Fuel Economy Data Trends

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25FA-MIS580-1: Capstone - Business Intelligence and Data Analytics
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Agenda

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Evaluation of Fuel Economy

Research Design

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Introduction

What is Fuel Economy?

Fuel Economy is measured in Miles Per Gallon (MPG) in Combustion Engines

In Electric vehicles MPGe is Miles Per Gallon Equivalent

Problems to Solve

- Hypothesis 1
- H_0 (Null Hypothesis) : there is no statistical relationship between vehicle cylinders, engine displacement, drivetrain type and fuel efficiency (MPG).
- H_1 (Alternate Hypothesis): At least one of the independent variables from the list of vehicle cylinders, engine displacement, drivetrain type and fuel efficiency has a significant impact on a vehicle's fuel efficiency.

- Hypothesis 2
- H_0 (Null Hypothesis) : There is no significant upward trend in fuel economy/efficiency from 1984 to present.
- H_1 (Alternate Hypothesis): There is evidence that indicates a significant upward trend in fuel efficiency from 1984 to present.

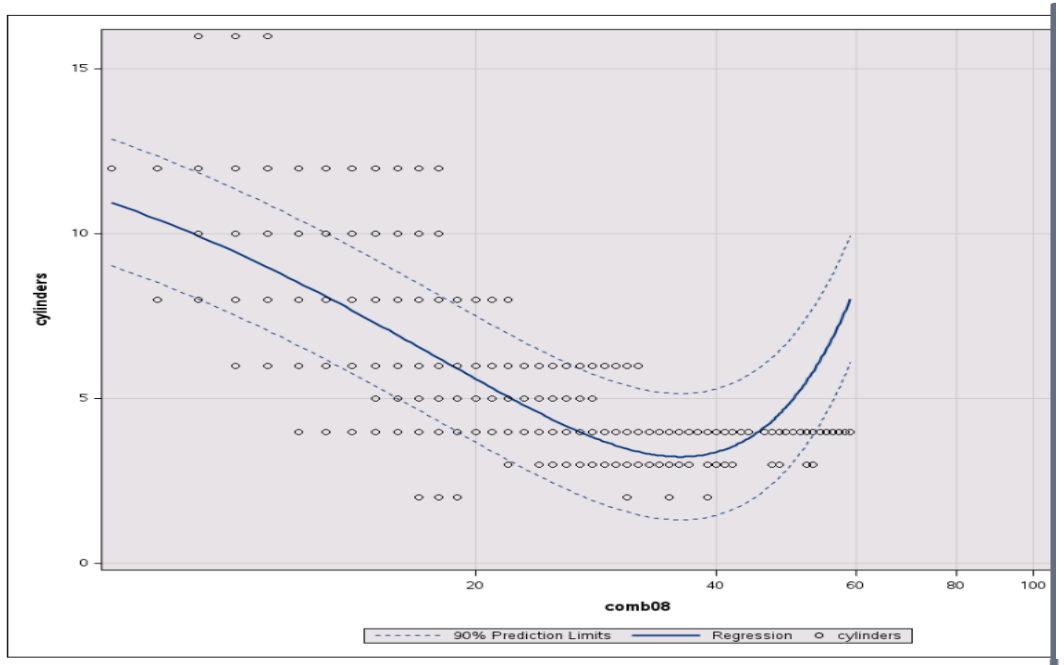
Research of Fuel Economy

- The data came from Environmental Protection Agency and was contributed to FuelEconomy.gov for consumption
  Download Fuel Economy Data

- 4 main attributes in the data set we will analyze:
  1. comb08 (Combined Highway and City MPG)
  2. cylinders (V8,V6,I4...etc.)
  3. displacement (1.3L, 1.5L,5.0L etc.)
  4. drivetrain

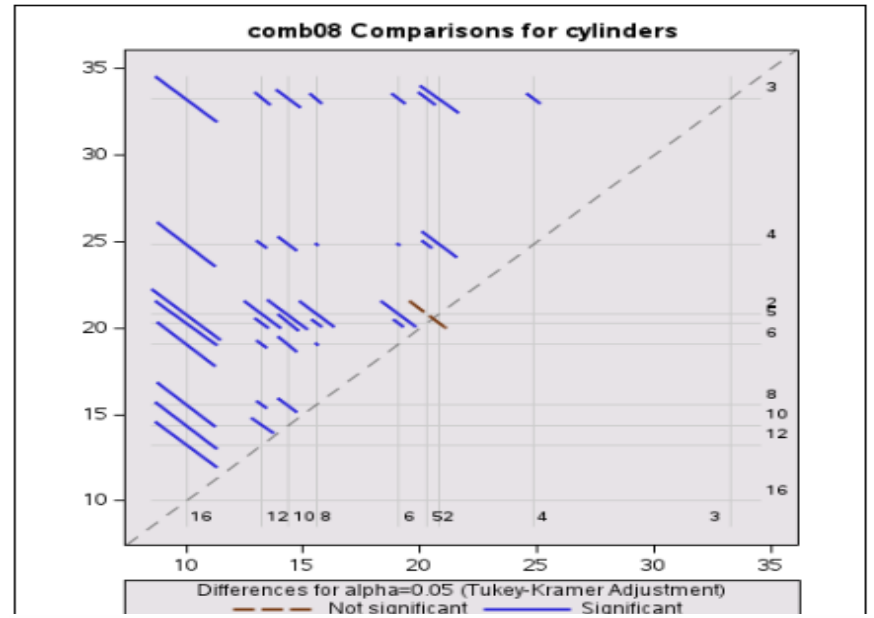
- Year

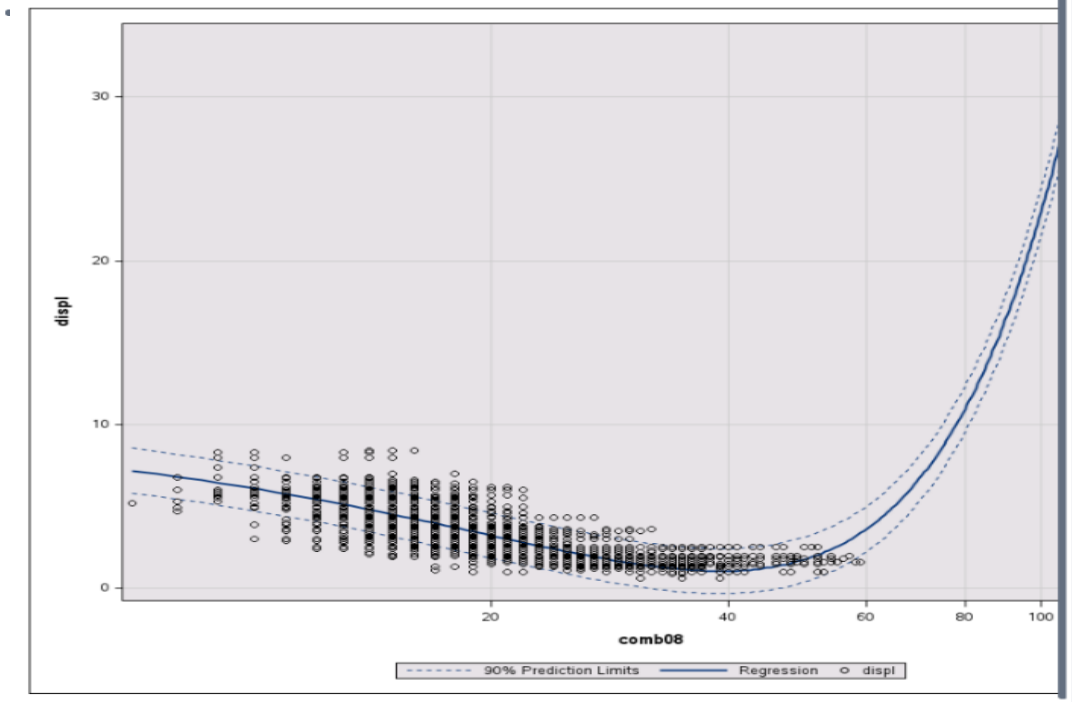
Data Analysis H1



CYLINDER

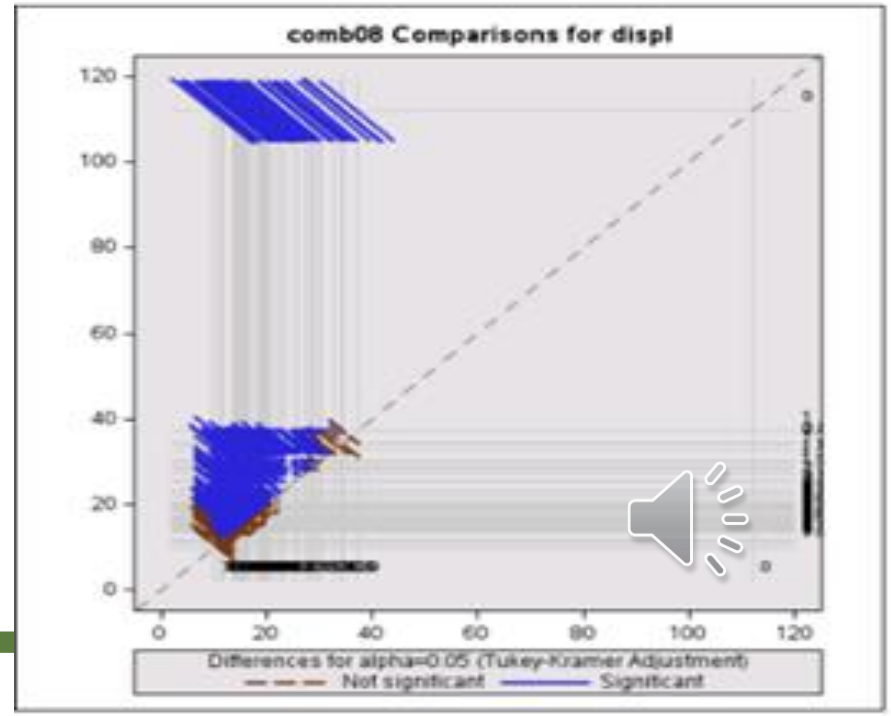
MPG



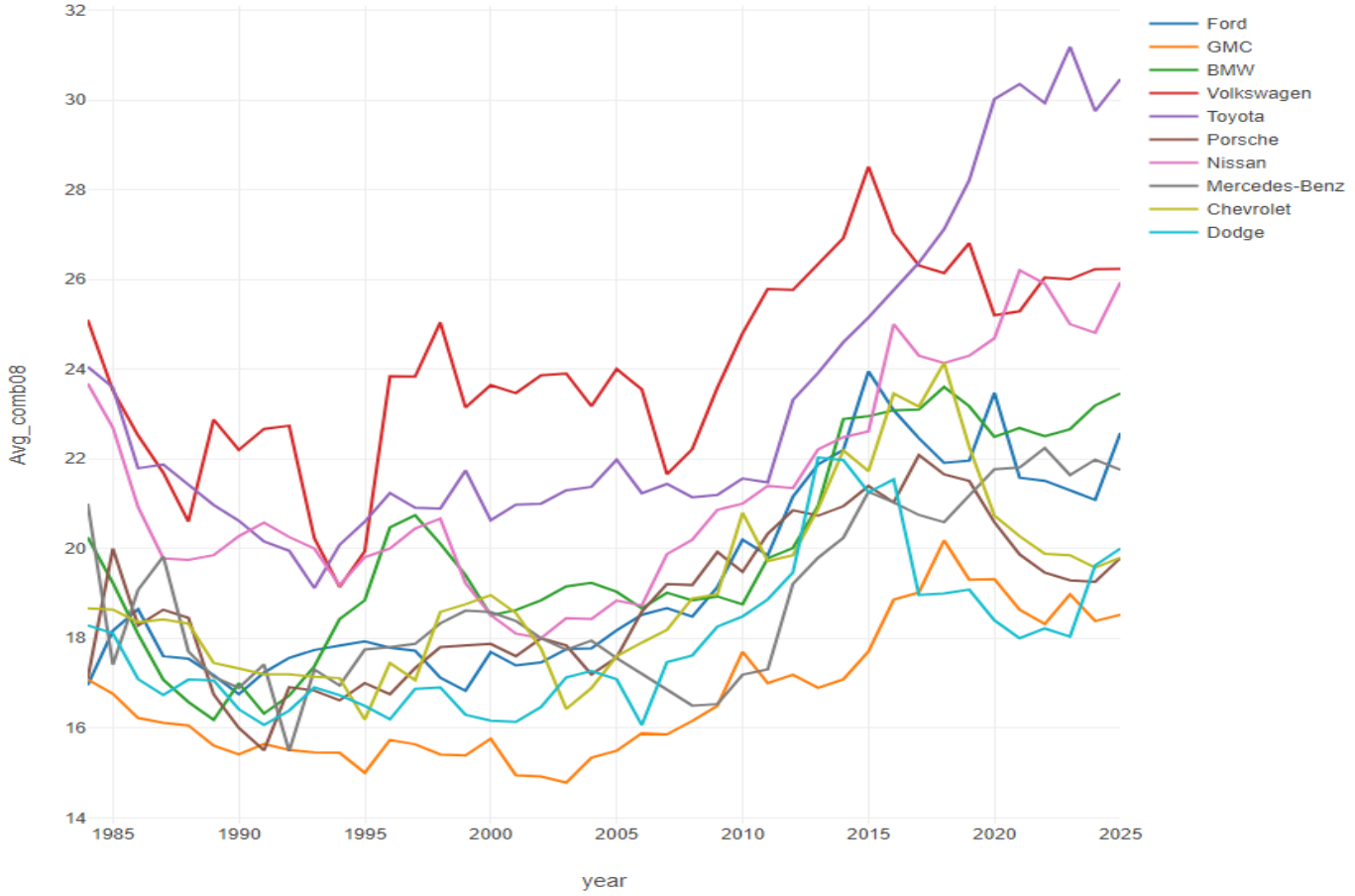


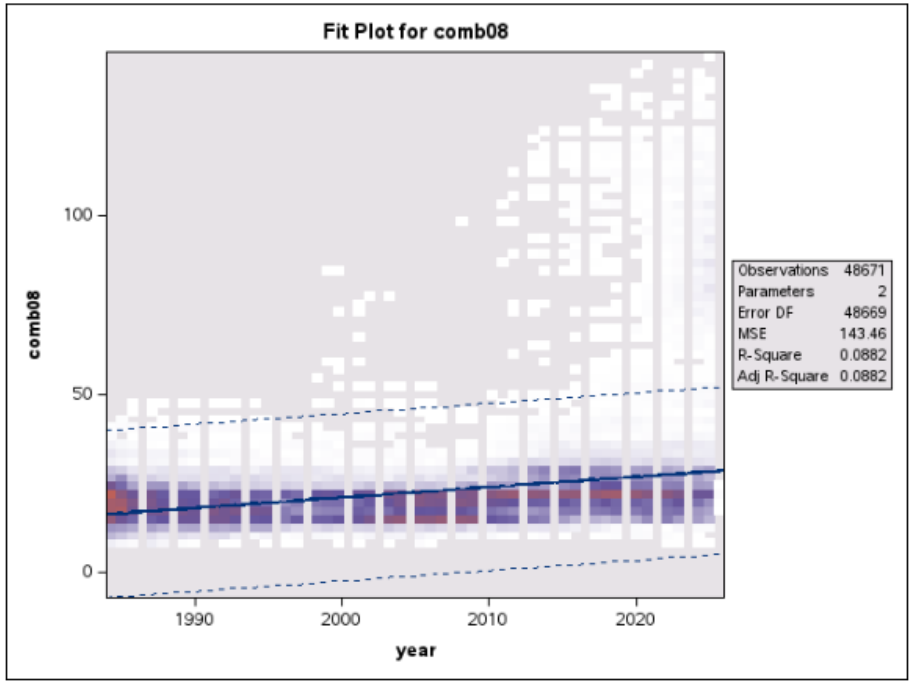
DISPLACEMENT

MPG



Data Analysis H2





YEAR

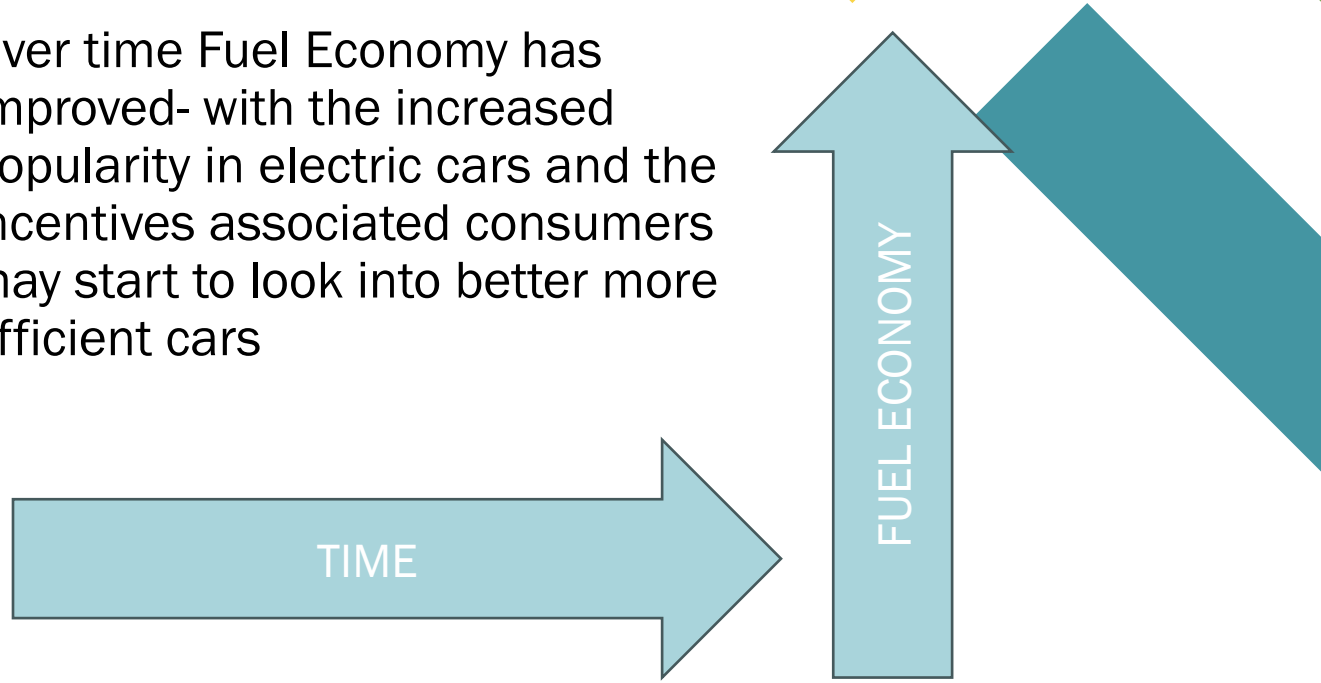
MPG

Recommendations

Higher MPG =

- Less $ at Pump
- Better for environment
- Lower carbon footprint for global warming

Over time Fuel Economy has Improved- with the increased popularity in electric cars and the incentives associated consumers may start to look into better more efficient cars



Plug-In Hybrid, Electric Hybrid, All Electric Study of MPGe

Conclusion

REJECT - H_0 (Null Hypothesis) : there is no statistical relationship between vehicle cylinders, engine displacement, drivetrain type and fuel efficiency (MPG).

REJECT - H_0 (Null Hypothesis) : There is no significant upward trend in fuel economy/efficiency from 1984 to present.

- Increase in Displacement and Cylinders will negatively impact the MPG of a vehicle.
- Over time since the data started being tracked MPG has gotten better at a rate of about 3MPG per decade.
- Higher MPG = Better for environment and Wallet

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