**. logit MR\_indicator `part\_sigsub\_lag\_1\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) offset(lnhours) iter(50) or**

Iteration 0: log pseudolikelihood = -12187.002

Iteration 1: log pseudolikelihood = -11587.918

Iteration 2: log pseudolikelihood = -11583.114

Iteration 3: log pseudolikelihood = -11583.109

Iteration 4: log pseudolikelihood = -11583.109

Logistic regression Number of obs = 26,110

Wald chi2(84) = .

Log pseudolikelihood = -11583.109 Prob > chi2 = .

(Std. Err. adjusted for 1,475 clusters in mineid)

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

| Robust

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

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

p47\_ss\_1lag | 2.16084 .7234019 2.30 0.021 1.121138 4.164724

p48\_ss\_1lag | 1.044678 .0887779 0.51 0.607 .8843953 1.234009

p71\_ss\_1lag | 1.207507 .5761571 0.40 0.693 .473961 3.076359

p72\_ss\_1lag | .9435763 .338732 -0.16 0.871 .4668812 1.906987

p75\_ss\_1lag | 1.014459 .0036749 3.96 0.000 1.007282 1.021687

p77\_ss\_1lag | 1.05114 .0541314 0.97 0.333 .950223 1.162775

mine\_time | .9979852 .0022167 -0.91 0.364 .99365 1.002339

onsite\_insp\_hours | 1.001004 .0002519 3.99 0.000 1.000511 1.001498

|

state |

AL | 1.994909 .4327032 3.18 0.001 1.30405 3.051771

AR | 2.30646 .153766 12.54 0.000 2.023943 2.628412

CO | .8534441 .1650873 -0.82 0.413 .5841462 1.246891

IL | 1.687331 .2059579 4.29 0.000 1.328317 2.14338

IN | 1.087756 .2294067 0.40 0.690 .7194724 1.644558

MD | 1.165954 .3014965 0.59 0.553 .702384 1.935477

MT | .7448167 .0453865 -4.83 0.000 .6609676 .8393027

NM | 1.397314 .0805046 5.81 0.000 1.24811 1.564354

OH | .9480978 .2367615 -0.21 0.831 .5811507 1.546741

OK | 1.064903 .3039256 0.22 0.826 .6086604 1.863137

PA | 1.286923 .1349415 2.41 0.016 1.04785 1.580542

TN | 1.491392 .2318235 2.57 0.010 1.099715 2.022569

UT | .644266 .1362409 -2.08 0.038 .4256614 .9751381

VA | .7343133 .0607764 -3.73 0.000 .6243535 .863639

WV | 1.239496 .0745545 3.57 0.000 1.101656 1.394582

WY | 2.585506 .1260157 19.49 0.000 2.34995 2.844674

|

time |

2000.25 | .914289 .1455229 -0.56 0.573 .6692708 1.249008

2000.5 | 1.291984 .204095 1.62 0.105 .9479656 1.760847

2000.75 | .7786394 .1234883 -1.58 0.115 .570611 1.062509

2001 | .843975 .1330267 -1.08 0.282 .6196748 1.149464

2001.25 | .7819733 .1293586 -1.49 0.137 .5654331 1.08144

2001.75 | .9437522 .1502482 -0.36 0.716 .6907869 1.289353

2002 | .8323791 .1267795 -1.20 0.228 .6175538 1.121935

2002.25 | .6687607 .1117822 -2.41 0.016 .4819409 .9279993

2002.5 | .9349909 .1529767 -0.41 0.681 .6784842 1.288472

2002.75 | .9163928 .151755 -0.53 0.598 .6624031 1.267771

2003 | .7533464 .1297985 -1.64 0.100 .5374477 1.055974

2003.25 | .7640713 .1290003 -1.59 0.111 .5488115 1.063762

2003.5 | .9858792 .1658693 -0.08 0.933 .7089462 1.370989

2003.75 | .6472883 .1097493 -2.57 0.010 .4642742 .9024456

2004 | .7456818 .1268849 -1.72 0.085 .5342118 1.040863

2004.25 | .7499376 .1221754 -1.77 0.077 .5449447 1.032043

2004.5 | .6630348 .1144941 -2.38 0.017 .4726604 .9300867

2004.75 | .5896611 .1096428 -2.84 0.005 .4095702 .8489392

2005 | .5605204 .0949167 -3.42 0.001 .402209 .7811441

2005.25 | .7100592 .114174 -2.13 0.033 .5181143 .9731136

2005.5 | .6264137 .104307 -2.81 0.005 .4519848 .8681577

2005.75 | .5073071 .0844895 -4.07 0.000 .3660222 .703128

2006 | .7427945 .1243892 -1.78 0.076 .5349652 1.031364

2006.25 | .5967782 .1008195 -3.06 0.002 .4285596 .8310261

2006.5 | .6302369 .1050804 -2.77 0.006 .45455 .8738282

2006.75 | .594449 .1045377 -2.96 0.003 .4211388 .839081

2007 | .5460687 .0911287 -3.63 0.000 .3937292 .7573505

2007.25 | .520051 .0918101 -3.70 0.000 .3679377 .7350512

2007.5 | .6331235 .1054353 -2.74 0.006 .4568106 .8774871

2007.75 | .6198663 .1046843 -2.83 0.005 .4451899 .8630794

2008 | .4647619 .0804871 -4.42 0.000 .330994 .6525908

2008.25 | .5022724 .0877396 -3.94 0.000 .3566538 .7073458

2008.5 | .5294414 .0894809 -3.76 0.000 .3801513 .7373597

2008.75 | .3957838 .0683705 -5.37 0.000 .282108 .5552654

2009 | .4065265 .0725352 -5.04 0.000 .2865574 .5767214

2009.25 | .3695053 .0645975 -5.69 0.000 .2623085 .5205099

2009.5 | .4535138 .0798158 -4.49 0.000 .3212062 .64032

2009.75 | .3470151 .0632406 -5.81 0.000 .2427862 .4959896

2010 | .3651963 .067273 -5.47 0.000 .2545224 .5239944

2010.25 | .3946562 .0731581 -5.02 0.000 .2744292 .5675546

2010.5 | .4771673 .0851951 -4.14 0.000 .3362748 .6770911

2010.75 | .358429 .0651656 -5.64 0.000 .2509846 .5118694

2011 | .4646891 .0843984 -4.22 0.000 .3255101 .6633771

2011.25 | .4662627 .0811334 -4.38 0.000 .3315239 .6557625

2011.5 | .541601 .0916433 -3.62 0.000 .388731 .7545878

2011.75 | .3607411 .0651163 -5.65 0.000 .2532489 .5138585

2012 | .4885299 .0865444 -4.04 0.000 .3452221 .6913275

2012.25 | .4623613 .0842499 -4.23 0.000 .3235031 .660822

2012.5 | .5317897 .0959766 -3.50 0.000 .3733502 .7574667

2012.75 | .3377378 .0647758 -5.66 0.000 .231913 .4918517

2013 | .342921 .0630054 -5.83 0.000 .2392222 .4915715

2013.25 | .2837441 .0558856 -6.40 0.000 .192875 .4174243

2013.5 | .3620456 .0717962 -5.12 0.000 .2454506 .5340262

2013.75 | .3830278 .0767171 -4.79 0.000 .2586676 .5671769

2014 | .2494489 .051316 -6.75 0.000 .1666766 .3733262

2014.25 | .3158152 .0649021 -5.61 0.000 .2111085 .472455

2014.5 | .3633627 .072447 -5.08 0.000 .2458263 .5370965

2014.75 | .3688574 .0732926 -5.02 0.000 .2498752 .5444949

2015 | .3525976 .0754259 -4.87 0.000 .2318434 .536246

2015.25 | .3414983 .075043 -4.89 0.000 .2219933 .5253358

2015.5 | .4959703 .1065609 -3.26 0.001 .3255159 .7556821

2015.75 | .2290766 .0516241 -6.54 0.000 .1472842 .3562914

2016 | .3705964 .084456 -4.36 0.000 .2370932 .5792732

|

\_cons | .0000183 2.27e-06 -87.98 0.000 .0000143 .0000233

lnhours | 1 (offset)

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

**. lfit**

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

number of observations = 26110

number of covariate patterns = 26069

Pearson chi2(25981) = 183089.75

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -15202.263

Iteration 1: log likelihood = -11645.71

Iteration 2: log likelihood = -11535.09

Iteration 3: log likelihood = -11530.262

Iteration 4: log likelihood = -11530.212

Iteration 5: log likelihood = -11530.212

Logistic regression Number of obs = 26,110

LR chi2(2) = 7344.10

Prob > chi2 = 0.0000

Log likelihood = -11530.212 Pseudo R2 = 0.2415

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

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

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

\_hat | 1.11751 .0199762 55.94 0.000 1.078357 1.156662

\_hatsq | .077096 .0067565 11.41 0.000 .0638534 .0903386

\_cons | -.0545071 .0208753 -2.61 0.009 -.0954218 -.0135923

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

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 3078 1228 | 4306

- | 3945 17859 | 21804

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

Total | 7023 19087 | 26110

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

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

Sensitivity Pr( +| D) 43.83%

Specificity Pr( -|~D) 93.57%

Positive predictive value Pr( D| +) 71.48%

Negative predictive value Pr(~D| -) 81.91%

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

False + rate for true ~D Pr( +|~D) 6.43%

False - rate for true D Pr( -| D) 56.17%

False + rate for classified + Pr(~D| +) 28.52%

False - rate for classified - Pr( D| -) 18.09%

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

Correctly classified 80.19%

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

**. summ MR\_indicator pbssv2\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

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

pbssv2\_yhat | 26,110 .2689774 .2329331 .0000242 .9859897