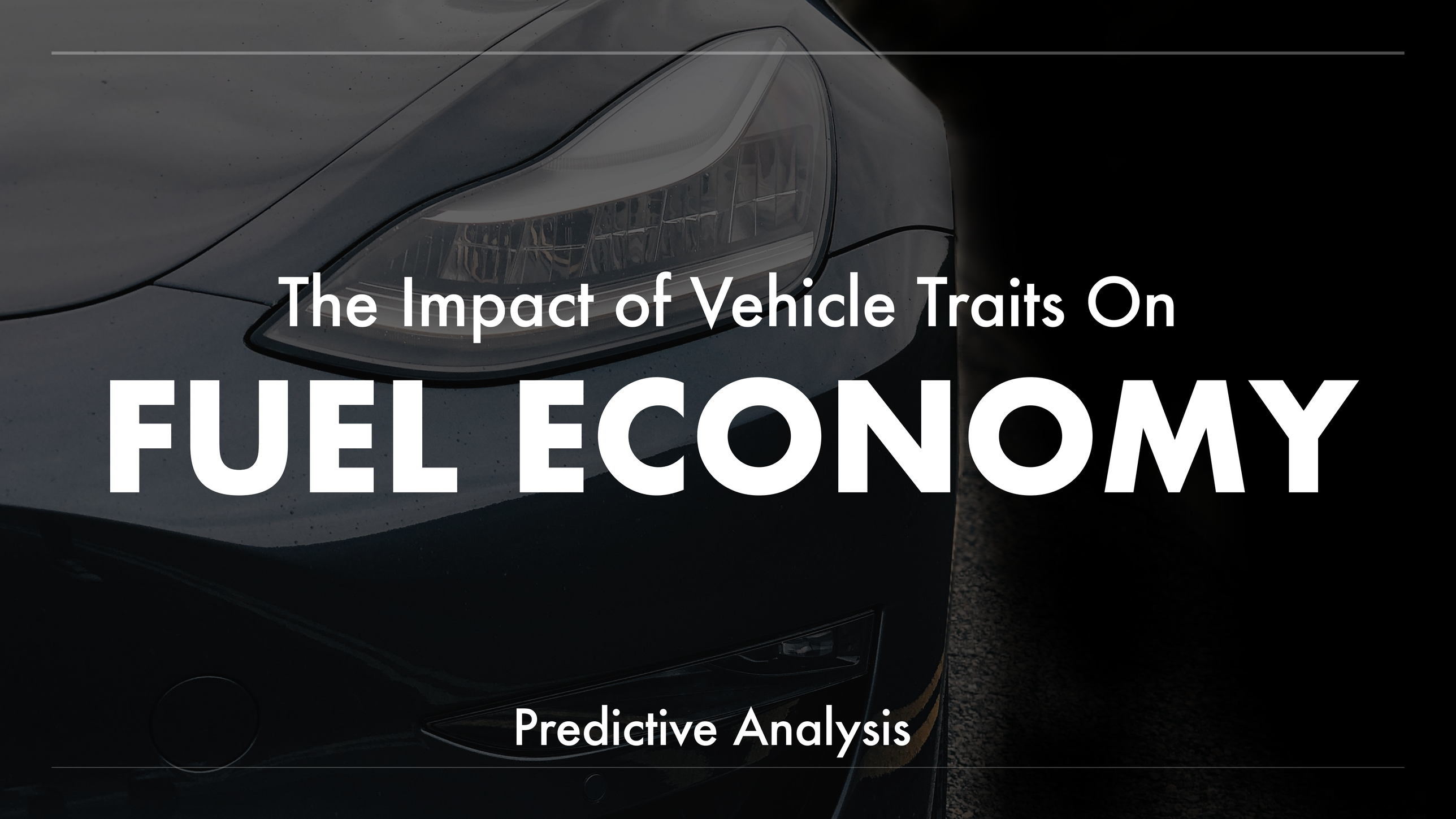


The Impact of Vehicle Traits On

FUEL ECONOMY

Predictive Analysis

Automotiv(ation) & Challenges

- States and Countries around the world have plans to regulate ICE car sales
- USA plans to cut emissions 50% by 2030
- In 2019, US emissions were only 13% below 2005 levels
- What can we discover to better inform auto manufacturers and policy makers?

What are the largest predictors on MPG/MPGe*?

*MPGe calculated from kwH/100 miles for EVs

About the Dataset

43,495 different vehicles

83 features representing different vehicle traits

make, model & year

cylinders, drivetrain & transmission

displacement, fuel types, body style class, etc.

Sourced from the EPA's fueleconomy.gov

Initial Takeaways

Clearest predictor: ICE vehicle vs PHEV vs BEV

- Median MPG ICE vehicles:

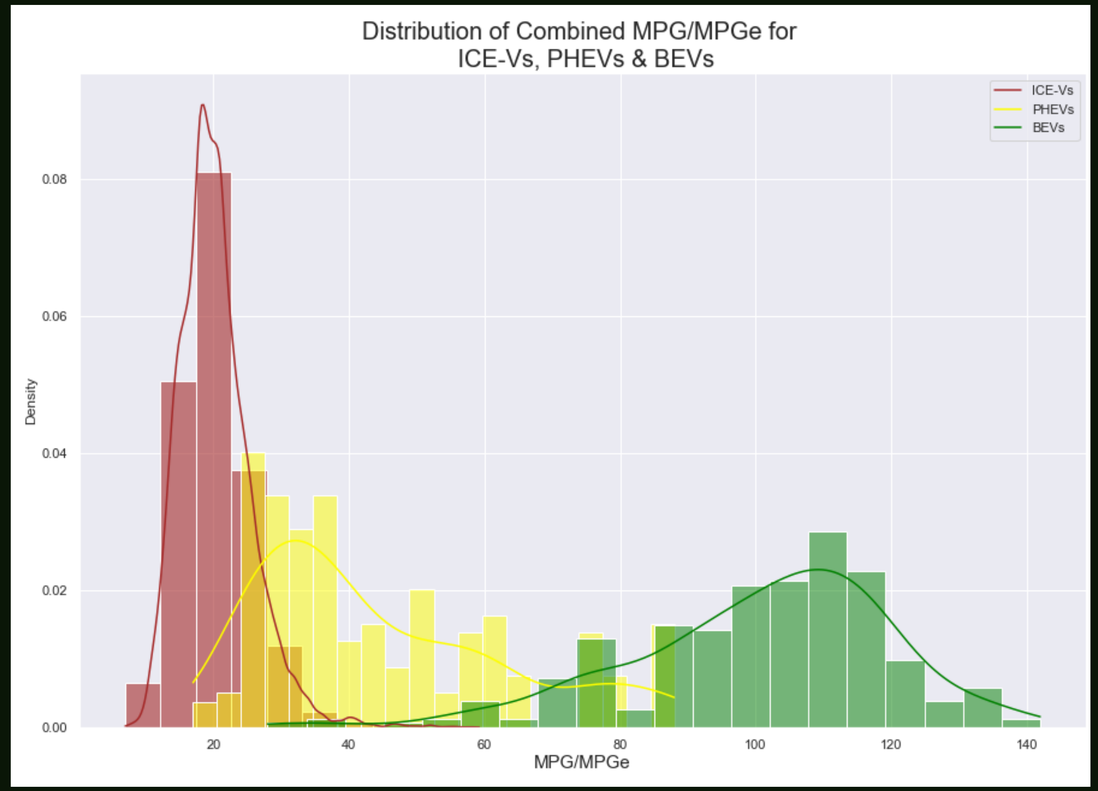
  20

- **Median MPGe PHEVs:**

  38

- **Median MPGe BEVs:**

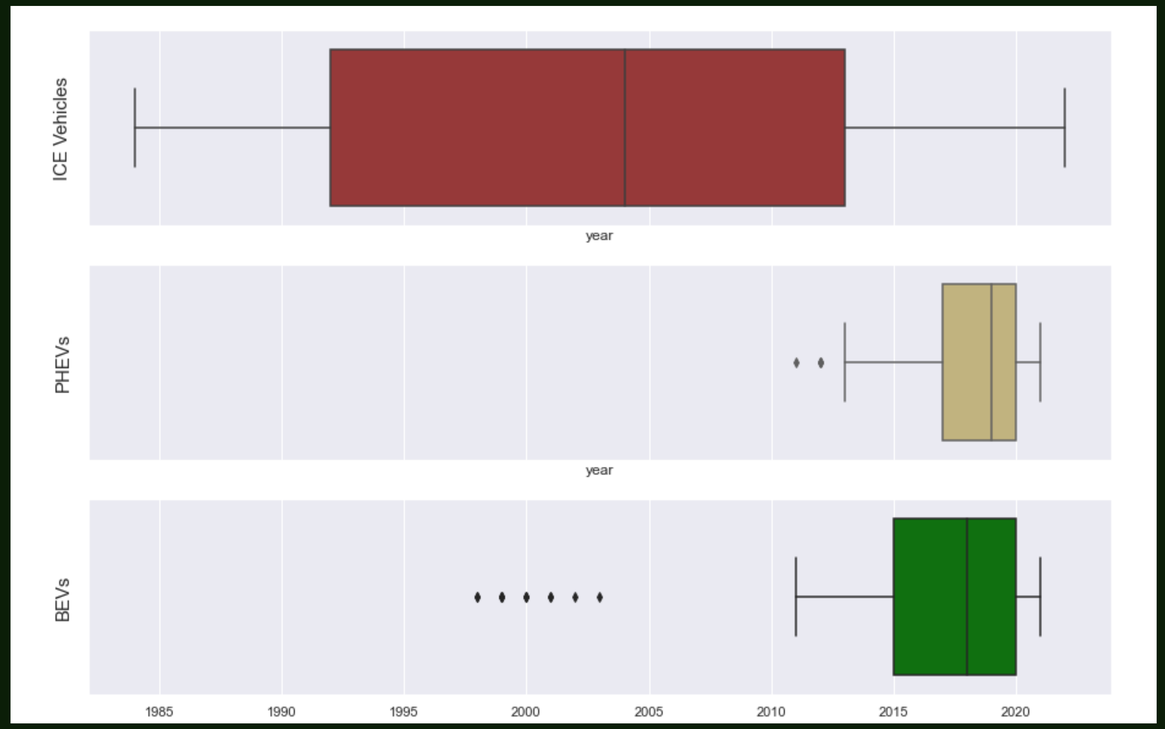
  104



Deeper Analysis

Correcting for Yearly Progress

Vehicle Manufacture Year Distribution



Year

- Median Year of Manufacture:
  - BEVs – 2018
  - PHEVs – 2019
  - ICE-Vs – 2004
- Median MPG for ICE-Vs Made in 2018: **22.6**

Tools for Action
Using Deep Learning to Predict on MPG/e

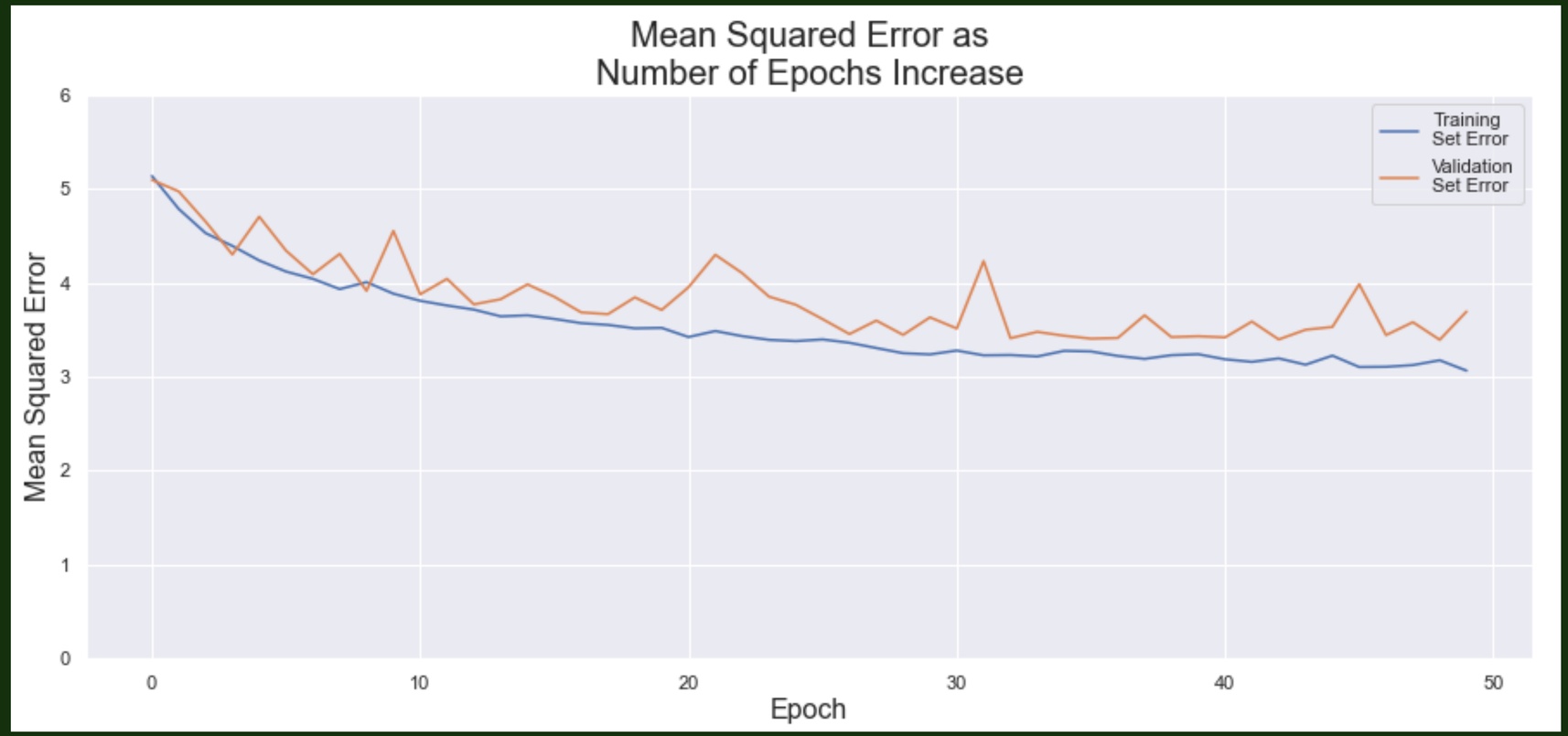
Using Neural Net Regression

Ran over 100 models

50-1000 Epochs

Able to predict within:

4.43 MPG/MPGe



Further Action

- Run other regression algorithms to compare with Neural Nets
- More data and utilize the dataset I have further
- Analysis with pollutants instead of MPG as target

THANK YOU

Dataset Source:

https://www.fueleconomy.gov/

Mike Flanagan

https://www.linkedin.com/in/mike-flanagan-data/

https://github.com/mike-flanagan