. // Model C.V.3

.

. // poisson model

. glm dv `count\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, family(poisson) link(log) vce(cl mineid) exposure(hours) iter(50) eform

Iteration 0: log pseudolikelihood = -23327.994

Iteration 1: log pseudolikelihood = -20952.169

Iteration 2: log pseudolikelihood = -20942.839

Iteration 3: log pseudolikelihood = -20942.834

Iteration 4: log pseudolikelihood = -20942.834

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 22357.68789 (1/df) Deviance = 3.593906

Pearson = 27661.68479 (1/df) Pearson = 4.446501

Variance function: V(u) = u [Poisson]

Link function : g(u) = ln(u) [Log]

AIC = 6.708727

Log pseudolikelihood = -20942.83404 BIC = -32018.93

(Std. Err. adjusted for 1,238 clusters in mineid)

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

| Robust

dv | IRR Std. Err. z P>|z| [95% Conf. Interval]

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

p48\_c\_4lag | 1.002312 .0019534 1.19 0.236 .9984912 1.006148

p75\_c\_4lag | 1.000086 .0000499 1.73 0.084 .9999884 1.000184

mine\_time | 1.007009 .0066613 1.06 0.291 .9940375 1.02015

onsite\_insp\_hours | .9998025 .0000432 -4.57 0.000 .9997178 .9998872

|

state |

1 | .9483976 .0872613 -0.58 0.565 .7919031 1.135818

2 | 1.638669 .0867534 9.33 0.000 1.47716 1.817837

3 | .6416376 .0669878 -4.25 0.000 .5229056 .7873291

4 | 1.225243 .099379 2.50 0.012 1.045157 1.436359

5 | 1.072775 .1289128 0.58 0.559 .8476598 1.357674

6 | .9817235 .0555204 -0.33 0.744 .8787197 1.096801

7 | 1.125295 .1674157 0.79 0.428 .8406764 1.506273

8 | .5060109 .0207673 -16.60 0.000 .4669018 .5483959

9 | .6480692 .0282606 -9.95 0.000 .5949805 .7058948

10 | .9014646 .0553128 -1.69 0.091 .7993187 1.016664

11 | 1.720141 .3254036 2.87 0.004 1.187244 2.49223

12 | 1.023453 .0973682 0.24 0.807 .8493507 1.233243

13 | 1.545979 .1593132 4.23 0.000 1.263244 1.891995

14 | .4211313 .06414 -5.68 0.000 .3124468 .5676217

15 | .8065459 .0612504 -2.83 0.005 .6950042 .935989

17 | .6631385 .0238992 -11.40 0.000 .6179129 .7116741

|

time |

2000 | 1.076043 .0451138 1.75 0.080 .991157 1.168199

2002 | .9603448 .0364581 -1.07 0.286 .8914819 1.034527

2003 | .8419907 .0332619 -4.35 0.000 .7792584 .909773

2004 | .8151854 .0356276 -4.68 0.000 .7482638 .8880921

2005 | .7617128 .0393491 -5.27 0.000 .6883658 .8428752

2006 | .7260485 .0390488 -5.95 0.000 .65341 .8067621

2007 | .7342848 .0426162 -5.32 0.000 .655334 .822747

2008 | .7017917 .0417643 -5.95 0.000 .6245287 .7886131

2009 | .6169186 .0382194 -7.80 0.000 .5463793 .6965648

2010 | .60431 .0406755 -7.48 0.000 .5296223 .6895301

2011 | .5500578 .0352518 -9.33 0.000 .4851288 .6236768

2012 | .4902897 .0340421 -10.27 0.000 .4279091 .561764

2013 | .4727326 .0375772 -9.43 0.000 .404533 .5524297

2014 | .4961598 .0429694 -8.09 0.000 .4187011 .587948

2015 | .4665219 .0418326 -8.50 0.000 .3913322 .5561585

|

\_cons | .0000948 5.37e-06 -163.69 0.000 .0000849 .000106

ln(hours) | 1 (exposure)

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

.

. quietly poisson dv `count\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) exposure(hours) iter(50) irr

. est store pois

. estat gof

Deviance goodness-of-fit = 22357.69

Prob > chi2(6221) = 0.0000

Pearson goodness-of-fit = 27661.68

Prob > chi2(6221) = 0.0000

.

. pause "next"

.

. // negative binomial model

. glm dv `count\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, family(nbinomial) link(log) vce(cl mineid) exposure(hours) iter(50) eform

Iteration 0: log pseudolikelihood = -17736.93

Iteration 1: log pseudolikelihood = -17512.793

Iteration 2: log pseudolikelihood = -17507.638

Iteration 3: log pseudolikelihood = -17507.627

Iteration 4: log pseudolikelihood = -17507.627

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 3927.283352 (1/df) Deviance = .6312945

Pearson = 5307.218731 (1/df) Pearson = .8531134

Variance function: V(u) = u+(1)u^2 [Neg. Binomial]

Link function : g(u) = ln(u) [Log]

AIC = 5.609988

Log pseudolikelihood = -17507.62687 BIC = -50449.34

(Std. Err. adjusted for 1,238 clusters in mineid)

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

| Robust

dv | IRR Std. Err. z P>|z| [95% Conf. Interval]

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

p48\_c\_4lag | 1.002813 .0025542 1.10 0.270 .9978197 1.007832

p75\_c\_4lag | 1.000206 .0000555 3.72 0.000 1.000098 1.000315

mine\_time | 1.009501 .0062375 1.53 0.126 .9973499 1.021801

onsite\_insp\_hours | .9997699 .0000445 -5.17 0.000 .9996826 .9998571

|

state |

1 | .8066529 .1000453 -1.73 0.083 .6325811 1.028625

2 | 1.092175 .05285 1.82 0.068 .9933515 1.20083

3 | .6536758 .0847885 -3.28 0.001 .5069356 .8428922

4 | 1.005205 .0664624 0.08 0.937 .8830285 1.144286

5 | .8530909 .0794236 -1.71 0.088 .7108003 1.023866

6 | .769666 .0384086 -5.25 0.000 .6979508 .84875

7 | 1.0777 .2275967 0.35 0.723 .7124183 1.630276

8 | .4851147 .0188911 -18.58 0.000 .4494666 .5235901

9 | .538978 .0240452 -13.85 0.000 .4938519 .5882275

10 | .7769826 .0833721 -2.35 0.019 .6296154 .9588423

11 | 1.51677 .2730939 2.31 0.021 1.065764 2.15863

12 | 1.013056 .078163 0.17 0.866 .8708798 1.178442

13 | 1.549283 .1791225 3.79 0.000 1.235145 1.943317

14 | .416472 .0744049 -4.90 0.000 .2934365 .5910953

15 | .7075368 .0406267 -6.03 0.000 .6322271 .7918172

17 | .5909481 .0216645 -14.35 0.000 .5499761 .6349725

|

time |

2000 | 1.040411 .0606625 0.68 0.497 .9280566 1.166367

2002 | .8969354 .0507166 -1.92 0.054 .8028428 1.002056

2003 | .842744 .0626234 -2.30 0.021 .7285239 .9748718

2004 | .7657497 .0491344 -4.16 0.000 .6752574 .8683689

2005 | .6872697 .0445208 -5.79 0.000 .6053229 .7803103

2006 | .6790756 .045567 -5.77 0.000 .5953896 .7745243

2007 | .6634748 .0476008 -5.72 0.000 .5764415 .7636487

2008 | .5986508 .0441974 -6.95 0.000 .5180011 .6918572

2009 | .5406606 .0411408 -8.08 0.000 .465751 .6276183

2010 | .5394978 .0410846 -8.10 0.000 .4646947 .6263421

2011 | .5051653 .0376213 -9.17 0.000 .4365578 .5845548

2012 | .4510648 .0377405 -9.52 0.000 .3828415 .5314456

2013 | .4526239 .0399253 -8.99 0.000 .3807626 .5380476

2014 | .4331032 .0372896 -9.72 0.000 .3658509 .5127181

2015 | .4035434 .0357354 -10.25 0.000 .3392446 .4800291

|

\_cons | .0001145 8.21e-06 -126.57 0.000 .0000995 .0001318

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

. eststo: nbreg dv `count\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) exposure(hours) iter(50) irr

Fitting Poisson model:

Iteration 0: log pseudolikelihood = -22862.196

Iteration 1: log pseudolikelihood = -20967.944

Iteration 2: log pseudolikelihood = -20942.844

Iteration 3: log pseudolikelihood = -20942.834

Iteration 4: log pseudolikelihood = -20942.834

Fitting constant-only model:

Iteration 0: log pseudolikelihood = -17884.199

Iteration 1: log pseudolikelihood = -17442.363

Iteration 2: log pseudolikelihood = -17390.126

Iteration 3: log pseudolikelihood = -17389.648

Iteration 4: log pseudolikelihood = -17389.648

Fitting full model:

Iteration 0: log pseudolikelihood = -16878.952

Iteration 1: log pseudolikelihood = -16750.544

Iteration 2: log pseudolikelihood = -16739.598

Iteration 3: log pseudolikelihood = -16739.569

Iteration 4: log pseudolikelihood = -16739.569

Negative binomial regression Number of obs = 6,253

Wald chi2(31) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16739.569 Pseudo R2 = 0.0374

(Std. Err. adjusted for 1,238 clusters in mineid)

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

| Robust

dv | IRR Std. Err. z P>|z| [95% Conf. Interval]

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

p48\_c\_4lag | 1.001977 .002044 0.97 0.333 .9979788 1.005991

p75\_c\_4lag | 1.000196 .0000527 3.71 0.000 1.000092 1.000299

mine\_time | 1.007006 .0057439 1.22 0.221 .9958107 1.018327

onsite\_insp\_hours | .9997785 .0000441 -5.02 0.000 .9996921 .9998649

|

state |

1 | .8311519 .0938742 -1.64 0.102 .6661035 1.037096

2 | 1.234734 .0570541 4.56 0.000 1.127824 1.351778

3 | .64517 .0832586 -3.40 0.001 .500988 .8308469

4 | 1.021373 .0632203 0.34 0.733 .9046842 1.153112

5 | .881252 .0832611 -1.34 0.181 .7322817 1.060528

6 | .7973156 .0378317 -4.77 0.000 .7265102 .8750217

7 | 1.062596 .2054811 0.31 0.754 .7273878 1.552282

8 | .4868713 .0178392 -19.64 0.000 .453133 .5231217

9 | .5689643 .0235923 -13.60 0.000 .5245534 .6171353

10 | .7970599 .0711534 -2.54 0.011 .6691204 .949462

11 | 1.551576 .273456 2.49 0.013 1.098383 2.191756

12 | 1.074496 .0771422 1.00 0.317 .9334558 1.236846

13 | 1.518469 .1630485 3.89 0.000 1.230287 1.874154

14 | .414519 .0737917 -4.95 0.000 .2924258 .5875885

15 | .7333769 .0399951 -5.69 0.000 .659032 .8161087

17 | .6105008 .0209942 -14.35 0.000 .570709 .6530671

|

time |

2000 | 1.06054 .0510476 1.22 0.222 .9650629 1.165463

2002 | .9222531 .0424076 -1.76 0.078 .8427711 1.009231

2003 | .8379868 .0479227 -3.09 0.002 .7491327 .9373798

2004 | .7884283 .0414655 -4.52 0.000 .7112057 .8740356

2005 | .7129587 .0398739 -6.05 0.000 .6389383 .7955543

2006 | .703381 .0405476 -6.10 0.000 .6282344 .7875163

2007 | .6946806 .0433942 -5.83 0.000 .6146299 .7851573

2008 | .6216302 .0395014 -7.48 0.000 .5488361 .7040792

2009 | .5542274 .0365119 -8.96 0.000 .4870929 .6306149

2010 | .5561662 .037853 -8.62 0.000 .4867112 .6355326

2011 | .5171223 .033989 -10.03 0.000 .4546175 .5882208

2012 | .4561018 .0328433 -10.90 0.000 .3960663 .5252374

2013 | .4453978 .0336434 -10.71 0.000 .3841069 .5164688

2014 | .4427952 .0344782 -10.46 0.000 .380123 .5158004

2015 | .4208987 .0340504 -10.70 0.000 .3591832 .4932182

|

\_cons | .00011 6.74e-06 -148.76 0.000 .0000975 .000124

ln(hours) | 1 (exposure)

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

/lnalpha | -1.171286 .0603117 -1.289495 -1.053077

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

alpha | .3099681 .0186947 .2754099 .3488626

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

(est1 stored)

. esttab using `"`directory'Model.`injury\_label'.`time\_label'.`violation\_level\_label'.C.V.3.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.Y.P.C.V.3.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.Y.P.C.V.3.csv)

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(1) = 8406.53

(Assumption: pois nested in nbin) Prob > chi2 = 0.0000

Akaike's information criterion and Bayesian information criterion

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

Model | Obs ll(null) ll(model) df AIC BIC

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

pois | 6,253 -24975.69 -20942.83 32 41949.67 42165.37

nbin | 6,253 -17389.65 -16739.57 33 33545.14 33767.58

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

Note: N=Obs used in calculating BIC; see [R] BIC note.

.

. pause "next"

.

. // final model + diagnostics/assessment

. quietly nbreg dv `count\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) exposure(hours) iter(50) irr

. predict cv3\_yhat

(option n assumed; predicted number of events)

. gen cv3\_res = dv - cv3\_yhat

.

. summ dv cv3\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cv3\_yhat | 6,253 10.61109 15.63275 .0035451 144.4476

.

. pause "next"

. /\*

> scatter dv cv3\_yhat

>

> pause "next"

>

> scatter cv3\_res dv

>

> pause "next"

>

> scatter cv3\_res cv3\_yhat

> \*/

. pause "complete: C.V.3"

.