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

Iteration 0: log pseudolikelihood = -12887.233

Iteration 1: log pseudolikelihood = -12183.455

Iteration 2: log pseudolikelihood = -12177.075

Iteration 3: log pseudolikelihood = -12177.068

Iteration 4: log pseudolikelihood = -12177.068

Logistic regression Number of obs = 28,337

Wald chi2(85) = .

Log pseudolikelihood = -12177.068 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]

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

p47 | .9777337 .1705714 -0.13 0.897 .6945819 1.376315

p48 | .9600184 .0235317 -1.66 0.096 .9149875 1.007266

p71 | .8263503 .1479652 -1.07 0.287 .5817671 1.17376

p72 | .9323712 .0757973 -0.86 0.389 .7950423 1.093421

p75 | 1.008327 .0016286 5.13 0.000 1.00514 1.011524

p77 | 1.014097 .0218377 0.65 0.516 .9721862 1.057814

mine\_time | .9982867 .0021462 -0.80 0.425 .994089 1.002502

onsite\_insp\_hours | 1.000536 .0002874 1.87 0.062 .9999729 1.001099

|

state |

AL | 1.96965 .4290126 3.11 0.002 1.28525 3.018496

AR | 2.207294 .1436114 12.17 0.000 1.943028 2.507501

CO | .8312335 .1668312 -0.92 0.357 .5608983 1.231862

IL | 1.613312 .2073689 3.72 0.000 1.254031 2.075528

IN | 1.081234 .2320489 0.36 0.716 .7099685 1.646646

MD | 1.126882 .2945589 0.46 0.648 .6751194 1.880947

MT | .7597185 .0511358 -4.08 0.000 .6658237 .8668543

NM | 1.415687 .0869352 5.66 0.000 1.255152 1.596755

OH | .9938528 .2429263 -0.03 0.980 .6155507 1.60465

OK | 1.018792 .279972 0.07 0.946 .5945228 1.745831

PA | 1.320124 .1351661 2.71 0.007 1.080093 1.613497

TN | 1.614952 .2469222 3.13 0.002 1.196776 2.179245

UT | .6615336 .1375101 -1.99 0.047 .4401659 .9942314

VA | .7428728 .0583046 -3.79 0.000 .6369533 .8664057

WV | 1.225349 .0715337 3.48 0.000 1.092869 1.373888

WY | 2.9365 .23281 13.59 0.000 2.513886 3.430161

|

time |

2000 | 1.188691 .1891842 1.09 0.277 .8701564 1.62383

2000.25 | 1.127916 .1769063 0.77 0.443 .8294137 1.533847

2000.5 | 1.63494 .2559165 3.14 0.002 1.202994 2.22198

2000.75 | .9621411 .1567635 -0.24 0.813 .6991186 1.324118

2001 | 1.058751 .1664189 0.36 0.716 .7780335 1.440752

2001.5 | 1.293847 .2107581 1.58 0.114 .9402178 1.780481

2001.75 | 1.167133 .1844645 0.98 0.328 .8562266 1.590934

2002 | 1.050135 .1764128 0.29 0.771 .7555294 1.459617

2002.25 | .8537206 .1410178 -0.96 0.338 .6176096 1.180096

2002.5 | 1.17778 .1932002 1.00 0.319 .853955 1.624401

2002.75 | 1.141747 .1933962 0.78 0.434 .8191961 1.591298

2003 | .9851996 .1712079 -0.09 0.932 .7008136 1.384988

2003.25 | .9536778 .1700292 -0.27 0.790 .6724233 1.352573

2003.5 | 1.22032 .2077143 1.17 0.242 .8741545 1.703567

2003.75 | .8192266 .1413717 -1.16 0.248 .5841368 1.14893

2004 | .9421683 .1604995 -0.35 0.727 .6747226 1.315624

2004.25 | .9446985 .1518807 -0.35 0.723 .6893569 1.29462

2004.5 | .8543382 .1523625 -0.88 0.377 .6023192 1.211806

2004.75 | .7550289 .1337895 -1.59 0.113 .5334976 1.06855

2005 | .7036671 .1222218 -2.02 0.043 .5006334 .9890419

2005.25 | .9248029 .1538019 -0.47 0.638 .6675561 1.281181

2005.5 | .8168267 .1354778 -1.22 0.223 .5901342 1.1306

2005.75 | .6423931 .1105116 -2.57 0.010 .45853 .8999824

2006 | .938361 .1549288 -0.39 0.700 .6789405 1.296905

2006.25 | .7392142 .1219145 -1.83 0.067 .5350401 1.021302

2006.5 | .8318573 .1394925 -1.10 0.272 .5988424 1.15554

2006.75 | .758649 .1361207 -1.54 0.124 .5337205 1.07837

2007 | .7026897 .1202439 -2.06 0.039 .5024657 .9826996

2007.25 | .6365084 .1106802 -2.60 0.009 .4526805 .8949866

2007.5 | .8021593 .1389323 -1.27 0.203 .5712607 1.126385

2007.75 | .7556284 .1326679 -1.60 0.111 .5356243 1.065998

2008 | .5849436 .1028042 -3.05 0.002 .4144907 .8254927

2008.25 | .6499223 .1122998 -2.49 0.013 .4632151 .9118852

2008.5 | .6385255 .1098269 -2.61 0.009 .4557964 .8945107

2008.75 | .4925504 .08875 -3.93 0.000 .3460009 .7011713

2009 | .4871 .0867864 -4.04 0.000 .3435263 .6906791

2009.25 | .4640911 .0807006 -4.41 0.000 .3300564 .6525568

2009.5 | .5417283 .0946313 -3.51 0.000 .3846716 .7629092

2009.75 | .4295212 .078208 -4.64 0.000 .300605 .6137238

2010 | .458667 .0872318 -4.10 0.000 .3159449 .665861

2010.25 | .4859348 .0871365 -4.02 0.000 .3419345 .6905785

2010.5 | .5961635 .1083751 -2.85 0.004 .4174722 .8513405

2010.75 | .4636494 .0846938 -4.21 0.000 .3241176 .6632492

2011 | .5813048 .1065234 -2.96 0.003 .405903 .8325024

2011.25 | .6122336 .1091442 -2.75 0.006 .4316897 .8682856

2011.5 | .6760711 .1187453 -2.23 0.026 .4791673 .9538885

2011.75 | .4528234 .0844931 -4.25 0.000 .3141244 .6527637

2012 | .6130198 .1103433 -2.72 0.007 .430783 .8723492

2012.25 | .562335 .1036089 -3.12 0.002 .3918892 .8069134

2012.5 | .6619342 .1230921 -2.22 0.027 .4597554 .9530217

2012.75 | .4236041 .0818833 -4.44 0.000 .2900158 .6187263

2013 | .4279455 .0808062 -4.49 0.000 .2955708 .6196058

2013.25 | .3764007 .074026 -4.97 0.000 .2560037 .5534197

2013.5 | .4639336 .0924396 -3.85 0.000 .3139442 .6855818

2013.75 | .4823204 .0986727 -3.56 0.000 .3229963 .7202343

2014 | .3095673 .0637665 -5.69 0.000 .2067377 .4635435

2014.25 | .405142 .083457 -4.39 0.000 .2705605 .6066666

2014.5 | .4553479 .0908734 -3.94 0.000 .3079425 .673313

2014.75 | .4609233 .0934743 -3.82 0.000 .3097467 .6858837

2015 | .4517617 .0978549 -3.67 0.000 .2954832 .6906943

2015.25 | .4421017 .0952634 -3.79 0.000 .2898055 .6744313

2015.5 | .6359133 .1355256 -2.12 0.034 .4187841 .9656186

2015.75 | .3087559 .0706015 -5.14 0.000 .1972312 .4833423

2016 | .4863566 .1124758 -3.12 0.002 .3091038 .7652535

|

\_cons | .0000144 1.76e-06 -91.22 0.000 .0000114 .0000183

lnhours | 1 (offset)

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

. lfit

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

number of observations = 28337

number of covariate patterns = 28296

Pearson chi2(28207) = 202336.63

Prob > chi2 = 0.0000

. linktest

Iteration 0: log likelihood = -16143.173

Iteration 1: log likelihood = -12276.392

Iteration 2: log likelihood = -12133.203

Iteration 3: log likelihood = -12125.558

Iteration 4: log likelihood = -12125.432

Iteration 5: log likelihood = -12125.432

Logistic regression Number of obs = 28,337

LR chi2(2) = 8035.48

Prob > chi2 = 0.0000

Log likelihood = -12125.432 Pseudo R2 = 0.2489

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

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

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

\_hat | 1.117177 .0195661 57.10 0.000 1.078828 1.155526

\_hatsq | .0721221 .0064599 11.16 0.000 .059461 .0847832

\_cons | -.0477307 .020618 -2.32 0.021 -.0881413 -.0073202

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

. estat classification

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 3133 1229 | 4362

- | 4144 19831 | 23975

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

Total | 7277 21060 | 28337

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

True D defined as MR\_indicator != 0

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

Sensitivity Pr( +| D) 43.05%

Specificity Pr( -|~D) 94.16%

Positive predictive value Pr( D| +) 71.82%

Negative predictive value Pr(~D| -) 82.72%

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

False + rate for true ~D Pr( +|~D) 5.84%

False - rate for true D Pr( -| D) 56.95%

False + rate for classified + Pr(~D| +) 28.18%

False - rate for classified - Pr( D| -) 17.28%

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

Correctly classified 81.04%

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

. summ MR\_indicator pbv1\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

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

pbv1\_yhat | 28,337 .2568021 .2314757 .0000213 .9913669