.

. // Model C.V.2

.

. // poisson model

. glm dv `count\_lag\_1\_vars' `covariates' ib(freq).state ib(freq).time, family(poisson) link(log) vce(cl mineid) exposure(hours) iter(50) eform

Iteration 0: log pseudolikelihood = -23315.663

Iteration 1: log pseudolikelihood = -20932.579

Iteration 2: log pseudolikelihood = -20923.301

Iteration 3: log pseudolikelihood = -20923.297

Iteration 4: log pseudolikelihood = -20923.297

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 22318.61292 (1/df) Deviance = 3.587625

Pearson = 27606.40094 (1/df) Pearson = 4.437615

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

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

AIC = 6.702478

Log pseudolikelihood = -20923.29656 BIC = -32058.01

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

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

| Robust

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

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

p48\_1lag | 1.006702 .0049345 1.36 0.173 .9970773 1.016421

p75\_1lag | 1.00042 .0002077 2.02 0.043 1.000013 1.000827

mine\_time | 1.007405 .0065767 1.13 0.258 .9945974 1.020378

onsite\_insp\_hours | .99979 .0000436 -4.82 0.000 .9997047 .9998754

|

state |

1 | .9472757 .0873699 -0.59 0.557 .7906197 1.134972

2 | 1.632944 .0855214 9.36 0.000 1.473641 1.809468

3 | .6417236 .066962 -4.25 0.000 .5230312 .7873511

4 | 1.221083 .099205 2.46 0.014 1.041336 1.431858

5 | 1.073848 .1295357 0.59 0.555 .8477434 1.360258

6 | .984612 .055856 -0.27 0.785 .881003 1.100406

7 | 1.125034 .1680322 0.79 0.430 .8395223 1.507644

8 | .5092331 .0210173 -16.35 0.000 .4696621 .5521381

9 | .6493849 .0283123 -9.90 0.000 .5961986 .707316

10 | .9013526 .0546572 -1.71 0.087 .8003475 1.015105

11 | 1.715999 .3253357 2.85 0.004 1.183417 2.488262

12 | 1.034615 .0973929 0.36 0.718 .8603025 1.244245

13 | 1.553861 .1602707 4.27 0.000 1.269452 1.901989

14 | .4239217 .0644446 -5.65 0.000 .3146923 .5710646

15 | .8094994 .0611222 -2.80 0.005 .6981449 .9386149

17 | .6669428 .0244355 -11.06 0.000 .6207293 .7165969

|

time |

2000 | 1.058128 .0425082 1.41 0.160 .9780086 1.14481

2002 | .9623111 .0364276 -1.01 0.310 .8934985 1.036423

2003 | .8428736 .0331234 -4.35 0.000 .7803901 .91036

2004 | .8153876 .0356706 -4.67 0.000 .7483878 .8883855

2005 | .7622335 .0391158 -5.29 0.000 .6892974 .8428872

2006 | .7236762 .0388332 -6.03 0.000 .6514303 .8039344

2007 | .7360181 .0426378 -5.29 0.000 .6570192 .8245156

2008 | .700215 .0417938 -5.97 0.000 .6229105 .7871131

2009 | .6180512 .0378596 -7.86 0.000 .5481291 .6968929

2010 | .6051613 .0406217 -7.48 0.000 .5305593 .690253

2011 | .5528916 .0350956 -9.34 0.000 .4882123 .6261397

2012 | .4930318 .0339404 -10.27 0.000 .4308023 .5642503

2013 | .4740508 .0372248 -9.51 0.000 .4064287 .552924

2014 | .4998345 .042911 -8.08 0.000 .4224255 .5914286

2015 | .4695533 .0418522 -8.48 0.000 .3942899 .5591832

|

\_cons | .0000943 5.31e-06 -164.59 0.000 .0000845 .0001053

ln(hours) | 1 (exposure)

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

.

. quietly poisson dv `count\_lag\_1\_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 = 22318.61

Prob > chi2(6221) = 0.0000

Pearson goodness-of-fit = 27606.4

Prob > chi2(6221) = 0.0000

.

. pause "next"

.

. // negative binomial model

. glm dv `count\_lag\_1\_vars' `covariates' ib(freq).state ib(freq).time, family(nbinomial) link(log) vce(cl mineid) exposure(hours) iter(50) eform

Iteration 0: log pseudolikelihood = -17735.121

Iteration 1: log pseudolikelihood = -17511.531

Iteration 2: log pseudolikelihood = -17506.398

Iteration 3: log pseudolikelihood = -17506.387

Iteration 4: log pseudolikelihood = -17506.387

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,221

Scale parameter = 1

Deviance = 3924.804417 (1/df) Deviance = .6308961

Pearson = 5309.385858 (1/df) Pearson = .8534618

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

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

AIC = 5.609591

Log pseudolikelihood = -17506.3874 BIC = -50451.82

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

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

| Robust

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

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

p48\_1lag | 1.004746 .0057121 0.83 0.405 .9936127 1.016004

p75\_1lag | 1.000896 .000215 4.17 0.000 1.000475 1.001318

mine\_time | 1.010274 .0061949 1.67 0.096 .9982044 1.022489

onsite\_insp\_hours | .9997586 .0000441 -5.48 0.000 .9996722 .9998449

|

state |

1 | .8056636 .0998003 -1.74 0.081 .6319933 1.027058

2 | 1.087321 .0525646 1.73 0.083 .9890265 1.195385

3 | .6526044 .0849205 -3.28 0.001 .505693 .8421959

4 | .9996044 .0662954 -0.01 0.995 .8777586 1.138364

5 | .85162 .0790966 -1.73 0.084 .7098851 1.021653

6 | .7697643 .0384083 -5.24 0.000 .6980491 .8488472

7 | 1.077758 .2286259 0.35 0.724 .7111401 1.633381

8 | .485653 .0188617 -18.60 0.000 .4500568 .5240647

9 | .539306 .0240709 -13.83 0.000 .4941326 .5886092

10 | .7761977 .083643 -2.35 0.019 .6284156 .9587331

11 | 1.499803 .2692096 2.26 0.024 1.054985 2.132171

12 | 1.018169 .0785037 0.23 0.815 .875366 1.184268

13 | 1.551996 .1793594 3.80 0.000 1.237427 1.946531

14 | .4163269 .0739326 -4.93 0.000 .2939515 .5896488

15 | .7081854 .0405853 -6.02 0.000 .6329445 .7923706

17 | .5946386 .0219526 -14.08 0.000 .553132 .6392598

|

time |

2000 | 1.021806 .059357 0.37 0.710 .9118466 1.145025

2002 | .8999074 .0509667 -1.86 0.063 .8053592 1.005556

2003 | .8448878 .0627656 -2.27 0.023 .7304062 .977313

2004 | .7669808 .0491715 -4.14 0.000 .6764155 .869672

2005 | .6888405 .0445463 -5.76 0.000 .6068379 .7819241

2006 | .6778283 .0453618 -5.81 0.000 .5945049 .7728301

2007 | .663306 .0475348 -5.73 0.000 .5763866 .763333

2008 | .5961453 .0440139 -7.01 0.000 .5158306 .6889649

2009 | .5407977 .0411431 -8.08 0.000 .4658827 .6277592

2010 | .5400325 .0411775 -8.08 0.000 .4650672 .6270816

2011 | .5072413 .0377156 -9.13 0.000 .4384541 .5868202

2012 | .4525838 .0378181 -9.49 0.000 .3842132 .533121

2013 | .4544488 .0399839 -8.96 0.000 .3824665 .5399784

2014 | .4346899 .0372886 -9.71 0.000 .3674192 .5142773

2015 | .4056737 .0358344 -10.21 0.000 .3411832 .4823541

|

\_cons | .0001138 8.14e-06 -126.97 0.000 .0000989 .0001309

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

. eststo: nbreg dv `count\_lag\_1\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) exposure(hours) iter(50) irr

Fitting Poisson model:

Iteration 0: log pseudolikelihood = -23226.396

Iteration 1: log pseudolikelihood = -20951.61

Iteration 2: log pseudolikelihood = -20923.32

Iteration 3: log pseudolikelihood = -20923.297

Iteration 4: log pseudolikelihood = -20923.297

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 = -16876.95

Iteration 1: log pseudolikelihood = -16747.086

Iteration 2: log pseudolikelihood = -16735.814

Iteration 3: log pseudolikelihood = -16735.784

Iteration 4: log pseudolikelihood = -16735.784

Negative binomial regression Number of obs = 6,253

Wald chi2(31) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16735.784 Pseudo R2 = 0.0376

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

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

| Robust

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

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

p48\_1lag | 1.003634 .0046736 0.78 0.436 .9945158 1.012836

p75\_1lag | 1.000851 .0002048 4.16 0.000 1.00045 1.001253

mine\_time | 1.007751 .0056972 1.37 0.172 .9966464 1.01898

onsite\_insp\_hours | .9997666 .0000438 -5.33 0.000 .9996808 .9998524

|

state |

1 | .8303162 .093747 -1.65 0.100 .6654853 1.035973

2 | 1.228652 .0566571 4.47 0.000 1.122477 1.344871

3 | .6438024 .0832542 -3.41 0.001 .4996642 .8295202

4 | 1.015863 .0630241 0.25 0.800 .8995526 1.147212

5 | .8797707 .0828062 -1.36 0.174 .7315639 1.058003

6 | .7980057 .0378201 -4.76 0.000 .7272182 .8756837

7 | 1.062848 .2064012 0.31 0.754 .7263919 1.555147

8 | .4881281 .0177719 -19.70 0.000 .4545095 .5242333

9 | .5694127 .0235744 -13.60 0.000 .5250326 .6175441

10 | .7961218 .0712138 -2.55 0.011 .6680958 .9486812

11 | 1.535957 .269262 2.45 0.014 1.089328 2.165706

12 | 1.080957 .0773204 1.09 0.276 .9395553 1.243639

13 | 1.521649 .1631724 3.91 0.000 1.233209 1.877553

14 | .4149015 .0734012 -4.97 0.000 .2933303 .5868581

15 | .7344955 .0399371 -5.68 0.000 .6602468 .8170939

17 | .6139797 .0212122 -14.12 0.000 .5737809 .6569949

|

time |

2000 | 1.040844 .049755 0.84 0.402 .9477548 1.143076

2002 | .9255567 .0425385 -1.68 0.092 .8458277 1.012801

2003 | .8399514 .0478772 -3.06 0.002 .7511657 .9392314

2004 | .7899998 .0414552 -4.49 0.000 .7127878 .8755758

2005 | .7145887 .039816 -6.03 0.000 .6406609 .7970473

2006 | .7019668 .0402744 -6.17 0.000 .6273069 .7855124

2007 | .6947685 .0432683 -5.85 0.000 .6149355 .7849658

2008 | .6190428 .039355 -7.54 0.000 .5465205 .7011888

2009 | .5543276 .0364403 -8.98 0.000 .4873156 .6305546

2010 | .5567466 .0379069 -8.60 0.000 .4871944 .6362282

2011 | .5194042 .0340234 -10.00 0.000 .4568229 .5905587

2012 | .4578018 .0328522 -10.89 0.000 .3977358 .5269391

2013 | .4470435 .0335788 -10.72 0.000 .3858455 .5179479

2014 | .4445657 .0344086 -10.47 0.000 .3819921 .5173894

2015 | .4233066 .0340842 -10.68 0.000 .3615074 .4956702

|

\_cons | .0001092 6.65e-06 -149.93 0.000 .000097 .0001231

ln(hours) | 1 (exposure)

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

/lnalpha | -1.174225 .0604173 -1.292641 -1.055809

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

alpha | .3090585 .0186725 .2745449 .3479108

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

(est1 stored)

. esttab using `"`directory'Model.`injury\_label'.`time\_label'.`violation\_level\_label'.C.V.2.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.2.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.2.csv)

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(1) = 8375.03

(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 -20923.3 32 41910.59 42126.3

nbin | 6,253 -17389.65 -16735.78 33 33537.57 33760.01

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

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

.

. pause "next"

.

. // final model + diagnostics/assessment

. quietly nbreg dv `count\_lag\_1\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) exposure(hours) iter(50) irr

. predict cv2\_yhat

(option n assumed; predicted number of events)

. gen cv2\_res = dv - cv2\_yhat

.

. summ dv cv2\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cv2\_yhat | 6,253 10.62723 15.74789 .00354 147.1036

. /\*

> pause "next"

>

> scatter dv cv2\_yhat

>

> pause "next"

>

> scatter cv2\_res dv

>

> pause "next"

>

> scatter cv2\_res cv2\_yhat

> \*/

. pause "complete: C.V.2"

.