

Multicollinearity - Ridge compared to LASSO

The REG Procedure
Model: MODEL1
Dependent Variable: y

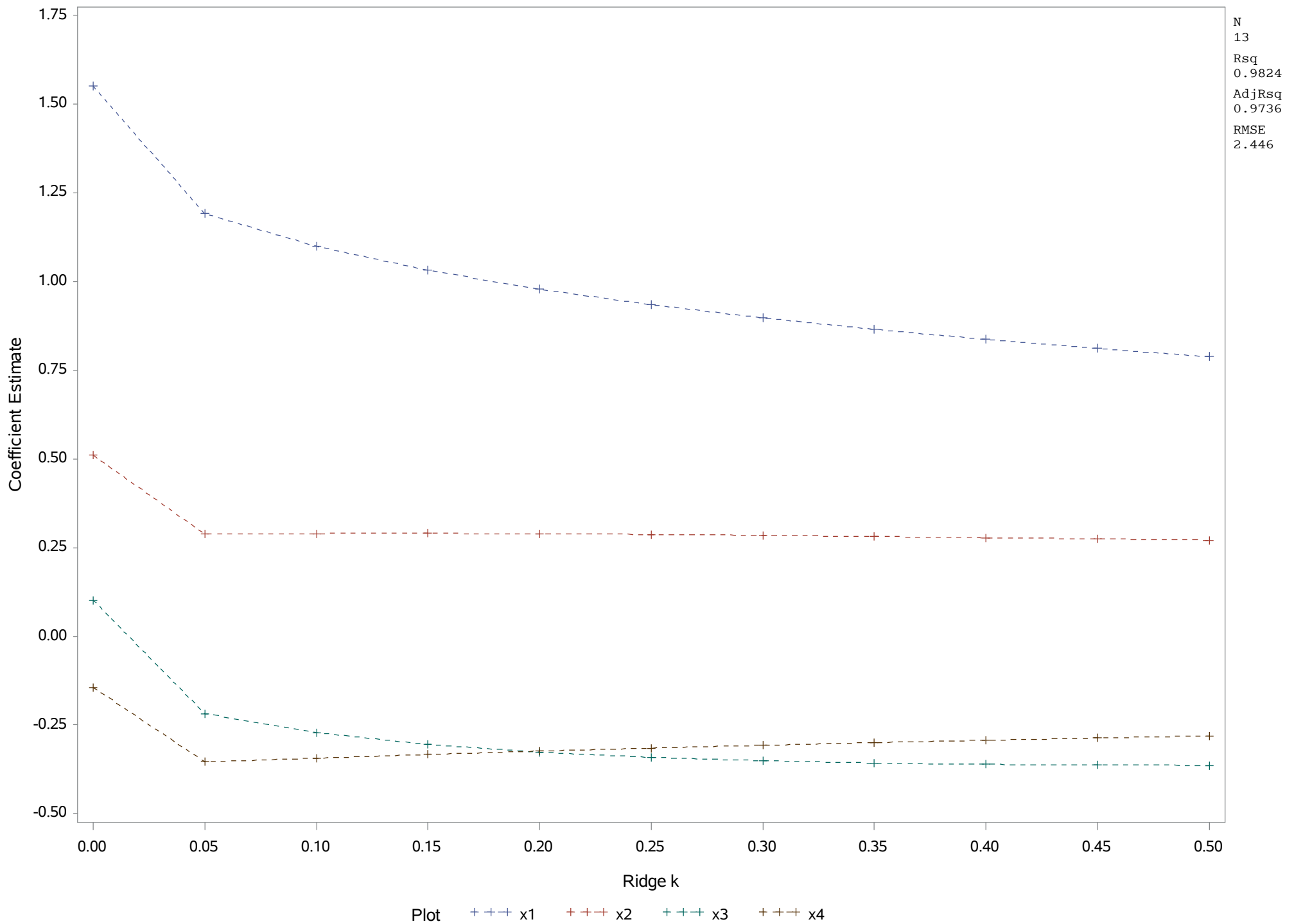
Number of Observations Read	13
Number of Observations Used	13

Analysis of Variance					
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	2667.89944	666.97486	111.48	<.0001
Error	8	47.86364	5.98295		
Corrected Total	12	2715.76308			

Root MSE	2.44601	R-Square	0.9824
Dependent Mean	95.42308	Adj R-Sq	0.9736
Coeff Var	2.56333		

Parameter Estimates						
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > t	Variance Inflation
Intercept	1	62.40537	70.07096	0.89	0.3991	0
x1	1	1.55110	0.74477	2.08	0.0708	38.49621
x2	1	0.51017	0.72379	0.70	0.5009	254.42317
x3	1	0.10191	0.75471	0.14	0.8959	46.86839
x4	1	-0.14406	0.70905	-0.20	0.8441	282.51286

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Obs	_MODEL_	_TYPE_	_DEPVAR_	_RIDGE_	_PCOMIT_	_RMSE_	Intercept	x1	x2	x3	x4	y
1	MODEL1	PARMS	y	.	.	2.44601	62.4054	1.55110	0.51017	0.10191	-0.14406	-1
2	MODEL1	RIDGE	y	0.00	.	2.44601	62.4054	1.55110	0.51017	0.10191	-0.14406	-1
3	MODEL1	RIDGE	y	0.05	.	2.54498	85.8306	1.19172	0.28850	-0.21796	-0.35423	-1
4	MODEL1	RIDGE	y	0.10	.	2.71492	86.7702	1.09962	0.28985	-0.27175	-0.34370	-1
5	MODEL1	RIDGE	y	0.15	.	2.91763	87.3344	1.03203	0.29020	-0.30502	-0.33322	-1
6	MODEL1	RIDGE	y	0.20	.	3.13492	87.7519	0.97879	0.28919	-0.32679	-0.32372	-1
7	MODEL1	RIDGE	y	0.25	.	3.35900	88.0869	0.93499	0.28720	-0.34131	-0.31510	-1
8	MODEL1	RIDGE	y	0.30	.	3.58583	88.3683	0.89783	0.28455	-0.35097	-0.30720	-1
9	MODEL1	RIDGE	y	0.35	.	3.81294	88.6118	0.86556	0.28148	-0.35725	-0.29989	-1
10	MODEL1	RIDGE	y	0.40	.	4.03871	88.8270	0.83703	0.27813	-0.36111	-0.29308	-1
11	MODEL1	RIDGE	y	0.45	.	4.26202	89.0203	0.81144	0.27460	-0.36318	-0.28668	-1
12	MODEL1	RIDGE	y	0.50	.	4.48207	89.1960	0.78822	0.27096	-0.36391	-0.28064	-1

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The GLMSELECT Procedure

Data Set	WORK.EXAMPLE
Dependent Variable	y
Selection Method	LASSO
Stop Criterion	SBC
Effect Hierarchy Enforced	None

Number of Observations Read	13
Number of Observations Used	13

Dimensions	
Number of Effects	5
Number of Parameters	5

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The GLMSELECT Procedure

LASSO Selection Summary				
Step	Effect Entered	Effect Removed	Number Effects In	SBC
0	Intercept		1	72.0094
1	x4		2	71.9502*
* Optimal Value of Criterion				

Selection stopped at a local minimum of the SBC criterion.

Stop Details				
Candidate For	Effect	Candidate SBC		Compare SBC
Entry	x1	72.6149	>	71.9502

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The GLMSELECT Procedure Selected Model

The selected model is the model at the last step (Step 1).

Effects:	Intercept x4
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The GLMSELECT Procedure Selected Model

Analysis of Variance				
Source	DF	Sum of Squares	Mean Square	F Value
Model	1	496.41264	496.41264	2.46
Error	11	2219.35043	201.75913	
Corrected Total	12	2715.76308		

Root MSE	14.20419
Dependent Mean	95.42308
R-Square	0.1828
Adj R-Sq	0.1085
AIC	85.82027
AICC	88.48693
SBC	71.95016

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The GLMSELECT Procedure Selected Model

Parameter Estimates		
Parameter	DF	Estimate
Intercept	1	98.660102
x4	1	-0.107901