. // Model B.V.4

.

. eststo clear

. eststo: logit dv\_indicator `count\_lag\_all\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) offset(lnhours) iter(50) or

note: 8.state != 0 predicts failure perfectly

8.state dropped and 1 obs not used

Iteration 0: log pseudolikelihood = -9648.0546

Iteration 1: log pseudolikelihood = -9153.879

Iteration 2: log pseudolikelihood = -9117.7523

Iteration 3: log pseudolikelihood = -9117.5114

Iteration 4: log pseudolikelihood = -9117.5114

Logistic regression Number of obs = 19,290

Wald chi2(81) = .

Log pseudolikelihood = -9117.5114 Prob > chi2 = .

(Std. Err. adjusted for 1,287 clusters in mineid)

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

| Robust

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

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

p48\_c\_lag\_all | 1.025942 .0167161 1.57 0.116 .9936962 1.059233

p75\_c\_lag\_all | 1.000314 .0001265 2.49 0.013 1.000066 1.000562

mine\_time | .998062 .0038063 -0.51 0.611 .9906295 1.00555

onsite\_insp\_hours | 1.003729 .0004728 7.90 0.000 1.002803 1.004656

|

state |

AL | 1.123564 .4108814 0.32 0.750 .5486785 2.300794

CO | 1.385168 .2412816 1.87 0.061 .9845376 1.948825

IL | 4.774965 1.428433 5.23 0.000 2.656641 8.582374

IN | 1.850707 .6303897 1.81 0.071 .9492937 3.608069

MD | 2.123541 .6331466 2.53 0.012 1.183777 3.809356

MT | 1 (empty)

NM | 2.177953 .1425498 11.89 0.000 1.915738 2.476057

OH | 1.318959 .2825499 1.29 0.196 .8667327 2.007138

OK | 3.641196 1.350917 3.48 0.000 1.759708 7.534381

PA | 1.830333 .2241156 4.94 0.000 1.439808 2.326782

TN | 1.733301 .3633815 2.62 0.009 1.14927 2.614122

UT | .4265123 .1212397 -3.00 0.003 .2443264 .7445481

VA | 1.125481 .0977274 1.36 0.173 .9493509 1.334287

WV | 1.708638 .138829 6.59 0.000 1.457099 2.003601

WY | 2.5968 .616258 4.02 0.000 1.630933 4.13467

|

time |

2000.25 | 1.478959 .1965407 2.94 0.003 1.139827 1.918993

2000.5 | 1.571305 .2230949 3.18 0.001 1.189614 2.075461

2000.75 | .7786709 .1039317 -1.87 0.061 .599434 1.011502

2001 | .9676857 .1347797 -0.24 0.814 .73651 1.271423

2001.25 | .968284 .1347728 -0.23 0.817 .7371 1.271977

2001.5 | 1.219667 .1857111 1.30 0.192 .9049699 1.643798

2001.75 | .9701166 .1457344 -0.20 0.840 .7226923 1.30225

2002 | 1.072149 .1593173 0.47 0.639 .801253 1.434632

2002.25 | .8912733 .1374344 -0.75 0.455 .6588031 1.205775

2002.5 | 1.28172 .2087195 1.52 0.127 .9314954 1.763623

2002.75 | .8068878 .1267419 -1.37 0.172 .5930764 1.097781

2003 | .9324708 .1645413 -0.40 0.692 .6598338 1.317759

2003.25 | .9530807 .1652526 -0.28 0.782 .6784872 1.338806

2003.5 | 1.426362 .2413623 2.10 0.036 1.023749 1.987312

2003.75 | .746157 .1291934 -1.69 0.091 .5314334 1.047639

2004 | .772457 .1278679 -1.56 0.119 .5584336 1.068506

2004.25 | .7108897 .116982 -2.07 0.038 .5149094 .9814623

2004.5 | .7407897 .1251009 -1.78 0.076 .5320449 1.031434

2004.75 | .5871754 .0965281 -3.24 0.001 .4254373 .8104014

2005 | .7156373 .1220474 -1.96 0.050 .5123019 .9996776

2005.25 | .6237914 .1039011 -2.83 0.005 .4500492 .8646073

2005.5 | .7271457 .127554 -1.82 0.069 .5155917 1.025503

2005.75 | .5399052 .0935338 -3.56 0.000 .3844629 .7581946

2006 | .6747589 .1244754 -2.13 0.033 .4700285 .9686638

2006.25 | .5580219 .0940908 -3.46 0.001 .4009831 .7765625

2006.5 | .6769217 .1174466 -2.25 0.025 .481786 .9510925

2006.75 | .569385 .1019629 -3.15 0.002 .4008452 .8087894

2007 | .5317385 .0932448 -3.60 0.000 .3770794 .7498311

2007.25 | .4582829 .0812078 -4.40 0.000 .3238176 .6485847

2007.5 | .5824156 .104714 -3.01 0.003 .4094428 .8284623

2007.75 | .4686762 .0810192 -4.38 0.000 .3339852 .6576859

2008 | .4589021 .0828252 -4.32 0.000 .322174 .6536564

2008.25 | .4680671 .087351 -4.07 0.000 .3246805 .6747766

2008.5 | .4424372 .0782521 -4.61 0.000 .3128261 .6257491

2008.75 | .450681 .0792742 -4.53 0.000 .3192597 .6362011

2009 | .5140203 .0931323 -3.67 0.000 .3603762 .7331695

2009.25 | .5234595 .1023371 -3.31 0.001 .3568387 .7678815

2009.5 | .4085232 .080455 -4.55 0.000 .2777027 .6009707

2009.75 | .4498021 .0847674 -4.24 0.000 .3108912 .6507806

2010 | .4312813 .0888763 -4.08 0.000 .2879713 .64591

2010.25 | .4486848 .0875884 -4.11 0.000 .3060393 .6578177

2010.5 | .6302001 .1301601 -2.24 0.025 .4204103 .9446777

2010.75 | .3793871 .0785559 -4.68 0.000 .2528323 .5692886

2011 | .4348463 .0889841 -4.07 0.000 .2911732 .6494117

2011.25 | .4095342 .0836075 -4.37 0.000 .2744827 .6110338

2011.5 | .5428255 .1067093 -3.11 0.002 .3692582 .7979771

2011.75 | .4370218 .0894435 -4.04 0.000 .2926113 .6527022

2012 | .3438335 .0687459 -5.34 0.000 .2323589 .5087881

2012.25 | .4691762 .0978877 -3.63 0.000 .3117049 .7062011

2012.5 | .4219167 .0919776 -3.96 0.000 .2752107 .646827

2012.75 | .1734617 .0389067 -7.81 0.000 .1117591 .2692306

2013 | .3662919 .0850981 -4.32 0.000 .2323129 .5775389

2013.25 | .354996 .0848021 -4.34 0.000 .222273 .5669701

2013.5 | .281651 .0683032 -5.22 0.000 .1751001 .4530398

2013.75 | .222939 .054399 -6.15 0.000 .1381929 .3596551

2014 | .291973 .0759964 -4.73 0.000 .1753021 .4862933

2014.25 | .2446568 .0623563 -5.52 0.000 .14846 .4031858

2014.5 | .271026 .0677754 -5.22 0.000 .1660164 .4424566

2014.75 | .3968136 .1063375 -3.45 0.001 .2346837 .6709501

2015 | .2828312 .0701587 -5.09 0.000 .1739321 .4599123

2015.25 | .1692766 .0432409 -6.95 0.000 .1026034 .279275

2015.5 | .3198302 .0846932 -4.30 0.000 .1903337 .5374317

2015.75 | .1907786 .0518398 -6.10 0.000 .1120043 .3249559

2016 | .1146708 .0374382 -6.63 0.000 .0604713 .2174488

|

\_cons | .0000763 8.41e-06 -86.08 0.000 .0000615 .0000947

lnhours | 1 (offset)

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

(est1 stored)

. esttab using `"`directory'Model.`injury\_label'.`time\_label'.`violation\_level\_label'.B.V.4.csv"', replace plain wide p eform

(note: file C:\Users\jbodson\Dropbox (Stanford Law School)\R-code\Injury-Classification\PS Model Summaries 10-10\Estout\Model.PS.Q.P.B.V.4.csv not found)

(output written to C:\Users\jbodson\Dropbox (Stanford Law School)\R-code\Injury-Classification\PS Model Summaries 10-10\Estout\Model.PS.Q.P.B.V.4.csv)

.

. pause "next"

.

. // diagnostics/assessment

. lfit

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

number of observations = 19290

number of covariate patterns = 19280

Pearson chi2(19197) = 71603.34

Prob > chi2 = 0.0000

.

. pause "next"

.

. linktest

Iteration 0: log likelihood = -12685.832

Iteration 1: log likelihood = -9394.1671

Iteration 2: log likelihood = -8969.0892

Iteration 3: log likelihood = -8876.2026

Iteration 4: log likelihood = -8875.8284

Iteration 5: log likelihood = -8875.8284

Logistic regression Number of obs = 19,290

LR chi2(2) = 7620.01

Prob > chi2 = 0.0000

Log likelihood = -8875.8284 Pseudo R2 = 0.3003

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

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

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

\_hat | .9683457 .0167917 57.67 0.000 .9354346 1.001257

\_hatsq | .1347302 .0052837 25.50 0.000 .1243743 .1450862

\_cons | -.165434 .0201568 -8.21 0.000 -.2049406 -.1259274

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

Note: 0 failures and 56 successes completely determined.

.

. pause "next"

.

. estat classification

Logistic model for dv\_indicator

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

Classified | D ~D | Total

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

+ | 10483 2609 | 13092

- | 1717 4481 | 6198

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

Total | 12200 7090 | 19290

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

True D defined as dv\_indicator != 0

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

Sensitivity Pr( +| D) 85.93%

Specificity Pr( -|~D) 63.20%

Positive predictive value Pr( D| +) 80.07%

Negative predictive value Pr(~D| -) 72.30%

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

False + rate for true ~D Pr( +|~D) 36.80%

False - rate for true D Pr( -| D) 14.07%

False + rate for classified + Pr(~D| +) 19.93%

False - rate for classified - Pr( D| -) 27.70%

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

Correctly classified 77.57%

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

.

. pause "next"

.

. predict bv4\_yhat

(option pr assumed; Pr(dv\_indicator))

(10999 missing values generated)

. gen bv4\_res = dv\_indicator - bv4\_yhat

(10,999 missing values generated)

.

. summ dv\_indicator bv4\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv\_indicator | 30,289 .5522797 .4972675 0 1

bv4\_yhat | 19,290 .632452 .2778788 .0001637 .9999929

. /\*

> pause "next"

>

> scatter dv\_indicator bv4\_yhat

>

> pause "next"

>

> scatter bv4\_res dv\_indicator

>

> pause "next"

>

> scatter bv4\_res bv4\_yhat

> \*/

. pause "complete: B.V.4"