

Exploratory Data Analysis of: Example of EDA using the auto.dta Data set

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Chapter 1.

Graphs

Univariate Distributions

Categorical Variables

Bar Graphs.

Figure 1.1: Repair Record 1978

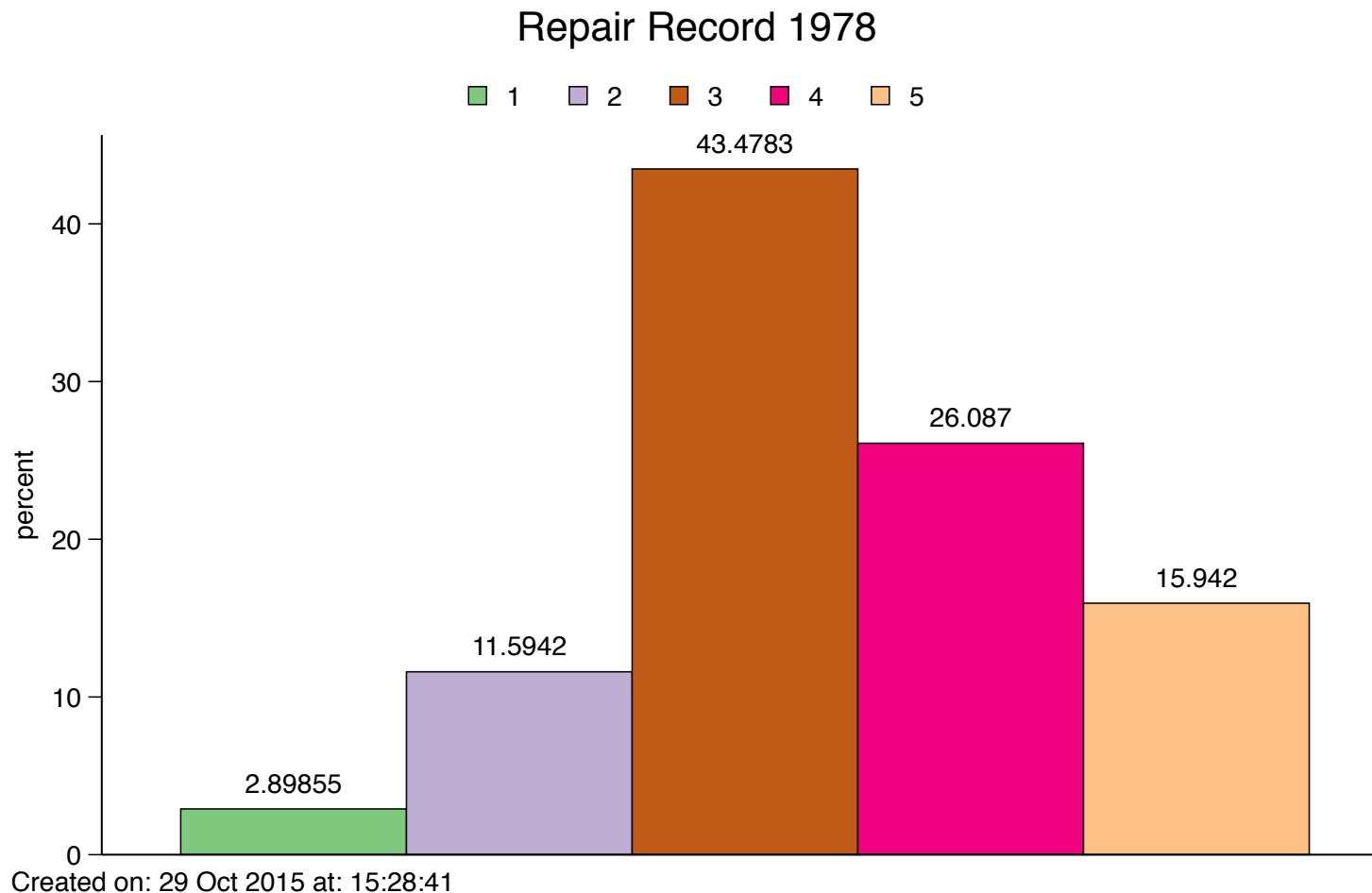


Figure 1.2: Headroom (in.)

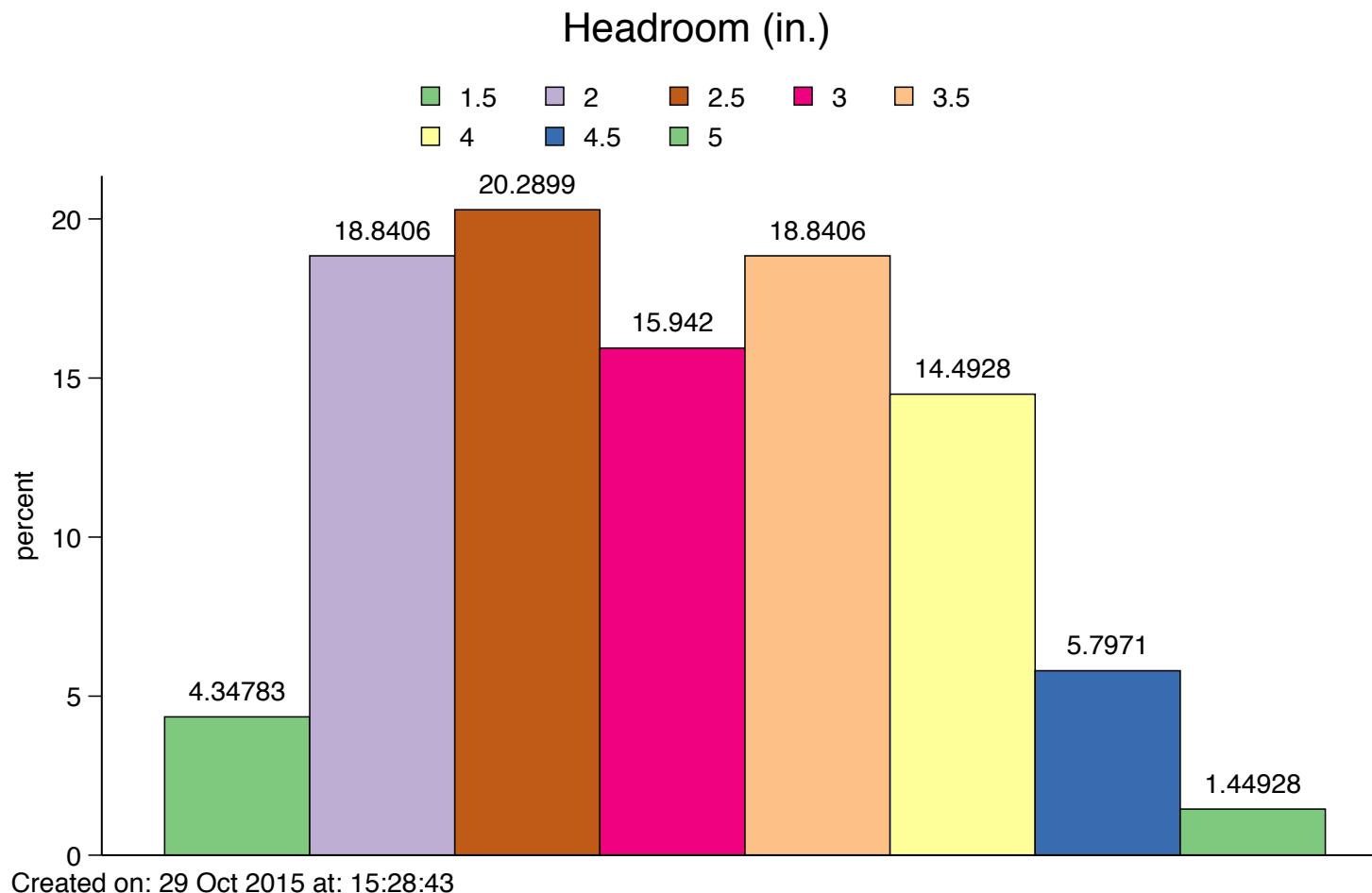


Figure 1.3: Car type

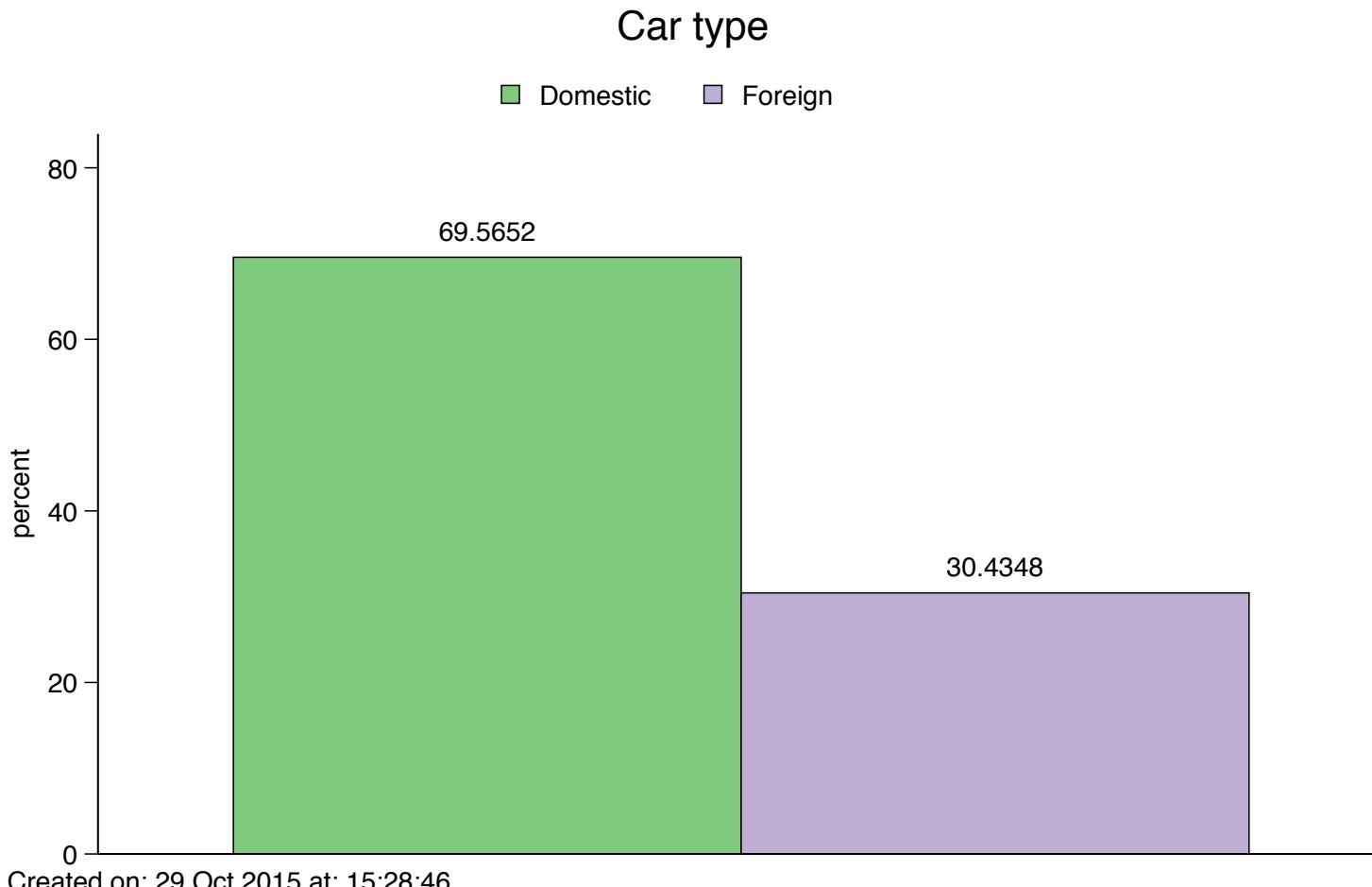
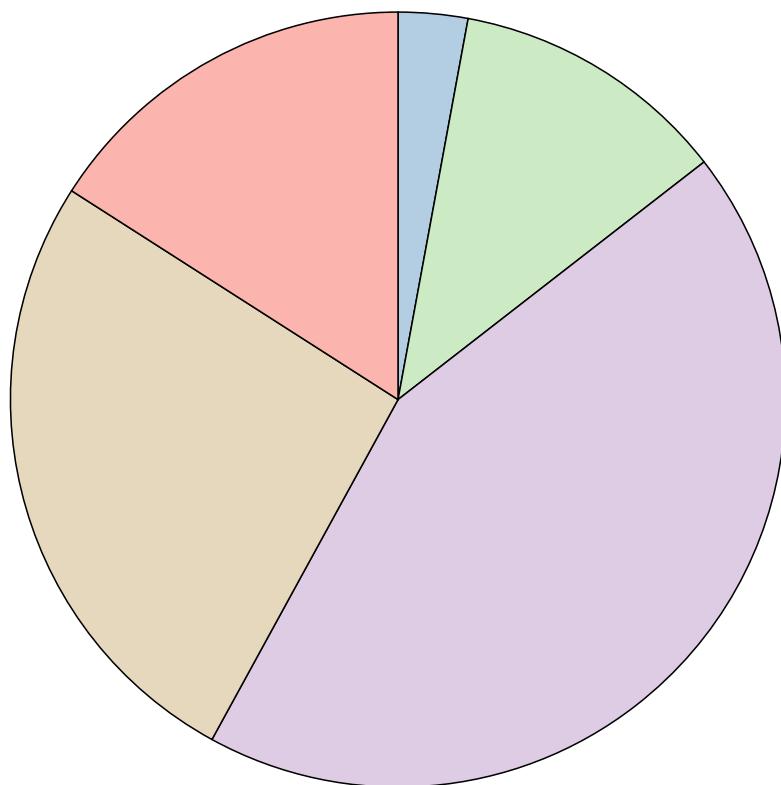


Figure 1.4: Pie Chart of Repair Record 1978

Repair Record 1978

■ 1 ■ 2 ■ 3 ■ 4 ■ 5



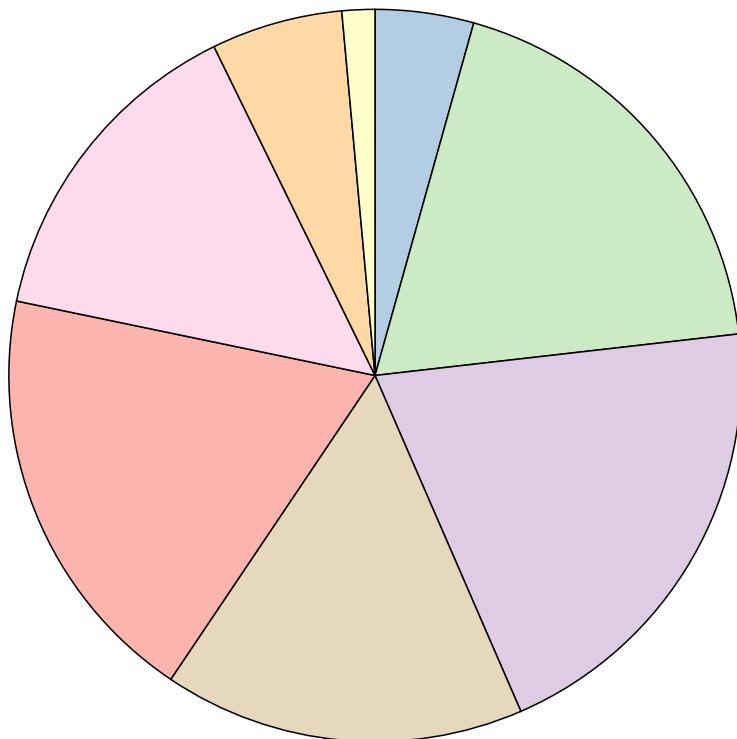
Created on: 29 Oct 2015 at: 15:28:48

Pie Charts.

Figure 1.5: Pie Chart of Headroom (in.)

Headroom (in.)

1.5	2	2.5	3	3.5
4	4.5	5		

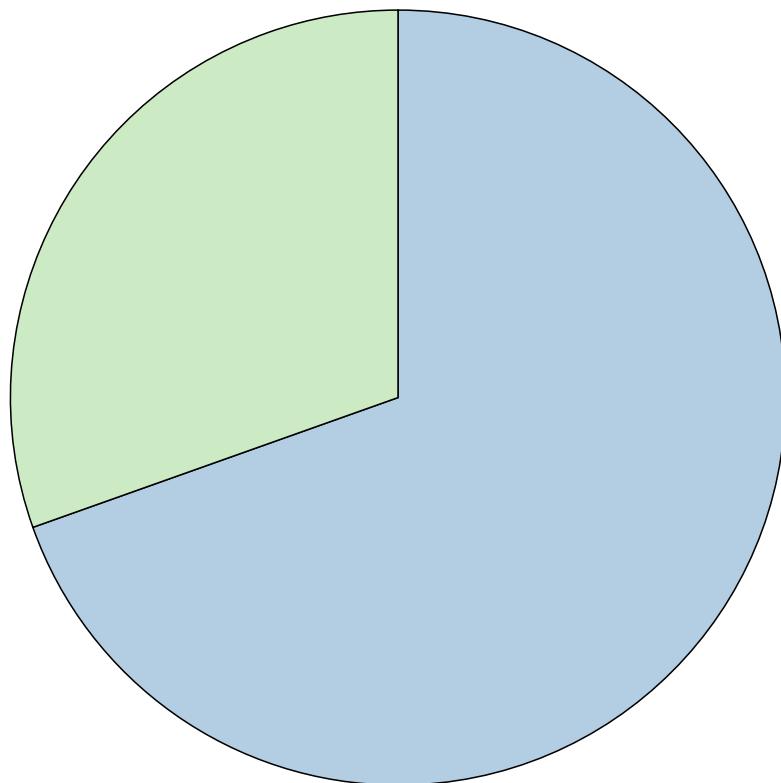


Created on: 29 Oct 2015 at: 15:28:50

Figure 1.6: Pie Chart of Car type

Car type

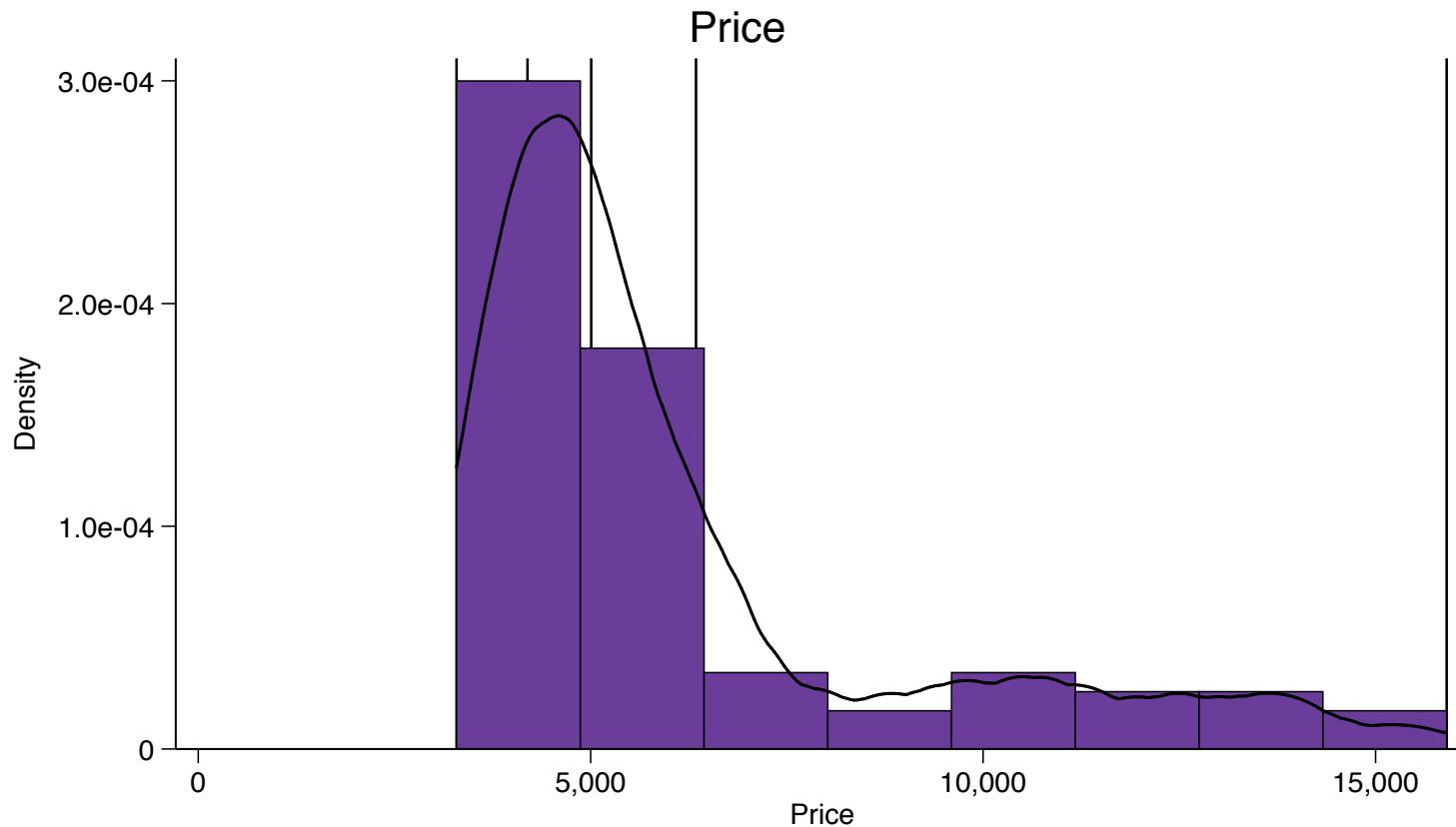
Domestic Foreign



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Continuous Variables

Figure 1.7: Histogram of Price

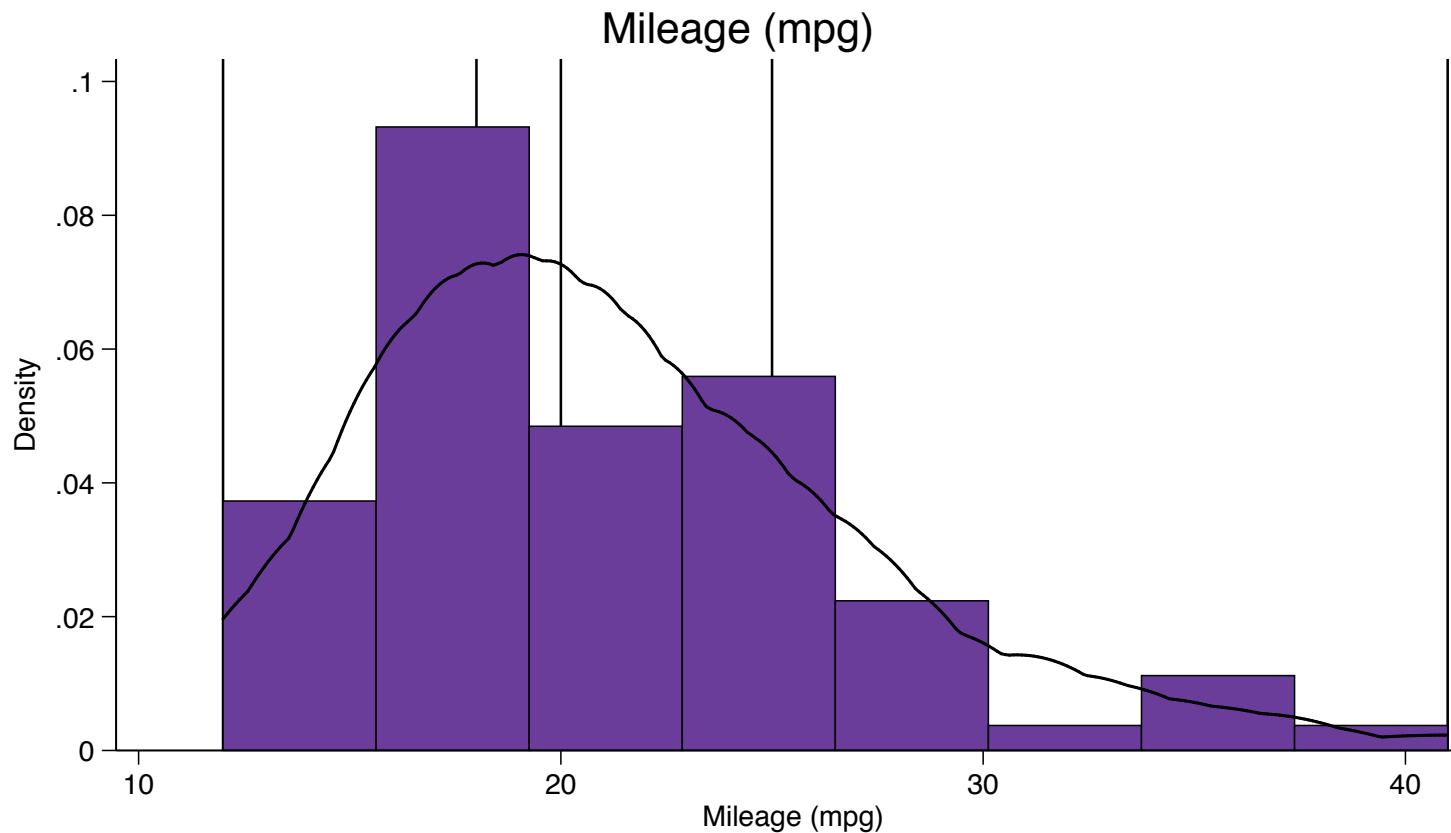


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Vertical lines show locations of Tukey's Five Number Summary
Min = 3291.00 25th %ile = 4195.00 Median = 5006.50 75th %ile = 6342.00 Max = 15906.00
 $\mu = 6165.26$ $\sigma = 2949.50$

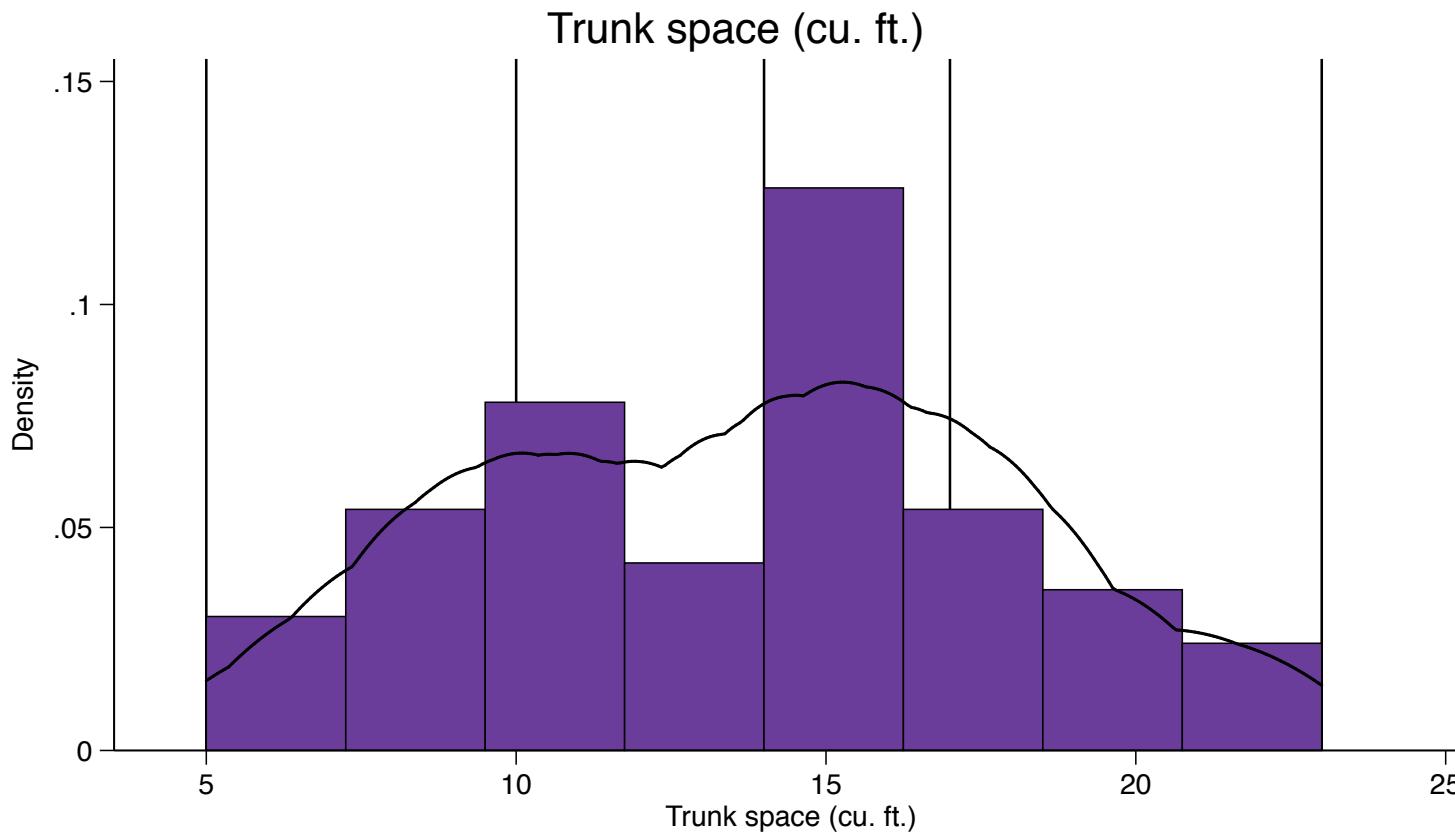
Histograms.

Figure 1.8: Histogram of Mileage (mpg)



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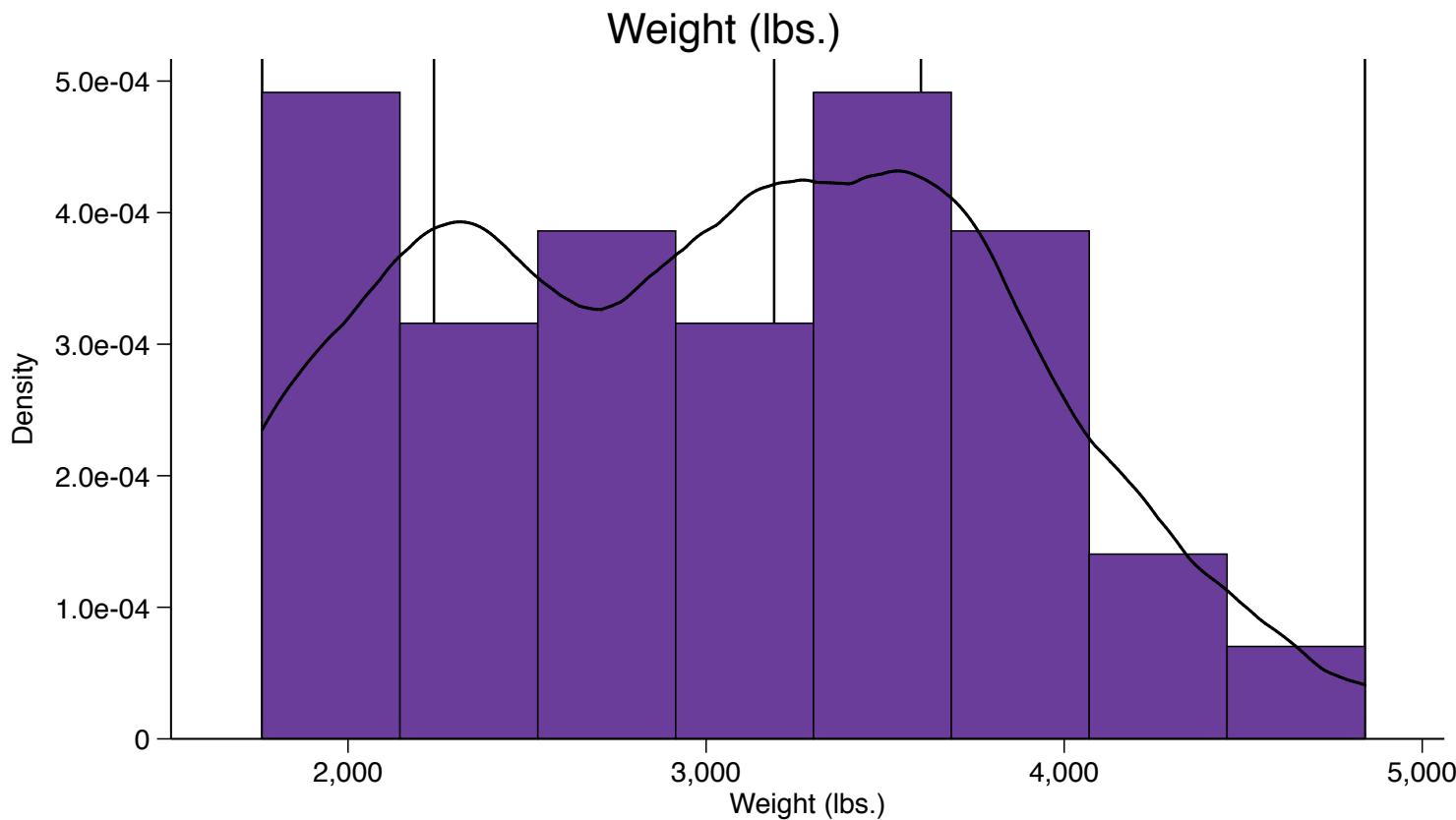
Figure 1.9: Histogram of Trunk space (cu. ft.)



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Vertical lines show locations of Tukey's Five Number Summary
Min = 5.00 25th %ile = 10.00 Median = 14.00 75th %ile = 17.00 Max = 23.00
 $\mu = 13.76 \sigma = 4.28$

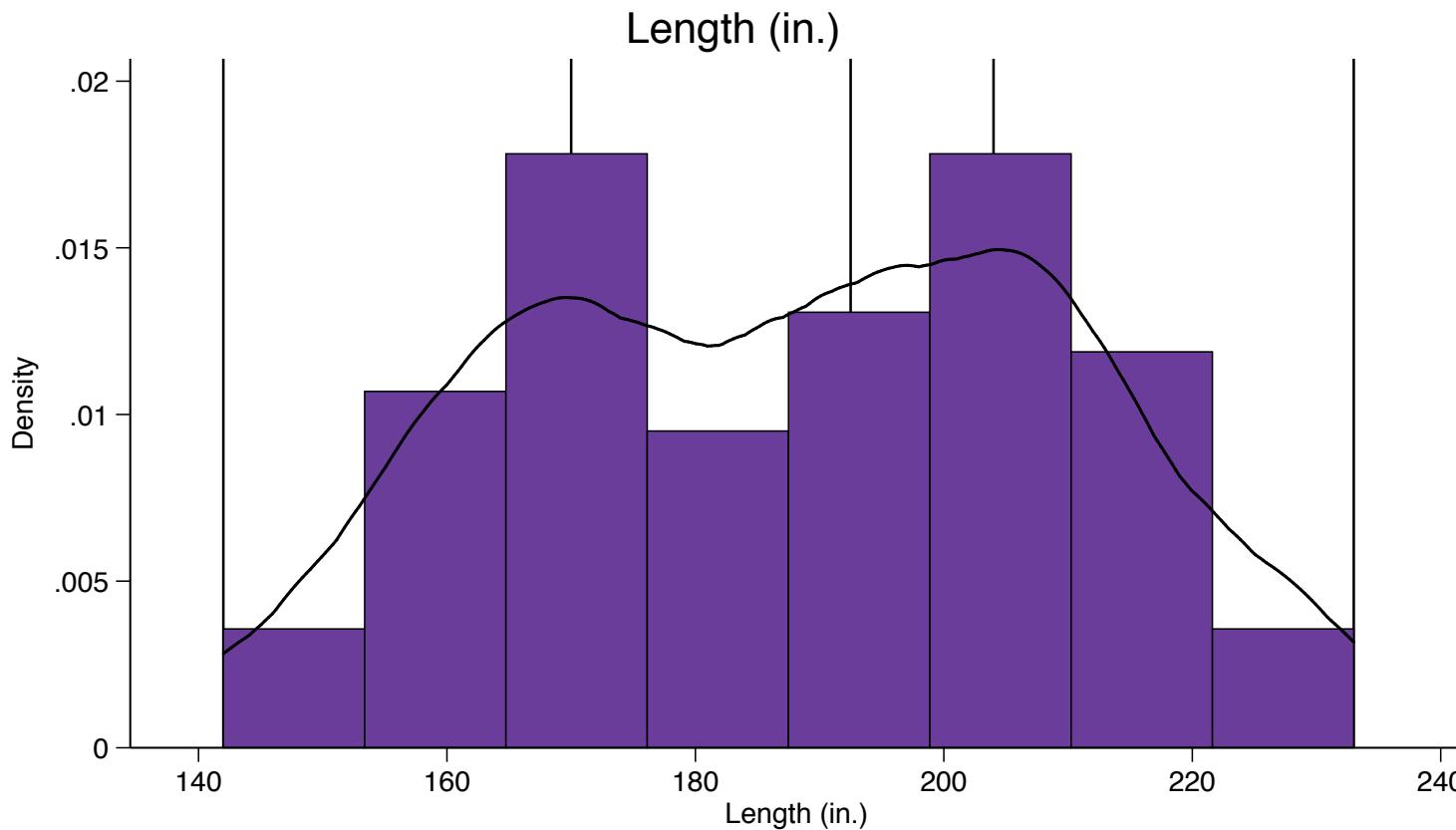
Figure 1.10: Histogram of Weight (lbs.)



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Vertical lines show locations of Tukey's Five Number Summary
Min = 1760.00 25th %ile = 2240.00 Median = 3190.00 75th %ile = 3600.00 Max = 4840.00
 $\mu = 3019.46 \sigma = 777.19$

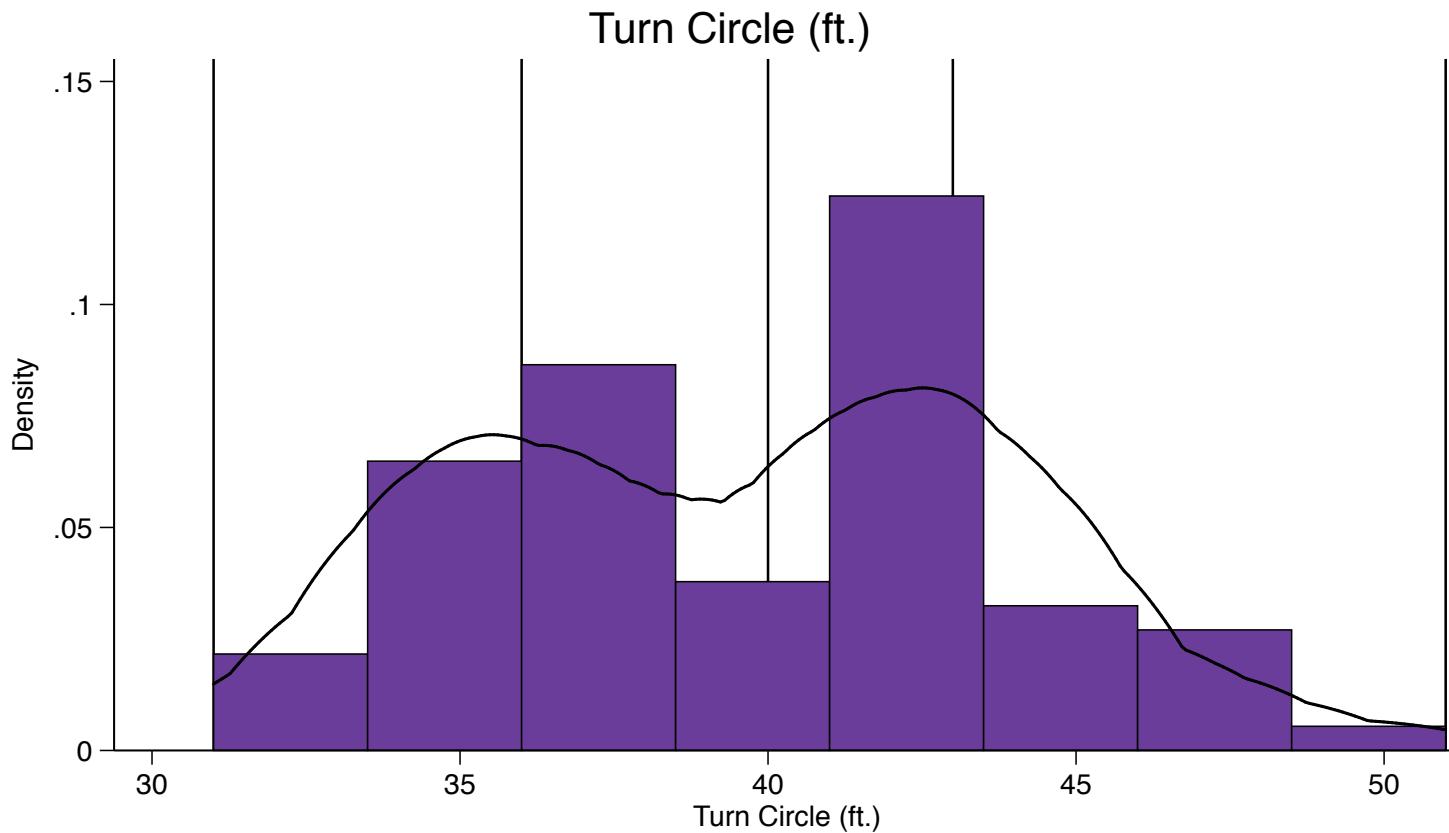
Figure 1.11: Histogram of Length (in.)



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Vertical lines show locations of Tukey's Five Number Summary
Min = 142.00 25th %ile = 170.00 Median = 192.50 75th %ile = 204.00 Max = 233.00
 $\mu = 187.93 \sigma = 22.27$

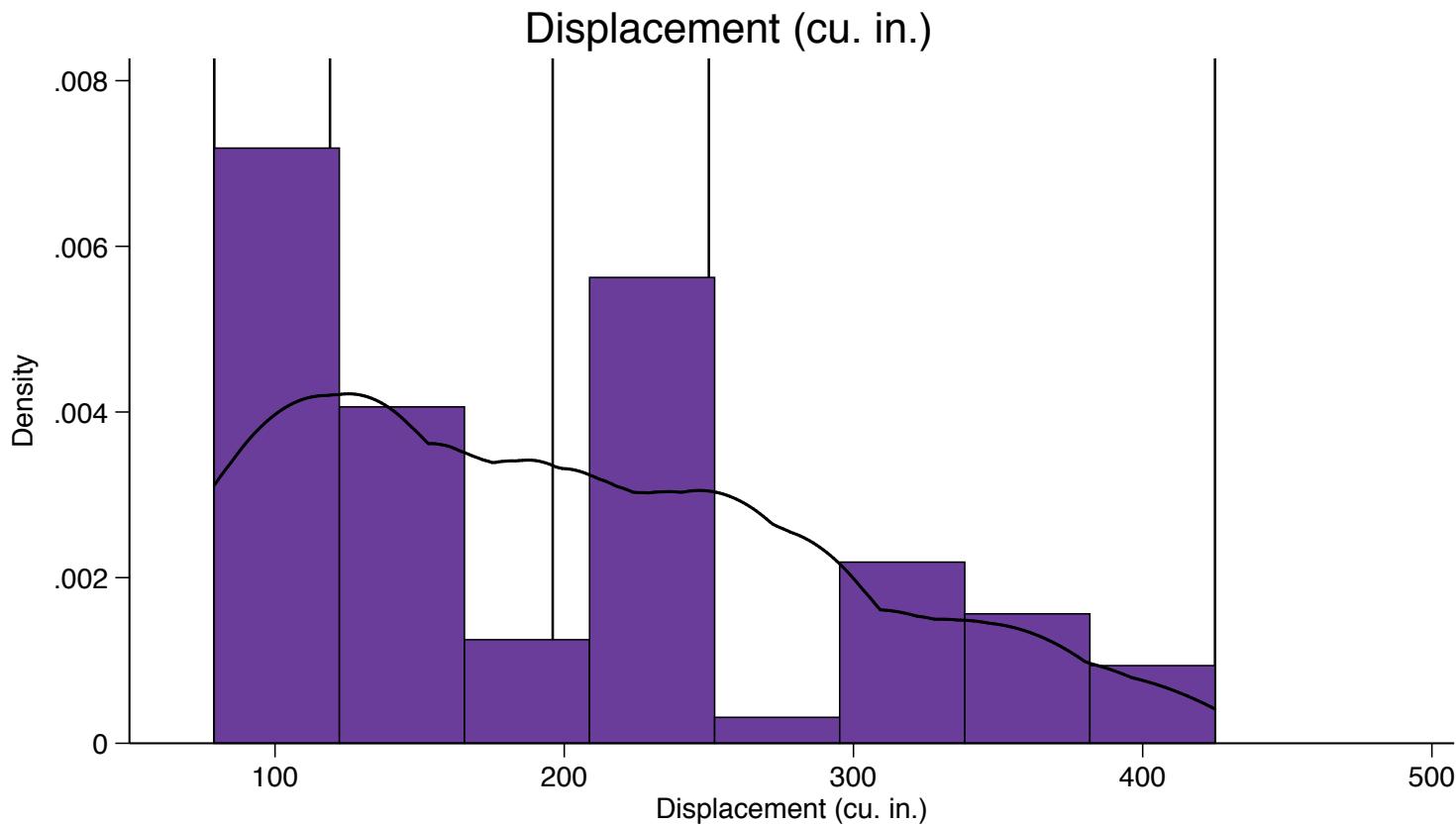
Figure 1.12: Histogram of Turn Circle (ft.)



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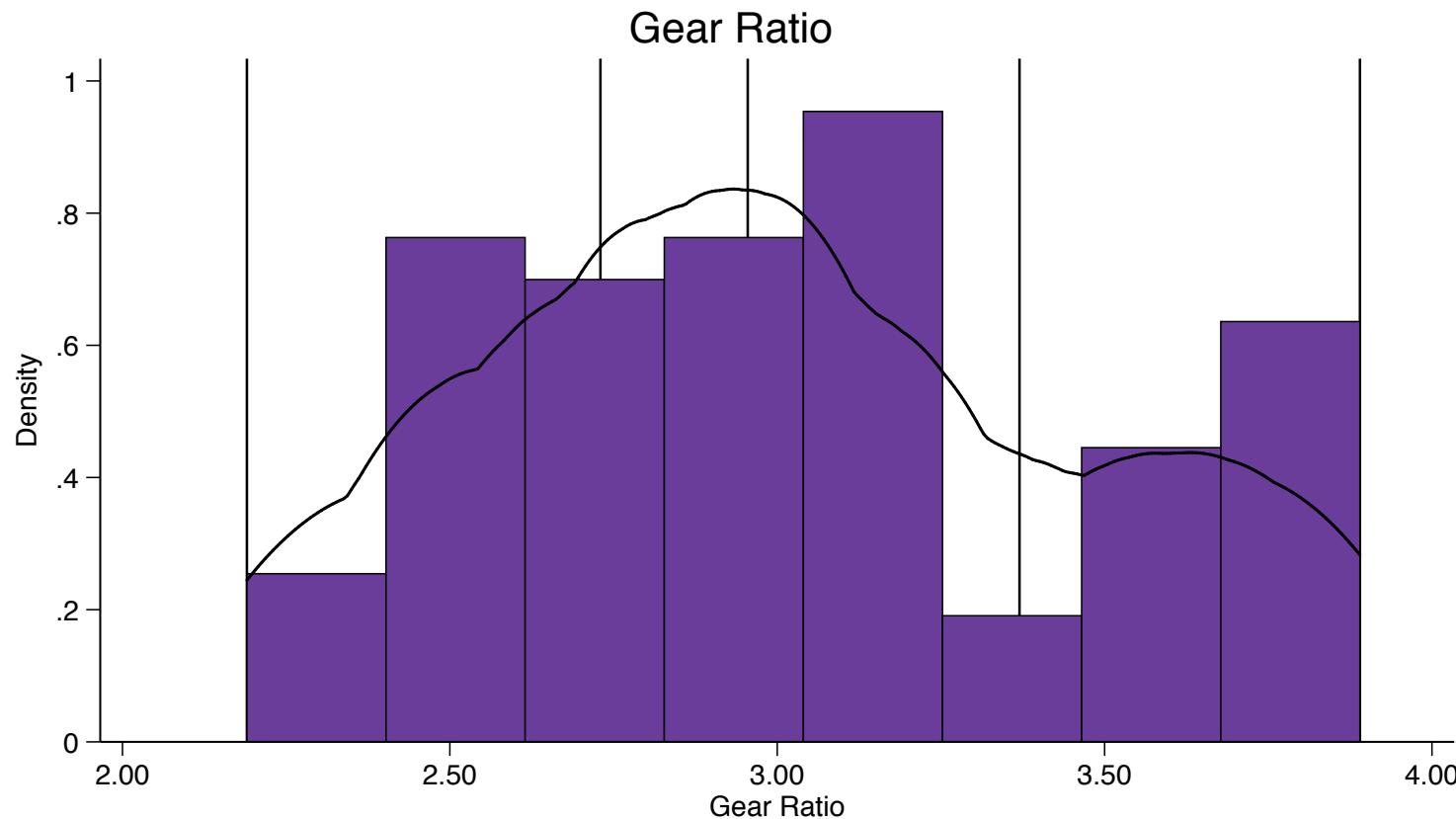
Vertical lines show locations of Tukey's Five Number Summary
Min = 31.00 25th %ile = 36.00 Median = 40.00 75th %ile = 43.00 Max = 51.00
 $\mu = 39.65 \sigma = 4.40$

Figure 1.13: Histogram of Displacement (cu. in.)



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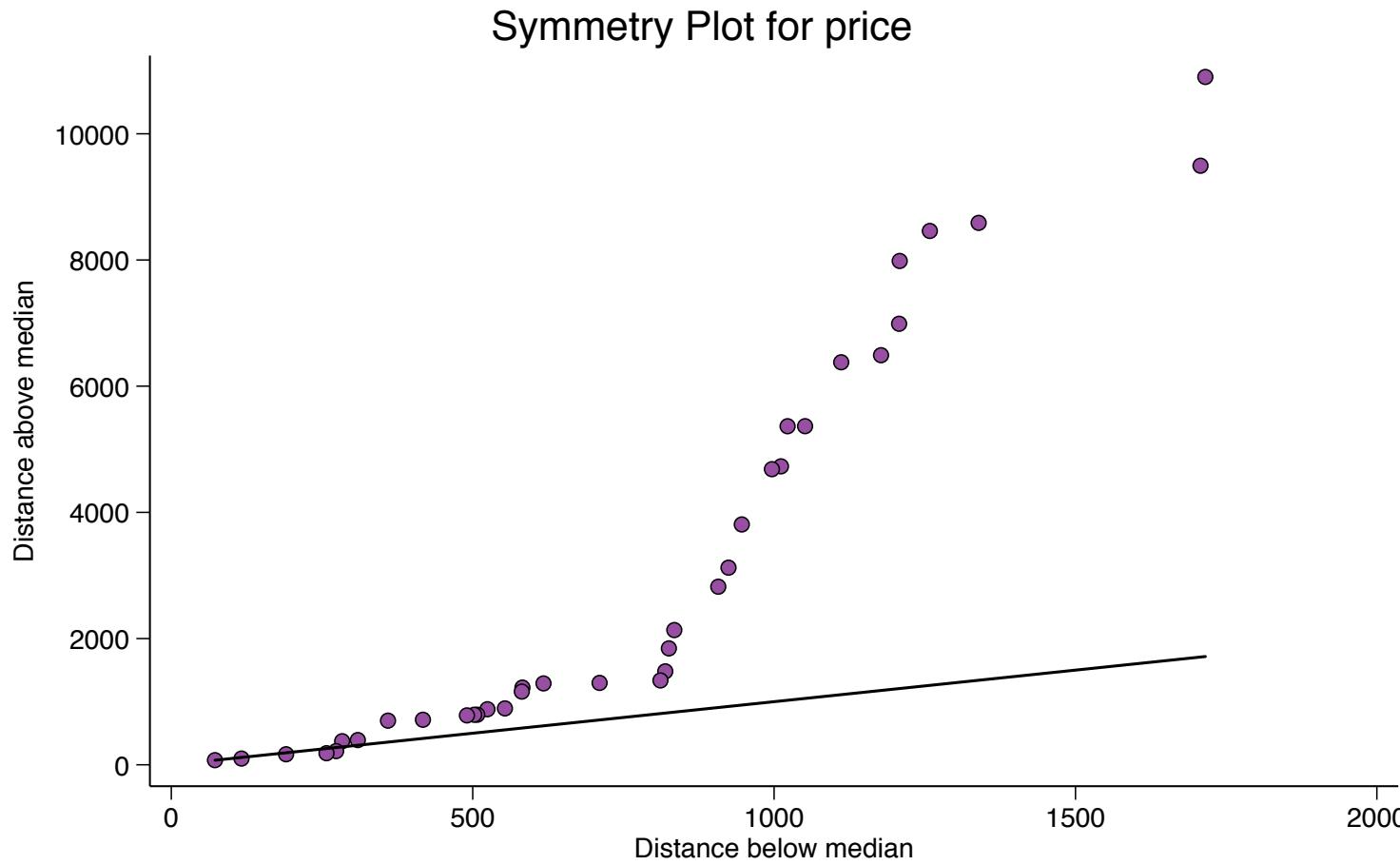
Figure 1.14: Histogram of Gear Ratio



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Vertical lines show locations of Tukey's Five Number Summary
Min = 2.19 25th %ile = 2.73 Median = 2.96 75th %ile = 3.37 Max = 3.89
 $\mu = 3.01 \sigma = 0.46$

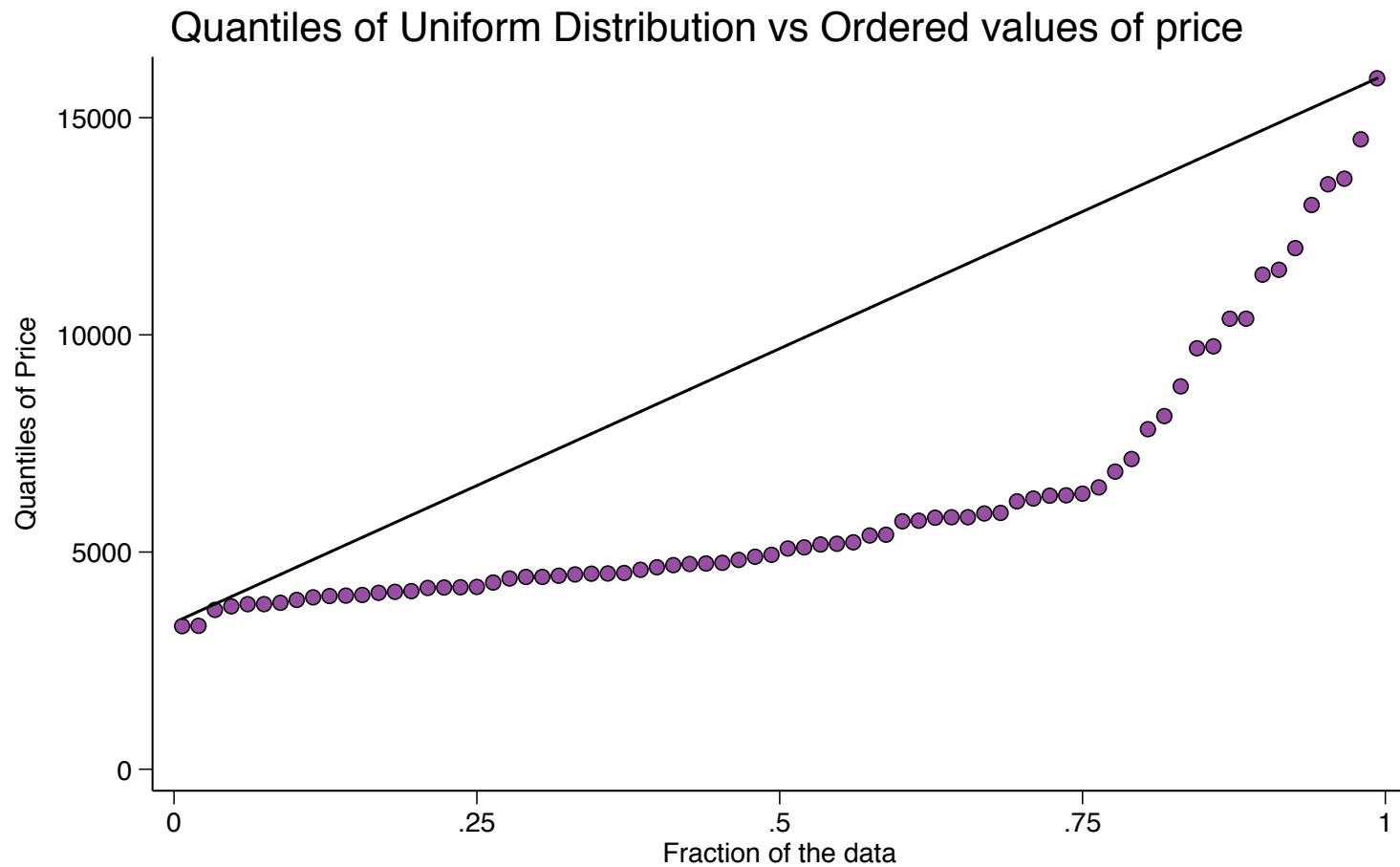
Figure 1.15: Symmetry Plot for Price



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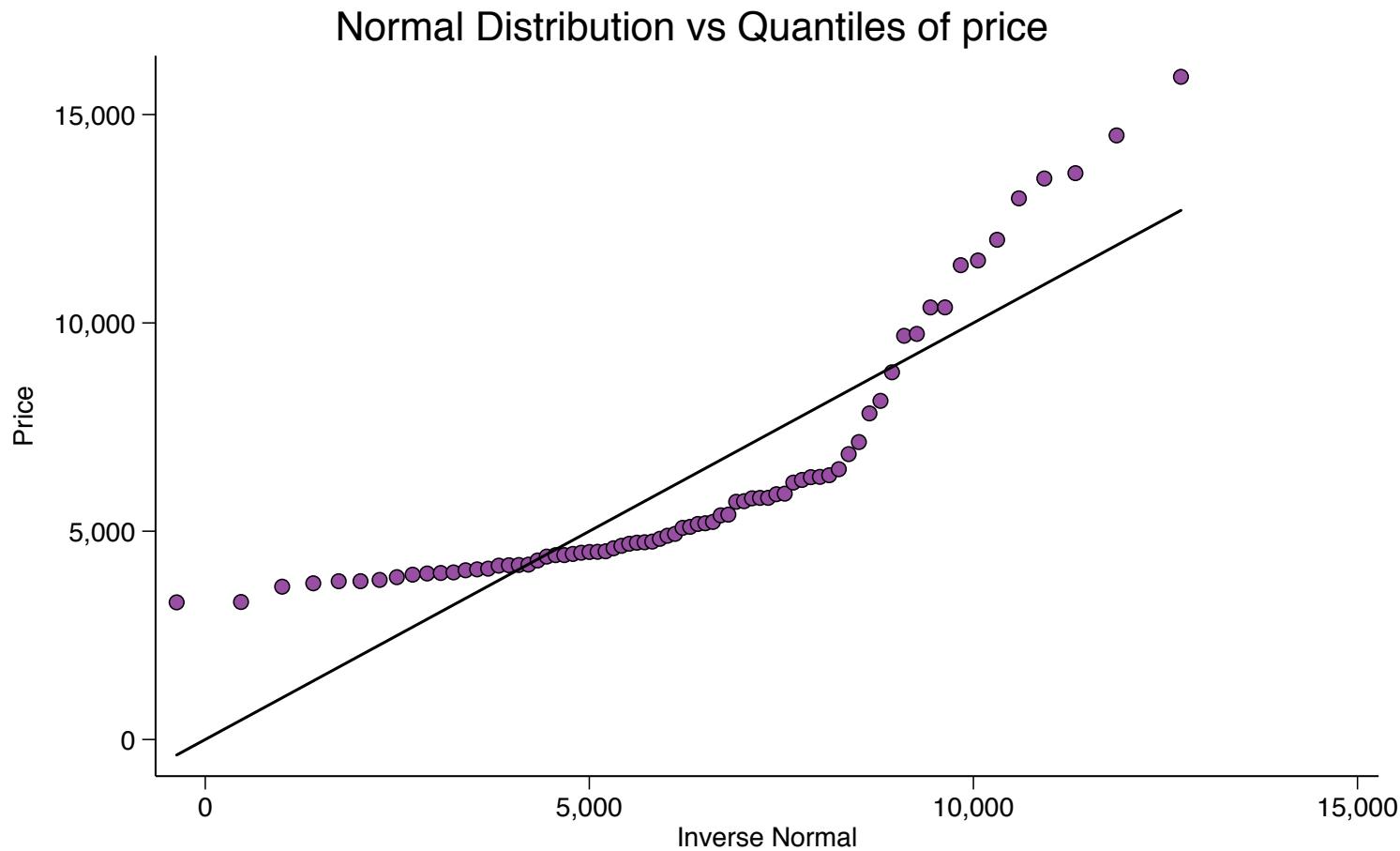
Distribution Diagnostic Plots.

Figure 1.16: Quantiles of Uniform Distribution vs Ordered values of Price



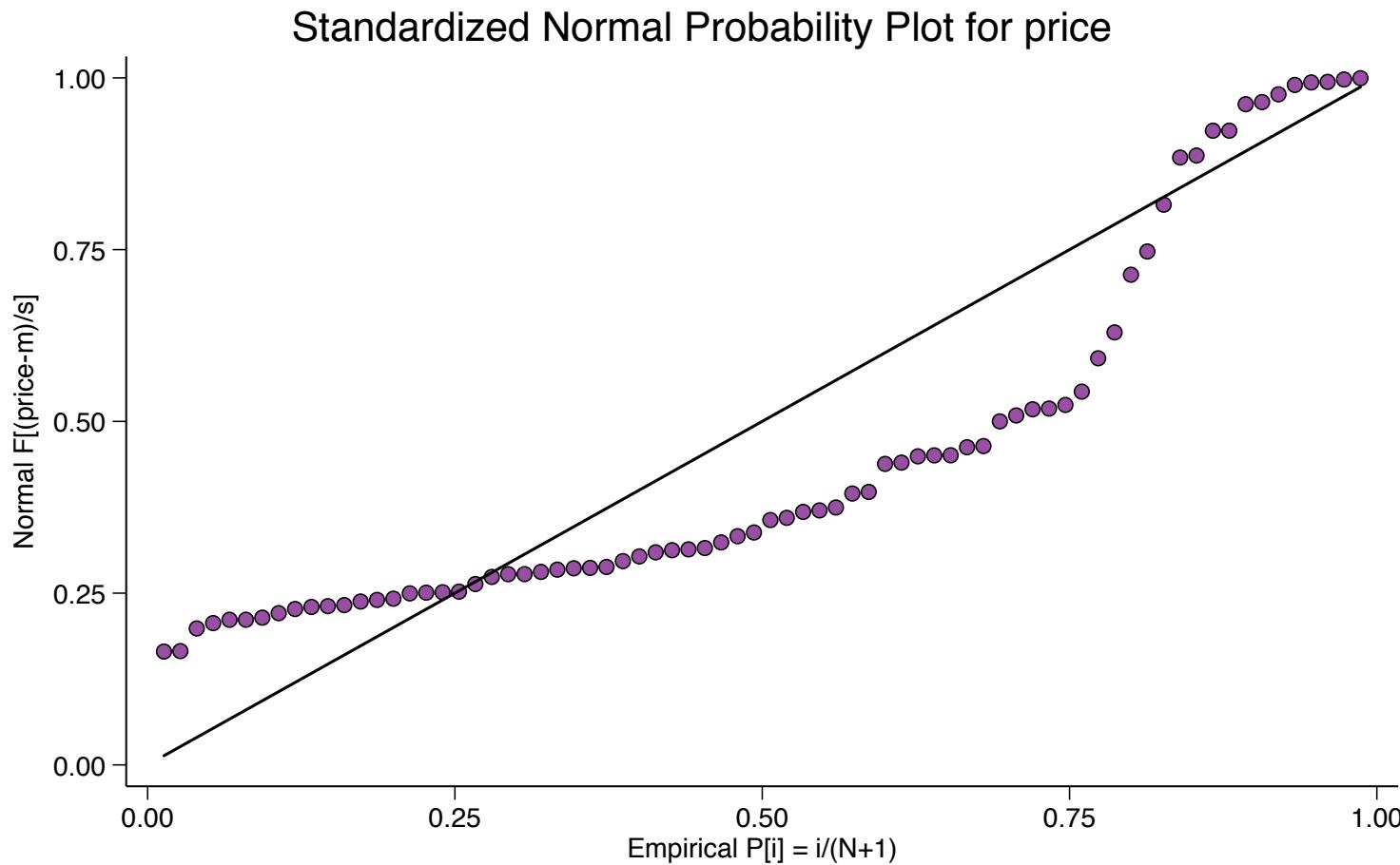
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Figure 1.17: Normal Distribution vs Quantiles of Price



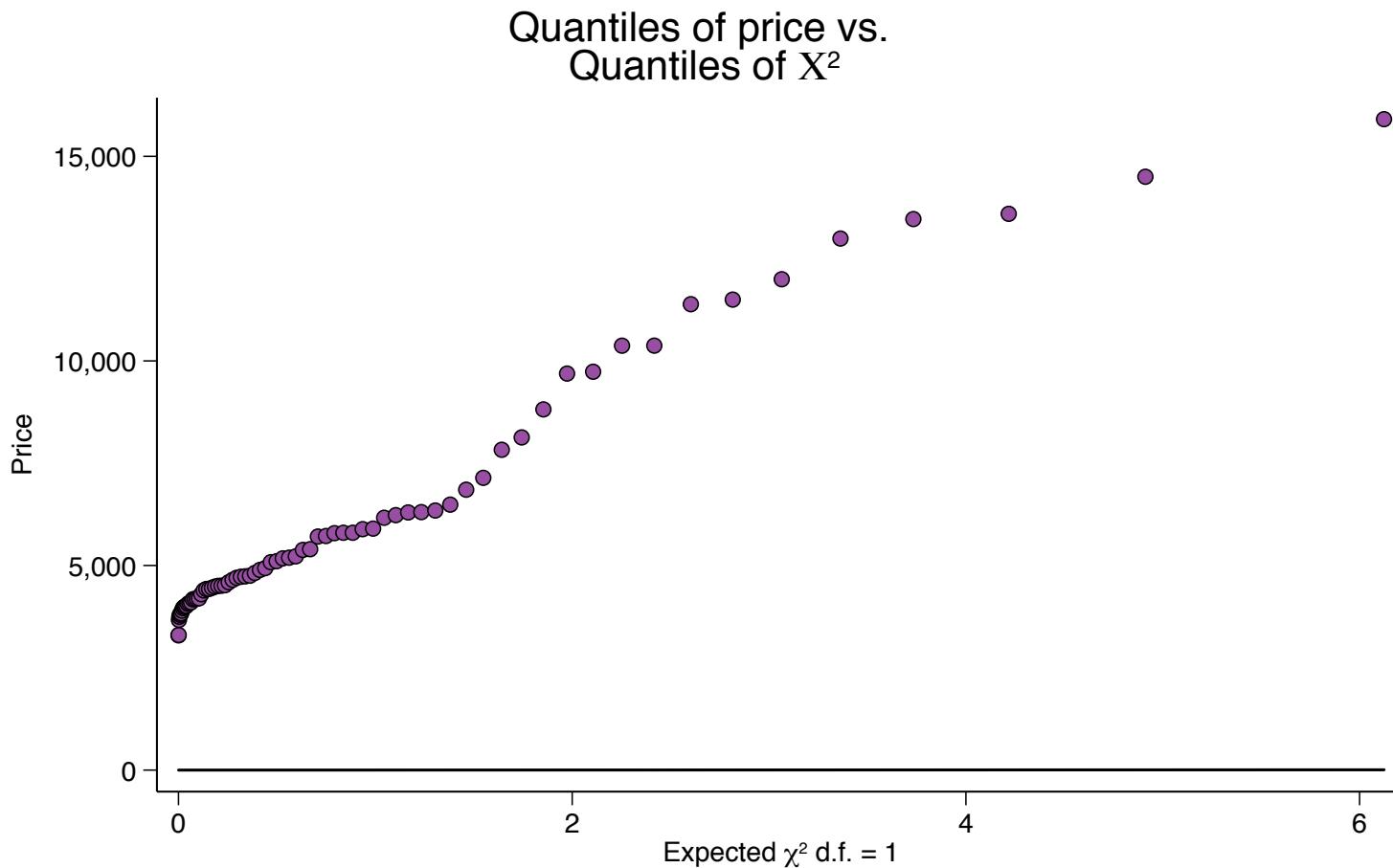
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Figure 1.18: Standardized Normal Probability Plot for Price



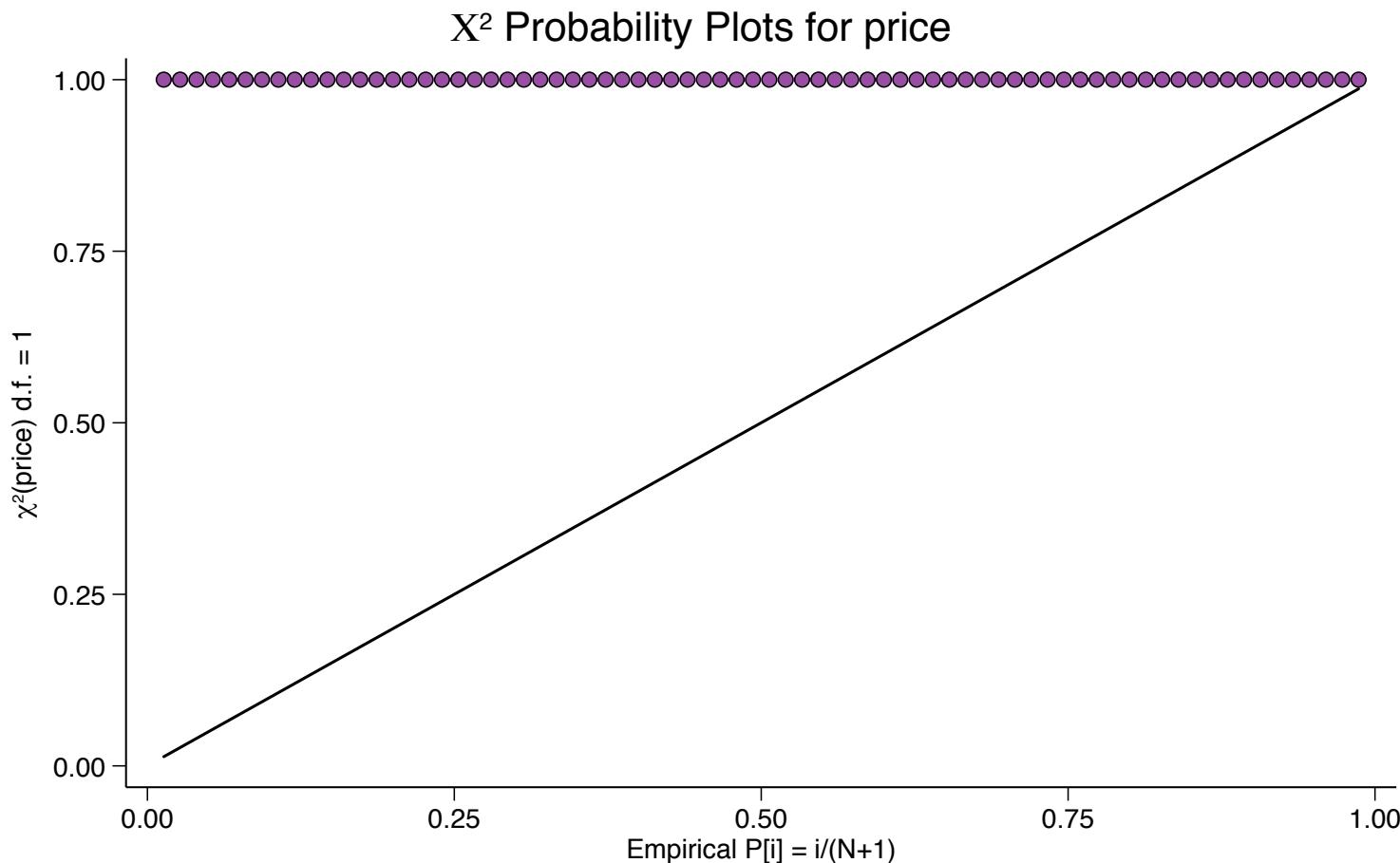
Created on: 29 Oct 2015 at: 15:29:17

Figure 1.19: Chi-Squared Quantiles v. Price



Created on: 29 Oct 2015 at: 15:29:19

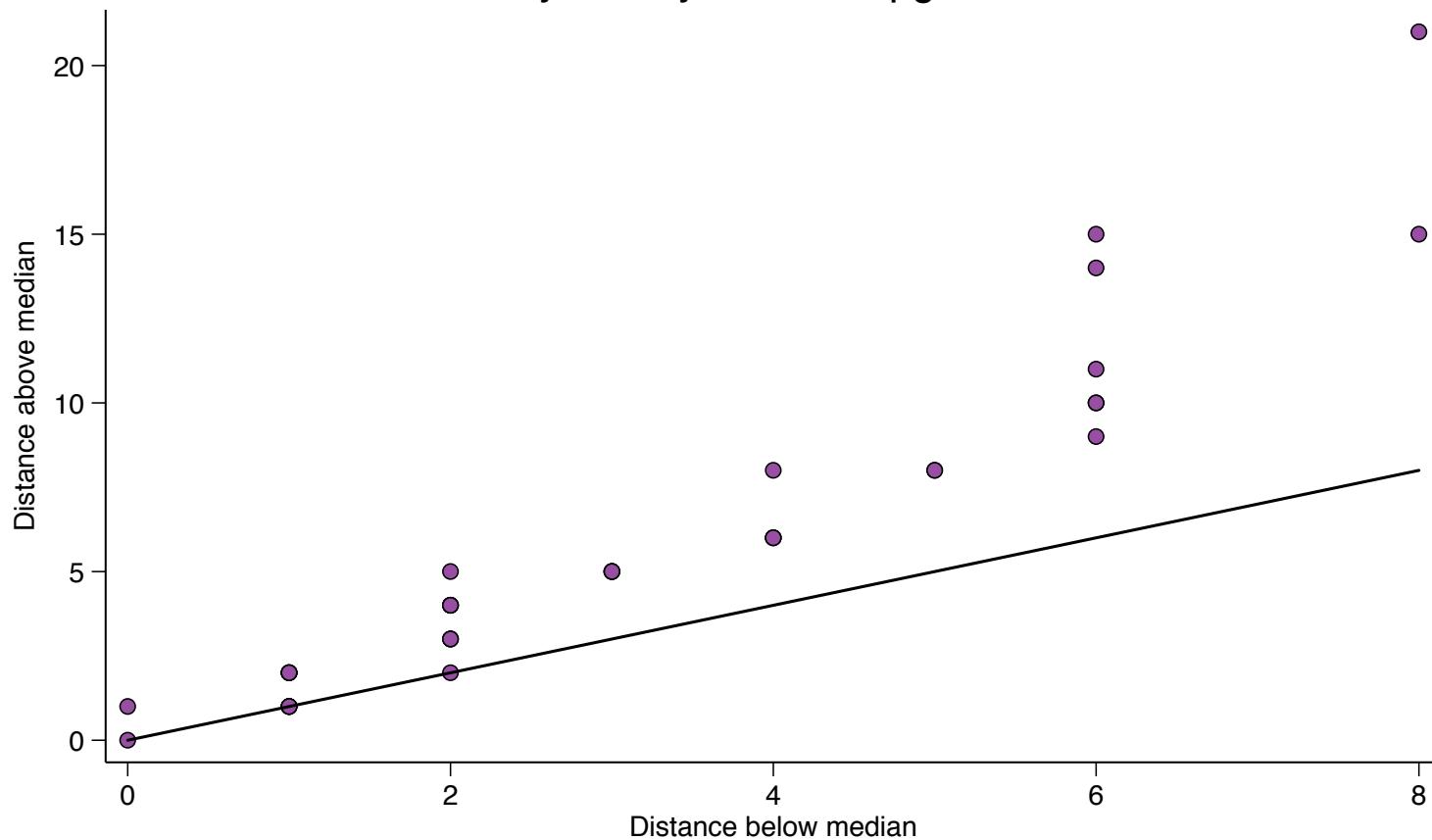
Figure 1.20: Chi-Squared Probability Price



Created on: 29 Oct 2015 at: 15:29:21

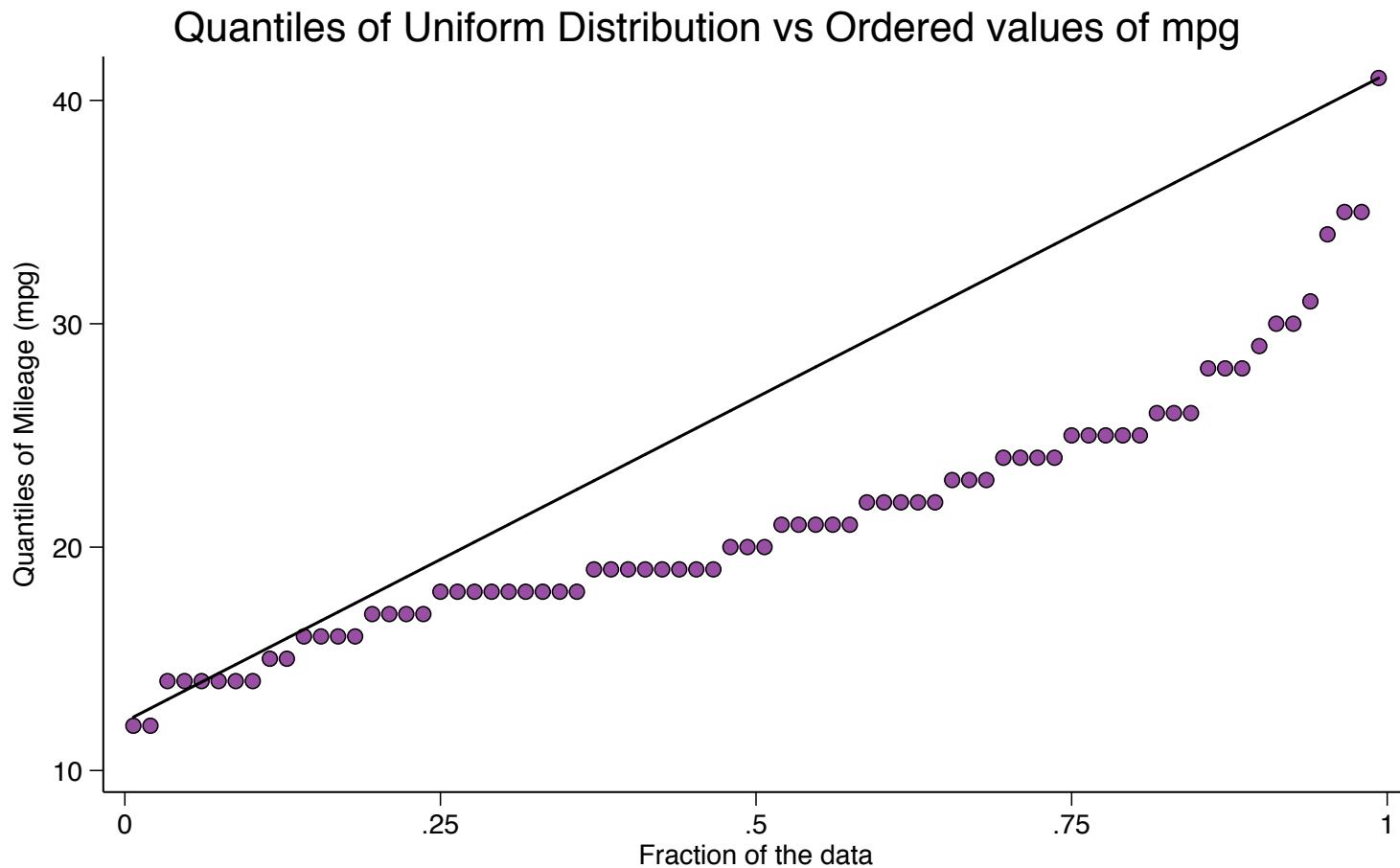
Figure 1.21: Symmetry Plot for Mileage (mpg)

Symmetry Plot for mpg



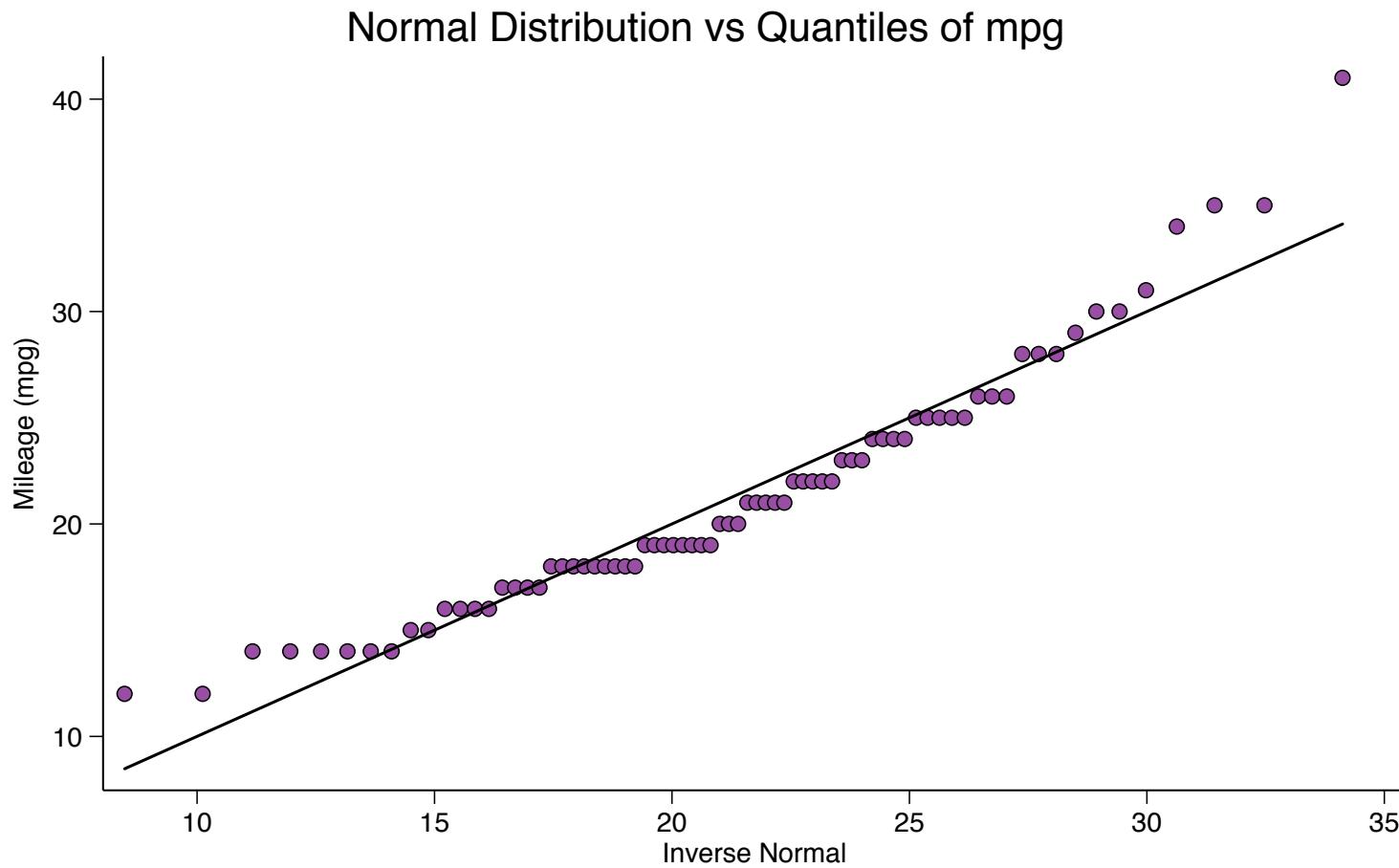
Created on: 29 Oct 2015 at: 15:29:24

Figure 1.22: Quantiles of Uniform Distribution vs Ordered values of Mileage (mpg)



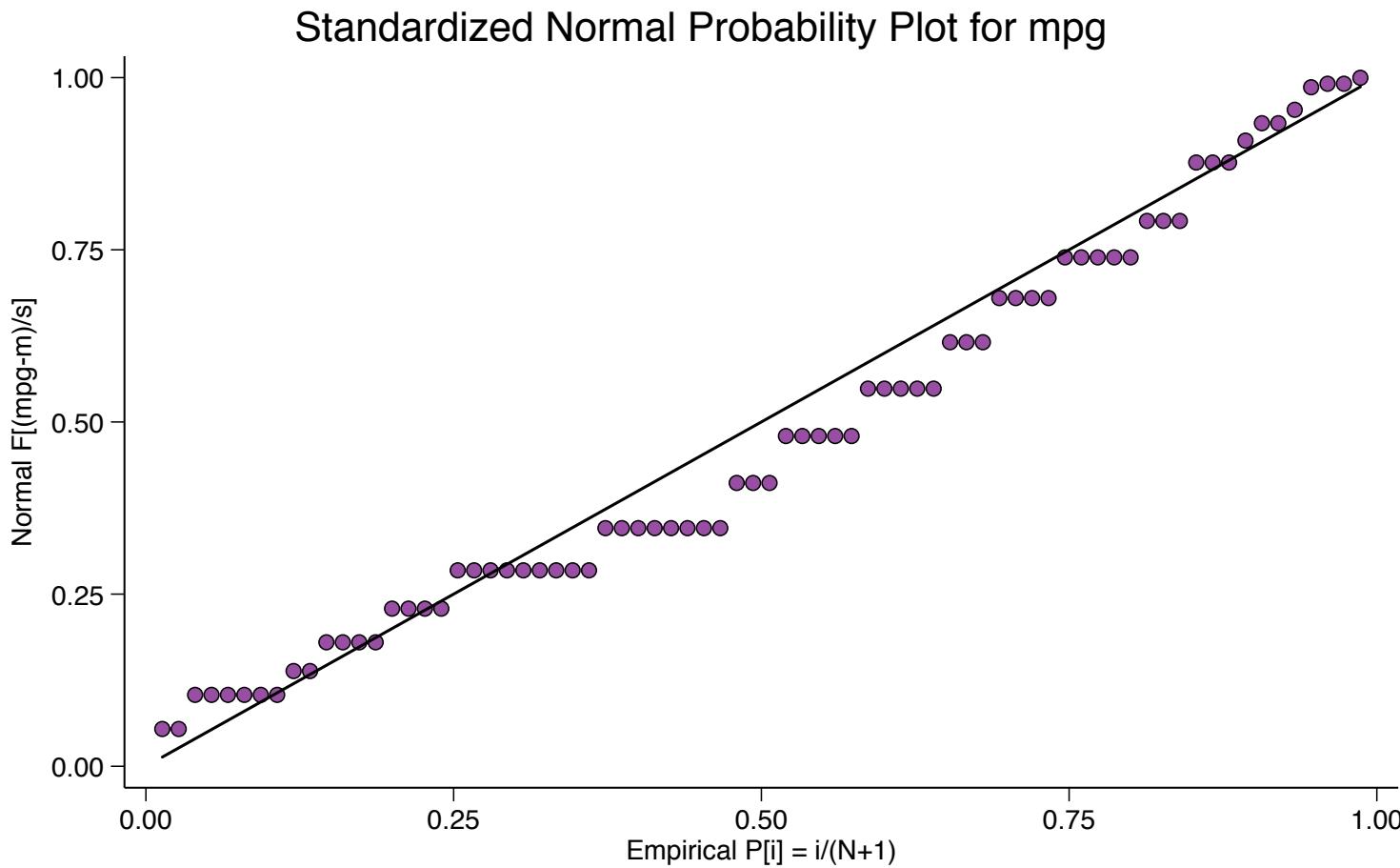
Created on: 29 Oct 2015 at: 15:29:26

Figure 1.23: Normal Distribution vs Quantiles of Mileage (mpg)



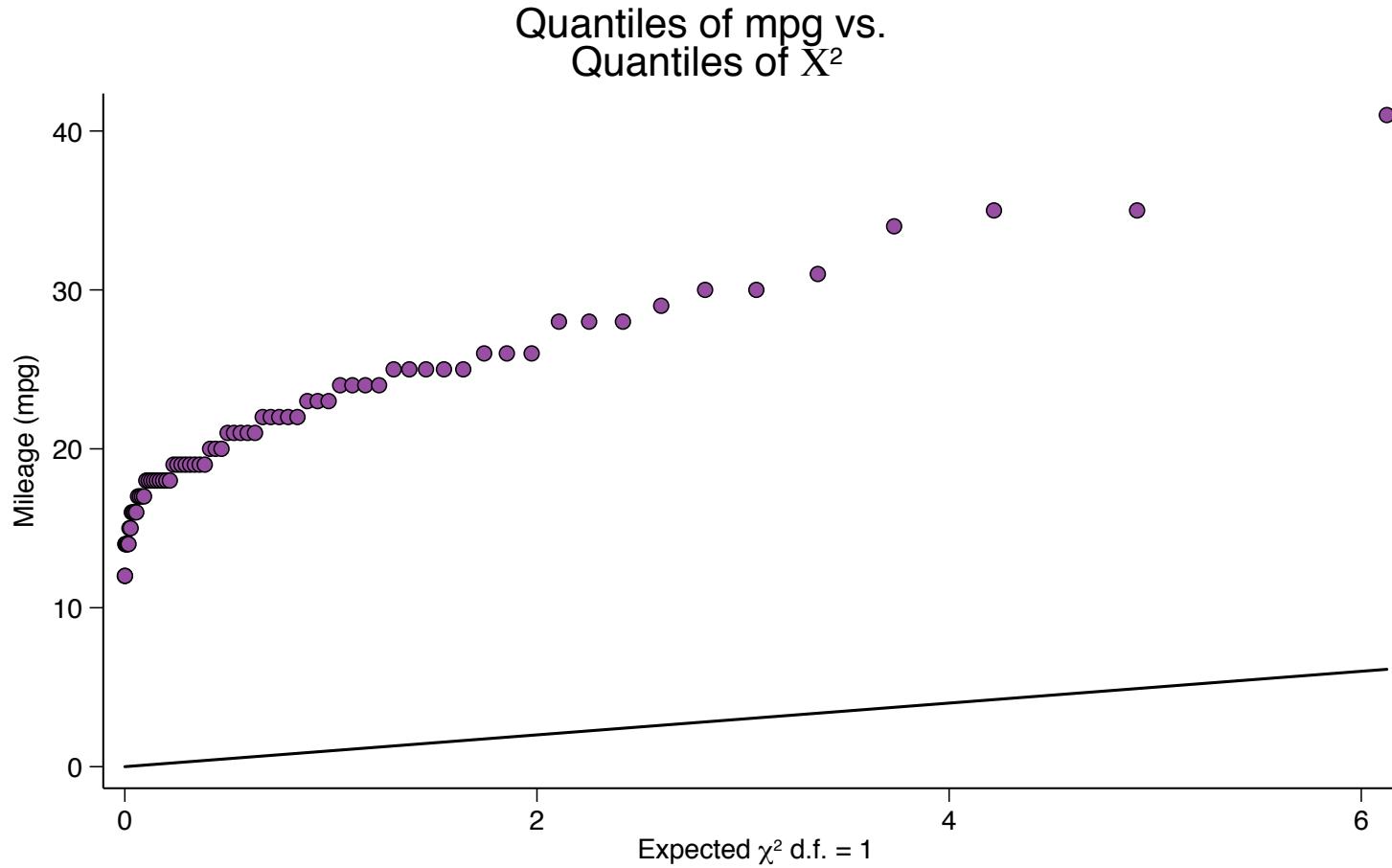
Created on: 29 Oct 2015 at: 15:29:28

Figure 1.24: Standardized Normal Probability Plot for Mileage (mpg)



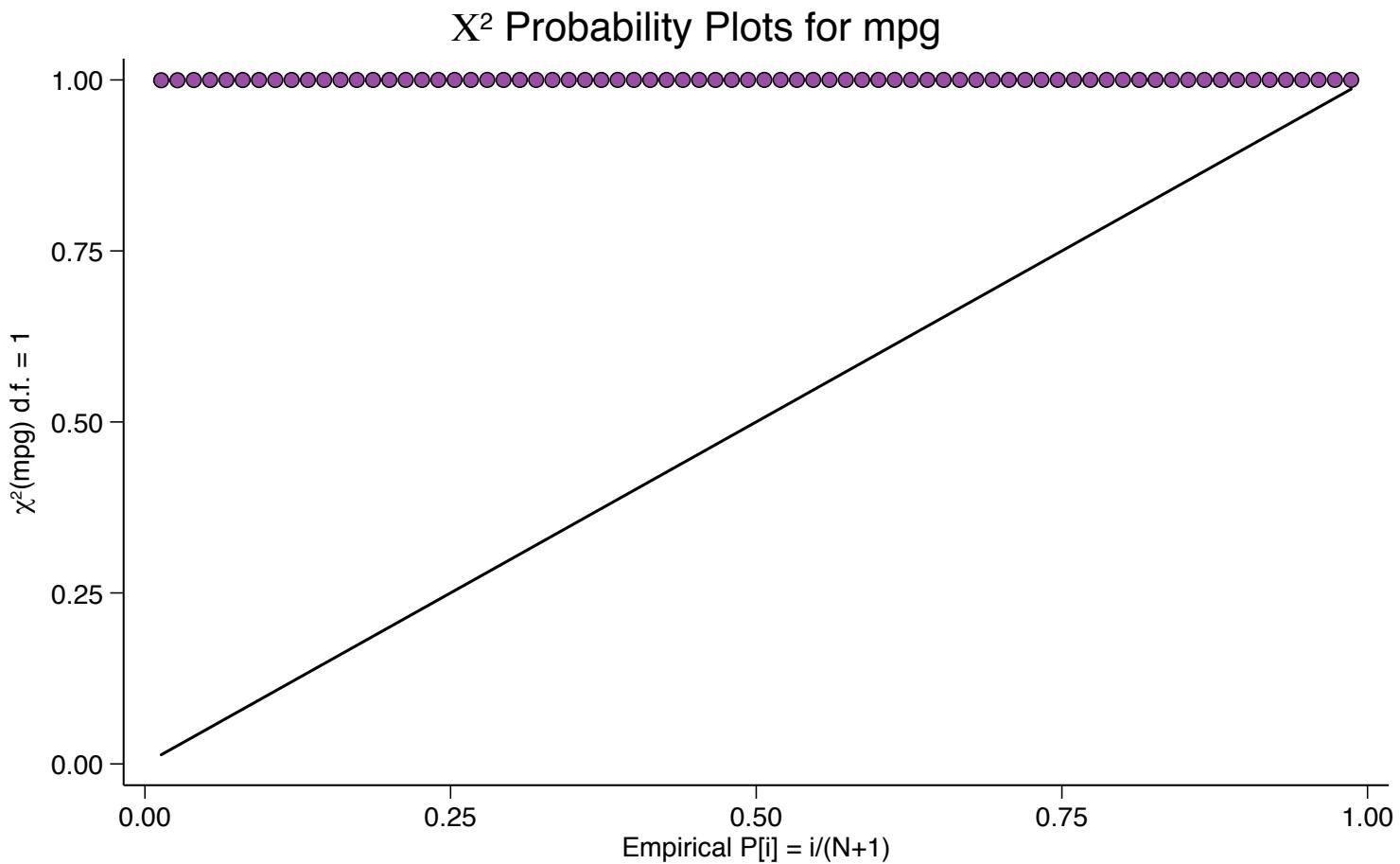
Created on: 29 Oct 2015 at: 15:29:30

Figure 1.25: Chi-Squared Quantiles v. Mileage (mpg)



Created on: 29 Oct 2015 at: 15:29:32

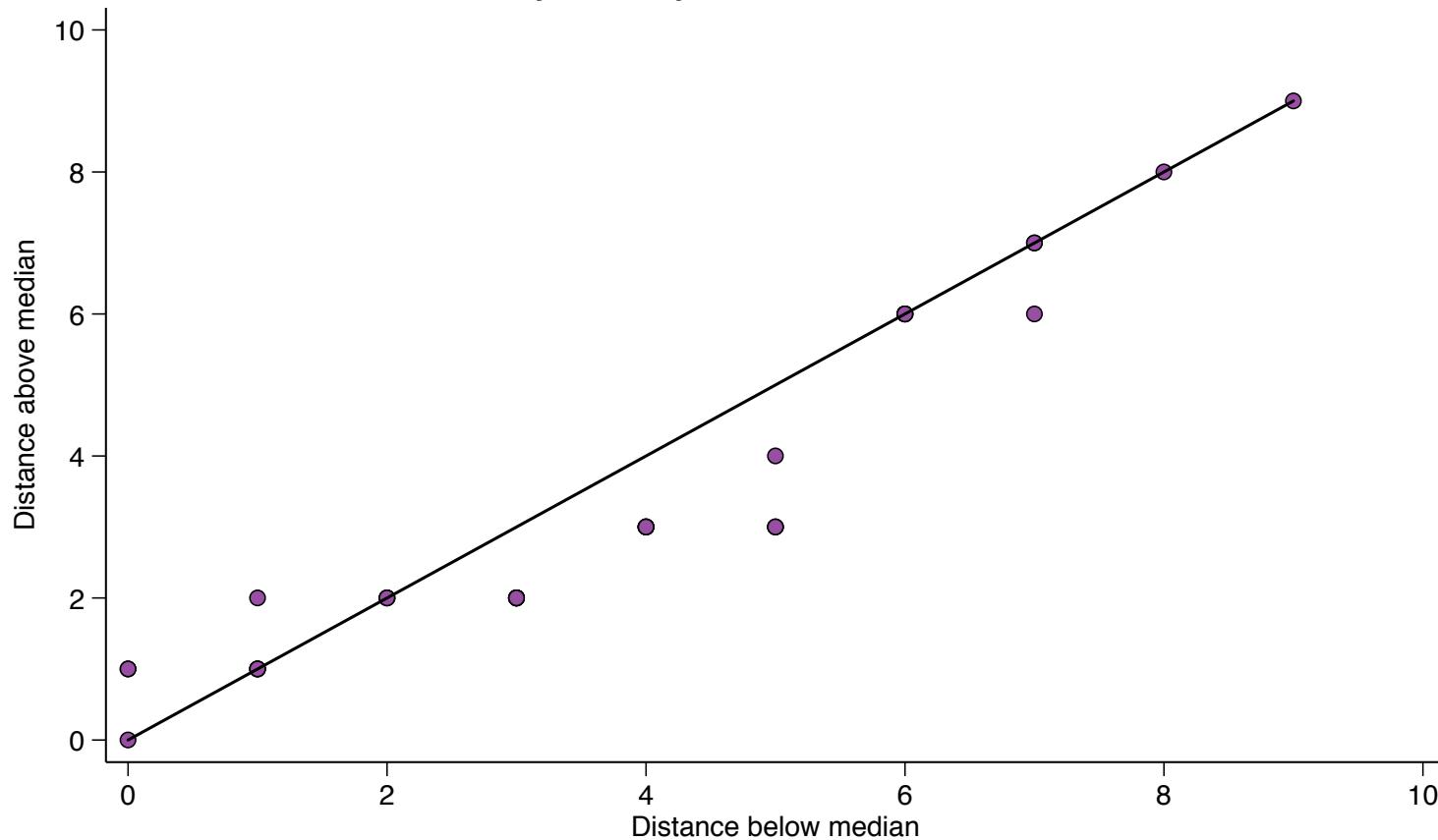
Figure 1.26: Chi-Squared Probability Mileage (mpg)



Created on: 29 Oct 2015 at: 15:29:34

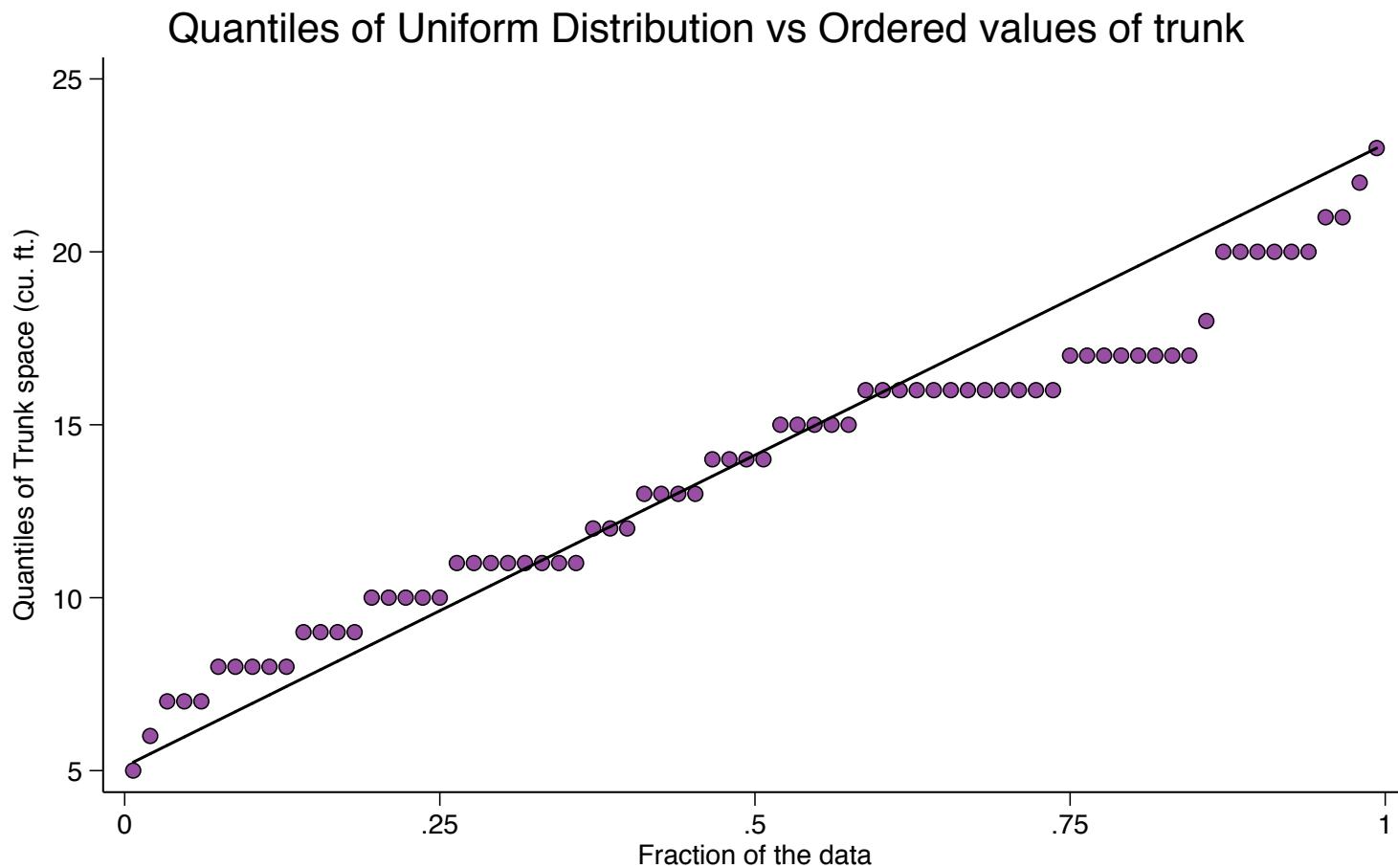
Figure 1.27: Symmetry Plot for Trunk space (cu. ft.)

Symmetry Plot for trunk



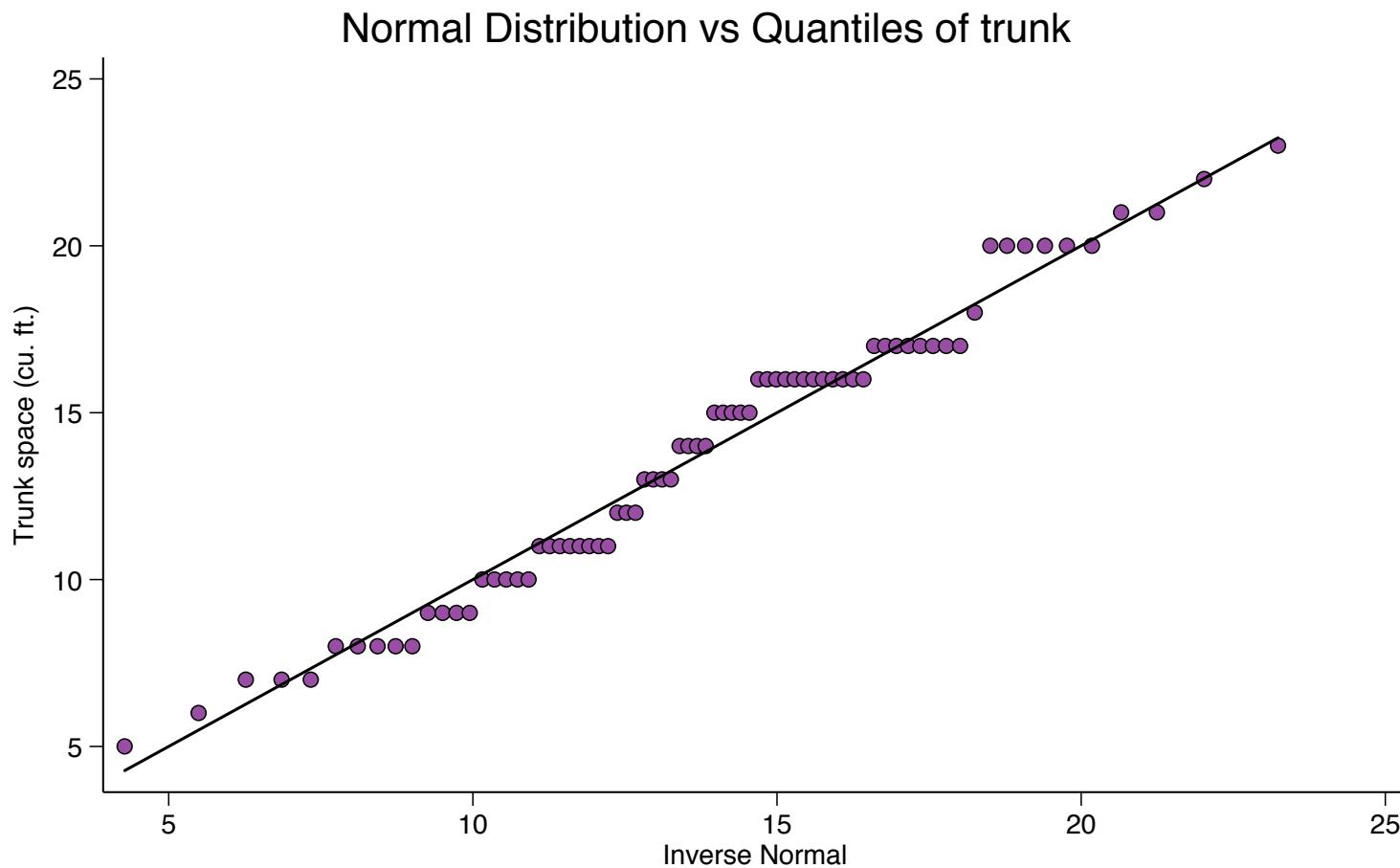
Created on: 29 Oct 2015 at: 15:29:36

Figure 1.28: Quantiles of Uniform Distribution vs Ordered values of Trunk space (cu. ft.)



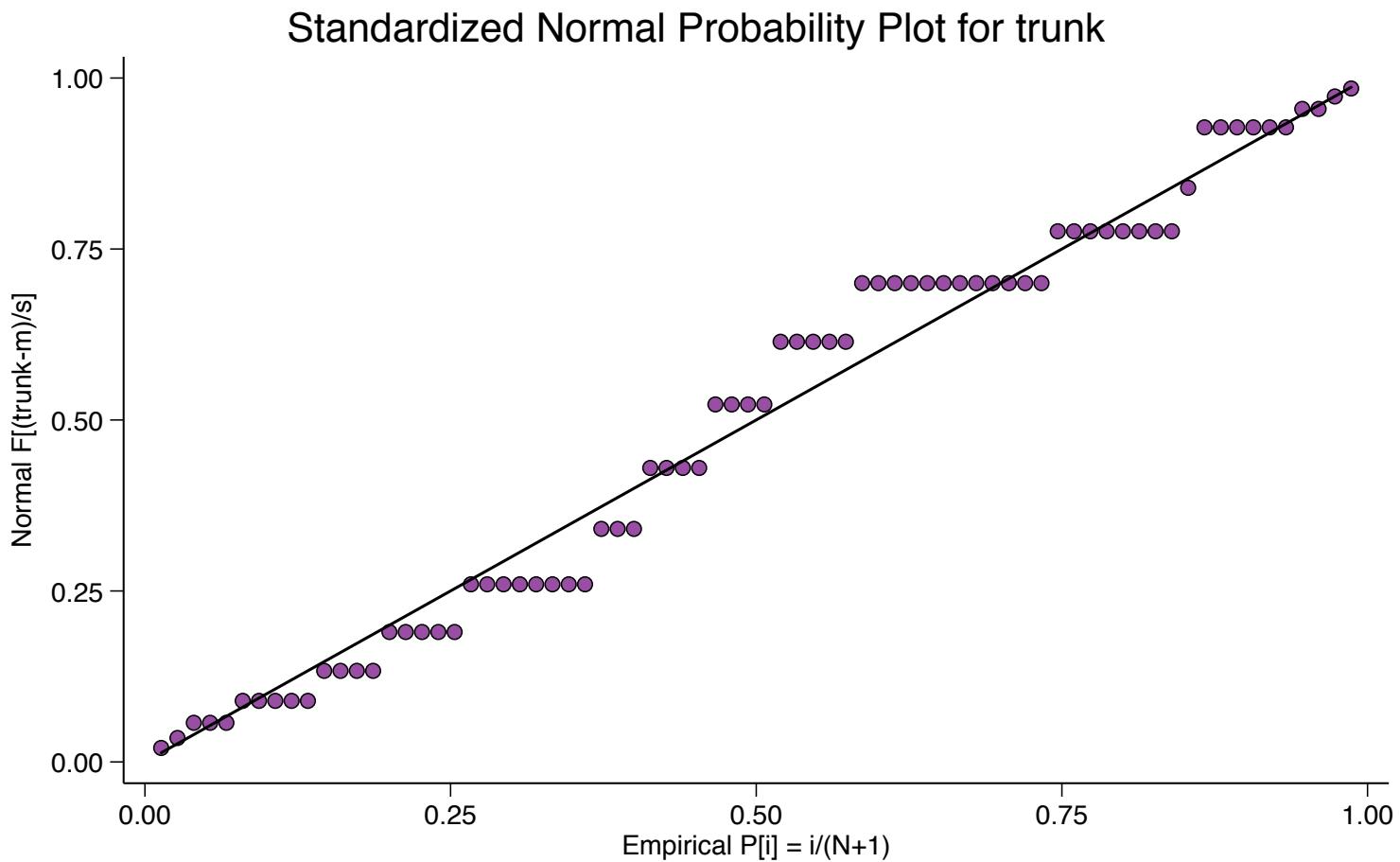
Created on: 29 Oct 2015 at: 15:29:38

Figure 1.29: Normal Distribution vs Quantiles of Trunk space (cu. ft.)



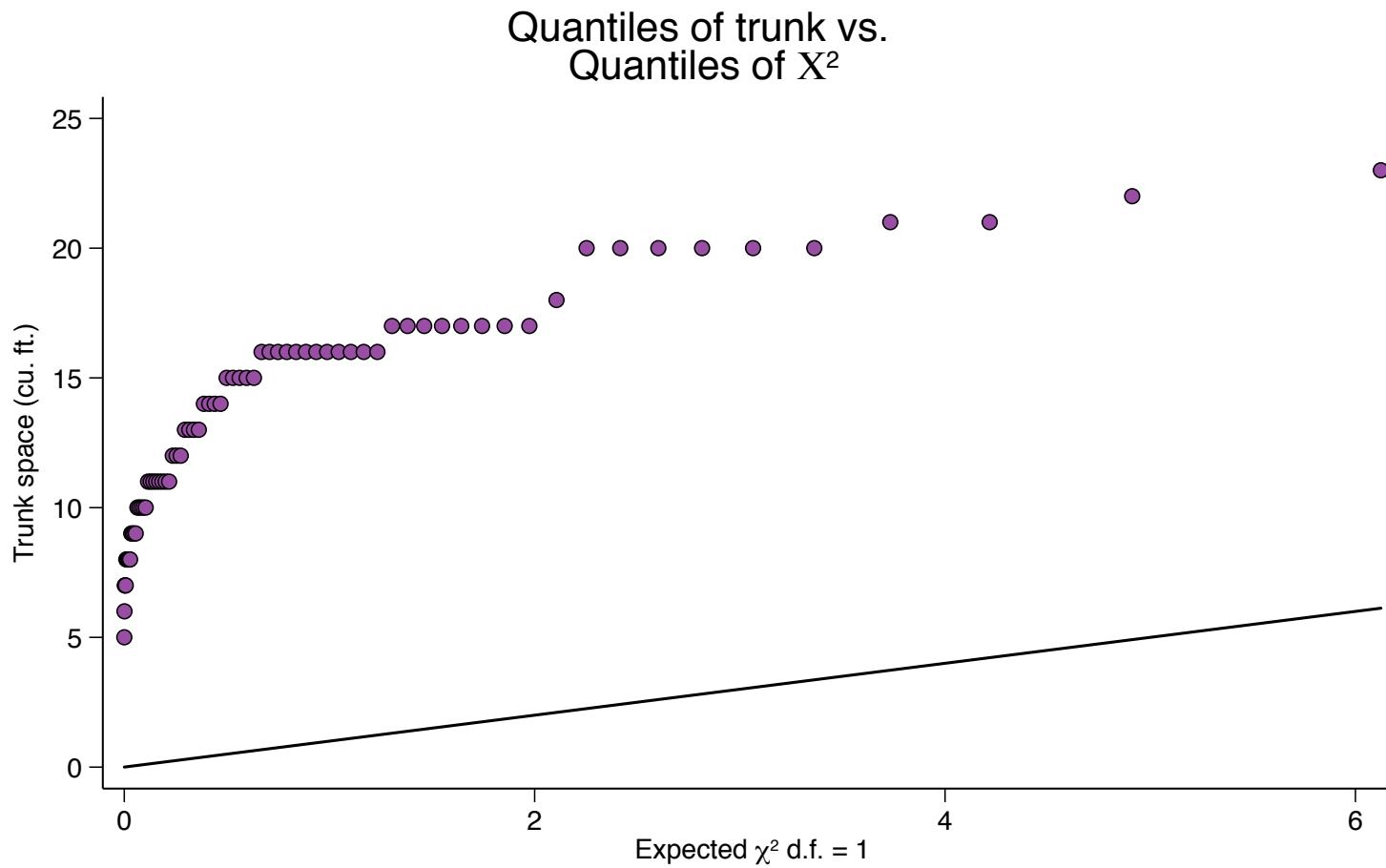
Created on: 29 Oct 2015 at: 15:29:40

Figure 1.30: Standardized Normal Probability Plot for Trunk space (cu. ft.)



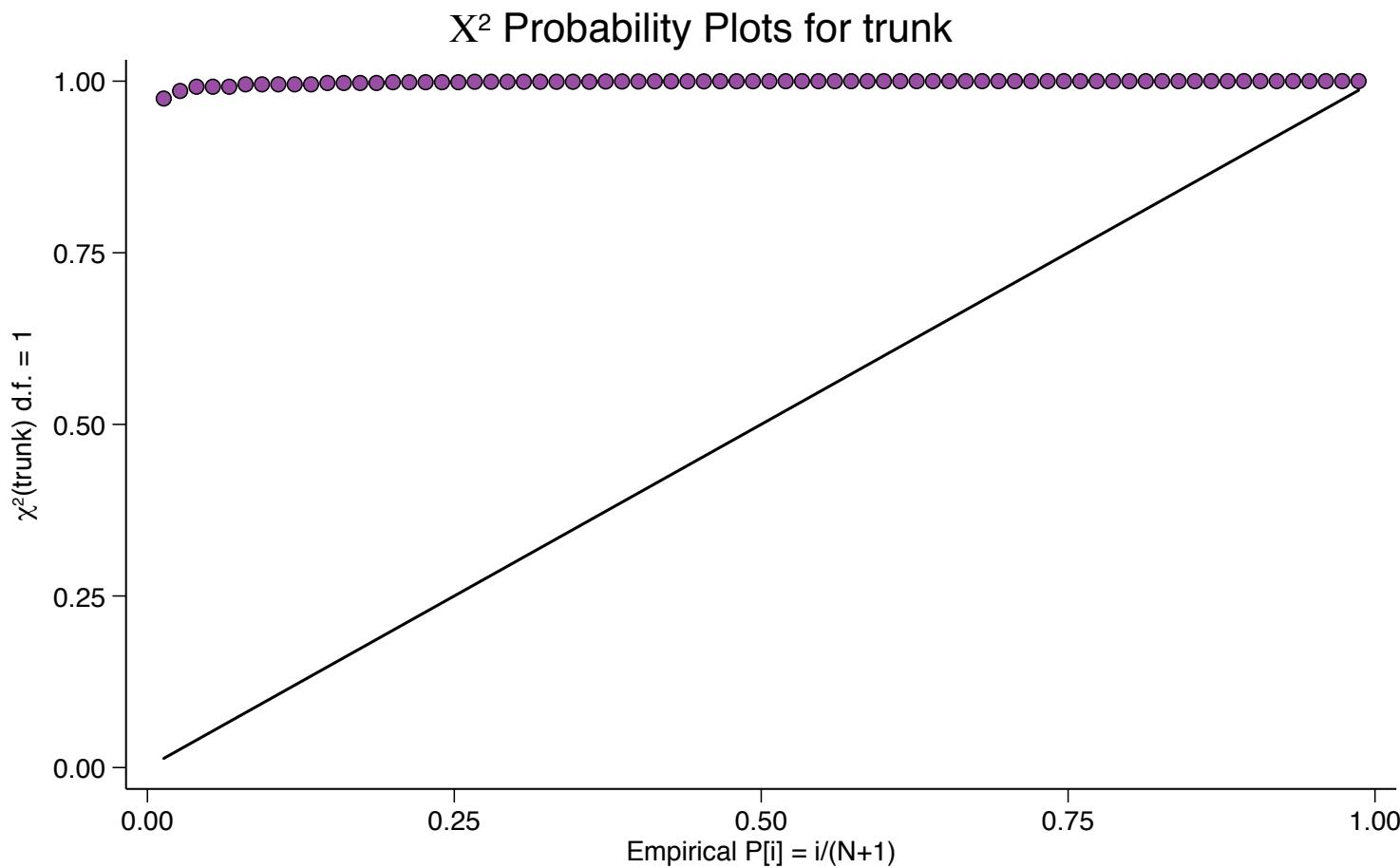
Created on: 29 Oct 2015 at: 15:29:42

Figure 1.31: Chi-Squared Quantiles v. Trunk space (cu. ft.)



Created on: 29 Oct 2015 at: 15:29:45

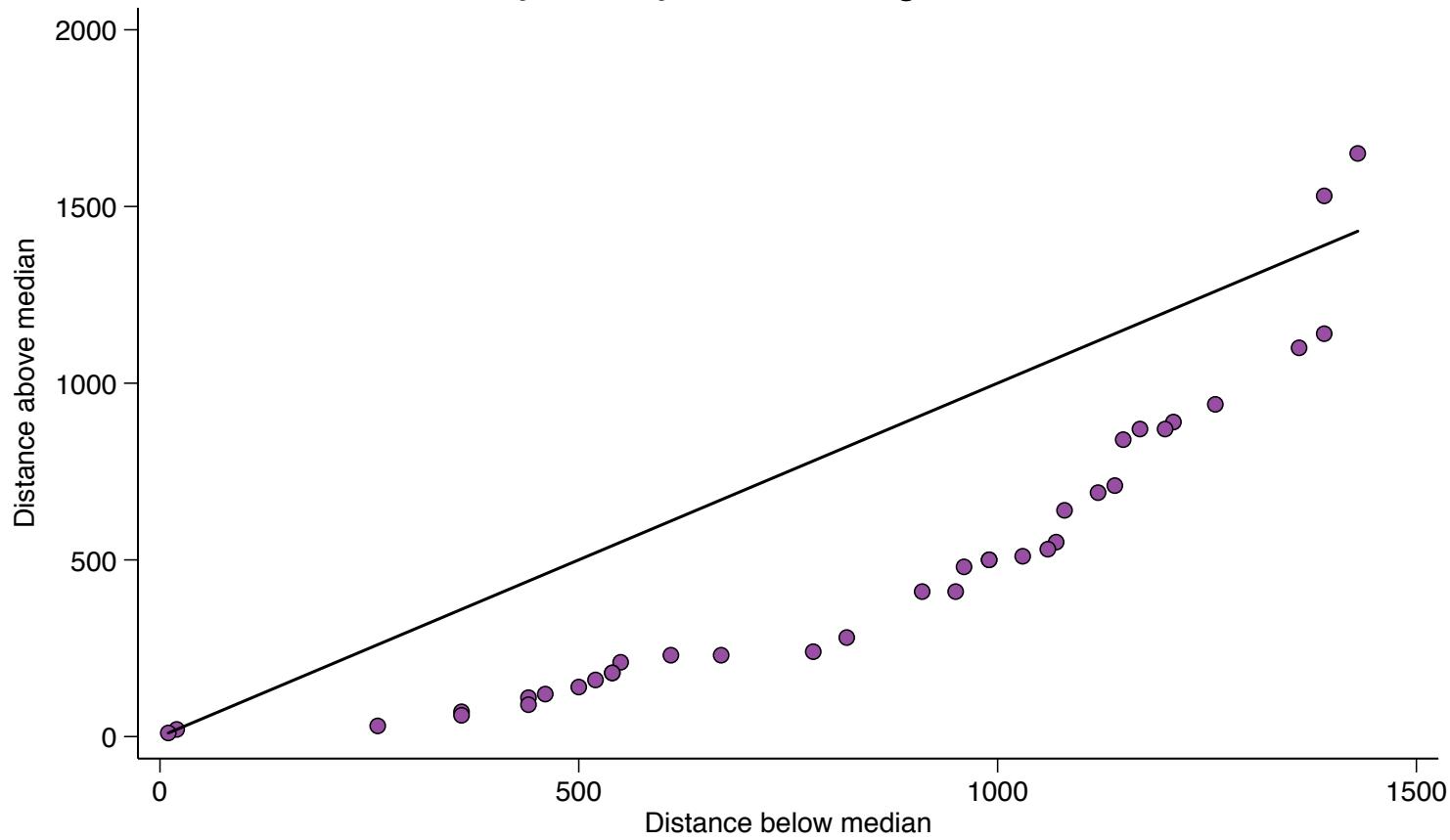
Figure 1.32: Chi-Squared Probability Trunk space (cu. ft.)



Created on: 29 Oct 2015 at: 15:29:47

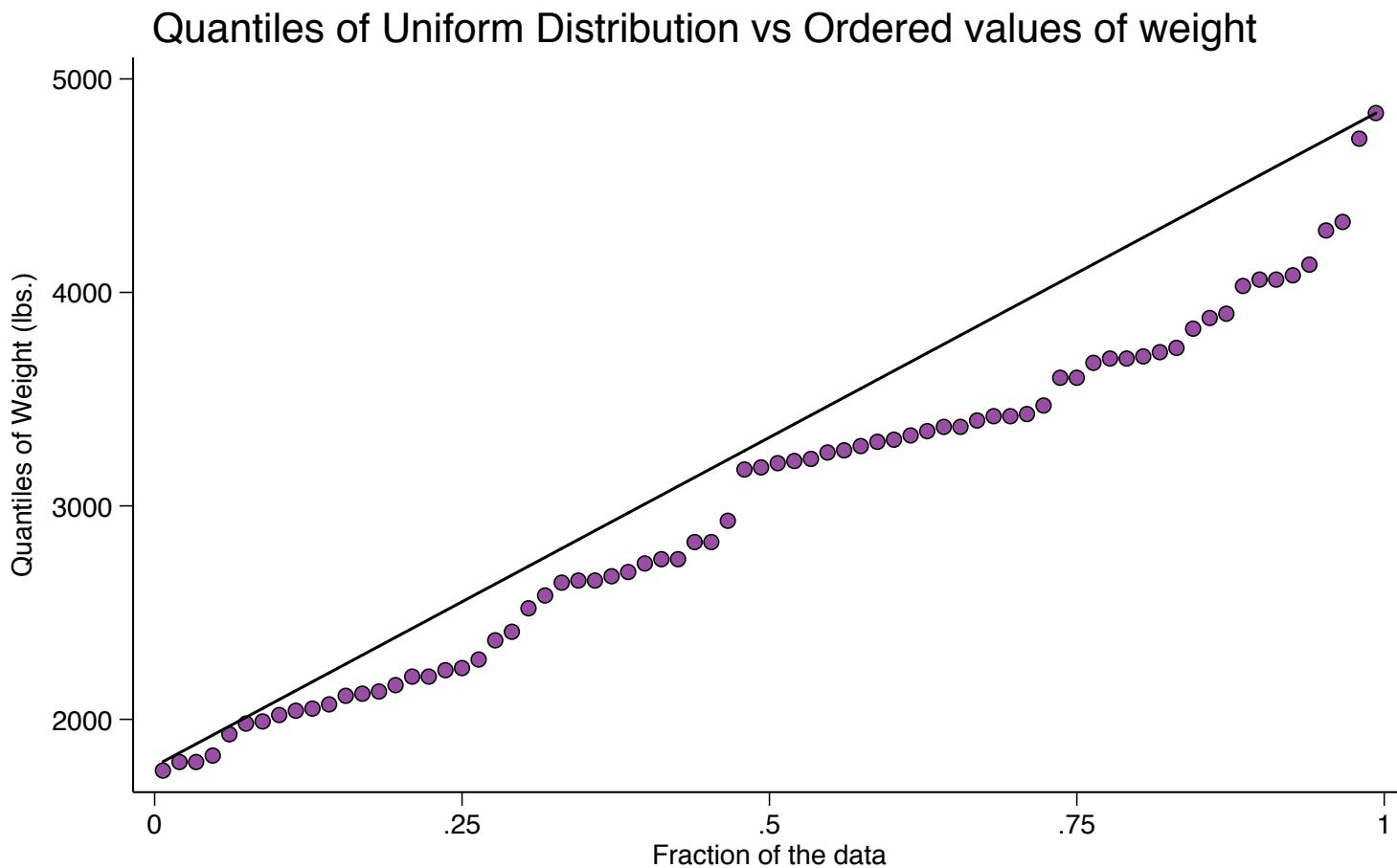
Figure 1.33: Symmetry Plot for Weight (lbs.)

Symmetry Plot for weight



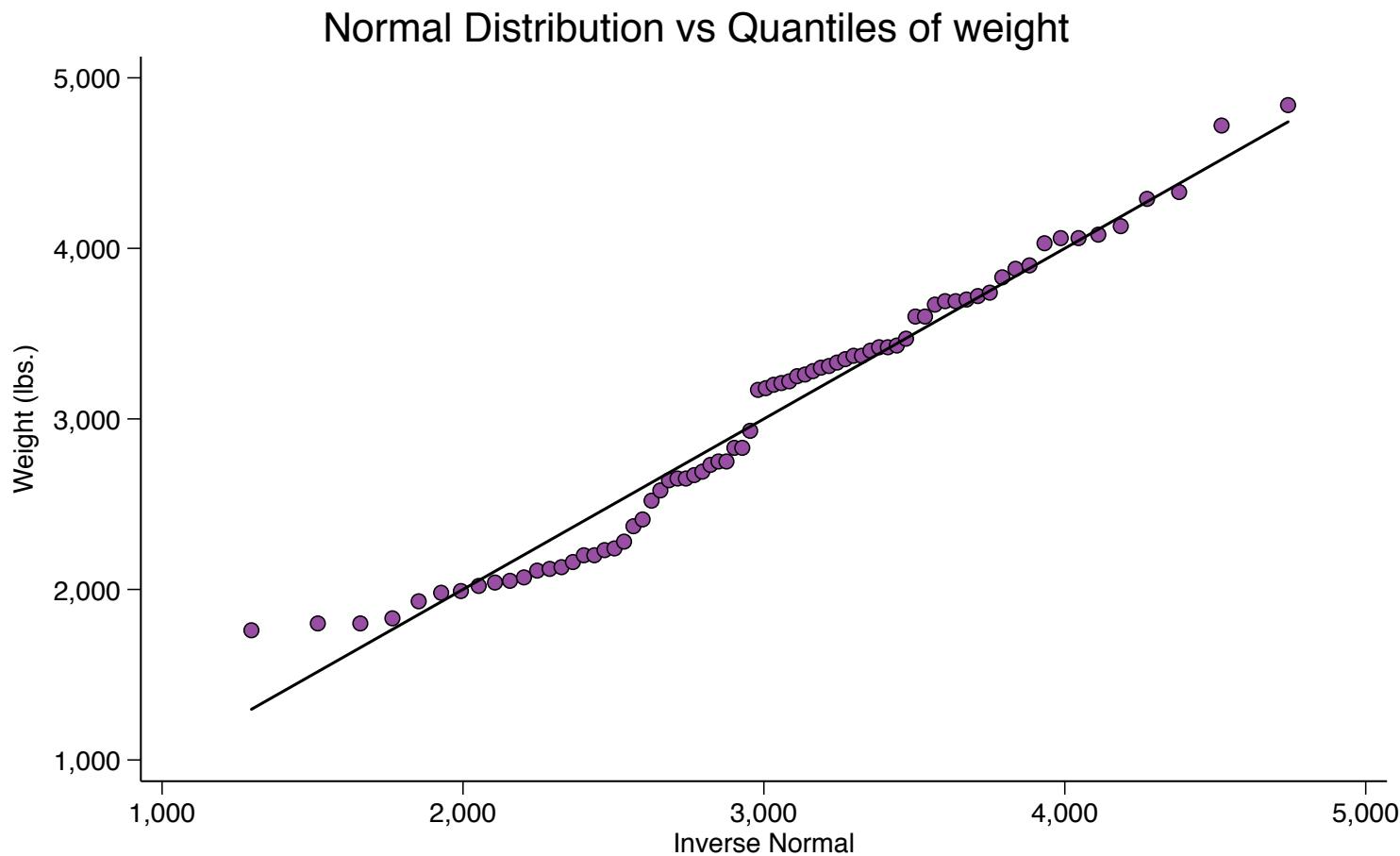
Created on: 29 Oct 2015 at: 15:29:49

Figure 1.34: Quantiles of Uniform Distribution vs Ordered values of Weight (lbs.)



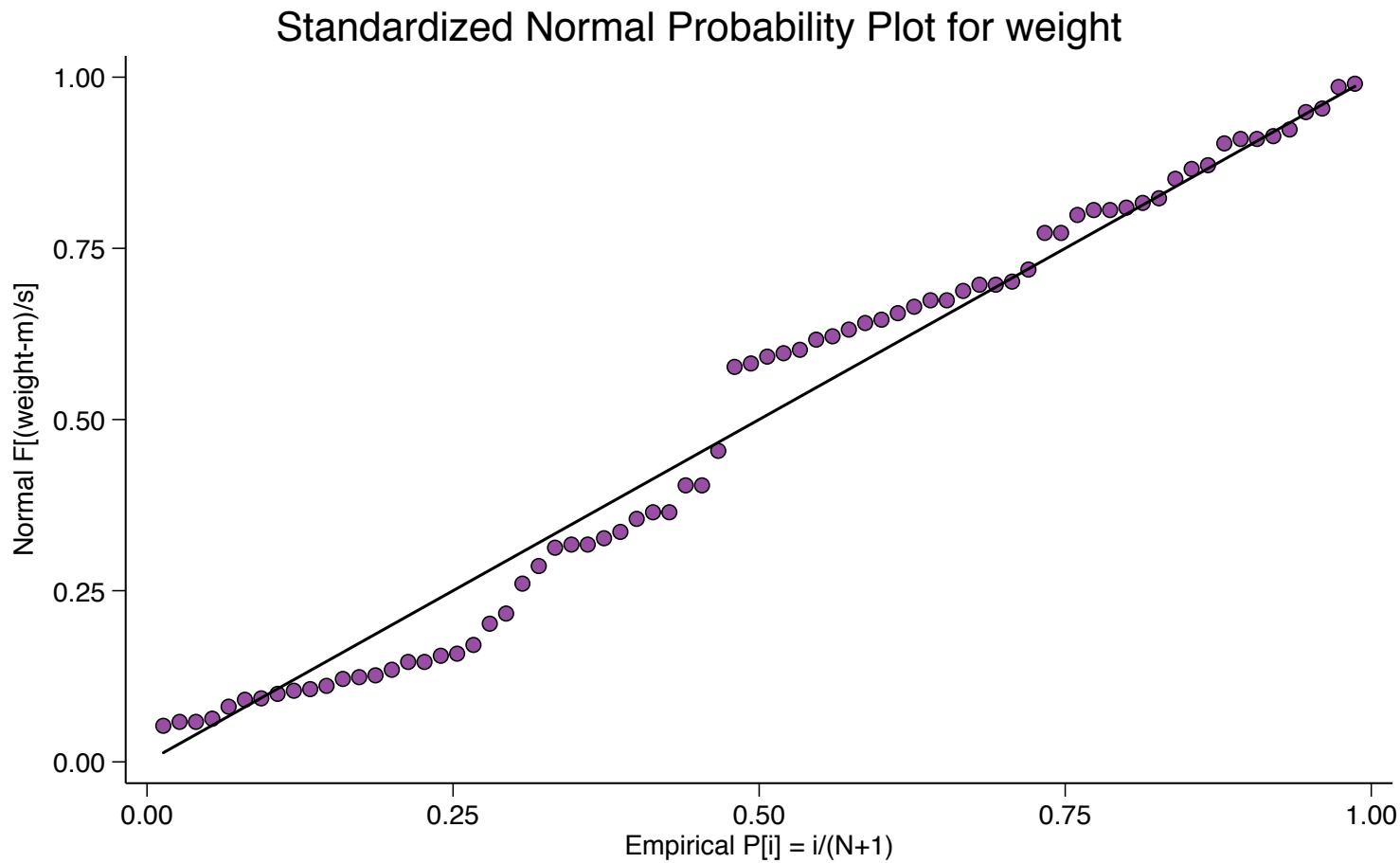
Created on: 29 Oct 2015 at: 15:29:51

Figure 1.35: Normal Distribution vs Quantiles of Weight (lbs.)



Created on: 29 Oct 2015 at: 15:29:53

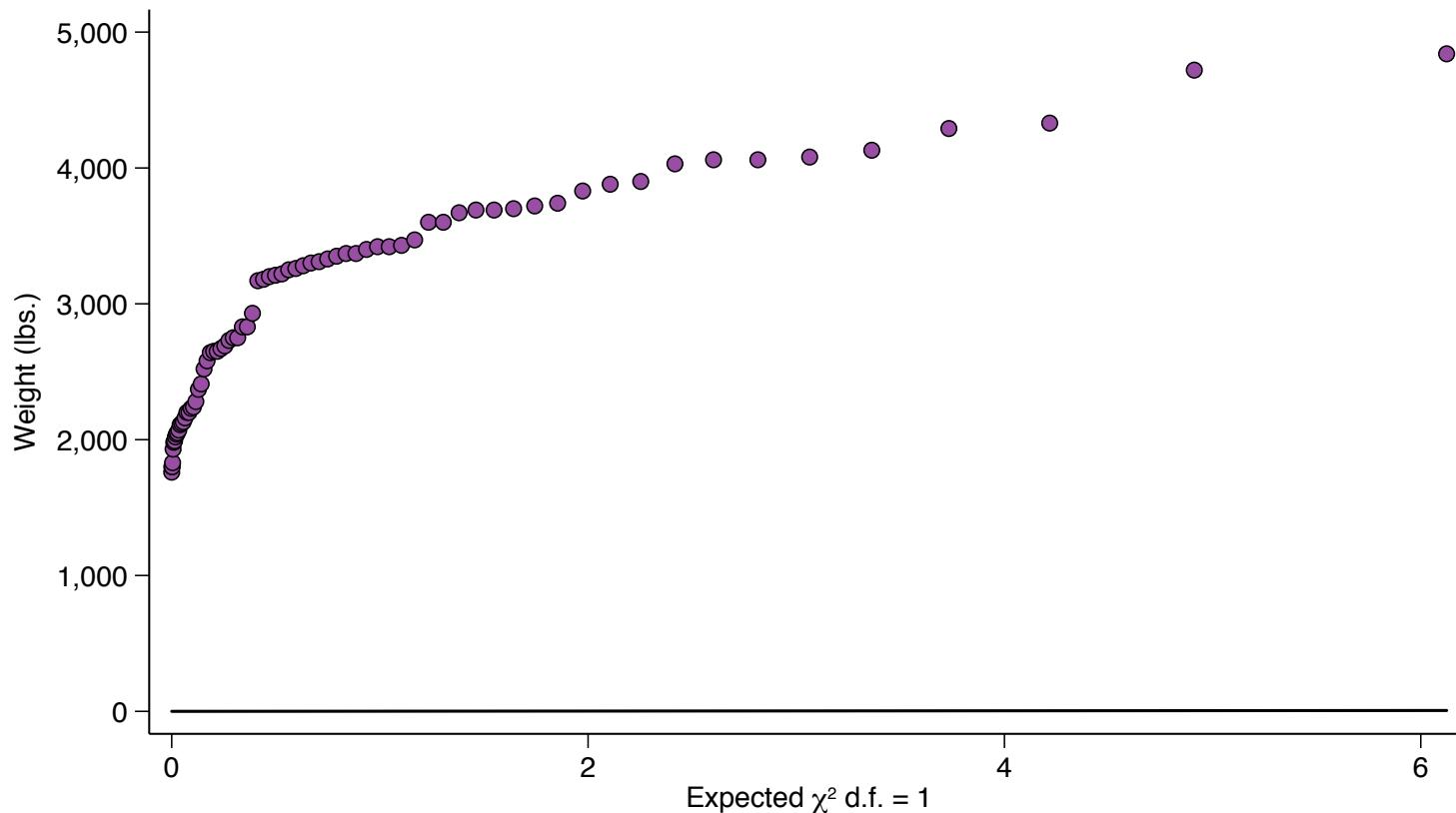
Figure 1.36: Standardized Normal Probability Plot for Weight (lbs.)



Created on: 29 Oct 2015 at: 15:29:55

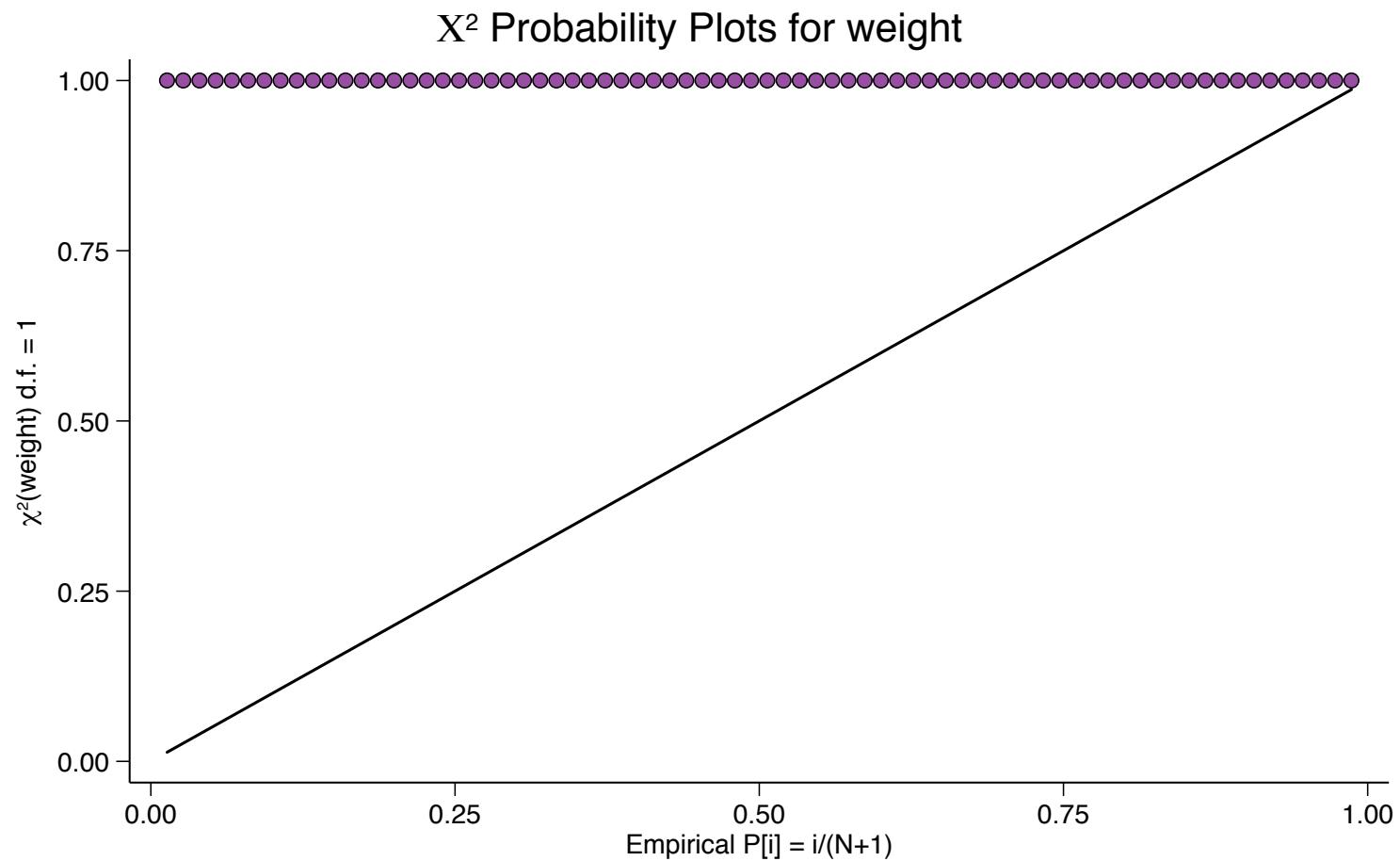
Figure 1.37: Chi-Squared Quantiles v. Weight (lbs.)

Quantiles of weight vs.
Quantiles of χ^2



Created on: 29 Oct 2015 at: 15:29:57

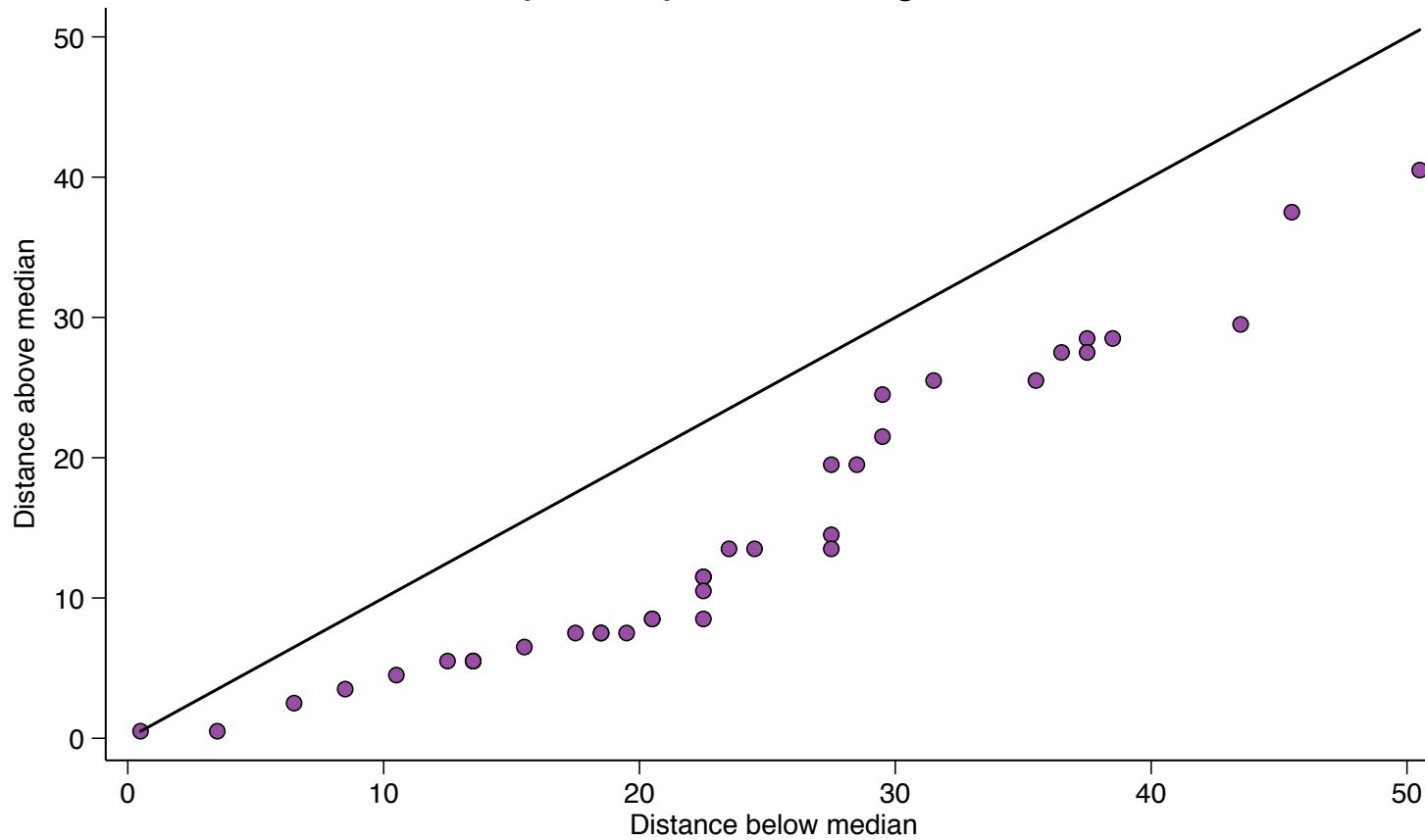
Figure 1.38: Chi-Squared Probability Weight (lbs.)



Created on: 29 Oct 2015 at: 15:30:00

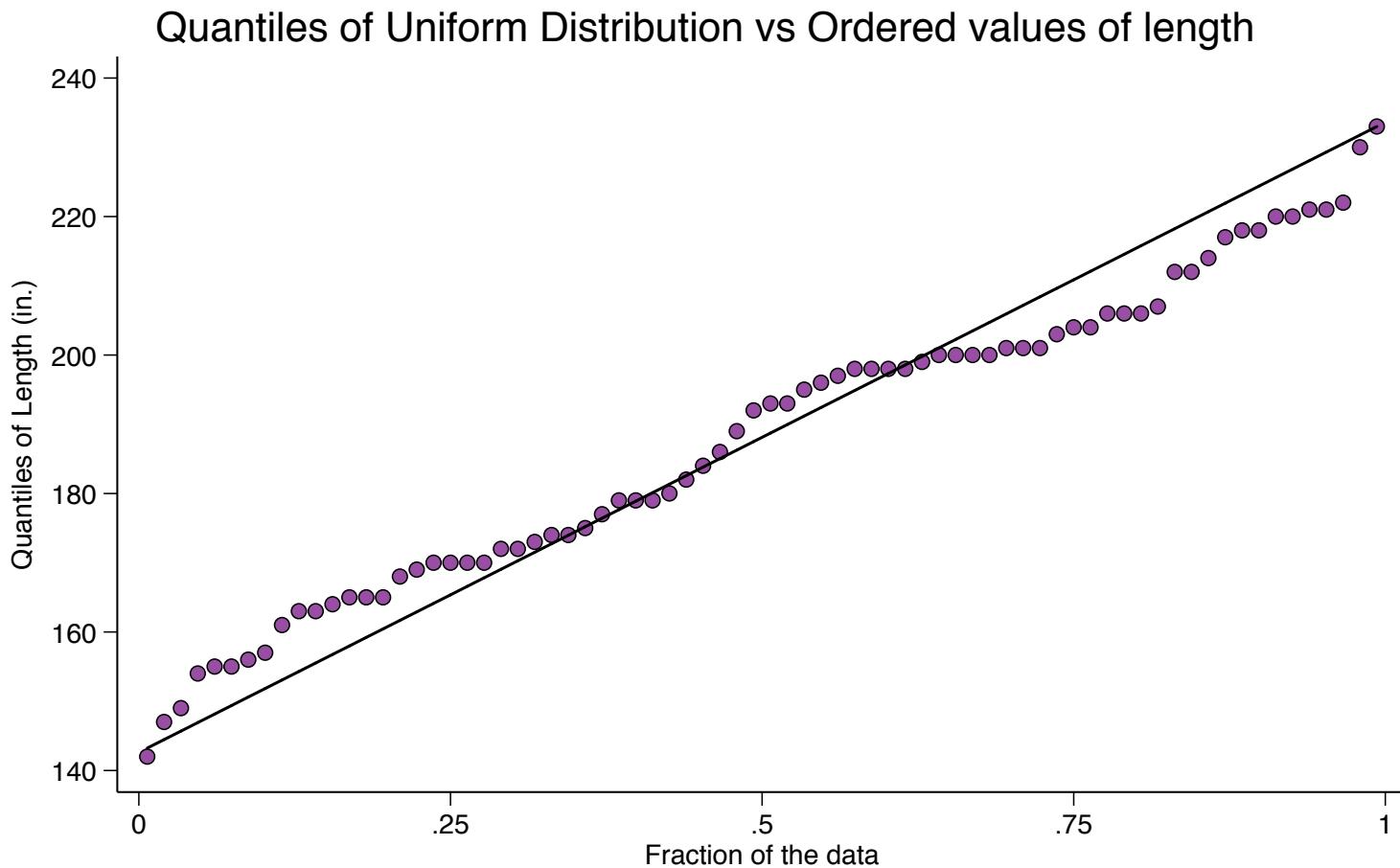
Figure 1.39: Symmetry Plot for Length (in.)

Symmetry Plot for length



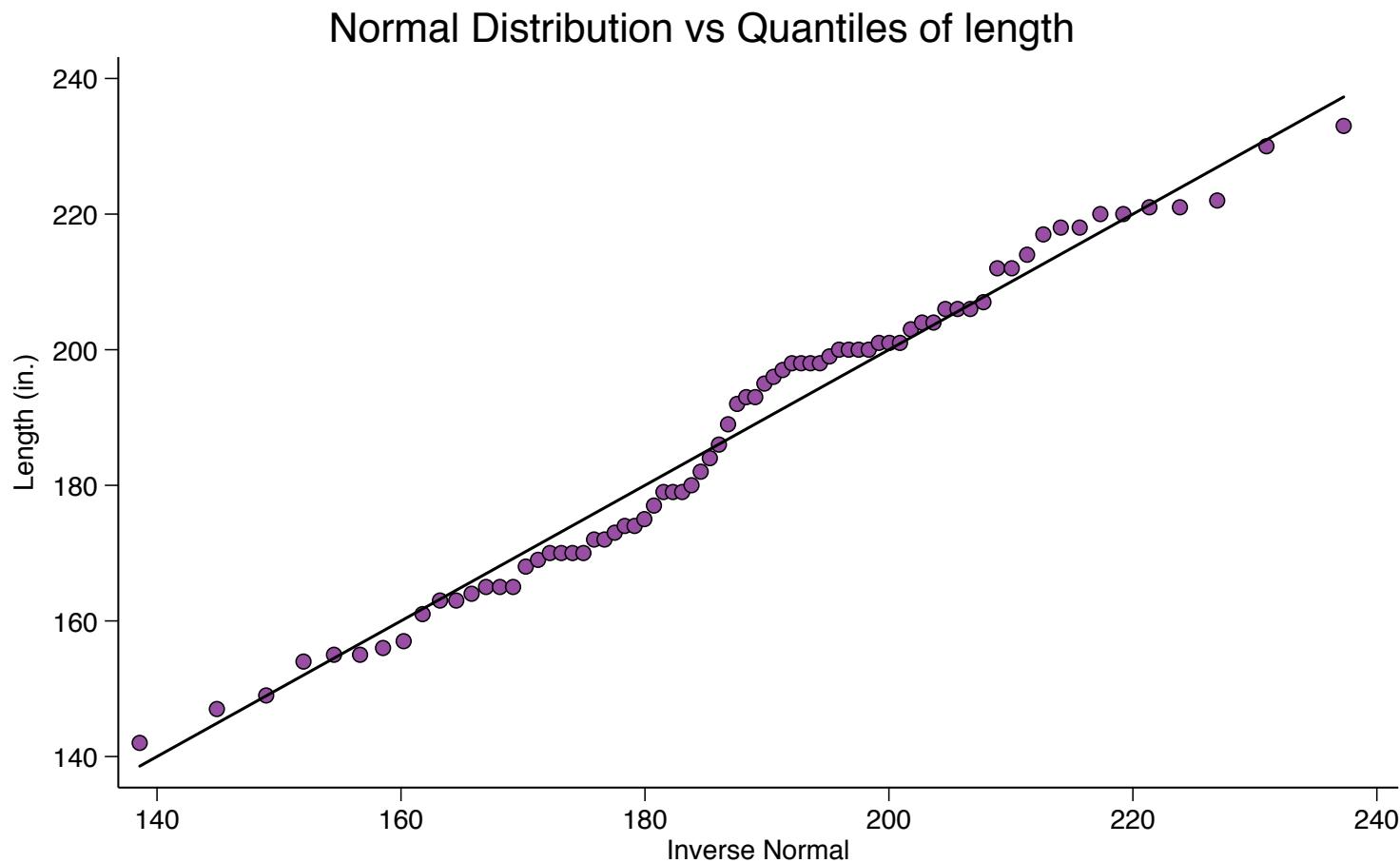
Created on: 29 Oct 2015 at: 15:30:02

Figure 1.40: Quantiles of Uniform Distribution vs Ordered values of Length (in.)



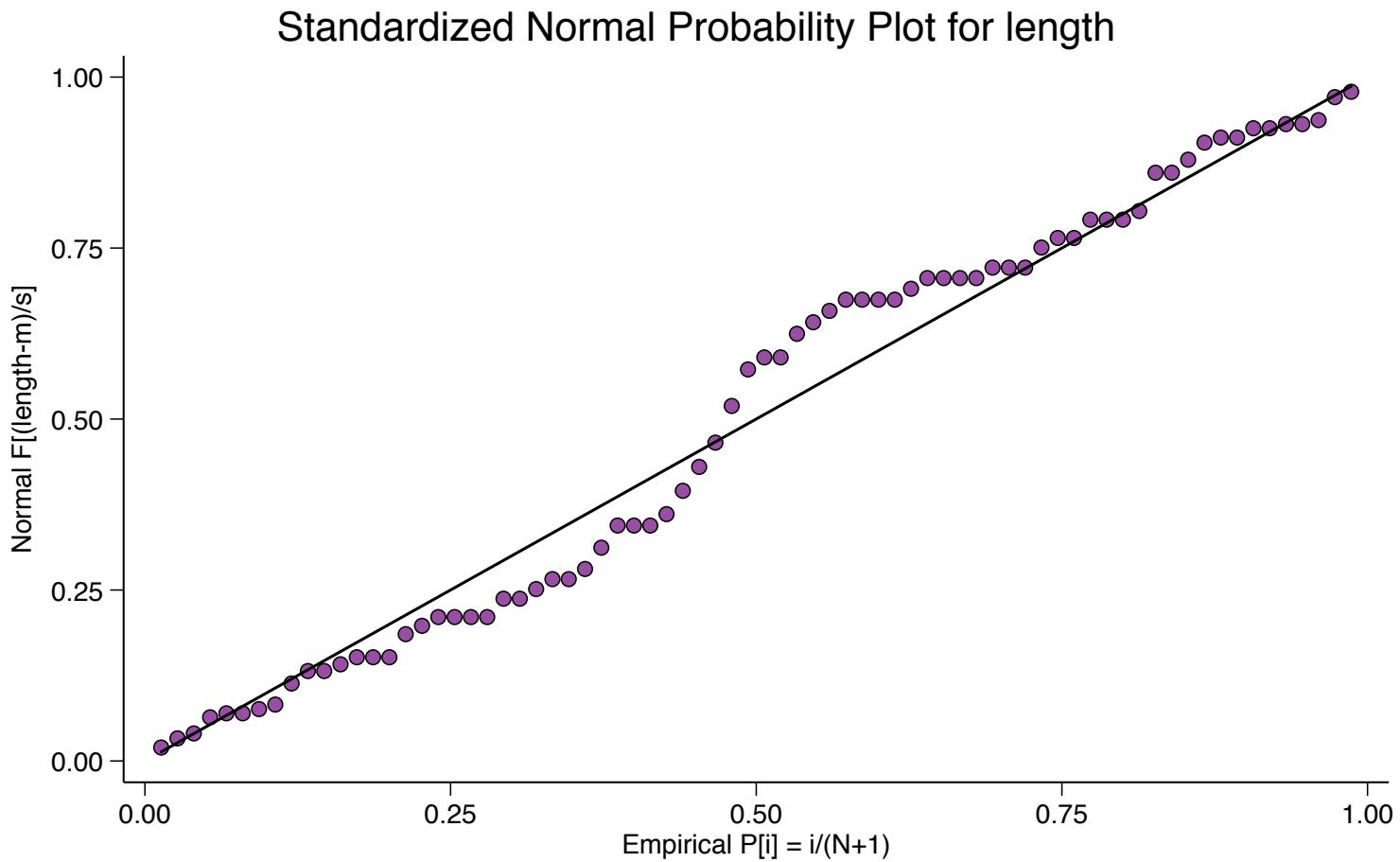
Created on: 29 Oct 2015 at: 15:30:04

Figure 1.41: Normal Distribution vs Quantiles of Length (in.)



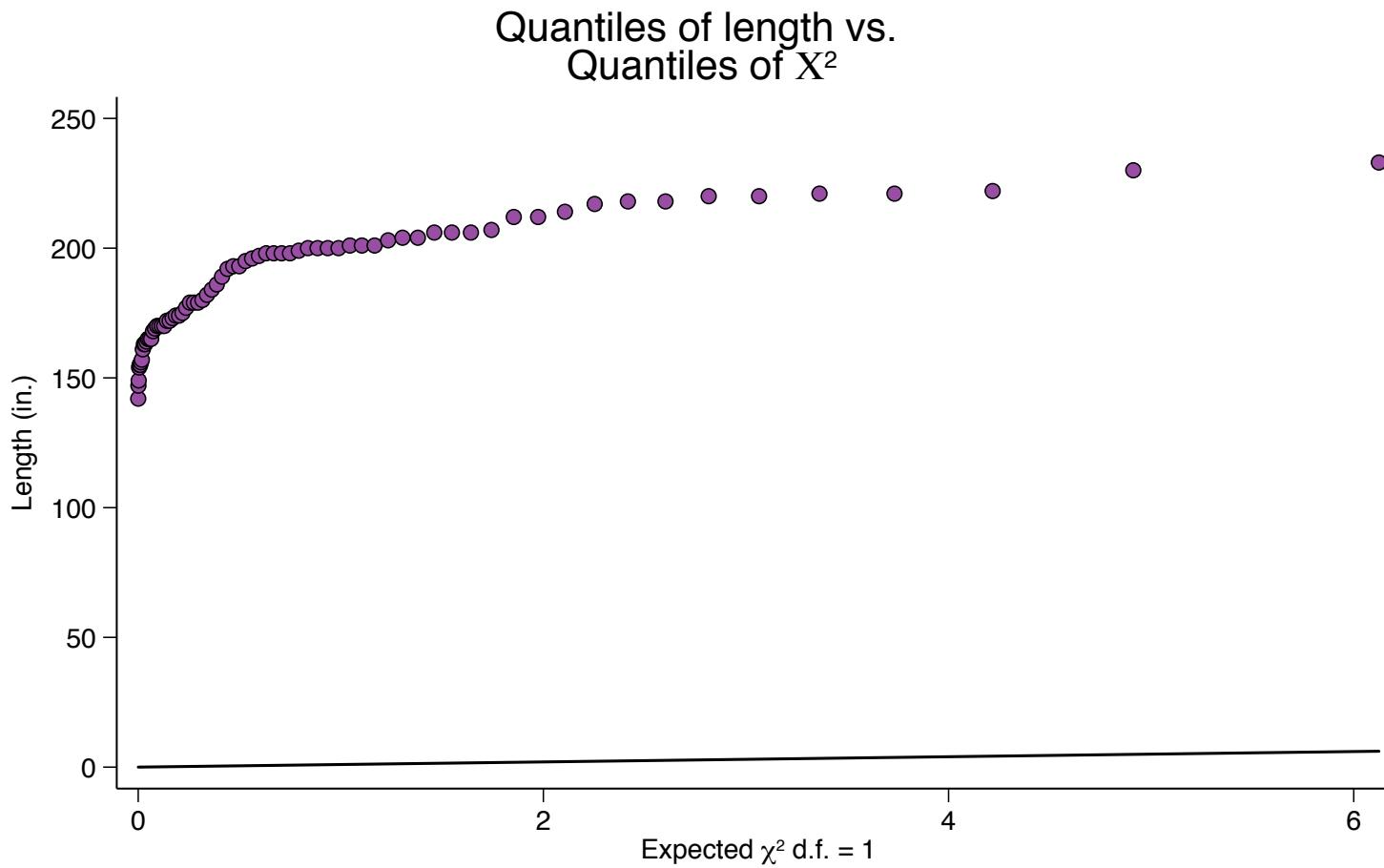
Created on: 29 Oct 2015 at: 15:30:06

Figure 1.42: Standardized Normal Probability Plot for Length (in.)



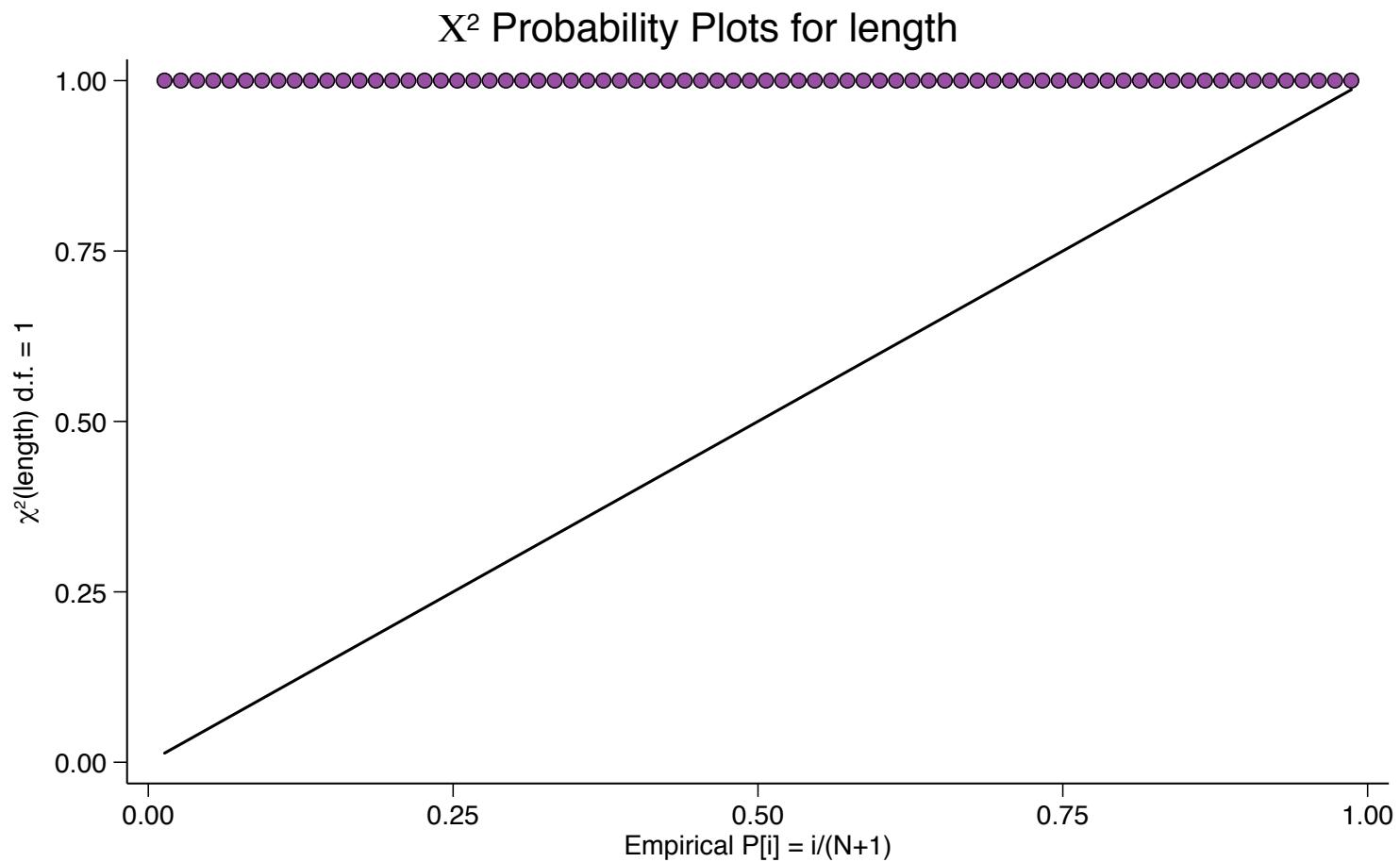
Created on: 29 Oct 2015 at: 15:30:08

Figure 1.43: Chi-Squared Quantiles v. Length (in.)



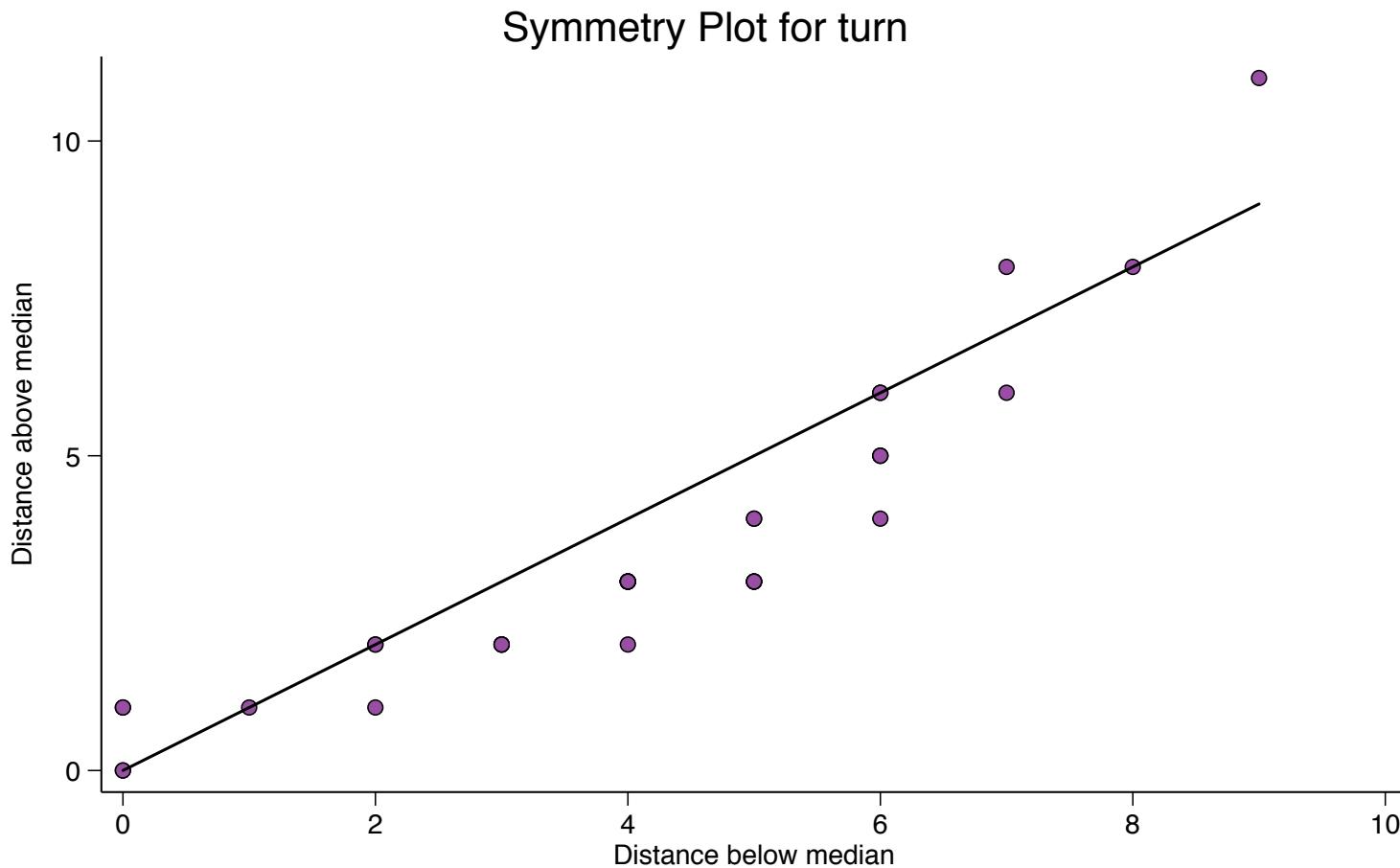
Created on: 29 Oct 2015 at: 15:30:10

Figure 1.44: Chi-Squared Probability Length (in.)



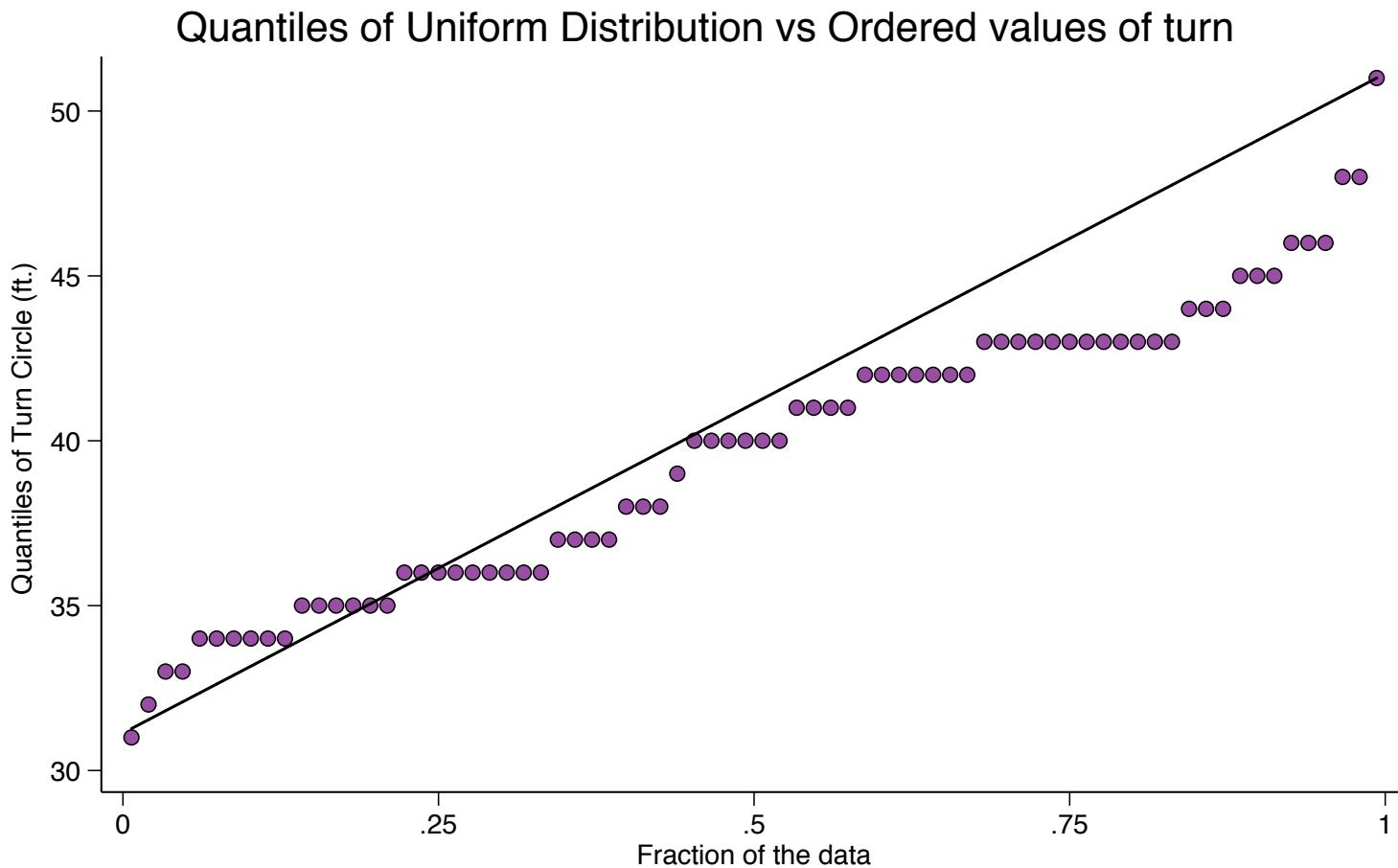
Created on: 29 Oct 2015 at: 15:30:12

Figure 1.45: Symmetry Plot for Turn Circle (ft.)



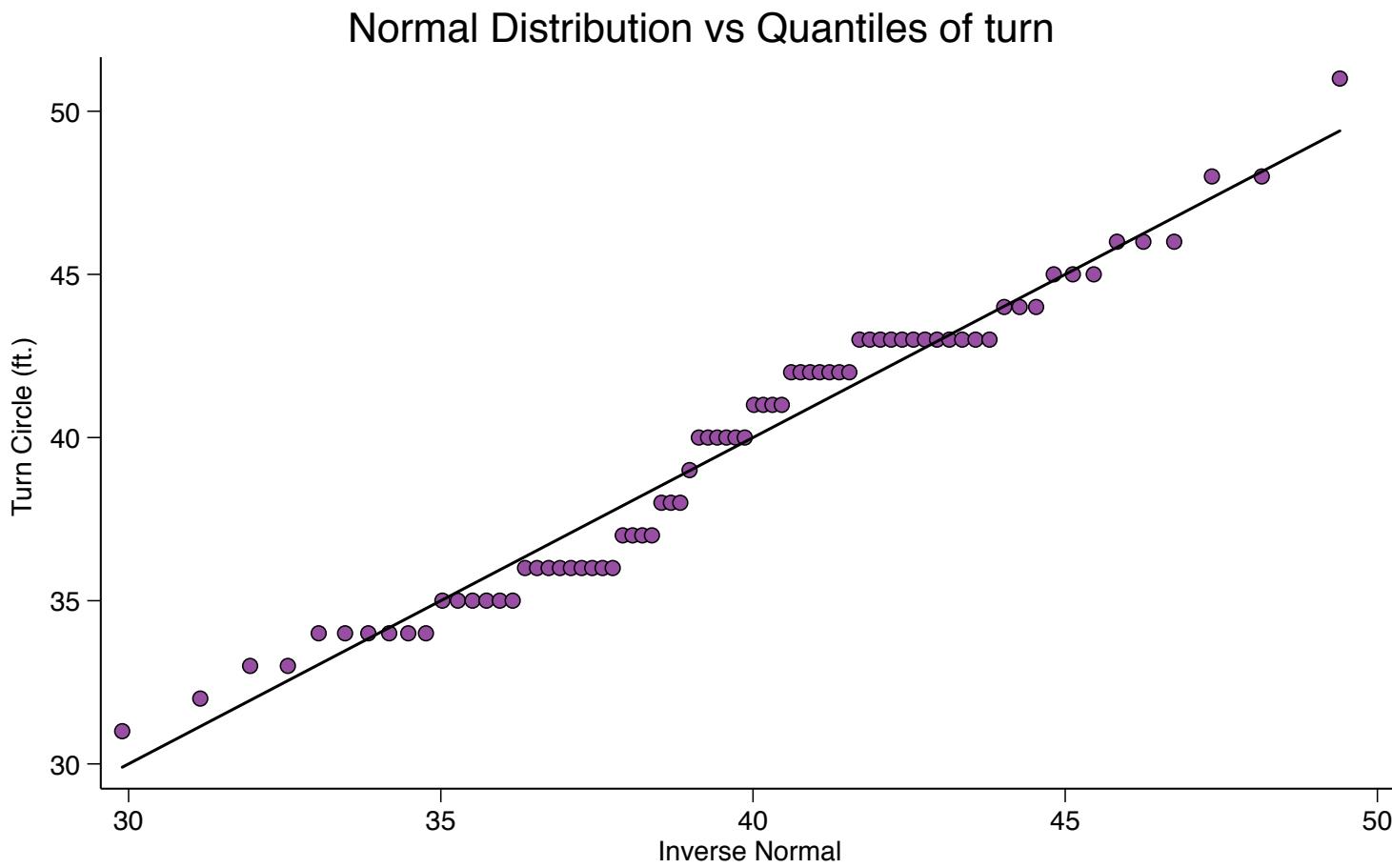
Created on: 29 Oct 2015 at: 15:30:14

Figure 1.46: Quantiles of Uniform Distribution vs Ordered values of Turn Circle (ft.)



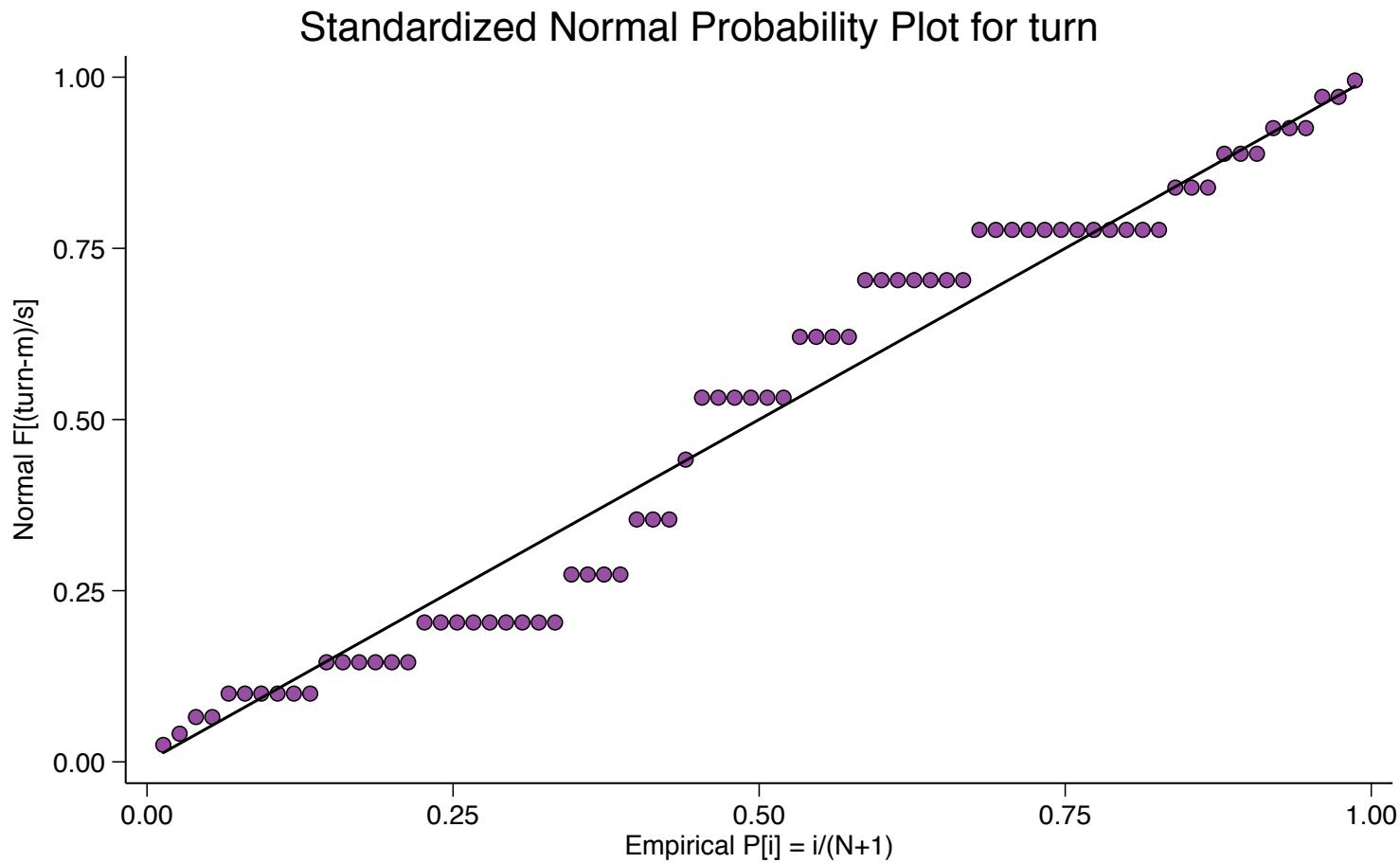
Created on: 29 Oct 2015 at: 15:30:16

Figure 1.47: Normal Distribution vs Quantiles of Turn Circle (ft.)



Created on: 29 Oct 2015 at: 15:30:19

Figure 1.48: Standardized Normal Probability Plot for Turn Circle (ft.)



Created on: 29 Oct 2015 at: 15:30:21

Figure 1.49: Chi-Squared Quantiles v. Turn Circle (ft.)

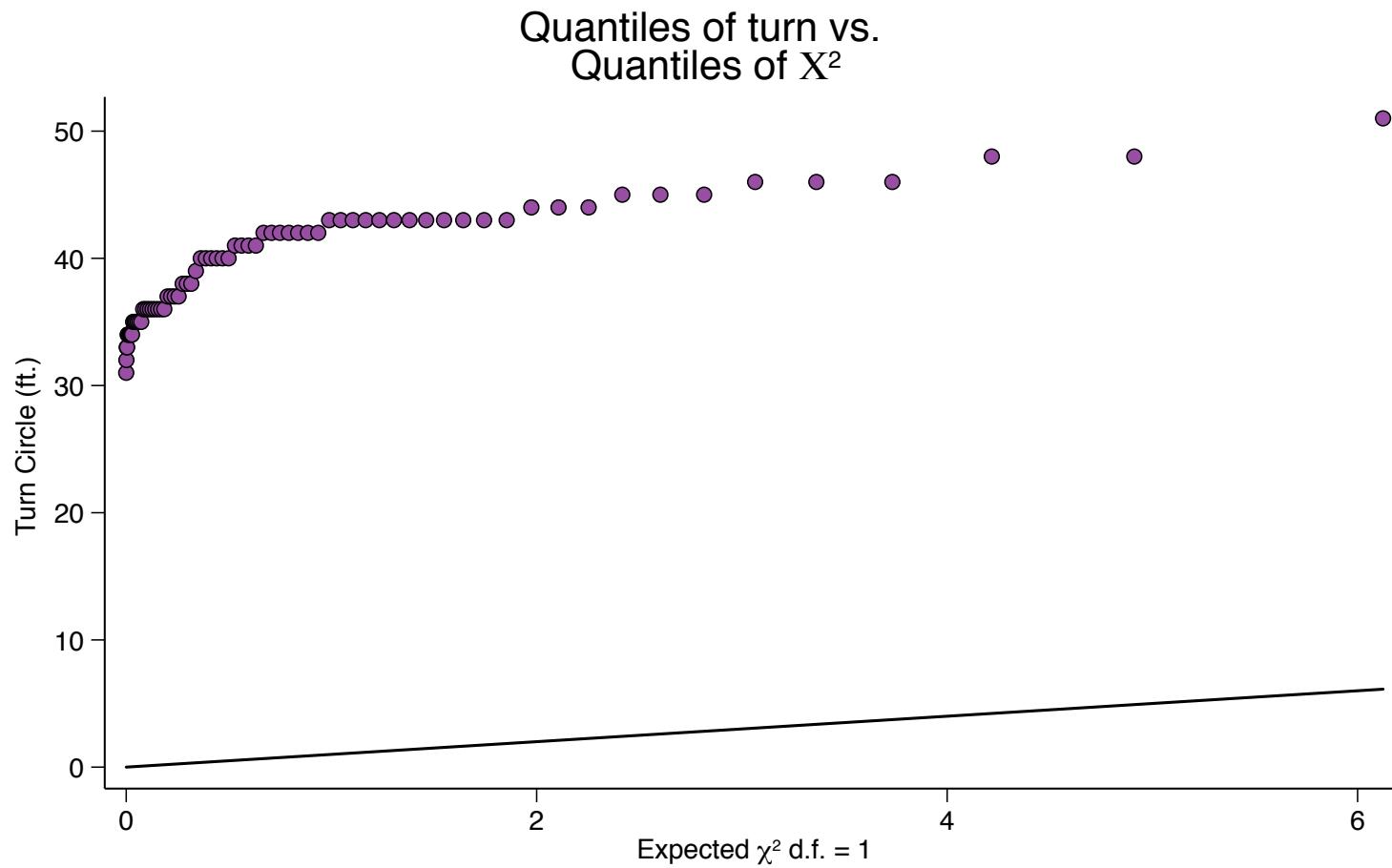
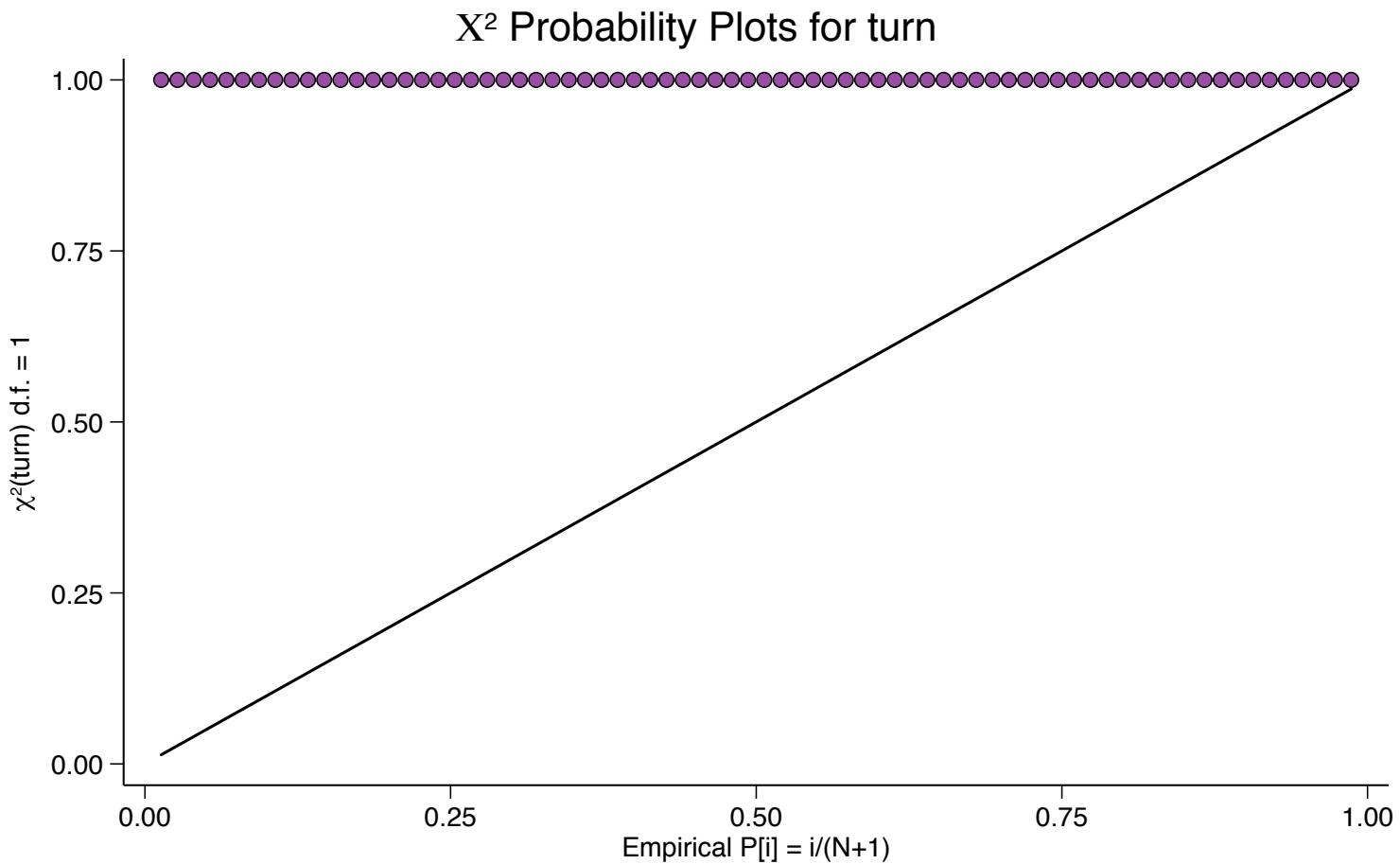


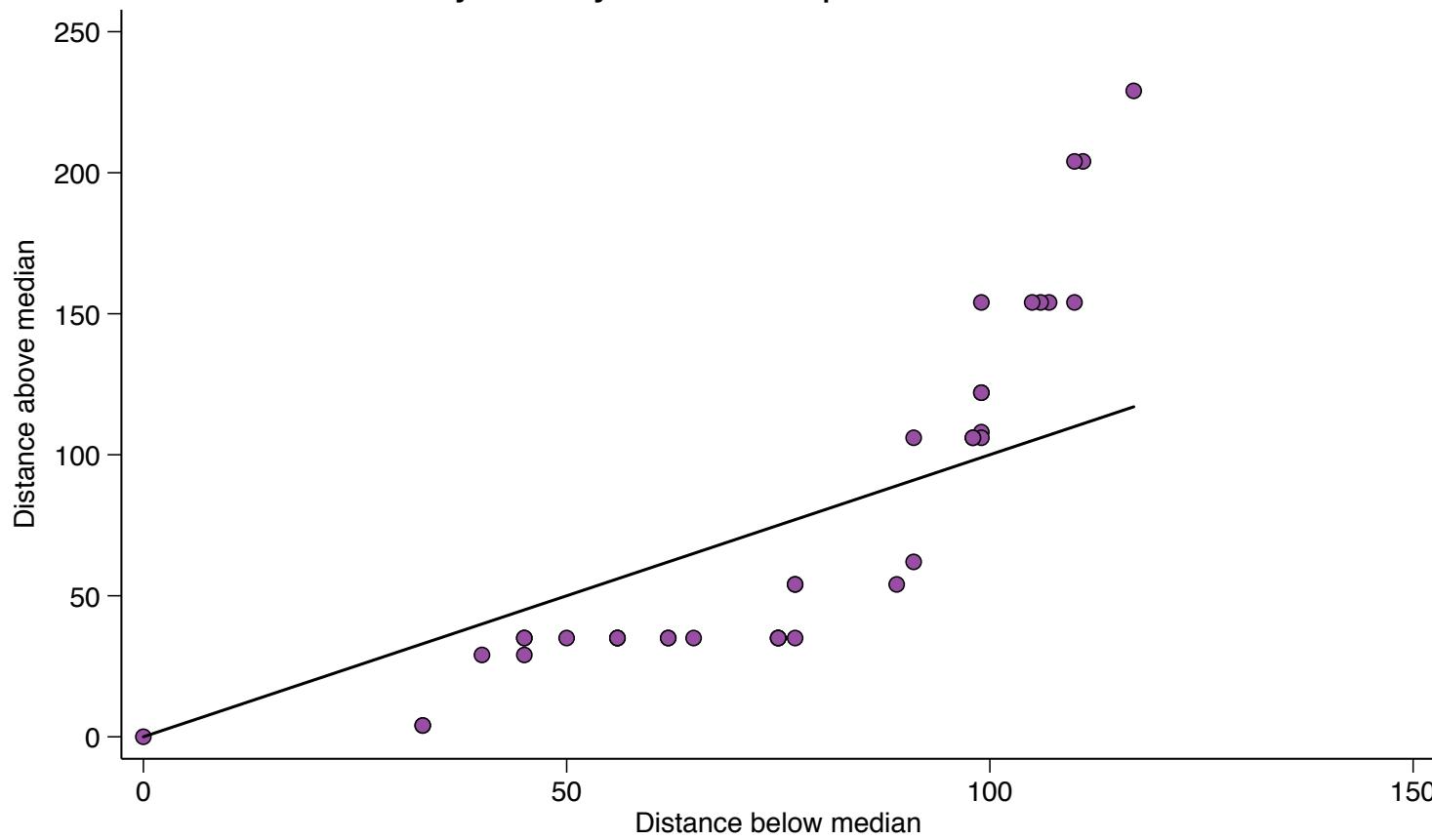
Figure 1.50: Chi-Squared Probability Turn Circle (ft.)



Created on: 29 Oct 2015 at: 15:30:25

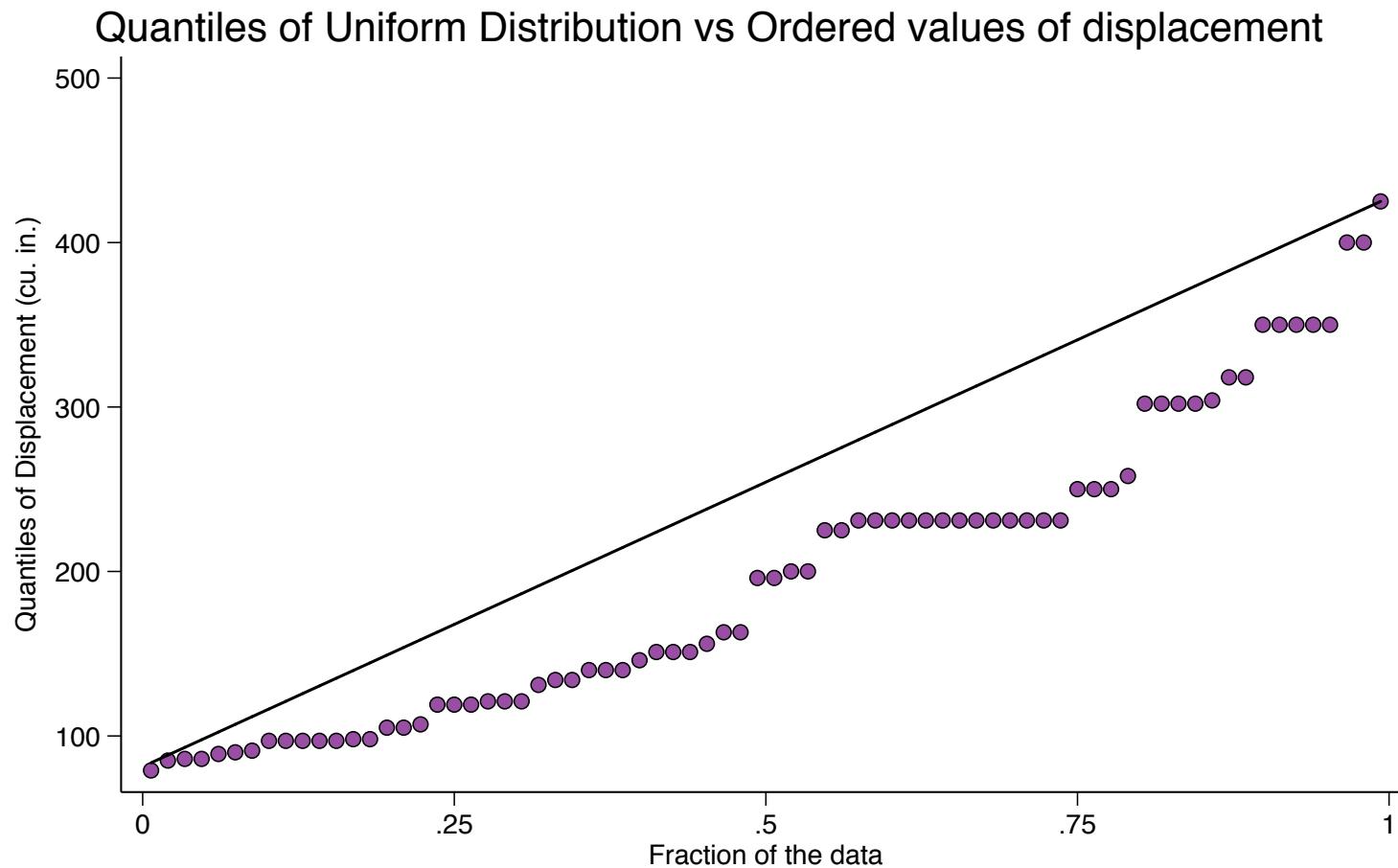
Figure 1.51: Symmetry Plot for Displacement (cu. in.)

Symmetry Plot for displacement



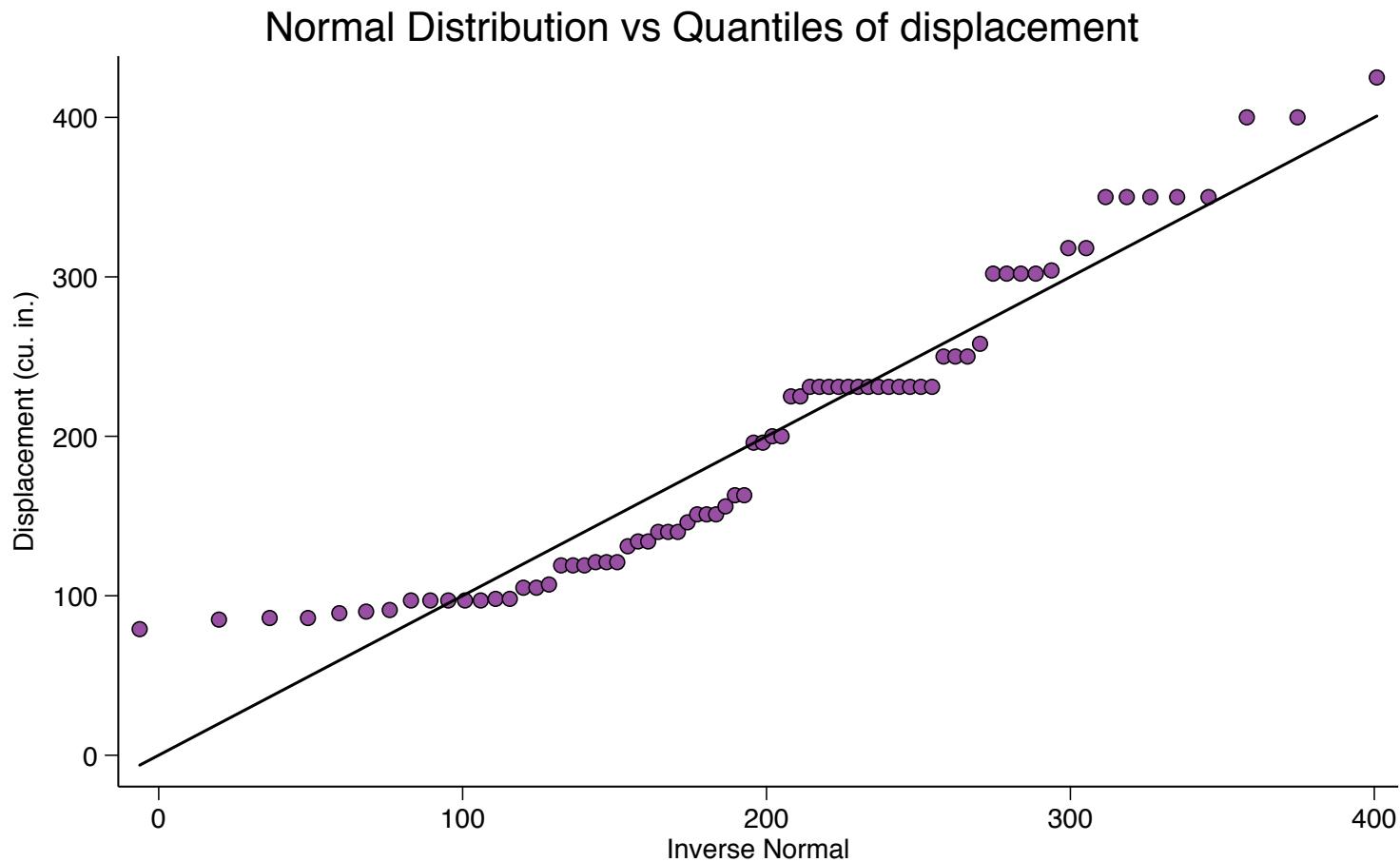
Created on: 29 Oct 2015 at: 15:30:27

Figure 1.52: Quantiles of Uniform Distribution vs Ordered values of Displacement (cu. in.)



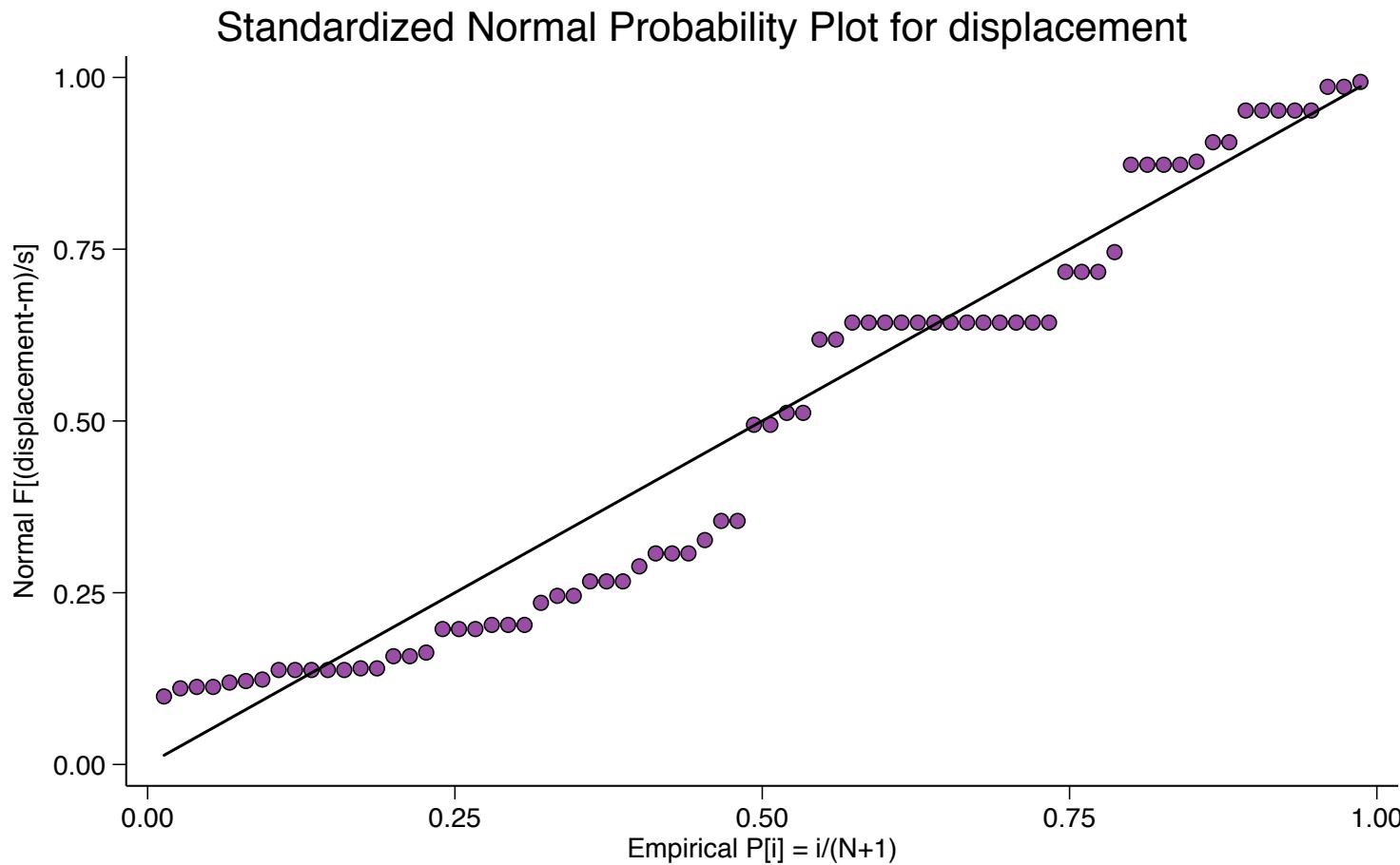
Created on: 29 Oct 2015 at: 15:30:29

Figure 1.53: Normal Distribution vs Quantiles of Displacement (cu. in.)



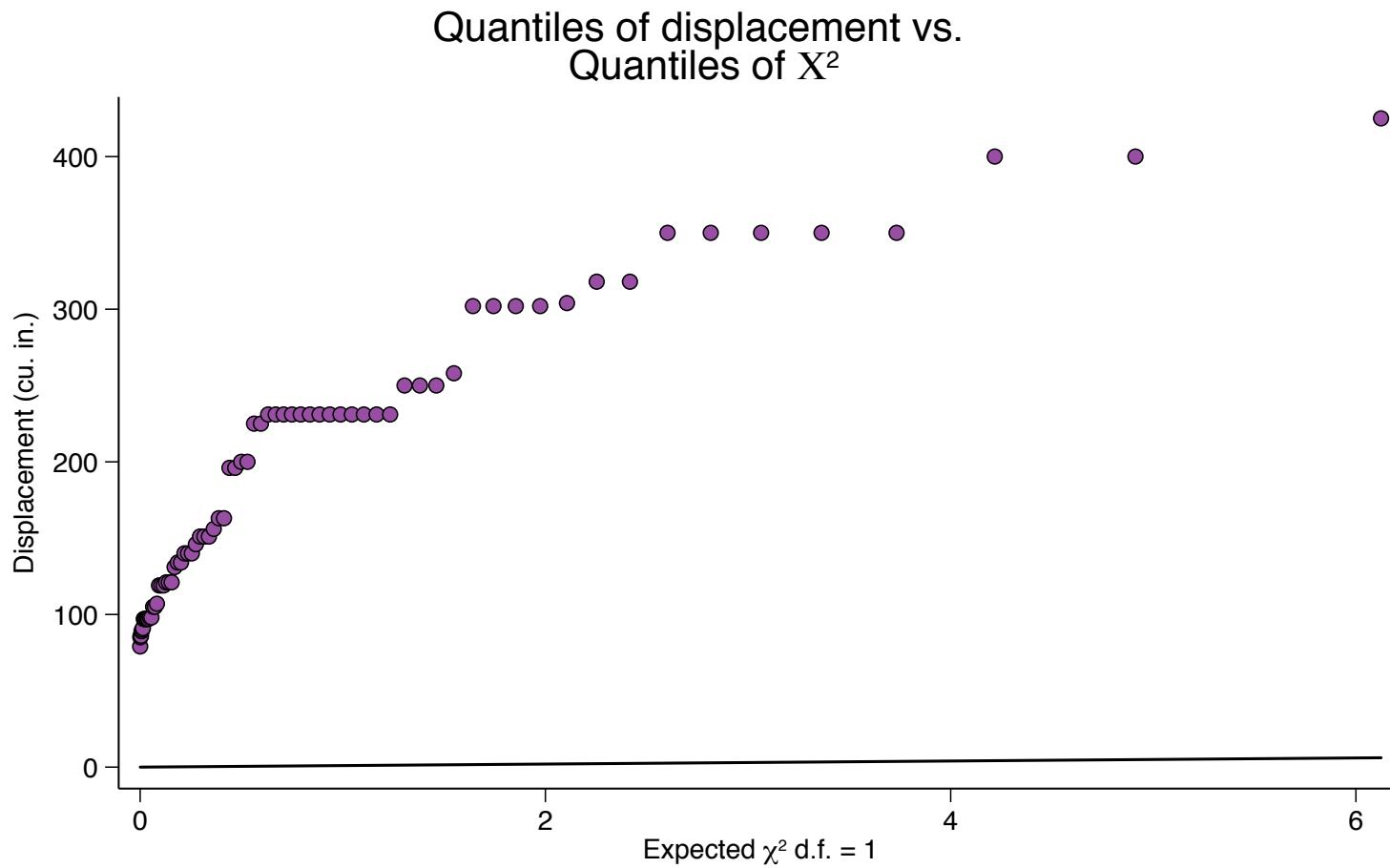
Created on: 29 Oct 2015 at: 15:30:31

Figure 1.54: Standardized Normal Probability Plot for Displacement (cu. in.)



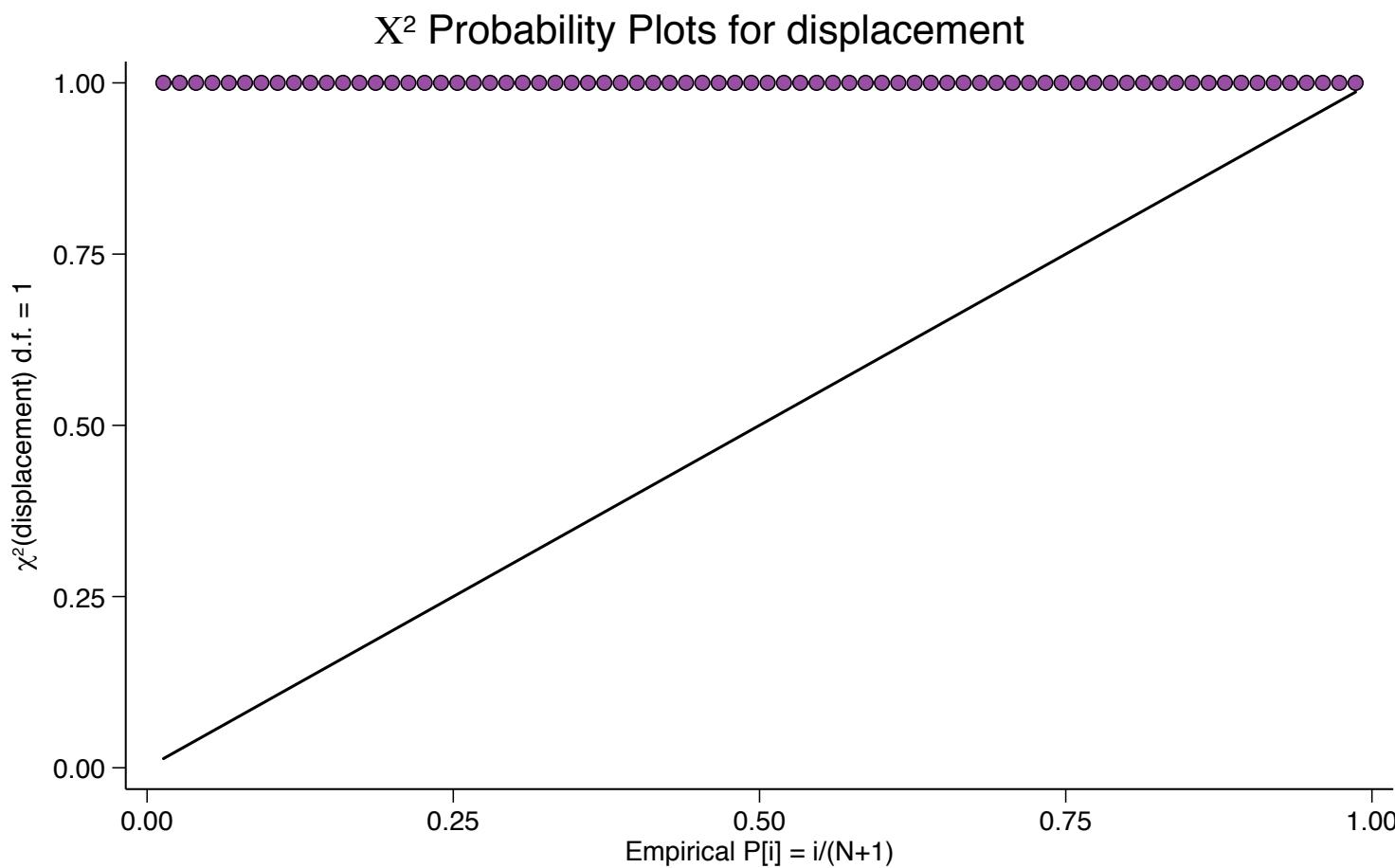
Created on: 29 Oct 2015 at: 15:30:33

Figure 1.55: Chi-Squared Quantiles v. Displacement (cu. in.)



Created on: 29 Oct 2015 at: 15:30:36

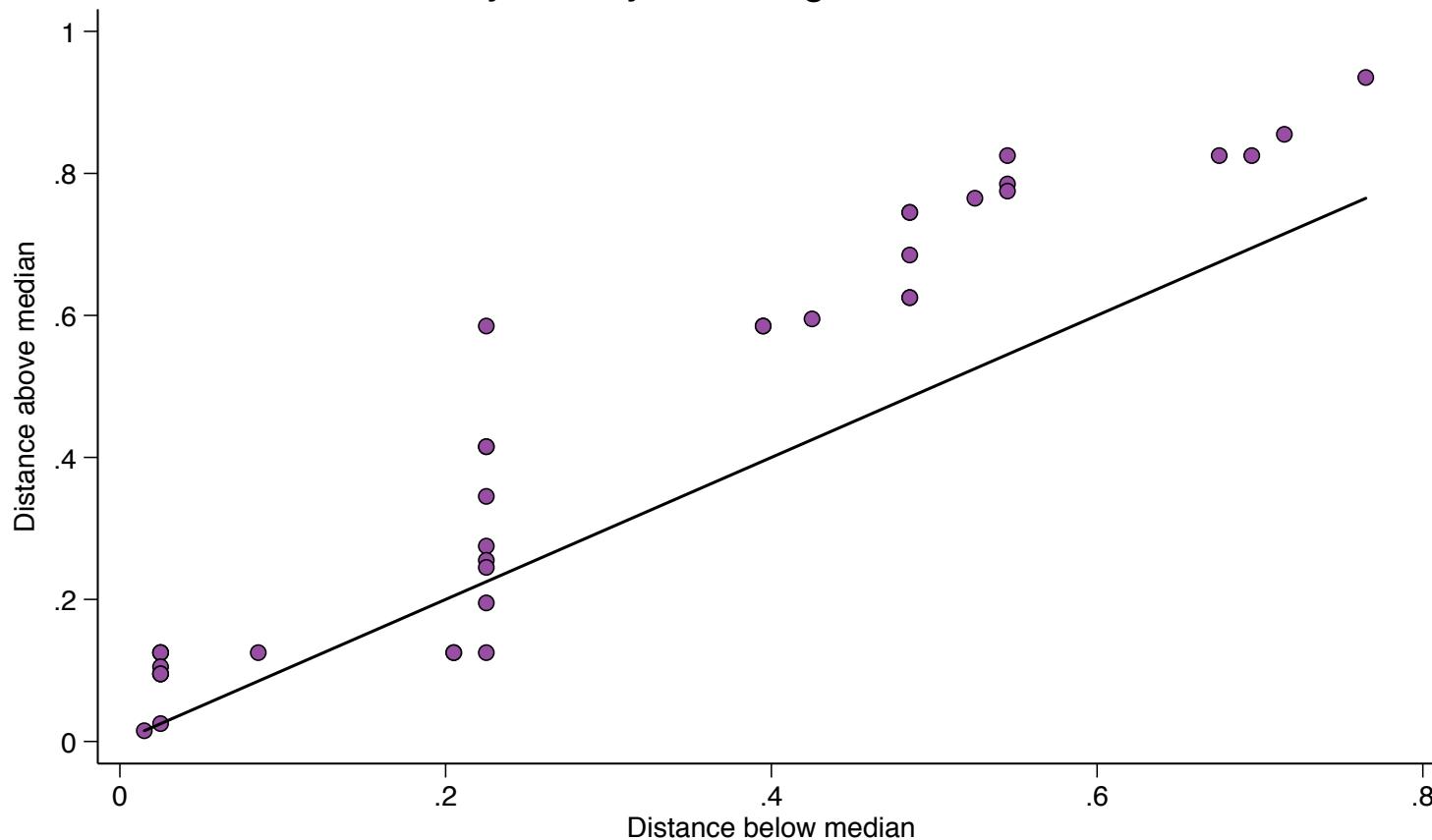
Figure 1.56: Chi-Squared Probability Displacement (cu. in.)



Created on: 29 Oct 2015 at: 15:30:38

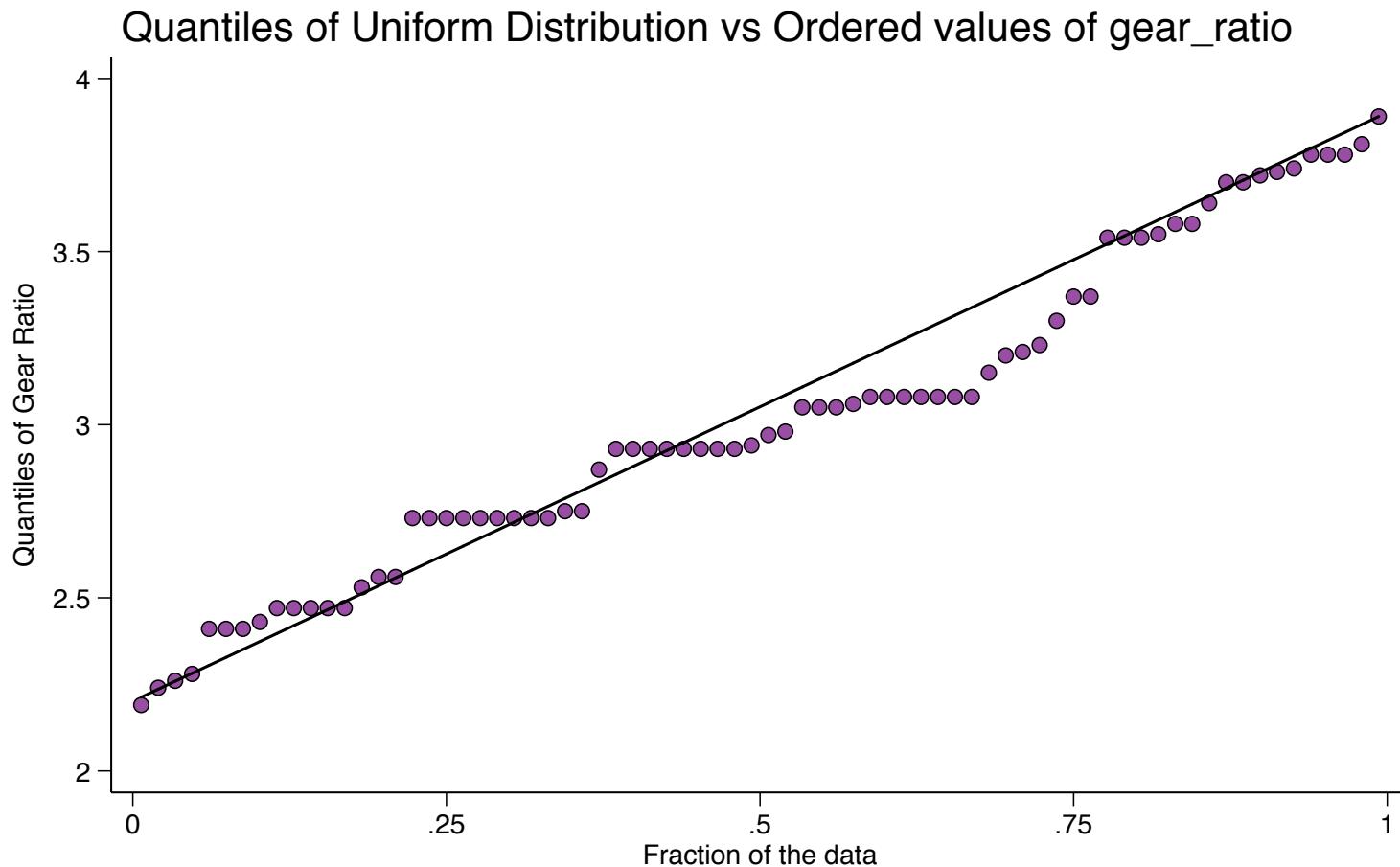
Figure 1.57: Symmetry Plot for Gear Ratio

Symmetry Plot for gear_ratio



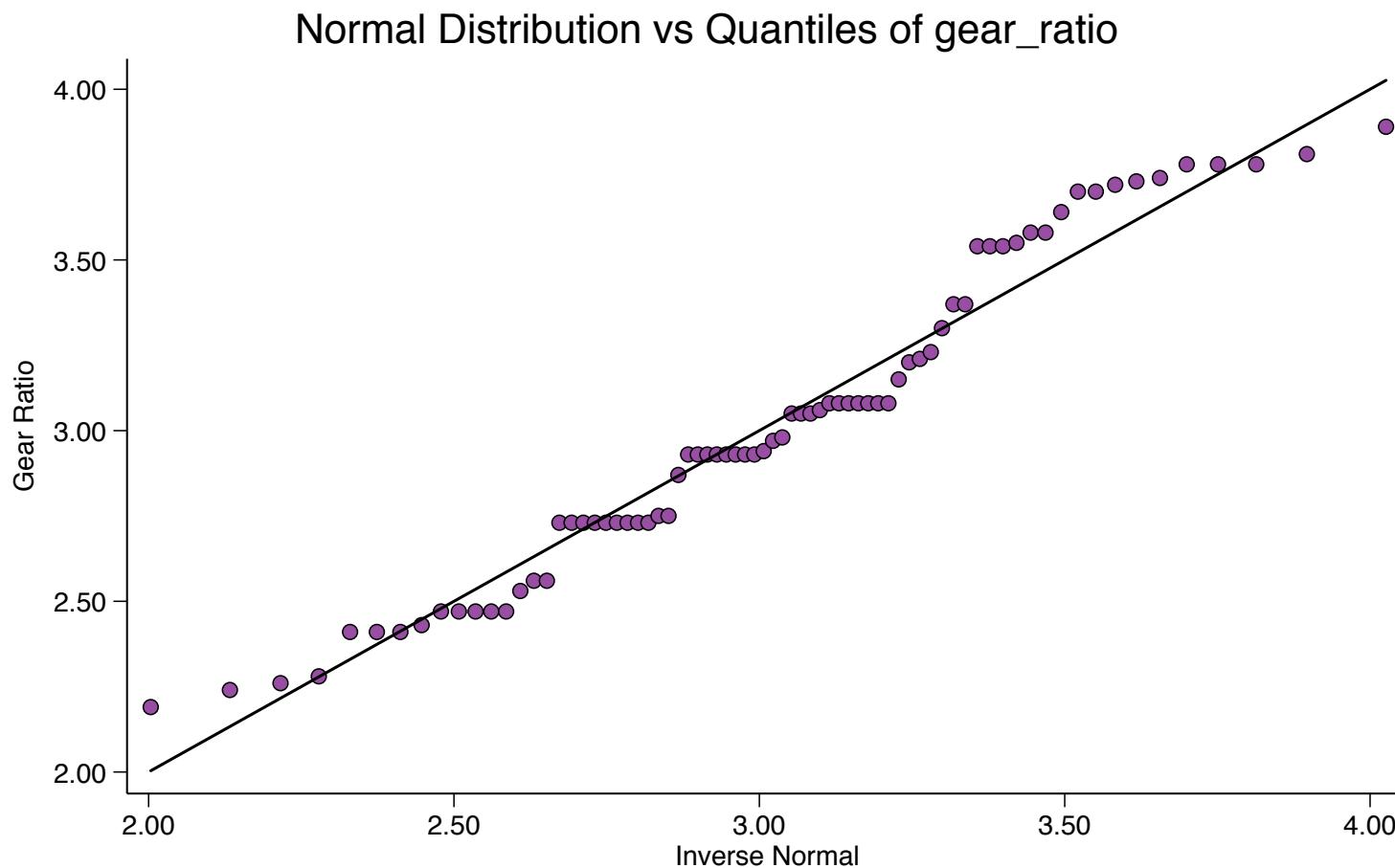
Created on: 29 Oct 2015 at: 15:30:40

Figure 1.58: Quantiles of Uniform Distribution vs Ordered values of Gear Ratio



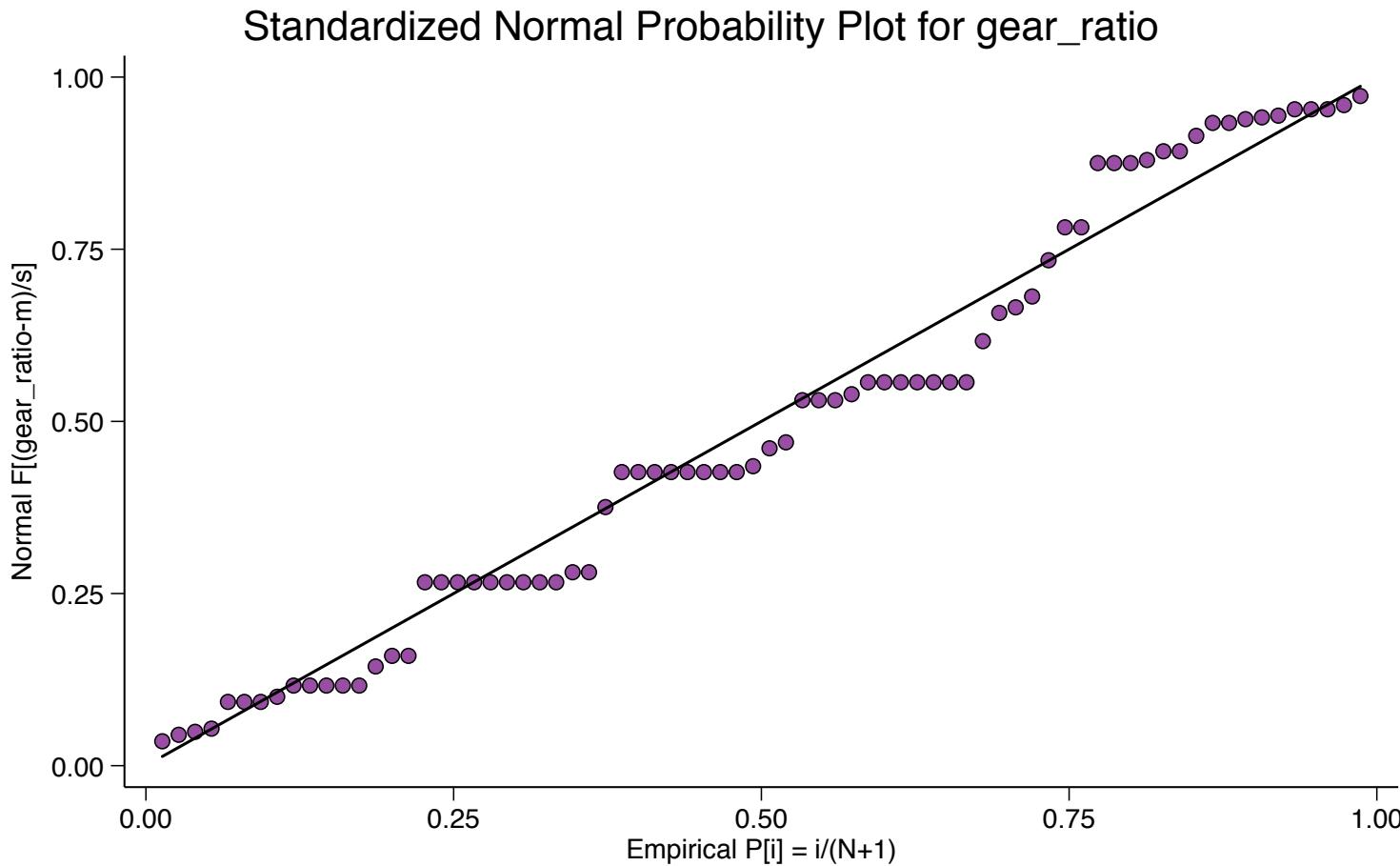
Created on: 29 Oct 2015 at: 15:30:42

Figure 1.59: Normal Distribution vs Quantiles of Gear Ratio



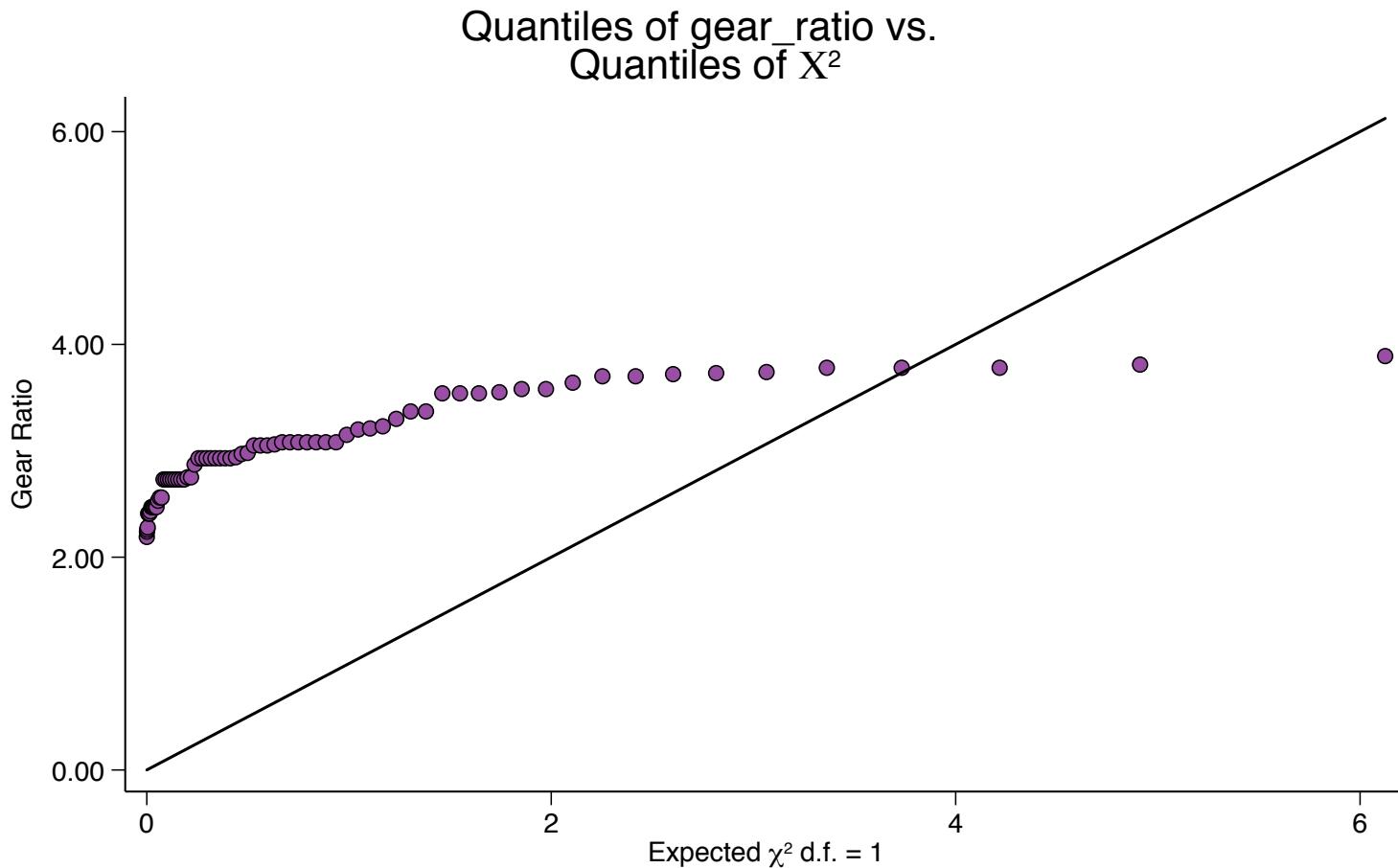
Created on: 29 Oct 2015 at: 15:30:44

Figure 1.60: Standardized Normal Probability Plot for Gear Ratio



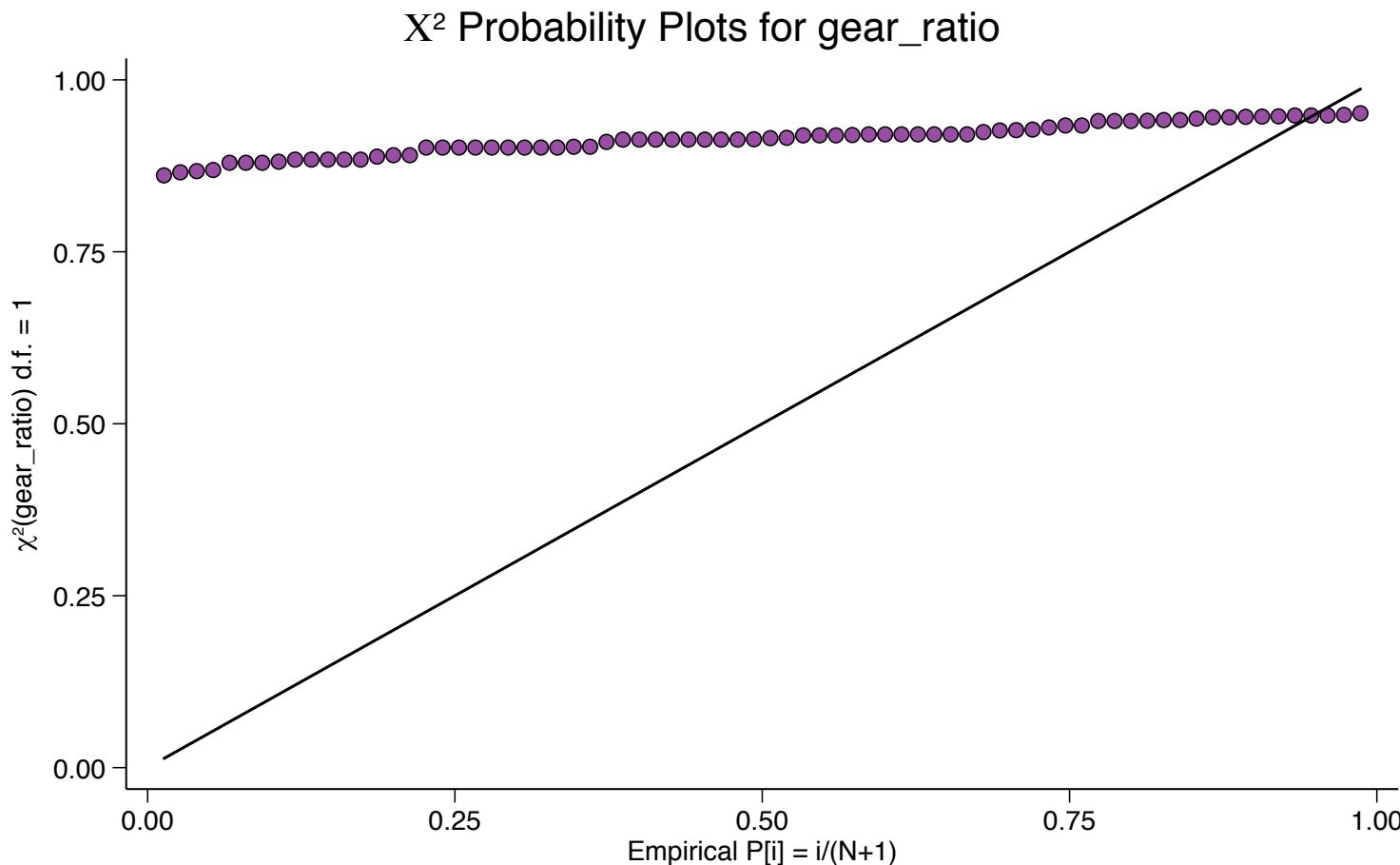
Created on: 29 Oct 2015 at: 15:30:46

Figure 1.61: Chi-Squared Quantiles v. Gear Ratio



Created on: 29 Oct 2015 at: 15:30:48

Figure 1.62: Chi-Squared Probability Gear Ratio

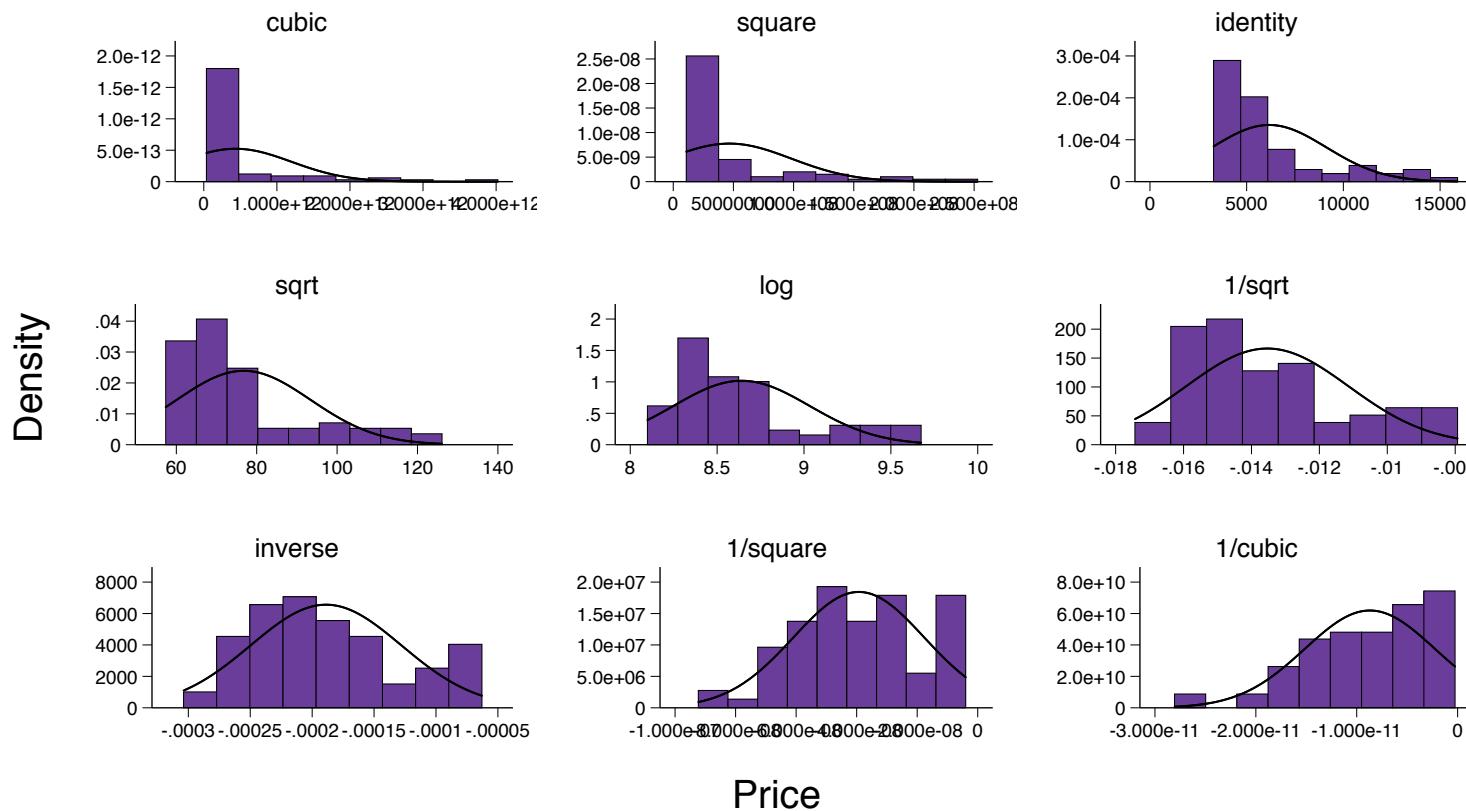


Created on: 29 Oct 2015 at: 15:30:51

Ladder of Powers Transformation Graphs.

Figure 1.63: Price Ladder of Powers Histograms

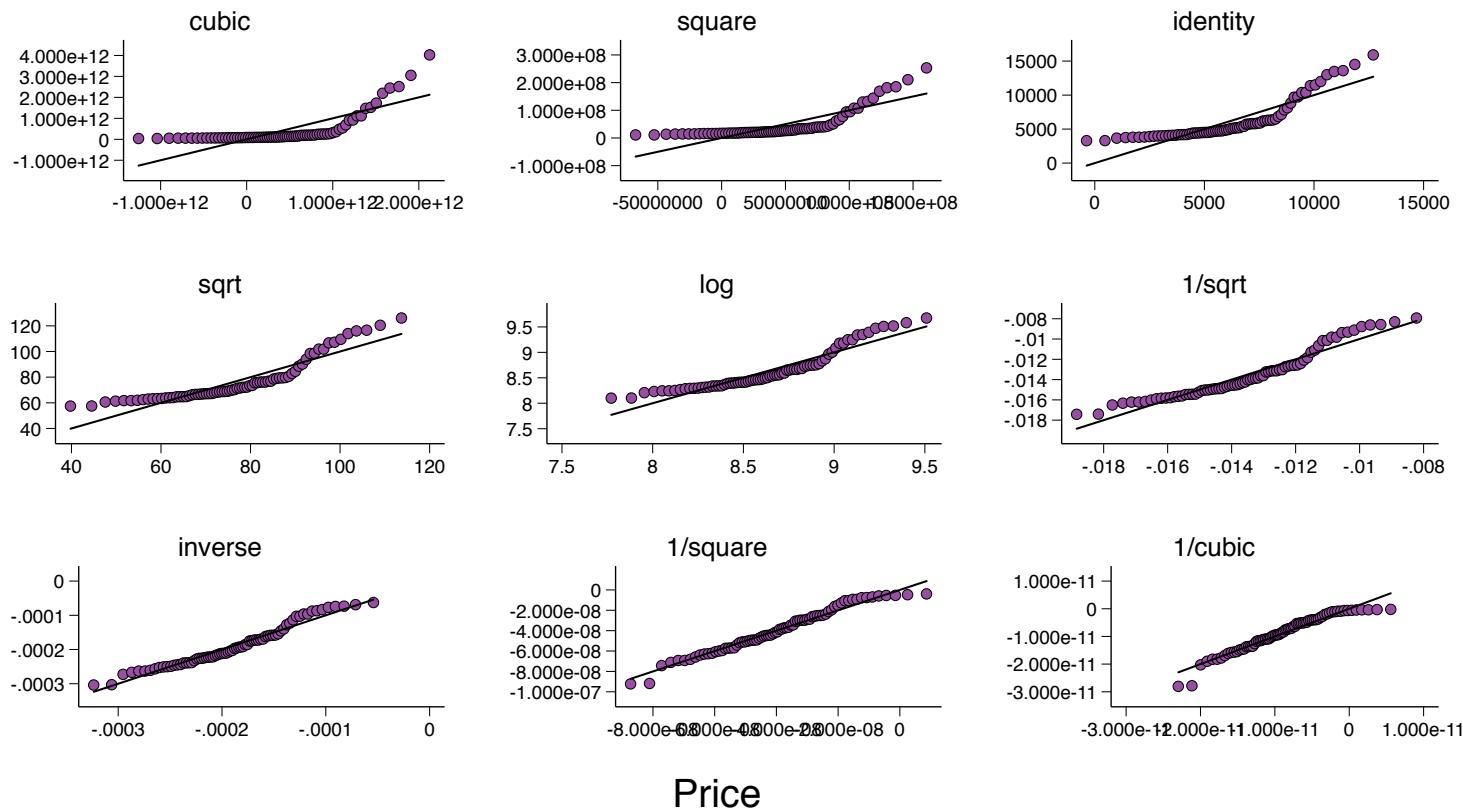
Ladder of Powers Histograms for Price



Histograms by transformation

Figure 1.64: Price Ladder of Powers Quantile Normal Plots

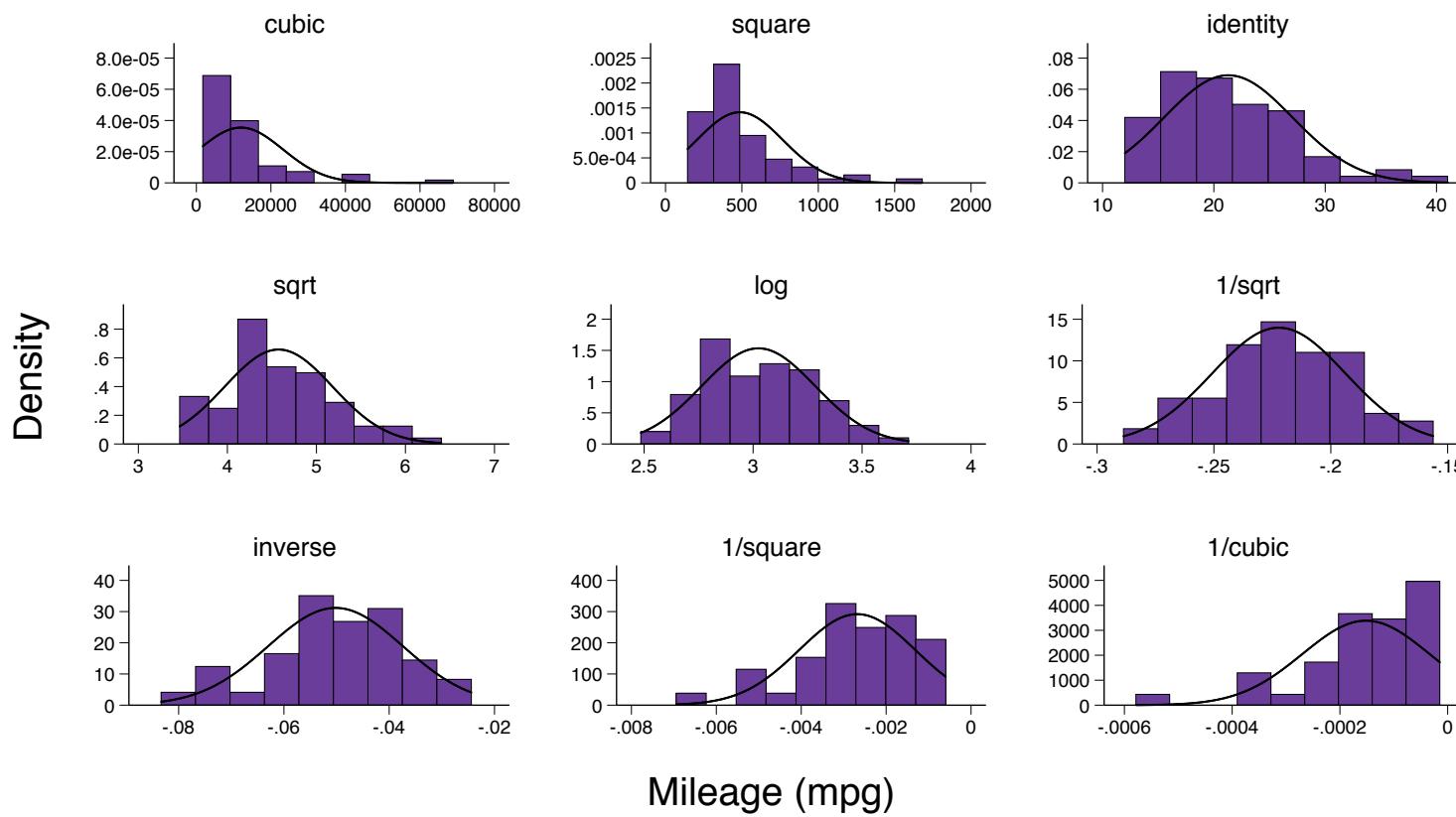
Ladder of Powers Quantile Normal Plots for Price



Quantile-Normal plots by transformation

Figure 1.65: Mileage (mpg) Ladder of Powers Histograms

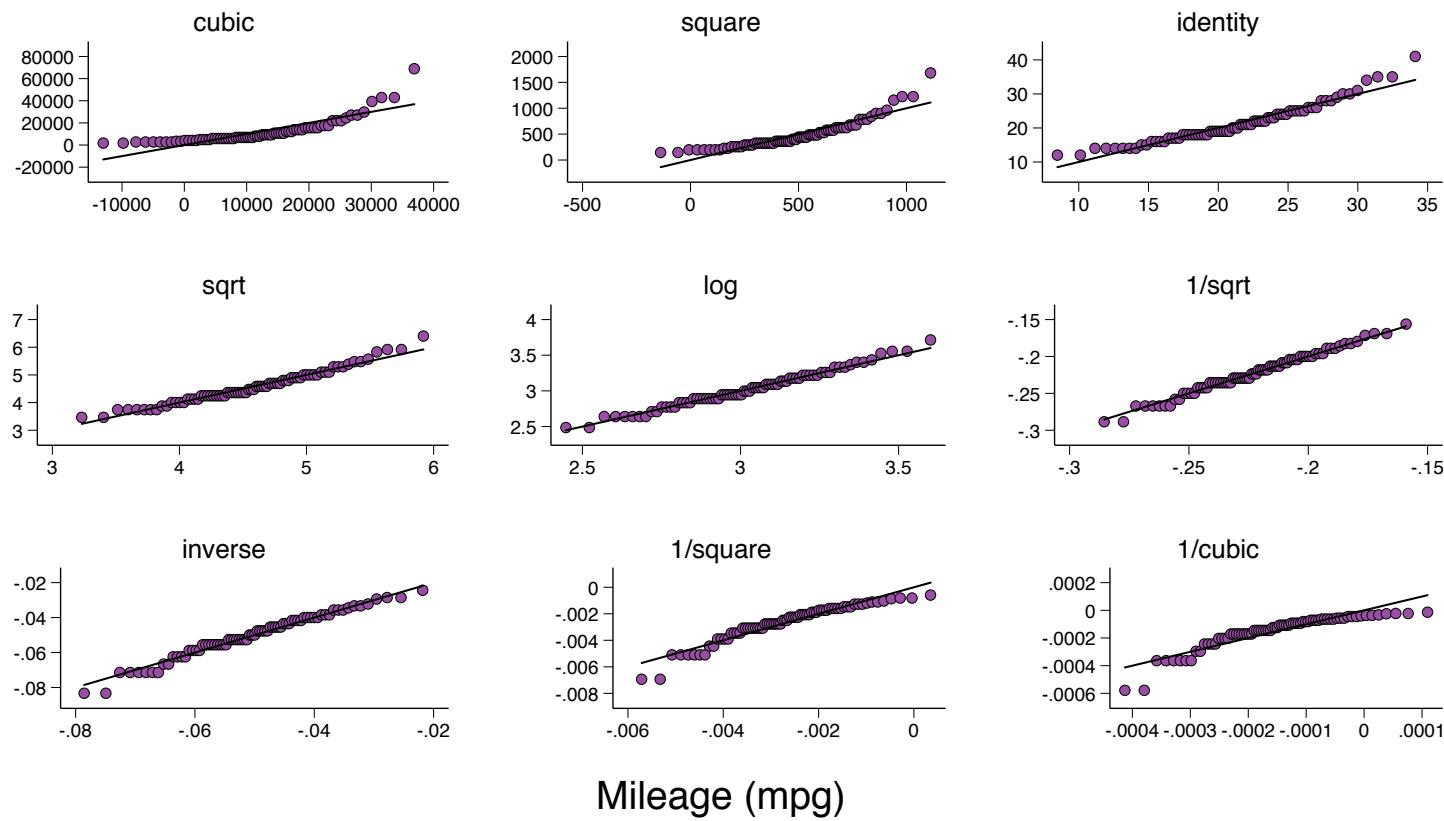
Ladder of Powers Histograms for Mileage (mpg)



Histograms by transformation

Figure 1.66: Mileage (mpg) Ladder of Powers Quantile Normal Plots

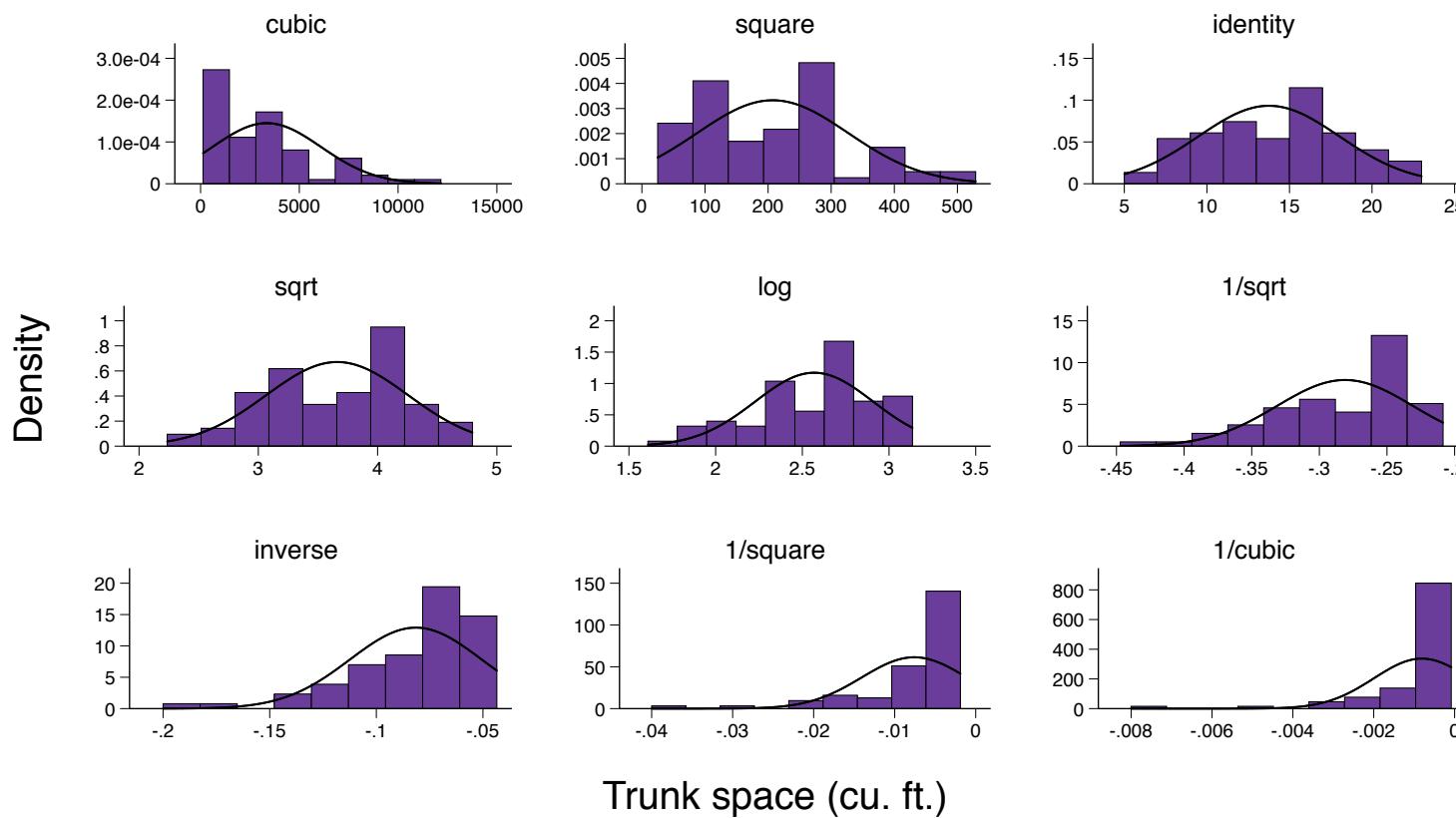
Ladder of Powers Quantile Normal Plots for Mileage (mpg)



Quantile-Normal plots by transformation

Figure 1.67: Trunk space (cu. ft.) Ladder of Powers Histograms

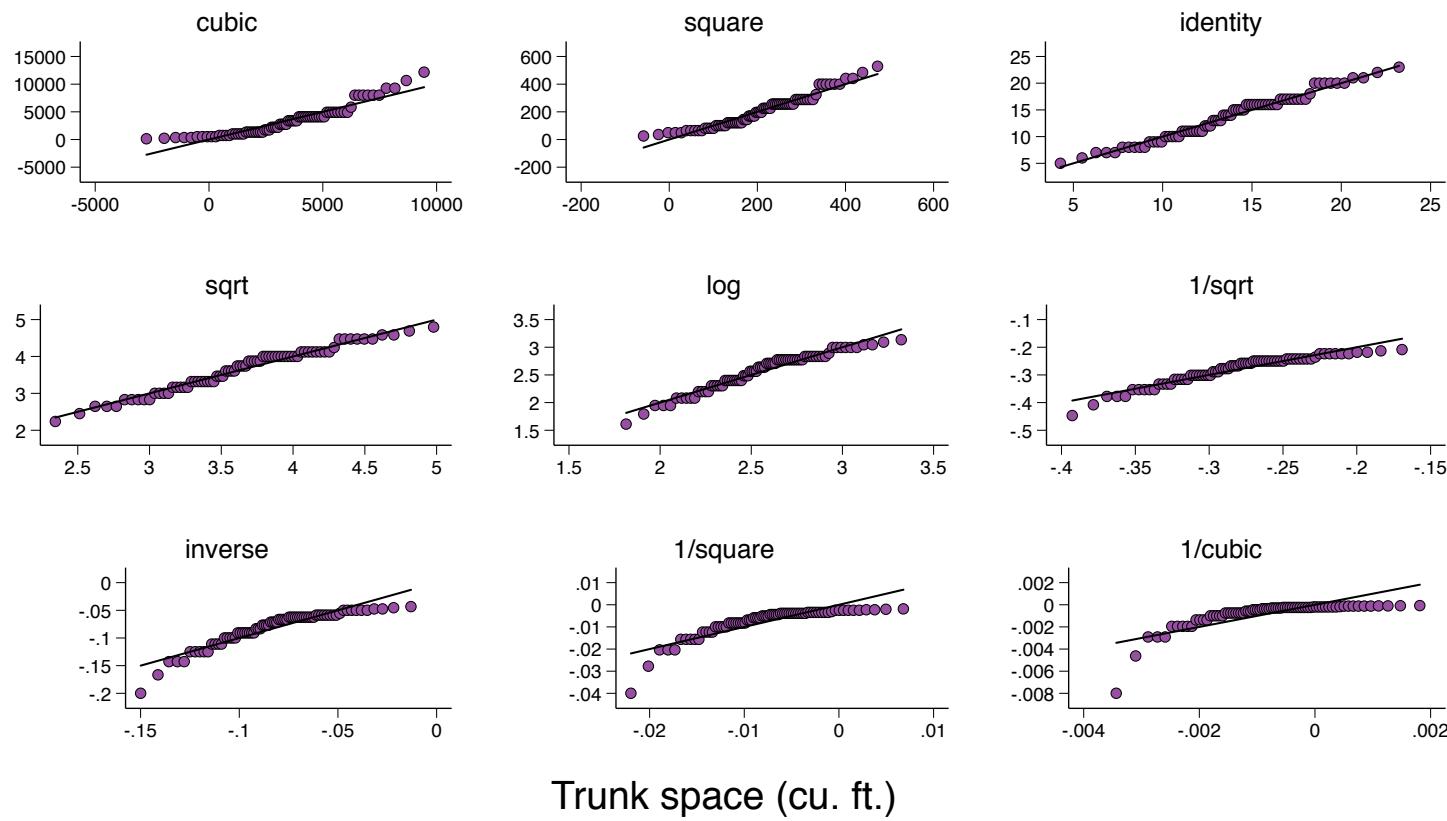
Ladder of Powers Histograms for Trunk space (cu. ft.)



Histograms by transformation

Figure 1.68: Trunk space (cu. ft.) Ladder of Powers Quantile Normal Plots

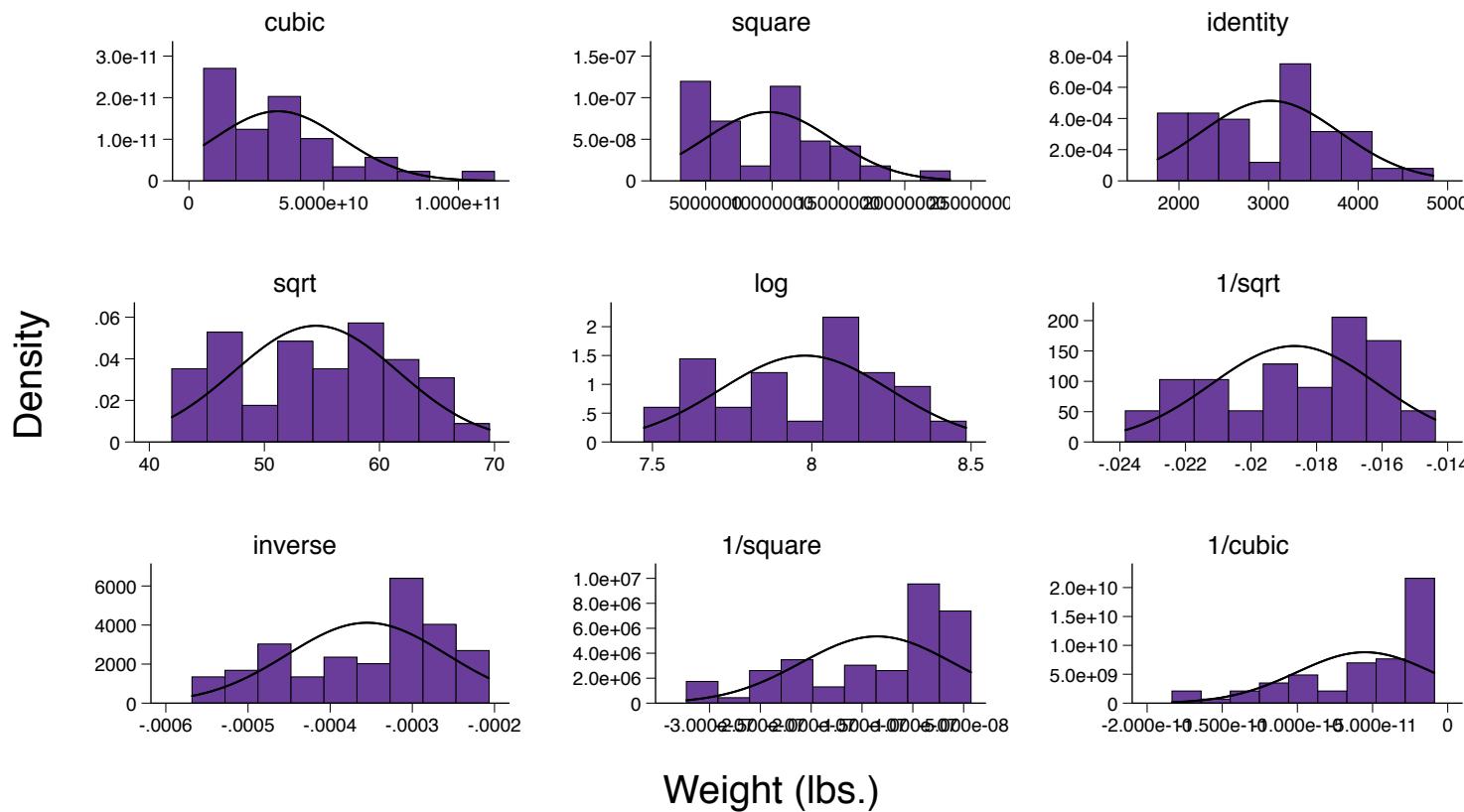
Ladder of Powers Quantile Normal Plots for Trunk space (cu. ft.)



Quantile-Normal plots by transformation

Figure 1.69: Weight (lbs.) Ladder of Powers Histograms

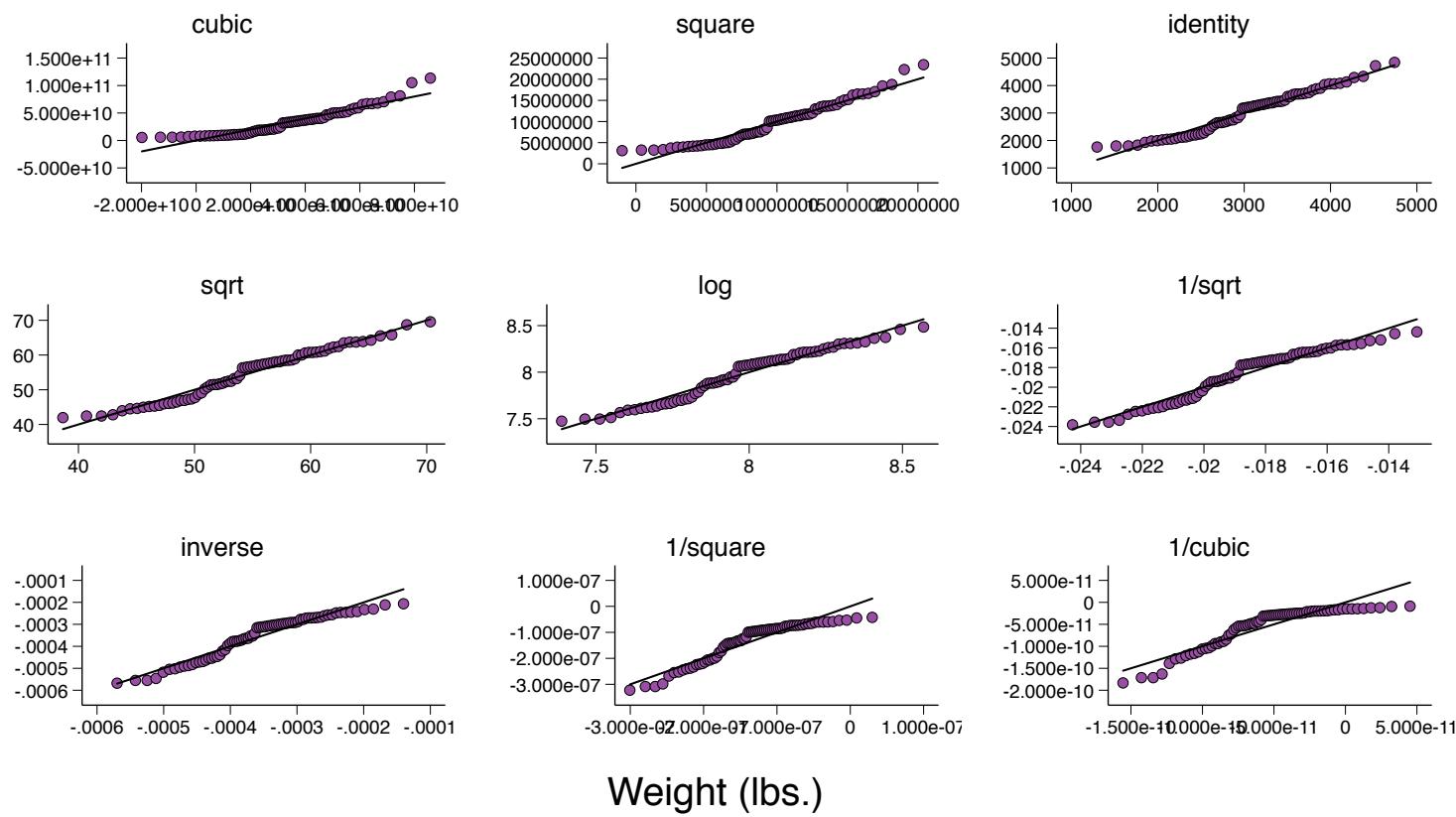
Ladder of Powers Histograms for Weight (lbs.)



Histograms by transformation

Figure 1.70: Weight (lbs.) Ladder of Powers Quantile Normal Plots

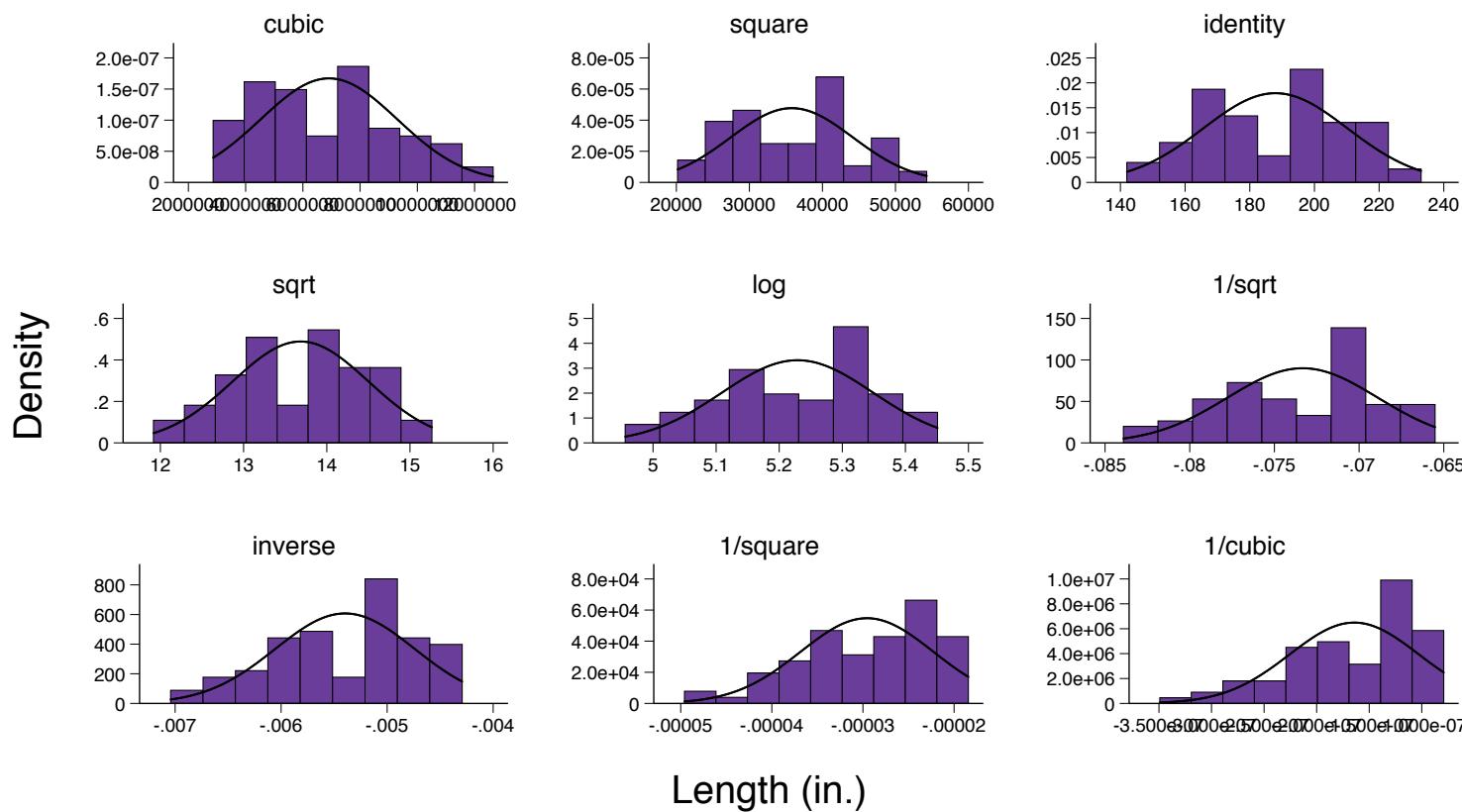
Ladder of Powers Quantile Normal Plots for Weight (lbs.)



Quantile-Normal plots by transformation

Figure 1.71: Length (in.) Ladder of Powers Histograms

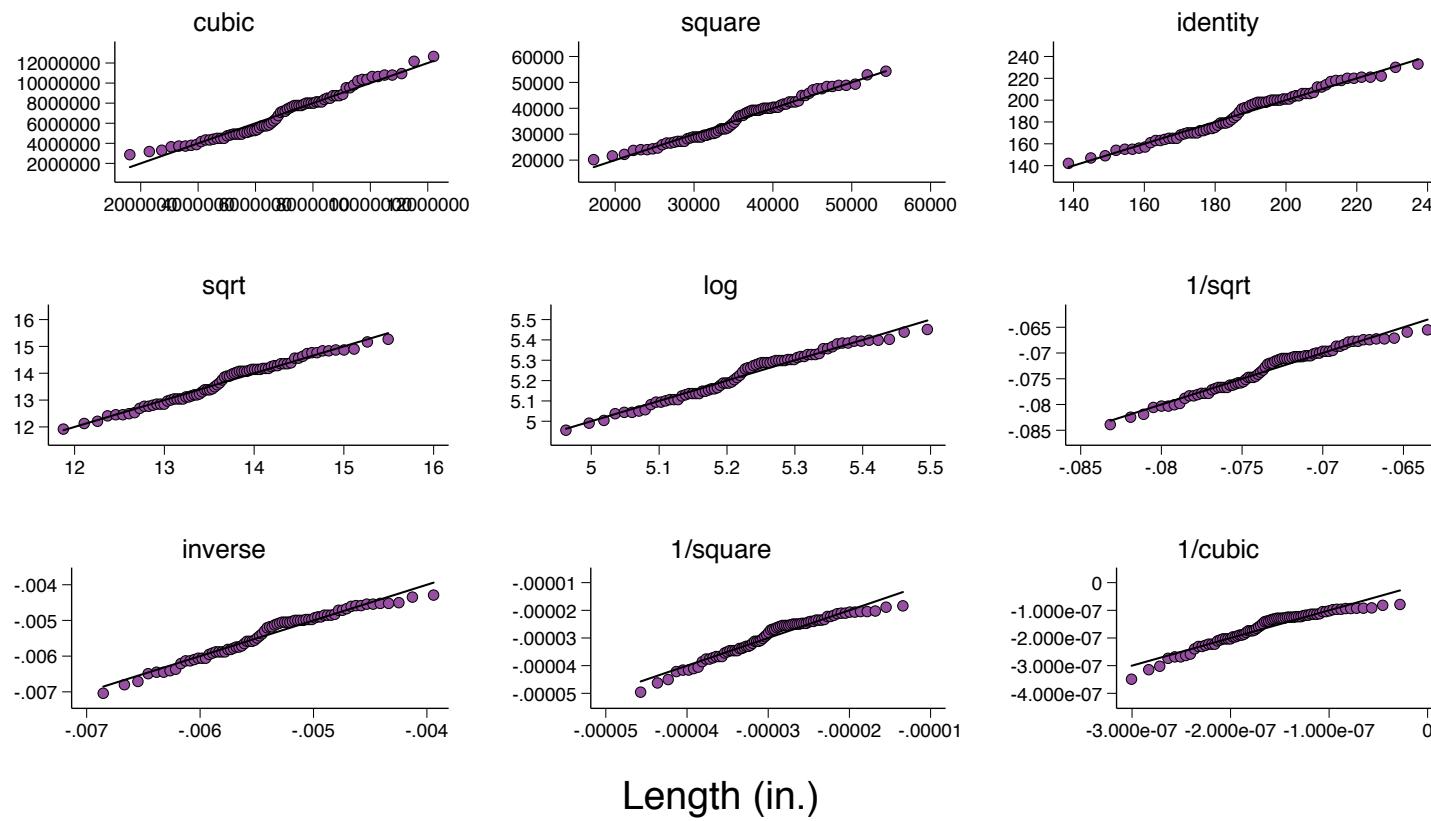
Ladder of Powers Histograms for Length (in.)



Histograms by transformation

Figure 1.72: Length (in.) Ladder of Powers Quantile Normal Plots

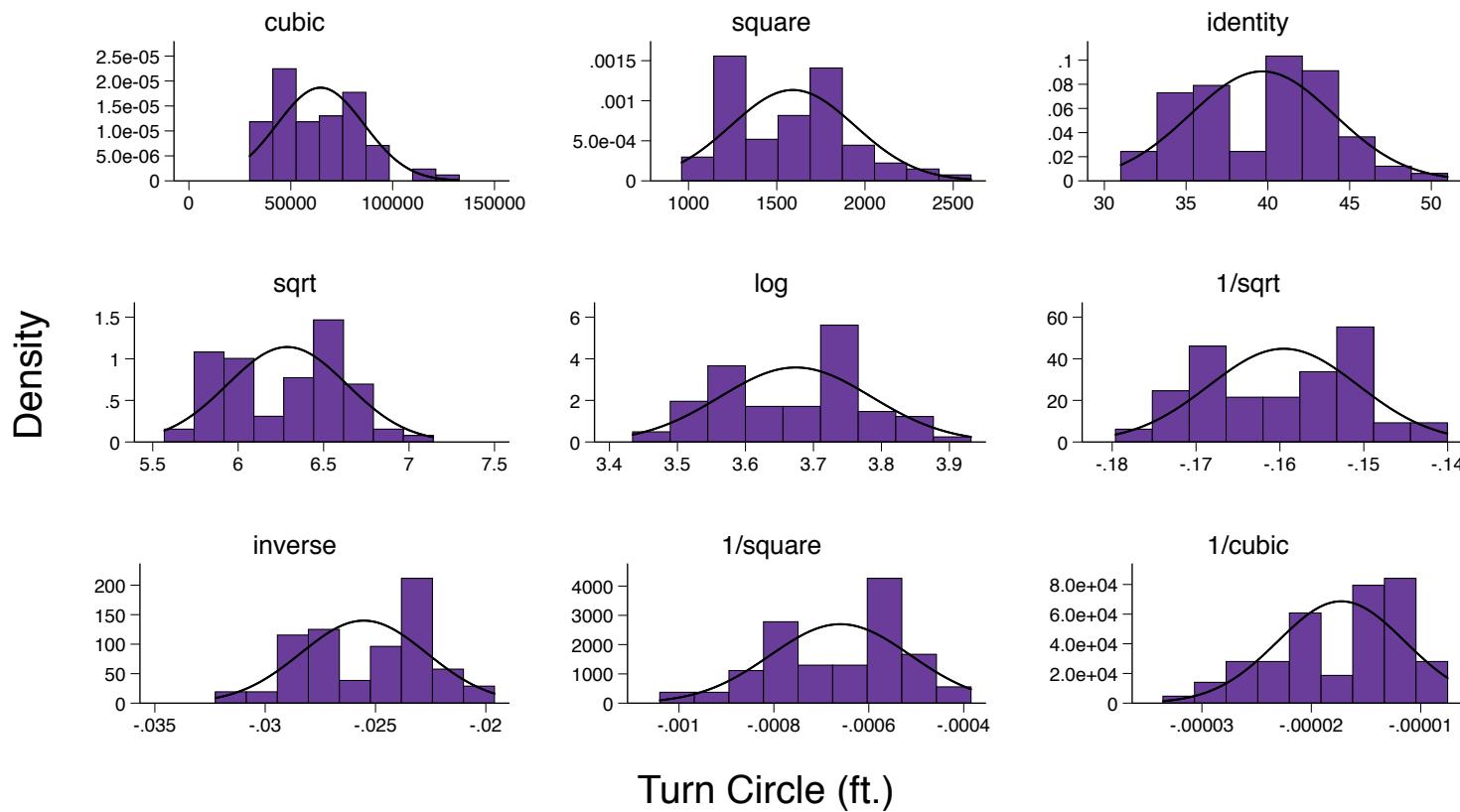
Ladder of Powers Quantile Normal Plots for Length (in.)



Quantile-Normal plots by transformation

Figure 1.73: Turn Circle (ft.) Ladder of Powers Histograms

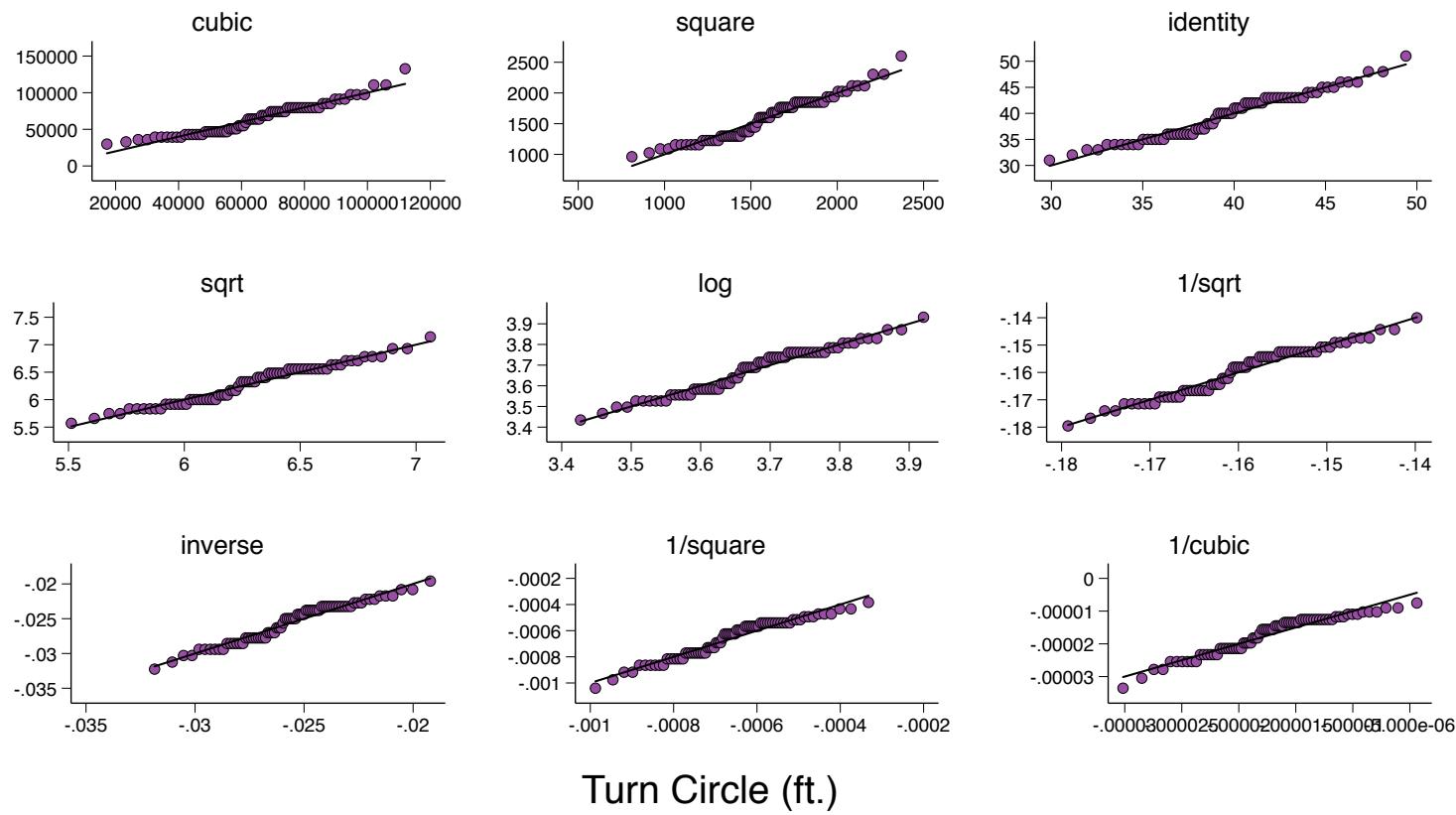
Ladder of Powers Histograms for Turn Circle (ft.)



Histograms by transformation

Figure 1.74: Turn Circle (ft.) Ladder of Powers Quantile Normal Plots

Ladder of Powers Quantile Normal Plots for Turn Circle (ft.)

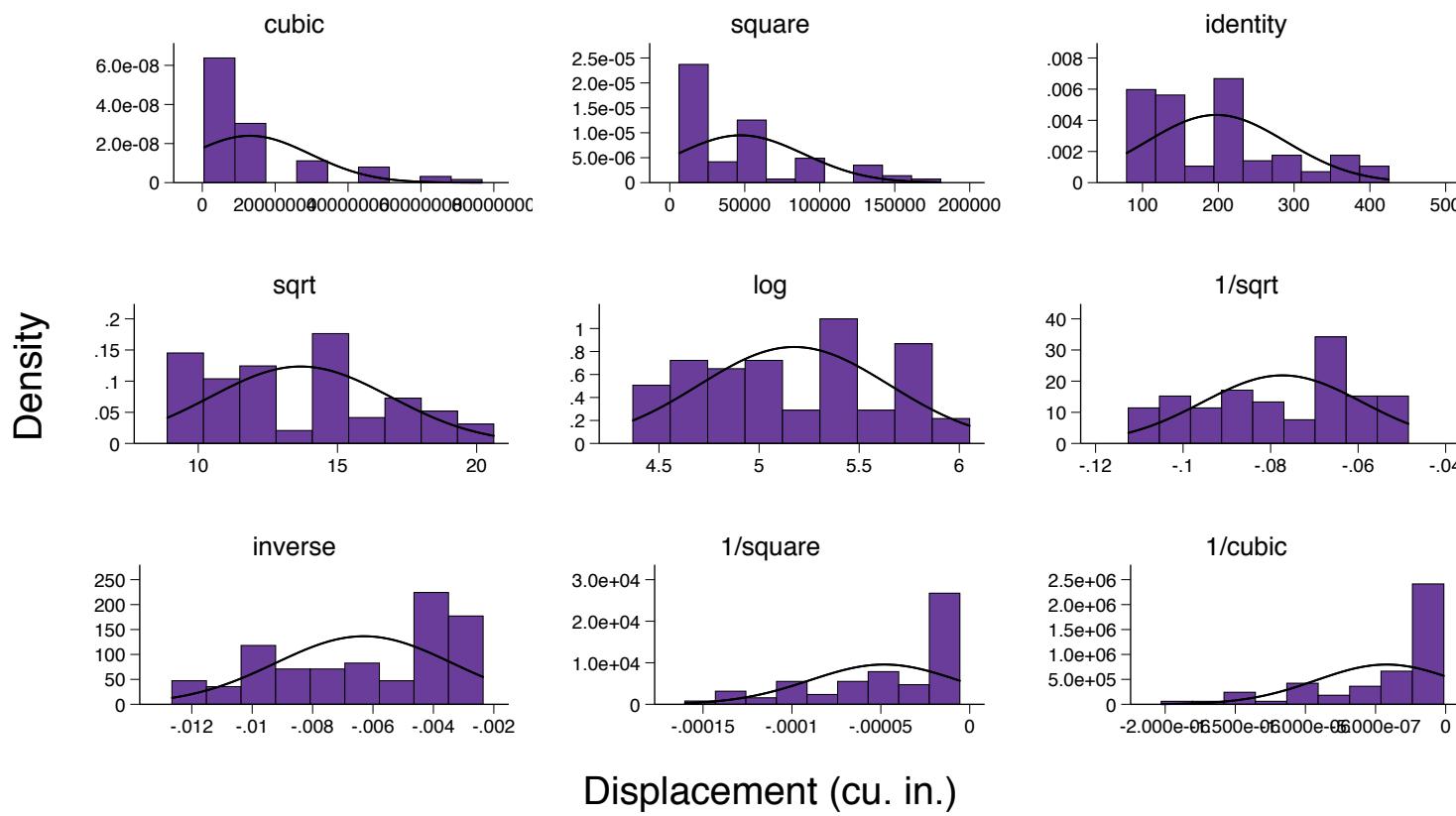


Turn Circle (ft.)

Quantile-Normal plots by transformation

Figure 1.75: Displacement (cu. in.) Ladder of Powers Histograms

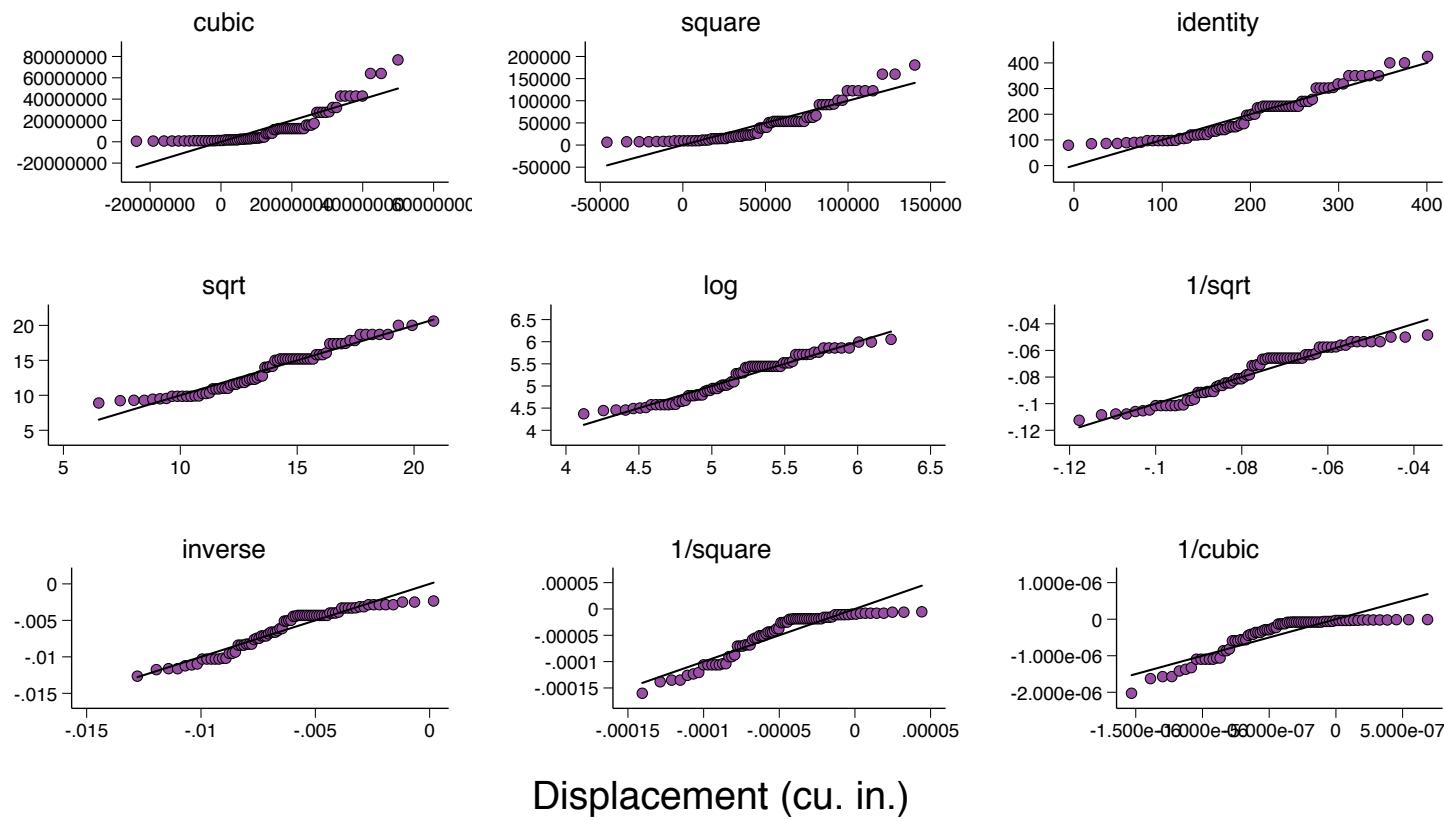
Ladder of Powers Histograms for Displacement (cu. in.)



Histograms by transformation

Figure 1.76: Displacement (cu. in.) Ladder of Powers Quantile Normal Plots

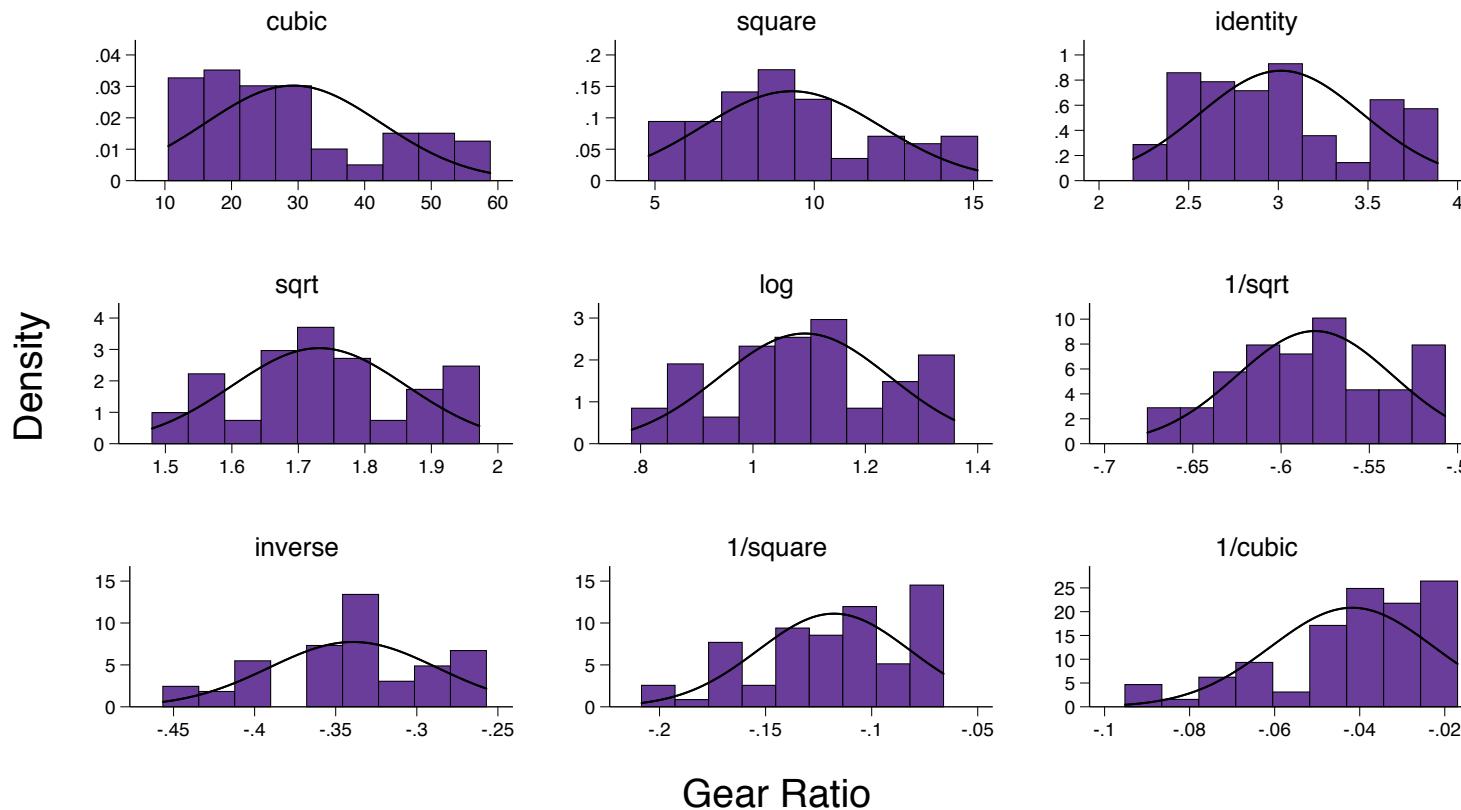
Ladder of Powers Quantile Normal Plots for Displacement (cu. in.)



Quantile-Normal plots by transformation

Figure 1.77: Gear Ratio Ladder of Powers Histograms

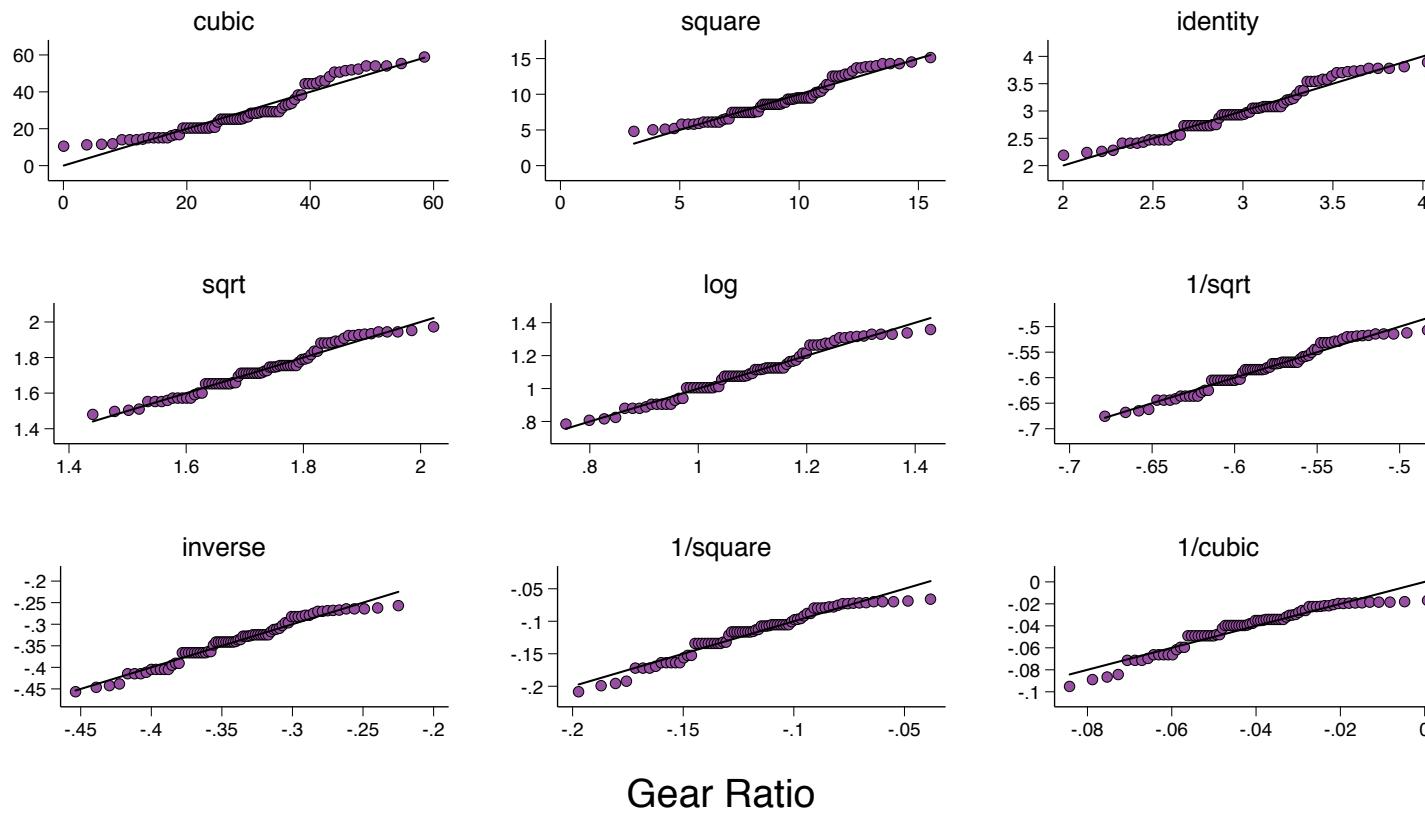
Ladder of Powers Histograms for Gear Ratio



Histograms by transformation

Figure 1.78: Gear Ratio Ladder of Powers Quantile Normal Plots

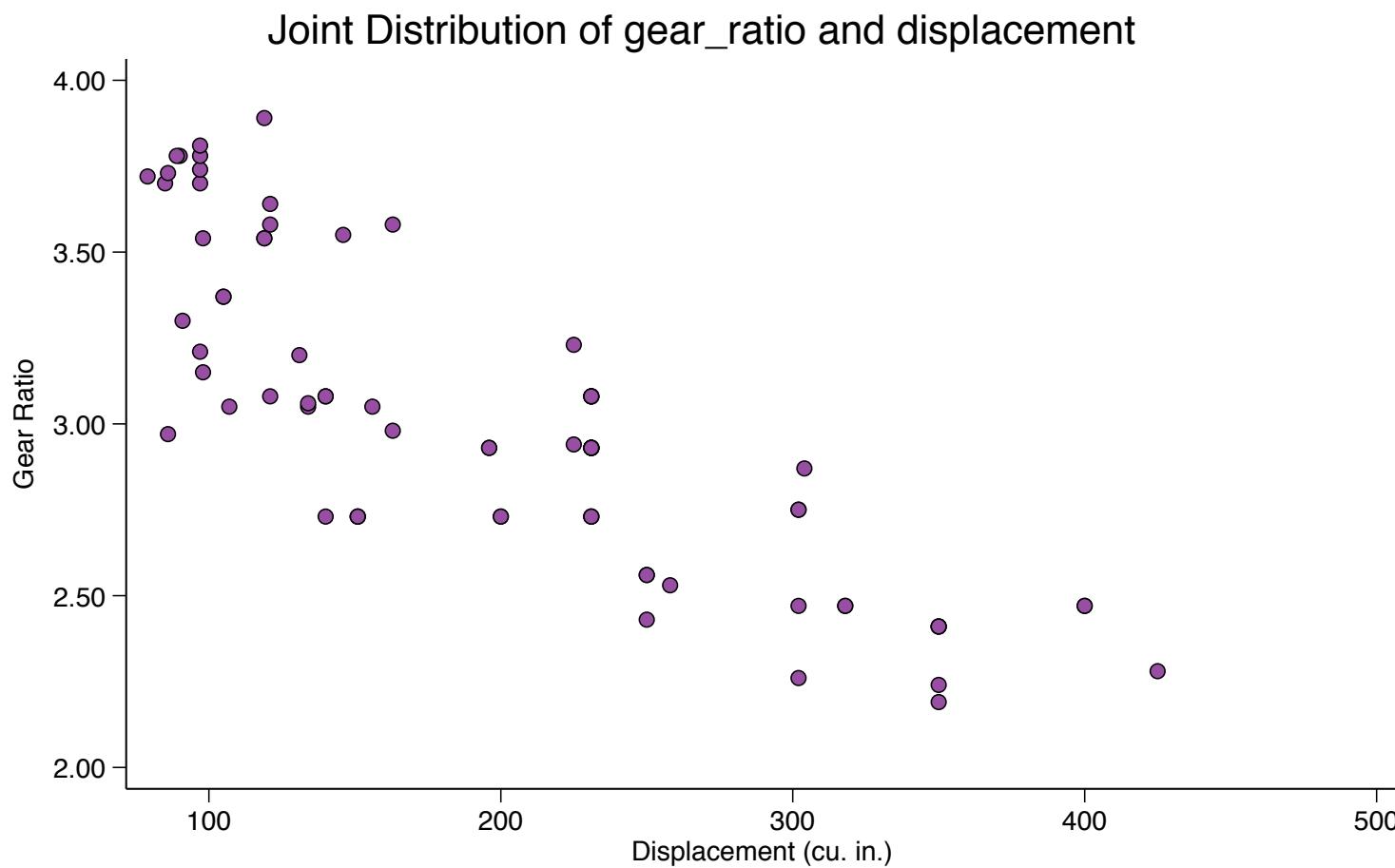
Ladder of Powers Quantile Normal Plots for Gear Ratio



Quantile-Normal plots by transformation

Bivariate Distributions

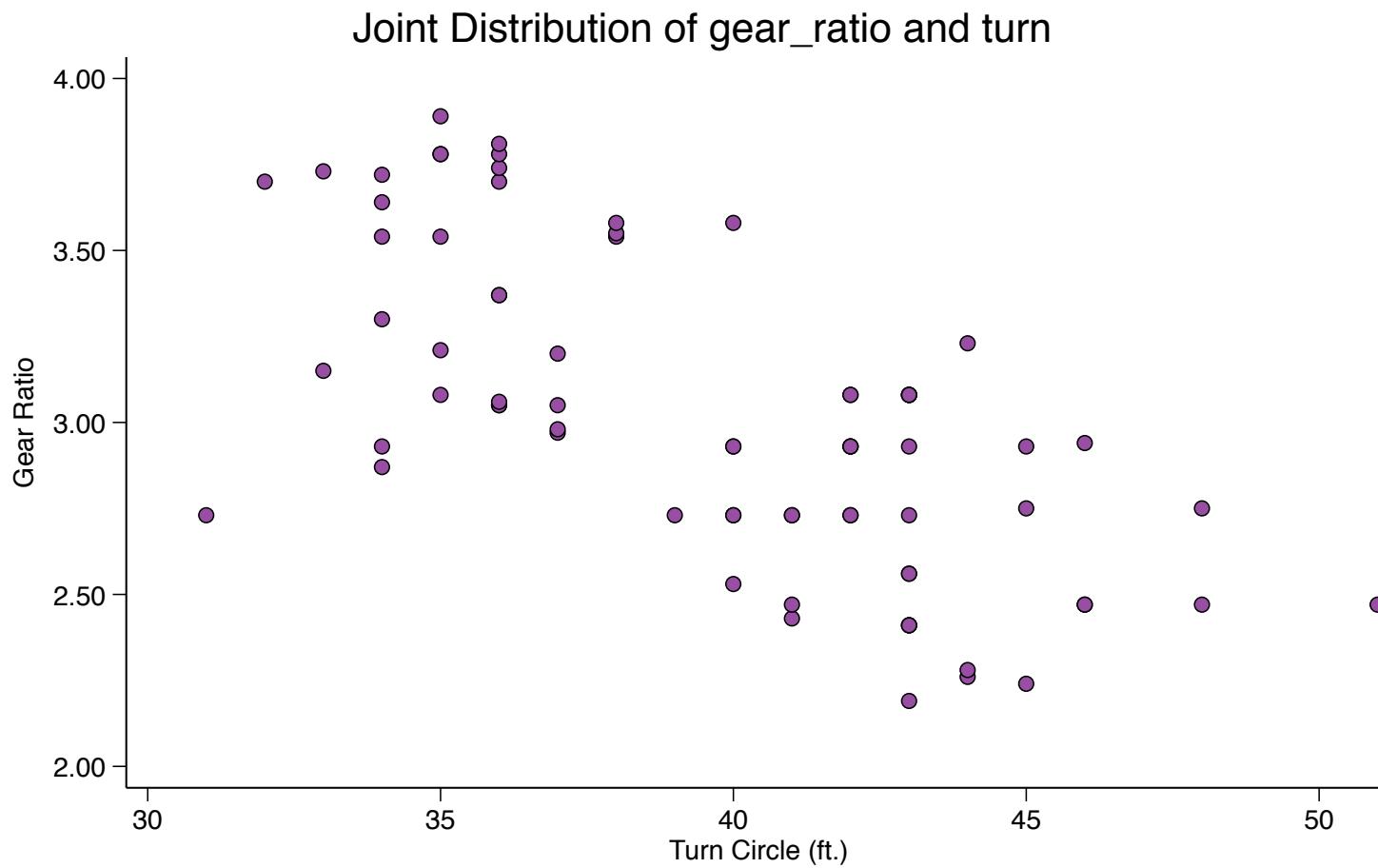
Figure 1.79: Scatterplot of Gear Ratio & Displacement (cu. in.)



Created on: 29 Oct 2015 at: 15:35:57

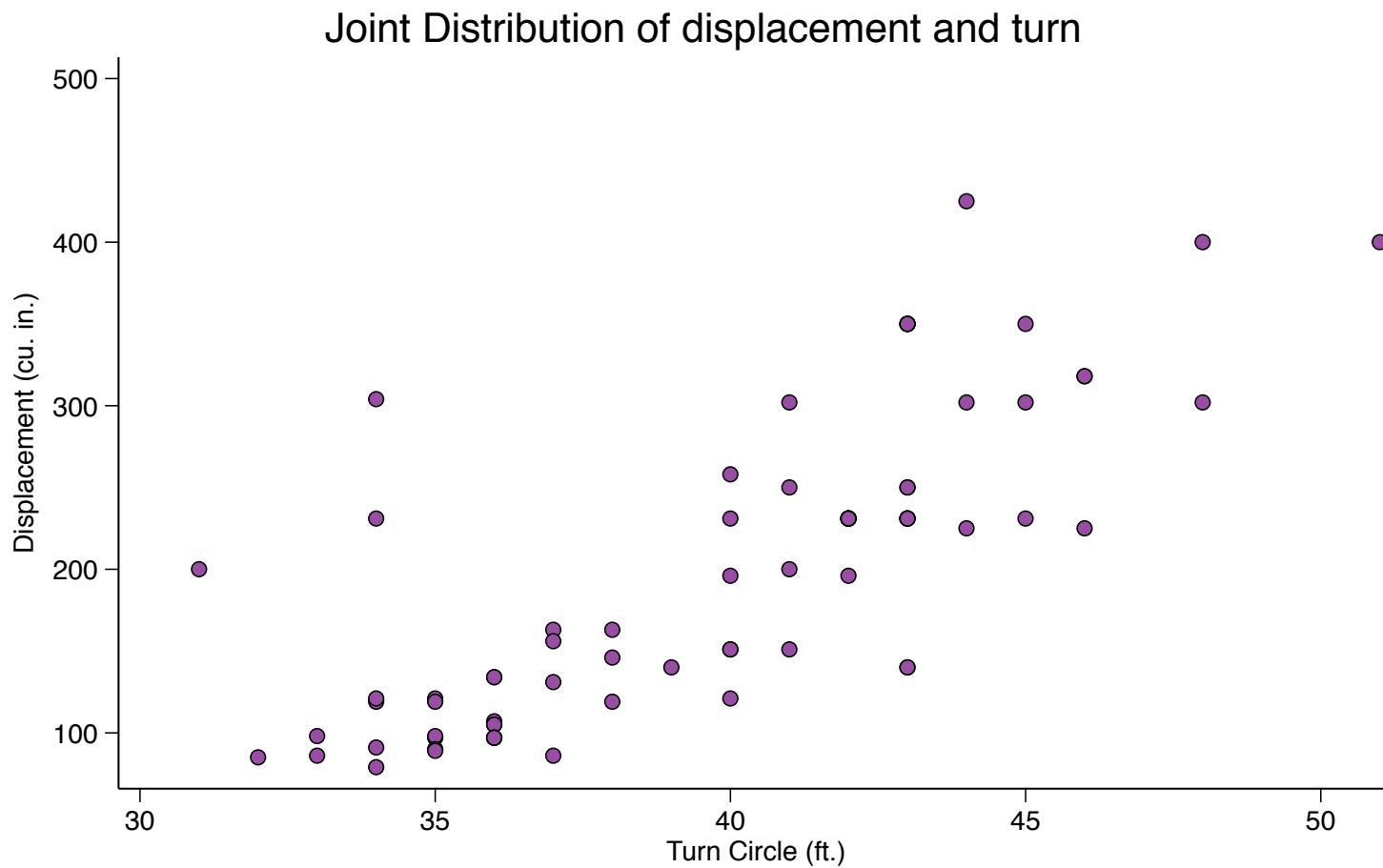
Scatterplots.

Figure 1.80: Scatterplot of Gear Ratio & Turn Circle (ft.)



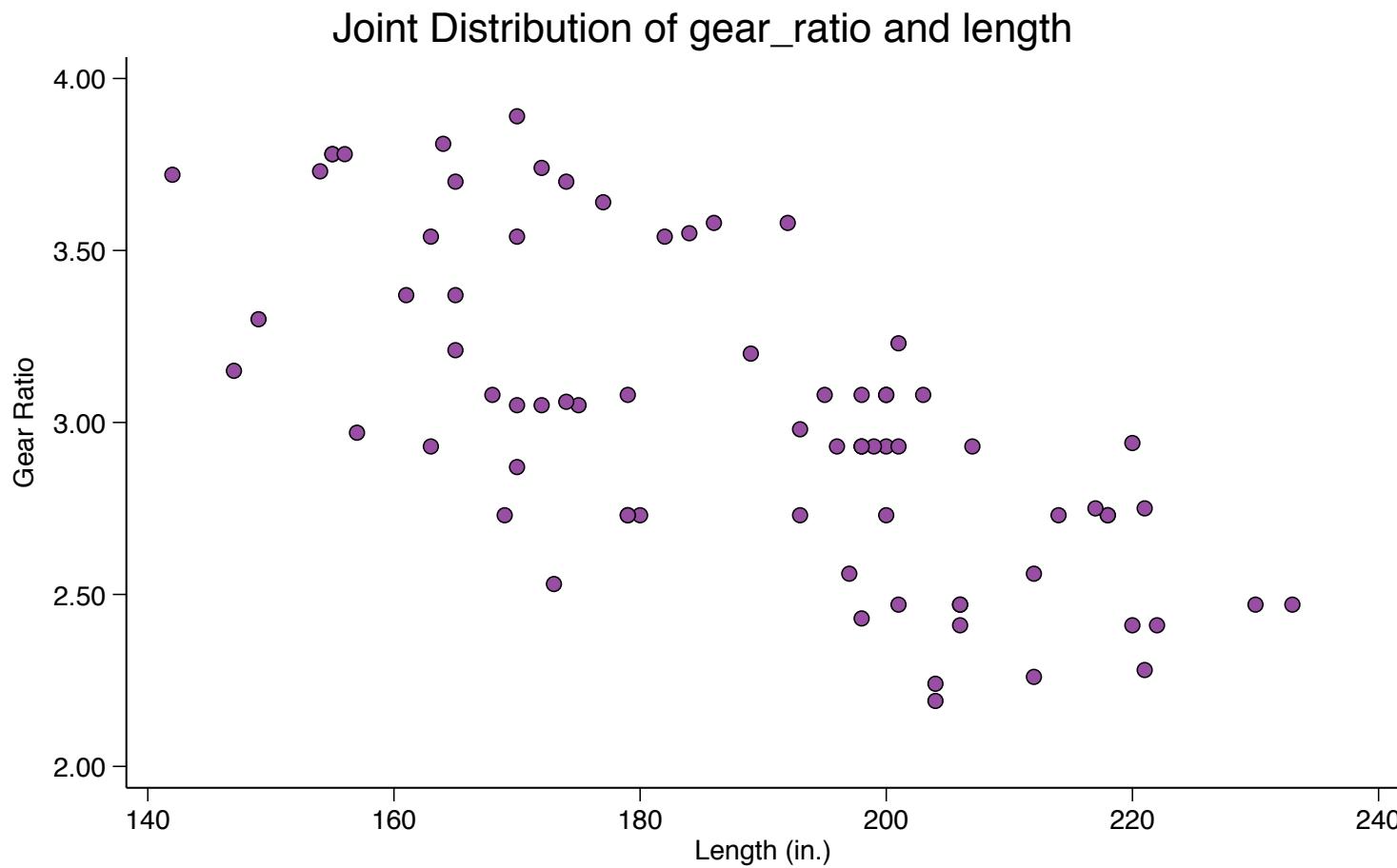
Created on: 29 Oct 2015 at: 15:35:59

Figure 1.81: Scatterplot of Displacement (cu. in.) & Turn Circle (ft.)



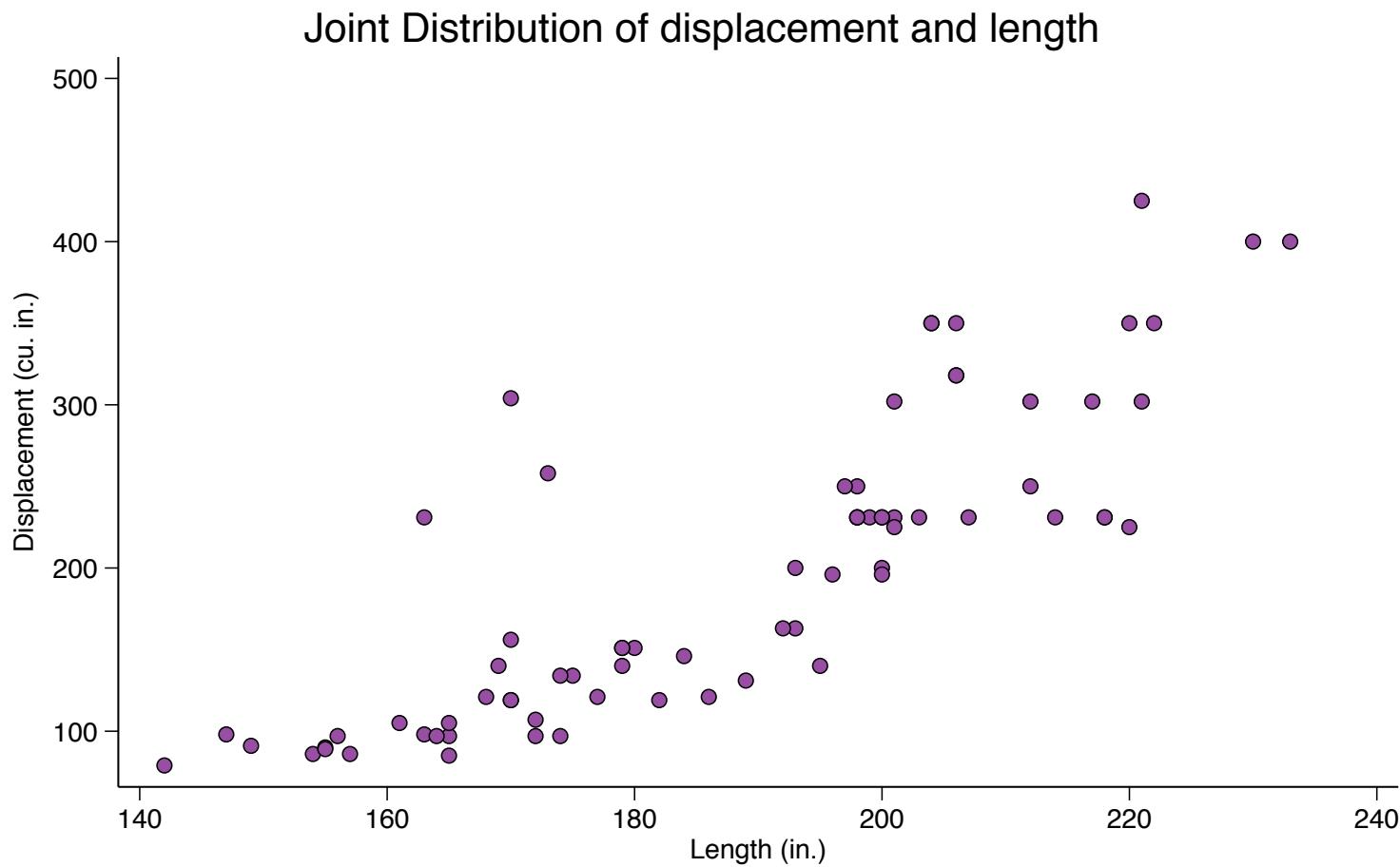
Created on: 29 Oct 2015 at: 15:36:01

Figure 1.82: Scatterplot of Gear Ratio & Length (in.)



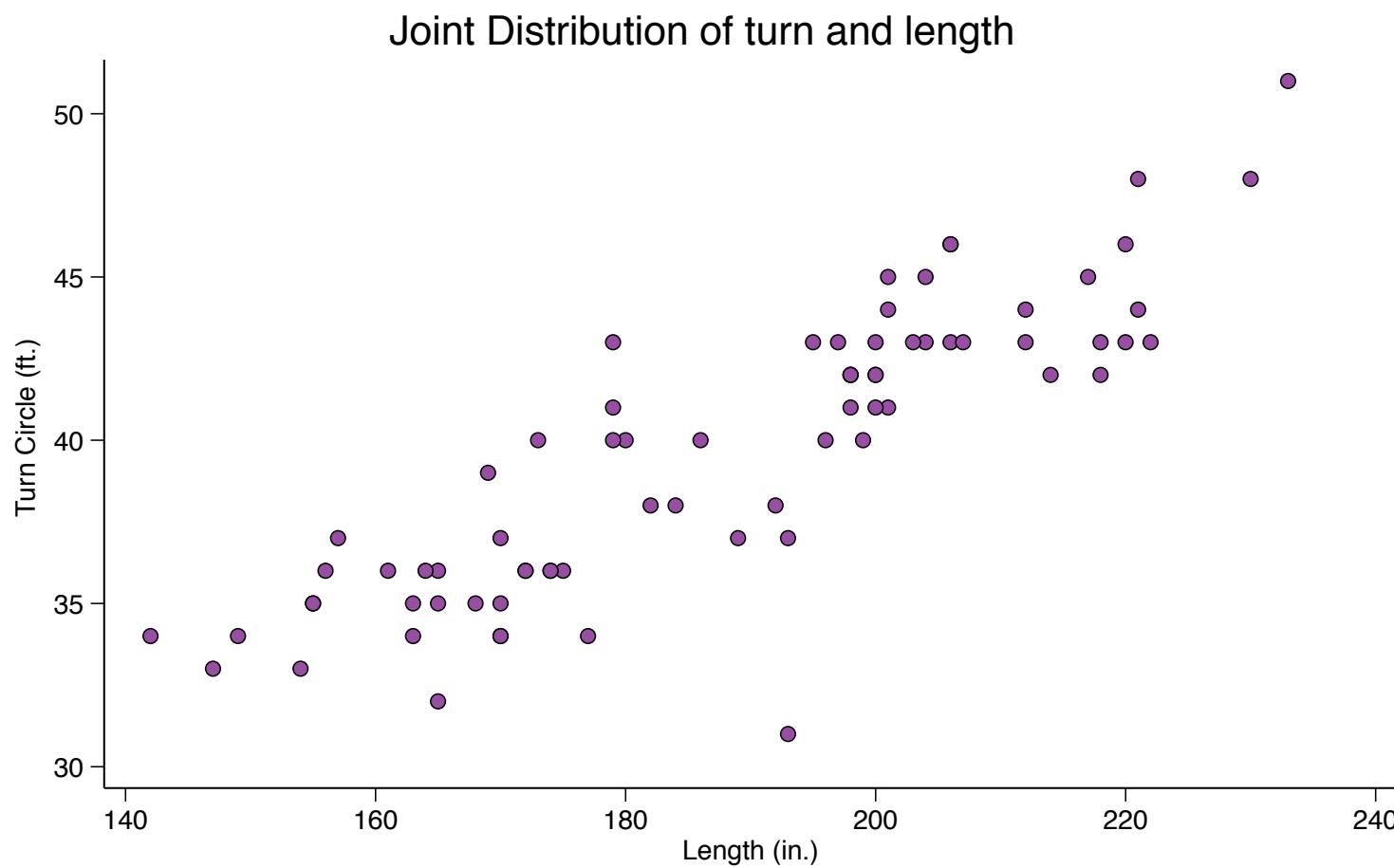
Created on: 29 Oct 2015 at: 15:36:03

Figure 1.83: Scatterplot of Displacement (cu. in.) & Length (in.)



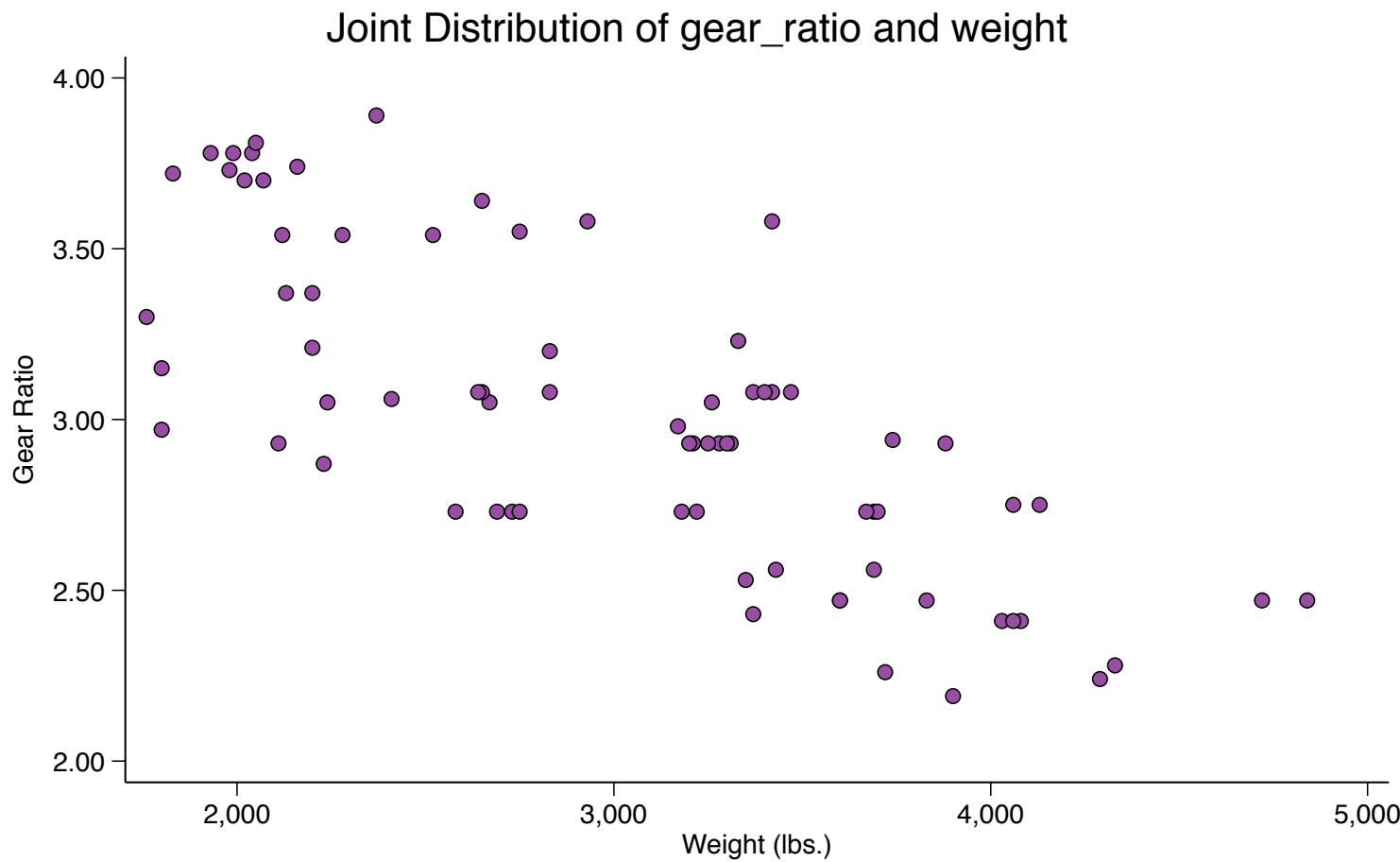
Created on: 29 Oct 2015 at: 15:36:05

Figure 1.84: Scatterplot of Turn Circle (ft.) & Length (in.)



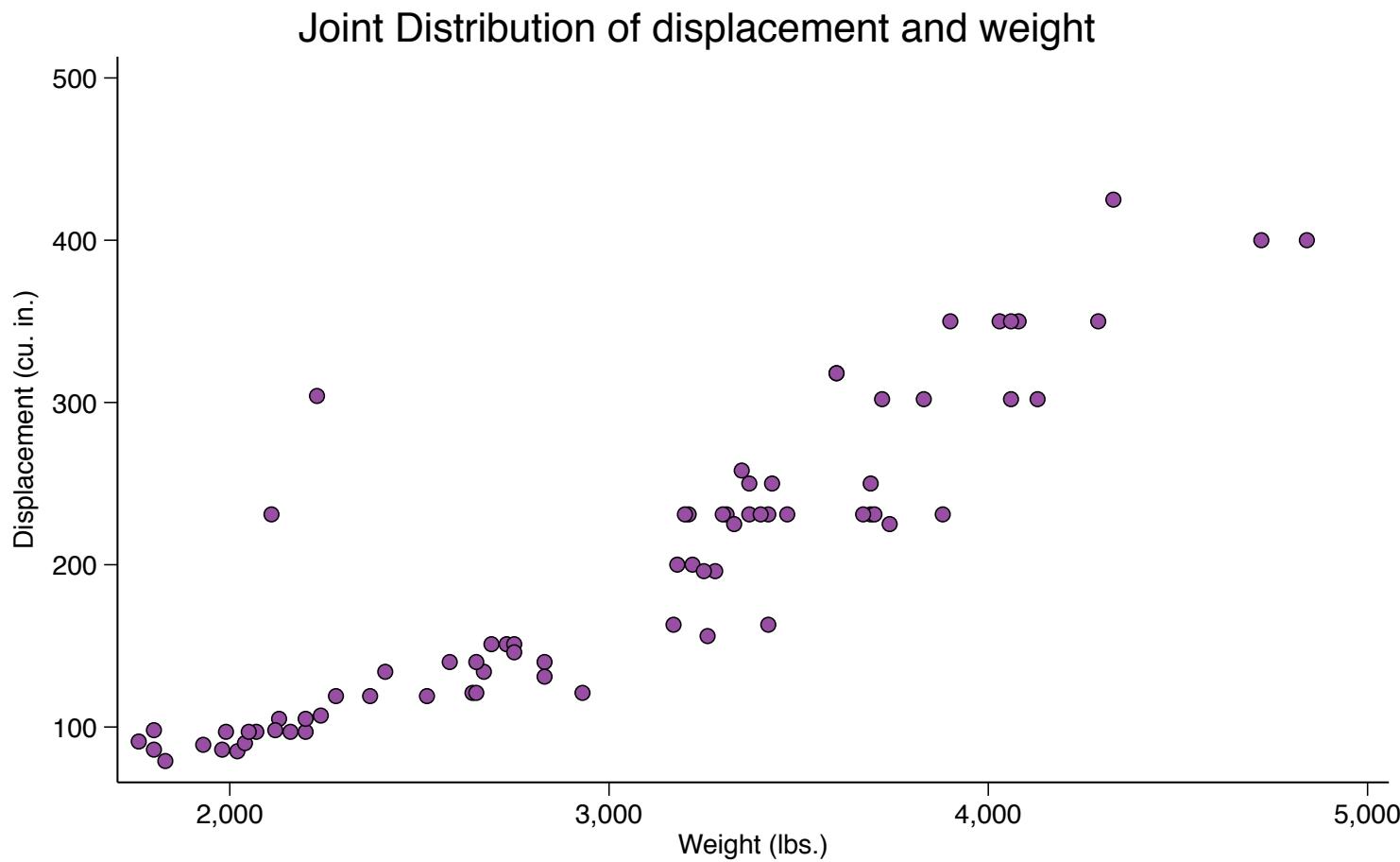
Created on: 29 Oct 2015 at: 15:36:08

Figure 1.85: Scatterplot of Gear Ratio & Weight (lbs.)



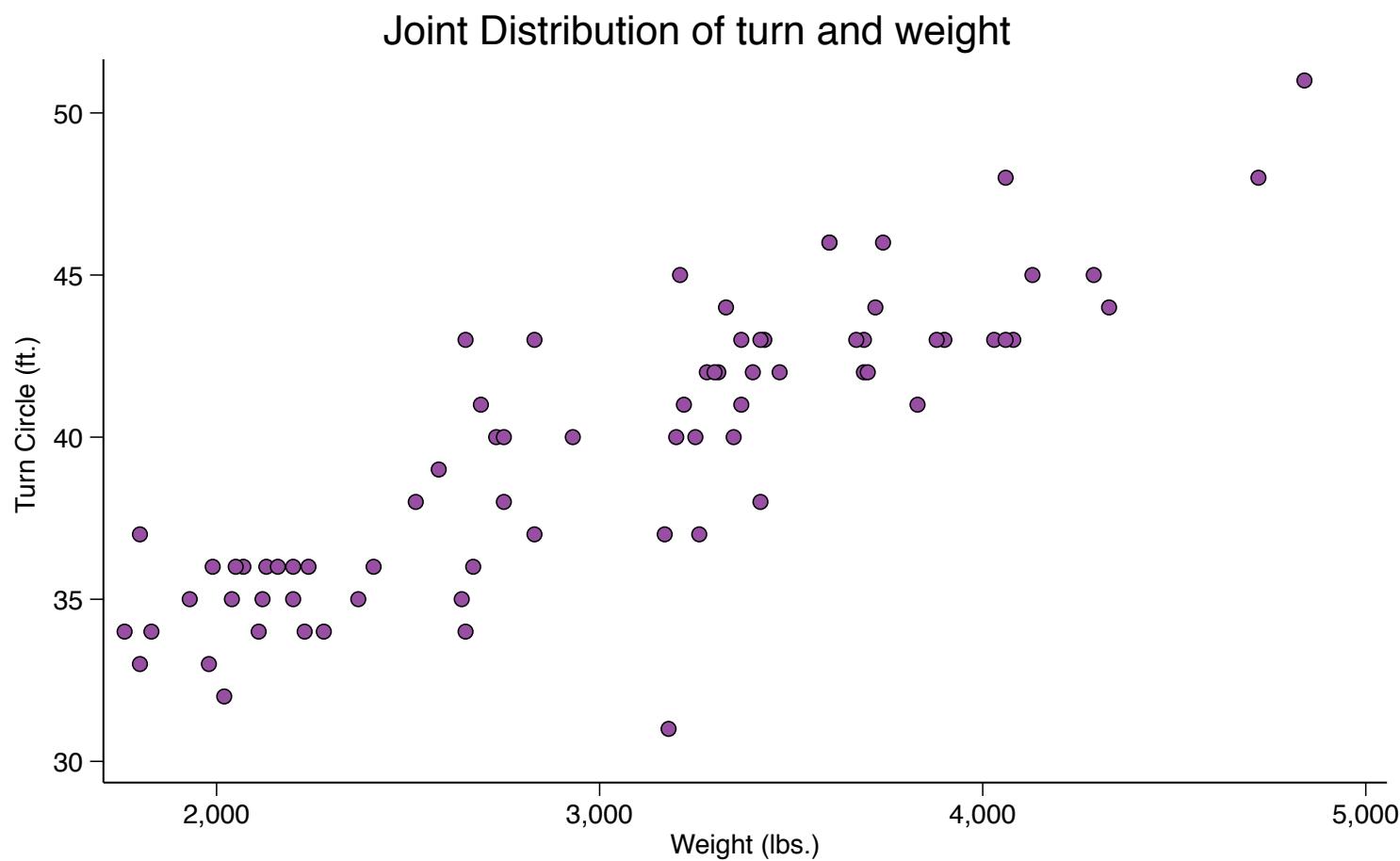
Created on: 29 Oct 2015 at: 15:36:10

Figure 1.86: Scatterplot of Displacement (cu. in.) & Weight (lbs.)



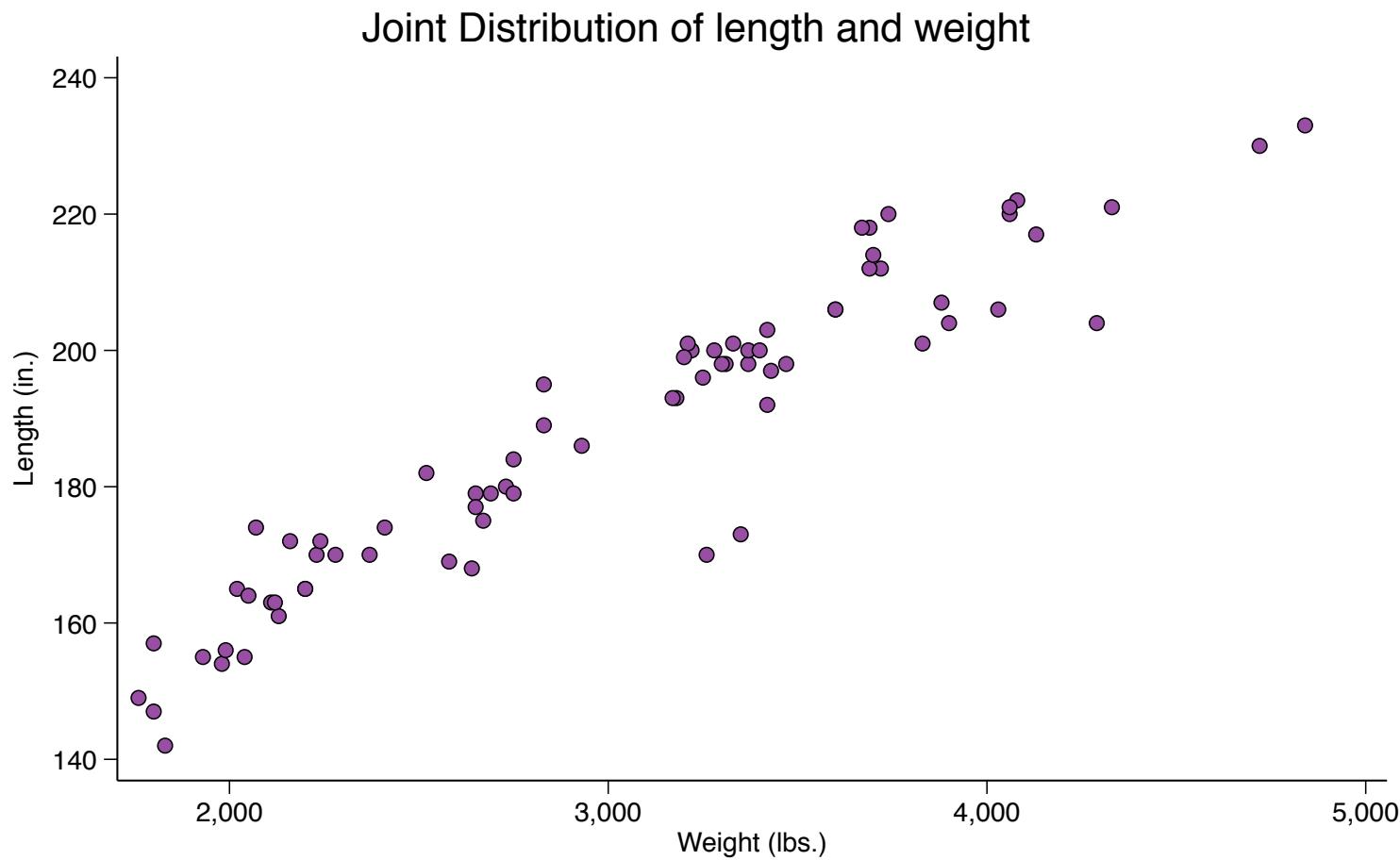
Created on: 29 Oct 2015 at: 15:36:12

Figure 1.87: Scatterplot of Turn Circle (ft.) & Weight (lbs.)



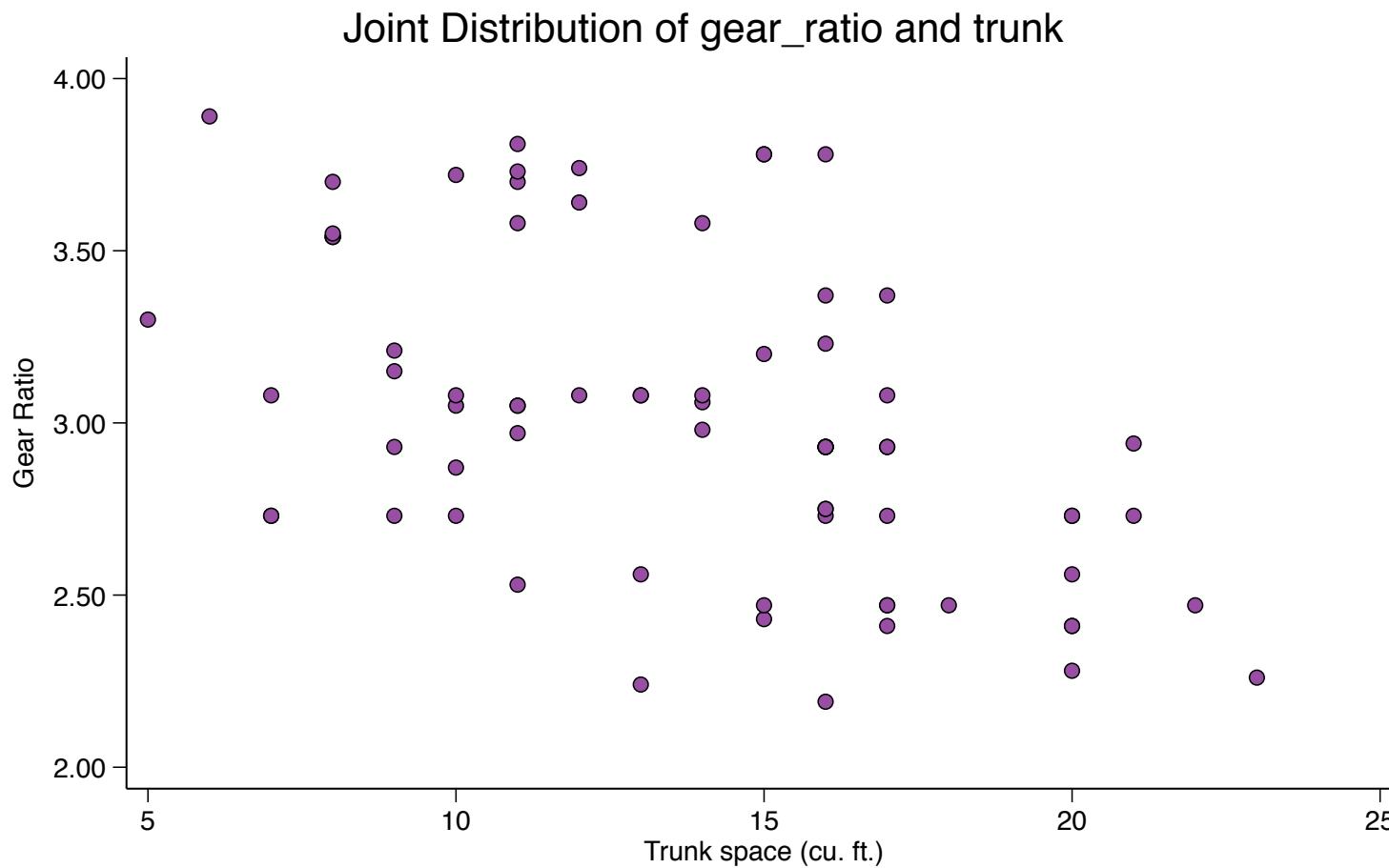
Created on: 29 Oct 2015 at: 15:36:14

Figure 1.88: Scatterplot of Length (in.) & Weight (lbs.)



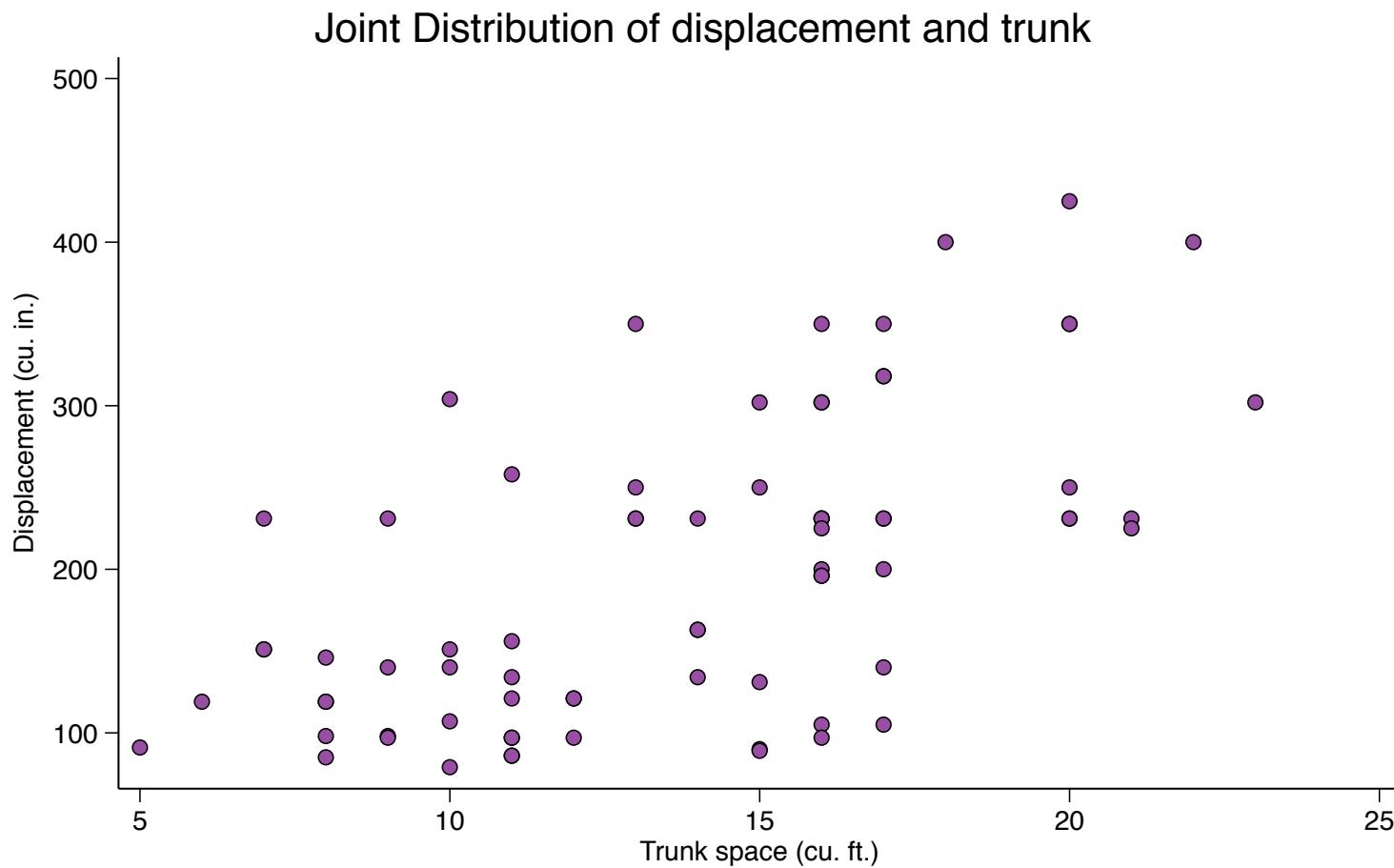
Created on: 29 Oct 2015 at: 15:36:16

Figure 1.89: Scatterplot of Gear Ratio & Trunk space (cu. ft.)



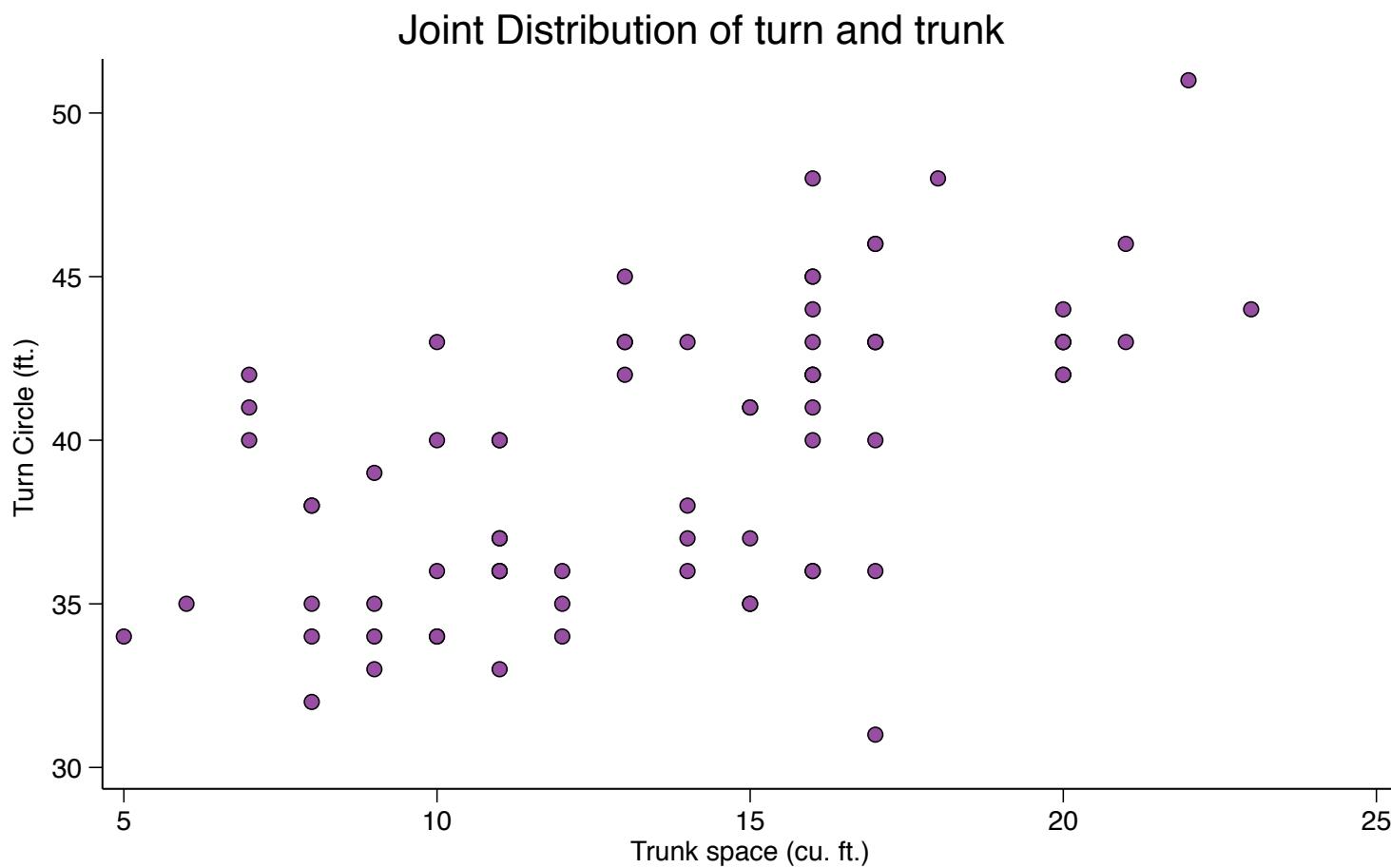
Created on: 29 Oct 2015 at: 15:36:18

Figure 1.90: Scatterplot of Displacement (cu. in.) & Trunk space (cu. ft.)



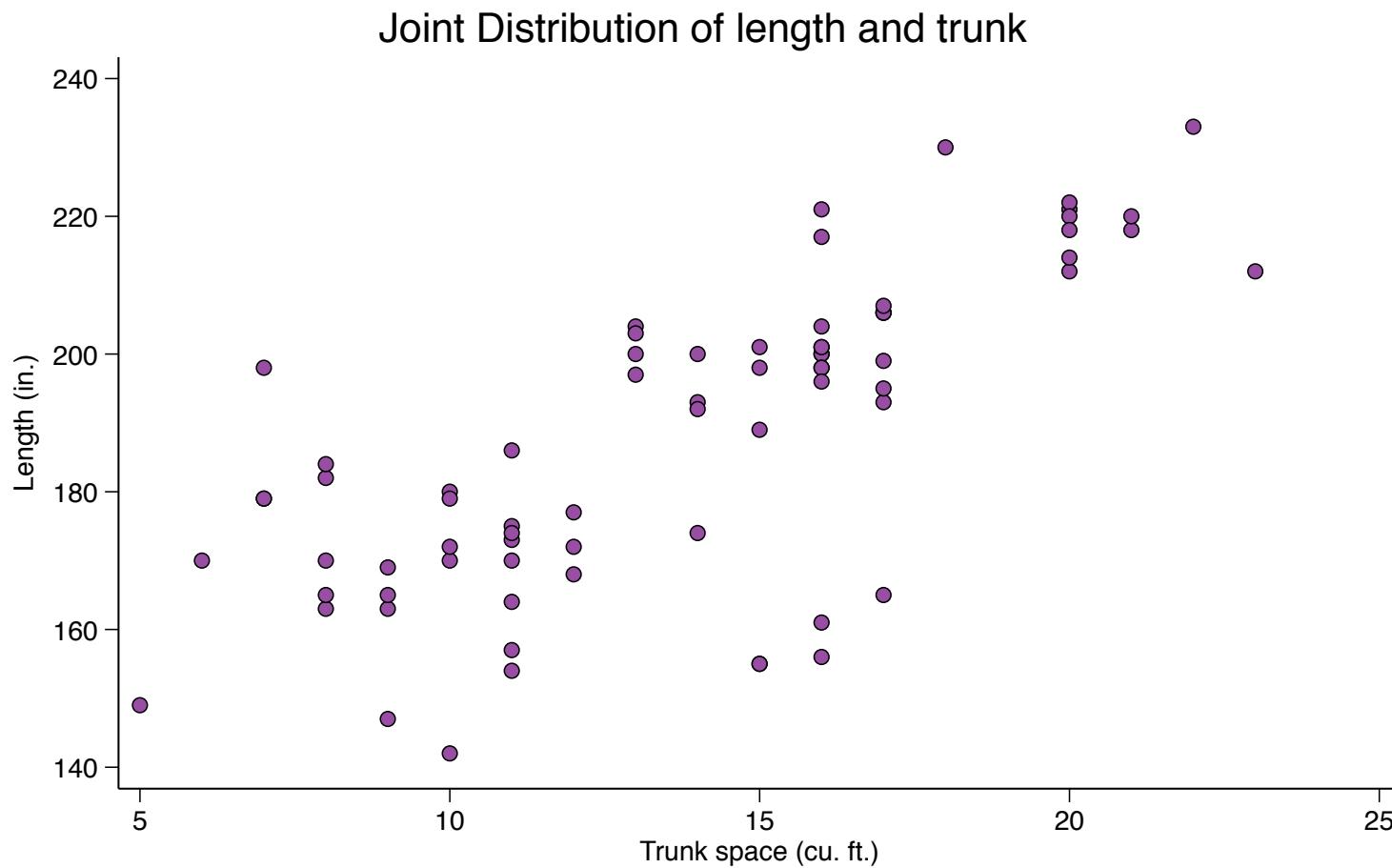
Created on: 29 Oct 2015 at: 15:36:20

Figure 1.91: Scatterplot of Turn Circle (ft.) & Trunk space (cu. ft.)



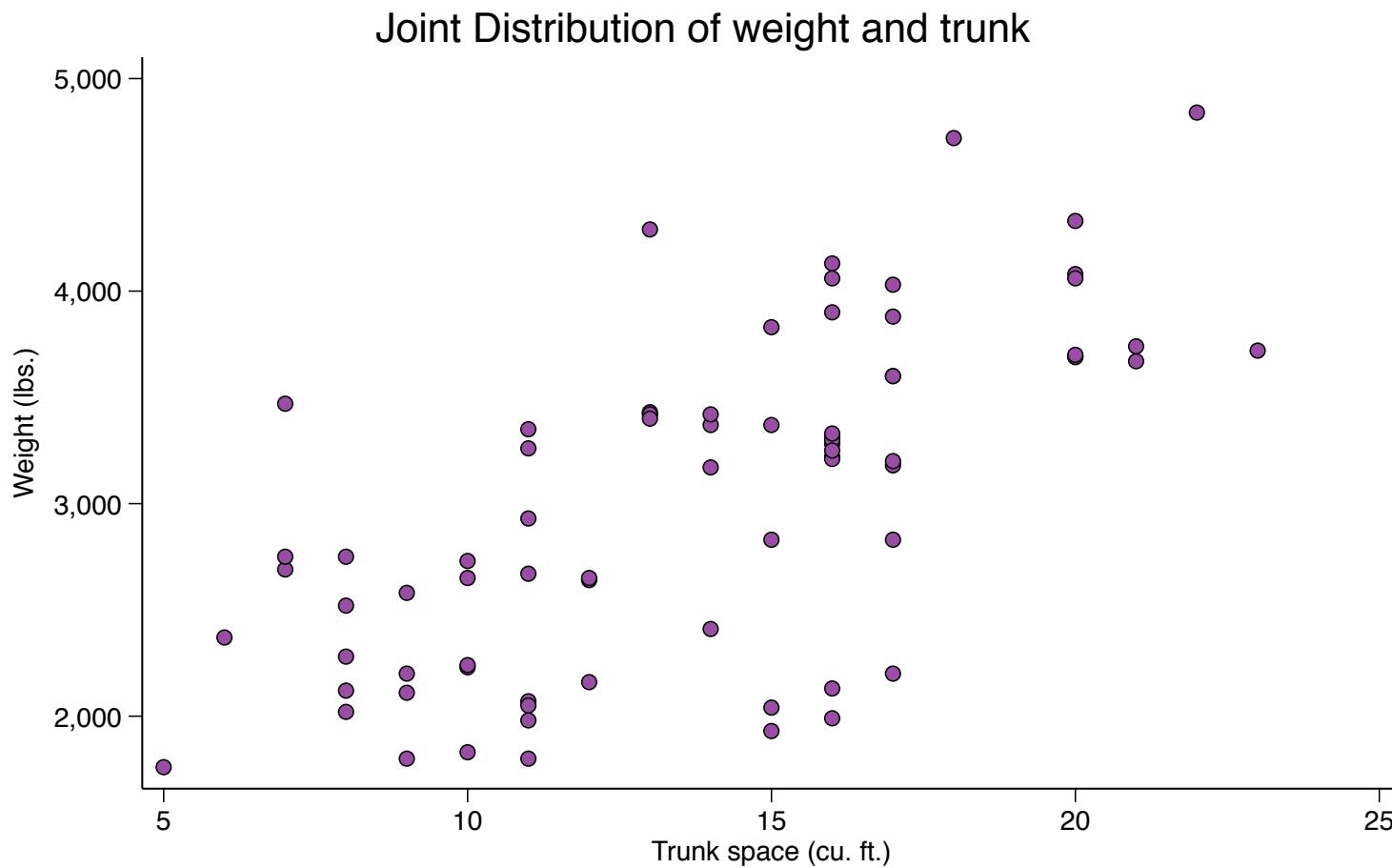
Created on: 29 Oct 2015 at: 15:36:22

Figure 1.92: Scatterplot of Length (in.) & Trunk space (cu. ft.)



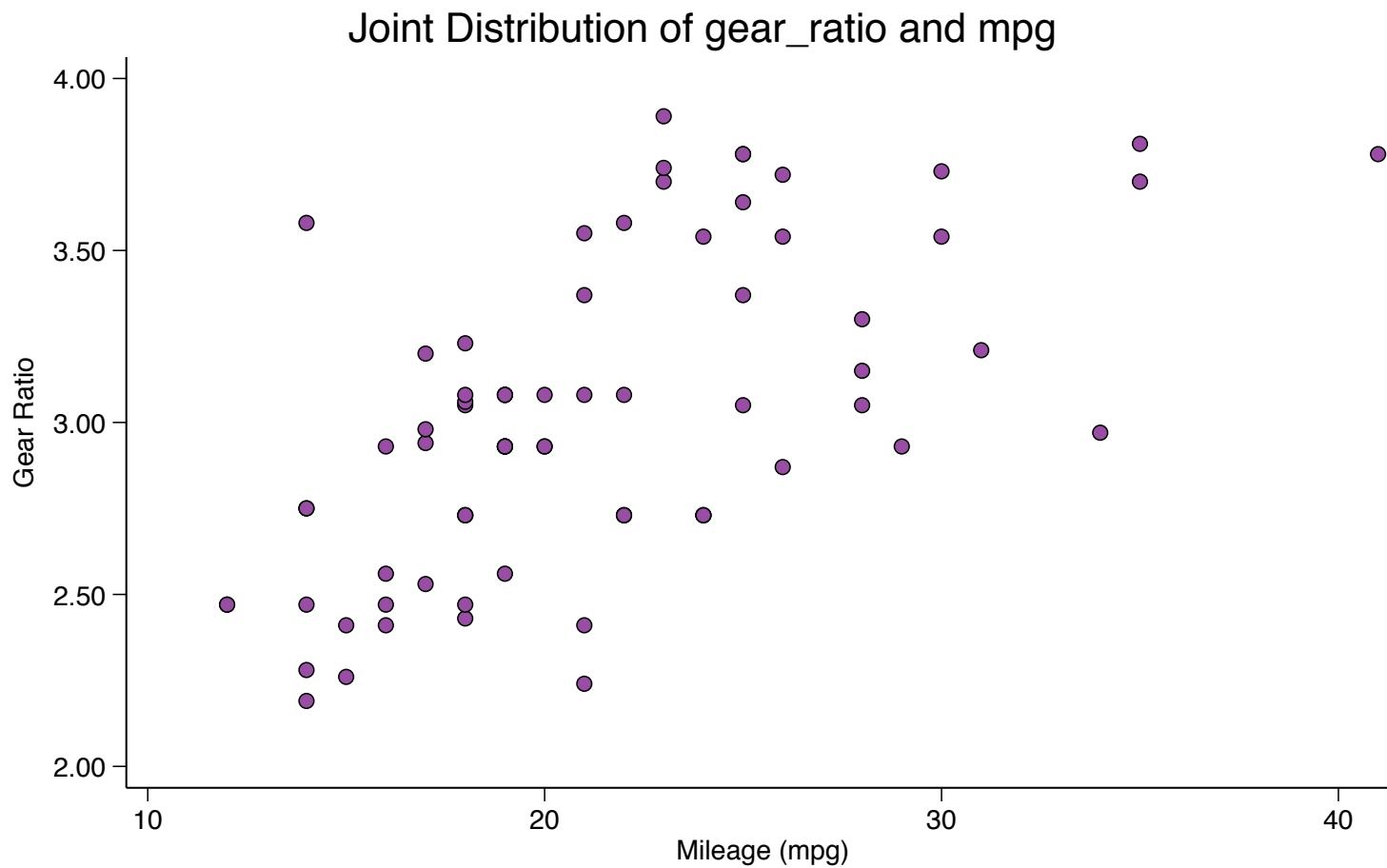
Created on: 29 Oct 2015 at: 15:36:24

Figure 1.93: Scatterplot of Weight (lbs.) & Trunk space (cu. ft.)



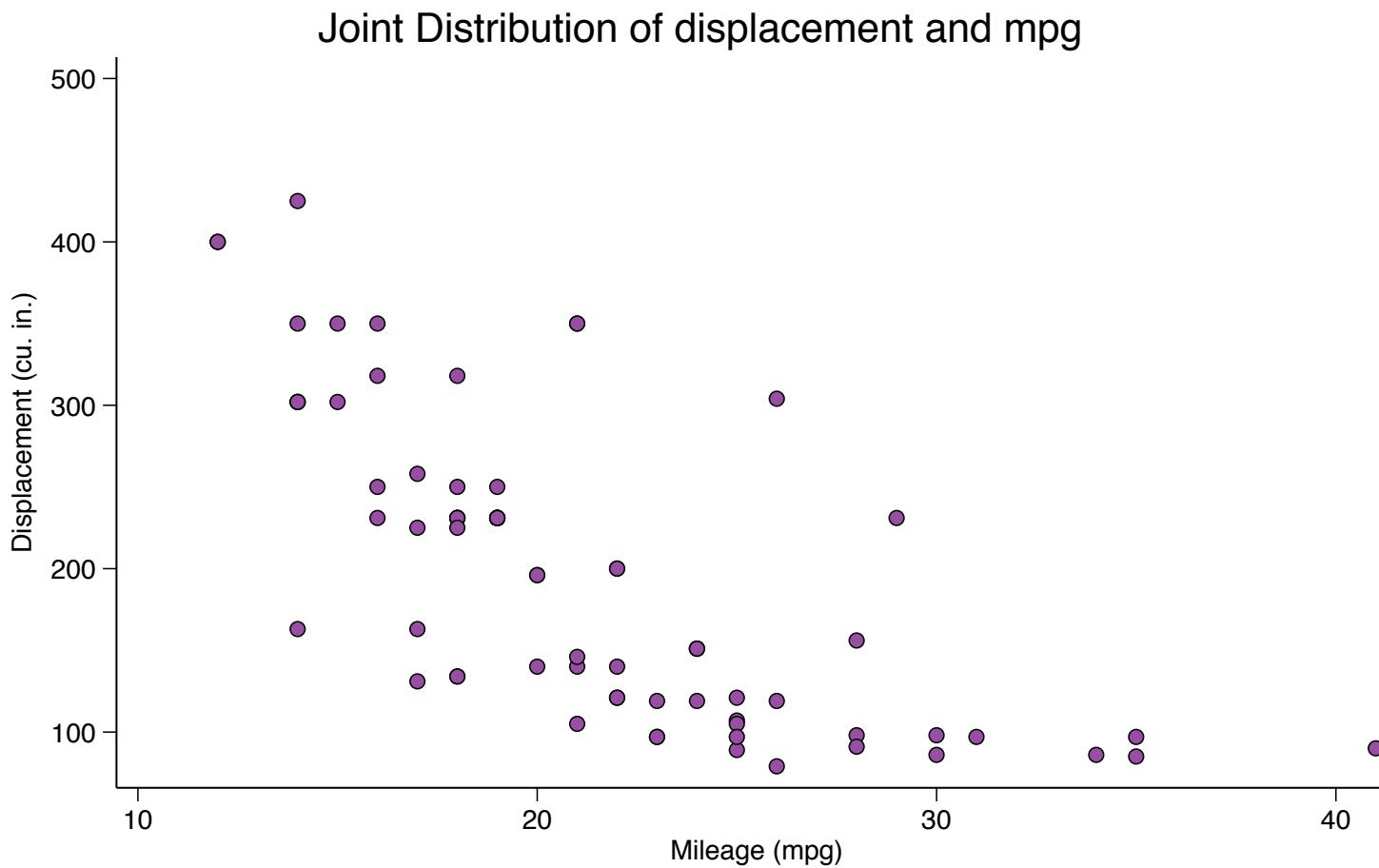
Created on: 29 Oct 2015 at: 15:36:26

Figure 1.94: Scatterplot of Gear Ratio & Mileage (mpg)



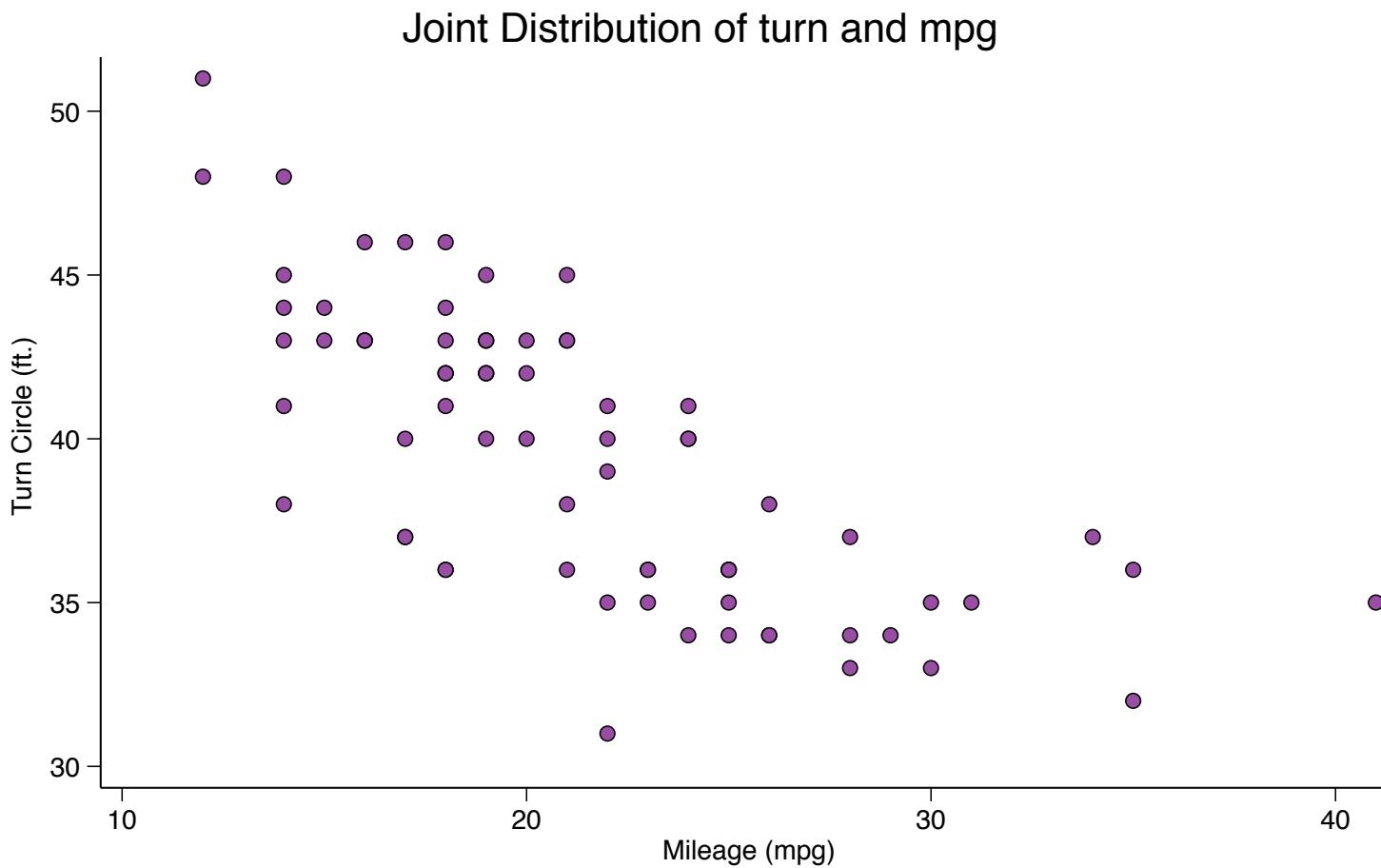
Created on: 29 Oct 2015 at: 15:36:28

Figure 1.95: Scatterplot of Displacement (cu. in.) & Mileage (mpg)



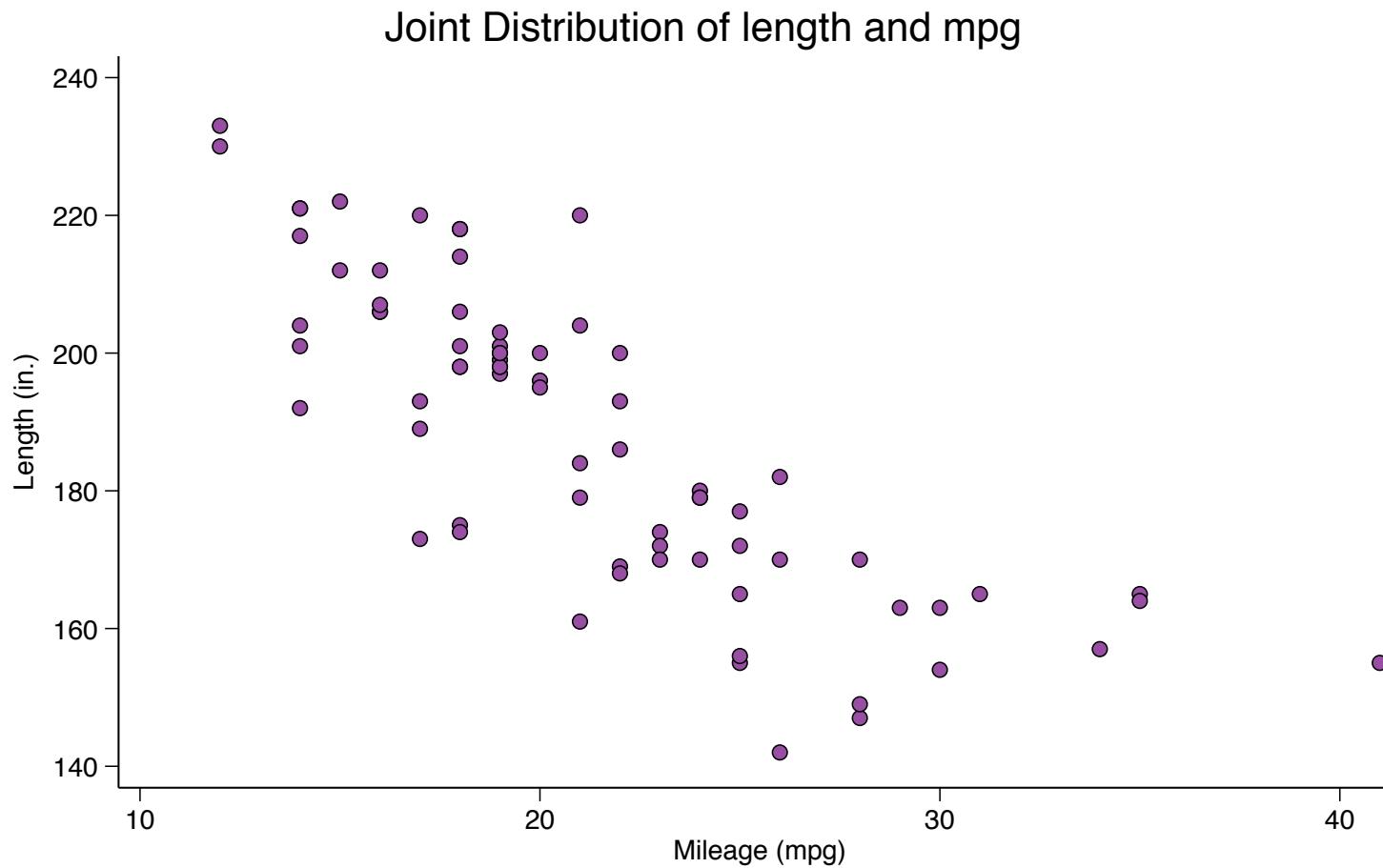
Created on: 29 Oct 2015 at: 15:36:30

Figure 1.96: Scatterplot of Turn Circle (ft.) & Mileage (mpg)



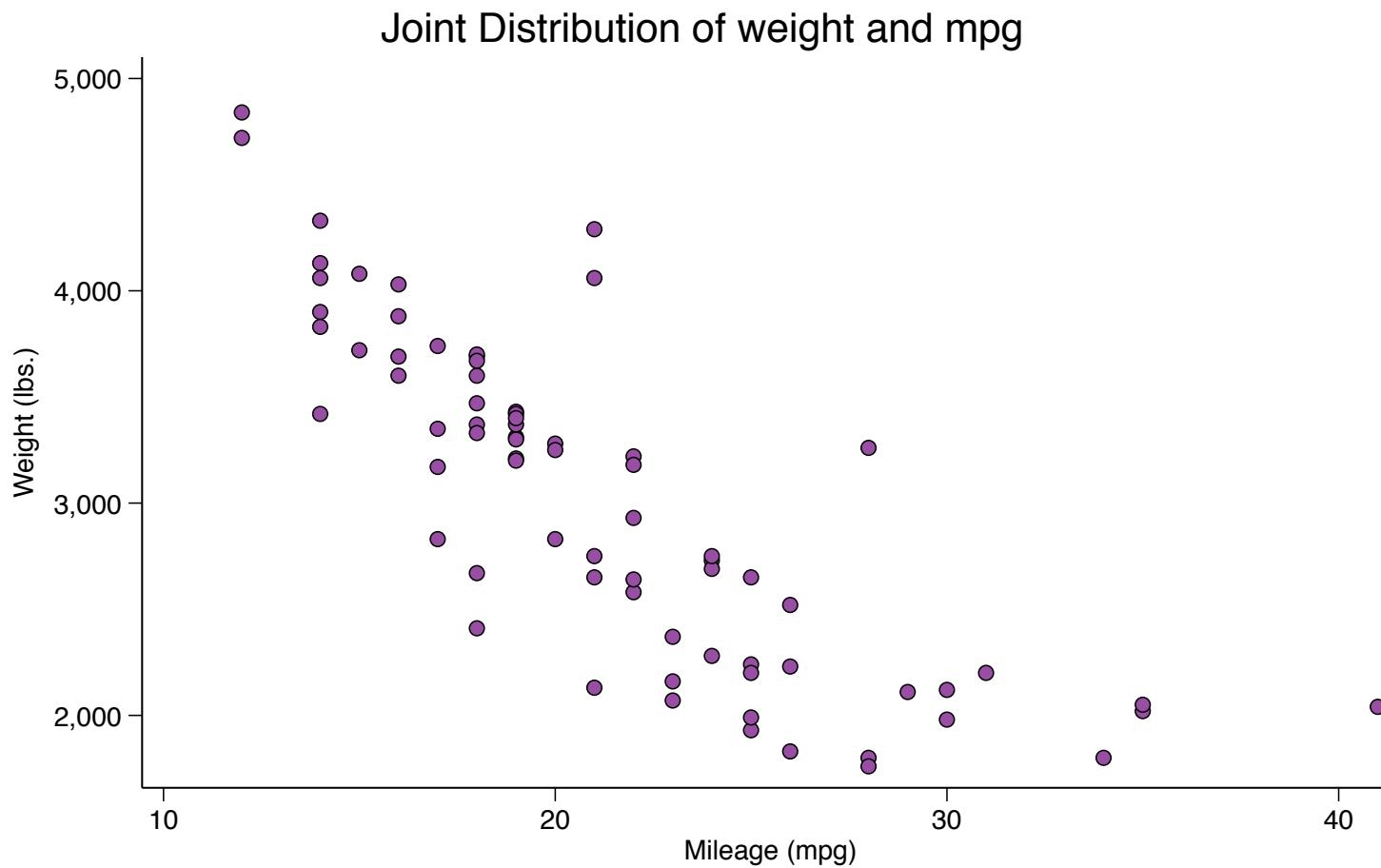
Created on: 29 Oct 2015 at: 15:36:32

Figure 1.97: Scatterplot of Length (in.) & Mileage (mpg)



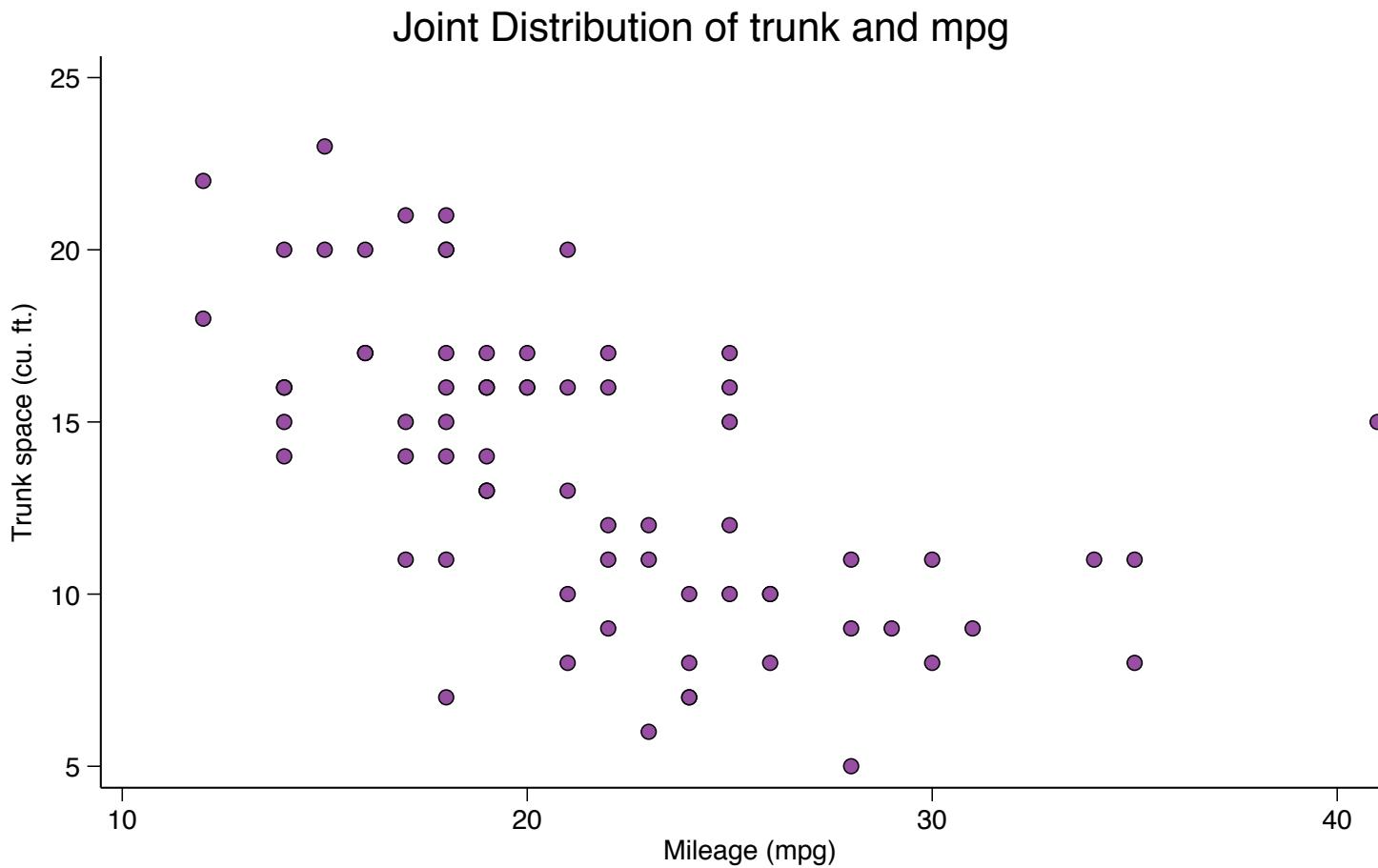
Created on: 29 Oct 2015 at: 15:36:34

Figure 1.98: Scatterplot of Weight (lbs.) & Mileage (mpg)



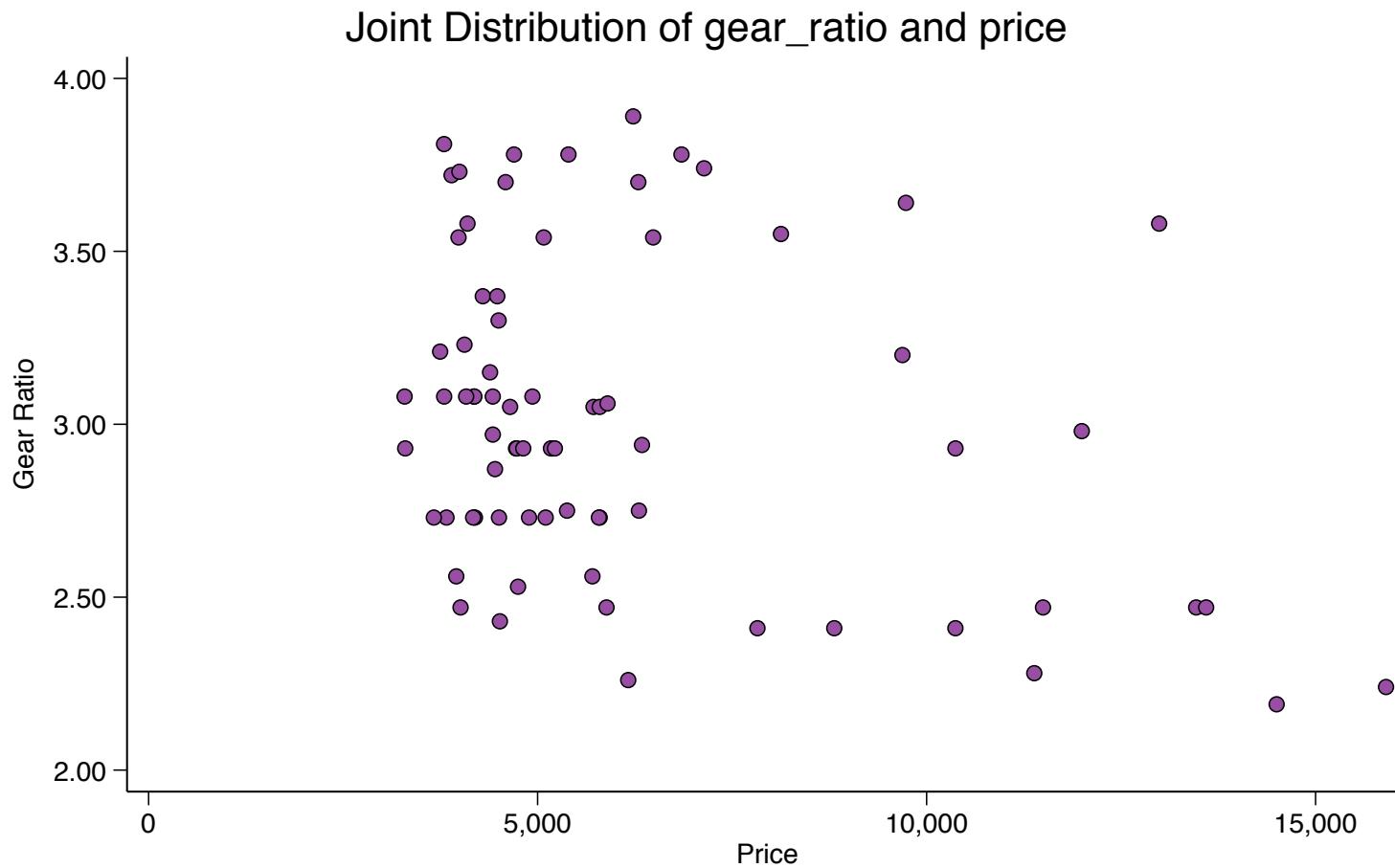
Created on: 29 Oct 2015 at: 15:36:36

Figure 1.99: Scatterplot of Trunk space (cu. ft.) & Mileage (mpg)



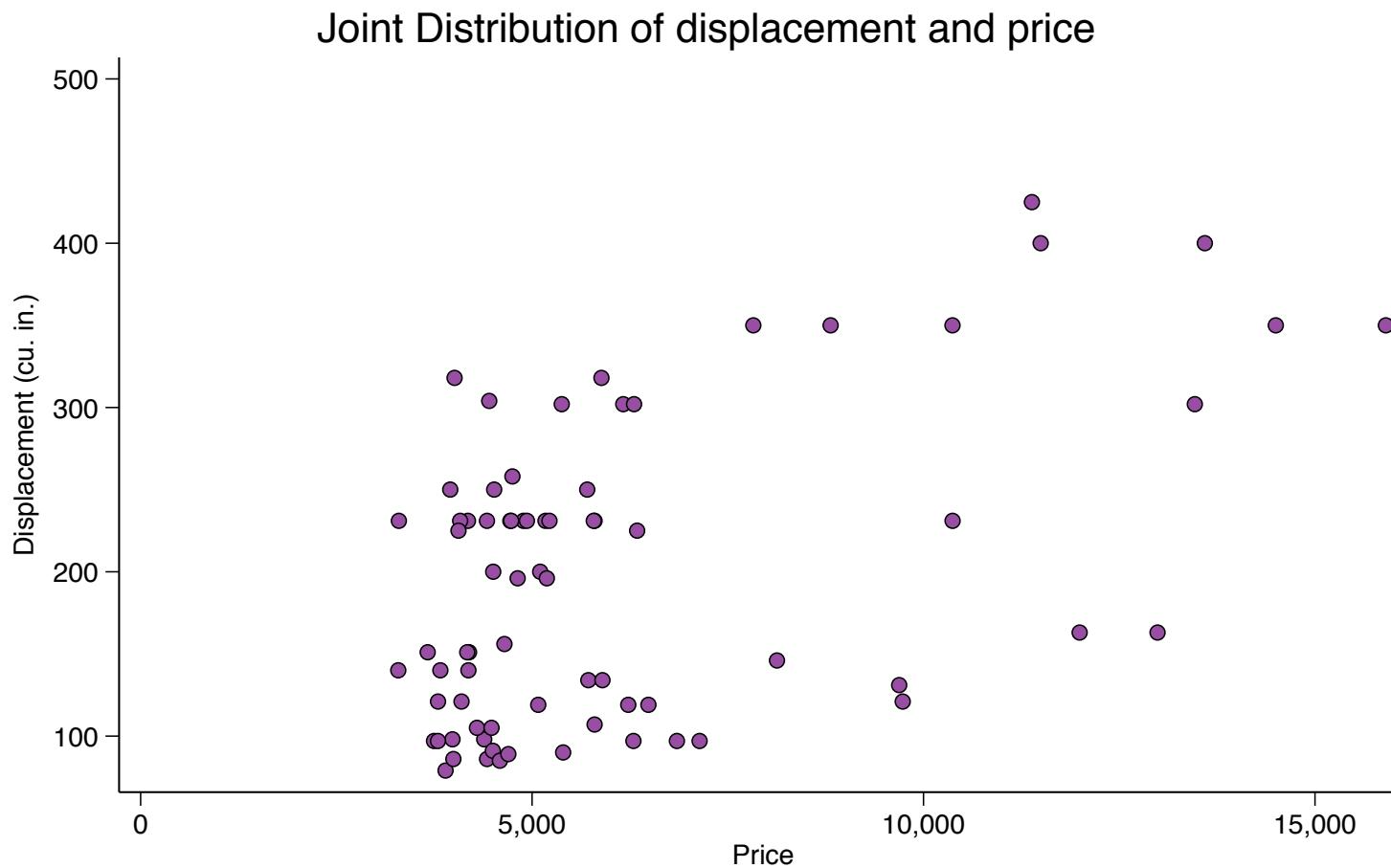
Created on: 29 Oct 2015 at: 15:36:38

Figure 1.100: Scatterplot of Gear Ratio & Price



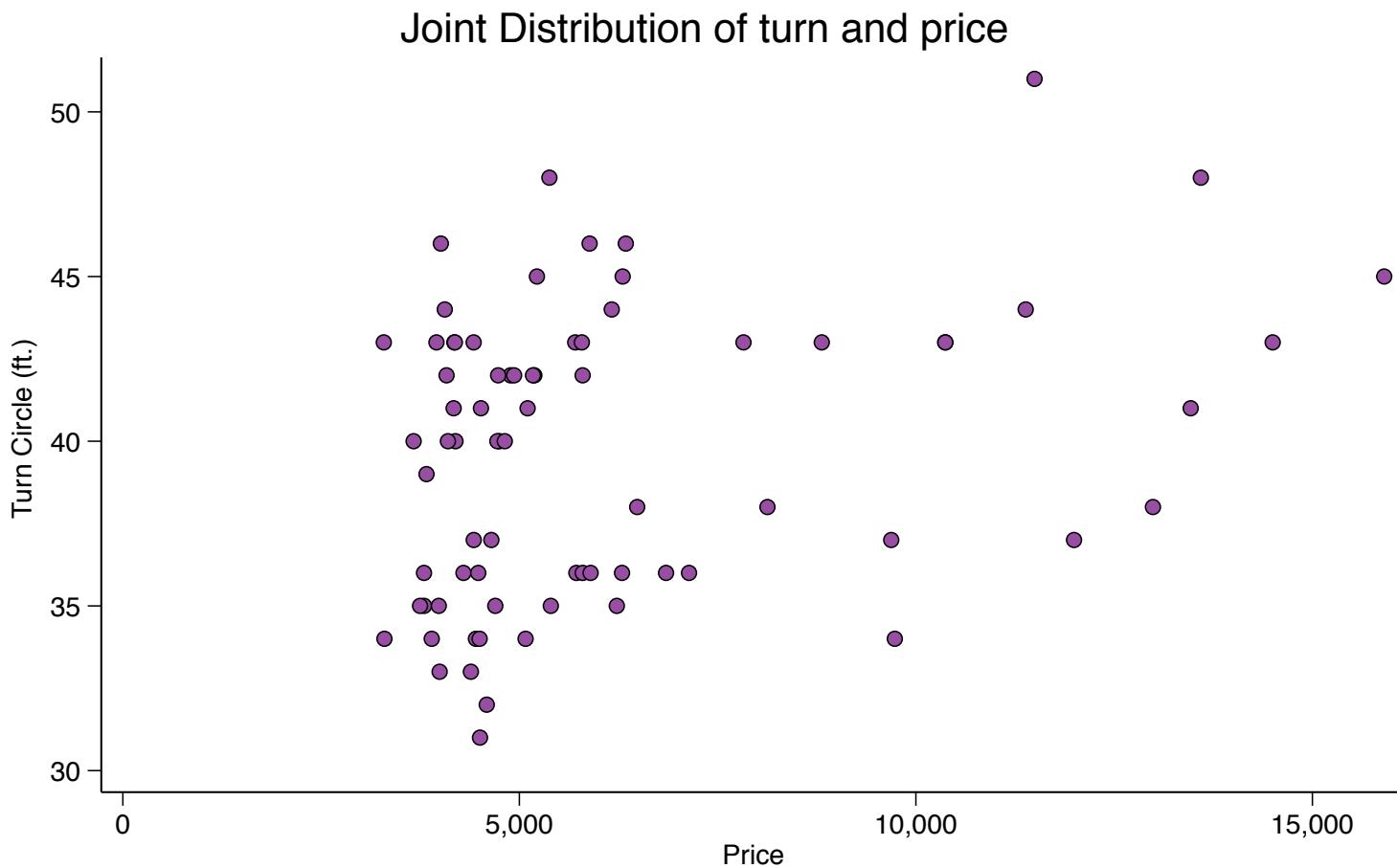
Created on: 29 Oct 2015 at: 15:36:40

Figure 1.101: Scatterplot of Displacement (cu. in.) & Price



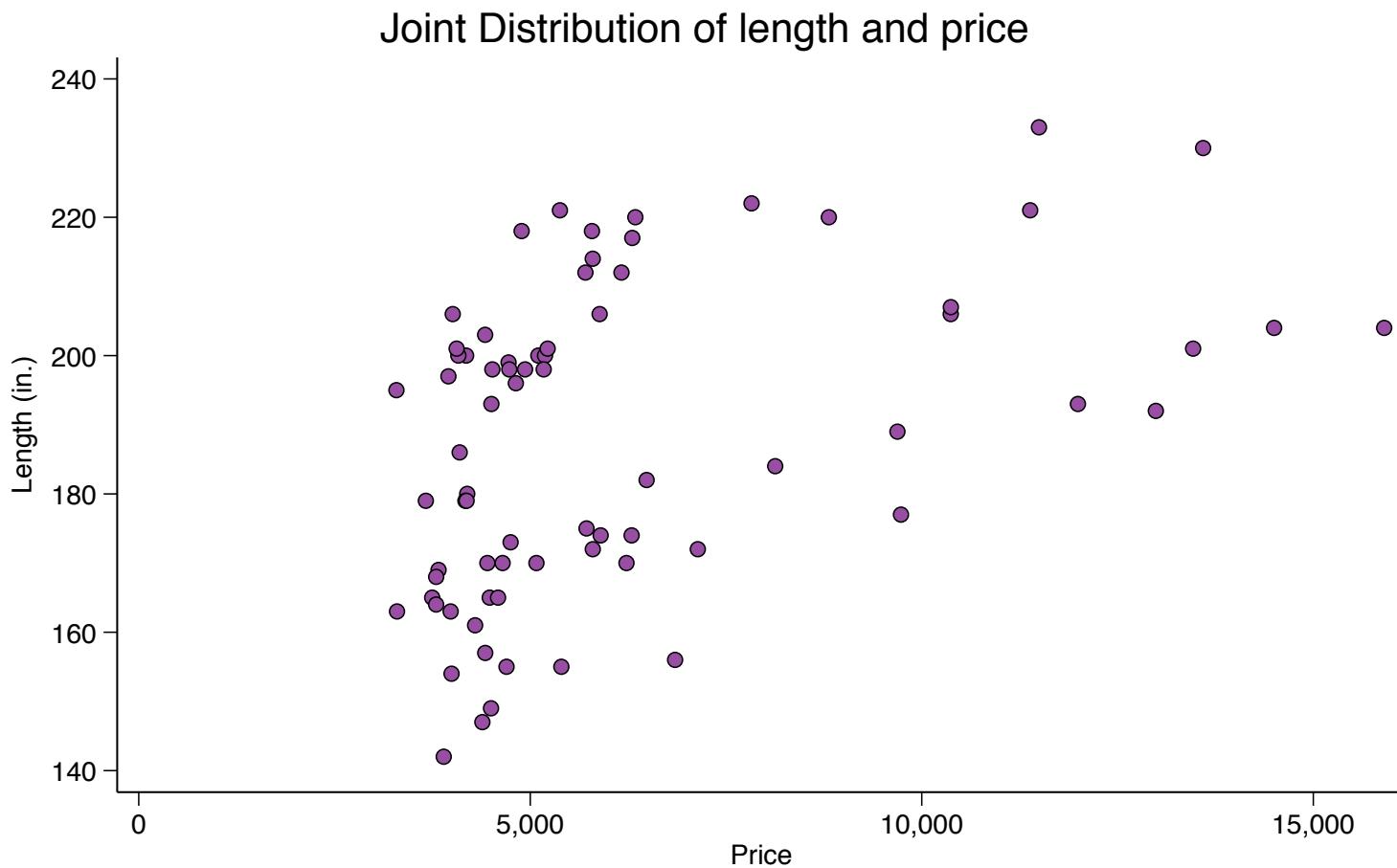
Created on: 29 Oct 2015 at: 15:36:42

Figure 1.102: Scatterplot of Turn Circle (ft.) & Price



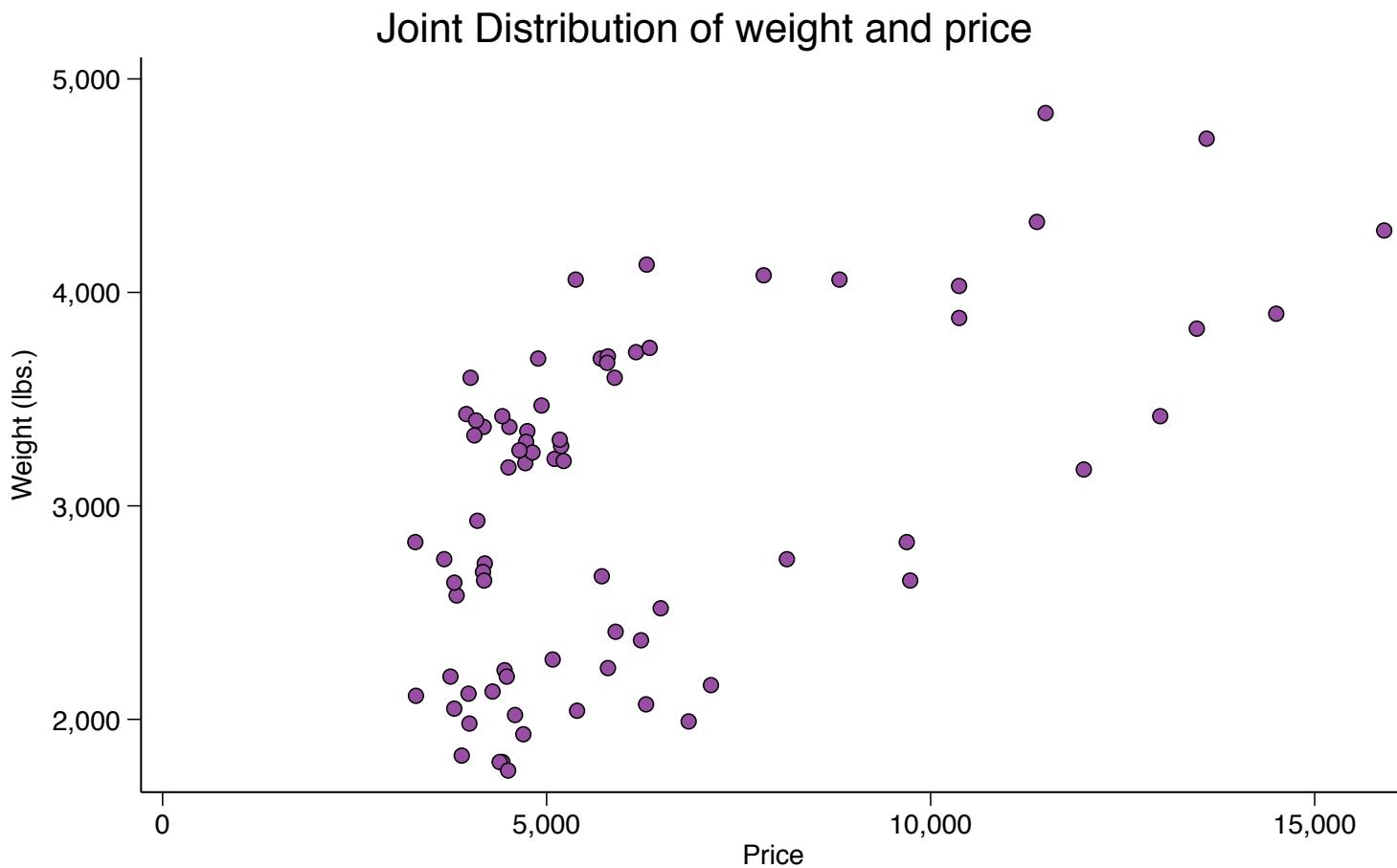
Created on: 29 Oct 2015 at: 15:36:44

Figure 1.103: Scatterplot of Length (in.) & Price



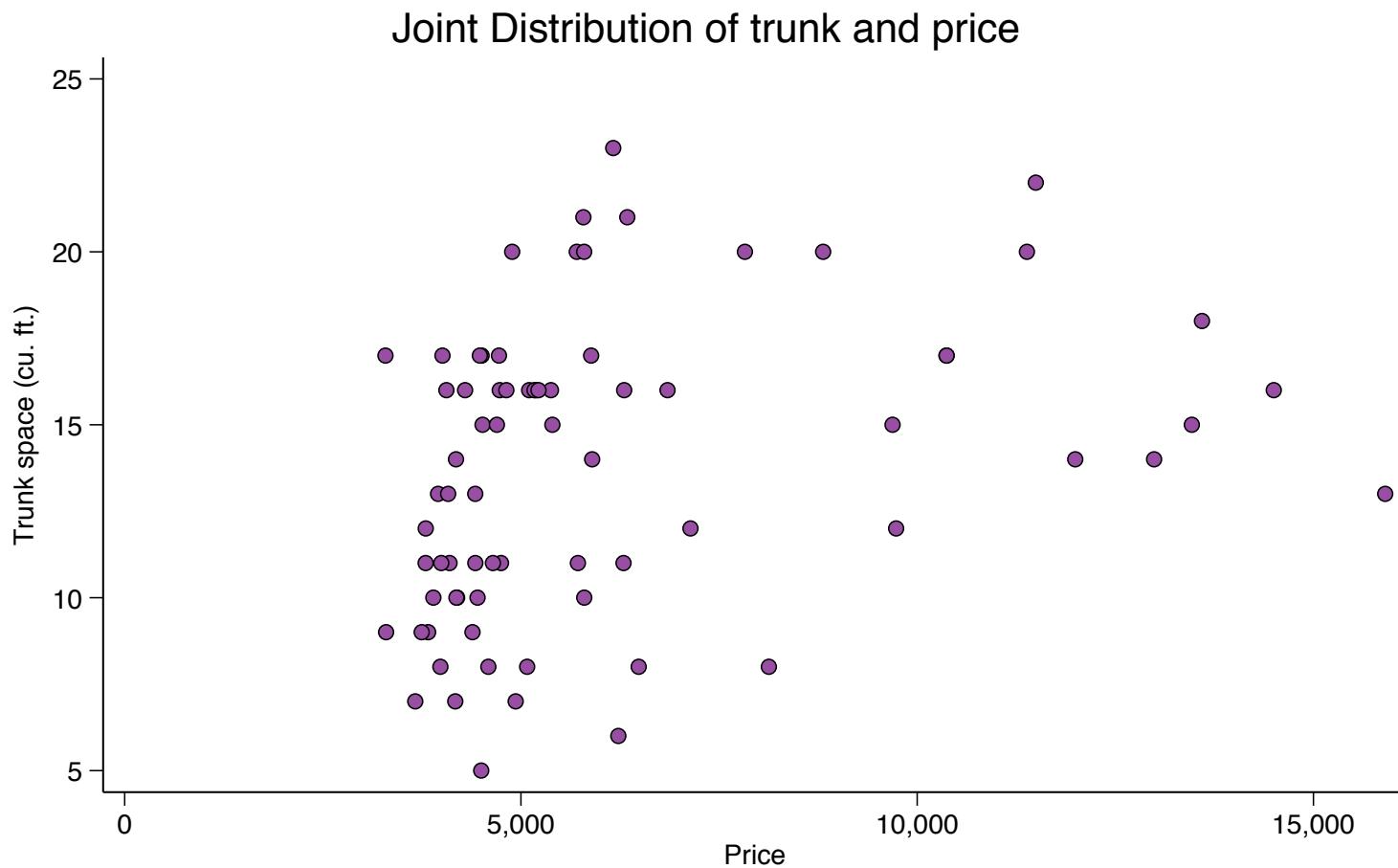
Created on: 29 Oct 2015 at: 15:36:46

Figure 1.104: Scatterplot of Weight (lbs.) & Price



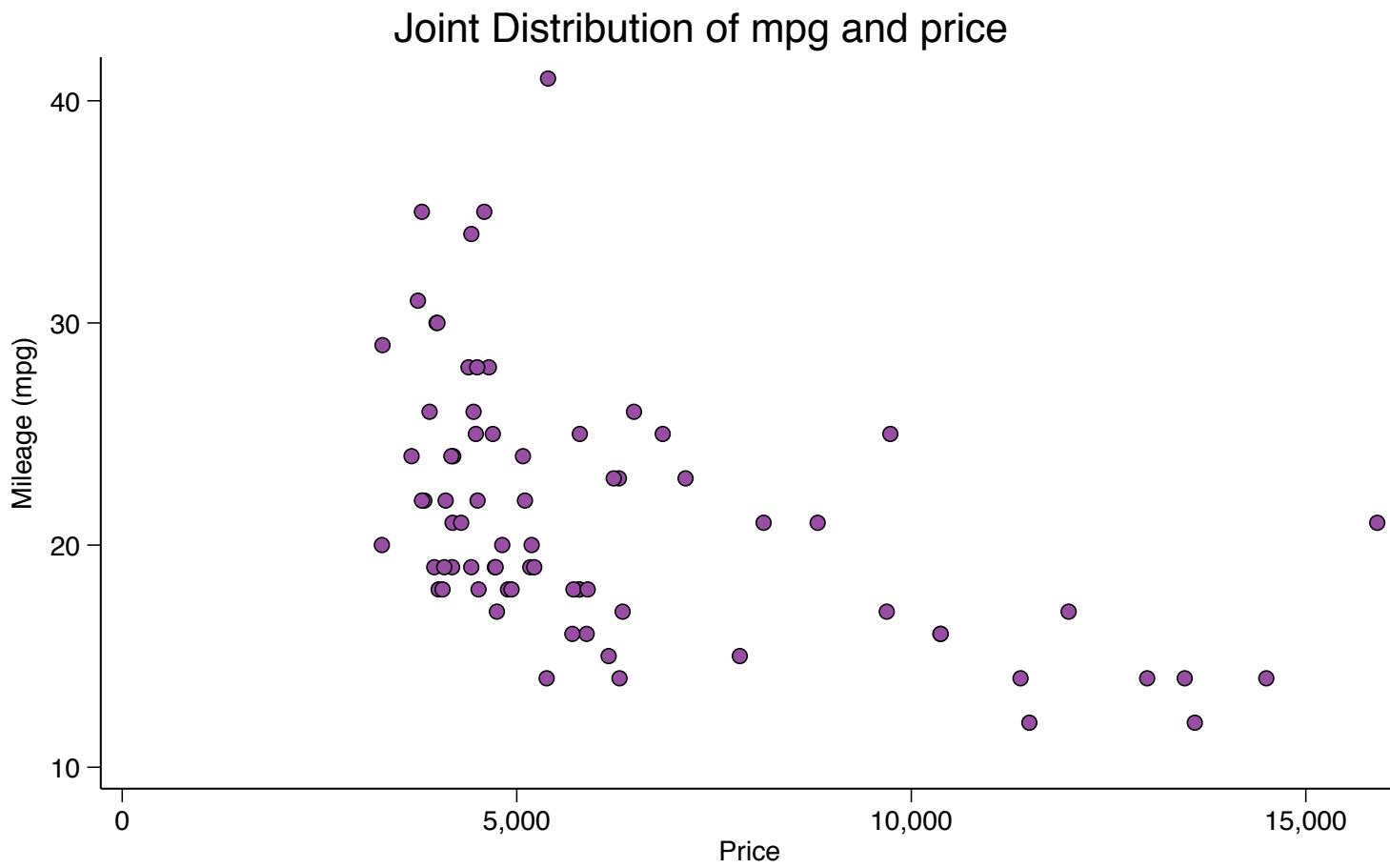
Created on: 29 Oct 2015 at: 15:36:48

Figure 1.105: Scatterplot of Trunk space (cu. ft.) & Price



Created on: 29 Oct 2015 at: 15:36:50

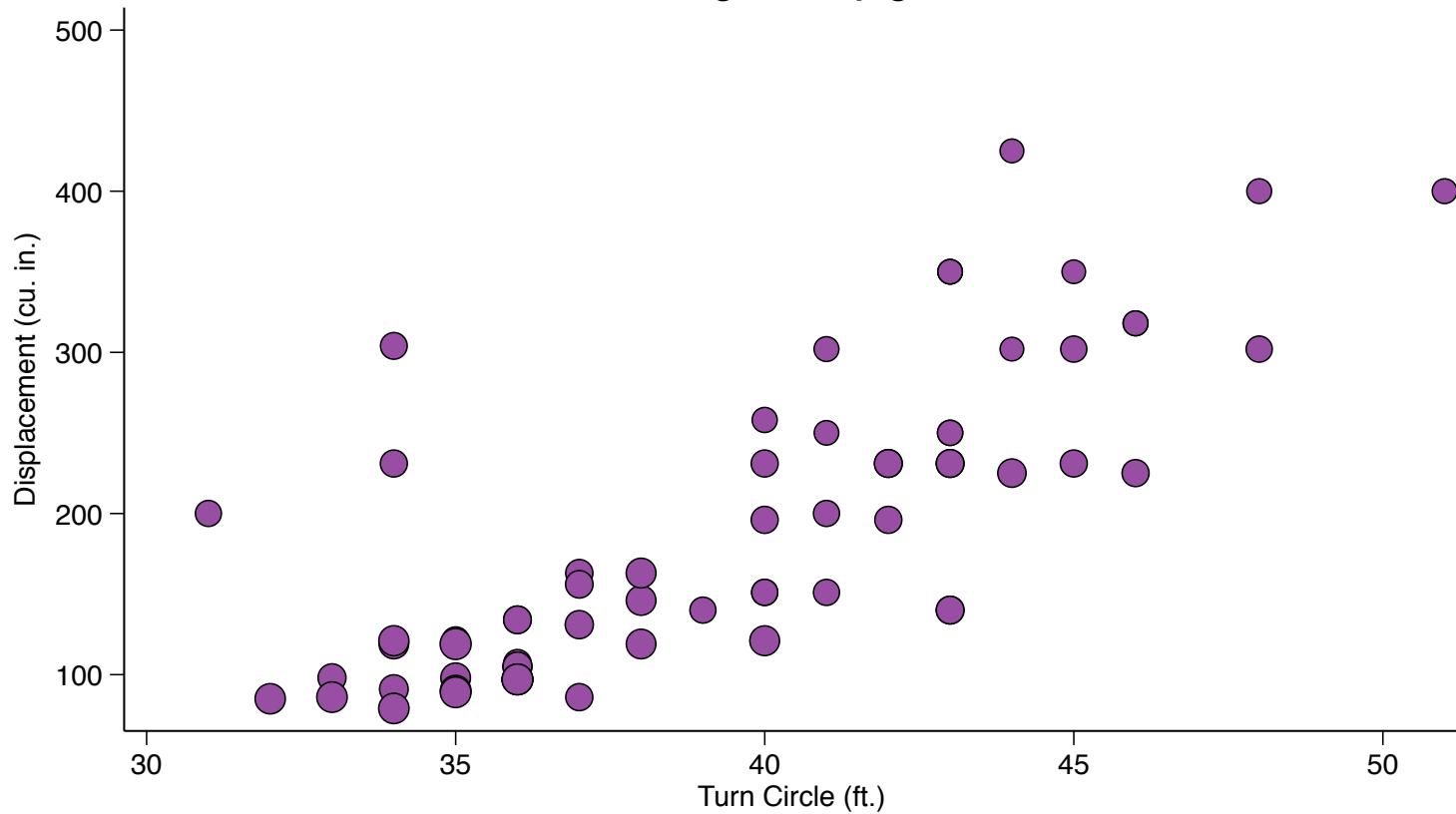
Figure 1.106: Scatterplot of Mileage (mpg) & Price



Created on: 29 Oct 2015 at: 15:36:52

Figure 1.107: Bubble Plot of Displacement (cu. in.), Turn Circle (ft.), and Gear Ratio

**Joint Distribution of displacement and turn and
Points Sizes Weighted by gear_ratio**

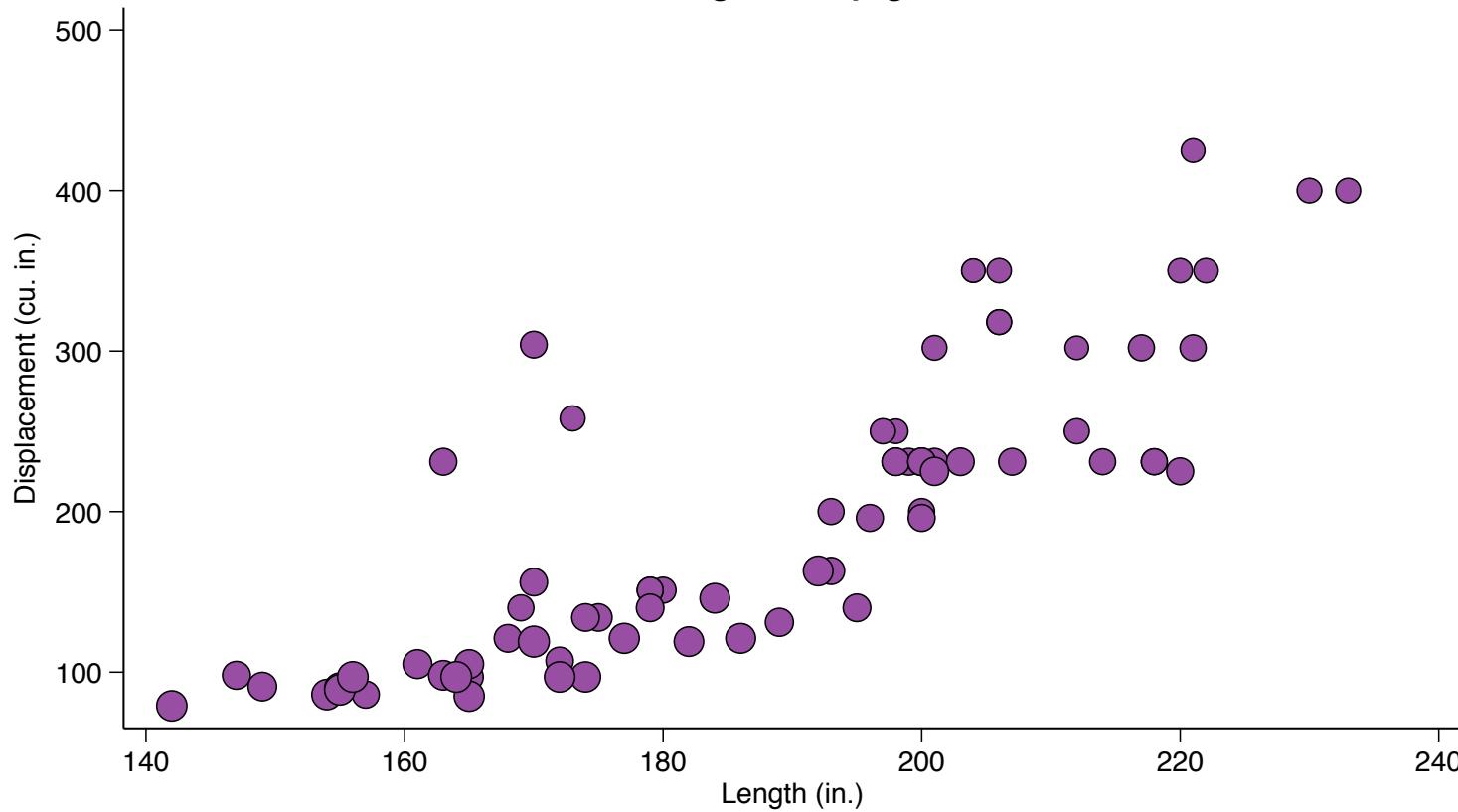


Created on: 29 Oct 2015 at: 15:36:54

Bubble Plots.

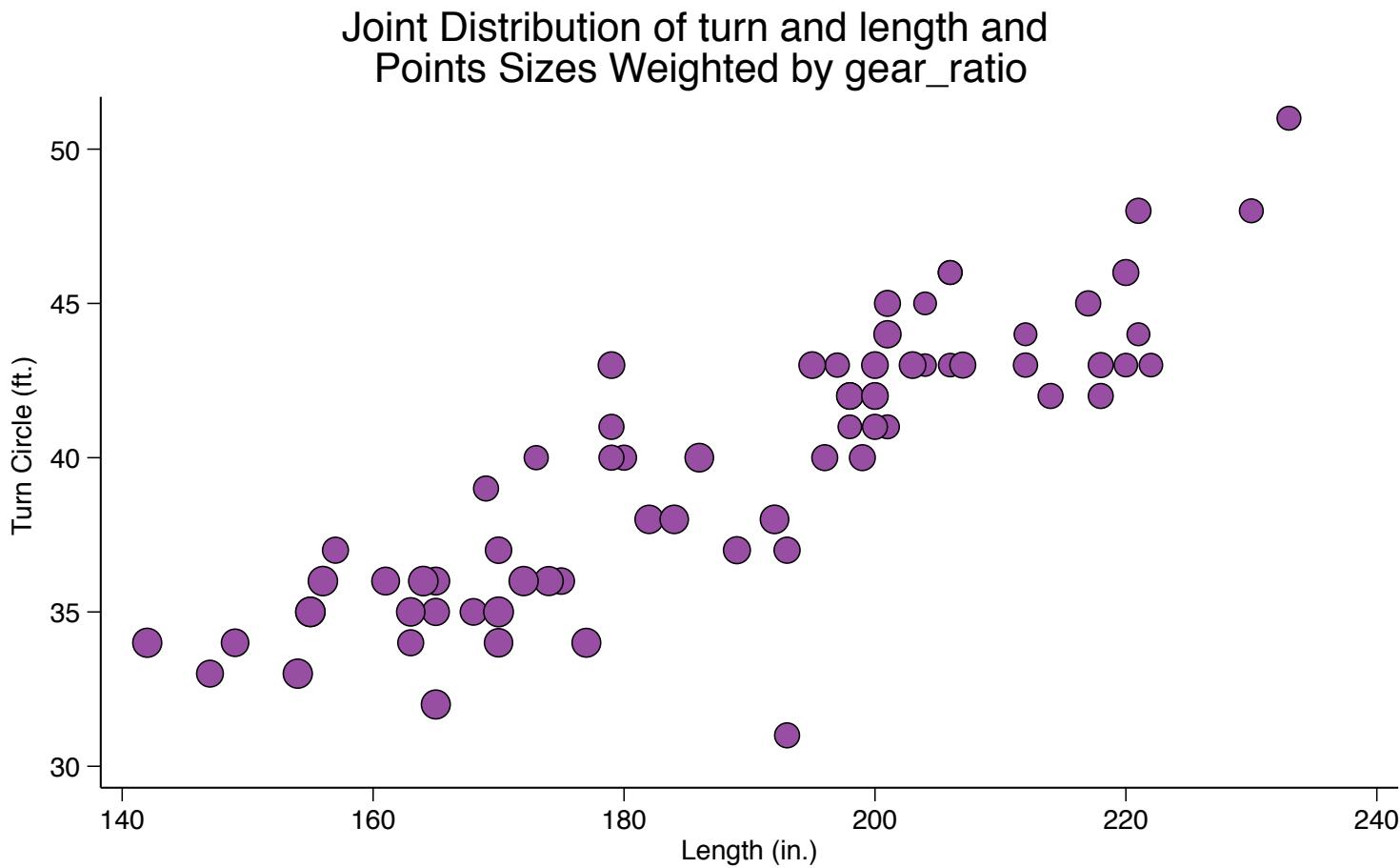
Figure 1.108: Bubble Plot of Displacement (cu. in.), Length (in.), and Gear Ratio

**Joint Distribution of displacement and length and
Points Sizes Weighted by gear_ratio**



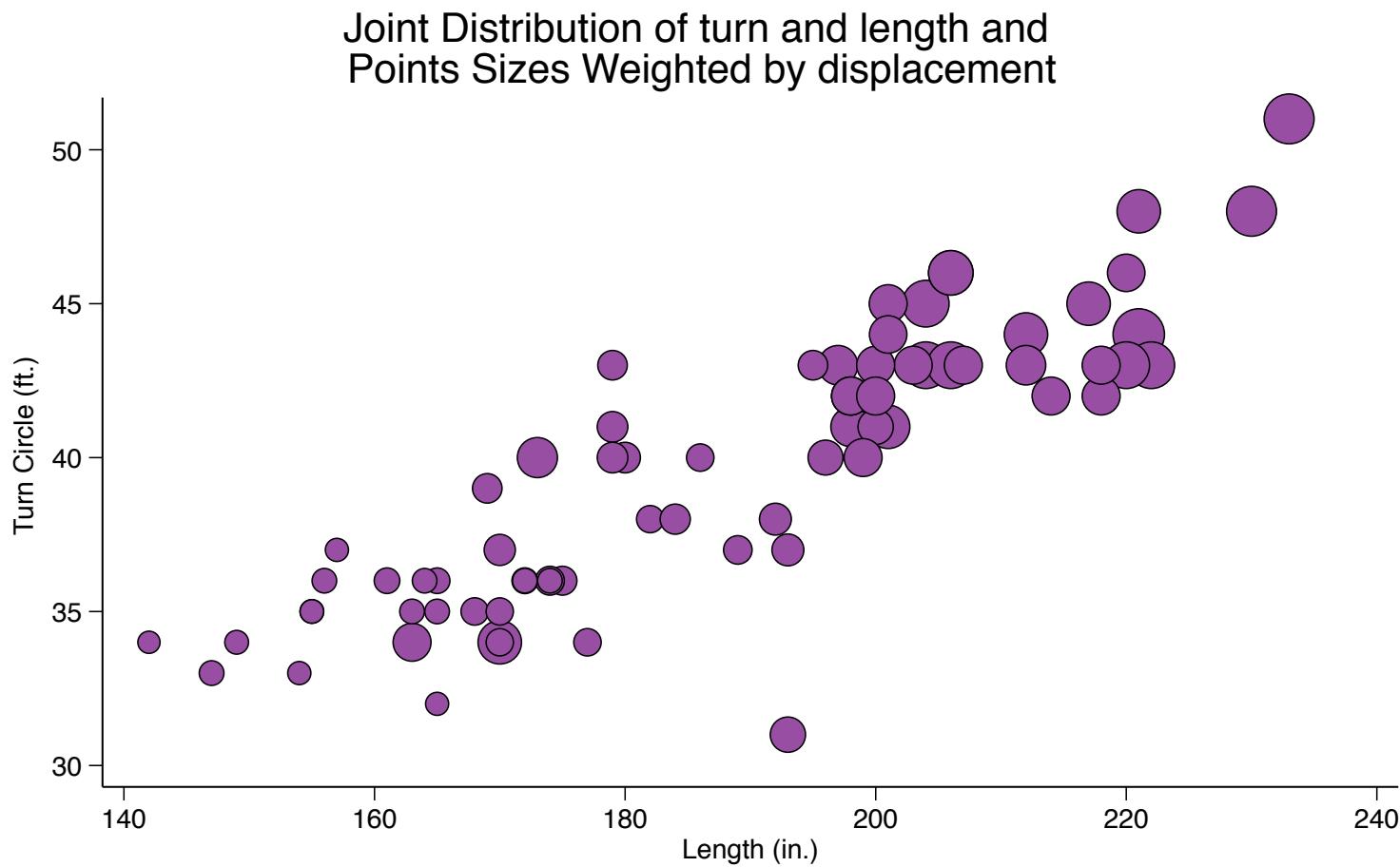
Created on: 29 Oct 2015 at: 15:36:56

Figure 1.109: Bubble Plot of Turn Circle (ft.), Length (in.), and Gear Ratio



Created on: 29 Oct 2015 at: 15:36:58

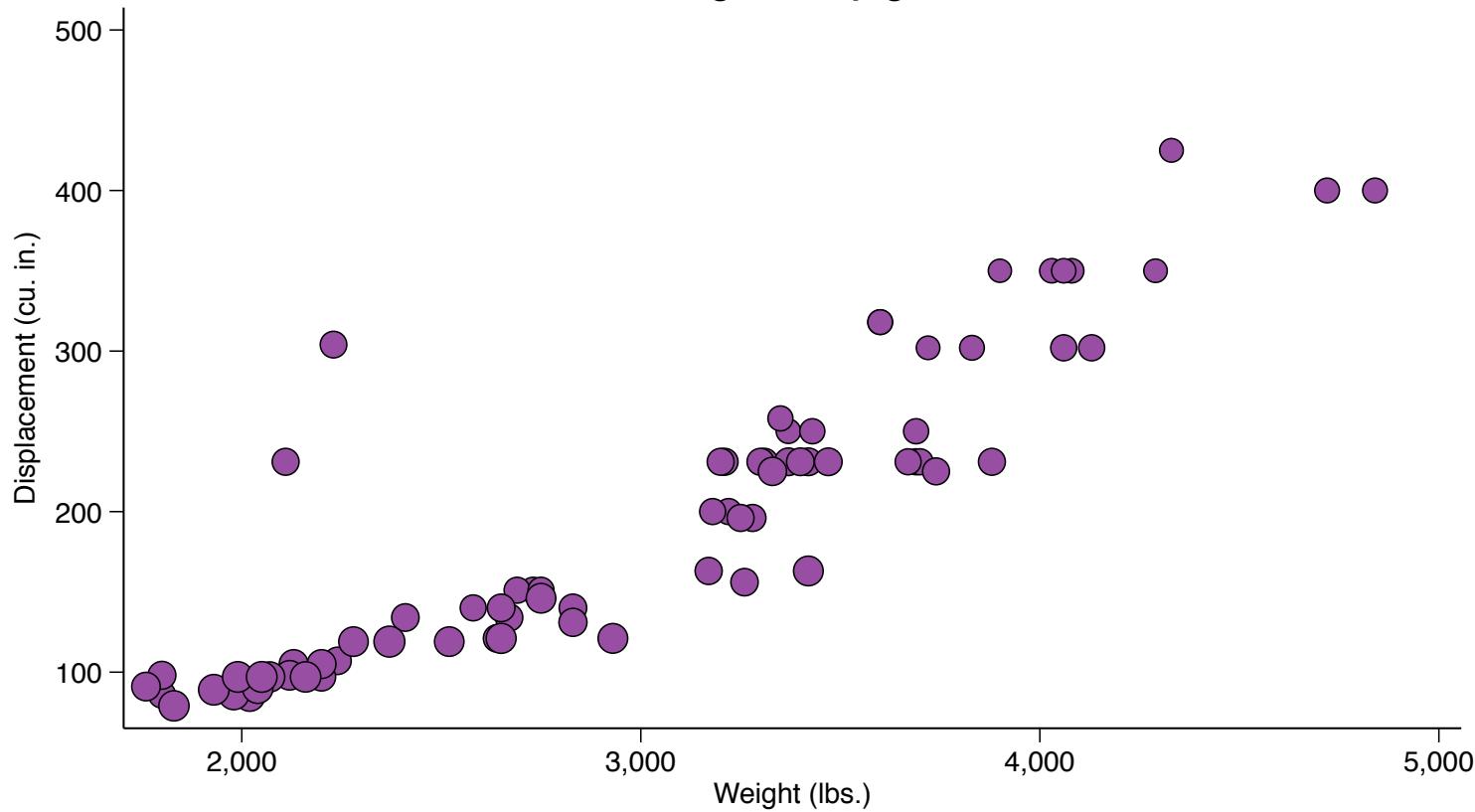
Figure 1.110: Bubble Plot of Turn Circle (ft.), Length (in.), and Displacement (cu. in.)



Created on: 29 Oct 2015 at: 15:37:00

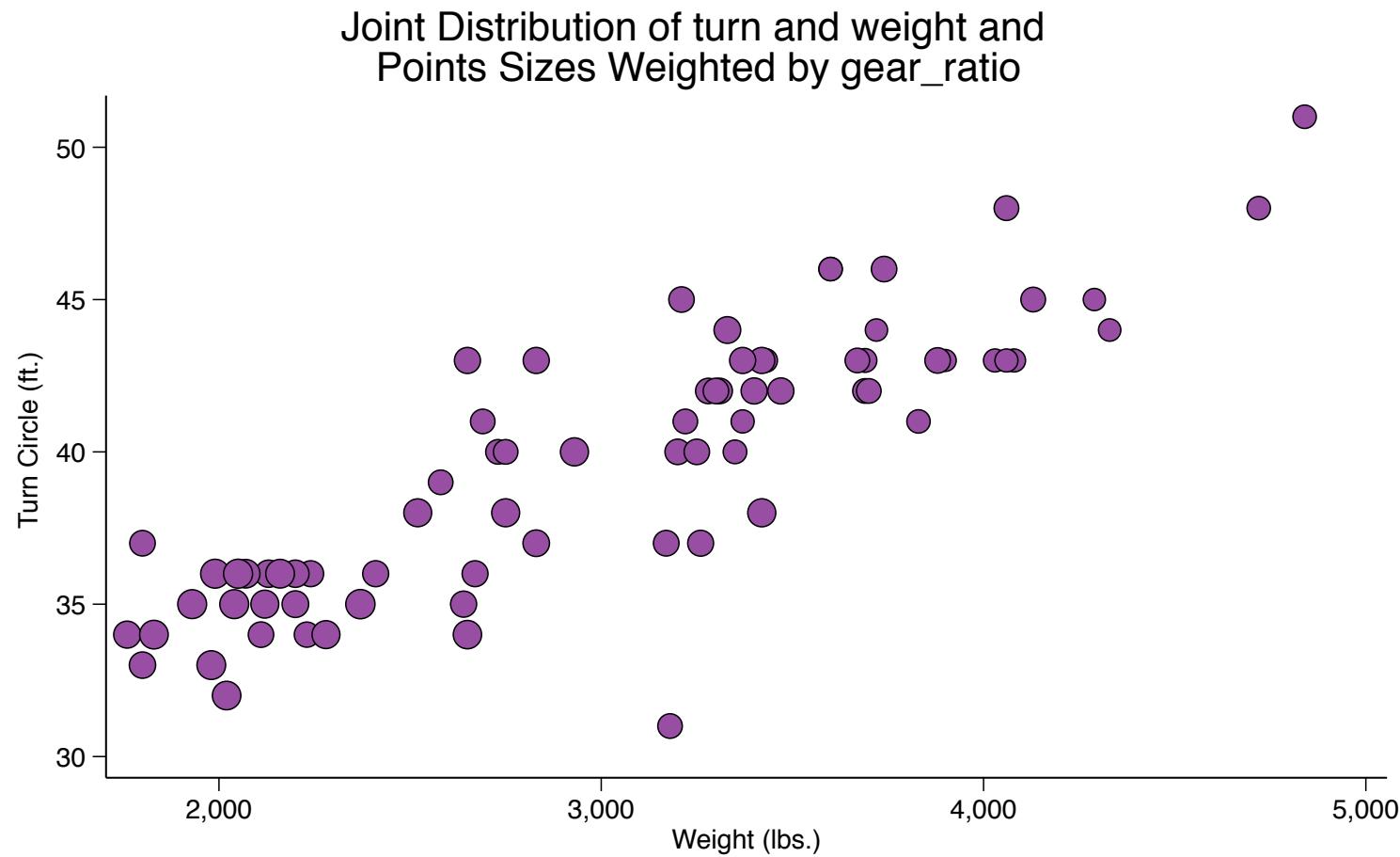
Figure 1.111: Bubble Plot of Displacement (cu. in.), Weight (lbs.), and Gear Ratio

**Joint Distribution of displacement and weight and
Points Sizes Weighted by gear_ratio**



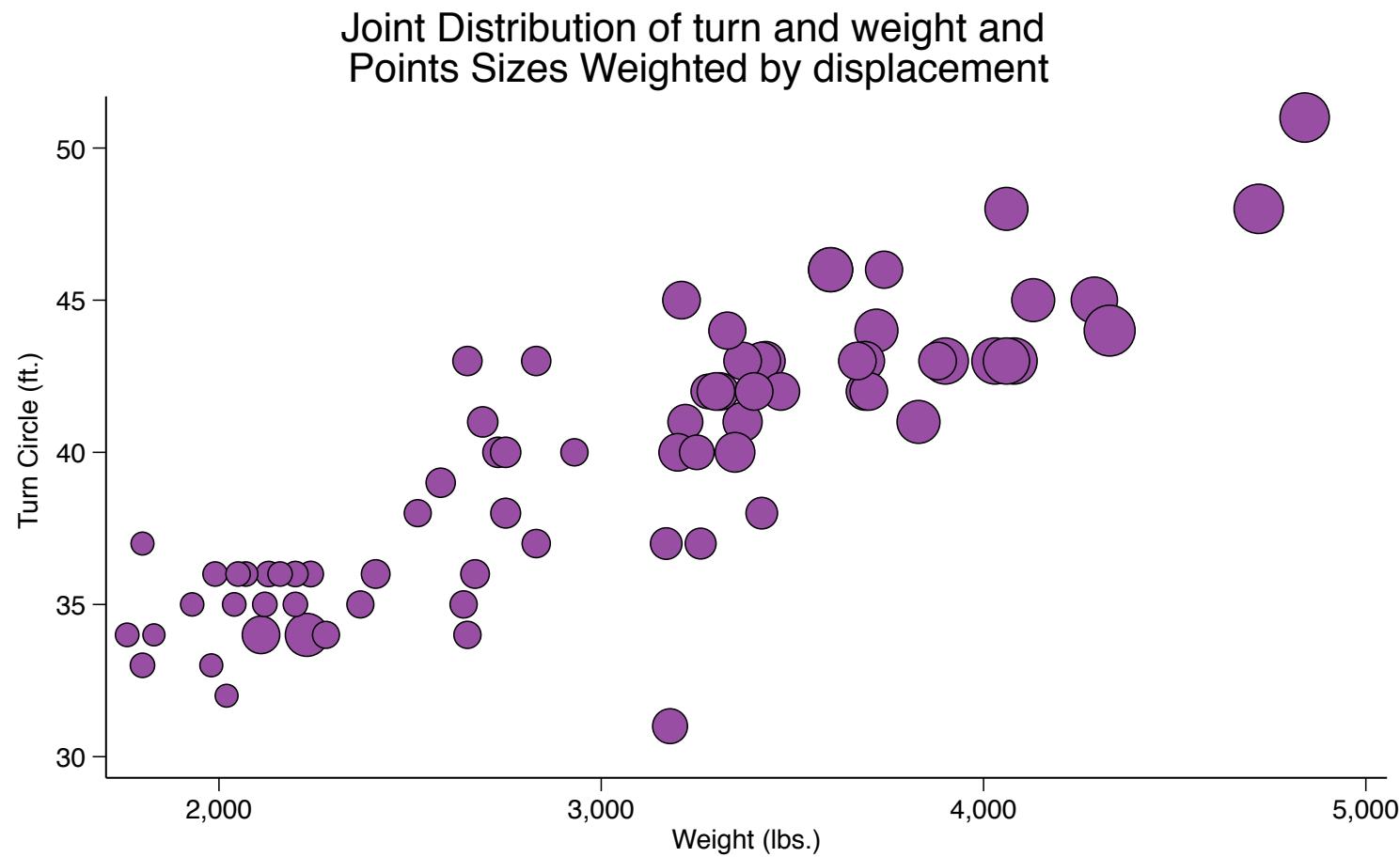
Created on: 29 Oct 2015 at: 15:37:03

Figure 1.112: Bubble Plot of Turn Circle (ft.), Weight (lbs.), and Gear Ratio



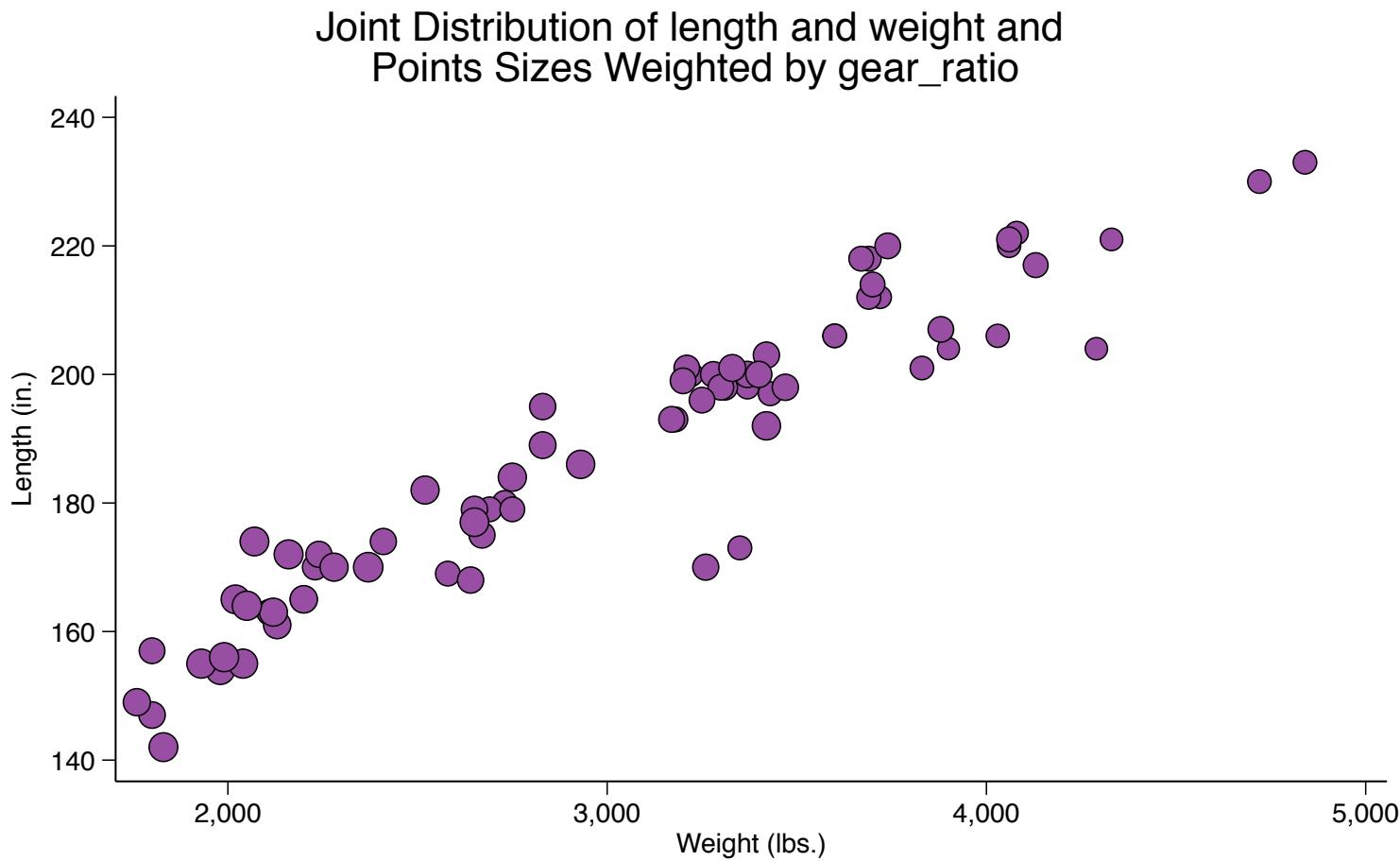
Created on: 29 Oct 2015 at: 15:37:05

Figure 1.113: Bubble Plot of Turn Circle (ft.), Weight (lbs.), and Displacement (cu. in.)



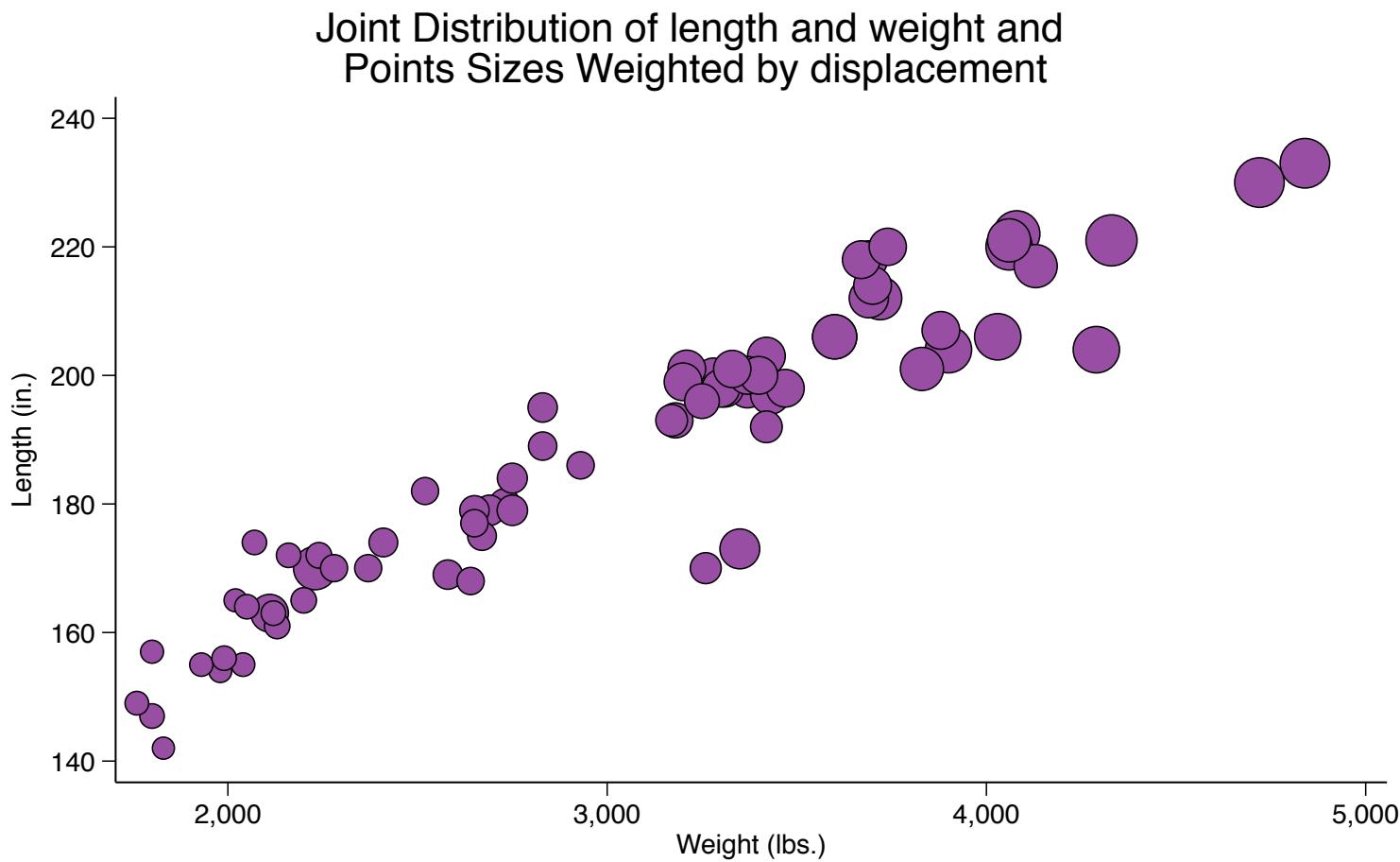
Created on: 29 Oct 2015 at: 15:37:07

Figure 1.114: Bubble Plot of Length (in.), Weight (lbs.), and Gear Ratio



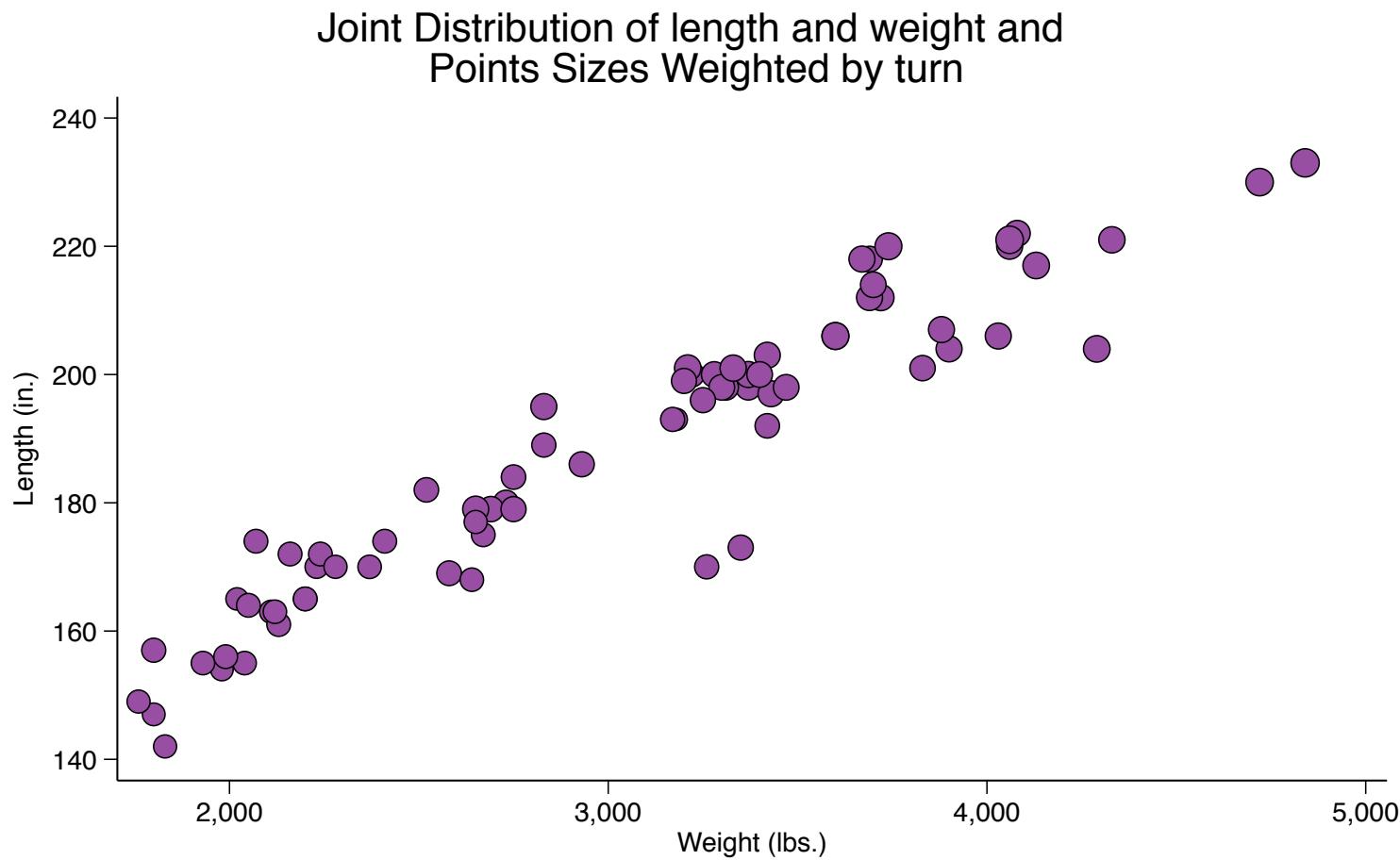
Created on: 29 Oct 2015 at: 15:37:09

Figure 1.115: Bubble Plot of Length (in.), Weight (lbs.), and Displacement (cu. in.)



Created on: 29 Oct 2015 at: 15:37:11

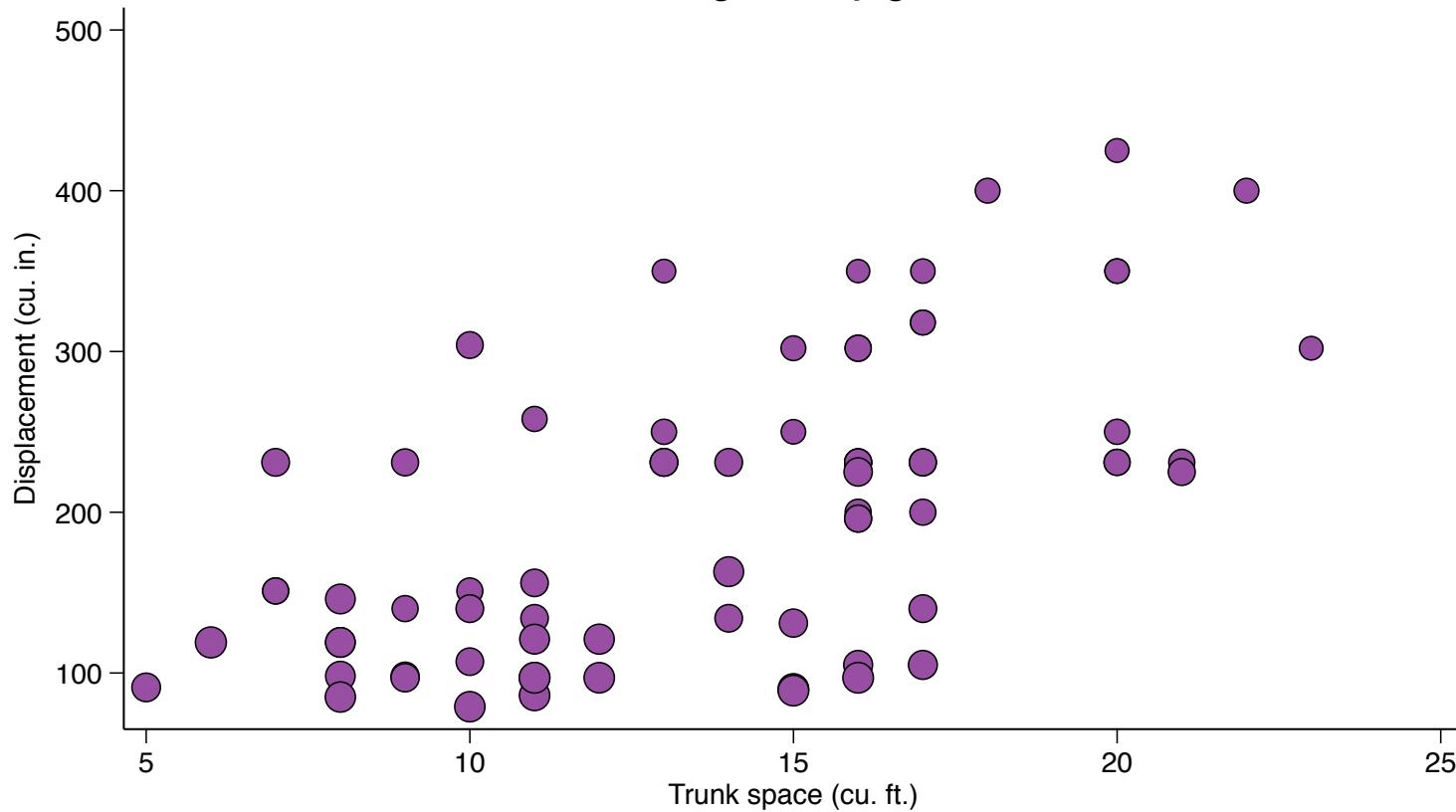
Figure 1.116: Bubble Plot of Length (in.), Weight (lbs.), and Turn Circle (ft.)



Created on: 29 Oct 2015 at: 15:37:13

Figure 1.117: Bubble Plot of Displacement (cu. in.), Trunk space (cu. ft.), and Gear Ratio

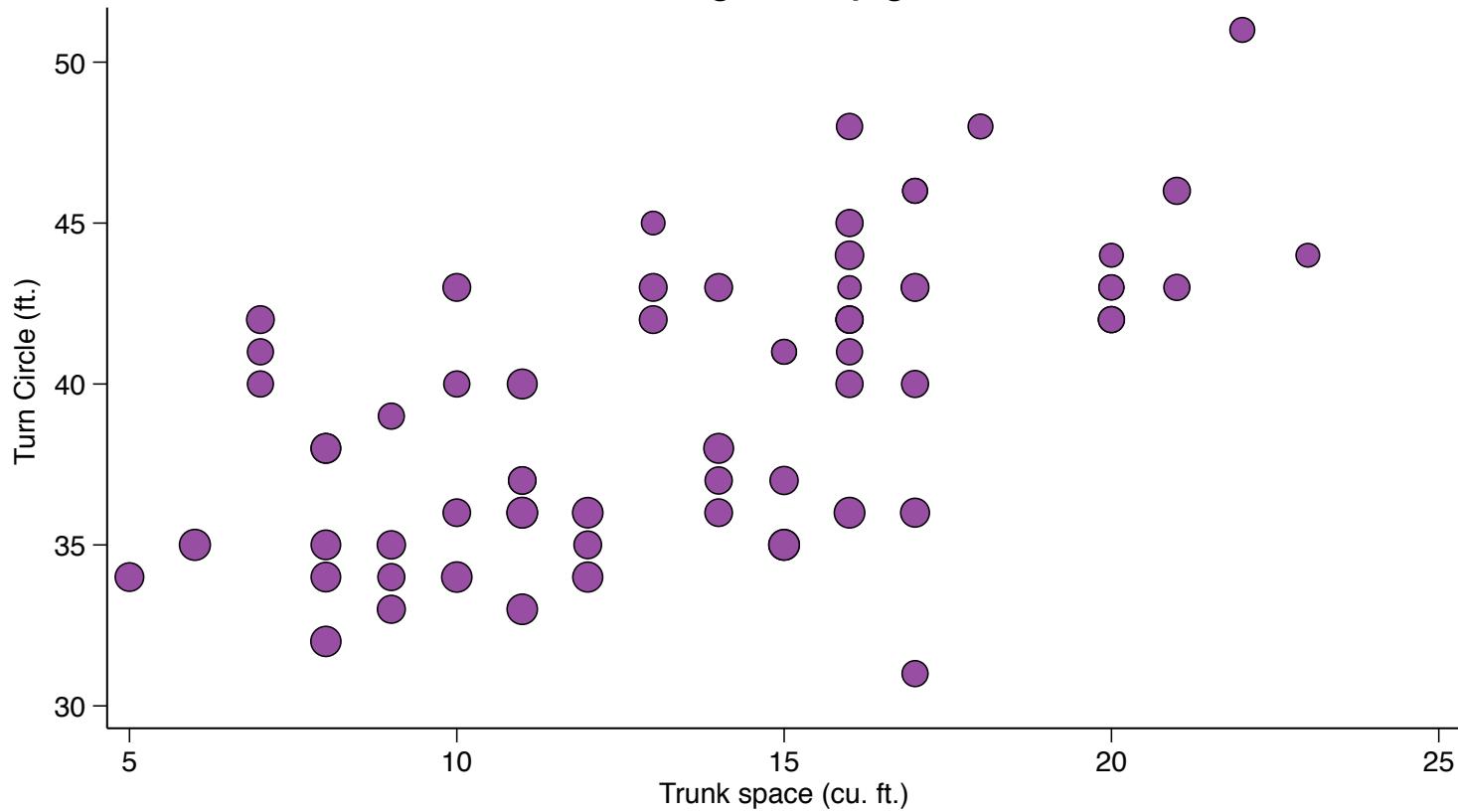
**Joint Distribution of displacement and trunk and
Points Sizes Weighted by gear_ratio**



Created on: 29 Oct 2015 at: 15:37:15

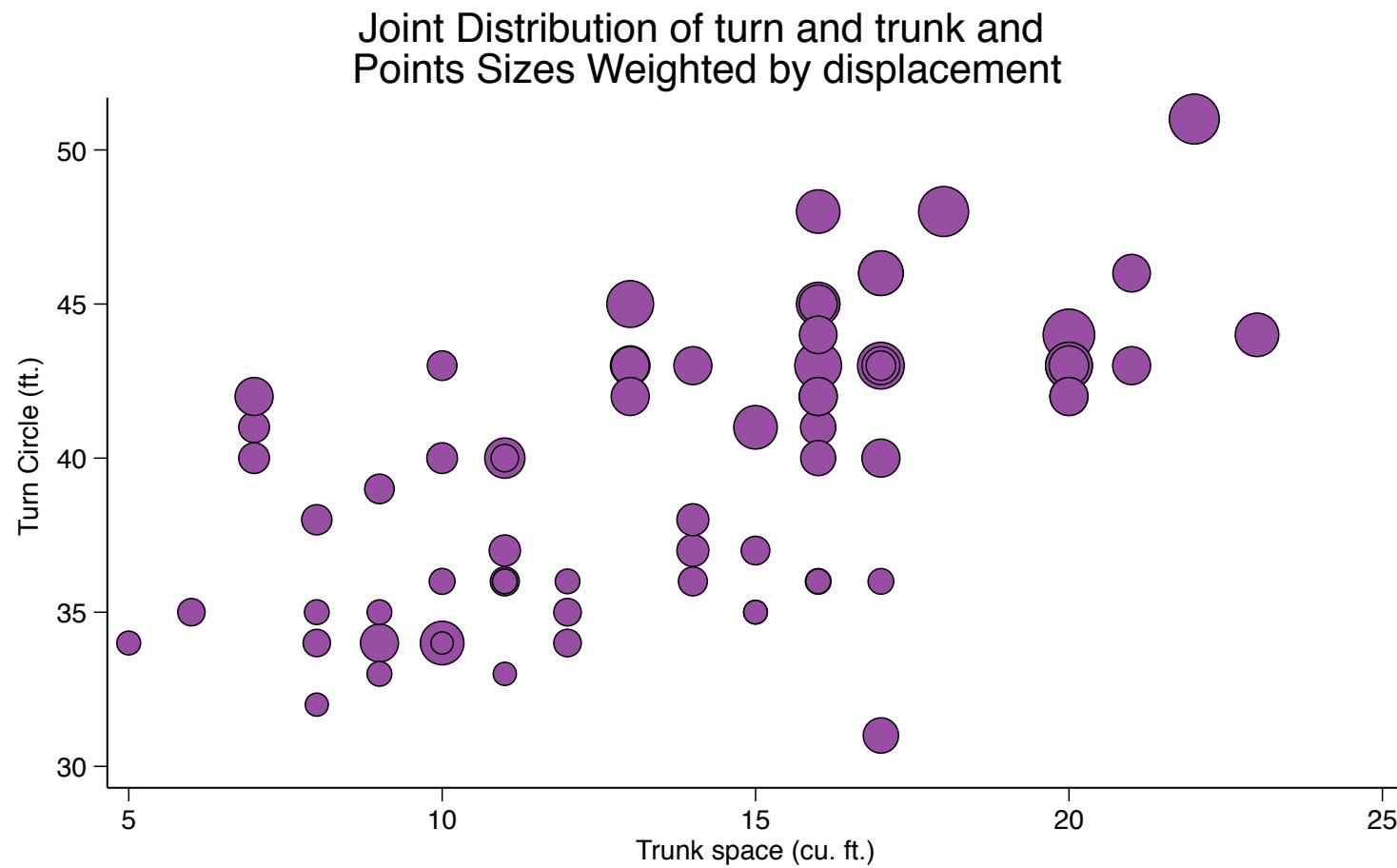
Figure 1.118: Bubble Plot of Turn Circle (ft.), Trunk space (cu. ft.), and Gear Ratio

**Joint Distribution of turn and trunk and
Points Sizes Weighted by gear_ratio**



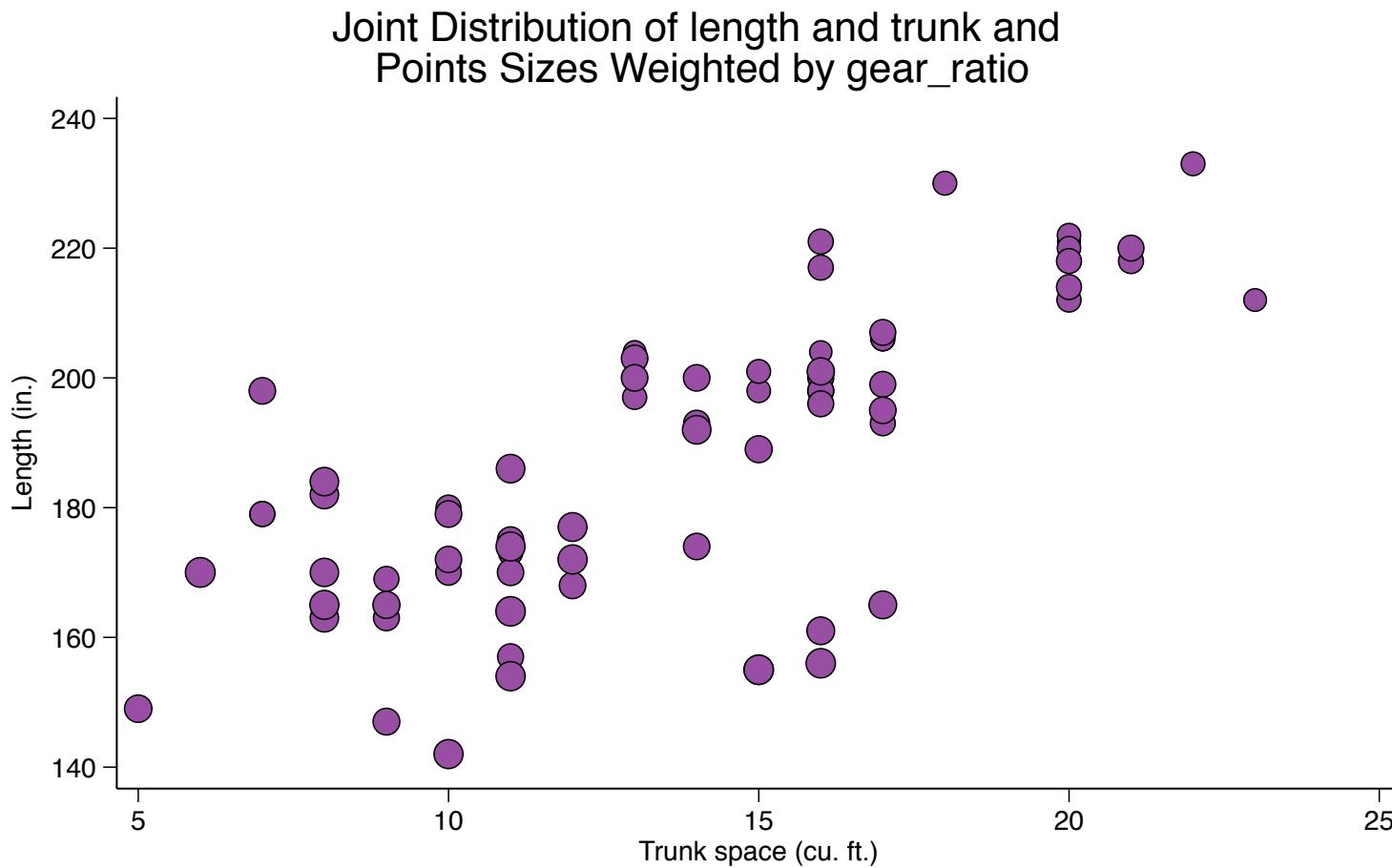
Created on: 29 Oct 2015 at: 15:37:17

Figure 1.119: Bubble Plot of Turn Circle (ft.), Trunk space (cu. ft.), and Displacement (cu. in.)



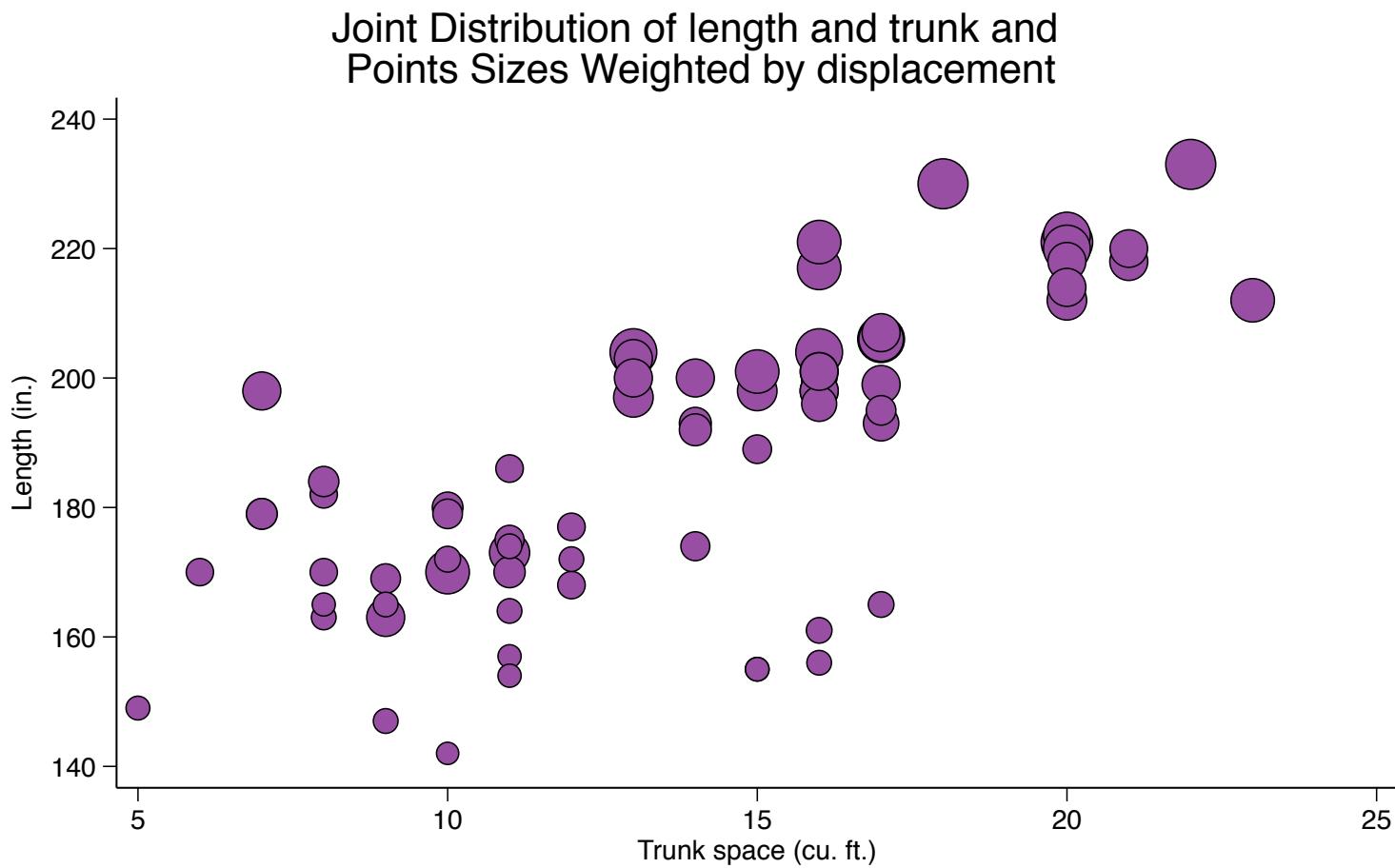
Created on: 29 Oct 2015 at: 15:37:19

Figure 1.120: Bubble Plot of Length (in.), Trunk space (cu. ft.), and Gear Ratio



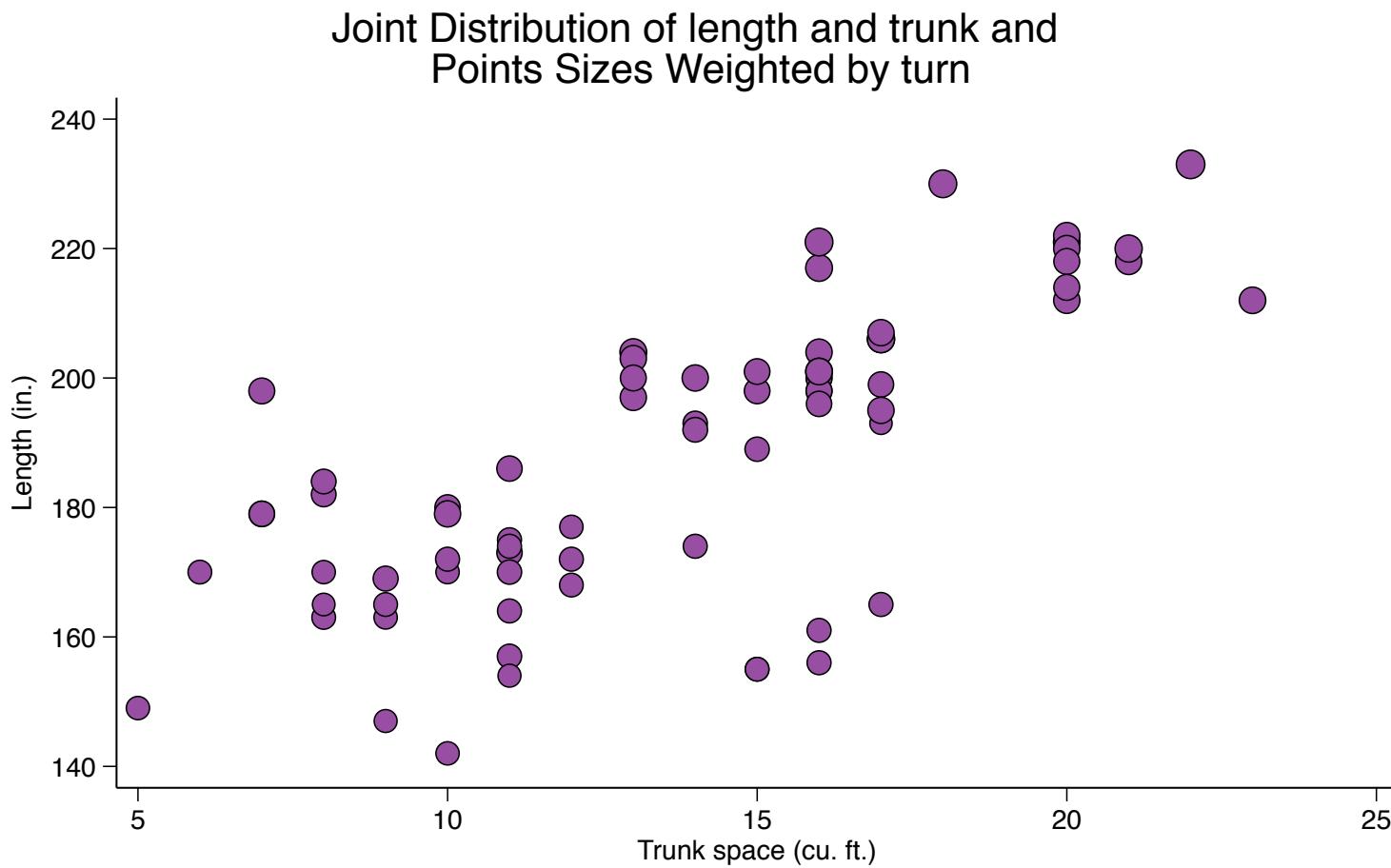
Created on: 29 Oct 2015 at: 15:37:21

Figure 1.121: Bubble Plot of Length (in.), Trunk space (cu. ft.), and Displacement (cu. in.)



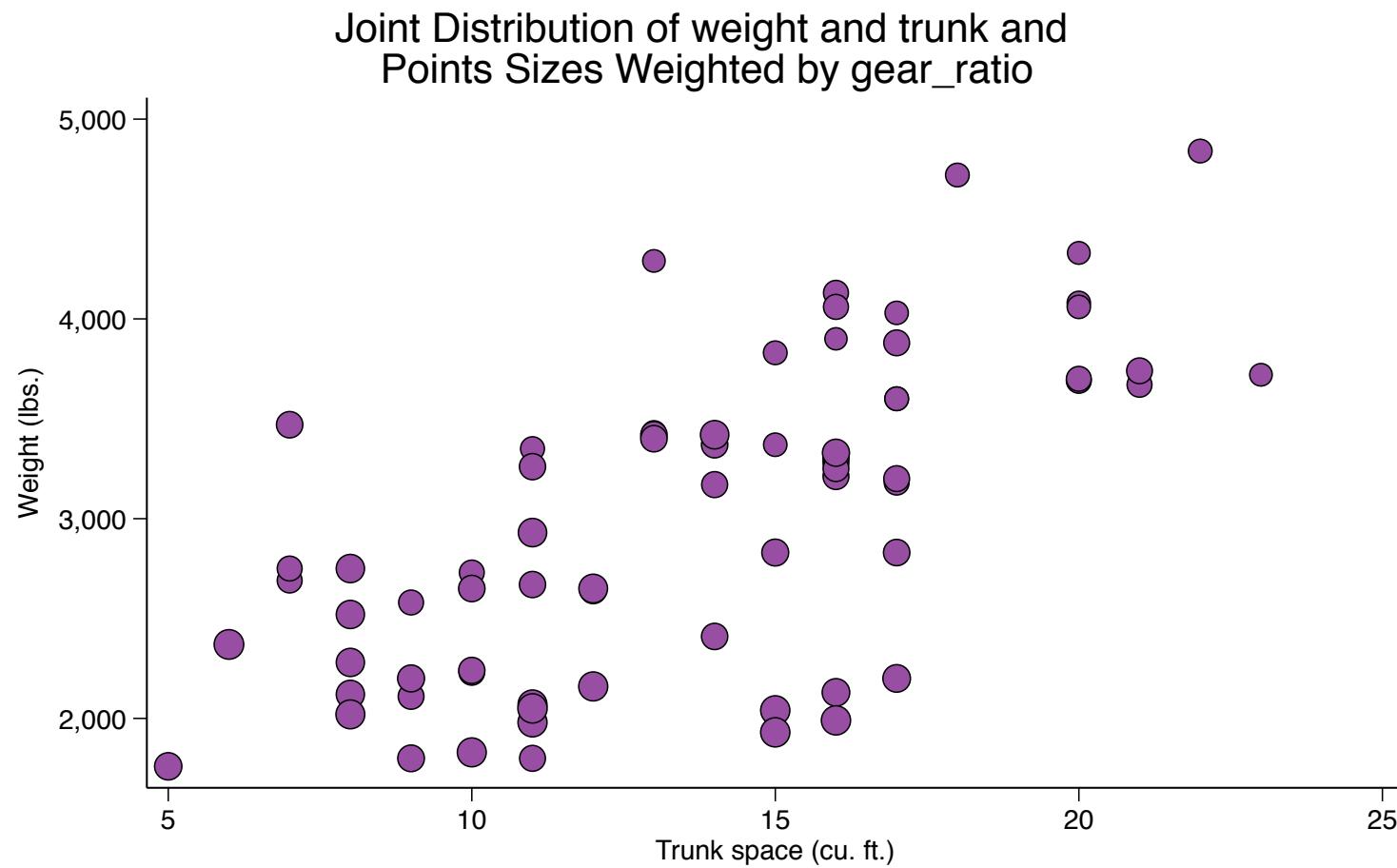
Created on: 29 Oct 2015 at: 15:37:23

Figure 1.122: Bubble Plot of Length (in.), Trunk space (cu. ft.), and Turn Circle (ft.)



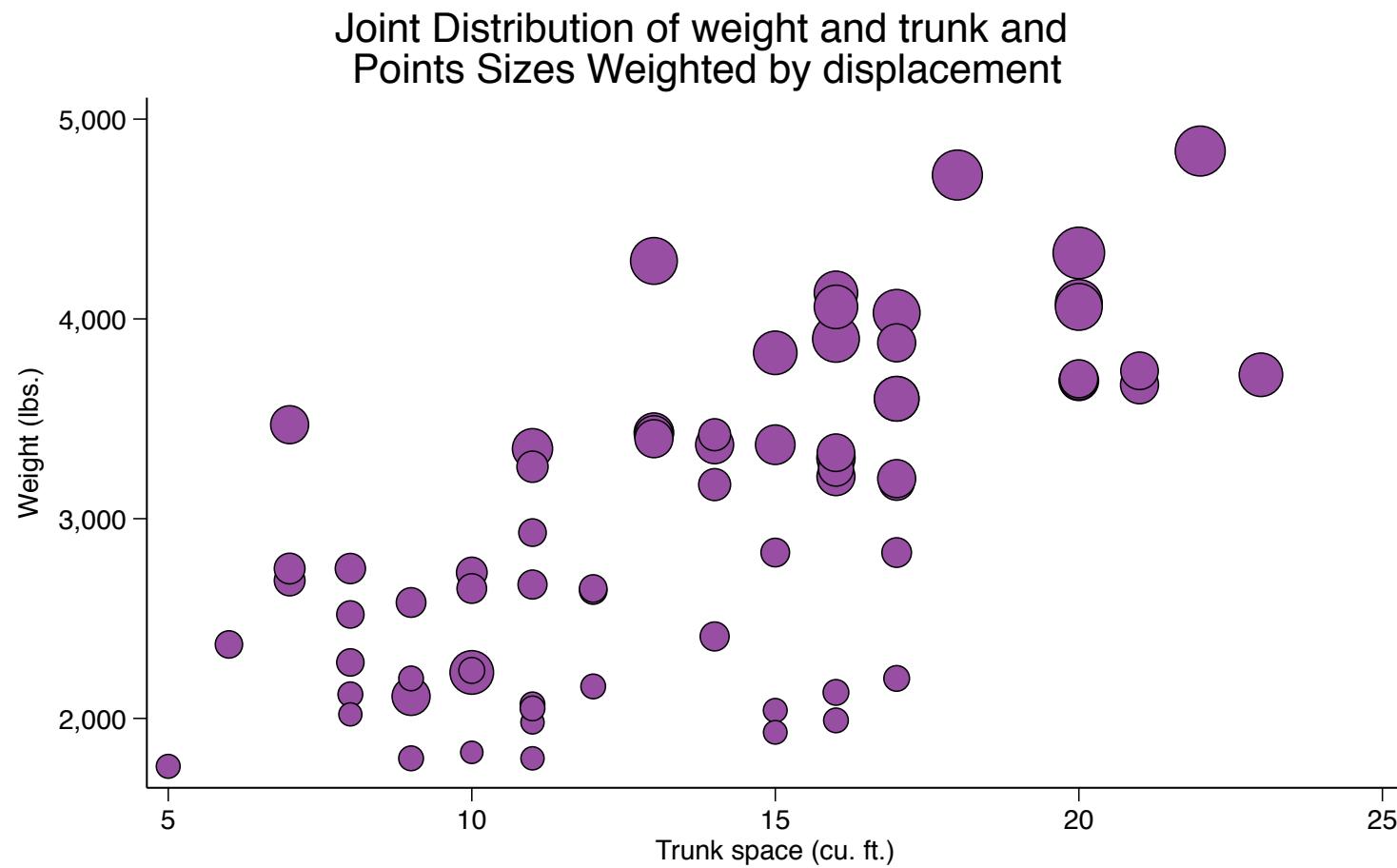
Created on: 29 Oct 2015 at: 15:37:25

Figure 1.123: Bubble Plot of Weight (lbs.), Trunk space (cu. ft.), and Gear Ratio



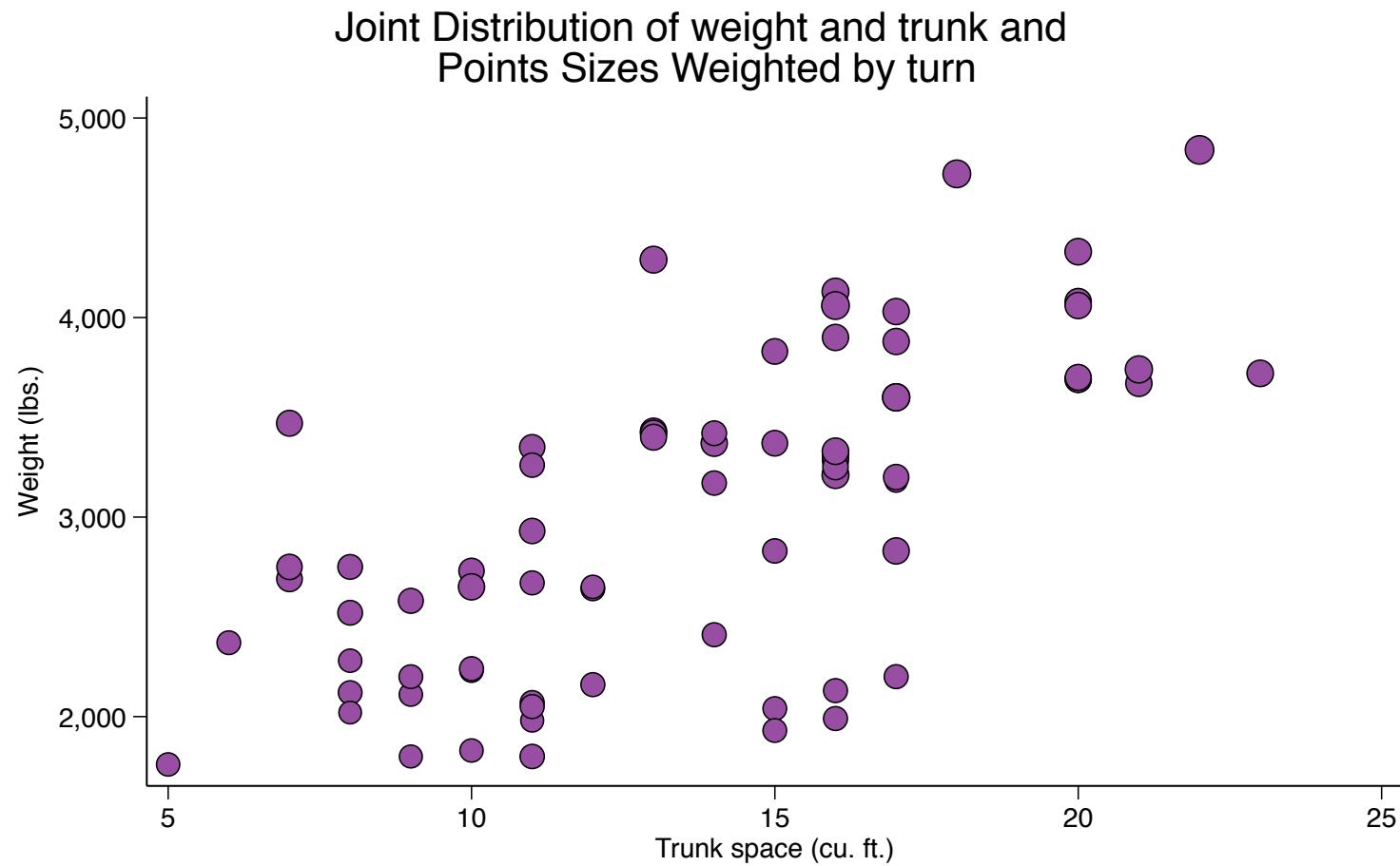
Created on: 29 Oct 2015 at: 15:37:27

Figure 1.124: Bubble Plot of Weight (lbs.), Trunk space (cu. ft.), and Displacement (cu. in.)



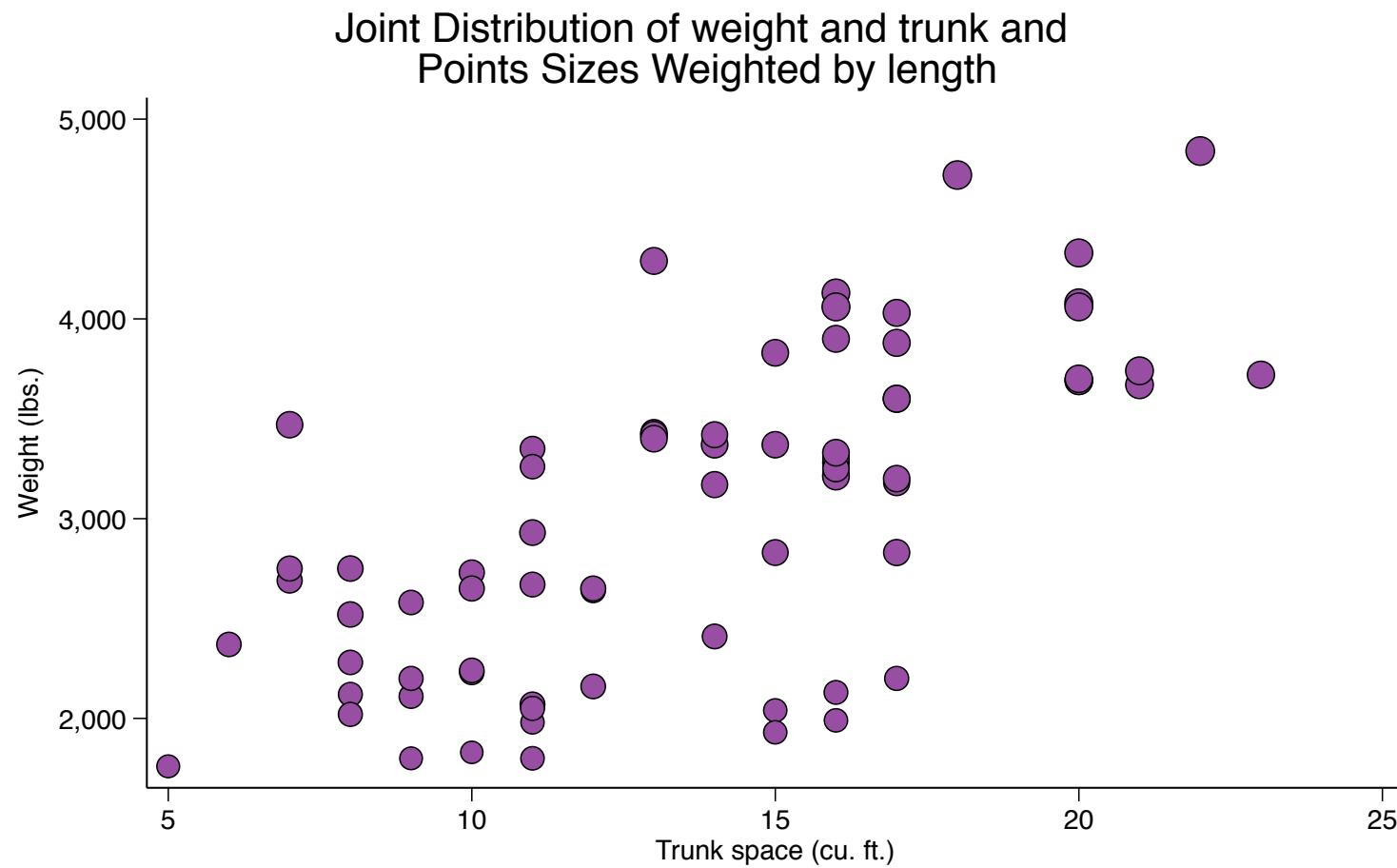
Created on: 29 Oct 2015 at: 15:37:29

Figure 1.125: Bubble Plot of Weight (lbs.), Trunk space (cu. ft.), and Turn Circle (ft.)



Created on: 29 Oct 2015 at: 15:37:31

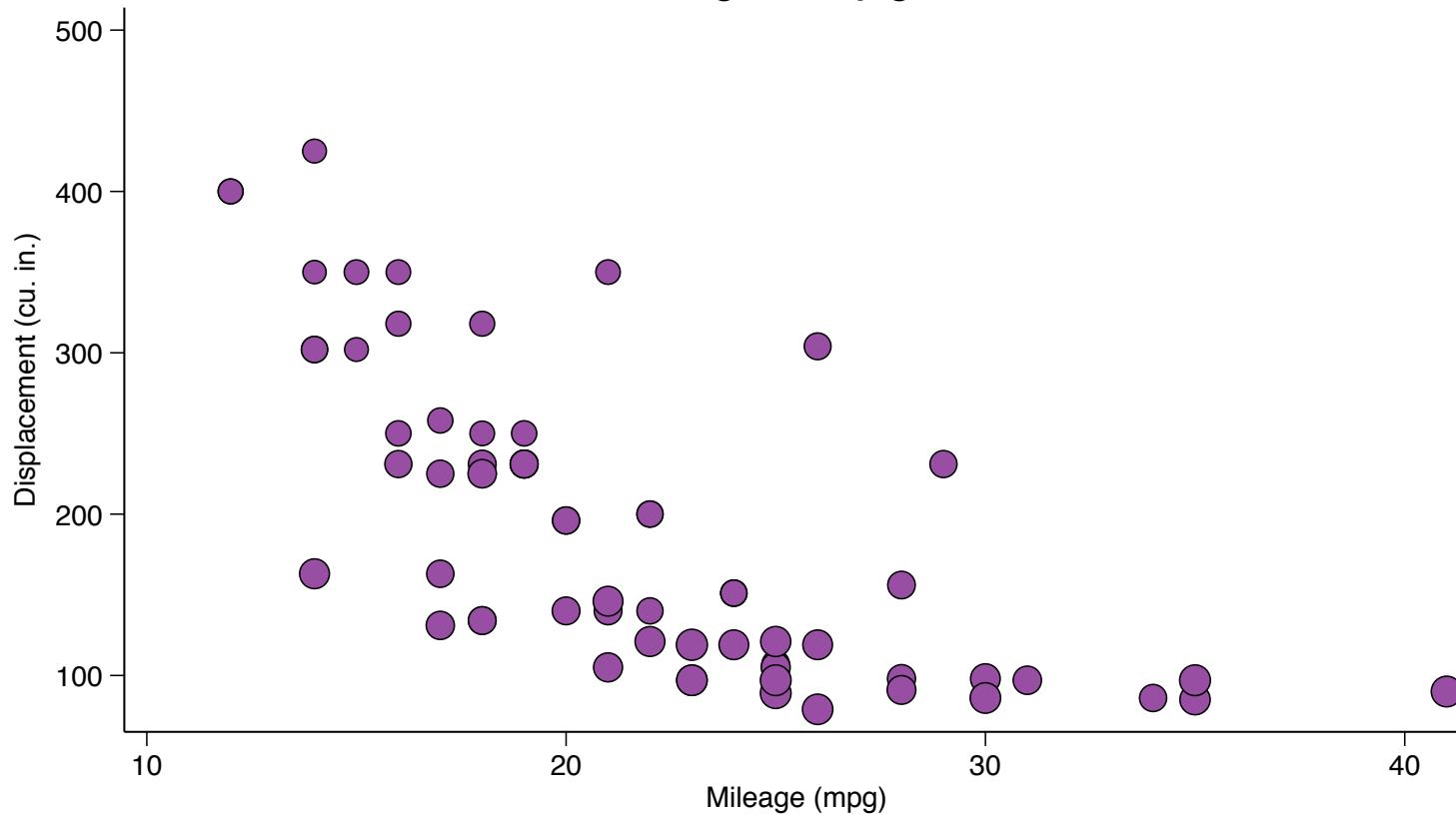
Figure 1.126: Bubble Plot of Weight (lbs.), Trunk space (cu. ft.), and Length (in.)



Created on: 29 Oct 2015 at: 15:37:33

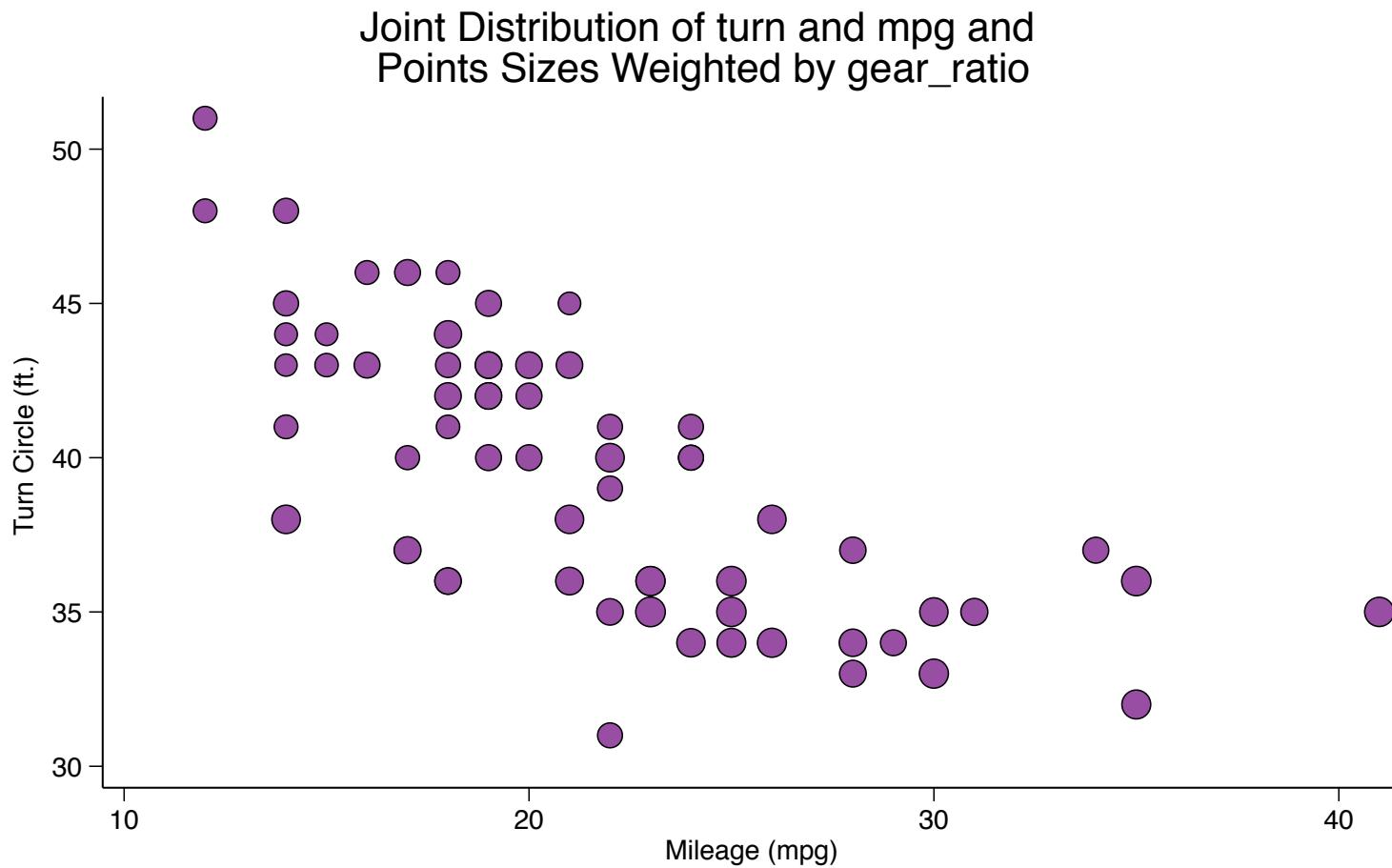
Figure 1.127: Bubble Plot of Displacement (cu. in.), Mileage (mpg), and Gear Ratio

Joint Distribution of displacement and mpg and
Points Sizes Weighted by gear_ratio



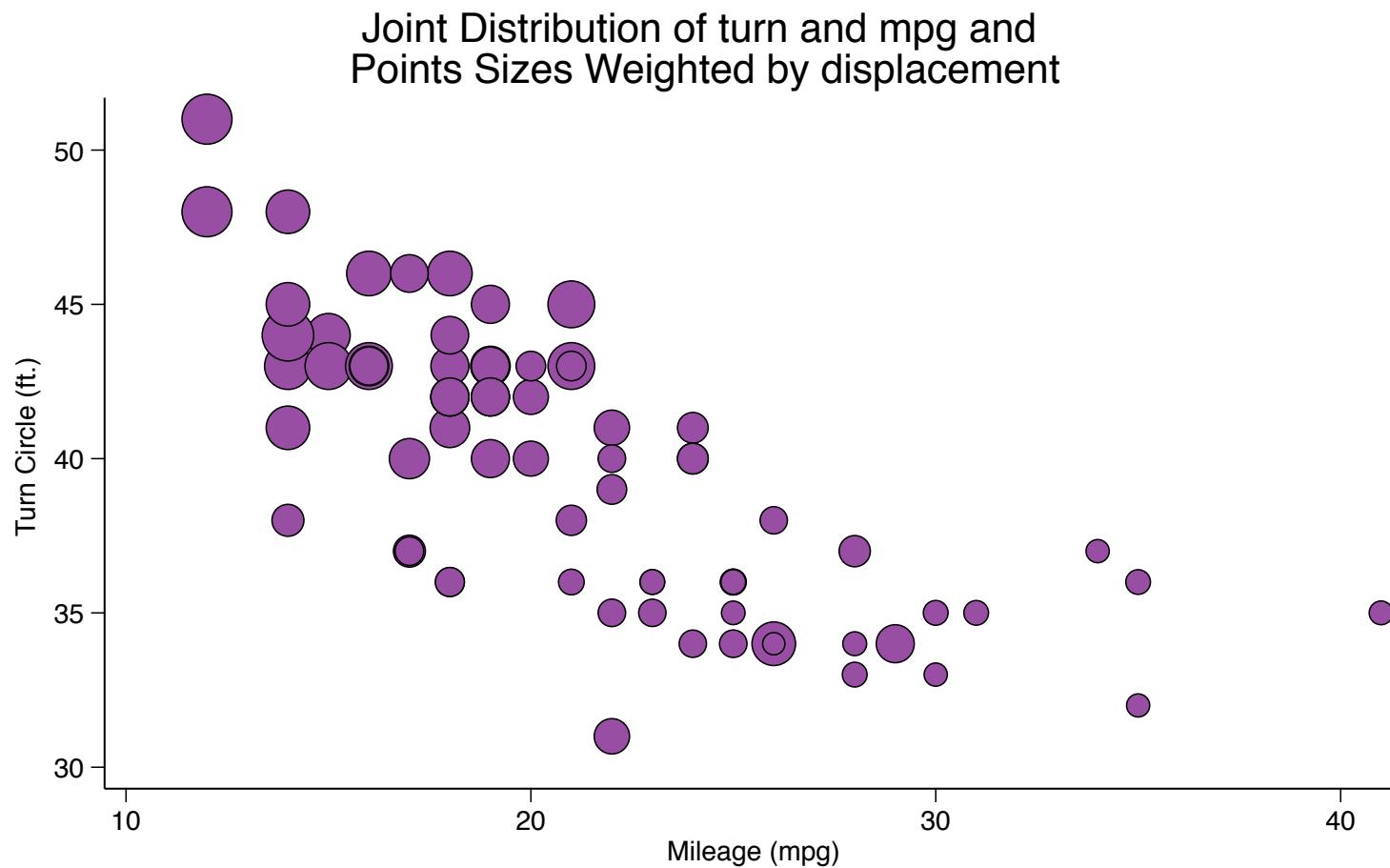
Created on: 29 Oct 2015 at: 15:37:35

Figure 1.128: Bubble Plot of Turn Circle (ft.), Mileage (mpg), and Gear Ratio



Created on: 29 Oct 2015 at: 15:37:37

Figure 1.129: Bubble Plot of Turn Circle (ft.), Mileage (mpg), and Displacement (cu. in.)



Created on: 29 Oct 2015 at: 15:37:39

Figure 1.130: Bubble Plot of Length (in.), Mileage (mpg), and Gear Ratio

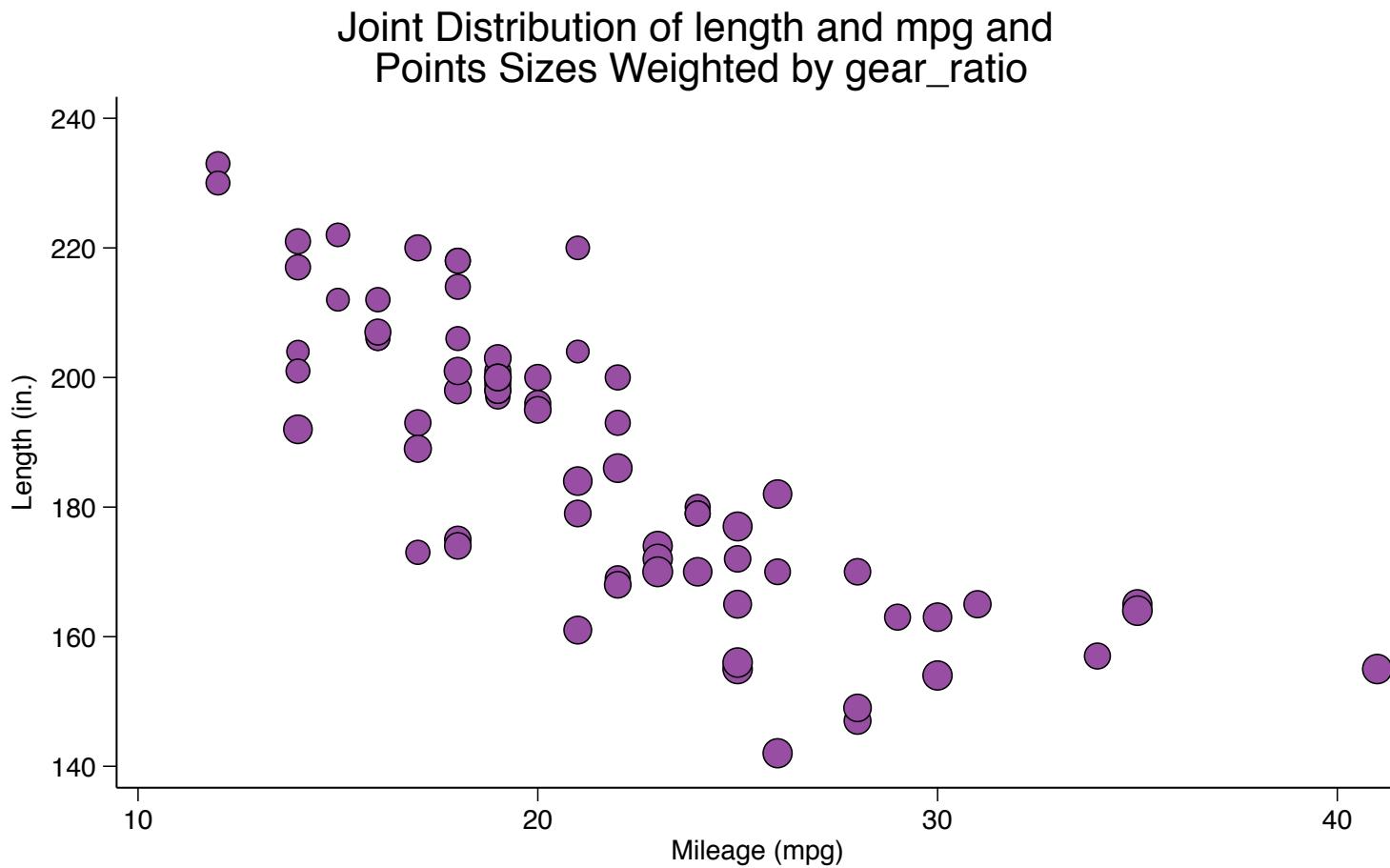


Figure 1.131: Bubble Plot of Length (in.), Mileage (mpg), and Displacement (cu. in.)

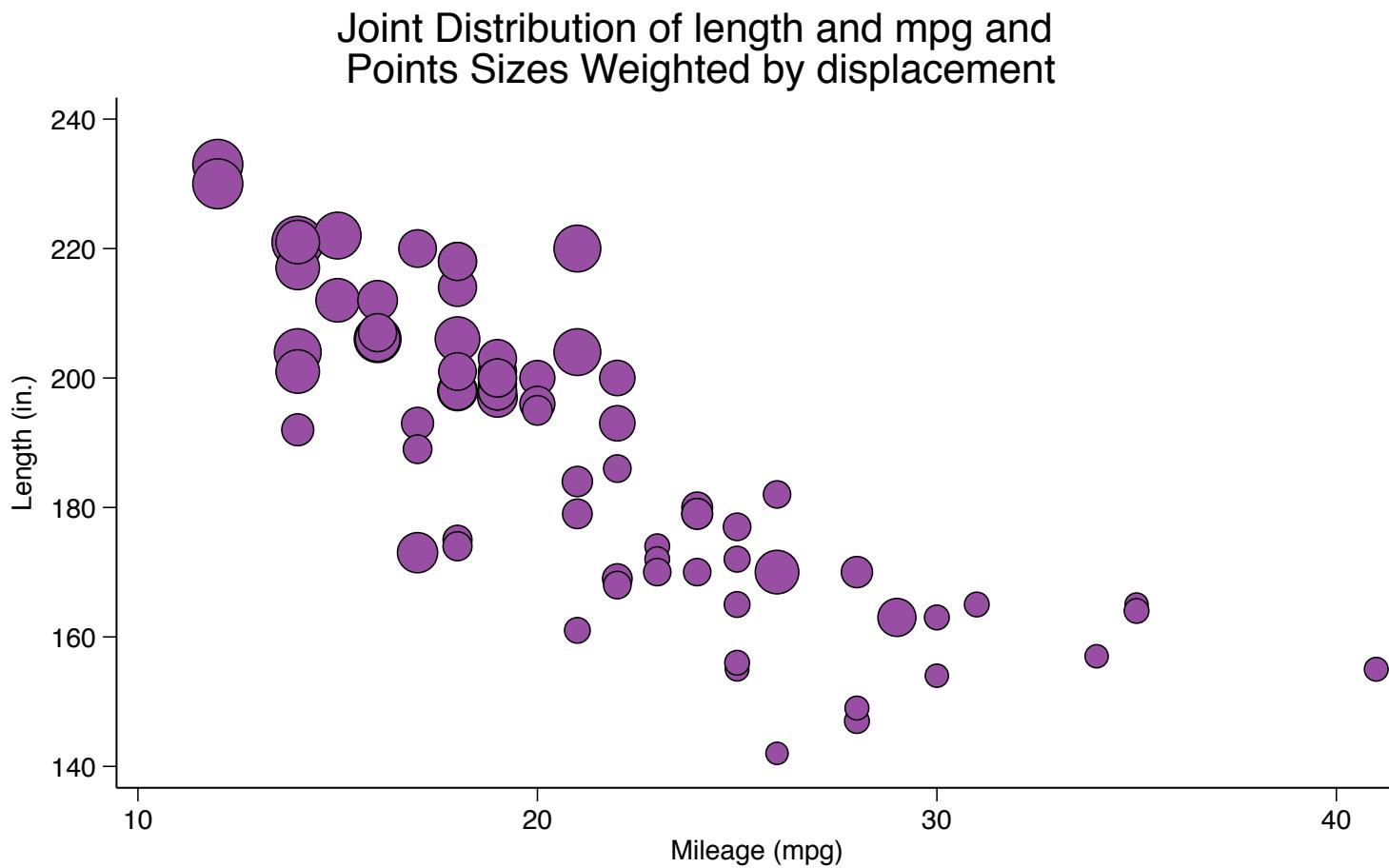
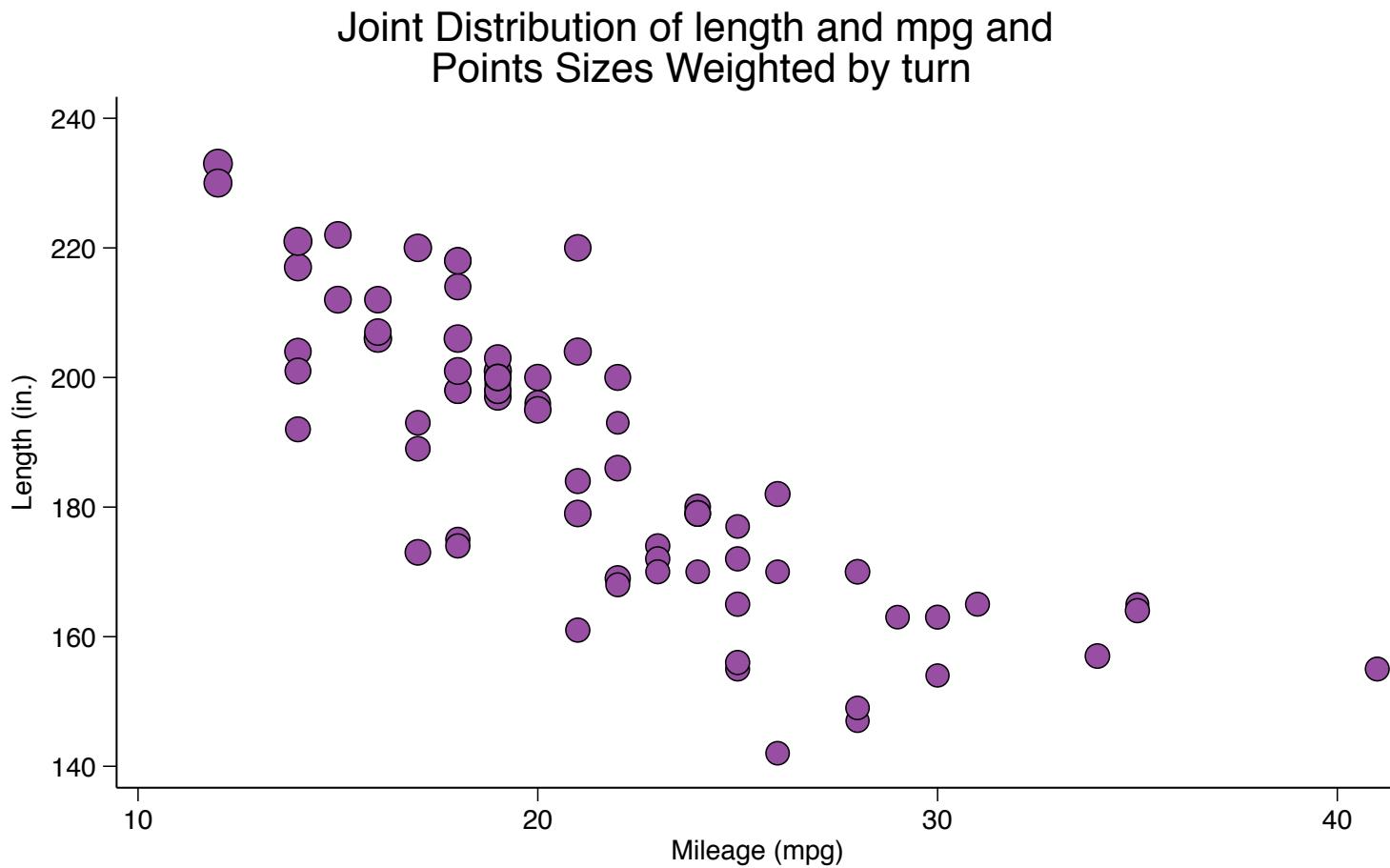


Figure 1.132: Bubble Plot of Length (in.), Mileage (mpg), and Turn Circle (ft.)



Created on: 29 Oct 2015 at: 15:37:45

Figure 1.133: Bubble Plot of Weight (lbs.), Mileage (mpg), and Gear Ratio

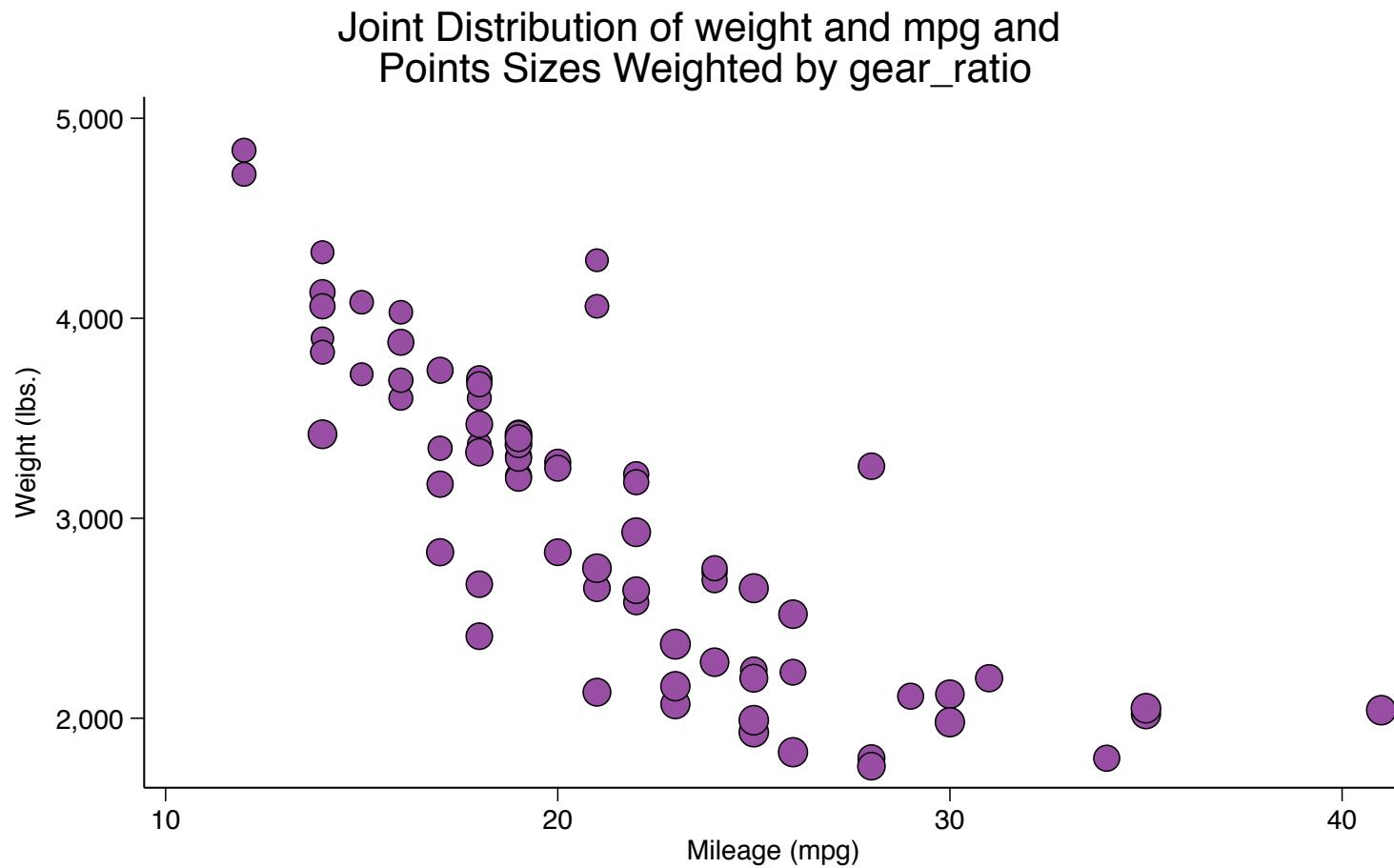
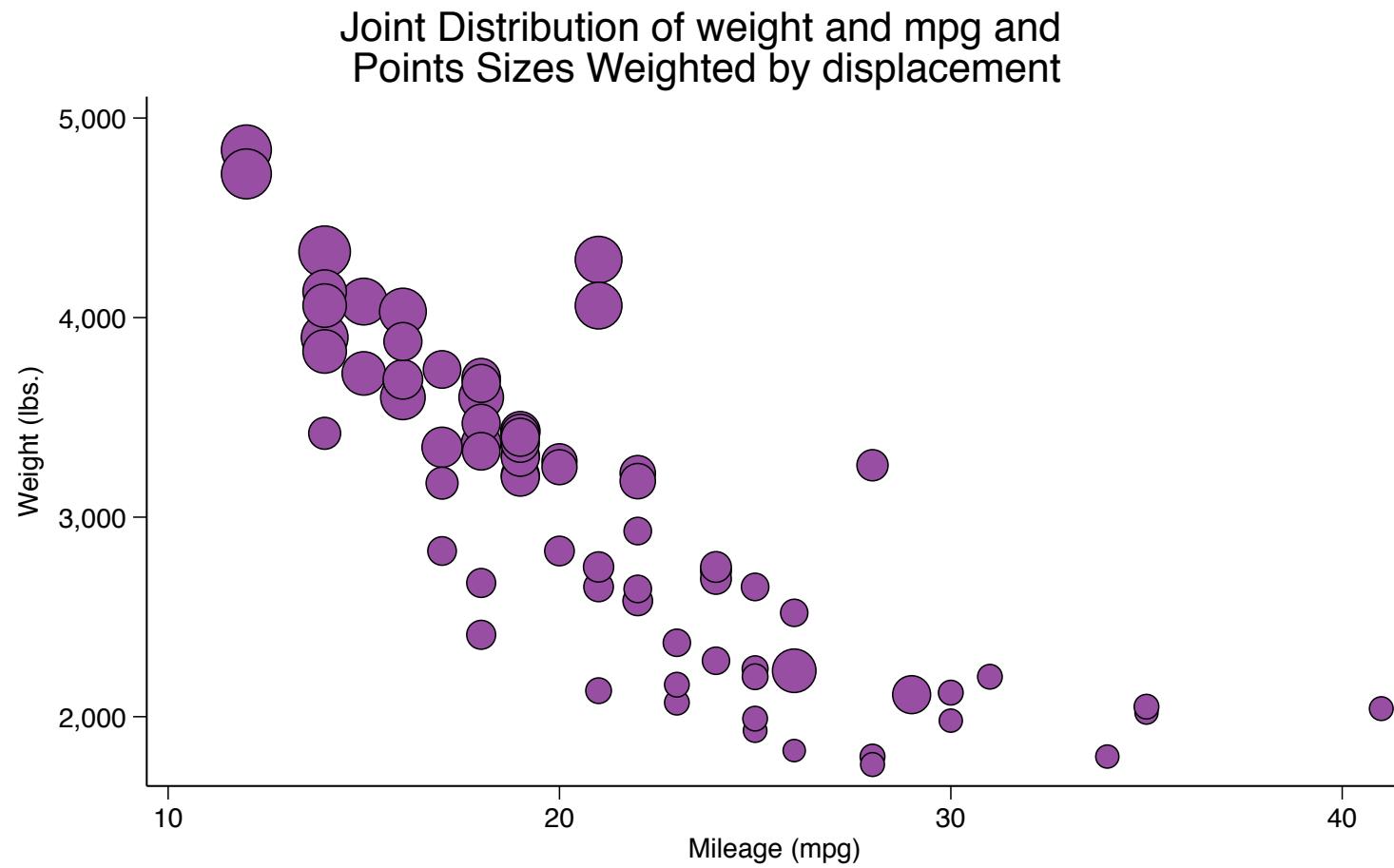
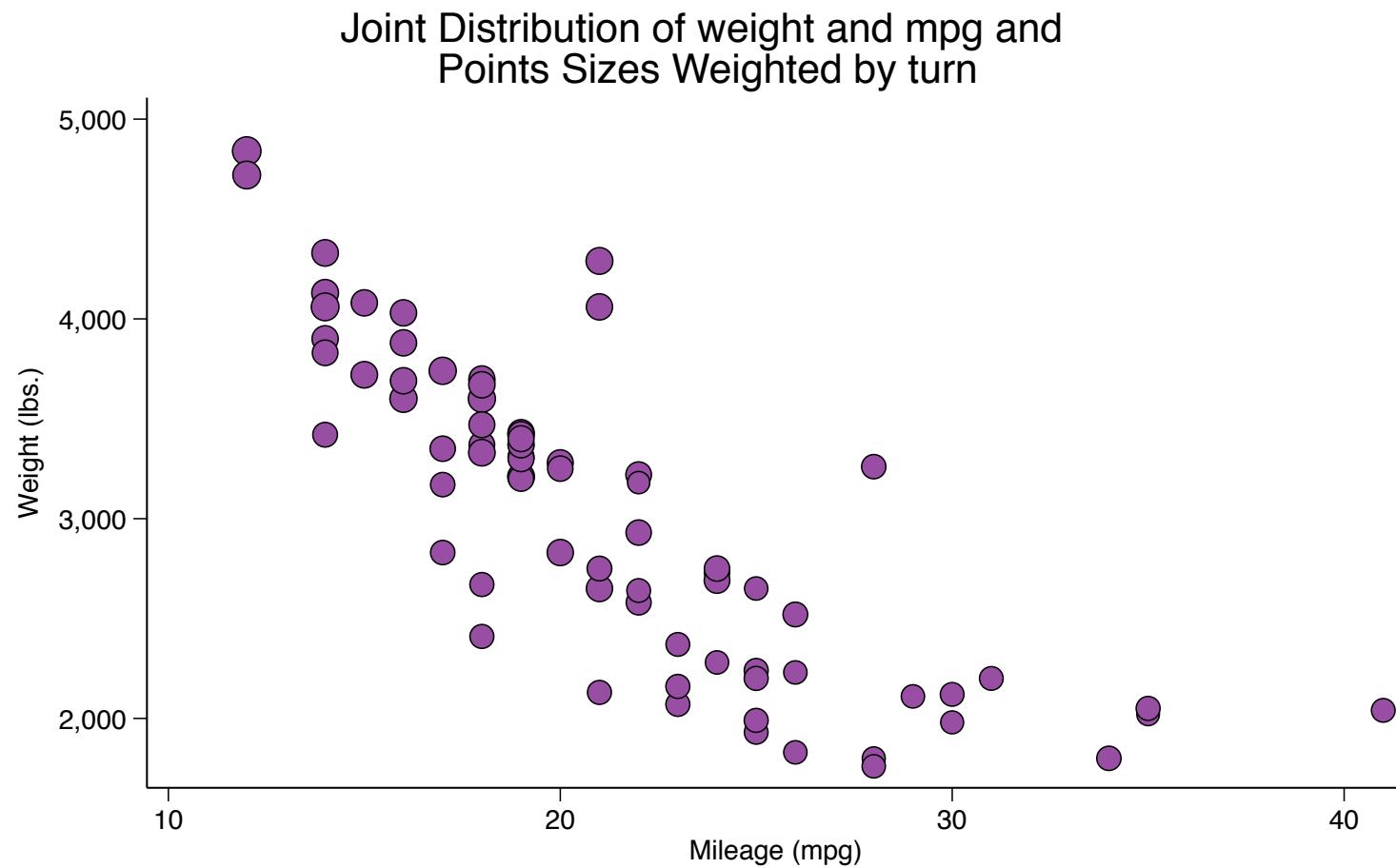


Figure 1.134: Bubble Plot of Weight (lbs.), Mileage (mpg), and Displacement (cu. in.)



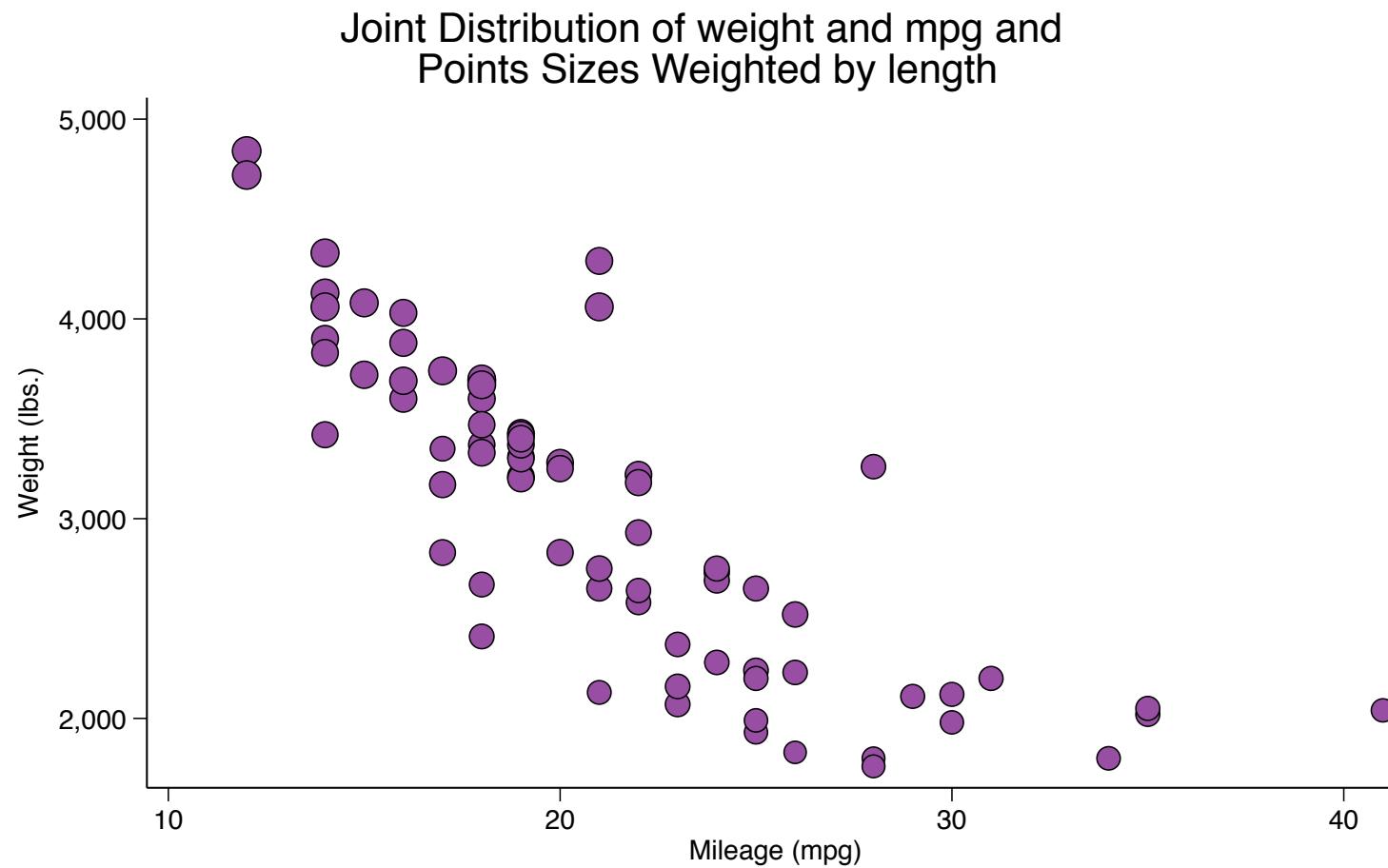
Created on: 29 Oct 2015 at: 15:37:49

Figure 1.135: Bubble Plot of Weight (lbs.), Mileage (mpg), and Turn Circle (ft.)



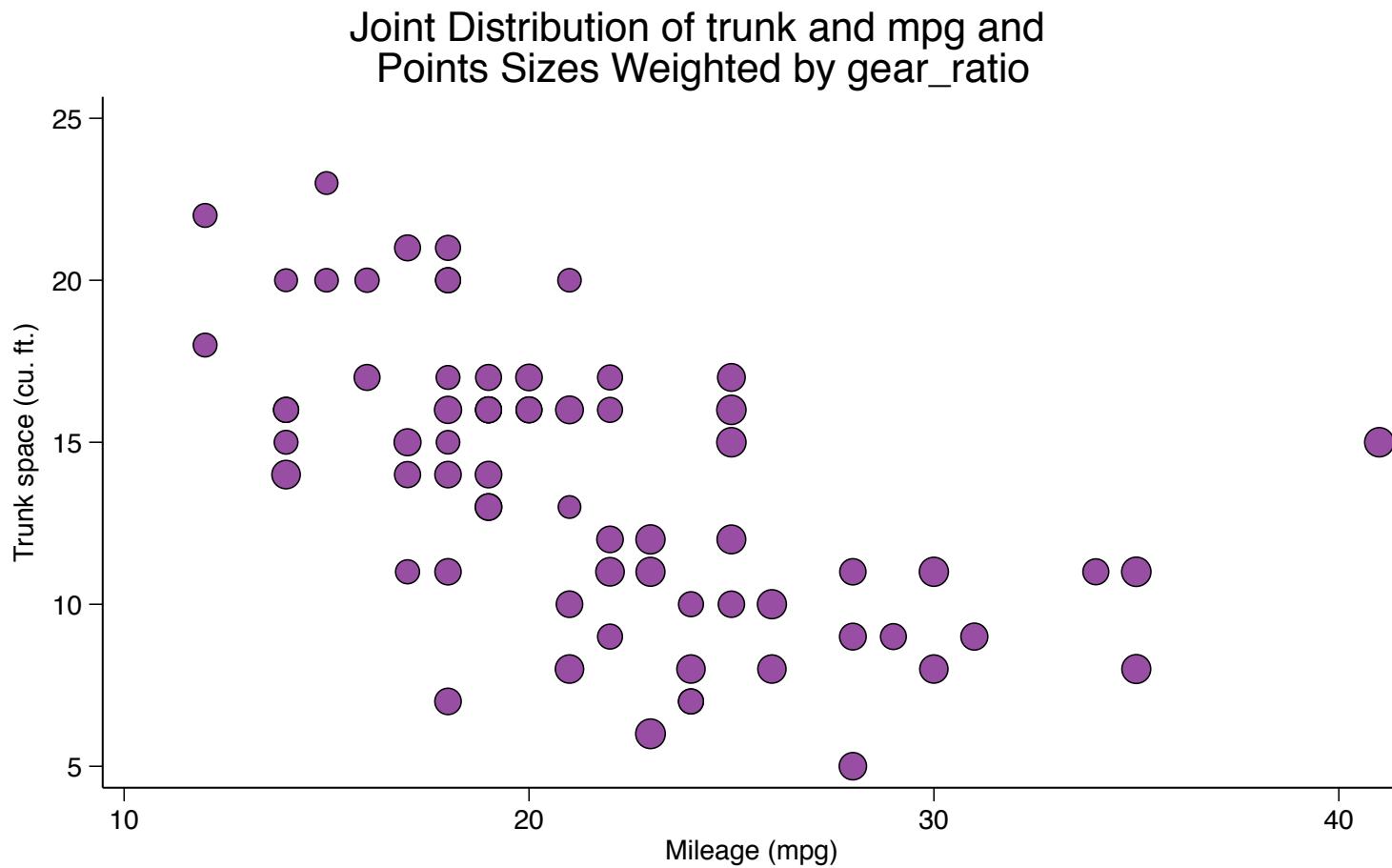
Created on: 29 Oct 2015 at: 15:37:51

Figure 1.136: Bubble Plot of Weight (lbs.), Mileage (mpg), and Length (in.)



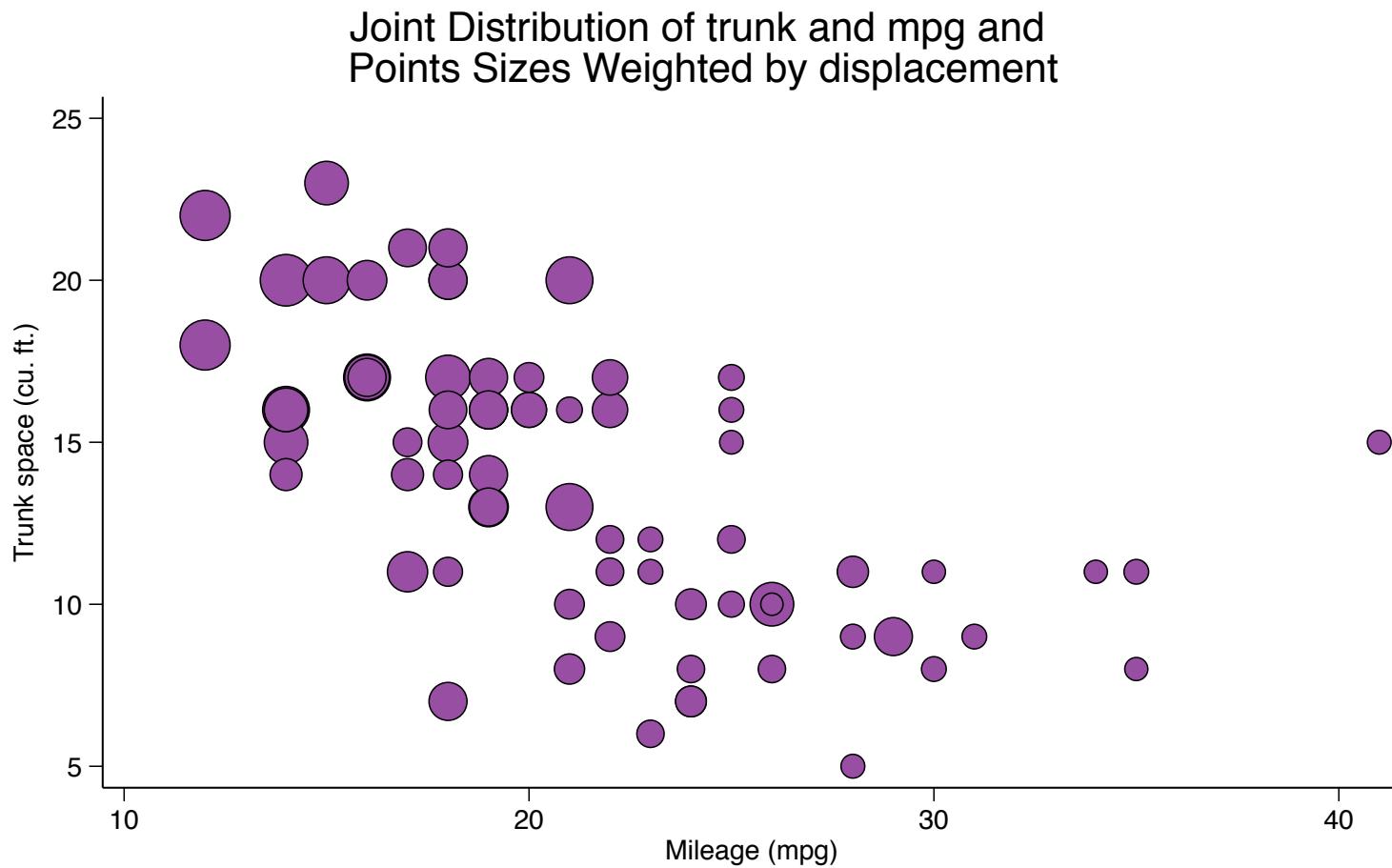
Created on: 29 Oct 2015 at: 15:37:53

Figure 1.137: Bubble Plot of Trunk space (cu. ft.), Mileage (mpg), and Gear Ratio



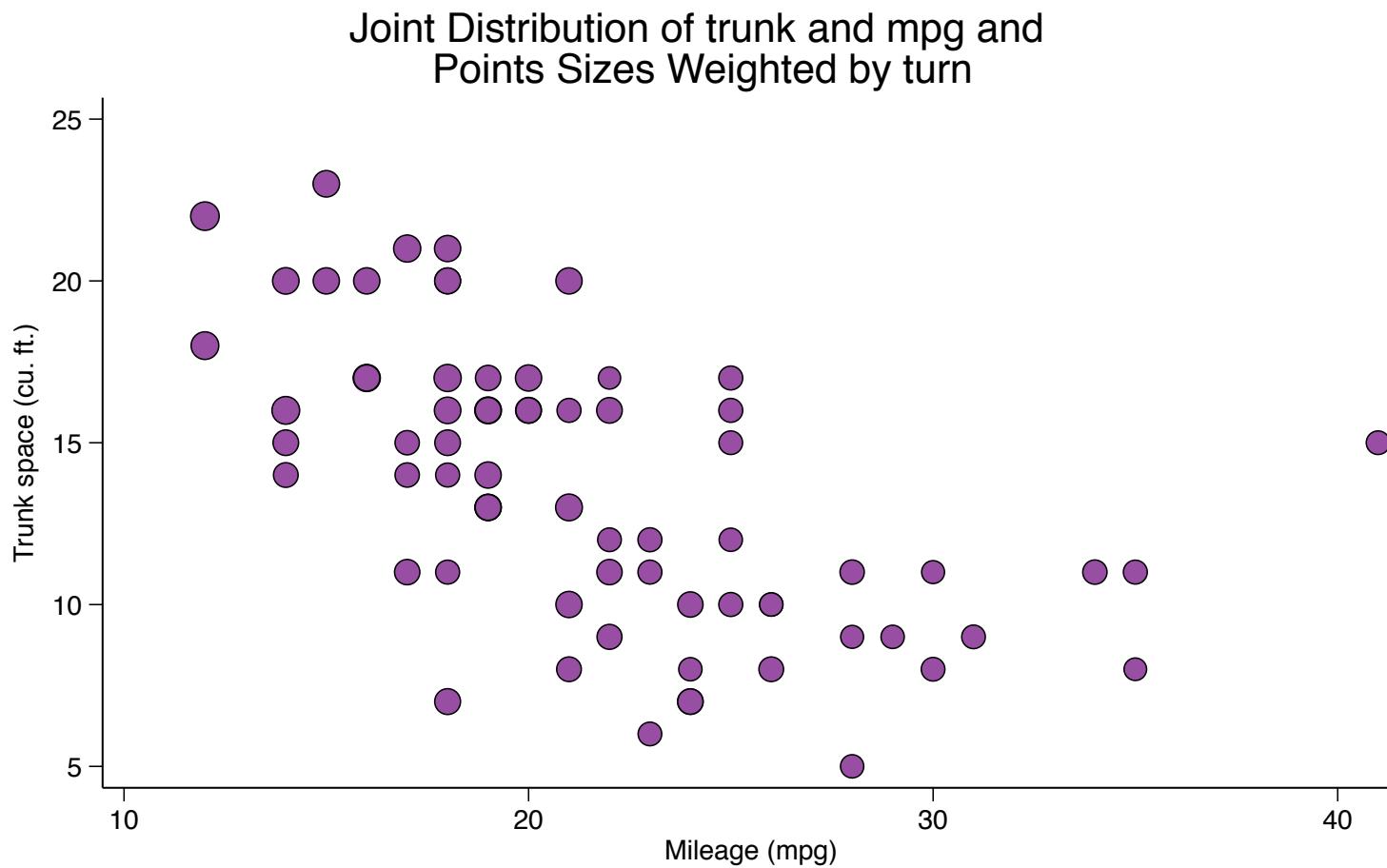
Created on: 29 Oct 2015 at: 15:37:55

Figure 1.138: Bubble Plot of Trunk space (cu. ft.), Mileage (mpg), and Displacement (cu. in.)



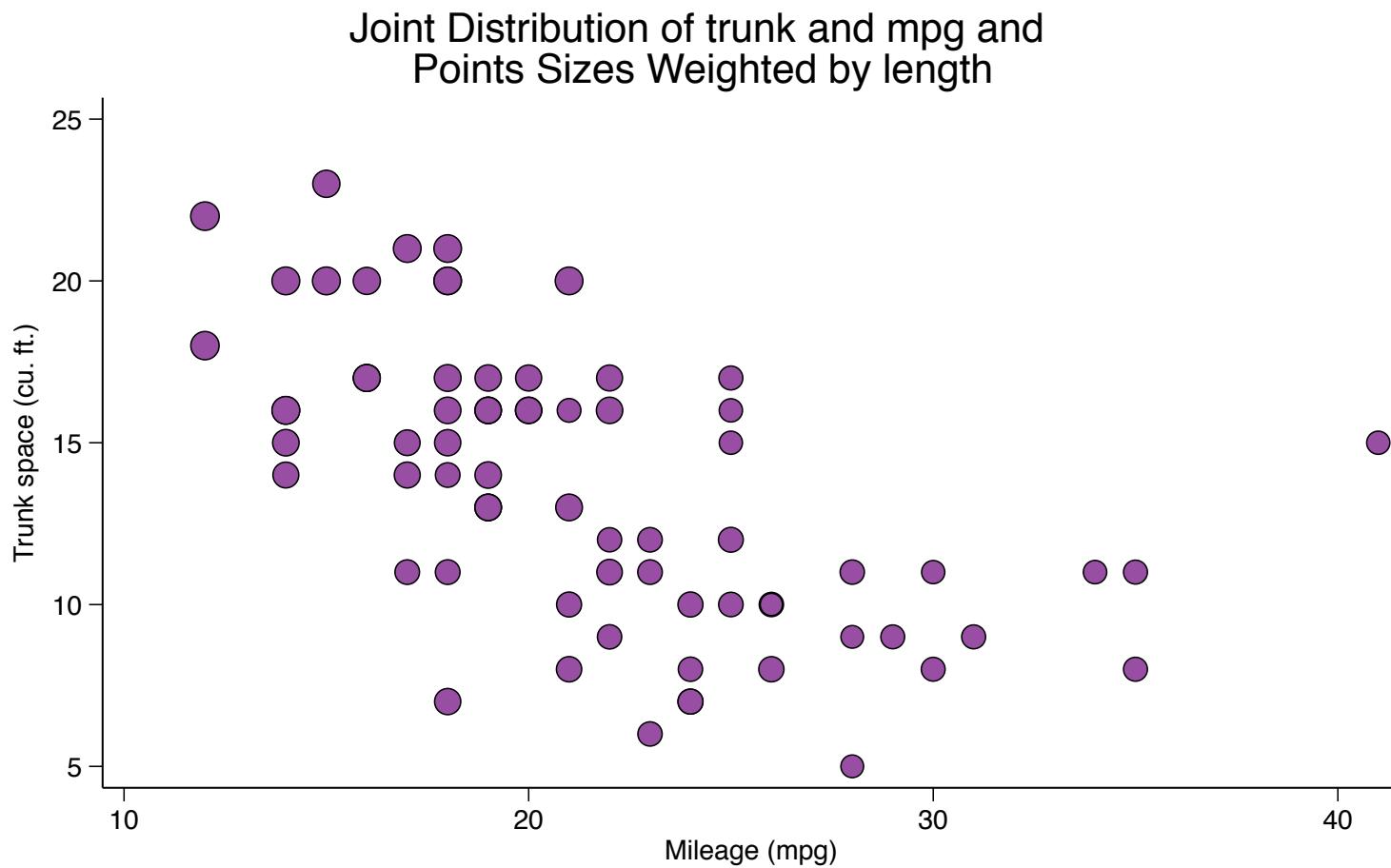
Created on: 29 Oct 2015 at: 15:37:57

Figure 1.139: Bubble Plot of Trunk space (cu. ft.), Mileage (mpg), and Turn Circle (ft.)



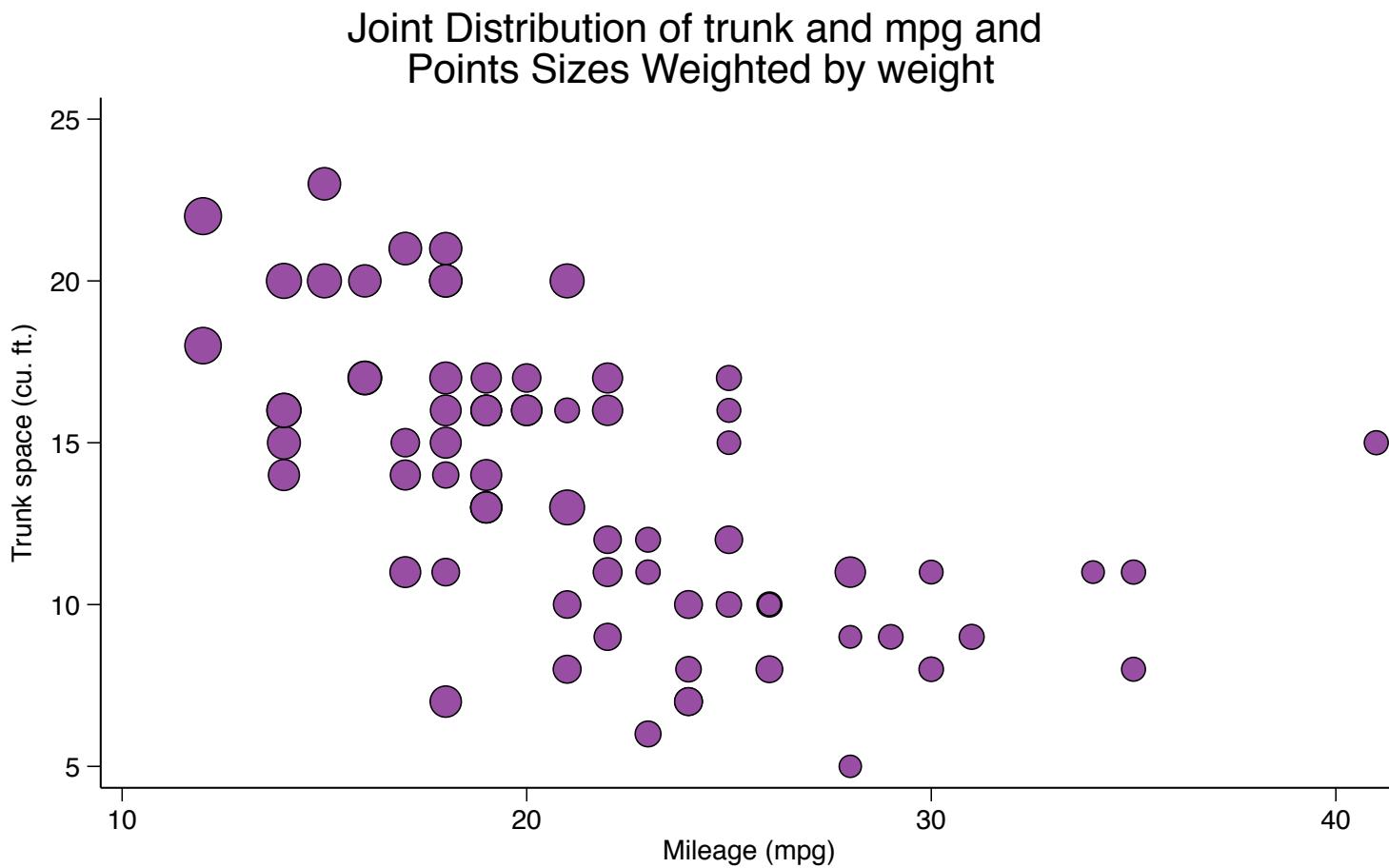
Created on: 29 Oct 2015 at: 15:37:59

Figure 1.140: Bubble Plot of Trunk space (cu. ft.), Mileage (mpg), and Length (in.)



Created on: 29 Oct 2015 at: 15:38:01

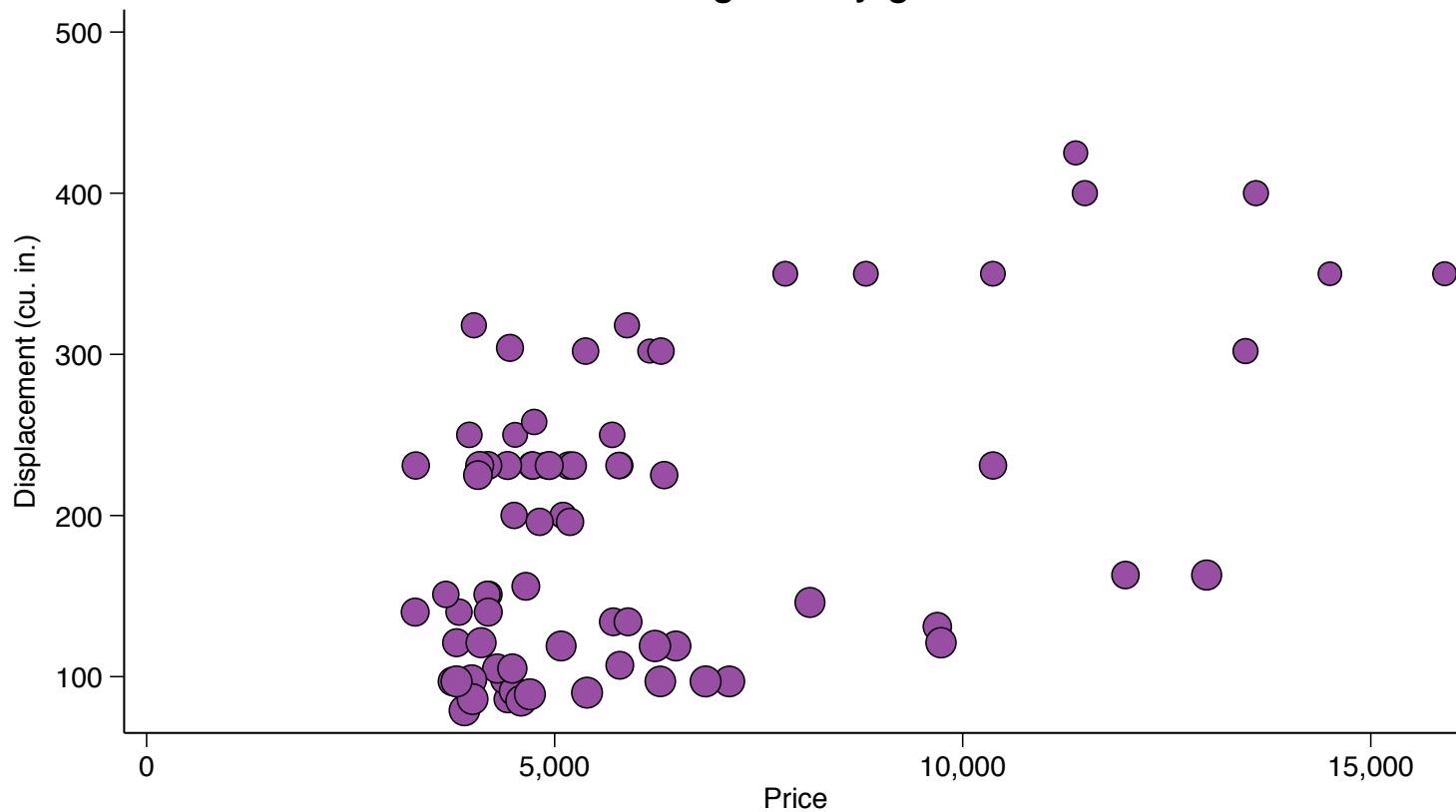
Figure 1.141: Bubble Plot of Trunk space (cu. ft.), Mileage (mpg), and Weight (lbs.)



Created on: 29 Oct 2015 at: 15:38:03

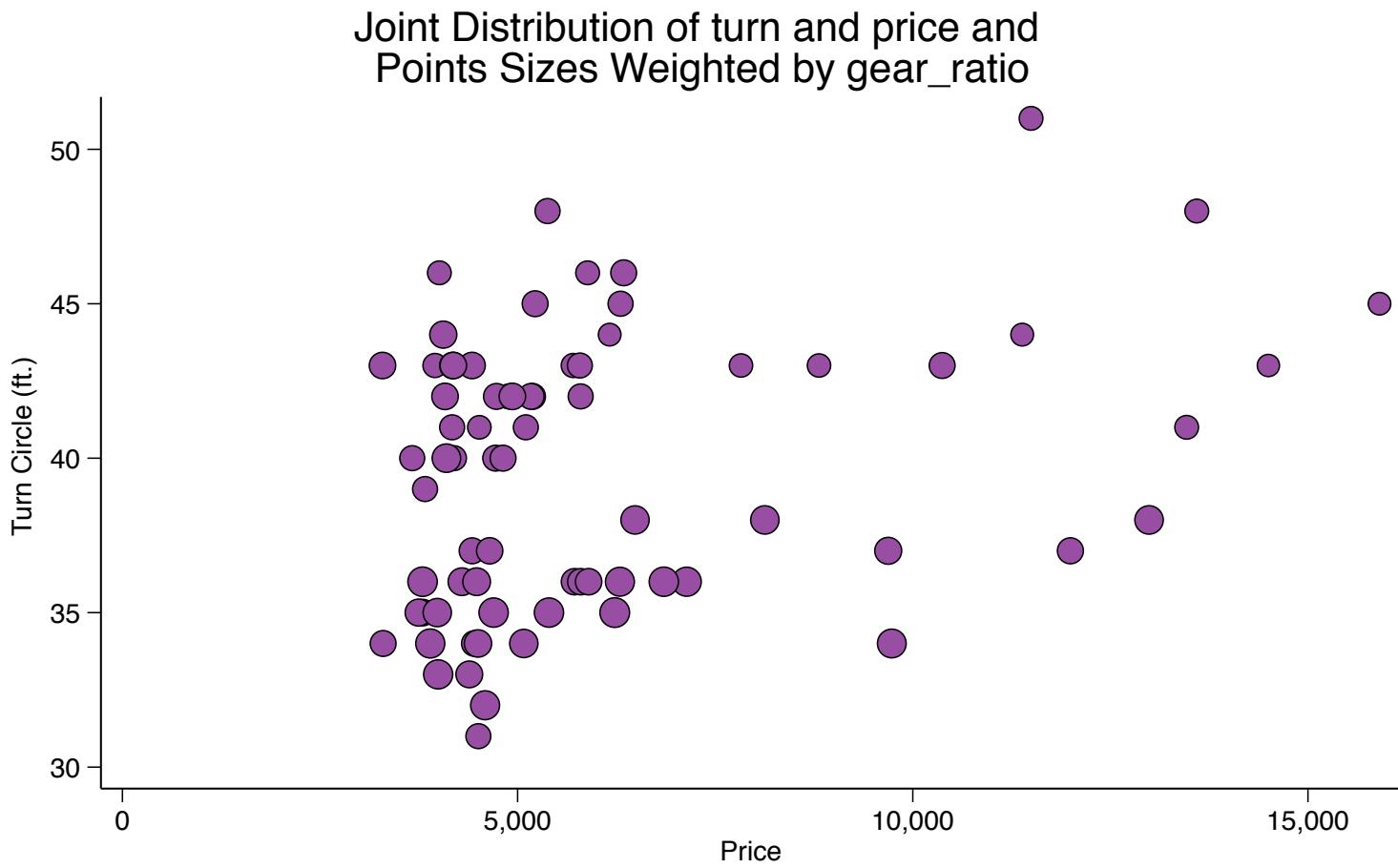
Figure 1.142: Bubble Plot of Displacement (cu. in.), Price, and Gear Ratio

Joint Distribution of displacement and price and
Points Sizes Weighted by gear_ratio



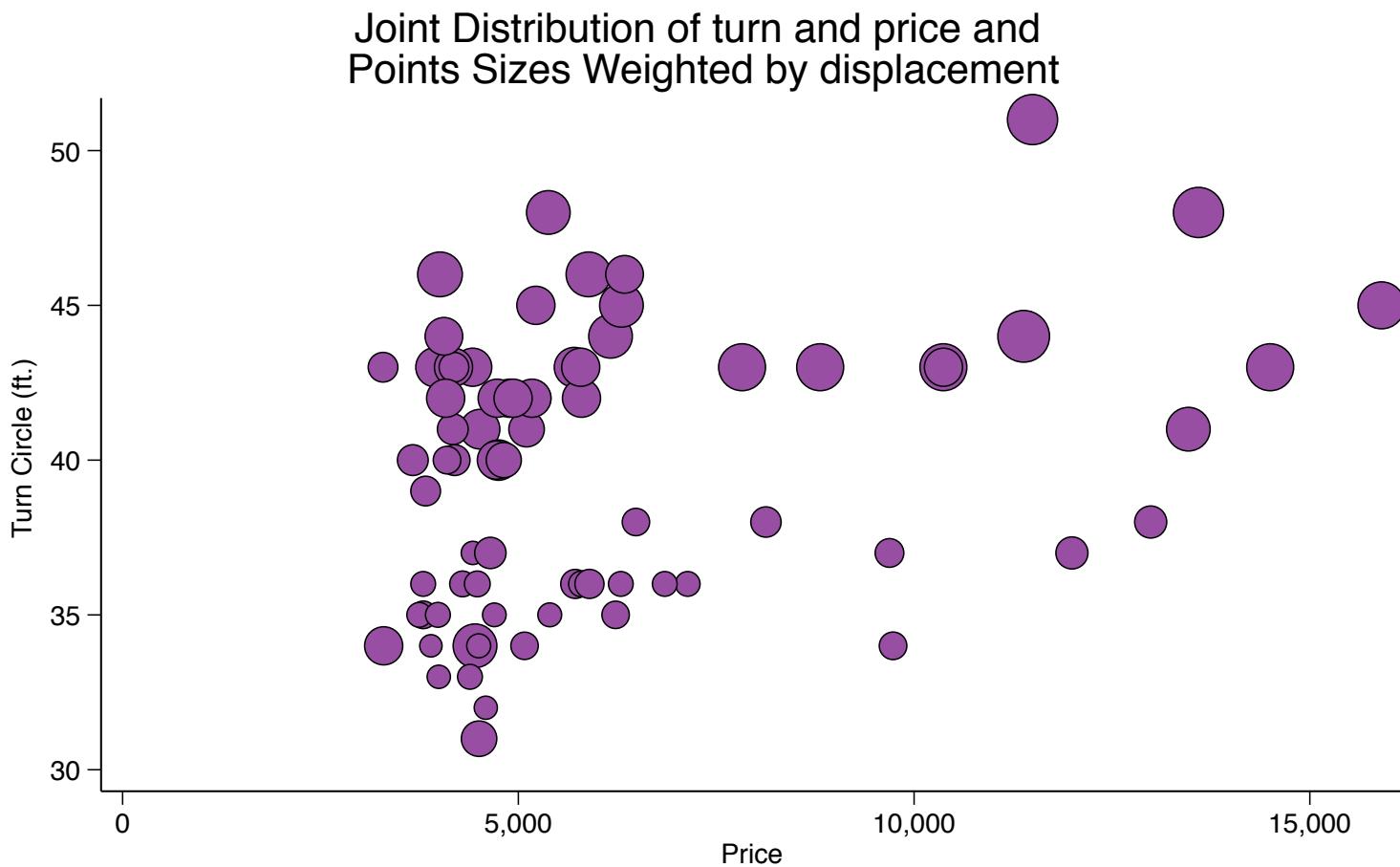
Created on: 29 Oct 2015 at: 15:38:05

Figure 1.143: Bubble Plot of Turn Circle (ft.), Price, and Gear Ratio



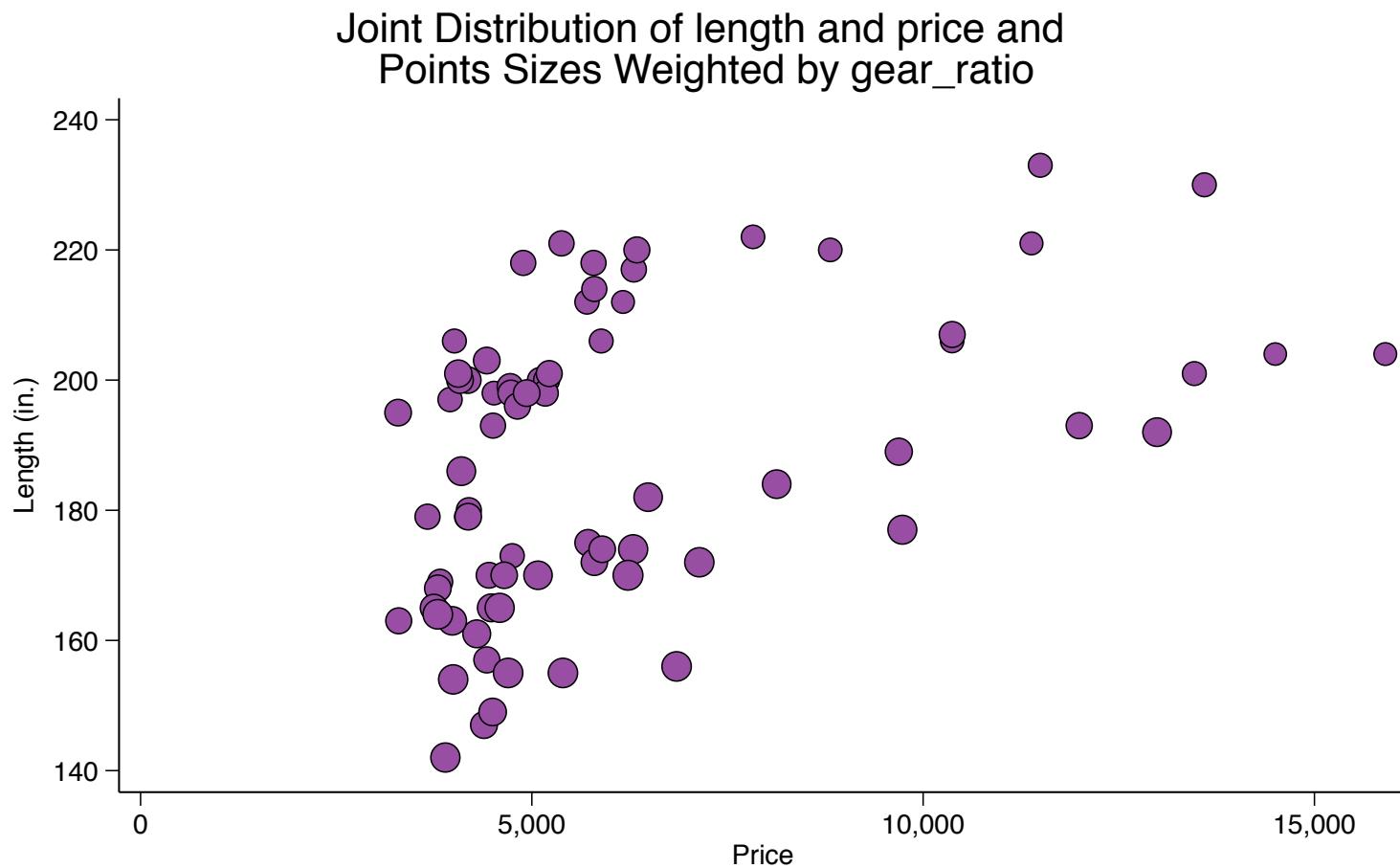
Created on: 29 Oct 2015 at: 15:38:07

Figure 1.144: Bubble Plot of Turn Circle (ft.), Price, and Displacement (cu. in.)



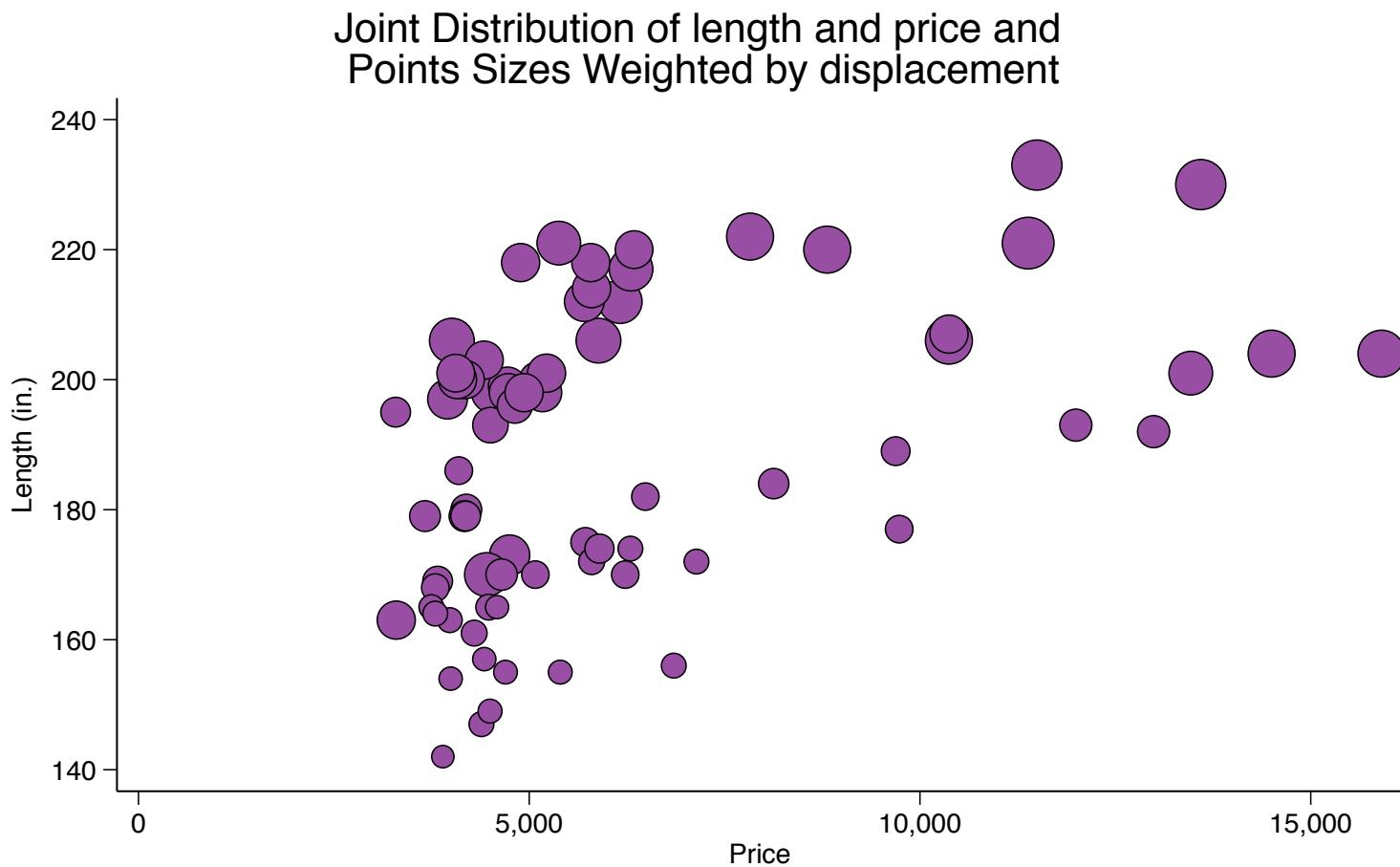
Created on: 29 Oct 2015 at: 15:38:09

Figure 1.145: Bubble Plot of Length (in.), Price, and Gear Ratio



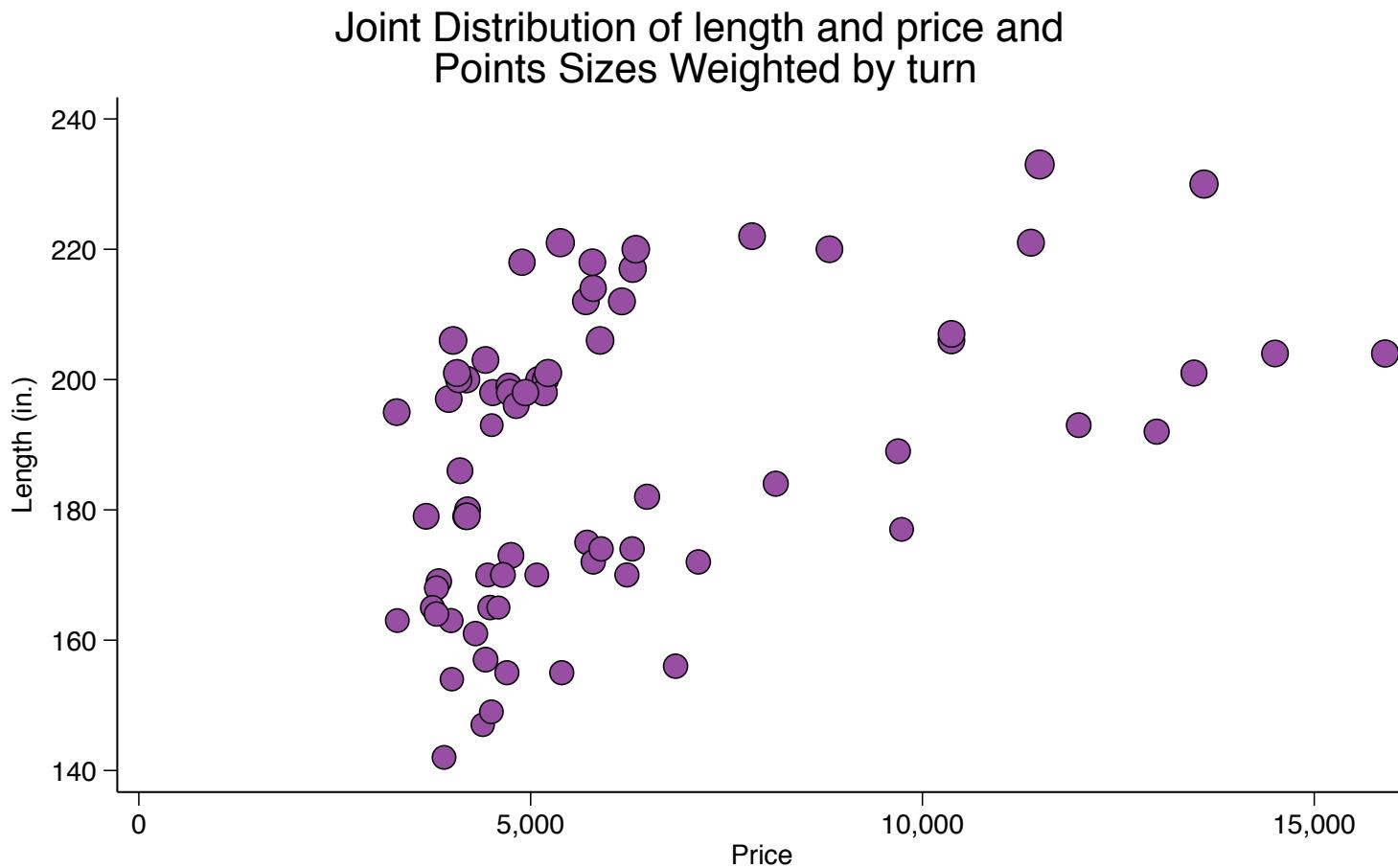
Created on: 29 Oct 2015 at: 15:38:11

Figure 1.146: Bubble Plot of Length (in.), Price, and Displacement (cu. in.)



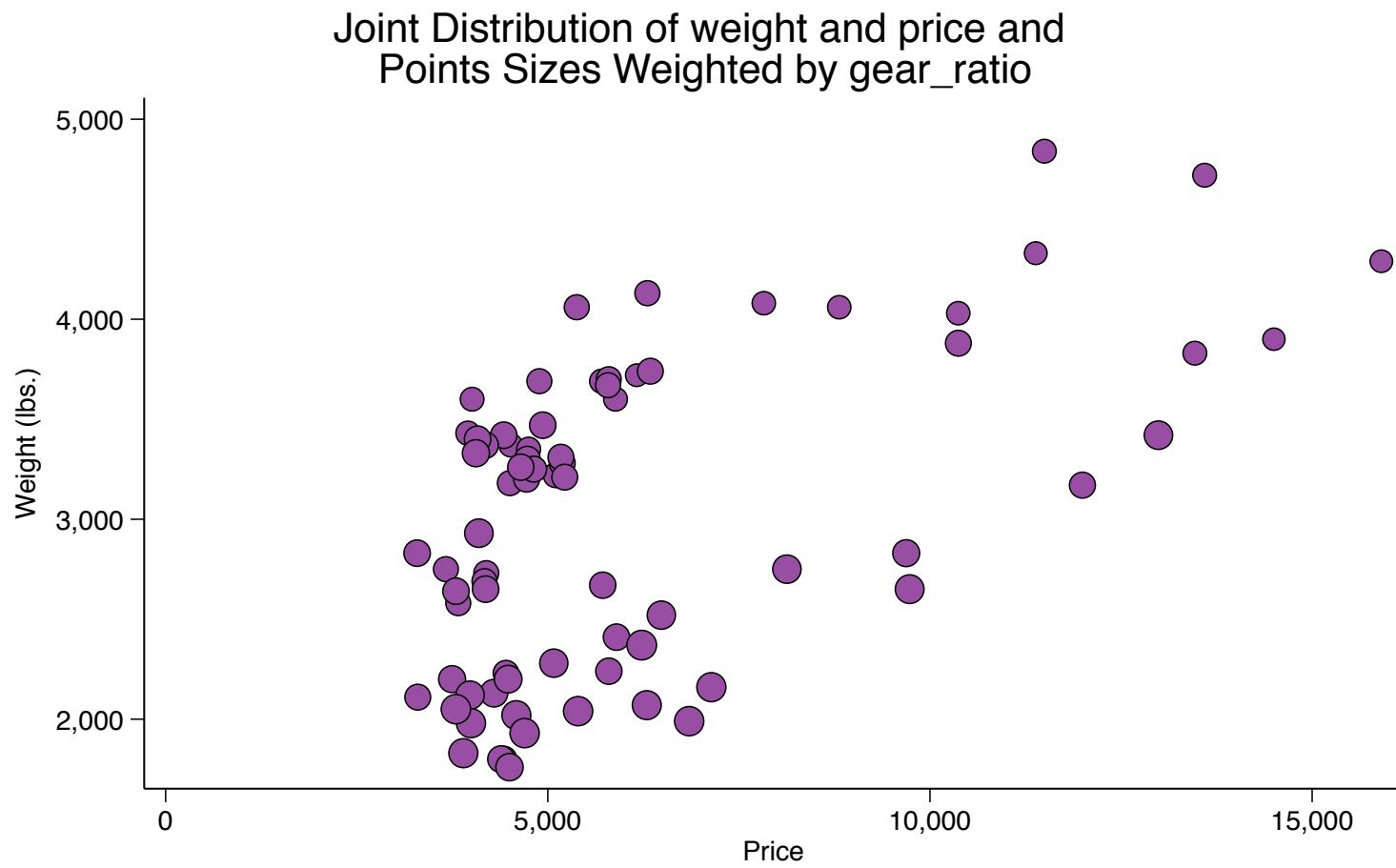
Created on: 29 Oct 2015 at: 15:38:13

Figure 1.147: Bubble Plot of Length (in.), Price, and Turn Circle (ft.)



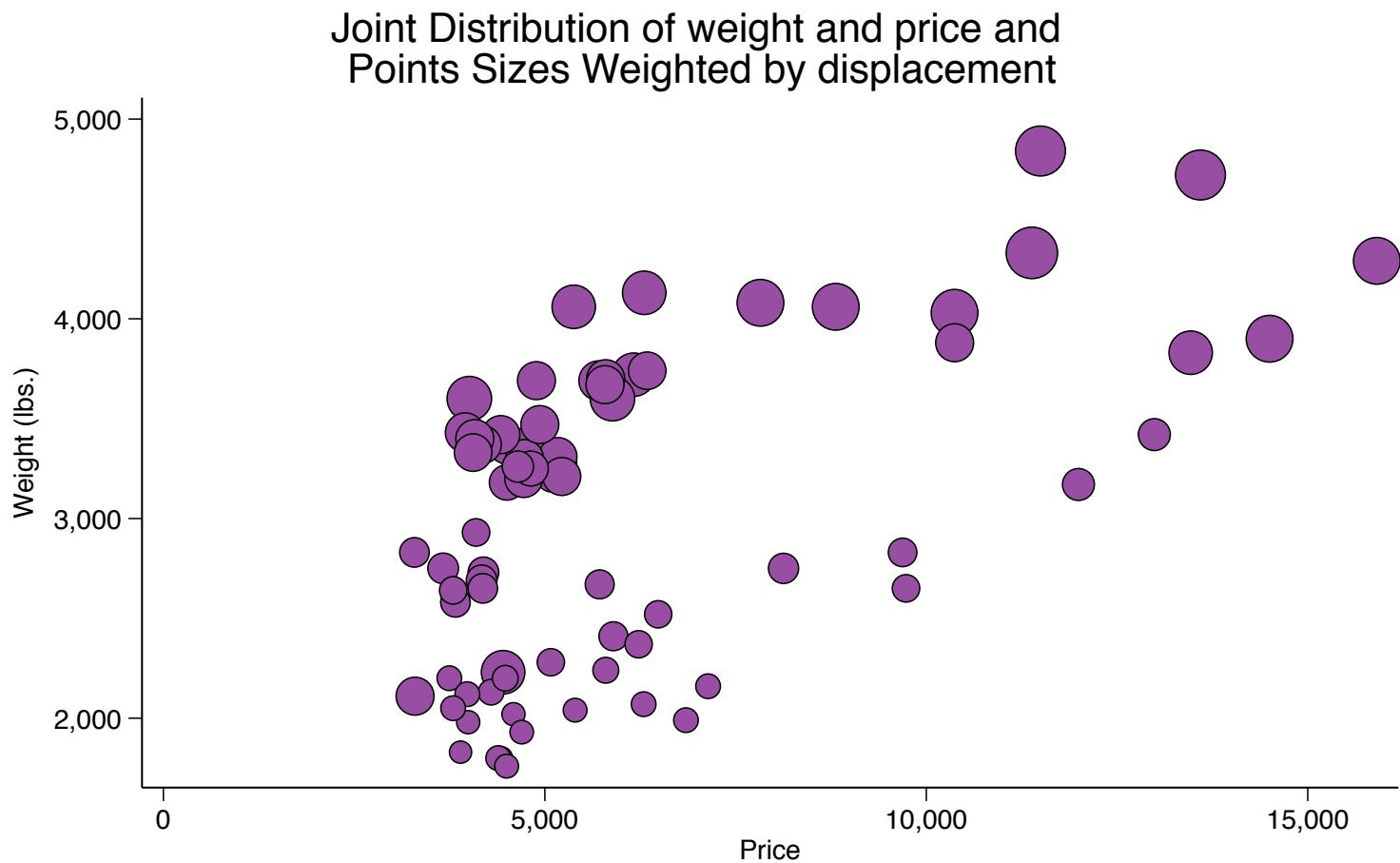
Created on: 29 Oct 2015 at: 15:38:15

Figure 1.148: Bubble Plot of Weight (lbs.), Price, and Gear Ratio



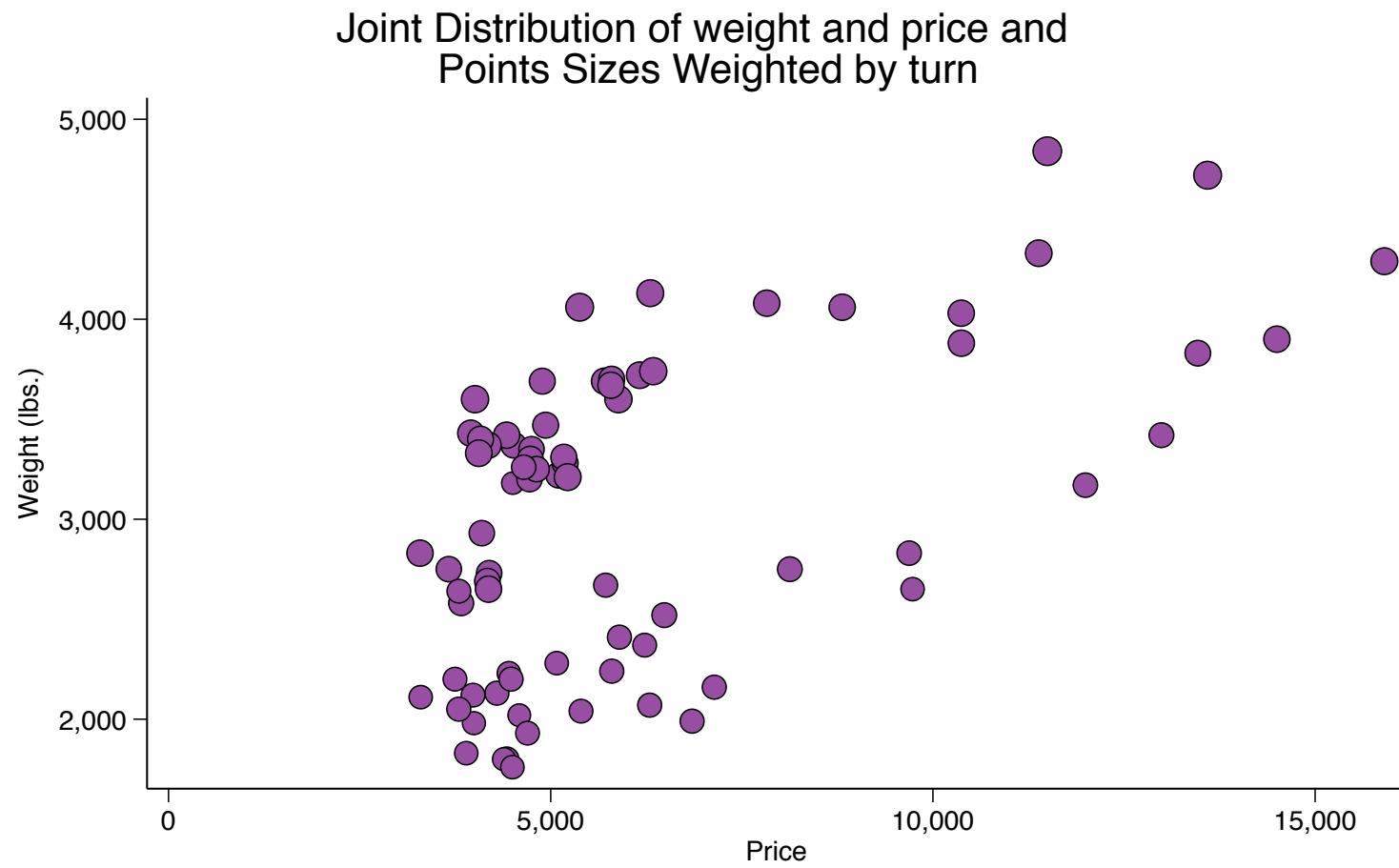
Created on: 29 Oct 2015 at: 15:38:17

Figure 1.149: Bubble Plot of Weight (lbs.), Price, and Displacement (cu. in.)



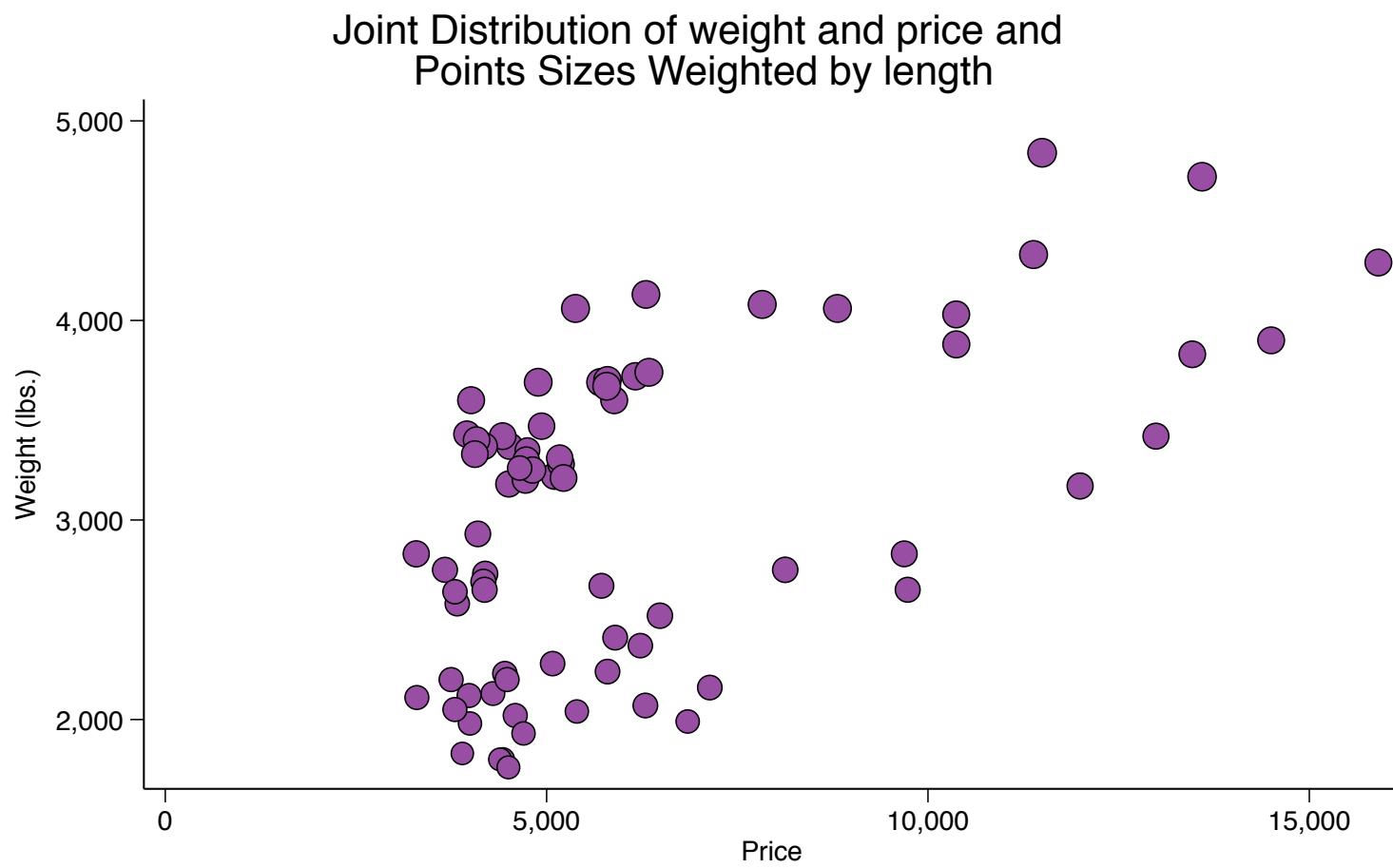
Created on: 29 Oct 2015 at: 15:38:19

Figure 1.150: Bubble Plot of Weight (lbs.), Price, and Turn Circle (ft.)



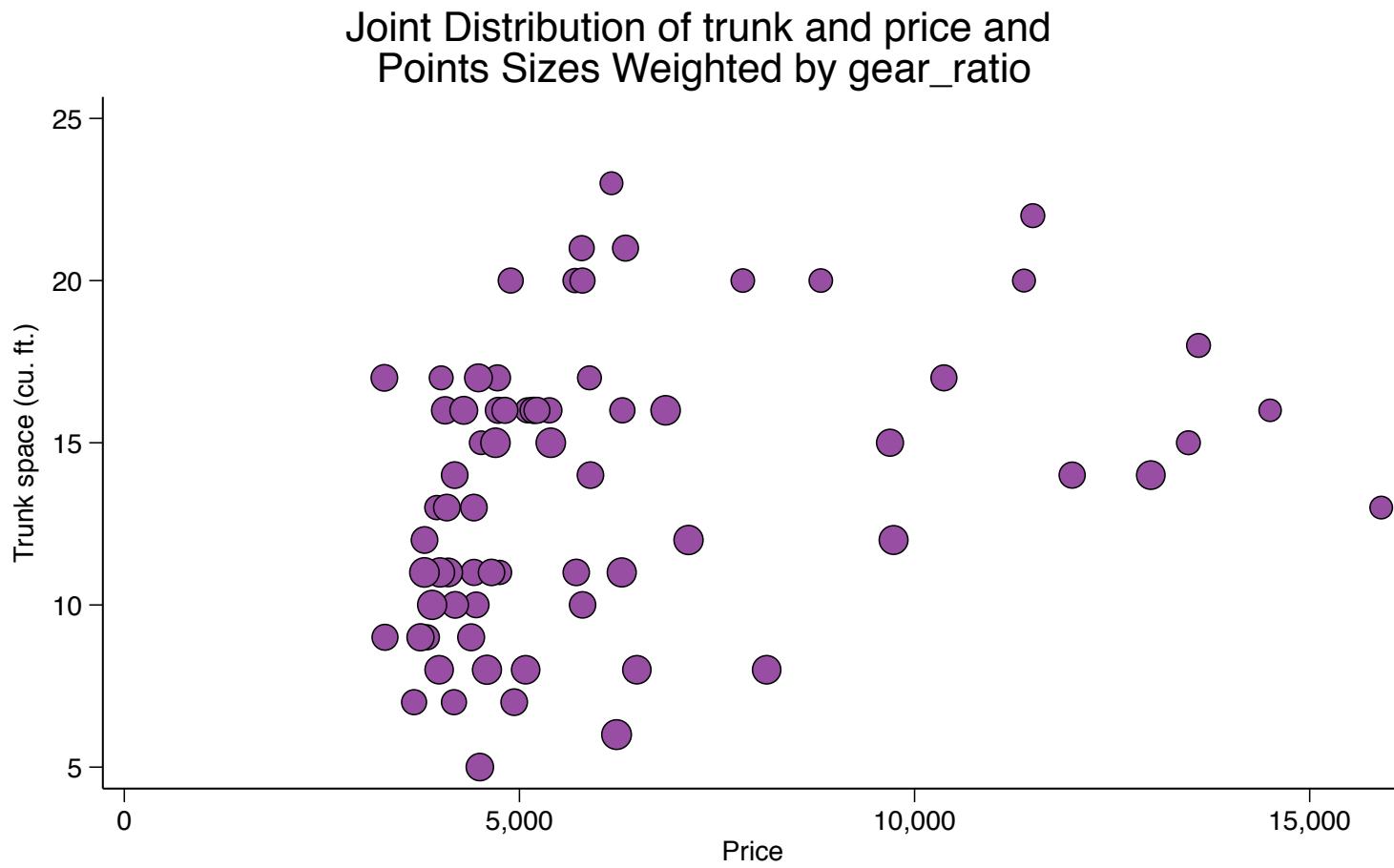
Created on: 29 Oct 2015 at: 15:38:21

Figure 1.151: Bubble Plot of Weight (lbs.), Price, and Length (in.)



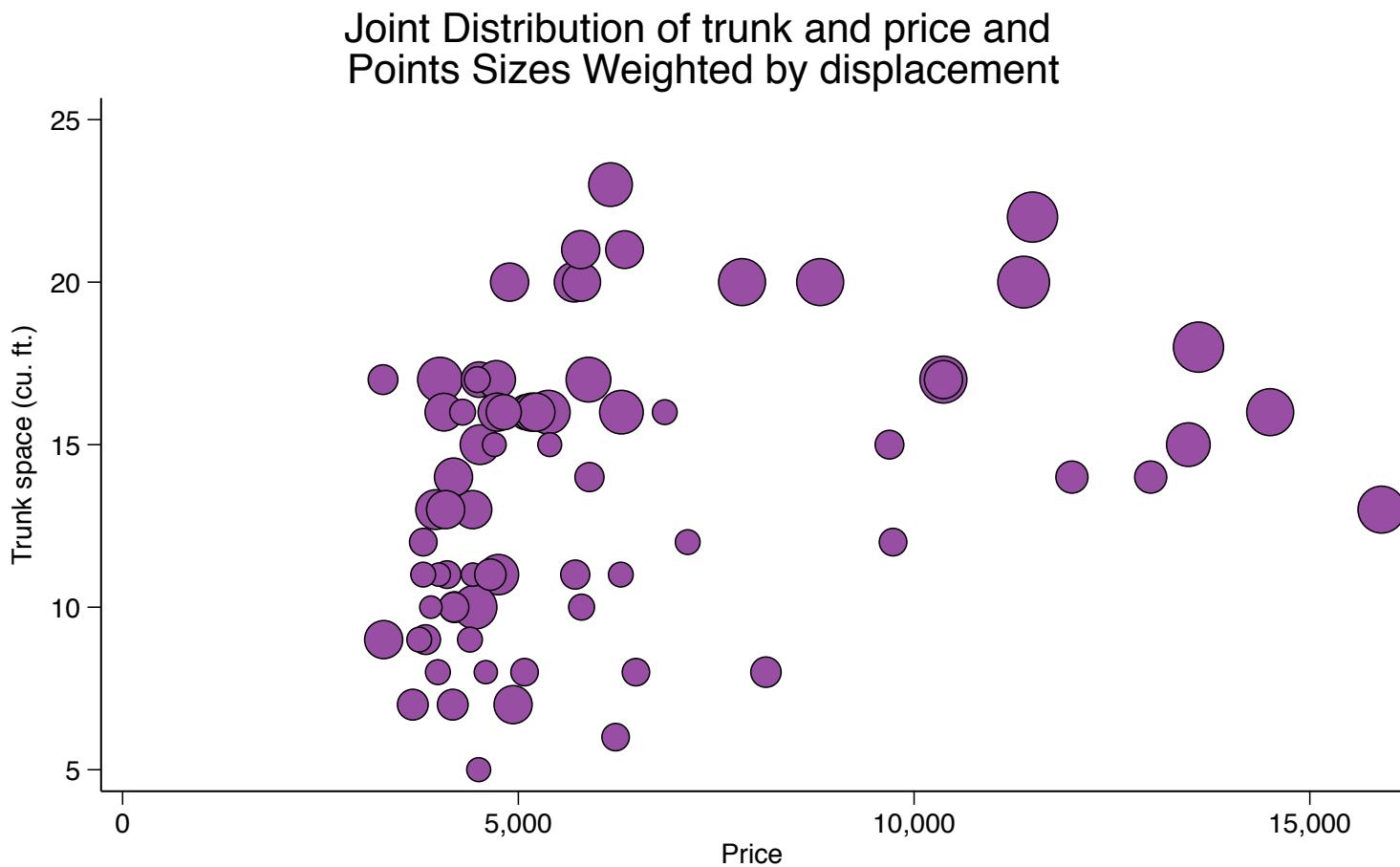
Created on: 29 Oct 2015 at: 15:38:23

Figure 1.152: Bubble Plot of Trunk space (cu. ft.), Price, and Gear Ratio



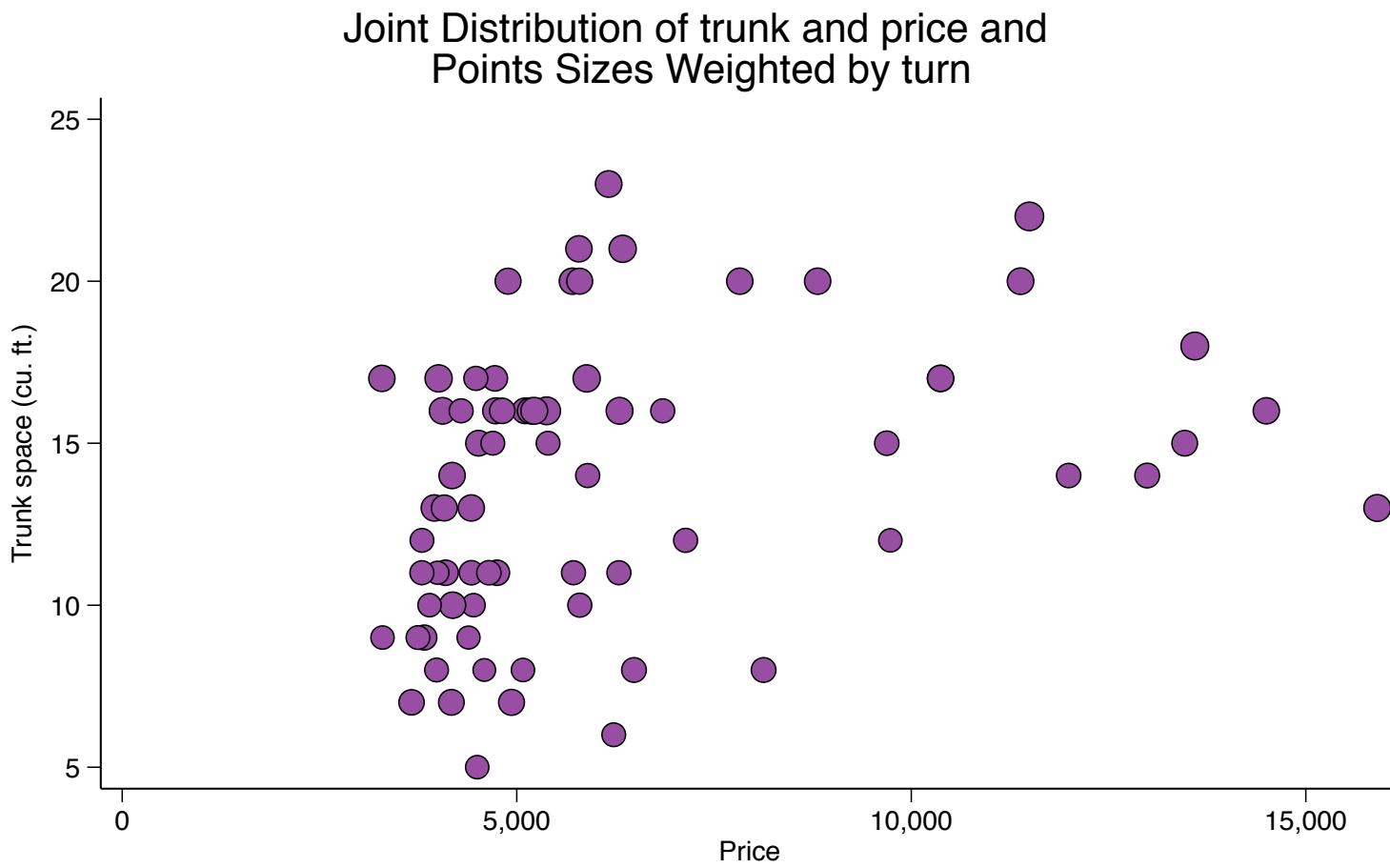
Created on: 29 Oct 2015 at: 15:38:26

Figure 1.153: Bubble Plot of Trunk space (cu. ft.), Price, and Displacement (cu. in.)



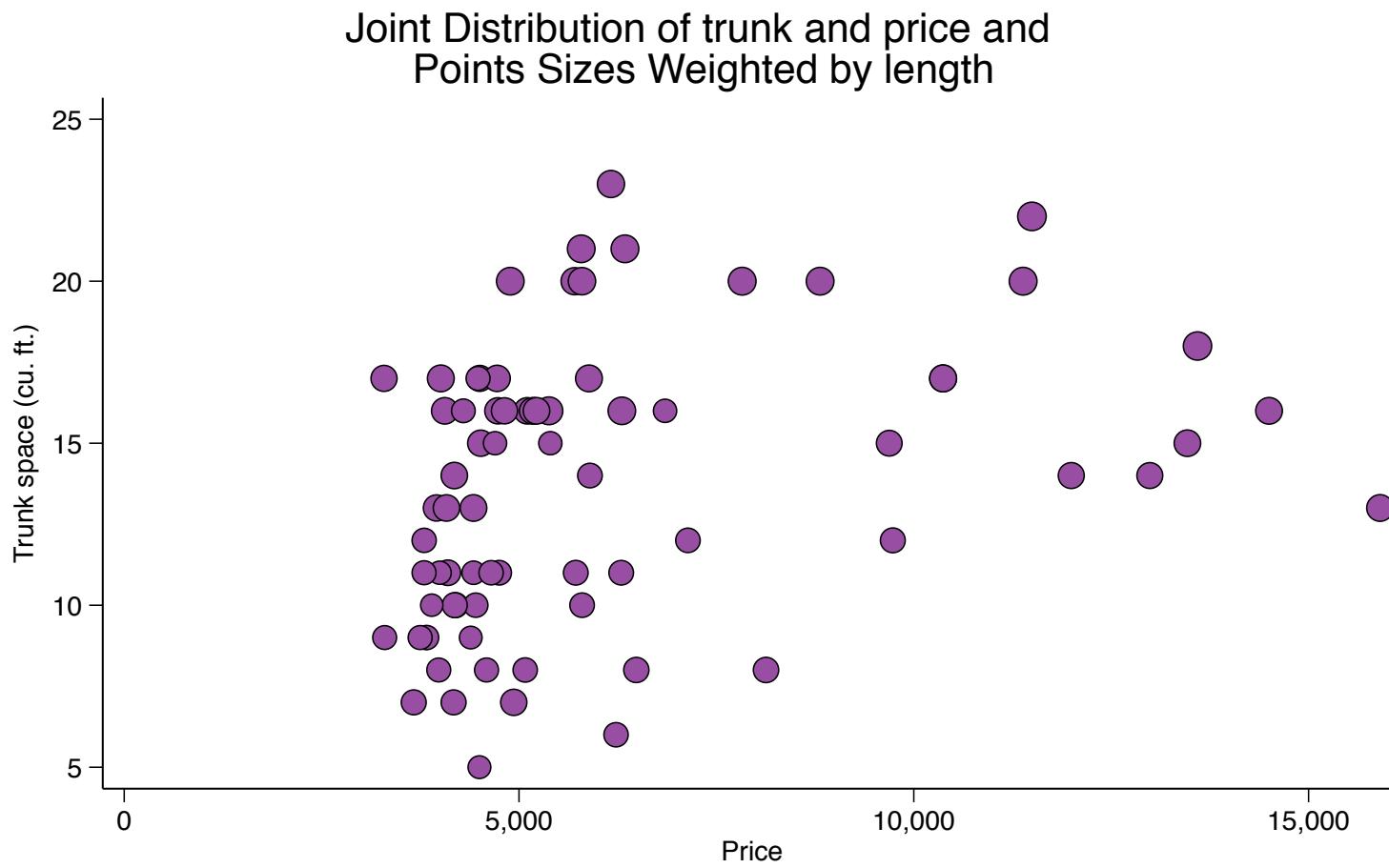
Created on: 29 Oct 2015 at: 15:38:28

Figure 1.154: Bubble Plot of Trunk space (cu. ft.), Price, and Turn Circle (ft.)



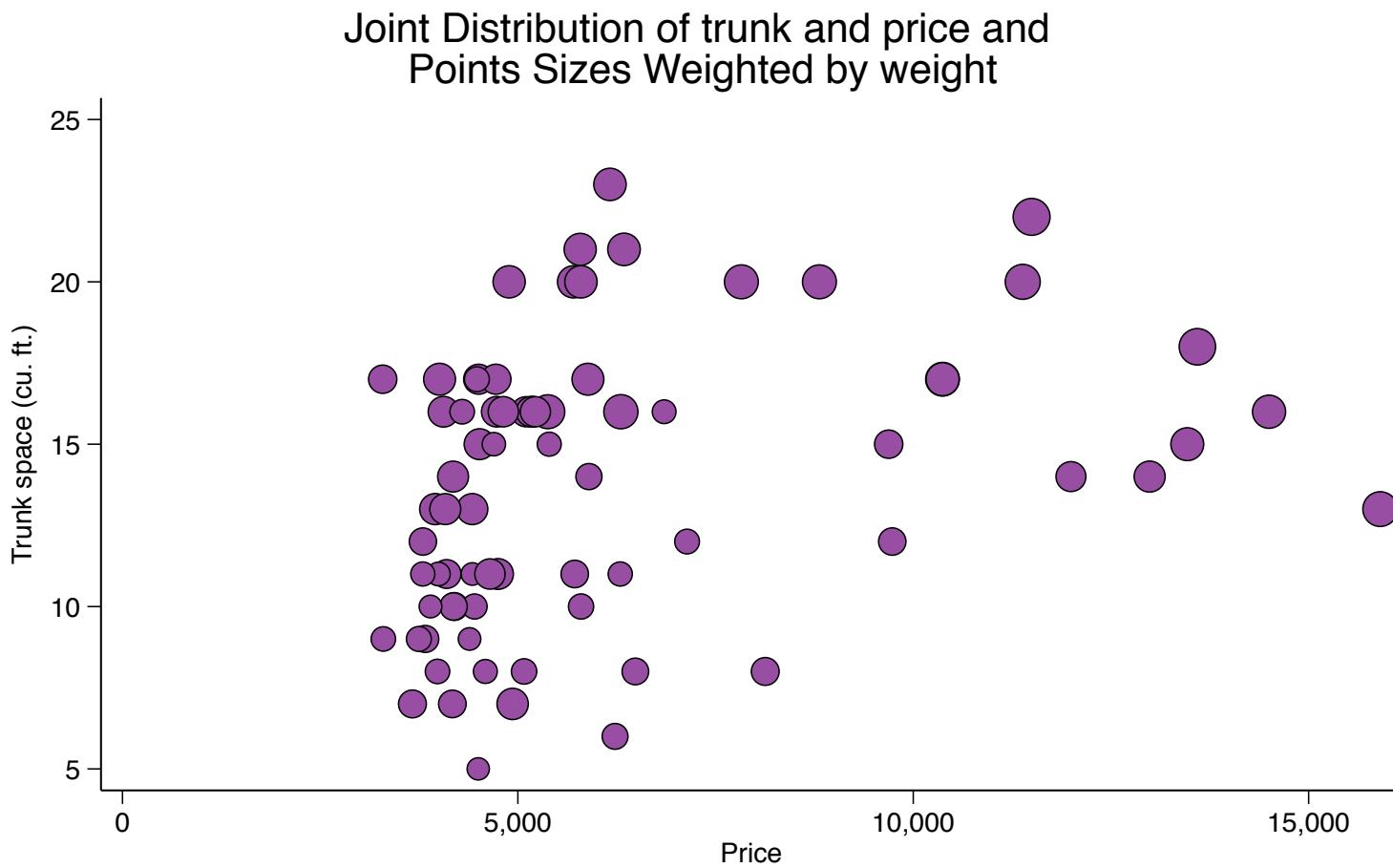
Created on: 29 Oct 2015 at: 15:38:30

Figure 1.155: Bubble Plot of Trunk space (cu. ft.), Price, and Length (in.)



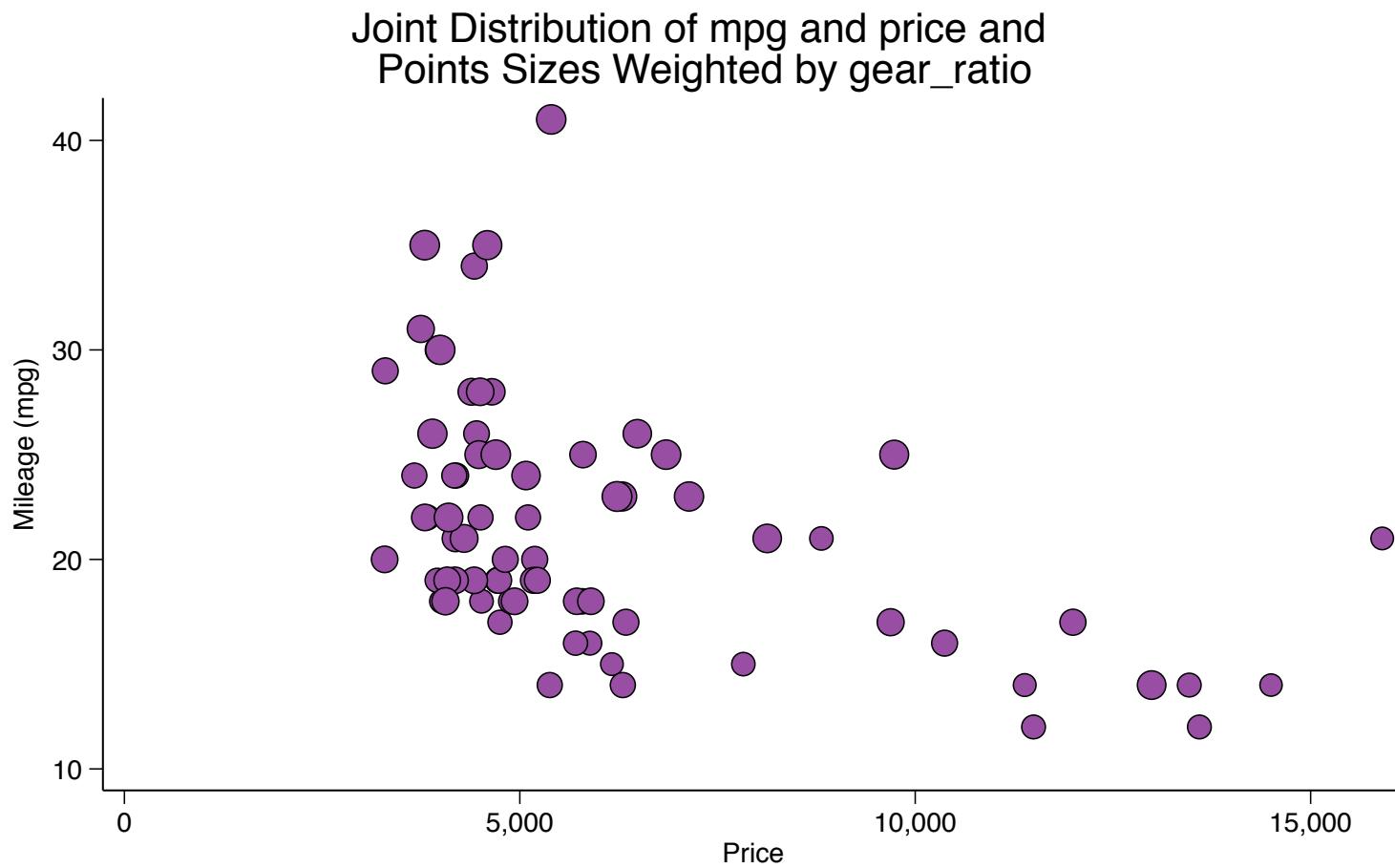
Created on: 29 Oct 2015 at: 15:38:32

Figure 1.156: Bubble Plot of Trunk space (cu. ft.), Price, and Weight (lbs.)



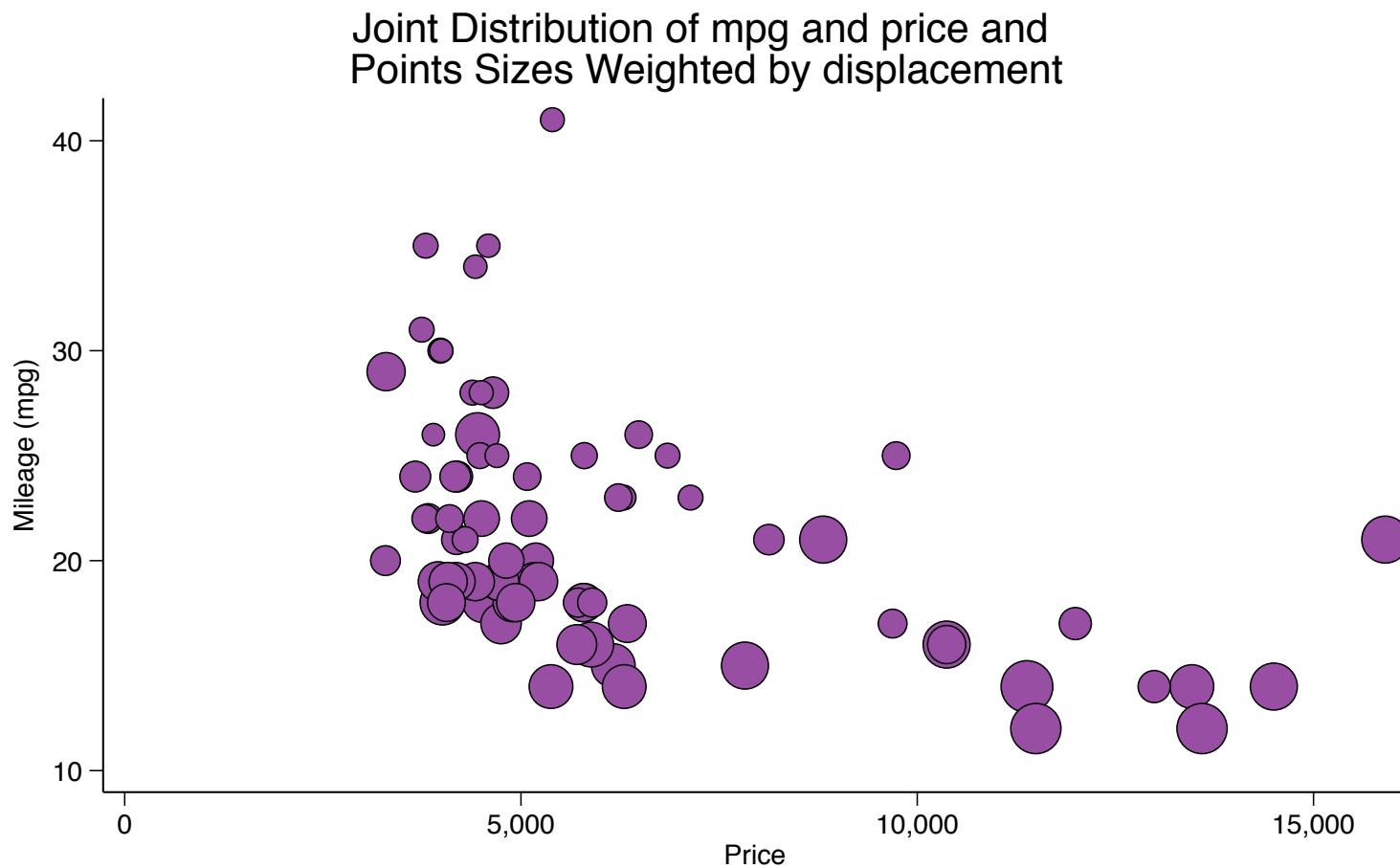
Created on: 29 Oct 2015 at: 15:38:34

Figure 1.157: Bubble Plot of Mileage (mpg), Price, and Gear Ratio



Created on: 29 Oct 2015 at: 15:38:36

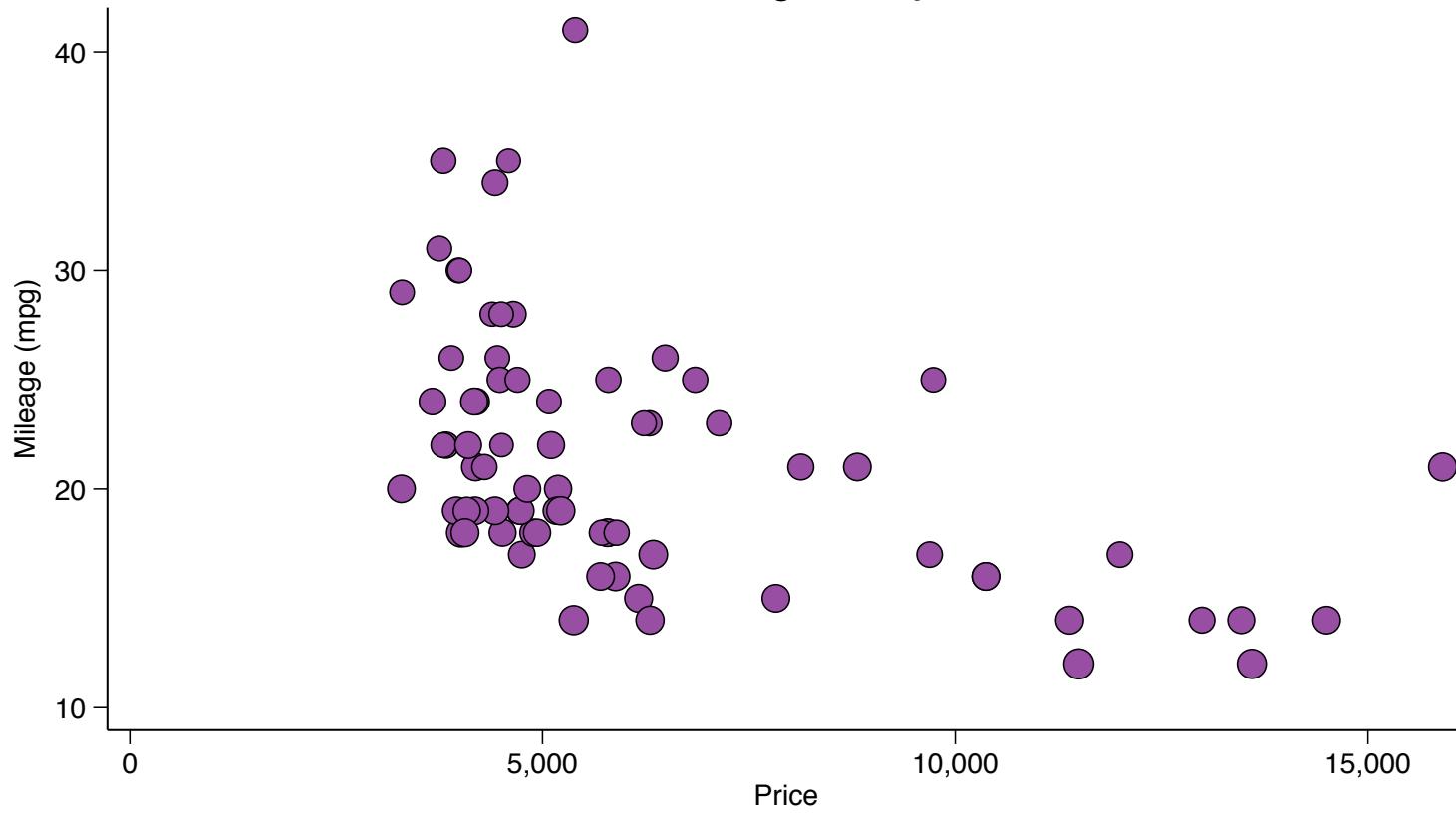
Figure 1.158: Bubble Plot of Mileage (mpg), Price, and Displacement (cu. in.)



Created on: 29 Oct 2015 at: 15:38:38

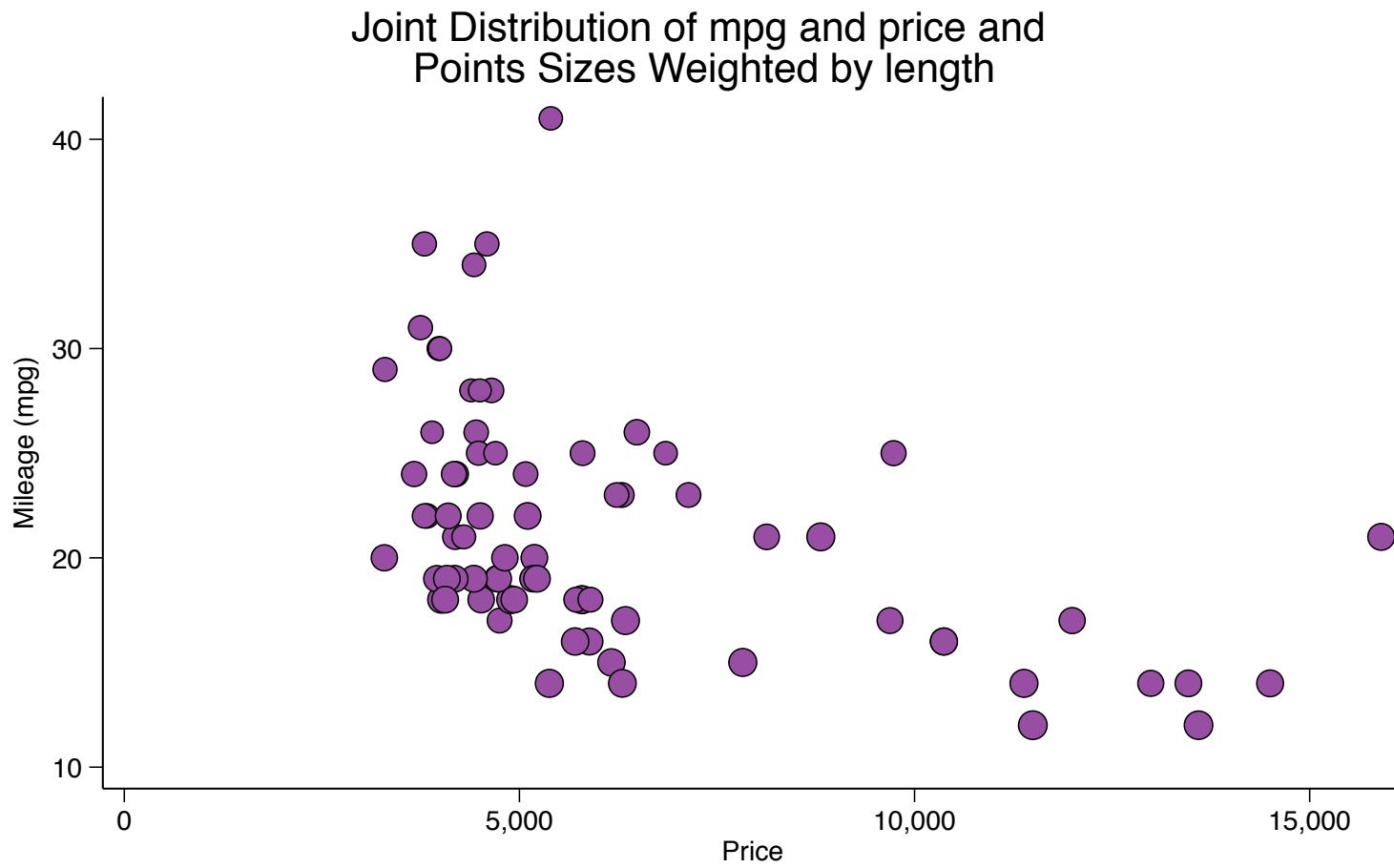
Figure 1.159: Bubble Plot of Mileage (mpg), Price, and Turn Circle (ft.)

**Joint Distribution of mpg and price and
Points Sizes Weighted by turn**



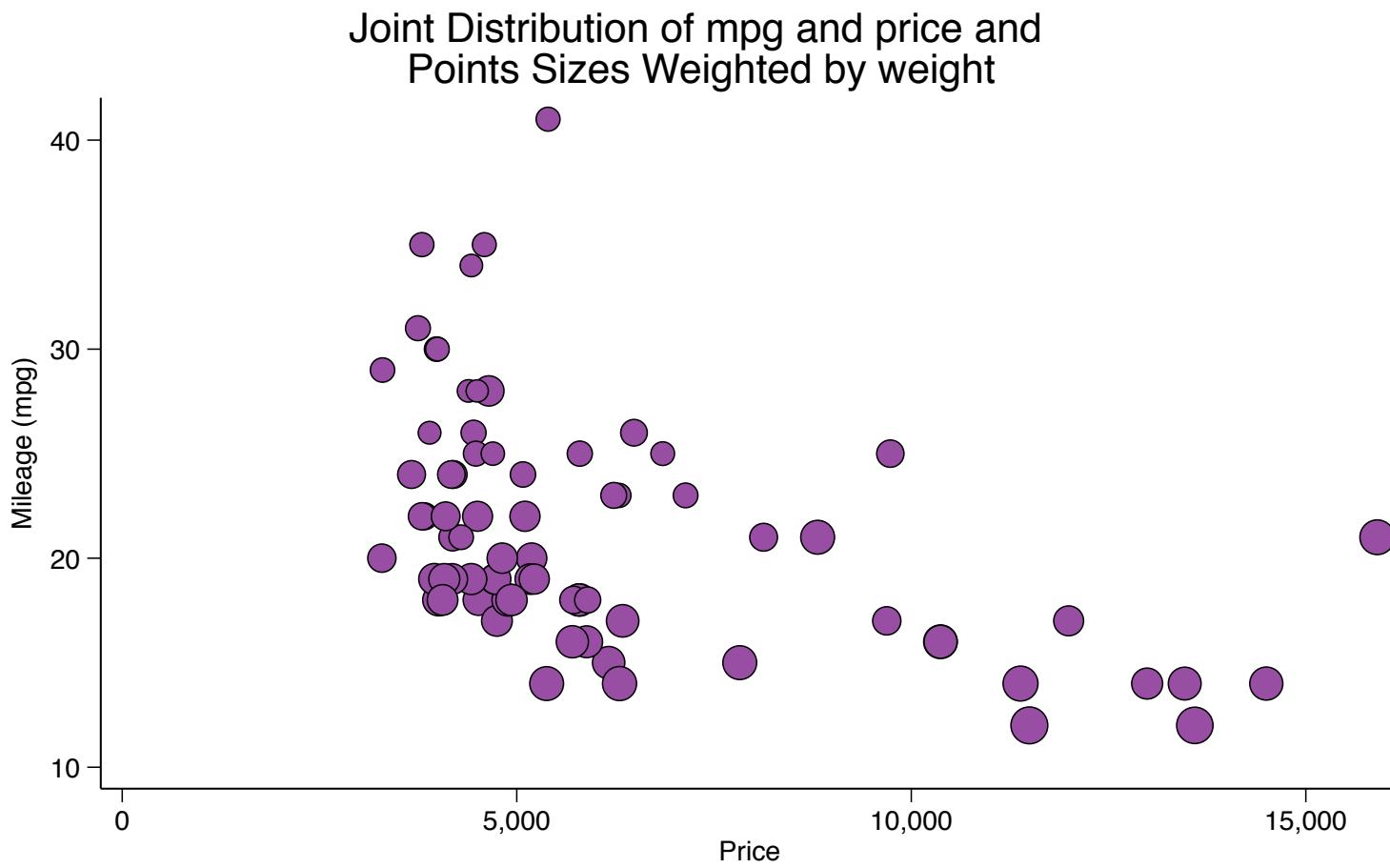
Created on: 29 Oct 2015 at: 15:38:40

Figure 1.160: Bubble Plot of Mileage (mpg), Price, and Length (in.)



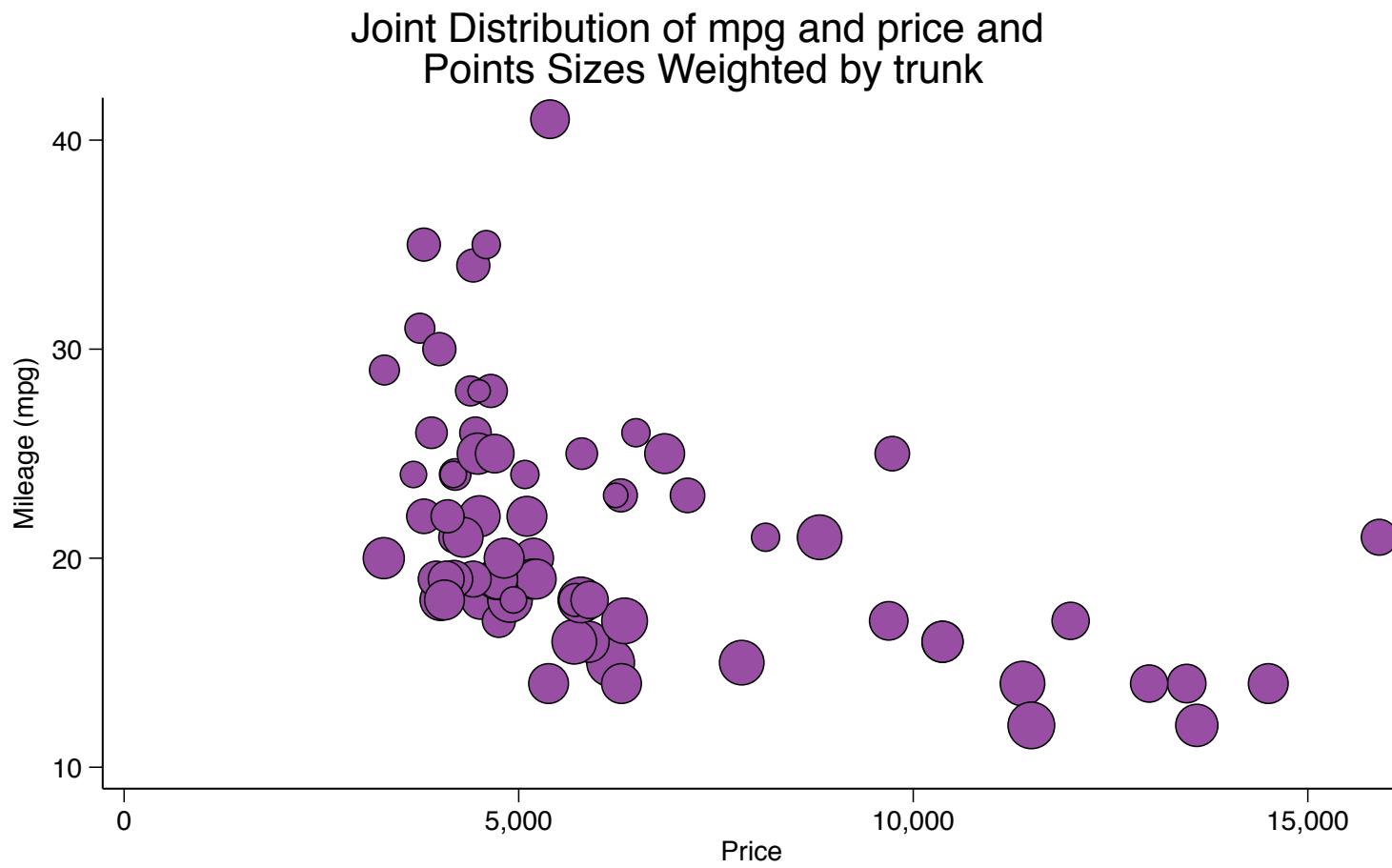
Created on: 29 Oct 2015 at: 15:38:42

Figure 1.161: Bubble Plot of Mileage (mpg), Price, and Weight (lbs.)



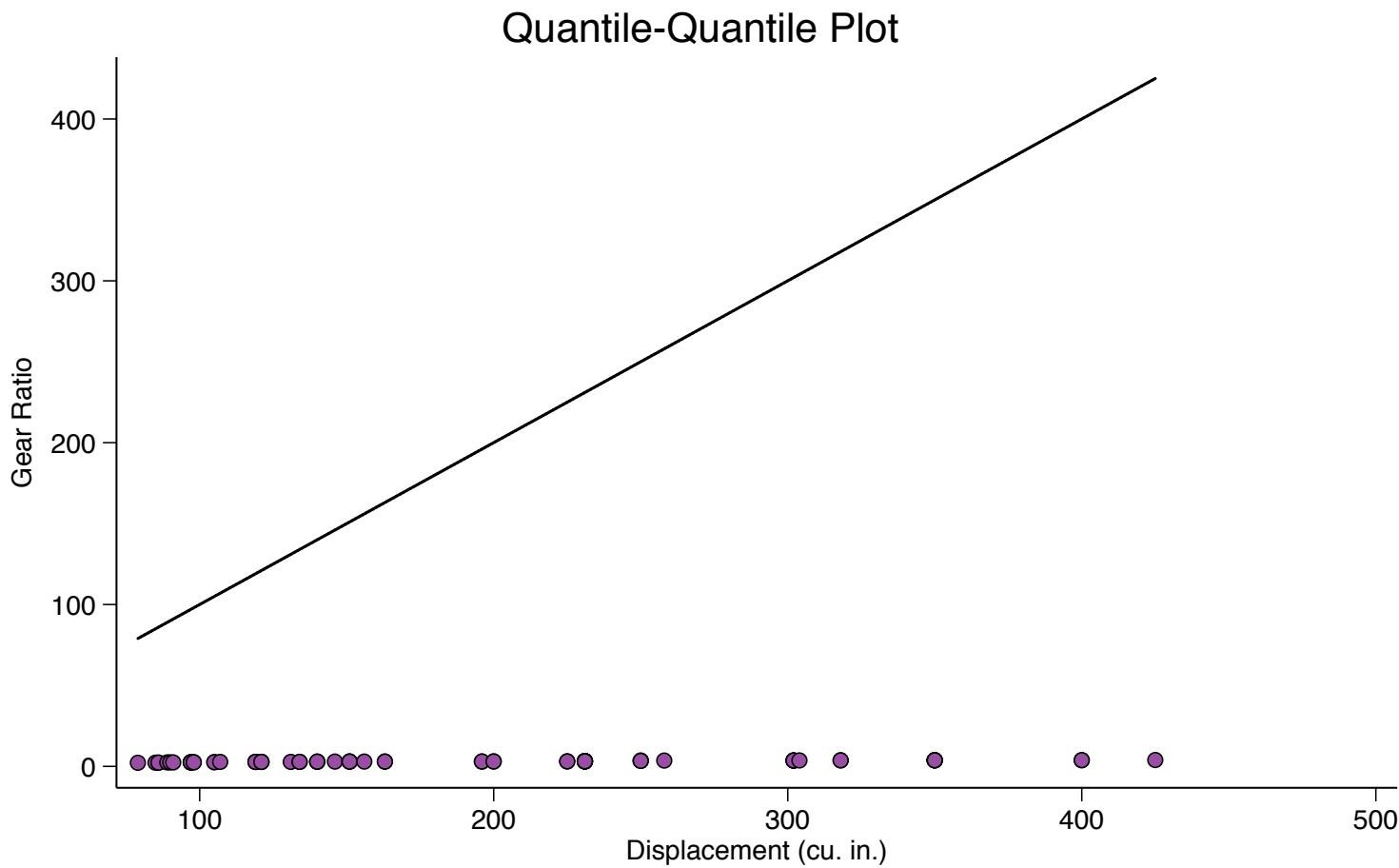
Created on: 29 Oct 2015 at: 15:38:43

Figure 1.162: Bubble Plot of Mileage (mpg), Price, and Trunk space (cu. ft.)



Created on: 29 Oct 2015 at: 15:38:45

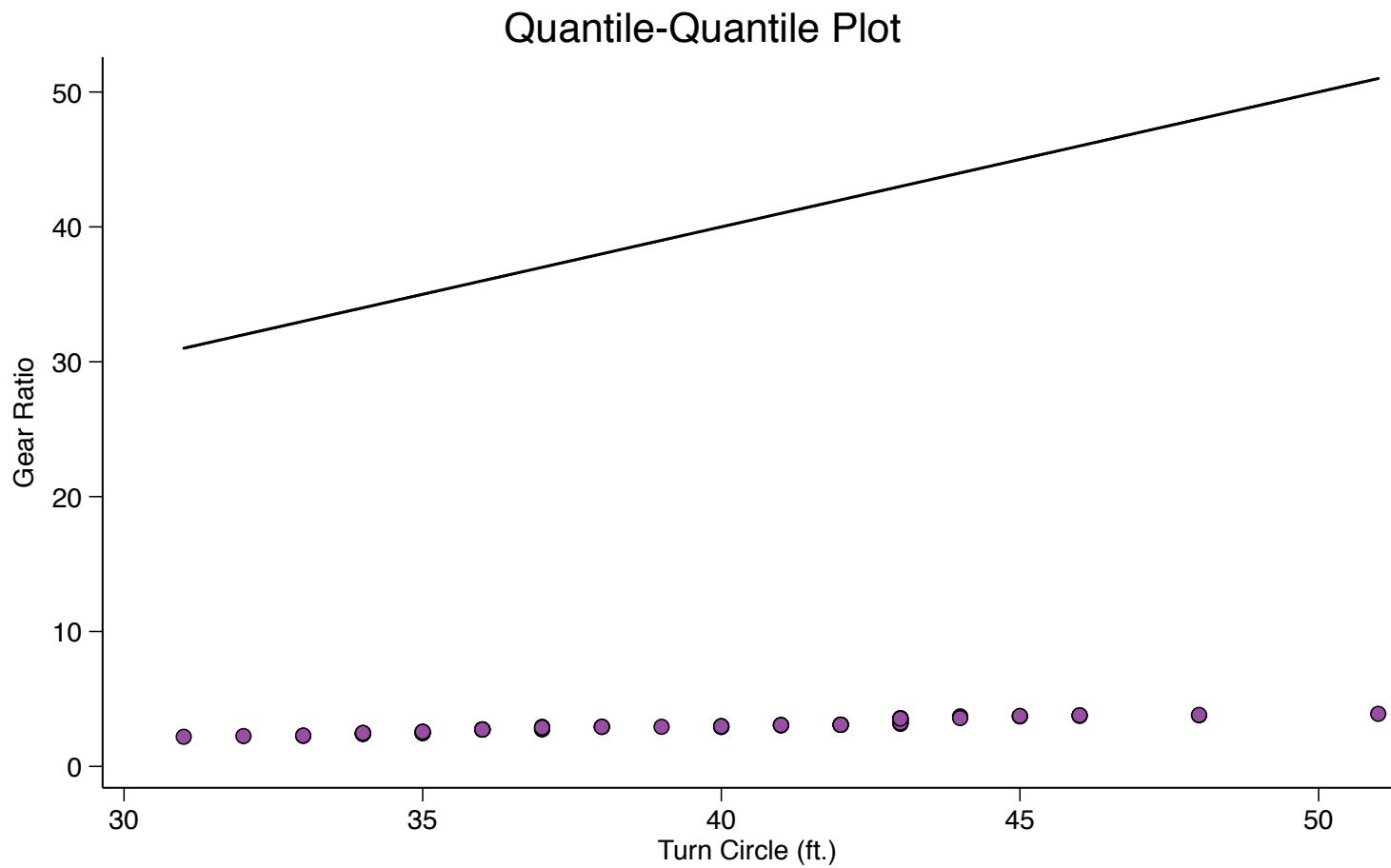
Figure 1.163: Quantiles of Gear Ratio vs Quantiles of Displacement (cu. in.)



Created on: 29 Oct 2015 at: 15:38:46

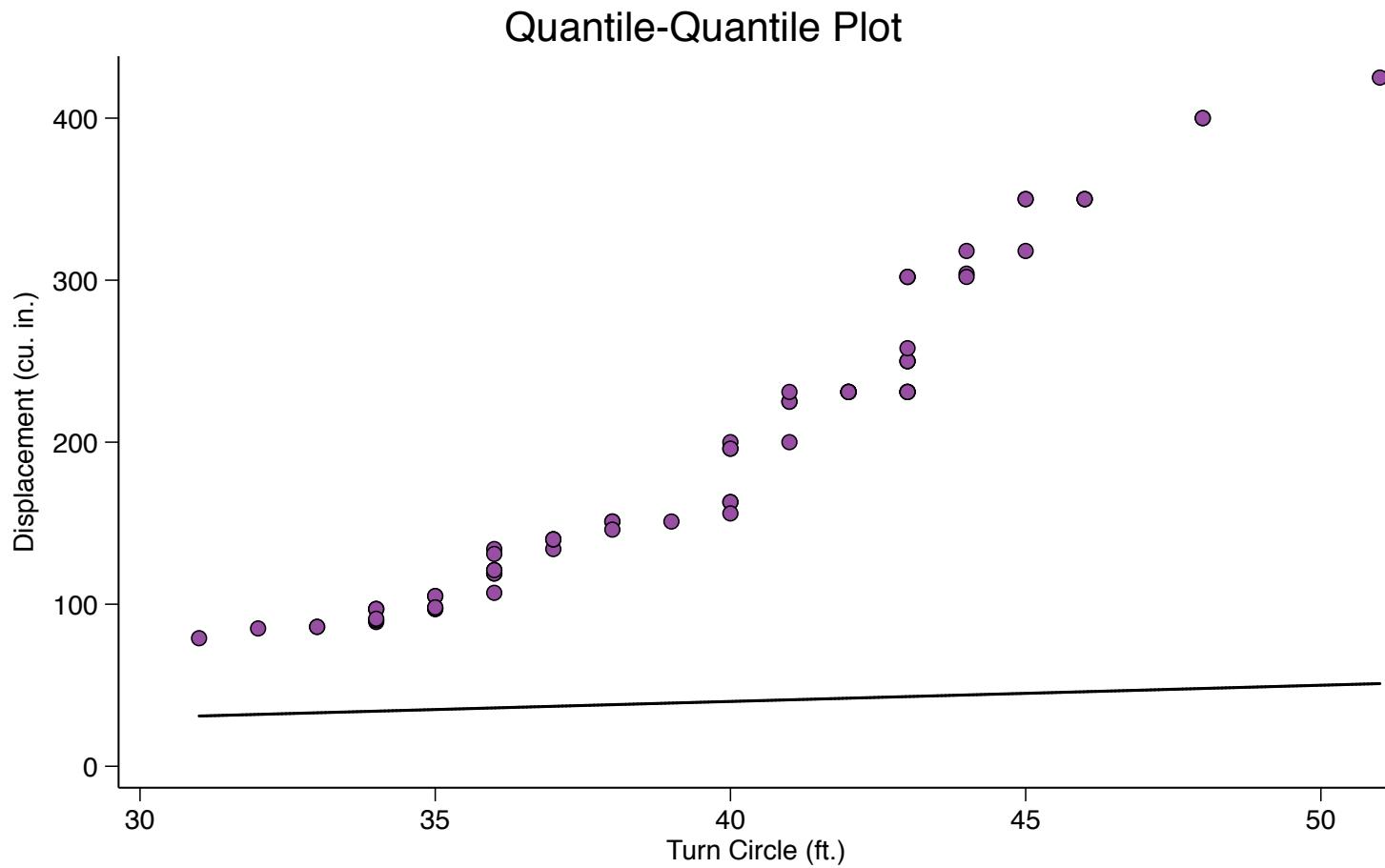
Quantile Quantile Plots.

Figure 1.164: Quantiles of Gear Ratio vs Quantiles of Turn Circle (ft.)



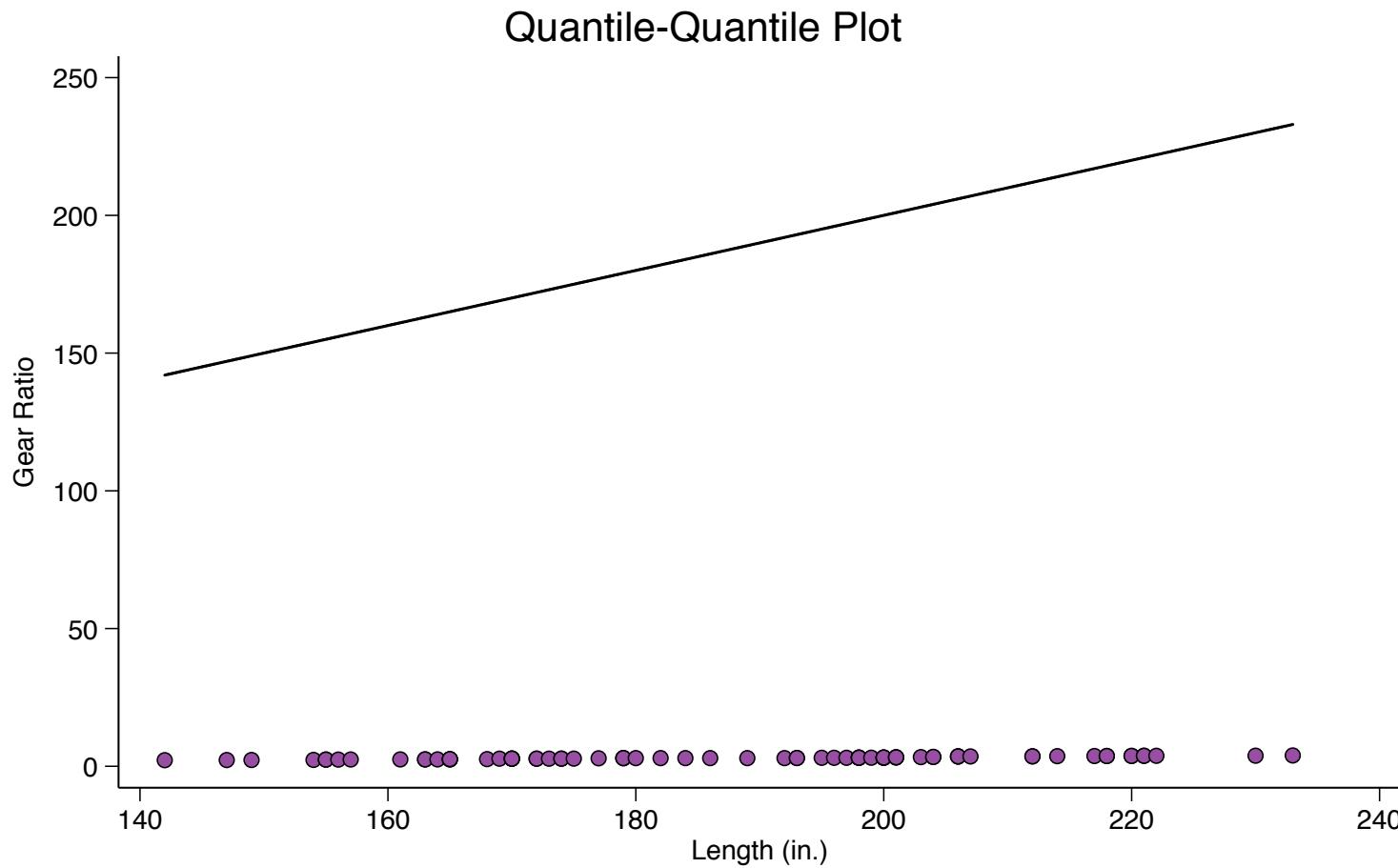
Created on: 29 Oct 2015 at: 15:38:48

Figure 1.165: Quantiles of Displacement (cu. in.) vs Quantiles of Turn Circle (ft.)



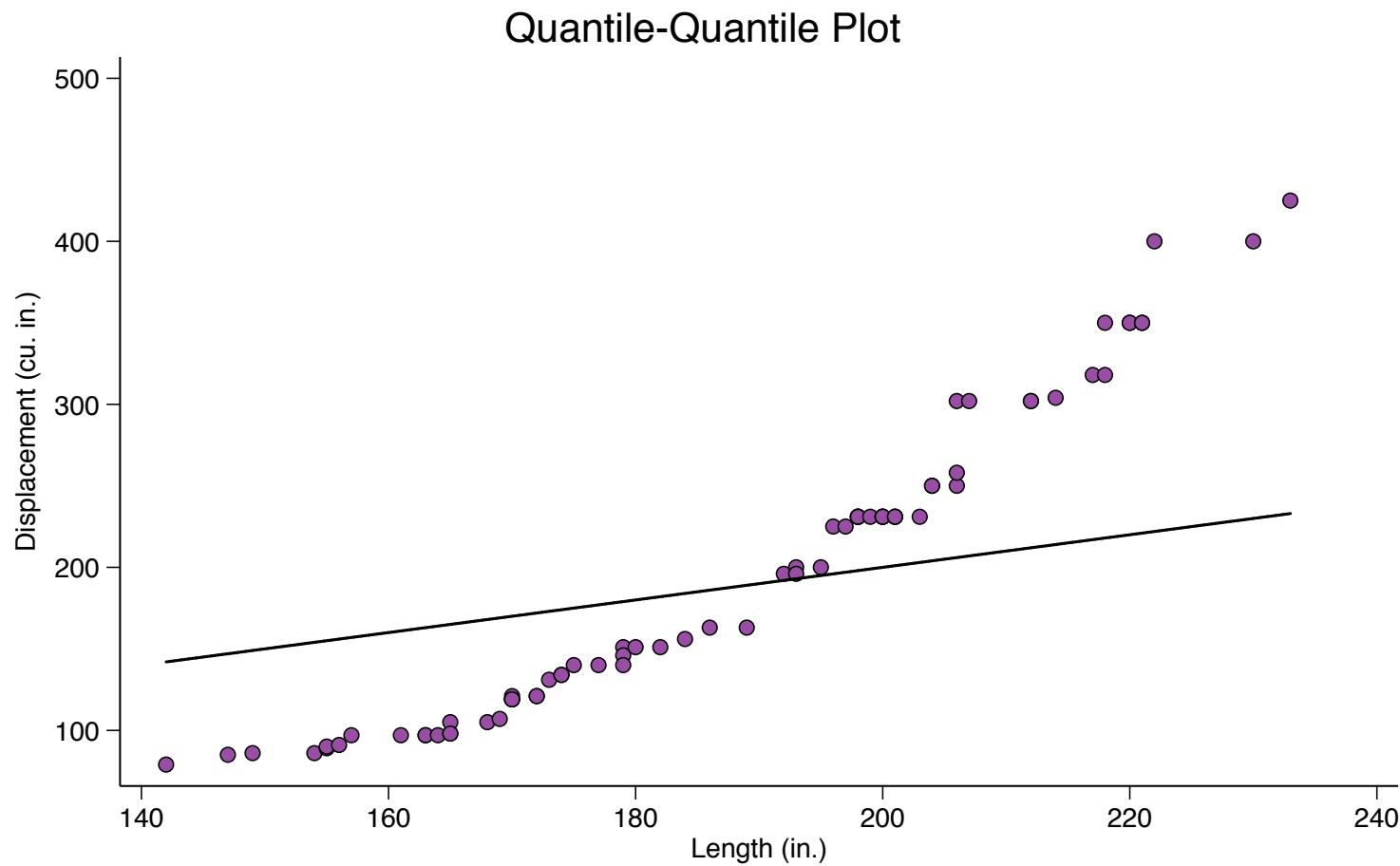
Created on: 29 Oct 2015 at: 15:38:50

Figure 1.166: Quantiles of Gear Ratio vs Quantiles of Length (in.)



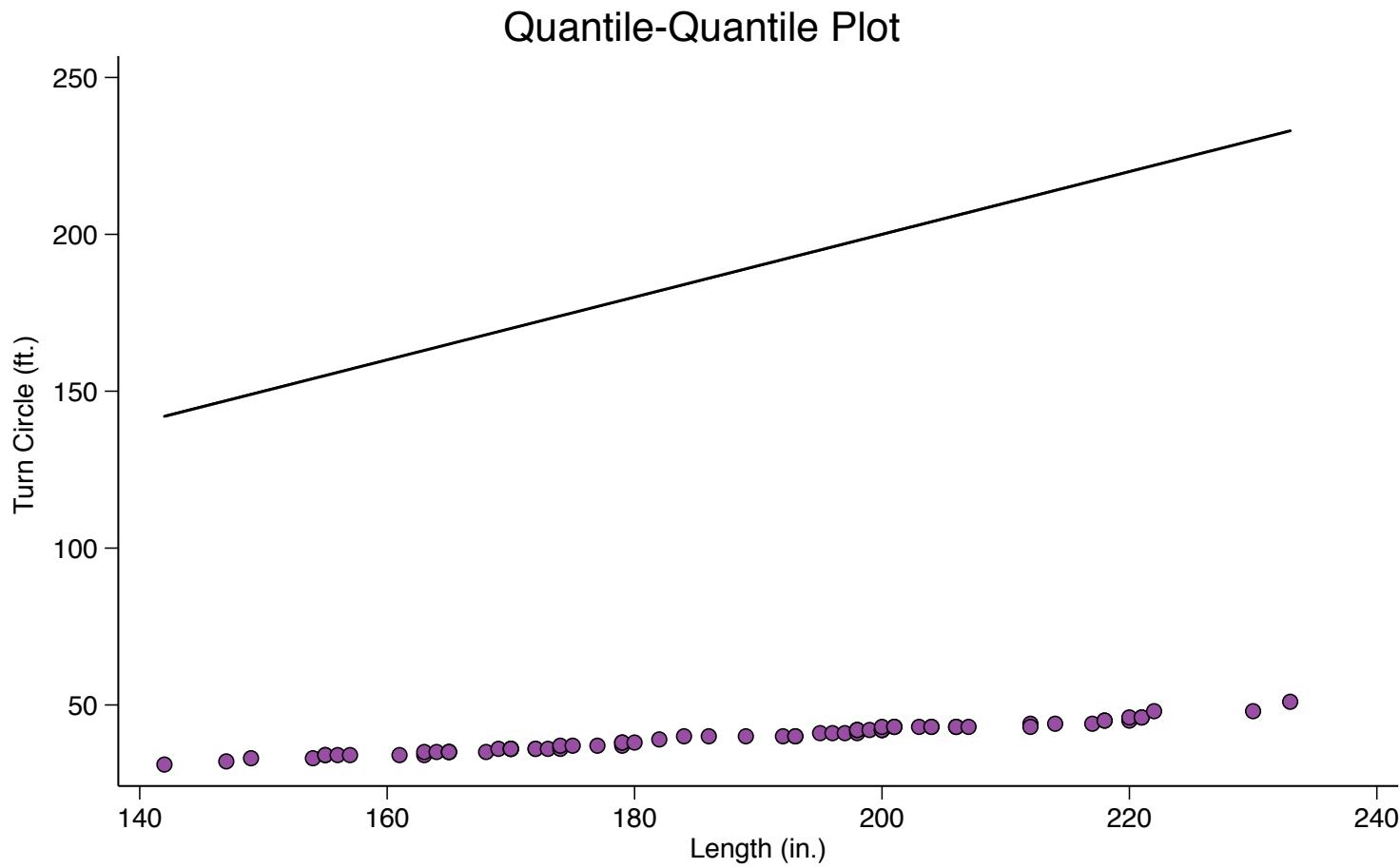
Created on: 29 Oct 2015 at: 15:38:51

Figure 1.167: Quantiles of Displacement (cu. in.) vs Quantiles of Length (in.)



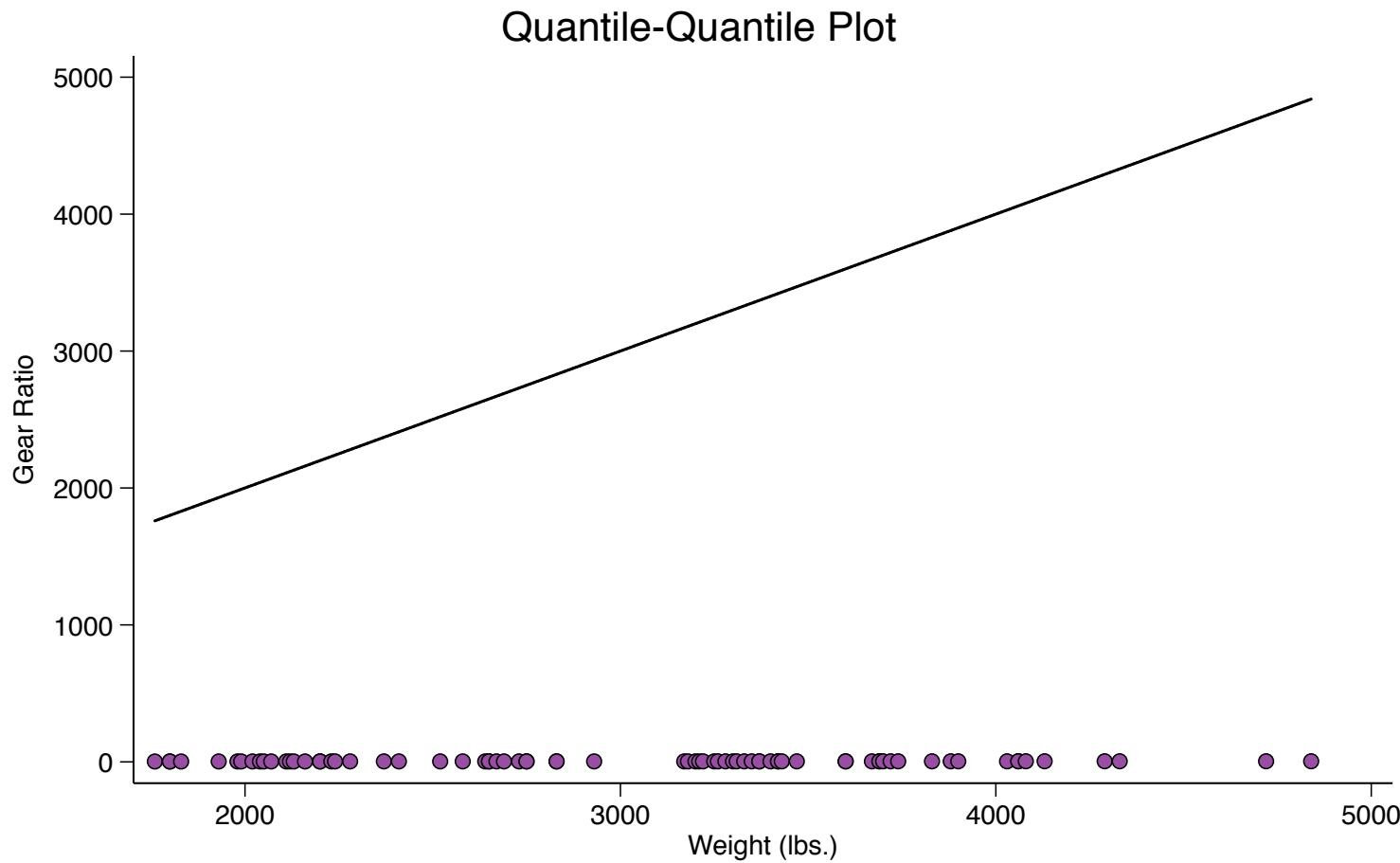
Created on: 29 Oct 2015 at: 15:38:53

Figure 1.168: Quantiles of Turn Circle (ft.) vs Quantiles of Length (in.)



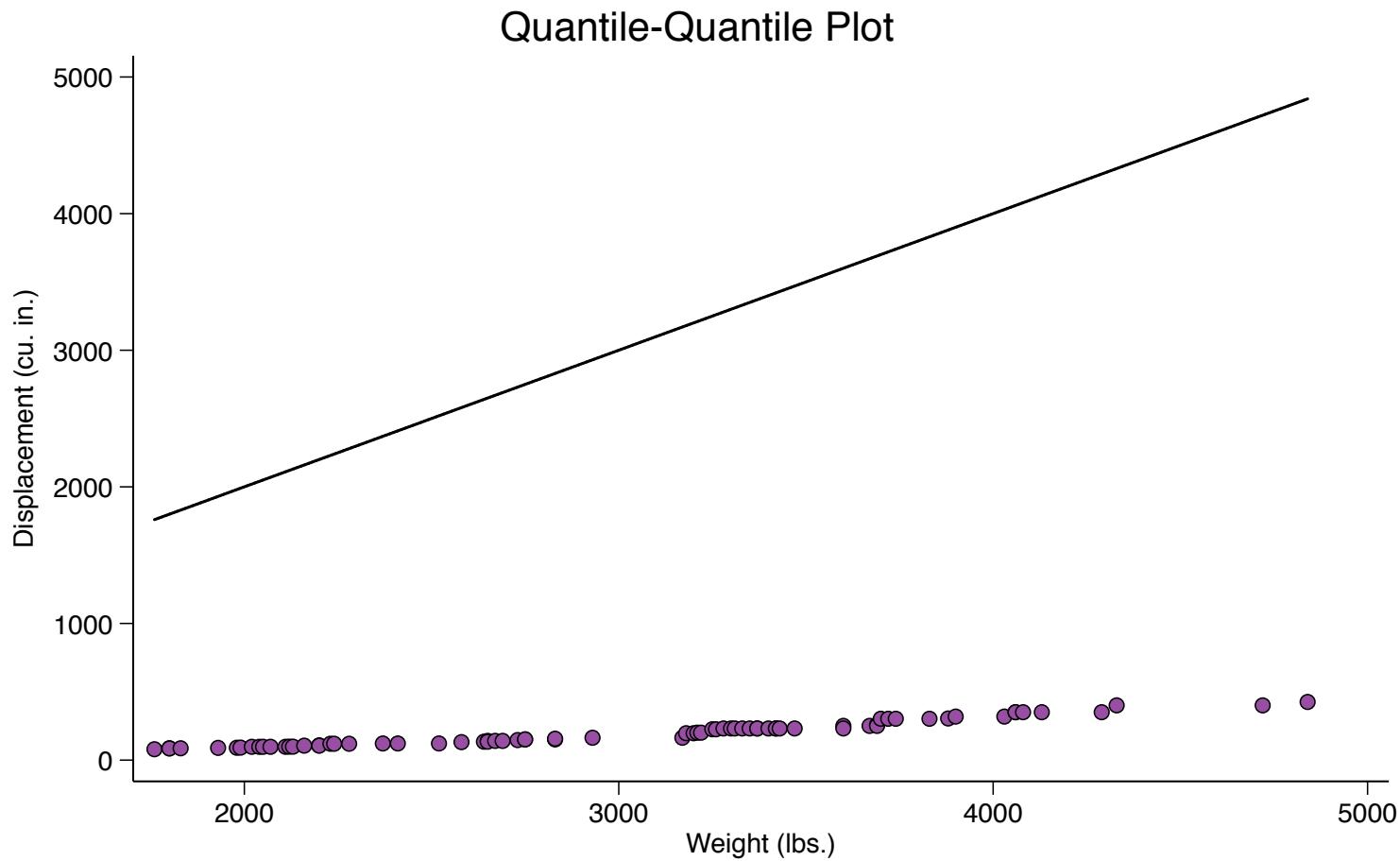
Created on: 29 Oct 2015 at: 15:38:55

Figure 1.169: Quantiles of Gear Ratio vs Quantiles of Weight (lbs.)



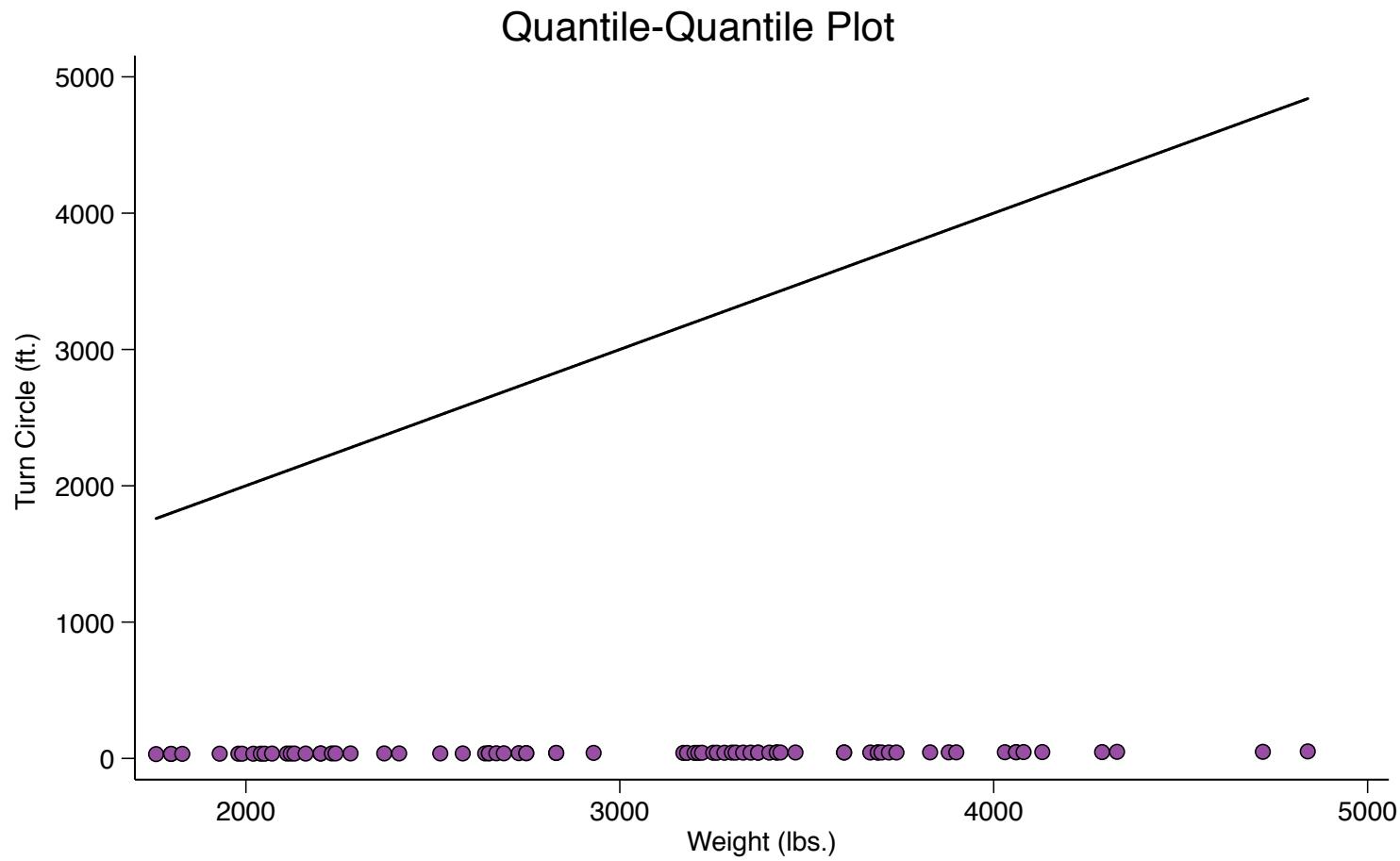
Created on: 29 Oct 2015 at: 15:38:56

Figure 1.170: Quantiles of Displacement (cu. in.) vs Quantiles of Weight (lbs.)



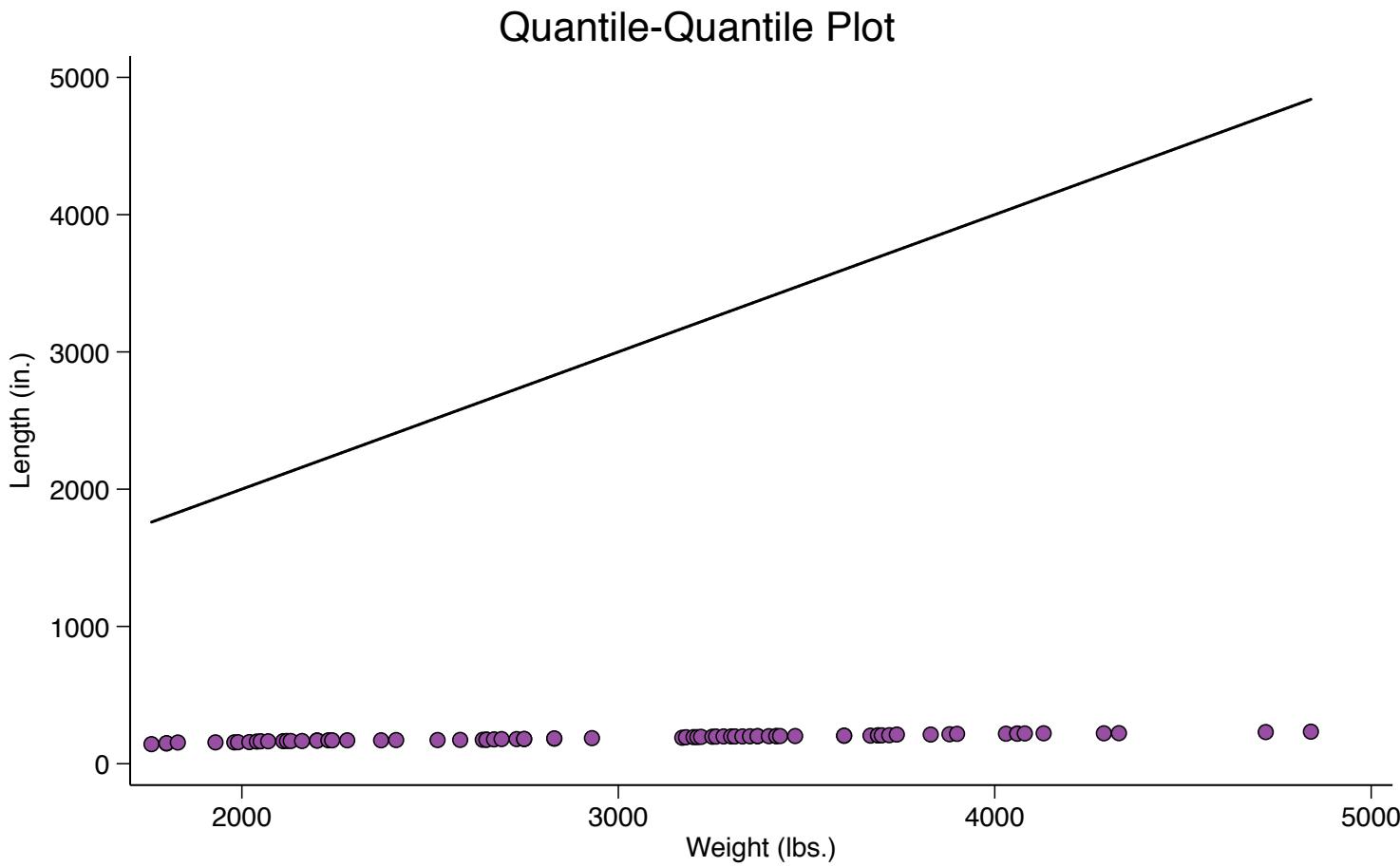
Created on: 29 Oct 2015 at: 15:38:58

Figure 1.171: Quantiles of Turn Circle (ft.) vs Quantiles of Weight (lbs.)



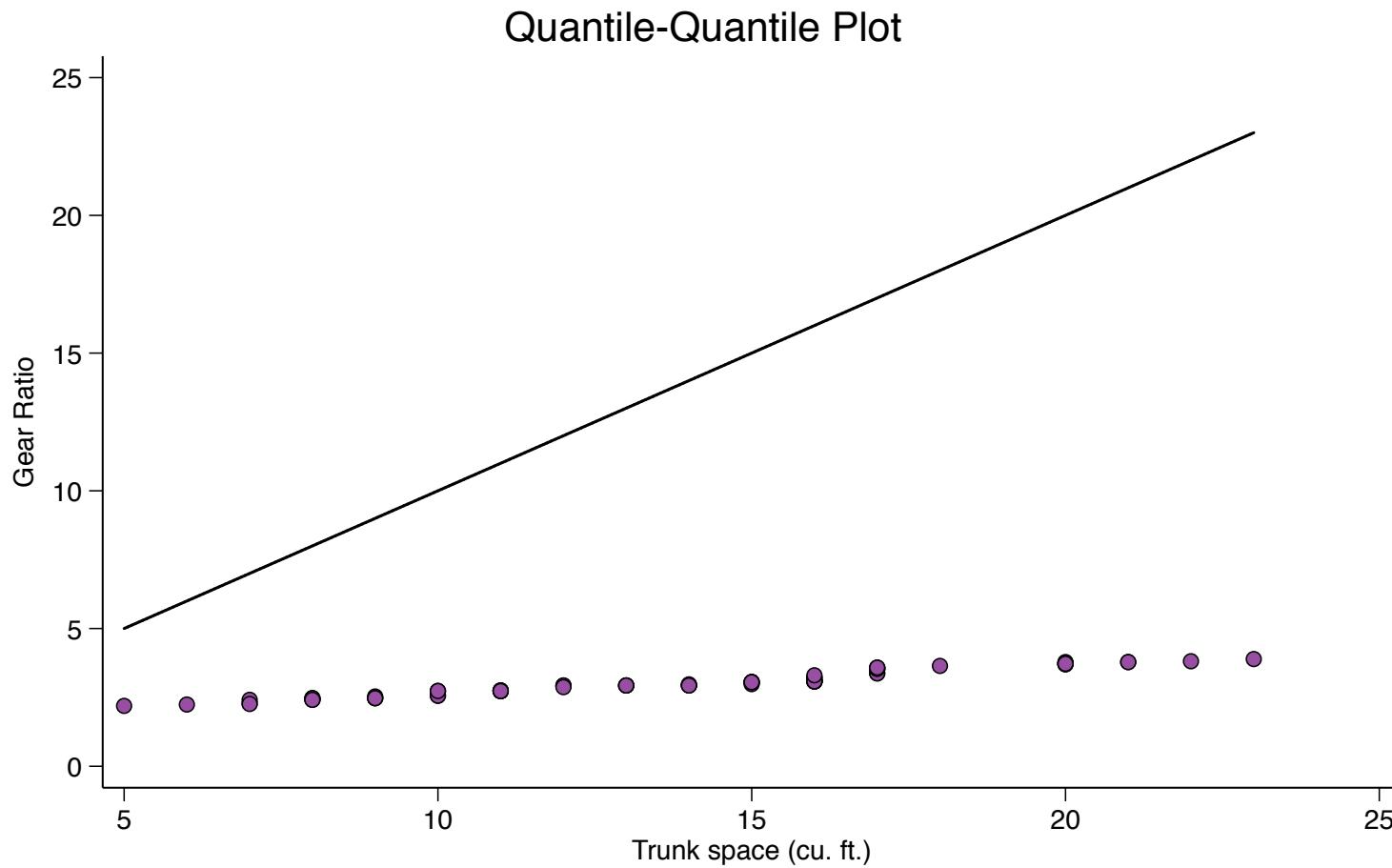
Created on: 29 Oct 2015 at: 15:38:59

Figure 1.172: Quantiles of Length (in.) vs Quantiles of Weight (lbs.)



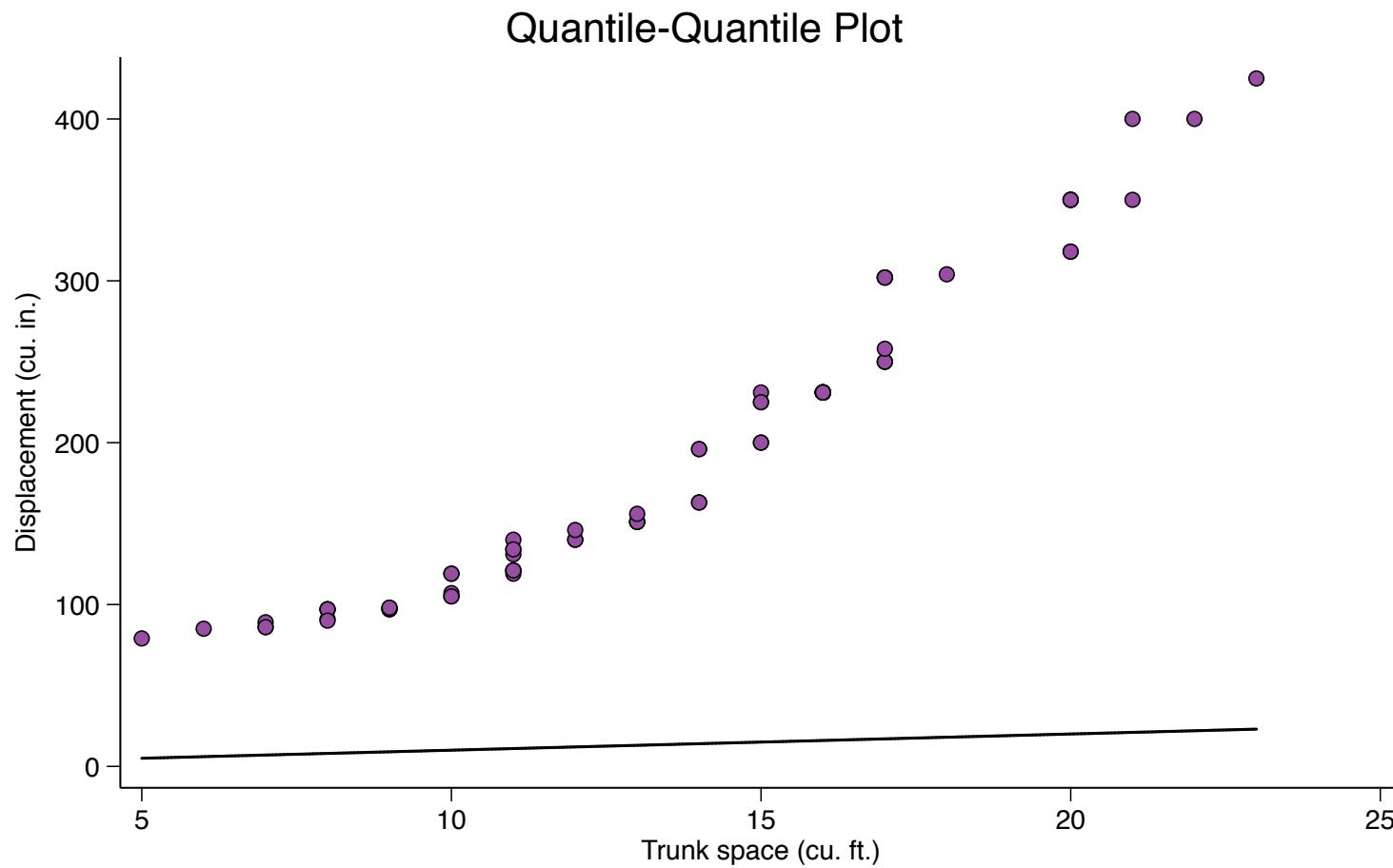
Created on: 29 Oct 2015 at: 15:39:01

Figure 1.173: Quantiles of Gear Ratio vs Quantiles of Trunk space (cu. ft.)



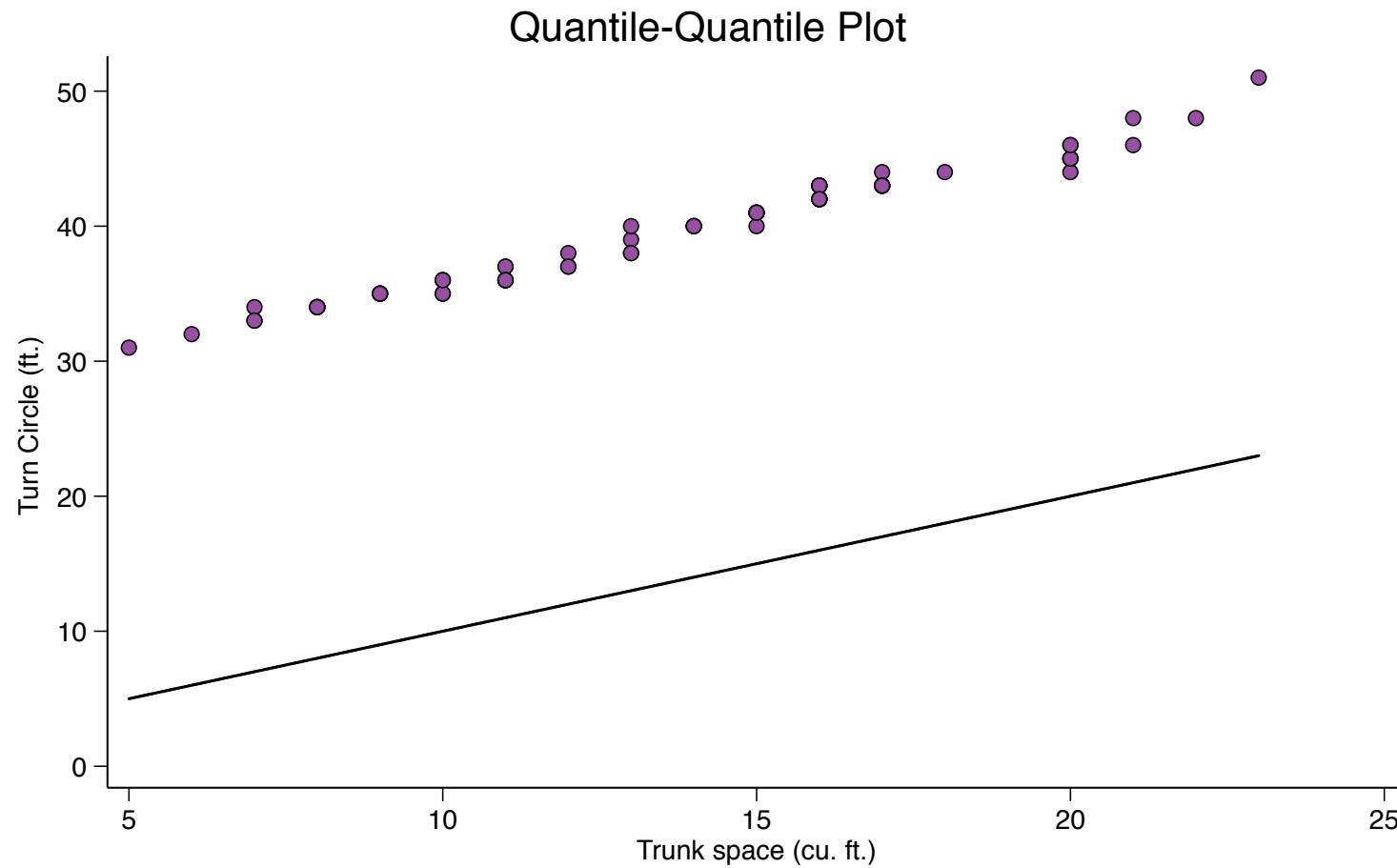
Created on: 29 Oct 2015 at: 15:39:03

Figure 1.174: Quantiles of Displacement (cu. in.) vs Quantiles of Trunk space (cu. ft.)



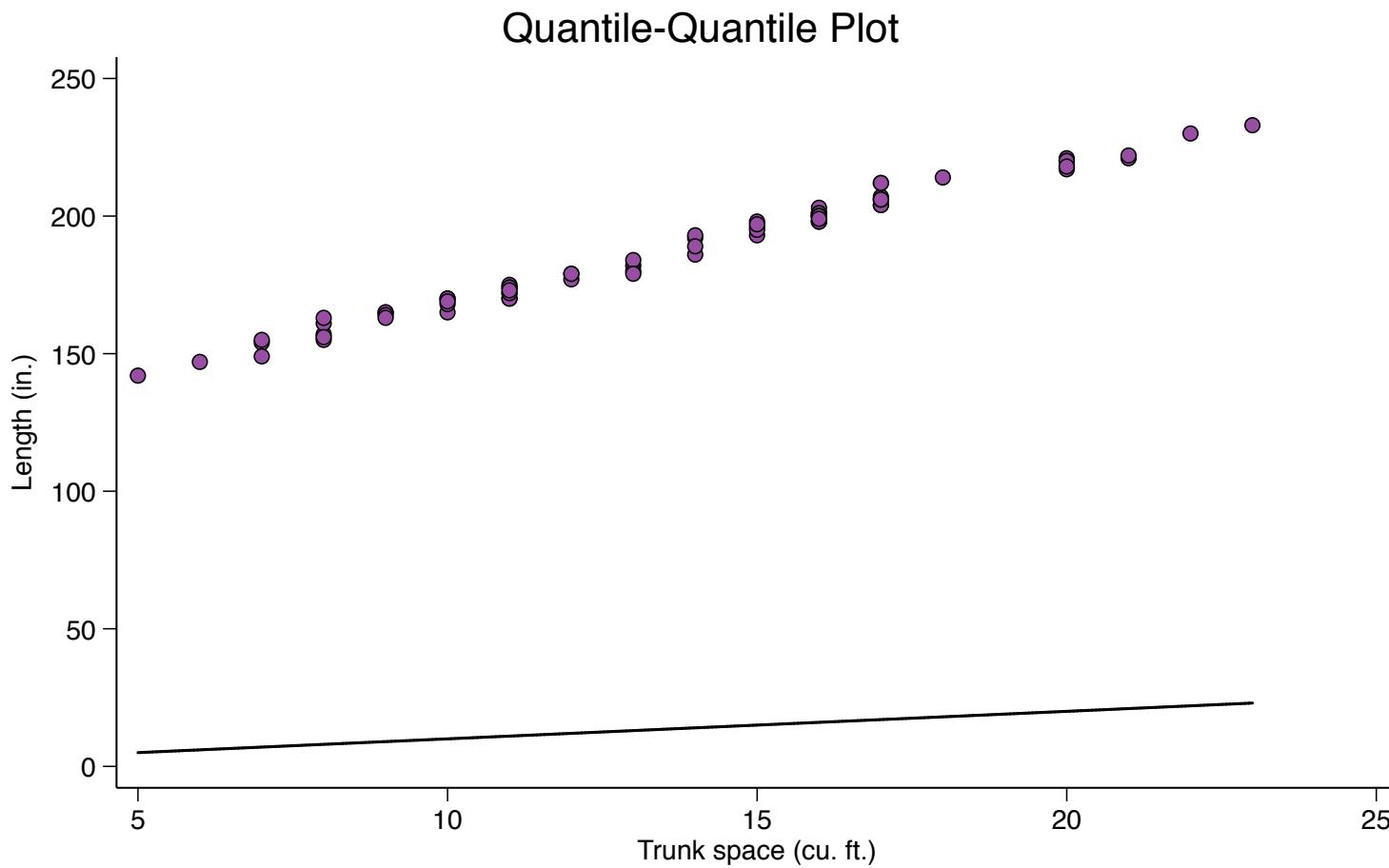
Created on: 29 Oct 2015 at: 15:39:04

Figure 1.175: Quantiles of Turn Circle (ft.) vs Quantiles of Trunk space (cu. ft.)



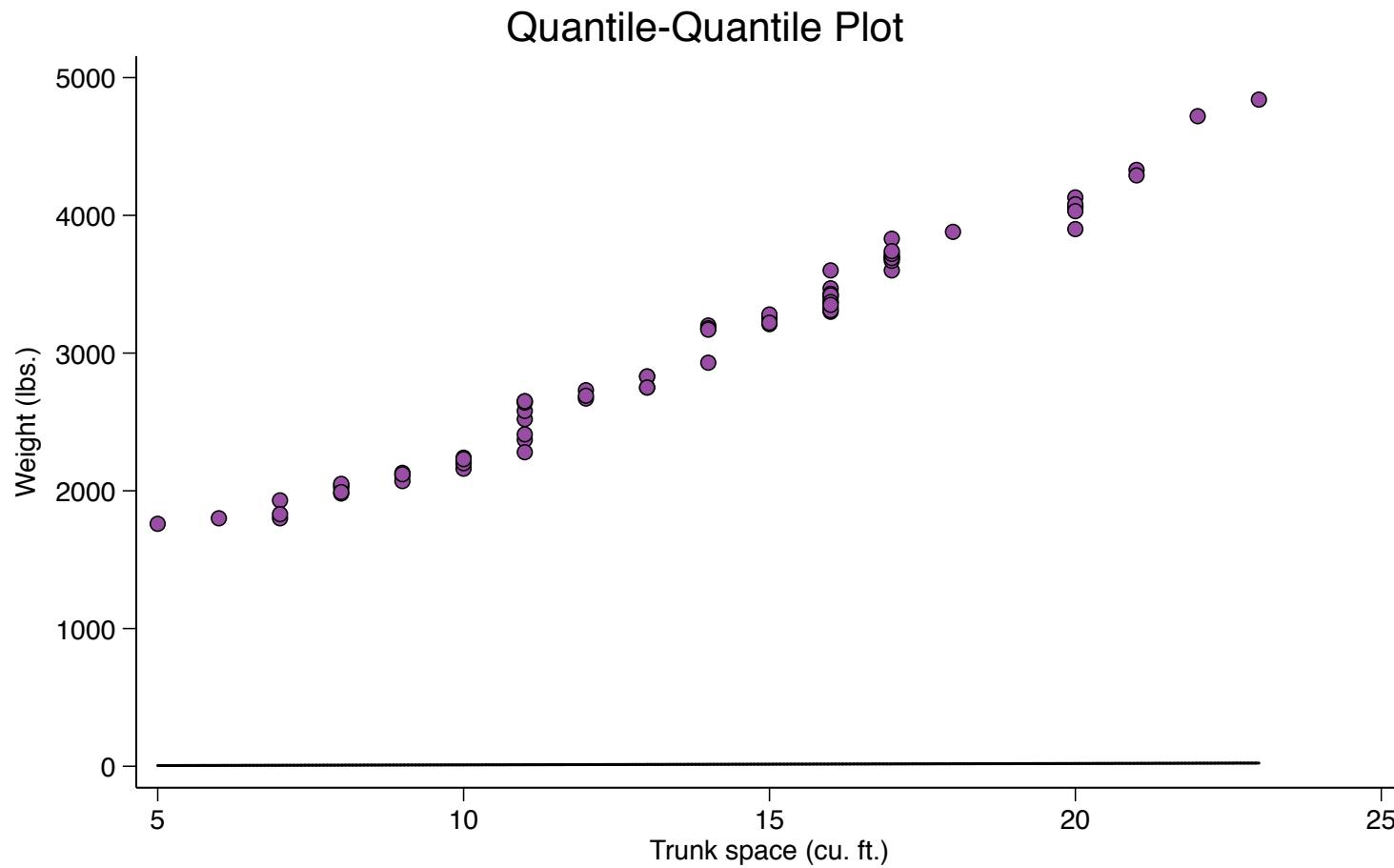
Created on: 29 Oct 2015 at: 15:39:06

Figure 1.176: Quantiles of Length (in.) vs Quantiles of Trunk space (cu. ft.)



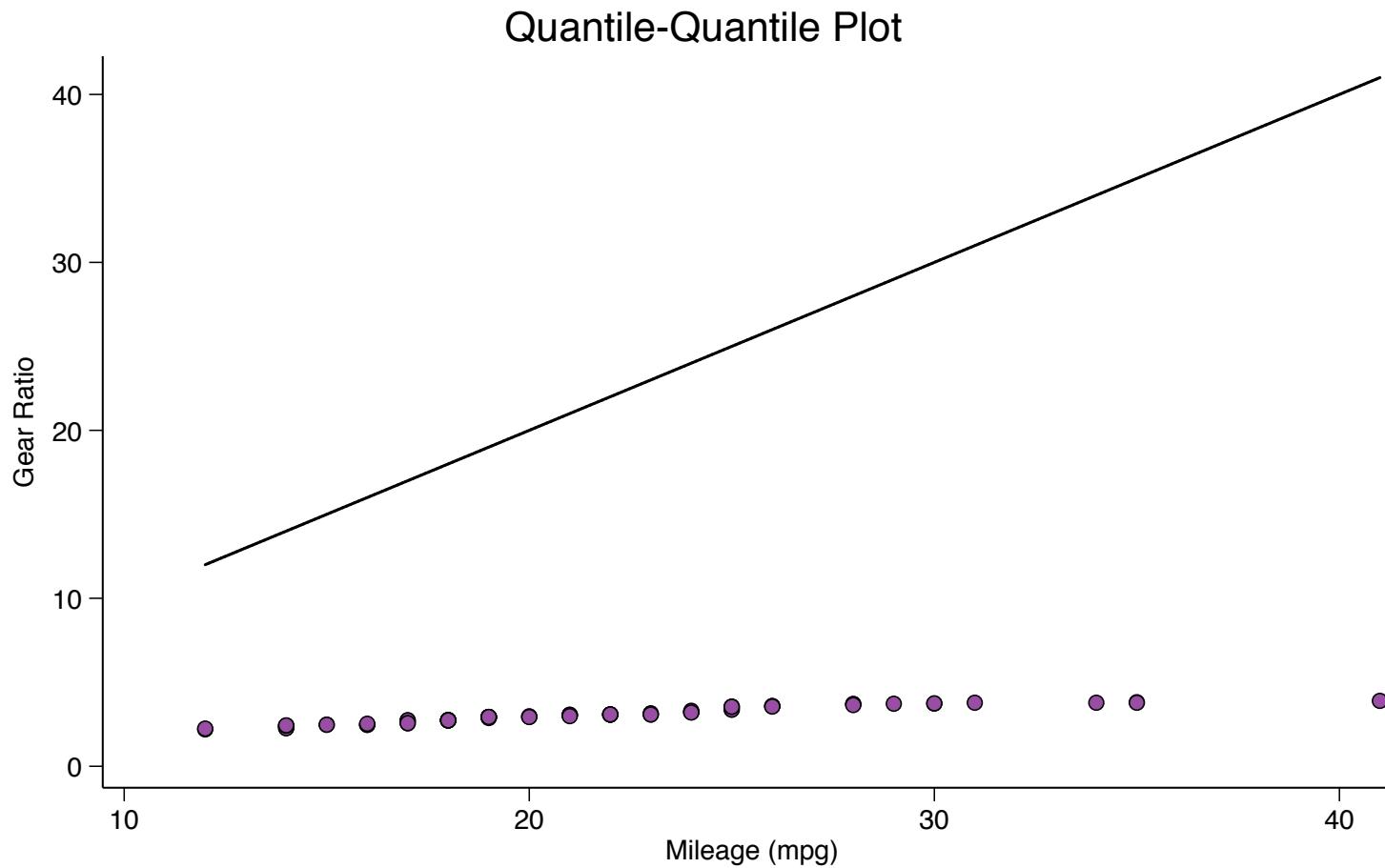
Created on: 29 Oct 2015 at: 15:39:08

Figure 1.177: Quantiles of Weight (lbs.) vs Quantiles of Trunk space (cu. ft.)



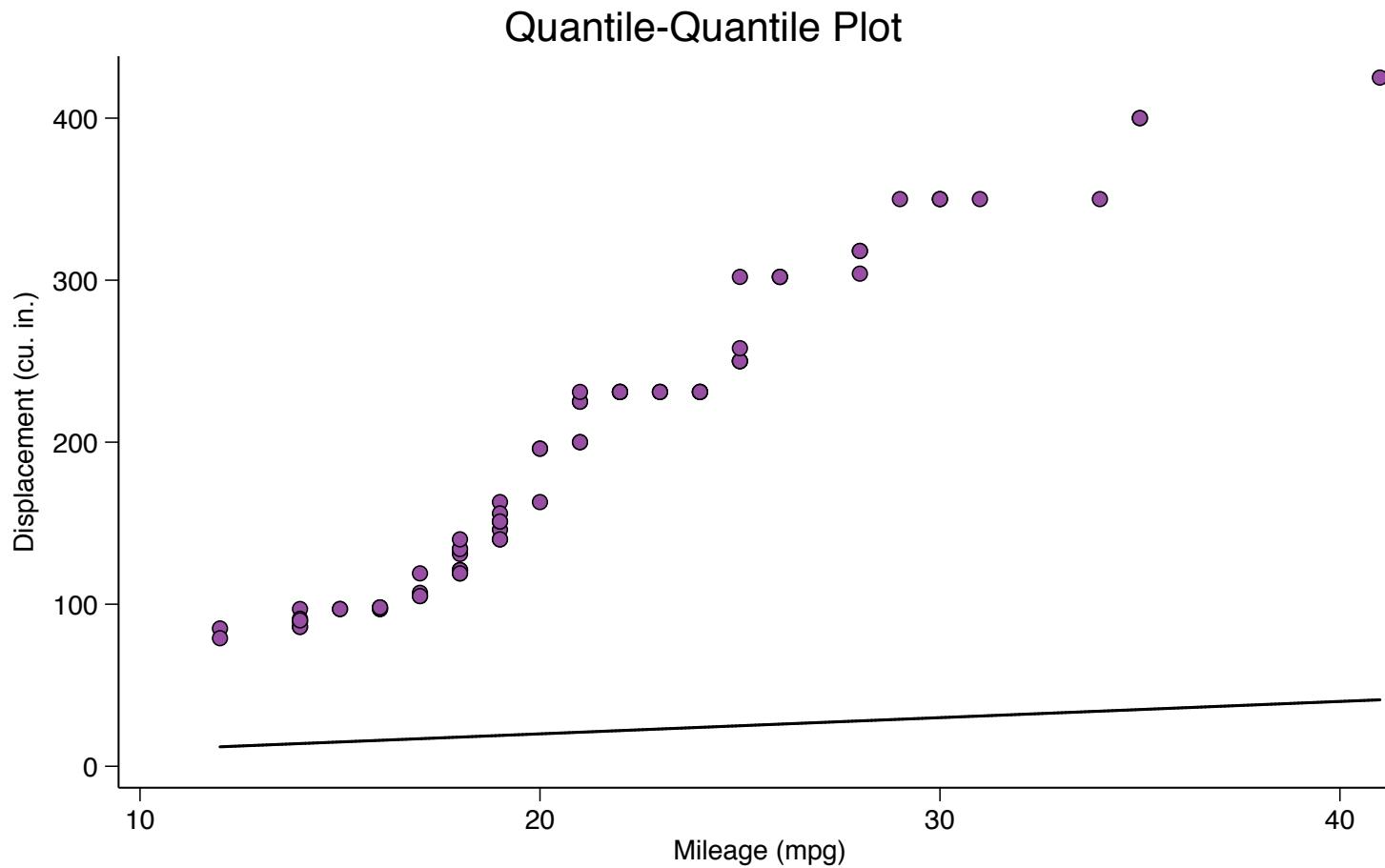
Created on: 29 Oct 2015 at: 15:39:09

Figure 1.178: Quantiles of Gear Ratio vs Quantiles of Mileage (mpg)



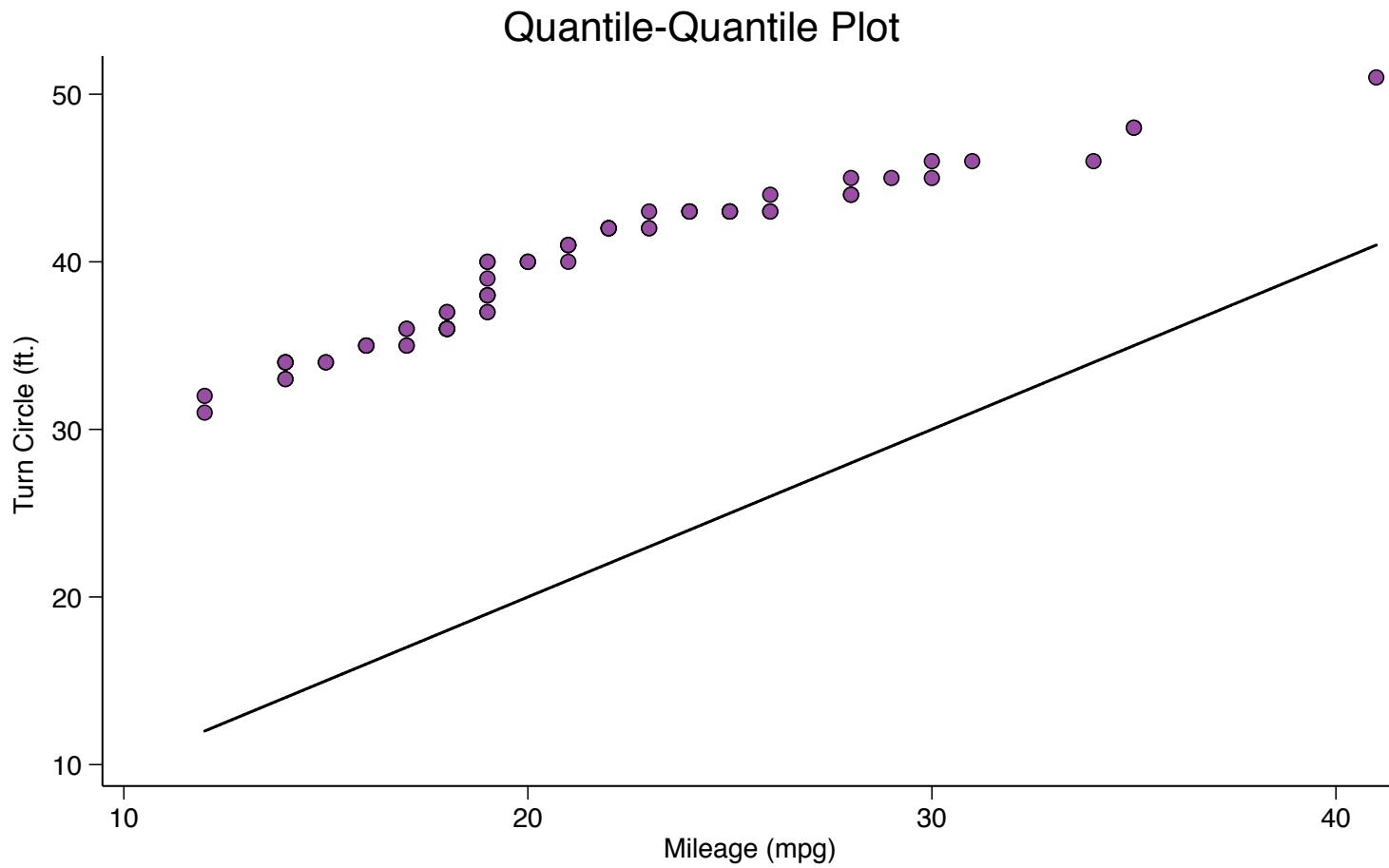
Created on: 29 Oct 2015 at: 15:39:11

Figure 1.179: Quantiles of Displacement (cu. in.) vs Quantiles of Mileage (mpg)



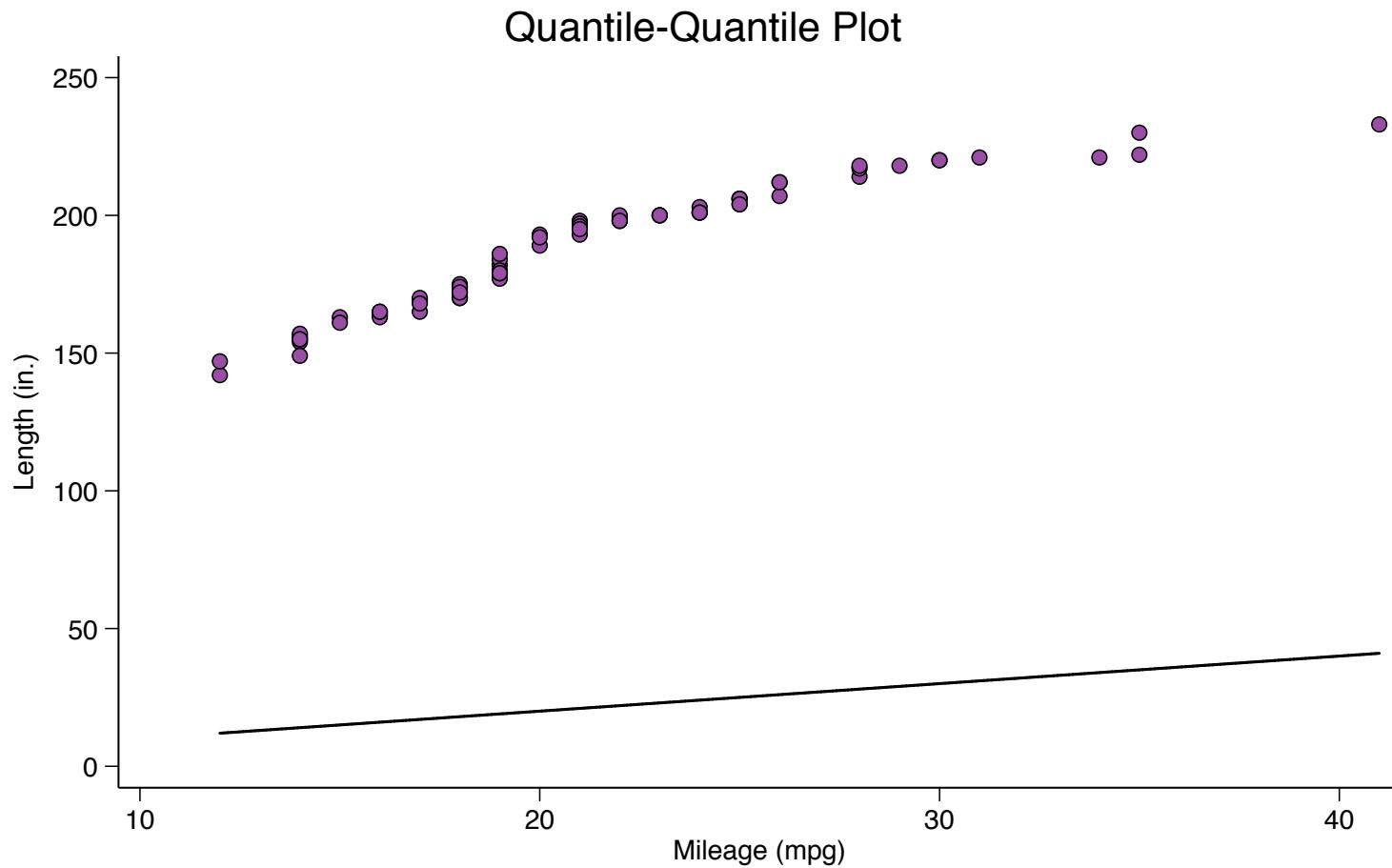
Created on: 29 Oct 2015 at: 15:39:13

Figure 1.180: Quantiles of Turn Circle (ft.) vs Quantiles of Mileage (mpg)



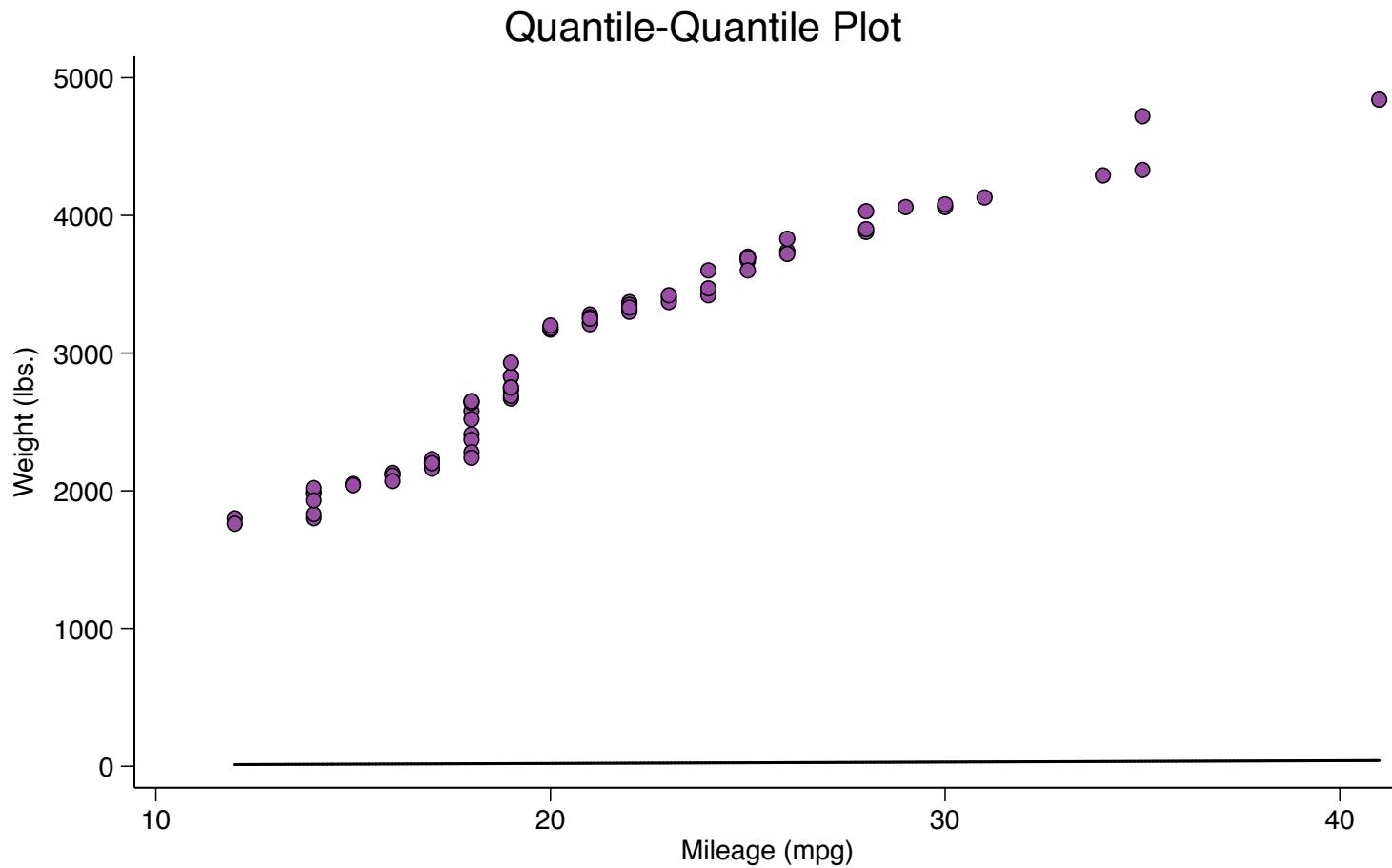
Created on: 29 Oct 2015 at: 15:39:14

Figure 1.181: Quantiles of Length (in.) vs Quantiles of Mileage (mpg)



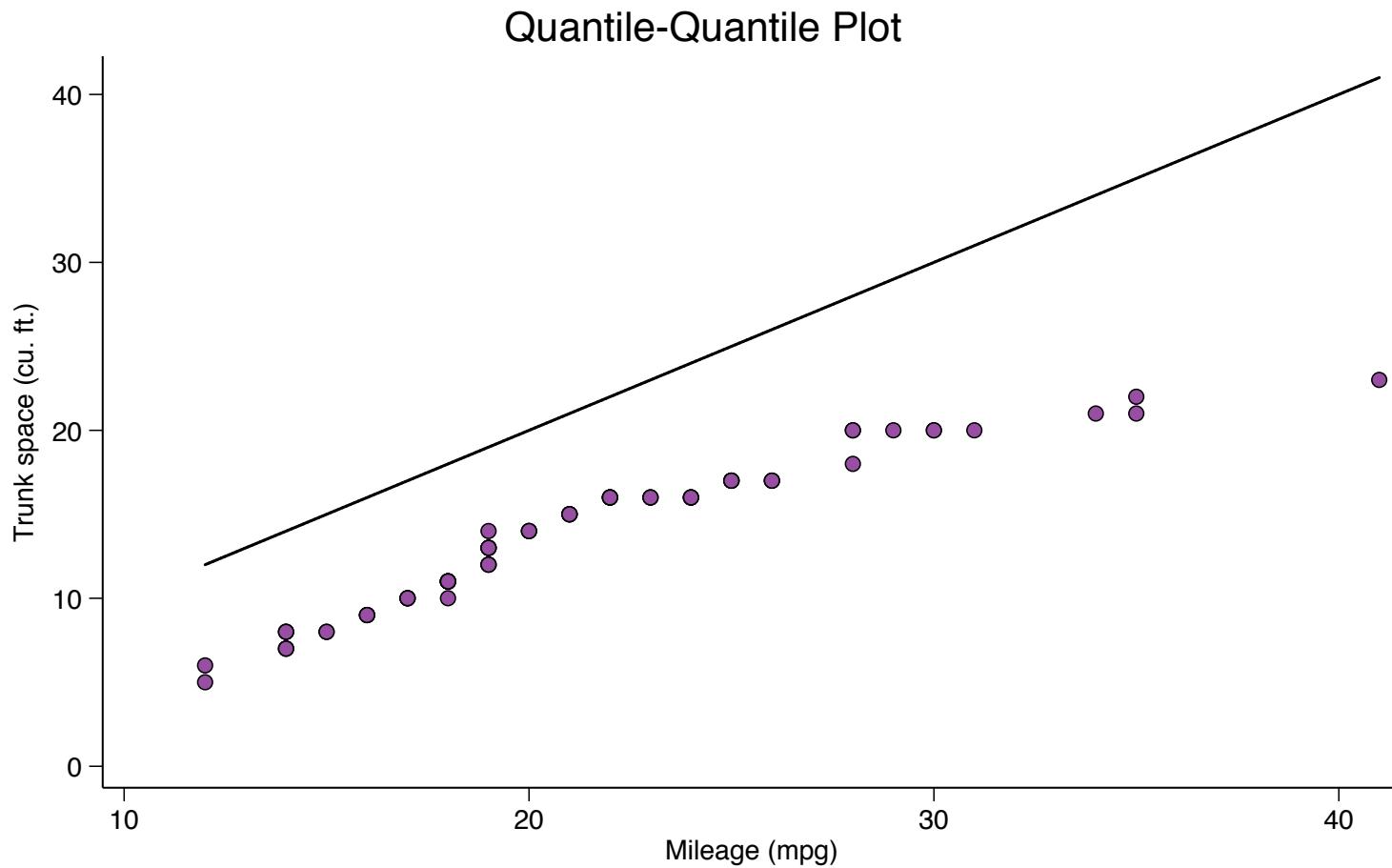
Created on: 29 Oct 2015 at: 15:39:16

Figure 1.182: Quantiles of Weight (lbs.) vs Quantiles of Mileage (mpg)



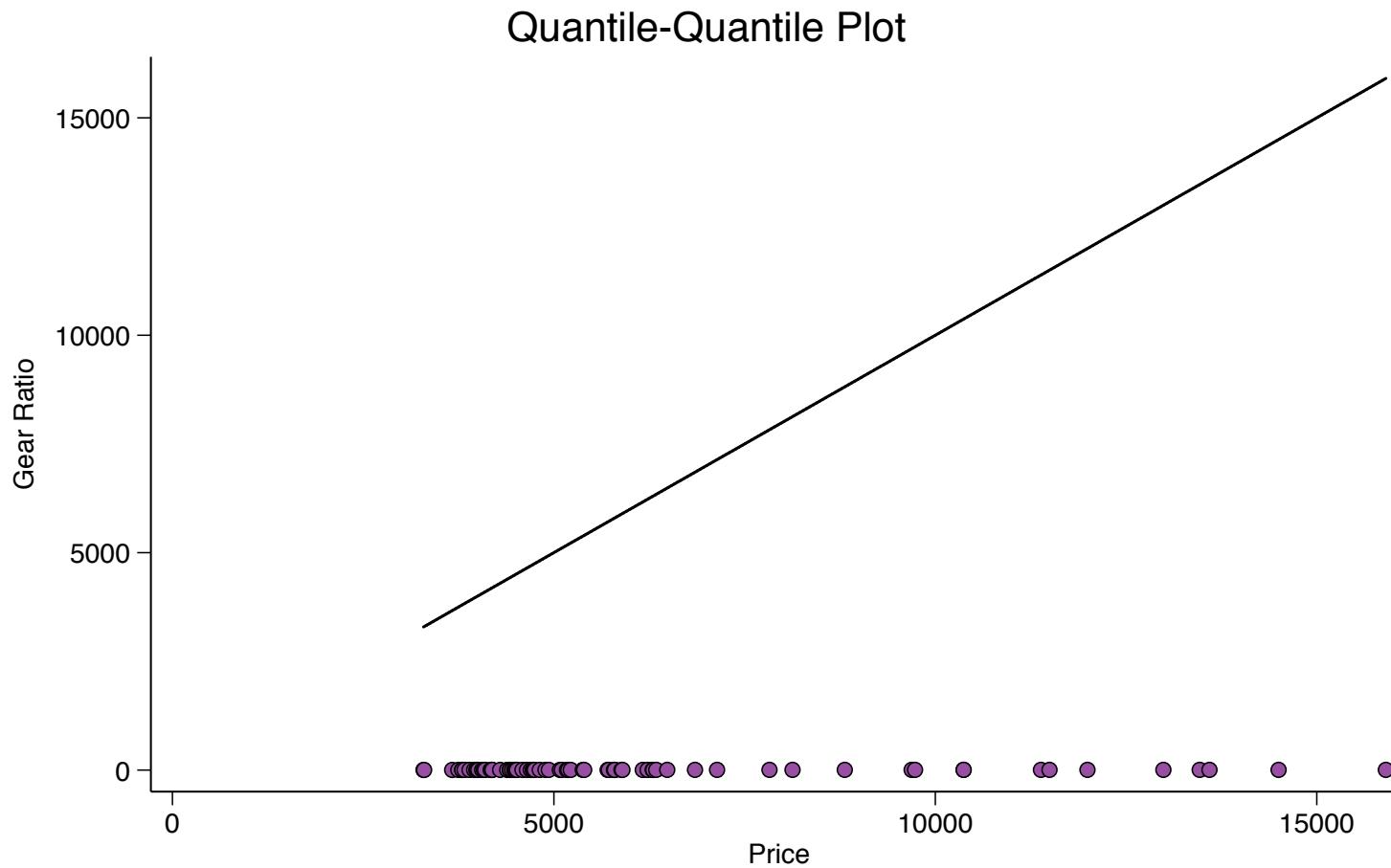
Created on: 29 Oct 2015 at: 15:39:18

Figure 1.183: Quantiles of Trunk space (cu. ft.) vs Quantiles of Mileage (mpg)



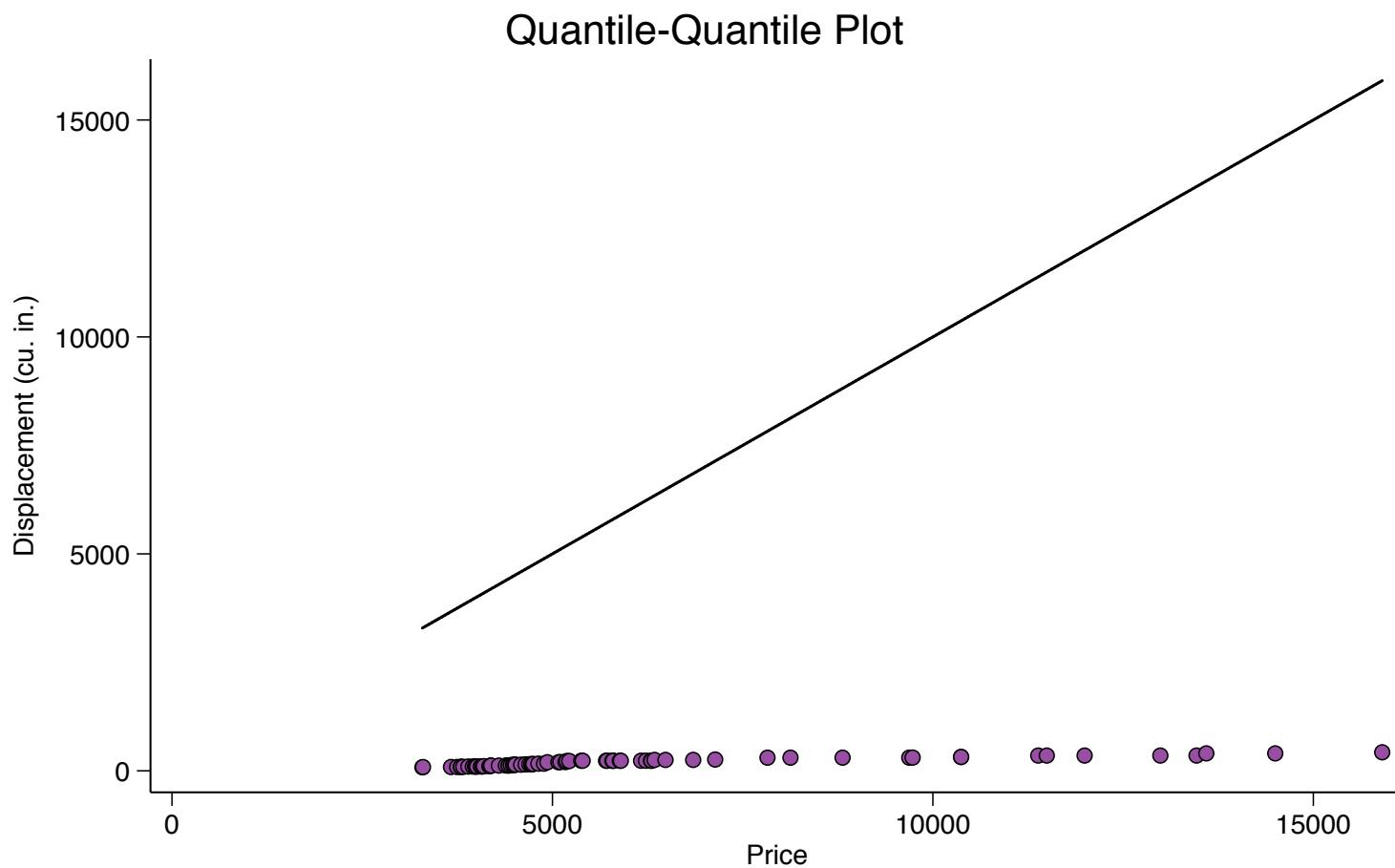
Created on: 29 Oct 2015 at: 15:39:19

Figure 1.184: Quantiles of Gear Ratio vs Quantiles of Price



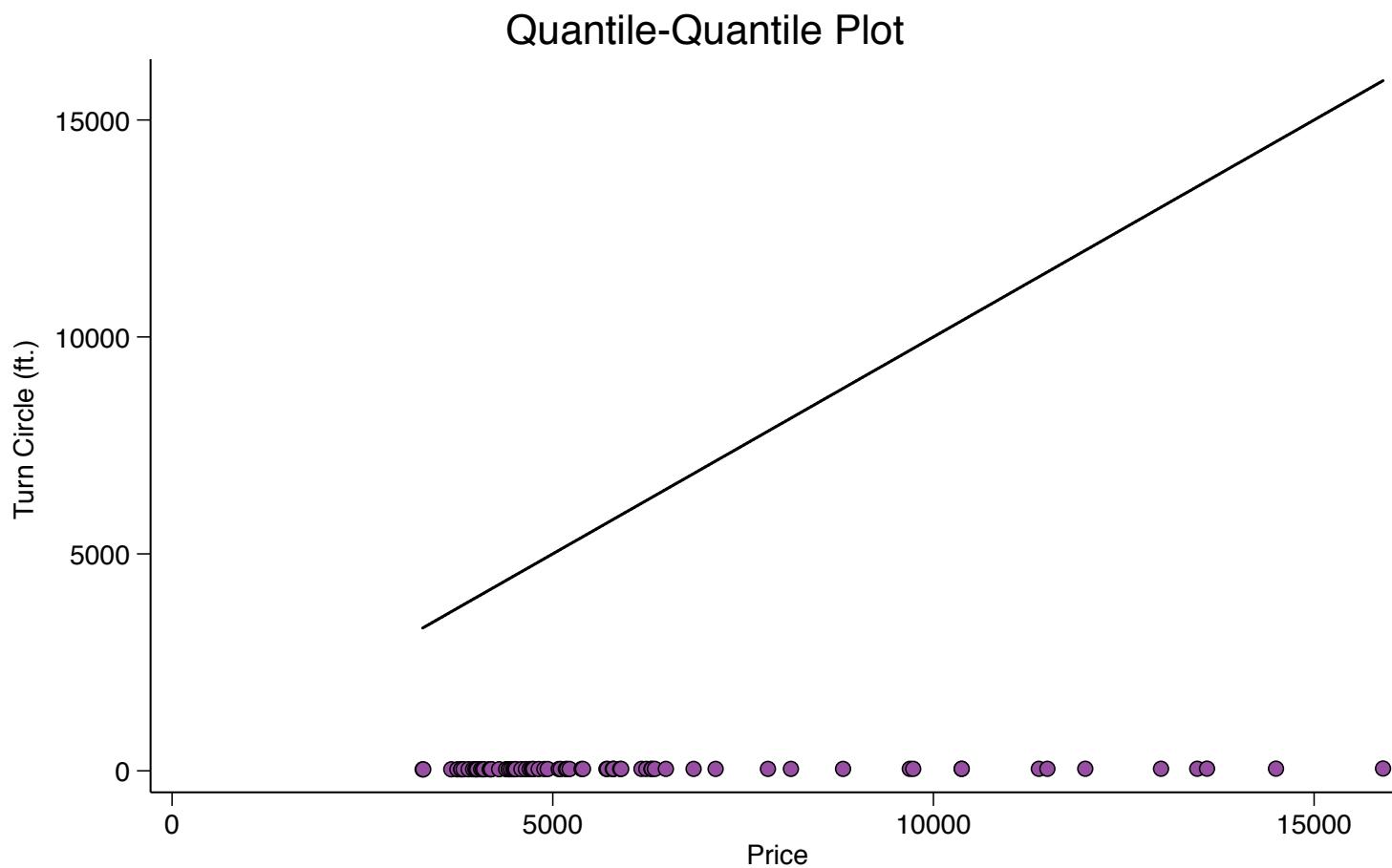
Created on: 29 Oct 2015 at: 15:39:21

Figure 1.185: Quantiles of Displacement (cu. in.) vs Quantiles of Price



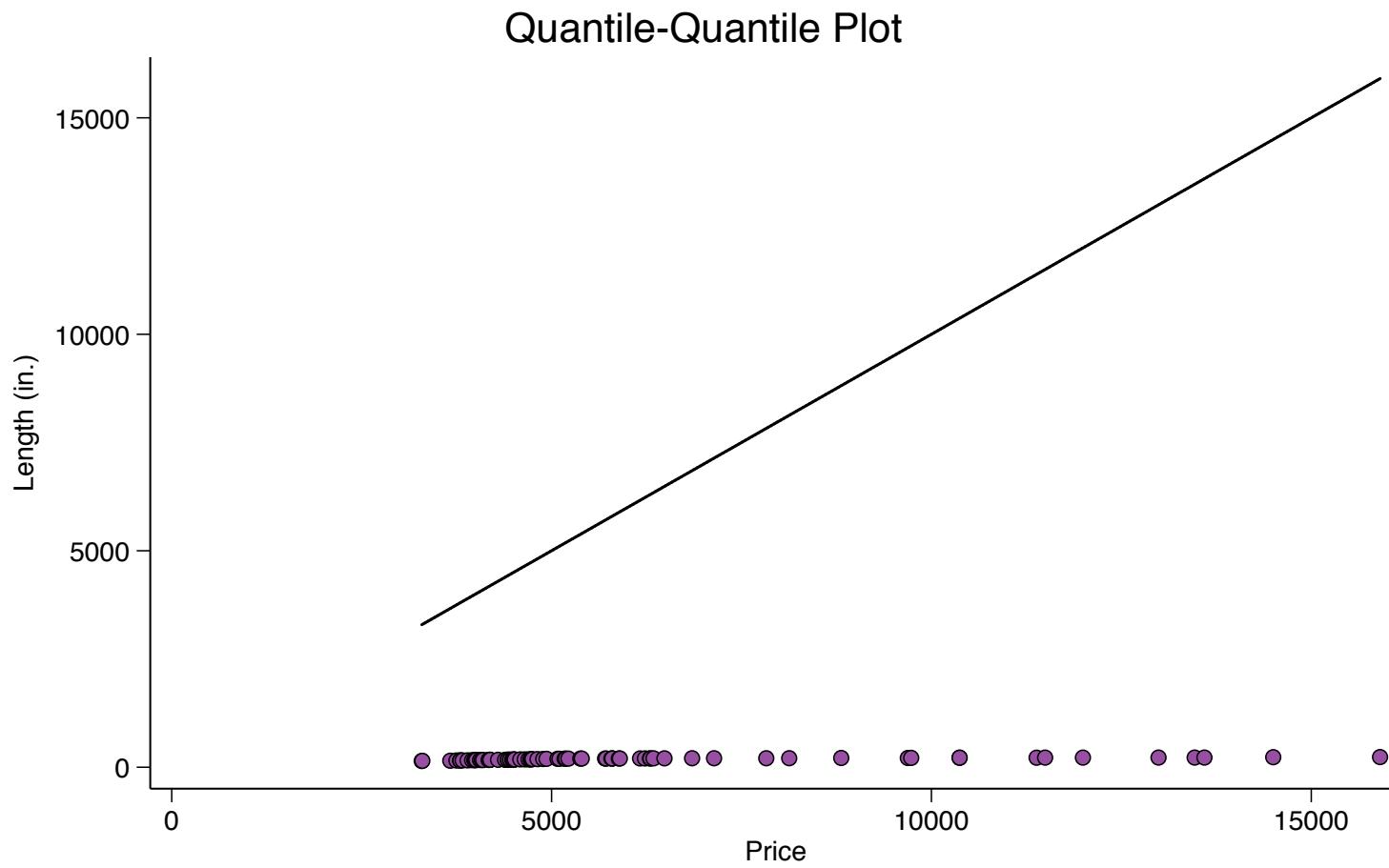
Created on: 29 Oct 2015 at: 15:39:23

Figure 1.186: Quantiles of Turn Circle (ft.) vs Quantiles of Price



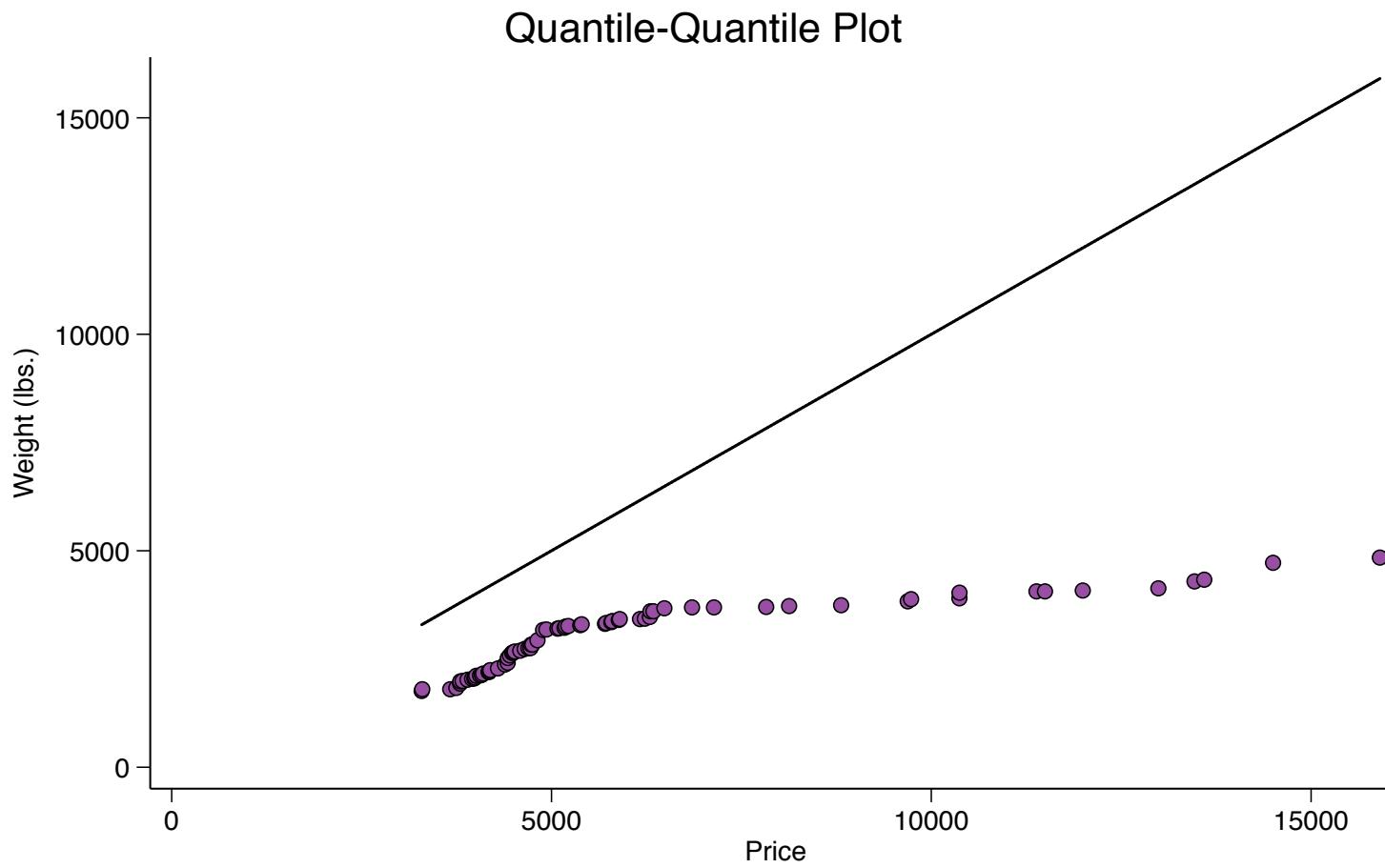
Created on: 29 Oct 2015 at: 15:39:24

Figure 1.187: Quantiles of Length (in.) vs Quantiles of Price



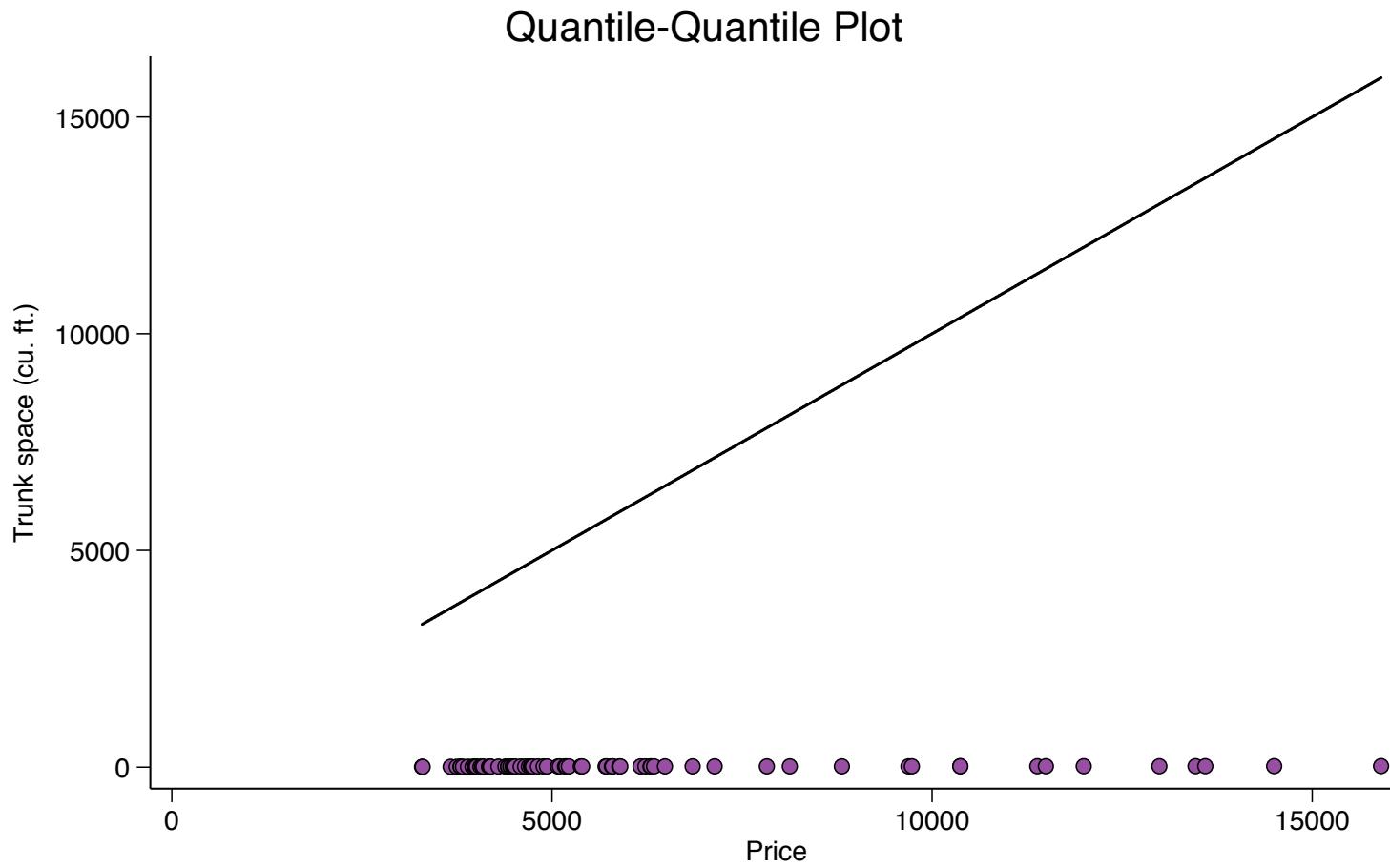
Created on: 29 Oct 2015 at: 15:39:26

Figure 1.188: Quantiles of Weight (lbs.) vs Quantiles of Price



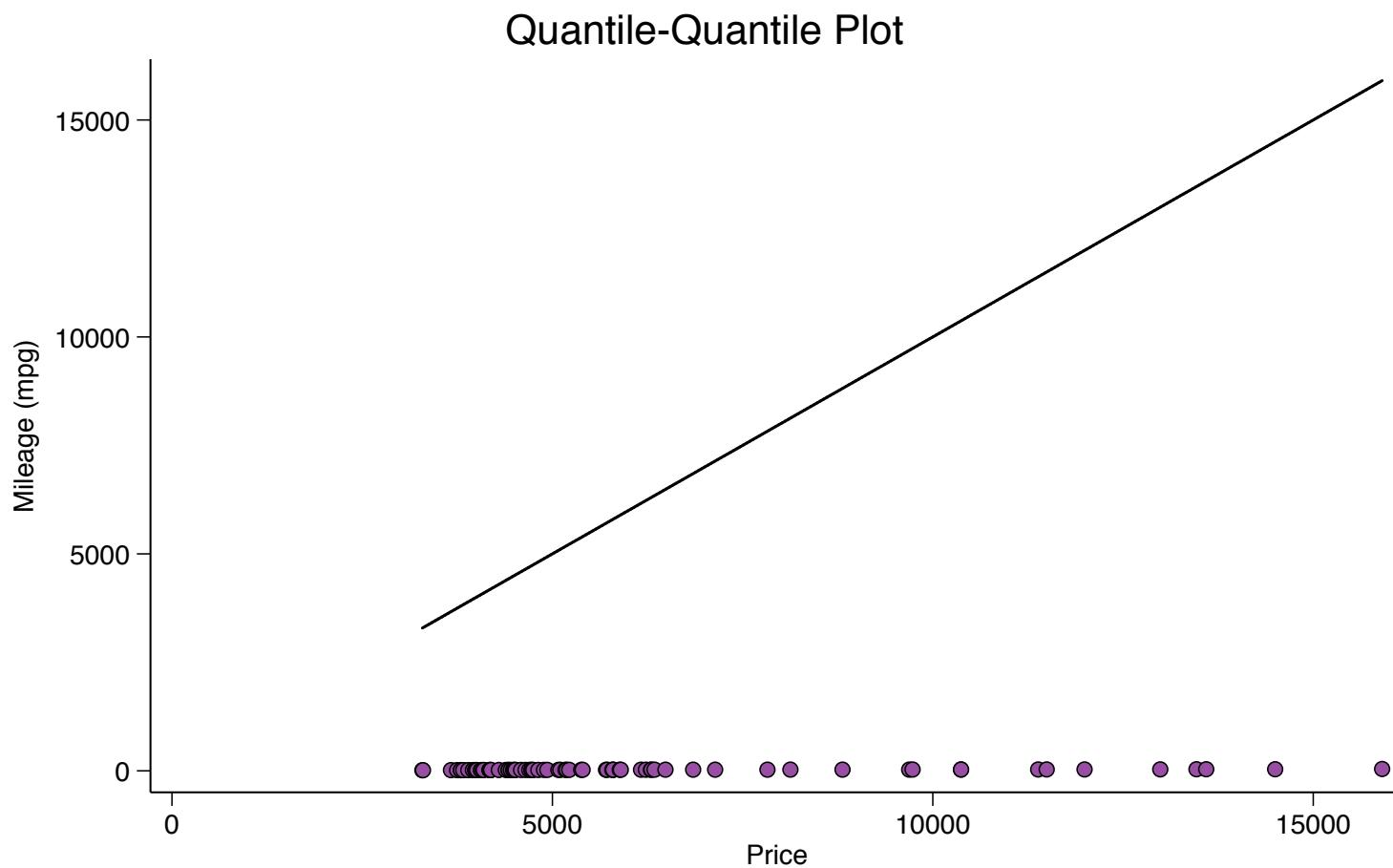
Created on: 29 Oct 2015 at: 15:39:28

Figure 1.189: Quantiles of Trunk space (cu. ft.) vs Quantiles of Price



Created on: 29 Oct 2015 at: 15:39:29

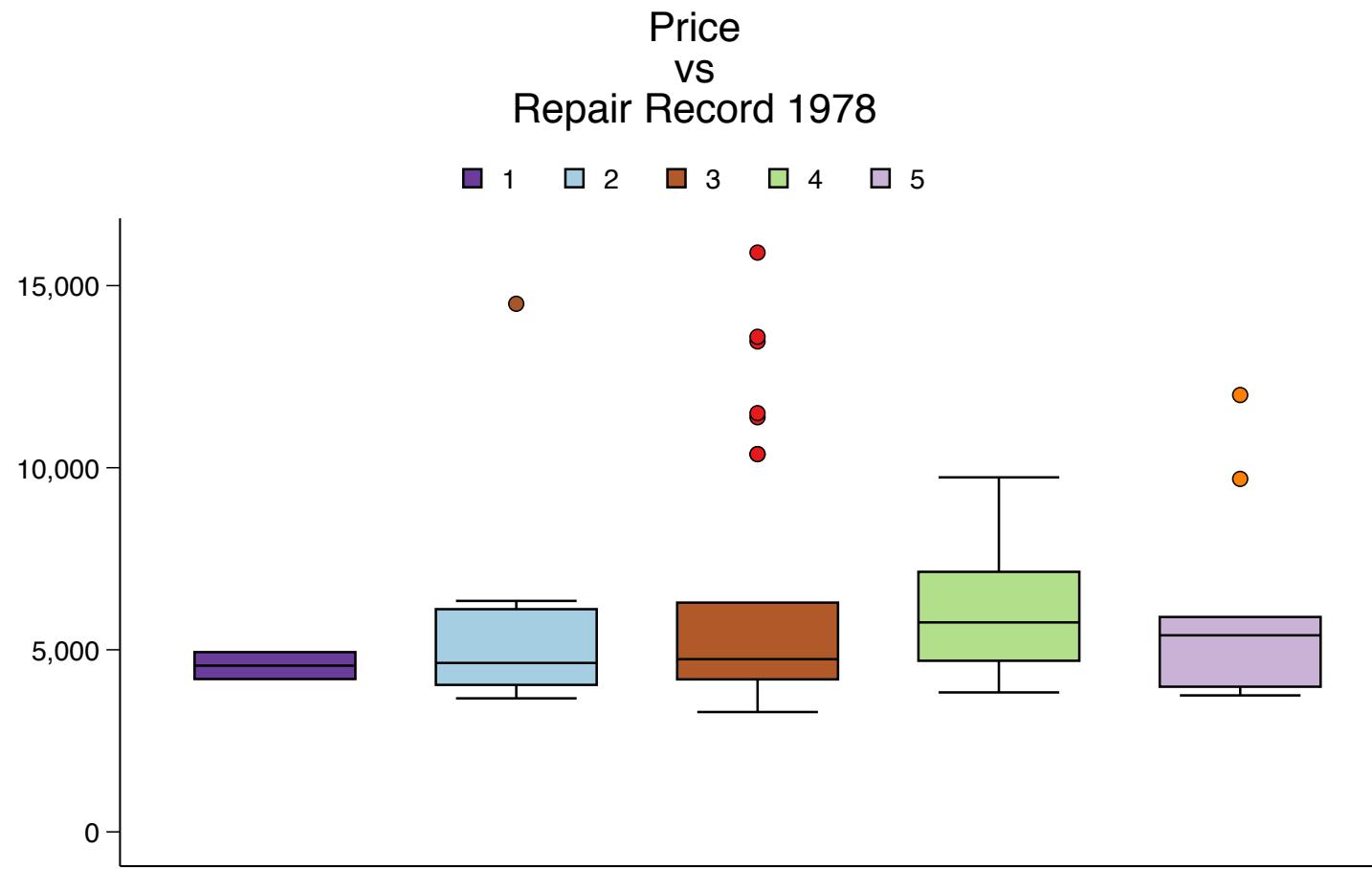
Figure 1.190: Quantiles of Mileage (mpg) vs Quantiles of Price



Created on: 29 Oct 2015 at: 15:39:31

Box Plots

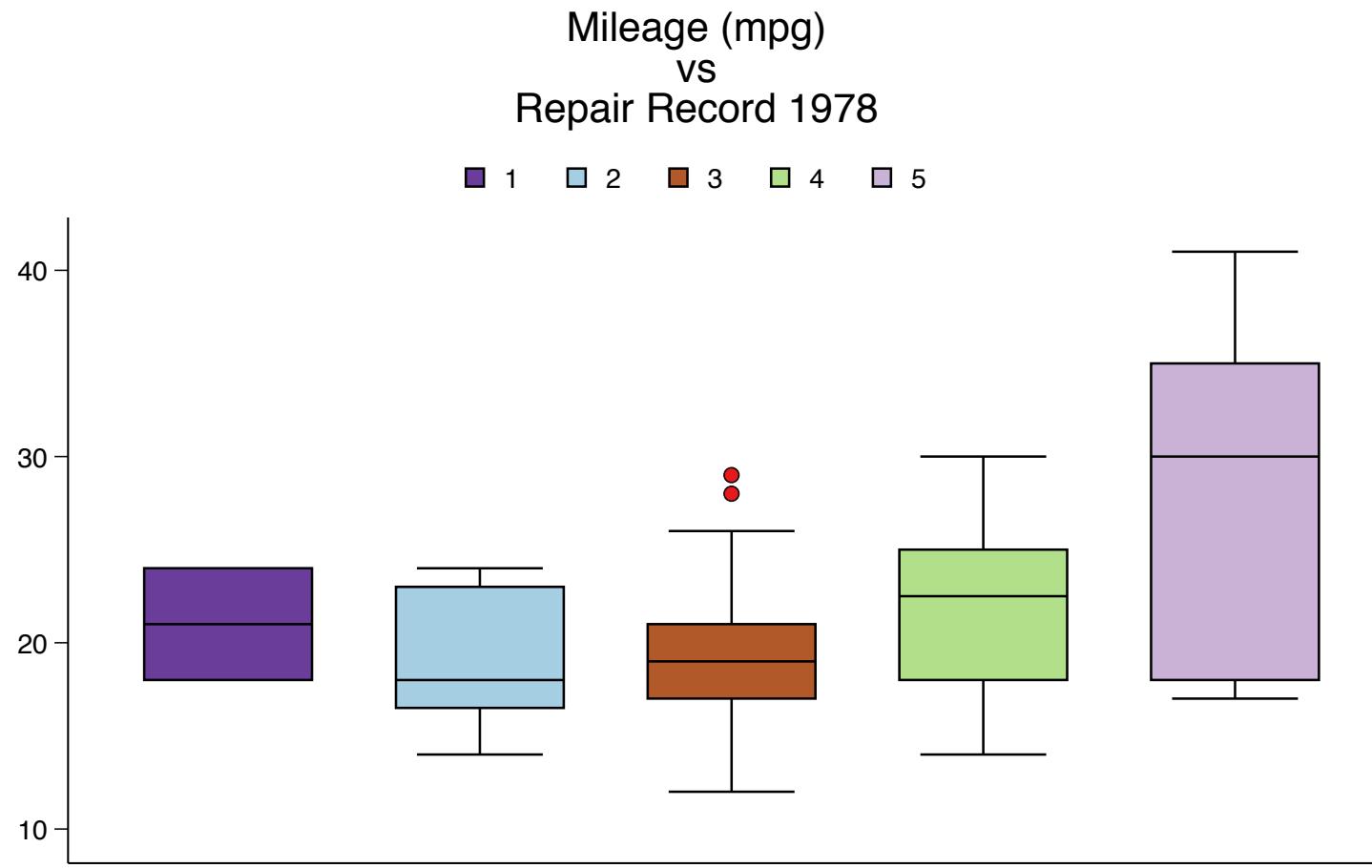
Figure 1.191: Box Plot of Price by Repair Record 1978



Created on: 29 Oct 2015 at: 15:39:32

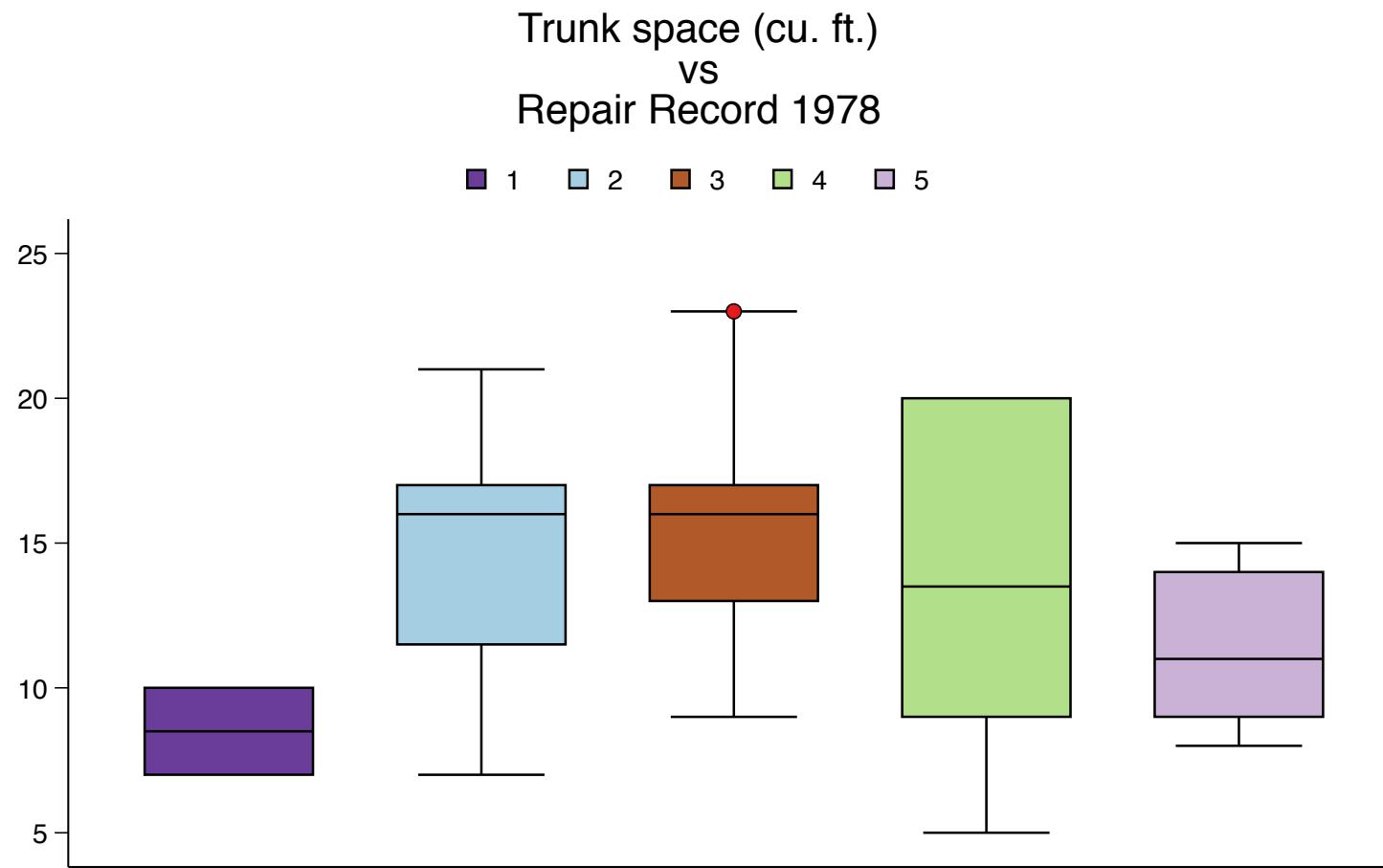
Distributions by rep78.

Figure 1.192: Box Plot of Mileage (mpg) by Repair Record 1978



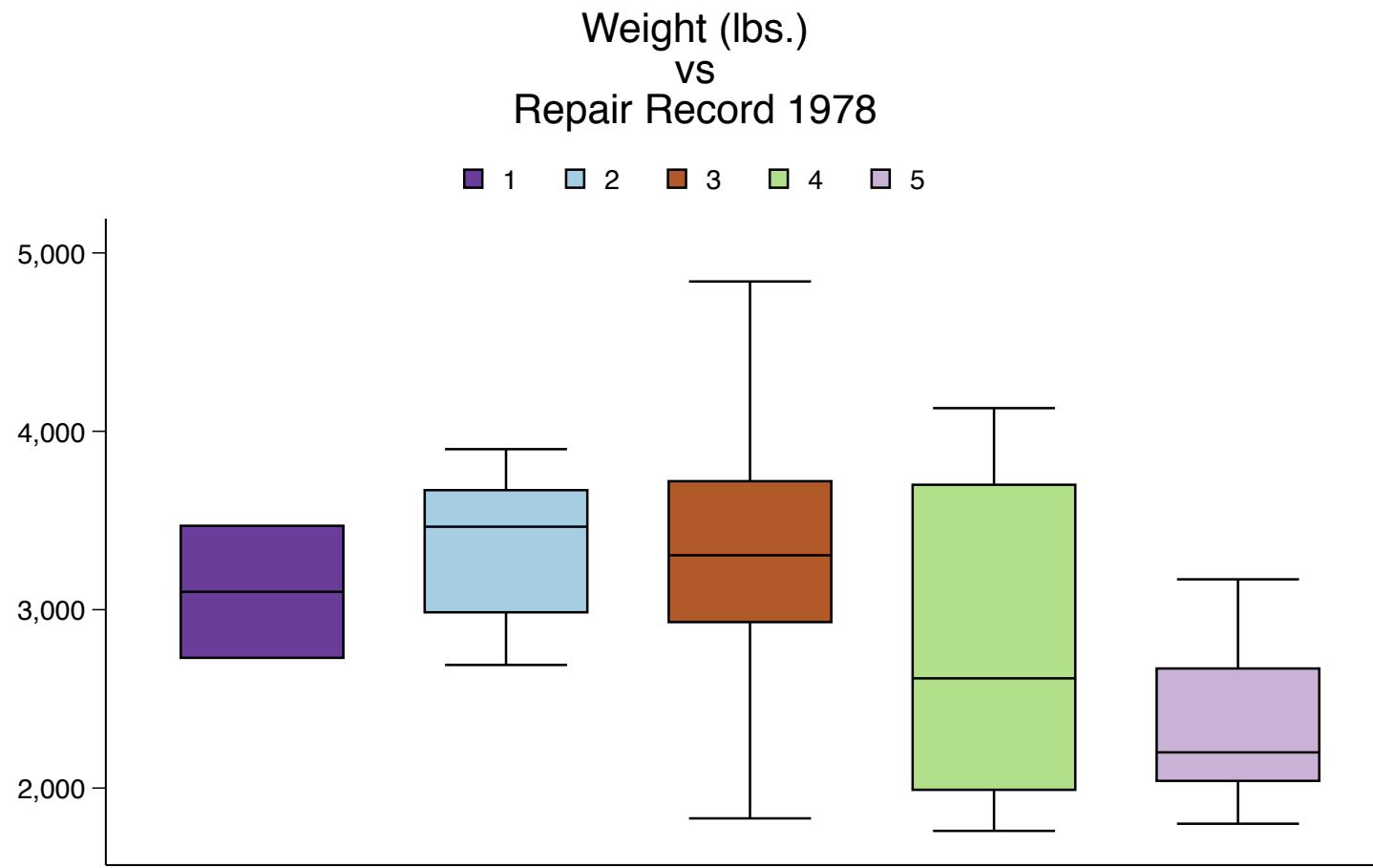
Created on: 29 Oct 2015 at: 15:39:35

Figure 1.193: Box Plot of Trunk space (cu. ft.) by Repair Record 1978



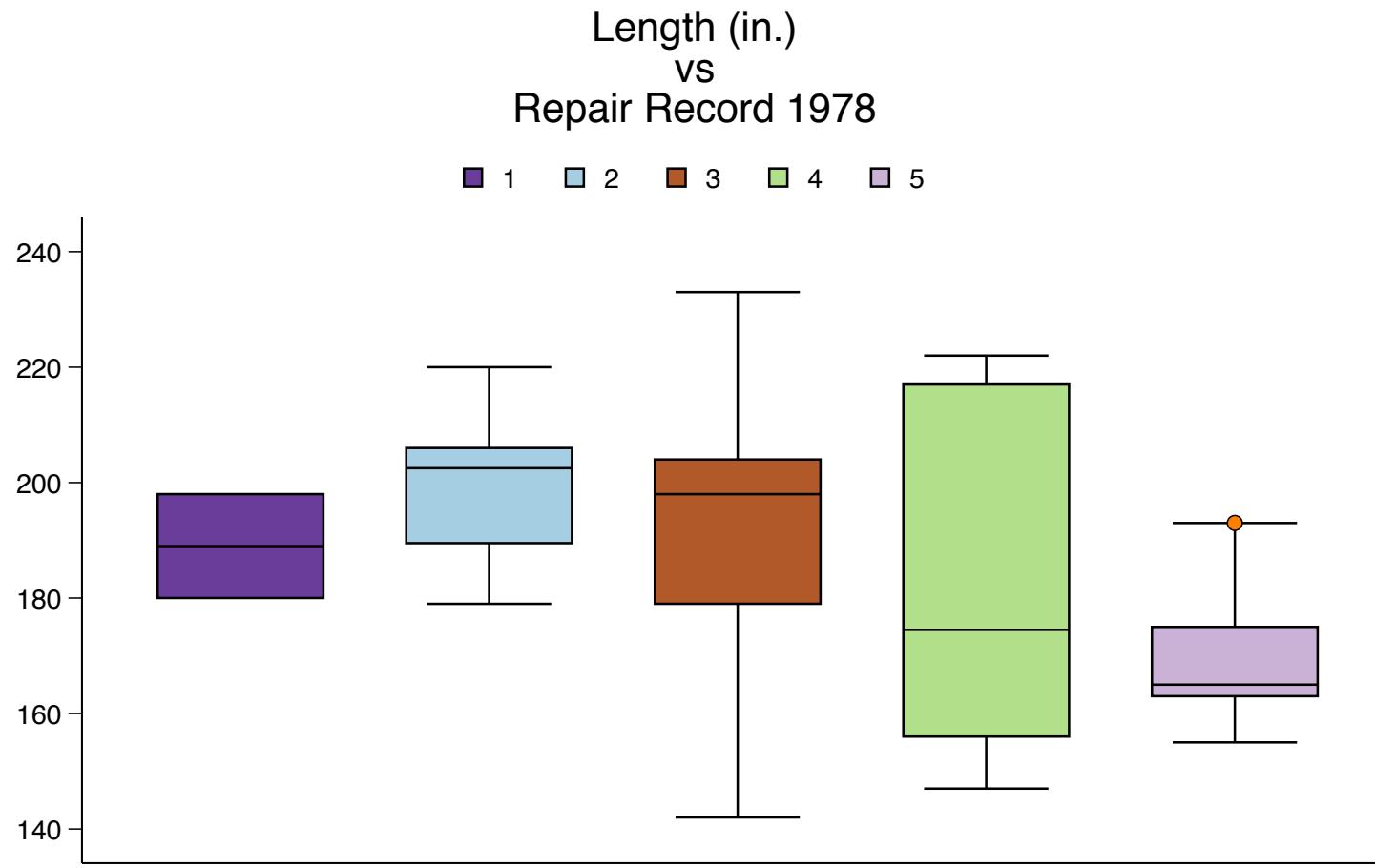
Created on: 29 Oct 2015 at: 15:39:37

Figure 1.194: Box Plot of Weight (lbs.) by Repair Record 1978



Created on: 29 Oct 2015 at: 15:39:39

Figure 1.195: Box Plot of Length (in.) by Repair Record 1978



Created on: 29 Oct 2015 at: 15:39:41

Figure 1.196: Box Plot of Turn Circle (ft.) by Repair Record 1978

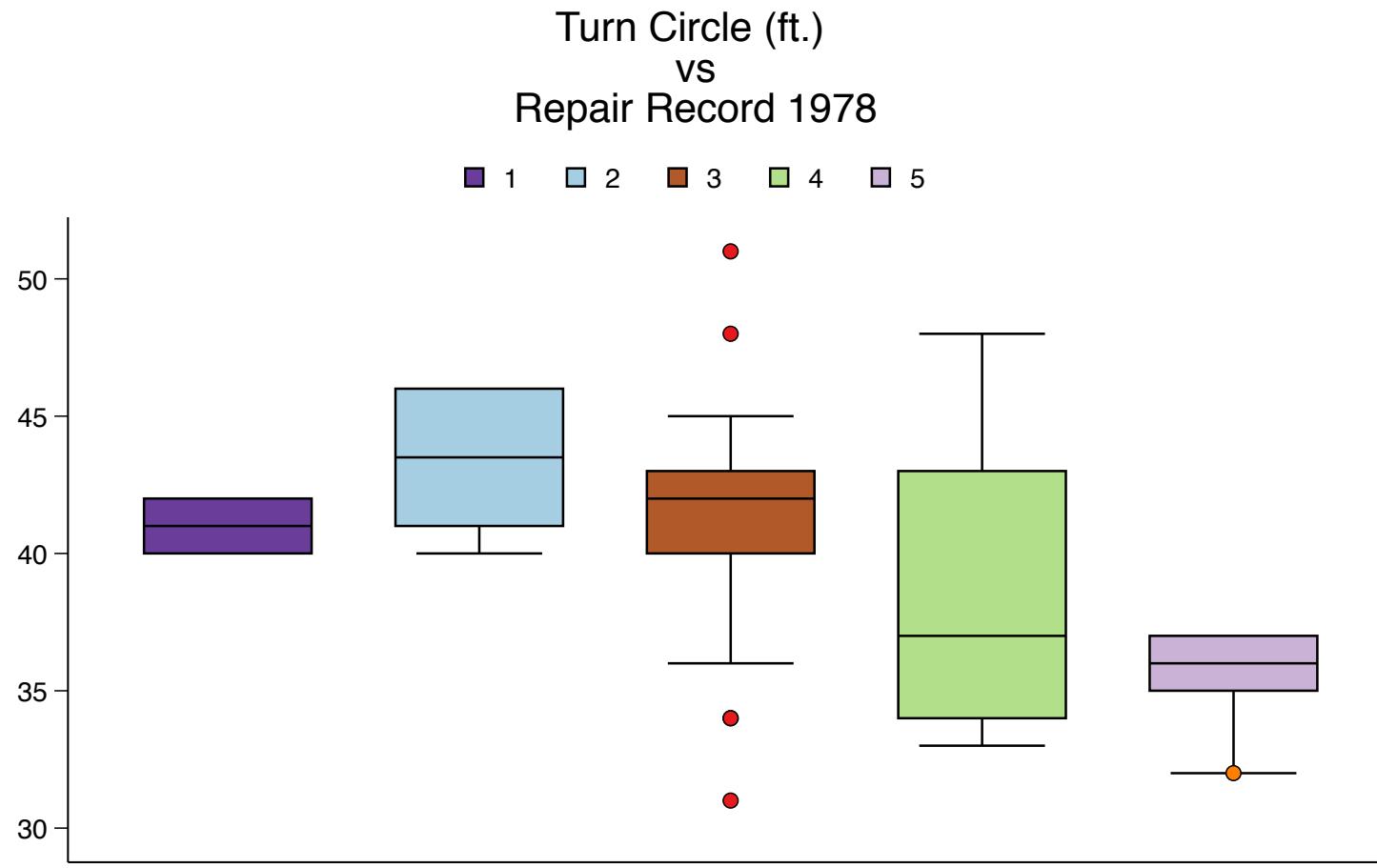
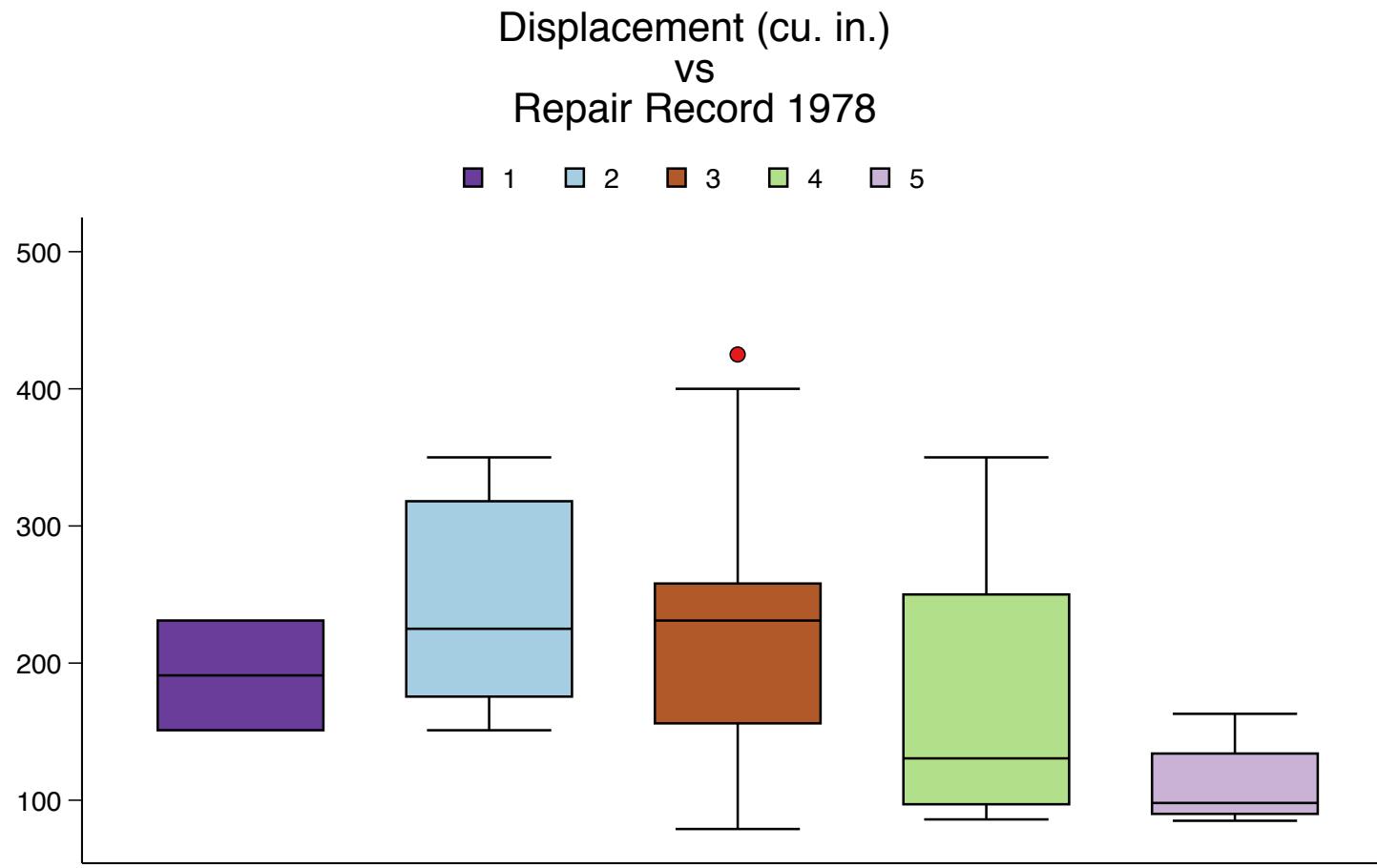
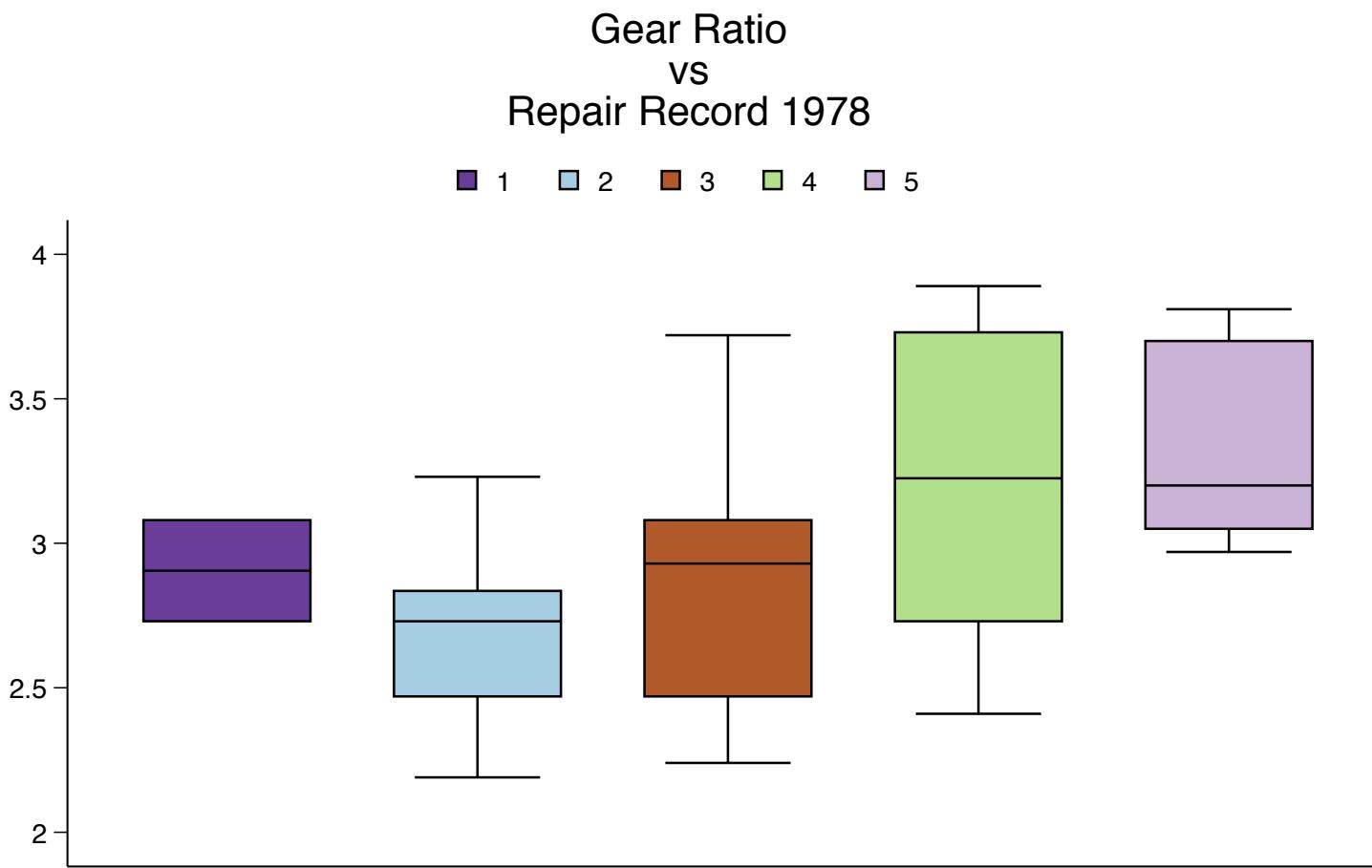


Figure 1.197: Box Plot of Displacement (cu. in.) by Repair Record 1978



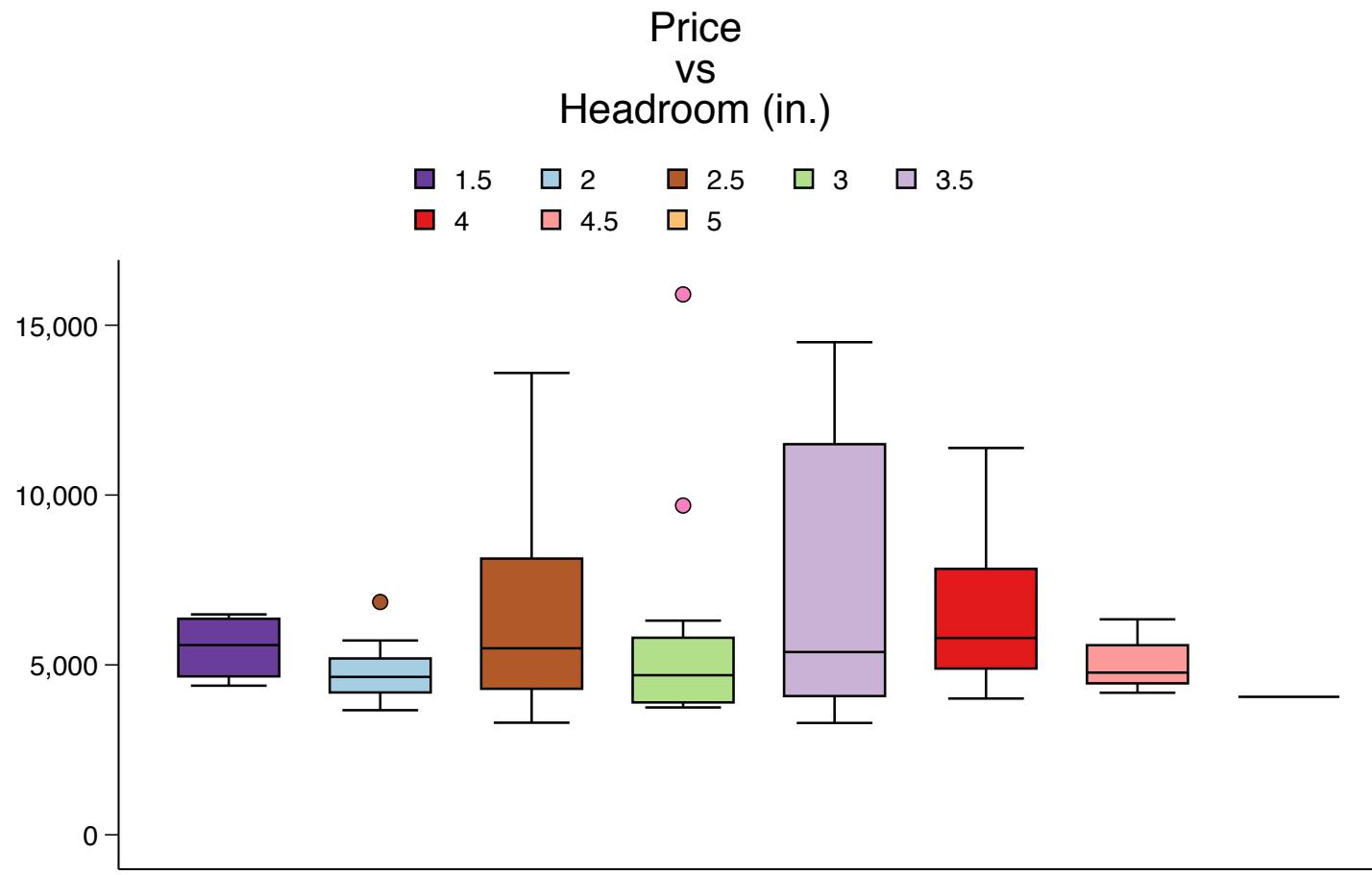
Created on: 29 Oct 2015 at: 15:39:45

Figure 1.198: Box Plot of Gear Ratio by Repair Record 1978



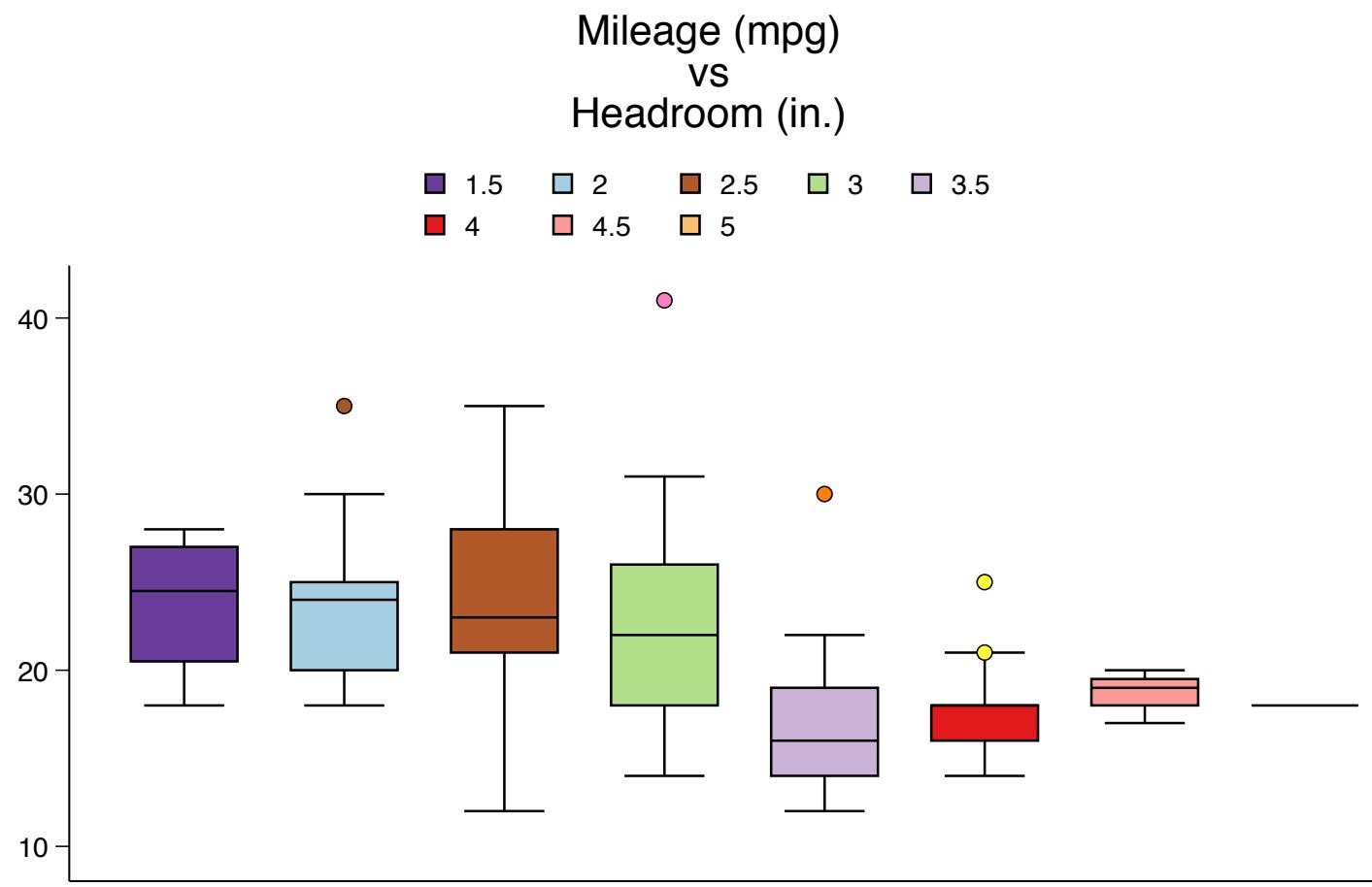
Created on: 29 Oct 2015 at: 15:39:48

Figure 1.199: Box Plot of Price by Headroom (in.)



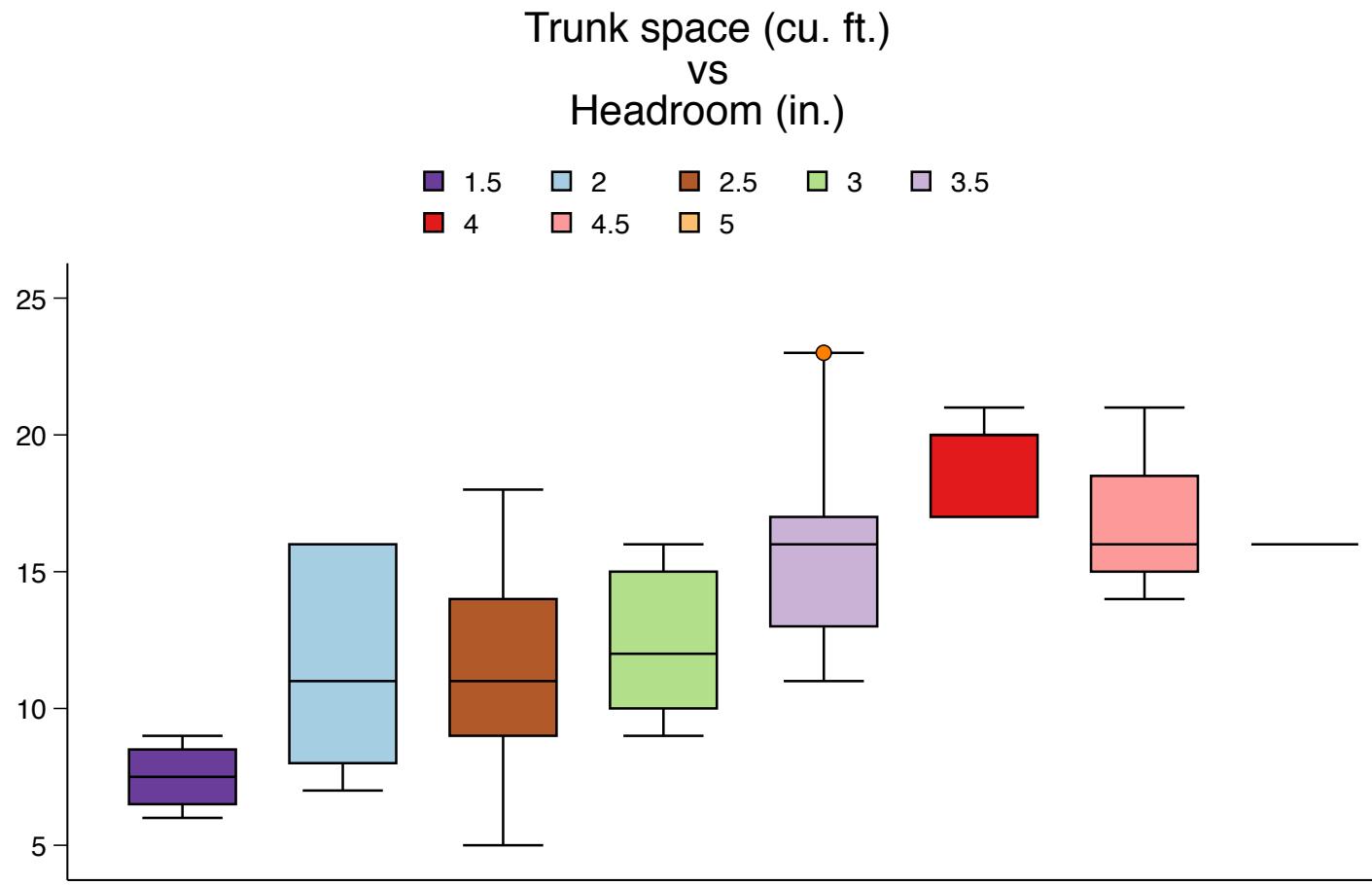
Distributions by headroom.

Figure 1.200: Box Plot of Mileage (mpg) by Headroom (in.)



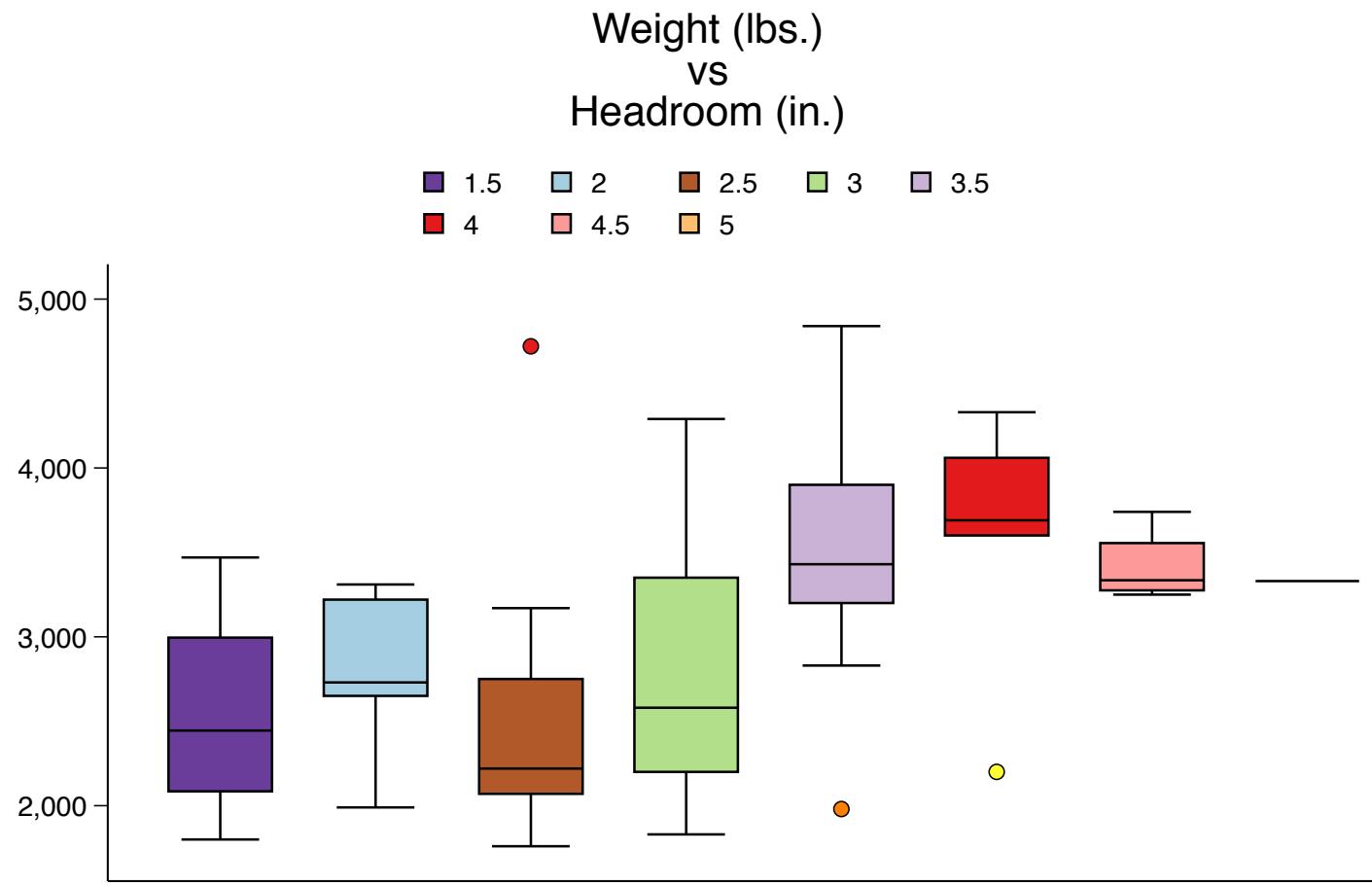
Created on: 29 Oct 2015 at: 15:39:52

Figure 1.201: Box Plot of Trunk space (cu. ft.) by Headroom (in.)



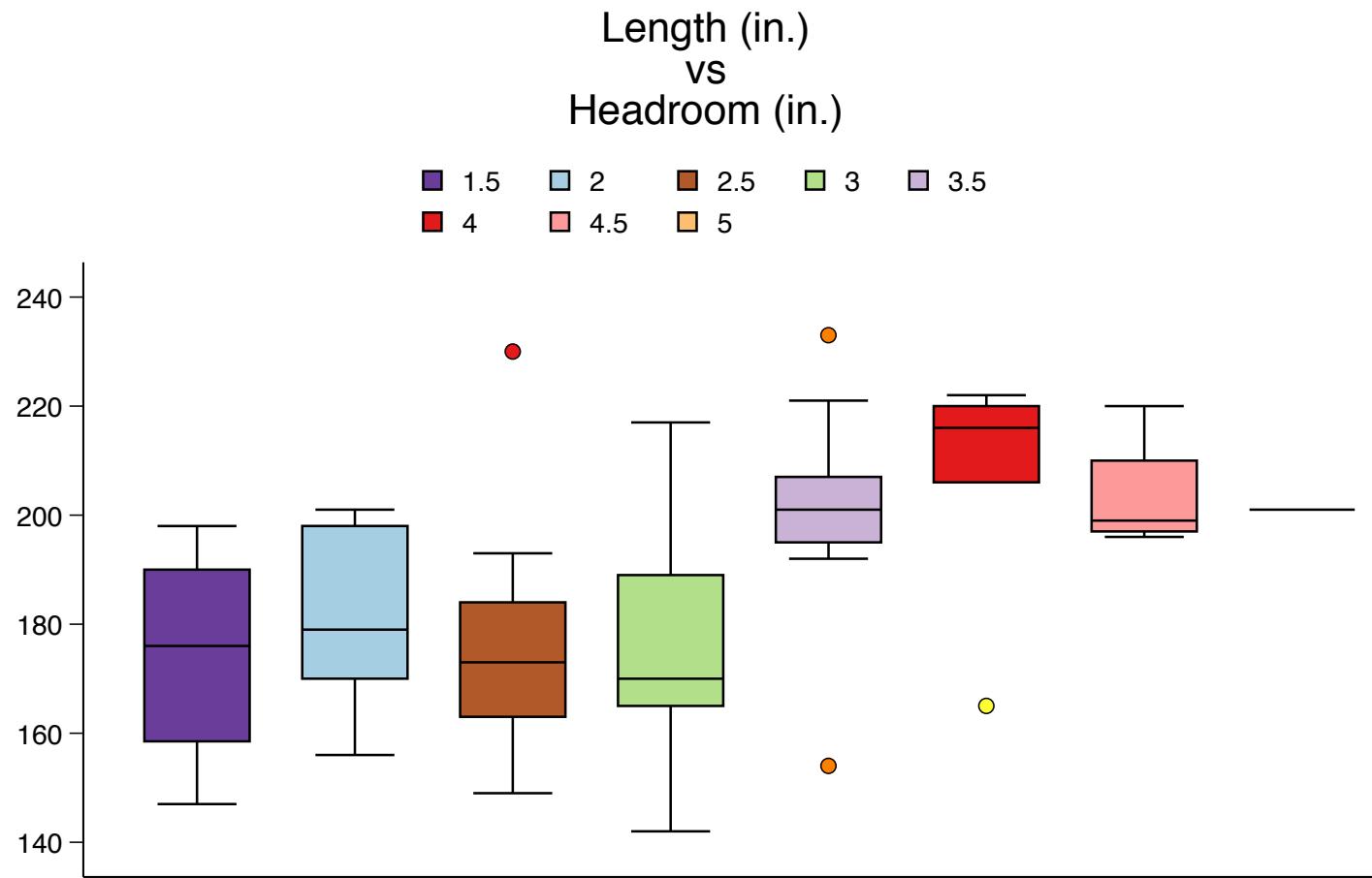
Created on: 29 Oct 2015 at: 15:39:55

Figure 1.202: Box Plot of Weight (lbs.) by Headroom (in.)



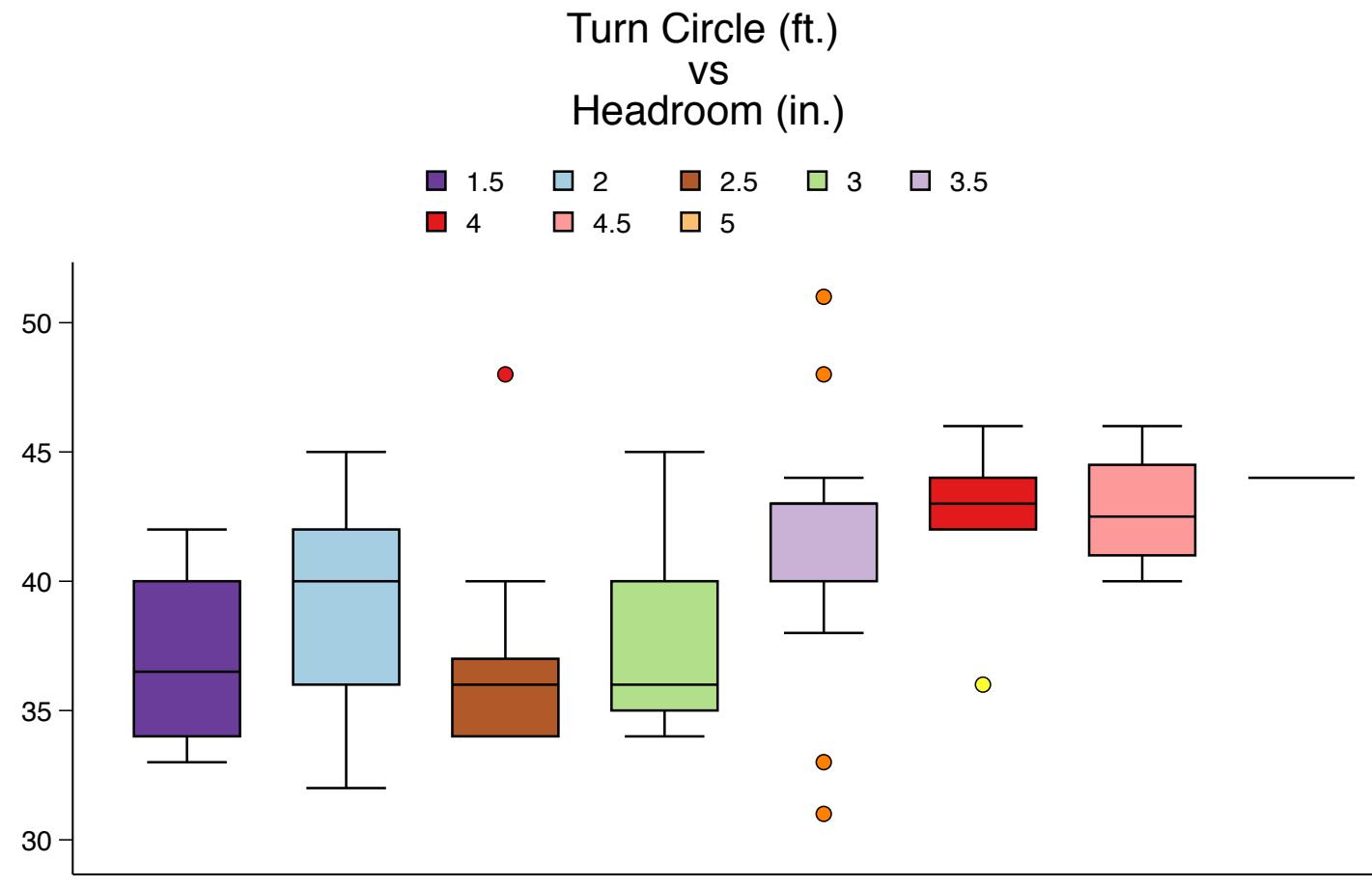
Created on: 29 Oct 2015 at: 15:39:57

Figure 1.203: Box Plot of Length (in.) by Headroom (in.)



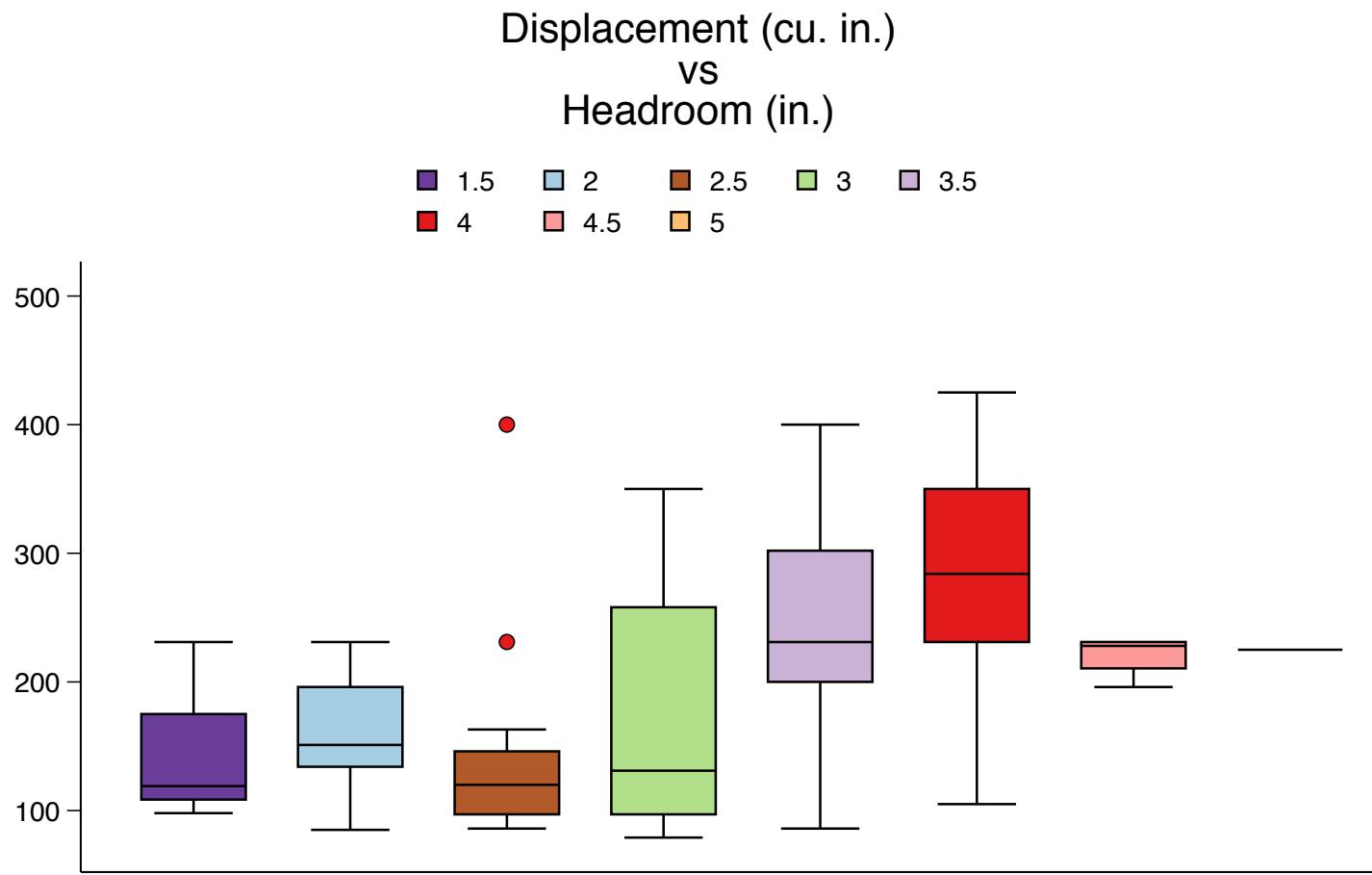
Created on: 29 Oct 2015 at: 15:39:59

Figure 1.204: Box Plot of Turn Circle (ft.) by Headroom (in.)



Created on: 29 Oct 2015 at: 15:40:02

Figure 1.205: Box Plot of Displacement (cu. in.) by Headroom (in.)



Created on: 29 Oct 2015 at: 15:40:04

Figure 1.206: Box Plot of Gear Ratio by Headroom (in.)

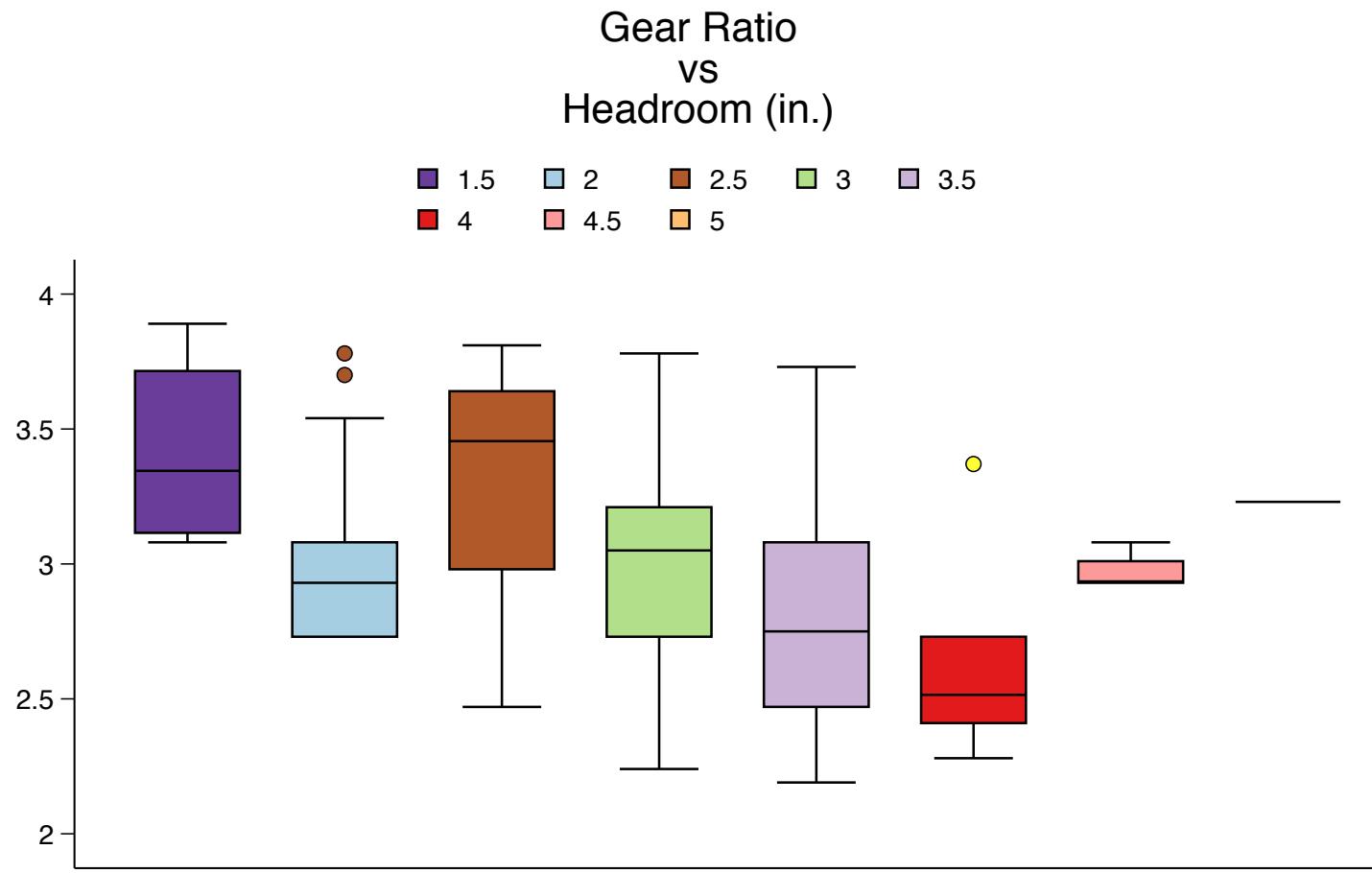
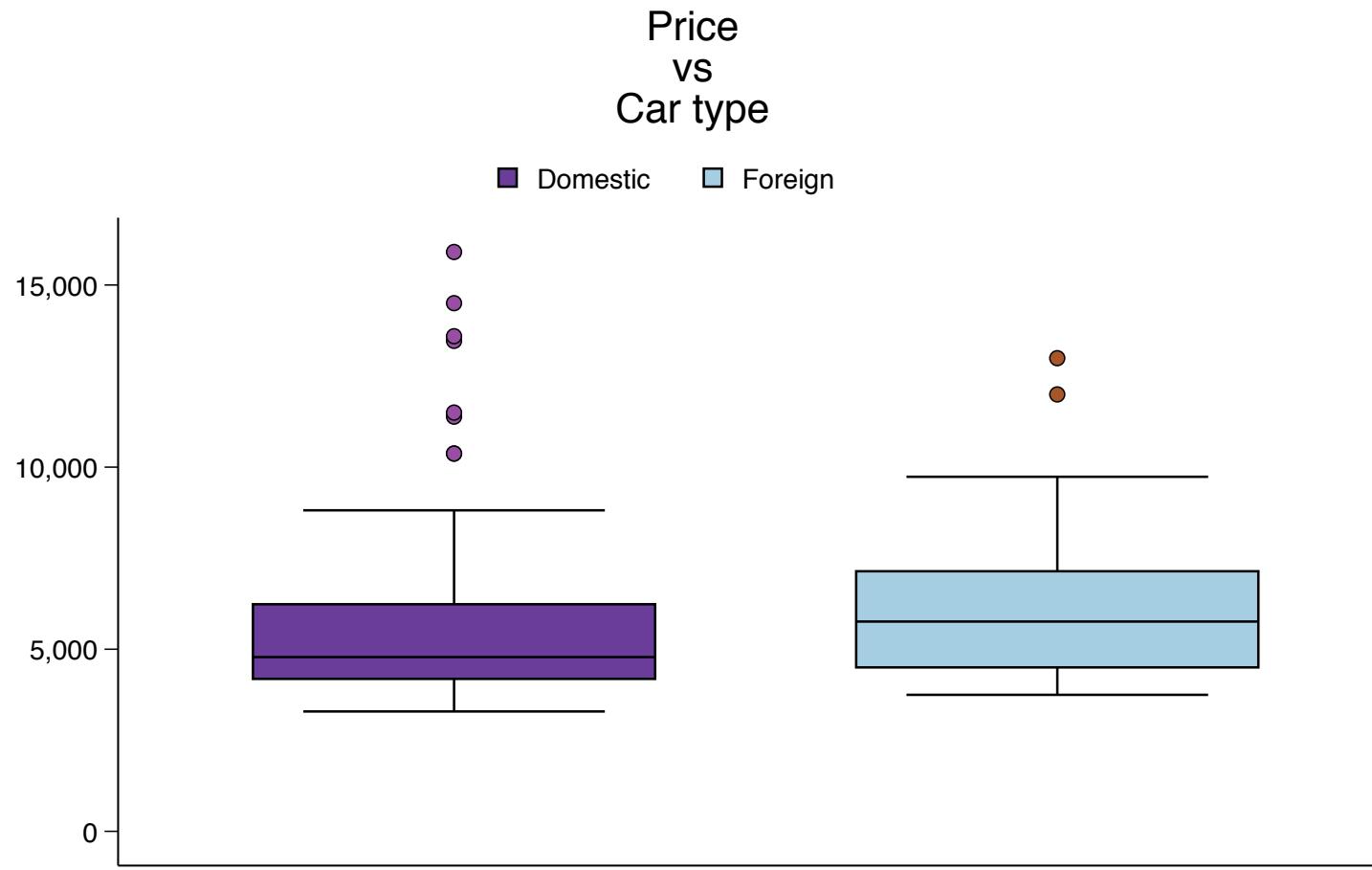


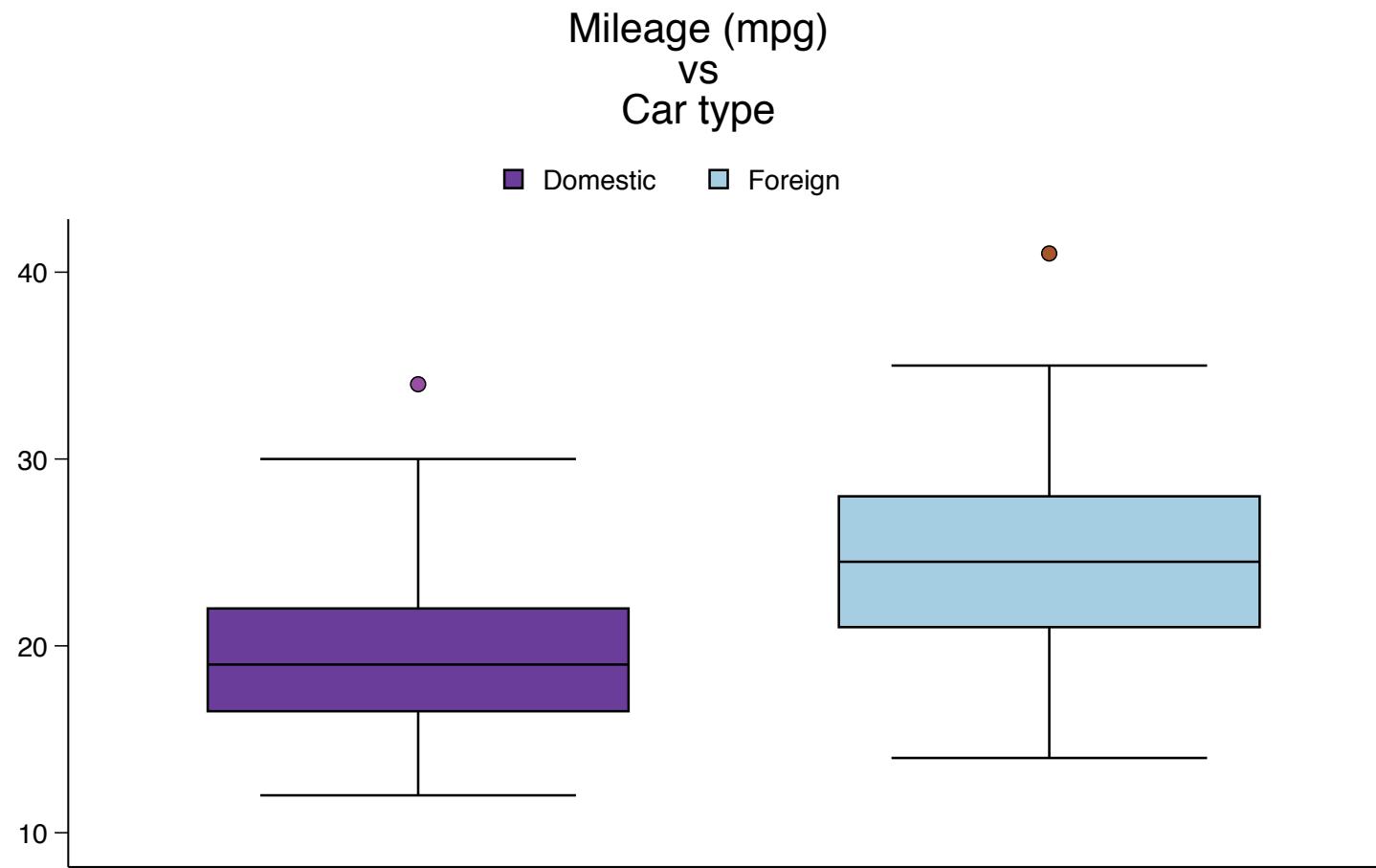
Figure 1.207: Box Plot of Price by Car type



Created on: 29 Oct 2015 at: 15:40:09

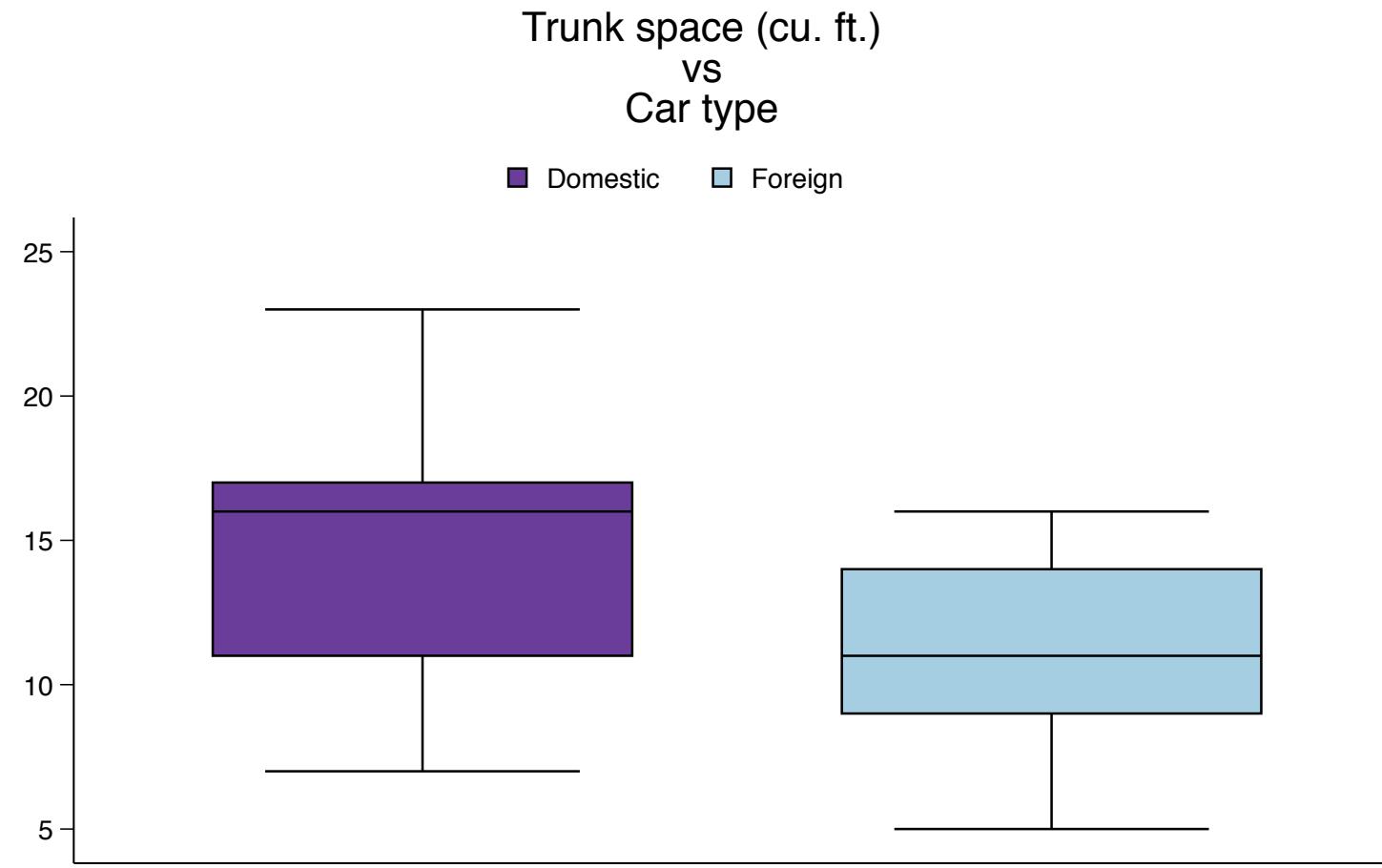
Distributions by foreign.

Figure 1.208: Box Plot of Mileage (mpg) by Car type



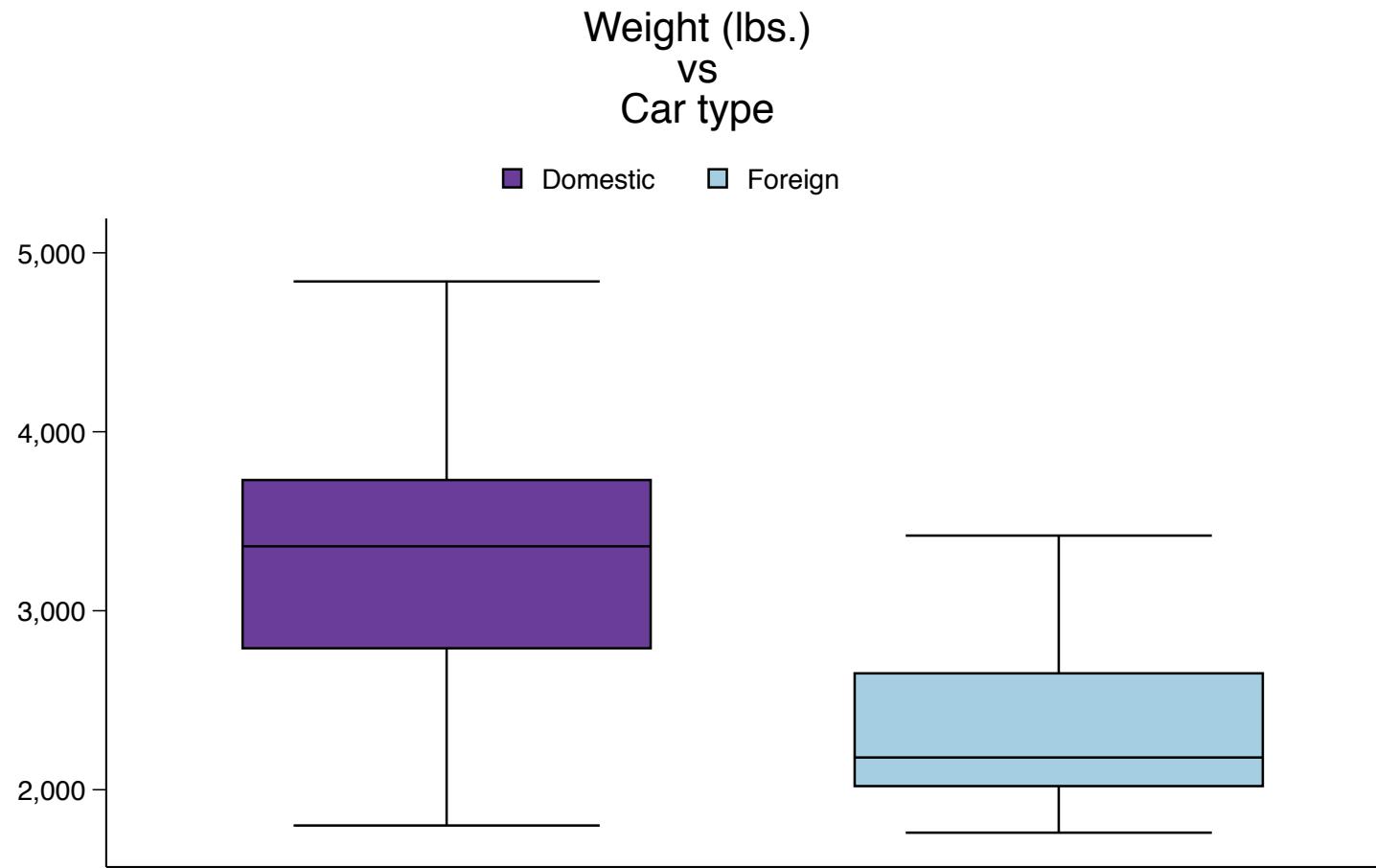
Created on: 29 Oct 2015 at: 15:40:11

Figure 1.209: Box Plot of Trunk space (cu. ft.) by Car type



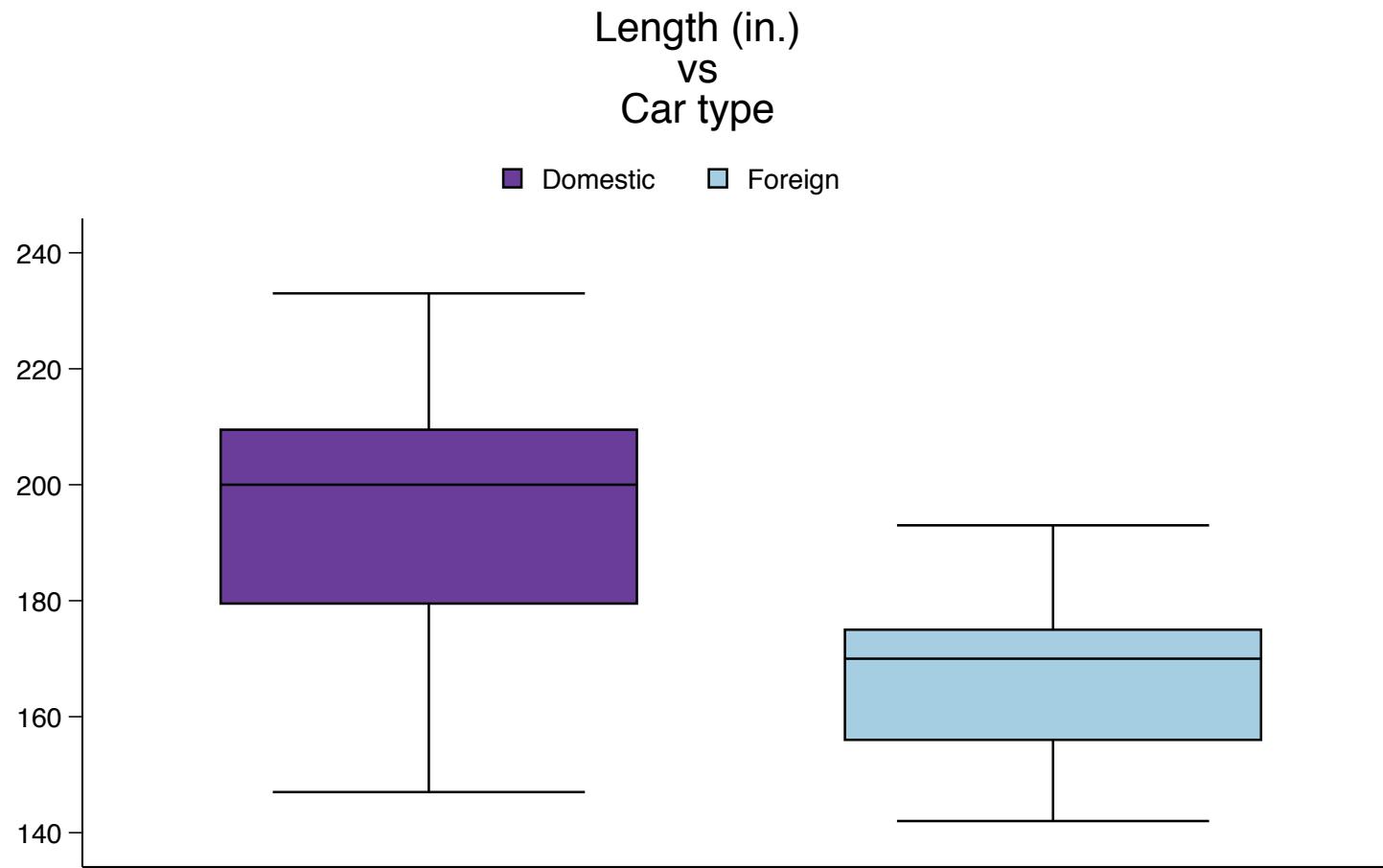
Created on: 29 Oct 2015 at: 15:40:13

Figure 1.210: Box Plot of Weight (lbs.) by Car type



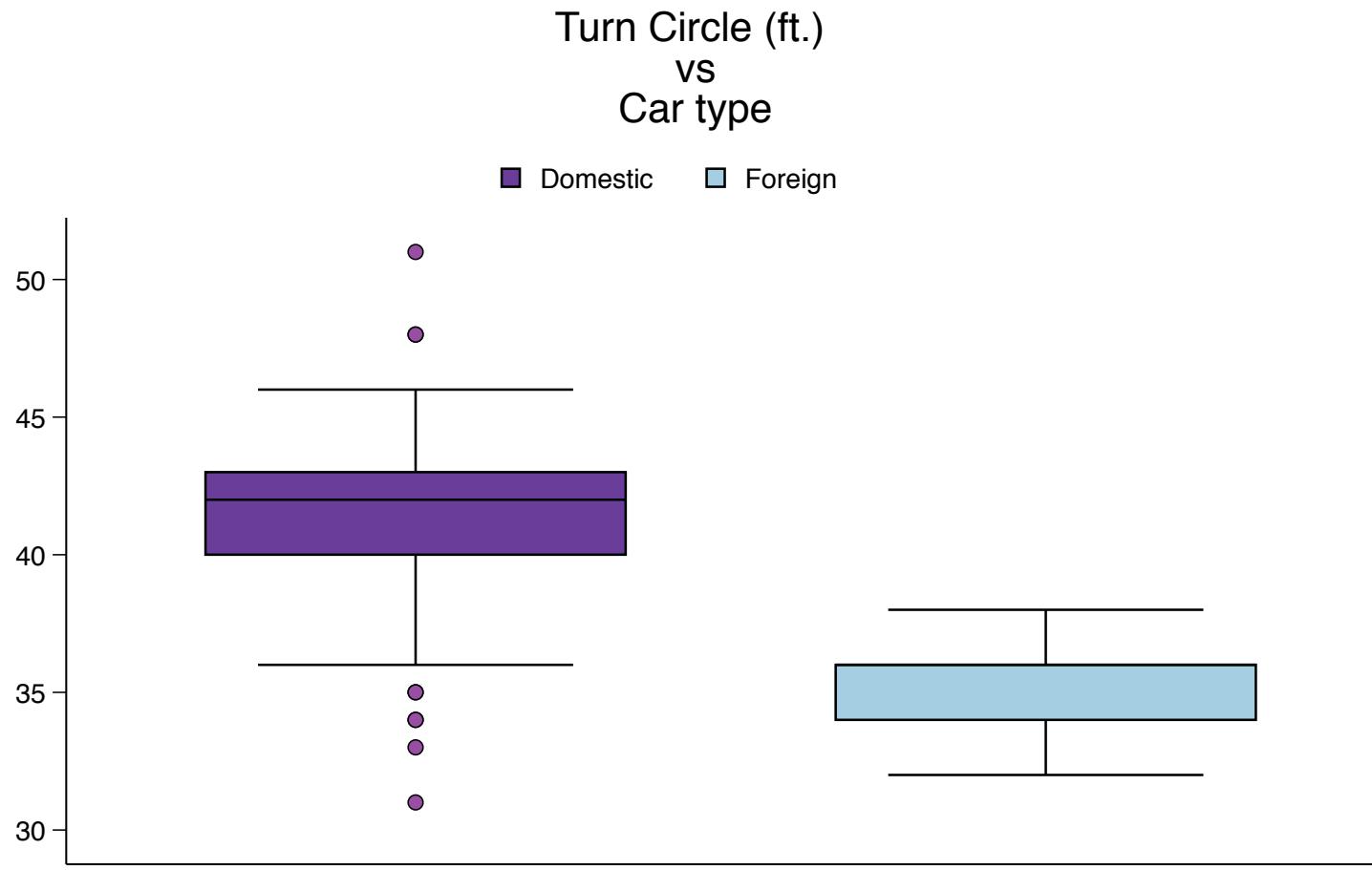
Created on: 29 Oct 2015 at: 15:40:15

Figure 1.211: Box Plot of Length (in.) by Car type



Created on: 29 Oct 2015 at: 15:40:17

Figure 1.212: Box Plot of Turn Circle (ft.) by Car type

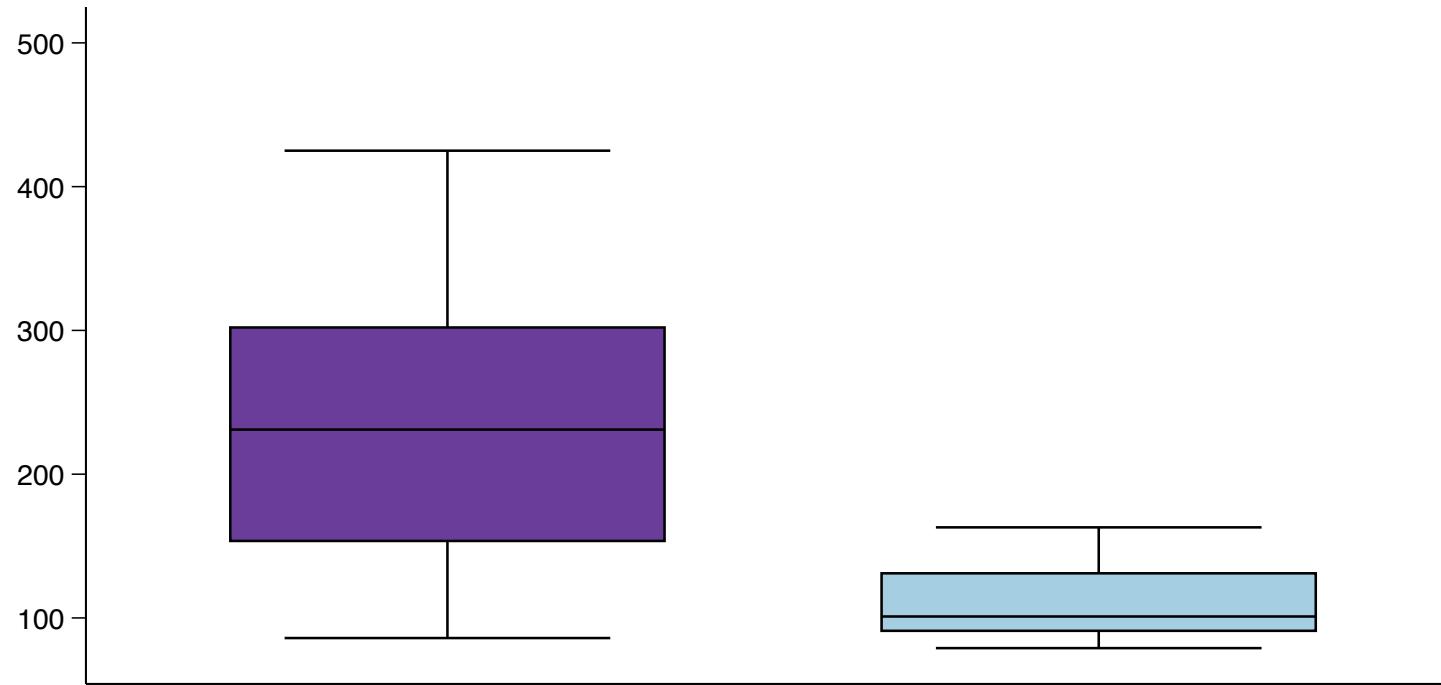


Created on: 29 Oct 2015 at: 15:40:19

Figure 1.213: Box Plot of Displacement (cu. in.) by Car type

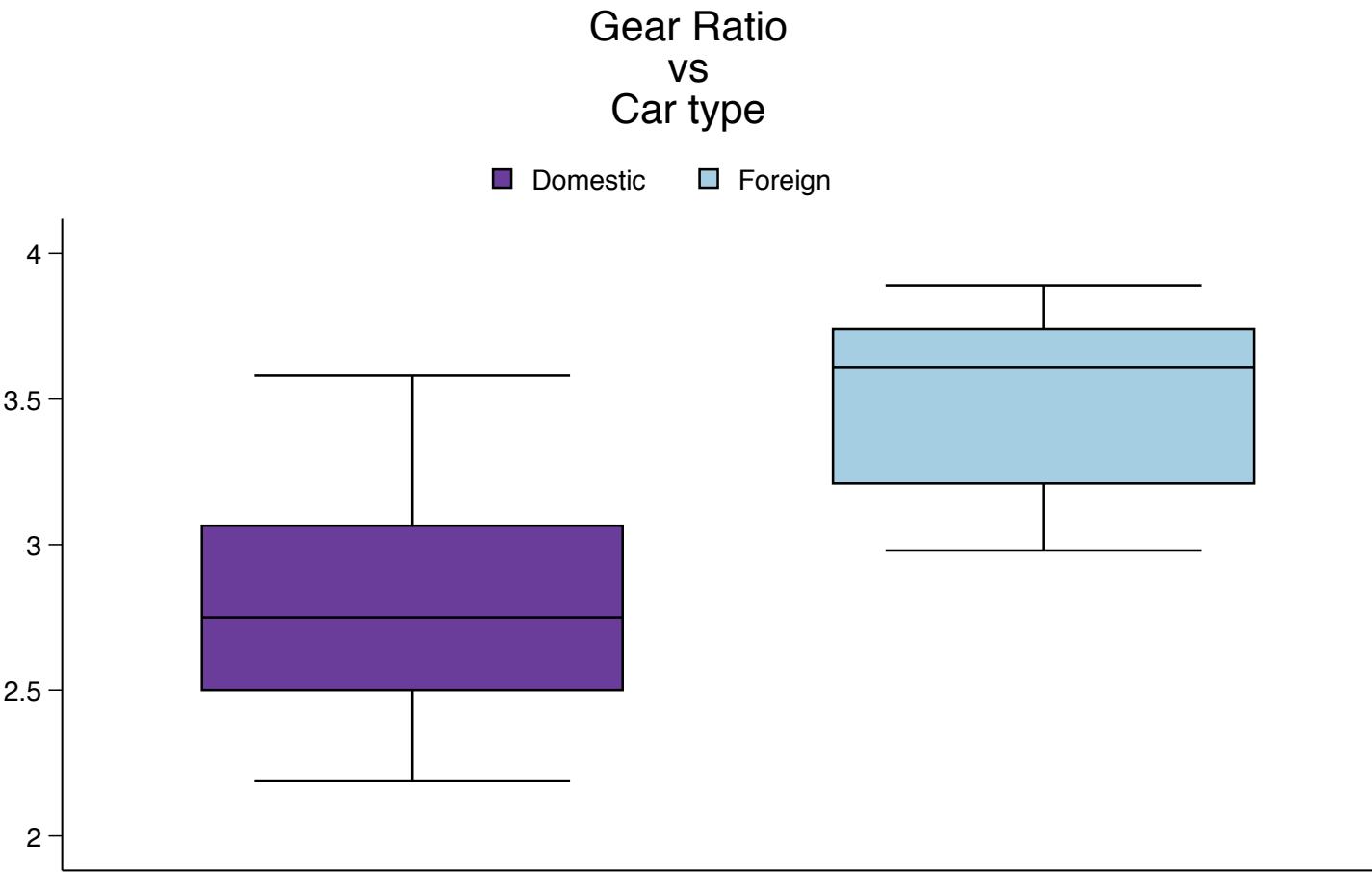
Displacement (cu. in.)
vs
Car type

■ Domestic □ Foreign



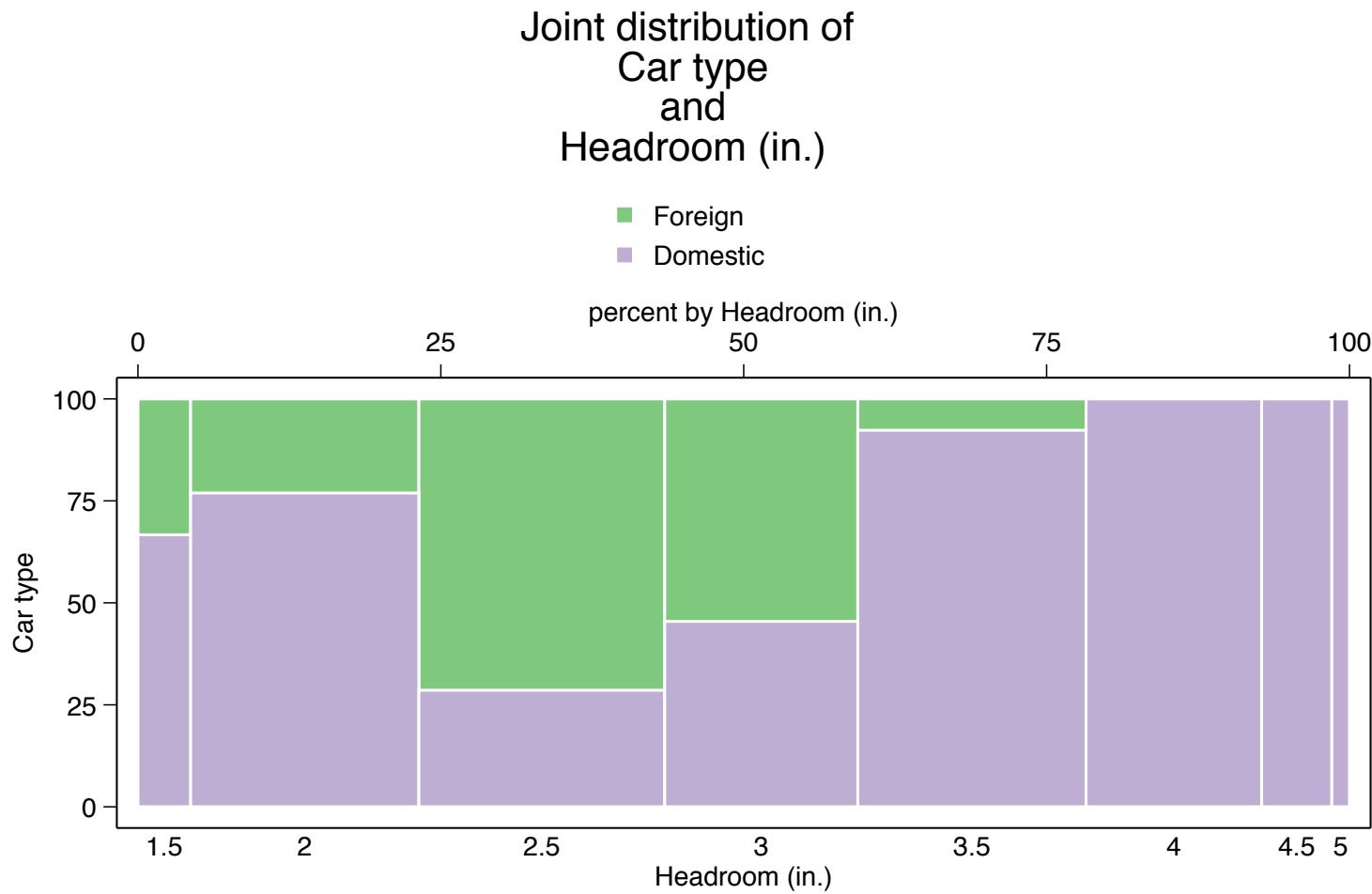
Created on: 29 Oct 2015 at: 15:40:20

Figure 1.214: Box Plot of Gear Ratio by Car type



Created on: 29 Oct 2015 at: 15:40:22

Figure 1.215: Mosaic Plots of Car type by Headroom (in.)



Mosaic Plots.

Figure 1.216: Mosaic Plots of Car type by Repair Record 1978

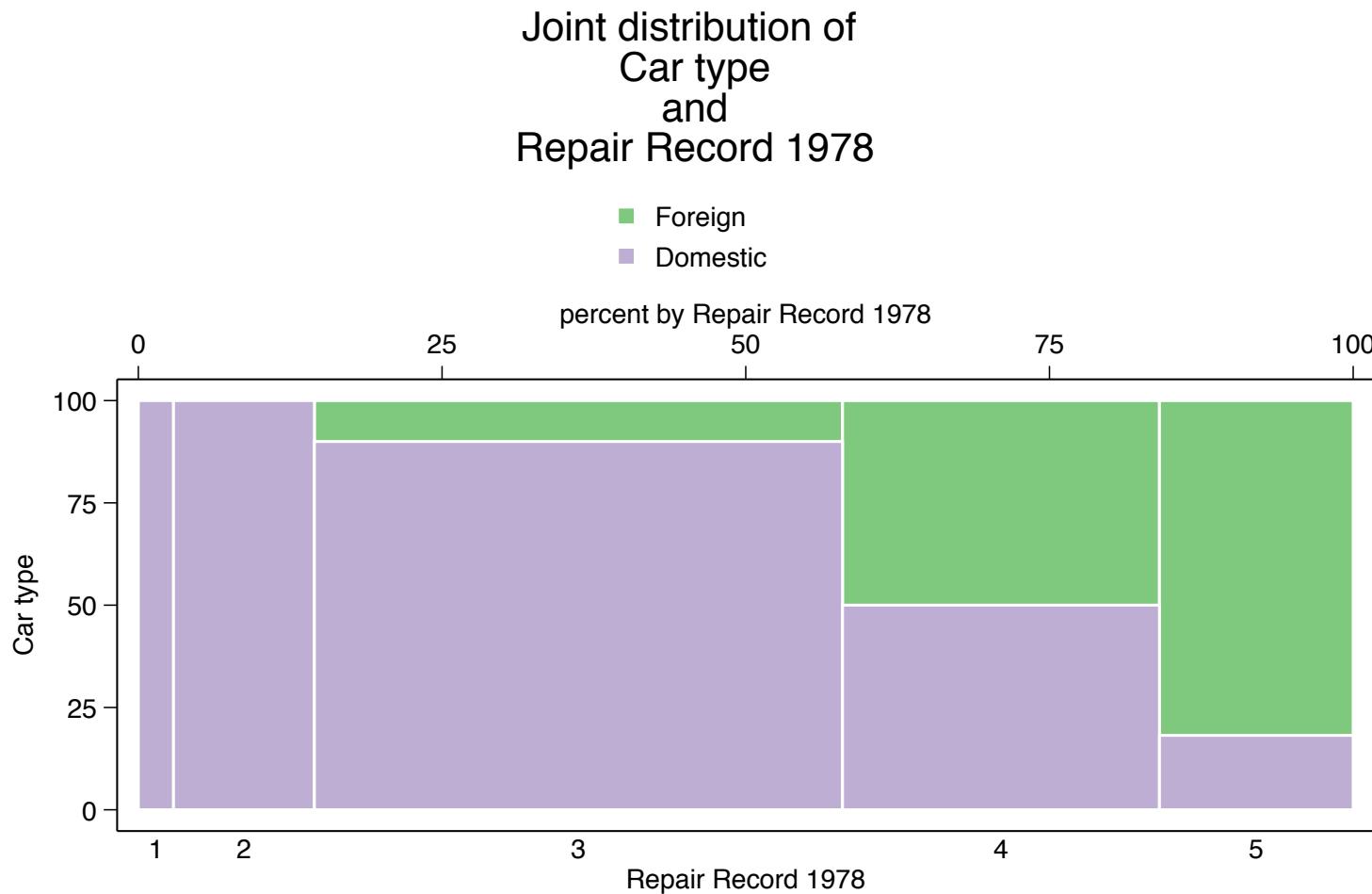
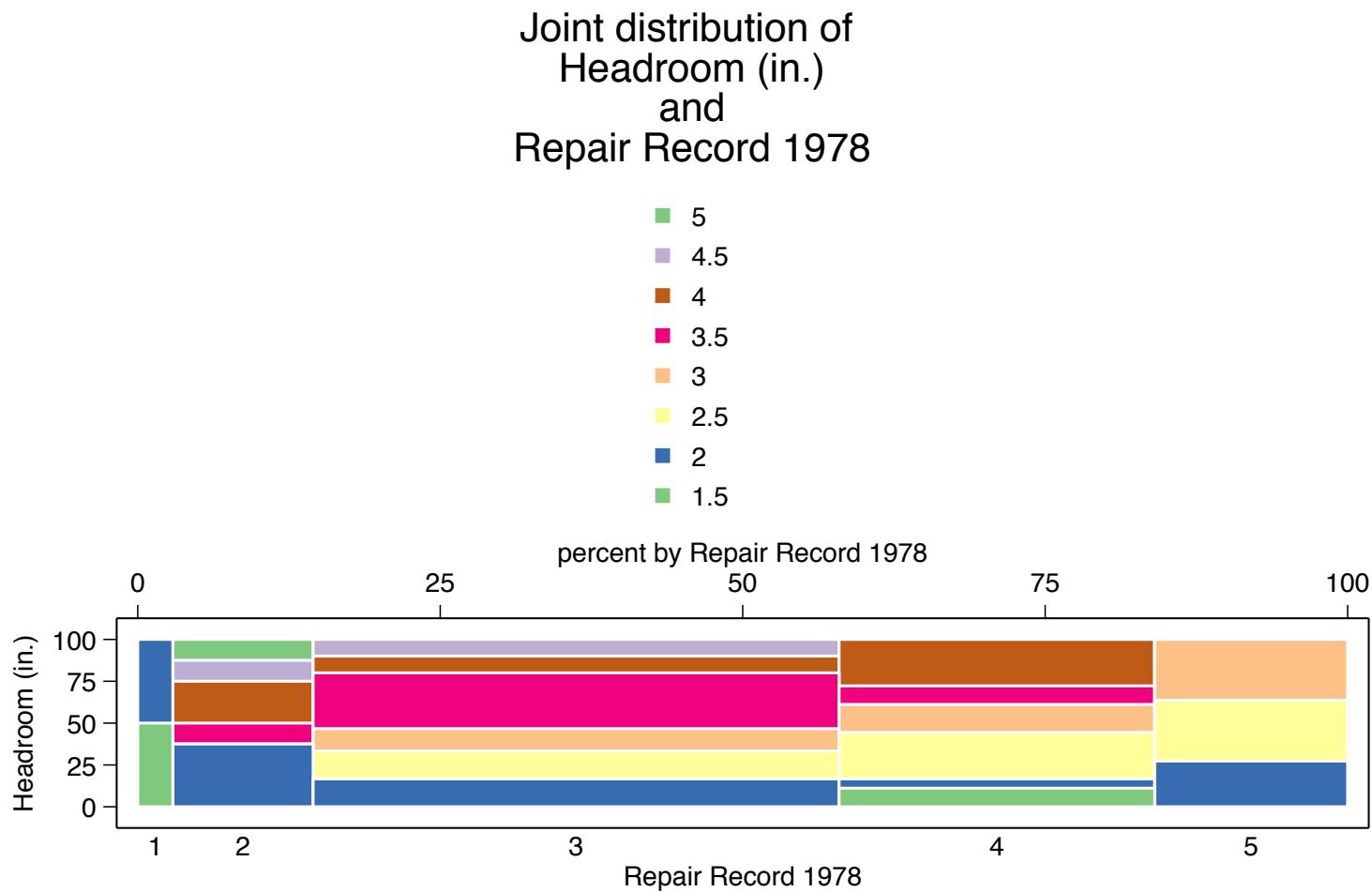


Figure 1.217: Mosaic Plots of Headroom (in.) by Repair Record 1978

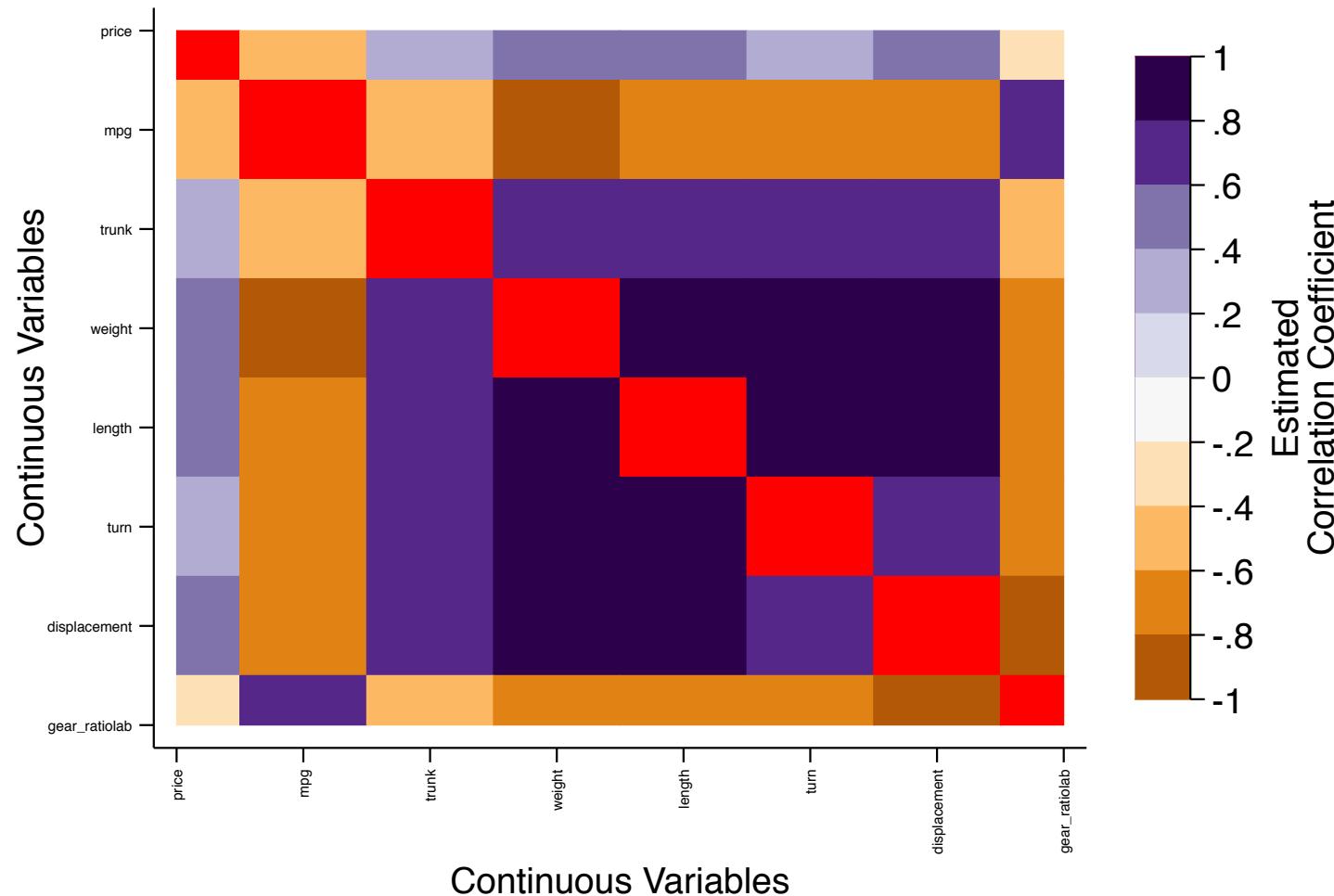


Correlations

Correlations Between Continuous Variables

Figure 1.218: Correlation Heatmap

Correlations Between Continuous Variables



Chapter 2.
Descriptive Statistics

Categorical Variables

Table 2.1: Distribution of Repair Record 1978

	Frequency	Percentage
1	2	2.703
2	8	10.81
3	30	40.54
4	18	24.32
5	11	14.86
.	5	6.757

Table 2.2: Distribution of Headroom (in.)

	Frequency	Percentage
1.5	4	5.405
2	13	17.57
2.5	14	18.92
3	13	17.57
3.5	15	20.27
4	10	13.51
4.5	4	5.405
5	1	1.351

Table 2.3: Distribution of Car type

	Frequency	Percentage
Domestic	52	70.27
Foreign	22	29.73

Table 2.4: Frequency of Headroom (in.) by Car type

	Domestic Frequency	Foreign Frequency
1.5	3	1
2	10	3
2.5	4	10
3	7	6
3.5	13	2
4	10	0
4.5	4	0
5	1	0

Table 2.5: Overall % of Headroom (in.) by Car type

	Domestic Overall%	Foreign Overall%
1.5	4.054	1.351
2	13.51	4.054
2.5	5.405	13.51
3	9.459	8.108
3.5	17.57	2.703
4	13.51	0
4.5	5.405	0
5	1.351	0

Table 2.6: Column % of Headroom (in.) by Car type

	Domestic Column%	Foreign Column%
1.5	5.769	4.545
2	19.23	13.64
2.5	7.692	45.45
3	13.46	27.27
3.5	25	9.091
4	19.23	0
4.5	7.692	0
5	1.923	0

Table 2.7: Row % of Headroom (in.) by Car type

	Domestic Row%	Foreign Row%
1.5	75	25
2	76.92	23.08
2.5	28.57	71.43
3	53.85	46.15
3.5	86.67	13.33
4	100	0
4.5	100	0
5	100	0

Table 2.8: Frequency of Repair Record 1978 by Car type

	Domestic Frequency	Foreign Frequency
1	2	0
2	8	0
3	27	3
4	9	9
5	2	9
.	4	1

Table 2.9: Overall % of Repair Record 1978 by Car type

	Domestic Overall%	Foreign Overall%
1	2.703	0
2	10.81	0
3	36.49	4.054
4	12.16	12.16
5	2.703	12.16
.	5.405	1.351

Table 2.10: Column % of Repair Record 1978 by Car type

	Domestic Column%	Foreign Column%
1	3.846	0
2	15.38	0
3	51.92	13.64
4	17.31	40.91
5	3.846	40.91
.	7.692	4.545

Table 2.11: Row % of Repair Record 1978 by Car type

	Domestic Row%	Foreign Row%
1	100	0
2	100	0
3	90	10
4	50	50
5	18.18	81.82
.	80	20

Table 2.12: Frequency of Repair Record 1978 by Headroom (in.)

	1.5 Frequency	2 Frequency	2.5 Frequency	3 Frequency	3.5 Frequency	4 Frequency	4.5 Frequency	5 Frequency
1	1	1	0	0	0	0	0	0
2	0	3	0	0	1	2	1	1
3	0	5	5	4	10	3	3	0
4	2	1	5	3	2	5	0	0
5	0	3	4	4	0	0	0	0
.	1	0	0	2	2	0	0	0

Table 2.13: Overall % of Repair Record 1978 by Headroom (in.)

	1.5 Overall%	2 Overall%	2.5 Overall%	3 Overall%	3.5 Overall%	4 Overall%	4.5 Overall%	5 Overall%
1	1.351	1.351	0	0	0	0	0	0
2	0	4.054	0	0	1.351	2.703	1.351	1.351
3	0	6.757	6.757	5.405	13.51	4.054	4.054	0
4	2.703	1.351	6.757	4.054	2.703	6.757	0	0
5	0	4.054	5.405	5.405	0	0	0	0
.	1.351	0	0	2.703	2.703	0	0	0

Table 2.14: Column % of Repair Record 1978 by Headroom (in.)

	1.5 Column%	2 Column%	2.5 Column%	3 Column%	3.5 Column%	4 Column%	4.5 Column%	5 Column%
1	25	7.692	0	0	0	0	0	0
2	0	23.08	0	0	6.667	20	25	100
3	0	38.46	35.71	30.77	66.67	30	75	0
4	50	7.692	35.71	23.08	13.33	50	0	0
5	0	23.08	28.57	30.77	0	0	0	0
.	25	0	0	15.38	13.33	0	0	0

Table 2.15: Row % of Repair Record 1978 by Headroom (in.)

	1.5	2	2.5	3	3.5	4	4.5	5
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Continuous Variables

Table 2.16: Descriptive Statistics of Continuous Variables

	N	μ	σ
Price	74	6165.257	2949.496
Mileage (mpg)	74	21.297	5.786
Trunk space (cu. ft.)	74	13.757	4.277
Weight (lbs.)	74	3019.459	777.194
Length (in.)	74	187.932	22.266
Turn Circle (ft.)	74	39.649	4.399
Displacement (cu. in.)	74	197.297	91.837
Gear Ratio	74	3.015	0.456

μ = Average σ = Standard Deviation

Table 2.17: Higher Order Moment Conditions

	Skewness	Kurtosis
Price	1.653	4.819
Mileage (mpg)	0.949	3.975
Trunk space (cu. ft.)	0.029	2.192
Weight (lbs.)	0.148	2.118
Length (in.)	-0.041	2.042
Turn Circle (ft.)	0.124	2.229
Displacement (cu. in.)	0.592	2.376
Gear Ratio	0.219	2.102

Table 2.18: Order Statistics

	Min.	25%ile	Median	75%ile	Max
Price	3291.000	4195.000	5006.500	6342.000	15906.000
Mileage (mpg)	12.000	18.000	20.000	25.000	41.000
Trunk space (cu. ft.)	5.000	10.000	14.000	17.000	23.000
Weight (lbs.)	1760.000	2240.000	3190.000	3600.000	4840.000
Length (in.)	142.000	170.000	192.500	204.000	233.000
Turn Circle (ft.)	31.000	36.000	40.000	43.000	51.000
Displacement (cu. in.)	79.000	119.000	196.000	250.000	425.000
Gear Ratio	2.190	2.730	2.955	3.370	3.890

This is also known as Tukey's Five Number Summary

Conditional Descriptive Statistics

Tables by groups of rep78

Table 2.19: Averages by groups of Repair Record 1978

	1	2	3	4	5	Total
Price	4564.5	5967.6	6429.2	6071.5	5913	6146.0
Mileage (mpg)	21	19.12	19.43	21.67	27.36	21.29
Trunk space (cu. ft.)	8.500	14.62	15.27	13.50	11.45	13.93
Weight (lbs.)	3100	3353.8	3299	2870	2322.7	3032.0
Length (in.)	189	199.4	194	184.8	170.2	188.3
Turn Circle (ft.)	41	43.38	41.07	38.50	35.64	39.80
Displacement (cu. in.)	191	242.2	230.0	178.8	111.1	198
Gear Ratio	2.905	2.686	2.871	3.176	3.305	2.999

mean coefficients; *t* statistics in parentheses

Table 2.20: Standard Deviations by groups of Repair Record 1978

	1	2	3	4	5	Total
Price	522.6	3579.4	3525.1	1709.6	2615.8	2912.4
Mileage (mpg)	4.243	3.758	4.141	4.935	8.732	5.866
Trunk space (cu. ft.)	2.121	4.984	3.591	5.272	2.659	4.343
Weight (lbs.)	523.3	446.0	752.4	907.3	410.6	792.9
Length (in.)	12.73	13.98	20.72	28.65	12.10	22.75
Turn Circle (ft.)	1.414	2.504	4.250	4.706	1.433	4.441
Displacement (cu. in.)	56.57	77.57	91.93	96.06	25.46	93.15
Gear Ratio	0.247	0.317	0.411	0.536	0.335	0.463

sd coefficients; *t* statistics in parentheses

Tables by groups of headroom

Table 2.21: Averages by groups of Headroom (in.)

	1_missing_5 1.5	2 1.5	2_missing_5 1.5	3 1.5	3_missing_5 1.5	4 1.5	4_missing_5 1.5	5 1.5	Total 1.5
Price	5509.5	4822.8	6591.6	5906.2	7580.9	6458.5	5018	4060	6165.3
Mileage (mpg)	23.75	23.77	23.71	23.46	17.53	17.90	18.75	18	21.30
Trunk space (cu. ft.)	7.500	11.69	11.43	12.31	16.07	19.20	16.75	16	13.76
Weight (lbs.)	2540	2761.5	2499.3	2743.1	3541.3	3662	3415	3330	3019.5
Length (in.)	174.2	180.4	175.3	175.2	201.1	210.2	203.5	201	187.9
Turn Circle (ft.)	37	39.23	36.86	37.77	41.73	42.80	42.75	44	39.65
Displacement (cu. in.)	141.8	155.5	143.4	178.3	251.3	280.9	220.8	225	197.3
Gear Ratio	3.415	3.070	3.331	3.028	2.817	2.616	2.970	3.230	3.015

mean coefficients; *t* statistics in parentheses

Table 2.22: Standard Deviations by groups of Headroom
(in.)

	1_missing_5 1.5	2 1.5	2_missing_5 1.5	3 1.5	3_missing_5 1.5	4 1.5	4_missing_5 1.5	Total 1.5
Price	1009.6	854.1	3196.5	3404.0	4086.4	2256.7	926.6	2949.5
Mileage (mpg)	4.349	4.902	6.293	7.043	4.486	3.178	1.258	5.786
Trunk space (cu. ft.)	1.291	3.772	3.390	2.626	3.240	1.549	2.986	4.277
Weight (lbs.)	693.3	484.2	761.2	812.6	644.0	570.3	222.2	777.2
Length (in.)	21.48	15.22	19.71	21.29	16.97	16.90	11.12	22.27
Turn Circle (ft.)	3.916	3.723	3.634	3.919	4.992	2.781	2.500	4.399
Displacement (cu. in.)	60.32	47.86	83.01	98.48	84.98	89.71	16.74	91.84
Gear Ratio	0.376	0.370	0.394	0.508	0.450	0.308	0.0735	0.456

sd coefficients; *t* statistics in parentheses

Table 2.23: Averages by groups of Car type

	Domestic	Foreign	Total
Price	6072.4	6384.7	6165.3
Mileage (mpg)	19.83	24.77	21.30
Trunk space (cu. ft.)	14.75	11.41	13.76
Weight (lbs.)	3317.1	2315.9	3019.5
Length (in.)	196.1	168.5	187.9
Turn Circle (ft.)	41.44	35.41	39.65
Displacement (cu. in.)	233.7	111.2	197.3
Gear Ratio	2.807	3.507	3.015

mean coefficients; t statistics in parentheses

Tables by groups of foreign

Table 2.24: Standard Deviations by groups of Car type

	Domestic	Foreign	Total
Price	3097.1	2621.9	2949.5
Mileage (mpg)	4.743	6.611	5.786
Trunk space (cu. ft.)	4.306	3.217	4.277
Weight (lbs.)	695.4	433.0	777.2
Length (in.)	20.05	13.68	22.27
Turn Circle (ft.)	3.968	1.501	4.399
Displacement (cu. in.)	85.26	24.88	91.84
Gear Ratio	0.336	0.297	0.456

sd coefficients; *t* statistics in parentheses