. // Model SP.B.V.4

**. eststo: logit MR\_indicator `subpart\_count\_lag\_all\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) offset(lnhours) iter(50) or**

note: sp71\_701\_c\_lag\_all != 0 predicts success perfectly

sp71\_701\_c\_lag\_all dropped and 7 obs not used

note: sp75\_1003\_1\_c\_lag\_all != 0 predicts success perfectly

sp75\_1003\_1\_c\_lag\_all dropped and 49 obs not used

note: sp75\_1401\_1\_c\_lag\_all != 0 predicts success perfectly

sp75\_1401\_1\_c\_lag\_all dropped and 13 obs not used

note: sp75\_1403\_11\_c\_lag\_all != 0 predicts success perfectly

sp75\_1403\_11\_c\_lag\_all dropped and 9 obs not used

note: sp77\_502\_1\_c\_lag\_all != 0 predicts success perfectly

sp77\_502\_1\_c\_lag\_all dropped and 13 obs not used

note: sp77\_704\_1\_c\_lag\_all != 0 predicts success perfectly

sp77\_704\_1\_c\_lag\_all dropped and 12 obs not used

note: sp77\_901\_1\_c\_lag\_all != 0 predicts success perfectly

sp77\_901\_1\_c\_lag\_all dropped and 14 obs not used

note: sp75\_1402\_2\_c\_lag\_all != 0 predicts success perfectly

sp75\_1402\_2\_c\_lag\_all dropped and 5 obs not used

note: sp77\_1802\_c\_lag\_all != 0 predicts success perfectly

sp77\_1802\_c\_lag\_all dropped and 10 obs not used

note: sp77\_403\_2\_c\_lag\_all != 0 predicts success perfectly

sp77\_403\_2\_c\_lag\_all dropped and 16 obs not used

note: sp77\_702\_c\_lag\_all != 0 predicts success perfectly

sp77\_702\_c\_lag\_all dropped and 1 obs not used

note: sp75\_1403\_3\_c\_lag\_all != 0 predicts success perfectly

sp75\_1403\_3\_c\_lag\_all dropped and 19 obs not used

note: sp75\_1107\_14\_c\_lag\_all != 0 predicts success perfectly

sp75\_1107\_14\_c\_lag\_all dropped and 7 obs not used

note: sp75\_1403\_4\_c\_lag\_all != 0 predicts success perfectly

sp75\_1403\_4\_c\_lag\_all dropped and 35 obs not used

note: sp75\_703\_4\_c\_lag\_all != 0 predicts success perfectly

sp75\_703\_4\_c\_lag\_all dropped and 3 obs not used

note: sp77\_314\_c\_lag\_all != 0 predicts success perfectly

sp77\_314\_c\_lag\_all dropped and 12 obs not used

note: sp75\_155\_c\_lag\_all != 0 predicts success perfectly

sp75\_155\_c\_lag\_all dropped and 14 obs not used

note: sp75\_1727\_c\_lag\_all != 0 predicts success perfectly

sp75\_1727\_c\_lag\_all dropped and 1 obs not used

note: sp77\_1438\_c\_lag\_all != 0 predicts success perfectly

sp77\_1438\_c\_lag\_all dropped and 10 obs not used

note: sp75\_819\_c\_lag\_all != 0 predicts success perfectly

sp75\_819\_c\_lag\_all dropped and 8 obs not used

note: sp77\_309\_c\_lag\_all != 0 predicts success perfectly

sp77\_309\_c\_lag\_all dropped and 2 obs not used

note: sp72\_610\_c\_lag\_all != 0 predicts success perfectly

sp72\_610\_c\_lag\_all dropped and 5 obs not used

note: 17.state != 0 predicts success perfectly

17.state dropped and 11 obs not used

note: sp75\_510\_1\_c\_lag\_all omitted because of collinearity

note: sp77\_801\_1\_c\_lag\_all omitted because of collinearity

note: sp77\_801\_c\_lag\_all omitted because of collinearity

note: sp77\_902\_2\_c\_lag\_all omitted because of collinearity

note: sp75\_705\_3\_c\_lag\_all omitted because of collinearity

note: sp48\_24\_c\_lag\_all omitted because of collinearity

note: sp48\_4\_c\_lag\_all omitted because of collinearity

note: sp75\_834\_c\_lag\_all omitted because of collinearity

note: sp77\_606\_c\_lag\_all omitted because of collinearity

note: sp77\_906\_c\_lag\_all omitted because of collinearity

note: sp75\_1438\_c\_lag\_all omitted because of collinearity

Iteration 0: log pseudolikelihood = -3048.4138

Iteration 1: log pseudolikelihood = -2737.2022

Iteration 2: log pseudolikelihood = -2700.2959

Iteration 3: log pseudolikelihood = -2694.4882

Iteration 4: log pseudolikelihood = -2693.1163

Iteration 5: log pseudolikelihood = -2692.9656

Iteration 6: log pseudolikelihood = -2692.9358

Iteration 7: log pseudolikelihood = -2692.9219

Iteration 8: log pseudolikelihood = -2692.9209

Iteration 9: log pseudolikelihood = -2692.9208

Iteration 10: log pseudolikelihood = -2692.9207

Iteration 11: log pseudolikelihood = -2692.9207

Logistic regression Number of obs = 5,977

Wald chi2(317) = .

Log pseudolikelihood = -2692.9207 Prob > chi2 = .

(Std. Err. adjusted for 1,231 clusters in mineid)

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| Robust

MR\_indicator | Odds Ratio Std. Err. z P>|z| [95% Conf. Interval]

-----------------------+----------------------------------------------------------------

sp47\_41\_c\_lag\_all | .9665054 .0425031 -0.77 0.439 .88669 1.053505

sp48\_11\_c\_lag\_all | 1.03098 .0417137 0.75 0.451 .9523807 1.116067

sp71\_701\_c\_lag\_all | 1 (omitted)

sp75\_1001\_1\_c\_lag\_all | 1.01375 .1154593 0.12 0.905 .8109323 1.267292

sp75\_1001\_c\_lag\_all | 1.282339 .1842663 1.73 0.084 .9675847 1.699482

sp75\_1003\_1\_c\_lag\_all | 1 (omitted)

sp75\_1400\_1\_c\_lag\_all | .8944573 .3245201 -0.31 0.759 .4392717 1.821319

sp75\_1401\_1\_c\_lag\_all | 1 (omitted)

sp75\_1401\_c\_lag\_all | .5016675 .2233004 -1.55 0.121 .2096681 1.200327

sp75\_1403\_11\_c\_lag\_all | 1 (omitted)

sp75\_1404\_1\_c\_lag\_all | .6899724 .2345406 -1.09 0.275 .3543928 1.343317

sp75\_1405\_1\_c\_lag\_all | .8034512 .1161305 -1.51 0.130 .6052393 1.066576

sp75\_1431\_c\_lag\_all | 2.160033 1.907117 0.87 0.383 .3827585 12.18978

sp75\_151\_c\_lag\_all | 1.380878 .3978681 1.12 0.263 .7850575 2.428899

sp75\_1721\_c\_lag\_all | .7385037 .0648378 -3.45 0.001 .6217567 .8771723

sp75\_1731\_c\_lag\_all | 1.000914 .0024707 0.37 0.711 .9960832 1.005768

sp75\_1911\_c\_lag\_all | .9970646 .01105 -0.27 0.791 .9756406 1.018959

sp75\_211\_c\_lag\_all | 1.014474 .0114341 1.27 0.202 .9923088 1.037133

sp75\_341\_c\_lag\_all | .8048374 .2582292 -0.68 0.499 .4291441 1.50943

sp75\_506\_1\_c\_lag\_all | 1.101755 .0549267 1.94 0.052 .9991928 1.214844

sp75\_510\_1\_c\_lag\_all | 1 (omitted)

sp75\_511\_1\_c\_lag\_all | 1.031266 .2126649 0.15 0.881 .6883961 1.54491

sp75\_511\_c\_lag\_all | .9588347 .0312833 -1.29 0.198 .8994399 1.022152

sp75\_512\_1\_c\_lag\_all | 1.143905 .2788967 0.55 0.581 .7093449 1.844685

sp75\_513\_1\_c\_lag\_all | 1.027992 .0673836 0.42 0.674 .9040543 1.16892

sp75\_516\_1\_c\_lag\_all | 1.073385 .0753848 1.01 0.313 .9353519 1.231789

sp75\_517\_1\_c\_lag\_all | .8791201 .1452982 -0.78 0.436 .6358641 1.215436

sp75\_518\_1\_c\_lag\_all | 1.000574 .0147999 0.04 0.969 .971983 1.030006

sp75\_523\_1\_c\_lag\_all | 1.034593 .0155869 2.26 0.024 1.00449 1.065599

sp75\_600\_1\_c\_lag\_all | 1.014671 .0801994 0.18 0.854 .8690529 1.184688

sp75\_601\_1\_c\_lag\_all | 1.003666 .0066407 0.55 0.580 .9907345 1.016766

sp75\_601\_c\_lag\_all | 1.008126 .0125072 0.65 0.514 .9839079 1.03294

sp75\_700\_1\_c\_lag\_all | 1.030412 .0661888 0.47 0.641 .9085186 1.16866

sp75\_701\_1\_c\_lag\_all | 1.012246 .0402259 0.31 0.759 .9363964 1.094238

sp75\_701\_c\_lag\_all | 1.010966 .0084805 1.30 0.194 .9944809 1.027725

sp75\_702\_1\_c\_lag\_all | .9093707 .1220976 -0.71 0.479 .6989618 1.183119

sp75\_703\_1\_c\_lag\_all | .9263279 .2139349 -0.33 0.740 .5890881 1.45663

sp75\_705\_1\_c\_lag\_all | 1.069707 .2093642 0.34 0.731 .7288977 1.569867

sp75\_801\_c\_lag\_all | 1.144806 .1541996 1.00 0.315 .8791827 1.49068

sp75\_821\_c\_lag\_all | 1.075257 .1007585 0.77 0.439 .894848 1.292038

sp75\_831\_c\_lag\_all | .8933297 .1548786 -0.65 0.515 .6359705 1.254835

sp75\_901\_c\_lag\_all | 1.030494 .0486053 0.64 0.524 .9394997 1.130301

sp75\_902\_1\_c\_lag\_all | .6965763 .1559932 -1.61 0.106 .4491054 1.080411

sp77\_1111\_c\_lag\_all | .9711724 .2013869 -0.14 0.888 .6468255 1.458161

sp77\_401\_c\_lag\_all | .9624092 .0365388 -1.01 0.313 .8933941 1.036756

sp77\_403\_1\_c\_lag\_all | 1.171293 .0820259 2.26 0.024 1.021071 1.343617

sp77\_411\_c\_lag\_all | .5064483 .0692273 -4.98 0.000 .3874208 .6620446

sp77\_501\_c\_lag\_all | .9852338 .074208 -0.20 0.843 .8500151 1.141963

sp77\_502\_1\_c\_lag\_all | 1 (omitted)

sp77\_503\_1\_c\_lag\_all | .875828 .0861631 -1.35 0.178 .7222349 1.062085

sp77\_506\_1\_c\_lag\_all | 1.011239 .0276005 0.41 0.682 .9585643 1.066808

sp77\_508\_1\_c\_lag\_all | 1.020289 .0985279 0.21 0.835 .8443529 1.232885

sp77\_511\_c\_lag\_all | .9118214 .1005775 -0.84 0.403 .7345459 1.131881

sp77\_601\_c\_lag\_all | 1.031906 .1272583 0.25 0.799 .8103392 1.314054

sp77\_606\_1\_c\_lag\_all | .032167 .0245974 -4.49 0.000 .0071865 .143981

sp77\_700\_1\_c\_lag\_all | .70757 .125786 -1.95 0.052 .4994015 1.002511

sp77\_701\_1\_c\_lag\_all | .9593324 .0661459 -0.60 0.547 .8380672 1.098144

sp77\_701\_c\_lag\_all | 1.005164 .0170316 0.30 0.761 .9723305 1.039105

sp75\_811\_c\_lag\_all | 1.029241 .0343753 0.86 0.388 .9640247 1.09887

sp77\_704\_1\_c\_lag\_all | 1 (omitted)

sp77\_800\_1\_c\_lag\_all | 1.237044 .1352757 1.95 0.052 .9983957 1.532736

sp77\_801\_1\_c\_lag\_all | 1 (omitted)

sp77\_801\_c\_lag\_all | 1 (omitted)

sp77\_807\_1\_c\_lag\_all | 1.115577 .1760391 0.69 0.488 .8188026 1.519917

sp77\_900\_1\_c\_lag\_all | 1.074827 .1195017 0.65 0.516 .8643706 1.336525

sp77\_901\_1\_c\_lag\_all | 1 (omitted)

sp77\_901\_c\_lag\_all | 1.24599 .1950099 1.41 0.160 .9168386 1.693308

sp47\_42\_c\_lag\_all | .8462148 .078606 -1.80 0.072 .7053608 1.015196

sp75\_1100\_2\_c\_lag\_all | .9965706 .0040022 -0.86 0.392 .9887571 1.004446

sp75\_1102\_c\_lag\_all | .9653294 .0215514 -1.58 0.114 .9240002 1.008507

sp75\_1106\_2\_c\_lag\_all | .9404847 .029893 -1.93 0.054 .8836832 1.000937

sp75\_1400\_2\_c\_lag\_all | 1.188322 .4119372 0.50 0.619 .6023671 2.344267

sp75\_1402\_2\_c\_lag\_all | 1 (omitted)

sp75\_1432\_c\_lag\_all | 1.239785 .2122353 1.26 0.209 .8864039 1.734048

sp75\_1600\_2\_c\_lag\_all | .9595442 .0166356 -2.38 0.017 .9274868 .9927097

sp75\_1912\_c\_lag\_all | 1.043955 .1010616 0.44 0.657 .8635347 1.26207

sp75\_202\_c\_lag\_all | 1.001151 .0015972 0.72 0.471 .9980258 1.004286

sp75\_212\_c\_lag\_all | 1.018801 .0364543 0.52 0.603 .9497995 1.092815

sp75\_312\_c\_lag\_all | .9882513 .0115292 -1.01 0.311 .9659109 1.011109

sp75\_342\_c\_lag\_all | .9989593 .0042866 -0.24 0.808 .9905929 1.007396

sp75\_352\_c\_lag\_all | 1.026409 .0440564 0.61 0.544 .943592 1.116494

sp75\_382\_c\_lag\_all | .9437086 .0464043 -1.18 0.239 .8570031 1.039186

sp75\_512\_2\_c\_lag\_all | .9850553 .010633 -1.39 0.163 .9644338 1.006118

sp75\_512\_c\_lag\_all | .9996467 .0032905 -0.11 0.915 .9932183 1.006117

sp75\_516\_2\_c\_lag\_all | .9973208 .0183473 -0.15 0.884 .9620013 1.033937

sp75\_523\_2\_c\_lag\_all | .9898599 .0077719 -1.30 0.194 .9747439 1.00521

sp75\_601\_2\_c\_lag\_all | 1.187694 .188185 1.09 0.278 .8706336 1.620219

sp75\_602\_c\_lag\_all | 1.017294 .0238639 0.73 0.465 .97158 1.065158

sp75\_701\_2\_c\_lag\_all | .9177332 .0598864 -1.32 0.188 .8075539 1.042945

sp75\_702\_c\_lag\_all | 1.120216 .2504119 0.51 0.612 .7228116 1.736115

sp75\_703\_2\_c\_lag\_all | .8632476 .1397077 -0.91 0.364 .6286041 1.185478

sp75\_705\_2\_c\_lag\_all | 1.692524 .8854762 1.01 0.314 .6070334 4.719078

sp75\_800\_2\_c\_lag\_all | .7539966 .1612761 -1.32 0.187 .4957944 1.146666

sp75\_802\_c\_lag\_all | .8036665 .0637526 -2.76 0.006 .687943 .9388566

sp75\_803\_2\_c\_lag\_all | .6217654 .0792427 -3.73 0.000 .4843315 .7981976

sp75\_812\_c\_lag\_all | 1.090487 .131763 0.72 0.473 .8605388 1.381882

sp75\_832\_c\_lag\_all | .744346 .2937108 -0.75 0.454 .3434788 1.613057

sp75\_900\_2\_c\_lag\_all | .7969756 .1974567 -0.92 0.360 .4904034 1.295199

sp75\_902\_2\_c\_lag\_all | 1.071845 .0669405 1.11 0.267 .9483561 1.211414

sp75\_902\_c\_lag\_all | .9975896 .0093415 -0.26 0.797 .9794476 1.016068

sp77\_1112\_c\_lag\_all | 1.111403 .2113546 0.56 0.579 .7655955 1.613407

sp77\_1432\_c\_lag\_all | .7380066 .1880524 -1.19 0.233 .4478829 1.216063

sp77\_1802\_c\_lag\_all | 1 (omitted)

sp77\_202\_c\_lag\_all | .9754769 .0130335 -1.86 0.063 .9502632 1.001359

sp77\_402\_c\_lag\_all | 1.01952 .0353567 0.56 0.577 .952525 1.091227

sp77\_403\_2\_c\_lag\_all | 1 (omitted)

sp77\_412\_c\_lag\_all | 1.054982 .084913 0.66 0.506 .9010189 1.235254

sp77\_502\_2\_c\_lag\_all | 1.051476 .0383274 1.38 0.168 .978976 1.129345

sp77\_502\_c\_lag\_all | .9848565 .0054697 -2.75 0.006 .9741942 .9956356

sp77\_512\_c\_lag\_all | 1.019949 .0173105 1.16 0.244 .9865795 1.054448

sp77\_602\_c\_lag\_all | 1.561638 .3544184 1.96 0.050 1.000916 2.436481

sp77\_701\_2\_c\_lag\_all | .9871593 .0345101 -0.37 0.712 .921786 1.057169

sp77\_702\_c\_lag\_all | 1 (omitted)

sp77\_800\_2\_c\_lag\_all | 1.107939 .0577574 1.97 0.049 1.000327 1.227126

sp77\_802\_c\_lag\_all | .9826161 .0952631 -0.18 0.856 .8125708 1.188247

sp77\_807\_2\_c\_lag\_all | 1.252433 .2252766 1.25 0.211 .8803343 1.781808

sp77\_900\_2\_c\_lag\_all | 1.007894 .0491826 0.16 0.872 .9159645 1.109051

sp77\_902\_2\_c\_lag\_all | 1 (omitted)

sp77\_902\_c\_lag\_all | .8973722 .092161 -1.05 0.292 .7337588 1.097468

sp47\_43\_c\_lag\_all | 1.001332 .4621797 0.00 0.998 .4052221 2.47436

sp72\_503\_c\_lag\_all | .9970087 .0610885 -0.05 0.961 .8841873 1.124226

sp75\_1106\_3\_c\_lag\_all | 1.00386 .0111217 0.35 0.728 .9822965 1.025896

sp75\_1400\_3\_c\_lag\_all | .9836932 .0717714 -0.23 0.822 .852619 1.134918

sp75\_1403\_3\_c\_lag\_all | 1 (omitted)

sp75\_1433\_c\_lag\_all | .9608678 .0943734 -0.41 0.684 .7926133 1.164839

sp75\_153\_c\_lag\_all | .9335035 .1946383 -0.33 0.741 .6203515 1.404734

sp75\_1903\_c\_lag\_all | 1.034286 .0796771 0.44 0.662 .8893394 1.202856

sp75\_1913\_c\_lag\_all | 1.02847 .0271749 1.06 0.288 .9765636 1.083135

sp75\_503\_c\_lag\_all | 1.002555 .0014963 1.71 0.087 .9996267 1.005492

sp75\_513\_c\_lag\_all | .9156195 .0467122 -1.73 0.084 .8284939 1.011907

sp75\_523\_c\_lag\_all | .9997595 .0100194 -0.02 0.981 .9803136 1.019591

sp75\_601\_3\_c\_lag\_all | .9398619 .2010258 -0.29 0.772 .6180189 1.42931

sp75\_603\_c\_lag\_all | 1.042845 .0370716 1.18 0.238 .9726598 1.118096

sp75\_701\_3\_c\_lag\_all | .9161618 .0795926 -1.01 0.314 .7727217 1.086229

sp75\_703\_3\_c\_lag\_all | 1.147842 .0924577 1.71 0.087 .9802083 1.344143

sp75\_703\_c\_lag\_all | 1.011062 .0162014 0.69 0.492 .9798014 1.04332

sp75\_705\_3\_c\_lag\_all | 1 (omitted)

sp75\_800\_3\_c\_lag\_all | .9243462 .0641401 -1.13 0.257 .8068077 1.059008

sp75\_803\_c\_lag\_all | 1.100873 .0543041 1.95 0.051 .9994225 1.212623

sp75\_900\_3\_c\_lag\_all | .9837953 .0468902 -0.34 0.732 .8960542 1.080128

sp75\_903\_c\_lag\_all | 1.009673 .0232805 0.42 0.676 .9650601 1.056349

sp77\_103\_c\_lag\_all | .9464038 .1484686 -0.35 0.725 .6958937 1.287094

sp77\_1103\_c\_lag\_all | 1.009114 .0131726 0.70 0.487 .9836237 1.035265

sp77\_1403\_c\_lag\_all | 1.034498 .1419457 0.25 0.805 .790559 1.353707

sp77\_1433\_c\_lag\_all | .6798633 .0733286 -3.58 0.000 .5503169 .8399054

sp77\_203\_c\_lag\_all | .9499174 .0849936 -0.57 0.566 .7971221 1.132001

sp77\_403\_c\_lag\_all | 1.006797 .1398344 0.05 0.961 .7668637 1.321799

sp77\_413\_c\_lag\_all | .0010555 .000852 -8.49 0.000 .0002169 .0051351

sp77\_503\_c\_lag\_all | 1.010431 .0745173 0.14 0.888 .8744439 1.167565

sp77\_513\_c\_lag\_all | 1.011087 .0171718 0.65 0.516 .9779847 1.045309

sp77\_603\_c\_lag\_all | 1.094289 .1169295 0.84 0.399 .8875188 1.349232

sp77\_703\_c\_lag\_all | .2335654 .2585422 -1.31 0.189 .0266797 2.044727

sp77\_803\_c\_lag\_all | 1.391179 .299323 1.53 0.125 .9125161 2.120927

sp77\_807\_3\_c\_lag\_all | 1.105135 .2261526 0.49 0.625 .7399918 1.650454

sp77\_903\_c\_lag\_all | 1.011766 .1509277 0.08 0.937 .7552734 1.355364

sp47\_44\_c\_lag\_all | .9571337 .0719134 -0.58 0.560 .8260728 1.108988

sp48\_24\_c\_lag\_all | 1 (omitted)

sp48\_4\_c\_lag\_all | 1 (omitted)

sp75\_1103\_4\_c\_lag\_all | .9981204 .0075572 -0.25 0.804 .983418 1.013043

sp75\_1104\_c\_lag\_all | .9885754 .0255918 -0.44 0.657 .9396676 1.040029

sp75\_1106\_4\_c\_lag\_all | 1.195765 .0951373 2.25 0.025 1.023111 1.397556

sp75\_1107\_14\_c\_lag\_all | 1 (omitted)

sp75\_1400\_4\_c\_lag\_all | .9982686 .0985429 -0.02 0.986 .8226631 1.211359

sp75\_1403\_4\_c\_lag\_all | 1 (omitted)

sp75\_1404\_c\_lag\_all | .8063393 .1625155 -1.07 0.286 .5432008 1.196948

sp75\_1434\_c\_lag\_all | .9832937 .1762244 -0.09 0.925 .6920416 1.397122

sp75\_1914\_c\_lag\_all | .9877292 .007035 -1.73 0.083 .9740366 1.001614

sp75\_214\_c\_lag\_all | .9958167 .0202772 -0.21 0.837 .9568568 1.036363

sp75\_324\_c\_lag\_all | .9151019 .0533359 -1.52 0.128 .8163153 1.025843

sp75\_344\_c\_lag\_all | .859374 .0740339 -1.76 0.079 .7258591 1.017448

sp75\_504\_c\_lag\_all | 1.022019 .0309617 0.72 0.472 .9631017 1.084541

sp75\_514\_c\_lag\_all | 1.004669 .0122697 0.38 0.703 .9809064 1.029007

sp75\_604\_c\_lag\_all | .9988277 .0031956 -0.37 0.714 .9925841 1.005111

sp75\_701\_4\_c\_lag\_all | 1.369592 .2177597 1.98 0.048 1.00289 1.870375

sp75\_703\_4\_c\_lag\_all | 1 (omitted)

sp75\_704\_c\_lag\_all | 1.141238 .1832804 0.82 0.411 .8330581 1.563427

sp75\_800\_4\_c\_lag\_all | 1.00065 .0452439 0.01 0.989 .9157897 1.093375

sp75\_814\_c\_lag\_all | .688438 .1450616 -1.77 0.076 .4555197 1.040453

sp75\_834\_c\_lag\_all | 1 (omitted)

sp75\_900\_4\_c\_lag\_all | 1.009596 .0211976 0.45 0.649 .9688927 1.052009

sp75\_902\_4\_c\_lag\_all | 1.118275 .0327477 3.82 0.000 1.055898 1.184337

sp75\_904\_c\_lag\_all | 1.008978 .0065424 1.38 0.168 .9962363 1.021883

sp77\_104\_c\_lag\_all | 411.5556 306.674 8.08 0.000 95.53194 1772.999

sp77\_1104\_c\_lag\_all | .9962252 .0045243 -0.83 0.405 .9873971 1.005132

sp77\_1434\_c\_lag\_all | .7648215 .166191 -1.23 0.217 .4995734 1.170903

sp77\_204\_c\_lag\_all | 1.024646 .0352917 0.71 0.480 .9577582 1.096204

sp77\_314\_c\_lag\_all | 1 (omitted)

sp77\_404\_c\_lag\_all | 1.011626 .0050376 2.32 0.020 1.0018 1.021548

sp77\_504\_c\_lag\_all | .9709515 .0288705 -0.99 0.321 .9159837 1.029218

sp77\_514\_c\_lag\_all | 1.097656 .4049304 0.25 0.801 .5326648 2.261926

sp77\_604\_c\_lag\_all | .8768075 .0634955 -1.82 0.069 .7607869 1.010521

sp75\_804\_c\_lag\_all | .9636765 .0445994 -0.80 0.424 .8801106 1.055177

sp77\_704\_c\_lag\_all | 1.217085 .1308408 1.83 0.068 .9858569 1.502547

sp77\_804\_c\_lag\_all | 1.231468 .2198842 1.17 0.244 .8678355 1.747468

sp77\_904\_c\_lag\_all | 1.018045 .022588 0.81 0.420 .9747224 1.063294

sp48\_25\_c\_lag\_all | 1.022719 .0574479 0.40 0.689 .9160997 1.141746

sp48\_5\_c\_lag\_all | 1.097894 .0810853 1.26 0.206 .9499368 1.268897

sp75\_1106\_5\_c\_lag\_all | .9752073 .0221425 -1.11 0.269 .9327604 1.019586

sp75\_1403\_5\_c\_lag\_all | .9921355 .0108481 -0.72 0.470 .9710998 1.013627

sp75\_1405\_c\_lag\_all | 1.009042 .0271254 0.33 0.738 .9572539 1.063633

sp75\_1435\_c\_lag\_all | .3703421 .0825749 -4.46 0.000 .2392276 .5733169

sp75\_155\_c\_lag\_all | 1 (omitted)

sp75\_1725\_c\_lag\_all | 1.010496 .0033959 3.11 0.002 1.003862 1.017174

sp75\_1915\_c\_lag\_all | 1.036443 .0764275 0.49 0.627 .8969695 1.197604

sp75\_505\_c\_lag\_all | 1.018513 .0838406 0.22 0.824 .8667596 1.196836

sp75\_515\_c\_lag\_all | .990574 .0073129 -1.28 0.200 .9763441 1.005011

sp75\_605\_c\_lag\_all | .9981828 .0095646 -0.19 0.849 .9796115 1.017106

sp75\_705\_c\_lag\_all | .940309 .1933466 -0.30 0.765 .6284146 1.407003

sp75\_815\_c\_lag\_all | .9851419 .0645112 -0.23 0.819 .86648 1.120054

sp75\_825\_c\_lag\_all | 1.064303 .0961812 0.69 0.490 .8915425 1.27054

sp75\_905\_c\_lag\_all | .7948802 .1286956 -1.42 0.156 .5787451 1.091732

sp77\_1605\_c\_lag\_all | .9951902 .004576 -1.05 0.294 .9862616 1.0042

sp77\_1915\_c\_lag\_all | .9885413 .0979217 -0.12 0.907 .8140996 1.200362

sp77\_205\_c\_lag\_all | 1.008601 .0082316 1.05 0.294 .9925956 1.024864

sp77\_305\_c\_lag\_all | 9.011539 54.76308 0.36 0.718 .0000605 1341365

sp77\_315\_c\_lag\_all | .0931587 .5432073 -0.41 0.684 1.01e-06 8561.91

sp77\_405\_c\_lag\_all | .8925027 .0658244 -1.54 0.123 .7723802 1.031307

sp77\_505\_c\_lag\_all | .9857566 .0113207 -1.25 0.212 .9638163 1.008196

sp77\_515\_c\_lag\_all | .925278 .2256499 -0.32 0.750 .5737035 1.492303

sp77\_605\_c\_lag\_all | .8891034 .1009076 -1.04 0.300 .7117809 1.110601

sp75\_805\_c\_lag\_all | .9221523 .0494994 -1.51 0.131 .8300644 1.024457

sp77\_705\_c\_lag\_all | .9988166 .0561909 -0.02 0.983 .8945391 1.11525

sp77\_805\_c\_lag\_all | .7150049 .1019366 -2.35 0.019 .5406984 .945503

sp48\_26\_c\_lag\_all | 1.040889 .037009 1.13 0.260 .9708226 1.116013

sp48\_6\_c\_lag\_all | 1.0205 .0452006 0.46 0.647 .9356451 1.113051

sp75\_1106\_6\_c\_lag\_all | .6208549 .2338595 -1.27 0.206 .2967326 1.299018

sp75\_1106\_c\_lag\_all | 1.050059 .0857209 0.60 0.550 .8948009 1.232256

sp75\_1403\_6\_c\_lag\_all | .9831273 .008903 -1.88 0.060 .9658318 1.000733

sp75\_1436\_c\_lag\_all | 4.826475 6.964189 1.09 0.275 .2853772 81.62831

sp75\_156\_c\_lag\_all | .9060205 .2541565 -0.35 0.725 .5228286 1.570062

sp75\_1712\_6\_c\_lag\_all | 1.069265 .0399998 1.79 0.073 .9936723 1.150609

sp75\_1726\_c\_lag\_all | 1.175846 .090853 2.10 0.036 1.010605 1.368105

sp75\_506\_c\_lag\_all | .9569164 .0385792 -1.09 0.275 .8842128 1.035598

sp75\_516\_c\_lag\_all | .9748648 .0093652 -2.65 0.008 .9566811 .9933941

sp75\_606\_c\_lag\_all | .9965494 .0041605 -0.83 0.408 .9884283 1.004737

sp75\_706\_c\_lag\_all | .9515349 .0347328 -1.36 0.174 .8858379 1.022104

sp75\_816\_c\_lag\_all | .9988354 .0157796 -0.07 0.941 .9683818 1.030247

sp77\_1106\_c\_lag\_all | .7548668 .2210716 -0.96 0.337 .4251929 1.340154

sp77\_1606\_c\_lag\_all | .994149 .0059325 -0.98 0.325 .9825892 1.005845

sp77\_1906\_c\_lag\_all | 1.149521 .230192 0.70 0.487 .7763602 1.702042

sp77\_1916\_c\_lag\_all | 2.662897 1.738002 1.50 0.133 .7409648 9.569982

sp77\_206\_c\_lag\_all | 1.011193 .042818 0.26 0.793 .9306595 1.098696

sp77\_216\_c\_lag\_all | .9763373 .0498304 -0.47 0.639 .8833975 1.079055

sp77\_506\_c\_lag\_all | .9769371 .0248789 -0.92 0.360 .9293723 1.026936

sp77\_516\_c\_lag\_all | 1.001098 .0098964 0.11 0.912 .9818882 1.020684

sp77\_606\_c\_lag\_all | 1 (omitted)

sp75\_806\_c\_lag\_all | .9592292 .0910108 -0.44 0.661 .7964548 1.15527

sp77\_906\_c\_lag\_all | 1 (omitted)

sp48\_27\_c\_lag\_all | 1.023935 .0493446 0.49 0.624 .9316486 1.125363

sp48\_7\_c\_lag\_all | 1.019394 .040732 0.48 0.631 .942607 1.102437

sp75\_1403\_7\_c\_lag\_all | .9715542 .0420102 -0.67 0.505 .8926082 1.057483

sp75\_1437\_c\_lag\_all | 1.117505 .7691434 0.16 0.872 .2899978 4.306303

sp75\_1727\_c\_lag\_all | 1 (omitted)

sp75\_337\_c\_lag\_all | .9647069 .0322245 -1.08 0.282 .9035712 1.029979

sp75\_507\_c\_lag\_all | .9506732 .0247627 -1.94 0.052 .9033574 1.000467

sp75\_517\_c\_lag\_all | .9949363 .0021461 -2.35 0.019 .990739 .9991514

sp75\_607\_c\_lag\_all | .9959074 .0247021 -0.17 0.869 .9486501 1.045519

sp75\_827\_c\_lag\_all | 1.446265 .396307 1.35 0.178 .8452806 2.474543

sp75\_907\_c\_lag\_all | .982 .0503613 -0.35 0.723 .8880923 1.085838

sp77\_1437\_c\_lag\_all | 1.125868 .540177 0.25 0.805 .4396345 2.883255

sp77\_207\_c\_lag\_all | .9887828 .0193147 -0.58 0.564 .9516422 1.027373

sp77\_507\_c\_lag\_all | 1.090016 .0687072 1.37 0.171 .963338 1.233351

sp75\_807\_c\_lag\_all | .9969971 .0076198 -0.39 0.694 .9821738 1.012044

sp77\_807\_c\_lag\_all | .8924739 .065893 -1.54 0.123 .7722354 1.031434

sp48\_28\_c\_lag\_all | .9624813 .0294818 -1.25 0.212 .9063983 1.022034

sp48\_8\_c\_lag\_all | 1.034252 .0476463 0.73 0.465 .9449593 1.131983

sp75\_1403\_8\_c\_lag\_all | .9929147 .0147225 -0.48 0.632 .9644745 1.022194

sp75\_1438\_c\_lag\_all | 1 (omitted)

sp75\_1728\_c\_lag\_all | 1.074913 .1078887 0.72 0.472 .8829546 1.308604

sp75\_208\_c\_lag\_all | .9887471 .0081883 -1.37 0.172 .9728279 1.004927

sp75\_518\_c\_lag\_all | .9912006 .0086367 -1.01 0.310 .9744166 1.008274

sp75\_705\_8\_c\_lag\_all | .7920465 .202905 -0.91 0.363 .4793927 1.308609

sp75\_818\_c\_lag\_all | 1.178463 .2078958 0.93 0.352 .8339753 1.665247

sp77\_1438\_c\_lag\_all | 1 (omitted)

sp77\_208\_c\_lag\_all | 1.012481 .0106736 1.18 0.239 .9917763 1.033619

sp77\_408\_c\_lag\_all | 1.155635 .0937943 1.78 0.075 .9856783 1.354898

sp77\_508\_c\_lag\_all | .9301115 .0618181 -1.09 0.276 .81651 1.059518

sp75\_808\_c\_lag\_all | 1.09301 .0518804 1.87 0.061 .9959123 1.199573

sp77\_704\_8\_c\_lag\_all | 1.029064 .1027756 0.29 0.774 .8461173 1.251568

sp77\_808\_c\_lag\_all | 1.333373 .3652028 1.05 0.294 .7794942 2.280818

sp75\_1403\_9\_c\_lag\_all | 2.242369 4.333282 0.42 0.676 .0507922 98.99597

sp75\_1729\_c\_lag\_all | 1.075412 .1638696 0.48 0.633 .7977563 1.449705

sp75\_1909\_c\_lag\_all | 1.005413 .0040794 1.33 0.183 .9974487 1.01344

sp75\_519\_c\_lag\_all | .531358 .1884224 -1.78 0.075 .2651836 1.064701

sp75\_819\_c\_lag\_all | 1 (omitted)

sp77\_309\_c\_lag\_all | 1 (omitted)

sp77\_409\_c\_lag\_all | 1.313908 .2590719 1.38 0.166 .892746 1.933757

sp77\_509\_c\_lag\_all | 1.026409 .0368096 0.73 0.467 .9567406 1.101151

sp75\_809\_c\_lag\_all | .9994667 .0230639 -0.02 0.982 .9552693 1.045709

sp77\_704\_9\_c\_lag\_all | 1.091675 .1876059 0.51 0.610 .779495 1.528881

sp77\_809\_c\_lag\_all | .9177003 .0353223 -2.23 0.026 .8510167 .9896089

sp72\_610\_c\_lag\_all | 1 (omitted)

sp72\_620\_c\_lag\_all | .9849419 .1732519 -0.09 0.931 .6977241 1.390393

sp72\_630\_c\_lag\_all | 1.008224 .0056573 1.46 0.144 .9971971 1.019374

sp75\_100\_c\_lag\_all | 1.290176 .1419626 2.32 0.021 1.039893 1.600699

sp75\_1101\_20\_c\_lag\_all | 1.349407 .1690096 2.39 0.017 1.05568 1.72486

sp75\_1400\_c\_lag\_all | .9936673 .0603769 -0.10 0.917 .8821056 1.119338

sp75\_1403\_10\_c\_lag\_all | 1.019808 .0154411 1.30 0.195 .9899888 1.050526

sp75\_150\_c\_lag\_all | .9024531 .2654408 -0.35 0.727 .5070591 1.606167

sp75\_160\_c\_lag\_all | 1.048442 .132631 0.37 0.708 .8182101 1.343457

sp75\_1712\_10\_c\_lag\_all | .8859298 .0953383 -1.13 0.260 .7174609 1.093957

sp75\_1720\_c\_lag\_all | 1.028741 .0235022 1.24 0.215 .9836937 1.075851

sp75\_1730\_c\_lag\_all | 1.102364 .0553844 1.94 0.052 .9989861 1.21644

sp75\_1910\_c\_lag\_all | 1.001055 .0087505 0.12 0.904 .9840505 1.018354

sp75\_320\_c\_lag\_all | .9916514 .0139398 -0.60 0.551 .9647028 1.019353

sp75\_340\_c\_lag\_all | 1.022682 .0104537 2.19 0.028 1.002397 1.043377

sp75\_520\_c\_lag\_all | 1.005361 .0163129 0.33 0.742 .9738918 1.037848

sp75\_600\_c\_lag\_all | .7096539 .1074644 -2.26 0.024 .5274087 .9548735

sp75\_700\_c\_lag\_all | 1.069947 .0301236 2.40 0.016 1.012505 1.130647

sp75\_800\_c\_lag\_all | .9667784 .0650267 -0.50 0.615 .8473719 1.103011

sp75\_820\_c\_lag\_all | 1.170759 .2519307 0.73 0.464 .7678936 1.784983

sp75\_900\_c\_lag\_all | .9969228 .0121649 -0.25 0.801 .9733629 1.021053

sp77\_1710\_c\_lag\_all | .9983583 .0186497 -0.09 0.930 .9624665 1.035588

sp77\_200\_c\_lag\_all | 1.04695 .0322673 1.49 0.137 .9855791 1.112141

sp77\_210\_c\_lag\_all | 1.08375 .057521 1.52 0.130 .9766771 1.202562

sp77\_400\_c\_lag\_all | .9969256 .0077185 -0.40 0.691 .9819117 1.012169

sp77\_410\_c\_lag\_all | 1.014238 .0093314 1.54 0.124 .9961123 1.032693

sp77\_500\_c\_lag\_all | .6194309 .2694492 -1.10 0.271 .2640734 1.452985

sp77\_510\_c\_lag\_all | 1.677529 .6438704 1.35 0.178 .790608 3.559417

sp77\_600\_c\_lag\_all | .9343847 .0871955 -0.73 0.467 .7782028 1.121912

sp77\_700\_c\_lag\_all | 1.081318 .0719127 1.18 0.240 .9491717 1.231863

sp75\_810\_c\_lag\_all | .9976103 .0214208 -0.11 0.911 .9564974 1.04049

sp77\_800\_c\_lag\_all | .8212065 .0805698 -2.01 0.045 .6775475 .9953252

sp77\_810\_c\_lag\_all | 1.092582 .1218699 0.79 0.427 .878028 1.359564

sp77\_900\_c\_lag\_all | .9963001 .0983523 -0.04 0.970 .8210349 1.208979

mine\_time | 1.002957 .0177518 0.17 0.868 .9687608 1.038361

onsite\_insp\_hours | 1.001204 .000207 5.82 0.000 1.000798 1.00161

|

state |

1 | 1.718351 .8034894 1.16 0.247 .6872202 4.296631

2 | 3.020341 .4744127 7.04 0.000 2.220014 4.109192

3 | .6214212 .4364871 -0.68 0.498 .1568559 2.461904

4 | 3.349752 1.621398 2.50 0.013 1.297183 8.650161

5 | .5873979 .1872403 -1.67 0.095 .3144861 1.097143

6 | .6892279 .0781722 -3.28 0.001 .5518481 .8608078

7 | 1.200029 .5465061 0.40 0.689 .491525 2.929801

8 | .9615066 .3054636 -0.12 0.902 .51586 1.792143

9 | 1442669 4584751 4.46 0.000 2844.969 7.32e+08

10 | .4070782 .1945597 -1.88 0.060 .1595339 1.03873

11 | .6765108 .8118124 -0.33 0.745 .0643923 7.107484

12 | .9546875 .1973961 -0.22 0.823 .6365938 1.431726

13 | 2.12647 .7909976 2.03 0.043 1.025727 4.408456

14 | .9144613 .3165365 -0.26 0.796 .4640084 1.802207

15 | .6064164 .0830317 -3.65 0.000 .4636847 .7930839

17 | 1 (empty)

|

time |

2000 | .9555962 .1416988 -0.31 0.759 .7145878 1.277889

2002 | .6728143 .108602 -2.46 0.014 .4903418 .9231909

2003 | .740653 .1374225 -1.62 0.106 .5148501 1.065488

2004 | .4562035 .0830179 -4.31 0.000 .3193454 .6517134

2005 | .496652 .0813444 -4.27 0.000 .360278 .6846469

2006 | .5610247 .0944314 -3.43 0.001 .4033743 .7802896

2007 | .5296658 .0950213 -3.54 0.000 .372647 .7528462

2008 | .4433516 .0800952 -4.50 0.000 .3111513 .6317205

2009 | .2062761 .0411414 -7.91 0.000 .1395334 .3049438

2010 | .2940929 .0610841 -5.89 0.000 .1957434 .4418572

2011 | .3678577 .0723079 -5.09 0.000 .250244 .5407496

2012 | .3222609 .0690258 -5.29 0.000 .2117809 .4903751

2013 | .225789 .0532075 -6.32 0.000 .1422708 .3583355

2014 | .1772424 .0442809 -6.93 0.000 .10862 .2892181

2015 | .2357874 .0604886 -5.63 0.000 .1426114 .3898405

|

\_cons | .0000207 2.89e-06 -77.00 0.000 .0000157 .0000272

lnhours | 1 (offset)

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

Note: 0 failures and 34 successes completely determined.

(est1 stored)

**. lfit**

Logistic model for MR\_indicator, goodness-of-fit test

number of observations = 5977

number of covariate patterns = 5962

Pearson chi2(5637) = 5250.66

Prob > chi2 = 0.9999

**. linktest**

Iteration 0: log likelihood = -4130.7892

Iteration 1: log likelihood = -2775.5062

Iteration 2: log likelihood = -2691.6928

Iteration 3: log likelihood = -2690.3387

Iteration 4: log likelihood = -2690.3382

Iteration 5: log likelihood = -2690.3382

Logistic regression Number of obs = 5,977

LR chi2(2) = 2880.90

Prob > chi2 = 0.0000

Log likelihood = -2690.3382 Pseudo R2 = 0.3487

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

MR\_indicator | Coef. Std. Err. z P>|z| [95% Conf. Interval]

-------------+----------------------------------------------------------------

\_hat | 1.065634 .0299082 35.63 0.000 1.007015 1.124253

\_hatsq | -.0090659 .0154193 -0.59 0.557 -.0392872 .0211554

\_cons | .012273 .0387935 0.32 0.752 -.0637609 .0883068

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

Note: 0 failures and 22 successes completely determined.

**. estat classification**

Logistic model for MR\_indicator

-------- True --------

Classified | D ~D | Total

-----------+--------------------------+-----------

+ | 2499 649 | 3148

- | 680 2149 | 2829

-----------+--------------------------+-----------

Total | 3179 2798 | 5977

Classified + if predicted Pr(D) >= .5

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

Sensitivity Pr( +| D) 78.61%

Specificity Pr( -|~D) 76.80%

Positive predictive value Pr( D| +) 79.38%

Negative predictive value Pr(~D| -) 75.96%

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

False + rate for true ~D Pr( +|~D) 23.20%

False - rate for true D Pr( -| D) 21.39%

False + rate for classified + Pr(~D| +) 20.62%

False - rate for classified - Pr( D| -) 24.04%

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

Correctly classified 77.76%

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

**. summ MR\_indicator spbv4\_yhat**

Variable | Obs Mean Std. Dev. Min Max

-------------+---------------------------------------------------------

MR\_indicator | 6,253 .5525348 .4972722 0 1

spbv4\_yhat | 5,977 .5318722 .3082652 .0003396 1