. // Model SP.B.V.2

**. eststo: logit MR\_indicator `subpart\_count\_lag\_1\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) offset(lnhours) iter(50) or**

note: sp71\_701\_1lag != 0 predicts success perfectly

sp71\_701\_1lag dropped and 1 obs not used

note: sp75\_1003\_1\_1lag != 0 predicts success perfectly

sp75\_1003\_1\_1lag dropped and 9 obs not used

note: sp75\_1401\_1\_1lag != 0 predicts success perfectly

sp75\_1401\_1\_1lag dropped and 2 obs not used

note: sp75\_1403\_11\_1lag != 0 predicts success perfectly

sp75\_1403\_11\_1lag dropped and 3 obs not used

note: sp75\_1431\_1lag != 0 predicts failure perfectly

sp75\_1431\_1lag dropped and 1 obs not used

note: sp75\_510\_1\_1lag != 0 predicts success perfectly

sp75\_510\_1\_1lag dropped and 1 obs not used

note: sp75\_511\_1\_1lag != 0 predicts failure perfectly

sp75\_511\_1\_1lag dropped and 2 obs not used

note: sp75\_702\_1\_1lag != 0 predicts failure perfectly

sp75\_702\_1\_1lag dropped and 2 obs not used

note: sp77\_606\_1\_1lag != 0 predicts success perfectly

sp77\_606\_1\_1lag dropped and 1 obs not used

note: sp77\_801\_1lag != 0 predicts failure perfectly

sp77\_801\_1lag dropped and 3 obs not used

note: sp77\_901\_1\_1lag != 0 predicts success perfectly

sp77\_901\_1\_1lag dropped and 2 obs not used

note: sp75\_1402\_2\_1lag != 0 predicts success perfectly

sp75\_1402\_2\_1lag dropped and 1 obs not used

note: sp75\_702\_1lag != 0 predicts failure perfectly

sp75\_702\_1lag dropped and 2 obs not used

note: sp75\_705\_2\_1lag != 0 predicts success perfectly

sp75\_705\_2\_1lag dropped and 1 obs not used

note: sp75\_803\_2\_1lag != 0 predicts failure perfectly

sp75\_803\_2\_1lag dropped and 3 obs not used

note: sp75\_832\_1lag != 0 predicts failure perfectly

sp75\_832\_1lag dropped and 3 obs not used

note: sp77\_403\_2\_1lag != 0 predicts success perfectly

sp77\_403\_2\_1lag dropped and 1 obs not used

note: sp77\_902\_2\_1lag != 0 predicts success perfectly

sp77\_902\_2\_1lag dropped and 1 obs not used

note: sp47\_43\_1lag != 0 predicts success perfectly

sp47\_43\_1lag dropped and 1 obs not used

note: sp75\_1403\_3\_1lag != 0 predicts success perfectly

sp75\_1403\_3\_1lag dropped and 4 obs not used

note: sp75\_705\_3\_1lag != 0 predicts success perfectly

sp75\_705\_3\_1lag dropped and 1 obs not used

note: sp48\_24\_1lag != 0 predicts failure perfectly

sp48\_24\_1lag dropped and 1 obs not used

note: sp48\_4\_1lag != 0 predicts failure perfectly

sp48\_4\_1lag dropped and 3 obs not used

note: sp75\_1403\_4\_1lag != 0 predicts success perfectly

sp75\_1403\_4\_1lag dropped and 7 obs not used

note: sp75\_703\_4\_1lag != 0 predicts failure perfectly

sp75\_703\_4\_1lag dropped and 3 obs not used

note: sp77\_104\_1lag != 0 predicts failure perfectly

sp77\_104\_1lag dropped and 2 obs not used

note: sp77\_314\_1lag != 0 predicts success perfectly

sp77\_314\_1lag dropped and 2 obs not used

note: sp77\_804\_1lag != 0 predicts failure perfectly

sp77\_804\_1lag dropped and 3 obs not used

note: sp75\_155\_1lag != 0 predicts success perfectly

sp75\_155\_1lag dropped and 3 obs not used

note: sp77\_305\_1lag != 0 predicts success perfectly

sp77\_305\_1lag dropped and 2 obs not used

note: sp77\_315\_1lag != 0 predicts success perfectly

sp77\_315\_1lag dropped and 1 obs not used

note: sp77\_606\_1lag != 0 predicts failure perfectly

sp77\_606\_1lag dropped and 2 obs not used

note: sp77\_906\_1lag != 0 predicts success perfectly

sp77\_906\_1lag dropped and 1 obs not used

note: sp75\_1727\_1lag != 0 predicts failure perfectly

sp75\_1727\_1lag dropped and 2 obs not used

note: sp75\_1438\_1lag != 0 predicts failure perfectly

sp75\_1438\_1lag dropped and 1 obs not used

note: sp75\_819\_1lag != 0 predicts success perfectly

sp75\_819\_1lag dropped and 1 obs not used

note: sp77\_309\_1lag != 0 predicts success perfectly

sp77\_309\_1lag dropped and 1 obs not used

note: sp77\_801\_1\_1lag omitted because of collinearity

note: sp75\_834\_1lag omitted because of collinearity

Iteration 0: log pseudolikelihood = -12156.389

Iteration 1: log pseudolikelihood = -11401.171

Iteration 2: log pseudolikelihood = -11387.108

Iteration 3: log pseudolikelihood = -11386.899

Iteration 4: log pseudolikelihood = -11386.896

Iteration 5: log pseudolikelihood = -11386.896

Logistic regression Number of obs = 26,030

Wald chi2(368) = .

Log pseudolikelihood = -11386.896 Prob > chi2 = .

(Std. Err. adjusted for 1,475 clusters in mineid)

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| Robust

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

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

sp47\_41\_1lag | .8396722 .0975901 -1.50 0.133 .6686205 1.054484

sp48\_11\_1lag | 1.097973 .1743782 0.59 0.556 .8042761 1.498918

sp71\_701\_1lag | 1 (omitted)

sp75\_1001\_1\_1lag | .563043 .3237525 -1.00 0.318 .1824301 1.737747

sp75\_1001\_1lag | .9662675 1.04707 -0.03 0.975 .1155354 8.08127

sp75\_1003\_1\_1lag | 1 (omitted)

sp75\_1400\_1\_1lag | 2.531618 2.252591 1.04 0.297 .442602 14.48048

sp75\_1401\_1\_1lag | 1 (omitted)

sp75\_1401\_1lag | 2.597777 2.466037 1.01 0.315 .4041725 16.69694

sp75\_1403\_11\_1lag | 1 (omitted)

sp75\_1404\_1\_1lag | .065306 .0507231 -3.51 0.000 .0142504 .2992816

sp75\_1405\_1\_1lag | 5.381153 7.398336 1.22 0.221 .3635731 79.64508

sp75\_1431\_1lag | 1 (omitted)

sp75\_151\_1lag | .4805198 .4730036 -0.74 0.457 .069795 3.308251

sp75\_1721\_1lag | .60895 .6316392 -0.48 0.633 .0797379 4.650488

sp75\_1731\_1lag | .9909971 .0129319 -0.69 0.488 .9659723 1.01667

sp75\_1911\_1lag | 1.012606 .037848 0.34 0.737 .9410775 1.089572

sp75\_211\_1lag | 1.020446 .0529593 0.39 0.697 .9217517 1.129707

sp75\_341\_1lag | .8221104 .7569919 -0.21 0.832 .1352544 4.996994

sp75\_506\_1\_1lag | 1.230159 .2597706 0.98 0.327 .813232 1.860836

sp75\_510\_1\_1lag | 1 (omitted)

sp75\_511\_1\_1lag | 1 (omitted)

sp75\_511\_1lag | .8517907 .0942214 -1.45 0.147 .6857672 1.058008

sp75\_512\_1\_1lag | 1.468654 .811307 0.70 0.487 .4973965 4.336469

sp75\_513\_1\_1lag | .9499734 .3263482 -0.15 0.881 .484501 1.862637

sp75\_516\_1\_1lag | 1.264536 .6582057 0.45 0.652 .4559014 3.50745

sp75\_517\_1\_1lag | 1.452729 .6714479 0.81 0.419 .5871666 3.594247

sp75\_518\_1\_1lag | .9761008 .0508248 -0.46 0.642 .8814005 1.080976

sp75\_523\_1\_1lag | .9067998 .0689586 -1.29 0.198 .7812334 1.052548

sp75\_600\_1\_1lag | .9813228 .4927611 -0.04 0.970 .3667666 2.625633

sp75\_601\_1\_1lag | 1.01205 .0328012 0.37 0.712 .9497606 1.078426

sp75\_601\_1lag | .9602783 .0495083 -0.79 0.432 .8679853 1.062385

sp75\_700\_1\_1lag | .663383 .2572808 -1.06 0.290 .3101999 1.418689

sp75\_701\_1\_1lag | .9145192 .1096585 -0.75 0.456 .7229807 1.156802

sp75\_701\_1lag | 1.098014 .0382404 2.68 0.007 1.025565 1.175581

sp75\_702\_1\_1lag | 1 (omitted)

sp75\_703\_1\_1lag | .326683 .2812095 -1.30 0.194 .0604519 1.765399

sp75\_705\_1\_1lag | .9537034 .4648374 -0.10 0.923 .3668897 2.479083

sp75\_801\_1lag | .5635088 .3183642 -1.02 0.310 .1862084 1.705305

sp75\_811\_1lag | 1.149491 .1370209 1.17 0.242 .9099995 1.452011

sp75\_821\_1lag | 1.284623 .2364922 1.36 0.174 .8955172 1.842796

sp75\_831\_1lag | 1.208846 1.290048 0.18 0.859 .1492767 9.789267

sp75\_901\_1lag | .8325921 .2163686 -0.71 0.481 .5002966 1.385597

sp75\_902\_1\_1lag | .339843 .1826855 -2.01 0.045 .1184971 .9746507

sp77\_1111\_1lag | 1.199617 .4517322 0.48 0.629 .5734708 2.509425

sp77\_401\_1lag | .8638637 .160312 -0.79 0.430 .6004586 1.242818

sp77\_403\_1\_1lag | .7724542 .187812 -1.06 0.288 .4796388 1.244031

sp77\_411\_1lag | .1974343 .1899793 -1.69 0.092 .0299476 1.301617

sp77\_501\_1lag | 1.834984 .537752 2.07 0.038 1.033197 3.258979

sp77\_502\_1\_1lag | 24.34539 20.3454 3.82 0.000 4.732268 125.2461

sp77\_503\_1\_1lag | 1.000532 .5278869 0.00 0.999 .355739 2.81404

sp77\_506\_1\_1lag | .8349522 .0768774 -1.96 0.050 .6970888 1.000081

sp77\_508\_1\_1lag | .7287164 .2077327 -1.11 0.267 .4167825 1.274112

sp77\_511\_1lag | .2918569 .1496036 -2.40 0.016 .1068687 .7970568

sp77\_601\_1lag | .9553739 .6609182 -0.07 0.947 .2462184 3.707031

sp77\_606\_1\_1lag | 1 (omitted)

sp77\_700\_1\_1lag | 1.375468 .6955509 0.63 0.528 .5105193 3.705858

sp77\_701\_1\_1lag | .9890003 .3223053 -0.03 0.973 .5221537 1.873245

sp77\_701\_1lag | .9171921 .0719363 -1.10 0.270 .7865018 1.069599

sp77\_704\_1\_1lag | .9894622 .7989824 -0.01 0.990 .2032643 4.816563

sp77\_800\_1\_1lag | 1.32091 .576739 0.64 0.524 .5613319 3.108329

sp77\_801\_1\_1lag | 1 (omitted)

sp77\_801\_1lag | 1 (omitted)

sp77\_807\_1\_1lag | 1.225409 .7163815 0.35 0.728 .3896401 3.853884

sp77\_900\_1\_1lag | 4.707903 2.520009 2.89 0.004 1.648934 13.44163

sp77\_901\_1\_1lag | 1 (omitted)

sp77\_901\_1lag | .7237362 .3418094 -0.68 0.494 .2867946 1.826373

sp47\_42\_1lag | .4994072 .1643692 -2.11 0.035 .2619992 .9519402

sp75\_1100\_2\_1lag | 1.058603 .0217037 2.78 0.005 1.016908 1.102008

sp75\_1102\_1lag | .8979089 .1007083 -0.96 0.337 .7207134 1.11867

sp75\_1106\_2\_1lag | 1.049589 .1196895 0.42 0.671 .8393686 1.312459

sp75\_1400\_2\_1lag | .7774222 .3491694 -0.56 0.575 .3223669 1.874836

sp75\_1402\_2\_1lag | 1 (omitted)

sp75\_1432\_1lag | 1.324561 .6689971 0.56 0.578 .492215 3.564421

sp75\_1600\_2\_1lag | .9441676 .0629748 -0.86 0.389 .8284666 1.076027

sp75\_1912\_1lag | .9104034 .2341822 -0.36 0.715 .5498955 1.507258

sp75\_202\_1lag | 1.000841 .0090642 0.09 0.926 .9832318 1.018765

sp75\_212\_1lag | .7297677 .0769884 -2.99 0.003 .5934516 .8973956

sp75\_312\_1lag | 1.049643 .0642457 0.79 0.429 .9309836 1.183426

sp75\_342\_1lag | .9949905 .0225614 -0.22 0.825 .9517391 1.040207

sp75\_352\_1lag | .7704901 .1020734 -1.97 0.049 .5942936 .9989253

sp75\_382\_1lag | 1.263314 .2395043 1.23 0.218 .8712387 1.831832

sp75\_512\_2\_1lag | .9869809 .0363361 -0.36 0.722 .9182721 1.060831

sp75\_512\_1lag | 1.016408 .0126514 1.31 0.191 .9919116 1.041509

sp75\_516\_2\_1lag | 1.054376 .0879961 0.63 0.526 .8952743 1.241753

sp75\_523\_2\_1lag | 1.062501 .0699211 0.92 0.357 .9339286 1.208775

sp75\_601\_2\_1lag | .5335894 .400224 -0.84 0.402 .1226748 2.320915

sp75\_602\_1lag | 1.154488 .1061682 1.56 0.118 .9640769 1.382506

sp75\_701\_2\_1lag | .7517167 .1544361 -1.39 0.165 .5025502 1.124421

sp75\_702\_1lag | 1 (omitted)

sp75\_703\_2\_1lag | .7072915 .2041234 -1.20 0.230 .4017379 1.245243

sp75\_705\_2\_1lag | 1 (omitted)

sp75\_800\_2\_1lag | .6300857 .5939246 -0.49 0.624 .0993229 3.997146

sp75\_802\_1lag | .355935 .1281286 -2.87 0.004 .175775 .7207492

sp75\_803\_2\_1lag | 1 (omitted)

sp75\_812\_1lag | .6133809 .2358207 -1.27 0.204 .2887201 1.303118

sp75\_832\_1lag | 1 (omitted)

sp75\_900\_2\_1lag | .5008288 .2592851 -1.34 0.182 .1815566 1.38155

sp75\_902\_2\_1lag | 1.106944 .2098721 0.54 0.592 .7633811 1.605129

sp75\_902\_1lag | 1.012179 .0551695 0.22 0.824 .9096244 1.126297

sp77\_1112\_1lag | .7288911 .1830152 -1.26 0.208 .4455914 1.192308

sp77\_1432\_1lag | 21.00135 16.2356 3.94 0.000 4.615356 95.56286

sp77\_1802\_1lag | 2.583717 2.372685 1.03 0.301 .4271372 15.62868

sp77\_202\_1lag | .8626142 .037797 -3.37 0.001 .7916252 .9399691

sp77\_402\_1lag | .9823014 .1216879 -0.14 0.885 .7705442 1.252253

sp77\_403\_2\_1lag | 1 (omitted)

sp77\_412\_1lag | 1.638965 .4947433 1.64 0.102 .9070336 2.96153

sp77\_502\_2\_1lag | 1.190331 .1888113 1.10 0.272 .8722667 1.624374

sp77\_502\_1lag | .9984785 .0323175 -0.05 0.962 .9371045 1.063872

sp77\_512\_1lag | .9327482 .0595815 -1.09 0.276 .8229849 1.057151

sp77\_602\_1lag | 1.516627 .8420574 0.75 0.453 .5108305 4.502778

sp77\_701\_2\_1lag | 1.115526 .2353015 0.52 0.604 .7377901 1.686655

sp77\_702\_1lag | .8313053 .7359894 -0.21 0.835 .1466075 4.713733

sp77\_800\_2\_1lag | 1.062369 .2529979 0.25 0.799 .6661404 1.694278

sp77\_802\_1lag | .4867361 .3048436 -1.15 0.250 .1426214 1.661125

sp77\_807\_2\_1lag | .6742352 .3129387 -0.85 0.396 .2714787 1.674508

sp77\_900\_2\_1lag | 1.176497 .3057114 0.63 0.532 .7069801 1.957828

sp77\_902\_2\_1lag | 1 (omitted)

sp77\_902\_1lag | 1.543574 .5163157 1.30 0.194 .8013199 2.97337

sp47\_43\_1lag | 1 (omitted)

sp72\_503\_1lag | .7640865 .1461715 -1.41 0.160 .525177 1.111679

sp75\_1106\_3\_1lag | 1.069049 .0470613 1.52 0.129 .9806778 1.165384

sp75\_1400\_3\_1lag | 1.155973 .1665065 1.01 0.314 .8716467 1.533045

sp75\_1403\_3\_1lag | 1 (omitted)

sp75\_1433\_1lag | .9700907 .2058309 -0.14 0.886 .6400398 1.47034

sp75\_153\_1lag | 1.341989 .9095833 0.43 0.664 .3554802 5.066204

sp75\_1903\_1lag | 1.120062 .1685618 0.75 0.451 .8339534 1.504326

sp75\_1913\_1lag | .9600515 .1931927 -0.20 0.839 .6471514 1.42424

sp75\_503\_1lag | 1.006952 .0096527 0.72 0.470 .9882098 1.02605

sp75\_513\_1lag | .9793146 .1533918 -0.13 0.894 .7204386 1.331213

sp75\_523\_1lag | .869372 .0568155 -2.14 0.032 .7648524 .9881746

sp75\_601\_3\_1lag | 2.074717 1.368474 1.11 0.269 .5695212 7.558014

sp75\_603\_1lag | .8414381 .1180533 -1.23 0.218 .6391446 1.107759

sp75\_701\_3\_1lag | 1.146133 .2178618 0.72 0.473 .7896509 1.663547

sp75\_703\_3\_1lag | 1.508523 .2272224 2.73 0.006 1.122894 2.026585

sp75\_703\_1lag | 1.025965 .0844133 0.31 0.755 .8731688 1.205499

sp75\_705\_3\_1lag | 1 (omitted)

sp75\_800\_3\_1lag | 1.053934 .2747848 0.20 0.840 .6322456 1.756876

sp75\_803\_1lag | .9821644 .2099297 -0.08 0.933 .6460212 1.493212

sp75\_900\_3\_1lag | 1.387597 .2296421 1.98 0.048 1.003212 1.919261

sp75\_903\_1lag | 1.081571 .124775 0.68 0.497 .8626934 1.355981

sp77\_103\_1lag | .6904882 .3763598 -0.68 0.497 .2372452 2.009625

sp77\_1103\_1lag | 1.005523 .0661755 0.08 0.933 .8838384 1.143962

sp77\_1403\_1lag | .7830071 .2635747 -0.73 0.467 .4047953 1.514593

sp77\_1433\_1lag | 1.640084 .9919943 0.82 0.413 .5012132 5.366732

sp77\_203\_1lag | 1.54726 .8810008 0.77 0.443 .5068668 4.723158

sp77\_403\_1lag | 1.796926 .9871984 1.07 0.286 .6122033 5.274299

sp77\_413\_1lag | 1.06374 .5056597 0.13 0.897 .4189946 2.700616

sp77\_503\_1lag | 1.502522 .4022231 1.52 0.128 .8891101 2.539139

sp77\_513\_1lag | .8151733 .0700511 -2.38 0.017 .6888153 .9647106

sp77\_603\_1lag | 2.907588 1.612687 1.92 0.054 .9804281 8.62283

sp77\_701\_3\_1lag | 1.237355 1.886616 0.14 0.889 .0623237 24.56605

sp77\_703\_1lag | 2.07208 1.785867 0.85 0.398 .3826309 11.22104

sp77\_803\_1lag | 1.488793 1.059746 0.56 0.576 .368923 6.00804

sp77\_807\_3\_1lag | 2.605812 2.354204 1.06 0.289 .4435377 15.30931

sp77\_902\_3\_1lag | 1.506104 .9679701 0.64 0.524 .4273554 5.307873

sp77\_903\_1lag | .5313167 .3018761 -1.11 0.266 .1744735 1.617995

sp47\_44\_1lag | .9227319 .1689612 -0.44 0.661 .6444843 1.321109

sp48\_24\_1lag | 1 (omitted)

sp48\_4\_1lag | 1 (omitted)

sp75\_1103\_4\_1lag | 1.059109 .0385513 1.58 0.115 .9861819 1.137428

sp75\_1104\_1lag | 1.049531 .1213219 0.42 0.676 .8367572 1.316409

sp75\_1106\_4\_1lag | .9782712 .2586092 -0.08 0.934 .582695 1.642394

sp75\_1107\_14\_1lag | .8379203 .6803748 -0.22 0.828 .1706254 4.114922

sp75\_1400\_4\_1lag | 1.132506 .3156984 0.45 0.655 .6557811 1.95579

sp75\_1403\_4\_1lag | 1 (omitted)

sp75\_1404\_1lag | .7004515 .5797676 -0.43 0.667 .1383037 3.547499

sp75\_1434\_1lag | 1.36844 .4347221 0.99 0.323 .7342066 2.550545

sp75\_1914\_1lag | .9869189 .0202709 -0.64 0.521 .9479778 1.02746

sp75\_214\_1lag | 1.023062 .095058 0.25 0.806 .8527313 1.227415

sp75\_324\_1lag | .9143905 .2121051 -0.39 0.700 .5803422 1.440719

sp75\_344\_1lag | .9015518 .2148425 -0.43 0.664 .5651279 1.438251

sp75\_504\_1lag | 1.270968 .2496356 1.22 0.222 .8648623 1.867765

sp75\_514\_1lag | .9854675 .0513296 -0.28 0.779 .8898283 1.091386

sp75\_604\_1lag | 1.044196 .0185264 2.44 0.015 1.008509 1.081146

sp75\_701\_4\_1lag | 2.646097 1.245008 2.07 0.039 1.052227 6.654297

sp75\_703\_4\_1lag | 1 (omitted)

sp75\_704\_1lag | 1.525384 .543458 1.19 0.236 .7587806 3.066493

sp75\_800\_4\_1lag | .9004735 .176645 -0.53 0.593 .613044 1.322666

sp75\_804\_1lag | 1.011389 .1537066 0.07 0.941 .7508548 1.362323

sp75\_814\_1lag | .6671044 .2592386 -1.04 0.298 .3114688 1.428805

sp75\_834\_1lag | 1 (omitted)

sp75\_900\_4\_1lag | 1.040147 .1217043 0.34 0.737 .8269865 1.308251

sp75\_902\_4\_1lag | .8546553 .1050601 -1.28 0.201 .6716693 1.087493

sp75\_904\_1lag | 1.007928 .029173 0.27 0.785 .9523414 1.066759

sp77\_104\_1lag | 1 (omitted)

sp77\_1104\_1lag | .998538 .0253342 -0.06 0.954 .9500983 1.049447

sp77\_1434\_1lag | 1.067177 .5620312 0.12 0.902 .3801448 2.995875

sp77\_204\_1lag | .9817608 .0971411 -0.19 0.852 .8086915 1.191869

sp77\_314\_1lag | 1 (omitted)

sp77\_404\_1lag | .9904563 .0267476 -0.36 0.723 .9393952 1.044293

sp77\_504\_1lag | 1.047189 .1264048 0.38 0.702 .8265658 1.326699

sp77\_514\_1lag | .9514032 .2777217 -0.17 0.864 .5368989 1.685919

sp77\_604\_1lag | 1.739058 .4505679 2.14 0.033 1.046594 2.889678

sp77\_701\_4\_1lag | 1.28465 .5830051 0.55 0.581 .5278237 3.126659

sp77\_704\_1lag | 1.469974 .9324901 0.61 0.544 .4239774 5.096551

sp77\_804\_1lag | 1 (omitted)

sp77\_904\_1lag | 1.018232 .0832784 0.22 0.825 .8674193 1.195265

sp48\_25\_1lag | 1.044528 .3375476 0.13 0.893 .5544314 1.967854

sp48\_5\_1lag | .9652233 .2746218 -0.12 0.901 .5526461 1.68581

sp75\_1106\_5\_1lag | 1.031509 .1277829 0.25 0.802 .8091449 1.314981

sp75\_1403\_5\_1lag | 1.007992 .0345529 0.23 0.816 .9424948 1.078042

sp75\_1405\_1lag | .9188191 .0507762 -1.53 0.126 .8244996 1.023928

sp75\_1435\_1lag | 1.690205 1.689428 0.53 0.600 .2383026 11.98808

sp75\_155\_1lag | 1 (omitted)

sp75\_1725\_1lag | 1.000253 .0154814 0.02 0.987 .970366 1.031061

sp75\_1915\_1lag | 1.250066 .3153629 0.88 0.376 .7624203 2.049612

sp75\_505\_1lag | 1.161619 .4757977 0.37 0.715 .5204901 2.592476

sp75\_515\_1lag | .92855 .0256632 -2.68 0.007 .8795892 .9802362

sp75\_605\_1lag | .9978145 .0504223 -0.04 0.965 .903725 1.1017

sp75\_701\_5\_1lag | 1.084505 .2872804 0.31 0.759 .6452856 1.822682

sp75\_705\_1lag | .9312622 .6852901 -0.10 0.923 .2201386 3.939559

sp75\_805\_1lag | 2.206272 1.086616 1.61 0.108 .8402951 5.792768

sp75\_815\_1lag | 2.941591 1.291256 2.46 0.014 1.244327 6.953927

sp75\_825\_1lag | 1.699809 .5156343 1.75 0.080 .9379709 3.080426

sp75\_905\_1lag | 1.288806 .7549355 0.43 0.665 .4088695 4.062472

sp77\_1605\_1lag | .9801709 .0301795 -0.65 0.515 .9227695 1.041143

sp77\_1915\_1lag | .965685 .351856 -0.10 0.924 .4728164 1.972325

sp77\_205\_1lag | 1.03153 .0379228 0.84 0.398 .9598177 1.108601

sp77\_305\_1lag | 1 (omitted)

sp77\_315\_1lag | 1 (omitted)

sp77\_405\_1lag | .9574163 .370216 -0.11 0.910 .4487002 2.042892

sp77\_505\_1lag | 1.007247 .0615075 0.12 0.906 .8936297 1.135311

sp77\_515\_1lag | .7046108 .676755 -0.36 0.715 .1072503 4.629135

sp77\_605\_1lag | .196426 .2061815 -1.55 0.121 .0251028 1.537007

sp77\_705\_1lag | 1.071882 .1888439 0.39 0.694 .758896 1.513949

sp77\_805\_1lag | 1.560924 1.320727 0.53 0.599 .2972793 8.195946

sp48\_26\_1lag | .9789526 .1863067 -0.11 0.911 .6741671 1.421529

sp48\_6\_1lag | .7959572 .106921 -1.70 0.089 .6117131 1.035694

sp75\_1106\_6\_1lag | 350.0527 4517.777 0.45 0.650 3.62e-09 3.39e+13

sp75\_1106\_1lag | 1.188 .3323468 0.62 0.538 .6865784 2.05562

sp75\_1403\_6\_1lag | .9542079 .0291354 -1.54 0.125 .8987787 1.013056

sp75\_1436\_1lag | .1111384 .1806155 -1.35 0.176 .0045977 2.686495

sp75\_156\_1lag | .6500894 .535963 -0.52 0.601 .1291826 3.271463

sp75\_1712\_6\_1lag | 1.062084 .110888 0.58 0.564 .865542 1.303255

sp75\_1726\_1lag | 1.242168 .3147476 0.86 0.392 .7559587 2.041092

sp75\_506\_1lag | 1.045456 .1890274 0.25 0.806 .7335015 1.490082

sp75\_516\_1lag | 1.00625 .0407717 0.15 0.878 .9294293 1.089419

sp75\_606\_1lag | 1.003244 .0267016 0.12 0.903 .9522517 1.056967

sp75\_706\_1lag | .7897612 .1474058 -1.26 0.206 .5478004 1.138595

sp75\_806\_1lag | 1.397876 .8328719 0.56 0.574 .4348224 4.493918

sp75\_816\_1lag | 1.063982 .0942289 0.70 0.484 .8944372 1.265666

sp77\_1106\_1lag | 1.878156 3.333196 0.36 0.722 .0579548 60.8659

sp77\_1606\_1lag | 1.005195 .0413555 0.13 0.900 .9273218 1.089608

sp77\_1906\_1lag | 1.189998 .6831988 0.30 0.762 .3862393 3.666368

sp77\_1916\_1lag | 1.443698 1.318717 0.40 0.688 .24097 8.649468

sp77\_206\_1lag | .9836547 .1524481 -0.11 0.915 .7259761 1.332794

sp77\_216\_1lag | 1.095788 .216099 0.46 0.643 .7444959 1.612839

sp77\_506\_1lag | .9687642 .1039426 -0.30 0.767 .7850355 1.195493

sp77\_516\_1lag | 1.029535 .0464976 0.64 0.519 .9423189 1.124824

sp77\_606\_1lag | 1 (omitted)

sp77\_906\_1lag | 1 (omitted)

sp48\_27\_1lag | 1.632331 .3216055 2.49 0.013 1.109437 2.401673

sp48\_7\_1lag | 1.143543 .1538522 1.00 0.319 .8784803 1.488583

sp75\_1403\_7\_1lag | .8154459 .1153807 -1.44 0.149 .6179528 1.076056

sp75\_1437\_1lag | 1.829884 1.433284 0.77 0.440 .3941913 8.494543

sp75\_1727\_1lag | 1 (omitted)

sp75\_337\_1lag | .787778 .083769 -2.24 0.025 .6395738 .9703247

sp75\_507\_1lag | 1.292285 .1564296 2.12 0.034 1.019346 1.638307

sp75\_517\_1lag | 1.007534 .0132861 0.57 0.569 .9818275 1.033914

sp75\_607\_1lag | 1.165693 .1436423 1.24 0.213 .9155774 1.484135

sp75\_807\_1lag | 1.016088 .0269142 0.60 0.547 .9646832 1.070232

sp75\_827\_1lag | 1.1905 .8201569 0.25 0.800 .308547 4.593434

sp75\_907\_1lag | .8388303 .1776215 -0.83 0.407 .5539021 1.270326

sp77\_1437\_1lag | 2.984139 2.726344 1.20 0.231 .4979105 17.88491

sp77\_207\_1lag | 1.015309 .0878492 0.18 0.861 .8569357 1.202951

sp77\_507\_1lag | .7090799 .1923279 -1.27 0.205 .4166955 1.206623

sp77\_807\_1lag | .9562784 .2996892 -0.14 0.887 .5173986 1.767435

sp48\_28\_1lag | 1.195093 .1846476 1.15 0.249 .88285 1.617769

sp48\_8\_1lag | .9927539 .1982419 -0.04 0.971 .6712219 1.468308

sp75\_1403\_8\_1lag | .9279227 .038322 -1.81 0.070 .8557724 1.006156

sp75\_1438\_1lag | 1 (omitted)

sp75\_1728\_1lag | 2.164831 1.361505 1.23 0.219 .6310827 7.426113

sp75\_208\_1lag | 1.023883 .0474819 0.51 0.611 .9349245 1.121306

sp75\_518\_1lag | 1.036151 .0357461 1.03 0.303 .968406 1.108635

sp75\_705\_8\_1lag | 1.721206 .7409985 1.26 0.207 .7402545 4.00207

sp75\_808\_1lag | 1.266732 .3084865 0.97 0.332 .7859453 2.041632

sp75\_818\_1lag | 1.556291 .7247133 0.95 0.342 .6247615 3.876745

sp77\_1438\_1lag | .076474 .1162354 -1.69 0.091 .0038882 1.504123

sp77\_208\_1lag | 1.158194 .0574088 2.96 0.003 1.050968 1.27636

sp77\_408\_1lag | .8713721 .233415 -0.51 0.607 .5154562 1.473043

sp77\_508\_1lag | 1.507352 .4282458 1.44 0.149 .8637424 2.630541

sp77\_704\_8\_1lag | 1.434678 .6486003 0.80 0.425 .5914757 3.479944

sp77\_808\_1lag | 3.21405 2.058988 1.82 0.068 .9157037 11.28107

sp75\_1403\_9\_1lag | 1.343922 .3704175 1.07 0.284 .7830009 2.306672

sp75\_1729\_1lag | 1.326811 .5095563 0.74 0.462 .6250414 2.816499

sp75\_1909\_1lag | 1.031635 .0213795 1.50 0.133 .9905715 1.074401

sp75\_519\_1lag | .880709 1.206964 -0.09 0.926 .0600215 12.92285

sp75\_809\_1lag | 1.014949 .0846939 0.18 0.859 .8618155 1.195292

sp75\_819\_1lag | 1 (omitted)

sp77\_309\_1lag | 1 (omitted)

sp77\_409\_1lag | .7786031 .3501046 -0.56 0.578 .3225277 1.879599

sp77\_509\_1lag | .7711975 .0907853 -2.21 0.027 .6122972 .9713347

sp77\_704\_9\_1lag | .2284797 .2342734 -1.44 0.150 .030624 1.704643

sp77\_809\_1lag | .9110479 .1828044 -0.46 0.642 .614816 1.350011

sp72\_610\_1lag | 1.937641 3.159923 0.41 0.685 .0792731 47.36099

sp72\_620\_1lag | .3855625 .3769246 -0.97 0.330 .0567496 2.619549

sp72\_630\_1lag | 1.049493 .0267949 1.89 0.058 .9982688 1.103347

sp75\_100\_1lag | .6897516 .2740421 -0.93 0.350 .3165962 1.502726

sp75\_1101\_20\_1lag | 2.002511 1.167118 1.19 0.233 .6389565 6.275934

sp75\_1400\_1lag | .8509069 .1353981 -1.01 0.310 .6229268 1.162324

sp75\_1403\_10\_1lag | 1.057179 .0735938 0.80 0.424 .9223447 1.211723

sp75\_150\_1lag | 1.85282 .9026249 1.27 0.206 .7131148 4.814009

sp75\_160\_1lag | .8976059 .3902646 -0.25 0.804 .382822 2.104624

sp75\_1712\_10\_1lag | .9134858 .2016365 -0.41 0.682 .5926707 1.407959

sp75\_1720\_1lag | .9467085 .0912515 -0.57 0.570 .7837373 1.143568

sp75\_1730\_1lag | .8935024 .1709013 -0.59 0.556 .6141654 1.299888

sp75\_1910\_1lag | 1.022101 .0328566 0.68 0.496 .9596901 1.088571

sp75\_320\_1lag | .9288642 .0538384 -1.27 0.203 .8291159 1.040613

sp75\_340\_1lag | 1.022026 .03762 0.59 0.554 .9508895 1.098485

sp75\_520\_1lag | 1.058372 .0977223 0.61 0.539 .8831703 1.268329

sp75\_600\_1lag | 1.644924 1.958083 0.42 0.676 .1595487 16.95893

sp75\_700\_1lag | .9191768 .0966025 -0.80 0.423 .748067 1.129425

sp75\_800\_1lag | 1.269584 .2631902 1.15 0.250 .8456755 1.905984

sp75\_810\_1lag | .9185378 .0919643 -0.85 0.396 .7548741 1.117685

sp75\_820\_1lag | .5336758 .2516954 -1.33 0.183 .2117525 1.345013

sp75\_900\_1lag | .9984322 .058713 -0.03 0.979 .8897408 1.120401

sp77\_1710\_1lag | .9730711 .0695415 -0.38 0.702 .8458874 1.119378

sp77\_200\_1lag | 1.178186 .0801347 2.41 0.016 1.031144 1.346197

sp77\_210\_1lag | 1.030778 .2720293 0.11 0.909 .614508 1.729032

sp77\_400\_1lag | 1.009909 .0357685 0.28 0.781 .9421818 1.082504

sp77\_410\_1lag | 1.034997 .0413709 0.86 0.389 .9570063 1.119343

sp77\_500\_1lag | 1.734337 1.547159 0.62 0.537 .3018545 9.964812

sp77\_510\_1lag | .1223626 .050182 -5.12 0.000 .0547726 .2733592

sp77\_600\_1lag | 1.471121 .5234558 1.08 0.278 .7324415 2.954771

sp77\_700\_1lag | 1.085542 .3974741 0.22 0.823 .5296349 2.22493

sp77\_800\_1lag | 1.077854 .5620852 0.14 0.886 .3878559 2.995361

sp77\_810\_1lag | .9226104 .5113411 -0.15 0.884 .3113539 2.733898

sp77\_900\_1lag | .695444 .2601848 -0.97 0.332 .3340444 1.447838

mine\_time | .9986238 .0022675 -0.61 0.544 .9941894 1.003078

onsite\_insp\_hours | 1.000956 .0002409 3.97 0.000 1.000484 1.001428

|

state |

AL | 2.166395 .509716 3.29 0.001 1.366043 3.435666

AR | 2.420268 .1903324 11.24 0.000 2.074551 2.823598

CO | .9004168 .1871233 -0.50 0.614 .5991673 1.353129

IL | 1.510663 .2010564 3.10 0.002 1.163804 1.960899

IN | 1.020114 .2088508 0.10 0.923 .6829359 1.523764

MD | 1.161639 .3272952 0.53 0.595 .6687173 2.0179

MT | .8122038 .089556 -1.89 0.059 .6543483 1.00814

NM | 1.495334 .1250214 4.81 0.000 1.269321 1.761592

OH | .9782422 .2424976 -0.09 0.929 .6017845 1.5902

OK | 1.028785 .300233 0.10 0.923 .5806529 1.822775

PA | 1.340313 .1403287 2.80 0.005 1.091658 1.645605

TN | 1.626395 .2594329 3.05 0.002 1.189728 2.223334

UT | .7037021 .1407658 -1.76 0.079 .4754643 1.041501

VA | .7494976 .0593904 -3.64 0.000 .6416835 .8754265

WV | 1.287604 .0801491 4.06 0.000 1.139719 1.454678

WY | 2.770982 .3244189 8.71 0.000 2.202812 3.4857

|

time |

2000.25 | .9115221 .1482564 -0.57 0.569 .6627074 1.253755

2000.5 | 1.264964 .2017039 1.47 0.140 .9254449 1.729043

2000.75 | .7718442 .1250315 -1.60 0.110 .5618793 1.06027

2001 | .8517568 .1363904 -1.00 0.316 .6223205 1.165781

2001.25 | .7904891 .1334273 -1.39 0.164 .5678334 1.100451

2001.75 | .9577662 .1552735 -0.27 0.790 .6970474 1.316003

2002 | .825524 .1283934 -1.23 0.218 .6086151 1.119739

2002.25 | .6597772 .1129557 -2.43 0.015 .4717037 .9228377

2002.5 | .9089848 .1547028 -0.56 0.575 .6511606 1.268893

2002.75 | .9267152 .1582844 -0.45 0.656 .6630705 1.295188

2003 | .7630168 .1331901 -1.55 0.121 .5419394 1.07428

2003.25 | .7683785 .1323835 -1.53 0.126 .5481788 1.077031

2003.5 | .9813767 .1668714 -0.11 0.912 .7032326 1.369533

2003.75 | .6349597 .1106447 -2.61 0.009 .4512533 .8934536

2004 | .7364278 .1273419 -1.77 0.077 .5247371 1.033519

2004.25 | .7745796 .1271687 -1.56 0.120 .5614585 1.068598

2004.5 | .6524986 .1141391 -2.44 0.015 .4631078 .919342

2004.75 | .5850991 .1090041 -2.88 0.004 .4061163 .8429629

2005 | .5531945 .0971328 -3.37 0.001 .3921204 .7804342

2005.25 | .6965091 .114152 -2.21 0.027 .505152 .9603545

2005.5 | .6075945 .1034317 -2.93 0.003 .4352237 .848233

2005.75 | .4894501 .0827909 -4.22 0.000 .3513395 .6818517

2006 | .7335415 .1263014 -1.80 0.072 .5234372 1.027981

2006.25 | .5680171 .1000503 -3.21 0.001 .4021898 .8022168

2006.5 | .6268393 .1079822 -2.71 0.007 .4472232 .8785937

2006.75 | .5875671 .1060581 -2.95 0.003 .412489 .8369559

2007 | .5399566 .0923302 -3.60 0.000 .3861954 .7549367

2007.25 | .5197215 .0938397 -3.62 0.000 .3648209 .7403918

2007.5 | .6057111 .1047036 -2.90 0.004 .4316446 .8499722

2007.75 | .5864957 .1024139 -3.06 0.002 .4165125 .8258509

2008 | .4408801 .0777507 -4.64 0.000 .3120386 .6229206

2008.25 | .4742591 .0849647 -4.16 0.000 .3338265 .6737682

2008.5 | .5044263 .0887998 -3.89 0.000 .3572326 .7122694

2008.75 | .3632287 .0639323 -5.75 0.000 .2572523 .5128627

2009 | .3728761 .0685155 -5.37 0.000 .2601102 .5345296

2009.25 | .3502691 .0635979 -5.78 0.000 .2453862 .4999808

2009.5 | .4273011 .0774101 -4.69 0.000 .2995918 .60945

2009.75 | .3152635 .0581295 -6.26 0.000 .2196472 .4525031

2010 | .3376268 .0633036 -5.79 0.000 .2337977 .4875662

2010.25 | .3496824 .0654058 -5.62 0.000 .2423606 .5045282

2010.5 | .448395 .083513 -4.31 0.000 .3112616 .6459455

2010.75 | .3527006 .0662767 -5.55 0.000 .2440366 .5097501

2011 | .4457338 .0818838 -4.40 0.000 .3109604 .6389193

2011.25 | .4457003 .0803184 -4.48 0.000 .3130764 .6345057

2011.5 | .5130987 .0895134 -3.82 0.000 .3645049 .7222681

2011.75 | .3373072 .0621664 -5.90 0.000 .2350431 .4840652

2012 | .4454952 .0808053 -4.46 0.000 .3122119 .6356771

2012.25 | .4368807 .0823283 -4.39 0.000 .3019657 .6320742

2012.5 | .497065 .0907211 -3.83 0.000 .347582 .7108354

2012.75 | .3241512 .0633993 -5.76 0.000 .2209351 .4755876

2013 | .3077694 .0579622 -6.26 0.000 .212774 .4451764

2013.25 | .266726 .0535115 -6.59 0.000 .180009 .3952177

2013.5 | .3465515 .0697226 -5.27 0.000 .2336226 .5140683

2013.75 | .3528622 .0734144 -5.01 0.000 .234698 .5305191

2014 | .2312779 .0489856 -6.91 0.000 .1527026 .3502854

2014.25 | .2995 .0640292 -5.64 0.000 .1969796 .4553785

2014.5 | .3353557 .0692977 -5.29 0.000 .2236731 .5028025

2014.75 | .3534141 .0725995 -5.06 0.000 .2362802 .5286162

2015 | .3210486 .0704847 -5.18 0.000 .2087823 .4936829

2015.25 | .3170182 .0720667 -5.05 0.000 .2030408 .4949772

2015.5 | .4658149 .1010885 -3.52 0.000 .3044322 .7127484

2015.75 | .2075931 .0495051 -6.59 0.000 .1300845 .3312839

2016 | .3565153 .0823278 -4.47 0.000 .2267335 .560584

|

\_cons | .0000174 2.22e-06 -86.11 0.000 .0000136 .0000224

lnhours | 1 (offset)

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(est1 stored)

**. lfit**

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

number of observations = 26030

number of covariate patterns = 26028

Pearson chi2(25656) = 164066.94

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -15130.143

Iteration 1: log likelihood = -11460.118

Iteration 2: log likelihood = -11345.977

Iteration 3: log likelihood = -11342.648

Iteration 4: log likelihood = -11342.637

Iteration 5: log likelihood = -11342.637

Logistic regression Number of obs = 26,030

LR chi2(2) = 7575.01

Prob > chi2 = 0.0000

Log likelihood = -11342.637 Pseudo R2 = 0.2503

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

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

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

\_hat | 1.097383 .0198346 55.33 0.000 1.058508 1.136258

\_hatsq | .0694759 .0069048 10.06 0.000 .0559426 .0830091

\_cons | -.0593403 .0210343 -2.82 0.005 -.1005667 -.0181139

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

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 3120 1229 | 4349

- | 3856 17825 | 21681

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

Total | 6976 19054 | 26030

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

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

Sensitivity Pr( +| D) 44.72%

Specificity Pr( -|~D) 93.55%

Positive predictive value Pr( D| +) 71.74%

Negative predictive value Pr(~D| -) 82.21%

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

False + rate for true ~D Pr( +|~D) 6.45%

False - rate for true D Pr( -| D) 55.28%

False + rate for classified + Pr(~D| +) 28.26%

False - rate for classified - Pr( D| -) 17.79%

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

Correctly classified 80.46%

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

**. summ MR\_indicator spbv2\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

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

spbv2\_yhat | 26,030 .2679985 .2377466 .0000299 .9996597