

```

1 *****;
2 *** SENIC hospital study from Appendix C of: ***;
3 *** Neter, J., Kutner, M. H., Nachtsheim, C. J., and Wasserman, W., ***;
4 *** Applied Linear Statistical Models, 4th Edition, Richard D. ***;
5 *** Irwin, Inc., Burr Ridge, Illinois, 1996. ***;
6 *****;
7 OPTIONS PS=256 LS=121 NOCENTER NODATE NONUMBER;
8
9 DATA SENIC; Infile cards missover;
10 TITLE1 'SENIC database from NKNW 1996 (Appendix C)';
11 INPUT IDNo LtofStay Age InfRisk CulRatio XRay NoBeds MedSch Region Census
Nurses Services;
12 *** label IDNo = 'Identification number'
13 LtofStay = 'Length of stay (days)'
14 Age = 'Patient age (years)'
15 InfRisk = 'Average Infection risk (%)'
16 CulRatio = 'ratio cultures to patients w/o symptoms'
17 XRay = 'ratio xrays to patients w/o symptoms'
18 NoBeds = 'Average no. of beds in hosp.'
19 MedSch = 'Med School Affiliation'
20 Region = 'Region NE, NC, S, W'
21 Census = 'Average no. patients in hosp.'
22 Nurses = 'Av. no. nurses'
23 Services = '% of 35 potential service facilities';
24 CARDS;

```

NOTE: The data set WORK.SENIC has 113 observations and 12 variables.

NOTE: DATA statement used:

```

real time      0.30 seconds
cpu time       0.12 seconds

```

```

24 ! Run;

```

```

138 ;

```

```

139 Proc print data=SENIC; RUN;

```

NOTE: There were 113 observations read from the data set WORK.SENIC.

NOTE: The PROCEDURE PRINT printed page 1.

NOTE: PROCEDURE PRINT used:

```

real time      0.26 seconds
cpu time       0.09 seconds

```

SENIC database from NKNW 1996 (Appendix C)

| Obs | IDNo | Ltof Stay | Age | Inf Risk | Cul Ratio | XRay | No Beds | Med Sch | Region | Census | Nurses | Services |
|-------|------|--------------|------|-------------|--------------|-------|------------|------------|--------|--------|--------|----------|
| 1 | 1 | 7.13 | 55.7 | 4.1 | 9.0 | 39.6 | 279 | 2 | 4 | 207 | 241 | 60.0 |
| 2 | 2 | 8.82 | 58.2 | 1.6 | 3.8 | 51.7 | 80 | 2 | 2 | 51 | 52 | 40.0 |
| 3 | 3 | 8.34 | 56.9 | 2.7 | 8.1 | 74.0 | 107 | 2 | 3 | 82 | 54 | 20.0 |
| 4 | 4 | 8.95 | 53.7 | 5.6 | 18.9 | 122.8 | 147 | 2 | 4 | 53 | 148 | 40.0 |
| 5 | 5 | 11.20 | 56.5 | 5.7 | 34.5 | 88.9 | 180 | 2 | 1 | 134 | 151 | 40.0 |
| 6 | 6 | 9.76 | 50.9 | 5.1 | 21.9 | 97.0 | 150 | 2 | 2 | 147 | 106 | 40.0 |
| 7 | 7 | 9.68 | 57.8 | 4.6 | 16.7 | 79.0 | 186 | 2 | 3 | 151 | 129 | 40.0 |
| 8 | 8 | 11.18 | 45.7 | 5.4 | 60.5 | 85.8 | 640 | 1 | 2 | 399 | 360 | 60.0 |
| 9 | 9 | 8.67 | 48.2 | 4.3 | 24.4 | 90.8 | 182 | 2 | 3 | 130 | 118 | 40.0 |
| 10 | 10 | 8.84 | 56.3 | 6.3 | 29.6 | 82.6 | 85 | 2 | 1 | 59 | 66 | 40.0 |
| . . . | | | | | | | | | | | | |
| 109 | 109 | 11.80 | 53.8 | 5.7 | 9.1 | 116.9 | 571 | 1 | 2 | 441 | 469 | 62.9 |
| 110 | 110 | 9.50 | 49.3 | 5.8 | 42.0 | 70.9 | 98 | 2 | 3 | 68 | 46 | 22.9 |
| 111 | 111 | 7.70 | 56.9 | 4.4 | 12.2 | 67.9 | 129 | 2 | 4 | 85 | 136 | 62.9 |
| 112 | 112 | 17.94 | 56.2 | 5.9 | 26.4 | 91.8 | 835 | 1 | 1 | 791 | 407 | 62.9 |
| 113 | 113 | 9.41 | 59.5 | 3.1 | 20.6 | 91.7 | 29 | 2 | 3 | 20 | 22 | 22.9 |

```

140      proc reg data=SENIC all LINEPRINTER;
141          TITLE2 'Full Model with diagnostics';
142          model InfRisk = LtofStay Age CulRatio XRay NoBeds Census Nurses
Services
143              / all influence collin partial;
144          output out=next1 p=YHat r=e;
145          OPTIONS PS=50 LS=160; PLOT RESIDUAL.*PREDICTED. / VREF=0;
146          OPTIONS PS=60 LS=120;
147      Run;

```

NOTE: 113 observations read.

NOTE: 113 observations used in computations.

```
148      OPTIONS PS=50 LS=130;
```

NOTE: The data set WORK.NEXT1 has 113 observations and 14 variables.

NOTE: The PROCEDURE REG printed pages 2-28.

NOTE: PROCEDURE REG used:

real time 0.63 seconds

cpu time 0.22 seconds

```
149      proc plot data=next1; PLOT e*YHat / VREF=0;
```

```
150      run;
```

```
151      OPTIONS PS=256 LS=121;
```

```
152
```

NOTE: There were 113 observations read from the data set WORK.NEXT1.

NOTE: The PROCEDURE PLOT printed page 29.

NOTE: PROCEDURE PLOT used:

real time 0.02 seconds

cpu time 0.01 seconds

SENIC database from NKNW 1996 (Appendix C)

Full Model with diagnostics

The REG Procedure

| Variable | Descriptive Statistics | | | | |
|-----------|------------------------|-----------|----------------|-----------|--------------------|
| | Sum | Mean | Uncorrected SS | Variance | Standard Deviation |
| Intercept | 113.00000 | 1.00000 | 113.00000 | 0 | 0 |
| LtofStay | 1090.26000 | 9.64832 | 10928 | 3.65366 | 1.91146 |
| Age | 6015.20000 | 53.23186 | 322430 | 19.90594 | 4.46161 |
| CulRatio | 1784.60000 | 15.79292 | 39916 | 104.74924 | 10.23471 |
| XRay | 9224.00000 | 81.62832 | 794935 | 374.95776 | 19.36383 |
| NoBeds | 28495 | 252.16814 | 11350621 | 37188 | 192.84269 |
| Census | 21625 | 191.37168 | 6786317 | 23642 | 153.75956 |
| Nurses | 19577 | 173.24779 | 5563895 | 19395 | 139.26539 |
| Services | 4877.00000 | 43.15929 | 236367 | 231.06619 | 15.20086 |
| InfRisk | 492.10000 | 4.35487 | 2344.41000 | 1.79803 | 1.34091 |

| Variable | Uncorrected Sums of Squares and Crossproducts | | | | |
|-----------|---|------------|-----------|-----------|-----------|
| | Intercept | LtofStay | Age | CulRatio | XRay |
| Intercept | 113 | 1090.26 | 6015.2 | 1784.6 | 9224 |
| LtofStay | 1090.26 | 10928.3862 | 58217.008 | 17934.179 | 90581.657 |
| Age | 6015.2 | 58217.008 | 322429.74 | 93842.53 | 490828.22 |
| CulRatio | 1784.6 | 17934.179 | 93842.53 | 39915.96 | 155106.57 |
| XRay | 9224 | 90581.657 | 490828.22 | 155106.57 | 794934.88 |
| NoBeds | 28495 | 291825.09 | 1511173.4 | 480905.9 | 2345162.1 |
| Census | 21625 | 224243.93 | 1146930.4 | 366716.9 | 1786191.9 |
| Nurses | 19577 | 199032.96 | 1036347.9 | 340930 | 1621409.2 |
| Services | 4877 | 48211.858 | 259304.51 | 80247.9 | 401791.21 |
| InfRisk | 492.1 | 4901.071 | 26196.13 | 8631.16 | 41487.8 |

| Variable | Uncorrected Sums of Squares and Crossproducts | | | | |
|-----------|---|-----------|-----------|-----------|----------|
| | NoBeds | Census | Nurses | Services | InfRisk |
| Intercept | 28495 | 21625 | 19577 | 4877 | 492.1 |
| LtofStay | 291825.09 | 224243.93 | 199032.96 | 48211.858 | 4901.071 |
| Age | 1511173.4 | 1146930.4 | 1036347.9 | 259304.51 | 26196.13 |
| CulRatio | 480905.9 | 366716.9 | 340930 | 80247.9 | 8631.16 |
| XRay | 2345162.1 | 1786191.9 | 1621409.2 | 401791.21 | 41487.8 |
| NoBeds | 11350621 | 8710988 | 7690447 | 1490677.5 | 134511.4 |
| Census | 8710988 | 6786317 | 5923892 | 1136997.3 | 102981.5 |
| Nurses | 7690447 | 5923892 | 5563895 | 1030697.7 | 93495.4 |
| Services | 1490677.5 | 1136997.3 | 1030697.7 | 236367.28 | 22180.61 |
| InfRisk | 134511.4 | 102981.5 | 93495.4 | 22180.61 | 2344.41 |

SENIC database from NKNW 1996 (Appendix C)
Full Model with diagnostics

The REG Procedure

| Variable | Correlation | | | | |
|----------|-------------|---------|----------|---------|---------|
| | LtofStay | Age | CulRatio | XRay | NoBeds |
| LtofStay | 1.0000 | 0.1889 | 0.3267 | 0.3825 | 0.4093 |
| Age | 0.1889 | 1.0000 | -0.2258 | -0.0189 | -0.0588 |
| CulRatio | 0.3267 | -0.2258 | 1.0000 | 0.4250 | 0.1397 |
| XRay | 0.3825 | -0.0189 | 0.4250 | 1.0000 | 0.0458 |
| NoBeds | 0.4093 | -0.0588 | 0.1397 | 0.0458 | 1.0000 |
| Census | 0.4739 | -0.0548 | 0.1989 | 0.0629 | 0.9810 |
| Nurses | 0.3404 | -0.0829 | 0.1989 | 0.0774 | 0.9155 |
| Services | 0.3555 | -0.0405 | 0.1851 | 0.1119 | 0.7945 |
| InfRisk | 0.5334 | 0.0011 | 0.5592 | 0.4534 | 0.3598 |

| Variable | Correlation | | | |
|----------|-------------|---------|----------|---------|
| | Census | Nurses | Services | InfRisk |
| LtofStay | 0.4739 | 0.3404 | 0.3555 | 0.5334 |
| Age | -0.0548 | -0.0829 | -0.0405 | 0.0011 |
| CulRatio | 0.1429 | 0.1989 | 0.1851 | 0.5592 |
| XRay | 0.0629 | 0.0774 | 0.1119 | 0.4534 |
| NoBeds | 0.9810 | 0.9155 | 0.7945 | 0.3598 |
| Census | 1.0000 | 0.9079 | 0.7781 | 0.3814 |
| Nurses | 0.9079 | 1.0000 | 0.7835 | 0.3940 |
| Services | 0.7781 | 0.7835 | 1.0000 | 0.4126 |
| InfRisk | 0.3814 | 0.3940 | 0.4126 | 1.0000 |

| Variable | Intercept | Model Crossproducts X'X X'Y Y'Y | | | | |
|-----------|-----------|---------------------------------|-----------|-----------|-----------|-----------|
| | | LtofStay | Age | CulRatio | XRay | NoBeds |
| Intercept | 113 | 1090.26 | 6015.2 | 1784.6 | 9224 | 28495 |
| LtofStay | 1090.26 | 10928.3862 | 58217.008 | 17934.179 | 90581.657 | 291825.09 |
| Age | 6015.2 | 58217.008 | 322429.74 | 93842.53 | 490828.22 | 1511173.4 |
| CulRatio | 1784.6 | 17934.179 | 93842.53 | 39915.96 | 155106.57 | 480905.9 |
| XRay | 9224 | 90581.657 | 490828.22 | 155106.57 | 794934.88 | 2345162.1 |
| NoBeds | 28495 | 291825.09 | 1511173.4 | 480905.9 | 2345162.1 | 11350621 |
| Census | 21625 | 224243.93 | 1146930.4 | 366716.9 | 1786191.9 | 8710988 |
| Nurses | 19577 | 199032.96 | 1036347.9 | 340930 | 1621409.2 | 6786317 |
| Services | 4877 | 48211.858 | 259304.51 | 80247.9 | 401791.21 | 5563895 |
| InfRisk | 492.1 | 4901.071 | 26196.13 | 8631.16 | 41487.8 | 102981.5 |

| Variable | NoBeds | Model Crossproducts X'X X'Y Y'Y | | | | |
|-----------|-----------|---------------------------------|-----------|-----------|----------|--|
| | | Census | Nurses | Services | InfRisk | |
| Intercept | 28495 | 21625 | 19577 | 4877 | 492.1 | |
| LtofStay | 291825.09 | 224243.93 | 199032.96 | 48211.858 | 4901.071 | |
| Age | 1511173.4 | 1146930.4 | 1036347.9 | 259304.51 | 26196.13 | |
| CulRatio | 480905.9 | 366716.9 | 340930 | 80247.9 | 8631.16 | |
| XRay | 2345162.1 | 1786191.9 | 1621409.2 | 401791.21 | 41487.8 | |
| NoBeds | 11350621 | 8710988 | 7690447 | 1490677.5 | 134511.4 | |
| Census | 8710988 | 6786317 | 5923892 | 1136997.3 | 102981.5 | |
| Nurses | 7690447 | 5923892 | 5563895 | 1030697.7 | 93495.4 | |
| Services | 1490677.5 | 1136997.3 | 1030697.7 | 236367.28 | 22180.61 | |
| InfRisk | 134511.4 | 102981.5 | 93495.4 | 22180.61 | 2344.41 | |

| Variable | Intercept | X'X Inverse, Parameter Estimates, and SSE | | | | |
|-----------|--------------|---|--------------|--------------|---------------|--------------|
| | | LtofStay | Age | CulRatio | XRay | NoBeds |
| Intercept | 1.5858508096 | -0.001322824 | -0.025196942 | -0.002266262 | -0.001378744 | 0.0000554848 |
| LtofStay | -0.001322824 | 0.0051859266 | -0.000559317 | -0.000236511 | -0.000125206 | 0.0000554848 |
| Age | -0.025196942 | -0.000559317 | 0.0005385865 | 0.0000791345 | 3.7315905E-6 | 0.0000554848 |
| CulRatio | -0.002266262 | -0.000236511 | 0.0000791345 | 0.0001256418 | -0.0001256418 | 0.0000554848 |
| XRay | -0.001378744 | -0.000125206 | 3.7315905E-6 | -0.000018668 | 0.0000327219 | 0.0000554848 |
| NoBeds | -0.000134192 | 0.0000554848 | -5.086015E-6 | -1.744267E-6 | 1.2384372E-7 | 0.0000554848 |
| Census | 0.000244251 | -0.000120582 | 0.0000114987 | 6.2102827E-6 | 1.3610934E-6 | 0.0000554848 |
| Nurses | 9.3582332E-6 | 0.0000327339 | -1.741494E-6 | -3.965013E-6 | -6.872235E-7 | 0.0000554848 |
| Services | -0.002065552 | -0.00003638 | -5.727461E-6 | -4.319302E-6 | -3.724035E-6 | 0.0000554848 |
| InfRisk | -0.747255248 | 0.1769313961 | 0.016213596 | 0.0469933765 | 0.0120368799 | 0.0000554848 |

| Variable | NoBeds | X'X Inverse, Parameter Estimates, and SSE | | | | |
|-----------|--------------|---|--------------|--------------|--------------|--|
| | | Census | Nurses | Services | InfRisk | |
| Intercept | -0.000134192 | 0.000244251 | 9.3582332E-6 | -0.002065552 | -0.747255248 | |
| LtofStay | 0.0000554848 | -0.000120582 | 0.0000327339 | -0.00003638 | 0.1769313961 | |
| Age | -5.086015E-6 | 0.0000114987 | -1.741494E-6 | -5.727461E-6 | 0.016213596 | |
| CulRatio | -1.744267E-6 | 6.2102827E-6 | -3.965013E-6 | -4.319302E-6 | 0.0469933765 | |
| XRay | 1.2384372E-7 | 1.3610934E-6 | -6.872235E-7 | -3.724035E-6 | 0.0120368799 | |
| NoBeds | 7.9876579E-6 | -8.96859E-6 | -8.96859E-6 | -6.032734E-6 | -0.00144718 | |
| Census | -8.96859E-6 | 0.0000131054 | -1.498917E-6 | 2.5756281E-6 | 0.0007279559 | |
| Nurses | -8.686793E-7 | -1.498917E-6 | 3.3422233E-6 | -4.330367E-6 | 0.001906211 | |
| Services | -6.032734E-6 | 2.5756281E-6 | -4.330367E-6 | 0.0001128895 | 0.0162795745 | |
| InfRisk | -0.00144718 | 0.0007279559 | 0.001906211 | 0.0162795745 | 95.639819869 | |

SENIC database from NKNW 1996 (Appendix C)

Full Model with diagnostics

The REG Procedure

Model: MODEL1

Dependent Variable: InFRisk

Analysis of Variance

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|-----|----------------|-------------|---------|--------|
| Model | 8 | 105.74000 | 13.21750 | 14.37 | <.0001 |
| Error | 104 | 95.63982 | 0.91961 | | |
| Corrected Total | 112 | 201.37982 | | | |

| | | | |
|----------------|----------|----------|--------|
| Root MSE | 0.95896 | R-Square | 0.5251 |
| Dependent Mean | 4.35487 | Adj R-Sq | 0.4885 |
| Coeff Var | 22.02053 | | |

Parameter Estimates

| Variable | DF | Parameter Estimate | Standard Error | t Value | Pr > t | Type I SS | Type II SS | Standardized Estimate | Squared Semi-partial Corr Type I |
|-----------|----|--------------------|----------------|---------|---------|------------|------------|-----------------------|----------------------------------|
| Intercept | 1 | -0.74726 | 1.20763 | -0.62 | 0.5374 | 2143.03018 | 0.35211 | 0 | . |
| LtofStay | 1 | 0.17693 | 0.06906 | 2.56 | 0.0118 | 57.30511 | 6.03648 | 0.25221 | 0.28456 |
| Age | 1 | 0.01621 | 0.02226 | 0.73 | 0.4679 | 2.07506 | 0.48809 | 0.05395 | 0.01030 |
| CulRatio | 1 | 0.04699 | 0.01075 | 4.37 | <.0001 | 31.45735 | 17.57678 | 0.35868 | 0.15621 |
| XRay | 1 | 0.01204 | 0.00549 | 2.19 | 0.0304 | 3.84765 | 4.42782 | 0.17382 | 0.01911 |
| NoBeds | 1 | -0.00145 | 0.00271 | -0.53 | 0.5945 | 6.51642 | 0.26220 | -0.20813 | 0.03236 |
| Census | 1 | 0.00072796 | 0.00347 | 0.21 | 0.8343 | 0.17436 | 0.04044 | 0.08347 | 0.00086581 |
| Nurses | 1 | 0.00191 | 0.00175 | 1.09 | 0.2794 | 2.01642 | 1.08719 | 0.19798 | 0.01001 |
| Services | 1 | 0.01628 | 0.01019 | 1.60 | 0.1131 | 2.34765 | 2.34765 | 0.18455 | 0.01166 |

Parameter Estimates

| Variable | DF | Squared Partial Corr Type I | Squared Semi-partial Corr Type II | Squared Partial Corr Type II | Tolerance | Variance Inflation | 95% Confidence Limits | |
|-----------|----|-----------------------------|-----------------------------------|------------------------------|-----------|--------------------|-----------------------|---------|
| Intercept | 1 | . | . | . | . | 0 | -3.14203 | 1.64752 |
| LtofStay | 1 | 0.28456 | 0.02998 | 0.05937 | 0.47122 | 2.12214 | 0.03999 | 0.31388 |
| Age | 1 | 0.01440 | 0.00242 | 0.00508 | 0.83281 | 1.20076 | -0.02792 | 0.06035 |
| CulRatio | 1 | 0.22153 | 0.08728 | 0.15525 | 0.67842 | 1.47402 | 0.02568 | 0.06831 |
| XRay | 1 | 0.03481 | 0.02199 | 0.04425 | 0.72772 | 1.37416 | 0.00116 | 0.02291 |
| NoBeds | 1 | 0.06108 | 0.00130 | 0.00273 | 0.03006 | 33.26931 | -0.00682 | 0.00393 |
| Census | 1 | 0.00174 | 0.00020079 | 0.00042261 | 0.02882 | 34.70183 | -0.00616 | 0.00761 |
| Nurses | 1 | 0.02016 | 0.00540 | 0.01124 | 0.13774 | 7.26005 | -0.00157 | 0.00538 |
| Services | 1 | 0.02396 | 0.01166 | 0.02396 | 0.34229 | 2.92151 | -0.00393 | 0.03648 |

Covariance of Estimates

| Variable | Intercept | LtofStay | Age | CulRatio | XRay |
|-----------|--------------|--------------|--------------|--------------|--------------|
| Intercept | 1.4583700555 | -0.001216487 | -0.023171451 | -0.002084085 | -0.001267912 |
| LtofStay | -0.001216487 | 0.0047690489 | -0.000514356 | -0.000217498 | -0.000115141 |
| Age | -0.023171451 | -0.000514356 | 0.0004952915 | 0.0000727731 | 3.4316216E-6 |
| CulRatio | -0.002084085 | -0.000217498 | 0.0000727731 | 0.0001155419 | -0.000017167 |
| XRay | -0.001267912 | -0.000115141 | 3.4316216E-6 | -0.000017167 | 0.0000300915 |
| NoBeds | -0.000123405 | 0.0000510246 | -4.677169E-6 | -1.604051E-6 | 1.1388838E-7 |
| Census | 0.0002246165 | -0.000110889 | 0.0000105743 | 5.7110607E-6 | 1.2516801E-6 |
| Nurses | 8.6059591E-6 | 0.0000301025 | -1.601502E-6 | -3.64628E-6 | -6.319801E-7 |
| Services | -0.00189951 | -0.000033456 | -5.267051E-6 | -3.972089E-6 | -3.424674E-6 |

Covariance of Estimates

| Variable | NoBeds | Census | Nurses | Services |
|-----------|--------------|--------------|--------------|--------------|
| Intercept | -0.000123405 | 0.0002246165 | 8.6059591E-6 | -0.00189951 |
| LtofStay | 0.0000510246 | -0.000110889 | 0.0000301025 | -0.000033456 |

Covariance of Estimates

| Variable | NoBeds | Census | Nurses | Services |
|----------|--------------|--------------|--------------|--------------|
| Age | -4.677169E-6 | 0.0000105743 | -1.601502E-6 | -5.267051E-6 |
| CulRatio | -1.604051E-6 | 5.7110607E-6 | -3.64628E-6 | -3.972089E-6 |
| XRay | 1.1388838E-7 | 1.2516801E-6 | -6.319801E-7 | -3.424674E-6 |
| NoBeds | 7.3455592E-6 | -8.247638E-6 | -7.988493E-7 | -5.547785E-6 |
| Census | -8.247638E-6 | 0.0000120519 | -1.378425E-6 | 2.3685827E-6 |
| Nurses | -7.988493E-7 | -1.378425E-6 | 3.0735542E-6 | -3.982265E-6 |
| Services | -5.547785E-6 | 2.3685827E-6 | -3.982265E-6 | 0.0001038147 |

SENIC database from NKNW 1996 (Appendix C)

Full Model with diagnostics

The REG Procedure

Model: MODEL1

Dependent Variable: InfRisk

| Variable | Correlation of Estimates | | | | |
|-----------|--------------------------|----------|---------|----------|---------|
| | Intercept | LtofStay | Age | CulRatio | XRay |
| Intercept | 1.0000 | -0.0146 | -0.8622 | -0.1606 | -0.1914 |
| LtofStay | -0.0146 | 1.0000 | -0.3347 | -0.2930 | -0.3039 |
| Age | -0.8622 | -0.3347 | 1.0000 | 0.3042 | 0.0281 |
| CulRatio | -0.1606 | -0.2930 | 0.3042 | 1.0000 | -0.2911 |
| XRay | -0.1914 | -0.3039 | 0.0281 | -0.2911 | 1.0000 |
| NoBeds | -0.0377 | 0.2726 | -0.0775 | -0.0551 | 0.0077 |
| Census | 0.0536 | -0.4625 | 0.1369 | 0.1530 | 0.0657 |
| Nurses | 0.0041 | 0.2486 | -0.0410 | -0.1935 | -0.0657 |
| Services | -0.1544 | -0.0475 | -0.0232 | -0.0363 | -0.0613 |

| Variable | Correlation of Estimates | | | |
|-----------|--------------------------|---------|---------|----------|
| | NoBeds | Census | Nurses | Services |
| Intercept | -0.0377 | 0.0536 | 0.0041 | -0.1544 |
| LtofStay | 0.2726 | -0.4625 | 0.2486 | -0.0475 |
| Age | -0.0775 | 0.1369 | -0.0410 | -0.0232 |
| CulRatio | -0.0551 | 0.1530 | -0.1935 | -0.0363 |
| XRay | 0.0077 | 0.0657 | -0.0657 | -0.0613 |
| NoBeds | 1.0000 | -0.8766 | -0.1681 | -0.2009 |
| Census | -0.8766 | 1.0000 | -0.2265 | 0.0670 |
| Nurses | -0.1681 | -0.2265 | 1.0000 | -0.2229 |
| Services | -0.2009 | 0.0670 | -0.2229 | 1.0000 |

Sequential Parameter Estimates

| | Intercept | LtofStay | Age | CulRatio | XRay |
|--|-----------|----------|-----------|----------|----------|
| | 4.354867 | 0 | 0 | 0 | 0 |
| | 0.744304 | 0.374217 | 0 | 0 | 0 |
| | 2.265909 | 0.387916 | -0.031067 | 0 | 0 |
| | 0.397766 | 0.269740 | 0.008351 | 0.057623 | 0 |
| | -0.083236 | 0.239464 | 0.008050 | 0.050572 | 0.011031 |
| | -0.424573 | 0.169755 | 0.017327 | 0.050376 | 0.013107 |
| | -0.393711 | 0.157208 | 0.018602 | 0.050908 | 0.013235 |
| | -0.449386 | 0.182178 | 0.017040 | 0.047616 | 0.012574 |
| | -0.747255 | 0.176931 | 0.016214 | 0.046993 | 0.012037 |

Sequential Parameter Estimates

| | NoBeds | Census | Nurses | Services |
|--|-----------|----------|----------|----------|
| | 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 | 0 |
| | 0 | 0 | 0 | 0 |
| | 0.001403 | 0 | 0 | 0 |
| | 0.000299 | 0.001472 | 0 | 0 |
| | -0.000577 | 0.000357 | 0.002531 | 0 |
| | -0.001447 | 0.000728 | 0.001906 | 0.016280 |

Collinearity Diagnostics

| Number | Eigenvalue | Condition Index | -----Proportion of Variation----- | | | | | |
|--------|------------|-----------------|-----------------------------------|-----------|------------|----------|------------|------------|
| | | | Intercept | LtofStay | Age | CulRatio | XRay | NoBeds |
| 1 | 7.92221 | 1.00000 | 0.0008203 | 0.0026608 | 0.00008384 | 0.00241 | 0.00055647 | 0.00014889 |
| 2 | 0.70667 | 3.34824 | 0.00062369 | 0.00113 | 0.00066774 | 0.02105 | 0.000504 | 0.00316 |
| 3 | 0.23449 | 5.81248 | 0.00150 | 0.00158 | 0.00222 | 0.67694 | 0.00076682 | 0.00000481 |
| 4 | 0.04727 | 12.94588 | 0.00082735 | 0.04556 | 0.00039099 | 0.00635 | 0.00030739 | 0.02079 |
| 5 | 0.03554 | 14.93049 | 0.00123 | 0.00104 | 0.00130 | 0.09639 | 0.43090 | 0.00276 |
| 6 | 0.02878 | 16.59008 | 0.01898 | 0.01720 | 0.02926 | 0.06172 | 0.48518 | 0.00092814 |
| 7 | 0.01657 | 21.86586 | 0.03592 | 0.60385 | 0.02075 | 0.05279 | 0.05646 | 0.10941 |
| 8 | 0.00546 | 38.09407 | 0.03300 | 0.27836 | 0.00195 | 0.01730 | 0.00245 | 0.85653 |
| 9 | 0.00301 | 51.29072 | 0.90784 | 0.05102 | 0.94338 | 0.06505 | 0.01834 | 0.00627 |

| Number | Census | Nurses | Services |
|--------|-------------|------------|------------|
| 1 | 0.00014895 | 0.00070822 | 0.00057691 |
| 2 | 0.00351 | 0.01543 | 0.00004055 |
| 3 | 8.741457E-8 | 0.00219 | 0.00244 |
| 4 | 0.05162 | 0.47665 | 0.11157 |
| 5 | 0.00000597 | 0.22472 | 0.43144 |
| 6 | 0.00018174 | 0.13803 | 0.36303 |
| 7 | 0.00117 | 0.13349 | 0.06932 |
| 8 | 0.93113 | 0.00712 | 0.01485 |
| 9 | 0.01224 | 0.00166 | 0.00673 |

SENIC database from NKNW 1996 (Appendix C)

Full Model with diagnostics

The REG Procedure

Model: MODEL1

Dependent Variable: InfRisk

| Obs | Dep Var InfRisk | Predicted Value | Output Statistics | | | | Residual | Std Error Residual | |
|-----|--------------------|--------------------|---------------------------|-------------|----------------|-----------|----------|-----------------------|-------|
| | | | Std Error Mean Predict | 95% CL Mean | 95% CL Predict | Std Error | | | |
| 1 | 4.1000 | 3.5001 | 0.3025 | 2.9002 | 4.0999 | 1.5060 | 5.4941 | 0.5999 | 0.910 |
| 2 | 1.6000 | 3.2294 | 0.2303 | 2.7727 | 3.6862 | 1.2737 | 5.1852 | -1.6294 | 0.931 |
| 3 | 2.7000 | 3.2557 | 0.2019 | 2.8553 | 3.6560 | 1.3123 | 5.1990 | -0.5557 | 0.937 |
| 4 | 5.6000 | 4.8324 | 0.3086 | 4.2204 | 5.4444 | 2.8347 | 6.8301 | 0.7676 | 0.908 |
| 5 | 5.7000 | 5.6179 | 0.2338 | 5.1542 | 6.0816 | 3.6605 | 7.5753 | 0.0821 | 0.930 |
| 6 | 5.1000 | 4.7448 | 0.1833 | 4.3812 | 5.1083 | 2.8087 | 6.6809 | 0.3552 | 0.941 |
| 7 | 4.6000 | 4.3761 | 0.1467 | 4.0853 | 4.6670 | 2.4523 | 6.2999 | 0.2239 | 0.948 |
| 8 | 5.4000 | 6.8749 | 0.5686 | 5.7473 | 8.0026 | 4.6641 | 9.0858 | -1.4749 | 0.772 |
| 9 | 4.3000 | 4.5152 | 0.1671 | 4.1839 | 4.8465 | 2.5849 | 6.4455 | -0.2152 | 0.944 |
| 10 | 6.3000 | 4.8118 | 0.2339 | 4.3481 | 5.2756 | 2.8544 | 6.7692 | 1.4882 | 0.930 |
| 11 | 4.9000 | 6.7534 | 0.3947 | 5.9706 | 7.5361 | 4.6969 | 8.8098 | -1.8534 | 0.874 |
| 12 | 4.3000 | 3.5753 | 0.1927 | 3.1932 | 3.9575 | 1.6357 | 5.5150 | 0.7247 | 0.939 |
| 13 | 7.7000 | 7.3160 | 0.3647 | 6.5927 | 8.0392 | 5.2814 | 9.3505 | 0.3840 | 0.887 |
| 14 | 3.7000 | 4.2070 | 0.2082 | 3.7942 | 4.6198 | 2.2611 | 6.1530 | -0.5070 | 0.936 |
| 15 | 4.2000 | 3.6547 | 0.2068 | 3.2446 | 4.0648 | 1.7093 | 5.6001 | 0.5453 | 0.936 |
| 16 | 5.5000 | 5.0455 | 0.3143 | 4.4223 | 5.6687 | 3.0443 | 7.0467 | 0.4545 | 0.906 |
| 17 | 4.5000 | 4.5928 | 0.2155 | 4.1655 | 5.0201 | 2.6437 | 6.5419 | -0.0928 | 0.934 |
| 18 | 6.4000 | 5.2613 | 0.1774 | 4.9095 | 5.6131 | 3.3273 | 7.1952 | 1.1387 | 0.942 |
| 19 | 4.2000 | 3.6730 | 0.1499 | 3.3757 | 3.9703 | 1.7482 | 5.5977 | 0.5270 | 0.947 |
| 20 | 4.1000 | 4.9375 | 0.4201 | 4.1044 | 5.7706 | 2.8614 | 7.0136 | -0.8375 | 0.862 |
| 21 | 4.2000 | 3.8105 | 0.3312 | 3.1537 | 4.4674 | 1.7986 | 5.8224 | 0.3895 | 0.900 |
| 22 | 4.8000 | 5.6847 | 0.2423 | 5.2043 | 6.1651 | 3.7233 | 7.6461 | -0.8847 | 0.928 |
| 23 | 5.0000 | 4.9035 | 0.2109 | 4.4854 | 5.3216 | 2.9564 | 6.8506 | 0.0965 | 0.935 |
| 24 | 4.8000 | 4.9061 | 0.3527 | 4.2066 | 5.6056 | 2.8799 | 6.9323 | -0.1061 | 0.892 |
| 25 | 4.0000 | 4.5309 | 0.1766 | 4.1807 | 4.8810 | 2.5972 | 6.4645 | -0.5309 | 0.943 |
| 26 | 3.9000 | 4.7168 | 0.3373 | 4.0480 | 5.3856 | 2.7009 | 6.7326 | -0.8168 | 0.898 |
| 27 | 4.5000 | 5.0818 | 0.2135 | 4.6584 | 5.5052 | 3.1336 | 7.0300 | -0.5818 | 0.935 |
| 28 | 3.2000 | 3.3972 | 0.1926 | 3.0152 | 3.7792 | 1.4576 | 5.3369 | -0.1972 | 0.939 |
| 29 | 4.4000 | 4.9918 | 0.1704 | 4.6539 | 5.3296 | 3.0603 | 6.9232 | -0.5918 | 0.944 |
| 30 | 4.9000 | 4.5468 | 0.1700 | 4.2096 | 4.8840 | 2.6155 | 6.4781 | 0.3532 | 0.944 |
| 31 | 5.0000 | 5.4726 | 0.2575 | 4.9619 | 5.9833 | 3.5035 | 7.4416 | -0.4726 | 0.924 |
| 32 | 5.2000 | 4.7400 | 0.2468 | 4.2505 | 5.2295 | 2.7763 | 6.7036 | 0.4600 | 0.927 |
| 33 | 5.3000 | 4.4081 | 0.2659 | 3.8807 | 4.9355 | 2.4346 | 6.3815 | 0.8919 | 0.921 |
| 34 | 6.1000 | 5.9570 | 0.2454 | 5.4704 | 6.4435 | 3.9940 | 7.9199 | 0.1430 | 0.927 |
| 35 | 6.3000 | 4.3256 | 0.1711 | 3.9863 | 4.6649 | 2.3939 | 6.2573 | 1.9744 | 0.944 |
| 36 | 5.0000 | 5.1517 | 0.2032 | 4.7488 | 5.5546 | 3.2078 | 7.0956 | -0.1517 | 0.937 |
| 37 | 2.8000 | 4.2150 | 0.1698 | 3.8782 | 4.5518 | 2.2838 | 6.1463 | -1.4150 | 0.944 |
| 38 | 4.6000 | 3.4214 | 0.2044 | 3.0160 | 3.8268 | 1.4770 | 5.3658 | 1.1786 | 0.937 |
| 39 | 4.1000 | 4.0817 | 0.2365 | 3.6126 | 4.5507 | 2.1230 | 6.0403 | 0.0183 | 0.929 |
| 40 | 1.3000 | 2.6742 | 0.2781 | 2.1228 | 3.2256 | 0.6942 | 4.6542 | -1.3742 | 0.918 |
| 41 | 3.7000 | 3.9159 | 0.1748 | 3.5693 | 4.2626 | 1.9829 | 5.8489 | -0.2159 | 0.943 |
| 42 | 4.7000 | 4.9090 | 0.1576 | 4.5965 | 5.2214 | 2.9818 | 6.8362 | -0.2090 | 0.946 |
| 43 | 3.0000 | 3.7888 | 0.3245 | 3.1453 | 4.4323 | 1.7812 | 5.7964 | -0.7888 | 0.902 |
| 44 | 5.6000 | 4.6250 | 0.1662 | 4.2955 | 4.9546 | 2.6950 | 6.5550 | 0.9750 | 0.944 |
| 45 | 5.5000 | 3.9156 | 0.1419 | 3.6343 | 4.1969 | 1.9933 | 5.8380 | 1.5844 | 0.948 |
| 46 | 4.6000 | 4.5727 | 0.4242 | 3.7315 | 5.4139 | 2.4933 | 6.6521 | 0.0273 | 0.860 |
| 47 | 6.5000 | 6.7821 | 0.5490 | 5.6935 | 7.8707 | 4.5909 | 8.9733 | -0.2821 | 0.786 |
| 48 | 5.5000 | 4.1778 | 0.3715 | 3.4411 | 4.9145 | 2.1384 | 6.2171 | 1.3222 | 0.884 |
| 49 | 1.8000 | 2.2184 | 0.3082 | 1.6073 | 2.8295 | 0.2210 | 4.2159 | -0.4184 | 0.908 |
| 50 | 4.2000 | 4.1237 | 0.1562 | 3.8140 | 4.4333 | 2.1970 | 6.0504 | 0.0763 | 0.946 |
| 51 | 5.6000 | 5.2600 | 0.2160 | 4.8316 | 5.6885 | 3.3107 | 7.2094 | 0.3400 | 0.934 |
| 52 | 4.3000 | 4.1467 | 0.3460 | 3.4606 | 4.8328 | 2.1251 | 6.1683 | 0.1533 | 0.894 |
| 53 | 7.6000 | 5.0438 | 0.3878 | 4.2748 | 5.8129 | 2.9926 | 7.0951 | 2.5562 | 0.877 |
| 54 | 7.8000 | 6.3393 | 0.4085 | 5.5292 | 7.1495 | 4.2723 | 8.4064 | 1.4607 | 0.868 |
| 55 | 3.1000 | 3.2399 | 0.1803 | 2.8824 | 3.5973 | 1.3049 | 5.1748 | -0.1399 | 0.942 |
| 56 | 3.9000 | 4.3604 | 0.1821 | 3.9992 | 4.7215 | 2.4247 | 6.2960 | -0.4604 | 0.942 |
| 57 | 3.7000 | 3.0107 | 0.2188 | 2.5768 | 3.4447 | 1.0602 | 4.9613 | 0.6893 | 0.934 |
| 58 | 4.3000 | 4.0995 | 0.2552 | 3.5935 | 4.6055 | 2.1316 | 6.0673 | 0.2005 | 0.924 |
| 59 | 3.9000 | 5.2170 | 0.2057 | 4.8092 | 5.6248 | 3.2721 | 7.1619 | -1.3170 | 0.937 |
| 60 | 4.5000 | 4.7098 | 0.1862 | 4.3405 | 5.0791 | 2.7726 | 6.6470 | -0.2098 | 0.941 |
| 61 | 3.4000 | 3.6326 | 0.2324 | 3.1717 | 4.0936 | 1.6759 | 5.5893 | -0.2326 | 0.930 |
| 62 | 5.7000 | 5.0145 | 0.3804 | 4.2602 | 5.7688 | 2.9687 | 7.0603 | 0.6855 | 0.880 |
| 63 | 5.4000 | 3.7195 | 0.3105 | 3.1039 | 4.3352 | 1.7207 | 5.7184 | 1.6805 | 0.907 |
| 64 | 4.4000 | 4.0297 | 0.1988 | 3.6356 | 4.4238 | 2.0876 | 5.9718 | 0.3703 | 0.938 |
| 65 | 5.0000 | 4.2063 | 0.2820 | 3.6471 | 4.7654 | 2.2241 | 6.1884 | 0.7937 | 0.917 |
| 66 | 4.3000 | 5.0302 | 0.4047 | 4.2277 | 5.8327 | 2.9661 | 7.0942 | -0.7302 | 0.869 |
| 67 | 4.4000 | 4.2694 | 0.2055 | 3.8619 | 4.6770 | 2.3246 | 6.2143 | 0.1306 | 0.937 |
| 68 | 3.7000 | 4.1120 | 0.2099 | 3.6957 | 4.5283 | 2.1653 | 6.0587 | -0.4120 | 0.936 |
| 69 | 4.5000 | 3.9764 | 0.3032 | 3.3752 | 4.5776 | 1.9820 | 5.9708 | 0.5236 | 0.910 |
| 70 | 3.5000 | 4.2224 | 0.1981 | 3.8296 | 4.6152 | 2.2806 | 6.1642 | -0.7224 | 0.938 |
| 71 | 4.2000 | 3.6541 | 0.1704 | 3.3161 | 3.9921 | 1.7226 | 5.5856 | 0.5459 | 0.944 |
| 72 | 2.0000 | 3.0916 | 0.1828 | 2.7292 | 3.4540 | 1.1557 | 5.0275 | -1.0916 | 0.941 |
| 73 | 5.2000 | 4.1729 | 0.1431 | 3.8890 | 4.4567 | 2.2502 | 6.0956 | 1.0271 | 0.948 |
| 74 | 4.5000 | 5.8951 | 0.3613 | 5.1786 | 6.6115 | 3.8629 | 7.9272 | -1.3951 | 0.888 |

| Obs | Dep Var | Predicted | Std Error | | 95% CL Mean | | 95% CL Predict | | Residual | Std Error Residual |
|-----|----------|-----------|-----------|---------|-------------|--------|----------------|---------|----------|--------------------|
| | InfrRisk | Value | Mean | Predict | Mean | Mean | Predict | Predict | | |
| 75 | 3.4000 | 3.7978 | 0.3644 | 3.0752 | 4.5204 | 1.7635 | 5.8321 | -0.3978 | 0.887 | |
| 76 | 4.5000 | 3.3530 | 0.1970 | 2.9624 | 3.7436 | 1.4116 | 5.2943 | 1.1470 | 0.939 | |
| 77 | 2.9000 | 3.7601 | 0.1645 | 3.4338 | 4.0863 | 1.8306 | 5.6895 | -0.8601 | 0.945 | |
| 78 | 4.9000 | 4.6400 | 0.3034 | 4.0384 | 5.2416 | 2.6455 | 6.6346 | 0.2600 | 0.910 | |
| 79 | 4.4000 | 4.2309 | 0.1372 | 3.9589 | 4.5029 | 2.3099 | 6.1519 | 0.1691 | 0.949 | |
| 80 | 5.1000 | 5.1301 | 0.2551 | 4.6243 | 5.6359 | 3.1623 | 7.0979 | -0.0301 | 0.924 | |
| 81 | 2.9000 | 3.6909 | 0.4178 | 2.8623 | 4.5195 | 1.6166 | 5.7653 | -0.7909 | 0.863 | |
| 82 | 3.5000 | 3.6466 | 0.2147 | 3.2208 | 4.0724 | 1.6978 | 5.5954 | -0.1466 | 0.935 | |
| 83 | 5.5000 | 3.4759 | 0.1938 | 3.0917 | 3.8602 | 1.5359 | 5.4160 | 2.0241 | 0.939 | |
| 84 | 4.7000 | 2.9373 | 0.2322 | 2.4769 | 3.3978 | 0.9807 | 4.8939 | 1.7627 | 0.930 | |
| 85 | 1.7000 | 3.4202 | 0.2271 | 2.9699 | 3.8706 | 1.4660 | 5.3745 | -1.7202 | 0.932 | |
| 86 | 4.1000 | 4.3757 | 0.1499 | 4.0785 | 4.6730 | 2.4510 | 6.3005 | -0.2757 | 0.947 | |
| 87 | 2.9000 | 4.0162 | 0.3516 | 3.3189 | 4.7135 | 1.9907 | 6.0417 | -1.1162 | 0.892 | |
| 88 | 4.3000 | 4.7994 | 0.2635 | 4.2769 | 5.3219 | 2.8272 | 6.7715 | -0.4994 | 0.922 | |
| 89 | 4.8000 | 4.6353 | 0.1427 | 4.3524 | 4.9182 | 2.7127 | 6.5579 | 0.1647 | 0.948 | |
| 90 | 5.8000 | 5.1161 | 0.2283 | 4.6634 | 5.5688 | 3.1613 | 7.0709 | 0.6839 | 0.931 | |
| 91 | 2.9000 | 3.5738 | 0.1698 | 3.2371 | 3.9105 | 1.6425 | 5.5050 | -0.6738 | 0.944 | |
| 92 | 2.0000 | 3.3353 | 0.1641 | 3.0100 | 3.6607 | 1.4060 | 5.2646 | -1.3353 | 0.945 | |
| 93 | 1.3000 | 2.8328 | 0.3000 | 2.2379 | 3.4276 | 0.8402 | 4.8253 | -1.5328 | 0.911 | |
| 94 | 5.3000 | 3.5739 | 0.1575 | 3.2616 | 3.8862 | 1.6468 | 5.5011 | 1.7261 | 0.946 | |
| 95 | 5.3000 | 4.1800 | 0.2006 | 3.7821 | 4.5779 | 2.2371 | 6.1228 | 1.1200 | 0.938 | |
| 96 | 2.5000 | 4.7218 | 0.2338 | 4.2581 | 5.1855 | 2.7644 | 6.6792 | -2.2218 | 0.930 | |
| 97 | 3.8000 | 3.6521 | 0.1357 | 3.3830 | 3.9212 | 1.7315 | 5.5727 | 0.1479 | 0.949 | |
| 98 | 4.8000 | 4.6121 | 0.2273 | 4.1613 | 5.0629 | 2.6578 | 6.5665 | 0.1879 | 0.932 | |
| 99 | 2.3000 | 3.1092 | 0.1950 | 2.7224 | 3.4960 | 1.1686 | 5.0498 | -0.8092 | 0.939 | |
| 100 | 6.2000 | 4.6116 | 0.2199 | 4.1755 | 5.0476 | 2.6606 | 6.5626 | 1.5884 | 0.933 | |
| 101 | 2.6000 | 3.5498 | 0.1930 | 3.1670 | 3.9326 | 1.6100 | 5.4896 | -0.9498 | 0.939 | |
| 102 | 4.3000 | 4.3379 | 0.2770 | 3.7887 | 4.8872 | 2.3586 | 6.3173 | -0.0379 | 0.918 | |
| 103 | 2.7000 | 3.5443 | 0.2496 | 3.0493 | 4.0392 | 1.5792 | 5.5093 | -0.8443 | 0.926 | |
| 104 | 6.6000 | 6.2094 | 0.4199 | 5.3767 | 7.0421 | 4.1334 | 8.2854 | 0.3906 | 0.862 | |
| 105 | 4.5000 | 3.9279 | 0.1929 | 3.5454 | 4.3104 | 1.9882 | 5.8677 | 0.5721 | 0.939 | |
| 106 | 2.9000 | 3.3188 | 0.3339 | 2.6567 | 3.9810 | 1.3052 | 5.3325 | -0.4188 | 0.899 | |
| 107 | 1.4000 | 2.4051 | 0.2470 | 1.9153 | 2.8950 | 0.4414 | 4.3689 | -1.0051 | 0.927 | |
| 108 | 2.1000 | 2.6359 | 0.2276 | 2.1846 | 3.0872 | 0.6814 | 4.5904 | -0.5359 | 0.932 | |
| 109 | 5.7000 | 5.4603 | 0.3348 | 4.7964 | 6.1242 | 3.4460 | 7.4745 | 0.2397 | 0.899 | |
| 110 | 5.8000 | 4.9282 | 0.3457 | 4.2428 | 5.6137 | 2.9068 | 6.9497 | 0.8718 | 0.895 | |
| 111 | 4.4000 | 4.0867 | 0.3228 | 3.4466 | 4.7268 | 2.0802 | 6.0932 | 0.3133 | 0.903 | |
| 112 | 5.9000 | 6.8509 | 0.6281 | 5.6055 | 8.0964 | 4.5777 | 9.1242 | -0.9509 | 0.725 | |
| 113 | 3.1000 | 4.3416 | 0.2219 | 3.9016 | 4.7815 | 2.3897 | 6.2935 | -1.2416 | 0.933 | |

| Obs | Student Residual | Cook's D | | | | | RStudent | Hat | Diag | Cov | DFFITs |
|-----|------------------|----------|------|-----|---|---|----------|---------|--------|--------|---------|
| | | -2 | -1 | 0 | 1 | 2 | | H | Ratio | | |
| 1 | 0.659 | | | * | | | 0.005 | 0.6575 | 0.0995 | 1.1666 | 0.2185 |
| 2 | -1.750 | | *** | | | | 0.021 | -1.7682 | 0.0577 | 0.8845 | -0.4375 |
| 3 | -0.593 | | * | | | | 0.002 | -0.5909 | 0.0443 | 1.1072 | -0.1272 |
| 4 | 0.845 | | | * | | | 0.009 | 0.8442 | 0.1036 | 1.1436 | 0.2870 |
| 5 | 0.0883 | | | | | | 0.000 | 0.0879 | 0.0595 | 1.1590 | 0.0221 |
| 6 | 0.377 | | | | | | 0.001 | 0.3758 | 0.0365 | 1.1183 | 0.0732 |
| 7 | 0.236 | | | | | | 0.000 | 0.2352 | 0.0234 | 1.1116 | 0.0364 |
| 8 | -1.910 | | *** | | | | 0.220 | -1.9351 | 0.3516 | 1.2200 | -1.4251 |
| 9 | -0.228 | | | | | | 0.000 | -0.2268 | 0.0304 | 1.1200 | -0.0401 |
| 10 | 1.600 | | | *** | | | 0.018 | 1.6124 | 0.0595 | 0.9267 | 0.4055 |
| 11 | -2.121 | | **** | | | | 0.102 | -2.1576 | 0.1694 | 0.8823 | -0.9745 |
| 12 | 0.771 | | | * | | | 0.003 | 0.7699 | 0.0404 | 1.0795 | 0.1579 |
| 13 | 0.433 | | | | | | 0.004 | 0.4313 | 0.1446 | 1.2548 | 0.1774 |
| 14 | -0.542 | | * | | | | 0.002 | -0.5398 | 0.0471 | 1.1161 | -0.1200 |
| 15 | 0.582 | | | * | | | 0.002 | 0.5805 | 0.0465 | 1.1109 | 0.1282 |
| 16 | 0.502 | | | * | | | 0.003 | 0.4998 | 0.1074 | 1.1957 | 0.1734 |
| 17 | -0.0993 | | | | | | 0.000 | -0.0988 | 0.0505 | 1.1479 | -0.0228 |
| 18 | 1.208 | | | ** | | | 0.006 | 1.2110 | 0.0342 | 0.9946 | 0.2280 |
| 19 | 0.556 | | | * | | | 0.001 | 0.5546 | 0.0244 | 1.0886 | 0.0878 |
| 20 | -0.972 | | * | | | | 0.025 | -0.9713 | 0.1919 | 1.2436 | -0.4733 |
| 21 | 0.433 | | | | | | 0.003 | 0.4311 | 0.1193 | 1.2187 | 0.1587 |
| 22 | -0.953 | | * | | | | 0.007 | -0.9530 | 0.0638 | 1.0767 | -0.2488 |
| 23 | 0.103 | | | | | | 0.000 | 0.1027 | 0.0483 | 1.1452 | 0.0231 |
| 24 | -0.119 | | | | | | 0.000 | -0.1184 | 0.1353 | 1.2600 | -0.0468 |
| 25 | -0.563 | | * | | | | 0.001 | -0.5614 | 0.0339 | 1.0985 | -0.1052 |
| 26 | -0.910 | | * | | | | 0.013 | -0.9091 | 0.1237 | 1.1584 | -0.3415 |
| 27 | -0.622 | | * | | | | 0.002 | -0.6205 | 0.0496 | 1.1099 | -0.1417 |
| 28 | -0.210 | | | | | | 0.000 | -0.2090 | 0.0404 | 1.1324 | -0.0429 |
| 29 | -0.627 | | * | | | | 0.001 | -0.6252 | 0.0316 | 1.0887 | -0.1129 |
| 30 | 0.374 | | | | | | 0.001 | 0.3727 | 0.0314 | 1.1127 | 0.0671 |
| 31 | -0.512 | | * | | | | 0.002 | -0.5098 | 0.0721 | 1.1493 | -0.1421 |
| 32 | 0.496 | | | | | | 0.002 | 0.4946 | 0.0663 | 1.1436 | 0.1318 |
| 33 | 0.968 | | | * | | | 0.009 | 0.9678 | 0.0769 | 1.0893 | 0.2793 |
| 34 | 0.154 | | | | | | 0.000 | 0.1536 | 0.0655 | 1.1649 | 0.0406 |

| Obs | Student Residual | -2 | -1 | 0 | 1 | 2 | Cook's D | RStudent | Hat | Diag H | Cov Ratio | DFFITs |
|-----|------------------|----|------|-------|------|---|----------|----------|--------|--------|-----------|---------|
| 35 | 2.092 | | | | **** | | 0.016 | 2.1277 | 0.0318 | | 0.7651 | 0.3859 |
| 36 | -0.162 | | | | | | 0.000 | -0.1611 | 0.0449 | | 1.1395 | -0.0349 |
| 37 | -1.499 | | ** | | | | 0.008 | -1.5084 | 0.0314 | | 0.9251 | -0.2714 |
| 38 | 1.258 | | | ** | | | 0.008 | 1.2615 | 0.0454 | | 0.9955 | 0.2752 |
| 39 | 0.0197 | | | | | | 0.000 | 0.0196 | 0.0608 | | 1.1615 | 0.0050 |
| 40 | -1.497 | | ** | | | | 0.023 | -1.5064 | 0.0841 | | 0.9789 | -0.4564 |
| 41 | -0.229 | | | | | | 0.000 | -0.2280 | 0.0332 | | 1.1232 | -0.0423 |
| 42 | -0.221 | | | | | | 0.000 | -0.2199 | 0.0270 | | 1.1164 | -0.0366 |
| 43 | -0.874 | | * | | | | 0.011 | -0.8731 | 0.1145 | | 1.1528 | -0.3140 |
| 44 | 1.032 | | | ** | | | 0.004 | 1.0326 | 0.0300 | | 1.0251 | 0.1817 |
| 45 | 1.671 | | | *** | | | 0.007 | 1.6853 | 0.0219 | | 0.8731 | 0.2521 |
| 46 | 0.0317 | | | | | | 0.000 | 0.0316 | 0.1957 | | 1.3561 | 0.0156 |
| 47 | -0.359 | | | | | | 0.007 | -0.3573 | 0.3277 | | 1.6046 | -0.2495 |
| 48 | 1.496 | | | ** | | | 0.044 | 1.5047 | 0.1501 | | 1.0554 | 0.6323 |
| 49 | -0.461 | | | | | | 0.003 | -0.4590 | 0.1033 | | 1.1943 | -0.1558 |
| 50 | 0.0807 | | | | | | 0.000 | 0.0803 | 0.0265 | | 1.1199 | 0.0132 |
| 51 | 0.364 | | | | | | 0.001 | 0.3623 | 0.0508 | | 1.1361 | 0.0838 |
| 52 | 0.171 | | | | | | 0.000 | 0.1706 | 0.1302 | | 1.2509 | 0.0660 |
| 53 | 2.914 | | | ***** | | | 0.185 | 3.0267 | 0.1635 | | 0.6057 | 1.3383 |
| 54 | 1.684 | | | *** | | | 0.070 | 1.6988 | 0.1815 | | 1.0393 | 0.8000 |
| 55 | -0.149 | | | | | | 0.000 | -0.1478 | 0.0353 | | 1.1286 | -0.0283 |
| 56 | -0.489 | | | | | | 0.001 | -0.4872 | 0.0361 | | 1.1085 | -0.0942 |
| 57 | 0.738 | | | * | | | 0.003 | 0.7366 | 0.0521 | | 1.0976 | 0.1726 |
| 58 | 0.217 | | | | | | 0.000 | 0.2159 | 0.0708 | | 1.1692 | 0.0596 |
| 59 | -1.406 | | ** | | | | 0.011 | -1.4128 | 0.0460 | | 0.9620 | -0.3102 |
| 60 | -0.223 | | | | | | 0.000 | -0.2220 | 0.0377 | | 1.1287 | -0.0439 |
| 61 | -0.250 | | | | | | 0.000 | -0.2489 | 0.0588 | | 1.1527 | -0.0622 |
| 62 | 0.779 | | | * | | | 0.013 | 0.7773 | 0.1573 | | 1.2281 | 0.3358 |
| 63 | 1.852 | | | *** | | | 0.045 | 1.8744 | 0.1048 | | 0.9011 | 0.6414 |
| 64 | 0.395 | | | | | | 0.001 | 0.3931 | 0.0430 | | 1.1245 | 0.0833 |
| 65 | 0.866 | | | * | | | 0.008 | 0.8649 | 0.0865 | | 1.1188 | 0.2661 |
| 66 | -0.840 | | * | | | | 0.017 | -0.8387 | 0.1781 | | 1.2484 | -0.3904 |
| 67 | 0.139 | | | | | | 0.000 | 0.1387 | 0.0459 | | 1.1414 | 0.0304 |
| 68 | -0.440 | | | | | | 0.001 | -0.4386 | 0.0479 | | 1.1267 | -0.0984 |
| 69 | 0.576 | | | * | | | 0.004 | 0.5737 | 0.0999 | | 1.1777 | 0.1912 |
| 70 | -0.770 | | * | | | | 0.003 | -0.7684 | 0.0427 | | 1.0823 | -0.1622 |
| 71 | 0.578 | | | * | | | 0.001 | 0.5766 | 0.0316 | | 1.0942 | 0.1041 |
| 72 | -1.160 | | ** | | | | 0.006 | -1.1615 | 0.0363 | | 1.0069 | -0.2255 |
| 73 | 1.083 | | | ** | | | 0.003 | 1.0841 | 0.0223 | | 1.0074 | 0.1636 |
| 74 | -1.570 | | *** | | | | 0.045 | -1.5818 | 0.1419 | | 1.0243 | -0.6433 |
| 75 | -0.448 | | | | | | 0.004 | -0.4468 | 0.1444 | | 1.2529 | -0.1835 |
| 76 | 1.222 | | | ** | | | 0.007 | 1.2251 | 0.0422 | | 0.9999 | 0.2571 |
| 77 | -0.910 | | * | | | | 0.003 | -0.9096 | 0.0294 | | 1.0458 | -0.1584 |
| 78 | 0.286 | | | | | | 0.001 | 0.2845 | 0.1001 | | 1.2036 | 0.0949 |
| 79 | 0.178 | | | | | | 0.000 | 0.1773 | 0.0205 | | 1.1106 | 0.0256 |
| 80 | -0.0326 | | | | | | 0.000 | -0.0324 | 0.0707 | | 1.1738 | -0.0089 |
| 81 | -0.916 | | * | | | | 0.022 | -0.9156 | 0.1899 | | 1.2517 | -0.4432 |
| 82 | -0.157 | | | | | | 0.000 | -0.1561 | 0.0501 | | 1.1460 | -0.0359 |
| 83 | 2.155 | | | **** | | | 0.022 | 2.1943 | 0.0408 | | 0.7539 | 0.4527 |
| 84 | 1.894 | | | *** | | | 0.025 | 1.9187 | 0.0586 | | 0.8448 | 0.4788 |
| 85 | -1.846 | | *** | | | | 0.023 | -1.8684 | 0.0561 | | 0.8562 | -0.4555 |
| 86 | -0.291 | | | | | | 0.000 | -0.2898 | 0.0244 | | 1.1100 | -0.0459 |
| 87 | -1.251 | | ** | | | | 0.027 | -1.2545 | 0.1345 | | 1.0995 | -0.4945 |
| 88 | -0.542 | | * | | | | 0.003 | -0.5397 | 0.0755 | | 1.1503 | -0.1542 |
| 89 | 0.174 | | | | | | 0.000 | 0.1728 | 0.0221 | | 1.1126 | 0.0260 |
| 90 | 0.734 | | | * | | | 0.004 | 0.7326 | 0.0567 | | 1.1035 | 0.1796 |
| 91 | -0.714 | | * | | | | 0.002 | -0.7122 | 0.0314 | | 1.0775 | -0.1281 |
| 92 | -1.413 | | ** | | | | 0.007 | -1.4202 | 0.0293 | | 0.9438 | -0.2466 |
| 93 | -1.683 | | *** | | | | 0.034 | -1.6980 | 0.0978 | | 0.9432 | -0.5592 |
| 94 | 1.825 | | | *** | | | 0.010 | 1.8457 | 0.0270 | | 0.8365 | 0.3073 |
| 95 | 1.194 | | | ** | | | 0.007 | 1.1969 | 0.0438 | | 1.0074 | 0.2561 |
| 96 | -2.389 | | **** | | | | 0.040 | -2.4455 | 0.0595 | | 0.6979 | -0.6149 |
| 97 | 0.156 | | | | | | 0.000 | 0.1551 | 0.0200 | | 1.1108 | 0.0222 |

| Student | Cook's | Hat | Diag | Cov | |
|--------------|---------|-----|--------|--------|---------|
| Obs Residual | D | H | H | Ratio | DFFITs |
| 98 | 0.202 | | 0.0562 | 1.1517 | 0.0490 |
| 99 | -0.862 | * | 0.0414 | 1.0668 | -0.1788 |
| 100 | 1.702 | *** | 0.0526 | 0.8930 | 0.4046 |
| 101 | -1.011 | ** | 0.0405 | 1.0402 | -0.2078 |
| 102 | -0.0413 | | 0.0834 | 1.1899 | -0.0124 |
| 103 | -0.912 | * | 0.0677 | 1.0886 | -0.2456 |
| 104 | 0.453 | | 0.1917 | 1.3258 | 0.2198 |
| 105 | 0.609 | * | 0.0405 | 1.1009 | 0.1247 |
| 106 | -0.466 | | 0.1212 | 1.2182 | -0.1724 |
| 107 | -1.085 | ** | 0.0664 | 1.0546 | -0.2894 |
| 108 | -0.575 | * | 0.0563 | 1.1233 | -0.1401 |
| 109 | 0.267 | | 0.1219 | 1.2346 | 0.0989 |
| 110 | 0.975 | * | 0.1299 | 1.1544 | 0.3765 |
| 111 | 0.347 | | 0.1133 | 1.2175 | 0.2325 |
| 112 | -1.312 | ** | 0.4289 | 1.6437 | -1.1413 |
| 113 | -1.331 | ** | 0.0535 | 0.9875 | -0.3177 |

Output Statistics

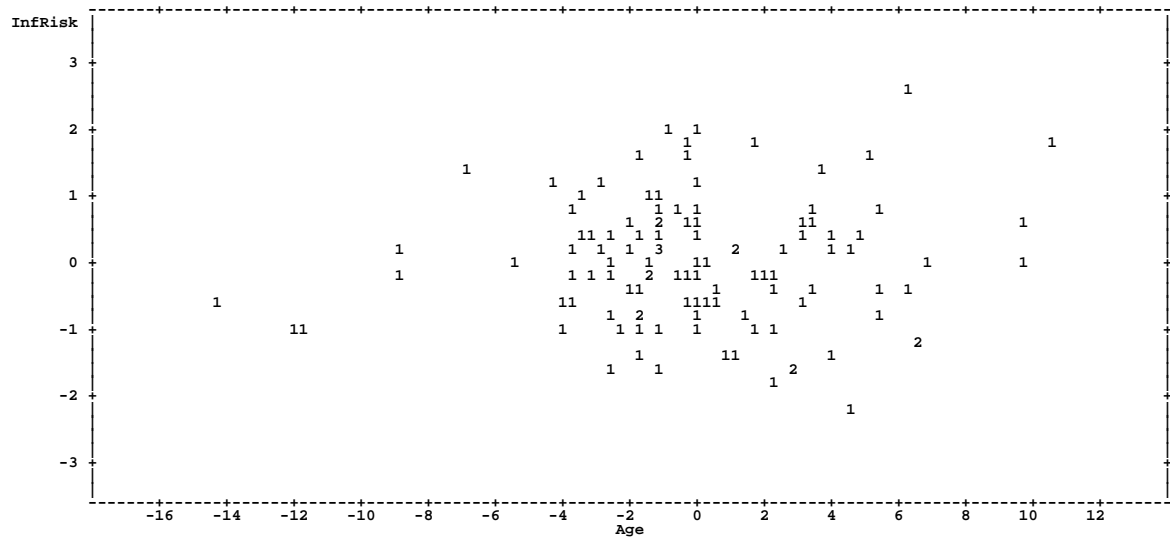
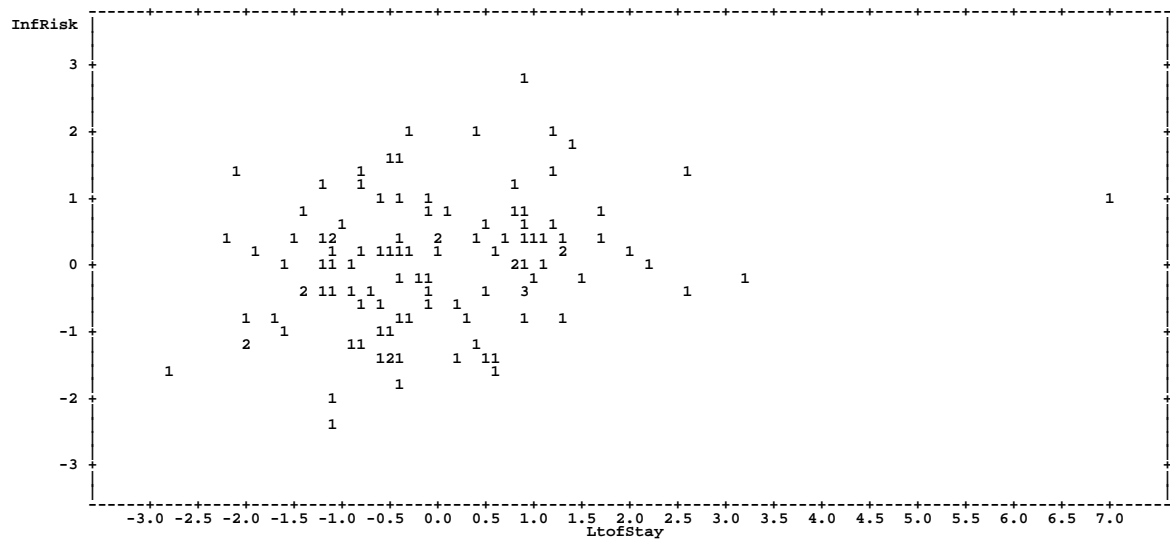
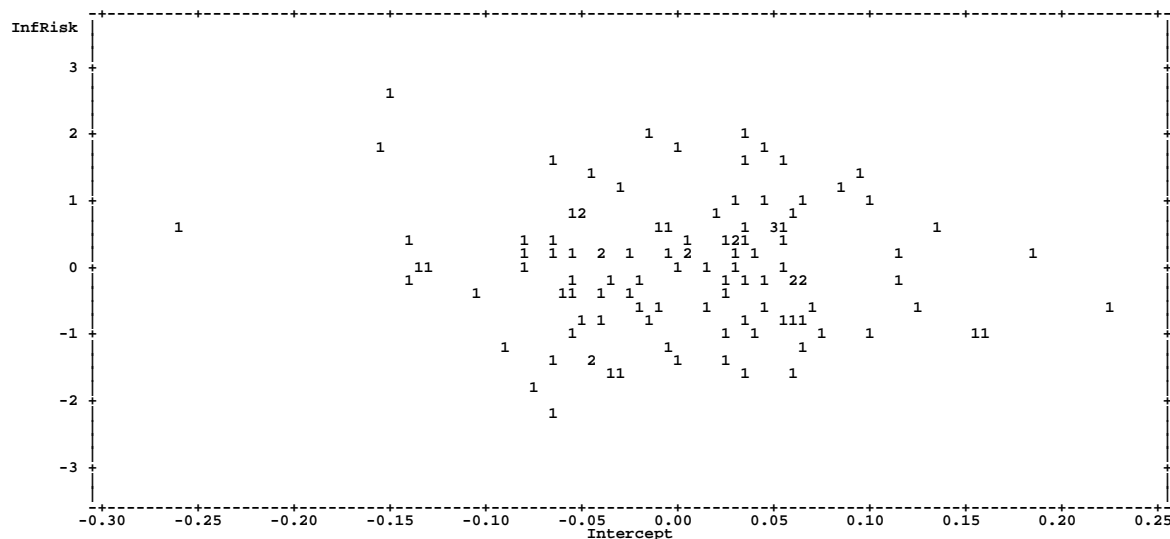
| Obs | Intercept | LtofStay | Age | CulRatio | KRay | NoBeds | Census | Nurses | Services |
|-----|-----------|----------|---------|----------|---------|---------|---------|---------|----------|
| 1 | -0.0058 | -0.0612 | 0.0559 | 0.0266 | -0.1222 | -0.0569 | 0.0265 | 0.0288 | 0.1141 |
| 2 | 0.0761 | -0.0766 | -0.1232 | 0.0709 | 0.2390 | 0.0296 | 0.0403 | -0.0008 | -0.1732 |
| 3 | 0.0069 | 0.0335 | -0.0493 | 0.0042 | -0.0077 | 0.0030 | -0.0216 | 0.0072 | 0.0805 |
| 4 | -0.0561 | 0.0045 | 0.0018 | -0.0587 | 0.1880 | 0.1264 | -0.1664 | 0.0799 | -0.0095 |
| 5 | -0.0091 | 0.0040 | 0.0085 | 0.0160 | -0.0056 | 0.0005 | -0.0026 | 0.0027 | -0.0013 |
| 6 | 0.0125 | -0.0207 | -0.0104 | 0.0155 | 0.0235 | -0.0449 | 0.0472 | -0.0174 | 0.0131 |
| 7 | -0.0188 | -0.0080 | 0.0253 | 0.0121 | -0.0046 | -0.0111 | 0.0114 | -0.0032 | 0.0024 |
| 8 | -0.1053 | -0.1015 | 0.1415 | -0.9392 | 0.3270 | -0.8654 | 0.6518 | 0.2810 | 0.2112 |
| 9 | -0.0192 | 0.0116 | 0.0167 | -0.0147 | -0.0081 | -0.0012 | -0.0016 | 0.0103 | -0.0031 |
| 10 | -0.1378 | -0.1386 | 0.1959 | 0.3054 | -0.0665 | -0.0708 | 0.0629 | -0.0804 | 0.1133 |
| 11 | 0.2254 | 0.1898 | -0.1289 | -0.0027 | -0.4323 | 0.0365 | 0.0364 | -0.4860 | 0.0604 |
| 12 | -0.0475 | -0.0578 | 0.0625 | -0.0322 | 0.0529 | 0.0372 | -0.0108 | -0.0781 | 0.0360 |
| 13 | -0.0830 | 0.0291 | 0.0532 | 0.0905 | 0.0106 | -0.0190 | -0.0206 | 0.0836 | 0.0066 |
| 14 | 0.0421 | 0.0780 | -0.0694 | -0.0554 | -0.0266 | 0.0145 | -0.0170 | 0.0162 | -0.0171 |
| 15 | -0.0060 | -0.0157 | 0.0436 | 0.0264 | -0.0069 | -0.0095 | 0.0233 | -0.0018 | -0.0881 |
| 16 | 0.0378 | 0.0664 | -0.0433 | -0.0126 | -0.0781 | -0.0614 | 0.0042 | 0.1298 | 0.0062 |
| 17 | -0.0075 | 0.0102 | 0.0062 | -0.0075 | -0.0097 | 0.0047 | -0.0061 | 0.0063 | -0.0029 |
| 18 | -0.0471 | 0.1035 | -0.0023 | 0.0563 | 0.0216 | -0.0255 | -0.0039 | 0.0125 | -0.0043 |
| 19 | 0.0245 | 0.0215 | -0.0224 | -0.0516 | -0.0028 | -0.0176 | -0.0060 | 0.0371 | 0.0050 |
| 20 | 0.0534 | 0.0356 | -0.0380 | 0.0173 | -0.0388 | -0.3537 | 0.2797 | 0.0235 | 0.0248 |
| 21 | 0.1068 | -0.0193 | -0.0934 | 0.0078 | 0.0497 | 0.0380 | -0.0213 | -0.0101 | -0.0770 |
| 22 | -0.0303 | 0.0401 | 0.0368 | -0.1306 | -0.0895 | 0.0489 | -0.0489 | -0.0171 | 0.0556 |
| 23 | -0.0009 | -0.0082 | -0.0002 | -0.0003 | 0.0076 | -0.0145 | 0.0140 | -0.0044 | 0.0141 |
| 24 | 0.0217 | 0.0127 | -0.0285 | 0.0007 | -0.0055 | 0.0043 | -0.0040 | -0.0216 | 0.0151 |
| 25 | -0.0112 | 0.0245 | 0.0006 | -0.0190 | 0.0341 | 0.0542 | -0.0409 | -0.0057 | -0.0653 |
| 26 | -0.0449 | 0.1400 | 0.0381 | 0.1104 | -0.2315 | -0.0002 | -0.0141 | -0.0985 | 0.0727 |
| 27 | -0.0549 | 0.0042 | 0.0594 | -0.0453 | -0.0351 | 0.0059 | 0.0129 | -0.0441 | 0.0269 |
| 28 | -0.0161 | 0.0162 | 0.0010 | -0.0062 | 0.0164 | 0.0189 | -0.0255 | 0.0175 | -0.0044 |
| 29 | 0.0164 | -0.0407 | -0.0045 | 0.0091 | -0.0246 | 0.0312 | -0.0253 | -0.0300 | 0.0483 |
| 30 | 0.0141 | 0.0122 | -0.0276 | -0.0165 | 0.0394 | 0.0193 | -0.0206 | -0.0035 | -0.0058 |
| 31 | -0.0155 | -0.0331 | 0.0450 | 0.0382 | -0.0336 | 0.0589 | -0.0118 | -0.0946 | -0.0276 |
| 32 | 0.0032 | 0.0012 | 0.0005 | 0.0074 | -0.0390 | -0.0962 | 0.0559 | 0.0561 | 0.0612 |
| 33 | 0.0281 | 0.1903 | -0.0286 | 0.0210 | -0.1998 | -0.0125 | -0.0381 | 0.0993 | -0.0653 |
| 34 | -0.0115 | 0.0199 | -0.0042 | -0.0014 | 0.0110 | 0.0012 | -0.0001 | -0.0122 | 0.0118 |
| 35 | -0.0467 | 0.0587 | 0.0057 | -0.0964 | -0.0679 | -0.0897 | -0.0014 | 0.0342 | 0.2901 |
| 36 | 0.0167 | 0.0027 | -0.0093 | -0.0038 | -0.0152 | -0.0102 | 0.0083 | 0.0131 | -0.0171 |
| 37 | 0.1246 | -0.0244 | -0.1473 | -0.0797 | 0.0713 | 0.0215 | -0.0171 | 0.0615 | -0.0299 |
| 38 | 0.1382 | -0.0589 | -0.1253 | -0.1272 | 0.1091 | -0.0757 | 0.0589 | -0.0235 | 0.0552 |
| 39 | 0.0004 | 0.0019 | -0.0012 | -0.0023 | -0.0014 | -0.0016 | 0.0004 | 0.0005 | 0.0032 |
| 40 | 0.0886 | 0.0540 | -0.2360 | 0.0265 | 0.0833 | -0.0289 | -0.0192 | 0.0048 | 0.2557 |
| 41 | -0.0138 | 0.0195 | 0.0069 | 0.0092 | -0.0231 | 0.0178 | -0.0214 | 0.0037 | 0.0072 |
| 42 | 0.0052 | -0.0142 | -0.0005 | -0.0080 | -0.0024 | 0.0037 | 0.0039 | -0.0105 | 0.0054 |
| 43 | -0.1827 | -0.2113 | 0.2495 | 0.1618 | 0.0297 | -0.0613 | 0.0909 | 0.0005 | -0.0031 |
| 44 | 0.0376 | -0.0317 | -0.0249 | -0.0133 | -0.0102 | -0.1203 | 0.1211 | 0.0004 | 0.0513 |
| 45 | 0.1139 | -0.0952 | -0.0655 | -0.0032 | 0.0632 | -0.1020 | 0.0990 | -0.0199 | 0.0005 |
| 46 | -0.0000 | 0.0032 | 0.0002 | -0.0030 | -0.0045 | 0.0072 | -0.0080 | 0.0071 | -0.0027 |
| 47 | 0.0775 | -0.2186 | 0.0207 | 0.0722 | 0.0080 | -0.0257 | 0.0549 | -0.0182 | -0.0122 |
| 48 | -0.0879 | -0.0938 | 0.1457 | 0.0508 | -0.0089 | 0.2387 | 0.0424 | -0.4695 | -0.0988 |
| 49 | -0.0758 | 0.0048 | 0.0186 | 0.0097 | 0.0676 | 0.0099 | -0.0307 | 0.0083 | 0.0943 |
| 50 | 0.0030 | -0.0051 | -0.0026 | -0.0051 | 0.0056 | -0.0026 | 0.0038 | -0.0033 | 0.0051 |
| 51 | -0.0375 | 0.0325 | 0.0270 | 0.0075 | -0.0226 | -0.0246 | -0.0032 | 0.0478 | 0.0183 |
| 52 | 0.0091 | 0.0136 | -0.0082 | -0.0032 | -0.0345 | 0.0358 | -0.0373 | 0.0083 | 0.0114 |
| 53 | -0.6207 | 0.2045 | 0.4722 | -0.0177 | 0.2607 | 1.0981 | -0.8620 | -0.2284 | -0.3190 |
| 54 | 0.2203 | 0.1940 | -0.2962 | 0.4956 | -0.0829 | 0.1343 | -0.0902 | -0.1464 | -0.1429 |

| | -----DFBETAS----- | | | | | | | | |
|-----|-------------------|----------|---------|----------|---------|---------|---------|---------|----------|
| Obs | Intercept | LtofStay | Age | CulRatio | XRay | NoBeds | Census | Nurses | Services |
| 55 | -0.0062 | -0.0084 | 0.0017 | 0.0031 | 0.0174 | -0.0049 | 0.0084 | -0.0010 | -0.0009 |
| 56 | 0.0240 | -0.0544 | -0.0066 | 0.0442 | 0.0249 | -0.0014 | 0.0198 | -0.0184 | -0.0328 |
| 57 | -0.0514 | -0.0838 | 0.0946 | -0.0365 | 0.0393 | -0.0069 | 0.0139 | -0.0237 | 0.0078 |
| 58 | 0.0320 | -0.0187 | -0.0191 | 0.0022 | -0.0127 | -0.0308 | 0.0209 | 0.0271 | 0.0059 |
| 59 | -0.0487 | 0.0437 | 0.0561 | 0.0392 | -0.1383 | 0.1161 | -0.1259 | -0.0869 | 0.0841 |
| 60 | 0.0153 | -0.0179 | -0.0099 | 0.0077 | -0.0130 | -0.0037 | 0.0049 | -0.0082 | *0.0218 |
| 61 | 0.0107 | -0.0373 | -0.0104 | 0.0096 | 0.0332 | -0.0224 | 0.0297 | -0.0072 | 0.0075 |
| 62 | 0.0550 | -0.0682 | -0.0040 | 0.0715 | -0.1211 | -0.2090 | 0.2535 | -0.0688 | 0.0645 |
| 63 | -0.3925 | -0.2981 | 0.4899 | -0.0237 | 0.2989 | -0.0489 | 0.0799 | -0.0238 | -0.0754 |
| 64 | 0.0157 | 0.0206 | -0.0239 | -0.0450 | 0.0398 | -0.0074 | -0.0083 | 0.0331 | -0.0241 |
| 65 | 0.1549 | -0.1426 | -0.0766 | 0.0682 | -0.0071 | -0.0452 | 0.1068 | -0.0342 | -0.0722 |
| 66 | -0.0697 | 0.0201 | -0.0017 | -0.0725 | 0.1108 | 0.1225 | -0.0574 | -0.2884 | 0.1584 |
| 67 | 0.0103 | 0.0116 | -0.0179 | -0.0215 | 0.0102 | 0.0051 | -0.0105 | 0.0080 | 0.0055 |
| 68 | 0.0139 | 0.0563 | -0.0236 | 0.0348 | -0.0626 | 0.0346 | -0.0423 | 0.0045 | -0.0112 |
| 69 | 0.0249 | -0.0807 | 0.0007 | -0.0311 | 0.0651 | -0.0185 | 0.0955 | -0.1185 | -0.0247 |
| 70 | 0.0135 | 0.0913 | -0.0591 | -0.1009 | -0.0243 | 0.0068 | -0.0308 | 0.0431 | 0.0388 |
| 71 | 0.0359 | -0.0446 | -0.0148 | -0.0038 | 0.0425 | 0.0011 | -0.0039 | 0.0078 | -0.0230 |
| 72 | -0.0969 | 0.0703 | 0.0038 | -0.0516 | 0.1074 | 0.0058 | -0.0101 | 0.0154 | 0.0327 |
| 73 | 0.0621 | -0.0069 | -0.0339 | 0.0210 | -0.0879 | -0.0494 | 0.0580 | -0.0351 | 0.0472 |
| 74 | 0.0967 | 0.0624 | -0.0356 | -0.3241 | 0.1210 | 0.1577 | -0.0777 | 0.1176 | -0.5043 |
| 75 | -0.1361 | -0.0348 | 0.1609 | 0.0596 | -0.0174 | -0.0545 | 0.0570 | 0.0279 | -0.0424 |
| 76 | 0.1545 | -0.1276 | -0.0831 | -0.0148 | 0.0619 | -0.0504 | 0.0442 | 0.0238 | -0.0454 |
| 77 | -0.0854 | -0.0215 | 0.0852 | 0.0484 | -0.0363 | 0.0078 | 0.0052 | 0.0017 | 0.0168 |
| 78 | 0.0021 | -0.0335 | 0.0085 | -0.0098 | 0.0128 | 0.0026 | 0.0291 | -0.0316 | -0.0075 |
| 79 | -0.0085 | -0.0049 | 0.0107 | 0.0011 | -0.0027 | 0.0014 | -0.0051 | 0.0038 | 0.0108 |
| 80 | 0.0055 | 0.0010 | -0.0053 | -0.0053 | 0.0006 | -0.0017 | 0.0009 | 0.0037 | -0.0027 |
| 81 | -0.2071 | -0.1869 | 0.2802 | 0.1750 | 0.1152 | -0.1756 | 0.1463 | 0.1520 | -0.1607 |
| 82 | -0.0129 | 0.0104 | 0.0138 | 0.0187 | -0.0190 | 0.0006 | -0.0016 | 0.0081 | -0.0125 |
| 83 | 0.1055 | -0.0486 | -0.0444 | 0.0137 | -0.1684 | 0.1873 | -0.1900 | -0.1034 | 0.1805 |
| 84 | 0.1158 | 0.1691 | -0.0180 | -0.0757 | -0.2955 | 0.1548 | -0.1765 | 0.0827 | -0.1886 |
| 85 | 0.0695 | 0.0543 | -0.1328 | 0.0009 | 0.1940 | 0.0829 | -0.0256 | 0.0626 | -0.2835 |
| 86 | -0.0090 | 0.0015 | 0.0095 | -0.0141 | 0.0073 | -0.0132 | 0.0127 | 0.0165 | -0.0207 |
| 87 | 0.0046 | 0.2707 | -0.0545 | -0.0431 | -0.0866 | -0.0695 | -0.0979 | 0.3829 | -0.2057 |
| 88 | 0.0374 | -0.0351 | 0.0029 | 0.0300 | -0.0115 | -0.0796 | 0.0849 | 0.0365 | -0.0977 |
| 89 | -0.0056 | -0.0033 | 0.0043 | 0.0013 | 0.0058 | -0.0089 | 0.0019 | 0.0080 | 0.0111 |
| 90 | 0.0514 | 0.0464 | -0.0374 | 0.0414 | -0.0704 | -0.0506 | 0.0443 | 0.0684 | -0.0759 |
| 91 | -0.0513 | -0.0125 | 0.0451 | 0.0538 | -0.0453 | -0.0270 | 0.0229 | 0.0025 | 0.0554 |
| 92 | 0.0022 | -0.0436 | -0.0423 | 0.0840 | 0.0185 | -0.0513 | 0.0589 | -0.0273 | 0.1045 |
| 93 | -0.1305 | -0.0707 | 0.0437 | 0.1990 | -0.0926 | -0.0852 | 0.0366 | -0.0563 | 0.4469 |
| 94 | 0.0024 | -0.0627 | 0.0760 | -0.0029 | 0.0425 | 0.0715 | -0.0670 | 0.0353 | -0.1565 |
| 95 | 0.1035 | 0.0670 | -0.0960 | -0.0556 | 0.0463 | -0.0088 | -0.0209 | 0.1226 | -0.1684 |
| 96 | 0.2140 | 0.2021 | -0.2662 | -0.3811 | 0.0772 | 0.0462 | -0.0090 | 0.1246 | -0.3010 |
| 97 | 0.0063 | 0.0001 | -0.0039 | -0.0112 | -0.0038 | 0.0008 | -0.0033 | 0.0034 | 0.0058 |
| 98 | 0.0010 | 0.0195 | -0.0135 | -0.0199 | 0.0142 | 0.0099 | -0.0011 | -0.0256 | 0.0051 |
| 99 | -0.0738 | 0.0236 | 0.0356 | 0.0422 | 0.0768 | 0.0446 | -0.0416 | 0.0409 | -0.0754 |
| 100 | 0.0752 | -0.0524 | -0.0076 | 0.0739 | -0.1939 | -0.0467 | 0.1145 | -0.0558 | 0.0346 |
| 101 | -0.0512 | -0.0964 | 0.0521 | 0.1041 | -0.0070 | -0.0140 | 0.0429 | -0.0635 | 0.0944 |
| 102 | -0.0061 | -0.0023 | 0.0089 | 0.0064 | -0.0065 | -0.0011 | 0.0014 | 0.0013 | -0.0018 |
| 103 | 0.0612 | 0.1326 | -0.1215 | -0.0262 | -0.1112 | -0.0508 | 0.0166 | 0.0231 | 0.1012 |
| 104 | -0.1648 | 0.0003 | 0.1142 | -0.0262 | 0.1142 | -0.0288 | 0.0459 | -0.0652 | 0.0682 |
| 105 | 0.0371 | 0.0358 | -0.0184 | -0.0213 | -0.0699 | -0.0147 | -0.0130 | 0.0793 | -0.0274 |
| 106 | 0.0663 | -0.0789 | -0.0728 | 0.0343 | 0.0573 | -0.0652 | 0.0726 | -0.0264 | 0.0622 |
| 107 | -0.1435 | 0.0716 | 0.0273 | 0.0018 | 0.1223 | 0.0182 | -0.0757 | 0.1015 | 0.0813 |
| 108 | -0.0320 | -0.0225 | -0.0069 | 0.0165 | 0.0787 | -0.0410 | 0.0378 | 0.0026 | 0.0473 |
| 109 | -0.0139 | 0.0179 | -0.0082 | -0.0563 | 0.0552 | 0.0065 | -0.0178 | 0.0502 | -0.0138 |
| 110 | 0.0786 | -0.0077 | -0.0134 | 0.3086 | -0.1571 | 0.0268 | 0.0073 | -0.0647 | -0.1149 |
| 111 | -0.0304 | -0.0282 | 0.0330 | 0.0056 | -0.0213 | -0.0310 | 0.0054 | 0.0020 | 0.1027 |
| 112 | 0.1180 | -0.1095 | -0.0938 | -0.1728 | 0.0725 | 0.3803 | -0.6959 | 0.4691 | 0.1899 |
| 113 | 0.1581 | 0.0586 | -0.2054 | -0.1201 | -0.0508 | 0.0215 | -0.0283 | 0.0088 | 0.1050 |

Sum of Residuals 0
 Sum of Squared Residuals 95.63982
 Predicted Residual SS (PRESS) 117.92422

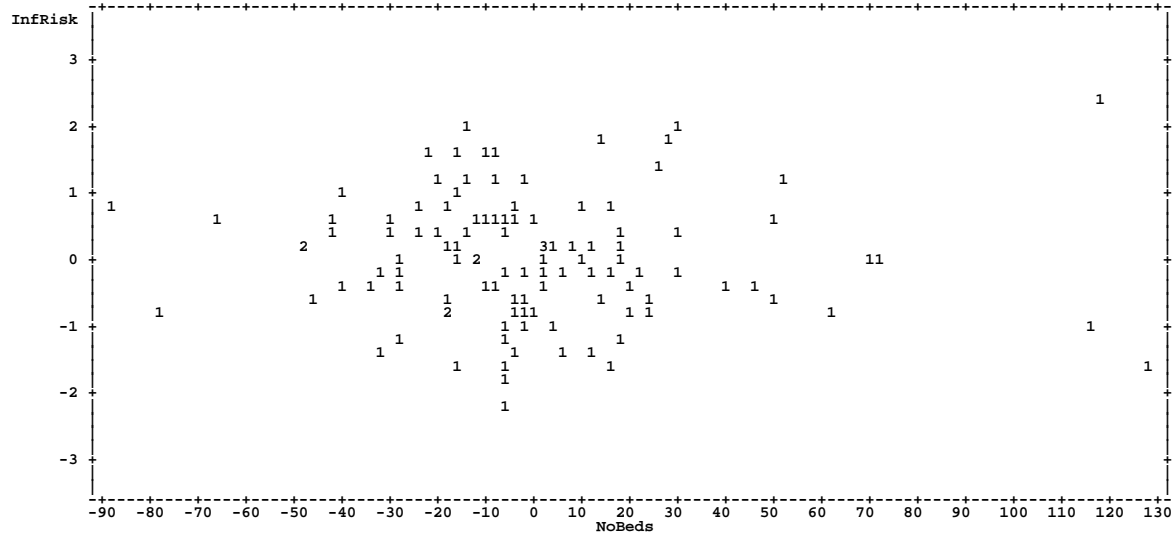
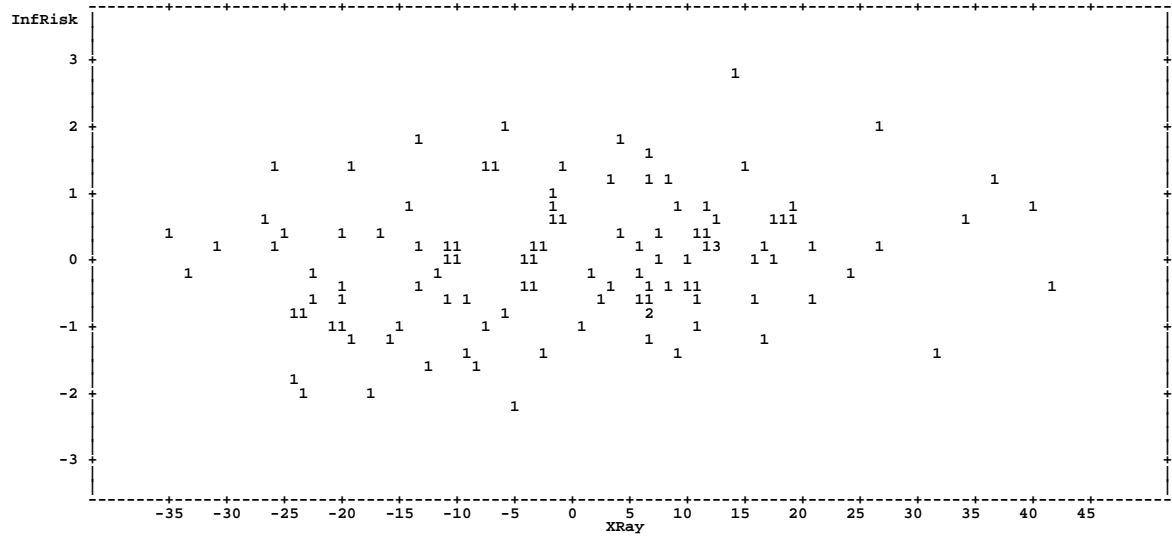
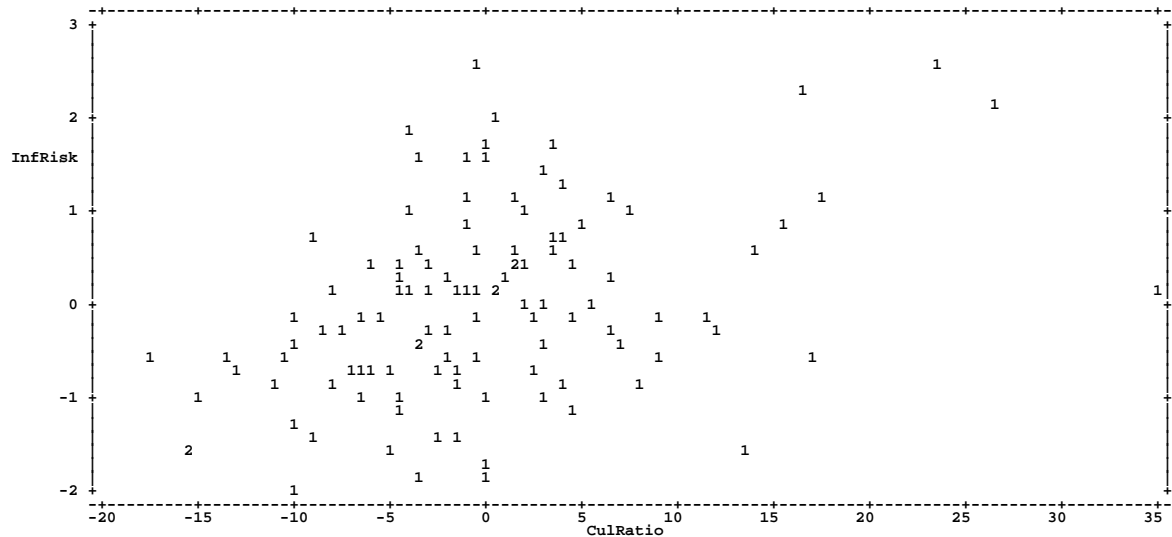
SENIC database from NKNW 1996 (Appendix C)
Full Model with diagnostics

The REG Procedure
Model: MODEL1
Partial Regression Residual Plot



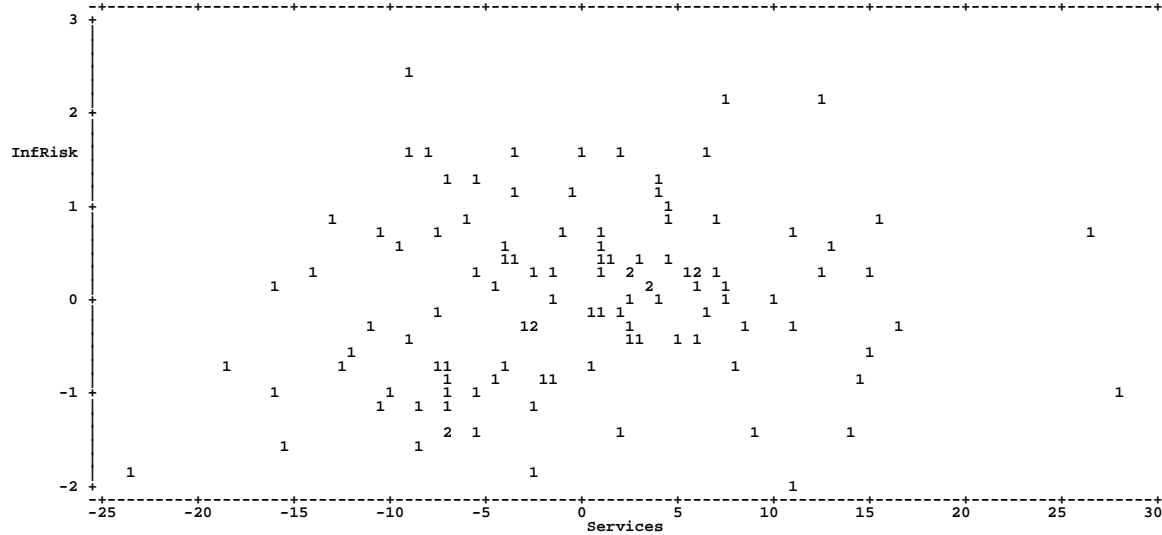
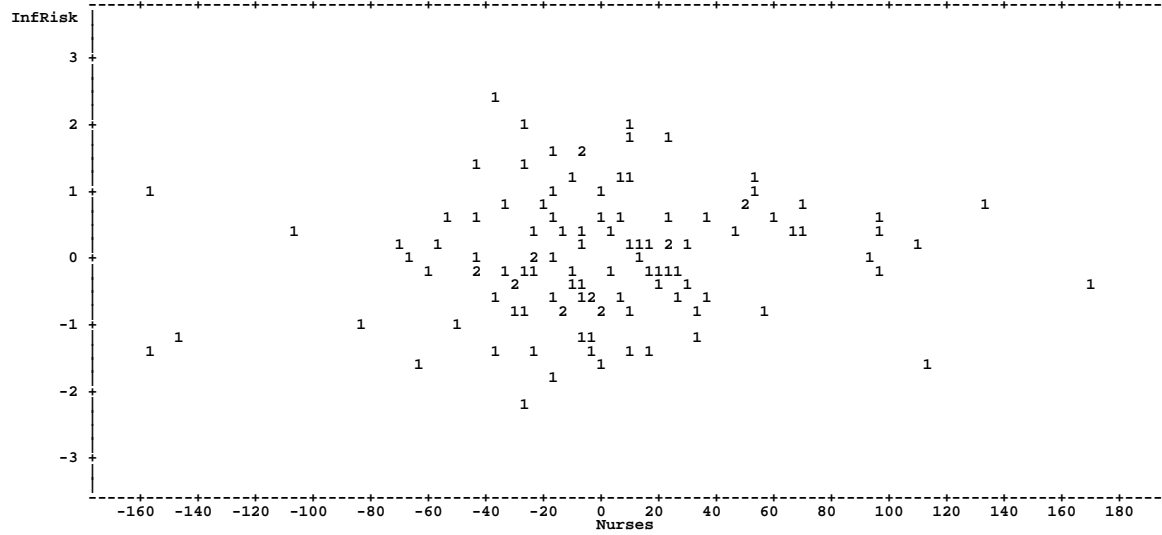
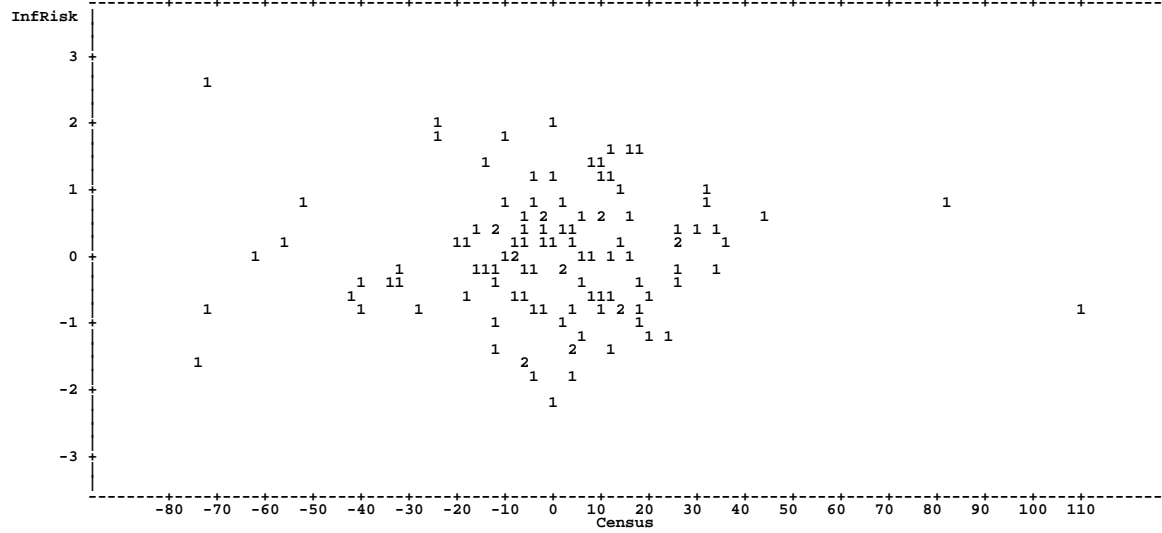
SENIC database from NKNW 1996 (Appendix C)
Full Model with diagnostics

The REG Procedure
Model: MODEL1
Partial Regression Residual Plot



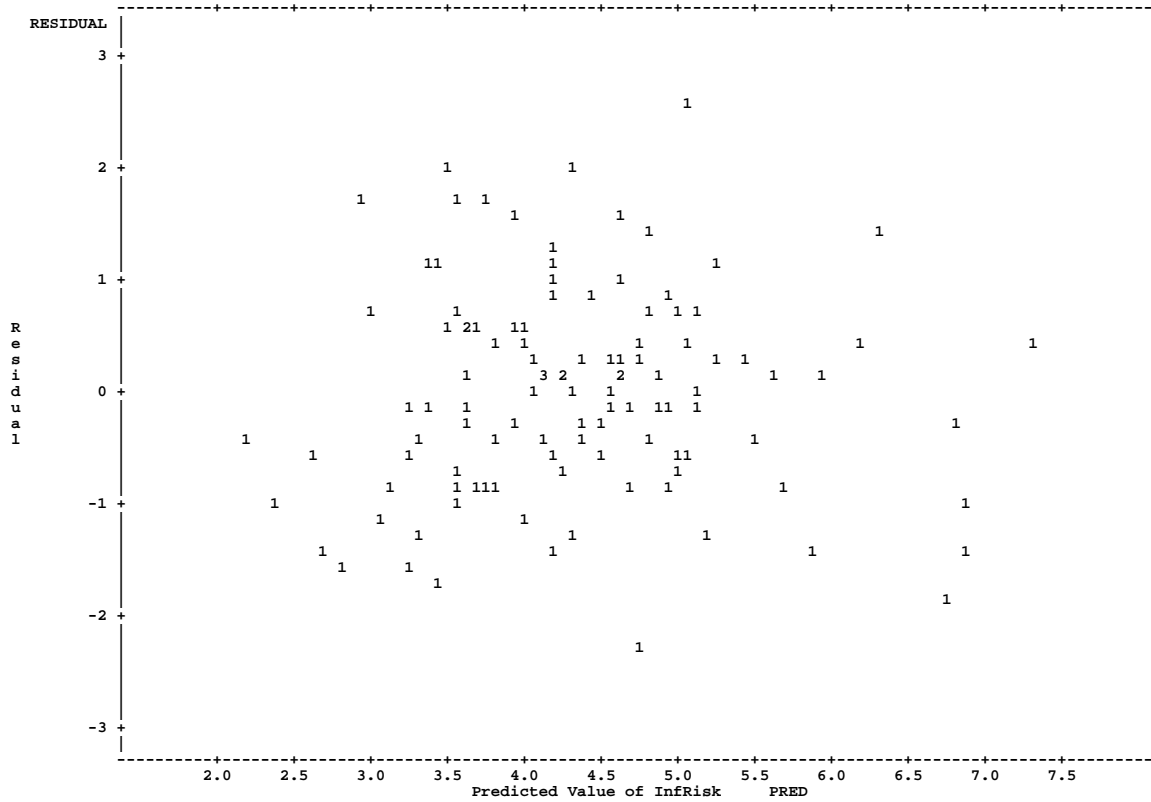
SENIC database from NKNW 1996 (Appendix C)
Full Model with diagnostics

The REG Procedure
Model: MODEL1
Partial Regression Residual Plot

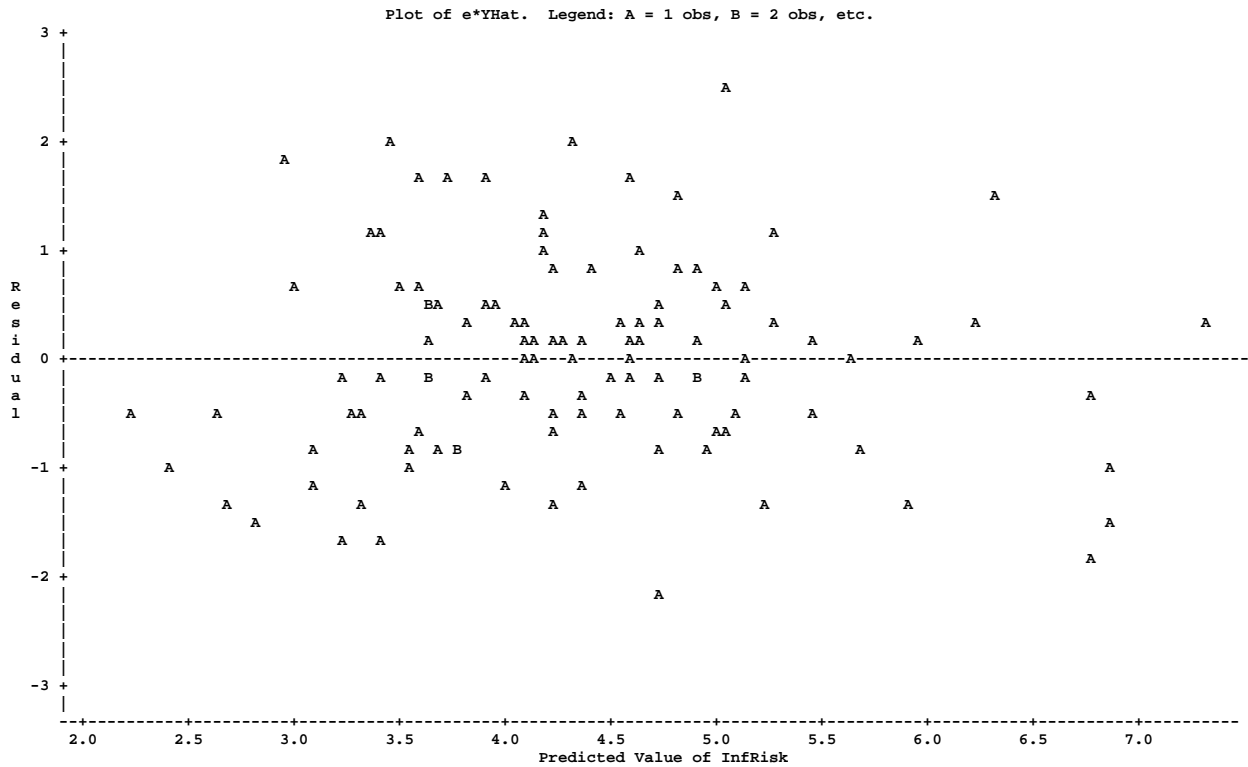


SENIC database from NKNW 1996 (Appendix C)
 Full Model with diagnostics

The REG Procedure
 Model: MODEL1
 Dependent Variable: InfRisk



SENIC database from NKNW 1996 (Appendix C)
 Full Model with diagnostics



```

153      proc univariate data=next1 normal plot; var e;
154          TITLE3 'Full model residual analysis';
155      run;

```

NOTE: The PROCEDURE UNIVARIATE printed page 30.

NOTE: PROCEDURE UNIVARIATE used:

```

      real time          0.04 seconds
      cpu time           0.01 seconds

```

SENIC database from NKNW 1996 (Appendix C)

Full Model with diagnostics

Full model residual analysis

The UNIVARIATE Procedure

Variable: e (Residual)

| Moments | | | |
|-----------------|------------|------------------|------------|
| N | 113 | Sum Weights | 113 |
| Mean | 0 | Sum Observations | 0 |
| Std Deviation | 0.92408169 | Variance | 0.85392696 |
| Skewness | 0.19655938 | Kurtosis | -0.0822943 |
| Uncorrected SS | 95.6398199 | Corrected SS | 95.6398199 |
| Coeff Variation | . | Std Error Mean | 0.08693029 |

| Basic Statistical Measures | | | |
|----------------------------|----------|---------------------|---------|
| Location | | Variability | |
| Mean | 0.000000 | Std Deviation | 0.92408 |
| Median | 0.018329 | Variance | 0.85393 |
| Mode | . | Range | 4.77796 |
| | | Interquartile Range | 1.13707 |

| Tests for Location: Mu0=0 | | | |
|---------------------------|-------------|-------------------|--------|
| Test | -Statistic- | -----p Value----- | |
| Student's t | t 0 | Pr > t | 1.0000 |
| Sign | M 0.5 | Pr >= M | 1.0000 |
| Signed Rank | S -68.5 | Pr >= S | 0.8454 |

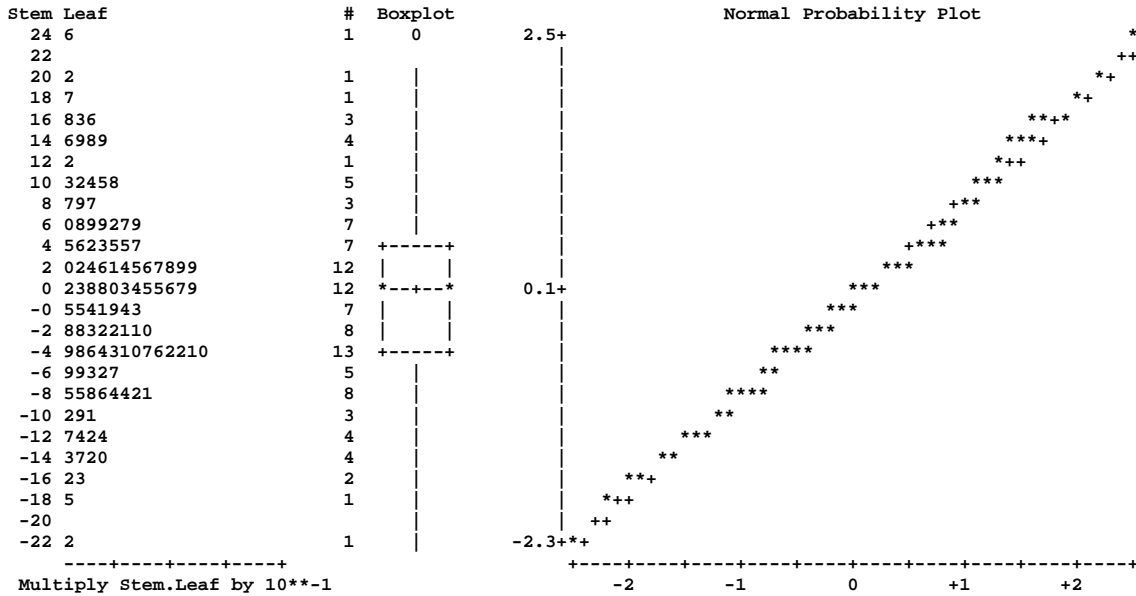
| Tests for Normality | | | |
|---------------------|---------------|-------------------|---------|
| Test | --Statistic-- | -----p Value----- | |
| Shapiro-Wilk | W 0.993988 | Pr < W | 0.9091 |
| Kolmogorov-Smirnov | D 0.044211 | Pr > D | >0.1500 |
| Cramer-von Mises | W-Sq 0.026903 | Pr > W-Sq | >0.2500 |
| Anderson-Darling | A-Sq 0.198655 | Pr > A-Sq | >0.2500 |

Quantiles (Definition 5)

| Quantile | Estimate |
|------------|-----------|
| 100% Max | 2.556167 |
| 99% | 2.024051 |
| 95% | 1.680463 |
| 90% | 1.178595 |
| 75% Q3 | 0.545301 |
| 50% Median | 0.018329 |
| 25% Q1 | -0.591769 |
| 10% | -1.241553 |
| 5% | -1.474932 |
| 1% | -1.853377 |
| 0% Min | -2.221798 |

Extreme Observations

| -----Lowest----- | | -----Highest----- | |
|------------------|-----|-------------------|-----|
| Value | Obs | Value | Obs |
| -2.22180 | 96 | 1.72608 | 94 |
| -1.85338 | 11 | 1.76267 | 84 |
| -1.72024 | 85 | 1.97442 | 35 |
| -1.62945 | 2 | 2.02405 | 83 |
| -1.53276 | 93 | 2.55617 | 53 |



```

157      proc reg data=SENIC;
158          TITLE2 'Stepwise regression - backward selection';
159          model InfRisk = LtofStay Age CulRatio XRay NoBeds Census Nurses
Services
160                      / selection=backward;
161      Run;
NOTE: 113 observations read.
NOTE: 113 observations used in computations.
162
NOTE: The PROCEDURE REG printed page 31.
NOTE: PROCEDURE REG used:
      real time          0.10 seconds
      cpu time           0.07 seconds
    
```


SENIC database from NKNW 1996 (Appendix C)

Stepwise regression - backward selection

The REG Procedure

Model: MODEL1

Dependent Variable: InfRisk

Backward Elimination: Step 0

All Variables Entered: R-Square = 0.5251 and C(p) = 9.0000

| Analysis of Variance | | | | | |
|----------------------|-----|----------------|-------------|---------|--------|
| Source | DF | Sum of Squares | Mean Square | F Value | Pr > |
| Model | 8 | 105.74000 | 13.21750 | 14.37 | <.0001 |
| Error | 104 | 95.63982 | 0.91961 | | |
| Corrected Total | 112 | 201.37982 | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|--------------------|----------------|------------|---------|--------|
| Intercept | -0.74726 | 1.20763 | 0.35211 | 0.38 | 0.5374 |
| LtofStay | 0.17693 | 0.06906 | 6.03648 | 6.56 | 0.0118 |
| Age | 0.01621 | 0.02226 | 0.48809 | 0.53 | 0.4679 |
| CulRatio | 0.04699 | 0.01075 | 17.57678 | 19.11 | <.0001 |
| XRay | 0.01204 | 0.00549 | 4.42782 | 4.81 | 0.0304 |
| NoBeds | -0.00145 | 0.00271 | 0.26220 | 0.29 | 0.5945 |
| Census | 0.00072796 | 0.00347 | 0.04044 | 0.04 | 0.8343 |
| Nurses | 0.00191 | 0.00175 | 1.08719 | 1.18 | 0.2794 |
| Services | 0.01628 | 0.01019 | 2.34765 | 2.55 | 0.1131 |

Bounds on condition number: 34.702, 674.59

Backward Elimination: Step 1

Variable Census Removed: R-Square = 0.5249 and C(p) = 7.0440

| Analysis of Variance | | | | | |
|----------------------|-----|----------------|-------------|---------|--------|
| Source | DF | Sum of Squares | Mean Square | F Value | Pr > |
| Model | 7 | 105.69957 | 15.09994 | 16.57 | <.0001 |
| Error | 105 | 95.68026 | 0.91124 | | |
| Corrected Total | 112 | 201.37982 | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|--------------------|----------------|------------|---------|--------|
| Intercept | -0.76082 | 1.20039 | 0.36606 | 0.40 | 0.5276 |
| LtofStay | 0.18363 | 0.06095 | 8.27183 | 9.08 | 0.0032 |
| Age | 0.01557 | 0.02195 | 0.45899 | 0.50 | 0.4795 |
| CulRatio | 0.04665 | 0.01057 | 17.73508 | 19.46 | <.0001 |
| XRay | 0.01196 | 0.00545 | 4.39134 | 4.82 | 0.0303 |
| NoBeds | -0.00094901 | 0.00130 | 0.48680 | 0.53 | 0.4665 |
| Nurses | 0.00199 | 0.00170 | 1.24827 | 1.37 | 0.2445 |
| Services | 0.01614 | 0.01012 | 2.31695 | 2.54 | 0.1138 |

Bounds on condition number: 7.7057, 162.09

Backward Elimination: Step 2

Variable Age Removed: R-Square = 0.5226 and C(p) = 5.5431

| Analysis of Variance | | | | | |
|----------------------|-----|----------------|-------------|---------|------|
| Source | DF | Sum of Squares | Mean Square | F Value | Pr > |
| Model | 6 | 105.24057 | 17.54010 | 19.34 | |
| Error | 106 | 96.13925 | 0.90697 | | |
| Corrected Total | 112 | 201.37982 | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|--------------------|----------------|------------|---------|--------|
| Intercept | -0.01195 | 0.57099 | 0.00039725 | 0.00 | 0.9833 |
| LtofStay | 0.19699 | 0.05783 | 10.52453 | 11.60 | 0.0009 |
| CulRatio | 0.04448 | 0.01010 | 17.59563 | 19.40 | <.0001 |
| XRay | 0.01189 | 0.00543 | 4.33823 | 4.78 | 0.0309 |
| NoBeds | -0.00103 | 0.00129 | 0.57917 | 0.64 | 0.4260 |
| Nurses | 0.00200 | 0.00170 | 1.26422 | 1.39 | 0.2404 |
| Services | 0.01637 | 0.01009 | 2.38761 | 2.63 | 0.1077 |

Bounds on condition number: 7.6446, 129.79

Backward Elimination: Step 3

Variable NoBeds Removed: R-Square = 0.5197 and C(p) = 4.1729

| Analysis of Variance | | | | | |
|----------------------|-----|----------------|-------------|---------|------|
| Source | DF | Sum of Squares | Mean Square | F Value | Pr > |
| Model | 5 | 104.66141 | 20.93228 | 23.16 | |
| Error | 107 | 96.71842 | 0.90391 | | |
| Corrected Total | 112 | 201.37982 | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|--------------------|----------------|------------|---------|--------|
| Intercept | 0.08173 | 0.55788 | 0.01940 | 0.02 | 0.8838 |
| LtofStay | 0.18315 | 0.05508 | 9.99423 | 11.06 | 0.0012 |
| CulRatio | 0.04567 | 0.00997 | 18.96154 | 20.98 | <.0001 |
| XRay | 0.01247 | 0.00538 | 4.86433 | 5.38 | 0.0223 |
| Nurses | 0.00093910 | 0.00105 | 0.72307 | 0.80 | 0.3731 |
| Services | 0.01400 | 0.00963 | 1.91090 | 2.11 | 0.1489 |

Bounds on condition number: 2.6532, 46.546

Backward Elimination: Step 4

Variable Nurses Removed: R-Square = 0.5161 and C(p) = 2.9592

| Analysis of Variance | | | | | |
|----------------------|-----|----------------|-------------|---------|------|
| Source | DF | Sum of Squares | Mean Square | F Value | Pr > |
| Model | 4 | 103.93833 | 25.98458 | 28.80 | |
| Error | 108 | 97.44149 | 0.90224 | | |
| Corrected Total | 112 | 201.37982 | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|--------------------|----------------|------------|---------|--------|
| Intercept | -0.06358 | 0.53321 | 0.01283 | 0.01 | 0.9053 |

| | | | | | |
|----------|---------|---------|----------|-------|--------|
| LtofStay | 0.18841 | 0.05471 | 10.69867 | 11.86 | 0.0008 |
| CulRatio | 0.04645 | 0.00992 | 19.76510 | 21.91 | <.0001 |
| XRay | 0.01205 | 0.00535 | 4.57751 | 5.07 | 0.0263 |
| Services | 0.02047 | 0.00635 | 9.37912 | 10.40 | 0.0017 |

Bounds on condition number: 1.3578, 20.506

All variables left in the model are significant at the 0.1000 level.

| Summary of Backward Elimination | | | | | | | |
|---------------------------------|---------------------|-------------------|---------------------|-------------------|--------|---------|--------|
| Step | Variable Removed | Number Vars In | Partial R-Square | Model R-Square | C(p) | F Value | Pr > F |
| 1 | Census | 7 | 0.0002 | 0.5249 | 7.0440 | 0.04 | 0.8343 |
| 2 | Age | 6 | 0.0023 | 0.5226 | 5.5431 | 0.50 | 0.4795 |
| 3 | NoBeds | 5 | 0.0029 | 0.5197 | 4.1729 | 0.64 | 0.4260 |
| 4 | Nurses | 4 | 0.0036 | 0.5161 | 2.9592 | 0.80 | 0.3731 |

```

163      proc reg data=SENIC;
164          TITLE2 'Stepwise regression - stepwise selection';
165          model Infrisk = LtofStay Age CulRatio XRay NoBeds Census Nurses
Services
166                      / selection=stepwise;
167      run;
NOTE: 113 observations read.
NOTE: 113 observations used in computations.
NOTE: The PROCEDURE REG printed page 32.
NOTE: PROCEDURE REG used:
      real time          0.07 seconds
      cpu time           0.07 seconds

```

SENIC database from NKNW 1996 (Appendix C)
Stepwise regression - stepwise selection

The REG Procedure
Model: MODEL1
Dependent Variable: Infrisk

Stepwise Selection: Step 1
Variable CulRatio Entered: R-Square = 0.3127 and C(p) = 41.5161

| Analysis of Variance | | | | | | |
|----------------------|-----|-------------------|----------------|---------|--------|--|
| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F | |
| Model | 1 | 62.96314 | 62.96314 | 50.49 | <.0001 | |
| Error | 111 | 138.41668 | 1.24700 | | | |
| Corrected Total | 112 | 201.37982 | | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|-----------------------|-------------------|------------|---------|--------|
| Intercept | 3.19790 | 0.19377 | 339.64906 | 272.37 | <.0001 |
| CulRatio | 0.07326 | 0.01031 | 62.96314 | 50.49 | <.0001 |

Bounds on condition number: 1, 1

Stepwise Selection: Step 2
Variable LtofStay Entered: R-Square = 0.4504 and C(p) = 13.3525

| Analysis of Variance | | | | | | |
|----------------------|-----|-------------------|----------------|---------|--------|--|
| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F | |
| Model | 2 | 90.70199 | 45.35099 | 45.07 | <.0001 | |
| Error | 110 | 110.67784 | 1.00616 | | | |
| Corrected Total | 112 | 201.37982 | | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|--------------------|----------------|------------|---------|--------|
| Intercept | 0.80549 | 0.48776 | 2.74400 | 2.73 | 0.1015 |
| LtofStay | 0.27547 | 0.05246 | 27.73885 | 27.57 | <.0001 |
| CulRatio | 0.05645 | 0.00980 | 33.39688 | 33.19 | <.0001 |

Bounds on condition number: 1.1195, 4.4779

Stepwise Selection: Step 3

Variable Services Entered: R-Square = 0.4934 and C(p) = 5.9368

Analysis of Variance

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|-----|----------------|-------------|---------|--------|
| Model | 3 | 99.36082 | 33.12027 | 35.39 | <.0001 |
| Error | 109 | 102.01900 | 0.93595 | | |
| Corrected Total | 112 | 201.37982 | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|--------------------|----------------|------------|---------|--------|
| Intercept | 0.49133 | 0.48164 | 0.97402 | 1.04 | 0.3099 |
| LtofStay | 0.22391 | 0.05337 | 16.47665 | 17.60 | <.0001 |
| CulRatio | 0.05420 | 0.00948 | 30.59828 | 32.69 | <.0001 |
| Services | 0.01963 | 0.00645 | 8.65884 | 9.25 | 0.0029 |

Bounds on condition number: 1.2451, 10.57

Stepwise Selection: Step 4

Variable XRay Entered: R-Square = 0.5161 and C(p) = 2.9592

Analysis of Variance

| Source | DF | Sum of Squares | Mean Square | F Value | Pr > F |
|-----------------|-----|----------------|-------------|---------|--------|
| Model | 4 | 103.93833 | 25.98458 | 28.80 | <.0001 |
| Error | 108 | 97.44149 | 0.90224 | | |
| Corrected Total | 112 | 201.37982 | | | |

| Variable | Parameter Estimate | Standard Error | Type II SS | F Value | Pr > F |
|-----------|--------------------|----------------|------------|---------|--------|
| Intercept | -0.06358 | 0.53321 | 0.01283 | 0.01 | 0.9053 |
| LtofStay | 0.18841 | 0.05471 | 10.69867 | 11.86 | 0.0008 |
| CulRatio | 0.04645 | 0.00992 | 19.76510 | 21.91 | <.0001 |
| XRay | 0.01205 | 0.00535 | 4.57751 | 5.07 | 0.0263 |
| Services | 0.02047 | 0.00635 | 9.37912 | 10.40 | 0.0017 |

Bounds on condition number: 1.3578, 20.506

All variables left in the model are significant at the 0.1500 level.
No other variable met the 0.1500 significance level for entry into the model.

| Step | Variable Entered | Variable Removed | Summary of Stepwise Selection | | | C(p) | F Value | Pr > F |
|------|------------------|------------------|-------------------------------|------------------|----------------|---------|---------|--------|
| | | | Number Vars In | Partial R-Square | Model R-Square | | | |
| 1 | CulRatio | | 1 | 0.3127 | 0.3127 | 41.5161 | 50.49 | <.0001 |
| 2 | LtofStay | | 2 | 0.1377 | 0.4504 | 13.3525 | 27.57 | <.0001 |
| 3 | Services | | 3 | 0.0430 | 0.4934 | 5.9368 | 9.25 | 0.0029 |
| 4 | XRay | | 4 | 0.0227 | 0.5161 | 2.9592 | 5.07 | 0.0263 |

```

169 proc reg data=SENIC;
170     TITLE2 'Multiple regression - RSquare option';
171     model Infrisk = LtofStay Age CulRatio XRay NoBeds Census Nurses
Services
172     / selection=rsquare start=3 stop=6 best=8;
173 Run;

```

NOTE: 113 observations read.

NOTE: 113 observations used in computations.

NOTE: The PROCEDURE REG printed page 33.

NOTE: PROCEDURE REG used:

| | |
|-----------|--------------|
| real time | 0.05 seconds |
| cpu time | 0.05 seconds |

SENIC database from NKNW 1996 (Appendix C)

Multiple regression - RSquare option

The REG Procedure

Model: MODEL1

Dependent Variable: InfRisk

R-Square Selection Method

Number in

| Model | R-Square | Variables in Model |
|-------|----------|---|
| 3 | 0.4934 | LtofStay CulRatio Services |
| 3 | 0.4852 | LtofStay CulRatio Nurses |
| 3 | 0.4736 | LtofStay CulRatio NoBeds |
| 3 | 0.4735 | LtofStay CulRatio Census |
| 3 | 0.4696 | LtofStay CulRatio XRay |
| 3 | 0.4630 | CulRatio XRay Services |
| 3 | 0.4619 | CulRatio XRay Census |
| 3 | 0.4538 | CulRatio XRay Nurses |
| ----- | | |
| 4 | 0.5161 | LtofStay CulRatio XRay Services |
| 4 | 0.5102 | LtofStay CulRatio XRay Nurses |
| 4 | 0.5000 | LtofStay CulRatio XRay Census |
| 4 | 0.4997 | LtofStay CulRatio XRay NoBeds |
| 4 | 0.4956 | LtofStay CulRatio Nurses Services |
| 4 | 0.4956 | LtofStay Age CulRatio Services |
| 4 | 0.4935 | LtofStay CulRatio NoBeds Services |
| 4 | 0.4934 | LtofStay CulRatio Census Services |
| ----- | | |
| 5 | 0.5197 | LtofStay CulRatio XRay Nurses Services |
| 5 | 0.5183 | LtofStay Age CulRatio XRay Services |
| 5 | 0.5166 | LtofStay CulRatio XRay Census Services |
| 5 | 0.5163 | LtofStay CulRatio XRay NoBeds Services |
| 5 | 0.5130 | LtofStay Age CulRatio XRay Nurses |
| 5 | 0.5107 | LtofStay CulRatio XRay NoBeds Nurses |
| 5 | 0.5106 | LtofStay CulRatio XRay Census Nurses |
| 5 | 0.5033 | LtofStay Age CulRatio XRay Census |
| ----- | | |
| 6 | 0.5226 | LtofStay CulRatio XRay NoBeds Nurses Services |
| 6 | 0.5225 | LtofStay Age CulRatio XRay Nurses Services |
| 6 | 0.5216 | LtofStay CulRatio XRay Census Nurses Services |
| 6 | 0.5191 | LtofStay Age CulRatio XRay Census Services |
| 6 | 0.5187 | LtofStay Age CulRatio XRay NoBeds Services |
| 6 | 0.5169 | LtofStay CulRatio XRay NoBeds Census Services |
| 6 | 0.5134 | LtofStay Age CulRatio XRay NoBeds Nurses |
| 6 | 0.5132 | LtofStay Age CulRatio XRay Census Nurses |