Fi Motors (Flatiron Motors): What makes a fun motorcycle?

Phase 3 Project: Josh Ruggles

Business Problem

- Flatiron Motors wants to build a fun motorcycle
- Figure out what make s a motorcycle “fun”
- Replicate success of **Yamaha MT-07** and **Suzuki SV650**

Method of approach: classification

The class outcomes that we are looking at will be referred to as Features.

The accuracy of our model is often labeled as a %, but we will also depict this as a confusion matrix.

Project Goals

- Build a predictive model
- Plug in relevant features
- Rank model features
- Make relevant suggestions

How did we rate, ‘fun’?

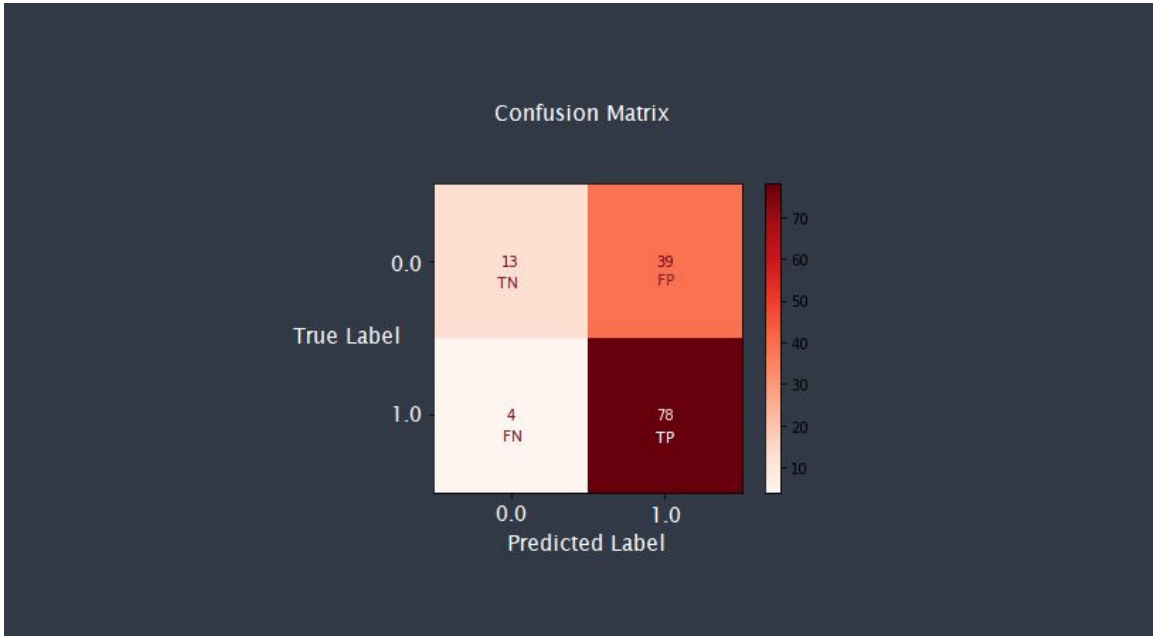
- 0 = not as fun as an MT-07/SV650 or less than 3.4
- 1= at least as fun as these bikes or more than 3.4

Data and exploration

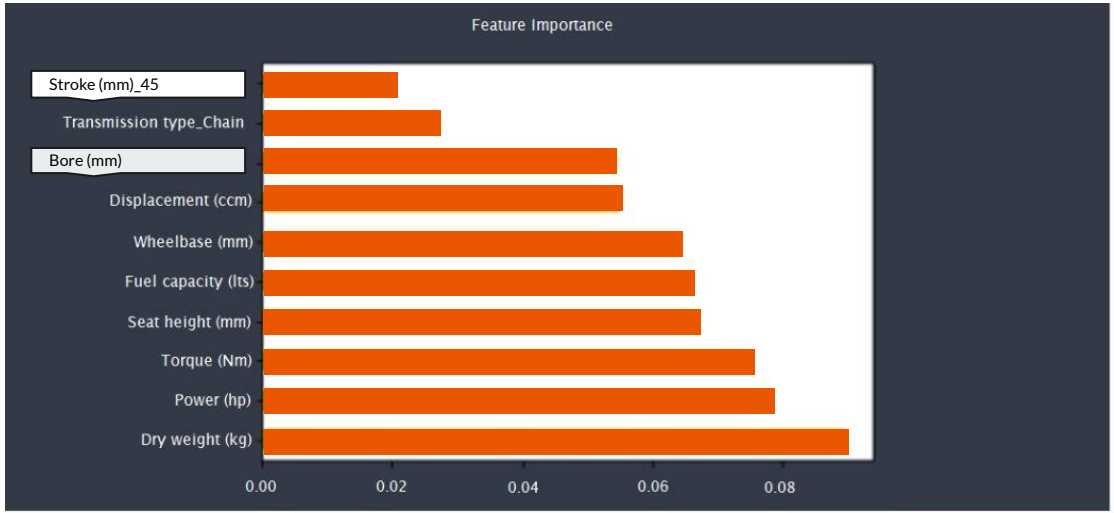
All data was pulled from kaggle.com

-Dataset “all_bikez_curated.csv” file curated by Emmanuel F. Werr

Confusion Matrix Accuracy: 67.9%



Feature Importance



These 10 features are the most highly correlated with bikes that are considered a ratings success.

For your consideration:

Based on the top 10 features these were our findings (totals based on averages of bikes with ratings of 3.4 or better)

- Dry weight of 188.89 kg
- ~70 horsepower
- ~75 Nm torque

For your consideration:

- Seat height around 790 mm
- Fuel capacity of 16.86 liters (more obviously if you are considering a touring machine)
- Wheelbase of 1483.67 mm

For your consideration:

- Displacement of 848 ccm
- Bore of 81.37 mm
- Final drive: Chain
- Engine stroke: 45 mm

Further Considerations

- Consider making the engine a 4 cylinder.
- Stroke of (45mm) x Bore (81.37 mm) = 231.9 ccm (cubic centimeters)
- 4(cylinders) x 231.9 = 927.5 ccm (cubic centimeters)

Limitations of the data

- After preprocessing, there is not a large sample size to pull from
- Though this was not part of the business problem, there is no pricing consideration in this model: price to manufacture or otherwise
- Large amount of false positives

Conclusions

- The majority of bikes @ 790 mm seat height are naked sport bikes
- The data supports the creation of a 4 cylinder engine with an engine displacement somewhere between 848-927 ccm
- Target power: 70 horsepower
- Target torque: 75 Nm

Thank you!

For questions or concerns please contact:

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