Supporting Document for Predicting a Car's MPG Shiny App

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Summary

This report is prepared for Predicting a Car's MPG shiny app. We use mtcars dataset to build our model. The data is obtained from 1974 *Motor Trend* US magazine. This shiny app is used to predict mpg value based on given transmission type, number of cylinders, horsepower and weight (1000 lbs).

Prediction Model

A linear model was selected to fit the mpg data. "am" represents transmission type, "cyl" means number of cylinders, hp represents horsepower, and wt is the weight of a car measured in 1000 lbs. The interaction between transmission type and weight is also considered.

```
fit <- lm(mpg ~ am + cyl + hp + wt + am:wt, data = mtcars)
```

The mpg can then be estimated using this model.

```
mpgPred <- predict(fit, newdata)
```

Running the App

On the left panel, you will select four parameters for predicting the mpg value. 1. Transmission type. 2. Number of cynlinders. 3. Horse power (hp). 4. Weight (1000 lbs).

Once you finish setting all parameters, click "Submit" button.

On the right panel there is a histogram of all mpg values in the dataset. The predicted value is the x coordinates of the red vertical line.