The GLM Procedure

Class Level Information		
Class	**Levels**	**Values**
cylinders	5	3 4 5 6 8
origin	3	1 2 3
year	13	70 71 72 73 74 75 76 77 78 79 80 81 82

Number of Observations Read	392
Number of Observations Used	392

The GLM Procedure

Matrix Element Representation	
Dependent Variable: logmpg	
Effect	**Representation**
Intercept	Intercept
cylinders 3	cylinders 3
cylinders 4	cylinders 4
cylinders 5	cylinders 5
cylinders 6	cylinders 6
cylinders 8	cylinders 8
weight	weight
acceleration	acceleration
year 70	year 70
year 71	year 71
year 72	year 72
year 73	year 73
year 74	year 74
year 75	year 75
year 76	year 76
year 77	year 77
year 78	year 78
year 79	year 79
year 80	year 80
year 81	year 81
year 82	year 82
inv_horsepower	Dummy001

The GLM Procedure

Dependent Variable: logmpg		
Tolerances		
Variable	Type I Tolerance	Type II Tolerance
Intercept	392	1.4333923673
cylinders 3	1	0.7528994117
cylinders 4	0.9893702259	0.1049817664
cylinders 5	0.9917166524	0.8544348741
cylinders 6	0.7025089606	0.2968599833
cylinders 8	6.549969E-16	0
weight	0.1891118904	0.1013223566
acceleration	0.6549779389	0.3463364408
year 70	0.9043496026	0.479853677
year 71	0.9824706488	0.5429539968
year 72	0.9461171379	0.5229797412
year 73	0.9023607596	0.4341084396
year 74	0.9650340773	0.561545365
year 75	0.9171119031	0.5138932064
year 76	0.9009130111	0.490761158
year 77	0.8882556073	0.5383790614
year 78	0.8156830095	0.4797336499
year 79	0.7584953685	0.5192898688
year 80	0.7172788569	0.5513817719
year 81	0.5512399442	0.5458916444
year 82	1.346498E-15	0
Dummy001	0.1375513745	0.1375513745

The GLM Procedure

Dependent Variable: logmpg

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	19	41.23330445	2.17017392	203.01	<.0001
Error	372	3.97665657	0.01068994		
Corrected Total	391	45.20996102			

R-Square	Coeff Var	Root MSE	logmpg Mean
0.912040	3.337047	0.103392	3.098313

Source	DF	Type I SS	Mean Square	F Value	Pr > F
cylinders	4	32.04929962	8.01232490	749.52	<.0001
weight	1	3.75049524	3.75049524	350.84	<.0001
acceleration	1	0.14118134	0.14118134	13.21	0.0003
year	12	4.90560737	0.40880061	38.24	<.0001
inv_horsepower	1	0.38672088	0.38672088	36.18	<.0001

Source	DF	Type III SS	Mean Square	F Value	Pr > F
cylinders	4	0.43456791	0.10864198	10.16	<.0001
weight	1	1.00140081	1.00140081	93.68	<.0001
acceleration	1	0.09497271	0.09497271	8.88	0.0031
year	12	4.51247875	0.37603990	35.18	<.0001
inv_horsepower	1	0.38672088	0.38672088	36.18	<.0001

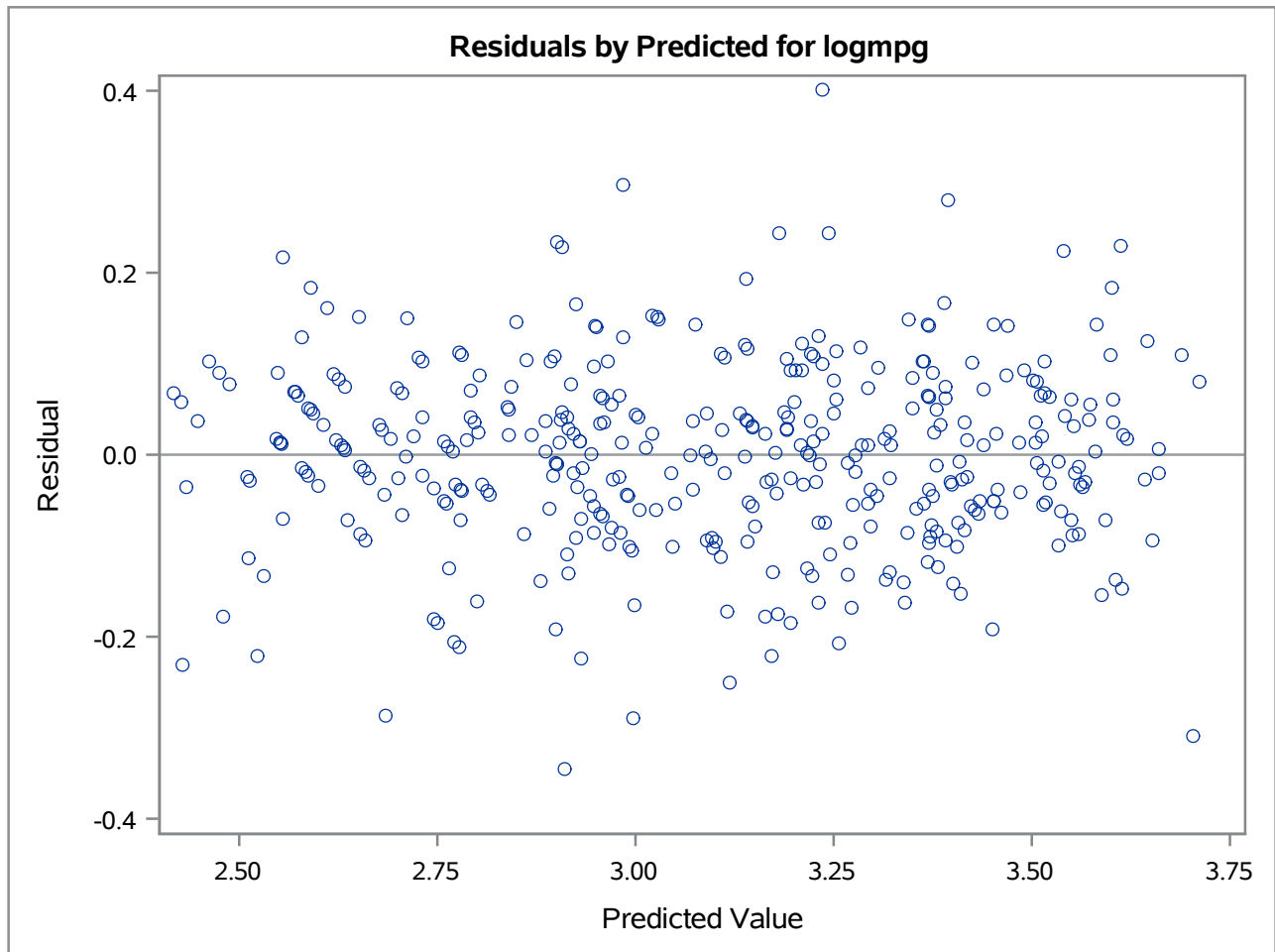| Parameter		Estimate		Standard Error	t Value	Pr > |t|
Intercept		3.671389079	B	0.08635849	42.51	<.0001
cylinders	3	-0.135482888	B	0.05988475	-2.26	0.0242
cylinders	4	0.100305334	B	0.03223803	3.11	0.0020
cylinders	5	0.127878778	B	0.06482697	1.97	0.0493
cylinders	6	0.008798696	B	0.02346046	0.38	0.7078
cylinders	8	0.000000000	B	.	.	.
weight		-0.000187176		0.00001934	-9.68	<.0001
acceleration		-0.009599125		0.00322047	-2.98	0.0031
year	70	-0.305224191	B	0.02880208	-10.60	<.0001
year	71	-0.257446230	B	0.02798471	-9.20	<.0001
year	72	-0.303155550	B	0.02803874	-10.81	<.0001
year	73	-0.329221163	B	0.02618365	-12.57	<.0001
year	74	-0.234318457	B	0.02800341	-8.37	<.0001
year	75	-0.239453342	B	0.02740181	-8.74	<.0001
year	76	-0.217850922	B	0.02648589	-8.23	<.0001
year	77	-0.150929291	B	0.02763483	-5.46	<.0001

The GLM Procedure

Dependent Variable: logmpg

Parameter		Estimate		Standard Error	t Value	Pr > |t|
year	78	-0.155982245	B	0.02610684	-5.97	<.0001
year	79	-0.065523983	B	0.02768684	-2.37	0.0185
year	80	0.035574219	B	0.02777001	1.28	0.2010
year	81	-0.036913076	B	0.02744402	-1.35	0.1794
year	82	0.000000000	B	.	.	.
inv_horsepower		0.024115808		0.00400950	6.01	<.0001

Note: The X'X matrix has been found to be singular, and a generalized inverse was used to solve the normal equations. Terms whose estimates are followed by the letter 'B' are not uniquely estimable.
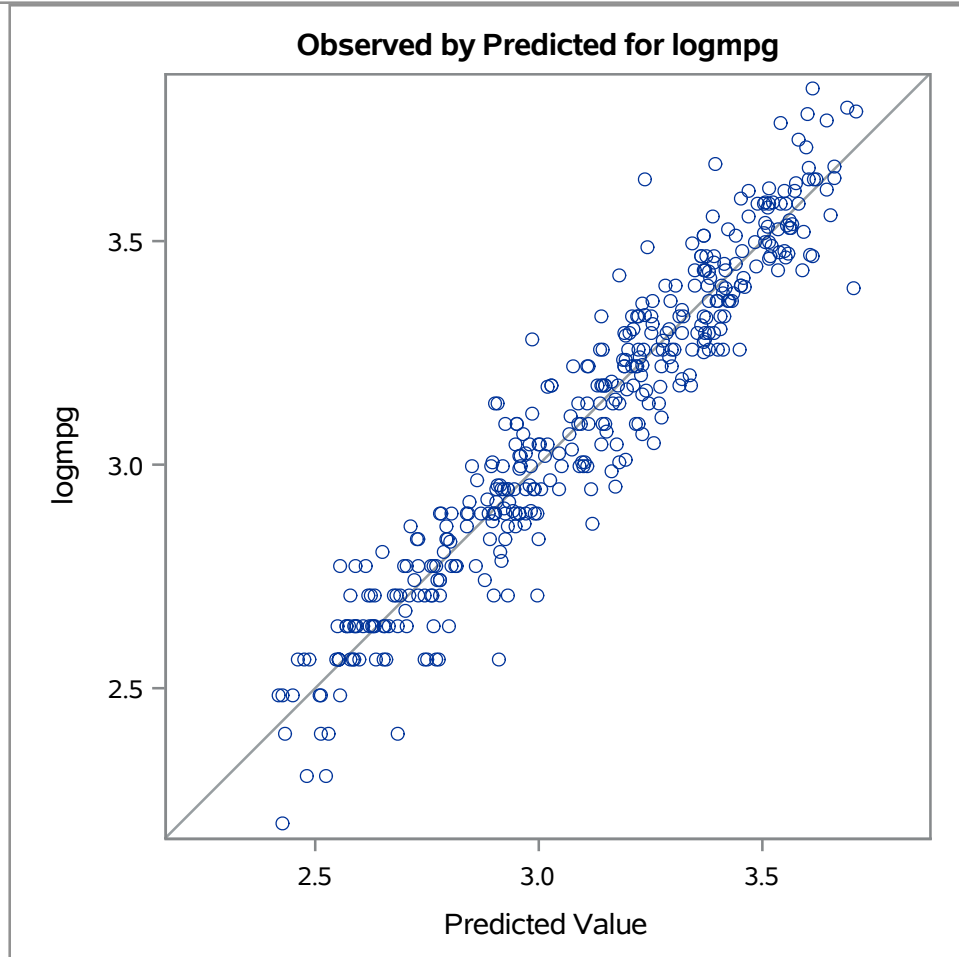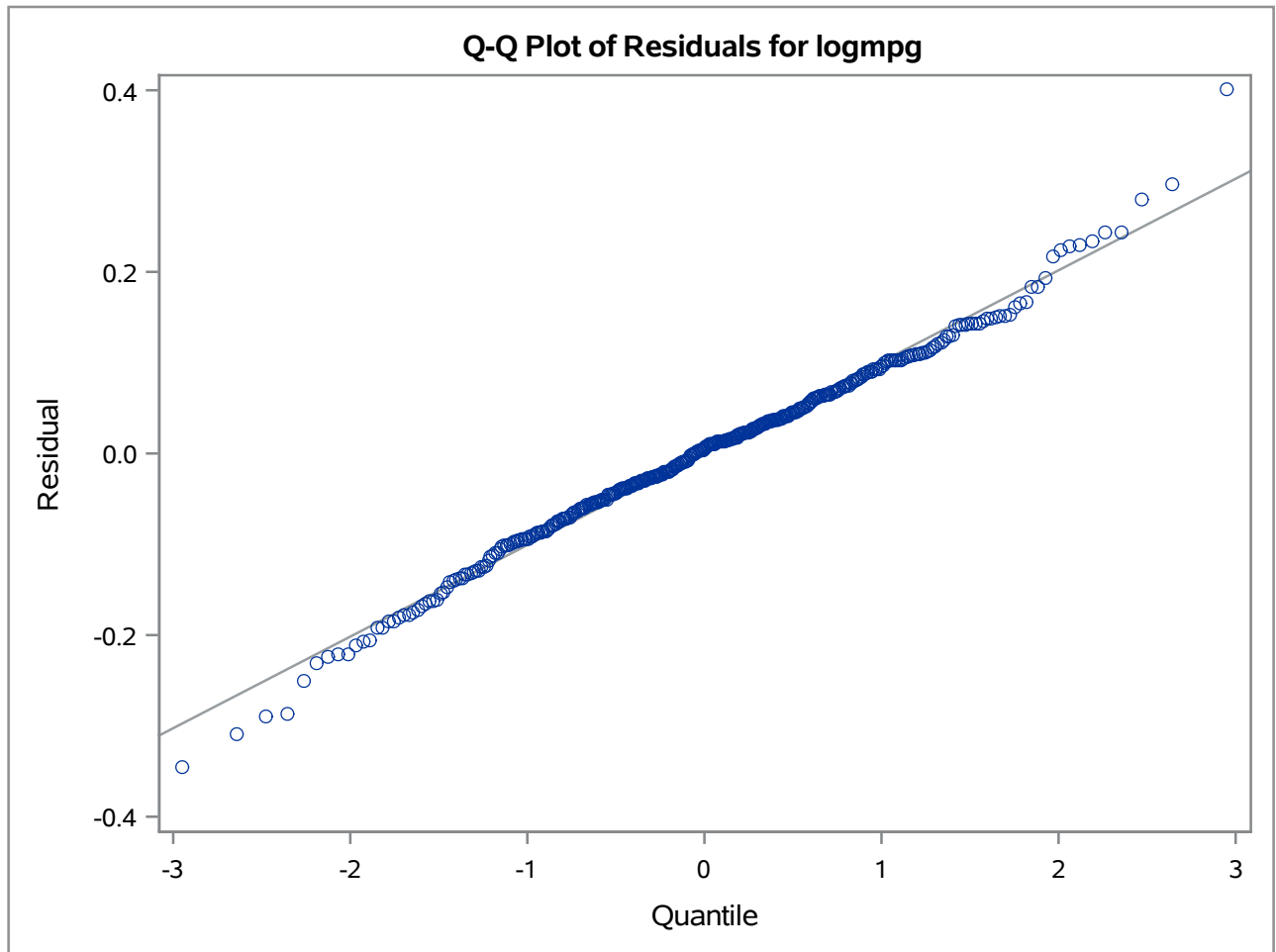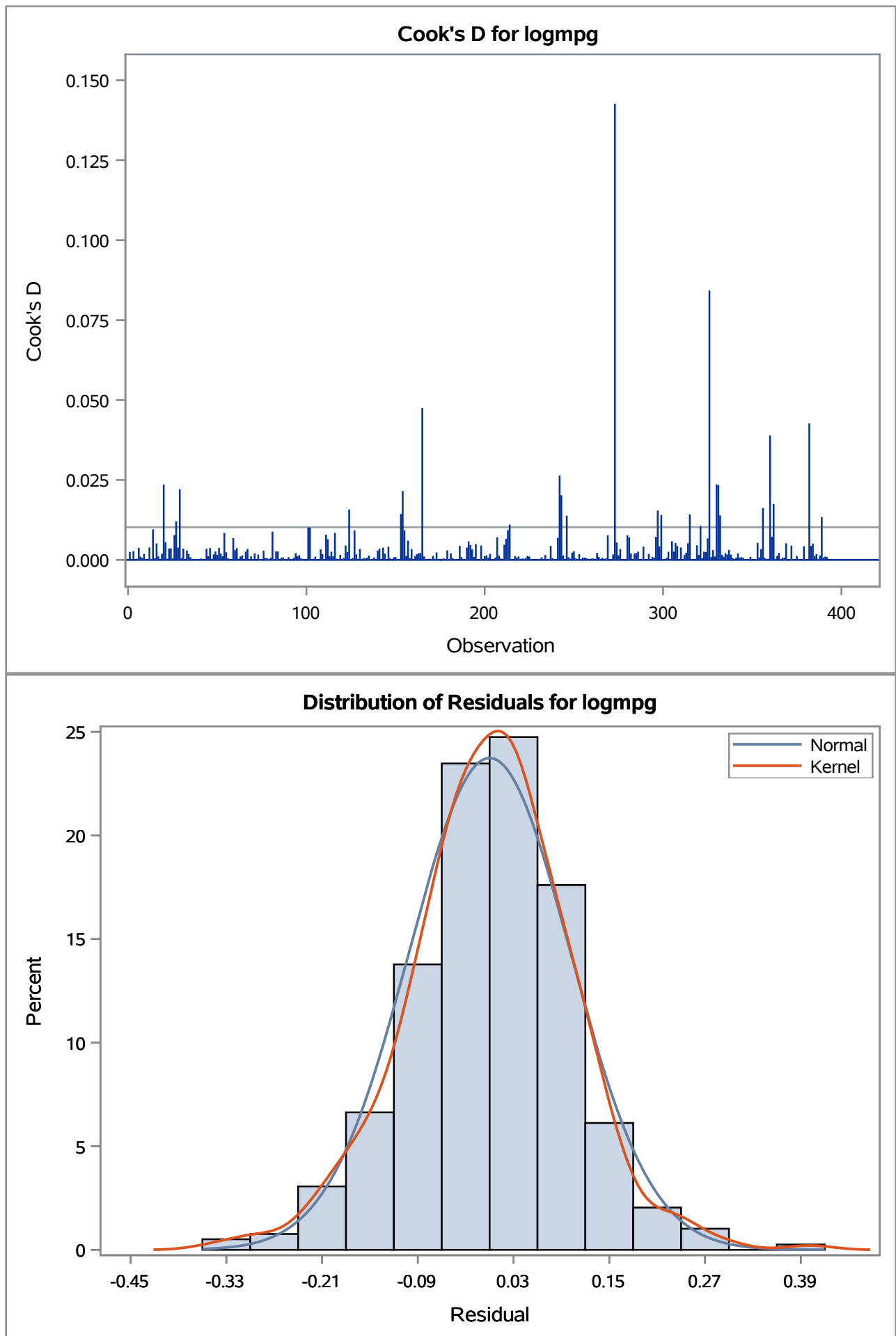

Residuals by Predicted for logmpg

The GLM Procedure

Dependent Variable: logmpg

Studentized Residuals by Predicted for logmpg

Outlier and Leverage Diagnostics for logmpg

The GLM Procedure

Dependent Variable: logmpg

Q-Q Plot of Residuals for logmpg

Observed by Predicted for logmpg

The GLM Procedure

Dependent Variable: logmpg

Cook's D for logmpg

Distribution of Residuals for logmpg

The GLM Procedure

Dependent Variable: logmpg

Residual-Fit Spread Plot for logmpg