.

. // Model C.PP.3

.

. // poisson model

. glm dv `pp\_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 = -23215.876

Iteration 1: log pseudolikelihood = -20921.392

Iteration 2: log pseudolikelihood = -20913.164

Iteration 3: log pseudolikelihood = -20913.161

Iteration 4: log pseudolikelihood = -20913.161

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 22298.34227 (1/df) Deviance = 3.584366

Pearson = 27583.9859 (1/df) Pearson = 4.434012

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

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

AIC = 6.699236

Log pseudolikelihood = -20913.16123 BIC = -32078.28

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

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

| Robust

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

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

p48\_pp\_c\_4lag | 1.000068 .0000365 1.87 0.061 .9999968 1.00014

p75\_pp\_c\_4lag | 1.000002 6.35e-07 2.46 0.014 1 1.000003

mine\_time | 1.004823 .0064459 0.75 0.453 .9922679 1.017536

onsite\_insp\_hours | .9998033 .000051 -3.86 0.000 .9997034 .9999033

|

state |

1 | .9733614 .0939137 -0.28 0.780 .8056509 1.175984

2 | 1.675161 .0846719 10.21 0.000 1.517163 1.849614

3 | .6512682 .0671758 -4.16 0.000 .5320614 .797183

4 | 1.235153 .1064868 2.45 0.014 1.043124 1.462533

5 | 1.072132 .1296342 0.58 0.565 .8459162 1.358843

6 | .9826465 .0566637 -0.30 0.761 .8776338 1.100225

7 | 1.133183 .1693177 0.84 0.403 .8455039 1.518745

8 | .5188289 .0208738 -16.31 0.000 .4794885 .5613971

9 | .6514664 .027757 -10.06 0.000 .5992732 .7082053

10 | .9162906 .059064 -1.36 0.175 .8075415 1.039685

11 | 1.723672 .3139599 2.99 0.003 1.206179 2.463188

12 | 1.04101 .1041642 0.40 0.688 .855624 1.266563

13 | 1.533487 .1563193 4.19 0.000 1.255772 1.872617

14 | .4246408 .0643994 -5.65 0.000 .315451 .5716256

15 | .8068635 .0614724 -2.82 0.005 .6949439 .9368077

17 | .6655665 .0237059 -11.43 0.000 .6206885 .7136893

|

time |

2000 | 1.046353 .0431496 1.10 0.272 .9651086 1.134436

2002 | .9635012 .0368572 -0.97 0.331 .8939041 1.038517

2003 | .8459487 .0337557 -4.19 0.000 .7823098 .9147645

2004 | .8220356 .0362152 -4.45 0.000 .7540333 .8961707

2005 | .7736385 .0405329 -4.90 0.000 .6981383 .8573038

2006 | .7394757 .0402104 -5.55 0.000 .6647191 .8226396

2007 | .7294076 .0422543 -5.45 0.000 .6511191 .8171092

2008 | .6607929 .0398086 -6.88 0.000 .5871997 .7436095

2009 | .5811281 .0359369 -8.78 0.000 .5147942 .6560095

2010 | .5726119 .0387318 -8.24 0.000 .5015159 .6537868

2011 | .522459 .0332464 -10.20 0.000 .461197 .5918586

2012 | .4655589 .0318512 -11.17 0.000 .4071361 .5323651

2013 | .4505061 .0340558 -10.55 0.000 .3884674 .5224526

2014 | .472349 .0398322 -8.89 0.000 .4003898 .5572409

2015 | .4452394 .0400117 -9.00 0.000 .373336 .5309911

|

\_cons | .000098 5.63e-06 -160.78 0.000 .0000876 .0001097

ln(hours) | 1 (exposure)

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

.

. quietly poisson dv `pp\_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 = 22298.34

Prob > chi2(6220) = 0.0000

Pearson goodness-of-fit = 27583.99

Prob > chi2(6220) = 0.0000

.

. pause "next"

.

. // negative binomial model

. glm dv `pp\_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 = -17740.524

Iteration 1: log pseudolikelihood = -17516.344

Iteration 2: log pseudolikelihood = -17511.089

Iteration 3: log pseudolikelihood = -17511.077

Iteration 4: log pseudolikelihood = -17511.077

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 3934.183294 (1/df) Deviance = .6324037

Pearson = 5314.166896 (1/df) Pearson = .8542303

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

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

AIC = 5.611091

Log pseudolikelihood = -17511.07684 BIC = -50442.44

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

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

| Robust

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

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

p48\_pp\_c\_4lag | 1.000072 .0000505 1.42 0.157 .9999726 1.00017

p75\_pp\_c\_4lag | 1.000002 6.86e-07 2.65 0.008 1 1.000003

mine\_time | 1.009746 .006313 1.55 0.121 .9974482 1.022195

onsite\_insp\_hours | .9998219 .0000441 -4.04 0.000 .9997355 .9999083

|

state |

1 | .8299327 .1028689 -1.50 0.133 .6509351 1.058152

2 | 1.097852 .0547275 1.87 0.061 .9956613 1.210531

3 | .6688291 .0861905 -3.12 0.002 .5195445 .8610088

4 | 1.032053 .0688986 0.47 0.636 .9054758 1.176325

5 | .8579852 .0829865 -1.58 0.113 .709822 1.037075

6 | .7694128 .0387131 -5.21 0.000 .6971579 .8491565

7 | 1.088509 .2301558 0.40 0.688 .7192055 1.647446

8 | .4767134 .0194409 -18.17 0.000 .4400929 .5163812

9 | .5382598 .0250139 -13.33 0.000 .4914 .5895881

10 | .7844825 .0843696 -2.26 0.024 .6353867 .968564

11 | 1.528921 .2700579 2.40 0.016 1.081521 2.161401

12 | .9959592 .0783276 -0.05 0.959 .8536866 1.161942

13 | 1.535052 .1801764 3.65 0.000 1.219589 1.932114

14 | .4153479 .0755487 -4.83 0.000 .2907936 .5932521

15 | .7084624 .0409582 -5.96 0.000 .6325668 .7934639

17 | .5818076 .0222126 -14.19 0.000 .5398607 .6270137

|

time |

2000 | 1.009395 .0586157 0.16 0.872 .9008068 1.131072

2002 | .8985504 .0503306 -1.91 0.056 .8051262 1.002815

2003 | .840603 .0622792 -2.34 0.019 .7269868 .9719756

2004 | .7638409 .0491492 -4.19 0.000 .6733371 .8665095

2005 | .6874527 .0451377 -5.71 0.000 .6044403 .7818658

2006 | .6823757 .0463999 -5.62 0.000 .5972332 .7796563

2007 | .6593551 .0474191 -5.79 0.000 .5726684 .7591639

2008 | .5781655 .0428218 -7.40 0.000 .5000438 .6684921

2009 | .5228437 .0399832 -8.48 0.000 .4500682 .6073871

2010 | .5206794 .0395781 -8.59 0.000 .4486095 .6043275

2011 | .4868153 .036223 -9.67 0.000 .4207537 .5632491

2012 | .4328431 .0360947 -10.04 0.000 .3675776 .5096968

2013 | .4334946 .038386 -9.44 0.000 .3644263 .515653

2014 | .4129016 .0354476 -10.30 0.000 .3489562 .4885649

2015 | .3849969 .0340338 -10.80 0.000 .3237508 .4578293

|

\_cons | .0001175 8.43e-06 -126.08 0.000 .0001021 .0001352

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

. eststo: nbreg dv `pp\_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 = -21525.269

Iteration 1: log pseudolikelihood = -20914.904

Iteration 2: log pseudolikelihood = -20913.162

Iteration 3: log pseudolikelihood = -20913.161

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 = -16878.478

Iteration 1: log pseudolikelihood = -16755.042

Iteration 2: log pseudolikelihood = -16745.711

Iteration 3: log pseudolikelihood = -16745.69

Iteration 4: log pseudolikelihood = -16745.69

Negative binomial regression Number of obs = 6,253

Wald chi2(31) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16745.69 Pseudo R2 = 0.0370

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

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

| Robust

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

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

p48\_pp\_c\_4lag | 1.000058 .000041 1.42 0.155 .999978 1.000139

p75\_pp\_c\_4lag | 1.000002 6.55e-07 3.12 0.002 1.000001 1.000003

mine\_time | 1.006698 .0057993 1.16 0.247 .9953955 1.018129

onsite\_insp\_hours | .9998186 .000044 -4.12 0.000 .9997323 .9999048

|

state |

1 | .8572691 .0972419 -1.36 0.175 .6863784 1.070707

2 | 1.245984 .0596116 4.60 0.000 1.134458 1.368474

3 | .660766 .0846222 -3.24 0.001 .5140875 .8492946

4 | 1.048455 .0663515 0.75 0.455 .9261504 1.186911

5 | .8859905 .0869224 -1.23 0.217 .731004 1.073837

6 | .7979101 .0382813 -4.71 0.000 .7262998 .876581

7 | 1.073304 .2085839 0.36 0.716 .7333339 1.570882

8 | .4822174 .0191302 -18.39 0.000 .4461434 .5212082

9 | .5706714 .0248488 -12.88 0.000 .523989 .6215127

10 | .8071063 .0722329 -2.39 0.017 .6772538 .9618559

11 | 1.563964 .2694682 2.60 0.009 1.115748 2.192236

12 | 1.062176 .0779475 0.82 0.411 .91988 1.226483

13 | 1.502878 .1635834 3.74 0.000 1.214152 1.860262

14 | .4143893 .0748589 -4.88 0.000 .2908306 .5904415

15 | .7343884 .0404152 -5.61 0.000 .6592985 .8180307

17 | .6037479 .0217604 -14.00 0.000 .5625699 .64794

|

time |

2000 | 1.027558 .0492817 0.57 0.571 .935368 1.128833

2002 | .9246442 .0421845 -1.72 0.086 .8455528 1.011134

2003 | .8373404 .047764 -3.11 0.002 .7487682 .9363898

2004 | .7882577 .0417472 -4.49 0.000 .7105382 .8744783

2005 | .715382 .040828 -5.87 0.000 .6396738 .8000506

2006 | .7087471 .0415826 -5.87 0.000 .631758 .7951185

2007 | .6900022 .0432331 -5.92 0.000 .6102633 .78016

2008 | .5964571 .0379479 -8.12 0.000 .5265311 .6756697

2009 | .5319014 .0351374 -9.56 0.000 .4673054 .6054267

2010 | .5332134 .0362593 -9.25 0.000 .4666789 .6092338

2011 | .4954617 .0325399 -10.69 0.000 .4356189 .5635254

2012 | .4350711 .0311749 -11.61 0.000 .378066 .5006716

2013 | .4245485 .0319746 -11.38 0.000 .3662854 .4920793

2014 | .4203912 .0325821 -11.18 0.000 .3611453 .4893564

2015 | .4001312 .0323159 -11.34 0.000 .3415519 .4687574

|

\_cons | .0001132 6.96e-06 -147.69 0.000 .0001003 .0001277

ln(hours) | 1 (exposure)

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

/lnalpha | -1.170118 .0610532 -1.28978 -1.050456

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

alpha | .3103304 .0189467 .2753314 .3497783

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

(est1 stored)

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

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(0) = -8334.94

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

Akaike's information criterion and Bayesian information criterion

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

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

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

nbin | 6,253 -17389.65 -16745.69 33 33557.38 33779.83

pois | 6,253 -24975.69 -20913.16 33 41892.32 42114.77

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

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

.

. pause "next"

.

. // final model + diagnostics/assessment

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

. predict cpp3\_yhat

(option n assumed; predicted number of events)

. gen cpp3\_res = dv - cpp3\_yhat

.

. summ dv cpp3\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cpp3\_yhat | 6,253 10.49787 14.95571 .0034772 124.2906

. /\*

> pause "next"

>

> scatter dv cpp3\_yhat

>

> pause "next"

>

> scatter cpp3\_res dv

>

> pause "next"

>

> scatter cpp3\_res cpp3\_yhat

> \*/

. pause "complete: C.PP.3"