

Car MPG Analysis – Project Report

Batsheva (Levin) Isaacson

Tableau Analysis

- **Average mpg by car name:** Shows each car's average mpg in alphabetical order. You can filter to see only cars within a specific mpg range.
- **Weight of cars over the years:** Shows how average car weight changes over time. Safety features add weight, but lighter materials reduce it.
- **Horsepower & weight vs. acceleration:** Side-by-side scatterplots show a weak inverse relationship; other factors also play a role.

R Analysis

- Converted horsepower column to numeric and removed NA values for regression.
- **Simple linear regression** (mpg vs. weight): Strong inverse relationship, $R^2 = 0.774$. Scatterplot confirms this.
- **Multiple linear regression** (full model): Included all variables; $R^2 = 0.823$.
- **Reduced model:** Only significant variables kept — origin, model year, weight; $R^2 = 0.821$.
- Residual plot shows points mostly randomly scattered; histogram roughly bell-shaped with slight right skew. Overall, the model fits fairly well.

Key Insights

- Weight has a clear negative effect on mpg.
- Car origin and model year also influence mpg significantly.
- Tableau dashboards highlight trends in car weight, horsepower, acceleration, and mpg.