. // Model C.PP.1

.

. // poisson model

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

note: sp75\_1318\_pp omitted because of collinearity

note: sp75\_373\_pp omitted because of collinearity

Iteration 0: log pseudolikelihood = -22687.899

Iteration 1: log pseudolikelihood = -20298.807

Iteration 2: log pseudolikelihood = -20287.112

Iteration 3: log pseudolikelihood = -20287.106

Iteration 4: log pseudolikelihood = -20287.106

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,140

Scale parameter = 1

Deviance = 21046.23089 (1/df) Deviance = 3.427725

Pearson = 25588.4934 (1/df) Pearson = 4.167507

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

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

AIC = 6.524902

Log pseudolikelihood = -20287.10554 BIC = -32622.38

(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 | 1.000177 .0004022 0.44 0.660 .9993891 1.000966

sp48\_24\_pp | 1.001715 .0001309 13.12 0.000 1.001458 1.001971

sp48\_25\_pp | .9994811 .0008336 -0.62 0.534 .9978487 1.001116

sp48\_26\_pp | 1.001634 .0007944 2.06 0.039 1.000079 1.003192

sp48\_27\_pp | .9999142 .0006274 -0.14 0.891 .9986853 1.001145

sp48\_28\_pp | .9975082 .0007437 -3.35 0.001 .9960517 .9989668

sp48\_4\_pp | .9999268 .001496 -0.05 0.961 .996999 1.002863

sp48\_5\_pp | 1.001866 .0011282 1.66 0.098 .9996574 1.00408

sp48\_6\_pp | 1.000493 .0004717 1.05 0.295 .9995694 1.001418

sp48\_7\_pp | 1.000241 .0003762 0.64 0.522 .9995039 1.000979

sp48\_8\_pp | 1.000533 .0008064 0.66 0.508 .9989541 1.002115

sp75\_100\_pp | 1.003781 .0014457 2.62 0.009 1.000952 1.006619

sp75\_1002\_pp | .9998817 .0002297 -0.52 0.606 .9994316 1.000332

sp75\_1003\_pp | .9996727 .0001769 -1.85 0.064 .999326 1.00002

sp75\_1003\_2\_pp | .9988138 .0005293 -2.24 0.025 .997777 .9998517

sp75\_1311\_pp | .9997102 .0010121 -0.29 0.775 .9977286 1.001696

sp75\_1315\_pp | 1.005898 .006616 0.89 0.371 .9930146 1.018949

sp75\_1316\_pp | .9993802 .0015859 -0.39 0.696 .9962767 1.002493

sp75\_1318\_pp | 1 (omitted)

sp75\_1400\_pp | .9994048 .0005962 -1.00 0.318 .9982371 1.000574

sp75\_1400\_1\_pp | 1.000098 .0021222 0.05 0.963 .9959468 1.004266

sp75\_1403\_10\_pp | 1.00043 .0001579 2.72 0.006 1.00012 1.000739

sp75\_1403\_5\_pp | .9996819 .0000957 -3.32 0.001 .9994943 .9998695

sp75\_1403\_6\_pp | 1.00003 .0000805 0.38 0.706 .9998725 1.000188

sp75\_1403\_7\_pp | .9997312 .0004455 -0.60 0.546 .9988584 1.000605

sp75\_1403\_8\_pp | .9997537 .0000851 -2.89 0.004 .9995868 .9999205

sp75\_1404\_pp | 1.002154 .0021064 1.02 0.306 .9980339 1.006291

sp75\_1404\_1\_pp | .9984426 .0011708 -1.33 0.184 .9961505 1.00074

sp75\_1405\_pp | .9997673 .0001261 -1.85 0.065 .9995202 1.000014

sp75\_1405\_1\_pp | 1.0006 .0010588 0.57 0.571 .9985264 1.002677

sp75\_153\_pp | 1.001738 .0016007 1.09 0.277 .9986052 1.00488

sp75\_156\_pp | .9962282 .0015685 -2.40 0.016 .9931586 .9993072

sp75\_160\_pp | 1.011096 .0069763 1.60 0.110 .9975143 1.024862

sp75\_1719\_2\_pp | .9992482 .0007226 -1.04 0.298 .9978329 1.000666

sp75\_1719\_4\_pp | 1.000246 .0003764 0.65 0.514 .9995081 1.000984

sp75\_1720\_pp | 1.000372 .00033 1.13 0.260 .9997251 1.001019

sp75\_1725\_pp | .999987 .0000341 -0.38 0.702 .9999202 1.000054

sp75\_1906\_pp | 1.00034 .0005133 0.66 0.507 .9993346 1.001347

sp75\_1916\_pp | 1.000814 .0003758 2.17 0.030 1.000077 1.00155

sp75\_203\_pp | 1.000173 .0001195 1.45 0.147 .9999391 1.000407

sp75\_204\_pp | 1.000114 .0001663 0.68 0.494 .9997878 1.00044

sp75\_205\_pp | 1.003663 .0033715 1.09 0.276 .9970768 1.010293

sp75\_207\_pp | 1.002072 .0013571 1.53 0.126 .9994159 1.004736

sp75\_208\_pp | 1.000219 .0001419 1.54 0.123 .999941 1.000497

sp75\_209\_pp | .9994921 .0007925 -0.64 0.522 .9979401 1.001047

sp75\_212\_pp | 1.001574 .0005718 2.76 0.006 1.000454 1.002696

sp75\_213\_pp | 1.002888 .0007369 3.92 0.000 1.001444 1.004333

sp75\_215\_pp | 1.001766 .0031968 0.55 0.580 .9955194 1.008051

sp75\_332\_pp | .9995205 .0012871 -0.37 0.710 .9970011 1.002046

sp75\_334\_pp | .9997618 .0003295 -0.72 0.470 .9991161 1.000408

sp75\_337\_pp | .9993863 .0002977 -2.06 0.039 .998803 .9999699

sp75\_340\_pp | .9999507 .0001062 -0.46 0.643 .9997426 1.000159

sp75\_343\_pp | 1.000415 .0008298 0.50 0.617 .9987903 1.002043

sp75\_373\_pp | 1 (omitted)

sp75\_388\_pp | 1.00002 .0007387 0.03 0.978 .9985735 1.001469

sp75\_389\_pp | .9984924 .0013626 -1.11 0.269 .9958254 1.001167

sp75\_500\_pp | .9999005 .000615 -0.16 0.871 .9986959 1.001106

sp75\_500\_1\_pp | .9980413 .0021248 -0.92 0.357 .9938855 1.002214

sp75\_501\_pp | .9995899 .0011379 -0.36 0.719 .9973621 1.001823

sp75\_501\_2\_pp | .9980157 .0016554 -1.20 0.231 .9947763 1.001266

sp75\_502\_pp | 1.004618 .0017013 2.72 0.007 1.001289 1.007958

sp75\_503\_pp | 1.000032 .0000266 1.22 0.222 .9999804 1.000085

sp75\_505\_pp | .998404 .0026276 -0.61 0.544 .9932673 1.003567

sp75\_506\_1\_pp | 1.002317 .0006448 3.60 0.000 1.001054 1.003581

sp75\_507\_pp | 1.00062 .0004381 1.42 0.157 .9997616 1.001479

sp75\_507\_1\_pp | 1.000096 .0002416 0.40 0.690 .999623 1.00057

sp75\_508\_1\_pp | .9887318 .00124 -9.04 0.000 .9863043 .9911652

sp75\_509\_pp | 1.0034 .001433 2.38 0.017 1.000596 1.006213

sp75\_510\_pp | 1.001233 .0020322 0.61 0.544 .9972575 1.005224

sp75\_512\_1\_pp | 1.003134 .0017549 1.79 0.074 .9996999 1.006579

sp75\_523\_pp | .9992054 .0003829 -2.07 0.038 .9984552 .9999563

sp75\_523\_3\_pp | .9997698 .0000869 -2.65 0.008 .9995995 .9999402

sp75\_524\_pp | 1.003269 .0015221 2.15 0.031 1.00029 1.006256

sp75\_602\_pp | .9997068 .0003423 -0.86 0.392 .999036 1.000378

sp75\_603\_pp | 1.000454 .0003679 1.23 0.217 .9997331 1.001175

sp75\_604\_pp | 1.000028 .000051 0.54 0.586 .9999278 1.000128

sp75\_605\_pp | 1.000015 .0001742 0.09 0.931 .9996738 1.000357

sp75\_606\_pp | .999987 .000122 -0.11 0.915 .9997478 1.000226

sp75\_607\_pp | .9999598 .0004882 -0.08 0.934 .9990035 1.000917

sp75\_703\_3\_pp | 1.0001 .0007469 0.13 0.893 .9986373 1.001565

sp75\_703\_4\_pp | .9896729 .0045095 -2.28 0.023 .9808737 .9985509

sp75\_807\_pp | 1.00012 .0001001 1.20 0.230 .9999241 1.000316

sp75\_810\_pp | 1.000905 .0003017 3.00 0.003 1.000314 1.001496

sp75\_811\_pp | 1.000003 .0004989 0.01 0.995 .9990259 1.000982

sp75\_812\_pp | .9983437 .0011212 -1.48 0.140 .9961486 1.000544

sp75\_816\_pp | 1.000067 .0002599 0.26 0.796 .9995581 1.000577

sp75\_817\_pp | .9979174 .0017369 -1.20 0.231 .9945189 1.001328

sp75\_906\_pp | .9924917 .0022775 -3.28 0.001 .9880378 .9969656

mine\_time | 1.008667 .0059673 1.46 0.145 .9970393 1.020431

onsite\_insp\_hours | .9998556 .0000419 -3.45 0.001 .9997736 .9999377

|

state |

1 | .9091278 .079135 -1.09 0.274 .7665353 1.078246

2 | 1.527723 .079658 8.13 0.000 1.379309 1.692107

3 | .6184331 .0638081 -4.66 0.000 .5052057 .7570373

4 | 1.116107 .0838401 1.46 0.144 .9633077 1.293143

5 | 1.007498 .1235136 0.06 0.951 .7923037 1.28114

6 | .920457 .0461896 -1.65 0.099 .8342365 1.015588

7 | 1.066226 .1632065 0.42 0.675 .7898716 1.43927

8 | .5153734 .0217015 -15.74 0.000 .4745471 .5597121

9 | .6418861 .0250284 -11.37 0.000 .5946589 .692864

10 | .9886224 .0857984 -0.13 0.895 .8339849 1.171933

11 | 1.709262 .2935931 3.12 0.002 1.220678 2.393404

12 | .9693977 .0900208 -0.33 0.738 .8080853 1.162912

13 | 1.513788 .1464652 4.29 0.000 1.252299 1.829879

14 | .399761 .059586 -6.15 0.000 .298487 .5353964

15 | .7923228 .0537743 -3.43 0.001 .6936363 .9050499

17 | .6812993 .0311372 -8.40 0.000 .6229249 .7451438

|

time |

2000 | 1.051723 .0399323 1.33 0.184 .9762988 1.132975

2002 | .9666355 .0357459 -0.92 0.359 .8990534 1.039298

2003 | .8386463 .0307685 -4.80 0.000 .7804583 .9011726

2004 | .8258094 .0361921 -4.37 0.000 .7578354 .8998804

2005 | .7702909 .0349941 -5.74 0.000 .7046686 .8420244

2006 | .7301887 .0375678 -6.11 0.000 .6601479 .8076608

2007 | .7192019 .03884 -6.10 0.000 .6469673 .7995017

2008 | .6342521 .037389 -7.72 0.000 .5650461 .7119344

2009 | .565691 .0339517 -9.49 0.000 .5029117 .6363072

2010 | .5697554 .0360456 -8.89 0.000 .5033118 .6449704

2011 | .5046134 .0295001 -11.70 0.000 .4499837 .5658753

2012 | .4469986 .0279674 -12.87 0.000 .3954112 .5053164

2013 | .4282564 .0315291 -11.52 0.000 .3707121 .4947332

2014 | .440952 .0337241 -10.71 0.000 .3795695 .5122611

2015 | .4136593 .0332478 -10.98 0.000 .3533682 .4842371

|

\_cons | .0000996 4.97e-06 -184.79 0.000 .0000903 .0001098

ln(hours) | 1 (exposure)

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

.

. quietly poisson dv `pp\_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 = 21046.23

Prob > chi2(6140) = 0.0000

Pearson goodness-of-fit = 25588.49

Prob > chi2(6140) = 0.0000

.

. pause "next"

.

. // negative binomial model

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

note: sp75\_1318\_pp omitted because of collinearity

note: sp75\_373\_pp omitted because of collinearity

Iteration 0: log pseudolikelihood = -17716.016

Iteration 1: log pseudolikelihood = -17479.073

Iteration 2: log pseudolikelihood = -17473.575

Iteration 3: log pseudolikelihood = -17473.564

Iteration 4: log pseudolikelihood = -17473.564

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,140

Scale parameter = 1

Deviance = 3859.157259 (1/df) Deviance = .6285272

Pearson = 5146.066371 (1/df) Pearson = .8381216

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

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

AIC = 5.625

Log pseudolikelihood = -17473.56382 BIC = -49809.46

(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 | 1.000708 .000583 1.22 0.224 .9995662 1.001852

sp48\_24\_pp | 1.001301 .0001817 7.17 0.000 1.000945 1.001658

sp48\_25\_pp | .9996472 .0009531 -0.37 0.711 .9977808 1.001517

sp48\_26\_pp | 1.001284 .0007997 1.61 0.108 .999718 1.002853

sp48\_27\_pp | .9996939 .0006923 -0.44 0.658 .998338 1.001052

sp48\_28\_pp | .9981432 .0010702 -1.73 0.083 .9960479 1.000243

sp48\_4\_pp | .9985892 .00174 -0.81 0.418 .9951847 1.002005

sp48\_5\_pp | 1.001636 .0014331 1.14 0.253 .9988311 1.004449

sp48\_6\_pp | 1.000454 .000678 0.67 0.503 .9991256 1.001783

sp48\_7\_pp | 1.000844 .0005397 1.56 0.118 .9997869 1.001903

sp48\_8\_pp | 1.000289 .0008772 0.33 0.742 .9985715 1.00201

sp75\_100\_pp | 1.004424 .0016718 2.65 0.008 1.001152 1.007706

sp75\_1002\_pp | .999595 .0003057 -1.32 0.185 .998996 1.000194

sp75\_1003\_pp | .9994893 .0002492 -2.05 0.040 .999001 .9999778

sp75\_1003\_2\_pp | .9984817 .0004959 -3.06 0.002 .9975101 .9994541

sp75\_1311\_pp | .9983373 .0014473 -1.15 0.251 .9955048 1.001178

sp75\_1315\_pp | .9992818 .0087436 -0.08 0.935 .9822907 1.016567

sp75\_1316\_pp | .9960343 .002889 -1.37 0.171 .9903882 1.001713

sp75\_1318\_pp | 1 (omitted)

sp75\_1400\_pp | 1.000408 .0008527 0.48 0.632 .9987382 1.002081

sp75\_1400\_1\_pp | .9998886 .002058 -0.05 0.957 .9958631 1.00393

sp75\_1403\_10\_pp | 1.000297 .0001575 1.89 0.059 .9999888 1.000606

sp75\_1403\_5\_pp | .9997502 .0001342 -1.86 0.063 .9994873 1.000013

sp75\_1403\_6\_pp | 1.000051 .0001024 0.50 0.617 .9998506 1.000252

sp75\_1403\_7\_pp | .9998427 .0004027 -0.39 0.696 .9990536 1.000632

sp75\_1403\_8\_pp | .9997439 .0000967 -2.65 0.008 .9995543 .9999336

sp75\_1404\_pp | 1.002017 .0032699 0.62 0.537 .995629 1.008447

sp75\_1404\_1\_pp | .9970404 .0013062 -2.26 0.024 .9944836 .9996038

sp75\_1405\_pp | .999661 .0001858 -1.82 0.068 .9992969 1.000025

sp75\_1405\_1\_pp | 1.001712 .0017562 0.98 0.329 .9982754 1.00516

sp75\_153\_pp | 1.000097 .0018535 0.05 0.958 .9964707 1.003736

sp75\_156\_pp | .9966704 .0015398 -2.16 0.031 .9936571 .9996929

sp75\_160\_pp | 1.020026 .0057384 3.52 0.000 1.008841 1.031335

sp75\_1719\_2\_pp | .9990275 .0017376 -0.56 0.576 .9956276 1.002439

sp75\_1719\_4\_pp | .9997634 .0003747 -0.63 0.528 .9990293 1.000498

sp75\_1720\_pp | 1.000611 .0004 1.53 0.127 .9998272 1.001395

sp75\_1725\_pp | 1.000056 .0000455 1.24 0.215 .9999673 1.000146

sp75\_1906\_pp | 1.001209 .0005344 2.26 0.024 1.000162 1.002257

sp75\_1916\_pp | 1.00041 .0004701 0.87 0.383 .9994893 1.001332

sp75\_203\_pp | 1.000011 .0001377 0.08 0.939 .9997409 1.00028

sp75\_204\_pp | 1.000242 .000193 1.25 0.210 .9998638 1.00062

sp75\_205\_pp | 1.007694 .004363 1.77 0.077 .999179 1.016282

sp75\_207\_pp | 1.000958 .001362 0.70 0.482 .9982922 1.003631

sp75\_208\_pp | 1.00007 .0001873 0.38 0.707 .9997033 1.000437

sp75\_209\_pp | 1.000041 .0008437 0.05 0.961 .998389 1.001696

sp75\_212\_pp | 1.002312 .0006519 3.55 0.000 1.001035 1.003591

sp75\_213\_pp | 1.002218 .0015665 1.42 0.156 .9991526 1.005293

sp75\_215\_pp | 1.001781 .0044137 0.40 0.686 .9931671 1.010469

sp75\_332\_pp | .999279 .0011928 -0.60 0.546 .9969439 1.00162

sp75\_334\_pp | 1.000035 .0004418 0.08 0.936 .9991697 1.000902

sp75\_337\_pp | .999475 .0002711 -1.94 0.053 .9989437 1.000007

sp75\_340\_pp | .9999331 .0001267 -0.53 0.598 .9996847 1.000182

sp75\_343\_pp | 1.000336 .0008 0.42 0.675 .998769 1.001905

sp75\_373\_pp | 1 (omitted)

sp75\_388\_pp | 1.001051 .0008991 1.17 0.242 .9992903 1.002815

sp75\_389\_pp | .9975526 .0018138 -1.35 0.178 .994004 1.001114

sp75\_500\_pp | .9995981 .0005959 -0.67 0.500 .9984308 1.000767

sp75\_500\_1\_pp | .9993679 .0034184 -0.18 0.853 .9926904 1.00609

sp75\_501\_pp | .9989398 .0012378 -0.86 0.392 .9965168 1.001369

sp75\_501\_2\_pp | .998587 .0016695 -0.85 0.398 .9953202 1.001864

sp75\_502\_pp | 1.005385 .0026732 2.02 0.043 1.000159 1.010638

sp75\_503\_pp | 1.000016 .0000357 0.46 0.644 .9999465 1.000086

sp75\_505\_pp | .9997701 .0014934 -0.15 0.878 .9968473 1.002701

sp75\_506\_1\_pp | 1.002738 .0008578 3.20 0.001 1.001058 1.004421

sp75\_507\_pp | 1.000447 .0005564 0.80 0.422 .9993567 1.001538

sp75\_507\_1\_pp | .9997533 .0002528 -0.98 0.329 .9992579 1.000249

sp75\_508\_1\_pp | .9857175 .0010683 -13.27 0.000 .983626 .9878135

sp75\_509\_pp | 1.003054 .0013125 2.33 0.020 1.000485 1.00563

sp75\_510\_pp | 1.001838 .0024543 0.75 0.454 .9970389 1.00666

sp75\_512\_1\_pp | 1.001944 .0024454 0.80 0.426 .9971624 1.006748

sp75\_523\_pp | .9986471 .0004554 -2.97 0.003 .9977549 .9995401

sp75\_523\_3\_pp | .9997717 .0001151 -1.98 0.047 .9995462 .9999973

sp75\_524\_pp | 1.001629 .001721 0.95 0.344 .9982612 1.005007

sp75\_602\_pp | .9997448 .000443 -0.58 0.565 .998877 1.000613

sp75\_603\_pp | 1.001038 .000612 1.70 0.090 .9998393 1.002238

sp75\_604\_pp | 1.0001 .0000565 1.76 0.078 .999989 1.00021

sp75\_605\_pp | .9999219 .0002166 -0.36 0.718 .9994974 1.000347

sp75\_606\_pp | .9999787 .0001195 -0.18 0.858 .9997444 1.000213

sp75\_607\_pp | .9999048 .0003855 -0.25 0.805 .9991496 1.000661

sp75\_703\_3\_pp | .9999677 .0007652 -0.04 0.966 .998469 1.001469

sp75\_703\_4\_pp | .9869525 .0059449 -2.18 0.029 .9753693 .9986733

sp75\_807\_pp | 1.00021 .0001284 1.64 0.102 .9999584 1.000462

sp75\_810\_pp | 1.00048 .0004418 1.09 0.277 .9996147 1.001347

sp75\_811\_pp | 1.000226 .0005089 0.44 0.657 .9992292 1.001224

sp75\_812\_pp | .9988393 .0011791 -0.98 0.325 .9965309 1.001153

sp75\_816\_pp | 1.000054 .0003463 0.16 0.877 .9993753 1.000733

sp75\_817\_pp | .9993935 .0037111 -0.16 0.870 .9921463 1.006694

sp75\_906\_pp | .9936491 .0026758 -2.37 0.018 .9884185 .9989074

mine\_time | 1.012867 .0061815 2.09 0.036 1.000824 1.025055

onsite\_insp\_hours | .999838 .0000418 -3.87 0.000 .9997561 .99992

|

state |

1 | .8331972 .1080284 -1.41 0.159 .646227 1.074263

2 | 1.039779 .0552718 0.73 0.463 .9369006 1.153954

3 | .6658167 .0851093 -3.18 0.001 .5182607 .855384

4 | .9867755 .0647166 -0.20 0.839 .8677473 1.122131

5 | .8077308 .0694043 -2.49 0.013 .6825385 .9558861

6 | .7602553 .0373645 -5.58 0.000 .6904388 .8371315

7 | 1.059409 .2256067 0.27 0.786 .6979042 1.608168

8 | .4740244 .022134 -15.99 0.000 .4325685 .5194532

9 | .5501647 .0277561 -11.84 0.000 .4983668 .6073462

10 | .8331152 .0931479 -1.63 0.102 .6691678 1.03723

11 | 1.540167 .283601 2.35 0.019 1.07357 2.209556

12 | .9829171 .0753291 -0.22 0.822 .8458283 1.142225

13 | 1.543855 .1784412 3.76 0.000 1.230902 1.936376

14 | .4104309 .0736931 -4.96 0.000 .288673 .5835443

15 | .7126724 .0408332 -5.91 0.000 .6369709 .7973708

17 | .610397 .033977 -8.87 0.000 .5473075 .6807591

|

time |

2000 | 1.021094 .0560129 0.38 0.704 .9170069 1.136997

2002 | .9134968 .0527549 -1.57 0.117 .8157361 1.022973

2003 | .8504987 .0603041 -2.28 0.022 .74015 .9772992

2004 | .7743071 .0474465 -4.17 0.000 .6866808 .8731153

2005 | .6941182 .0420313 -6.03 0.000 .6164391 .7815858

2006 | .6856313 .0435232 -5.95 0.000 .6054206 .7764689

2007 | .6401652 .0438127 -6.52 0.000 .559804 .7320623

2008 | .5679963 .0431733 -7.44 0.000 .4893796 .6592424

2009 | .5263963 .0399084 -8.46 0.000 .4537112 .6107258

2010 | .5217764 .0381982 -8.89 0.000 .4520324 .6022811

2011 | .4858457 .035099 -9.99 0.000 .4217012 .559747

2012 | .4344294 .0357428 -10.13 0.000 .3697315 .5104486

2013 | .4339866 .037729 -9.60 0.000 .3659961 .5146076

2014 | .409099 .0342676 -10.67 0.000 .3471592 .48209

2015 | .3804293 .0319044 -11.52 0.000 .3227667 .4483935

|

\_cons | .0001156 7.70e-06 -136.03 0.000 .0001014 .0001317

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

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

note: sp75\_1318\_pp omitted because of collinearity

note: sp75\_373\_pp omitted because of collinearity

Fitting Poisson model:

Iteration 0: log pseudolikelihood = -235307.97

Iteration 1: log pseudolikelihood = -109325.89

Iteration 2: log pseudolikelihood = -55970.858

Iteration 3: log pseudolikelihood = -24931.371

Iteration 4: log pseudolikelihood = -21031.447

Iteration 5: log pseudolikelihood = -20303.275

Iteration 6: log pseudolikelihood = -20287.12

Iteration 7: log pseudolikelihood = -20287.106

Iteration 8: log pseudolikelihood = -20287.106

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 = -16809.517

Iteration 1: log pseudolikelihood = -16662.178

Iteration 2: log pseudolikelihood = -16648.383

Iteration 3: log pseudolikelihood = -16648.333

Iteration 4: log pseudolikelihood = -16648.333

Negative binomial regression Number of obs = 6,253

Wald chi2(112) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16648.333 Pseudo R2 = 0.0426

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

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

| Robust

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

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

sp48\_11\_pp | 1.000609 .0005087 1.20 0.231 .9996121 1.001606

sp48\_24\_pp | 1.001471 .0001531 9.62 0.000 1.001171 1.001771

sp48\_25\_pp | .9995518 .0008714 -0.51 0.607 .9978453 1.001261

sp48\_26\_pp | 1.001566 .0007582 2.07 0.039 1.000081 1.003053

sp48\_27\_pp | .9997533 .0006494 -0.38 0.704 .9984813 1.001027

sp48\_28\_pp | .9977116 .0009111 -2.51 0.012 .9959275 .9994989

sp48\_4\_pp | .998712 .0016425 -0.78 0.433 .995498 1.001936

sp48\_5\_pp | 1.001569 .0012184 1.29 0.197 .9991842 1.00396

sp48\_6\_pp | 1.000499 .0006215 0.80 0.422 .9992818 1.001718

sp48\_7\_pp | 1.000609 .0004932 1.23 0.217 .9996423 1.001576

sp48\_8\_pp | 1.000443 .0007937 0.56 0.577 .9988884 1.002

sp75\_100\_pp | 1.004317 .0015924 2.72 0.007 1.0012 1.007442

sp75\_1002\_pp | .9996609 .0002597 -1.31 0.192 .999152 1.00017

sp75\_1003\_pp | .9995309 .0002267 -2.07 0.039 .9990867 .9999753

sp75\_1003\_2\_pp | .998627 .0004875 -2.81 0.005 .9976719 .9995829

sp75\_1311\_pp | .9985755 .0012125 -1.17 0.240 .9962018 1.000955

sp75\_1315\_pp | 1.001489 .0075267 0.20 0.843 .9868452 1.01635

sp75\_1316\_pp | .99716 .0025202 -1.13 0.260 .9922328 1.002112

sp75\_1318\_pp | 1 (omitted)

sp75\_1400\_pp | .9999884 .0006713 -0.02 0.986 .9986735 1.001305

sp75\_1400\_1\_pp | .9998811 .0020795 -0.06 0.954 .9958137 1.003965

sp75\_1403\_10\_pp | 1.000301 .0001432 2.10 0.035 1.000021 1.000582

sp75\_1403\_5\_pp | .9997319 .000128 -2.09 0.036 .9994811 .9999827

sp75\_1403\_6\_pp | 1.000047 .0000983 0.48 0.634 .9998541 1.000239

sp75\_1403\_7\_pp | .9998662 .0003861 -0.35 0.729 .9991098 1.000623

sp75\_1403\_8\_pp | .9997399 .0000903 -2.88 0.004 .9995629 .9999169

sp75\_1404\_pp | 1.002349 .0029914 0.79 0.432 .9965033 1.008229

sp75\_1404\_1\_pp | .9975128 .0011241 -2.21 0.027 .9953122 .9997184

sp75\_1405\_pp | .9996965 .0001706 -1.78 0.075 .9993622 1.000031

sp75\_1405\_1\_pp | 1.001429 .0014889 0.96 0.337 .9985152 1.004352

sp75\_153\_pp | .9999603 .0018627 -0.02 0.983 .9963161 1.003618

sp75\_156\_pp | .9965695 .0013742 -2.49 0.013 .9938798 .9992664

sp75\_160\_pp | 1.02021 .0058624 3.48 0.000 1.008784 1.031765

sp75\_1719\_2\_pp | .9989991 .0014949 -0.67 0.503 .9960734 1.001933

sp75\_1719\_4\_pp | .9999037 .0003642 -0.26 0.791 .9991902 1.000618

sp75\_1720\_pp | 1.000581 .0003698 1.57 0.116 .9998568 1.001306

sp75\_1725\_pp | 1.000038 .0000407 0.94 0.349 .9999583 1.000118

sp75\_1906\_pp | 1.001149 .0005079 2.26 0.024 1.000154 1.002145

sp75\_1916\_pp | 1.000575 .0004499 1.28 0.201 .9996939 1.001457

sp75\_203\_pp | 1.000052 .0001313 0.40 0.692 .9997948 1.000309

sp75\_204\_pp | 1.000238 .0001809 1.32 0.188 .9998835 1.000593

sp75\_205\_pp | 1.007396 .0045306 1.64 0.101 .9985551 1.016315

sp75\_207\_pp | 1.001309 .0012577 1.04 0.298 .9988467 1.003777

sp75\_208\_pp | 1.000168 .0001682 1.00 0.318 .9998382 1.000497

sp75\_209\_pp | .9998461 .000783 -0.20 0.844 .9983126 1.001382

sp75\_212\_pp | 1.002095 .0005861 3.58 0.000 1.000947 1.003245

sp75\_213\_pp | 1.00244 .0011555 2.11 0.035 1.000178 1.004707

sp75\_215\_pp | 1.002155 .0043712 0.49 0.622 .9936239 1.010759

sp75\_332\_pp | .9995265 .0011529 -0.41 0.681 .9972695 1.001789

sp75\_334\_pp | .9999883 .0003978 -0.03 0.977 .9992089 1.000768

sp75\_337\_pp | .9994408 .0002584 -2.16 0.030 .9989345 .9999473

sp75\_340\_pp | .9999053 .0001205 -0.79 0.432 .9996692 1.000141

sp75\_343\_pp | 1.000491 .000778 0.63 0.528 .9989678 1.002017

sp75\_373\_pp | 1 (omitted)

sp75\_388\_pp | 1.000767 .0008235 0.93 0.351 .9991547 1.002383

sp75\_389\_pp | .9977799 .0015128 -1.47 0.143 .9948192 1.000749

sp75\_500\_pp | .9996954 .0005603 -0.54 0.587 .9985977 1.000794

sp75\_500\_1\_pp | .9989277 .0032768 -0.33 0.744 .9925258 1.005371

sp75\_501\_pp | .9991192 .0012028 -0.73 0.464 .9967645 1.001479

sp75\_501\_2\_pp | .9983376 .0015761 -1.05 0.292 .9952533 1.001431

sp75\_502\_pp | 1.004466 .0021258 2.11 0.035 1.000308 1.008641

sp75\_503\_pp | 1.000028 .0000334 0.84 0.398 .9999627 1.000094

sp75\_505\_pp | .9999378 .0014614 -0.04 0.966 .9970775 1.002806

sp75\_506\_1\_pp | 1.002601 .0008369 3.11 0.002 1.000962 1.004243

sp75\_507\_pp | 1.000465 .0005368 0.87 0.386 .9994132 1.001517

sp75\_507\_1\_pp | .999884 .0002382 -0.49 0.626 .9994172 1.000351

sp75\_508\_1\_pp | .9862867 .0010556 -12.90 0.000 .9842198 .9883579

sp75\_509\_pp | 1.003049 .0013165 2.32 0.020 1.000472 1.005633

sp75\_510\_pp | 1.001469 .0022416 0.66 0.512 .9970854 1.005872

sp75\_512\_1\_pp | 1.002394 .002227 1.08 0.282 .998039 1.006769

sp75\_523\_pp | .9987959 .0003757 -3.20 0.001 .9980599 .9995325

sp75\_523\_3\_pp | .9997985 .0001048 -1.92 0.055 .9995931 1.000004

sp75\_524\_pp | 1.002122 .0016447 1.29 0.197 .9989034 1.005351

sp75\_602\_pp | .9997335 .0003985 -0.67 0.504 .9989527 1.000515

sp75\_603\_pp | 1.000904 .0005197 1.74 0.082 .9998864 1.001923

sp75\_604\_pp | 1.00009 .0000528 1.71 0.087 .9999868 1.000194

sp75\_605\_pp | .9999566 .0001985 -0.22 0.827 .9995676 1.000346

sp75\_606\_pp | .9999979 .0001158 -0.02 0.986 .9997709 1.000225

sp75\_607\_pp | .9999165 .0003865 -0.22 0.829 .9991593 1.000674

sp75\_703\_3\_pp | 1.000049 .0007258 0.07 0.946 .9986277 1.001473

sp75\_703\_4\_pp | .9873218 .005459 -2.31 0.021 .9766801 .9980794

sp75\_807\_pp | 1.000178 .0001189 1.49 0.135 .9999446 1.000411

sp75\_810\_pp | 1.000588 .0003747 1.57 0.116 .9998539 1.001323

sp75\_811\_pp | 1.000161 .0004794 0.34 0.737 .9992221 1.001101

sp75\_812\_pp | .9988691 .0011431 -0.99 0.323 .9966312 1.001112

sp75\_816\_pp | 1.000042 .0003221 0.13 0.897 .9994105 1.000673

sp75\_817\_pp | .9995168 .0035311 -0.14 0.891 .9926199 1.006462

sp75\_906\_pp | .9938108 .0023598 -2.61 0.009 .9891965 .9984467

mine\_time | 1.010524 .0056206 1.88 0.060 .9995672 1.0216

onsite\_insp\_hours | .9998406 .0000404 -3.94 0.000 .9997614 .9999198

|

state |

1 | .8561516 .0991543 -1.34 0.180 .682291 1.074315

2 | 1.174277 .0588511 3.21 0.001 1.064415 1.295478

3 | .6550678 .0826376 -3.35 0.001 .5115712 .8388154

4 | .9957279 .0594625 -0.07 0.943 .8857455 1.119367

5 | .8322506 .0719019 -2.13 0.034 .7026109 .9858102

6 | .7832185 .0354526 -5.40 0.000 .7167258 .85588

7 | 1.044533 .2061286 0.22 0.825 .7094886 1.537795

8 | .4849464 .0219507 -15.99 0.000 .443777 .5299352

9 | .5849434 .0268477 -11.68 0.000 .5346203 .6400034

10 | .8677809 .0832821 -1.48 0.139 .7189838 1.047372

11 | 1.578202 .2795975 2.58 0.010 1.115223 2.233383

12 | 1.045865 .0728785 0.64 0.520 .912351 1.198918

13 | 1.514123 .1587998 3.96 0.000 1.232787 1.859664

14 | .4059147 .072052 -5.08 0.000 .2866435 .5748143

15 | .7385407 .0393033 -5.70 0.000 .6653889 .8197347

17 | .6338893 .0325923 -8.87 0.000 .5731228 .7010986

|

time |

2000 | 1.037887 .0451685 0.85 0.393 .9530286 1.130301

2002 | .9401281 .043494 -1.33 0.182 .858632 1.029359

2003 | .8441483 .0441483 -3.24 0.001 .7619063 .9352678

2004 | .7982758 .0387541 -4.64 0.000 .725821 .8779634

2005 | .7217162 .0361316 -6.51 0.000 .654263 .7961237

2006 | .7111557 .0370903 -6.54 0.000 .6420522 .7876967

2007 | .6697504 .0388304 -6.91 0.000 .5978091 .7503493

2008 | .5830649 .0367571 -8.56 0.000 .5152952 .6597474

2009 | .5304205 .0329906 -10.19 0.000 .4695458 .5991873

2010 | .5311906 .0333987 -10.06 0.000 .469603 .6008552

2011 | .4897263 .0300785 -11.62 0.000 .4341836 .5523743

2012 | .4305651 .0292345 -12.41 0.000 .3769154 .4918511

2013 | .4201419 .0301099 -12.10 0.000 .3650849 .4835018

2014 | .4119076 .0298966 -12.22 0.000 .3572884 .4748765

2015 | .3922581 .0291225 -12.61 0.000 .3391377 .453699

|

\_cons | .0001113 5.94e-06 -170.43 0.000 .0001002 .0001236

ln(hours) | 1 (exposure)

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

/lnalpha | -1.239297 .0587603 -1.354465 -1.124129

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

alpha | .2895877 .0170163 .2580852 .3249353

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

(est1 stored)

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

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(1) = 7277.54

(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 -20287.11 113 40800.21 41561.92

nbin | 6,253 -17389.65 -16648.33 114 33524.67 34293.12

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

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

.

. pause "next"

.

. // final model + diagnostics/assessment

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

. predict cpp1\_yhat

(option n assumed; predicted number of events)

. gen cpp1\_res = dv - cpp1\_yhat

.

. summ dv cpp1\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cpp1\_yhat | 6,253 10.40667 14.87951 .0033982 249.744

. /\*

> pause "next"

>

> scatter dv cpp1\_yhat

>

> pause "next"

>

> scatter cpp1\_res dv

>

> pause "next"

>

> scatter cpp1\_res cpp1\_yhat

> \*/

. pause "complete: C.PP.1"

.