

# Regression Models Project - Motor Trend Data 'mtcars'

## Miles Per Gallon Analysis

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### Executive Summary:

## Add after completing analysis

Grading - Criteria (remove on completion)

Did the student interpret the coefficients correctly? Did the student do some exploratory data analyses? Did the student fit multiple models and detail their strategy for model selection? Did the student answer the questions of interest or detail why the question(s) is (are) not answerable? Did the student do a residual plot and some diagnostics? Did the student quantify the uncertainty in their conclusions and/or perform an inference correctly? Was the report brief (about 2 pages long) for the main body of the report and no longer than 5 with supporting appendix of figures? Did the report include an executive summary? Was the report done in Rmd (knitr)?

### Software environment:

System - session Info:

```
sessionInfo()
```

```
## R version 3.3.1 (2016-06-21)
## Platform: x86_64-apple-darwin13.4.0 (64-bit)
## Running under: OS X 10.11.6 (El Capitan)
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats      graphics  grDevices  utils      datasets  methods   base
##
## loaded via a namespace (and not attached):
## [1] magrittr_1.5      formatR_1.4      tools_3.3.1      htmltools_0.3.5
## [5] yaml_2.1.13       Rcpp_0.12.7      stringi_1.1.1    rmarkdown_1.0
## [9] knitr_1.14        stringr_1.1.0    digest_0.6.10    evaluate_0.9
```

### Raw data overview:

Motor Trend 'mtcars' data set:

```
rm(list = ls()); data("mtcars"); any(is.na(mtcars)); head(mtcars,5)
```

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

```
##           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, ggplot2
- ABlines (h/v)
- Confidence intervals
- Standard error
- Variance
- Fitted lines
- Heatmap
- K-Means
- Dimension Reduction
  - PCA
  - SVD
- Figures: Exploratory see Appendix A

## Preliminary findings: questions of interest: & interpretation of results:

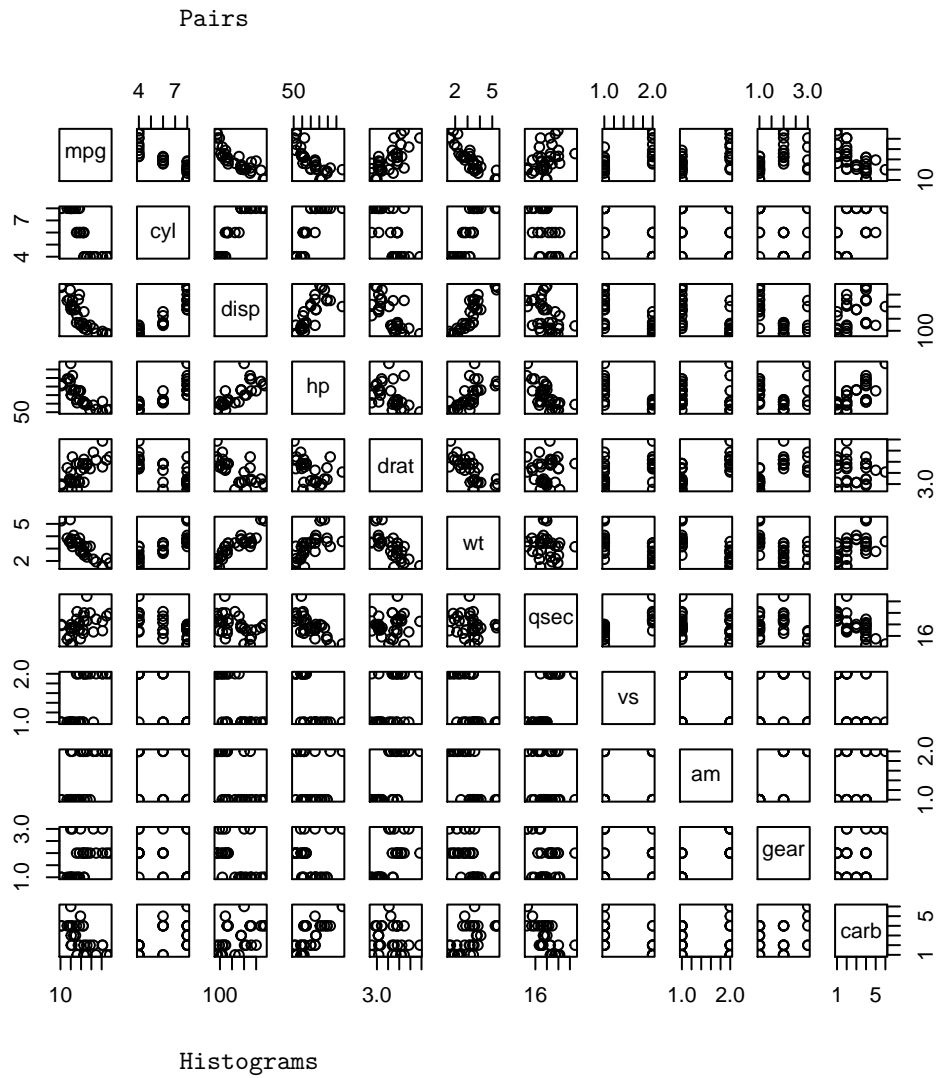
- A
- B
- C

## Conclusions / recommendations:

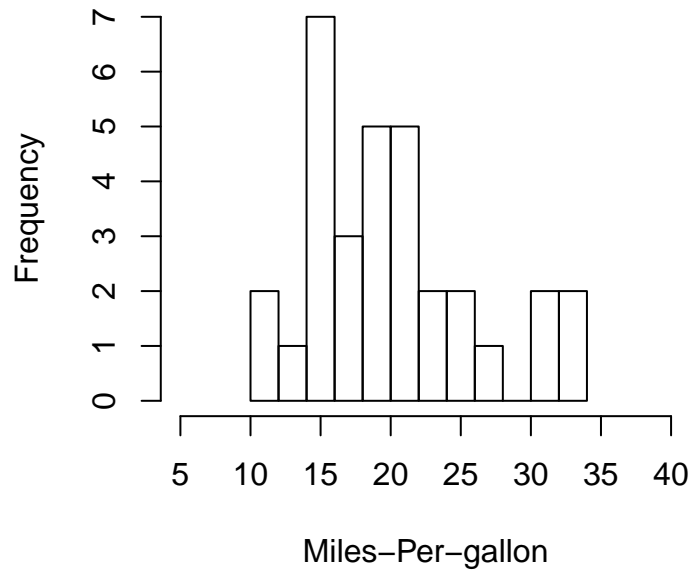
- A
- B
- C

- 1 Challenge the results ?
- 2 Measures of uncertainty 'e'

# Appendix A

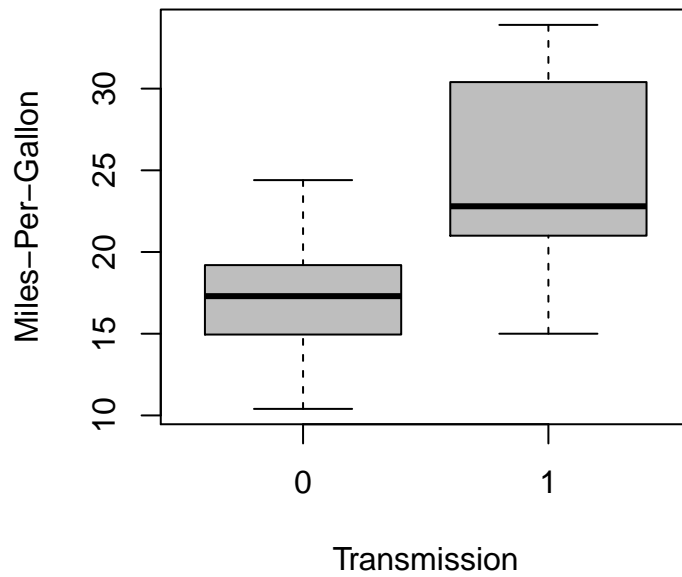


## MPG Histogram



Box Plots

## Boxplot MPG



QQ Plots

Residuals

=== END ===