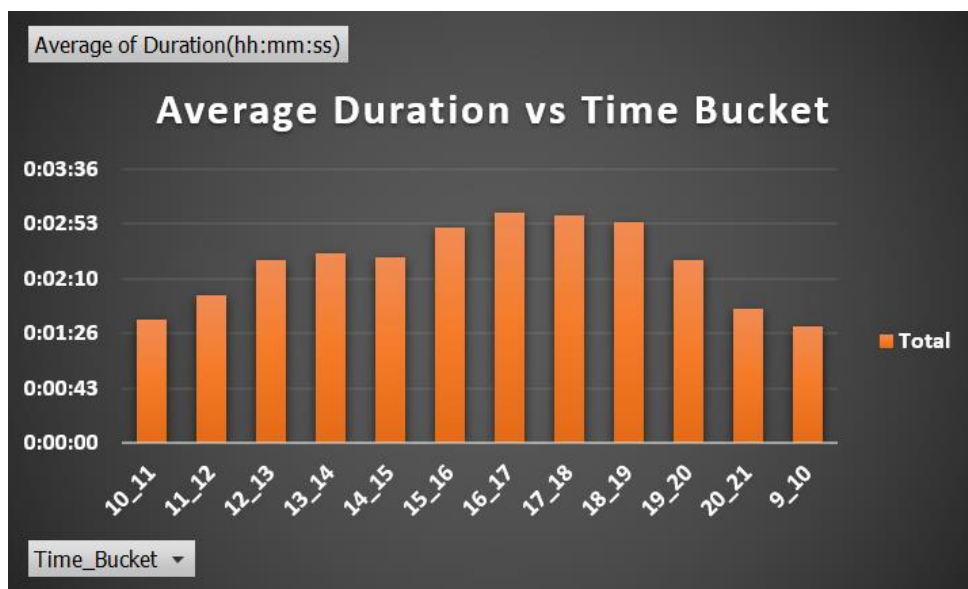
**Your Task:** What is the average duration of calls for each time bucket?

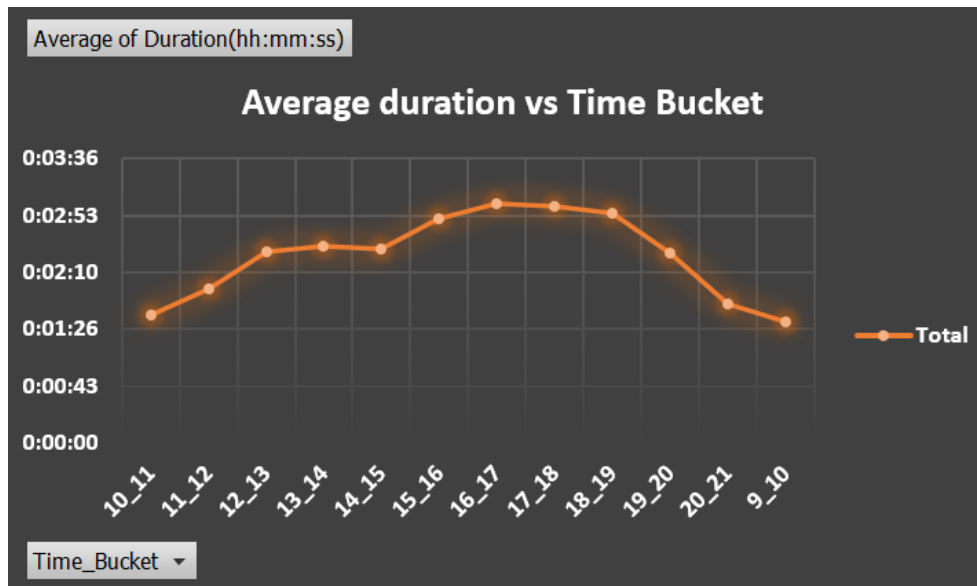
Approach:

- Pivot table created with Time\_bucket and average duration of calls

Time Bucket ▾	Average of Duration(hh:mm:ss)
10_11	0:01:37
11_12	0:01:57
12_13	0:02:25
13_14	0:02:30
14_15	0:02:27
15_16	0:02:50
16_17	0:03:01
17_18	0:03:00
18_19	0:02:54
19_20	0:02:25
20_21	0:01:46
9_10	0:01:32
<b>Grand Total</b>	<b>0:02:20</b>

- Bar graph and line charted plotted for the same





Insight: The average time duration of call was the maximum in the time bucket 4pm to 5pm

**2. Call Volume Analysis:** Visualize the total number of calls received. This should be represented as a graph or chart showing the number of calls against time. Time should be represented in buckets (e.g., 1-2, 2-3, etc.).

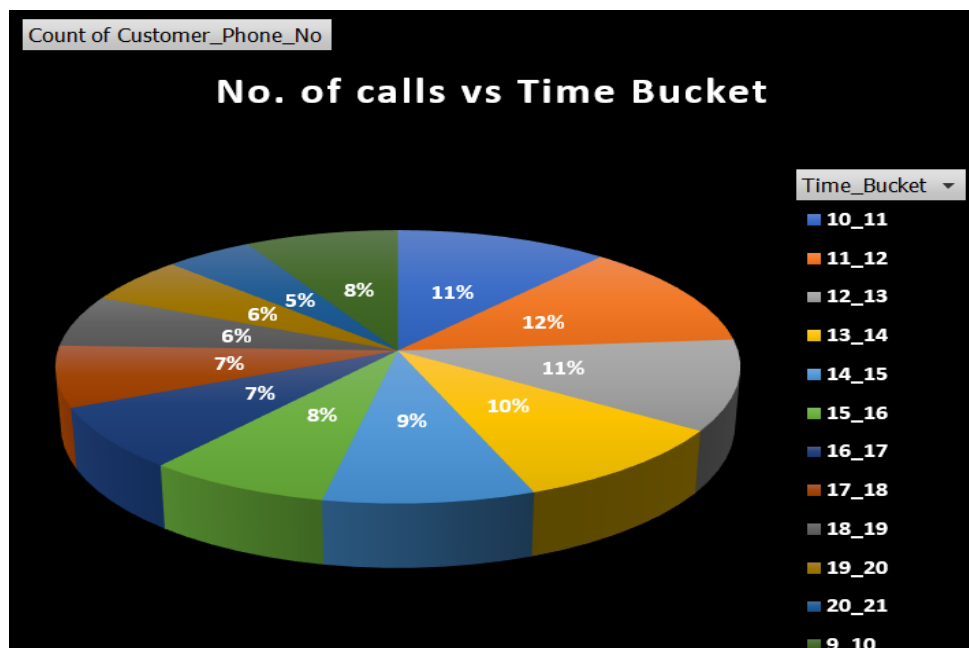
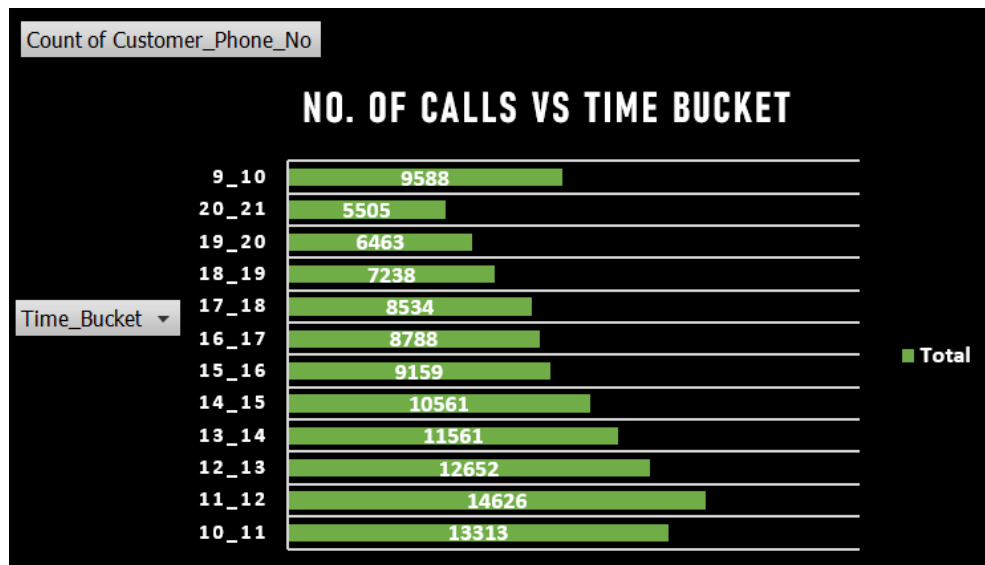
**Your Task:** Can you create a chart or graph that shows the number of calls received in each time bucket?

Approach :

- Pivot table created with time\_bucket and count of customer calls

Time Bucket ▾	Count of Customer_Phone_No
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
9_10	9588
<b>Grand Total</b>	<b>117988</b>

- Column chart and pie chart plotted for the same



Insight: The maximum number of calls was made during 11 am to 12 pm.

**3. Manpower Planning:** The current rate of abandoned calls is approximately 30%. Propose a plan for manpower allocation during each time bucket (from 9 am to 9 pm) to reduce the abandon rate to 10%. In other words, you need to calculate the minimum number of agents required in each time bucket to ensure that at least 90 out of 100 calls are answered.

**Your Task:** What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

**Approach:** Pivot table with time bucket as rows and agent\_id as columns with values as number of agents answering/transferring calls

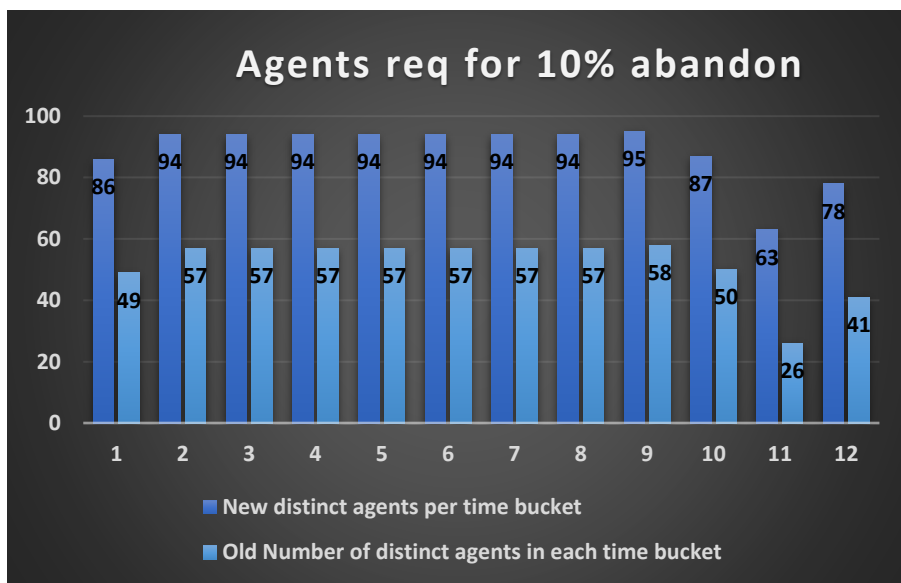
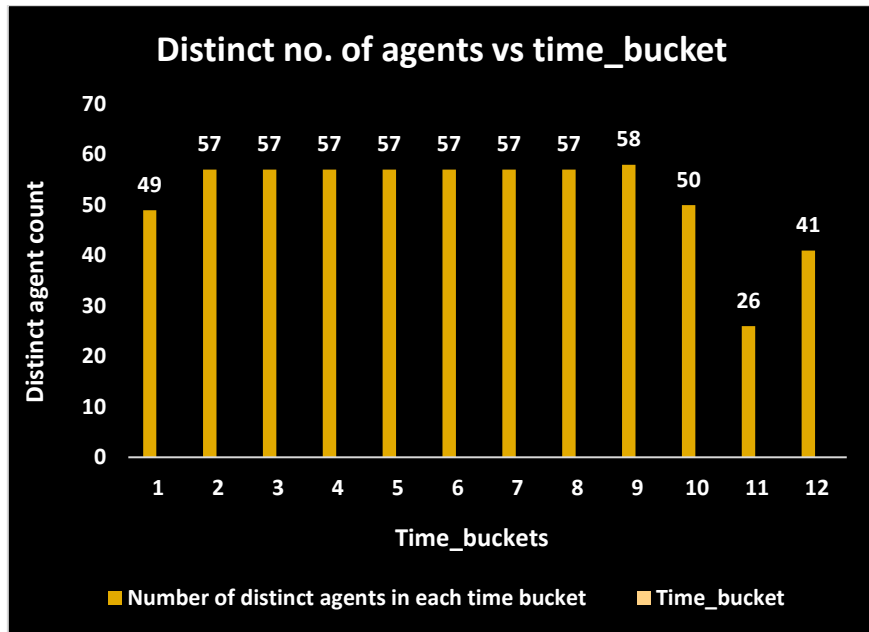
For the month:

Table created with number of distinct agents in each time bucket

Number of distinct agents in each time bucket	Time_bucket
49	10_11
57	11_12
57	12_13
57	13_14
57	14_15
57	15_16
57	16_17
57	17_18
58	18_19
50	19_20
26	20_21
41	9_10

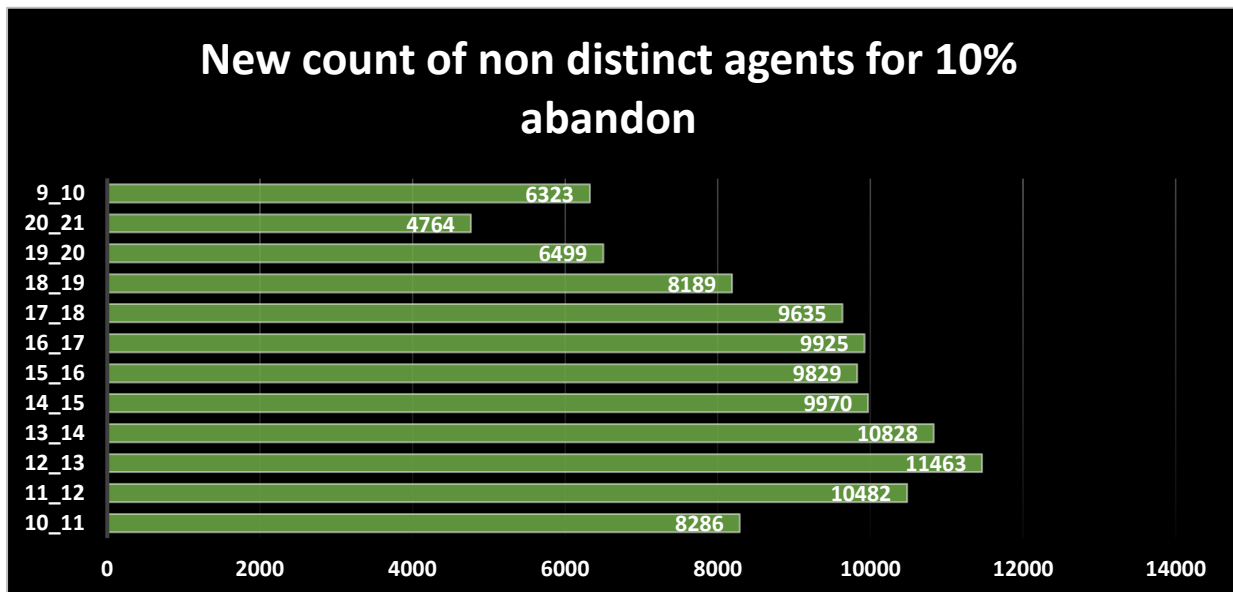
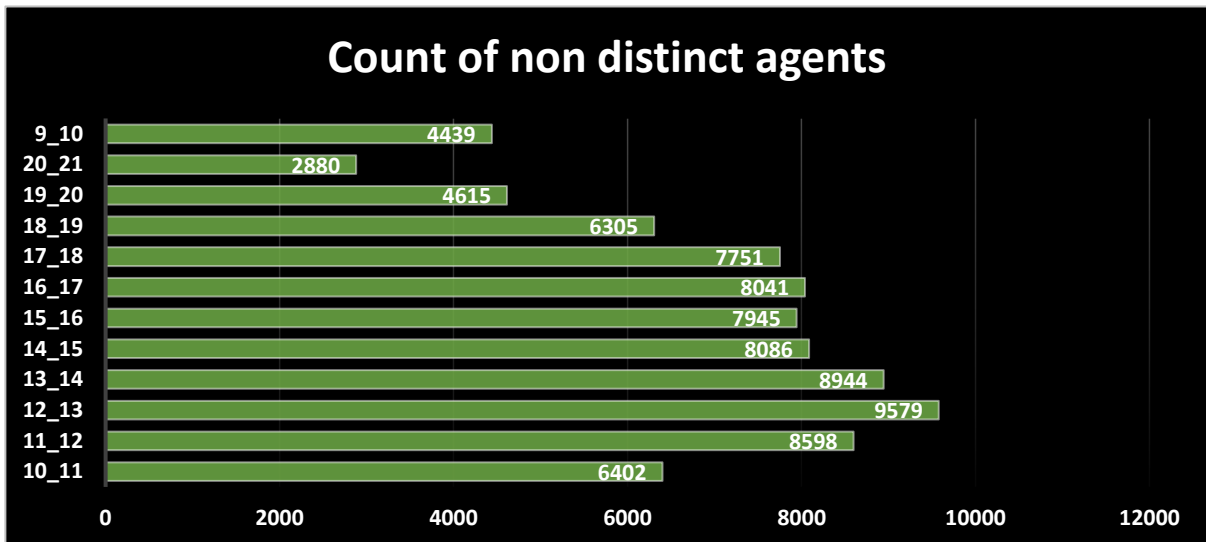
- 52 agents in average per bucket
- 34403 initial number of abandoned calls
- 11799 req no. of abandoned calls
- $34403 - 11799 = 22604$  no. of abandoned calls to be picked up
- $22604 / 12 = 1883.67$
- Atleast 1884 calls to be picked up per time bucket
- $1884 / 52 = 36.23$
- Atleast 37 agents per bucket have to be added distinctly

New distinct agents per time bucket	Time_bucket	Old Nu
86	10_11	49
94	11_12	57
94	12_13	57
94	13_14	57
94	14_15	57
94	15_16	57
94	16_17	57
94	17_18	57
95	18_19	58
87	19_20	50
63	20_21	26
78	9_10	41



Time bucket	Count of non distinct agents
10_11	6402
11_12	8598
12_13	9579
13_14	8944
14_15	8086
15_16	7945
16_17	8041
17_18	7751
18_19	6305
19_20	4615
20_21	2880
9_10	4439

Time bucket	New Count of non distinct agents
10_11	8286
11_12	10482
12_13	11463
13_14	10828
14_15	9970
15_16	9829
16_17	9925
17_18	9635
18_19	8189
19_20	6499
20_21	4764
9_10	6323



#### Per day:

- 982.783 number of abandoned calls to be picked up per day
- 81.9 avg number of calls to be pickup per time bucket per day
- Total avg agents per day is 24
- $(82/24)$  4 agents have to be added approximately per time bucket per day for 10% abandonment



avg agents per day ▼	time bucket ▼	new count of agents per day ▼
2	10_11	6
2	11_12	6
2	12_13	6
2	13_14	6
2	14_15	6
2	15_16	6
2	16_17	6
2	17_18	6
3	18_19	7
2	19_20	6
1	20_21	5
2	9_10	6

#### Alternate method:

- by converting the total seconds into hours and taking average:
- $16463119/23$  gives average time of call per day = 716,176.478.
- $716,176.478/3600$  gives avg time of call per day in hours which is =
- 199 hours is the avg time of call per day
- now an agent works only 60% of 7.5 hours at work that is
- 4.5 hours agent works per day
- so number of agents req to work per day at 30% abandon rate is  $199/4.5$  that is 44 agents (approx)
- so to complete 70% work 44 agents
- to complete 90% work we need  $90/70 \times 44$  that is approx 57 agents
- $57/12 = 4$  approx agents to be added per time bucket

**4. Night Shift Manpower Planning:** Customers also call ABC Insurance Company at night but don't get an answer because there are no agents available. This creates a poor customer experience. Assume that for every 100 calls that customers make between 9 am and 9 pm, they also make 30 calls at night between 9 pm and 9 am. The distribution of these 30 calls is as follows:

**Your Task:** Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%.

**Approach:**

- Pivot table with Time bucket and call status for each time bucket
- Table with call status and count of abandoned calls

Time bucket	abandon	answered	transfer	Grand Total
10_11	6911	6368	34	13313
11_12	6028	8560	38	14626
12_13	3073	9432	147	12652
13_14	2617	8829	115	11561
14_15	2475	7974	112	10561
15_16	1214	7760	185	9159
16_17	747	7852	189	8788
17_18	783	7601	150	8534
18_19	933	6200	105	7238
19_20	1848	4578	37	6463
20_21	2625	2870	10	5505
9_10	5149	4427	11	9587
<b>Grand Total</b>	<b>34403</b>	<b>82451</b>	<b>1133</b>	<b>117987</b>

- no. of calls = 117987
- no. of night calls =  $0.3 \times 117987 = 35396$  (approx)
- total number of abandoned calls per day =  $(35396 + 34403) / 23 =$
- for 30% abandoned calls we have = 3035
- hence for 10% abandoned calls we have =  $0.9 \times 3035 = 2731$  calls

calls to be picked up = 2731

- if for initial number of calls, 82 agents are required per day per time bucket (10% abandon rate)
- and 6 agents are present per time bucket
- then for 2731/12 (is number of calls to be picked up per day per time bucket ) calls to be
- picked up (228 calls)  
we need =  $(228 / 82 \times 6)$
- we need 16 extra agents

BY optimization, we get the below table

time_bucket	calls made	agents req
9_10	3	2
10_11	3	2
11_12	2	1
12_1	2	1
1_2	1	1
2_3	1	1
3_4	1	1
4_5	1	1
5_6	3	2
6_7	4	2
7_8	4	2
8_9	5	3
9_10		19

Hence totally, a minimum of 19 agents are required for the night shift.

## Result:

To drive continuous improvement by analyzing the effectiveness of shift schedules and manpower allocation over time, we adjust strategies based on evolving customer patterns and operational needs.

By leveraging these data analytic insights, CX teams can optimize shift planning and manpower allocation to efficiently manage inbound call volumes across different time buckets, ensuring consistent and responsive customer support.

By: Shivaani Dushyanth

Software Used : Microsoft Excel