Reproducible Collaborator Report Toy Example

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Date of report: 20DEC2023
Updates:

1. Added in the regression interpretation.
2. Determined t test was no longer applicable to main analysis.

Note this (collaborator) report will be very similar to the comprehensive report, differing only by exclusion of code syntax at the end.

We are interested in comparing weight of vehicles with their gas mileage. We hypothesize that vehicles that weigh more than 3,500 lbs will have worse gas mileage than the vehicles that do not.

Analysis plan initially included a t test as seen below.

The TTEST Procedure

Variable: MPG_City (MPG (City))

wt_cat	Method	N	Mean	Std Dev	Std Err	Minimum	Maximum
3500lbs or lighter		226	22.9115	5.5394	0.3685	12.0000	60.0000
Heavier than 3500lbs		202	16.8713	2.1402	0.1506	10.0000	23.0000
Diff (1-2)	Pooled		6.0402	4.2858	0.4150		
Diff (1-2)	Satterthwaite		6.0402		0.3981		

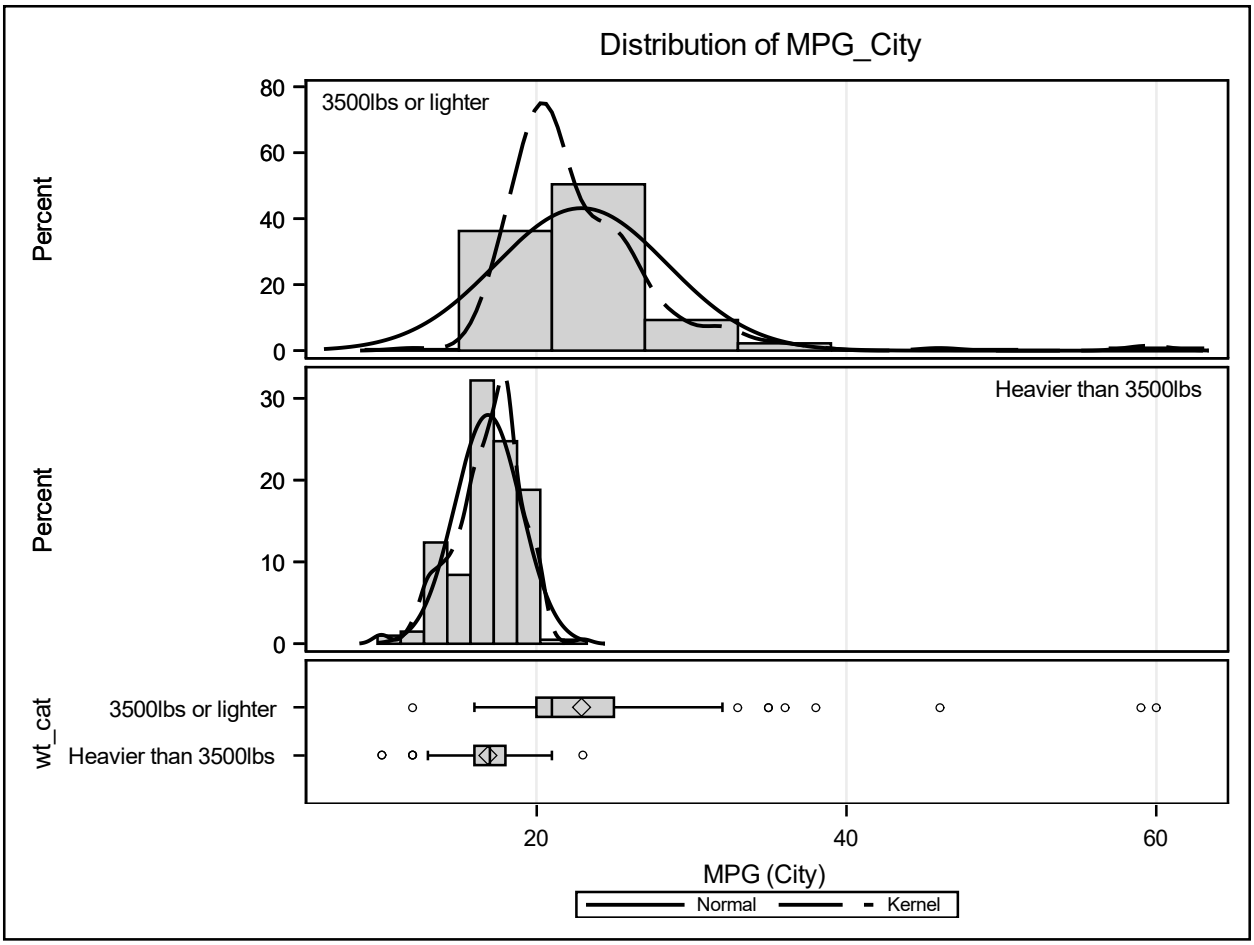
wt_cat	Method	Mean	95% CL Mean		Std Dev	95% CL Std Dev	
3500lbs or lighter		22.9115	22.1854	23.6376	5.5394	5.0715	6.1033
Heavier than 3500lbs		16.8713	16.5744	17.1682	2.1402	1.9498	2.3720
Diff (1-2)	Pooled	6.0402	5.2246	6.8559	4.2858	4.0164	4.5943
Diff (1-2)	Satterthwaite	6.0402	5.2568	6.8236			

Method	Variances	DF	t Value	Pr > |t|
Pooled	Equal	426	14.56	<.0001
Satterthwaite	Unequal	297.15	15.17	<.0001

Equality of Variances				
Method	Num DF	Den DF	F Value	Pr > F
Folded F	225	201	6.70	<.0001

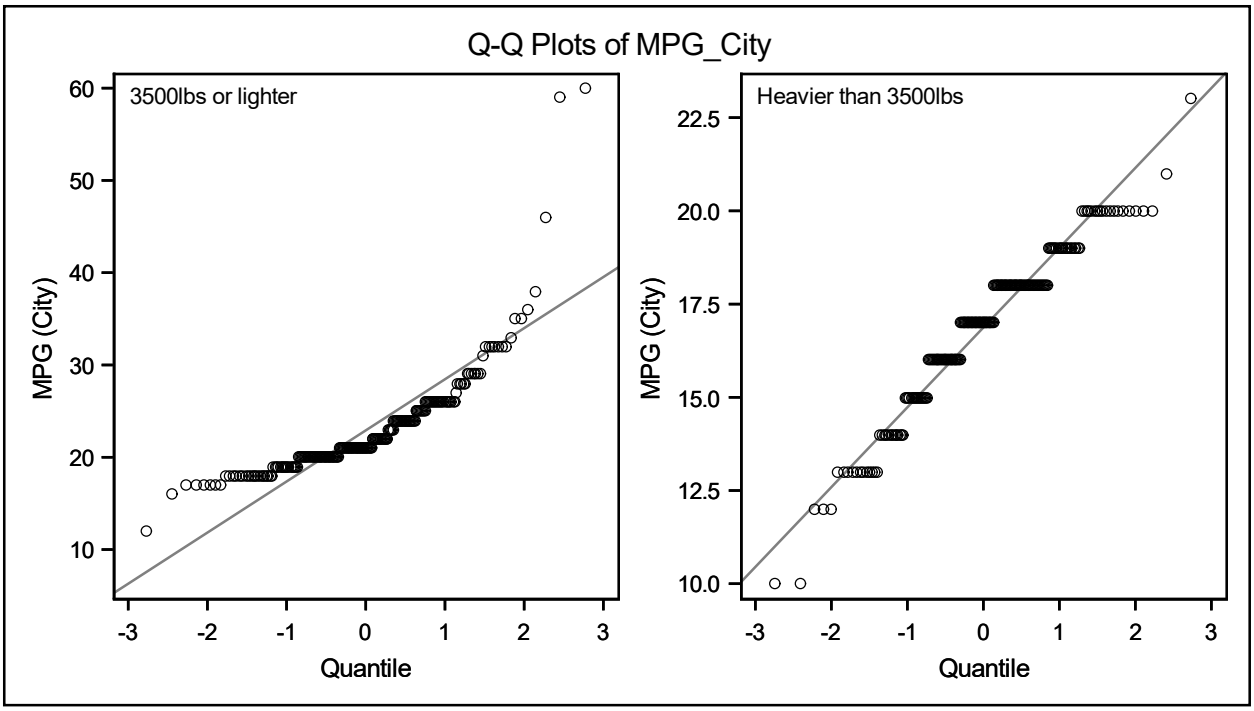
The TTEST Procedure

Variable: MPG_City (MPG (City))



The TTEST Procedure

Variable: MPG_City (MPG (City))



The t test comparing mean city gas mileage between cars that weigh over 3500lbs and those that are equal to and less than 3500 have a significant difference (6.70, p<.001).

Variable	*Class*	*N*	*Mean*	*LowerCLMean*	*UpperCLMean*
MPG_City	3500lbs or lighter	226	22.91	22.19	23.64
MPG_City	Heavier than 3500lbs	202	16.87	16.57	17.17

The REG Procedure
Model: MODEL1
Dependent Variable: MPG_City MPG (City)

Number of Observations Read	428
Number of Observations Used	428

Analysis of Variance

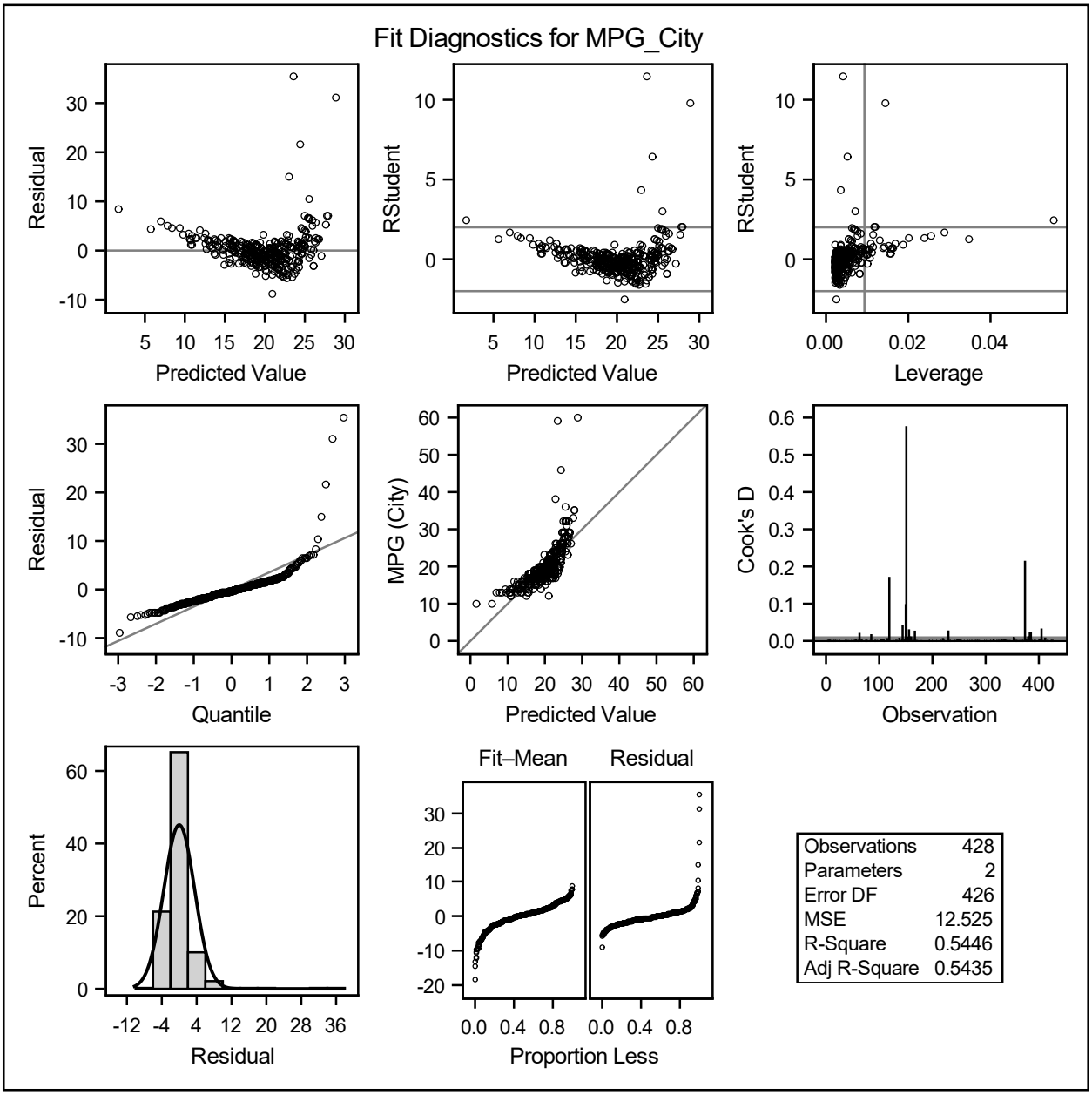
Source	*DF*	*Sum of Squares*	*Mean Square*	*F Value*	*Pr > F*
Model	1	6380.69016	6380.69016	509.43	<.0001
Error	426	5335.73040	12.52519		
Corrected Total	427	11716			

Root MSE	3.53909	*R-Square*	0.5446
Dependent Mean	20.06075	*Adj R-Sq*	0.5435
Coeff Var	17.64189		

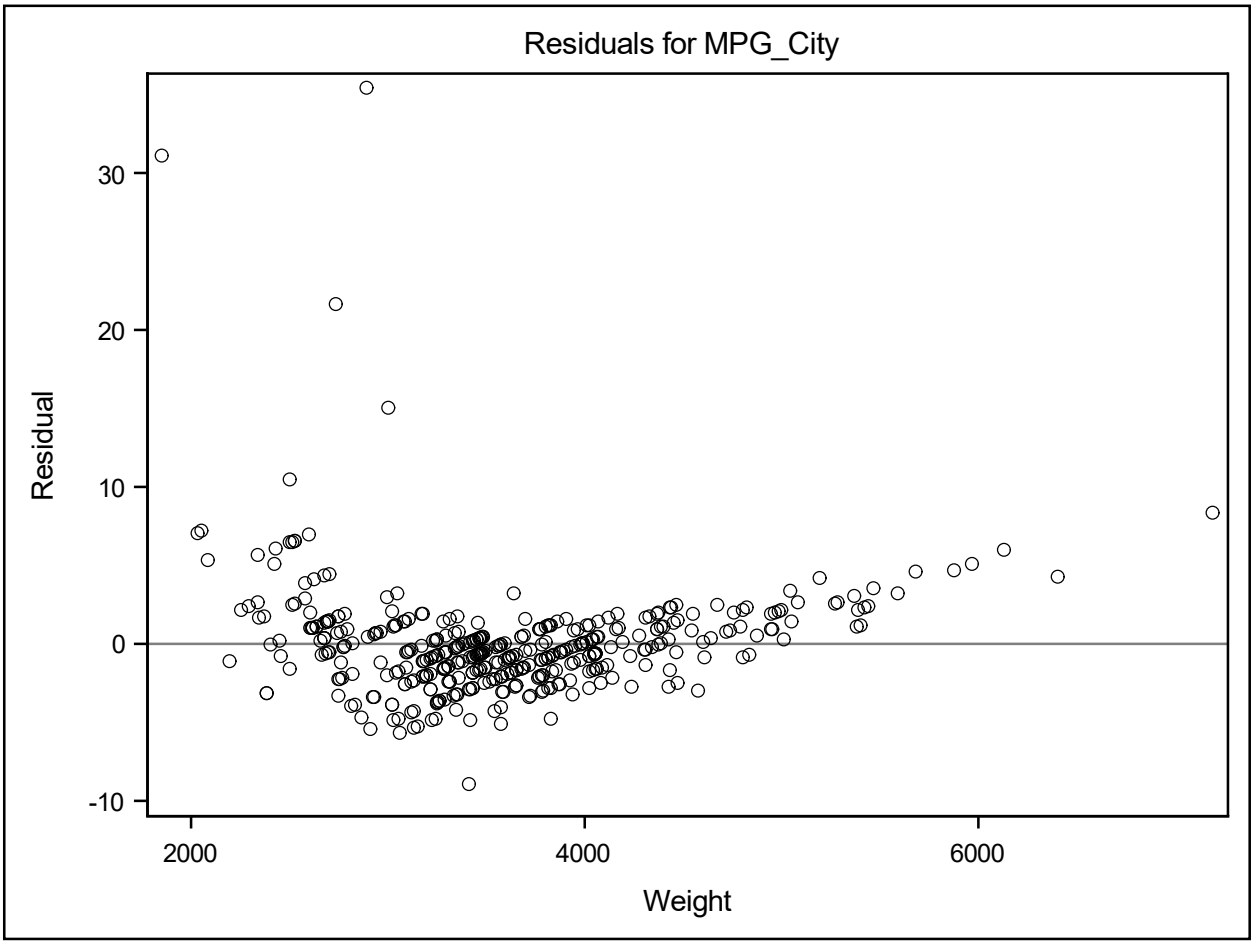
Parameter Estimates

Variable	*Label*	*DF*	*Parameter Estimate*	*Standard Error*	*t Value*	*Pr > |t|*
Intercept	Intercept	1	38.28385	0.82531	46.39	<.0001
Weight	Weight	1	-0.00509	0.00022566	-22.57	<.0001

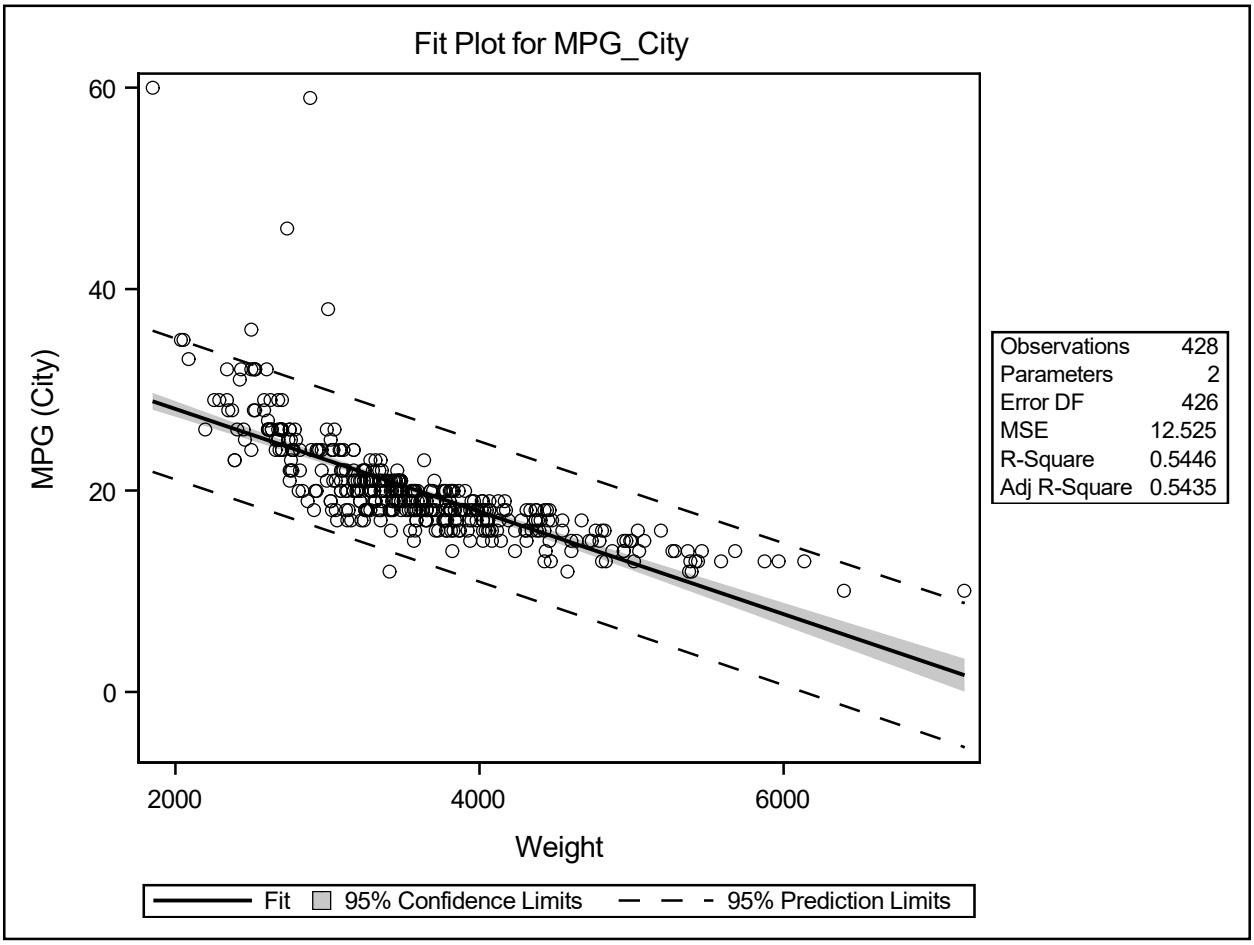
The REG Procedure
Model: MODEL1
Dependent Variable: MPG_City MPG (City)



The REG Procedure
Model: MODEL1
Dependent Variable: MPG_City MPG (City)



The REG Procedure
Model: MODEL1
Dependent Variable: MPG_City MPG (City)



Interpretation:

The linear regression assessing mean city gas mileage shows a significant relationship with car weight. For every one-thousand pound increase in weight, the expected MPG (city) changes by -5.09 ($p<.001$).

Session Information
Date: 20DEC2023
Operating System: WIN, X64_10PRO
SAS Version: 9.4

End of report.