**. logit MR\_indicator `part\_penalty\_point\_vars' `covariates' ib(freq).state ib(freq).time if sample\_pp, vce(cl mineid) offset(lnhours) iter(50) or**

Iteration 0: log pseudolikelihood = -6619.6672

Iteration 1: log pseudolikelihood = -6287.5991

Iteration 2: log pseudolikelihood = -6285.3547

Iteration 3: log pseudolikelihood = -6285.3533

Iteration 4: log pseudolikelihood = -6285.3533

Logistic regression Number of obs = 14,895

Wald chi2(56) = .

Log pseudolikelihood = -6285.3533 Prob > chi2 = .

(Std. Err. adjusted for 879 clusters in mineid)

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| Robust

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

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

p47\_pp | .9979524 .0031378 -0.65 0.514 .9918213 1.004121

p48\_pp | .9996014 .0003976 -1.00 0.316 .9988223 1.000381

p71\_pp | 1.000311 .0027755 0.11 0.911 .9948863 1.005766

p72\_pp | .9990082 .0017189 -0.58 0.564 .9956449 1.002383

p75\_pp | 1.000074 .0000246 3.00 0.003 1.000025 1.000122

p77\_pp | 1.000305 .0004397 0.69 0.488 .9994434 1.001167

mine\_time | .9977894 .0023388 -0.94 0.345 .9932159 1.002384

onsite\_insp\_hours | 1.000538 .0002952 1.82 0.068 .9999597 1.001117

|

state |

AL | 2.031748 .5151246 2.80 0.005 1.236113 3.3395

AR | 2.382726 .1969847 10.50 0.000 2.026299 2.801848

CO | .7441928 .1762664 -1.25 0.212 .4678143 1.183852

IL | 1.548646 .2351099 2.88 0.004 1.150074 2.085348

IN | 1.011308 .2700737 0.04 0.966 .5991935 1.706869

KY | .9644777 .0758133 -0.46 0.645 .8267668 1.125126

MD | 1.232021 .2807778 0.92 0.360 .7881865 1.925782

MT | .5274816 .0471083 -7.16 0.000 .4427803 .6283857

NM | 1.239585 .1077207 2.47 0.013 1.045457 1.469759

OH | .7373887 .2002859 -1.12 0.262 .4330094 1.255728

OK | .7974883 .4303087 -0.42 0.675 .2769702 2.296231

PA | 1.015561 .1497085 0.10 0.917 .7607229 1.355768

TN | 1.337353 .2207611 1.76 0.078 .9676889 1.848233

UT | .5725035 .169534 -1.88 0.060 .3204158 1.022922

VA | .6670516 .0767342 -3.52 0.000 .5324044 .8357517

WY | 2.398734 .1801102 11.65 0.000 2.070471 2.779041

|

time |

2007 | 1.488958 .2603803 2.28 0.023 1.056889 2.097663

2007.25 | 1.287815 .2328127 1.40 0.162 .9035915 1.835417

2007.5 | 1.592912 .2732977 2.71 0.007 1.138021 2.229633

2007.75 | 1.510178 .2632583 2.36 0.018 1.073111 2.125259

2008 | 1.175258 .2011656 0.94 0.345 .8403018 1.643732

2008.25 | 1.31167 .2471621 1.44 0.150 .9066303 1.897664

2008.5 | 1.294424 .2267816 1.47 0.141 .9182206 1.824761

2009 | .9975803 .175783 -0.01 0.989 .7062496 1.409086

2009.25 | .9485246 .172178 -0.29 0.771 .664564 1.353818

2009.5 | 1.099117 .1976015 0.53 0.599 .7727042 1.563417

2009.75 | .8719448 .1658617 -0.72 0.471 .6005831 1.265916

2010 | .9388769 .1684713 -0.35 0.725 .6604952 1.334589

2010.25 | .9959121 .1837055 -0.02 0.982 .6937592 1.429662

2010.5 | 1.222127 .2332043 1.05 0.293 .8407977 1.776402

2010.75 | .9461907 .1698253 -0.31 0.758 .6655832 1.345101

2011 | 1.187095 .2087493 0.98 0.329 .8410124 1.675592

2011.25 | 1.236941 .2168248 1.21 0.225 .8772851 1.744042

2011.5 | 1.364675 .2368224 1.79 0.073 .9712114 1.917541

2011.75 | .9152753 .1620538 -0.50 0.617 .6469079 1.294974

2012 | 1.234905 .2130882 1.22 0.221 .8805524 1.731857

2012.25 | 1.136895 .2080935 0.70 0.483 .7941805 1.627502

2012.5 | 1.338321 .2494298 1.56 0.118 .9287898 1.928426

2012.75 | .862282 .1657402 -0.77 0.441 .5916147 1.256781

2013 | .8743919 .1634886 -0.72 0.473 .6061129 1.261417

2013.25 | .7641093 .1492601 -1.38 0.168 .5210542 1.120542

2013.5 | .9391726 .1872379 -0.31 0.753 .635398 1.388177

2013.75 | .9849289 .198973 -0.08 0.940 .6628988 1.463398

2014 | .6424292 .1275554 -2.23 0.026 .4353291 .9480534

2014.25 | .8304734 .1690966 -0.91 0.362 .5571968 1.237778

2014.5 | .9318781 .1776579 -0.37 0.711 .6413304 1.354055

2014.75 | .9533281 .190348 -0.24 0.811 .6445931 1.409935

2015 | .933054 .1919989 -0.34 0.736 .6233774 1.396569

2015.25 | .9023755 .1915938 -0.48 0.629 .5951943 1.368093

2015.5 | 1.2976 .265762 1.27 0.203 .8685718 1.938544

2015.75 | .6321305 .1412571 -2.05 0.040 .4079393 .9795303

2016 | .9970597 .218878 -0.01 0.989 .648429 1.533133

|

\_cons | 8.74e-06 1.27e-06 -80.29 0.000 6.58e-06 .0000116

lnhours | 1 (offset)

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

**. lfit**

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

number of observations = 14895

number of covariate patterns = 14893

Pearson chi2(14832) = 40919.18

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -8482.2024

Iteration 1: log likelihood = -6410.3382

Iteration 2: log likelihood = -6301.0711

Iteration 3: log likelihood = -6283.3899

Iteration 4: log likelihood = -6283.0214

Iteration 5: log likelihood = -6283.0212

Logistic regression Number of obs = 14,895

LR chi2(2) = 4398.36

Prob > chi2 = 0.0000

Log likelihood = -6283.0212 Pseudo R2 = 0.2593

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

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

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

\_hat | 1.047707 .0267933 39.10 0.000 .9951934 1.100221

\_hatsq | .0227094 .0107265 2.12 0.034 .0016859 .043733

\_cons | -.0061853 .0281331 -0.22 0.826 -.0613251 .0489546

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

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 1699 686 | 2385

- | 2123 10387 | 12510

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

Total | 3822 11073 | 14895

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

True D defined as MR\_indicator != 0

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

Sensitivity Pr( +| D) 44.45%

Specificity Pr( -|~D) 93.80%

Positive predictive value Pr( D| +) 71.24%

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

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

False + rate for true ~D Pr( +|~D) 6.20%

False - rate for true D Pr( -| D) 55.55%

False + rate for classified + Pr(~D| +) 28.76%

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

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

Correctly classified 81.14%

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

**. summ MR\_indicator pbpp1\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

MR\_indicator | 30,289 .2418700 .428223 0 1

pbpp1\_yhat | 28,337 .2156043 .213291 8.92e-06 .9862546