A peek into a week

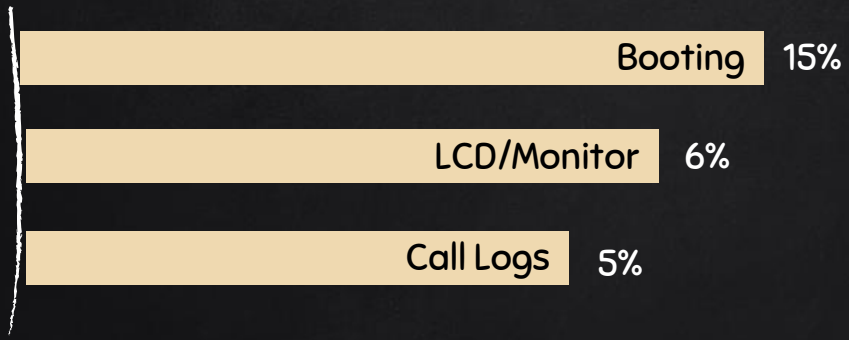
An attempt at understanding the repair logs and service

82,442 UNIQUE SERVICE LOGS

40th week of 2018

How are customers contacting us?

To tell us about issues regarding . . .



Solved using diagnostic tool

Only 25% effective usage of the tool

DIAGNOSTIC TOOL USAGE

- ✗ 94% cases that get escalated effectively use the tool → push by manager
- ✗ The tool is least used for complaints attended by agents with tenure > 5 years
- ✗ Tool used 35% of the time for hard issues

contact_type (in %)	CHAT	EMAIL	Unknown	VOICE
Effective_Usage	31.42	6.34	4.49	21.72
InEffective_Usage	8.34	1.68	0.00	7.17
Not_Considered	3.59	0.47	0.00	2.37
Not_USED	56.65	91.51	95.51	68.73

Email does not use the tool for 91% of the logs
Is it because they get more soft issues? 84% of the issues they get are hard.
May be because it is not a live channel

We need more training and rigor in using the tool as it could influence lesser repeats

AFTER WARRANTY SERVICE LOGS

15% of logs were **after warranty** contacting customers

Revenue opportunity : Cross sell warranty extension

All logs

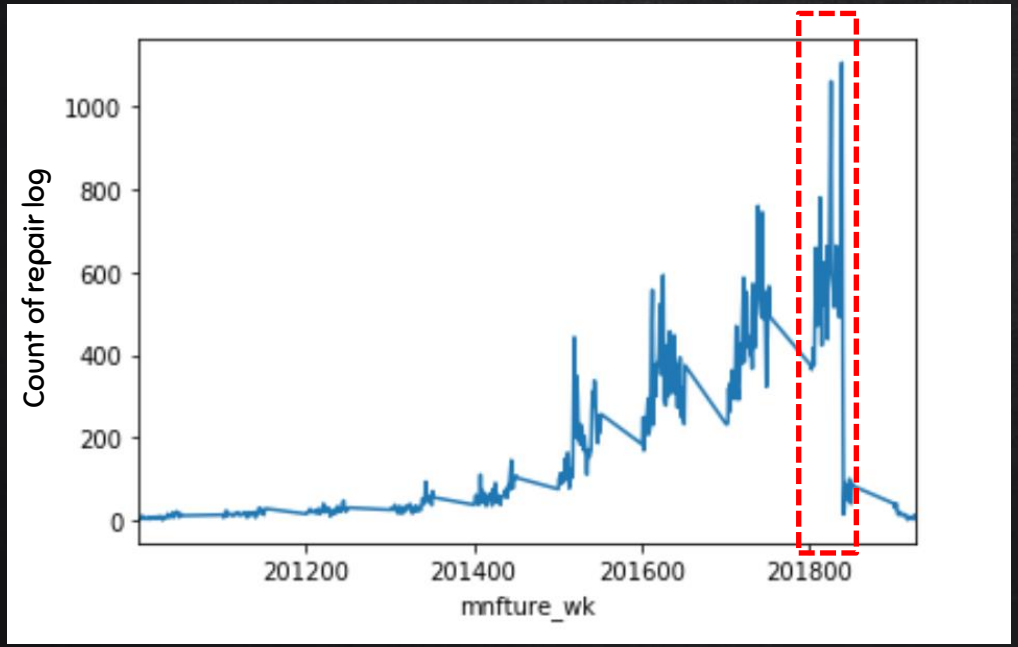
20% more hard issues than soft issues

After warranty logs

5x times more soft issues than hard issues

The leading issue type is 'General Queries' and 'Booting' → customers can be educated through support tool → saves cost

MANUFACTURING WEEK



- 39th week manufactured products has led to rush in calls on 40th week
- What's the issue?
  OS and (Audio,Video,Speaker)
- Same issue trend in other peak weeks (week 25,26)
- ***Prior identification would help in resource reallocation to handle traffic and proactively communicate solution***

REPEAT VISITS

7% of the calls required repeat

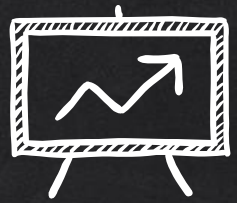
Ineffective usage of the diagnostic tool – higher repeat

Soft issues – no repeat

Logs after warranty over – lower repeat

Customized orders – higher repeat

**Customized orders – orders where manufacture date was later than contract start date*



Will a Visit repeat?

Why is this an important problem?

Customer Experience

✗ Repeat visits for an issue dampens the customer experience → unhappy customer → lost potential opportunity

Cost

✗ Every contact is a cost to the organization → labor cost + time lost

Identifying repeat visits and avoiding them

Better customer experience + Lowered costs

THE PATH TO CATCH A REPEAT!

Data Exploration → Feature Engineering → Imputation → Sampling–class imbalance → Feature Selection

And then classification algorithms

Goal : **Maximize Recall** as

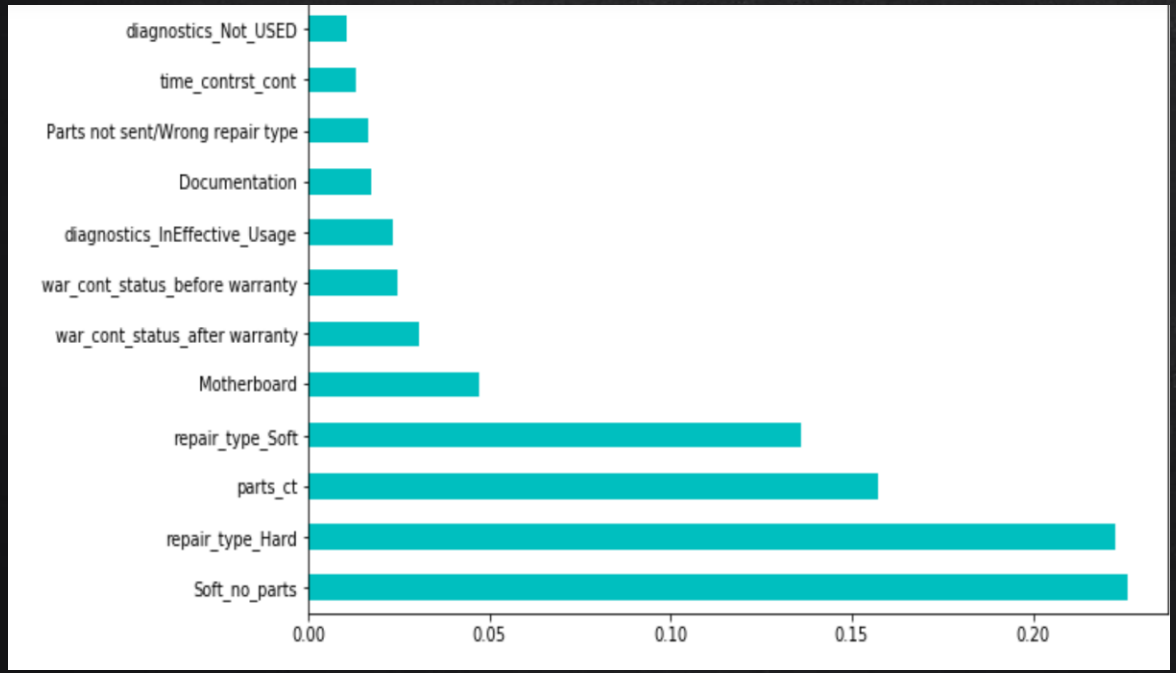
cost(missing out a repeat) > cost(missing out a non-repeat)

MODEL PERFORMANCE

	AUCROC	RECALL
Logistic	0.795	0.93
Logistic with l1	0.795	0.93
Random Forest	0.812	0.92
Light GBM	0.800	0.96

- ✗ We are missing out only on 77 repeats in the test set
- ✗ Recall is high at the cost of precision. We need to tune the model further to learn better and improve the precision as well
- ✗ For now, a low precision is okay as we would do precautious check in with these customers and it would give better experience

WHAT's DRIVING REPEATS?



- The results are in line with findings in exploration phase
- Repair type drives repeats ; hard : more likely, soft : less likely to repeat
- Number of parts sent less likely to repeat and parts like Motherboard, Documentation : more likely to repeat
- Ineffective usage of diagnostic tool : more likely to repeat

Preliminary recommendations

- ✗ Soft issues have no repeat → aim to help these customers self solve the issue using the support tool
- ✗ Repeats are Likely because fixing a motherboard is a more complex issue. Consider checking quality of the vendor, replacement if it justifies the cost or equip service centers to handle these issues.
- ✗ Consider checking clarity and length of the documentation
- ✗ Training to agents on using diagnostic tool effectively (Focus on Email and Voice)
- ✗ Communicate FAQ/ information on support tool to new customers during the time of warranty start

What's next?

- Tune the models further to improve scores and hence reliability
- I would try clustering the parts sent to identify groups with the same issue . This would be interesting as it would give us an idea as to what other features are common within the group and if that is driving repeat
- I saw that there were around 30 observations with no warranty (contract start and end date is same). With more data, it'd be an interesting group to look into.

Thank you for the opportunity. For more insights and detailed explanation, please refer Jupyter notebook attached.