Regression Models Project - Motor Trend Data 'mtcars' Miles Per Gallon Analysis

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EXECUTIVE SUMMARY

```
## Add after completing analysis
```

Planned Approach

```
Descriptive
        any(is.na)
        head(data)
        str(data)
        summary(data)
Exploratory
        Simple linear comparisons
        Multivariate
                Additive
                Multiplicative
                Missing
                Steped
                Coefficients
                Residuals
                        Influence
                        Leverage
                Deviance
                Anova
Inferential
        Null Hypothesis
        Alternative Hypothesis
        Power or Alpha
        Confidence Interval = .95, one or two sided?
        pValue
        R^2
Predictive ~ NA
Causal ~ NA
Mechanistic ~ NA
```

Access the Data:

```
Note on where to get this data:
```

Raw Data Overview:

    Motor Trend 'mtcars' data set

```
rm(list = ls())
data("mtcars")
any(is.na(mtcars))
```

```
## [1] FALSE
```

```
head(mtcars,5)
```

```
##                   mpg cyl disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4         21.0   6  160 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag     21.0   6  160 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710        22.8   4  108  93 3.85 2.320 18.61  1  1    4    1
## Hornet 4 Drive    21.4   6  258 110 3.08 3.215 19.44  1  0    3    1
## Hornet Sportabout 18.7   8  360 175 3.15 3.440 17.02  0  0    3    2
```

Exploratory Analysis

    Histograms
    Boxplots
    Rug
    Barplots
    Scatterplots
    Multiple plots
    Graphing - base, lattice, ggpplot2
    ABline (h/v)
    Confidence intervals
    Standard error
    Variance
    Fitted lines

    State the H0 & Ha hypothesis here
            Comparisons
            Causality?
            Multivariate
            Nested Analysis
            Summaries
            Boxplots
            Histograms
            Rug
            Barplot
            ABline (h/v)
            Scatterplot
            Multiple scatter plots
            Graphing - base, lattice, ggpplot2

```
        Heatmap
        K-Means
        Dimension Reduction
                PCA
                SVD
        Figures: Exploratory
```

Assumptions Main:

```
A
B
C
```

Inference

```
Hypothesis testing
Set Seed, if required
One or Two Sided Test
Power / Alpha
Beta = (1 - Alpha)
Confidence Intervals (.95 one sided, .975 two sided)
Standard Error
Variance
student's T-score
Z-score
p-Values
Residual Plots with diagnostics see Appendix
```

What are some possible alternative analyses?

???

Appendix A

```
Plots with Code
        Pairs
        Histograms
        Box Plots
        QQ Plots
        Fitted
        Residuals
        Residuals vs Fitted
```

=== END ===