

# Car Sales - Group 11

## Team Members

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## Problem Statement

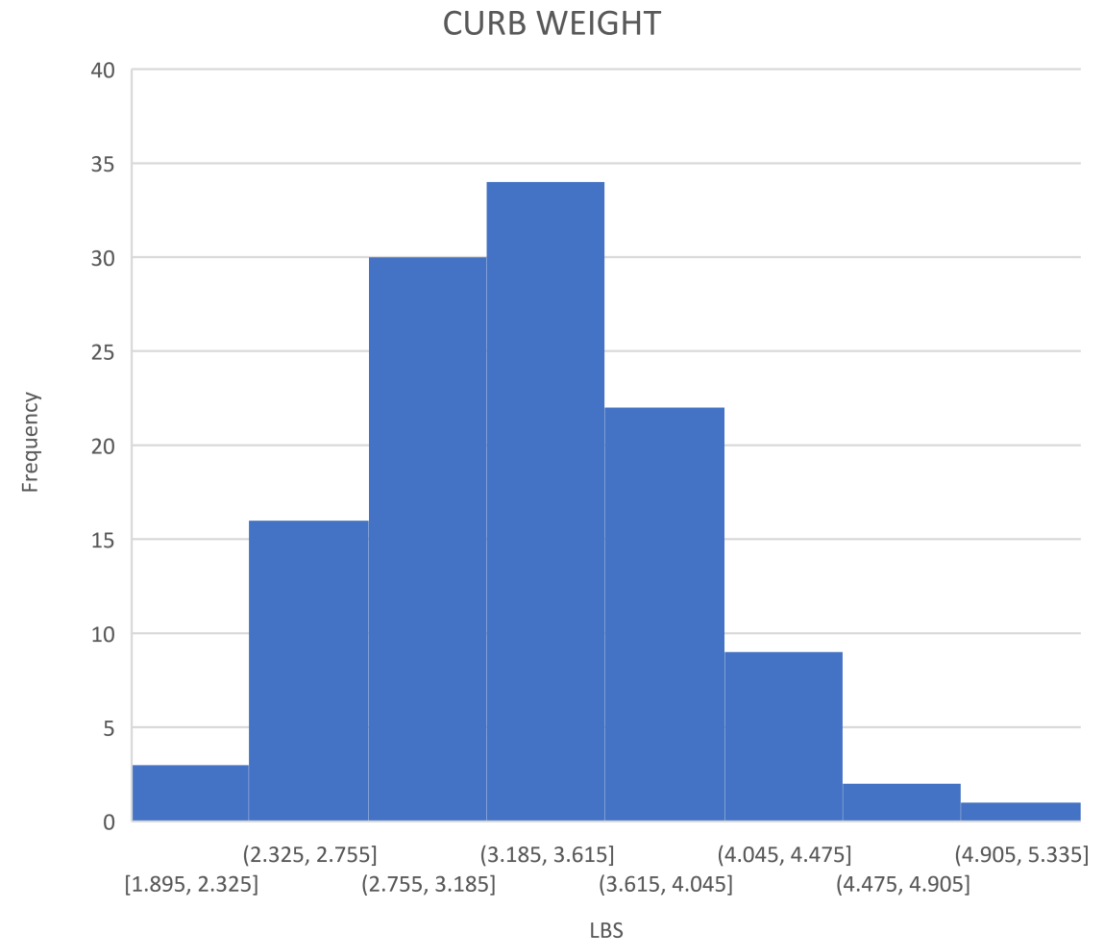
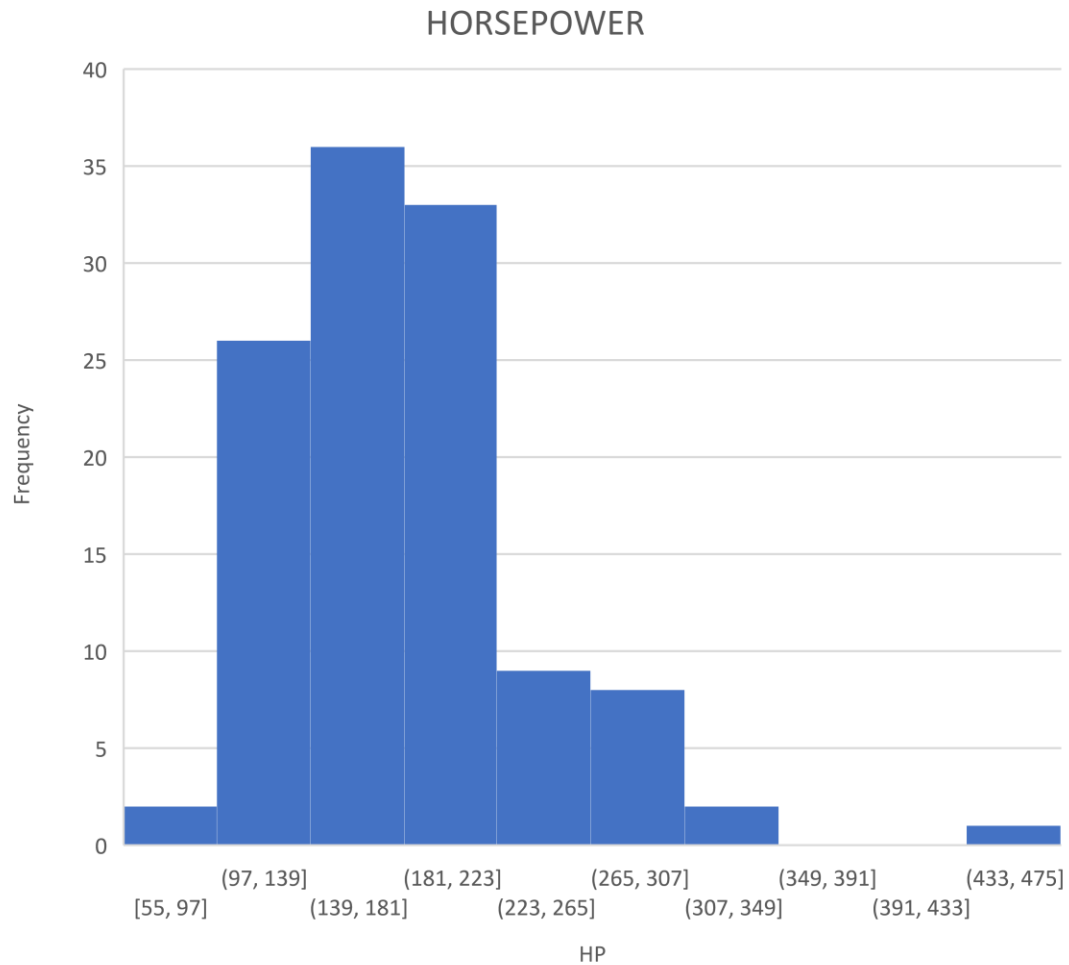
To predict the price of the car based on various factors such as

- Horsepower
- Vehicle Type
- Engine Size
- Resale Value

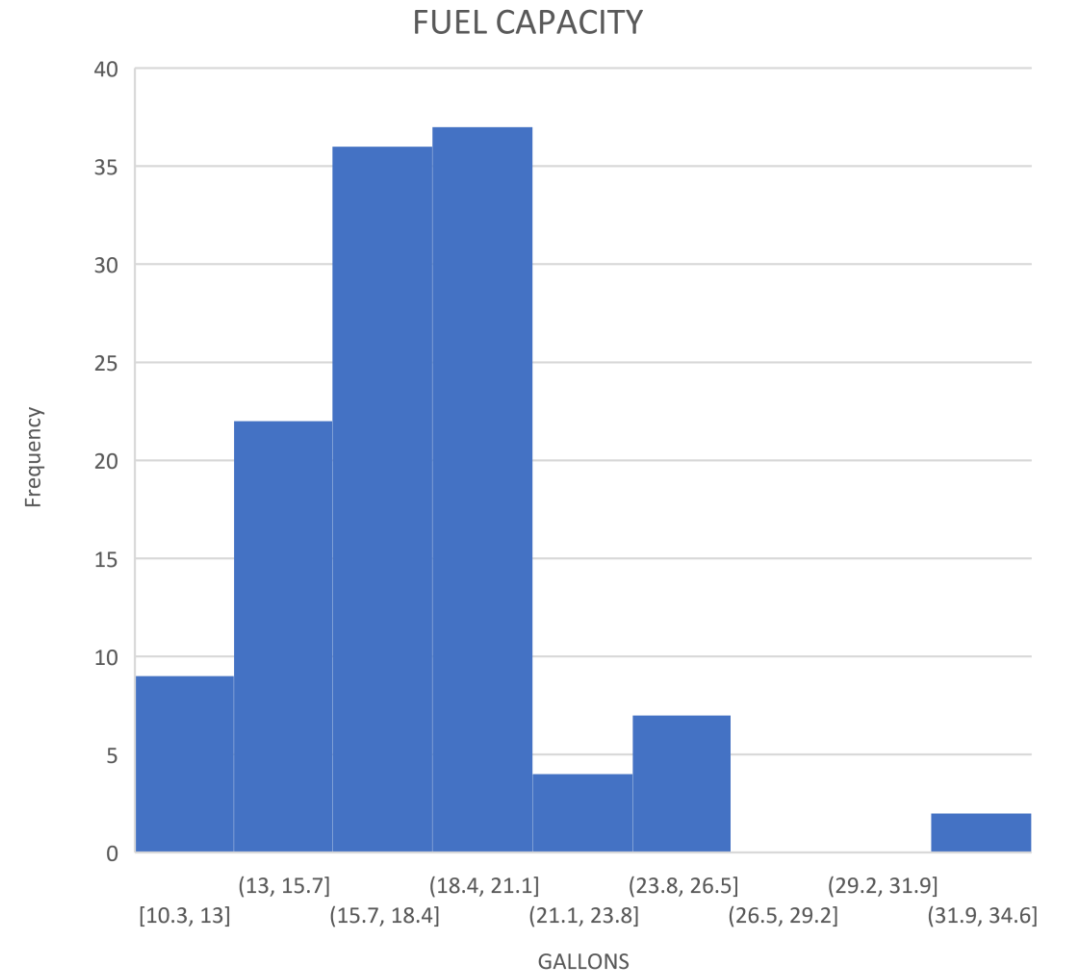
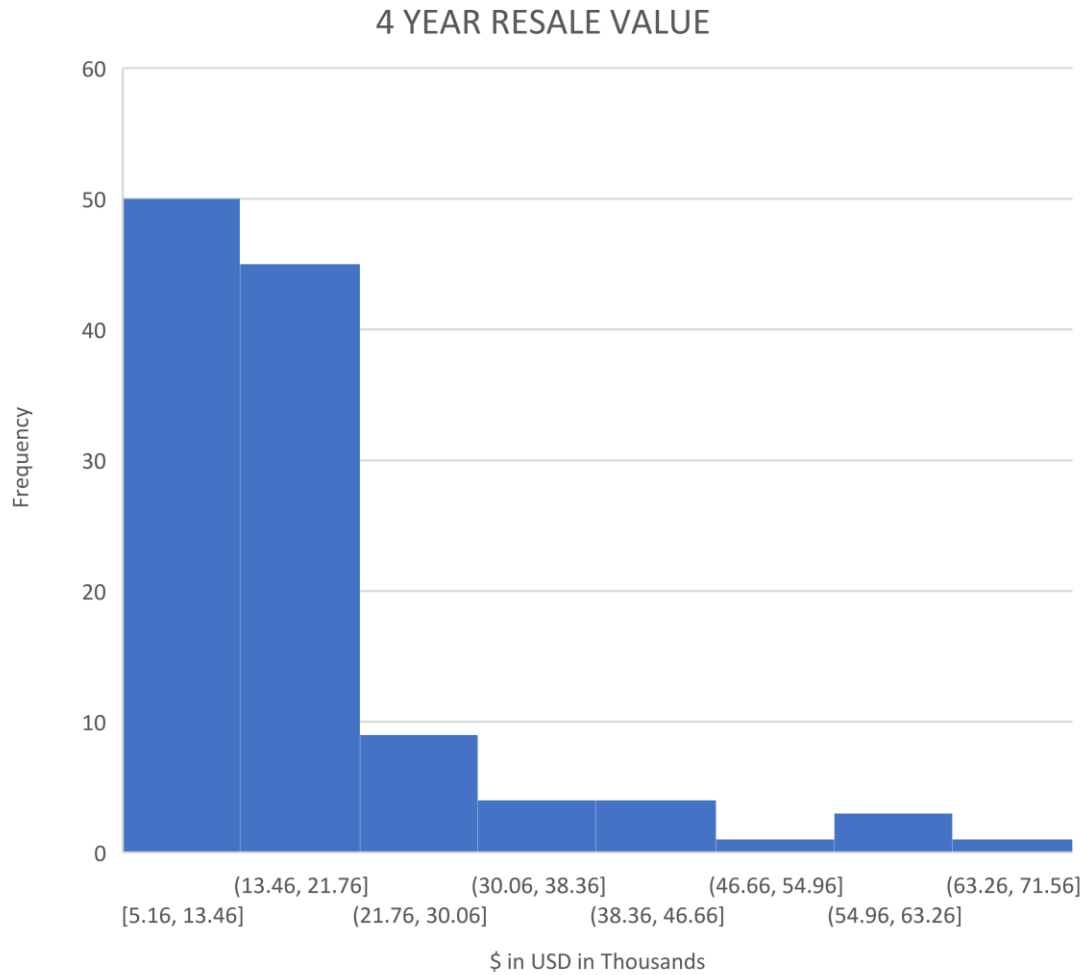
# Metadata

VARIABLES	UNITS	DEFINITION
Manufacturer	N/A	The company that makes the car
Model	N/A	Model of the car
Sales in thousands	\$ (USD)	Number of sales in thousands
4-year resale value	\$ (USD)	Resale value of the car in thousands
Vehicle Type	N/A	Type of car (Sedan or SUV)
Price in thousands	\$ (USD)	Price of vehicle in thousands
Engine Size	liter	Size of the engine in liters
Horsepower	hp	The power of the engine
Wheelbase	inches	The distance between the front and rear axels of a car
Width	inches	Width of the car
Length	inches	Length of the car
Curb Weight	lbs	The total weight of the car in thousands
Fuel Capacity	gallon	Fuel tank capacity
Fuel Efficiency	mpg	Number of miles per gallon
Latest Launch	N/A	Date of the car was released

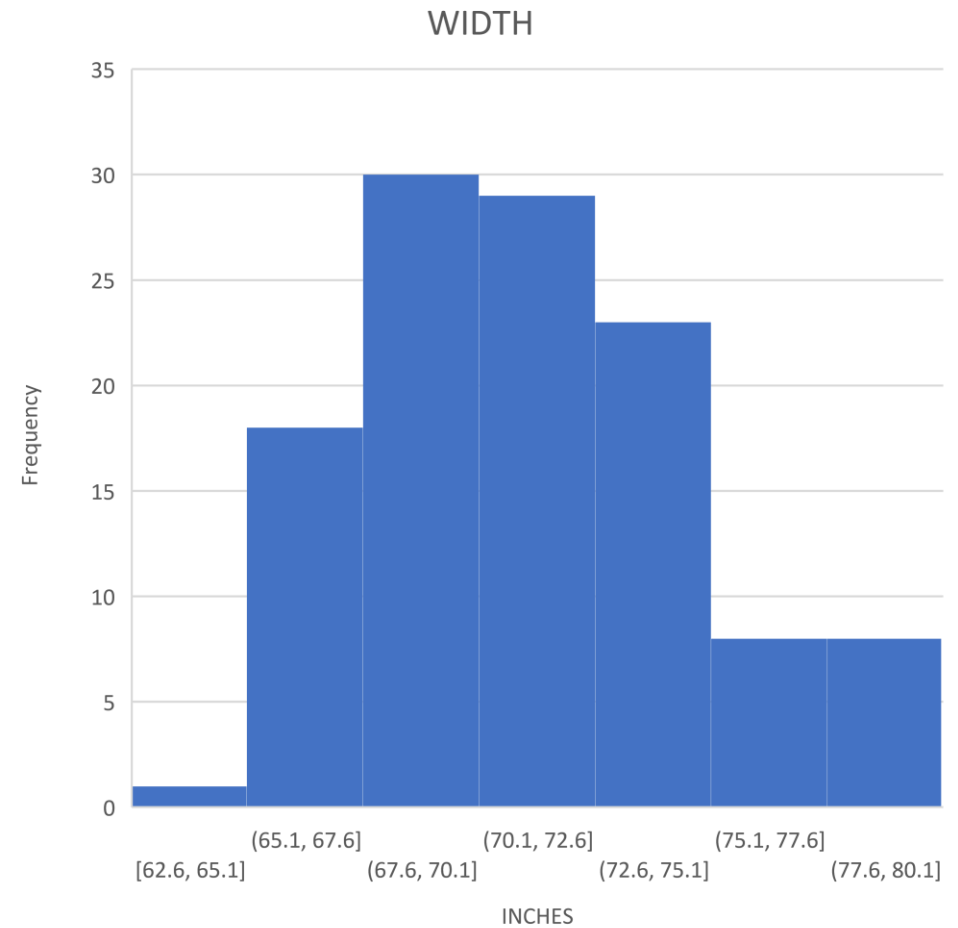
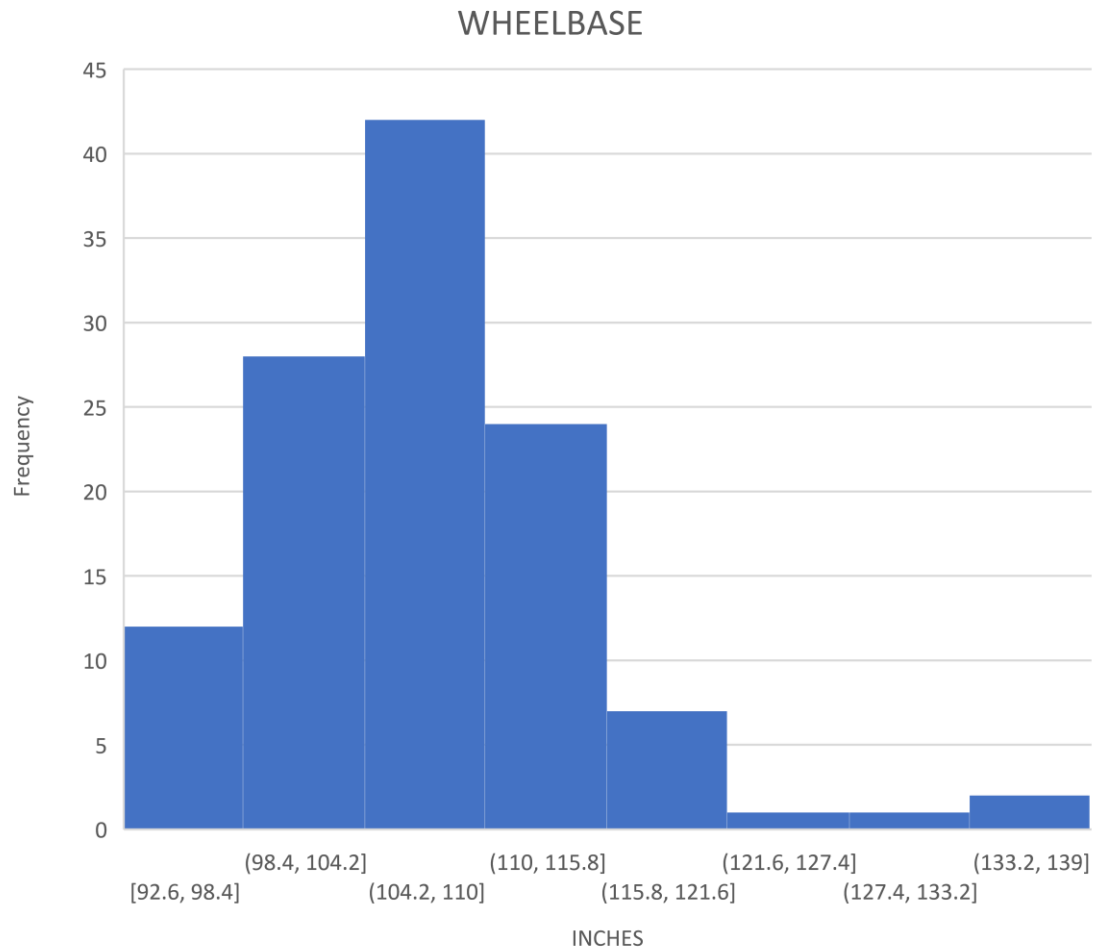
# Descriptive Statistics



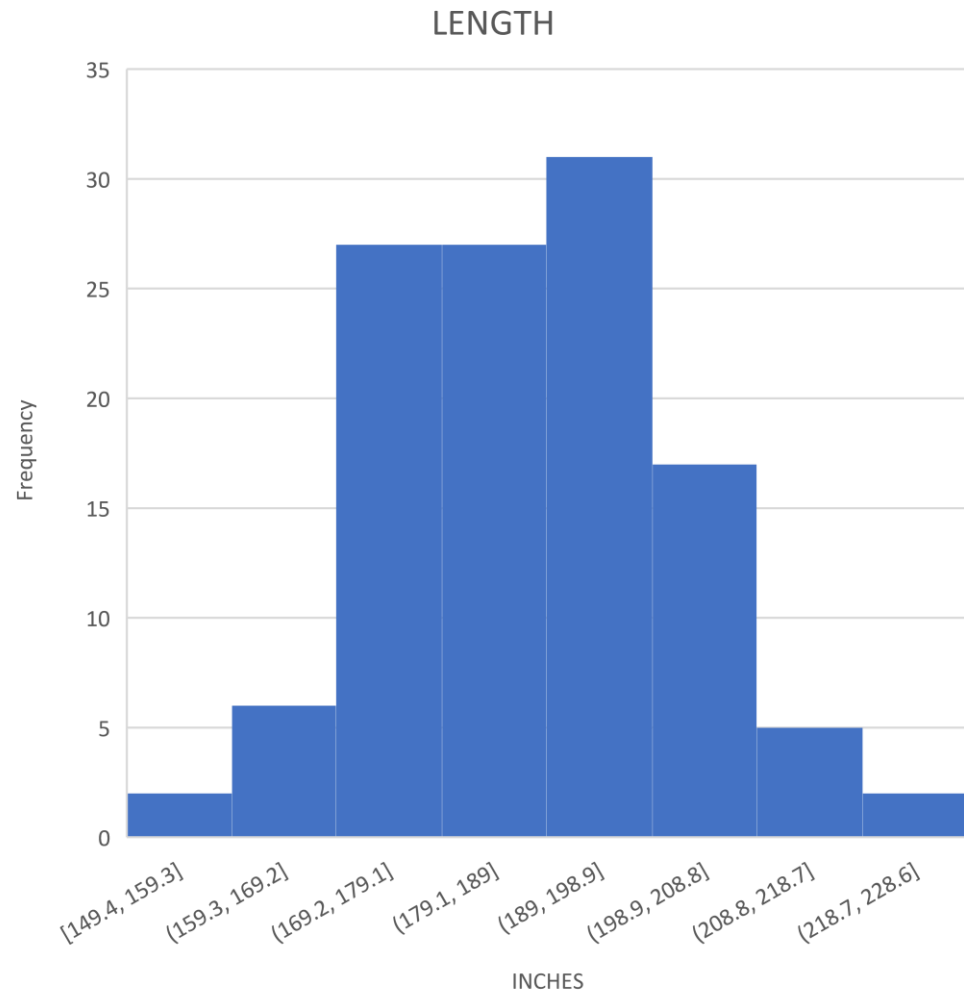
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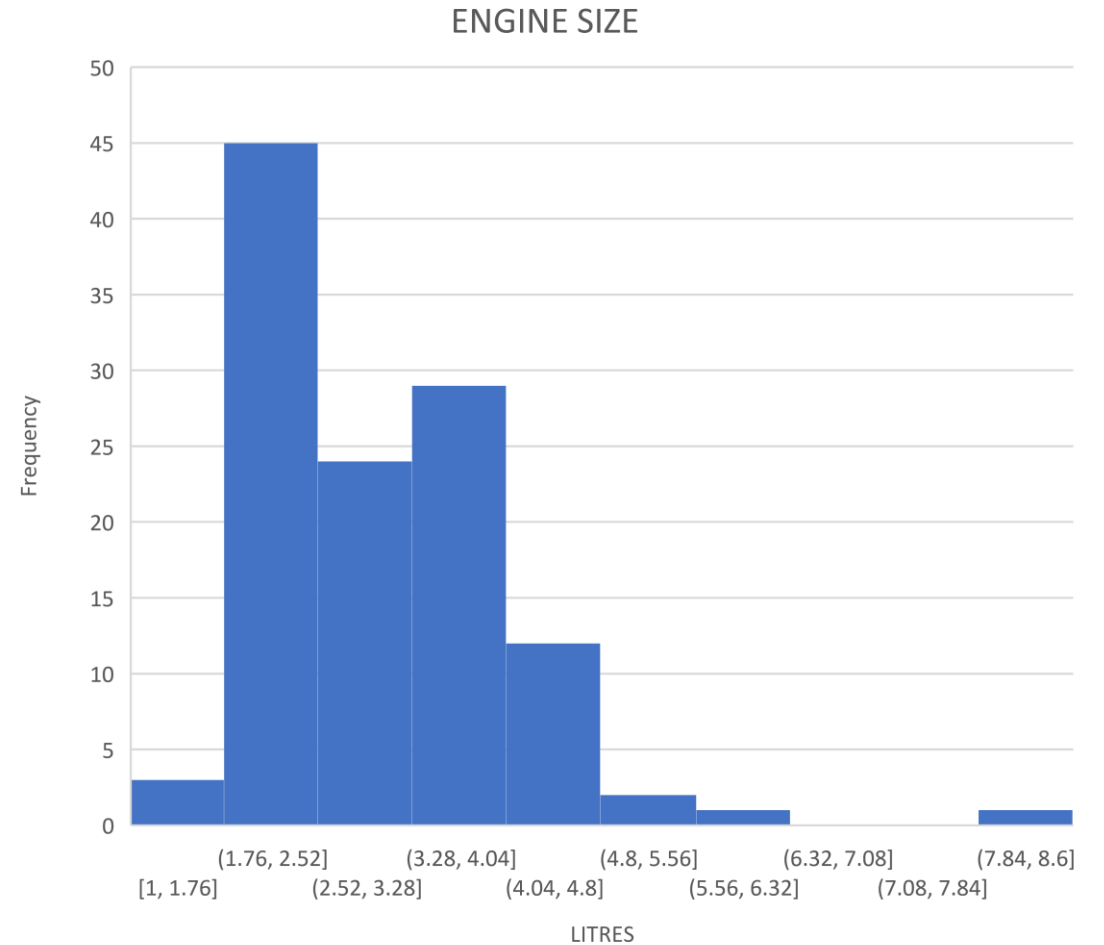
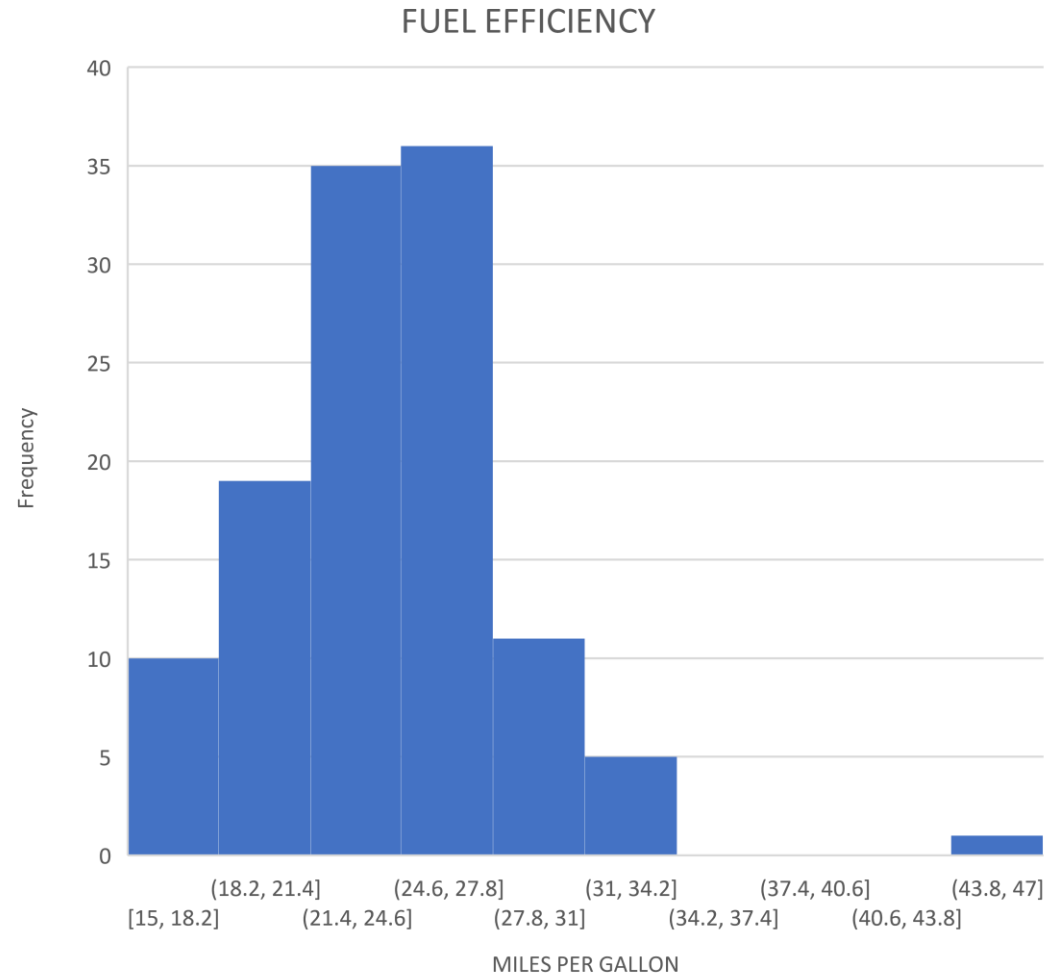
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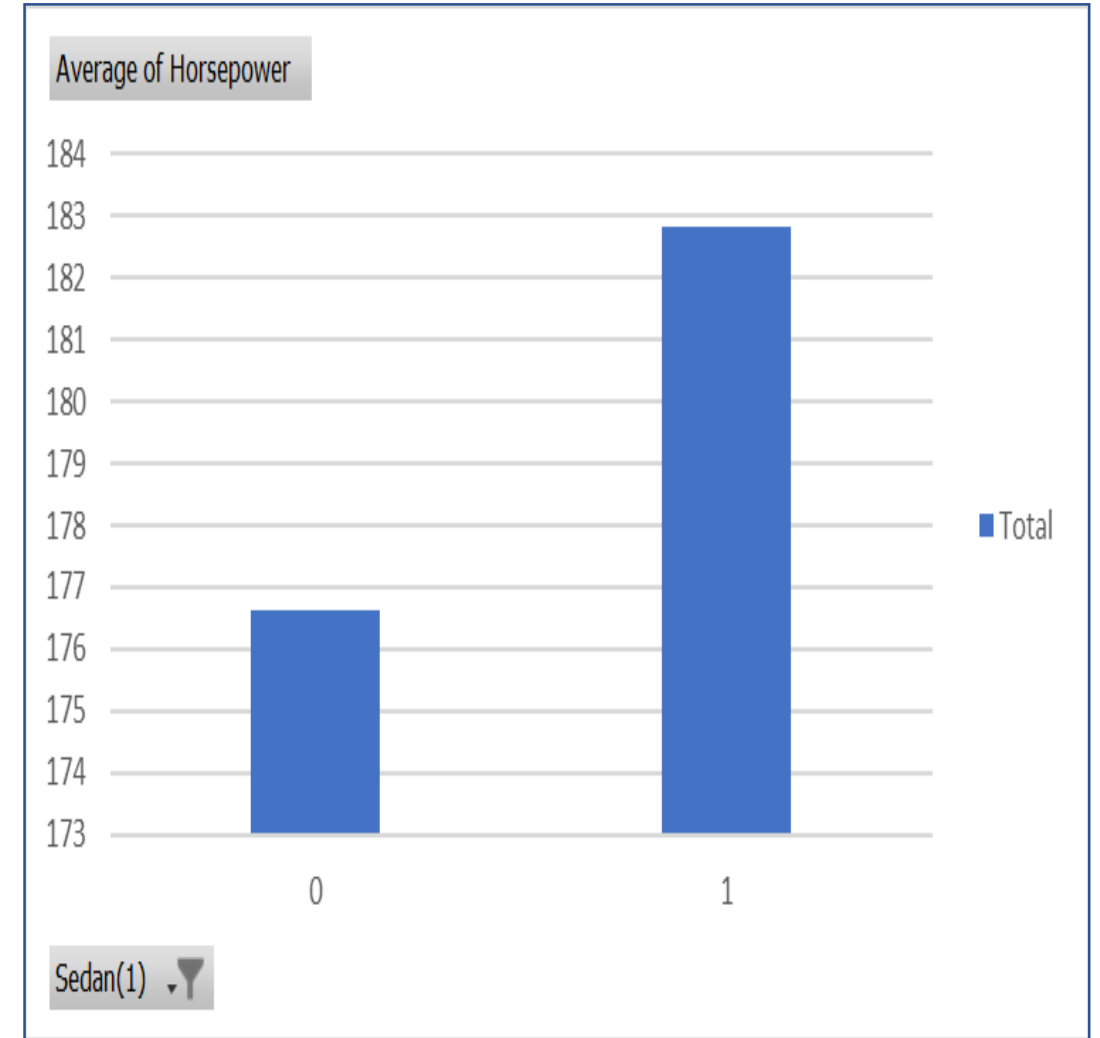
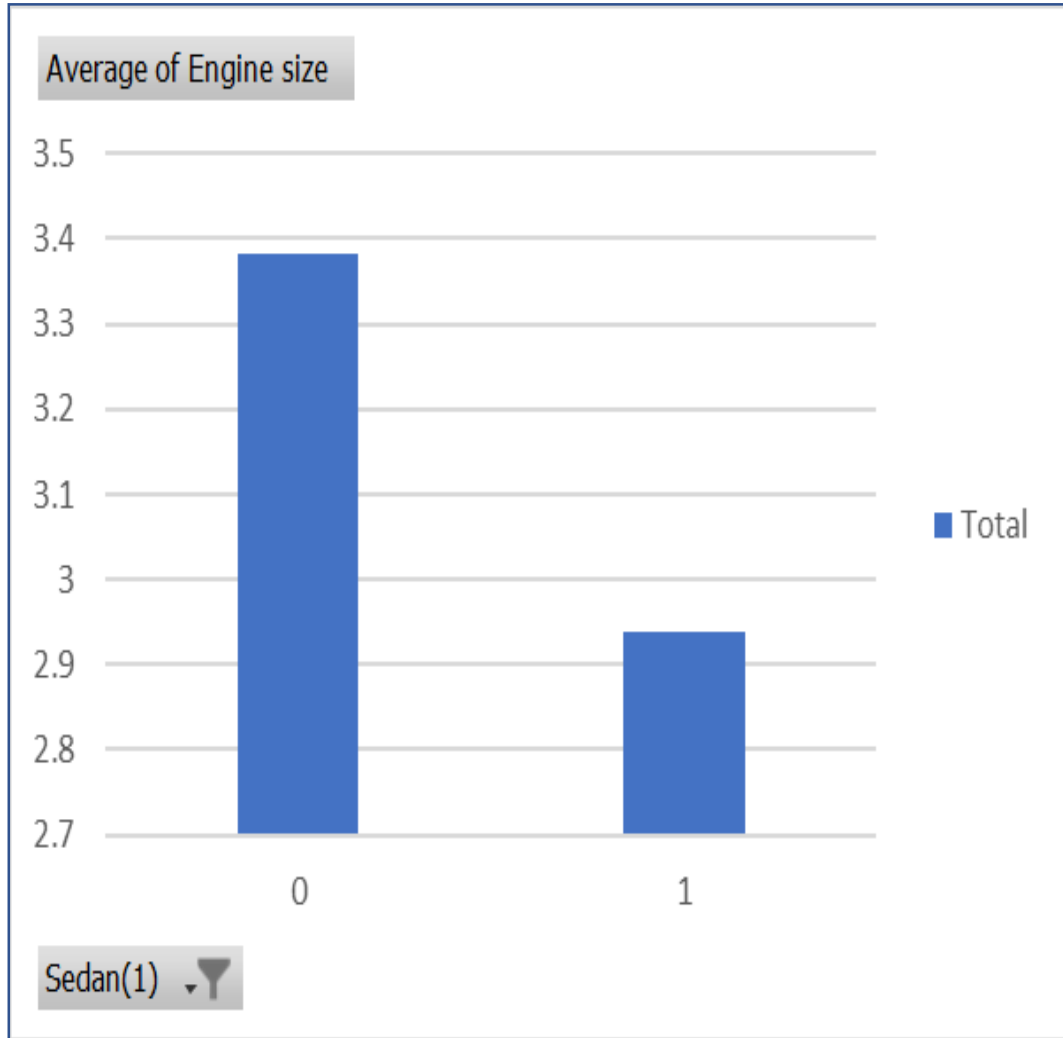


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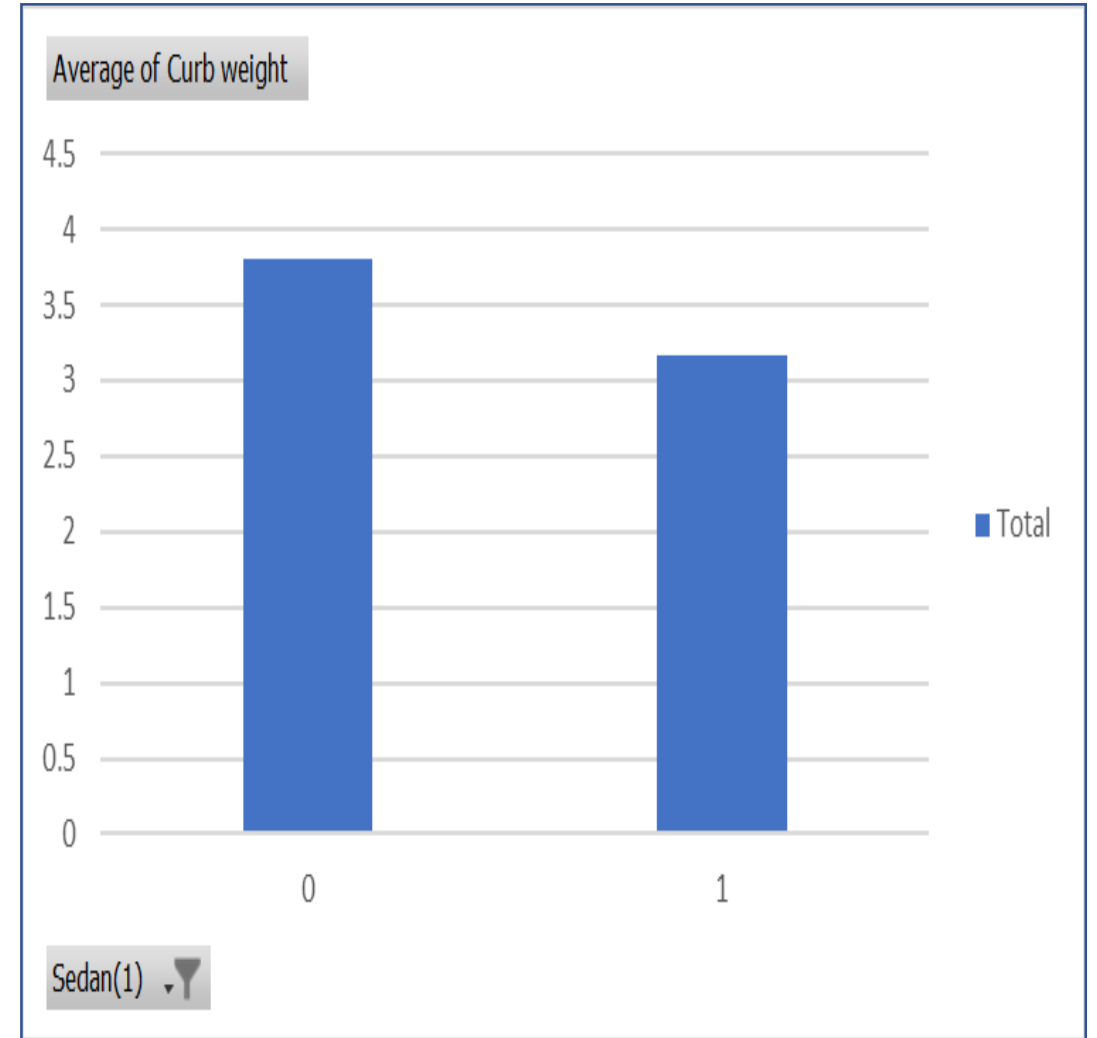
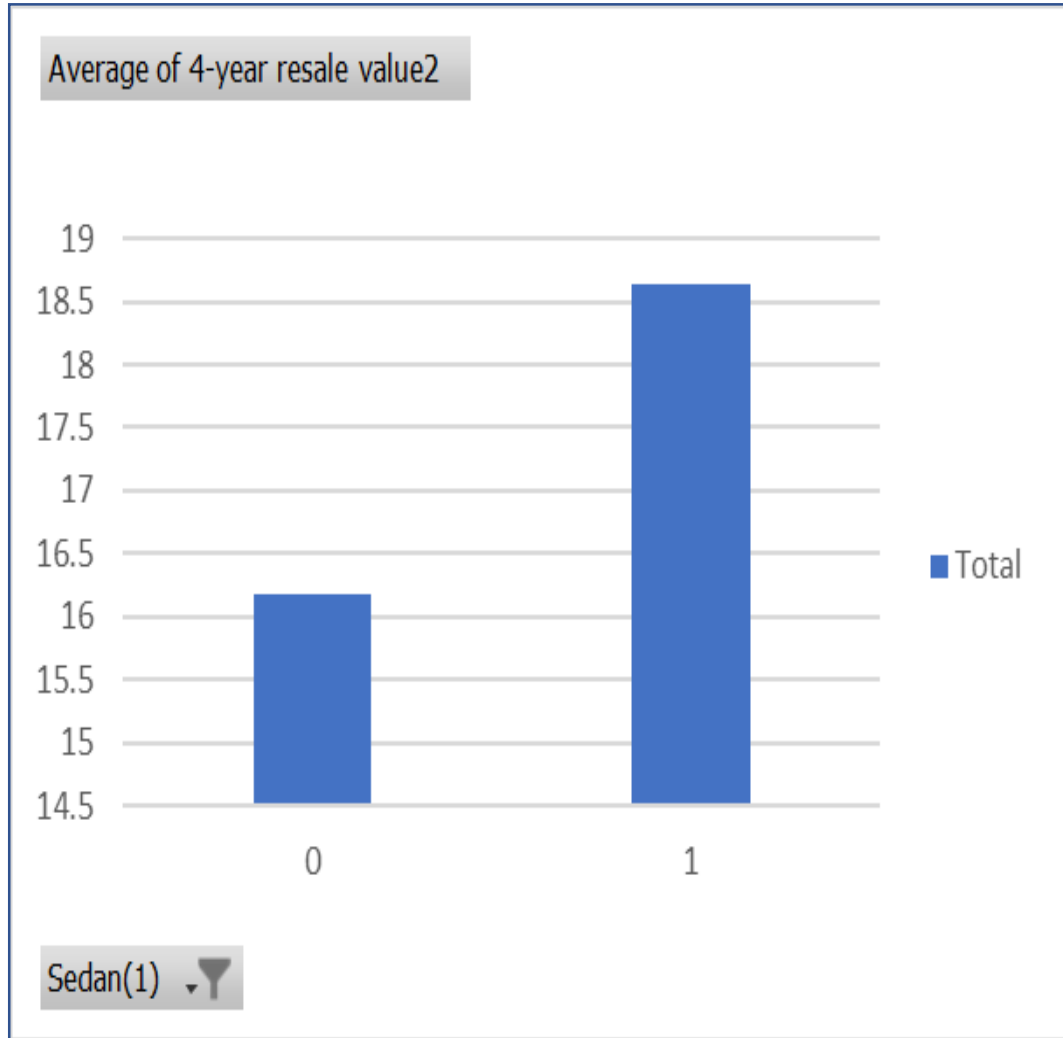




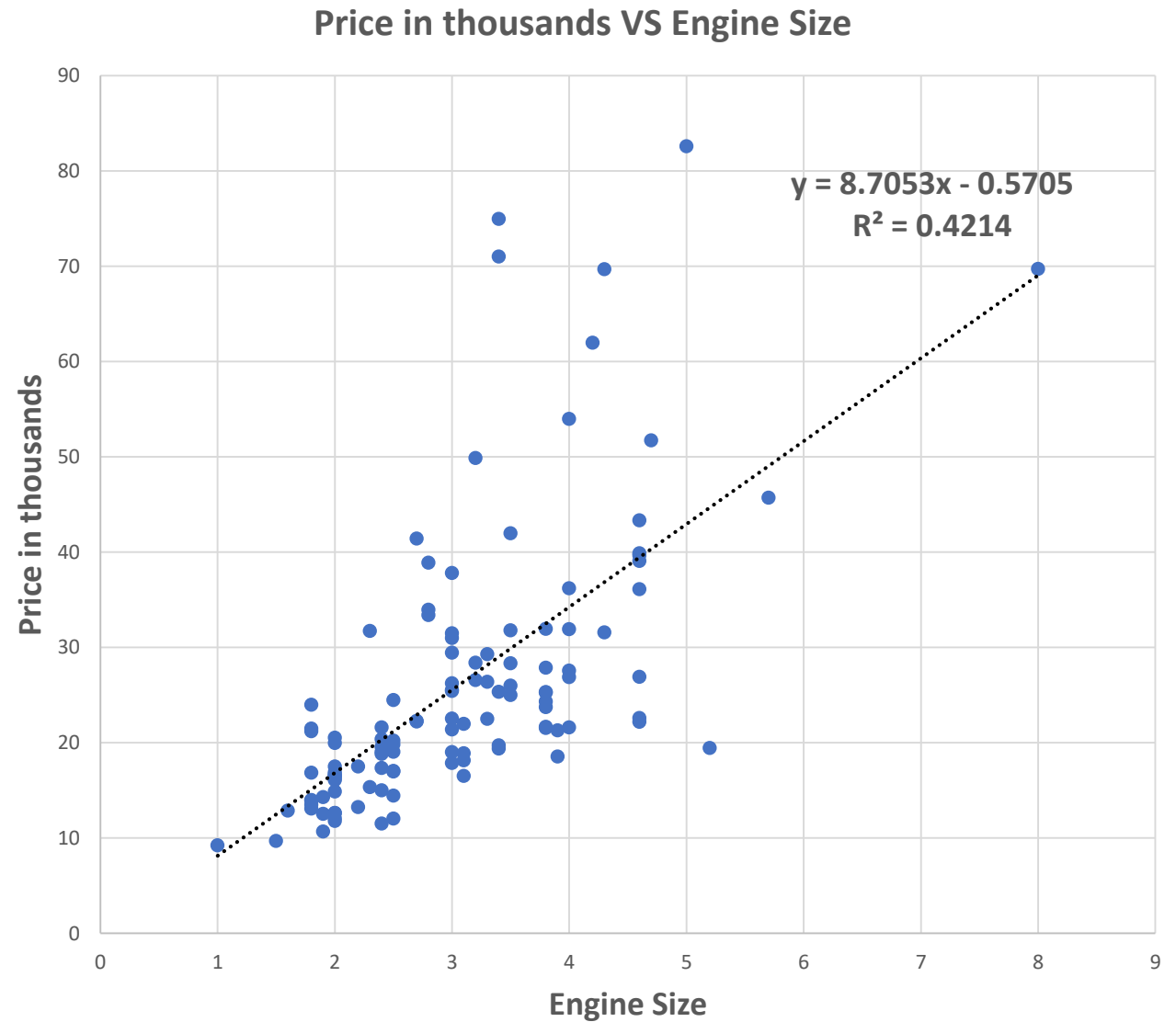
# Difference across vehicle types



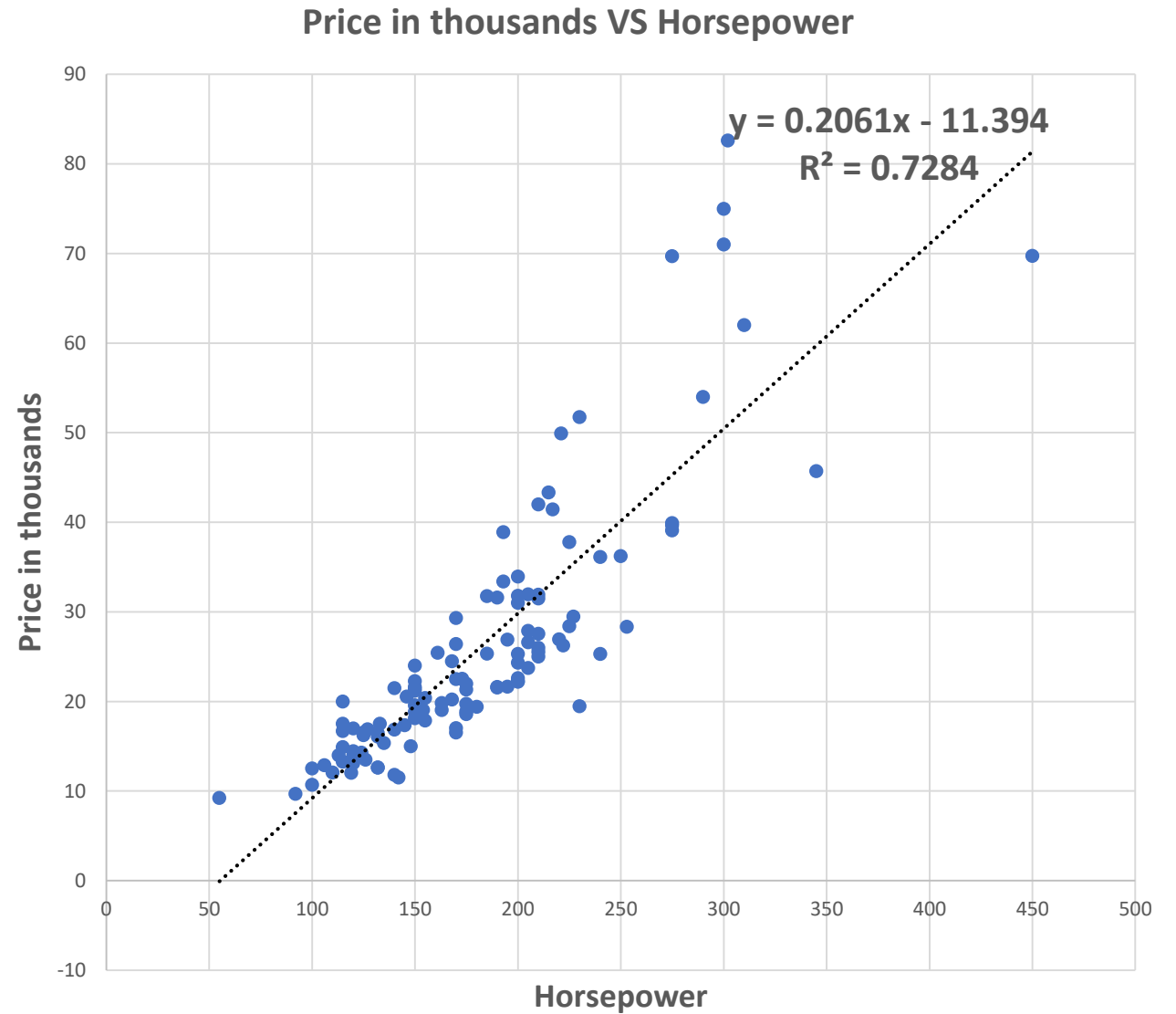
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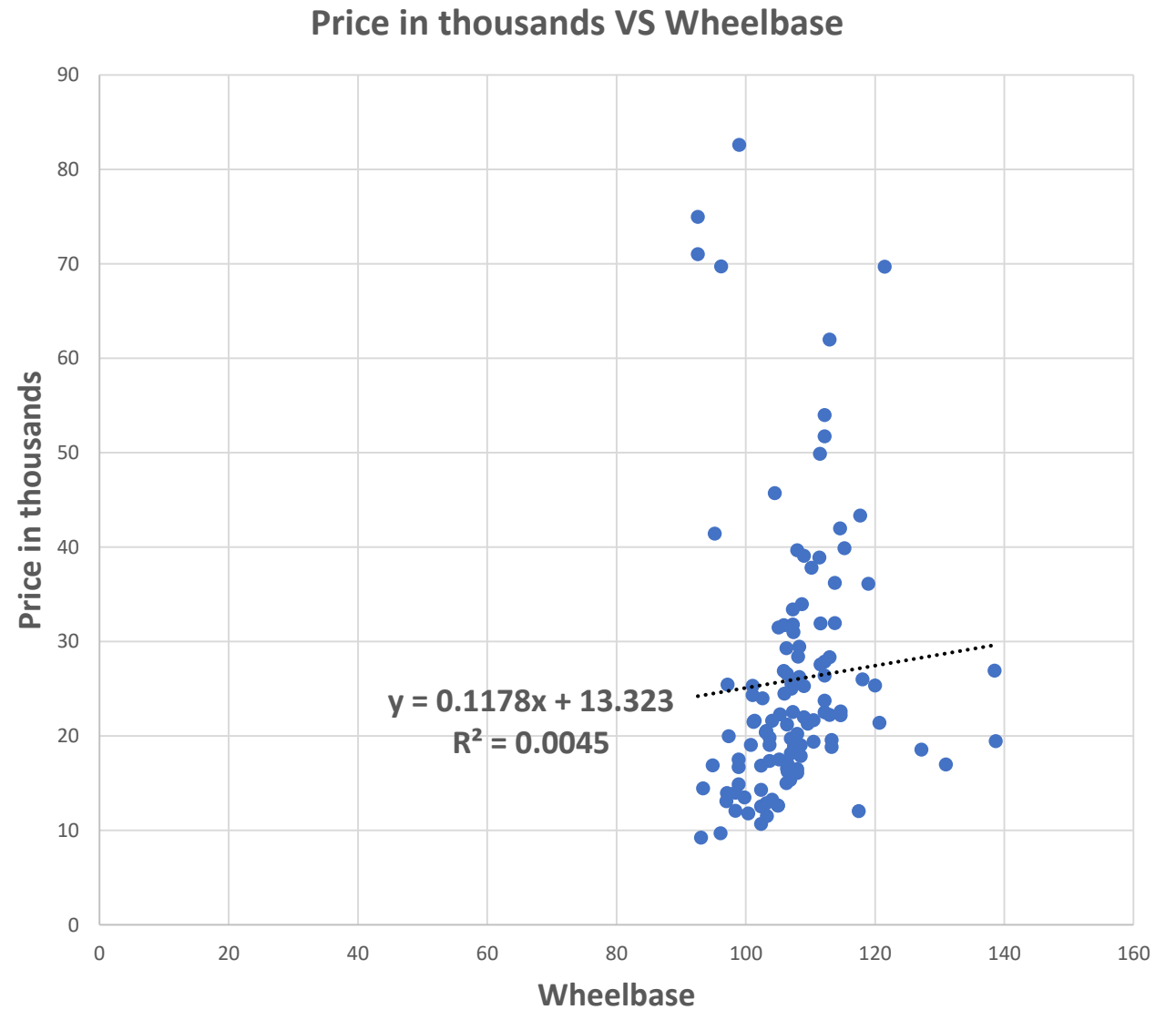
# Price in thousands VS Engine Size



# Price in thousands VS Horsepower



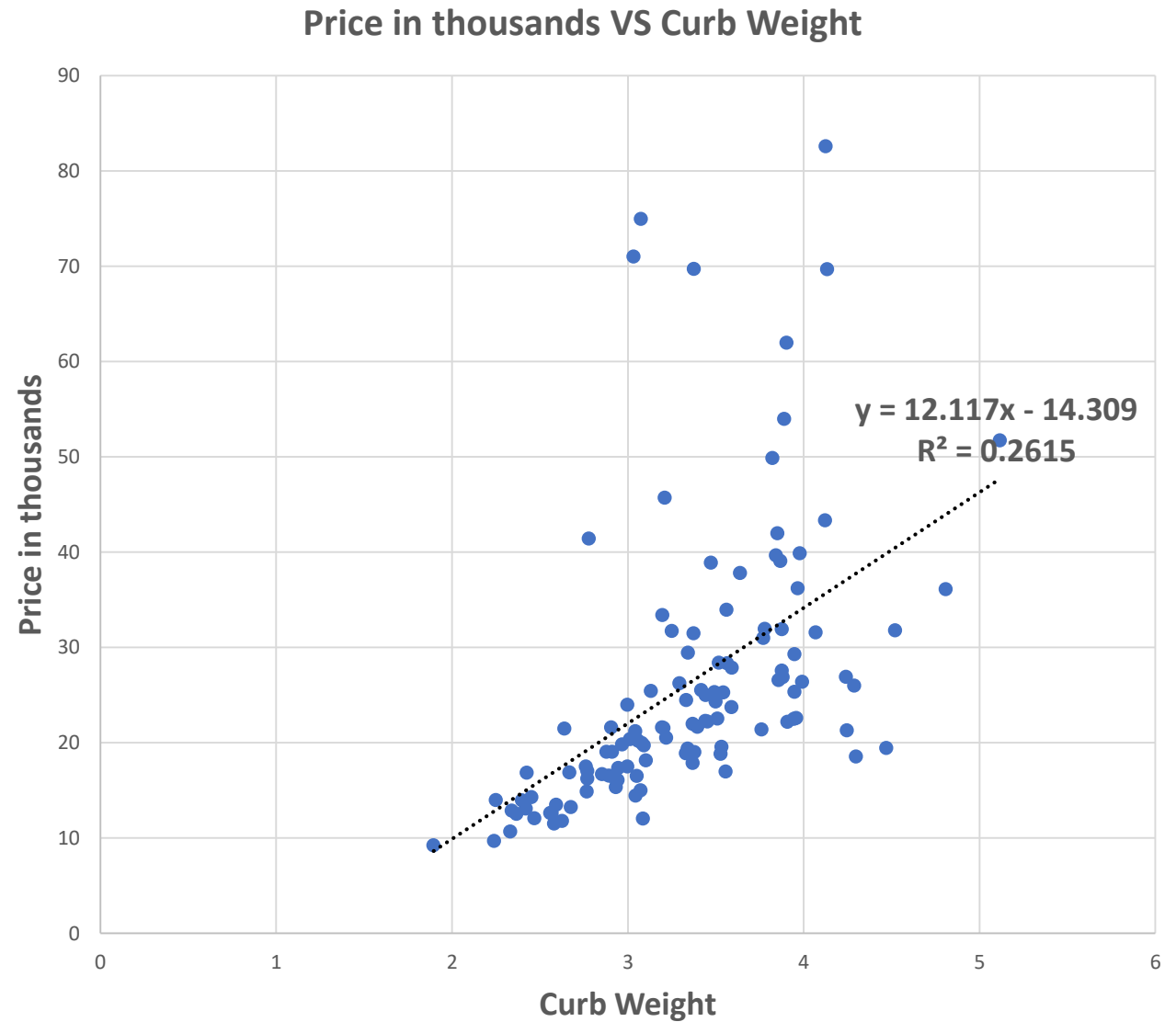
# Price in thousands VS Wheelbase



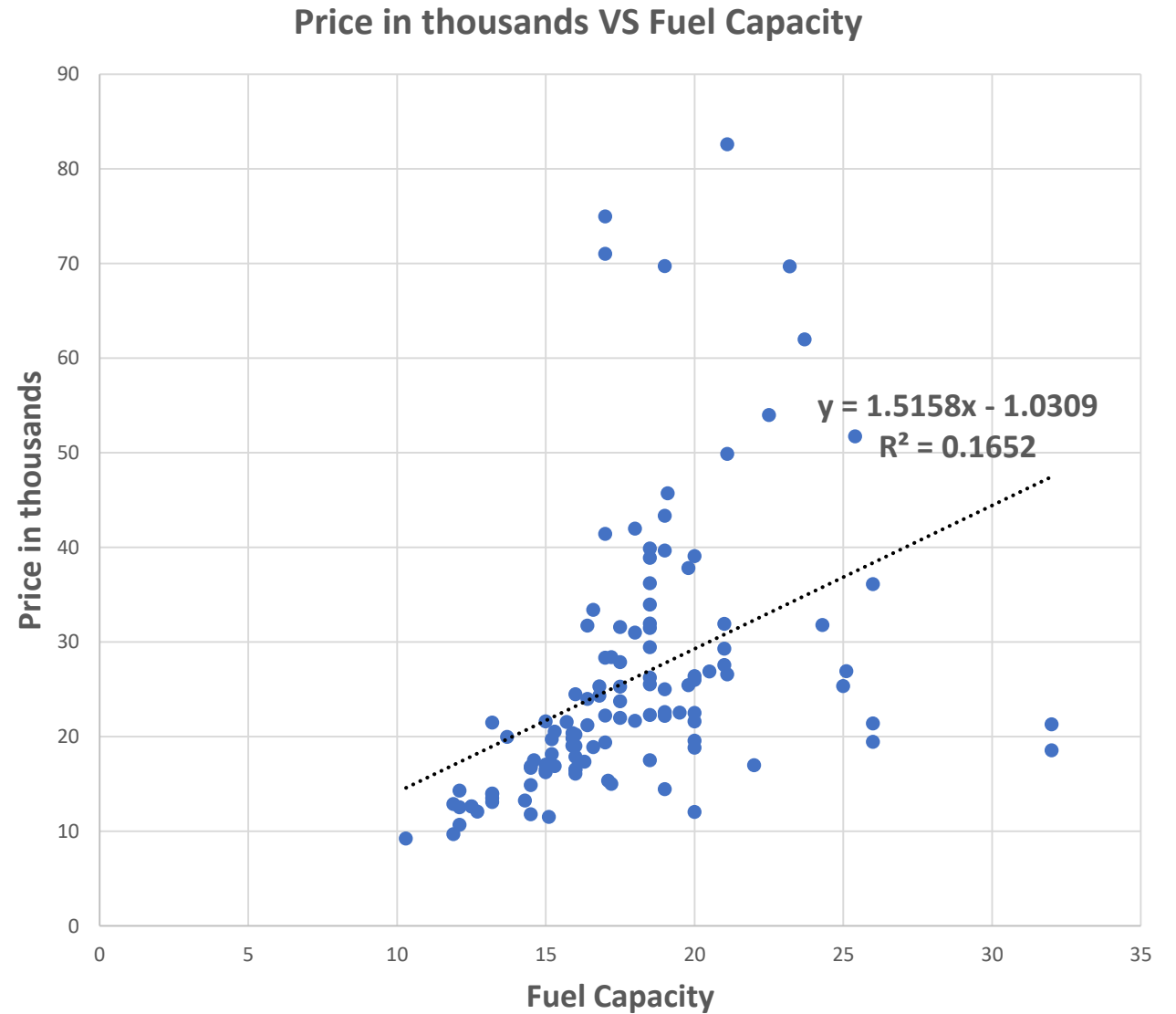
# Price in thousands VS Width



# Price in thousands VS Curb Weight

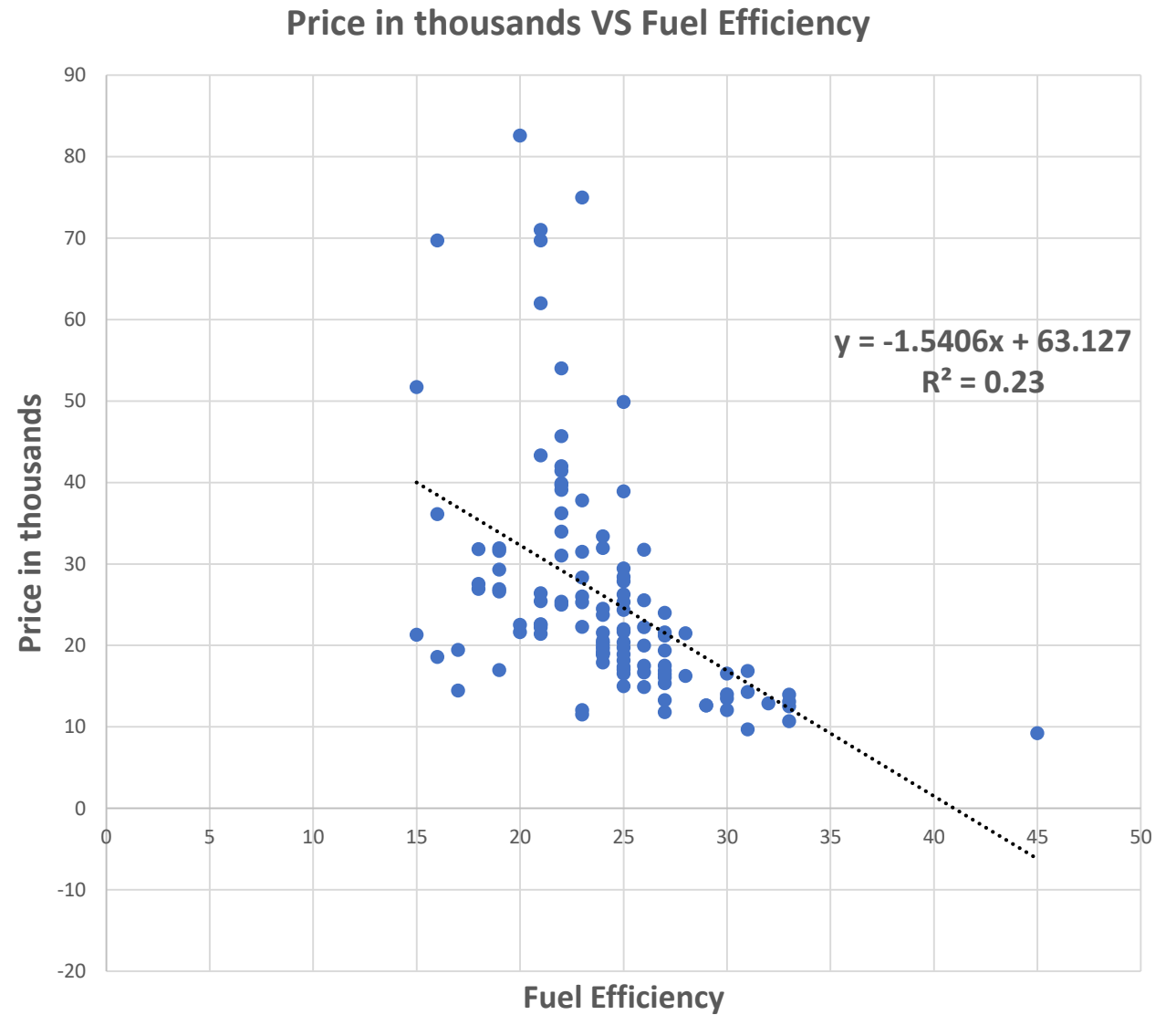


# Price in thousands VS Fuel Capacity

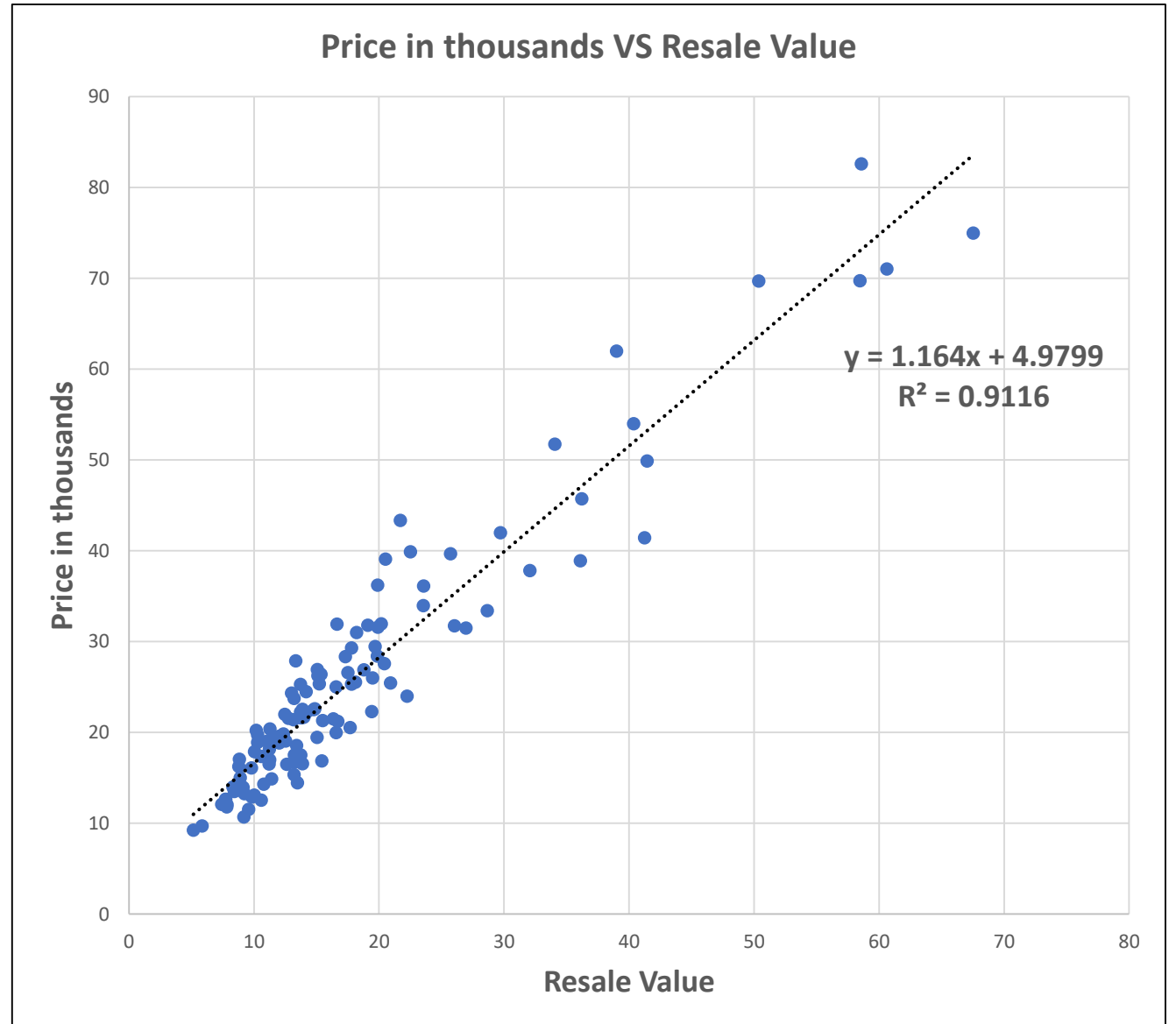




# Price in thousands VS Fuel Efficiency



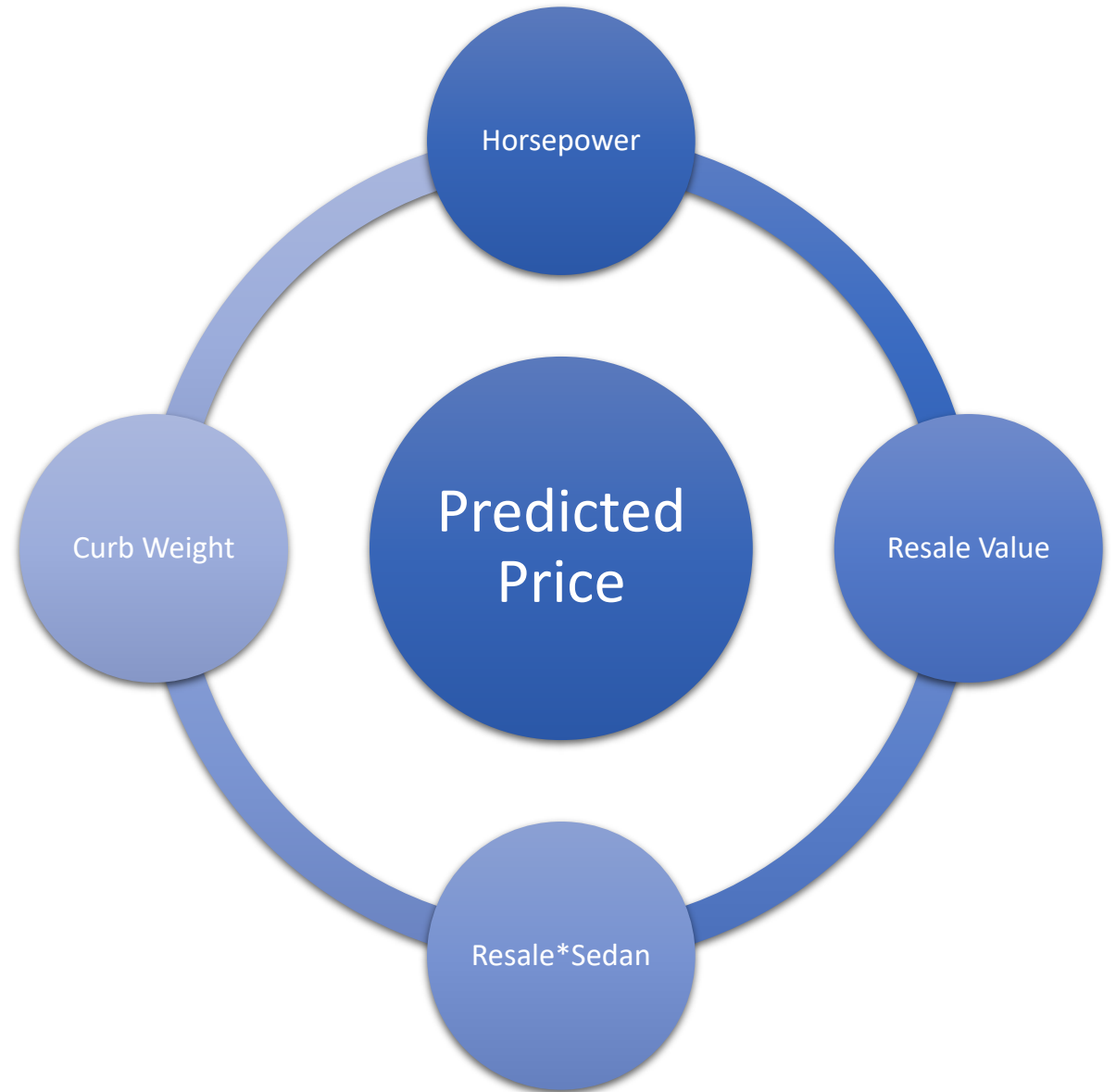
# Price in thousands VS Resale Value



# Correlation Analysis

	<i>Price in thousands</i>	<i>Engine size</i>	<i>Horsepower</i>	<i>4-year resale value</i>	<i>Wheelbase</i>	<i>Width</i>	<i>Length</i>	<i>Curb weight</i>	<i>Fuel capacity</i>	<i>Fuel efficiency</i>
Price in thousands	1									
Engine size	0.64917029	1								
Horsepower	0.853455147	0.861618267	1							
4-year resale value	0.954757187	0.527187293	0.773110336	1						
Wheelbase	0.067042294	0.410019809	0.225904647	-0.053684559	1					
Width	0.301292051	0.671756044	0.507274759	0.178128449	0.675558885	1				
Length	0.182592	0.53734301	0.400967605	0.025390418	0.853668611	0.743225676	1			
Curb weight	0.511399735	0.742830521	0.598603181	0.363274186	0.675608952	0.7359566	0.684305067	1		
Fuel capacity	0.406496233	0.616861968	0.479789835	0.324796126	0.658654367	0.672190579	0.562504216	0.847993507	1	
Fuel efficiency	-0.479538596	-0.724871327	-0.595843537	-0.39845921	-0.470454582	-0.599603551	-0.465682038	-0.81881895	-0.808505956	1

# Variables used for prediction



# Multiple Regression

Multiple R	0.978277928
R Square	0.957027703
Adjusted R Square	0.955492979
Standard Error	2.985117824
Observations	117

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>
Intercept	-11.66432886	1.859386939	-6.273212213	6.84386E-09
Horsepower	0.034697549	0.009637659	3.600205062	0.000475185
4-year resale value	0.78510313	0.060565826	12.96280736	4.97896E-24
Curb weight	4.507028249	0.804367986	5.603191984	1.52648E-07
resale* sedan	0.157319782	0.050940144	3.088326223	0.002538226

# Predictions

$$\text{Predicted Price} = -11.66 + 0.03 * \text{horsepower} + 0.78 * \text{resale value} + 4.51 * \text{curb weight} + 0.16 * (\text{resale} * \text{sedan})$$

Variable	Value
Horsepower	100 hp
4 years Resale value	\$5,000
Curb weight	3,500 lbs
Sedan(1)	Yes
Predicted Price	\$11,825

# Hypothesis Testing

$$\text{Predicted Price} = -11.66 + 0.03 * \text{HP} + 0.78 * \text{Resale} + 4.51 * \text{Weight} + 0.16 * (\text{Resale} * \text{Sedan})$$

Ho: Horsepower doesn't predict Car price

Ha: Horsepower does predict Car price

$$\alpha = 0.05$$

$$\text{P-Value} = 0.0004$$

Ho is rejected.

We have enough evidence to conclude that Horsepower does predict Car price.



Thank You !!