. // 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 failure 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\_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 failure perfectly

sp75\_1431 dropped and 1 obs not used

note: sp75\_1721 != 0 predicts failure perfectly

sp75\_1721 dropped and 15 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: 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 failure perfectly

sp77\_901\_1 dropped and 2 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\_403\_2 != 0 predicts success perfectly

sp77\_403\_2 dropped and 1 obs not used

note: sp77\_702 != 0 predicts success perfectly

sp77\_702 dropped and 2 obs not used

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

sp77\_902\_2 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 4 obs not used

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

sp75\_705\_3 dropped and 1 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 7 obs not used

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

sp75\_703\_4 dropped and 4 obs not used

note: sp75\_834 != 0 predicts failure perfectly

sp75\_834 dropped and 1 obs not used

note: sp75\_155 != 0 predicts success perfectly

sp75\_155 dropped and 3 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\_1436 != 0 predicts success perfectly

sp75\_1436 dropped and 3 obs not used

note: sp77\_1106 != 0 predicts failure perfectly

sp77\_1106 dropped and 4 obs not used

note: sp77\_906 != 0 predicts success perfectly

sp77\_906 dropped and 1 obs not used

note: sp75\_1727 != 0 predicts failure perfectly

sp75\_1727 dropped and 2 obs not used

note: sp75\_1438 != 0 predicts failure perfectly

sp75\_1438 dropped and 1 obs not used

note: sp75\_819 != 0 predicts success perfectly

sp75\_819 dropped and 1 obs not used

note: sp77\_309 != 0 predicts success perfectly

sp77\_309 dropped and 1 obs not used

Iteration 0: log pseudolikelihood = -12857.417

Iteration 1: log pseudolikelihood = -11984.066

Iteration 2: log pseudolikelihood = -11964.834

Iteration 3: log pseudolikelihood = -11964.39

Iteration 4: log pseudolikelihood = -11964.382

Iteration 5: log pseudolikelihood = -11964.382

Logistic regression Number of obs = 28,249

Wald chi2(373) = .

Log pseudolikelihood = -11964.382 Prob > chi2 = .

(Std. Err. adjusted for 1,544 clusters in mineid)

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| Robust

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

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

sp47\_41 | 1.108705 .1389111 0.82 0.410 .867297 1.417308

sp48\_11 | 1.178254 .1623849 1.19 0.234 .8993477 1.543654

sp71\_701 | 1 (omitted)

sp75\_1001 | .5684123 .535546 -0.60 0.549 .0896767 3.60286

sp75\_1001\_1 | .768542 .443871 -0.46 0.649 .2477745 2.383848

sp75\_1003\_1 | 1 (omitted)

sp75\_1400\_1 | .6376406 .4265554 -0.67 0.501 .171853 2.365892

sp75\_1401 | .4732509 .2562086 -1.38 0.167 .1637827 1.367461

sp75\_1401\_1 | .1550274 .1626911 -1.78 0.076 .0198211 1.21252

sp75\_1403\_11 | 1 (omitted)

sp75\_1404\_1 | 1.959756 2.441163 0.54 0.589 .1705711 22.51637

sp75\_1405\_1 | 1 (omitted)

sp75\_1431 | 1 (omitted)

sp75\_151 | 15.10588 13.52671 3.03 0.002 2.611733 87.37016

sp75\_1721 | 1 (omitted)

sp75\_1731 | .9693407 .0116616 -2.59 0.010 .9467518 .9924686

sp75\_1911 | 1.013362 .0401134 0.34 0.737 .9377133 1.095113

sp75\_211 | .9485317 .0444644 -1.13 0.260 .8652667 1.039809

sp75\_341 | .7046494 .5395663 -0.46 0.648 .1571044 3.160515

sp75\_506\_1 | 1.376155 .2426082 1.81 0.070 .9741038 1.944148

sp75\_510\_1 | 1 (omitted)

sp75\_511 | 1.13674 .1392906 1.05 0.296 .8940442 1.445317

sp75\_511\_1 | 1.777479 1.656233 0.62 0.537 .2861971 11.03935

sp75\_512\_1 | .9713789 .7943443 -0.04 0.972 .1955777 4.824563

sp75\_513\_1 | 1.616842 .5248673 1.48 0.139 .8557491 3.054843

sp75\_516\_1 | 2.537395 1.241071 1.90 0.057 .9728702 6.617915

sp75\_517\_1 | 1.98967 .8062119 1.70 0.090 .8992391 4.402373

sp75\_518\_1 | 1.002207 .0473586 0.05 0.963 .9135548 1.099463

sp75\_523\_1 | 1.008406 .075406 0.11 0.911 .8709332 1.167578

sp75\_600\_1 | 1.111022 .4985665 0.23 0.815 .4610513 2.677293

sp75\_601 | 1.060386 .0482122 1.29 0.197 .9699798 1.159218

sp75\_601\_1 | .975492 .0293312 -0.83 0.409 .9196651 1.034708

sp75\_700\_1 | .6372335 .3320072 -0.86 0.387 .2295151 1.769237

sp75\_701 | 1.05281 .0340033 1.59 0.111 .9882299 1.12161

sp75\_701\_1 | .9344539 .1105189 -0.57 0.567 .7411144 1.178231

sp75\_702\_1 | 1 (omitted)

sp75\_703\_1 | 9.367289 12.91696 1.62 0.105 .6278494 139.7566

sp75\_705\_1 | 2.101373 1.196549 1.30 0.192 .6883636 6.414877

sp75\_801 | 1.26126 .670916 0.44 0.663 .4446469 3.577616

sp75\_811 | .9359238 .1005413 -0.62 0.538 .7582292 1.155262

sp75\_821 | 1.088501 .198572 0.46 0.642 .7612836 1.556363

sp75\_831 | .9889551 .4972581 -0.02 0.982 .3691328 2.649541

sp75\_901 | .9111386 .2341584 -0.36 0.717 .5505916 1.507784

sp75\_902\_1 | 1.193115 .5777635 0.36 0.715 .4618379 3.0823

sp77\_1111 | .384602 .1954682 -1.88 0.060 .1420369 1.04141

sp77\_401 | .965883 .168987 -0.20 0.843 .685491 1.360966

sp77\_403\_1 | .8784482 .2214109 -0.51 0.607 .5360098 1.439659

sp77\_411 | .3860092 .4211246 -0.87 0.383 .0454948 3.275166

sp77\_501 | 1.132824 .3288898 0.43 0.668 .641262 2.001196

sp77\_502\_1 | 2.732952 4.977365 0.55 0.581 .0769819 97.02313

sp77\_503\_1 | 1.769997 .8572787 1.18 0.238 .6850183 4.573437

sp77\_506\_1 | .9682617 .0681862 -0.46 0.647 .843432 1.111566

sp77\_508\_1 | 1.152574 .4074123 0.40 0.688 .5764821 2.304368

sp77\_511 | .5154464 .1983522 -1.72 0.085 .2424528 1.095822

sp77\_601 | 1.305867 .5790665 0.60 0.547 .547579 3.114233

sp77\_606\_1 | 1 (omitted)

sp77\_700\_1 | 1.123138 .7104116 0.18 0.854 .3251082 3.88006

sp77\_701 | 1.04055 .0837745 0.49 0.622 .888654 1.218409

sp77\_701\_1 | .6771097 .2637697 -1.00 0.317 .3155524 1.452936

sp77\_704\_1 | 2.293276 1.378422 1.38 0.167 .706031 7.448844

sp77\_800\_1 | 1.145757 .4314038 0.36 0.718 .5477665 2.396566

sp77\_801 | 4.385904 3.660467 1.77 0.076 .8543739 22.51491

sp77\_801\_1 | 1 (omitted)

sp77\_807\_1 | .5574687 .3722081 -0.88 0.381 .150624 2.063226

sp77\_900\_1 | 2.651521 2.796853 0.92 0.355 .3354582 20.95809

sp77\_901 | 1.246047 .4067353 0.67 0.500 .6571809 2.362567

sp77\_901\_1 | 1 (omitted)

sp47\_42 | .6899912 .1819927 -1.41 0.159 .4114621 1.157064

sp75\_1100\_2 | 1.058564 .0203915 2.95 0.003 1.019342 1.099294

sp75\_1102 | .9839296 .1052296 -0.15 0.880 .7978651 1.213385

sp75\_1106\_2 | 1.100193 .1164339 0.90 0.367 .8940995 1.353792

sp75\_1400\_2 | 1.328126 .664569 0.57 0.571 .4980972 3.541313

sp75\_1402\_2 | 1 (omitted)

sp75\_1432 | .9523593 .5812164 -0.08 0.936 .287952 3.14979

sp75\_1600\_2 | .9847405 .0762146 -0.20 0.843 .8461405 1.146043

sp75\_1912 | .7890471 .1908933 -0.98 0.327 .4911031 1.267749

sp75\_202 | 1.005431 .0094369 0.58 0.564 .9871042 1.024098

sp75\_212 | .7773633 .0697922 -2.81 0.005 .6519325 .9269269

sp75\_312 | 1.04787 .0656389 0.75 0.455 .9268043 1.184751

sp75\_342 | .9963861 .0217333 -0.17 0.868 .9546872 1.039906

sp75\_352 | .8194207 .1451056 -1.12 0.261 .5791266 1.159419

sp75\_382 | .9164679 .2026578 -0.39 0.693 .5941441 1.413653

sp75\_512 | 1.004658 .0119865 0.39 0.697 .9814373 1.028428

sp75\_512\_2 | 1.045328 .0409057 1.13 0.257 .9681512 1.128656

sp75\_516\_2 | 1.211174 .0924008 2.51 0.012 1.042961 1.406517

sp75\_523\_2 | 1.012374 .0626919 0.20 0.843 .8966644 1.143016

sp75\_601\_2 | 2.903325 2.355413 1.31 0.189 .5920139 14.23834

sp75\_602 | .9972735 .0908497 -0.03 0.976 .8342024 1.192222

sp75\_701\_2 | .8855162 .1890074 -0.57 0.569 .5827917 1.345488

sp75\_702 | 2.294025 2.918745 0.65 0.514 .189493 27.77173

sp75\_703\_2 | 1.431479 .6568712 0.78 0.434 .5823571 3.518689

sp75\_705\_2 | 1 (omitted)

sp75\_800\_2 | 2.7584 1.591645 1.76 0.079 .8902237 8.547031

sp75\_802 | .7539476 .2322441 -0.92 0.359 .4122297 1.378933

sp75\_803\_2 | 1 (omitted)

sp75\_812 | 1.056647 .519865 0.11 0.911 .4028499 2.771512

sp75\_832 | .8764016 1.07699 -0.11 0.915 .078828 9.743739

sp75\_900\_2 | 1.578329 .8847793 0.81 0.416 .5260552 4.735479

sp75\_902 | .9187727 .0488776 -1.59 0.111 .8277995 1.019744

sp75\_902\_2 | 1.491709 .3291454 1.81 0.070 .9679806 2.298803

sp77\_1112 | 1.225697 .4209223 0.59 0.553 .6252704 2.402692

sp77\_1432 | .6776372 .527959 -0.50 0.617 .1471673 3.120206

sp77\_1802 | .2649998 .2857681 -1.23 0.218 .0320136 2.193596

sp77\_202 | .9016833 .0406953 -2.29 0.022 .825348 .9850789

sp77\_402 | .9616864 .0901176 -0.42 0.677 .80033 1.155574

sp77\_403\_2 | 1 (omitted)

sp77\_412 | 1.789846 .5569477 1.87 0.061 .9726278 3.293705

sp77\_502 | .9541499 .0315442 -1.42 0.156 .8942849 1.018022

sp77\_502\_2 | .9039427 .1285968 -0.71 0.478 .683986 1.194633

sp77\_512 | 1.079312 .0665252 1.24 0.216 .9564932 1.217902

sp77\_602 | 1.390856 .6494206 0.71 0.480 .5569781 3.473174

sp77\_701\_2 | .8130215 .1570381 -1.07 0.284 .5567873 1.187175

sp77\_702 | 1 (omitted)

sp77\_800\_2 | .6676601 .1708997 -1.58 0.115 .4042732 1.102645

sp77\_802 | .5541326 .4676945 -0.70 0.484 .1059716 2.897597

sp77\_807\_2 | .4277836 .1989022 -1.83 0.068 .1719688 1.06414

sp77\_900\_2 | 1.375331 .325263 1.35 0.178 .8651664 2.186324

sp77\_902 | 1.356645 .3759341 1.10 0.271 .7881218 2.33528

sp77\_902\_2 | 1 (omitted)

sp47\_43 | 1 (omitted)

sp72\_503 | .8144688 .1183682 -1.41 0.158 .6125871 1.082882

sp75\_1106\_3 | 1.090204 .044765 2.10 0.035 1.005904 1.181569

sp75\_1400\_3 | 1.017796 .1612875 0.11 0.911 .7460587 1.388508

sp75\_1403\_3 | 1 (omitted)

sp75\_1433 | 1.113267 .2145021 0.56 0.578 .7631172 1.624079

sp75\_153 | 1.268858 .7644047 0.40 0.693 .3896005 4.132442

sp75\_1903 | 1.512814 .3202952 1.96 0.051 .9990055 2.290885

sp75\_1913 | .8778545 .1510112 -0.76 0.449 .6266085 1.22984

sp75\_503 | 1.019613 .009823 2.02 0.044 1.000541 1.039049

sp75\_513 | .7005157 .1281296 -1.95 0.052 .4894707 1.002557

sp75\_523 | .9521573 .0602772 -0.77 0.439 .8410515 1.077941

sp75\_601\_3 | 1.216697 .8536946 0.28 0.780 .3075655 4.813128

sp75\_603 | 1.057097 .1834259 0.32 0.749 .7523424 1.485299

sp75\_701\_3 | .8934208 .2684269 -0.38 0.708 .4958084 1.609897

sp75\_703 | 1.167516 .0948996 1.91 0.057 .9955764 1.369151

sp75\_703\_3 | .7198483 .138763 -1.71 0.088 .4933526 1.050327

sp75\_705\_3 | 1 (omitted)

sp75\_800\_3 | .8216761 .2536808 -0.64 0.525 .4486465 1.504863

sp75\_803 | 1.202709 .2611417 0.85 0.395 .7858521 1.840688

sp75\_900\_3 | 1.019652 .1688014 0.12 0.906 .7371184 1.410479

sp75\_903 | 1.170473 .1073815 1.72 0.086 .9778464 1.401046

sp77\_103 | .4341269 .2458891 -1.47 0.141 .1430529 1.317457

sp77\_1103 | .9118421 .062395 -1.35 0.177 .7973961 1.042714

sp77\_1403 | 1.192939 .4107579 0.51 0.608 .6074755 2.342651

sp77\_1433 | .8543901 .4002298 -0.34 0.737 .3411301 2.139894

sp77\_203 | 2.306695 1.281118 1.50 0.132 .7766771 6.850779

sp77\_403 | 1.741516 .9235366 1.05 0.296 .6159282 4.924077

sp77\_413 | 1.0331 .5234383 0.06 0.949 .3827069 2.788808

sp77\_503 | .8859105 .2474964 -0.43 0.665 .5123775 1.531756

sp77\_513 | 1.015613 .0833273 0.19 0.850 .8647492 1.192796

sp77\_603 | 1.524535 .9388085 0.68 0.493 .4560029 5.096913

sp77\_701\_3 | .2017996 .1362809 -2.37 0.018 .053713 .7581597

sp77\_703 | 2.901478 2.48441 1.24 0.213 .5417168 15.54054

sp77\_803 | 1.209597 .7698038 0.30 0.765 .347476 4.210724

sp77\_807\_3 | .3646618 .2393388 -1.54 0.124 .1007443 1.319958

sp77\_902\_3 | 2.298422 1.079659 1.77 0.076 .9153497 5.771285

sp77\_903 | .4592321 .3381008 -1.06 0.291 .1084804 1.944075

sp47\_44 | .7618391 .182209 -1.14 0.255 .4767398 1.217433

sp48\_24 | 1 (omitted)

sp48\_4 | 1.924703 2.188045 0.58 0.565 .2073476 17.86605

sp75\_1103\_4 | 1.023702 .0359938 0.67 0.505 .9555314 1.096736

sp75\_1104 | 1.177485 .1204752 1.60 0.110 .9635277 1.438953

sp75\_1106\_4 | 1.154502 .2814959 0.59 0.556 .7158977 1.861823

sp75\_1107\_14 | 2.694171 2.923587 0.91 0.361 .3211748 22.60002

sp75\_1400\_4 | .9966884 .2793435 -0.01 0.991 .575429 1.726343

sp75\_1403\_4 | 1 (omitted)

sp75\_1404 | 1.894962 1.263746 0.96 0.338 .5127858 7.002689

sp75\_1434 | .8302304 .2960305 -0.52 0.602 .4127533 1.669962

sp75\_1914 | .9887821 .0280184 -0.40 0.691 .935364 1.045251

sp75\_214 | 1.062482 .0994455 0.65 0.517 .884405 1.276414

sp75\_324 | .8363408 .2014084 -0.74 0.458 .5216703 1.34082

sp75\_344 | 1.37607 .3342446 1.31 0.189 .8548413 2.215112

sp75\_504 | .643637 .1482698 -1.91 0.056 .4097851 1.010941

sp75\_514 | 1.059716 .0475903 1.29 0.197 .9704279 1.157219

sp75\_604 | 1.057002 .0187685 3.12 0.002 1.02085 1.094435

sp75\_701\_4 | 1.528218 .7059484 0.92 0.359 .6179868 3.779125

sp75\_703\_4 | 1 (omitted)

sp75\_704 | 1.469937 .5077095 1.12 0.265 .7469603 2.892676

sp75\_800\_4 | 1.181576 .2100813 0.94 0.348 .8339118 1.674184

sp75\_804 | .8256703 .1132654 -1.40 0.163 .6310139 1.080375

sp75\_814 | 2.345198 1.694876 1.18 0.238 .5688733 9.668148

sp75\_834 | 1 (omitted)

sp75\_900\_4 | 1.059157 .0927809 0.66 0.512 .8920645 1.257548

sp75\_902\_4 | .954367 .1185626 -0.38 0.707 .7481164 1.217479

sp75\_904 | .9968801 .0292632 -0.11 0.915 .9411441 1.055917

sp77\_104 | 1.703429 2.804119 0.32 0.746 .0676253 42.90808

sp77\_1104 | 1.00555 .0220456 0.25 0.801 .9632562 1.0497

sp77\_1434 | 2.02068 1.154031 1.23 0.218 .6597322 6.189097

sp77\_204 | .9055125 .1001475 -0.90 0.369 .7290438 1.124696

sp77\_314 | .5023942 .2629939 -1.31 0.189 .1800763 1.401628

sp77\_404 | .9771985 .0257645 -0.87 0.382 .9279835 1.029024

sp77\_504 | .9938798 .1088707 -0.06 0.955 .8018484 1.2319

sp77\_514 | .5961903 .2558486 -1.21 0.228 .2570994 1.382512

sp77\_604 | .6347404 .1789667 -1.61 0.107 .3652563 1.103048

sp77\_701\_4 | .6916193 .2305476 -1.11 0.269 .3598518 1.329262

sp77\_704 | .0445356 .0445427 -3.11 0.002 .0062715 .3162606

sp77\_804 | 15.67443 12.13983 3.55 0.000 3.435079 71.52316

sp77\_904 | .8972494 .078125 -1.25 0.213 .7564804 1.064213

sp48\_25 | .4978318 .0980685 -3.54 0.000 .338379 .7324229

sp48\_5 | 1.739803 .6358788 1.52 0.130 .8499541 3.56127

sp75\_1106\_5 | .9221302 .1092445 -0.68 0.494 .731056 1.163145

sp75\_1403\_5 | 1.033578 .0420603 0.81 0.417 .9543429 1.119391

sp75\_1405 | .8772799 .0677271 -1.70 0.090 .7540921 1.020592

sp75\_1435 | .2503804 .1043234 -3.32 0.001 .1106468 .5665805

sp75\_155 | 1 (omitted)

sp75\_1725 | 1.022323 .0165338 1.37 0.172 .9904259 1.055248

sp75\_1915 | .8795506 .2408109 -0.47 0.639 .5142941 1.504216

sp75\_505 | .7019058 .3417624 -0.73 0.467 .2702859 1.82278

sp75\_515 | .9527256 .0267239 -1.73 0.084 .9017614 1.00657

sp75\_605 | 1.004082 .051893 0.08 0.937 .9073553 1.11112

sp75\_701\_5 | .6700258 .2061112 -1.30 0.193 .3666466 1.224434

sp75\_705 | 2.936056 1.744225 1.81 0.070 .9164112 9.40672

sp75\_805 | .6799648 .2611393 -1.00 0.315 .3203199 1.443407

sp75\_815 | 1.000553 .3237986 0.00 0.999 .5306092 1.886712

sp75\_825 | .7053054 .2087459 -1.18 0.238 .3948672 1.259805

sp75\_905 | 1.695764 .7061675 1.27 0.205 .7497201 3.835584

sp77\_1605 | .9737001 .0257864 -1.01 0.314 .924449 1.025575

sp77\_1915 | .7604736 .2780682 -0.75 0.454 .3713993 1.557138

sp77\_205 | 1.032952 .0358783 0.93 0.351 .9649716 1.105721

sp77\_305 | 1 (omitted)

sp77\_315 | 1 (omitted)

sp77\_405 | 1.515645 .4290207 1.47 0.142 .870272 2.63961

sp77\_505 | .9819367 .0525475 -0.34 0.733 .8841626 1.090523

sp77\_515 | .2168111 .2975166 -1.11 0.265 .0147241 3.192517

sp77\_605 | .7787075 .6078847 -0.32 0.749 .1686158 3.596253

sp77\_705 | .9864047 .1912315 -0.07 0.944 .6745826 1.442365

sp77\_805 | 1.605196 1.605416 0.47 0.636 .226053 11.39846

sp48\_26 | 1.390663 .1839057 2.49 0.013 1.073139 1.802135

sp48\_6 | .8754602 .1181339 -0.99 0.324 .6720103 1.140504

sp75\_1106 | 1.411737 .3452843 1.41 0.159 .8741095 2.280036

sp75\_1106\_6 | .4432725 .3708789 -0.97 0.331 .0859972 2.284848

sp75\_1403\_6 | 1.002716 .0366109 0.07 0.941 .9334669 1.077102

sp75\_1436 | 1 (omitted)

sp75\_156 | 14.40702 13.28528 2.89 0.004 2.364003 87.80123

sp75\_1712\_6 | 1.099956 .1347201 0.78 0.437 .8652108 1.39839

sp75\_1726 | 1.309015 .4274284 0.82 0.410 .6902474 2.482474

sp75\_506 | .8924205 .1164786 -0.87 0.383 .6909884 1.152573

sp75\_516 | .9888525 .0411561 -0.27 0.788 .9113903 1.072898

sp75\_606 | 1.026602 .0314996 0.86 0.392 .9666836 1.090234

sp75\_706 | .928064 .1604592 -0.43 0.666 .6613144 1.30241

sp75\_806 | .8608696 .6289225 -0.21 0.838 .205626 3.604099

sp75\_816 | 1.070277 .0939542 0.77 0.439 .9011009 1.271215

sp77\_1106 | 1 (omitted)

sp77\_1606 | 1.055129 .0378383 1.50 0.135 .9835134 1.131959

sp77\_1906 | .6532154 .3857701 -0.72 0.471 .205287 2.078506

sp77\_1916 | 1.149775 1.073871 0.15 0.881 .1843334 7.171691

sp77\_206 | 1.046608 .1350283 0.35 0.724 .8127671 1.347727

sp77\_216 | 1.235306 .2789116 0.94 0.349 .7935739 1.922922

sp77\_506 | .7105424 .099155 -2.45 0.014 .5405132 .9340577

sp77\_516 | 1.058811 .0425554 1.42 0.155 .9786045 1.145591

sp77\_606 | 10.55976 11.28 2.21 0.027 1.301352 85.6866

sp77\_906 | 1 (omitted)

sp48\_27 | 1.280607 .2607826 1.21 0.225 .8591665 1.908774

sp48\_7 | 1.101472 .174339 0.61 0.541 .8076943 1.502105

sp75\_1403\_7 | .8463892 .1299618 -1.09 0.277 .6264254 1.143591

sp75\_1437 | 3.689018 4.155738 1.16 0.247 .4055258 33.55854

sp75\_1727 | 1 (omitted)

sp75\_337 | 1.073782 .1137941 0.67 0.502 .8723882 1.321667

sp75\_507 | .9394172 .1029679 -0.57 0.569 .757809 1.164548

sp75\_517 | .9737413 .012532 -2.07 0.039 .9494862 .9986159

sp75\_607 | 1.116701 .1418483 0.87 0.385 .8705897 1.432387

sp75\_807 | 1.024815 .0301685 0.83 0.405 .9673597 1.085684

sp75\_827 | 1.232056 .6895037 0.37 0.709 .4114027 3.689725

sp75\_907 | .7189343 .1230236 -1.93 0.054 .5140816 1.005417

sp77\_1437 | .4689334 .3462527 -1.03 0.305 .1103057 1.993537

sp77\_207 | 1.137706 .1027881 1.43 0.153 .9530739 1.358105

sp77\_507 | .7872804 .2222907 -0.85 0.397 .4526791 1.369205

sp77\_807 | 1.017964 .267234 0.07 0.946 .6085222 1.702896

sp48\_28 | 1.075378 .1832403 0.43 0.670 .7700508 1.501767

sp48\_8 | .9064394 .1964578 -0.45 0.650 .5927247 1.386196

sp75\_1403\_8 | .9888661 .041297 -0.27 0.789 .9111495 1.073212

sp75\_1438 | 1 (omitted)

sp75\_1728 | 11.32361 19.46102 1.41 0.158 .3900235 328.7602

sp75\_208 | .9518193 .0457501 -1.03 0.304 .8662449 1.045847

sp75\_518 | 1.086201 .0445605 2.02 0.044 1.002283 1.177145

sp75\_705\_8 | .775814 .4502762 -0.44 0.662 .2487294 2.419848

sp75\_808 | 1.091867 .2010453 0.48 0.633 .7610936 1.566395

sp75\_818 | 1.831024 1.594403 0.69 0.487 .3322708 10.09011

sp77\_1438 | .1019705 .2199754 -1.06 0.290 .0014867 6.993999

sp77\_208 | 1.126041 .0569722 2.35 0.019 1.019736 1.243429

sp77\_408 | 1.240426 .4408251 0.61 0.544 .618115 2.489273

sp77\_508 | .8386818 .209175 -0.71 0.481 .5143985 1.367397

sp77\_704\_8 | .9550126 .3988523 -0.11 0.912 .4212234 2.165238

sp77\_808 | 1.050013 .8162728 0.06 0.950 .2288106 4.818512

sp75\_1403\_9 | 1.149352 .2562385 0.62 0.532 .7424802 1.779186

sp75\_1729 | .563004 .2370739 -1.36 0.172 .2466501 1.285114

sp75\_1909 | 1.01725 .0227761 0.76 0.445 .9735747 1.062884

sp75\_519 | .9280178 1.08957 -0.06 0.949 .0929341 9.266964

sp75\_809 | .9588451 .0846012 -0.48 0.634 .8065753 1.139861

sp75\_819 | 1 (omitted)

sp77\_309 | 1 (omitted)

sp77\_409 | .3315496 .2535977 -1.44 0.149 .0740417 1.484639

sp77\_509 | .9103972 .1177704 -0.73 0.468 .7065098 1.173123

sp77\_704\_9 | .5573351 .7347775 -0.44 0.657 .0420642 7.384488

sp77\_809 | .8101319 .1288102 -1.32 0.185 .5932197 1.106359

sp72\_610 | 2.51484 2.440769 0.95 0.342 .3753009 16.8516

sp72\_620 | .4815385 .294212 -1.20 0.232 .1453988 1.594781

sp72\_630 | 1.016924 .0274127 0.62 0.534 .9645911 1.072097

sp75\_100 | .975435 .3815415 -0.06 0.949 .4531592 2.099645

sp75\_1101\_20 | .1079171 .1119256 -2.15 0.032 .0141342 .8239648

sp75\_1400 | .8282471 .1357906 -1.15 0.250 .6006285 1.142126

sp75\_1403\_10 | .9031756 .0535575 -1.72 0.086 .8040752 1.01449

sp75\_150 | 1.222456 1.192387 0.21 0.837 .1807047 8.269844

sp75\_160 | .7257798 .4100337 -0.57 0.570 .2398355 2.196324

sp75\_1712\_10 | 1.010722 .1855384 0.06 0.954 .7053045 1.448395

sp75\_1720 | .8693201 .0751594 -1.62 0.105 .7338154 1.029847

sp75\_1730 | .6955354 .1325869 -1.90 0.057 .4786944 1.010602

sp75\_1910 | 1.10668 .0351306 3.19 0.001 1.039924 1.177722

sp75\_320 | .947633 .0557149 -0.91 0.360 .8444907 1.063373

sp75\_340 | 1.04123 .0385602 1.09 0.275 .9683314 1.119617

sp75\_520 | 1.152797 .0944927 1.73 0.083 .9817056 1.353706

sp75\_600 | 2.275815 1.783302 1.05 0.294 .4899429 10.5713

sp75\_700 | .9756207 .1104851 -0.22 0.827 .7814225 1.218081

sp75\_800 | 1.068095 .2150479 0.33 0.744 .7198311 1.584853

sp75\_810 | .917554 .0810708 -0.97 0.330 .7716554 1.091038

sp75\_820 | 4.605592 3.252895 2.16 0.031 1.153688 18.38581

sp75\_900 | 1.012439 .0583934 0.21 0.830 .9042219 1.133608

sp77\_1710 | .9199197 .0667415 -1.15 0.250 .7979838 1.060488

sp77\_200 | 1.016535 .0486503 0.34 0.732 .9255181 1.116503

sp77\_210 | .8058242 .1669317 -1.04 0.297 .5369185 1.209406

sp77\_400 | 1.019832 .0318353 0.63 0.529 .9593067 1.084177

sp77\_410 | .9905687 .0424078 -0.22 0.825 .9108425 1.077273

sp77\_500 | 1.188642 .5526787 0.37 0.710 .4778272 2.956863

sp77\_510 | .9123371 1.307983 -0.06 0.949 .0549313 15.15272

sp77\_600 | 1.264808 .4519445 0.66 0.511 .6278716 2.547875

sp77\_700 | .7525853 .2576966 -0.83 0.406 .3846728 1.47238

sp77\_800 | 1.321324 1.039381 0.35 0.723 .2827719 6.174224

sp77\_810 | 1.095083 .4575156 0.22 0.828 .4828621 2.483541

sp77\_900 | .8991219 .2350143 -0.41 0.684 .5386787 1.500747

mine\_time | .9989008 .0021405 -0.51 0.608 .9947143 1.003105

onsite\_insp\_hours | 1.000914 .0002588 3.53 0.000 1.000407 1.001422

|

state |

AL | 2.00066 .4603883 3.01 0.003 1.274372 3.140872

AR | 2.496026 .1977633 11.54 0.000 2.137013 2.915351

CO | .9068567 .1404027 -0.63 0.528 .6695033 1.228357

IL | 1.603774 .2251584 3.36 0.001 1.217981 2.111766

IN | 1.117829 .2407023 0.52 0.605 .7329693 1.704766

MD | 1.258827 .3179453 0.91 0.362 .7673183 2.065172

MT | .7267838 .0777325 -2.98 0.003 .5893398 .8962821

NM | 1.494203 .1199617 5.00 0.000 1.276648 1.748832

OH | 1.066675 .2641018 0.26 0.794 .6565685 1.732942

OK | 1.032117 .3501507 0.09 0.926 .5308288 2.006796

PA | 1.364536 .1380325 3.07 0.002 1.119128 1.663758

TN | 1.767057 .2793224 3.60 0.000 1.296282 2.408806

UT | .6637994 .1383237 -1.97 0.049 .4412269 .9986464

VA | .7956186 .0597377 -3.05 0.002 .6867423 .9217561

WV | 1.29592 .0756197 4.44 0.000 1.155869 1.452939

WY | 2.915491 .3418633 9.13 0.000 2.316871 3.668778

|

time |

2000 | 1.17676 .1895429 1.01 0.312 .85819 1.613588

2000.25 | 1.10783 .1775157 0.64 0.523 .8092433 1.516588

2000.5 | 1.591589 .2536632 2.92 0.004 1.164579 2.17517

2000.75 | .9508129 .1568066 -0.31 0.760 .6882023 1.313633

2001 | 1.058255 .1696496 0.35 0.724 .7729183 1.448929

2001.5 | 1.300761 .2163924 1.58 0.114 .9388435 1.802196

2001.75 | 1.137972 .1826344 0.81 0.421 .8308471 1.558625

2002 | 1.010892 .1731361 0.06 0.950 .7226354 1.414134

2002.25 | .8179267 .1375523 -1.20 0.232 .5882557 1.137267

2002.5 | 1.138877 .1920959 0.77 0.441 .8182827 1.585076

2002.75 | 1.084183 .1875409 0.47 0.640 .7724357 1.521747

2003 | .9448738 .1674934 -0.32 0.749 .6675522 1.337403

2003.25 | .9147241 .1663868 -0.49 0.624 .6404097 1.306539

2003.5 | 1.173624 .2038725 0.92 0.357 .8349587 1.649654

2003.75 | .7828705 .1387062 -1.38 0.167 .5531934 1.107906

2004 | .9415031 .1628029 -0.35 0.727 .6708627 1.321326

2004.25 | .8792883 .1469265 -0.77 0.441 .6337209 1.220013

2004.5 | .8206394 .1478361 -1.10 0.273 .576515 1.168138

2004.75 | .7081938 .1266701 -1.93 0.054 .4987732 1.005544

2005 | .6772388 .1194776 -2.21 0.027 .479263 .9569952

2005.25 | .8640194 .1456479 -0.87 0.386 .6209209 1.202294

2005.5 | .7637021 .1295079 -1.59 0.112 .5477445 1.064805

2005.75 | .603591 .1067189 -2.86 0.004 .4268199 .8535733

2006 | .8604036 .1464922 -0.88 0.377 .6162782 1.201234

2006.25 | .719293 .1216754 -1.95 0.051 .5163175 1.002063

2006.5 | .7750351 .1318515 -1.50 0.134 .5552803 1.081759

2006.75 | .7108059 .1301204 -1.86 0.062 .496512 1.017589

2007 | .6810207 .1181834 -2.21 0.027 .4846677 .9569222

2007.25 | .5884648 .1062162 -2.94 0.003 .4131246 .8382236

2007.5 | .7439027 .1345047 -1.64 0.102 .5219282 1.060282

2007.75 | .6917526 .1235187 -2.06 0.039 .4874847 .9816136

2008 | .5420349 .096982 -3.42 0.001 .3817057 .7697079

2008.25 | .5938918 .1060557 -2.92 0.004 .4185063 .8427771

2008.5 | .5646709 .1013906 -3.18 0.001 .3971515 .8028502

2008.75 | .4438985 .0829396 -4.35 0.000 .3077812 .6402141

2009 | .4506787 .0824773 -4.36 0.000 .314841 .6451235

2009.25 | .4398377 .0787636 -4.59 0.000 .3096451 .6247707

2009.5 | .5385053 .0949989 -3.51 0.000 .3810901 .7609433

2009.75 | .4285696 .0792259 -4.58 0.000 .2983095 .615709

2010 | .4460577 .0861029 -4.18 0.000 .3055504 .6511773

2010.25 | .4775316 .0869053 -4.06 0.000 .3342667 .682199

2010.5 | .5922368 .1095049 -2.83 0.005 .4121998 .8509087

2010.75 | .4633326 .0854041 -4.17 0.000 .3228453 .6649534

2011 | .5751422 .1077376 -2.95 0.003 .3984055 .8302811

2011.25 | .5660089 .1038139 -3.10 0.002 .3950945 .8108592

2011.5 | .6676421 .1175975 -2.29 0.022 .4727312 .9429162

2011.75 | .4398525 .0828598 -4.36 0.000 .3040584 .636293

2012 | .589869 .1078074 -2.89 0.004 .4122738 .843967

2012.25 | .5489297 .1031371 -3.19 0.001 .3798276 .7933173

2012.5 | .6336436 .1193114 -2.42 0.015 .4380955 .9164765

2012.75 | .4009464 .0786436 -4.66 0.000 .2729779 .5889048

2013 | .4169964 .0782046 -4.66 0.000 .2887326 .6022389

2013.25 | .3445898 .0700791 -5.24 0.000 .2313097 .513347

2013.5 | .4383522 .0893209 -4.05 0.000 .2940208 .6535343

2013.75 | .4963933 .1016022 -3.42 0.001 .3323543 .7413965

2014 | .2958532 .0609735 -5.91 0.000 .1975371 .4431019

2014.25 | .3907204 .0821199 -4.47 0.000 .2588 .5898858

2014.5 | .437171 .0897066 -4.03 0.000 .2924061 .6536062

2014.75 | .4439771 .0902134 -4.00 0.000 .2981272 .6611797

2015 | .4603268 .0993136 -3.60 0.000 .3015943 .7026023

2015.25 | .4375777 .095096 -3.80 0.000 .2858043 .6699485

2015.5 | .6146381 .1316477 -2.27 0.023 .403927 .935268

2015.75 | .3011685 .0683832 -5.29 0.000 .1929905 .469984

2016 | .448159 .1040633 -3.46 0.001 .2843031 .706452

|

\_cons | .0000137 1.68e-06 -91.17 0.000 .0000108 .0000174

lnhours | 1 (offset)

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

(est1 stored)

**. lfit**

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

number of observations = 28249

number of covariate patterns = 28237

Pearson chi2(27859) = 174779.42

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -16060.649

Iteration 1: log likelihood = -12059.764

Iteration 2: log likelihood = -11919.213

Iteration 3: log likelihood = -11914.378

Iteration 4: log likelihood = -11914.337

Iteration 5: log likelihood = -11914.337

Logistic regression Number of obs = 28,249

LR chi2(2) = 8292.62

Prob > chi2 = 0.0000

Log likelihood = -11914.337 Pseudo R2 = 0.2582

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

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

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

\_hat | 1.109691 .0195093 56.88 0.000 1.071453 1.147928

\_hatsq | .0697093 .0064293 10.84 0.000 .0571081 .0823105

\_cons | -.0522264 .0207739 -2.51 0.012 -.0929426 -.0115102

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

Note: 0 failures and 1 success completely determined.

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 3174 1216 | 4390

- | 4050 19809 | 23859

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

Total | 7224 21025 | 28249

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

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

Sensitivity Pr( +| D) 43.94%

Specificity Pr( -|~D) 94.22%

Positive predictive value Pr( D| +) 72.30%

Negative predictive value Pr(~D| -) 83.03%

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

False + rate for true ~D Pr( +|~D) 5.78%

False - rate for true D Pr( -| D) 56.06%

False + rate for classified + Pr(~D| +) 27.70%

False - rate for classified - Pr( D| -) 16.97%

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

Correctly classified 81.36%

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

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

Variable | Obs Mean Std. Dev. Min Max

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

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

spbv1\_yhat | 28,249 .2557259 .2358062 .0000209 .9999858