.

. // Model C.SSV.4

.

. // poisson model

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

Iteration 0: log pseudolikelihood = -23342.174

Iteration 1: log pseudolikelihood = -20975.559

Iteration 2: log pseudolikelihood = -20966.368

Iteration 3: log pseudolikelihood = -20966.363

Iteration 4: log pseudolikelihood = -20966.363

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 22404.74648 (1/df) Deviance = 3.60147

Pearson = 27694.83604 (1/df) Pearson = 4.45183

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

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

AIC = 6.716252

Log pseudolikelihood = -20966.36334 BIC = -31971.87

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

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

| Robust

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

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

p48\_ss\_c\_lag\_all | 1.00242 .0027588 0.88 0.380 .9970271 1.007841

p75\_ss\_c\_lag\_all | .9999705 .0000219 -1.35 0.178 .9999275 1.000013

mine\_time | 1.013138 .0066954 1.98 0.048 1.0001 1.026346

onsite\_insp\_hours | .9998791 .0000459 -2.63 0.008 .9997893 .999969

|

state |

1 | .9461189 .0879156 -0.60 0.551 .7885878 1.135119

2 | 1.574509 .0761467 9.39 0.000 1.43212 1.731056

3 | .626827 .0660112 -4.44 0.000 .5099265 .7705269

4 | 1.221107 .0998363 2.44 0.015 1.040304 1.433332

5 | 1.055446 .1327398 0.43 0.668 .8248663 1.350482

6 | .9586473 .0513641 -0.79 0.431 .8630813 1.064795

7 | 1.117168 .1691976 0.73 0.464 .8302373 1.503263

8 | .4656469 .0192786 -18.46 0.000 .4293541 .5050076

9 | .6197136 .026651 -11.13 0.000 .5696194 .6742132

10 | .8880504 .0718253 -1.47 0.142 .7578663 1.040597

11 | 1.719035 .3096187 3.01 0.003 1.207739 2.446787

12 | .9558461 .0907375 -0.48 0.634 .7935683 1.151308

13 | 1.521678 .1571482 4.07 0.000 1.242844 1.863069

14 | .3989596 .0619061 -5.92 0.000 .2943397 .5407654

15 | .7928564 .061065 -3.01 0.003 .6817668 .9220473

17 | .6155979 .0373828 -7.99 0.000 .5465213 .6934053

|

time |

2000 | 1.043712 .0427509 1.04 0.296 .9631965 1.130957

2002 | .9558991 .0362581 -1.19 0.234 .8874118 1.029672

2003 | .8380755 .0332234 -4.46 0.000 .7754243 .9057888

2004 | .8077985 .0348434 -4.95 0.000 .7423137 .8790601

2005 | .7513836 .0381203 -5.63 0.000 .6802638 .8299388

2006 | .7232891 .0384476 -6.09 0.000 .6517258 .8027104

2007 | .7286504 .0420208 -5.49 0.000 .6507751 .8158445

2008 | .6820297 .0416347 -6.27 0.000 .60512 .7687146

2009 | .6013343 .0386687 -7.91 0.000 .5301266 .6821069

2010 | .585536 .0408598 -7.67 0.000 .5106874 .6713546

2011 | .5316915 .0358851 -9.36 0.000 .4658114 .6068892

2012 | .4693844 .0342274 -10.37 0.000 .4068734 .5414995

2013 | .4527341 .0368083 -9.75 0.000 .3860456 .530943

2014 | .4709306 .042998 -8.25 0.000 .3937663 .5632163

2015 | .4427256 .0426349 -8.46 0.000 .3665752 .534695

|

\_cons | .0000956 5.55e-06 -159.36 0.000 .0000853 .0001071

ln(hours) | 1 (exposure)

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

.

. quietly poisson dv `ss\_lag\_all\_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 = 22404.75

Prob > chi2(6221) = 0.0000

Pearson goodness-of-fit = 27694.84

Prob > chi2(6221) = 0.0000

.

. pause "next"

.

. // negative binomial model

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

Iteration 0: log pseudolikelihood = -17749.932

Iteration 1: log pseudolikelihood = -17520.05

Iteration 2: log pseudolikelihood = -17514.401

Iteration 3: log pseudolikelihood = -17514.387

Iteration 4: log pseudolikelihood = -17514.387

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 3940.803868 (1/df) Deviance = .6334679

Pearson = 5298.425295 (1/df) Pearson = .8516999

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

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

AIC = 5.61215

Log pseudolikelihood = -17514.38712 BIC = -50435.82

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

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

| Robust

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

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

p48\_ss\_c\_lag\_all | .9998767 .0037747 -0.03 0.974 .9925058 1.007302

p75\_ss\_c\_lag\_all | .9999964 .000024 -0.15 0.881 .9999494 1.000043

mine\_time | 1.012348 .0067671 1.84 0.066 .999171 1.025698

onsite\_insp\_hours | .9998893 .000041 -2.70 0.007 .9998089 .9999698

|

state |

1 | .8215924 .1037984 -1.56 0.120 .6413827 1.052436

2 | 1.079379 .0536611 1.54 0.124 .9791668 1.189847

3 | .6632087 .0855161 -3.18 0.001 .5151026 .8538993

4 | 1.036219 .0722417 0.51 0.610 .9038754 1.18794

5 | .8592958 .0859828 -1.52 0.130 .7062685 1.04548

6 | .7611002 .0378028 -5.50 0.000 .6905003 .8389186

7 | 1.084913 .2257318 0.39 0.695 .7215897 1.631172

8 | .4599657 .0176665 -20.22 0.000 .4266112 .495928

9 | .5286698 .0247315 -13.63 0.000 .4823527 .5794345

10 | .7802188 .0887778 -2.18 0.029 .6242546 .9751492

11 | 1.532907 .2731132 2.40 0.017 1.081085 2.173561

12 | .9618018 .0742557 -0.50 0.614 .8267397 1.118929

13 | 1.531599 .1807427 3.61 0.000 1.215334 1.930166

14 | .4047785 .0752121 -4.87 0.000 .2812259 .5826122

15 | .7062156 .0408588 -6.01 0.000 .6305075 .7910144

17 | .5742922 .036161 -8.81 0.000 .5076168 .6497254

|

time |

2000 | 1.008922 .058764 0.15 0.879 .9000771 1.130928

2002 | .8935249 .050189 -2.00 0.045 .8003775 .9975126

2003 | .8354149 .0619807 -2.42 0.015 .7223544 .9661713

2004 | .7558935 .0485301 -4.36 0.000 .6665173 .8572544

2005 | .6769578 .044047 -6.00 0.000 .5959053 .7690346

2006 | .6738371 .045384 -5.86 0.000 .5905071 .7689263

2007 | .6603178 .0477612 -5.74 0.000 .5730402 .7608884

2008 | .5946133 .0444067 -6.96 0.000 .5136478 .6883412

2009 | .5404223 .041496 -8.01 0.000 .4649157 .6281919

2010 | .5343245 .0409609 -8.18 0.000 .4597827 .6209512

2011 | .4978192 .0376204 -9.23 0.000 .4292853 .5772942

2012 | .4407348 .0376234 -9.60 0.000 .3728331 .521003

2013 | .4388858 .0393812 -9.18 0.000 .3681064 .5232748

2014 | .4152565 .0363384 -10.04 0.000 .3498075 .492951

2015 | .3869788 .034823 -10.55 0.000 .324407 .4616194

|

\_cons | .0001161 8.45e-06 -124.53 0.000 .0001007 .0001339

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

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

Fitting Poisson model:

Iteration 0: log pseudolikelihood = -21940.977

Iteration 1: log pseudolikelihood = -20972.054

Iteration 2: log pseudolikelihood = -20966.366

Iteration 3: log pseudolikelihood = -20966.363

Iteration 4: log pseudolikelihood = -20966.363

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 = -16884.89

Iteration 1: log pseudolikelihood = -16764.552

Iteration 2: log pseudolikelihood = -16755.661

Iteration 3: log pseudolikelihood = -16755.642

Iteration 4: log pseudolikelihood = -16755.642

Negative binomial regression Number of obs = 6,253

Wald chi2(31) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16755.642 Pseudo R2 = 0.0365

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

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

| Robust

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

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

p48\_ss\_c\_lag\_all | 1.001013 .003464 0.29 0.770 .9942463 1.007825

p75\_ss\_c\_lag\_all | .9999842 .0000214 -0.74 0.461 .9999424 1.000026

mine\_time | 1.011254 .0063115 1.79 0.073 .9989586 1.0237

onsite\_insp\_hours | .9999006 .0000394 -2.52 0.012 .9998234 .9999778

|

state |

1 | .8482085 .097924 -1.43 0.154 .6764459 1.063585

2 | 1.2079 .0576787 3.96 0.000 1.099981 1.326408

3 | .6499511 .0837286 -3.34 0.001 .5049244 .8366329

4 | 1.047329 .0683331 0.71 0.478 .9216081 1.1902

5 | .8832998 .0890961 -1.23 0.219 .7248526 1.076382

6 | .7868676 .0368888 -5.11 0.000 .7177891 .862594

7 | 1.071049 .2060842 0.36 0.721 .7345589 1.561679

8 | .454094 .0168068 -21.33 0.000 .4223198 .4882588

9 | .5526931 .0244337 -13.41 0.000 .5068199 .6027183

10 | .7995077 .0776138 -2.30 0.021 .6609835 .9670629

11 | 1.569703 .2716207 2.61 0.009 1.118217 2.203479

12 | 1.012007 .0742447 0.16 0.871 .8764682 1.168506

13 | 1.497471 .1645585 3.67 0.000 1.207311 1.857367

14 | .398277 .073787 -4.97 0.000 .2770045 .5726424

15 | .7307902 .0402628 -5.69 0.000 .6559879 .8141222

17 | .5807172 .0348276 -9.06 0.000 .5163156 .6531518

|

time |

2000 | 1.027147 .0495864 0.55 0.579 .9344155 1.129081

2002 | .917671 .0420935 -1.87 0.061 .8387692 1.003995

2003 | .8300837 .0475415 -3.25 0.001 .7419435 .9286945

2004 | .7764387 .0409751 -4.79 0.000 .7001428 .8610487

2005 | .6999066 .039467 -6.33 0.000 .6266741 .781697

2006 | .6958967 .0403073 -6.26 0.000 .6212151 .7795564

2007 | .6888276 .0434607 -5.91 0.000 .6087025 .7794998

2008 | .6131655 .0394724 -7.60 0.000 .5404826 .6956225

2009 | .5503229 .0365882 -8.98 0.000 .4830872 .6269165

2010 | .5460881 .0372993 -8.86 0.000 .4776649 .6243125

2011 | .5054356 .0338019 -10.20 0.000 .4433434 .5762242

2012 | .4414012 .0325192 -11.10 0.000 .3820528 .509969

2013 | .4286765 .0330429 -10.99 0.000 .3685685 .4985874

2014 | .4205275 .0333716 -10.92 0.000 .3599532 .4912954

2015 | .4000711 .0330835 -11.08 0.000 .3402106 .4704642

|

\_cons | .0001113 6.98e-06 -145.12 0.000 .0000984 .0001259

ln(hours) | 1 (exposure)

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

/lnalpha | -1.162308 .0600785 -1.28006 -1.044556

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

alpha | .3127636 .0187904 .2780208 .351848

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

(est1 stored)

. esttab using `"`directory'Model.`injury\_label'.`time\_label'.`violation\_level\_label'.C.SSV.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.Y.P.C.SSV.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.Y.P.C.SSV.4.csv)

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(1) = 8421.44

(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 -20966.36 32 41996.73 42212.43

nbin | 6,253 -17389.65 -16755.64 33 33577.28 33799.73

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

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

.

. pause "next"

.

. // final model + diagnostics/assessment

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

. predict cssv4\_yhat

(option n assumed; predicted number of events)

. gen cssv4\_res = dv - cssv4\_yhat

.

. summ dv cssv4\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cssv4\_yhat | 6,253 10.50684 14.95971 .0034718 128.3153

. /\*

> pause "next"

>

> scatter dv cssv4\_yhat

>

> pause "next"

>

> scatter cssv4\_res dv

>

> pause "next"

>

> scatter cssv4\_res cssv4\_yhat

> \*/

. pause "complete: C.SSV.4"