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

sp75\_1403\_11\_c\_4lag dropped and 12 obs not used

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

sp75\_510\_1\_c\_4lag dropped and 4 obs not used

note: sp77\_403\_2\_c\_4lag != 0 predicts success perfectly

sp77\_403\_2\_c\_4lag dropped and 3 obs not used

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

sp77\_902\_2\_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 14 obs not used

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

sp48\_24\_c\_4lag dropped and 3 obs not used

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

sp75\_834\_c\_4lag dropped and 3 obs not used

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

sp75\_155\_c\_4lag dropped and 12 obs not used

note: sp77\_906\_c\_4lag != 0 predicts success perfectly

sp77\_906\_c\_4lag dropped and 2 obs not used

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

sp75\_1438\_c\_4lag dropped and 4 obs not used

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

sp75\_819\_c\_4lag dropped and 4 obs not used

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

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

Iteration 0: log pseudolikelihood = -10677.711

Iteration 1: log pseudolikelihood = -9976.6961

Iteration 2: log pseudolikelihood = -9958.4059

Iteration 3: log pseudolikelihood = -9958.2077

Iteration 4: log pseudolikelihood = -9958.2075

Logistic regression Number of obs = 22,384

Wald chi2(379) = .

Log pseudolikelihood = -9958.2075 Prob > chi2 = .

(Std. Err. adjusted for 1,293 clusters in mineid)

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| Robust

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

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

sp47\_41\_c\_4lag | .9583906 .0664528 -0.61 0.540 .8366079 1.097901

sp48\_11\_c\_4lag | 1.134346 .0996246 1.44 0.151 .9549667 1.347419

sp71\_701\_c\_4lag | 2.88618 1.962395 1.56 0.119 .7613209 10.94156

sp75\_1001\_1\_c\_4lag | .8507445 .2014858 -0.68 0.495 .5348169 1.353297

sp75\_1001\_c\_4lag | .5016605 .1989792 -1.74 0.082 .2305623 1.09152

sp75\_1003\_1\_c\_4lag | 1.515007 .8557088 0.74 0.462 .5007693 4.583442

sp75\_1400\_1\_c\_4lag | 1.295955 .4151871 0.81 0.418 .6916549 2.428235

sp75\_1401\_1\_c\_4lag | 1.306702 .6081791 0.57 0.565 .5248088 3.253507

sp75\_1401\_c\_4lag | .8568452 .2256083 -0.59 0.557 .5114228 1.435571

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

sp75\_1404\_1\_c\_4lag | .6206337 .3713532 -0.80 0.425 .1920981 2.005154

sp75\_1405\_1\_c\_4lag | 3.109517 1.297854 2.72 0.007 1.372201 7.046418

sp75\_1431\_c\_4lag | .903184 .3016841 -0.30 0.760 .4693054 1.738189

sp75\_151\_c\_4lag | 1.903122 1.642407 0.75 0.456 .3506499 10.32903

sp75\_1721\_c\_4lag | .526968 .4664126 -0.72 0.469 .0929815 2.986564

sp75\_1731\_c\_4lag | .9936947 .0051105 -1.23 0.219 .9837286 1.003762

sp75\_1911\_c\_4lag | 1.00511 .0214506 0.24 0.811 .9639348 1.048044

sp75\_211\_c\_4lag | .9895741 .0232363 -0.45 0.655 .9450639 1.036181

sp75\_341\_c\_4lag | .7869615 .4137388 -0.46 0.649 .2808283 2.205292

sp75\_506\_1\_c\_4lag | 1.367493 .142522 3.00 0.003 1.114838 1.677407

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

sp75\_511\_1\_c\_4lag | .2291677 .1100477 -3.07 0.002 .0894131 .5873616

sp75\_511\_c\_4lag | 1.052979 .0699759 0.78 0.437 .9243847 1.199461

sp75\_512\_1\_c\_4lag | 1.051918 .3907157 0.14 0.892 .5079477 2.178438

sp75\_513\_1\_c\_4lag | 1.114235 .2400093 0.50 0.616 .7305095 1.699527

sp75\_516\_1\_c\_4lag | 1.044233 .3637622 0.12 0.901 .5275679 2.066885

sp75\_517\_1\_c\_4lag | 1.213653 .2378612 0.99 0.323 .8265505 1.782049

sp75\_518\_1\_c\_4lag | 1.000511 .0282135 0.02 0.986 .9467143 1.057365

sp75\_523\_1\_c\_4lag | .9680828 .0403965 -0.78 0.437 .8920583 1.050586

sp75\_600\_1\_c\_4lag | .9799655 .2518858 -0.08 0.937 .5921366 1.621809

sp75\_601\_1\_c\_4lag | .9905086 .0169923 -0.56 0.578 .9577579 1.024379

sp75\_601\_c\_4lag | 1.028718 .0256734 1.13 0.257 .9796096 1.080288

sp75\_700\_1\_c\_4lag | .872874 .1944629 -0.61 0.542 .5640492 1.350785

sp75\_701\_1\_c\_4lag | .9628833 .0666796 -0.55 0.585 .8406747 1.102857

sp75\_701\_c\_4lag | 1.056258 .0199561 2.90 0.004 1.01786 1.096104

sp75\_702\_1\_c\_4lag | .8587867 .338745 -0.39 0.700 .3963987 1.860537

sp75\_703\_1\_c\_4lag | 2.484178 1.456505 1.55 0.121 .7872503 7.838858

sp75\_705\_1\_c\_4lag | .9376489 .2467195 -0.24 0.807 .5598444 1.57041

sp75\_801\_c\_4lag | .862561 .2678651 -0.48 0.634 .469302 1.585358

sp75\_811\_c\_4lag | 1.065008 .059049 1.14 0.256 .9553405 1.187264

sp75\_821\_c\_4lag | 1.141442 .0954355 1.58 0.114 .9689137 1.344691

sp75\_831\_c\_4lag | .6507424 .1579681 -1.77 0.077 .4043705 1.047222

sp75\_901\_c\_4lag | .871208 .1148132 -1.05 0.295 .6728918 1.127972

sp75\_902\_1\_c\_4lag | 1.481372 .4959698 1.17 0.241 .7685602 2.855289

sp77\_1111\_c\_4lag | .6539742 .1854075 -1.50 0.134 .375178 1.139945

sp77\_401\_c\_4lag | .8596137 .0847647 -1.53 0.125 .7085461 1.04289

sp77\_403\_1\_c\_4lag | .9457566 .1542664 -0.34 0.732 .6869676 1.302035

sp77\_411\_c\_4lag | .396729 .2694481 -1.36 0.173 .1048045 1.501786

sp77\_501\_c\_4lag | 1.103894 .193267 0.56 0.572 .7832513 1.5558

sp77\_502\_1\_c\_4lag | 1.636338 1.580572 0.51 0.610 .2464225 10.8659

sp77\_503\_1\_c\_4lag | 1.051525 .4299834 0.12 0.902 .4717931 2.343624

sp77\_506\_1\_c\_4lag | 1.024913 .0438666 0.57 0.565 .9424435 1.114599

sp77\_508\_1\_c\_4lag | .9729509 .195488 -0.14 0.891 .6562436 1.442503

sp77\_511\_c\_4lag | .5291145 .1341101 -2.51 0.012 .3219608 .8695536

sp77\_601\_c\_4lag | .726143 .233358 -1.00 0.319 .3867893 1.363232

sp77\_606\_1\_c\_4lag | .9801823 .4847087 -0.04 0.968 .3718607 2.583649

sp77\_700\_1\_c\_4lag | 1.251619 .4654311 0.60 0.546 .6038677 2.594196

sp77\_701\_1\_c\_4lag | .9519699 .1878815 -0.25 0.803 .6465907 1.401577

sp77\_701\_c\_4lag | 1.034131 .0471903 0.74 0.462 .9456557 1.130885

sp77\_704\_1\_c\_4lag | .9932085 .2158312 -0.03 0.975 .6487366 1.520591

sp77\_800\_1\_c\_4lag | 1.183592 .2569028 0.78 0.437 .773474 1.811166

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

sp77\_801\_c\_4lag | .3370775 .2438762 -1.50 0.133 .0816364 1.391796

sp77\_807\_1\_c\_4lag | .8159836 .3386649 -0.49 0.624 .3617426 1.840616

sp77\_900\_1\_c\_4lag | 2.119185 .8558004 1.86 0.063 .9603385 4.676421

sp77\_901\_1\_c\_4lag | .6039198 .4142122 -0.74 0.462 .1574574 2.316303

sp77\_901\_c\_4lag | 1.037123 .2314472 0.16 0.870 .6696895 1.606152

sp47\_42\_c\_4lag | .8377643 .1646441 -0.90 0.368 .5699502 1.231421

sp75\_1100\_2\_c\_4lag | 1.020639 .0108263 1.93 0.054 .9996394 1.042081

sp75\_1102\_c\_4lag | .8715922 .0576263 -2.08 0.038 .7656585 .9921823

sp75\_1106\_2\_c\_4lag | 1.008601 .0594011 0.15 0.884 .898645 1.13201

sp75\_1400\_2\_c\_4lag | .9637785 .1898156 -0.19 0.851 .6551392 1.417819

sp75\_1402\_2\_c\_4lag | 1.449161 1.315425 0.41 0.683 .2446064 8.585492

sp75\_1432\_c\_4lag | 1.317685 .3019228 1.20 0.229 .8409588 2.06466

sp75\_1600\_2\_c\_4lag | 1.000836 .0371685 0.02 0.982 .9305753 1.076402

sp75\_1912\_c\_4lag | 1.088032 .152513 0.60 0.547 .8266584 1.432048

sp75\_202\_c\_4lag | 1.001063 .0039876 0.27 0.790 .9932783 1.00891

sp75\_212\_c\_4lag | .8192512 .0389425 -4.19 0.000 .7463729 .8992456

sp75\_312\_c\_4lag | 1.01154 .0337656 0.34 0.731 .9474791 1.079932

sp75\_342\_c\_4lag | .9897216 .0102104 -1.00 0.317 .9699106 1.009937

sp75\_352\_c\_4lag | .8902442 .0560395 -1.85 0.065 .7869142 1.007143

sp75\_382\_c\_4lag | 1.172024 .1479397 1.26 0.209 .915151 1.500998

sp75\_512\_2\_c\_4lag | 1.017769 .0199723 0.90 0.369 .9793674 1.057676

sp75\_512\_c\_4lag | .9991709 .006296 -0.13 0.895 .9869069 1.011587

sp75\_516\_2\_c\_4lag | 1.097472 .0500231 2.04 0.041 1.00368 1.200028

sp75\_523\_2\_c\_4lag | 1.018447 .0356926 0.52 0.602 .9508388 1.090861

sp75\_601\_2\_c\_4lag | .7965537 .241913 -0.75 0.454 .4392437 1.444523

sp75\_602\_c\_4lag | 1.037777 .0551957 0.70 0.486 .9350434 1.151799

sp75\_701\_2\_c\_4lag | 1.005644 .1081903 0.05 0.958 .8144591 1.241707

sp75\_702\_c\_4lag | .9422394 .2363536 -0.24 0.813 .5762936 1.54056

sp75\_703\_2\_c\_4lag | .801787 .1892837 -0.94 0.349 .5047886 1.273528

sp75\_705\_2\_c\_4lag | 1.82447 .5176194 2.12 0.034 1.046267 3.18149

sp75\_800\_2\_c\_4lag | 1.007205 .2691356 0.03 0.979 .5965793 1.700465

sp75\_802\_c\_4lag | .7864817 .1181305 -1.60 0.110 .5859183 1.055699

sp75\_803\_2\_c\_4lag | 2.269588 1.05982 1.76 0.079 .9087934 5.667988

sp75\_812\_c\_4lag | .6134876 .1555675 -1.93 0.054 .373215 1.008446

sp75\_832\_c\_4lag | .4865114 .5327417 -0.66 0.511 .0568862 4.160823

sp75\_900\_2\_c\_4lag | .5150052 .1834937 -1.86 0.063 .2561728 1.035357

sp75\_902\_2\_c\_4lag | 1.064829 .1131341 0.59 0.554 .8646546 1.311344

sp75\_902\_c\_4lag | 1.011332 .0300315 0.38 0.704 .9541515 1.071939

sp77\_1112\_c\_4lag | .9625551 .1488874 -0.25 0.805 .7108244 1.303434

sp77\_1432\_c\_4lag | .6983231 .300828 -0.83 0.405 .3001722 1.624585

sp77\_1802\_c\_4lag | .8857093 .5108901 -0.21 0.833 .2859603 2.743321

sp77\_202\_c\_4lag | .9459739 .0225069 -2.33 0.020 .9028739 .9911313

sp77\_402\_c\_4lag | .9362366 .0525155 -1.17 0.240 .8387642 1.045036

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

sp77\_412\_c\_4lag | 1.626419 .2517537 3.14 0.002 1.200812 2.202876

sp77\_502\_2\_c\_4lag | .9839173 .0832508 -0.19 0.848 .8335604 1.161395

sp77\_502\_c\_4lag | .9798024 .0136688 -1.46 0.144 .953375 1.006962

sp77\_512\_c\_4lag | .9982849 .0346988 -0.05 0.961 .9325413 1.068663

sp77\_602\_c\_4lag | .9518589 .2176843 -0.22 0.829 .6080062 1.490175

sp77\_701\_2\_c\_4lag | .8419019 .1078291 -1.34 0.179 .6550001 1.082136

sp77\_702\_c\_4lag | .463874 .3511148 -1.01 0.310 .1052228 2.044986

sp77\_800\_2\_c\_4lag | .9322123 .1388163 -0.47 0.637 .6962447 1.248153

sp77\_802\_c\_4lag | .5521231 .2651773 -1.24 0.216 .2153849 1.415327

sp77\_807\_2\_c\_4lag | .797381 .1779066 -1.01 0.310 .5149336 1.234754

sp77\_900\_2\_c\_4lag | 1.086728 .1438363 0.63 0.530 .838413 1.408586

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

sp77\_902\_c\_4lag | 1.350046 .29132 1.39 0.164 .8844466 2.06075

sp47\_43\_c\_4lag | 3.061516 2.261871 1.51 0.130 .7195522 13.02599

sp72\_503\_c\_4lag | .8722845 .06525 -1.83 0.068 .75333 1.010023

sp75\_1106\_3\_c\_4lag | 1.034859 .0263296 1.35 0.178 .9845199 1.087773

sp75\_1400\_3\_c\_4lag | 1.185048 .1077204 1.87 0.062 .9916585 1.416152

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

sp75\_1433\_c\_4lag | .9482936 .109858 -0.46 0.647 .755671 1.190016

sp75\_153\_c\_4lag | 1.267996 .4958707 0.61 0.544 .5891715 2.728942

sp75\_1903\_c\_4lag | 1.236095 .1108537 2.36 0.018 1.036849 1.473629

sp75\_1913\_c\_4lag | .9835877 .0598061 -0.27 0.785 .8730852 1.108076

sp75\_503\_c\_4lag | 1.005891 .0049095 1.20 0.229 .9963142 1.01556

sp75\_513\_c\_4lag | .9177775 .0762102 -1.03 0.301 .7799298 1.079989

sp75\_523\_c\_4lag | .9550587 .0337981 -1.30 0.194 .8910607 1.023653

sp75\_601\_3\_c\_4lag | 1.14109 .3531316 0.43 0.670 .6221563 2.09286

sp75\_603\_c\_4lag | .9573349 .0725635 -0.58 0.565 .8251731 1.110664

sp75\_701\_3\_c\_4lag | 1.024877 .1550603 0.16 0.871 .7618824 1.378655

sp75\_703\_3\_c\_4lag | .9513264 .0929632 -0.51 0.610 .7855078 1.152149

sp75\_703\_c\_4lag | 1.135315 .050744 2.84 0.005 1.040091 1.239258

sp75\_705\_3\_c\_4lag | 9.344198 2.574466 8.11 0.000 5.445319 16.0347

sp75\_800\_3\_c\_4lag | 1.023389 .1371796 0.17 0.863 .786941 1.330883

sp75\_803\_c\_4lag | 1.053191 .1140985 0.48 0.632 .8517089 1.302335

sp75\_900\_3\_c\_4lag | 1.085393 .0960818 0.93 0.355 .912507 1.291033

sp75\_903\_c\_4lag | 1.038519 .0528814 0.74 0.458 .9398771 1.147513

sp77\_103\_c\_4lag | 1.214602 .2199336 1.07 0.283 .8517317 1.732068

sp77\_1103\_c\_4lag | .9854522 .0338609 -0.43 0.670 .9212716 1.054104

sp77\_1403\_c\_4lag | 1.18315 .1565074 1.27 0.204 .912941 1.533335

sp77\_1433\_c\_4lag | 1.285359 .3120277 1.03 0.301 .7987127 2.068512

sp77\_203\_c\_4lag | 1.421317 .34086 1.47 0.143 .888292 2.274185

sp77\_403\_c\_4lag | 1.807215 .5605176 1.91 0.056 .9840224 3.319056

sp77\_413\_c\_4lag | 1.648051 .5089825 1.62 0.106 .8996769 3.018943

sp77\_503\_c\_4lag | .9400792 .1491704 -0.39 0.697 .6888062 1.283015

sp77\_513\_c\_4lag | .9476896 .0443822 -1.15 0.251 .8645749 1.038794

sp77\_603\_c\_4lag | 1.312365 .3548915 1.01 0.315 .7724517 2.229655

sp77\_701\_3\_c\_4lag | 1.601122 .6973383 1.08 0.280 .6818674 3.759665

sp77\_703\_c\_4lag | 1.173209 .8623864 0.22 0.828 .2777704 4.955243

sp77\_803\_c\_4lag | 1.601456 .7270663 1.04 0.300 .6577588 3.89909

sp77\_807\_3\_c\_4lag | 1.141205 .4898792 0.31 0.758 .492009 2.647004

sp77\_902\_3\_c\_4lag | 1.41199 .4889115 1.00 0.319 .7163038 2.78334

sp77\_903\_c\_4lag | .8162316 .2211806 -0.75 0.454 .4799066 1.388258

sp47\_44\_c\_4lag | .9578172 .1393604 -0.30 0.767 .7201692 1.273886

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

sp48\_4\_c\_4lag | .9388685 .7251189 -0.08 0.935 .2066302 4.265949

sp75\_1103\_4\_c\_4lag | 1.008759 .0191304 0.46 0.646 .9719528 1.04696

sp75\_1104\_c\_4lag | .9548138 .0454909 -0.97 0.332 .8696895 1.04827

sp75\_1106\_4\_c\_4lag | 1.011199 .170684 0.07 0.947 .726372 1.407713

sp75\_1107\_14\_c\_4lag | 1.302011 .8587963 0.40 0.689 .3574117 4.743081

sp75\_1400\_4\_c\_4lag | .8679428 .1254564 -0.98 0.327 .6538145 1.152199

sp75\_1403\_4\_c\_4lag | 1.011833 .7809672 0.02 0.988 .2229064 4.592987

sp75\_1404\_c\_4lag | 1.029667 .4489686 0.07 0.947 .4380714 2.420185

sp75\_1434\_c\_4lag | .8473629 .1257005 -1.12 0.264 .6335771 1.133286

sp75\_1914\_c\_4lag | 1.007865 .0107331 0.74 0.462 .9870463 1.029122

sp75\_214\_c\_4lag | 1.053006 .0496008 1.10 0.273 .9601427 1.15485

sp75\_324\_c\_4lag | .923332 .0840507 -0.88 0.381 .772455 1.103679

sp75\_344\_c\_4lag | .9720925 .136248 -0.20 0.840 .7385903 1.279415

sp75\_504\_c\_4lag | .8677665 .1000197 -1.23 0.218 .6922971 1.08771

sp75\_514\_c\_4lag | 1.012697 .0231653 0.55 0.581 .9682964 1.059133

sp75\_604\_c\_4lag | 1.028125 .0089202 3.20 0.001 1.010789 1.045758

sp75\_701\_4\_c\_4lag | 1.476144 .3634533 1.58 0.114 .9110615 2.391718

sp75\_703\_4\_c\_4lag | 1.785382 .7915373 1.31 0.191 .7487843 4.25702

sp75\_704\_c\_4lag | 1.095987 .2758693 0.36 0.716 .6691922 1.794982

sp75\_800\_4\_c\_4lag | .9804357 .0900893 -0.22 0.830 .8188507 1.173906

sp75\_804\_c\_4lag | .886772 .060975 -1.75 0.081 .7749663 1.014708

sp75\_814\_c\_4lag | 1.18934 .2616145 0.79 0.431 .7728064 1.830382

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

sp75\_900\_4\_c\_4lag | 1.036475 .0592062 0.63 0.531 .926693 1.159262

sp75\_902\_4\_c\_4lag | 1.024727 .074147 0.34 0.736 .8892357 1.180862

sp75\_904\_c\_4lag | 1.001029 .0147482 0.07 0.944 .9725361 1.030356

sp77\_104\_c\_4lag | 4.263604 3.588208 1.72 0.085 .8192451 22.18911

sp77\_1104\_c\_4lag | 1.013408 .0109689 1.23 0.219 .9921356 1.035136

sp77\_1434\_c\_4lag | 1.214432 .3728193 0.63 0.527 .6653683 2.216584

sp77\_204\_c\_4lag | .9620782 .0574852 -0.65 0.518 .8557564 1.08161

sp77\_314\_c\_4lag | .4640317 .504128 -0.71 0.480 .0551817 3.902117

sp77\_404\_c\_4lag | .9903255 .0124577 -0.77 0.440 .9662073 1.015046

sp77\_504\_c\_4lag | .9454562 .0516519 -1.03 0.305 .8494519 1.052311

sp77\_514\_c\_4lag | .5336781 .1171834 -2.86 0.004 .3470365 .8206983

sp77\_604\_c\_4lag | 1.004186 .1789145 0.02 0.981 .7082016 1.423874

sp77\_701\_4\_c\_4lag | 1.487566 .2667716 2.21 0.027 1.046711 2.114102

sp77\_704\_c\_4lag | .961343 .3923779 -0.10 0.923 .4319718 2.139446

sp77\_804\_c\_4lag | 2.096008 .8157966 1.90 0.057 .9774466 4.494619

sp77\_904\_c\_4lag | .9491586 .0458453 -1.08 0.280 .8634256 1.043404

sp48\_25\_c\_4lag | .8356372 .0877521 -1.71 0.087 .6801916 1.026607

sp48\_5\_c\_4lag | 1.158586 .1773684 0.96 0.336 .8582574 1.564008

sp75\_1106\_5\_c\_4lag | .8377085 .0579006 -2.56 0.010 .7315764 .9592376

sp75\_1403\_5\_c\_4lag | 1.008641 .0144095 0.60 0.547 .9807907 1.037282

sp75\_1405\_c\_4lag | .9791464 .0286937 -0.72 0.472 .9244925 1.037031

sp75\_1435\_c\_4lag | .7179749 .2108922 -1.13 0.259 .4037236 1.276834

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

sp75\_1725\_c\_4lag | 1.007109 .0073048 0.98 0.329 .992893 1.021528

sp75\_1915\_c\_4lag | .9919078 .1370911 -0.06 0.953 .7565317 1.300515

sp75\_505\_c\_4lag | 1.149248 .2186239 0.73 0.465 .791567 1.668551

sp75\_515\_c\_4lag | .9504875 .013975 -3.45 0.001 .923488 .9782763

sp75\_605\_c\_4lag | 1.015217 .0284945 0.54 0.591 .9608771 1.07263

sp75\_705\_c\_4lag | 2.065069 .4553724 3.29 0.001 1.3404 3.181521

sp75\_805\_c\_4lag | 1.818218 .4187083 2.60 0.009 1.157783 2.855387

sp75\_815\_c\_4lag | 1.508735 .2227844 2.79 0.005 1.129593 2.015135

sp75\_825\_c\_4lag | .9594353 .21045 -0.19 0.850 .6241752 1.474772

sp75\_905\_c\_4lag | 1.360532 .4161575 1.01 0.314 .7470412 2.477839

sp77\_1605\_c\_4lag | .9921837 .013717 -0.57 0.570 .9656598 1.019436

sp77\_1915\_c\_4lag | .828761 .1578511 -0.99 0.324 .5705636 1.203801

sp77\_205\_c\_4lag | 1.005236 .0133916 0.39 0.695 .9793282 1.031828

sp77\_305\_c\_4lag | 2.618727 2.47247 1.02 0.308 .4115558 16.66295

sp77\_315\_c\_4lag | 1.043843 1.105523 0.04 0.968 .1309595 8.320196

sp77\_405\_c\_4lag | 1.146558 .1845646 0.85 0.396 .8363263 1.571869

sp77\_505\_c\_4lag | .9891356 .0343036 -0.31 0.753 .9241358 1.058707

sp77\_515\_c\_4lag | .9809151 .5866604 -0.03 0.974 .3037732 3.167477

sp77\_605\_c\_4lag | .9443942 .342509 -0.16 0.875 .46392 1.922488

sp77\_705\_c\_4lag | 1.158611 .1341226 1.27 0.203 .9234245 1.453698

sp77\_805\_c\_4lag | 1.558118 .9461627 0.73 0.465 .4739261 5.122595

sp48\_26\_c\_4lag | 1.144528 .1003478 1.54 0.124 .9638211 1.359116

sp48\_6\_c\_4lag | .9650633 .0719034 -0.48 0.633 .8339421 1.116801

sp75\_1106\_6\_c\_4lag | .5481353 .3132432 -1.05 0.293 .1788344 1.680058

sp75\_1106\_c\_4lag | 1.446185 .2400031 2.22 0.026 1.044629 2.002101

sp75\_1403\_6\_c\_4lag | .971899 .0153666 -1.80 0.071 .9422429 1.002489

sp75\_1436\_c\_4lag | 2.943887 2.91929 1.09 0.276 .4215332 20.55941

sp75\_156\_c\_4lag | 1.89053 .5697911 2.11 0.035 1.04722 3.412944

sp75\_1712\_6\_c\_4lag | 1.054669 .0590827 0.95 0.342 .945 1.177066

sp75\_1726\_c\_4lag | 1.315982 .2258733 1.60 0.110 .9400502 1.842252

sp75\_506\_c\_4lag | .99617 .0799064 -0.05 0.962 .8512468 1.165766

sp75\_516\_c\_4lag | .9815534 .0219466 -0.83 0.405 .9394677 1.025524

sp75\_606\_c\_4lag | .9875855 .0143508 -0.86 0.390 .9598552 1.016117

sp75\_706\_c\_4lag | .9143901 .0861055 -0.95 0.342 .7602848 1.099732

sp75\_806\_c\_4lag | .8326082 .3647627 -0.42 0.676 .352803 1.964939

sp75\_816\_c\_4lag | 1.070661 .047696 1.53 0.125 .9811437 1.168346

sp77\_1106\_c\_4lag | 1.348053 .8246088 0.49 0.625 .4064655 4.470849

sp77\_1606\_c\_4lag | 1.037695 .0205705 1.87 0.062 .9981504 1.078806

sp77\_1906\_c\_4lag | .9704295 .2903571 -0.10 0.920 .5398591 1.744406

sp77\_1916\_c\_4lag | .9012883 .2218 -0.42 0.673 .5564033 1.459949

sp77\_206\_c\_4lag | .9673075 .0721134 -0.45 0.656 .8358088 1.119495

sp77\_216\_c\_4lag | 1.044638 .1178191 0.39 0.699 .8374591 1.303072

sp77\_506\_c\_4lag | .9204243 .0322551 -2.37 0.018 .8593277 .9858647

sp77\_516\_c\_4lag | .9995947 .0189319 -0.02 0.983 .9631691 1.037398

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

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

sp48\_27\_c\_4lag | 1.095506 .1324501 0.75 0.451 .8643738 1.388442

sp48\_7\_c\_4lag | .9803617 .0858175 -0.23 0.821 .8258003 1.163852

sp75\_1403\_7\_c\_4lag | .8251088 .0617528 -2.57 0.010 .712534 .9554696

sp75\_1437\_c\_4lag | 1.048661 .2466681 0.20 0.840 .6613234 1.662863

sp75\_1727\_c\_4lag | 1.168245 1.072094 0.17 0.865 .1933704 7.057941

sp75\_337\_c\_4lag | 1.005936 .0570909 0.10 0.917 .9000384 1.124292

sp75\_507\_c\_4lag | .9696635 .0656254 -0.46 0.649 .8492059 1.107208

sp75\_517\_c\_4lag | .9967666 .005925 -0.54 0.586 .9852212 1.008447

sp75\_607\_c\_4lag | 1.097869 .064797 1.58 0.114 .977939 1.232506

sp75\_807\_c\_4lag | 1.030739 .0147178 2.12 0.034 1.002292 1.059992

sp75\_827\_c\_4lag | 1.15416 .4558692 0.36 0.717 .5321809 2.50307

sp75\_907\_c\_4lag | .9277166 .0976016 -0.71 0.476 .7548551 1.140163

sp77\_1437\_c\_4lag | 1.331751 .4765319 0.80 0.423 .6604546 2.685363

sp77\_207\_c\_4lag | 1.087588 .0566871 1.61 0.107 .9819696 1.204566

sp77\_507\_c\_4lag | .8866419 .1453085 -0.73 0.463 .6430547 1.222499

sp77\_807\_c\_4lag | 1.310441 .1942993 1.82 0.068 .9799628 1.752368

sp48\_28\_c\_4lag | .8766705 .0928074 -1.24 0.214 .7124021 1.078817

sp48\_8\_c\_4lag | .9939747 .1245188 -0.05 0.962 .7775749 1.270599

sp75\_1403\_8\_c\_4lag | .9856936 .0175763 -0.81 0.419 .9518397 1.020752

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

sp75\_1728\_c\_4lag | 2.020917 .8763659 1.62 0.105 .8638271 4.727919

sp75\_208\_c\_4lag | .9925662 .0265212 -0.28 0.780 .9419233 1.045932

sp75\_518\_c\_4lag | 1.007707 .0205277 0.38 0.706 .9682662 1.048755

sp75\_705\_8\_c\_4lag | 1.233826 .5068494 0.51 0.609 .5515499 2.760089

sp75\_808\_c\_4lag | 1.115467 .1381667 0.88 0.378 .87503 1.421969

sp75\_818\_c\_4lag | 1.139316 .3527335 0.42 0.674 .6210283 2.090148

sp77\_1438\_c\_4lag | .3243907 .2410367 -1.52 0.130 .0756115 1.391711

sp77\_208\_c\_4lag | 1.058208 .0293646 2.04 0.041 1.002191 1.117355

sp77\_408\_c\_4lag | 1.177187 .1979371 0.97 0.332 .8466836 1.636704

sp77\_508\_c\_4lag | 1.011796 .1563575 0.08 0.940 .7473994 1.369724

sp77\_704\_8\_c\_4lag | .9527593 .2458446 -0.19 0.851 .5745713 1.579874

sp77\_808\_c\_4lag | 1.195184 .4930498 0.43 0.666 .5324611 2.682757

sp75\_1403\_9\_c\_4lag | .9972942 .1022505 -0.03 0.979 .8157392 1.219257

sp75\_1729\_c\_4lag | .8421053 .1898598 -0.76 0.446 .5413221 1.310017

sp75\_1909\_c\_4lag | 1.001269 .0112918 0.11 0.910 .9793802 1.023647

sp75\_519\_c\_4lag | 1.05631 .614302 0.09 0.925 .3378867 3.302262

sp75\_809\_c\_4lag | 1.044796 .0544062 0.84 0.400 .9434232 1.157062

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

sp77\_309\_c\_4lag | 1.69675 .7954543 1.13 0.259 .676964 4.252753

sp77\_409\_c\_4lag | .7003448 .2778259 -0.90 0.369 .321841 1.523991

sp77\_509\_c\_4lag | .8968618 .0699732 -1.40 0.163 .7696879 1.045048

sp77\_704\_9\_c\_4lag | .4986645 .2105377 -1.65 0.099 .2179859 1.140745

sp77\_809\_c\_4lag | .9440074 .0930669 -0.58 0.559 .7781405 1.14523

sp72\_610\_c\_4lag | 1.560752 .5980691 1.16 0.245 .7364778 3.307564

sp72\_620\_c\_4lag | .8816093 .3148316 -0.35 0.724 .437828 1.775206

sp72\_630\_c\_4lag | 1.017354 .0127468 1.37 0.170 .9926751 1.042647

sp75\_100\_c\_4lag | 1.221697 .2428077 1.01 0.314 .8275423 1.803585

sp75\_1101\_20\_c\_4lag | .843019 .1941809 -0.74 0.458 .5367495 1.324046

sp75\_1400\_c\_4lag | .9424995 .0785736 -0.71 0.477 .8004216 1.109797

sp75\_1403\_10\_c\_4lag | 1.010679 .026269 0.41 0.683 .9604817 1.063499

sp75\_150\_c\_4lag | 1.437474 .2891874 1.80 0.071 .9690747 2.132272

sp75\_160\_c\_4lag | .7411509 .2112436 -1.05 0.293 .4239321 1.295737

sp75\_1712\_10\_c\_4lag | .9035093 .1362444 -0.67 0.501 .6723199 1.214198

sp75\_1720\_c\_4lag | 1.017297 .0503131 0.35 0.729 .9233135 1.120846

sp75\_1730\_c\_4lag | .8804934 .0850594 -1.32 0.188 .7286121 1.064035

sp75\_1910\_c\_4lag | 1.026462 .0174771 1.53 0.125 .9927731 1.061295

sp75\_320\_c\_4lag | .9542725 .0289216 -1.54 0.122 .899238 1.012675

sp75\_340\_c\_4lag | 1.021983 .0194852 1.14 0.254 .9844972 1.060896

sp75\_520\_c\_4lag | 1.101518 .0505844 2.11 0.035 1.006705 1.20526

sp75\_600\_c\_4lag | 1.50388 .959766 0.64 0.523 .4305091 5.253445

sp75\_700\_c\_4lag | .9943793 .0500418 -0.11 0.911 .900981 1.09746

sp75\_800\_c\_4lag | .9209812 .1199245 -0.63 0.527 .7135306 1.188746

sp75\_810\_c\_4lag | .9994518 .0460377 -0.01 0.991 .9131729 1.093883

sp75\_820\_c\_4lag | .7636075 .2236654 -0.92 0.357 .4300787 1.35579

sp75\_900\_c\_4lag | .9749403 .0314691 -0.79 0.432 .9151725 1.038611

sp77\_1710\_c\_4lag | 1.005133 .037414 0.14 0.891 .9344134 1.081204

sp77\_200\_c\_4lag | .9951803 .0178755 -0.27 0.788 .9607546 1.03084

sp77\_210\_c\_4lag | .9487955 .1153761 -0.43 0.666 .7475913 1.204151

sp77\_400\_c\_4lag | 1.004786 .0170107 0.28 0.778 .9719931 1.038686

sp77\_410\_c\_4lag | 1.012941 .0209285 0.62 0.534 .9727417 1.054802

sp77\_500\_c\_4lag | 1.403239 .2840152 1.67 0.094 .9437325 2.086482

sp77\_510\_c\_4lag | .5819851 .3872402 -0.81 0.416 .1579577 2.144287

sp77\_600\_c\_4lag | 1.467352 .2594874 2.17 0.030 1.037546 2.075206

sp77\_700\_c\_4lag | .9603639 .1579509 -0.25 0.806 .6957269 1.325662

sp77\_810\_c\_4lag | .790471 .1815501 -1.02 0.306 .5039502 1.239893

sp77\_900\_c\_4lag | .6096272 .0943189 -3.20 0.001 .4501632 .8255789

mine\_time | .9982317 .0024133 -0.73 0.464 .9935129 1.002973

onsite\_insp\_hours | 1.00068 .0002453 2.77 0.006 1.0002 1.001161

|

state |

AL | 2.18784 .6132956 2.79 0.005 1.26301 3.789871

AR | 2.435555 .2849081 7.61 0.000 1.936536 3.063166

CO | .8827722 .2157968 -0.51 0.610 .5467255 1.425371

IL | 1.553122 .2222131 3.08 0.002 1.173329 2.05585

IN | 1.111854 .2394755 0.49 0.623 .7289748 1.695832

MD | 1.29976 .3991583 0.85 0.393 .7119636 2.37284

MT | .8665865 .1613443 -0.77 0.442 .6016336 1.248222

NM | 1.506817 .197891 3.12 0.002 1.164855 1.949168

OH | 1.019329 .2724017 0.07 0.943 .6037291 1.721021

OK | .9651043 .4050209 -0.08 0.933 .4239888 2.196818

PA | 1.345602 .1588757 2.51 0.012 1.067615 1.69597

TN | 1.744123 .2995283 3.24 0.001 1.245648 2.442074

UT | .7000322 .1534245 -1.63 0.104 .4555774 1.075657

VA | .7566937 .0636705 -3.31 0.001 .6416489 .8923655

WV | 1.281155 .0913315 3.48 0.001 1.114091 1.47327

WY | 2.914455 .6298456 4.95 0.000 1.90811 4.451551

|

time |

2000.75 | 2.122246 .4508806 3.54 0.000 1.399439 3.218379

2001 | 2.39802 .4906889 4.27 0.000 1.60575 3.581194

2001.25 | 2.182411 .4490323 3.79 0.000 1.458147 3.266418

2001.5 | 2.648489 .5090239 5.07 0.000 1.817198 3.86006

2001.75 | 2.97586 .6002999 5.41 0.000 2.004036 4.418955

2002 | 2.411505 .4878683 4.35 0.000 1.622119 3.585037

2002.25 | 1.880099 .3776625 3.14 0.002 1.268226 2.787178

2002.5 | 2.513299 .5135492 4.51 0.000 1.683899 3.75122

2002.75 | 2.538463 .515008 4.59 0.000 1.705602 3.778019

2003 | 2.231313 .4680859 3.83 0.000 1.479092 3.366092

2003.25 | 2.267111 .4902112 3.79 0.000 1.483952 3.463584

2003.5 | 2.762148 .5425474 5.17 0.000 1.879542 4.059214

2003.75 | 1.891095 .3866651 3.12 0.002 1.266693 2.823289

2004 | 2.045851 .4180461 3.50 0.000 1.370695 3.053565

2004.25 | 2.167055 .4378779 3.83 0.000 1.458394 3.220066

2004.5 | 1.85237 .3700707 3.09 0.002 1.252197 2.740203

2004.75 | 1.680179 .3476805 2.51 0.012 1.119995 2.52055

2005 | 1.526159 .3199657 2.02 0.044 1.01191 2.301748

2005.25 | 1.859415 .3802714 3.03 0.002 1.245363 2.776238

2005.5 | 1.785031 .3522838 2.94 0.003 1.212431 2.628053

2005.75 | 1.396239 .2880638 1.62 0.106 .9318477 2.092063

2006 | 1.929871 .3939412 3.22 0.001 1.293523 2.879271

2006.25 | 1.449731 .2871917 1.87 0.061 .9832507 2.137521

2006.5 | 1.763418 .3447801 2.90 0.004 1.20207 2.586905

2006.75 | 1.460436 .2893877 1.91 0.056 .9904112 2.153523

2007 | 1.455711 .2819889 1.94 0.053 .9958341 2.127959

2007.25 | 1.324893 .2670125 1.40 0.163 .8925522 1.966653

2007.5 | 1.583955 .3172814 2.30 0.022 1.069643 2.34556

2007.75 | 1.551238 .297277 2.29 0.022 1.065505 2.258403

2008 | 1.009285 .1923632 0.05 0.961 .6946725 1.466382

2008.25 | 1.239348 .2604914 1.02 0.307 .8208887 1.871124

2008.5 | 1.34553 .2619703 1.52 0.127 .918686 1.970695

2009 | .8834884 .172974 -0.63 0.527 .601933 1.296742

2009.25 | .8374637 .1690152 -0.88 0.379 .5638691 1.243809

2009.5 | 1.096529 .2173097 0.46 0.642 .7435828 1.617004

2009.75 | .8303553 .1749498 -0.88 0.378 .5494421 1.254891

2010 | .901425 .1811341 -0.52 0.606 .6079775 1.336508

2010.25 | 1.017494 .2073196 0.09 0.932 .6824887 1.516941

2010.5 | 1.219564 .2559233 0.95 0.344 .8083166 1.840042

2010.75 | .8411372 .1727381 -0.84 0.400 .5624214 1.257974

2011 | 1.100345 .2161806 0.49 0.626 .7486802 1.61719

2011.25 | 1.159738 .2271587 0.76 0.449 .7900134 1.702493

2011.5 | 1.392211 .2728274 1.69 0.091 .9481954 2.044149

2011.75 | .8566674 .1712688 -0.77 0.439 .5789436 1.267618

2012 | 1.200885 .2297874 0.96 0.339 .8253257 1.74734

2012.25 | 1.132049 .2370128 0.59 0.554 .7510216 1.706389

2012.5 | 1.441067 .3035768 1.73 0.083 .9536065 2.177706

2012.75 | .8704455 .188879 -0.64 0.523 .5689031 1.331818

2013 | .8943355 .1873235 -0.53 0.594 .5932143 1.348309

2013.25 | .7126125 .1552041 -1.56 0.120 .4650131 1.092048

2013.5 | .9858379 .2154772 -0.07 0.948 .6423269 1.513056

2013.75 | .9992289 .2237616 -0.00 0.997 .6442461 1.549809

2014 | .6618559 .1425278 -1.92 0.055 .4339712 1.009406

2014.25 | .8160059 .1847393 -0.90 0.369 .5235834 1.271747

2014.5 | .9770252 .2088149 -0.11 0.913 .6426619 1.485351

2014.75 | .9407013 .207691 -0.28 0.782 .6102682 1.450049

2015 | .8838533 .2014909 -0.54 0.588 .56537 1.381744

2015.25 | .8911914 .2094793 -0.49 0.624 .5622008 1.412702

2015.5 | 1.326442 .299913 1.25 0.212 .8515867 2.066083

2015.75 | .6243417 .159587 -1.84 0.065 .3783102 1.030378

2016 | 1.001488 .240586 0.01 0.995 .6254074 1.603721

|

\_cons | 6.20e-06 1.06e-06 -69.91 0.000 4.43e-06 8.67e-06

lnhours | 1 (offset)

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

(est1 stored)

**. lfit**

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

number of observations = 22384

number of covariate patterns = 22384

Pearson chi2(21990) = 118287.99

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -13343.325

Iteration 1: log likelihood = -10036.079

Iteration 2: log likelihood = -9934.0734

Iteration 3: log likelihood = -9933.0712

Iteration 4: log likelihood = -9933.0705

Logistic regression Number of obs = 22,384

LR chi2(2) = 6820.51

Prob > chi2 = 0.0000

Log likelihood = -9933.0705 Pseudo R2 = 0.2556

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

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

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

\_hat | 1.060052 .0202437 52.36 0.000 1.020375 1.099729

\_hatsq | .055815 .0077717 7.18 0.000 .0405827 .0710472

\_cons | -.0622207 .0220673 -2.82 0.005 -.1054717 -.0189696

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

Note: 0 failures and 2 successes completely determined.

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 3015 1207 | 4222

- | 3328 14834 | 18162

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

Total | 6343 16041 | 22384

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

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

Sensitivity Pr( +| D) 47.53%

Specificity Pr( -|~D) 92.48%

Positive predictive value Pr( D| +) 71.41%

Negative predictive value Pr(~D| -) 81.68%

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

False + rate for true ~D Pr( +|~D) 7.52%

False - rate for true D Pr( -| D) 52.47%

False + rate for classified + Pr(~D| +) 28.59%

False - rate for classified - Pr( D| -) 18.32%

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

Correctly classified 79.74%

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

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

Variable | Obs Mean Std. Dev. Min Max

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

MR\_indicator | 30,289 .24187 .428223 0 1

spbv3\_yhat | 22,384 .283372 .2467035 .0000383 .999992