

## Analysis of Car Speed and Stopping Distance

For this report, I will utilize the "Cars" dataset from the built-in datasets in R. This dataset contains information about various car's speed and stopping distance, which are relevant to mechanical engineering.

### Definition of Variables:

**X (Predictor Variable):** Speed (mph) - The speed of the car when the brakes were applied.

**Y (Response Variable):** Stopping Distance (ft) - The distance it took for the car to stop after the brakes were applied.

**Sample Size:** 50 observations

**Data Collection/Sourcing:** The data is sourced from the built-in R dataset "Cars" and represents a standard set of measurements for car performance.

Source: Ezekiel, M. (1930) Methods of Correlation Analysis. Wiley.

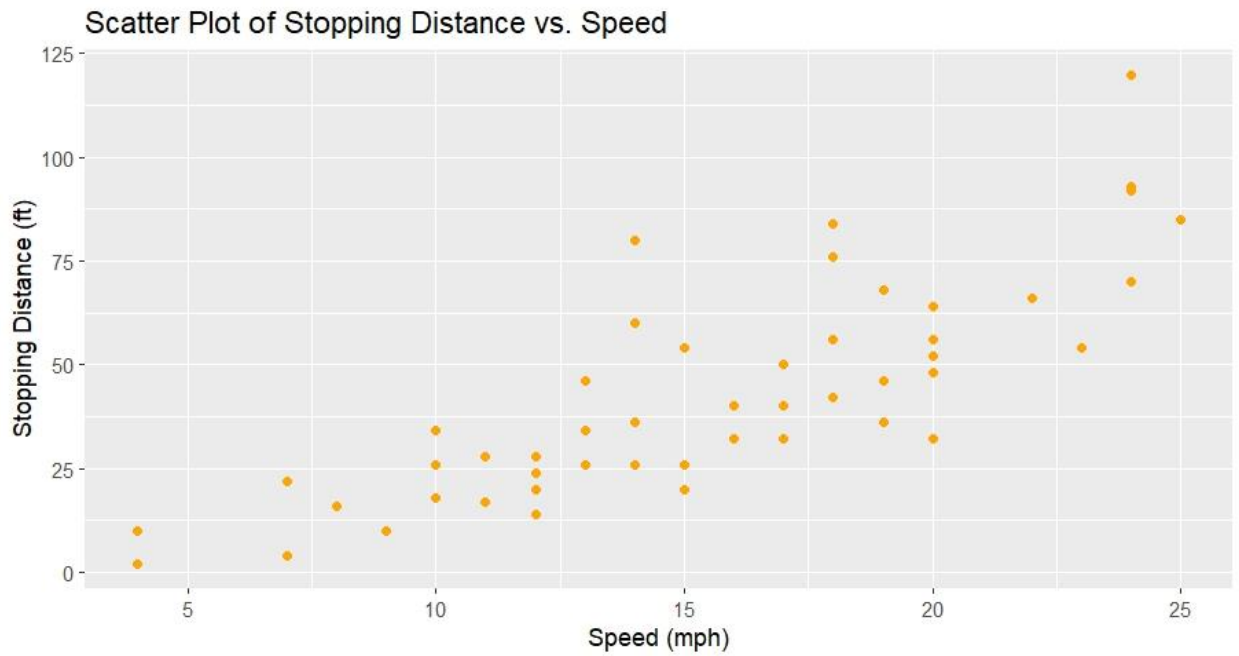
References: McNeil, D. R. (1977) Interactive Data Analysis. Wiley.

### Data Summaries:

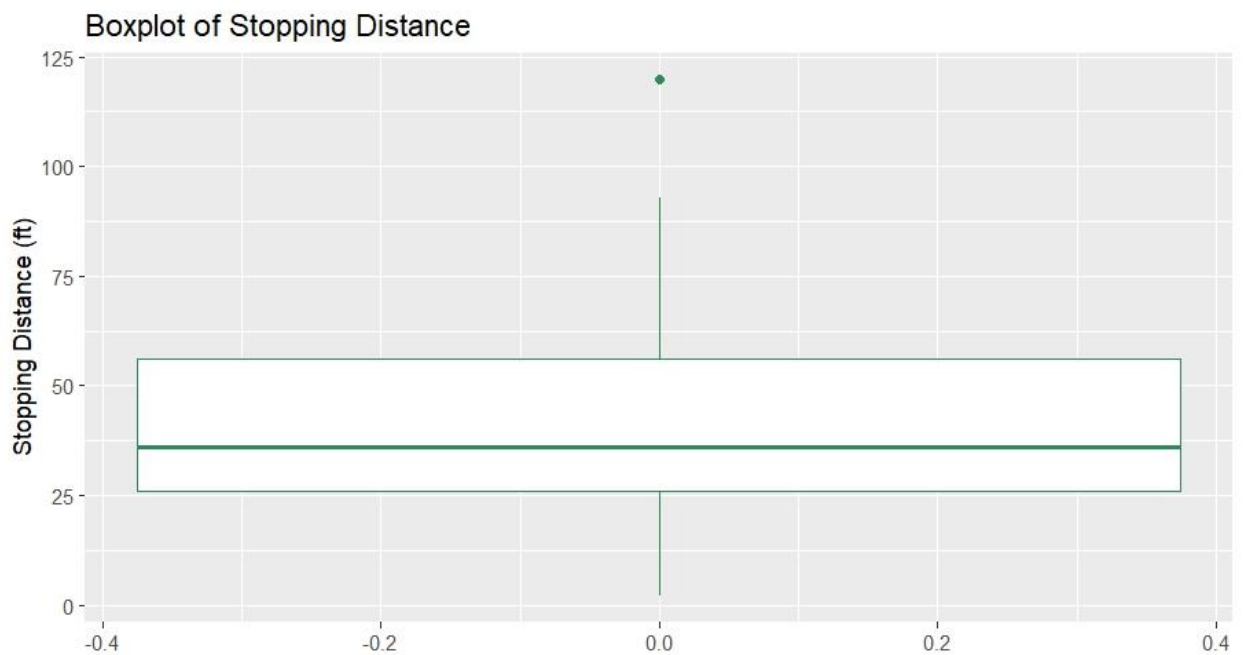
Statistics	X (Speed)	Y (Stopping Distance)
Min	4	2
Max	25	120
Q1 (25th percentile)	12	46
Q3 (75th percentile)	19	56
Mean	15.4	42.98
Median	15	36
Standard Deviation	5.287	25.769
Variance	27.959	664.061
IQR	7	30
MAD (Median Abs Dev)	5.930	23.725

## Visualizations:

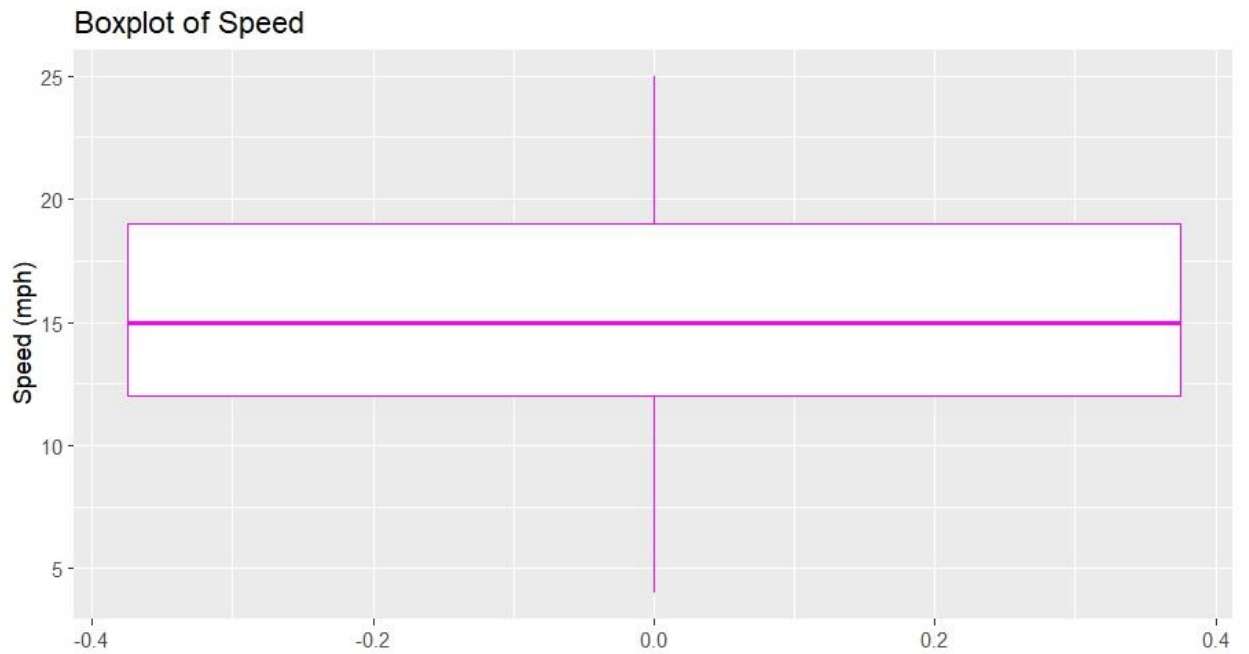
### 1. Scatter plot $Y \sim X$ (Stopping Distance vs. Speed)



### 2. Boxplot of Y (Stopping Distance)



### 3. Boxplot of X (Speed)



### 4. Histogram of Y (Stopping Distance)



## 5. Histogram of X (Speed)

