. // Model C.PP.2

.

. // poisson model

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

note: sp75\_1318\_pp\_1lag omitted because of collinearity

note: sp75\_373\_pp\_1lag omitted because of collinearity

Iteration 0: log pseudolikelihood = -22744.776

Iteration 1: log pseudolikelihood = -20337.168

Iteration 2: log pseudolikelihood = -20324.816

Iteration 3: log pseudolikelihood = -20324.809

Iteration 4: log pseudolikelihood = -20324.809

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,142

Scale parameter = 1

Deviance = 21121.63782 (1/df) Deviance = 3.438886

Pearson = 25684.50181 (1/df) Pearson = 4.181781

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

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

AIC = 6.536321

Log pseudolikelihood = -20324.80901 BIC = -32564.46

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

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| Robust

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

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

sp48\_11\_pp\_1lag | .9999547 .0004199 -0.11 0.914 .999132 1.000778

sp48\_24\_pp\_1lag | 1.001718 .0001324 12.98 0.000 1.001458 1.001977

sp48\_25\_pp\_1lag | .9999352 .0007328 -0.09 0.930 .9985 1.001373

sp48\_26\_pp\_1lag | 1.001242 .0007127 1.74 0.081 .999846 1.00264

sp48\_27\_pp\_1lag | .9999733 .0007082 -0.04 0.970 .9985863 1.001362

sp48\_28\_pp\_1lag | .9976532 .0008904 -2.63 0.008 .9959096 .9994

sp48\_4\_pp\_1lag | 1.013426 .0034928 3.87 0.000 1.006603 1.020295

sp48\_5\_pp\_1lag | 1.000437 .0010969 0.40 0.690 .9982894 1.002589

sp48\_6\_pp\_1lag | 1.000554 .0005066 1.09 0.274 .9995612 1.001547

sp48\_7\_pp\_1lag | 1.000182 .0003091 0.59 0.555 .9995767 1.000788

sp48\_8\_pp\_1lag | 1.000133 .000932 0.14 0.887 .9983078 1.001961

sp75\_100\_pp\_1lag | 1.002691 .0011608 2.32 0.020 1.000419 1.004969

sp75\_1002\_pp\_1lag | 1.000018 .0002075 0.09 0.932 .9996111 1.000424

sp75\_1003\_pp\_1lag | .999766 .0001875 -1.25 0.212 .9993985 1.000134

sp75\_1003\_2\_pp\_1lag | .9987216 .0004806 -2.66 0.008 .9977801 .999664

sp75\_1311\_pp\_1lag | .9985177 .000741 -2.00 0.046 .9970665 .999971

sp75\_1315\_pp\_1lag | 1.006137 .0066453 0.93 0.354 .9931966 1.019246

sp75\_1316\_pp\_1lag | .999223 .0014619 -0.53 0.595 .9963618 1.002092

sp75\_1318\_pp\_1lag | 1 (omitted)

sp75\_1400\_pp\_1lag | .9994375 .0006911 -0.81 0.416 .9980838 1.000793

sp75\_1400\_1\_pp\_1lag | .9991011 .0019816 -0.45 0.650 .9952249 1.002992

sp75\_1403\_10\_pp\_1lag | 1.000482 .0001766 2.73 0.006 1.000136 1.000828

sp75\_1403\_5\_pp\_1lag | .999685 .0000973 -3.24 0.001 .9994944 .9998757

sp75\_1403\_6\_pp\_1lag | 1.000016 .0000844 0.19 0.851 .9998504 1.000181

sp75\_1403\_7\_pp\_1lag | .9998541 .0005264 -0.28 0.782 .9988229 1.000886

sp75\_1403\_8\_pp\_1lag | .9997892 .0001 -2.11 0.035 .9995932 .9999853

sp75\_1404\_pp\_1lag | .9999525 .0018244 -0.03 0.979 .9963831 1.003535

sp75\_1404\_1\_pp\_1lag | 1.001009 .0020887 0.48 0.629 .9969232 1.005111

sp75\_1405\_pp\_1lag | .9996595 .0001715 -1.98 0.047 .9993234 .9999958

sp75\_1405\_1\_pp\_1lag | .9999828 .0012932 -0.01 0.989 .9974515 1.002521

sp75\_153\_pp\_1lag | 1.000001 .0021217 0.00 1.000 .995851 1.004168

sp75\_156\_pp\_1lag | .9960537 .001896 -2.08 0.038 .9923445 .9997767

sp75\_160\_pp\_1lag | 1.007032 .0072317 0.98 0.329 .9929571 1.021306

sp75\_1719\_2\_pp\_1lag | .9982242 .0009341 -1.90 0.058 .9963951 1.000057

sp75\_1719\_4\_pp\_1lag | 1.000376 .0003712 1.01 0.311 .9996484 1.001104

sp75\_1720\_pp\_1lag | 1.000765 .0003626 2.11 0.035 1.000055 1.001476

sp75\_1725\_pp\_1lag | 1.000003 .000032 0.10 0.921 .9999404 1.000066

sp75\_1906\_pp\_1lag | 1.000517 .0005499 0.94 0.347 .9994394 1.001595

sp75\_1916\_pp\_1lag | 1.000287 .0004621 0.62 0.534 .999382 1.001194

sp75\_203\_pp\_1lag | 1.000141 .0001159 1.22 0.222 .9999143 1.000369

sp75\_204\_pp\_1lag | 1.000274 .0001631 1.68 0.093 .9999545 1.000594

sp75\_205\_pp\_1lag | 1.00328 .0043932 0.75 0.455 .994706 1.011927

sp75\_207\_pp\_1lag | 1.002875 .0012442 2.31 0.021 1.000439 1.005317

sp75\_208\_pp\_1lag | 1.000216 .0001812 1.19 0.233 .9998612 1.000572

sp75\_209\_pp\_1lag | .9996389 .0008567 -0.42 0.673 .9979612 1.001319

sp75\_212\_pp\_1lag | 1.001446 .0005601 2.58 0.010 1.000349 1.002545

sp75\_213\_pp\_1lag | 1.002612 .0005968 4.38 0.000 1.001442 1.003782

sp75\_215\_pp\_1lag | 1.000246 .0010864 0.23 0.821 .9981192 1.002378

sp75\_332\_pp\_1lag | .9974353 .0010908 -2.35 0.019 .9952996 .9995755

sp75\_334\_pp\_1lag | .9998501 .0003539 -0.42 0.672 .9991567 1.000544

sp75\_337\_pp\_1lag | .999339 .0002385 -2.77 0.006 .9988717 .9998065

sp75\_340\_pp\_1lag | .9999873 .0000985 -0.13 0.897 .9997942 1.00018

sp75\_343\_pp\_1lag | 1.000618 .00074 0.84 0.403 .9991689 1.002069

sp75\_373\_pp\_1lag | 1 (omitted)

sp75\_388\_pp\_1lag | .9998223 .0007697 -0.23 0.817 .9983149 1.001332

sp75\_389\_pp\_1lag | .9999899 .001902 -0.01 0.996 .9962691 1.003725

sp75\_500\_pp\_1lag | .9996457 .0006791 -0.52 0.602 .9983155 1.000978

sp75\_500\_1\_pp\_1lag | .9986216 .0015689 -0.88 0.380 .9955513 1.001701

sp75\_501\_pp\_1lag | .9997063 .0009776 -0.30 0.764 .997792 1.001624

sp75\_501\_2\_pp\_1lag | .9985528 .0014341 -1.01 0.313 .9957459 1.001368

sp75\_502\_pp\_1lag | 1.004395 .0019674 2.24 0.025 1.000546 1.008258

sp75\_503\_pp\_1lag | 1.000016 .0000268 0.61 0.543 .9999638 1.000069

sp75\_505\_pp\_1lag | .9990979 .0023006 -0.39 0.695 .9945989 1.003617

sp75\_506\_1\_pp\_1lag | 1.002102 .0005659 3.72 0.000 1.000993 1.003212

sp75\_507\_pp\_1lag | 1.000486 .0003882 1.25 0.211 .9997251 1.001247

sp75\_507\_1\_pp\_1lag | 1.000293 .000281 1.04 0.297 .9997421 1.000844

sp75\_508\_1\_pp\_1lag | .990341 .0015113 -6.36 0.000 .9873832 .9933076

sp75\_509\_pp\_1lag | 1.002942 .0013527 2.18 0.029 1.000294 1.005596

sp75\_510\_pp\_1lag | 1.002109 .0031554 0.67 0.503 .9959436 1.008313

sp75\_512\_1\_pp\_1lag | 1.002115 .0016449 1.29 0.198 .9988963 1.005344

sp75\_523\_pp\_1lag | .9990956 .0003431 -2.64 0.008 .9984234 .9997682

sp75\_523\_3\_pp\_1lag | .9997025 .0000968 -3.07 0.002 .9995129 .9998922

sp75\_524\_pp\_1lag | 1.00281 .0014311 1.97 0.049 1.000009 1.005618

sp75\_602\_pp\_1lag | 1.000226 .0002866 0.79 0.431 .9996642 1.000788

sp75\_603\_pp\_1lag | 1.000543 .0003326 1.63 0.102 .9998915 1.001195

sp75\_604\_pp\_1lag | 1.000028 .0000516 0.55 0.584 .9999272 1.000129

sp75\_605\_pp\_1lag | 1.000109 .0001906 0.57 0.566 .9997359 1.000483

sp75\_606\_pp\_1lag | .9999471 .0001197 -0.44 0.658 .9997125 1.000182

sp75\_607\_pp\_1lag | .9995215 .0003953 -1.21 0.226 .9987471 1.000297

sp75\_703\_3\_pp\_1lag | 1.000679 .0007453 0.91 0.362 .9992194 1.002141

sp75\_703\_4\_pp\_1lag | .9924611 .00395 -1.90 0.057 .9847494 1.000233

sp75\_807\_pp\_1lag | 1.000119 .0000979 1.21 0.225 .9999269 1.000311

sp75\_810\_pp\_1lag | 1.001109 .0003377 3.28 0.001 1.000447 1.001771

sp75\_811\_pp\_1lag | 1.000408 .0006162 0.66 0.508 .999201 1.001616

sp75\_812\_pp\_1lag | .999765 .0015139 -0.16 0.877 .9968022 1.002737

sp75\_816\_pp\_1lag | .9998852 .0002342 -0.49 0.624 .9994262 1.000344

sp75\_817\_pp\_1lag | .9982201 .0018387 -0.97 0.333 .9946228 1.00183

sp75\_906\_pp\_1lag | .9934067 .0033456 -1.96 0.050 .9868712 .9999856

mine\_time | 1.009488 .0060127 1.59 0.113 .9977715 1.021341

onsite\_insp\_hours | .9998551 .0000406 -3.57 0.000 .9997755 .9999347

|

state |

1 | .9177615 .0749882 -1.05 0.294 .7819521 1.077158

2 | 1.498671 .0742504 8.17 0.000 1.359986 1.6515

3 | .6133886 .0622241 -4.82 0.000 .5027905 .7483149

4 | 1.129774 .0881545 1.56 0.118 .9695578 1.316466

5 | 1.016215 .1237809 0.13 0.895 .8003949 1.290229

6 | .9300297 .0474692 -1.42 0.155 .8414941 1.02788

7 | 1.051667 .1691438 0.31 0.754 .767319 1.441386

8 | .5158616 .0215778 -15.82 0.000 .475257 .5599353

9 | .6382057 .0248293 -11.54 0.000 .5913503 .6887736

10 | .9739402 .07766 -0.33 0.741 .8330273 1.13869

11 | 1.679685 .2884593 3.02 0.003 1.199631 2.351843

12 | .960585 .0900763 -0.43 0.668 .7993126 1.154396

13 | 1.52668 .14926 4.33 0.000 1.260457 1.849133

14 | .3983374 .0590259 -6.21 0.000 .2979336 .5325774

15 | .7993318 .053622 -3.34 0.001 .7008507 .9116511

17 | .6659683 .0273241 -9.91 0.000 .6145107 .7217348

|

time |

2000 | 1.049937 .0408243 1.25 0.210 .9728956 1.133079

2002 | .9645128 .0362759 -0.96 0.337 .8959706 1.038299

2003 | .8390711 .0318296 -4.63 0.000 .7789491 .9038336

2004 | .8236922 .0352077 -4.54 0.000 .7574979 .895671

2005 | .7692918 .0358379 -5.63 0.000 .7021621 .8428393

2006 | .7379466 .0380671 -5.89 0.000 .6669841 .8164589

2007 | .7326801 .0404383 -5.64 0.000 .6575589 .8163835

2008 | .6469938 .0376841 -7.48 0.000 .5771943 .7252342

2009 | .5663581 .0341878 -9.42 0.000 .5031634 .6374898

2010 | .5583565 .035925 -9.06 0.000 .4922035 .6334006

2011 | .5161397 .0302235 -11.29 0.000 .4601757 .5789097

2012 | .4475189 .0288632 -12.47 0.000 .3943777 .5078208

2013 | .4180768 .031853 -11.45 0.000 .3600839 .4854098

2014 | .4381906 .0338235 -10.69 0.000 .3766688 .5097608

2015 | .4046679 .0333738 -10.97 0.000 .3442694 .4756627

|

\_cons | .000099 5.00e-06 -182.65 0.000 .0000896 .0001092

ln(hours) | 1 (exposure)

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

.

. quietly poisson dv `pp\_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 = 21121.64

Prob > chi2(6142) = 0.0000

Pearson goodness-of-fit = 25684.5

Prob > chi2(6142) = 0.0000

.

. pause "next"

.

. // negative binomial model

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

note: sp75\_1318\_pp\_1lag omitted because of collinearity

note: sp75\_373\_pp\_1lag omitted because of collinearity

Iteration 0: log pseudolikelihood = -17721.7

Iteration 1: log pseudolikelihood = -17483.203

Iteration 2: log pseudolikelihood = -17477.615

Iteration 3: log pseudolikelihood = -17477.603

Iteration 4: log pseudolikelihood = -17477.603

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,142

Scale parameter = 1

Deviance = 3867.236384 (1/df) Deviance = .629638

Pearson = 5157.579871 (1/df) Pearson = .8397232

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

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

AIC = 5.625653

Log pseudolikelihood = -17477.60338 BIC = -49818.86

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

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| Robust

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

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

sp48\_11\_pp\_1lag | 1.00114 .0006556 1.74 0.082 .9998562 1.002426

sp48\_24\_pp\_1lag | 1.001331 .0001803 7.39 0.000 1.000978 1.001685

sp48\_25\_pp\_1lag | .9994754 .00081 -0.65 0.517 .9978891 1.001064

sp48\_26\_pp\_1lag | 1.001452 .0008452 1.72 0.086 .9997963 1.00311

sp48\_27\_pp\_1lag | .99953 .0007455 -0.63 0.529 .9980699 1.000992

sp48\_28\_pp\_1lag | .9986911 .0011103 -1.18 0.239 .9965174 1.00087

sp48\_4\_pp\_1lag | 1.009974 .0034216 2.93 0.003 1.00329 1.016702

sp48\_5\_pp\_1lag | 1.001343 .0013359 1.01 0.314 .9987279 1.003965

sp48\_6\_pp\_1lag | .9998683 .0006539 -0.20 0.840 .9985875 1.001151

sp48\_7\_pp\_1lag | 1.000628 .0005075 1.24 0.216 .9996342 1.001624

sp48\_8\_pp\_1lag | 1.000668 .0009912 0.67 0.500 .9987269 1.002612

sp75\_100\_pp\_1lag | 1.004172 .0015649 2.67 0.008 1.00111 1.007244

sp75\_1002\_pp\_1lag | .9996119 .0002909 -1.33 0.182 .9990418 1.000182

sp75\_1003\_pp\_1lag | .9995914 .0002419 -1.69 0.091 .9991174 1.000066

sp75\_1003\_2\_pp\_1lag | .9981607 .0004962 -3.70 0.000 .9971887 .9991336

sp75\_1311\_pp\_1lag | .9976415 .0014791 -1.59 0.111 .9947467 1.000545

sp75\_1315\_pp\_1lag | .9992527 .0087028 -0.09 0.932 .9823403 1.016456

sp75\_1316\_pp\_1lag | .9956088 .0030055 -1.46 0.145 .9897355 1.001517

sp75\_1318\_pp\_1lag | 1 (omitted)

sp75\_1400\_pp\_1lag | 1.000305 .0008956 0.34 0.733 .9985513 1.002062

sp75\_1400\_1\_pp\_1lag | .9990865 .0021533 -0.42 0.672 .9948751 1.003316

sp75\_1403\_10\_pp\_1lag | 1.000444 .0001898 2.34 0.019 1.000072 1.000816

sp75\_1403\_5\_pp\_1lag | .9997121 .0001446 -1.99 0.046 .9994287 .9999955

sp75\_1403\_6\_pp\_1lag | 1.000039 .0001078 0.36 0.719 .9998275 1.00025

sp75\_1403\_7\_pp\_1lag | .9999251 .0005432 -0.14 0.890 .998861 1.00099

sp75\_1403\_8\_pp\_1lag | .9997802 .0001079 -2.04 0.042 .9995686 .9999918

sp75\_1404\_pp\_1lag | .9975447 .002412 -1.02 0.309 .9928285 1.002283

sp75\_1404\_1\_pp\_1lag | .9980231 .0015816 -1.25 0.212 .9949281 1.001128

sp75\_1405\_pp\_1lag | .999627 .0002269 -1.64 0.100 .9991824 1.000072

sp75\_1405\_1\_pp\_1lag | 1.000856 .0018284 0.47 0.639 .9972791 1.004446

sp75\_153\_pp\_1lag | .9964212 .0028338 -1.26 0.207 .9908826 1.001991

sp75\_156\_pp\_1lag | .9968682 .0017695 -1.77 0.077 .9934061 1.000342

sp75\_160\_pp\_1lag | 1.014475 .0064706 2.25 0.024 1.001872 1.027236

sp75\_1719\_2\_pp\_1lag | .9977213 .0013106 -1.74 0.082 .9951559 1.000293

sp75\_1719\_4\_pp\_1lag | .9999041 .0003477 -0.28 0.783 .999223 1.000586

sp75\_1720\_pp\_1lag | 1.000772 .0004038 1.91 0.056 .9999809 1.001564

sp75\_1725\_pp\_1lag | 1.00005 .0000409 1.23 0.218 .9999702 1.00013

sp75\_1906\_pp\_1lag | 1.001186 .0005833 2.03 0.042 1.000044 1.00233

sp75\_1916\_pp\_1lag | 1.000272 .0005786 0.47 0.639 .9991383 1.001406

sp75\_203\_pp\_1lag | .9999953 .0001364 -0.03 0.972 .9997279 1.000263

sp75\_204\_pp\_1lag | 1.000385 .0001798 2.14 0.032 1.000033 1.000737

sp75\_205\_pp\_1lag | 1.006723 .0032396 2.08 0.037 1.000393 1.013092

sp75\_207\_pp\_1lag | 1.001198 .0013064 0.92 0.359 .9986406 1.003761

sp75\_208\_pp\_1lag | .9999496 .000203 -0.25 0.804 .9995518 1.000348

sp75\_209\_pp\_1lag | 1.000065 .0007979 0.08 0.935 .9985027 1.00163

sp75\_212\_pp\_1lag | 1.001691 .0006349 2.67 0.008 1.000448 1.002937

sp75\_213\_pp\_1lag | 1.001968 .0013882 1.42 0.156 .9992508 1.004692

sp75\_215\_pp\_1lag | .9991437 .0012798 -0.67 0.504 .9966385 1.001655

sp75\_332\_pp\_1lag | .9987651 .0011468 -1.08 0.282 .99652 1.001015

sp75\_334\_pp\_1lag | 1.000025 .0004556 0.06 0.956 .9991326 1.000919

sp75\_337\_pp\_1lag | .9995456 .0003353 -1.36 0.175 .9988887 1.000203

sp75\_340\_pp\_1lag | .9999813 .0001327 -0.14 0.888 .9997213 1.000241

sp75\_343\_pp\_1lag | 1.00006 .00072 0.08 0.933 .9986502 1.001472

sp75\_373\_pp\_1lag | 1 (omitted)

sp75\_388\_pp\_1lag | 1.000857 .0009411 0.91 0.362 .9990142 1.002703

sp75\_389\_pp\_1lag | .9980014 .0019362 -1.03 0.302 .9942136 1.001804

sp75\_500\_pp\_1lag | 1.00083 .0009856 0.84 0.400 .9989001 1.002764

sp75\_500\_1\_pp\_1lag | .9987003 .0027539 -0.47 0.637 .9933174 1.004112

sp75\_501\_pp\_1lag | .9992912 .0012234 -0.58 0.562 .9968963 1.001692

sp75\_501\_2\_pp\_1lag | .9997922 .0015287 -0.14 0.892 .9968005 1.002793

sp75\_502\_pp\_1lag | 1.0061 .0029404 2.08 0.037 1.000354 1.01188

sp75\_503\_pp\_1lag | 1.00001 .0000331 0.31 0.756 .9999455 1.000075

sp75\_505\_pp\_1lag | .9998463 .0013848 -0.11 0.912 .9971358 1.002564

sp75\_506\_1\_pp\_1lag | 1.002019 .0008015 2.52 0.012 1.00045 1.003592

sp75\_507\_pp\_1lag | 1.000233 .0005043 0.46 0.645 .9992447 1.001221

sp75\_507\_1\_pp\_1lag | .9998627 .0002869 -0.48 0.632 .9993005 1.000425

sp75\_508\_1\_pp\_1lag | .9875623 .0015913 -7.77 0.000 .9844484 .9906861

sp75\_509\_pp\_1lag | 1.002617 .0013755 1.91 0.057 .9999251 1.005317

sp75\_510\_pp\_1lag | 1.001413 .0037707 0.37 0.708 .9940495 1.008831

sp75\_512\_1\_pp\_1lag | .9996299 .0021582 -0.17 0.864 .9954089 1.003869

sp75\_523\_pp\_1lag | .9987005 .0004638 -2.80 0.005 .9977918 .99961

sp75\_523\_3\_pp\_1lag | .9998314 .0001145 -1.47 0.141 .9996071 1.000056

sp75\_524\_pp\_1lag | 1.001523 .0013672 1.12 0.265 .9988473 1.004207

sp75\_602\_pp\_1lag | .999842 .0004668 -0.34 0.735 .9989276 1.000757

sp75\_603\_pp\_1lag | 1.000711 .000463 1.54 0.125 .9998036 1.001619

sp75\_604\_pp\_1lag | 1.000083 .0000536 1.55 0.122 .9999779 1.000188

sp75\_605\_pp\_1lag | 1.000074 .0002415 0.31 0.760 .9996007 1.000547

sp75\_606\_pp\_1lag | .9999117 .0001182 -0.75 0.455 .99968 1.000143

sp75\_607\_pp\_1lag | .999206 .0003847 -2.06 0.039 .9984522 .9999603

sp75\_703\_3\_pp\_1lag | 1.000695 .0007982 0.87 0.384 .999132 1.002261

sp75\_703\_4\_pp\_1lag | .9912643 .0029372 -2.96 0.003 .9855243 .9970379

sp75\_807\_pp\_1lag | 1.000213 .0001197 1.78 0.076 .999978 1.000447

sp75\_810\_pp\_1lag | 1.000637 .0005415 1.18 0.239 .9995764 1.001699

sp75\_811\_pp\_1lag | 1.000812 .0005576 1.46 0.145 .9997199 1.001906

sp75\_812\_pp\_1lag | .9999776 .0016709 -0.01 0.989 .9967081 1.003258

sp75\_816\_pp\_1lag | .9999941 .0003488 -0.02 0.986 .9993107 1.000678

sp75\_817\_pp\_1lag | 1.000024 .0034343 0.01 0.994 .9933157 1.006778

sp75\_906\_pp\_1lag | .9951916 .0031166 -1.54 0.124 .9891019 1.001319

mine\_time | 1.012439 .0062199 2.01 0.044 1.000321 1.024703

onsite\_insp\_hours | .999842 .0000415 -3.81 0.000 .9997607 .9999234

|

state |

1 | .8238856 .1060437 -1.51 0.132 .6401877 1.060294

2 | 1.033571 .0559544 0.61 0.542 .9295202 1.149269

3 | .6652426 .0852976 -3.18 0.001 .5174147 .8553056

4 | .9992124 .0661097 -0.01 0.990 .8776892 1.137561

5 | .8202826 .0723256 -2.25 0.025 .6900996 .9750238

6 | .7612923 .037372 -5.56 0.000 .6914579 .8381797

7 | 1.023034 .2254665 0.10 0.918 .6641919 1.575747

8 | .4728034 .0235808 -15.02 0.000 .428773 .5213552

9 | .5524491 .0276116 -11.87 0.000 .5008976 .6093063

10 | .8263685 .0916856 -1.72 0.086 .6648643 1.027104

11 | 1.535837 .272477 2.42 0.016 1.084754 2.174498

12 | .9833967 .0752986 -0.22 0.827 .8463545 1.142629

13 | 1.53523 .1755701 3.75 0.000 1.226957 1.920956

14 | .4097828 .0729455 -5.01 0.000 .2890887 .5808663

15 | .7159489 .041032 -5.83 0.000 .6398799 .8010609

17 | .6037813 .0321684 -9.47 0.000 .5439127 .6702397

|

time |

2000 | 1.032391 .056677 0.58 0.561 .9270736 1.149672

2002 | .9211472 .0547961 -1.38 0.167 .8197732 1.035057

2003 | .8580191 .0608517 -2.16 0.031 .7466701 .9859732

2004 | .7798223 .0478478 -4.05 0.000 .6914618 .8794743

2005 | .6996495 .0422752 -5.91 0.000 .6215099 .7876133

2006 | .692441 .0438873 -5.80 0.000 .6115517 .7840295

2007 | .6543992 .0440417 -6.30 0.000 .57353 .7466712

2008 | .5736827 .0428528 -7.44 0.000 .4955516 .6641323

2009 | .5302236 .0402431 -8.36 0.000 .4569348 .6152673

2010 | .5209654 .0371529 -9.14 0.000 .4530071 .5991185

2011 | .4920355 .035518 -9.82 0.000 .4271217 .5668148

2012 | .4347941 .0357818 -10.12 0.000 .3700268 .5108979

2013 | .4321131 .0374222 -9.69 0.000 .364654 .5120518

2014 | .4095087 .0341725 -10.70 0.000 .3477222 .4822739

2015 | .3803481 .0320361 -11.48 0.000 .3224675 .448618

|

\_cons | .0001146 7.62e-06 -136.45 0.000 .0001006 .0001305

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

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

note: sp75\_1318\_pp\_1lag omitted because of collinearity

note: sp75\_373\_pp\_1lag omitted because of collinearity

Fitting Poisson model:

Iteration 0: log pseudolikelihood = -296817.3

Iteration 1: log pseudolikelihood = -124433.73

Iteration 2: log pseudolikelihood = -73143.797

Iteration 3: log pseudolikelihood = -37081.501

Iteration 4: log pseudolikelihood = -22875.944

Iteration 5: log pseudolikelihood = -20782.308

Iteration 6: log pseudolikelihood = -20355.771

Iteration 7: log pseudolikelihood = -20325.129

Iteration 8: log pseudolikelihood = -20324.809

Iteration 9: log pseudolikelihood = -20324.809

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 = -16821.681

Iteration 1: log pseudolikelihood = -16673.589

Iteration 2: log pseudolikelihood = -16658.675

Iteration 3: log pseudolikelihood = -16658.617

Iteration 4: log pseudolikelihood = -16658.617

Negative binomial regression Number of obs = 6,253

Wald chi2(110) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16658.617 Pseudo R2 = 0.0420

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

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

| Robust

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

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

sp48\_11\_pp\_1lag | 1.000869 .0005906 1.47 0.141 .9997117 1.002027

sp48\_24\_pp\_1lag | 1.001501 .0001524 9.86 0.000 1.001202 1.0018

sp48\_25\_pp\_1lag | .9995852 .0007634 -0.54 0.587 .9980901 1.001082

sp48\_26\_pp\_1lag | 1.001637 .0007913 2.07 0.038 1.000087 1.003189

sp48\_27\_pp\_1lag | .9995534 .0007032 -0.63 0.525 .9981762 1.000933

sp48\_28\_pp\_1lag | .9981658 .0009558 -1.92 0.055 .9962942 1.000041

sp48\_4\_pp\_1lag | 1.010372 .0032127 3.25 0.001 1.004095 1.016689

sp48\_5\_pp\_1lag | 1.000784 .00114 0.69 0.492 .9985518 1.00302

sp48\_6\_pp\_1lag | 1.000089 .0006105 0.15 0.884 .9988933 1.001286

sp48\_7\_pp\_1lag | 1.000491 .0004598 1.07 0.285 .9995902 1.001393

sp48\_8\_pp\_1lag | 1.000651 .0009351 0.70 0.486 .9988201 1.002485

sp75\_100\_pp\_1lag | 1.003901 .0014857 2.63 0.009 1.000993 1.006817

sp75\_1002\_pp\_1lag | .9996946 .0002525 -1.21 0.227 .9991998 1.00019

sp75\_1003\_pp\_1lag | .9996404 .0002259 -1.59 0.111 .9991977 1.000083

sp75\_1003\_2\_pp\_1lag | .9983752 .0004715 -3.44 0.001 .9974516 .9992997

sp75\_1311\_pp\_1lag | .9978293 .0011239 -1.93 0.054 .9956288 1.000035

sp75\_1315\_pp\_1lag | 1.001409 .0074691 0.19 0.850 .9868767 1.016156

sp75\_1316\_pp\_1lag | .9969859 .0024909 -1.21 0.227 .9921157 1.00188

sp75\_1318\_pp\_1lag | 1 (omitted)

sp75\_1400\_pp\_1lag | .9998888 .0007274 -0.15 0.879 .9984641 1.001316

sp75\_1400\_1\_pp\_1lag | .9991649 .0021828 -0.38 0.702 .9948959 1.003452

sp75\_1403\_10\_pp\_1lag | 1.000378 .0001558 2.43 0.015 1.000073 1.000684

sp75\_1403\_5\_pp\_1lag | .9997091 .0001364 -2.13 0.033 .9994419 .9999764

sp75\_1403\_6\_pp\_1lag | 1.000034 .0001029 0.33 0.740 .9998326 1.000236

sp75\_1403\_7\_pp\_1lag | 1.000025 .000522 0.05 0.962 .9990024 1.001049

sp75\_1403\_8\_pp\_1lag | .9997747 .0001023 -2.20 0.028 .9995741 .9999753

sp75\_1404\_pp\_1lag | .9984405 .0021337 -0.73 0.465 .9942674 1.002631

sp75\_1404\_1\_pp\_1lag | .9986336 .0014108 -0.97 0.333 .9958723 1.001403

sp75\_1405\_pp\_1lag | .9996598 .0002138 -1.59 0.112 .9992408 1.000079

sp75\_1405\_1\_pp\_1lag | 1.000767 .0015044 0.51 0.610 .9978224 1.003719

sp75\_153\_pp\_1lag | .9970029 .0026137 -1.14 0.252 .9918933 1.002139

sp75\_156\_pp\_1lag | .996932 .0016653 -1.84 0.066 .9936735 1.000201

sp75\_160\_pp\_1lag | 1.014676 .0066566 2.22 0.026 1.001713 1.027807

sp75\_1719\_2\_pp\_1lag | .9978453 .0012359 -1.74 0.082 .995426 1.00027

sp75\_1719\_4\_pp\_1lag | 1.000047 .000335 0.14 0.888 .9993907 1.000704

sp75\_1720\_pp\_1lag | 1.000792 .0003804 2.08 0.037 1.000046 1.001538

sp75\_1725\_pp\_1lag | 1.000038 .000037 1.02 0.307 .9999653 1.00011

sp75\_1906\_pp\_1lag | 1.001183 .0005606 2.11 0.035 1.000085 1.002283

sp75\_1916\_pp\_1lag | 1.000391 .0005474 0.71 0.475 .9993189 1.001465

sp75\_203\_pp\_1lag | 1.000026 .000129 0.20 0.843 .9997728 1.000278

sp75\_204\_pp\_1lag | 1.000379 .0001711 2.21 0.027 1.000043 1.000714

sp75\_205\_pp\_1lag | 1.006875 .0034305 2.01 0.044 1.000174 1.013621

sp75\_207\_pp\_1lag | 1.001648 .0011945 1.38 0.167 .9993093 1.003992

sp75\_208\_pp\_1lag | 1.000058 .000188 0.31 0.759 .9996892 1.000426

sp75\_209\_pp\_1lag | .9999694 .0007503 -0.04 0.967 .9985 1.001441

sp75\_212\_pp\_1lag | 1.001531 .0005906 2.59 0.009 1.000374 1.002689

sp75\_213\_pp\_1lag | 1.002108 .0009428 2.24 0.025 1.000262 1.003957

sp75\_215\_pp\_1lag | .999886 .0011806 -0.10 0.923 .9975748 1.002203

sp75\_332\_pp\_1lag | .9988317 .0011103 -1.05 0.293 .9966579 1.00101

sp75\_334\_pp\_1lag | .9999864 .0004045 -0.03 0.973 .9991939 1.00078

sp75\_337\_pp\_1lag | .9994783 .0002958 -1.76 0.078 .9988987 1.000058

sp75\_340\_pp\_1lag | .9999509 .0001235 -0.40 0.691 .999709 1.000193

sp75\_343\_pp\_1lag | 1.000281 .0006966 0.40 0.687 .9989163 1.001647

sp75\_373\_pp\_1lag | 1 (omitted)

sp75\_388\_pp\_1lag | 1.00057 .0008714 0.65 0.513 .9988632 1.002279

sp75\_389\_pp\_1lag | .998397 .0017608 -0.91 0.363 .9949519 1.001854

sp75\_500\_pp\_1lag | 1.000552 .0009477 0.58 0.560 .9986962 1.002411

sp75\_500\_1\_pp\_1lag | .9984791 .0026192 -0.58 0.562 .9933586 1.003626

sp75\_501\_pp\_1lag | .9996327 .0012055 -0.30 0.761 .9972728 1.001998

sp75\_501\_2\_pp\_1lag | .9993803 .0014704 -0.42 0.674 .9965026 1.002266

sp75\_502\_pp\_1lag | 1.005016 .0023717 2.12 0.034 1.000379 1.009675

sp75\_503\_pp\_1lag | 1.000017 .0000306 0.54 0.588 .9999565 1.000077

sp75\_505\_pp\_1lag | .9999972 .0013481 -0.00 0.998 .9973584 1.002643

sp75\_506\_1\_pp\_1lag | 1.001925 .0007602 2.54 0.011 1.000436 1.003416

sp75\_507\_pp\_1lag | 1.000282 .0004837 0.58 0.559 .9993347 1.001231

sp75\_507\_1\_pp\_1lag | 1.00001 .0002764 0.04 0.971 .9994686 1.000552

sp75\_508\_1\_pp\_1lag | .9881261 .001569 -7.52 0.000 .9850558 .9912061

sp75\_509\_pp\_1lag | 1.002658 .0013399 1.99 0.047 1.000036 1.005288

sp75\_510\_pp\_1lag | 1.001236 .0035315 0.35 0.726 .9943381 1.008181

sp75\_512\_1\_pp\_1lag | 1.000189 .0019691 0.10 0.924 .996337 1.004056

sp75\_523\_pp\_1lag | .9988054 .0003824 -3.12 0.002 .9980561 .9995553

sp75\_523\_3\_pp\_1lag | .9998378 .0001056 -1.54 0.125 .9996308 1.000045

sp75\_524\_pp\_1lag | 1.001802 .0012741 1.42 0.157 .9993076 1.004302

sp75\_602\_pp\_1lag | .9999189 .0004313 -0.19 0.851 .999074 1.000765

sp75\_603\_pp\_1lag | 1.00074 .0004282 1.73 0.084 .9999009 1.001579

sp75\_604\_pp\_1lag | 1.000088 .0000501 1.76 0.078 .99999 1.000186

sp75\_605\_pp\_1lag | 1.000079 .0002148 0.37 0.713 .9996581 1.0005

sp75\_606\_pp\_1lag | .999932 .0001144 -0.59 0.552 .9997077 1.000156

sp75\_607\_pp\_1lag | .9992823 .0003634 -1.97 0.048 .9985702 .9999948

sp75\_703\_3\_pp\_1lag | 1.00082 .0007208 1.14 0.255 .9994078 1.002233

sp75\_703\_4\_pp\_1lag | .990762 .0030762 -2.99 0.003 .984751 .9968097

sp75\_807\_pp\_1lag | 1.000191 .0001108 1.73 0.084 .9999742 1.000408

sp75\_810\_pp\_1lag | 1.000763 .0004501 1.70 0.090 .9998811 1.001645

sp75\_811\_pp\_1lag | 1.000652 .0005133 1.27 0.204 .9996466 1.001659

sp75\_812\_pp\_1lag | 1.000138 .0016384 0.08 0.933 .9969314 1.003354

sp75\_816\_pp\_1lag | .9999558 .000314 -0.14 0.888 .9993405 1.000572

sp75\_817\_pp\_1lag | 1.000078 .0032528 0.02 0.981 .9937229 1.006474

sp75\_906\_pp\_1lag | .9951395 .0029673 -1.63 0.102 .9893406 1.000972

mine\_time | 1.010248 .0056677 1.82 0.069 .9992005 1.021418

onsite\_insp\_hours | .999844 .0000402 -3.88 0.000 .9997652 .9999227

|

state |

1 | .8498236 .0971905 -1.42 0.155 .6791735 1.063352

2 | 1.166872 .0589452 3.06 0.002 1.056877 1.288316

3 | .655414 .0826185 -3.35 0.001 .5119377 .8391011

4 | 1.009089 .0611295 0.15 0.881 .8961172 1.136304

5 | .8450018 .0746759 -1.91 0.057 .7106141 1.004804

6 | .7851176 .0356545 -5.33 0.000 .7182557 .8582035

7 | 1.013221 .2073191 0.06 0.949 .6784789 1.513114

8 | .4844026 .0239933 -14.63 0.000 .4395871 .5337869

9 | .5853146 .0268132 -11.69 0.000 .5350519 .6402989

10 | .8589534 .080241 -1.63 0.104 .7152416 1.031541

11 | 1.565551 .2690304 2.61 0.009 1.117875 2.192507

12 | 1.045511 .0731063 0.64 0.524 .9116097 1.199079

13 | 1.507989 .1561865 3.97 0.000 1.230941 1.847394

14 | .4051154 .0713643 -5.13 0.000 .2868354 .5721696

15 | .7430724 .0396038 -5.57 0.000 .669367 .8248937

17 | .6296286 .0304842 -9.56 0.000 .572628 .6923032

|

time |

2000 | 1.050257 .045451 1.13 0.257 .9648483 1.143227

2002 | .946872 .0455978 -1.13 0.257 .8615899 1.040596

2003 | .85177 .0445179 -3.07 0.002 .7688367 .9436491

2004 | .8039484 .0391386 -4.48 0.000 .7307841 .8844376

2005 | .7275267 .0361587 -6.40 0.000 .6599993 .8019632

2006 | .7182222 .0372196 -6.39 0.000 .6488554 .7950047

2007 | .687912 .0386736 -6.65 0.000 .61614 .7680444

2008 | .5909785 .0362933 -8.56 0.000 .5239592 .6665702

2009 | .5348297 .0334203 -10.01 0.000 .4731794 .6045123

2010 | .5307582 .0324397 -10.36 0.000 .4708381 .5983038

2011 | .4982517 .0303037 -11.45 0.000 .442261 .5613309

2012 | .431074 .0290943 -12.47 0.000 .377661 .4920413

2013 | .4175818 .0297322 -12.26 0.000 .3631911 .4801179

2014 | .4119723 .0297417 -12.28 0.000 .357616 .4745906

2015 | .3912897 .0291014 -12.62 0.000 .3382143 .4526942

|

\_cons | .0001102 5.82e-06 -172.71 0.000 .0000994 .0001222

ln(hours) | 1 (exposure)

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

/lnalpha | -1.232647 .0578443 -1.346019 -1.119274

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

alpha | .29152 .0168628 .2602742 .3265167

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

(est1 stored)

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

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(1) = 7332.38

(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 -20324.81 111 40871.62 41619.85

nbin | 6,253 -17389.65 -16658.62 112 33541.23 34296.2

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

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

.

. pause "next"

.

. // final model + diagnostics/assessment

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

. predict cpp2\_yhat

(option n assumed; predicted number of events)

. gen cpp2\_res = dv - cpp2\_yhat

.

. summ dv cpp2\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cpp2\_yhat | 6,253 10.39904 14.81621 .0033438 239.1787

. /\*

> pause "next"

>

> scatter dv cpp2\_yhat

>

> pause "next"

>

> scatter cpp2\_res dv

>

> pause "next"

>

> scatter cpp2\_res cpp2\_yhat

> \*/

. pause "complete: C.PP.2"

.