. // Model SP.B.V.3

**. eststo: logit MR\_indicator `subpart\_count\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) offset(lnhours) iter(50) or**

note: sp71\_701\_c\_4lag != 0 predicts success perfectly

sp71\_701\_c\_4lag dropped and 1 obs not used

note: sp75\_1003\_1\_c\_4lag != 0 predicts success perfectly

sp75\_1003\_1\_c\_4lag dropped and 14 obs not used

note: sp75\_1400\_1\_c\_4lag != 0 predicts success perfectly

sp75\_1400\_1\_c\_4lag dropped and 10 obs not used

note: sp75\_1401\_1\_c\_4lag != 0 predicts success perfectly

sp75\_1401\_1\_c\_4lag dropped and 4 obs not used

note: sp75\_1403\_11\_c\_4lag != 0 predicts success perfectly

sp75\_1403\_11\_c\_4lag dropped and 5 obs not used

note: sp75\_1431\_c\_4lag != 0 predicts success perfectly

sp75\_1431\_c\_4lag dropped and 2 obs not used

note: sp75\_510\_1\_c\_4lag != 0 predicts success perfectly

sp75\_510\_1\_c\_4lag dropped and 1 obs not used

note: sp75\_702\_1\_c\_4lag != 0 predicts success perfectly

sp75\_702\_1\_c\_4lag dropped and 3 obs not used

note: sp77\_606\_1\_c\_4lag != 0 predicts success perfectly

sp77\_606\_1\_c\_4lag dropped and 2 obs not used

note: sp77\_901\_1\_c\_4lag != 0 predicts success perfectly

sp77\_901\_1\_c\_4lag dropped and 3 obs not used

note: sp75\_1402\_2\_c\_4lag != 0 predicts success perfectly

sp75\_1402\_2\_c\_4lag dropped and 2 obs not used

note: sp75\_705\_2\_c\_4lag != 0 predicts success perfectly

sp75\_705\_2\_c\_4lag dropped and 1 obs not used

note: sp75\_803\_2\_c\_4lag != 0 predicts success perfectly

sp75\_803\_2\_c\_4lag dropped and 5 obs not used

note: sp77\_1432\_c\_4lag != 0 predicts success perfectly

sp77\_1432\_c\_4lag dropped and 10 obs not used

note: sp77\_702\_c\_4lag != 0 predicts success perfectly

sp77\_702\_c\_4lag dropped and 4 obs not used

note: sp77\_902\_2\_c\_4lag != 0 predicts success perfectly

sp77\_902\_2\_c\_4lag dropped and 1 obs not used

note: sp47\_43\_c\_4lag != 0 predicts success perfectly

sp47\_43\_c\_4lag dropped and 1 obs not used

note: sp75\_1403\_3\_c\_4lag != 0 predicts success perfectly

sp75\_1403\_3\_c\_4lag dropped and 5 obs not used

note: sp75\_705\_3\_c\_4lag != 0 predicts success perfectly

sp75\_705\_3\_c\_4lag dropped and 2 obs not used

note: sp77\_103\_c\_4lag != 0 predicts success perfectly

sp77\_103\_c\_4lag dropped and 3 obs not used

note: sp77\_413\_c\_4lag != 0 predicts success perfectly

sp77\_413\_c\_4lag dropped and 2 obs not used

note: sp77\_703\_c\_4lag != 0 predicts success perfectly

sp77\_703\_c\_4lag dropped and 4 obs not used

note: sp48\_24\_c\_4lag != 0 predicts failure perfectly

sp48\_24\_c\_4lag dropped and 1 obs not used

note: sp75\_1403\_4\_c\_4lag != 0 predicts success perfectly

sp75\_1403\_4\_c\_4lag dropped and 9 obs not used

note: sp75\_814\_c\_4lag != 0 predicts success perfectly

sp75\_814\_c\_4lag dropped and 24 obs not used

note: sp75\_834\_c\_4lag != 0 predicts failure perfectly

sp75\_834\_c\_4lag dropped and 1 obs not used

note: sp77\_104\_c\_4lag != 0 predicts success perfectly

sp77\_104\_c\_4lag dropped and 4 obs not used

note: sp77\_1434\_c\_4lag != 0 predicts success perfectly

sp77\_1434\_c\_4lag dropped and 32 obs not used

note: sp77\_314\_c\_4lag != 0 predicts success perfectly

sp77\_314\_c\_4lag dropped and 4 obs not used

note: sp75\_155\_c\_4lag != 0 predicts success perfectly

sp75\_155\_c\_4lag dropped and 5 obs not used

note: sp77\_305\_c\_4lag != 0 predicts success perfectly

sp77\_305\_c\_4lag dropped and 2 obs not used

note: sp77\_315\_c\_4lag != 0 predicts success perfectly

sp77\_315\_c\_4lag dropped and 2 obs not used

note: sp75\_1106\_6\_c\_4lag != 0 predicts success perfectly

sp75\_1106\_6\_c\_4lag dropped and 1 obs not used

note: sp75\_1436\_c\_4lag != 0 predicts success perfectly

sp75\_1436\_c\_4lag dropped and 3 obs not used

note: sp77\_1906\_c\_4lag != 0 predicts success perfectly

sp77\_1906\_c\_4lag dropped and 15 obs not used

note: sp77\_1916\_c\_4lag != 0 predicts success perfectly

sp77\_1916\_c\_4lag dropped and 14 obs not used

note: sp77\_216\_c\_4lag != 0 predicts success perfectly

sp77\_216\_c\_4lag dropped and 91 obs not used

note: sp75\_1438\_c\_4lag != 0 predicts success perfectly

sp75\_1438\_c\_4lag dropped and 1 obs not used

note: sp77\_1438\_c\_4lag != 0 predicts success perfectly

sp77\_1438\_c\_4lag dropped and 2 obs not used

note: sp75\_1403\_9\_c\_4lag != 0 predicts success perfectly

sp75\_1403\_9\_c\_4lag dropped and 26 obs not used

note: sp75\_519\_c\_4lag != 0 predicts success perfectly

sp75\_519\_c\_4lag dropped and 5 obs not used

note: sp77\_1802\_c\_4lag != 0 predicts failure perfectly

sp77\_1802\_c\_4lag dropped and 1 obs not used

note: sp75\_341\_c\_4lag != 0 predicts success perfectly

sp75\_341\_c\_4lag dropped and 10 obs not used

note: sp75\_819\_c\_4lag != 0 predicts success perfectly

sp75\_819\_c\_4lag dropped and 1 obs not used

note: sp72\_610\_c\_4lag != 0 predicts success perfectly

sp72\_610\_c\_4lag dropped and 6 obs not used

note: 17.state != 0 predicts success perfectly

17.state dropped and 9 obs not used

note: sp77\_801\_1\_c\_4lag omitted because of collinearity

note: sp77\_403\_2\_c\_4lag omitted because of collinearity

note: sp77\_606\_c\_4lag omitted because of collinearity

note: sp77\_906\_c\_4lag omitted because of collinearity

note: sp77\_309\_c\_4lag omitted because of collinearity

Iteration 0: log pseudolikelihood = -3025.0997

Iteration 1: log pseudolikelihood = -2732.1789

Iteration 2: log pseudolikelihood = -2703.0065

Iteration 3: log pseudolikelihood = -2701.1511

Iteration 4: log pseudolikelihood = -2701.0648

Iteration 5: log pseudolikelihood = -2701.0642

Iteration 6: log pseudolikelihood = -2701.0642

Logistic regression Number of obs = 5,899

Wald chi2(306) = .

Log pseudolikelihood = -2701.0642 Prob > chi2 = .

(Std. Err. adjusted for 1,234 clusters in mineid)

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| Robust

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

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

sp47\_41\_c\_4lag | .8908949 .0524029 -1.96 0.050 .7938863 .9997574

sp48\_11\_c\_4lag | 1.175787 .0765718 2.49 0.013 1.034892 1.335863

sp71\_701\_c\_4lag | 1 (omitted)

sp75\_1001\_1\_c\_4lag | .9716308 .1734709 -0.16 0.872 .6847488 1.378705

sp75\_1001\_c\_4lag | .8826798 .3996355 -0.28 0.783 .363429 2.143813

sp75\_1003\_1\_c\_4lag | 1 (omitted)

sp75\_1400\_1\_c\_4lag | 1 (omitted)

sp75\_1401\_1\_c\_4lag | 1 (omitted)

sp75\_1401\_c\_4lag | .7505056 .187137 -1.15 0.250 .4603716 1.223487

sp75\_1403\_11\_c\_4lag | 1 (omitted)

sp75\_1404\_1\_c\_4lag | .9598565 .4519249 -0.09 0.931 .3814511 2.415315

sp75\_1405\_1\_c\_4lag | 1.134529 .498644 0.29 0.774 .4794009 2.684928

sp75\_1431\_c\_4lag | 1 (omitted)

sp75\_151\_c\_4lag | 1.792077 .7047885 1.48 0.138 .829079 3.873624

sp75\_1721\_c\_4lag | .8013287 .2785405 -0.64 0.524 .4054474 1.583751

sp75\_1731\_c\_4lag | .9879325 .0036612 -3.28 0.001 .9807826 .9951345

sp75\_1911\_c\_4lag | 1.014251 .0183353 0.78 0.434 .9789439 1.050832

sp75\_211\_c\_4lag | .9961873 .018478 -0.21 0.837 .9606215 1.03307

sp75\_341\_c\_4lag | 1 (omitted)

sp75\_506\_1\_c\_4lag | 1.217598 .1404902 1.71 0.088 .9711574 1.526575

sp75\_510\_1\_c\_4lag | 1 (omitted)

sp75\_511\_1\_c\_4lag | .7612291 .6964517 -0.30 0.766 .1266915 4.573864

sp75\_511\_c\_4lag | .9372896 .0447939 -1.36 0.175 .8534815 1.029327

sp75\_512\_1\_c\_4lag | 1.412894 .4912876 0.99 0.320 .7147135 2.793103

sp75\_513\_1\_c\_4lag | 1.292192 .1421749 2.33 0.020 1.041532 1.603177

sp75\_516\_1\_c\_4lag | 1.100405 .2077542 0.51 0.612 .7600589 1.593153

sp75\_517\_1\_c\_4lag | 1.223599 .3577705 0.69 0.490 .6898497 2.170319

sp75\_518\_1\_c\_4lag | 1.009308 .0220641 0.42 0.672 .9669761 1.053492

sp75\_523\_1\_c\_4lag | 1.03178 .0321388 1.00 0.315 .9706733 1.096733

sp75\_600\_1\_c\_4lag | 1.016963 .2086233 0.08 0.935 .6802783 1.52028

sp75\_601\_1\_c\_4lag | .9875971 .0143688 -0.86 0.391 .9598326 1.016165

sp75\_601\_c\_4lag | 1.003271 .0190333 0.17 0.863 .9666515 1.041278

sp75\_700\_1\_c\_4lag | .9592318 .1119514 -0.36 0.721 .763098 1.205776

sp75\_701\_1\_c\_4lag | .9796877 .0634989 -0.32 0.752 .8628129 1.112394

sp75\_701\_c\_4lag | 1.013025 .0157266 0.83 0.405 .9826656 1.044322

sp75\_702\_1\_c\_4lag | 1 (omitted)

sp75\_703\_1\_c\_4lag | 3.246521 2.020028 1.89 0.058 .9589351 10.99125

sp75\_705\_1\_c\_4lag | 2.087355 .4517134 3.40 0.001 1.365816 3.19007

sp75\_801\_c\_4lag | .9753925 .2168698 -0.11 0.911 .6308446 1.508122

sp75\_811\_c\_4lag | 1.033004 .0648698 0.52 0.605 .9133745 1.168302

sp75\_821\_c\_4lag | 1.154003 .2407311 0.69 0.492 .7667286 1.736889

sp75\_831\_c\_4lag | 1.113417 .2473248 0.48 0.629 .7204095 1.720824

sp75\_901\_c\_4lag | .9406376 .0808998 -0.71 0.477 .7947207 1.113346

sp75\_902\_1\_c\_4lag | 2.566736 .8467402 2.86 0.004 1.344555 4.899864

sp77\_1111\_c\_4lag | .7577183 .1934294 -1.09 0.277 .4594244 1.249688

sp77\_401\_c\_4lag | .8977285 .0622275 -1.56 0.120 .7836868 1.028365

sp77\_403\_1\_c\_4lag | 1.07949 .2511915 0.33 0.742 .6841456 1.70329

sp77\_411\_c\_4lag | .4419663 .1694869 -2.13 0.033 .2084334 .9371543

sp77\_501\_c\_4lag | 1.031983 .1430367 0.23 0.820 .7864894 1.354105

sp77\_502\_1\_c\_4lag | 1.495601 .5436082 1.11 0.268 .7335474 3.049321

sp77\_503\_1\_c\_4lag | .8719933 .2916192 -0.41 0.682 .4527384 1.679496

sp77\_506\_1\_c\_4lag | 1.028014 .0407211 0.70 0.485 .9512218 1.111006

sp77\_508\_1\_c\_4lag | 1.119923 .107703 1.18 0.239 .92753 1.352222

sp77\_511\_c\_4lag | .7095986 .123125 -1.98 0.048 .5050306 .997029

sp77\_601\_c\_4lag | .6539098 .1441967 -1.93 0.054 .4244392 1.007442

sp77\_606\_1\_c\_4lag | 1 (omitted)

sp77\_700\_1\_c\_4lag | 1.078183 .2564237 0.32 0.752 .6764748 1.718436

sp77\_701\_1\_c\_4lag | .8376868 .0918567 -1.62 0.106 .675683 1.038533

sp77\_701\_c\_4lag | 1.010323 .0292354 0.35 0.723 .9546169 1.069279

sp77\_704\_1\_c\_4lag | 1.531877 .4128984 1.58 0.114 .9032195 2.598093

sp77\_800\_1\_c\_4lag | .8084173 .1310784 -1.31 0.190 .5883287 1.110839

sp77\_801\_1\_c\_4lag | 1 (omitted)

sp77\_801\_c\_4lag | .3403555 .2261093 -1.62 0.105 .0925661 1.251451

sp77\_807\_1\_c\_4lag | 1.105642 .2493052 0.45 0.656 .7106928 1.720075

sp77\_900\_1\_c\_4lag | 1.007583 .2254534 0.03 0.973 .649859 1.562223

sp77\_901\_1\_c\_4lag | 1 (omitted)

sp77\_901\_c\_4lag | 1.144474 .2926349 0.53 0.598 .6933605 1.889091

sp47\_42\_c\_4lag | .7253387 .0938729 -2.48 0.013 .5628321 .9347659

sp75\_1100\_2\_c\_4lag | 1.003275 .0079586 0.41 0.680 .987797 1.018996

sp75\_1102\_c\_4lag | .9538842 .0334358 -1.35 0.178 .8905517 1.021721

sp75\_1106\_2\_c\_4lag | 1.019616 .057579 0.34 0.731 .9127843 1.138951

sp75\_1400\_2\_c\_4lag | .779493 .1552562 -1.25 0.211 .5275618 1.151731

sp75\_1402\_2\_c\_4lag | 1 (omitted)

sp75\_1432\_c\_4lag | 1.109597 .2769531 0.42 0.677 .6803105 1.80977

sp75\_1600\_2\_c\_4lag | .9470775 .0275119 -1.87 0.061 .8946616 1.002564

sp75\_1912\_c\_4lag | 1.015266 .16537 0.09 0.926 .7377906 1.397097

sp75\_202\_c\_4lag | 1.004028 .0030688 1.32 0.188 .9980313 1.010061

sp75\_212\_c\_4lag | .8731904 .0402827 -2.94 0.003 .797702 .9558224

sp75\_312\_c\_4lag | 1.007743 .0230813 0.34 0.736 .9635052 1.054012

sp75\_342\_c\_4lag | .9899298 .0070449 -1.42 0.155 .976218 1.003834

sp75\_352\_c\_4lag | .9992556 .0637017 -0.01 0.991 .8818875 1.132244

sp75\_382\_c\_4lag | 1.17077 .1876971 0.98 0.325 .8550812 1.603008

sp75\_512\_2\_c\_4lag | 1.033108 .0214039 1.57 0.116 .9919979 1.075923

sp75\_512\_c\_4lag | .9988825 .0046299 -0.24 0.809 .9898492 1.007998

sp75\_516\_2\_c\_4lag | 1.013136 .0375261 0.35 0.725 .9421928 1.089422

sp75\_523\_2\_c\_4lag | 1.00195 .0218217 0.09 0.929 .9600804 1.045646

sp75\_601\_2\_c\_4lag | .8428512 .3416619 -0.42 0.673 .3808063 1.865511

sp75\_602\_c\_4lag | .9821248 .0461716 -0.38 0.701 .8956741 1.07692

sp75\_701\_2\_c\_4lag | .9460903 .0939179 -0.56 0.577 .7788149 1.149293

sp75\_702\_c\_4lag | 1.158097 .2570608 0.66 0.508 .7495576 1.789306

sp75\_703\_2\_c\_4lag | .9151417 .1921084 -0.42 0.673 .6064604 1.380938

sp75\_705\_2\_c\_4lag | 1 (omitted)

sp75\_800\_2\_c\_4lag | 1.325135 .9283744 0.40 0.688 .3356744 5.23121

sp75\_802\_c\_4lag | .8600344 .1069625 -1.21 0.225 .6739876 1.097437

sp75\_803\_2\_c\_4lag | 1 (omitted)

sp75\_812\_c\_4lag | .5517685 .117566 -2.79 0.005 .3634046 .8377673

sp75\_832\_c\_4lag | .505635 .2861992 -1.20 0.228 .1667403 1.533323

sp75\_900\_2\_c\_4lag | .7646531 .2353128 -0.87 0.383 .4183284 1.397692

sp75\_902\_2\_c\_4lag | 1.043769 .1395221 0.32 0.749 .8031985 1.356393

sp75\_902\_c\_4lag | 1.028167 .0199017 1.44 0.151 .9898905 1.067923

sp77\_1112\_c\_4lag | 1.170408 .496752 0.37 0.711 .5094068 2.689117

sp77\_1432\_c\_4lag | 1 (omitted)

sp77\_1802\_c\_4lag | 1 (omitted)

sp77\_202\_c\_4lag | .9207948 .021754 -3.49 0.000 .8791299 .9644343

sp77\_402\_c\_4lag | .972865 .0437763 -0.61 0.541 .8907397 1.062562

sp77\_403\_2\_c\_4lag | 1 (omitted)

sp77\_412\_c\_4lag | 1.389109 .2115647 2.16 0.031 1.030614 1.872304

sp77\_502\_2\_c\_4lag | 1.119186 .0787669 1.60 0.110 .9749801 1.284721

sp77\_502\_c\_4lag | 1.011277 .0152628 0.74 0.457 .9818002 1.041638

sp77\_512\_c\_4lag | .9785366 .0295905 -0.72 0.473 .9222256 1.038286

sp77\_602\_c\_4lag | 1.151551 .2419237 0.67 0.502 .7628839 1.738233

sp77\_701\_2\_c\_4lag | .9340998 .0636462 -1.00 0.317 .8173263 1.067557

sp77\_702\_c\_4lag | 1 (omitted)

sp77\_800\_2\_c\_4lag | .980527 .0924599 -0.21 0.835 .8150694 1.179572

sp77\_802\_c\_4lag | .4566492 .143802 -2.49 0.013 .2463391 .8465097

sp77\_807\_2\_c\_4lag | .783708 .2395264 -0.80 0.425 .4305263 1.426622

sp77\_900\_2\_c\_4lag | 1.115883 .0984008 1.24 0.214 .9387672 1.326414

sp77\_902\_2\_c\_4lag | 1 (omitted)

sp77\_902\_c\_4lag | .9107765 .2613564 -0.33 0.745 .5189805 1.598353

sp47\_43\_c\_4lag | 1 (omitted)

sp72\_503\_c\_4lag | .9278433 .0755506 -0.92 0.358 .7909784 1.08839

sp75\_1106\_3\_c\_4lag | 1.014035 .0199362 0.71 0.478 .9757036 1.053871

sp75\_1400\_3\_c\_4lag | 1.090451 .117273 0.81 0.421 .8832086 1.346322

sp75\_1403\_3\_c\_4lag | 1 (omitted)

sp75\_1433\_c\_4lag | 1.054594 .144724 0.39 0.699 .8058853 1.380058

sp75\_153\_c\_4lag | 3.331141 2.903518 1.38 0.167 .6034777 18.38758

sp75\_1903\_c\_4lag | 1.331387 .2363356 1.61 0.107 .9401713 1.885393

sp75\_1913\_c\_4lag | .9736776 .0515102 -0.50 0.614 .8777772 1.080055

sp75\_503\_c\_4lag | 1.005949 .0031879 1.87 0.061 .99972 1.012216

sp75\_513\_c\_4lag | .9186764 .0559525 -1.39 0.164 .8153042 1.035155

sp75\_523\_c\_4lag | .9936173 .0233686 -0.27 0.785 .9488553 1.040491

sp75\_601\_3\_c\_4lag | .7825465 .3239282 -0.59 0.554 .3476664 1.761398

sp75\_603\_c\_4lag | 1.063975 .0708094 0.93 0.351 .9338611 1.212217

sp75\_701\_3\_c\_4lag | 1.101117 .1514087 0.70 0.484 .8409872 1.441709

sp75\_703\_3\_c\_4lag | 1.038545 .0795969 0.49 0.622 .8936902 1.206879

sp75\_703\_c\_4lag | 1.087656 .0347298 2.63 0.009 1.021673 1.1579

sp75\_705\_3\_c\_4lag | 1 (omitted)

sp75\_800\_3\_c\_4lag | 1.021907 .0917247 0.24 0.809 .8570556 1.218467

sp75\_803\_c\_4lag | 1.020133 .0911724 0.22 0.824 .8562137 1.215433

sp75\_900\_3\_c\_4lag | 1.007383 .0733321 0.10 0.920 .8734374 1.16187

sp75\_903\_c\_4lag | 1.066296 .0435225 1.57 0.116 .9843166 1.155104

sp77\_103\_c\_4lag | 1 (omitted)

sp77\_1103\_c\_4lag | 1.02012 .0302546 0.67 0.502 .9625122 1.081175

sp77\_1403\_c\_4lag | 1.797674 .831376 1.27 0.205 .7261945 4.45009

sp77\_1433\_c\_4lag | .9552872 .1680343 -0.26 0.795 .6767188 1.348527

sp77\_203\_c\_4lag | .9926237 .2837105 -0.03 0.979 .5668854 1.738097

sp77\_403\_c\_4lag | 1.26252 .2723864 1.08 0.280 .8271668 1.927008

sp77\_413\_c\_4lag | 1 (omitted)

sp77\_503\_c\_4lag | .8014533 .0871499 -2.04 0.042 .6476177 .991831

sp77\_513\_c\_4lag | .9478246 .0302328 -1.68 0.093 .8903836 1.008971

sp77\_603\_c\_4lag | 1.656189 .4318596 1.93 0.053 .9934705 2.760991

sp77\_701\_3\_c\_4lag | 1.355527 .4804549 0.86 0.391 .6767166 2.715246

sp77\_703\_c\_4lag | 1 (omitted)

sp77\_803\_c\_4lag | 1.051675 .2793453 0.19 0.850 .6248648 1.770016

sp77\_807\_3\_c\_4lag | 2.003583 .830663 1.68 0.094 .8890141 4.515501

sp77\_902\_3\_c\_4lag | .8878257 .1108957 -0.95 0.341 .695035 1.134093

sp77\_903\_c\_4lag | .8365689 .1425202 -1.05 0.295 .5990853 1.168194

sp47\_44\_c\_4lag | 1.123322 .1587976 0.82 0.411 .8514802 1.48195

sp48\_24\_c\_4lag | 1 (omitted)

sp48\_4\_c\_4lag | 1.249086 .7361289 0.38 0.706 .3935052 3.96492

sp75\_1103\_4\_c\_4lag | 1.011507 .0129086 0.90 0.370 .9865206 1.037127

sp75\_1104\_c\_4lag | .9642821 .0520466 -0.67 0.500 .8674829 1.071883

sp75\_1106\_4\_c\_4lag | .8696349 .1216756 -1.00 0.318 .6610594 1.14402

sp75\_1107\_14\_c\_4lag | .7306354 .2975663 -0.77 0.441 .3288753 1.623193

sp75\_1400\_4\_c\_4lag | 1.043103 .1657012 0.27 0.791 .7640299 1.424112

sp75\_1403\_4\_c\_4lag | 1 (omitted)

sp75\_1404\_c\_4lag | 1.097147 .3460354 0.29 0.769 .5912887 2.035777

sp75\_1434\_c\_4lag | .8084002 .1270718 -1.35 0.176 .5940551 1.100085

sp75\_1914\_c\_4lag | 1.000163 .0139295 0.01 0.991 .9732312 1.027841

sp75\_214\_c\_4lag | 1.055077 .0403055 1.40 0.160 .9789644 1.137107

sp75\_324\_c\_4lag | .9221655 .085917 -0.87 0.384 .7682518 1.106915

sp75\_344\_c\_4lag | .820377 .1170403 -1.39 0.165 .6202624 1.085054

sp75\_504\_c\_4lag | .9576673 .0613913 -0.67 0.500 .8445948 1.085878

sp75\_514\_c\_4lag | 1.021246 .0194839 1.10 0.270 .9837631 1.060156

sp75\_604\_c\_4lag | 1.012459 .0076374 1.64 0.101 .9975999 1.027539

sp75\_701\_4\_c\_4lag | 1.197616 .2834915 0.76 0.446 .7530557 1.90462

sp75\_703\_4\_c\_4lag | .3396348 .1831329 -2.00 0.045 .1180428 .9772028

sp75\_704\_c\_4lag | 1.236722 .2077866 1.26 0.206 .8897297 1.719039

sp75\_800\_4\_c\_4lag | .9908567 .0689451 -0.13 0.895 .8645361 1.135634

sp75\_804\_c\_4lag | 1.080823 .1061909 0.79 0.429 .8915051 1.310343

sp75\_814\_c\_4lag | 1 (omitted)

sp75\_834\_c\_4lag | 1 (omitted)

sp75\_900\_4\_c\_4lag | 1.008231 .0405856 0.20 0.839 .9317416 1.090999

sp75\_902\_4\_c\_4lag | 1.081367 .057362 1.47 0.140 .974586 1.199846

sp75\_904\_c\_4lag | 1.046944 .0140637 3.42 0.001 1.01974 1.074875

sp77\_104\_c\_4lag | 1 (omitted)

sp77\_1104\_c\_4lag | .997486 .0088833 -0.28 0.777 .9802262 1.01505

sp77\_1434\_c\_4lag | 1 (omitted)

sp77\_204\_c\_4lag | .9939101 .0642685 -0.09 0.925 .8756015 1.128204

sp77\_314\_c\_4lag | 1 (omitted)

sp77\_404\_c\_4lag | 1.010638 .0090842 1.18 0.239 .9929897 1.028601

sp77\_504\_c\_4lag | .9759541 .0488414 -0.49 0.627 .8847717 1.076534

sp77\_514\_c\_4lag | .2927525 .0884693 -4.06 0.000 .1619083 .5293369

sp77\_604\_c\_4lag | 1.078137 .1065183 0.76 0.446 .8883344 1.308493

sp77\_701\_4\_c\_4lag | 1.20254 .1700289 1.30 0.192 .9114793 1.586544

sp77\_704\_c\_4lag | .8613161 .2230987 -0.58 0.564 .5184224 1.431006

sp77\_804\_c\_4lag | 1.127664 .4544099 0.30 0.766 .5118875 2.48419

sp77\_904\_c\_4lag | 1.010471 .0366572 0.29 0.774 .9411195 1.084934

sp48\_25\_c\_4lag | 1.034565 .1038788 0.34 0.735 .8497483 1.259579

sp48\_5\_c\_4lag | 1.176498 .1583617 1.21 0.227 .9036828 1.531675

sp75\_1106\_5\_c\_4lag | .9588206 .0428916 -0.94 0.347 .8783346 1.046682

sp75\_1403\_5\_c\_4lag | .9905117 .021741 -0.43 0.664 .9488037 1.034053

sp75\_1405\_c\_4lag | .9887907 .0400337 -0.28 0.781 .9133587 1.070452

sp75\_1435\_c\_4lag | .739951 .2354724 -0.95 0.344 .3965771 1.380633

sp75\_155\_c\_4lag | 1 (omitted)

sp75\_1725\_c\_4lag | 1.009351 .0062389 1.51 0.132 .9971967 1.021653

sp75\_1915\_c\_4lag | 1.20015 .1423767 1.54 0.124 .9511642 1.514313

sp75\_505\_c\_4lag | 1.153194 .1548327 1.06 0.288 .8863728 1.500335

sp75\_515\_c\_4lag | .9713447 .0108597 -2.60 0.009 .9502915 .9928642

sp75\_605\_c\_4lag | .9834019 .0202012 -0.81 0.415 .9445948 1.023803

sp75\_705\_c\_4lag | 1.546535 .4885911 1.38 0.168 .8326122 2.87261

sp75\_805\_c\_4lag | 1.128464 .1264055 1.08 0.281 .9060246 1.405515

sp75\_815\_c\_4lag | 1.243536 .3596624 0.75 0.451 .7054551 2.192036

sp75\_825\_c\_4lag | .8018198 .1566627 -1.13 0.258 .5467209 1.175947

sp75\_905\_c\_4lag | .8834408 .2050684 -0.53 0.593 .5605219 1.392395

sp77\_1605\_c\_4lag | 1.00047 .0091608 0.05 0.959 .9826753 1.018587

sp77\_1915\_c\_4lag | .9386748 .1295401 -0.46 0.647 .7162203 1.230222

sp77\_205\_c\_4lag | 1.018603 .0159212 1.18 0.238 .9878709 1.050291

sp77\_305\_c\_4lag | 1 (omitted)

sp77\_315\_c\_4lag | 1 (omitted)

sp77\_405\_c\_4lag | 1.315816 .1967433 1.84 0.066 .9815716 1.763878

sp77\_505\_c\_4lag | 1.011814 .0221128 0.54 0.591 .9693887 1.056096

sp77\_515\_c\_4lag | 1.396135 .5051981 0.92 0.356 .686936 2.837519

sp77\_605\_c\_4lag | .850828 .1710053 -0.80 0.422 .5738011 1.261601

sp77\_705\_c\_4lag | 1.186049 .1056329 1.92 0.055 .9960749 1.412255

sp77\_805\_c\_4lag | 2.063412 1.147121 1.30 0.193 .6940233 6.134762

sp48\_26\_c\_4lag | 1.111684 .0780017 1.51 0.131 .9688497 1.275575

sp48\_6\_c\_4lag | .9472921 .0511654 -1.00 0.316 .8521353 1.053075

sp75\_1106\_6\_c\_4lag | 1 (omitted)

sp75\_1106\_c\_4lag | 1.20178 .1847653 1.20 0.232 .8891165 1.624394

sp75\_1403\_6\_c\_4lag | .9762023 .0187062 -1.26 0.209 .9402189 1.013563

sp75\_1436\_c\_4lag | 1 (omitted)

sp75\_156\_c\_4lag | 1.351908 .4194305 0.97 0.331 .7359721 2.483322

sp75\_1712\_6\_c\_4lag | 1.014804 .0536317 0.28 0.781 .9149485 1.125557

sp75\_1726\_c\_4lag | 1.12567 .1452191 0.92 0.359 .8741792 1.449513

sp75\_506\_c\_4lag | .9804923 .0629374 -0.31 0.759 .8645814 1.111943

sp75\_516\_c\_4lag | .9592175 .0154601 -2.58 0.010 .9293899 .9900025

sp75\_606\_c\_4lag | .9968074 .0128541 -0.25 0.804 .9719295 1.022322

sp75\_706\_c\_4lag | .938447 .0513277 -1.16 0.245 .8430509 1.044638

sp75\_806\_c\_4lag | .6404682 .2982962 -0.96 0.339 .2570709 1.595667

sp75\_816\_c\_4lag | 1.040978 .0415309 1.01 0.314 .9626795 1.125644

sp77\_1106\_c\_4lag | .9935323 .3837179 -0.02 0.987 .4660521 2.118017

sp77\_1606\_c\_4lag | 1.013067 .0142567 0.92 0.356 .9855065 1.041399

sp77\_1906\_c\_4lag | 1 (omitted)

sp77\_1916\_c\_4lag | 1 (omitted)

sp77\_206\_c\_4lag | 1.108671 .098909 1.16 0.248 .9308153 1.32051

sp77\_216\_c\_4lag | 1 (omitted)

sp77\_506\_c\_4lag | .9556794 .0363059 -1.19 0.233 .8871058 1.029554

sp77\_516\_c\_4lag | .9756929 .0175842 -1.37 0.172 .94183 1.010773

sp77\_606\_c\_4lag | 1 (omitted)

sp77\_906\_c\_4lag | 1 (omitted)

sp48\_27\_c\_4lag | 1.089523 .1009157 0.93 0.355 .9086468 1.306405

sp48\_7\_c\_4lag | 1.013577 .0655624 0.21 0.835 .8928886 1.150578

sp75\_1403\_7\_c\_4lag | .8576843 .0983415 -1.34 0.181 .6850609 1.073806

sp75\_1437\_c\_4lag | 2.807593 1.698439 1.71 0.088 .8578352 9.188917

sp75\_1727\_c\_4lag | 1.020095 .5252476 0.04 0.969 .37184 2.798497

sp75\_337\_c\_4lag | .9870119 .0402378 -0.32 0.748 .9112157 1.069113

sp75\_507\_c\_4lag | .9856437 .0478672 -0.30 0.766 .8961524 1.084072

sp75\_517\_c\_4lag | .9956235 .0048797 -0.89 0.371 .9861053 1.005234

sp75\_607\_c\_4lag | .9612146 .0421778 -0.90 0.367 .8820027 1.04754

sp75\_807\_c\_4lag | 1.00498 .0123064 0.41 0.685 .9811472 1.029392

sp75\_827\_c\_4lag | 1.118483 .431539 0.29 0.772 .5250662 2.382563

sp75\_907\_c\_4lag | .9524684 .0719063 -0.65 0.519 .8214656 1.104363

sp77\_1437\_c\_4lag | 1.108166 .3758569 0.30 0.762 .5700367 2.154304

sp77\_207\_c\_4lag | .9988073 .0398013 -0.03 0.976 .9237666 1.079944

sp77\_507\_c\_4lag | .8978577 .1028896 -0.94 0.347 .71724 1.123959

sp77\_807\_c\_4lag | .9531908 .1098826 -0.42 0.678 .7604215 1.194828

sp48\_28\_c\_4lag | .9830948 .0660842 -0.25 0.800 .8617419 1.121537

sp48\_8\_c\_4lag | .9288647 .0752976 -0.91 0.363 .7924112 1.088816

sp75\_1403\_8\_c\_4lag | .9622578 .0389204 -0.95 0.342 .8889205 1.041646

sp75\_1438\_c\_4lag | 1 (omitted)

sp75\_1728\_c\_4lag | 1.232381 .3693712 0.70 0.486 .6848911 2.217525

sp75\_208\_c\_4lag | .9841996 .0170272 -0.92 0.357 .9513863 1.018145

sp75\_518\_c\_4lag | 1.011854 .0163647 0.73 0.466 .9802826 1.044442

sp75\_705\_8\_c\_4lag | 1.205083 .1998139 1.13 0.261 .8707224 1.667838

sp75\_808\_c\_4lag | 1.133847 .1127084 1.26 0.206 .9331299 1.377739

sp75\_818\_c\_4lag | .9174239 .2328191 -0.34 0.734 .5579002 1.508633

sp77\_1438\_c\_4lag | 1 (omitted)

sp77\_208\_c\_4lag | 1.040711 .0220356 1.88 0.059 .9984057 1.084808

sp77\_408\_c\_4lag | .9977773 .1386704 -0.02 0.987 .7598611 1.310186

sp77\_508\_c\_4lag | 1.117514 .1049986 1.18 0.237 .9295576 1.343475

sp77\_704\_8\_c\_4lag | 1.701722 .4393842 2.06 0.039 1.025908 2.822726

sp77\_808\_c\_4lag | 3.43801 1.53207 2.77 0.006 1.435452 8.234279

sp75\_1403\_9\_c\_4lag | 1 (omitted)

sp75\_1729\_c\_4lag | 1.036632 .2942295 0.13 0.899 .5943283 1.808103

sp75\_1909\_c\_4lag | 1.005093 .0099119 0.52 0.606 .9858529 1.024709

sp75\_519\_c\_4lag | 1 (omitted)

sp75\_809\_c\_4lag | 1.045071 .0389364 1.18 0.237 .9714766 1.12424

sp75\_819\_c\_4lag | 1 (omitted)

sp77\_309\_c\_4lag | 1 (omitted)

sp77\_409\_c\_4lag | .8329717 .2177575 -0.70 0.485 .4990075 1.390444

sp77\_509\_c\_4lag | .9237097 .0473786 -1.55 0.122 .8353643 1.021398

sp77\_704\_9\_c\_4lag | .9289686 .2774873 -0.25 0.805 .5173007 1.668242

sp77\_809\_c\_4lag | .8640324 .0600763 -2.10 0.036 .7539558 .9901801

sp72\_610\_c\_4lag | 1 (omitted)

sp72\_620\_c\_4lag | 1.842783 .8147099 1.38 0.167 .7747309 4.383263

sp72\_630\_c\_4lag | 1.018534 .0104657 1.79 0.074 .9982266 1.039254

sp75\_100\_c\_4lag | 1.365701 .2905579 1.46 0.143 .9000347 2.072296

sp75\_1101\_20\_c\_4lag | 1.517174 .2735104 2.31 0.021 1.065575 2.160164

sp75\_1400\_c\_4lag | 1.019501 .103513 0.19 0.849 .8355306 1.243978

sp75\_1403\_10\_c\_4lag | 1.05892 .0341794 1.77 0.076 .9940044 1.128075

sp75\_150\_c\_4lag | .7594455 .341162 -0.61 0.540 .3148585 1.831799

sp75\_160\_c\_4lag | .9633948 .1554101 -0.23 0.817 .7022516 1.321648

sp75\_1712\_10\_c\_4lag | .9178545 .1430047 -0.55 0.582 .6763225 1.245644

sp75\_1720\_c\_4lag | 1.037262 .0387077 0.98 0.327 .9641042 1.115971

sp75\_1730\_c\_4lag | 1.170571 .1451929 1.27 0.204 .9179485 1.492717

sp75\_1910\_c\_4lag | 1.014896 .0179724 0.83 0.404 .9802745 1.050739

sp75\_320\_c\_4lag | .9351185 .0192232 -3.26 0.001 .8981906 .9735646

sp75\_340\_c\_4lag | 1.003803 .0163612 0.23 0.816 .972242 1.036388

sp75\_520\_c\_4lag | 1.017519 .0282085 0.63 0.531 .9637069 1.074337

sp75\_600\_c\_4lag | 1.228595 .3976904 0.64 0.525 .651447 2.317068

sp75\_700\_c\_4lag | 1.028058 .0501292 0.57 0.570 .934355 1.131157

sp75\_800\_c\_4lag | .9348009 .0888394 -0.71 0.478 .7759336 1.126195

sp75\_810\_c\_4lag | 1.008552 .0385525 0.22 0.824 .9357517 1.087016

sp75\_820\_c\_4lag | .9225844 .3404766 -0.22 0.827 .4475825 1.901687

sp75\_900\_c\_4lag | .9847544 .0210817 -0.72 0.473 .9442898 1.026953

sp77\_1710\_c\_4lag | .9791213 .0330258 -0.63 0.532 .9164851 1.046038

sp77\_200\_c\_4lag | 1.017238 .0259905 0.67 0.504 .9675519 1.069475

sp77\_210\_c\_4lag | 1.230844 .2167466 1.18 0.238 .8715848 1.738185

sp77\_400\_c\_4lag | 1.003368 .0146235 0.23 0.818 .9751123 1.032443

sp77\_410\_c\_4lag | .9963082 .0141686 -0.26 0.795 .9689216 1.024469

sp77\_500\_c\_4lag | 1.598503 1.052903 0.71 0.476 .439586 5.812771

sp77\_510\_c\_4lag | 1.175932 .3719179 0.51 0.608 .6326573 2.185728

sp77\_600\_c\_4lag | 1.327363 .2121589 1.77 0.076 .9703719 1.815689

sp77\_700\_c\_4lag | .9439104 .0953518 -0.57 0.568 .7743624 1.150581

sp77\_810\_c\_4lag | 1.069023 .1921116 0.37 0.710 .7516565 1.520388

sp77\_900\_c\_4lag | .7488003 .0972298 -2.23 0.026 .5805501 .9658114

mine\_time | .9958423 .0149663 -0.28 0.782 .9669366 1.025612

onsite\_insp\_hours | 1.001009 .0002287 4.42 0.000 1.000561 1.001458

|

state |

1 | 1.258152 .465564 0.62 0.535 .609195 2.598424

2 | 2.97502 .7399518 4.38 0.000 1.827164 4.843977

3 | .7283447 .3427277 -0.67 0.501 .2895997 1.83179

4 | 1.767125 .7110353 1.42 0.157 .803102 3.888337

5 | .8549205 .2462161 -0.54 0.586 .4861617 1.503387

6 | .6517546 .0703897 -3.96 0.000 .527417 .8054046

7 | .8544788 .3533062 -0.38 0.704 .3799708 1.921553

8 | 1.515393 .3098345 2.03 0.042 1.015057 2.262354

9 | 1.937213 .6277783 2.04 0.041 1.026442 3.656116

10 | .5463506 .2281319 -1.45 0.148 .2410167 1.238499

11 | .4488797 .1981585 -1.81 0.070 .1889583 1.066336

12 | 1.04954 .1924414 0.26 0.792 .7326973 1.503397

13 | 2.256659 .8143883 2.26 0.024 1.112455 4.577723

14 | .8588728 .3041014 -0.43 0.667 .4290852 1.719151

15 | .5558131 .0723331 -4.51 0.000 .4306793 .7173046

17 | 1 (empty)

|

time |

2000 | 1.06888 .1596599 0.45 0.656 .7975975 1.432432

2002 | .6962755 .1110055 -2.27 0.023 .5094202 .9516693

2003 | .745086 .1341193 -1.63 0.102 .5235832 1.060296

2004 | .466788 .0802803 -4.43 0.000 .3332163 .6539026

2005 | .4740757 .0752254 -4.70 0.000 .3473607 .6470155

2006 | .4962357 .0827978 -4.20 0.000 .3578192 .6881965

2007 | .4750139 .0874353 -4.04 0.000 .3311513 .6813748

2008 | .3579745 .0666993 -5.51 0.000 .2484579 .5157645

2009 | .1683216 .0340801 -8.80 0.000 .1131872 .2503125

2010 | .2533347 .0538257 -6.46 0.000 .1670479 .3841921

2011 | .3375608 .0683912 -5.36 0.000 .2269317 .5021215

2012 | .2990119 .0646184 -5.59 0.000 .1957666 .456708

2013 | .2255283 .0518675 -6.48 0.000 .1436944 .3539668

2014 | .1967611 .0468467 -6.83 0.000 .1233893 .3137625

2015 | .2550689 .0609961 -5.71 0.000 .1596265 .4075776

|

\_cons | .0000217 3.08e-06 -75.74 0.000 .0000165 .0000287

lnhours | 1 (offset)

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

(est1 stored)

**. lfit**

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

number of observations = 5899

number of covariate patterns = 5883

Pearson chi2(5573) = 5317.22

Prob > chi2 = 0.9929

**. linktest**

Iteration 0: log likelihood = -4080.7785

Iteration 1: log likelihood = -2701.2868

Iteration 2: log likelihood = -2697.8129

Iteration 3: log likelihood = -2696.6084

Iteration 4: log likelihood = -2696.6025

Iteration 5: log likelihood = -2696.6025

Logistic regression Number of obs = 5,899

LR chi2(2) = 2768.35

Prob > chi2 = 0.0000

Log likelihood = -2696.6025 Pseudo R2 = 0.3392

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

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

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

\_hat | 1.084352 .0304538 35.61 0.000 1.024664 1.14404

\_hatsq | -.0203675 .0151693 -1.34 0.179 -.0500988 .0093639

\_cons | .0254323 .0384589 0.66 0.508 -.0499457 .1008103

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

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 2433 637 | 3070

- | 671 2158 | 2829

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

Total | 3104 2795 | 5899

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

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

Sensitivity Pr( +| D) 78.38%

Specificity Pr( -|~D) 77.21%

Positive predictive value Pr( D| +) 79.25%

Negative predictive value Pr(~D| -) 76.28%

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False + rate for true ~D Pr( +|~D) 22.79%

False - rate for true D Pr( -| D) 21.62%

False + rate for classified + Pr(~D| +) 20.75%

False - rate for classified - Pr( D| -) 23.72%

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

Correctly classified 77.83%

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

**. summ MR\_indicator spbv3\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

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

spbv3\_yhat | 5,899 .5261909 .3031157 .0001371 .9999999