**data** old;

input year OilProd OilPrice FuelEcon Miles CarProd PopSize OilCons;

cards;

1960 7150000 1.9 10 718763.00 12800000.00 3026002942.00 32.708

1965 8180000 1.8 12.5 887811.00 19000000.00 3329122479.00 30.81

1970 9944000 1.8 13 1109724.00 22500000.00 3691172616.00 45.35

1975 8254000 11.53 13.5 1327664.00 25000000.00 4071020434.00 54.33

1980 8606000 36.83 20 1527295.00 28600000.00 4449048798.00 61.23

1985 9030000 27.56 23 1774827.00 32400000.00 4863601517.00 59.25

1990 7338000 23.73 23.3 2144362.00 36300000.00 5320816667.00 66.74

1991 7299000 20 23.4 2172050.00 35100000.00 5408908724.00 66.87

1992 7103000 19.32 23.1 2247151.00 35500000.00 5494899570.00 67.93

1993 6858000 16.97 23.5 2296378.00 34200000.00 5578865109.00 67.66

1994 6760000 15.82 23.3 2357588.00 34800000.00 5661086346.00 69.19

1995 6530000 17.02 23.4 2422696.00 35500000.00 5741822412.00 70.32

1996 6506000 20.67 23.3 2485848.00 36900000.00 5821016750.00 71.81

1997 6531000 19.09 23.4 2561695.00 39100000.00 5898688337.00 74

1998 6043000 12.72 23.4 2631522.00 38400000.00 5975303657.00 74.52

1999 5959000 17.97 23 2691056.00 39759847.00 6051478010.00 76.25

2000 5855000 28.5 22.9 2746925.00 41215653.00 6127700428.00 76.87

2001 5887000 24.44 23 2795610.00 39825888.00 6204147026.00 77.59

2002 5722000 25.02 23.2 2855508.00 41358394.00 6280853817.00 78.51

2003 5571000 28.83 23.2 2890221.00 41968666.00 6357991749.00 80.26

2004 5510000 38.27 23.1 2964788.00 44554268.00 6435705595.00 83.11

2005 4988000 54.52 23.5 2989430.00 47046368.00 6514094605.00 84.41

2006 5187000 65.14 23.3 3014371.00 49918578.00 6593227977.00 85.33

2007 5109000 72.39 24.1 3031124.00 53201346.00 6673105937.00 86.74

2008 5113000 97.26 24.3 2976528.00 52841125.00 6753649228.00 86.12

2009 5453000 61.67 25.4 2956763.52 47772598.00 6834721933.00 85.07

2010 5598000 79.5 25.8 2967265.97 58239494.00 6916183482.00 87.87

2011 5991000 111.26 25.6 2950401.81 59897273.00 6997998760.00 88.97

2012 7079000 111.67 27 2969432.94 63081024.00 7080072417.00 89.85

2013 7873000 108.66 27.4 2988322.74 65745403.00 7162119434.00 91.24

;;;;

**proc** **print**;

**proc** **reg**;

model miles= fuelecon oilprice oilprod/selection=stepwise;

**proc** **reg**;

model carprod=miles popsize/selection=stepwise;

**proc** **reg**;

model oilcons=carprod miles/selection=stepwise;

**run**;

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 Oil Fuel Oil

 Obs year OilProd Price Econ Miles CarProd PopSize Cons

 1 1960 7150000 1.90 10.0 718763.00 12800000 3026002942 32.708

 2 1965 8180000 1.80 12.5 887811.00 19000000 3329122479 30.810

 3 1970 9944000 1.80 13.0 1109724.00 22500000 3691172616 45.350

 4 1975 8254000 11.53 13.5 1327664.00 25000000 4071020434 54.330

 5 1980 8606000 36.83 20.0 1527295.00 28600000 4449048798 61.230

 6 1985 9030000 27.56 23.0 1774827.00 32400000 4863601517 59.250

 7 1990 7338000 23.73 23.3 2144362.00 36300000 5320816667 66.740

 8 1991 7299000 20.00 23.4 2172050.00 35100000 5408908724 66.870

 9 1992 7103000 19.32 23.1 2247151.00 35500000 5494899570 67.930

 10 1993 6858000 16.97 23.5 2296378.00 34200000 5578865109 67.660

 11 1994 6760000 15.82 23.3 2357588.00 34800000 5661086346 69.190

 12 1995 6530000 17.02 23.4 2422696.00 35500000 5741822412 70.320

 13 1996 6506000 20.67 23.3 2485848.00 36900000 5821016750 71.810

 14 1997 6531000 19.09 23.4 2561695.00 39100000 5898688337 74.000

 15 1998 6043000 12.72 23.4 2631522.00 38400000 5975303657 74.520

 16 1999 5959000 17.97 23.0 2691056.00 39759847 6051478010 76.250

 17 2000 5855000 28.50 22.9 2746925.00 41215653 6127700428 76.870

 18 2001 5887000 24.44 23.0 2795610.00 39825888 6204147026 77.590

 19 2002 5722000 25.02 23.2 2855508.00 41358394 6280853817 78.510

 20 2003 5571000 28.83 23.2 2890221.00 41968666 6357991749 80.260

 21 2004 5510000 38.27 23.1 2964788.00 44554268 6435705595 83.110

 22 2005 4988000 54.52 23.5 2989430.00 47046368 6514094605 84.410

 23 2006 5187000 65.14 23.3 3014371.00 49918578 6593227977 85.330

 24 2007 5109000 72.39 24.1 3031124.00 53201346 6673105937 86.740

 25 2008 5113000 97.26 24.3 2976528.00 52841125 6753649228 86.120

 26 2009 5453000 61.67 25.4 2956763.52 47772598 6834721933 85.070

 27 2010 5598000 79.50 25.8 2967265.97 58239494 6916183482 87.870

 28 2011 5991000 111.26 25.6 2950401.81 59897273 6997998760 88.970

 29 2012 7079000 111.67 27.0 2969432.94 63081024 7080072417 89.850

 30 2013 7873000 108.66 27.4 2988322.74 65745403 7162119434 91.240

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 The REG Procedure

 Model: MODEL1

 Dependent Variable: Miles

 Number of Observations Read 30

 Number of Observations Used 30

 Stepwise Selection: Step 1

 Variable FuelEcon Entered: R-Square = 0.8016 and C(p) = 65.8713

 Analysis of Variance

 Sum of Mean

 Source DF Squares Square F Value Pr > F

 Model 1 1.082398E13 1.082398E13 113.11 <.0001

 Error 28 2.679511E12 95696811198

 Corrected Total 29 1.350349E13

 Parameter Standard

 Variable Estimate Error Type II SS F Value Pr > F

 Intercept -789230 306544 6.343372E11 6.63 0.0156

 FuelEcon 144145 13554 1.082398E13 113.11 <.0001

 Bounds on condition number: 1, 1

---------------------------------------------------------------------------------------------------

 Stepwise Selection: Step 2

 Variable OilProd Entered: R-Square = 0.9362 and C(p) = 5.5209

 Analysis of Variance

 Sum of Mean

 Source DF Squares Square F Value Pr > F

 Model 2 1.264249E13 6.321244E12 198.23 <.0001

 Error 27 8.610028E11 31888990766

 Corrected Total 29 1.350349E13

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 The REG Procedure

 Model: MODEL1

 Dependent Variable: Miles

 Stepwise Selection: Step 2

 Parameter Standard

 Variable Estimate Error Type II SS F Value Pr > F

 Intercept 1584178 360685 6.151666E11 19.29 0.0002

 FuelEcon 107118 9233.35798 4.291875E12 134.59 <.0001

 OilProd -0.23368 0.03094 1.818508E12 57.03 <.0001

 Bounds on condition number: 1.3927, 5.5709

---------------------------------------------------------------------------------------------------

 Stepwise Selection: Step 3

 Variable OilPrice Entered: R-Square = 0.9438 and C(p) = 4.0000

 Analysis of Variance

 Sum of Mean

 Source DF Squares Square F Value Pr > F

 Model 3 1.274518E13 4.248392E12 145.66 <.0001

 Error 26 7.583137E11 29165910260

 Corrected Total 29 1.350349E13

 Parameter Standard

 Variable Estimate Error Type II SS F Value Pr > F

 Intercept 1713042 351712 6.91892E11 23.72 <.0001

 FuelEcon 96689 10434 2.504501E12 85.87 <.0001

 OilPrice 2229.23818 1188.04284 1.026891E11 3.52 0.0719

 OilProd -0.23129 0.02962 1.778072E12 60.96 <.0001

 Bounds on condition number: 1.9446, 14.803

---------------------------------------------------------------------------------------------------

 All variables left in the model are significant at the 0.1500 level.

 All variables have been entered into the model.

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 The REG Procedure

 Model: MODEL1

 Dependent Variable: Miles

 Summary of Stepwise Selection

 Variable Variable Number Partial Model

 Step Entered Removed Vars In R-Square R-Square C(p) F Value Pr > F

 1 FuelEcon 1 0.8016 0.8016 65.8713 113.11 <.0001

 2 OilProd 2 0.1347 0.9362 5.5209 57.03 <.0001

 3 OilPrice 3 0.0076 0.9438 4.0000 3.52 0.0719

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 The REG Procedure

 Model: MODEL1

 Dependent Variable: CarProd

 Number of Observations Read 30

 Number of Observations Used 30

 Stepwise Selection: Step 1

 Variable PopSize Entered: R-Square = 0.8782 and C(p) = 47.0371

 Analysis of Variance

 Sum of Mean

 Source DF Squares Square F Value Pr > F

 Model 1 3.992453E15 3.992453E15 201.87 <.0001

 Error 28 5.537676E14 1.977741E13

 Corrected Total 29 4.546221E15

 Parameter Standard

 Variable Estimate Error Type II SS F Value Pr > F

 Intercept -20549945 4367186 4.379127E14 22.14 <.0001

 PopSize 0.01055 0.00074276 3.992453E15 201.87 <.0001

 Bounds on condition number: 1, 1

---------------------------------------------------------------------------------------------------

 Stepwise Selection: Step 2

 Variable Miles Entered: R-Square = 0.9550 and C(p) = 3.0000

 Analysis of Variance

 Sum of Mean

 Source DF Squares Square F Value Pr > F

 Model 2 4.341507E15 2.170753E15 286.30 <.0001

 Error 27 2.047142E14 7.582009E12

 Corrected Total 29 4.546221E15

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 The REG Procedure

 Model: MODEL1

 Dependent Variable: CarProd

 Stepwise Selection: Step 2

 Parameter Standard

 Variable Estimate Error Type II SS F Value Pr > F

 Intercept -53903092 5610307 6.999038E14 92.31 <.0001

 Miles -30.82468 4.54302 3.490533E14 46.04 <.0001

 PopSize 0.02921 0.00279 8.322601E14 109.77 <.0001

 Bounds on condition number: 36.758, 147.03

---------------------------------------------------------------------------------------------------

 All variables left in the model are significant at the 0.1500 level.

 All variables have been entered into the model.

 Summary of Stepwise Selection

 Variable Variable Number Partial Model

 Step Entered Removed Vars In R-Square R-Square C(p) F Value Pr > F

 1 PopSize 1 0.8782 0.8782 47.0371 201.87 <.0001

 2 Miles 2 0.0768 0.9550 3.0000 46.04 <.0001

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 The REG Procedure

 Model: MODEL1

 Dependent Variable: OilCons

 Number of Observations Read 30

 Number of Observations Used 30

 Stepwise Selection: Step 1

 Variable Miles Entered: R-Square = 0.9504 and C(p) = 28.5024

 Analysis of Variance

 Sum of Mean

 Source DF Squares Square F Value Pr > F

 Model 1 6750.59196 6750.59196 536.54 <.0001

 Error 28 352.28516 12.58161

 Corrected Total 29 7102.87712

 Parameter Standard

 Variable Estimate Error Type II SS F Value Pr > F

 Intercept 18.36484 2.41949 724.87680 57.61 <.0001

 Miles 0.00002236 9.652618E-7 6750.59196 536.54 <.0001

 Bounds on condition number: 1, 1

---------------------------------------------------------------------------------------------------

 Stepwise Selection: Step 2

 Variable CarProd Entered: R-Square = 0.9754 and C(p) = 3.0000

 Analysis of Variance

 Sum of Mean

 Source DF Squares Square F Value Pr > F

 Model 2 6928.35809 3464.17904 535.95 <.0001

 Error 27 174.51903 6.46367

 Corrected Total 29 7102.87712

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 The REG Procedure

 Model: MODEL1

 Dependent Variable: OilCons

 Stepwise Selection: Step 2

 Parameter Standard

 Variable Estimate Error Type II SS F Value Pr > F

 Intercept 17.75026 1.73814 674.09404 104.29 <.0001

 CarProd 4.140383E-7 7.895061E-8 177.76613 27.50 <.0001

 Miles 0.00001568 0.00000145 757.68256 117.22 <.0001

 Bounds on condition number: 4.3841, 17.536

---------------------------------------------------------------------------------------------------

 All variables left in the model are significant at the 0.1500 level.

 All variables have been entered into the model.

 Summary of Stepwise Selection

 Variable Variable Number Partial Model

 Step Entered Removed Vars In R-Square R-Square C(p) F Value Pr > F

 1 Miles 1 0.9504 0.9504 28.5024 536.54 <.0001

 2 CarProd 2 0.0250 0.9754 3.0000 27.50 <.0001