. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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.

. // Model C.SSV.1

.

. // poisson model

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

Iteration 0: log pseudolikelihood = -23355.848

Iteration 1: log pseudolikelihood = -20943.545

Iteration 2: log pseudolikelihood = -20933.959

Iteration 3: log pseudolikelihood = -20933.954

Iteration 4: log pseudolikelihood = -20933.954

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 22339.92834 (1/df) Deviance = 3.591051

Pearson = 27593.10784 (1/df) Pearson = 4.435478

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

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

AIC = 6.705887

Log pseudolikelihood = -20933.95427 BIC = -32036.69

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

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

| Robust

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

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

p48\_ss | 1.005955 .0218027 0.27 0.784 .9641179 1.049609

p75\_ss | 1.001043 .0005204 2.01 0.045 1.000024 1.002064

mine\_time | 1.007804 .0065486 1.20 0.232 .9950506 1.020721

onsite\_insp\_hours | .9998075 .0000408 -4.72 0.000 .9997276 .9998873

|

state |

1 | .9451555 .0884239 -0.60 0.547 .7868089 1.13537

2 | 1.618774 .0852474 9.15 0.000 1.460026 1.794783

3 | .6595496 .0676088 -4.06 0.000 .5395018 .80631

4 | 1.253742 .1081315 2.62 0.009 1.058752 1.484642

5 | 1.092358 .1343878 0.72 0.473 .8583131 1.390223

6 | .9839307 .0546378 -0.29 0.770 .8824643 1.097064

7 | 1.124443 .1669332 0.79 0.430 .8405608 1.5042

8 | .5072793 .0197908 -17.40 0.000 .4699359 .5475902

9 | .6522667 .0278332 -10.01 0.000 .5999335 .709165

10 | .8843109 .0551127 -1.97 0.049 .7826286 .9992042

11 | 1.71047 .3313568 2.77 0.006 1.170088 2.500417

12 | 1.016081 .0931928 0.17 0.862 .848903 1.216183

13 | 1.547578 .1582038 4.27 0.000 1.266593 1.890898

14 | .4245911 .0644041 -5.65 0.000 .3153961 .5715911

15 | .8061095 .0623537 -2.79 0.005 .6927115 .9380709

17 | .6736223 .0241526 -11.02 0.000 .6279091 .7226634

|

time |

2000 | 1.050126 .0421178 1.22 0.223 .9707374 1.136006

2002 | .9686002 .0357731 -0.86 0.388 .9009638 1.041314

2003 | .8442923 .0328301 -4.35 0.000 .7823373 .9111535

2004 | .8084112 .0356732 -4.82 0.000 .7414312 .8814422

2005 | .7622664 .0384557 -5.38 0.000 .6905011 .8414904

2006 | .724466 .0390863 -5.97 0.000 .6517696 .8052708

2007 | .7411324 .0422594 -5.25 0.000 .6627661 .8287648

2008 | .7096592 .0415659 -5.86 0.000 .6326938 .7959872

2009 | .6283243 .0375491 -7.78 0.000 .5588761 .7064025

2010 | .6118739 .0409059 -7.35 0.000 .5367304 .6975378

2011 | .5583769 .0357651 -9.10 0.000 .4925001 .6330653

2012 | .4997546 .0344606 -10.06 0.000 .4365783 .5720729

2013 | .4818924 .0381785 -9.21 0.000 .4125842 .5628434

2014 | .5055702 .0434088 -7.94 0.000 .4272642 .5982277

2015 | .4786193 .0427008 -8.26 0.000 .4018361 .5700743

|

\_cons | .0000935 5.03e-06 -172.44 0.000 .0000842 .0001039

ln(hours) | 1 (exposure)

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

.

. quietly poisson dv `count\_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 = 22284.05

Prob > chi2(6221) = 0.0000

Pearson goodness-of-fit = 27548.49

Prob > chi2(6221) = 0.0000

.

. pause "next"

.

. // negative binomial model

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

Iteration 0: log pseudolikelihood = -17728.496

Iteration 1: log pseudolikelihood = -17505.323

Iteration 2: log pseudolikelihood = -17500.321

Iteration 3: log pseudolikelihood = -17500.312

Iteration 4: log pseudolikelihood = -17500.312

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 3912.653311 (1/df) Deviance = .6289428

Pearson = 5288.208941 (1/df) Pearson = .8500577

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

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

AIC = 5.607648

Log pseudolikelihood = -17500.31185 BIC = -50463.97

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

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

| Robust

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

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

p48\_ss | 1.007662 .0233153 0.33 0.742 .9629851 1.054411

p75\_ss | 1.003017 .0006148 4.91 0.000 1.001813 1.004223

mine\_time | 1.01094 .0061509 1.79 0.074 .9989562 1.023068

onsite\_insp\_hours | .9997595 .0000408 -5.90 0.000 .9996796 .9998394

|

state |

1 | .7973523 .0986548 -1.83 0.067 .625652 1.016173

2 | 1.075023 .051944 1.50 0.134 .9778863 1.181808

3 | .6857901 .0848543 -3.05 0.002 .538109 .8740015

4 | 1.043137 .0698662 0.63 0.528 .9148087 1.189466

5 | .875329 .0802153 -1.45 0.146 .7314204 1.047552

6 | .7708536 .0382346 -5.25 0.000 .6994425 .8495555

7 | 1.079084 .226597 0.36 0.717 .7150086 1.628543

8 | .5043957 .0198287 -17.41 0.000 .4669917 .5447956

9 | .5507337 .0245488 -13.38 0.000 .5046609 .6010128

10 | .759972 .0840838 -2.48 0.013 .611815 .9440067

11 | 1.489965 .2774909 2.14 0.032 1.034304 2.146365

12 | 1.024786 .0784544 0.32 0.749 .8819984 1.190689

13 | 1.553279 .1775333 3.85 0.000 1.24154 1.943293

14 | .4203938 .0731423 -4.98 0.000 .2989234 .591225

15 | .7072742 .0403656 -6.07 0.000 .6324235 .790984

17 | .6236975 .0242244 -12.15 0.000 .5779806 .6730304

|

time |

2000 | 1.017587 .0585196 0.30 0.762 .9091184 1.138997

2002 | .9133641 .0515905 -1.60 0.109 .8176447 1.020289

2003 | .8542678 .0631307 -2.13 0.033 .7390774 .9874114

2004 | .7671181 .0485856 -4.19 0.000 .6775654 .8685069

2005 | .6910389 .0441108 -5.79 0.000 .6097729 .7831353

2006 | .6752788 .0447747 -5.92 0.000 .592985 .7689932

2007 | .6659044 .047342 -5.72 0.000 .5792904 .7654687

2008 | .6076881 .0443237 -6.83 0.000 .5267391 .7010772

2009 | .5595702 .0418138 -7.77 0.000 .4833355 .6478292

2010 | .5476992 .0410999 -8.02 0.000 .4727887 .6344788

2011 | .5169968 .0380156 -8.97 0.000 .4476078 .5971427

2012 | .468642 .0388321 -9.15 0.000 .3983914 .5512802

2013 | .4749018 .0416006 -8.50 0.000 .3999817 .5638552

2014 | .452677 .0385252 -9.31 0.000 .3831305 .5348478

2015 | .4277013 .0377926 -9.61 0.000 .3596885 .5085745

|

\_cons | .0001107 7.77e-06 -129.81 0.000 .0000965 .000127

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

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

Fitting Poisson model:

Iteration 0: log pseudolikelihood = -22360.885

Iteration 1: log pseudolikelihood = -20945.786

Iteration 2: log pseudolikelihood = -20933.965

Iteration 3: log pseudolikelihood = -20933.954

Iteration 4: log pseudolikelihood = -20933.954

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 = -16874.773

Iteration 1: log pseudolikelihood = -16738.173

Iteration 2: log pseudolikelihood = -16724.123

Iteration 3: log pseudolikelihood = -16724.074

Iteration 4: log pseudolikelihood = -16724.074

Negative binomial regression Number of obs = 6,253

Wald chi2(31) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16724.074 Pseudo R2 = 0.0383

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

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

| Robust

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

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

p48\_ss | 1.00499 .0227264 0.22 0.826 .9614199 1.050535

p75\_ss | 1.002716 .000586 4.64 0.000 1.001568 1.003865

mine\_time | 1.008406 .005653 1.49 0.135 .9973865 1.019546

onsite\_insp\_hours | .9997731 .0000403 -5.63 0.000 .9996941 .9998522

|

state |

1 | .8232795 .092893 -1.72 0.085 .659939 1.027048

2 | 1.214848 .0562373 4.20 0.000 1.109477 1.330226

3 | .6775486 .0833827 -3.16 0.002 .5323376 .8623703

4 | 1.060094 .0668353 0.93 0.355 .9368692 1.199526

5 | .9043151 .0836591 -1.09 0.277 .7543524 1.08409

6 | .799841 .037534 -4.76 0.000 .7295574 .8768956

7 | 1.065583 .2045923 0.33 0.741 .7314018 1.552452

8 | .5035738 .0183425 -18.83 0.000 .4688765 .5408388

9 | .580431 .0238237 -13.25 0.000 .5355662 .6290541

10 | .7774117 .0710963 -2.75 0.006 .6498401 .930027

11 | 1.527289 .2789884 2.32 0.020 1.06766 2.184788

12 | 1.084082 .0773891 1.13 0.258 .9425348 1.246885

13 | 1.52093 .1609806 3.96 0.000 1.23599 1.871558

14 | .4190755 .072882 -5.00 0.000 .2980291 .5892859

15 | .7336703 .0398671 -5.70 0.000 .6595492 .8161212

17 | .6401942 .023005 -12.41 0.000 .5966564 .686909

|

time |

2000 | 1.034785 .0487705 0.73 0.468 .9434784 1.134927

2002 | .9377107 .0426973 -1.41 0.158 .8576511 1.025244

2003 | .8475885 .0478139 -2.93 0.003 .7588699 .946679

2004 | .7892453 .0407964 -4.58 0.000 .7132028 .8733956

2005 | .7159859 .0392623 -6.09 0.000 .6430243 .7972261

2006 | .699049 .0397112 -6.30 0.000 .625393 .7813799

2007 | .6970248 .0429356 -5.86 0.000 .617754 .7864678

2008 | .6311503 .0394227 -7.37 0.000 .5584255 .7133461

2009 | .5736101 .0366797 -8.69 0.000 .5060417 .6502003

2010 | .5656241 .0377729 -8.53 0.000 .496231 .644721

2011 | .5292134 .0342044 -9.85 0.000 .4662464 .6006842

2012 | .4730474 .033448 -10.59 0.000 .4118304 .543364

2013 | .4657655 .034765 -10.24 0.000 .402377 .5391399

2014 | .4614097 .0352939 -10.11 0.000 .3971707 .536039

2015 | .4453578 .035809 -10.06 0.000 .3804243 .5213747

|

\_cons | .0001065 6.28e-06 -154.99 0.000 .0000949 .0001196

ln(hours) | 1 (exposure)

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

/lnalpha | -1.178748 .0601869 -1.296712 -1.060783

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

alpha | .3076638 .0185173 .2734294 .3461845

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

(est1 stored)

. esttab using `"`directory'Model.`injury\_label'.`time\_label'.`violation\_level\_label'.C.SSV.1.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.SSV.1.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.SSV.1.csv)

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(1) = 8363.89

(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 -20906.02 32 41876.03 42091.74

nbin | 6,253 -17389.65 -16724.07 33 33514.15 33736.59

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

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

.

. pause "next"

.

. // final model + diagnostics/assessment

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

. predict cssv1\_yhat

(option n assumed; predicted number of events)

. gen cssv1\_res = dv - cssv1\_yhat

.

. summ dv cssv1\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cssv1\_yhat | 6,253 10.67511 16.03453 .0035951 172.7317

. /\*

> pause "next"

>

> scatter dv cssv1\_yhat

>

> pause "next"

>

> scatter cssv1\_res dv

>

> pause "next"

>

> scatter cssv1\_res cssv1\_yhat

> \*/

. pause "complete: C.SSV.1"

.