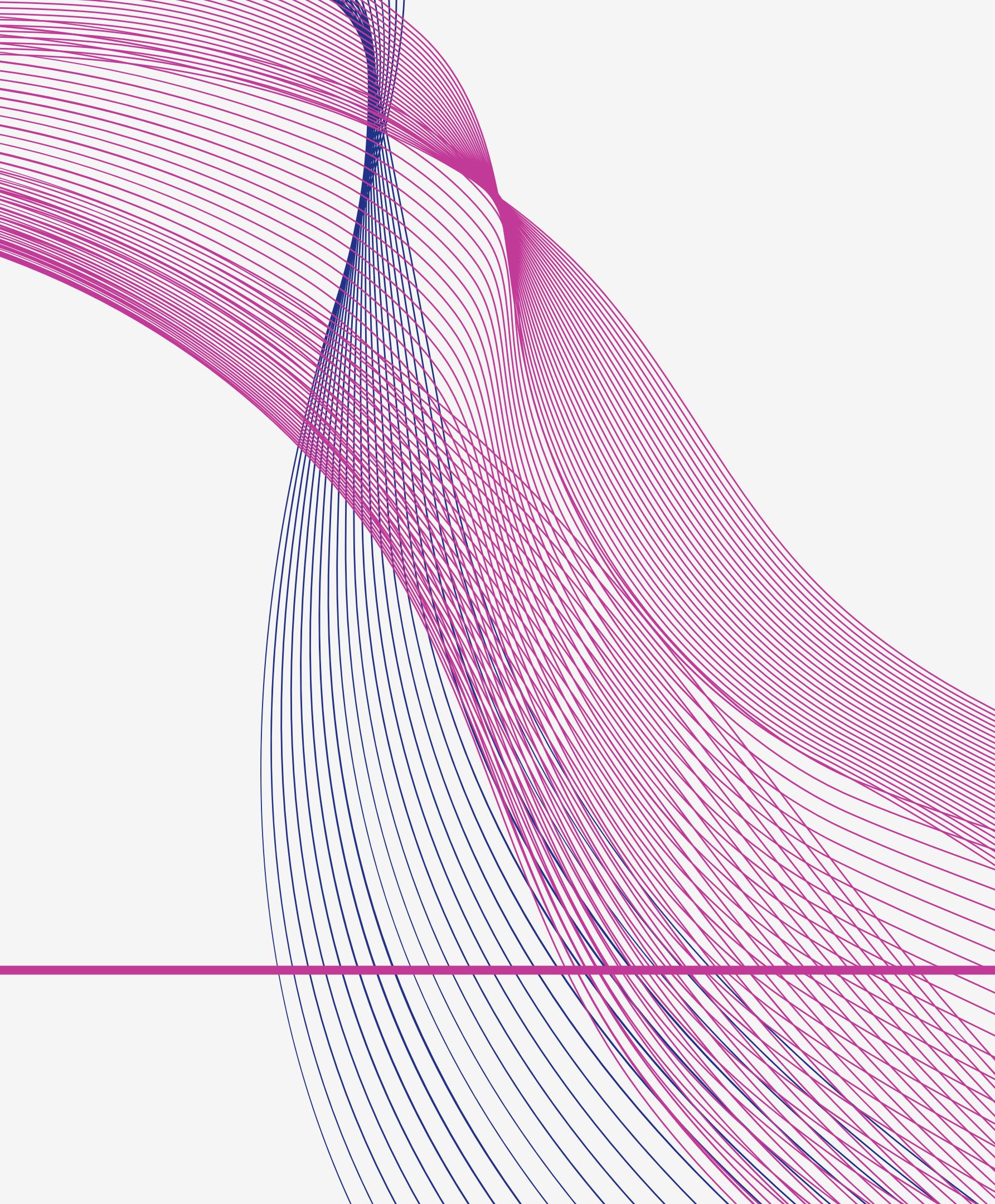


Task 8

ABC CALL VOLUME TREND ANALYSIS

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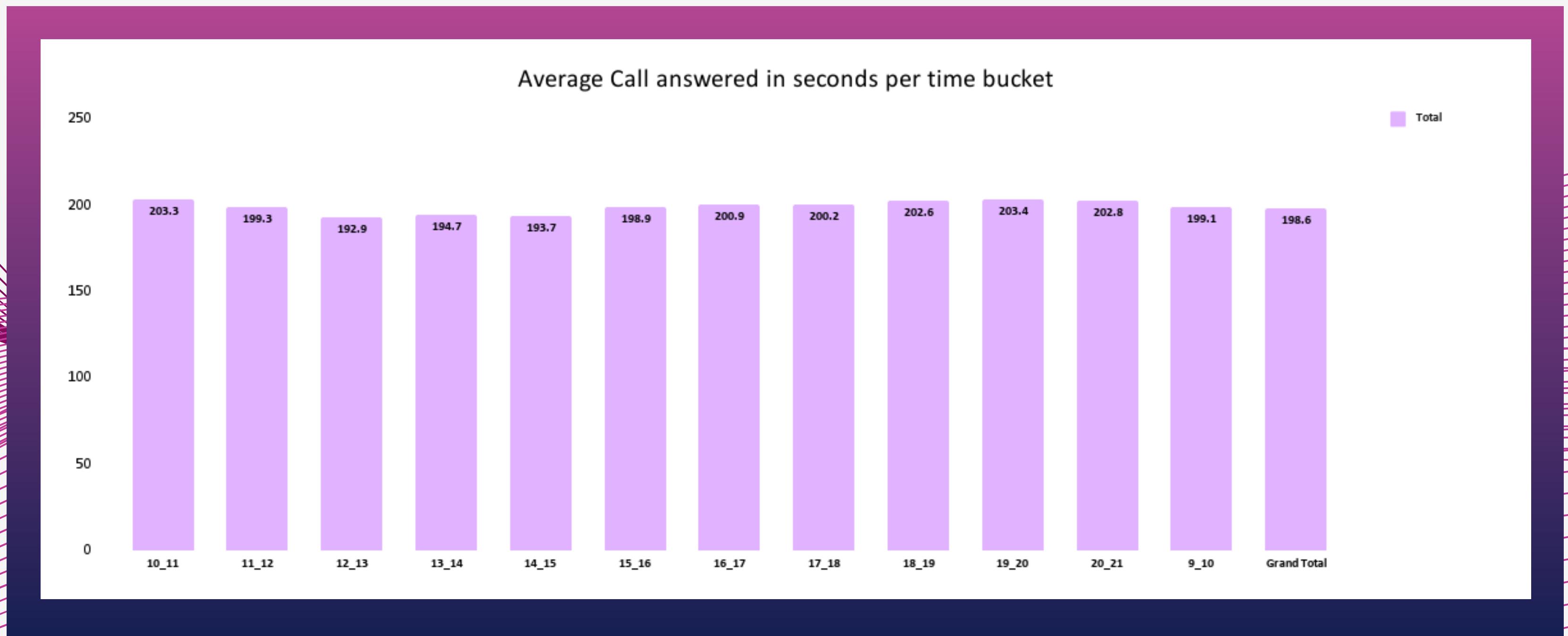


INTRODUCTION

In this project, you will explore Customer Experience (CX) analytics, with a specific focus on the inbound calling team of a company. The dataset, covering 23 days, includes details like the agent's name and ID, queue time, call time, call duration, and call status (abandoned, answered, or transferred).

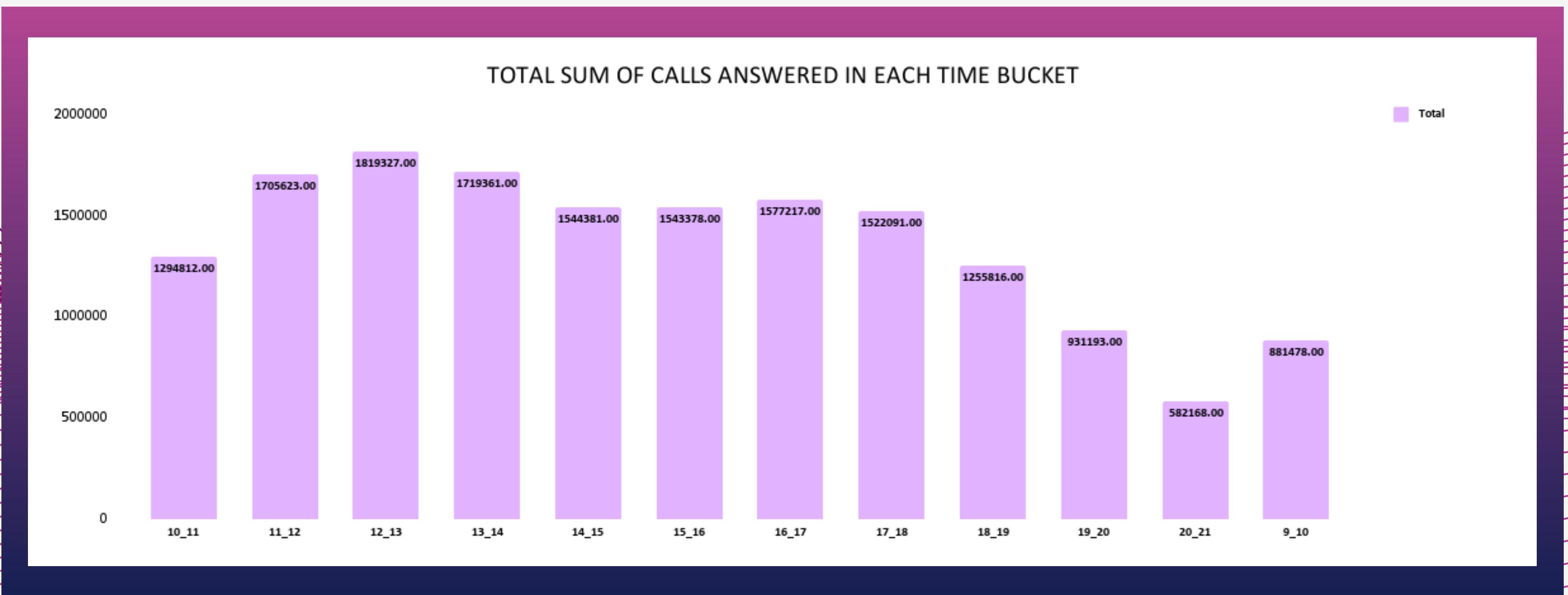
Average Call answered in seconds per time bucket

From the above bar plot we can infer that time_bucket 19_20 i.e. 7PM to 8PM had the highest of average of calls answered in seconds i.e. 203.4



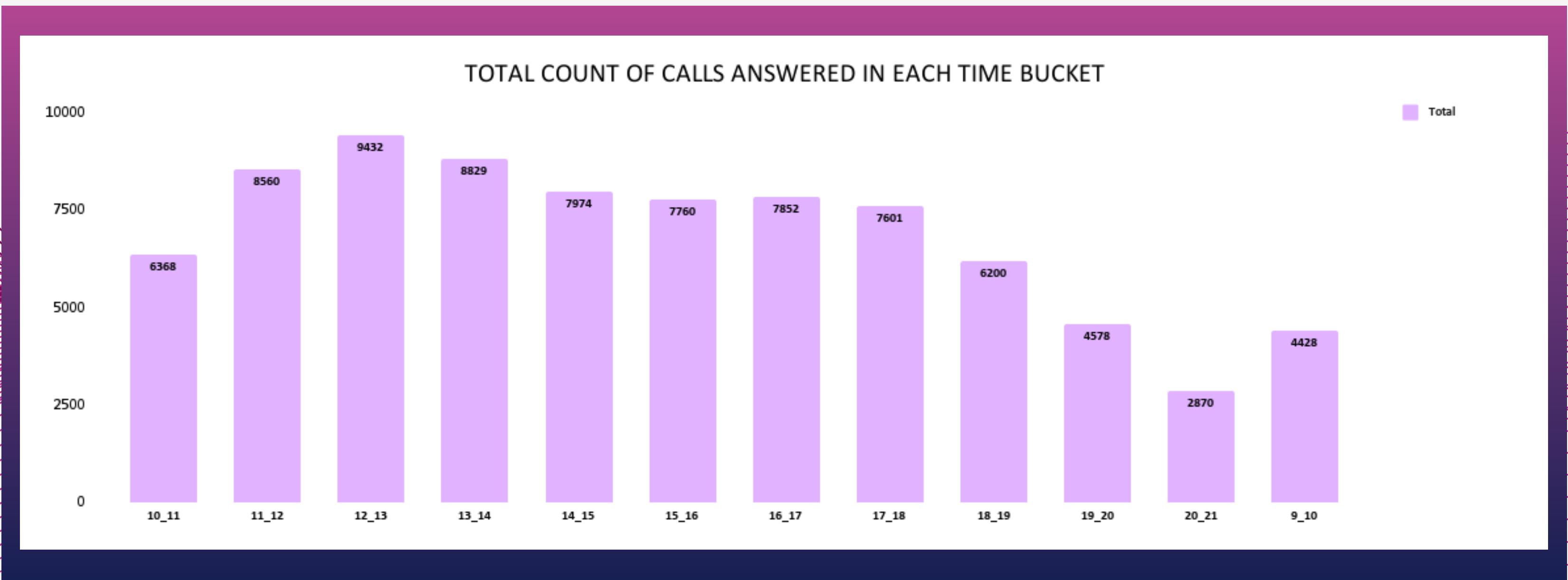
TOTAL SUM OF CALLS ANSWERED IN EACH TIME BUCKET

From the above Bar plot we can infer that the time_bucket 12_13 i.e. during the time period 12PM to 1PM had the highest total number of calls answered i.e. 1819327



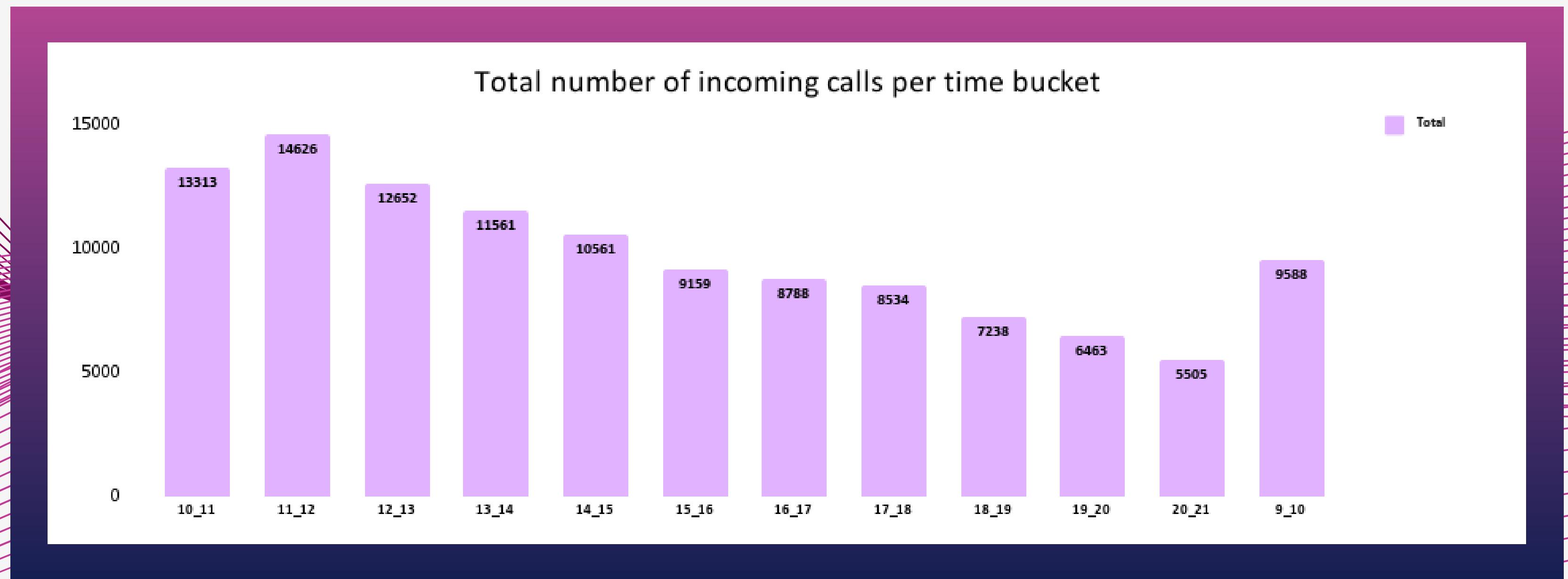
TOTAL COUNT OF CALLS ANSWERED IN EACH TIME BUCKET

From the above bar plot we can infer that the time_bucket 12-13 i.e. 12PM to 1PM had the highest count of calls answered i.e. 9432



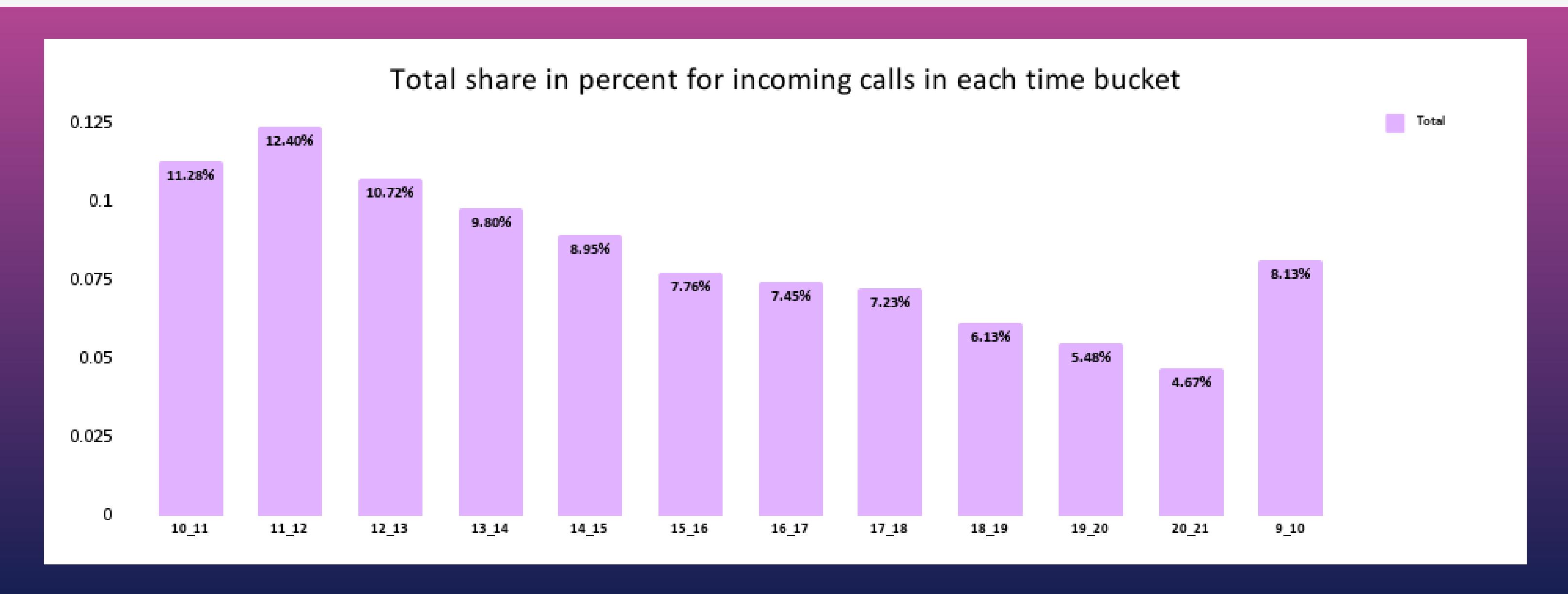
TOTAL NUMBER OF INCOMING CALLS PER TIME BUCKET

From the above bar plot we can infer that time bucket 11_12 i.e. 11AM to 12PM has the highest count for total number incoming calls i.e. 14626



TOTAL SHARE IN PERCENT FOR INCOMING CALLS IN EACH TIME BUCKET

From the above bar plot we can infer that the time bucket 11_12 i.e. 11 AM to 12 PM has the highest share for incoming calls i.e. 12.40%



FROM THE TABLE, WE CAN INFER THAT THE CURRENT ABANDON RATE IS AROUND 30% WE NEED TO PROPOSE A MANPOWER PLAN I.E. NEW TOTAL NUMBER OF PEOPLE WORKING PER DAY

- FROM THE PREVIOUS ANALYSIS WE CAN DERIVE THAT AVG CALLS ANSWERED PER AGENT IS 198.6 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%
- SO, WE NEED TO HAVE 90% OF THE TOTAL CALLS TO BE ANSWERED SO AS TO REDUCE THE ABANDON RATE TO 10%
- TOTAL AVG CALLS INCOMING PER DAY = 5130
- AVG CALLS ANSWERED PER SECOND = 198.6
- ANSWERED RATE = 90% I.E. 0.9
- SECONDS PER HOUR = 3600
- SO, 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. $255 / 4.5 = 56.67 \approx 57$ AGENTS WORKING PER DAY

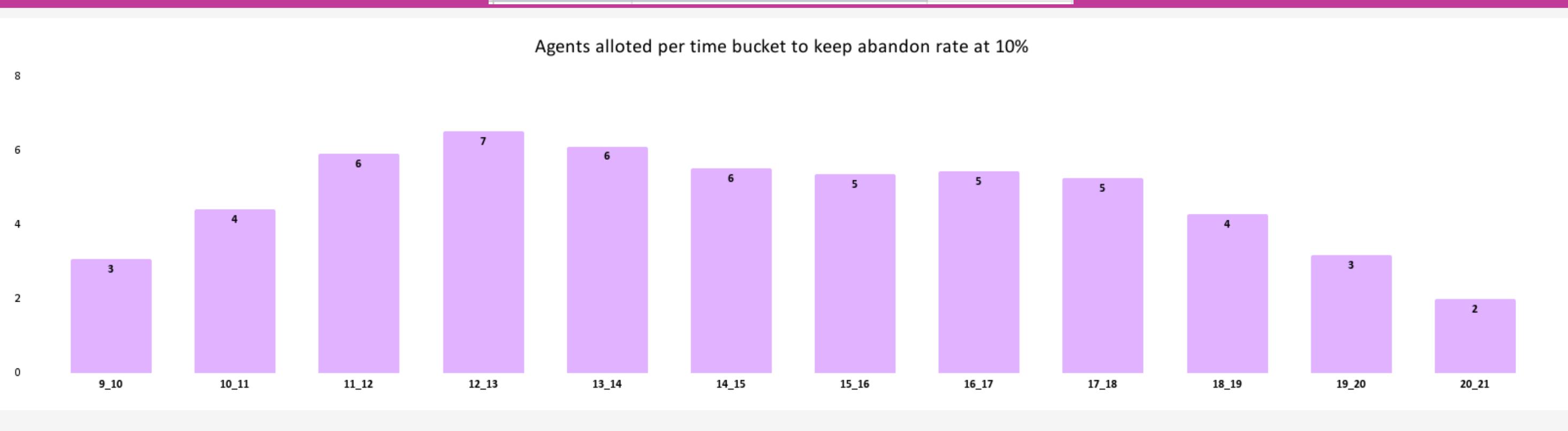
Row Labels	abandon	Count of Call_Status Column Labels		
		answered	transfer	Grand Total
01-Jan		684	3883	77
02-Jan		356	2935	60
03-Jan		599	4079	111
04-Jan		595	4404	114
05-Jan		536	4140	114
06-Jan		991	3875	85
07-Jan		1319	3587	42
08-Jan		1103	3519	50
09-Jan		962	2628	62
10-Jan		1212	3699	72
11-Jan		856	3695	86
12-Jan		1299	3297	47
13-Jan		738	3326	59
14-Jan		291	2832	32
15-Jan		304	2730	24
16-Jan		1191	3910	41
17-Jan		16636	5706	5
18-Jan		1738	4024	12
19-Jan		974	3717	12
20-Jan		833	3485	4
21-Jan		566	3104	5
22-Jan		239	3045	7
23-Jan		381	2832	12
Grand Total		34403	82452	1133
Avg calls on daily		1496	3585	49
% of Avg calls on		29%	70%	1%

SO, 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:-

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

Agents allotted per time bucket to keep abandon rate at 10%

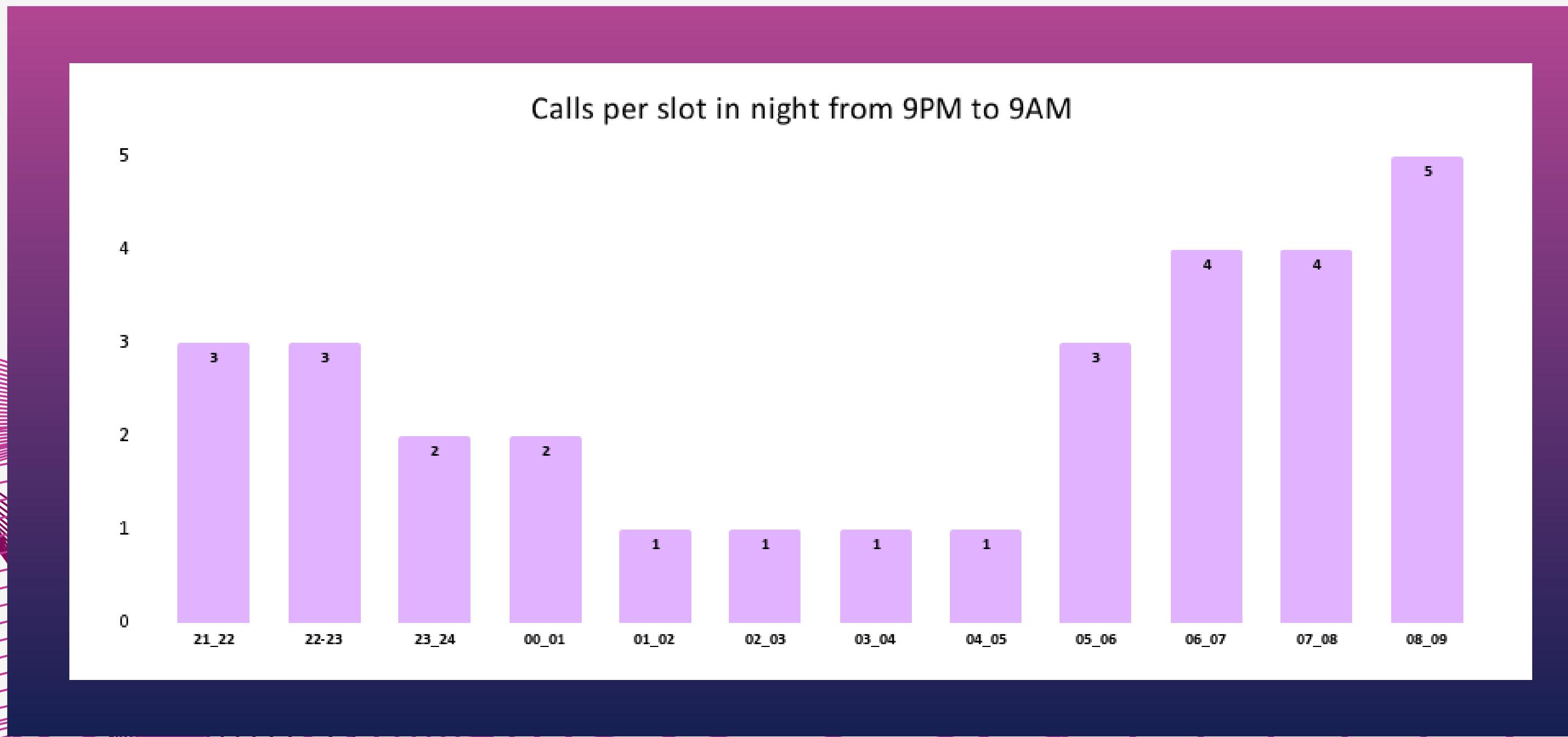


FROM THE ASSUMPTIONS GIVEN THE FOLLOWING POINTS WERE NOTED:-

- IN A DAY AN AGENT WORK FOR 9 HOURS → **TOTAL AGENT WORKING HOURS = 9 HOURS**
- OUT OF THE TOTAL 9 HOURS , 1.5 HOURS GOES FOR LUNCH AND COFFEE/TEA BREAKS; SO **REMAINING WORKING HOURS = $9 - 1.5 = 7.5$ HOURS**
- OUT OF THE REMAINING 7.5 HOURS PER DAY AN AGENT IS OCCUPIED WITH CONSUMERS CALL FOR ONLY **60% OF THE TIME I.E. 60% OF 7.5 I.E. $0.6 * 7.5 = 4.5$**
- SO, AN AGENT SPENDS ONLY 4.5 HOURS PER DAY OUT OF TOTAL 7.5 HOURS ON CONSUMER CALLS
- AN AGENT WORKS 6 DAYS A WEEK
- IN A MONTH OF 30 DAYS 6 DAYS PER WEEK; IN A MONTH OF 30 THERE ARE 4 WEEKS; 7 DAYS PER WEEK MEANS TOTAL 28 DAYS OUT OF WHICH **4 DAYS ARE UNPLANNED LEAVE**
- **DAY OF AGENT ON FLOOR = $(20 * 7) / 28 = 5$ DAYS**
- NOW, **TOTAL DAYS LEFT $28 - 4 = 24$ DAYS**
- PER WEEK THERE IS ONE SUNDAY WHICH IS AN OFFICIAL HOLIDAY FOR ALL WORKPLACES AROUND THE WORLD; SO IN **A MONTH OF 30 THERE ARE 4 SUNDAYS**
- NOW TOTAL DAYS LEFT FOR WORK = $24 - 4 = 20$ DAYS
- SO, **AN AGENT IS AVAILABLE TO WORK FOR 20 DAYS IN A MONTH OF 30 DAYS**

DISTRIBUTION IN EACH TIME BUCKET OF THE NIGHT TIME CALLS

We have total 30 calls in a window of 12 hours from 9 am to 9 pm



NOW WE NEED TO GIVE 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 : $5130 * 30 / 100 = 1539$ 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 $1539 * 198.6(\text{AVG CALLS ANSWERED PER SEC}) * 0.9 / 3600(\text{TOTAL SECONDS IN EACH HOUR}) = 76.41135$
- SO, ADDITIONAL AGENTS NEEDED BY THE COMPANY TO ANSWER NIGHT CALLS AS WELL BE $76.41135 / 4.5 = 16.98 == 17$
- SO, WE NEED ADDITIONAL 17 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
- SO, 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	10%
22_23	3	7.641135	13	10%
23_24	2	5.09409	8	7%
00_01	2	5.09409	8	7%
01_02	1	2.547045	4	3%
02_03	1	2.547045	4	3%
03_04	1	2.547045	4	3%
04_05	1	2.547045	4	3%
05_06	3	7.641135	13	10%
06_07	4	10.18818	17	13%
07_08	4	10.18818	17	13%
08_09	5	12.735225	21	17%
Total	30	76.41135	126	100%

The table above shows the desired distribution of the night calls to keep the abandon rate at 10%

- Since we have only 17 agents during night we need to distribute in an nonanalytical way i.e. the agents who work in 19_20, 20_21 time bucket to wait and work in 21_22 and 22_23 time buckets as well
- Also 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%

THANK YOU

To view the sheet click on [Google Sheet](#)