Community Data Project

Call Center Project

Scenario

Welcome to this portfolio practice project where I have taken a look at a call center dataset and found some insights. The data includes information from a call center about each call that the center receives. The data records information about the caller and agent who participated in the call and more importantly feedback from the customer such as their sentiment and a csat score. Using this information we can find out some insights about if agents are respecting the SLA provided and how satisfied the customers are with the service. The customers table also includes some demographic data so we can further analyse based on demographics and by call center location.

Firstly the data and checked and cleaned using Google sheets. The only issues found with the data was that csat scores weren't given for each call and there was a lot of missing demographic information potentially due to customers ringing from private or withheld numbers. However this is still important to take into consideration. The next slides then show some of the analysis that I did using SQL.

Situational Findings

- Do we have certain agents who respond to calls in a timely matter? As we can see from the data 75.3% of the calls were responded to in a timely matter.
- Are any agents having poor response time? In order to see which agents responded in a timely matter and which had a poor response time, i've showed the top 10 agents with the most responses above SLA and the top 10 with responses below SLA.
- What about customer ratings towards them? As you can see from the tables there isn't much difference in CSat score between the highest ranked and lowest ranked agents according to their customer response times.

```
SELECT agent_id,
  SUM(CASE WHEN response_time = 'Above SLA' THEN 1 ELSE 0 END) AS Above_SLA,
  SUM(CASE WHEN response_time = 'Within SLA' THEN 1 ELSE 0 END) AS Within_SLA,
  SUM(CASE WHEN response_time = 'Below SLA' THEN 1 ELSE 0 END) AS Below_SLA,
  ROUND(AVG(CASE WHEN csat_score IS NOT NULL AND csat_score <> '' THEN csat_score ELSE NULL END), 2) AS average_csat_score
FROM call_data
group by agent_id
order by Below_SLA DESC
limit 10;
```

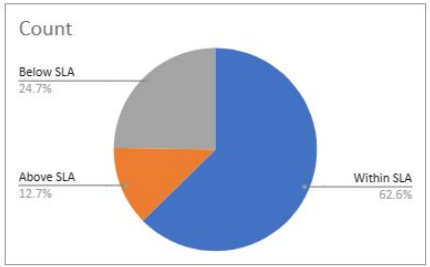
Top 10 Above SLA Agents

agent_id	Above_SLA	Within_SLA	Below_SLA	average_csat_score
411	54	204	87	5.39
425	54	220	71	5.63
417	51	208	99	5.59
429	50	186	77	5.9
421	50	214	75	5.57
432	49	204	59	5.75
424	48	217	81	5.61
412	48	214	78	5.52
414	48	199	90	5.34
436	47	218	79	5.48

Top 10 Above SLA Agents

agent_id	Above_SLA	Within_SLA	Below_SLA	average_csat_score
439	29	217	105	5.63
417	51	208	99	5.59
423	46	218	97	6.09
402	34	214	94	5.43
441	47	202	94	5.63
415	44	193	92	5.28
414	48	199	90	5.34
428	40	217	89	5.54
420	37	214	89	5.57
438	42	215	88	5.62

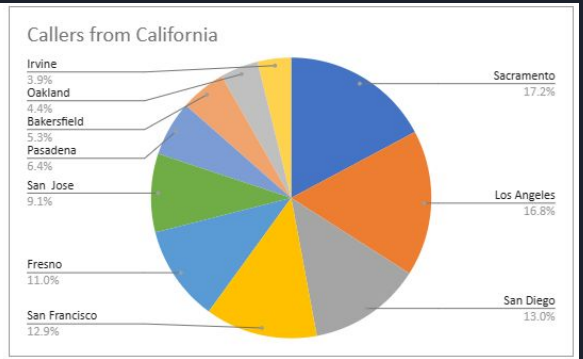
Response Time	Count
Within SLA	20625
Above SLA	4168
Below SLA	8148



- Where are our most loyal customers located? Unfortunately there is a lot of missing data related to the location of the customers calls. However from what data we have we can see the top 10 ranked states and cities. California has been broken down to show the top 10 cities within the state.

- Are there certain call centers that perform well? Not well? Are there certain channels that perform well? Not well? As you can see from the table there isn't much different in terms of Csat score between all of the different call centers.

City	Count
Sacramento	173
Los Angeles	169
San Diego	131
San Francisco	130
Fresno	111
San Jose	91
Pasadena	64
Bakersfield	53
Oakland	44
Irvine	39



Top 10 Cities

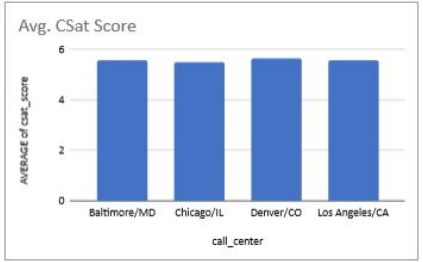
city	state	count
#N/A	#N/A	16429
Washington	District of Columbia	573
Houston	Texas	342
New York City	New York	268
El Paso	Texas	267
Dallas	Texas	220
Atlanta	Georgia	200
Miami	Florida	193
Sacramento	California	173
Los Angeles	California	169

Top 10 States

state	count
#N/A	16429
California	1856
Texas	1797
Florida	1405
New York	882
Virginia	584
District of Columbia	573
Ohio	558
Pennsylvania	504
Georgia	467

call_center	average_csat_score
Denver/CO	5.62
Baltimore/MD	5.56
Los Angeles/CA	5.55
Chicago/IL	5.48

call_center	AVERAGE of csat
Baltimore/MD	5.559699685
Chicago/IL	5.479438315
Denver/CO	5.617563739
Los Angeles/CA	5.551974848




```
SELECT state, COUNT(*) AS count
FROM customer
GROUP BY state
ORDER BY count DESC;
```

- How do our customers feel about our service? You can also see that when you break down the SLA times of each call center by % there are all this very similar. Even when we break down each call center by sentiment we can see that this is almost identical. Lastly if we go back to the Top 10 agents earlier based on SLA responses we can see that just because an agent has a good response time doesn't necessarily mean that the customer is satisfied with their service.

call_center	Total_calls	% Above_SLA	% Within_SLA	% Below_SLA	average_csat_score
Los Angeles/CA	13734	12.700	63.100	24.200	5.55
Baltimore/MD	11012	12.600	62.300	25.100	5.56
Denver/CO	2776	12.400	62.700	24.900	5.62
Chicago/IL	5419	12.900	62.000	25.100	5.48

```
SELECT call_center,
  COUNT(*) AS Total_calls,
  ROUND((SUM(CASE WHEN response_time = 'Above SLA' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS '% Above_SLA',
  ROUND((SUM(CASE WHEN response_time = 'Within SLA' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS '% Within_SLA',
  ROUND((SUM(CASE WHEN response_time = 'Below SLA' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS '% Below_SLA',
  ROUND(AVG(CASE WHEN csat_score IS NOT NULL AND csat_score <> '' THEN csat_score ELSE NULL END), 2) AS average_csat_score
FROM call_data
GROUP BY call_center
ORDER BY '% Above SLA' DESC
```

call_center	Total_calls	Very Positive %	Positive %	Neutral %	Negative %	Very Negative %	average_csat_score
Los Angeles/CA	13734	9.700	12.200	26.100	33.500	18.500	5.55
Baltimore/MD	11012	9.600	11.700	26.600	33.700	18.400	5.56
Denver/CO	2776	8.800	11.900	28.800	32.900	17.700	5.62
Chicago/IL	5419	9.800	11.700	26.700	33.900	17.900	5.48

```
SELECT call_center,
  COUNT(*) AS Total_calls,
  ROUND((SUM(CASE WHEN sentiment = 'Very Positive' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Very Positive %',
  ROUND((SUM(CASE WHEN sentiment = 'Positive' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Positive %',
  ROUND((SUM(CASE WHEN sentiment = 'Neutral' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Neutral %',
  ROUND((SUM(CASE WHEN sentiment = 'Negative' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Negative %',
  ROUND((SUM(CASE WHEN sentiment = 'Very Negative' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Very Negative %',
  ROUND(AVG(CASE WHEN csat_score IS NOT NULL AND csat_score <> '' THEN csat_score ELSE NULL END), 2) AS average_csat_score
FROM call_data
GROUP BY call_center
```

agent_id	Very Positive %	Positive %	Neutral %	Negative %	Very Negative %	average_csat_score
422	9.500	12.100	25.800	30.700	21.900	5.63
140	10.300	9.400	27.100	35.000	18.200	5.69
424	11.600	11.000	26.300	32.700	18.500	5.61
429	13.700	13.100	22.400	30.700	20.100	5.9
428	9.200	9.000	26.900	36.100	18.800	5.54
148	10.600	13.400	27.800	30.600	17.600	5.9
147	11.000	14.500	24.000	33.500	17.000	5.89
412	7.400	13.200	25.300	34.400	19.700	5.52
122	8.500	11.100	27.500	34.400	18.500	6.1
146	6.800	13.100	28.300	37.200	14.700	5.87

```
SELECT agent_id,
  ROUND((SUM(CASE WHEN sentiment = 'Very Positive' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Very Positive %',
  ROUND((SUM(CASE WHEN sentiment = 'Positive' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Positive %',
  ROUND((SUM(CASE WHEN sentiment = 'Neutral' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Neutral %',
  ROUND((SUM(CASE WHEN sentiment = 'Negative' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Negative %',
  ROUND((SUM(CASE WHEN sentiment = 'Very Negative' THEN 1 ELSE 0 END) / COUNT(*)), 3) * 100 AS 'Very Negative %',
  ROUND(AVG(CASE WHEN csat_score IS NOT NULL AND csat_score <> '' THEN csat_score ELSE NULL END), 2) AS average_csat_score
FROM call_data
GROUP BY agent_id
ORDER BY 'Very Positive %' DESC
LIMIT 10;
```

Key Findings

. The customer satisfaction can be looked at in several different ways from the data available. The SLA score shows whether customers are being responded to in time, the csat score rates the agent's performance on a scale and the sentiment is also an indication of how satisfied the customer was overall. After analysing all 3 areas of the data we can conclude that the service being provided is very consistent across all centers and demographics.

. We can see that overall across the board customers gave more negative feedback than positive and that agents were responding below SLA more frequently than they were answering above SLA. These are areas that the company needs to systematically improve on with more staff training and better management.

. Rather than improvements being made in certain demographics or at certain call centers. The company needs to improve is overall customer service in order to improve.