

Business Analytics Project

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Background

A Real estate agent works under a licensed broker (or brokerage). The brokerage provides the real estate agent with leads (leads are people who are looking to buy, sell or rent), and the agent's job is to help them in their home buying, selling or renting process.

Aim of project

1. Identify best practices by market research and analysing the follow-up data
2. Provide insights and recommendation for the brokerage for improving their Agent's performance
3. Build final report with insights and recommendations

(*All visualizations and codes are done in Python, refer **Business_insights.ipynb**)

There are 4 macro-level measures, effort statistics that can be defined for each agent, which are:

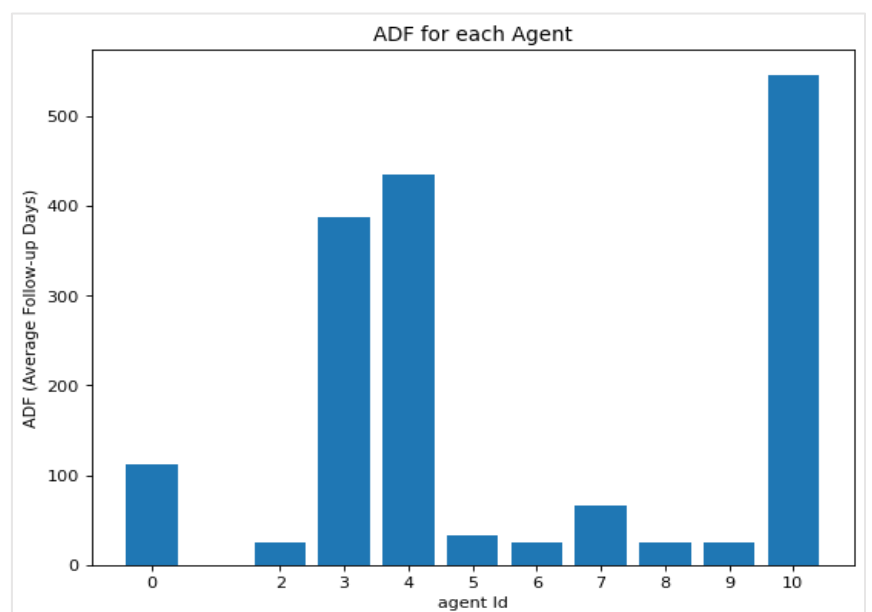
Measure 1: ADF (Average Days Follow-up)

ADF= Average number of days each agent takes to follow-up a lead. These are the insights, recommendations I got after analysing ADF:

Recommendation 1: ADF **should be low** for the agents, preferably lesser than 30 days. According to my market research customer conversion rate is inversely proportional to lead follow-up time, every agent should be advised to complete major conversation with the customer in under 30 days, decide whether to continue communicating with a lead or not.

Recommendation 2: Agents 0, 3,4,10 should be questioned about their **very high ADF**. They can work on their lead segmentation & targeting skills, by which they can have focus group, leading to quick follow-up time, decreasing ADF.

agentId	ADF
1	25.0
5	25.0
7	25.0
8	25.0
4	32.5
6	66.5
0	112.0
2	387.5
3	435.0
9	546.5



Calculation of ADF: ADF is calculated using group by statement twice, in the 1st groupby statement median of **days_taken_to_follow_up** is calculated on agentId and leadId. In the 2nd groupby median is again calculated finally giving the following output. Refer python code for more insights.

I used **median** for calculation of ADF inside the groupby statement instead of **mean**, as the **days_taken_to_follow_up** has a lot of outliers causing mean to give unsatisfactory results, as it is sensitive to outliers.

Measure 2: PLF (Percentage Leads Followed-up)

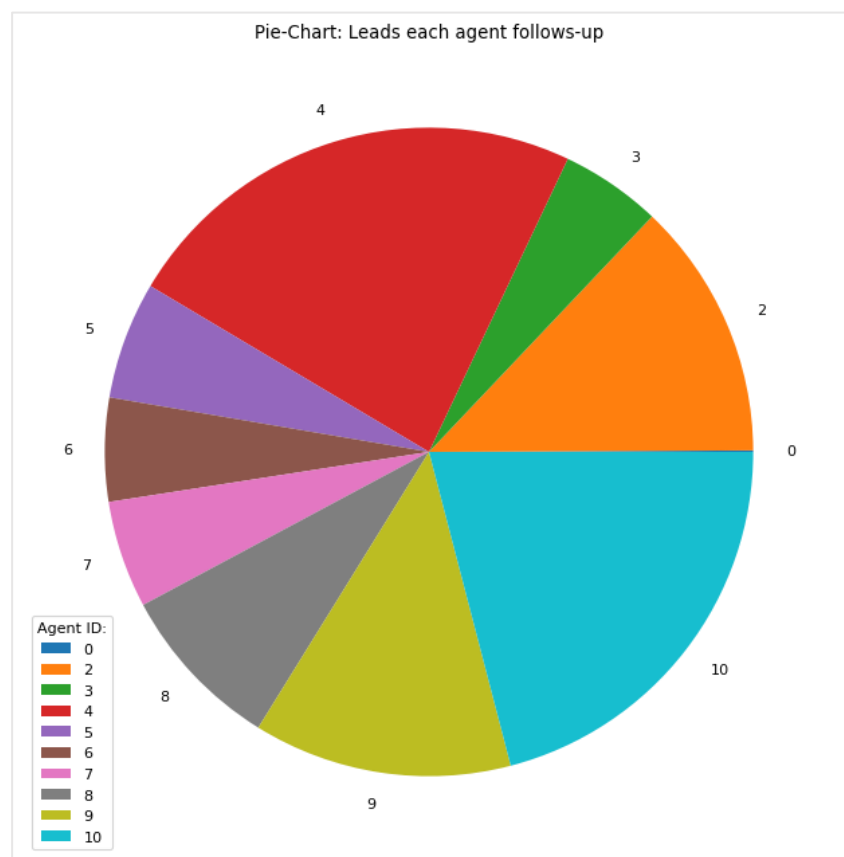
PLF= (Leads followed-up/total leads available in CRM)*100, calculated for each agent. These are the insights, recommendations I got after analysing PLF:

Recommendation 1: More PLF might sound productive, but hitting up a greater number of people without having a focus group in mind could be counter-productive. Mean PLF of all agents is 10.16, hence **PLF of all the agents should be around 10**, which is optimal according to industry standards too.

Recommendation 2: Agent 0 has **critically low PLF**, suggesting their lack of effort in following-up leads. The brokerage should question performance of agent 0, moreover provide correct training so agent is able to follow-up more leads by any medium call or text/email.

Recommendation 3: Agents 10, 4 should be questions about their **high PLF** as over-following-up could lead to spending more resources on following-up different customers, instead lowering PLF to optimum value around 10 could help agents give emphasis on knowing needs of customers and attract the most interested customers.

	agentId	PLF
0	0	0.074750
2	3	5.112872
5	6	5.247421
6	7	5.441770
4	5	5.950067
7	8	8.491553
1	2	13.066228
8	9	13.096128
9	10	21.288683
3	4	23.889969



Calculation of ADF: Number of leads followed by each agent is calculated using group by in python (refer the code file), which is divided by total number of unique leads present in the CRM (here in this dataset total leads = 6689)

Measure 3: CDM (Call Duration Minutes)

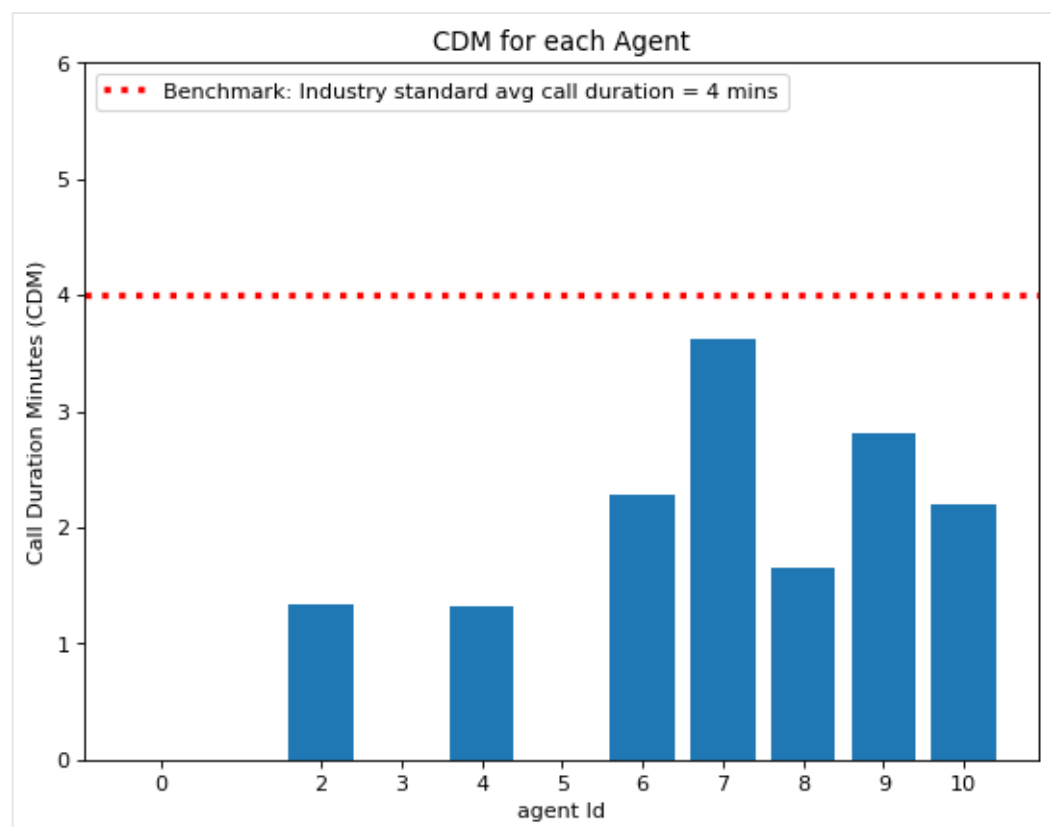
CDM = If the call was picked up by the customer, what was its duration in minutes, measured for each agent

Recommendation 1: Based in market the global metric for call duration is **4 minutes per call**. Hence **agents should try to increase their CDM**. To achieve this goal deliverables, plans & offers catered according to customers' demands, can be prepared by each agent in advance to make customer not drop the call early.

Recommendation 2: We can observe that for agents 0,3,5 the call duration is zero, meaning customers do not pick their calls. Special emphasis should be laid on such agents as calling is the most significant part of any sales campaign. **Training & guidance** can be provided to them.

Recommendation 3: We observe that agent 7 has a call duration is very near to industry standards, hence **feedback & learnings** can be obtained from agent 7 on how to convince already interested customers to talk, which finally can lead to conversion of customers.

agentId	CDM
7	0 0.000000
8	3 0.000000
9	5 0.000000
1	4 1.314250
0	2 1.330747
4	8 1.645668
6	10 2.196067
2	6 2.277820
5	9 2.803636
3	7 3.617094



Calculation of ADF: For CDM I took only those rows where **call_duration!=0**, applying groupby leadId on call_duration, divide by 60 to get duration in minutes.

Measure 4: CLEF (Call Efficiency in percentage)

CLEF= (no. of calls picked-up/no. of calls attempted) calculated for each agent

Recommendation 1: Agents 0,3,5 despite having high number of calls placed to leads, no lead picked-up their call CLEF = 0. This strongly suggests that either they do not know the time to call leads or they lack marketing skills (not able to attract people to pick the call). The solution is finding the perfect time when probability of picking call is high. Another solution is to send emails, text notifying before-hand about offers & exiting information to entice leads to pick up calls

Recommendation 2: Industry metrics suggest there is 8% probability of picking up the call by a lead, hence **agent 8** is following the right strategy. Brokerage should talk with agent 8 about his **ways, approaches of calling** & teach other agents know them. More the CLEF means more calls picked, means more probability of converting leads.

agentId	calls_picked_up	tot_calls_placed	CLEF
7	0	0	115 0.000000
8	3	0	528 0.000000
9	5	0	11241 0.000000
3	7	39	7819 0.498785
5	9	110	9281 1.185217
0	2	58	4086 1.419481
2	6	133	5606 2.372458
6	10	356	11363 3.132975
1	4	945	15284 6.182936
4	8	227	2732 8.308931

