

# Quiz 3

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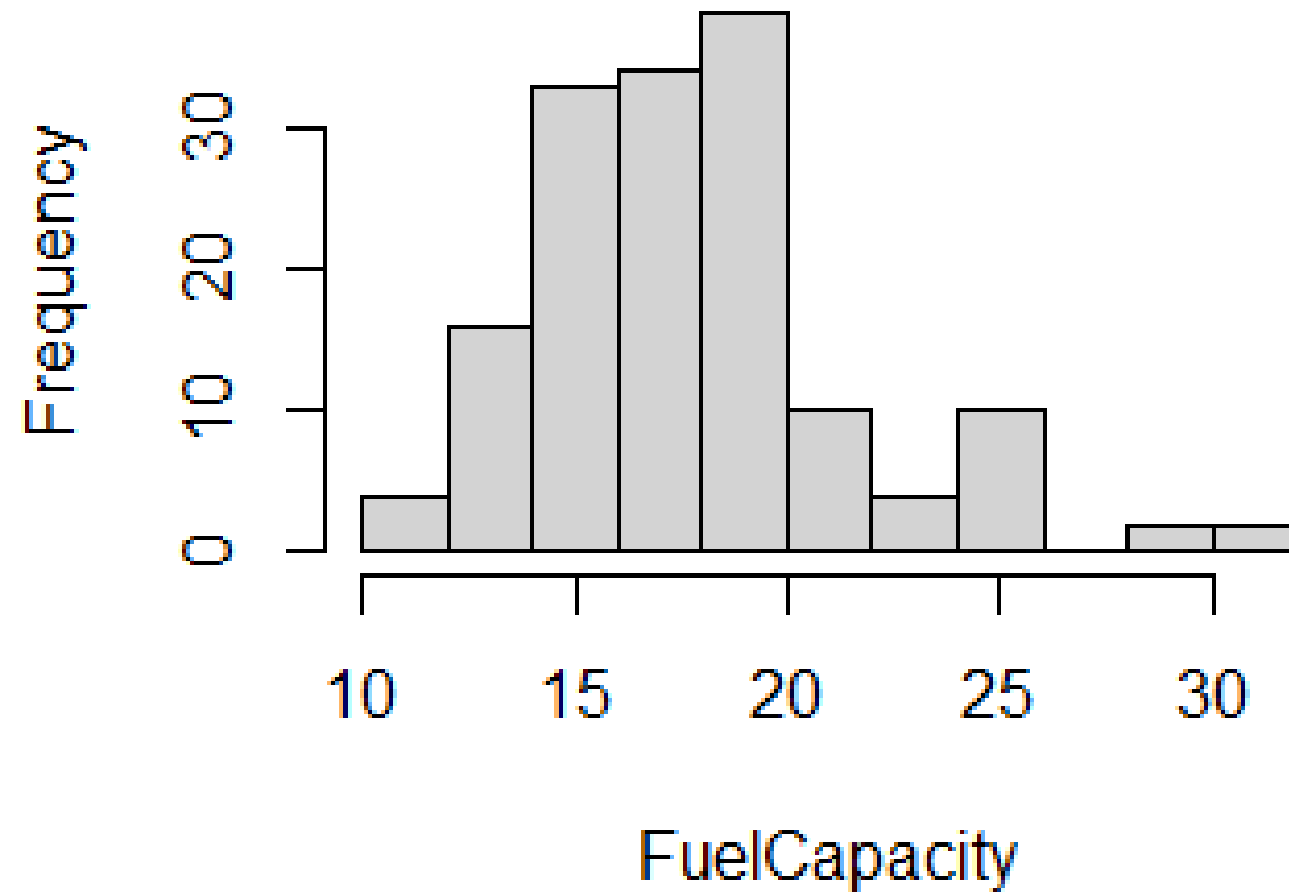
# Q1

```
> summary(mydata)
```

Manufacturer	Model	UnitSales		
Length:153	Length:153	Min. : 0.11		
Class :character	Class :character	1st Qu.: 13.80		
Mode :character	Mode :character	Median : 28.98		
		Mean : 53.12		
		3rd Qu.: 67.96		
		Max. : 540.56		
Price	Horsepower	mpg	PPFrating	
Min. : 9.235	Min. : 55.0	Min. : 15.00	Min. : 23.28	
1st Qu.: 17.890	1st Qu.: 148.0	1st Qu.: 21.00	1st Qu.: 60.09	
Median : 22.799	Median : 175.0	Median : 24.00	Median : 71.84	
Mean : 27.444	Mean : 185.4	Mean : 23.83	Mean : 76.96	
3rd Qu.: 31.965	3rd Qu.: 215.0	3rd Qu.: 26.00	3rd Qu.: 89.43	
Max. : 85.500	Max. : 450.0	Max. : 45.00	Max. : 188.14	
FuelCapacity	CurbWeight	GroupPPF		
Min. : 10.30	Min. : 1.895	Length:153		
1st Qu.: 15.80	1st Qu.: 2.967	Class :character		
Median : 17.20	Median : 3.340	Mode :character		
Mean : 17.96	Mean : 3.380			
3rd Qu.: 19.80	3rd Qu.: 3.823			
Max. : 32.00	Max. : 5.572			

Q2

## Fuel Capacity Distribution of Vehicle



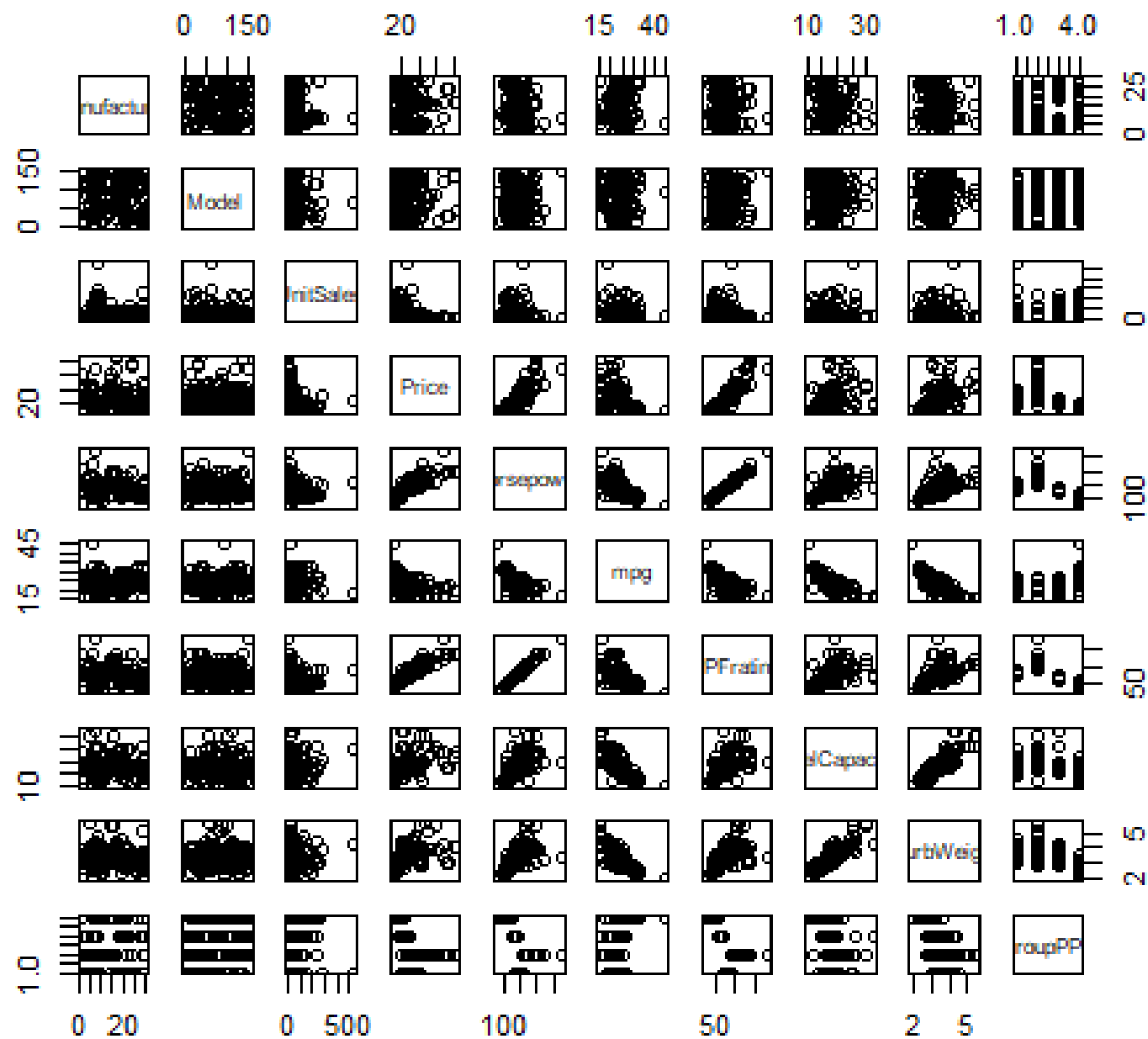
# Q3

```
> table(Manufacturer)
```

Manufacturer

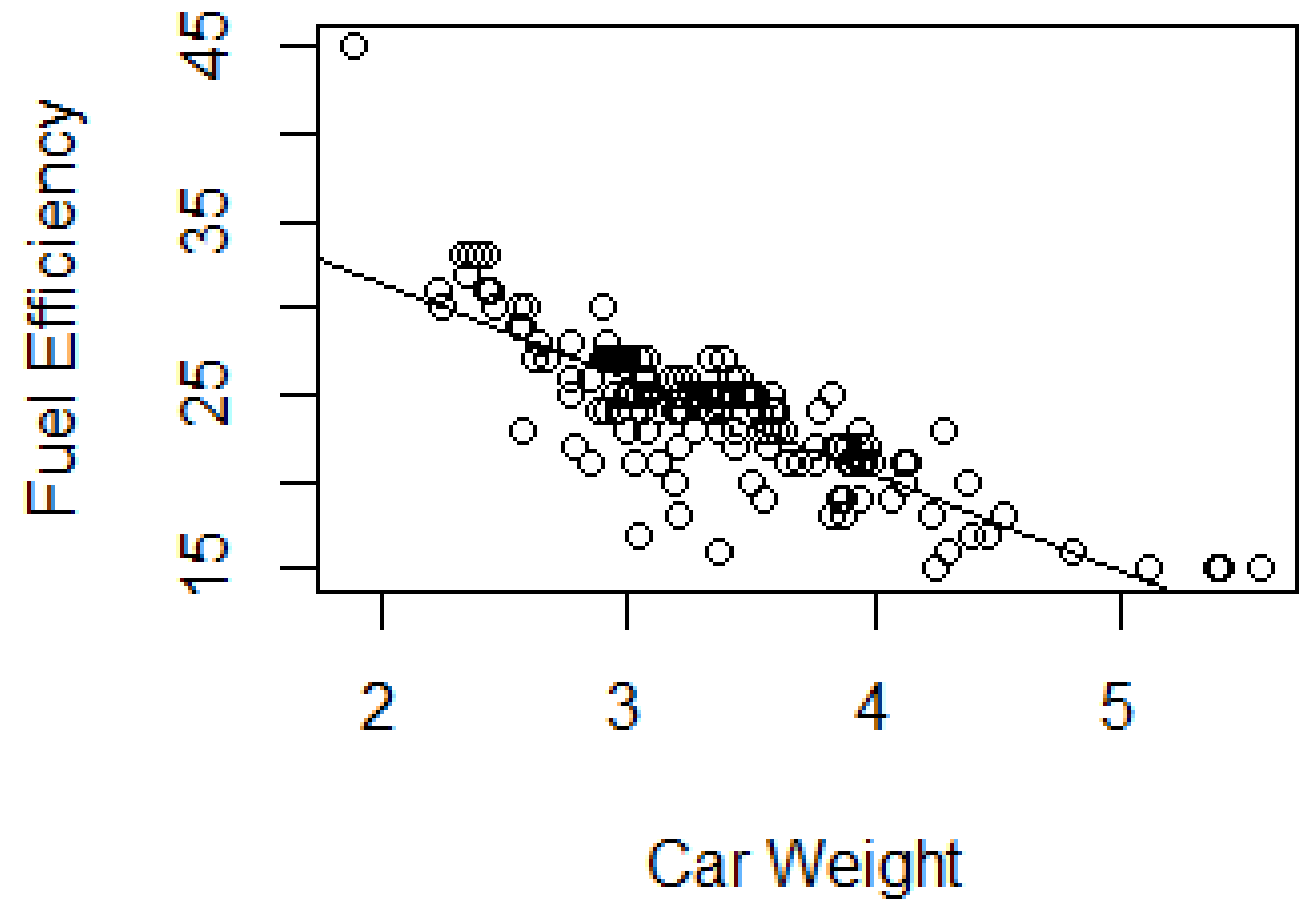
Acura	Audi	BMW	Buick	Cadillac
3	3	3	4	5
Chevrolet	Chrysler	Dodge	Ford	Honda
9	6	10	11	5
Hyundai	Infiniti	Jaguar	Jeep	Lexus
3	1	1	3	6
Lincoln	Mercedes-B	Mercury	Mitsubishi	Nissan
3	9	6	7	7
Oldsmobile	Plymouth	Pontiac	Porsche	Saab
5	4	6	3	2
Saturn	Subaru	Toyota	Volkswagen	Volvo
5	2	9	6	6

# Q4

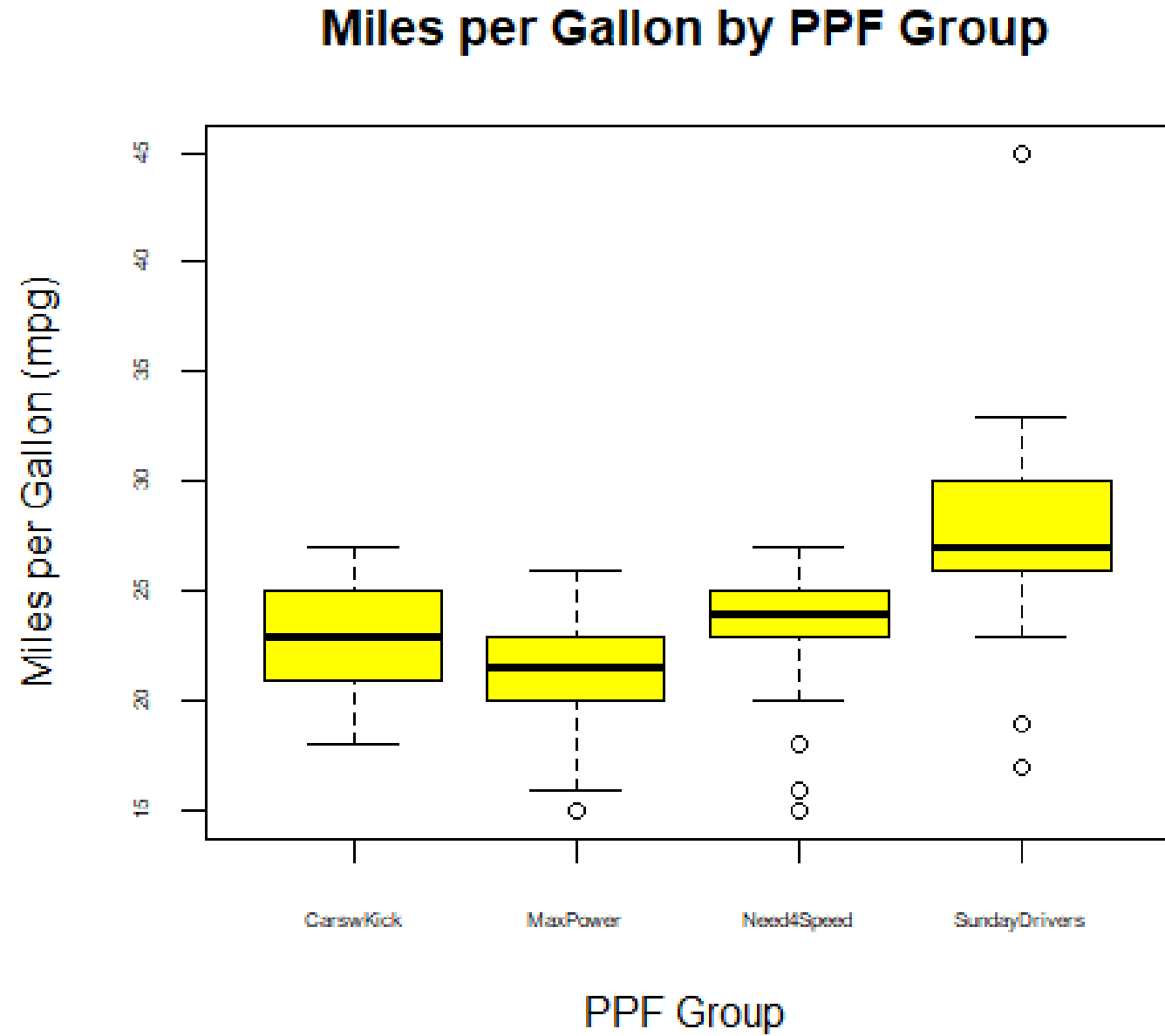


Q5

## The Relationship Between Vehicle Weight and Fuel Efficiency



Q6



Q7

```
> anova(lm(Price~factor(GroupPPF)))
```

Analysis of Variance Table

Response: Price

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
factor(GroupPPF)	3	20485	6828.4	90.846	< 2.2e-16 ***
Residuals	149	11200	75.2		

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Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

- There are large statistically significant differences between the PPF Groups.



# Q8

- Miles per gallon and car weight are not as significant as horsepower in determining the price.

```
> pricereg <- lm(Price~mpg + Horsepower + Curbweight)
> summary(pricereg)
```

Call:

```
lm(formula = Price ~ mpg + Horsepower + CurbWeight)
```

Residuals:

Min	1Q	Median	3Q	Max
-17.478	-4.725	-0.563	3.377	32.754

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-29.65369	11.77691	-2.518	0.0129 *
mpg	0.38957	0.26515	1.469	0.1439
Horsepower	0.21494	0.01447	14.853	<2e-16 ***
CurbWeight	2.35625	1.78611	1.319	0.1891

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Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 7.793 on 149 degrees of freedom  
Multiple R-squared: 0.7144, Adjusted R-squared: 0.7086  
F-statistic: 124.2 on 3 and 149 DF, p-value: < 2.2e-16