. // Model SP.B.V.1

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

note: sp71\_701 != 0 predicts success perfectly

sp71\_701 dropped and 1 obs not used

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

sp75\_1003\_1 dropped and 9 obs not used

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

sp75\_1400\_1 dropped and 7 obs not used

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

sp75\_1401\_1 dropped and 2 obs not used

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

sp75\_1403\_11 dropped and 3 obs not used

note: sp75\_1405\_1 != 0 predicts success perfectly

sp75\_1405\_1 dropped and 5 obs not used

note: sp75\_1431 != 0 predicts success perfectly

sp75\_1431 dropped and 1 obs not used

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

sp75\_510\_1 dropped and 1 obs not used

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

sp75\_702\_1 dropped and 2 obs not used

note: sp75\_703\_1 != 0 predicts success perfectly

sp75\_703\_1 dropped and 4 obs not used

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

sp77\_606\_1 dropped and 1 obs not used

note: sp77\_801\_1 != 0 predicts failure perfectly

sp77\_801\_1 dropped and 1 obs not used

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

sp77\_901\_1 dropped and 1 obs not used

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

sp75\_1402\_2 dropped and 1 obs not used

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

sp75\_705\_2 dropped and 1 obs not used

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

sp75\_803\_2 dropped and 3 obs not used

note: sp77\_1432 != 0 predicts success perfectly

sp77\_1432 dropped and 6 obs not used

note: sp77\_1802 != 0 predicts success perfectly

sp77\_1802 dropped and 3 obs not used

note: sp77\_702 != 0 predicts success perfectly

sp77\_702 dropped and 1 obs not used

note: sp47\_43 != 0 predicts success perfectly

sp47\_43 dropped and 1 obs not used

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

sp75\_1403\_3 dropped and 3 obs not used

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

sp75\_705\_3 dropped and 1 obs not used

note: sp77\_103 != 0 predicts success perfectly

sp77\_103 dropped and 2 obs not used

note: sp77\_413 != 0 predicts success perfectly

sp77\_413 dropped and 1 obs not used

note: sp77\_703 != 0 predicts success perfectly

sp77\_703 dropped and 2 obs not used

note: sp48\_24 != 0 predicts failure perfectly

sp48\_24 dropped and 1 obs not used

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

sp75\_1403\_4 dropped and 6 obs not used

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

sp75\_703\_4 dropped and 2 obs not used

note: sp75\_814 != 0 predicts success perfectly

sp75\_814 dropped and 19 obs not used

note: sp75\_834 != 0 predicts failure perfectly

sp75\_834 dropped and 1 obs not used

note: sp77\_104 != 0 predicts success perfectly

sp77\_104 dropped and 2 obs not used

note: sp77\_1434 != 0 predicts success perfectly

sp77\_1434 dropped and 18 obs not used

note: sp77\_314 != 0 predicts success perfectly

sp77\_314 dropped and 2 obs not used

note: sp77\_804 != 0 predicts success perfectly

sp77\_804 dropped and 2 obs not used

note: sp77\_801 != 0 predicts failure perfectly

sp77\_801 dropped and 1 obs not used

note: sp75\_155 != 0 predicts success perfectly

sp75\_155 dropped and 2 obs not used

note: sp77\_305 != 0 predicts success perfectly

sp77\_305 dropped and 2 obs not used

note: sp77\_315 != 0 predicts success perfectly

sp77\_315 dropped and 1 obs not used

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

sp75\_1106\_6 dropped and 1 obs not used

note: sp75\_1436 != 0 predicts success perfectly

sp75\_1436 dropped and 3 obs not used

note: sp75\_156 != 0 predicts success perfectly

sp75\_156 dropped and 5 obs not used

note: sp77\_1906 != 0 predicts success perfectly

sp77\_1906 dropped and 10 obs not used

note: sp77\_1916 != 0 predicts success perfectly

sp77\_1916 dropped and 7 obs not used

note: sp77\_216 != 0 predicts success perfectly

sp77\_216 dropped and 75 obs not used

note: sp77\_606 != 0 predicts success perfectly

sp77\_606 dropped and 1 obs not used

note: sp75\_1438 != 0 predicts success perfectly

sp75\_1438 dropped and 1 obs not used

note: sp75\_1728 != 0 predicts success perfectly

sp75\_1728 dropped and 7 obs not used

note: sp77\_1438 != 0 predicts success perfectly

sp77\_1438 dropped and 1 obs not used

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

sp75\_1403\_9 dropped and 27 obs not used

note: sp75\_519 != 0 predicts success perfectly

sp75\_519 dropped and 3 obs not used

note: sp75\_819 != 0 predicts success perfectly

sp75\_819 dropped and 1 obs not used

note: sp72\_610 != 0 predicts success perfectly

sp72\_610 dropped and 3 obs not used

note: sp72\_620 != 0 predicts success perfectly

sp72\_620 dropped and 6 obs not used

note: 17.state != 0 predicts success perfectly

17.state dropped and 11 obs not used

note: sp77\_403\_2 omitted because of collinearity

note: sp77\_902\_2 omitted because of collinearity

note: sp77\_906 omitted because of collinearity

note: sp75\_1727 omitted because of collinearity

note: sp77\_309 omitted because of collinearity

Iteration 0: log pseudolikelihood = -3031.5163

Iteration 1: log pseudolikelihood = -2730.5438

Iteration 2: log pseudolikelihood = -2702.3684

Iteration 3: log pseudolikelihood = -2696.2766

Iteration 4: log pseudolikelihood = -2695.4142

Iteration 5: log pseudolikelihood = -2694.0467

Iteration 6: log pseudolikelihood = -2691.8662

Iteration 7: log pseudolikelihood = -2691.4212

Iteration 8: log pseudolikelihood = -2691.4105

Iteration 9: log pseudolikelihood = -2691.4105

Logistic regression Number of obs = 5,969

Wald chi2(300) = .

Log pseudolikelihood = -2691.4105 Prob > chi2 = .

(Std. Err. adjusted for 1,235 clusters in mineid)

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| Robust

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

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

sp47\_41 | .7239507 .118136 -1.98 0.048 .5257846 .9968047

sp48\_11 | 1.206231 .2614212 0.87 0.387 .7887748 1.844623

sp71\_701 | 1 (omitted)

sp75\_1001 | .2283987 .2022758 -1.67 0.095 .0402575 1.295806

sp75\_1001\_1 | 2.418489 3.156365 0.68 0.499 .1873454 31.2209

sp75\_1003\_1 | 1 (omitted)

sp75\_1400\_1 | 1 (omitted)

sp75\_1401 | .9198534 .5385943 -0.14 0.887 .2919587 2.898116

sp75\_1401\_1 | 1 (omitted)

sp75\_1403\_11 | 1 (omitted)

sp75\_1404\_1 | 3.203165 2.477829 1.50 0.132 .7032775 14.58921

sp75\_1405\_1 | 1 (omitted)

sp75\_1431 | 1 (omitted)

sp75\_151 | .9314066 .6925056 -0.10 0.924 .2169035 3.999559

sp75\_1721 | .2692414 .25994 -1.36 0.174 .0405832 1.786229

sp75\_1731 | .9692556 .0128563 -2.35 0.019 .9443825 .9947838

sp75\_1911 | .981769 .0530566 -0.34 0.734 .8830978 1.091465

sp75\_211 | .9526128 .0545781 -0.85 0.397 .8514292 1.065821

sp75\_341 | .0612179 .0831922 -2.06 0.040 .0042671 .8782546

sp75\_506\_1 | 1.295059 .3784132 0.88 0.376 .7304161 2.296194

sp75\_510\_1 | 1 (omitted)

sp75\_511 | .8235023 .1236585 -1.29 0.196 .6135457 1.105306

sp75\_511\_1 | .761213 .9779151 -0.21 0.832 .061374 9.441214

sp75\_512\_1 | 3.432435 2.386067 1.77 0.076 .878794 13.40657

sp75\_513\_1 | 3.198257 1.653891 2.25 0.025 1.160748 8.812291

sp75\_516\_1 | 1.052279 .4996248 0.11 0.915 .4149335 2.668601

sp75\_517\_1 | 2.018267 1.110775 1.28 0.202 .6862949 5.935354

sp75\_518\_1 | 1.15239 .0872155 1.87 0.061 .9935244 1.336658

sp75\_523\_1 | 1.154438 .0924144 1.79 0.073 .9868032 1.350549

sp75\_600\_1 | 3.797209 2.295134 2.21 0.027 1.161384 12.41519

sp75\_601 | .9729756 .0553029 -0.48 0.630 .8704034 1.087635

sp75\_601\_1 | .9681881 .0381756 -0.82 0.412 .8961834 1.045978

sp75\_700\_1 | .8797087 .4025101 -0.28 0.779 .3588163 2.156778

sp75\_701 | 1.043169 .0491827 0.90 0.370 .951092 1.144159

sp75\_701\_1 | .8953557 .140919 -0.70 0.482 .6576971 1.218892

sp75\_702\_1 | 1 (omitted)

sp75\_703\_1 | 1 (omitted)

sp75\_705\_1 | 5.963224 9.444304 1.13 0.260 .2675369 132.9164

sp75\_801 | 1.255802 .8114519 0.35 0.724 .3539212 4.455901

sp75\_811 | 1.023816 .1912986 0.13 0.900 .7098658 1.476617

sp75\_821 | 3.030401 1.352436 2.48 0.013 1.263624 7.267454

sp75\_831 | .4437389 .562263 -0.64 0.521 .0370312 5.317258

sp75\_901 | .8379907 .2282114 -0.65 0.516 .4913942 1.429053

sp75\_902\_1 | 4.326177 3.746678 1.69 0.091 .7923605 23.62032

sp77\_1111 | .1880613 .1234838 -2.54 0.011 .0519264 .6810999

sp77\_401 | .9694985 .1890691 -0.16 0.874 .6615276 1.420844

sp77\_403\_1 | 1.546605 .7744342 0.87 0.384 .5796364 4.126701

sp77\_411 | .0320912 .0527966 -2.09 0.037 .0012764 .8068409

sp77\_501 | 1.342962 .5004207 0.79 0.429 .6469713 2.787676

sp77\_502\_1 | 1.70116 2.233357 0.40 0.686 .1297929 22.29664

sp77\_503\_1 | .6927895 .5819465 -0.44 0.662 .1335328 3.594303

sp77\_506\_1 | .9038259 .0909484 -1.00 0.315 .7420476 1.100874

sp77\_508\_1 | 1.146968 .383895 0.41 0.682 .5951834 2.210304

sp77\_511 | .375926 .2073767 -1.77 0.076 .1275098 1.10831

sp77\_601 | .2427792 .1882668 -1.83 0.068 .0531049 1.109912

sp77\_606\_1 | 1 (omitted)

sp77\_700\_1 | .9764858 .6860462 -0.03 0.973 .2463997 3.869828

sp77\_701 | .9343799 .0800872 -0.79 0.428 .7898882 1.105303

sp77\_701\_1 | .5755217 .2273903 -1.40 0.162 .2653074 1.248458

sp77\_704\_1 | 1.886941 1.215857 0.99 0.324 .5336833 6.671648

sp77\_800\_1 | 1.091921 .4691196 0.20 0.838 .4704259 2.534493

sp77\_801 | 1 (omitted)

sp77\_801\_1 | 1 (omitted)

sp77\_807\_1 | .3279061 .2069638 -1.77 0.077 .0951696 1.129797

sp77\_900\_1 | .9325878 .7055792 -0.09 0.927 .211683 4.108597

sp77\_901 | 1.781809 .8833323 1.17 0.244 .6743384 4.708088

sp77\_901\_1 | 1 (omitted)

sp47\_42 | .4807736 .178775 -1.97 0.049 .231965 .9964575

sp75\_1100\_2 | .9884639 .024479 -0.47 0.639 .9416318 1.037625

sp75\_1102 | 1.014495 .1155608 0.13 0.899 .8115024 1.268265

sp75\_1106\_2 | .8845505 .1506005 -0.72 0.471 .6335779 1.234938

sp75\_1400\_2 | .5591146 .4276176 -0.76 0.447 .1248797 2.503283

sp75\_1402\_2 | 1 (omitted)

sp75\_1432 | 1.41593 1.189039 0.41 0.679 .2730473 7.342524

sp75\_1600\_2 | .8994902 .0816663 -1.17 0.243 .7528603 1.074678

sp75\_1912 | .8881733 .4162002 -0.25 0.800 .3545051 2.22522

sp75\_202 | 1.021703 .0105941 2.07 0.038 1.001149 1.042679

sp75\_212 | .7289501 .1396737 -1.65 0.099 .5007253 1.061197

sp75\_312 | 1.004447 .060875 0.07 0.942 .8919478 1.131135

sp75\_342 | .9778967 .0232305 -0.94 0.347 .9334094 1.024504

sp75\_352 | 1.150946 .2785835 0.58 0.561 .7161823 1.849635

sp75\_382 | 2.537692 1.613394 1.46 0.143 .7299092 8.822854

sp75\_512 | .9967099 .0144312 -0.23 0.820 .9688229 1.0254

sp75\_512\_2 | 1.186737 .0762692 2.66 0.008 1.046284 1.346045

sp75\_516\_2 | 1.172199 .1266771 1.47 0.142 .9484483 1.448735

sp75\_523\_2 | 1.138361 .0752367 1.96 0.050 1.000051 1.295799

sp75\_601\_2 | 2.725232 2.703384 1.01 0.312 .3899652 19.045

sp75\_602 | .9790763 .115408 -0.18 0.858 .7771086 1.233535

sp75\_701\_2 | 1.015892 .2695172 0.06 0.953 .6039803 1.708725

sp75\_702 | .3396458 .3789274 -0.97 0.333 .0381399 3.024636

sp75\_703\_2 | 4.73244 3.909924 1.88 0.060 .9371855 23.89707

sp75\_705\_2 | 1 (omitted)

sp75\_800\_2 | .1854298 .1443199 -2.17 0.030 .0403357 .8524505

sp75\_802 | .6290469 .2183741 -1.34 0.182 .3185574 1.242162

sp75\_803\_2 | 1 (omitted)

sp75\_812 | .1693245 .100933 -2.98 0.003 .0526411 .5446463

sp75\_832 | .0959451 .1335094 -1.68 0.092 .0062742 1.467187

sp75\_900\_2 | .2169757 .1799403 -1.84 0.065 .0427071 1.102356

sp75\_902 | 1.052154 .0653831 0.82 0.413 .9315018 1.188433

sp75\_902\_2 | 1.02189 .3286734 0.07 0.946 .544039 1.919458

sp77\_1112 | 1.722369 1.500935 0.62 0.533 .3121461 9.503738

sp77\_1432 | 1 (omitted)

sp77\_1802 | 1 (omitted)

sp77\_202 | .7645383 .0611386 -3.36 0.001 .6536276 .8942688

sp77\_402 | 1.10302 .1636628 0.66 0.509 .8246782 1.475306

sp77\_403\_2 | 1 (omitted)

sp77\_412 | 1.794788 .7605326 1.38 0.168 .7822053 4.118183

sp77\_502 | .9843299 .0431282 -0.36 0.718 .9033279 1.072595

sp77\_502\_2 | 1.046322 .2042835 0.23 0.817 .7136369 1.5341

sp77\_512 | 1.016198 .1019086 0.16 0.873 .8348646 1.236916

sp77\_602 | .9321536 .5858242 -0.11 0.911 .2719811 3.194746

sp77\_701\_2 | .7312982 .1848743 -1.24 0.216 .4455622 1.200275

sp77\_702 | 1 (omitted)

sp77\_800\_2 | 1.260628 .3224769 0.91 0.365 .7635618 2.081277

sp77\_802 | .1812163 .1236306 -2.50 0.012 .0475866 .6900961

sp77\_807\_2 | 1.703786 1.664689 0.55 0.586 .2510419 11.56336

sp77\_900\_2 | .9852556 .2741511 -0.05 0.957 .5710825 1.699805

sp77\_902 | 1.030177 .6167528 0.05 0.960 .3186463 3.330539

sp77\_902\_2 | 1 (omitted)

sp47\_43 | 1 (omitted)

sp72\_503 | .61426 .1598653 -1.87 0.061 .3688258 1.023018

sp75\_1106\_3 | 1.039218 .0683372 0.59 0.559 .9135518 1.182171

sp75\_1400\_3 | 1.217434 .4307391 0.56 0.578 .6085307 2.435612

sp75\_1403\_3 | 1 (omitted)

sp75\_1433 | .9099819 .437449 -0.20 0.844 .3546834 2.334665

sp75\_153 | 3.403774 4.044371 1.03 0.303 .3315594 34.94299

sp75\_1903 | 3.552487 3.011583 1.50 0.135 .6744279 18.7124

sp75\_1913 | 1.097851 .2293316 0.45 0.655 .7290117 1.653301

sp75\_503 | 1.027903 .0105896 2.67 0.008 1.007356 1.04887

sp75\_513 | .9033377 .1630878 -0.56 0.573 .6341252 1.286842

sp75\_523 | .8746477 .0599024 -1.96 0.051 .7647801 1.000299

sp75\_601\_3 | 1.815481 1.098742 0.99 0.324 .5544191 5.944908

sp75\_603 | 1.362728 .2940881 1.43 0.152 .8927152 2.080203

sp75\_701\_3 | .9113823 .3855958 -0.22 0.826 .3977101 2.088501

sp75\_703 | 1.342244 .1328641 2.97 0.003 1.105539 1.62963

sp75\_703\_3 | 1.099751 .140981 0.74 0.458 .8554127 1.413881

sp75\_705\_3 | 1 (omitted)

sp75\_800\_3 | 1.013574 .2872836 0.05 0.962 .5815598 1.766513

sp75\_803 | .8116515 .1836746 -0.92 0.356 .5208887 1.26472

sp75\_900\_3 | .833271 .1784967 -0.85 0.395 .5475814 1.268014

sp75\_903 | 1.306671 .1549705 2.26 0.024 1.035653 1.648611

sp77\_103 | 1 (omitted)

sp77\_1103 | 1.040435 .0927743 0.44 0.657 .8736038 1.239126

sp77\_1403 | 2.074047 1.309491 1.16 0.248 .6017214 7.14894

sp77\_1433 | .4193965 .2523656 -1.44 0.149 .1289517 1.364026

sp77\_203 | .1579646 .1819532 -1.60 0.109 .0165232 1.510169

sp77\_403 | 4.361107 3.029669 2.12 0.034 1.117546 17.01876

sp77\_413 | 1 (omitted)

sp77\_503 | .7030197 .2088498 -1.19 0.236 .3927323 1.258457

sp77\_513 | .9591312 .0934302 -0.43 0.668 .7924308 1.1609

sp77\_603 | 14.84097 16.10139 2.49 0.013 1.769983 124.4386

sp77\_701\_3 | 3.778557 4.096772 1.23 0.220 .4512734 31.63824

sp77\_703 | 1 (omitted)

sp77\_803 | 1.597275 1.784881 0.42 0.675 .1787316 14.27441

sp77\_807\_3 | 2.301757 2.1131 0.91 0.364 .3807363 13.91536

sp77\_902\_3 | 1.612027 .7978332 0.96 0.335 .6110702 4.252591

sp77\_903 | .5598179 .297755 -1.09 0.275 .1973836 1.587751

sp47\_44 | 1.050725 .3021319 0.17 0.863 .598039 1.846073

sp48\_24 | 1 (omitted)

sp48\_4 | .7918925 .9442488 -0.20 0.845 .0765064 8.196621

sp75\_1103\_4 | 1.018869 .0400833 0.48 0.635 .94326 1.100539

sp75\_1104 | .8979959 .1232236 -0.78 0.433 .6862335 1.175105

sp75\_1106\_4 | .8484172 .3763211 -0.37 0.711 .355675 2.02379

sp75\_1107\_14 | .6755931 .932736 -0.28 0.776 .0451337 10.11276

sp75\_1400\_4 | 1.437049 .9320544 0.56 0.576 .40308 5.123323

sp75\_1403\_4 | 1 (omitted)

sp75\_1404 | .9450567 .7863216 -0.07 0.946 .1850236 4.827125

sp75\_1434 | .7146088 .4483962 -0.54 0.592 .2089124 2.444401

sp75\_1914 | 1.048746 .0519372 0.96 0.337 .9517357 1.155646

sp75\_214 | 1.146665 .1342121 1.17 0.242 .9116057 1.442334

sp75\_324 | .9713927 .3179515 -0.09 0.929 .5114271 1.845041

sp75\_344 | .4709893 .1730673 -2.05 0.040 .2292097 .9678077

sp75\_504 | .8063112 .1511471 -1.15 0.251 .5583939 1.1643

sp75\_514 | 1.115349 .0661517 1.84 0.066 .9929462 1.25284

sp75\_604 | 1.053988 .0263781 2.10 0.036 1.003535 1.106977

sp75\_701\_4 | 1.342601 .8998481 0.44 0.660 .360951 4.993966

sp75\_703\_4 | 1 (omitted)

sp75\_704 | 1.734115 .8105486 1.18 0.239 .6937687 4.334519

sp75\_800\_4 | .8399665 .1646211 -0.89 0.374 .5720565 1.233346

sp75\_804 | 1.036762 .2518868 0.15 0.882 .6439844 1.669103

sp75\_814 | 1 (omitted)

sp75\_834 | 1 (omitted)

sp75\_900\_4 | 1.121311 .1357214 0.95 0.344 .884501 1.421524

sp75\_902\_4 | 1.217547 .2169048 1.10 0.269 .858707 1.72634

sp75\_904 | 1.125516 .043266 3.08 0.002 1.043832 1.213592

sp77\_104 | 1 (omitted)

sp77\_1104 | 1.00956 .0336692 0.29 0.775 .9456805 1.077755

sp77\_1434 | 1 (omitted)

sp77\_204 | .9325065 .1821016 -0.36 0.720 .6359568 1.367339

sp77\_314 | 1 (omitted)

sp77\_404 | 1.016736 .0274579 0.61 0.539 .9643193 1.072003

sp77\_504 | .794803 .1096735 -1.66 0.096 .6064621 1.041634

sp77\_514 | .0049334 .0054015 -4.85 0.000 .000577 .0421814

sp77\_604 | 1.147794 .4636854 0.34 0.733 .5199913 2.533565

sp77\_701\_4 | 1.481736 .7236999 0.81 0.421 .5688952 3.859306

sp77\_704 | .4634406 .2845811 -1.25 0.210 .1390925 1.544132

sp77\_804 | 1 (omitted)

sp77\_904 | .9157418 .0977289 -0.82 0.409 .7429027 1.128793

sp48\_25 | 1.15197 .4020307 0.41 0.685 .5812682 2.282997

sp48\_5 | 1.178459 .3761813 0.51 0.607 .630374 2.203081

sp75\_1106\_5 | 1.193327 .1625207 1.30 0.194 .9137625 1.558424

sp75\_1403\_5 | .9934008 .095706 -0.07 0.945 .8224665 1.199861

sp75\_1405 | .9949629 .1258297 -0.04 0.968 .7765299 1.27484

sp75\_1435 | .1572763 .190027 -1.53 0.126 .0147302 1.679254

sp75\_155 | 1 (omitted)

sp75\_1725 | 1.040905 .0207525 2.01 0.044 1.001015 1.082384

sp75\_1915 | 1.597716 .5098864 1.47 0.142 .8547746 2.986396

sp75\_505 | 1.207676 .5365922 0.42 0.671 .5055293 2.885058

sp75\_515 | .937442 .0330647 -1.83 0.067 .8748257 1.00454

sp75\_605 | .9136344 .0525536 -1.57 0.116 .8162252 1.022668

sp75\_701\_5 | .779408 .467327 -0.42 0.678 .2406529 2.524287

sp75\_705 | 3.790906 3.613762 1.40 0.162 .585217 24.55665

sp75\_805 | 1.33718 .562475 0.69 0.490 .5863247 3.049591

sp75\_815 | 1.265391 .7225901 0.41 0.680 .4131937 3.875214

sp75\_825 | .4274515 .2026157 -1.79 0.073 .1688146 1.08234

sp75\_905 | .2519923 .1700277 -2.04 0.041 .0671511 .9456309

sp77\_1605 | .9957015 .0283788 -0.15 0.880 .9416051 1.052906

sp77\_1915 | .7344827 .2754089 -0.82 0.411 .352214 1.531639

sp77\_205 | 1.068324 .0505905 1.40 0.163 .9736303 1.172226

sp77\_305 | 1 (omitted)

sp77\_315 | 1 (omitted)

sp77\_405 | 1.987328 .864117 1.58 0.114 .8475311 4.659974

sp77\_505 | 1.018112 .0658692 0.28 0.781 .8968608 1.155756

sp77\_515 | 8.695971 16.21607 1.16 0.246 .2249133 336.2181

sp77\_605 | .191519 .2399795 -1.32 0.187 .0164297 2.232518

sp77\_705 | 1.307967 .3375651 1.04 0.298 .7887062 2.169092

sp77\_805 | .9206264 .7834137 -0.10 0.923 .173679 4.879997

sp48\_26 | 1.091618 .1653086 0.58 0.563 .811277 1.468831

sp48\_6 | .7105472 .1174691 -2.07 0.039 .5138905 .9824609

sp75\_1106 | 1.642791 .6837007 1.19 0.233 .7266535 3.713962

sp75\_1106\_6 | 1 (omitted)

sp75\_1403\_6 | .9982125 .0617479 -0.03 0.977 .8842376 1.126878

sp75\_1436 | 1 (omitted)

sp75\_156 | 1 (omitted)

sp75\_1712\_6 | 1.201805 .2226415 0.99 0.321 .8358802 1.727922

sp75\_1726 | 1.267159 .5347604 0.56 0.575 .5541295 2.897685

sp75\_506 | .9266539 .1830853 -0.39 0.700 .6291292 1.364882

sp75\_516 | .8931375 .0461135 -2.19 0.029 .8071793 .9882495

sp75\_606 | .9938859 .041397 -0.15 0.883 .9159728 1.078426

sp75\_706 | .8349319 .1276652 -1.18 0.238 .6187256 1.126689

sp75\_806 | .6428034 .5450294 -0.52 0.602 .121997 3.386938

sp75\_816 | 1.225465 .1547838 1.61 0.107 .956729 1.569687

sp77\_1106 | .9062435 1.286103 -0.07 0.945 .0561378 14.62966

sp77\_1606 | 1.084373 .0463894 1.89 0.058 .9971592 1.179215

sp77\_1906 | 1 (omitted)

sp77\_1916 | 1 (omitted)

sp77\_206 | .9468434 .2584906 -0.20 0.841 .5544955 1.616807

sp77\_216 | 1 (omitted)

sp77\_506 | .8936689 .1142949 -0.88 0.379 .6955256 1.14826

sp77\_516 | 1.043784 .0522566 0.86 0.392 .9462281 1.151399

sp77\_606 | 1 (omitted)

sp77\_906 | 1 (omitted)

sp48\_27 | 1.681624 .4617089 1.89 0.058 .9817974 2.880288

sp48\_7 | 1.182573 .2366311 0.84 0.402 .7989208 1.75046

sp75\_1403\_7 | .6723862 .1876989 -1.42 0.155 .3890478 1.162076

sp75\_1437 | 3.243719 4.150835 0.92 0.358 .2641196 39.83693

sp75\_1727 | 1 (omitted)

sp75\_337 | .93622 .1201178 -0.51 0.607 .7280614 1.203893

sp75\_507 | .9776228 .1661471 -0.13 0.894 .7006636 1.364059

sp75\_517 | .9793203 .0148324 -1.38 0.168 .9506766 1.008827

sp75\_607 | .9159973 .1258413 -0.64 0.523 .6997689 1.19904

sp75\_807 | 1.045167 .0392915 1.18 0.240 .9709256 1.125085

sp75\_827 | 2.130639 3.330127 0.48 0.628 .099565 45.59456

sp75\_907 | .7278588 .1672707 -1.38 0.167 .4639069 1.141993

sp77\_1437 | 1.870753 2.169325 0.54 0.589 .1927361 18.15807

sp77\_207 | 1.050687 .1249926 0.42 0.678 .8321703 1.326584

sp77\_507 | .6727142 .217509 -1.23 0.220 .3569531 1.267798

sp77\_807 | .6229887 .2126789 -1.39 0.166 .3190751 1.216375

sp48\_28 | .9106476 .1794413 -0.48 0.635 .6189033 1.339917

sp48\_8 | .8519263 .1838333 -0.74 0.458 .5581168 1.300406

sp75\_1403\_8 | .9693102 .0779679 -0.39 0.698 .8279328 1.134829

sp75\_1438 | 1 (omitted)

sp75\_1728 | 1 (omitted)

sp75\_208 | .9502946 .04647 -1.04 0.297 .8634435 1.045882

sp75\_518 | 1.011352 .0489709 0.23 0.816 .9197845 1.112035

sp75\_705\_8 | .7040641 .3586952 -0.69 0.491 .2593915 1.911035

sp75\_808 | 1.528591 .3641736 1.78 0.075 .9582967 2.438275

sp75\_818 | 2.931354 3.779874 0.83 0.404 .2341396 36.69963

sp77\_1438 | 1 (omitted)

sp77\_208 | 1.160886 .0754571 2.30 0.022 1.022025 1.318613

sp77\_408 | .9300295 .4589248 -0.15 0.883 .3535654 2.446379

sp77\_508 | 1.087959 .3455877 0.27 0.791 .5837546 2.027658

sp77\_704\_8 | 2.297162 1.230604 1.55 0.121 .8038917 6.56426

sp77\_808 | 3.441446 3.409546 1.25 0.212 .493662 23.99122

sp75\_1403\_9 | 1 (omitted)

sp75\_1729 | 1.15566 .7646675 0.22 0.827 .3159471 4.227134

sp75\_1909 | 1.064286 .0391389 1.69 0.090 .9902742 1.143829

sp75\_519 | 1 (omitted)

sp75\_809 | 1.116076 .1156425 1.06 0.289 .9109539 1.367386

sp75\_819 | 1 (omitted)

sp77\_309 | 1 (omitted)

sp77\_409 | 1.090114 1.701948 0.06 0.956 .0511126 23.24961

sp77\_509 | .9670151 .1452896 -0.22 0.823 .720351 1.298143

sp77\_704\_9 | .5450868 .6189303 -0.53 0.593 .0588777 5.046384

sp77\_809 | .6339043 .1157549 -2.50 0.013 .4431889 .9066892

sp72\_610 | 1 (omitted)

sp72\_620 | 1 (omitted)

sp72\_630 | 1.047471 .0332577 1.46 0.144 .984274 1.114726

sp75\_100 | 1.316952 .6416441 0.57 0.572 .5068137 3.422091

sp75\_1101\_20 | 2.713713 2.349483 1.15 0.249 .4972897 14.80875

sp75\_1400 | 1.557338 .476462 1.45 0.148 .8549898 2.836645

sp75\_1403\_10 | 1.208075 .1013388 2.25 0.024 1.024923 1.423956

sp75\_150 | .1195572 .1906174 -1.33 0.183 .0052536 2.720812

sp75\_160 | .8912865 .558951 -0.18 0.854 .2607382 3.046702

sp75\_1712\_10 | .7188916 .3476 -0.68 0.495 .278669 1.854548

sp75\_1720 | 1.027821 .109815 0.26 0.797 .8336289 1.267249

sp75\_1730 | 1.559083 .431633 1.60 0.109 .9061781 2.682408

sp75\_1910 | 1.03531 .0587585 0.61 0.541 .9263195 1.157124

sp75\_320 | .8208648 .0540881 -3.00 0.003 .721414 .9340254

sp75\_340 | .9276843 .046408 -1.50 0.133 .8410432 1.023251

sp75\_520 | 1.01325 .0914058 0.15 0.884 .849042 1.209216

sp75\_600 | .6034235 .5533877 -0.55 0.582 .1000005 3.641181

sp75\_700 | 1.0656 .1682223 0.40 0.687 .7820207 1.452012

sp75\_800 | .8222705 .2202958 -0.73 0.465 .4863713 1.39015

sp75\_810 | 1.011145 .1030101 0.11 0.913 .8281281 1.234609

sp75\_820 | 1.187599 1.55656 0.13 0.896 .0909952 15.49963

sp75\_900 | .9787298 .0640599 -0.33 0.743 .8608945 1.112694

sp77\_1710 | .8941378 .077731 -1.29 0.198 .7540603 1.060237

sp77\_200 | 1.048135 .1210223 0.41 0.684 .8358608 1.314319

sp77\_210 | 1.281932 .4168922 0.76 0.445 .677718 2.424828

sp77\_400 | 1.052615 .0454846 1.19 0.235 .9671377 1.145647

sp77\_410 | .9647633 .0427556 -0.81 0.418 .8845001 1.05231

sp77\_500 | 20.90299 21.71506 2.93 0.003 2.728588 160.1322

sp77\_510 | .7939211 .6357123 -0.29 0.773 .165272 3.813779

sp77\_600 | 1.127768 .4885398 0.28 0.781 .4824876 2.636047

sp77\_700 | 1.198534 .3889018 0.56 0.577 .6345292 2.263859

sp77\_800 | .2700085 .1691495 -2.09 0.037 .0790922 .9217671

sp77\_810 | .9618278 .4706097 -0.08 0.937 .3686512 2.509453

sp77\_900 | .5785589 .2266152 -1.40 0.162 .2684981 1.246677

mine\_time | 1.006746 .0149238 0.45 0.650 .9779165 1.036425

onsite\_insp\_hours | 1.000785 .0002252 3.49 0.000 1.000344 1.001227

|

state |

1 | 1.27548 .4565545 0.68 0.497 .6323952 2.572521

2 | 2.769122 .6346302 4.44 0.000 1.767107 4.339317

3 | .6472875 .2950061 -0.95 0.340 .2649451 1.581389

4 | 1.740164 .7119483 1.35 0.176 .7804418 3.880072

5 | .7448323 .2351894 -0.93 0.351 .4011269 1.383042

6 | .6346255 .0672683 -4.29 0.000 .5155761 .7811641

7 | .8364476 .2612926 -0.57 0.568 .4534582 1.542909

8 | 1.610655 .4060109 1.89 0.059 .9827282 2.639805

9 | 2.246503 .7847426 2.32 0.021 1.132837 4.454988

10 | .5487839 .2216573 -1.49 0.137 .2486541 1.211176

11 | .3950753 .1809004 -2.03 0.043 .1610366 .9692485

12 | 1.031332 .1876993 0.17 0.865 .721909 1.47338

13 | 2.084667 .7286768 2.10 0.036 1.050768 4.135867

14 | .7849577 .2730424 -0.70 0.486 .3969733 1.552141

15 | .5394011 .0684732 -4.86 0.000 .4205887 .6917768

17 | 1 (empty)

|

time |

2000 | .9112091 .1326097 -0.64 0.523 .68508 1.211978

2002 | .7154389 .1126725 -2.13 0.033 .5254352 .9741502

2003 | .7145599 .125818 -1.91 0.056 .5060124 1.009058

2004 | .4771369 .0808959 -4.36 0.000 .3422368 .665211

2005 | .459919 .0725757 -4.92 0.000 .3375677 .6266164

2006 | .4858896 .0786521 -4.46 0.000 .3537949 .667304

2007 | .4581484 .0834919 -4.28 0.000 .3205421 .654828

2008 | .3499107 .0639535 -5.75 0.000 .2445583 .5006475

2009 | .171795 .0338468 -8.94 0.000 .1167638 .2527626

2010 | .2677373 .0551339 -6.40 0.000 .1788236 .4008603

2011 | .3430676 .0666345 -5.51 0.000 .2344497 .5020069

2012 | .3148293 .0656508 -5.54 0.000 .2092067 .4737778

2013 | .2419155 .0536074 -6.40 0.000 .1566899 .3734963

2014 | .1735504 .0418301 -7.27 0.000 .1082092 .2783474

2015 | .2496141 .059111 -5.86 0.000 .1569265 .397047

|

\_cons | .0000215 3.01e-06 -76.71 0.000 .0000163 .0000283

lnhours | 1 (offset)

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

Note: 0 failures and 2 successes completely determined.

(est1 stored)

**. lfit**

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

number of observations = 5969

number of covariate patterns = 5954

Pearson chi2(5650) = 5343.09

Prob > chi2 = 0.9983

**. linktest**

Iteration 0: log likelihood = -4124.9707

Iteration 1: log likelihood = -2696.5446

Iteration 2: log likelihood = -2688.3258

Iteration 3: log likelihood = -2686.6998

Iteration 4: log likelihood = -2686.6874

Iteration 5: log likelihood = -2686.6874

Logistic regression Number of obs = 5,969

LR chi2(2) = 2876.57

Prob > chi2 = 0.0000

Log likelihood = -2686.6874 Pseudo R2 = 0.3487

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

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

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

\_hat | 1.090094 .0305806 35.65 0.000 1.030157 1.150031

\_hatsq | -.0150364 .0152284 -0.99 0.323 -.0448835 .0148106

\_cons | .0185599 .0384724 0.48 0.630 -.0568446 .0939644

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

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 2507 660 | 3167

- | 670 2132 | 2802

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

Total | 3177 2792 | 5969

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

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

Sensitivity Pr( +| D) 78.91%

Specificity Pr( -|~D) 76.36%

Positive predictive value Pr( D| +) 79.16%

Negative predictive value Pr(~D| -) 76.09%

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

False + rate for true ~D Pr( +|~D) 23.64%

False - rate for true D Pr( -| D) 21.09%

False + rate for classified + Pr(~D| +) 20.84%

False - rate for classified - Pr( D| -) 23.91%

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

Correctly classified 77.72%

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

**. summ MR\_indicator spbv1\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

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

spbv1\_yhat | 5,969 .53225 .3057323 .0003806 1