**. logit MR\_indicator `part\_count\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) offset(lnhours) iter(50) or**

Iteration 0: log pseudolikelihood = -10693.202

Iteration 1: log pseudolikelihood = -10189.285

Iteration 2: log pseudolikelihood = -10185.225

Iteration 3: log pseudolikelihood = -10185.222

Iteration 4: log pseudolikelihood = -10185.222

Logistic regression Number of obs = 22,446

Wald chi2(81) = .

Log pseudolikelihood = -10185.222 Prob > chi2 = .

(Std. Err. adjusted for 1,293 clusters in mineid)

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| Robust

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

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

p47\_c\_4lag | 1.041842 .0984619 0.43 0.664 .8656791 1.253853

p48\_c\_4lag | .9971606 .010262 -0.28 0.782 .9772489 1.017478

p71\_c\_4lag | 1.019451 .0961502 0.20 0.838 .8473932 1.226445

p72\_c\_4lag | .9734228 .0430308 -0.61 0.542 .8926344 1.061523

p75\_c\_4lag | 1.002459 .0005072 4.85 0.000 1.001466 1.003454

p77\_c\_4lag | .993956 .0114947 -0.52 0.600 .9716803 1.016742

mine\_time | .9967481 .0023672 -1.37 0.170 .9921193 1.001398

onsite\_insp\_hours | 1.000491 .0002659 1.85 0.065 .9999701 1.001013

|

state |

AL | 1.969181 .4567731 2.92 0.003 1.249799 3.102639

AR | 2.331482 .1715771 11.50 0.000 2.018324 2.693228

CO | .8284925 .184139 -0.85 0.397 .5359229 1.280781

IL | 1.601018 .1836999 4.10 0.000 1.278586 2.004761

IN | 1.035373 .2340428 0.15 0.878 .6647918 1.612532

MD | 1.174083 .3145437 0.60 0.549 .6944758 1.984909

MT | .8746928 .0735967 -1.59 0.112 .7417122 1.031515

NM | 1.411422 .1114387 4.36 0.000 1.209067 1.647644

OH | .9492463 .2444748 -0.20 0.840 .5730007 1.572543

OK | 1.051204 .324014 0.16 0.871 .5745393 1.923331

PA | 1.317339 .1479161 2.45 0.014 1.057112 1.641624

TN | 1.494982 .2417039 2.49 0.013 1.088971 2.052369

UT | .6683526 .136877 -1.97 0.049 .4473852 .9984576

VA | .7160489 .0612099 -3.91 0.000 .6055912 .8466538

WV | 1.210949 .0781213 2.97 0.003 1.067119 1.374165

WY | 2.931536 .2392766 13.18 0.000 2.498152 3.440105

|

time |

2000.75 | 1.821716 .3684482 2.97 0.003 1.225525 2.70794

2001 | 2.071084 .3989128 3.78 0.000 1.419866 3.020982

2001.25 | 1.868028 .3613026 3.23 0.001 1.278643 2.729088

2001.5 | 2.181106 .3971058 4.28 0.000 1.526517 3.11639

2001.75 | 2.480805 .4769056 4.73 0.000 1.701999 3.615981

2002 | 1.999369 .389455 3.56 0.000 1.36486 2.928853

2002.25 | 1.598834 .3091021 2.43 0.015 1.094563 2.335425

2002.5 | 2.23319 .4300203 4.17 0.000 1.531156 3.257107

2002.75 | 2.227304 .4297026 4.15 0.000 1.526025 3.250855

2003 | 1.967004 .3937117 3.38 0.001 1.32871 2.911924

2003.25 | 1.982466 .4065717 3.34 0.001 1.326289 2.963285

2003.5 | 2.416153 .4522395 4.71 0.000 1.67418 3.486958

2003.75 | 1.662533 .3197204 2.64 0.008 1.14045 2.423618

2004 | 1.809527 .3508057 3.06 0.002 1.237503 2.645965

2004.25 | 1.893051 .3607195 3.35 0.001 1.303066 2.750161

2004.5 | 1.629067 .3158135 2.52 0.012 1.114099 2.382068

2004.75 | 1.482157 .2923864 1.99 0.046 1.006878 2.181783

2005 | 1.359862 .2751008 1.52 0.129 .914737 2.021591

2005.25 | 1.676053 .3239272 2.67 0.008 1.147566 2.447922

2005.5 | 1.599425 .2988599 2.51 0.012 1.108952 2.306825

2005.75 | 1.257052 .2516759 1.14 0.253 .8490501 1.861116

2006 | 1.784008 .3432122 3.01 0.003 1.223602 2.601077

2006.25 | 1.377162 .2614234 1.69 0.092 .9493002 1.997867

2006.5 | 1.685183 .3150661 2.79 0.005 1.168165 2.431027

2006.75 | 1.394508 .2627164 1.77 0.078 .9639628 2.017354

2007 | 1.334788 .2493993 1.55 0.122 .925484 1.92511

2007.25 | 1.241785 .242753 1.11 0.268 .8465397 1.821568

2007.5 | 1.510905 .2829755 2.20 0.028 1.046687 2.18101

2007.75 | 1.520925 .2817431 2.26 0.024 1.057858 2.186695

2008 | 1.04921 .1907115 0.26 0.792 .7347543 1.498244

2008.25 | 1.227 .2488066 1.01 0.313 .8245957 1.825779

2008.5 | 1.333461 .2514243 1.53 0.127 .9214809 1.929632

2009 | .8930844 .1660523 -0.61 0.543 .6203368 1.285753

2009.25 | .8557956 .1648001 -0.81 0.419 .5867521 1.248204

2009.5 | 1.057418 .2013418 0.29 0.769 .7280654 1.535759

2009.75 | .789539 .15951 -1.17 0.242 .531381 1.173117

2010 | .8442475 .1595182 -0.90 0.370 .5829585 1.222649

2010.25 | .9428289 .1834661 -0.30 0.762 .6438677 1.380604

2010.5 | 1.12228 .2255302 0.57 0.566 .7569136 1.664011

2010.75 | .7988029 .153332 -1.17 0.242 .5483396 1.16367

2011 | .9880118 .1843392 -0.06 0.948 .6854068 1.424216

2011.25 | 1.060649 .1978289 0.32 0.752 .7358825 1.528745

2011.5 | 1.284877 .2387405 1.35 0.177 .8926913 1.849361

2011.75 | .8092401 .1521582 -1.13 0.260 .5597954 1.169837

2012 | 1.14726 .2088187 0.75 0.450 .8030272 1.639054

2012.25 | 1.077187 .2091809 0.38 0.702 .7361982 1.576114

2012.5 | 1.349724 .2659928 1.52 0.128 .9172694 1.986063

2012.75 | .8170065 .1662811 -0.99 0.321 .5482579 1.217492

2013 | .8326421 .164193 -0.93 0.353 .5657252 1.225494

2013.25 | .6745336 .1376863 -1.93 0.054 .4521222 1.006356

2013.5 | .9216436 .192357 -0.39 0.696 .6122208 1.387452

2013.75 | .9075819 .1942375 -0.45 0.650 .5966431 1.380566

2014 | .6189144 .1269409 -2.34 0.019 .4140444 .9251544

2014.25 | .7635455 .164779 -1.25 0.211 .5001947 1.16555

2014.5 | .9034279 .183203 -0.50 0.616 .6071294 1.344329

2014.75 | .8770192 .1815675 -0.63 0.526 .5845028 1.315926

2015 | .8070342 .171472 -1.01 0.313 .532152 1.223906

2015.25 | .7961688 .1768684 -1.03 0.305 .5151234 1.230549

2015.5 | 1.178446 .2518903 0.77 0.442 .7751172 1.791646

2015.75 | .5508947 .1294164 -2.54 0.011 .3476194 .873038

2016 | .9138382 .2069946 -0.40 0.691 .5862227 1.424544

|

\_cons | 7.96e-06 1.27e-06 -73.70 0.000 5.82e-06 .0000109

lnhours | 1 (offset)

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

**. lfit**

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

number of observations = 22446

number of covariate patterns = 22445

Pearson chi2(22359) = 141396.57

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -13411.179

Iteration 1: log likelihood = -10252.298

Iteration 2: log likelihood = -10163.206

Iteration 3: log likelihood = -10157.717

Iteration 4: log likelihood = -10157.655

Iteration 5: log likelihood = -10157.655

Logistic regression Number of obs = 22,446

LR chi2(2) = 6507.05

Prob > chi2 = 0.0000

Log likelihood = -10157.655 Pseudo R2 = 0.2426

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

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

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

\_hat | 1.08025 .020573 52.51 0.000 1.039928 1.120573

\_hatsq | .0621334 .0079638 7.80 0.000 .0465247 .0777421

\_cons | -.0545607 .0218928 -2.49 0.013 -.0974698 -.0116516

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

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 2928 1173 | 4101

- | 3466 14879 | 18345

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

Total | 6394 16052 | 22446

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

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

Sensitivity Pr( +| D) 45.79%

Specificity Pr( -|~D) 92.69%

Positive predictive value Pr( D| +) 71.40%

Negative predictive value Pr(~D| -) 81.11%

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

False + rate for true ~D Pr( +|~D) 7.31%

False - rate for true D Pr( -| D) 54.21%

False + rate for classified + Pr(~D| +) 28.60%

False - rate for classified - Pr( D| -) 18.89%

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

Correctly classified 79.33%

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

**. summ MR\_indicator pbv3\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

MR\_indicator | 30,289 .2418700 .4282230 0 1

pbv3\_yhat | 22,446 .2848614 .2395927 .0000269 .9910197