. // Model C.SSV.2

.

. // poisson model

. glm dv `ss\_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\_ss\_1lag omitted because of collinearity

note: sp75\_1322\_ss\_1lag omitted because of collinearity

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

Iteration 0: log pseudolikelihood = -22633.029

Iteration 1: log pseudolikelihood = -20268.095

Iteration 2: log pseudolikelihood = -20257.59

Iteration 3: log pseudolikelihood = -20257.585

Iteration 4: log pseudolikelihood = -20257.585

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,146

Scale parameter = 1

Deviance = 20987.18901 (1/df) Deviance = 3.414772

Pearson = 25452.3576 (1/df) Pearson = 4.141288

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

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

AIC = 6.513541

Log pseudolikelihood = -20257.58461 BIC = -32733.87

(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\_ss\_1lag | 1.018716 .0466572 0.40 0.686 .9312539 1.114393

sp48\_25\_ss\_1lag | .9519704 .060454 -0.78 0.438 .8405599 1.078148

sp48\_26\_ss\_1lag | 1.040733 .0583174 0.71 0.476 .9324862 1.161546

sp48\_27\_ss\_1lag | 1.027365 .0672819 0.41 0.680 .9036076 1.168072

sp48\_28\_ss\_1lag | .9543391 .0557891 -0.80 0.424 .8510262 1.070194

sp48\_4\_ss\_1lag | 1.700782 .1836232 4.92 0.000 1.376416 2.101589

sp48\_5\_ss\_1lag | .9314143 .0806733 -0.82 0.412 .7859902 1.103745

sp48\_6\_ss\_1lag | 1.058693 .0698865 0.86 0.388 .9302091 1.204924

sp48\_7\_ss\_1lag | 1.075293 .0364762 2.14 0.032 1.006125 1.149215

sp48\_8\_ss\_1lag | .9470964 .0989722 -0.52 0.603 .7716903 1.162373

sp75\_100\_ss\_1lag | 1.034348 .1420665 0.25 0.806 .7902334 1.353874

sp75\_1002\_ss\_1lag | .9820738 .0288554 -0.62 0.538 .9271159 1.04029

sp75\_1003\_ss\_1lag | .981573 .0316552 -0.58 0.564 .9214501 1.045619

sp75\_1003\_2\_ss\_1lag | .8966488 .0598941 -1.63 0.102 .7866184 1.02207

sp75\_1311\_ss\_1lag | .919546 .1120253 -0.69 0.491 .7242263 1.167542

sp75\_1315\_ss\_1lag | 1.180837 .4112497 0.48 0.633 .596681 2.336887

sp75\_1316\_ss\_1lag | .9031209 .1169034 -0.79 0.431 .7007501 1.163935

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

sp75\_1322\_ss\_1lag | 1 (omitted)

sp75\_1400\_ss\_1lag | 1.090077 .041403 2.27 0.023 1.011875 1.174322

sp75\_1400\_1\_ss\_1lag | .751251 .1378257 -1.56 0.119 .5243512 1.076336

sp75\_1403\_10\_ss\_1lag | 1.046288 .0104161 4.55 0.000 1.026071 1.066904

sp75\_1403\_5\_ss\_1lag | .9827088 .0075273 -2.28 0.023 .9680658 .9975733

sp75\_1403\_6\_ss\_1lag | .992366 .0069999 -1.09 0.277 .9787407 1.006181

sp75\_1403\_7\_ss\_1lag | 1.020373 .03184 0.65 0.518 .9598375 1.084726

sp75\_1403\_8\_ss\_1lag | .9712459 .0151725 -1.87 0.062 .941959 1.001443

sp75\_1404\_ss\_1lag | .8570679 .0651872 -2.03 0.043 .7383702 .9948469

sp75\_1404\_1\_ss\_1lag | .8871345 .0830391 -1.28 0.201 .7384378 1.065774

sp75\_1405\_ss\_1lag | .9783214 .0101249 -2.12 0.034 .9586768 .9983685

sp75\_1405\_1\_ss\_1lag | 1.24165 .2848611 0.94 0.345 .7919819 1.946628

sp75\_153\_ss\_1lag | 1.664092 .2848465 2.98 0.003 1.189803 2.327445

sp75\_155\_ss\_1lag | .8902442 .0806245 -1.28 0.199 .7454535 1.063158

sp75\_156\_ss\_1lag | 1.046525 .1806942 0.26 0.792 .7460708 1.467976

sp75\_1719\_2\_ss\_1lag | .8441103 .1990921 -0.72 0.472 .5316607 1.340182

sp75\_1719\_4\_ss\_1lag | .9604221 .07545 -0.51 0.607 .823365 1.120294

sp75\_1720\_ss\_1lag | 1.079131 .0320699 2.56 0.010 1.018071 1.143853

sp75\_1725\_ss\_1lag | .9966178 .0028101 -1.20 0.230 .9911253 1.002141

sp75\_1906\_ss\_1lag | 1.680613 .3258116 2.68 0.007 1.149344 2.457456

sp75\_1916\_ss\_1lag | 1.083514 .0485892 1.79 0.074 .992346 1.183057

sp75\_203\_ss\_1lag | 1.019138 .0146562 1.32 0.187 .9908135 1.048272

sp75\_204\_ss\_1lag | 1.054448 .0267107 2.09 0.036 1.003374 1.108121

sp75\_205\_ss\_1lag | 1.501163 .2811317 2.17 0.030 1.039964 2.166893

sp75\_207\_ss\_1lag | 1.273714 .1268199 2.43 0.015 1.047901 1.548188

sp75\_208\_ss\_1lag | 1.018423 .014919 1.25 0.213 .9895979 1.048087

sp75\_209\_ss\_1lag | 1.10018 .064537 1.63 0.104 .9806904 1.234229

sp75\_212\_ss\_1lag | 1.102761 .0501523 2.15 0.031 1.008718 1.205572

sp75\_213\_ss\_1lag | 1.08218 .02096 4.08 0.000 1.041869 1.12405

sp75\_215\_ss\_1lag | .9152333 .0576551 -1.41 0.160 .8089289 1.035508

sp75\_332\_ss\_1lag | .9153326 .0824685 -0.98 0.326 .7671644 1.092118

sp75\_334\_ss\_1lag | 1.00658 .0393135 0.17 0.867 .9324026 1.086659

sp75\_337\_ss\_1lag | .9643921 .022505 -1.55 0.120 .9212766 1.009525

sp75\_340\_ss\_1lag | .9955426 .0103875 -0.43 0.669 .9753902 1.016111

sp75\_343\_ss\_1lag | 1.043894 .0740536 0.61 0.545 .9083898 1.199611

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

sp75\_388\_ss\_1lag | 1.041712 .0644136 0.66 0.509 .9228137 1.175929

sp75\_389\_ss\_1lag | .94115 .1679075 -0.34 0.734 .6634357 1.335116

sp75\_500\_ss\_1lag | .9744657 .0562636 -0.45 0.654 .8702017 1.091222

sp75\_500\_1\_ss\_1lag | .8555631 .0913511 -1.46 0.144 .6940114 1.054721

sp75\_501\_ss\_1lag | .9797456 .1149094 -0.17 0.861 .7785387 1.232953

sp75\_501\_2\_ss\_1lag | .7761816 .2594372 -0.76 0.448 .4031353 1.494431

sp75\_502\_ss\_1lag | 1.281046 .3580675 0.89 0.376 .7407029 2.215571

sp75\_503\_ss\_1lag | 1.005806 .0040751 1.43 0.153 .9978503 1.013825

sp75\_505\_ss\_1lag | .504074 .1562911 -2.21 0.027 .2745202 .9255807

sp75\_506\_1\_ss\_1lag | 1.158705 .1460536 1.17 0.243 .9050655 1.483427

sp75\_507\_ss\_1lag | 1.050065 .0562915 0.91 0.362 .9453343 1.166399

sp75\_507\_1\_ss\_1lag | 1.051496 .0308302 1.71 0.087 .9927738 1.113692

sp75\_509\_ss\_1lag | 1.216074 .1055149 2.25 0.024 1.025898 1.441505

sp75\_512\_1\_ss\_1lag | 1.359431 .2020669 2.07 0.039 1.01586 1.8192

sp75\_523\_ss\_1lag | .9247443 .0194729 -3.72 0.000 .8873551 .9637089

sp75\_523\_3\_ss\_1lag | .9773072 .0088053 -2.55 0.011 .9602007 .9947185

sp75\_524\_ss\_1lag | 1.18867 .1512605 1.36 0.174 .9262845 1.525381

sp75\_602\_ss\_1lag | 1.026603 .0418716 0.64 0.520 .9477304 1.112039

sp75\_603\_ss\_1lag | 1.058883 .0321742 1.88 0.060 .9976636 1.123859

sp75\_604\_ss\_1lag | 1.006774 .0042145 1.61 0.107 .9985475 1.015068

sp75\_605\_ss\_1lag | .9897227 .0215623 -0.47 0.635 .9483508 1.032899

sp75\_606\_ss\_1lag | 1.003291 .0154439 0.21 0.831 .9734739 1.034022

sp75\_607\_ss\_1lag | .9882633 .040527 -0.29 0.773 .9119402 1.070974

sp75\_703\_3\_ss\_1lag | 1.089801 .0477683 1.96 0.050 1.000086 1.187565

sp75\_807\_ss\_1lag | 1.017232 .0169175 1.03 0.304 .9846093 1.050936

sp75\_810\_ss\_1lag | 1.113184 .0909549 1.31 0.189 .9484574 1.30652

sp75\_811\_ss\_1lag | .8363288 .0757033 -1.97 0.048 .7003699 .9986807

sp75\_812\_ss\_1lag | .9163682 .112541 -0.71 0.477 .7203313 1.165756

sp75\_816\_ss\_1lag | 1.018498 .0496567 0.38 0.707 .9256781 1.120625

sp75\_817\_ss\_1lag | 1.023832 .2913589 0.08 0.934 .5861331 1.788385

sp75\_906\_ss\_1lag | .5831886 .163254 -1.93 0.054 .3369219 1.009459

mine\_time | 1.010391 .0058729 1.78 0.075 .9989457 1.021967

onsite\_insp\_hours | .9998463 .0000325 -4.72 0.000 .9997826 .9999101

|

state |

1 | .8753637 .0690936 -1.69 0.092 .7498979 1.021821

2 | 1.429741 .0836463 6.11 0.000 1.274848 1.603454

3 | .6189488 .0621962 -4.77 0.000 .5083002 .7536839

4 | 1.091848 .0543512 1.77 0.078 .9903532 1.203744

5 | .9856579 .0937807 -0.15 0.879 .8179718 1.18772

6 | .8931191 .0456063 -2.21 0.027 .8080599 .987132

7 | 1.073005 .1769497 0.43 0.669 .7766575 1.482428

8 | .4803178 .0168502 -20.90 0.000 .4484018 .5145056

9 | .6146842 .0236852 -12.63 0.000 .5699717 .6629041

10 | 1.020205 .0986652 0.21 0.836 .8440475 1.233128

11 | 1.586763 .2652927 2.76 0.006 1.143401 2.202041

12 | .9733708 .0824651 -0.32 0.750 .8244486 1.149193

13 | 1.508196 .1522023 4.07 0.000 1.237535 1.838054

14 | .3922206 .0572889 -6.41 0.000 .2945788 .522227

15 | .7727466 .0539318 -3.69 0.000 .6739532 .8860219

17 | .648068 .0304829 -9.22 0.000 .5909938 .710654

|

time |

2000 | 1.068815 .0421772 1.69 0.092 .9892648 1.154761

2002 | .978738 .0374531 -0.56 0.574 .9080165 1.054968

2003 | .8442187 .0343949 -4.16 0.000 .7794271 .9143961

2004 | .8315885 .0359779 -4.26 0.000 .7639802 .9051799

2005 | .7719983 .035668 -5.60 0.000 .7051622 .8451692

2006 | .7635421 .0382371 -5.39 0.000 .6921592 .8422867

2007 | .7400554 .0416025 -5.35 0.000 .6628475 .8262564

2008 | .6815901 .0397421 -6.57 0.000 .6079831 .7641087

2009 | .6021143 .0356361 -8.57 0.000 .5361676 .6761721

2010 | .591853 .0377684 -8.22 0.000 .5222704 .6707062

2011 | .5200248 .0314638 -10.81 0.000 .4618731 .585498

2012 | .4650625 .0296071 -12.03 0.000 .4105079 .5268671

2013 | .4491834 .0342705 -10.49 0.000 .3867954 .5216343

2014 | .4674429 .036767 -9.67 0.000 .4006608 .5453562

2015 | .4342573 .0353592 -10.24 0.000 .3702017 .5093965

|

\_cons | .0000974 4.74e-06 -189.77 0.000 .0000886 .0001072

ln(hours) | 1 (exposure)

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

.

. quietly poisson dv `ss\_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 = 20987.19

Prob > chi2(6146) = 0.0000

Pearson goodness-of-fit = 25452.36

Prob > chi2(6146) = 0.0000

.

. pause "next"

.

. // negative binomial model

. glm dv `ss\_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\_ss\_1lag omitted because of collinearity

note: sp75\_1322\_ss\_1lag omitted because of collinearity

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

Iteration 0: log pseudolikelihood = -17712.88

Iteration 1: log pseudolikelihood = -17474.619

Iteration 2: log pseudolikelihood = -17469.237

Iteration 3: log pseudolikelihood = -17469.226

Iteration 4: log pseudolikelihood = -17469.226

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,146

Scale parameter = 1

Deviance = 3850.480969 (1/df) Deviance = .6265019

Pearson = 5125.185838 (1/df) Pearson = .8339059

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

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

AIC = 5.621694

Log pseudolikelihood = -17469.22568 BIC = -49870.58

(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\_ss\_1lag | 1.072408 .0717714 1.04 0.296 .9405743 1.22272

sp48\_25\_ss\_1lag | .956868 .0690762 -0.61 0.541 .8306229 1.102301

sp48\_26\_ss\_1lag | 1.059389 .0597154 1.02 0.306 .9485831 1.183139

sp48\_27\_ss\_1lag | .9592057 .0707513 -0.56 0.572 .8300932 1.1084

sp48\_28\_ss\_1lag | .9949402 .0814629 -0.06 0.951 .8474283 1.16813

sp48\_4\_ss\_1lag | 1.580277 .222625 3.25 0.001 1.198997 2.082802

sp48\_5\_ss\_1lag | 1.145391 .1546859 1.01 0.315 .8790196 1.492483

sp48\_6\_ss\_1lag | .954542 .0891552 -0.50 0.618 .7948624 1.1463

sp48\_7\_ss\_1lag | 1.066292 .0502894 1.36 0.174 .9721455 1.169557

sp48\_8\_ss\_1lag | 1.30791 .2213548 1.59 0.113 .9386802 1.822375

sp75\_100\_ss\_1lag | 1.372167 .2484691 1.75 0.081 .9622171 1.956774

sp75\_1002\_ss\_1lag | .9781946 .087664 -0.25 0.806 .8206201 1.166026

sp75\_1003\_ss\_1lag | .9464761 .041933 -1.24 0.214 .8677563 1.032337

sp75\_1003\_2\_ss\_1lag | .8831392 .0515378 -2.13 0.033 .7876897 .990155

sp75\_1311\_ss\_1lag | .8241848 .1046223 -1.52 0.128 .6426474 1.057003

sp75\_1315\_ss\_1lag | .8278864 .3255572 -0.48 0.631 .3830409 1.789354

sp75\_1316\_ss\_1lag | .678683 .1494543 -1.76 0.078 .4407802 1.044989

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

sp75\_1322\_ss\_1lag | 1 (omitted)

sp75\_1400\_ss\_1lag | 1.207075 .1130578 2.01 0.045 1.004635 1.450307

sp75\_1400\_1\_ss\_1lag | .7880038 .1939775 -0.97 0.333 .4864003 1.276623

sp75\_1403\_10\_ss\_1lag | 1.06354 .022772 2.88 0.004 1.019832 1.109122

sp75\_1403\_5\_ss\_1lag | .978745 .0136341 -1.54 0.123 .9523842 1.005836

sp75\_1403\_6\_ss\_1lag | .9860971 .0089646 -1.54 0.124 .9686825 1.003825

sp75\_1403\_7\_ss\_1lag | .9918408 .0391523 -0.21 0.836 .9179972 1.071624

sp75\_1403\_8\_ss\_1lag | .9628748 .0118545 -3.07 0.002 .9399185 .9863917

sp75\_1404\_ss\_1lag | .8395717 .0743897 -1.97 0.048 .7057285 .9987987

sp75\_1404\_1\_ss\_1lag | .7343364 .084681 -2.68 0.007 .5857842 .9205609

sp75\_1405\_ss\_1lag | .9711974 .0128049 -2.22 0.027 .9464219 .9966216

sp75\_1405\_1\_ss\_1lag | 1.481751 .3422263 1.70 0.089 .9422827 2.330072

sp75\_153\_ss\_1lag | 1.615278 .2918141 2.65 0.008 1.133627 2.30157

sp75\_155\_ss\_1lag | .8709029 .1046725 -1.15 0.250 .6881215 1.102235

sp75\_156\_ss\_1lag | 1.055328 .2056773 0.28 0.782 .7202665 1.546257

sp75\_1719\_2\_ss\_1lag | .5447787 .3567338 -0.93 0.354 .1509502 1.966105

sp75\_1719\_4\_ss\_1lag | .9440056 .084774 -0.64 0.521 .7916525 1.125679

sp75\_1720\_ss\_1lag | 1.080215 .0346701 2.40 0.016 1.014356 1.15035

sp75\_1725\_ss\_1lag | 1.0031 .003952 0.79 0.432 .9953842 1.010876

sp75\_1906\_ss\_1lag | 1.719284 .3350385 2.78 0.005 1.173474 2.518965

sp75\_1916\_ss\_1lag | 1.07882 .071884 1.14 0.255 .9467418 1.229323

sp75\_203\_ss\_1lag | 1.012097 .014216 0.86 0.392 .9846142 1.040347

sp75\_204\_ss\_1lag | 1.079417 .024005 3.44 0.001 1.033378 1.127506

sp75\_205\_ss\_1lag | 1.478693 .1662901 3.48 0.001 1.186189 1.843325

sp75\_207\_ss\_1lag | 1.172265 .0924905 2.01 0.044 1.004308 1.368311

sp75\_208\_ss\_1lag | 1.004275 .0164415 0.26 0.794 .9725621 1.037023

sp75\_209\_ss\_1lag | 1.076574 .0551096 1.44 0.149 .973803 1.190191

sp75\_212\_ss\_1lag | 1.075449 .0466553 1.68 0.094 .9877857 1.170892

sp75\_213\_ss\_1lag | 1.120687 .197208 0.65 0.517 .7937756 1.582234

sp75\_215\_ss\_1lag | .810414 .0677769 -2.51 0.012 .6878897 .9547618

sp75\_332\_ss\_1lag | .8806659 .0853028 -1.31 0.190 .7283872 1.06478

sp75\_334\_ss\_1lag | 1.024123 .0456854 0.53 0.593 .9383842 1.117696

sp75\_337\_ss\_1lag | .9529946 .0290142 -1.58 0.114 .8977913 1.011592

sp75\_340\_ss\_1lag | 1.001652 .015014 0.11 0.912 .9726527 1.031515

sp75\_343\_ss\_1lag | .9816395 .0767009 -0.24 0.813 .8422538 1.144092

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

sp75\_388\_ss\_1lag | 1.095319 .07739 1.29 0.198 .9536712 1.258005

sp75\_389\_ss\_1lag | .7858932 .169944 -1.11 0.265 .5143954 1.200687

sp75\_500\_ss\_1lag | 1.146164 .1152949 1.36 0.175 .941072 1.395953

sp75\_500\_1\_ss\_1lag | .7956655 .1139316 -1.60 0.110 .6009616 1.053451

sp75\_501\_ss\_1lag | .8537606 .1550278 -0.87 0.384 .5980989 1.218707

sp75\_501\_2\_ss\_1lag | .726146 .2432817 -0.96 0.340 .3765691 1.400242

sp75\_502\_ss\_1lag | 1.581911 .5386116 1.35 0.178 .8116402 3.083191

sp75\_503\_ss\_1lag | 1.012918 .0051555 2.52 0.012 1.002864 1.023073

sp75\_505\_ss\_1lag | .7380704 .1947188 -1.15 0.250 .4400809 1.237836

sp75\_506\_1\_ss\_1lag | .9896783 .1136697 -0.09 0.928 .7901857 1.239535

sp75\_507\_ss\_1lag | 1.066967 .0716315 0.97 0.334 .9354165 1.217018

sp75\_507\_1\_ss\_1lag | 1.015163 .0394509 0.39 0.699 .9407118 1.095506

sp75\_509\_ss\_1lag | 1.163805 .0908398 1.94 0.052 .9987124 1.356188

sp75\_512\_1\_ss\_1lag | .9417395 .167089 -0.34 0.735 .6651285 1.333386

sp75\_523\_ss\_1lag | .8922992 .0201994 -5.03 0.000 .8535744 .9327808

sp75\_523\_3\_ss\_1lag | .9895112 .0112971 -0.92 0.356 .9676153 1.011903

sp75\_524\_ss\_1lag | .9381734 .1713601 -0.35 0.727 .6558563 1.342015

sp75\_602\_ss\_1lag | .9894744 .0575858 -0.18 0.856 .8828075 1.109029

sp75\_603\_ss\_1lag | 1.073412 .0477813 1.59 0.112 .9837314 1.171268

sp75\_604\_ss\_1lag | 1.011548 .0052133 2.23 0.026 1.001382 1.021818

sp75\_605\_ss\_1lag | 1.019955 .0303944 0.66 0.507 .9620899 1.081301

sp75\_606\_ss\_1lag | .9996231 .0152546 -0.02 0.980 .9701674 1.029973

sp75\_607\_ss\_1lag | 1.007829 .0421345 0.19 0.852 .9285402 1.093889

sp75\_703\_3\_ss\_1lag | 1.077835 .0690338 1.17 0.242 .9506792 1.221998

sp75\_807\_ss\_1lag | 1.013058 .0178345 0.74 0.461 .9786993 1.048623

sp75\_810\_ss\_1lag | 1.032538 .0861294 0.38 0.701 .8768047 1.215932

sp75\_811\_ss\_1lag | .8347024 .0910788 -1.66 0.098 .6739886 1.033739

sp75\_812\_ss\_1lag | .9743266 .1565691 -0.16 0.871 .7110841 1.335021

sp75\_816\_ss\_1lag | .9823292 .0817403 -0.21 0.830 .834503 1.156342

sp75\_817\_ss\_1lag | 1.562108 .7541553 0.92 0.356 .606412 4.023969

sp75\_906\_ss\_1lag | .7168624 .2109172 -1.13 0.258 .4027105 1.276082

mine\_time | 1.012885 .0061221 2.12 0.034 1.000956 1.024955

onsite\_insp\_hours | .9998275 .0000386 -4.46 0.000 .9997518 .9999033

|

state |

1 | .7866465 .0942294 -2.00 0.045 .6220387 .9948137

2 | .9849186 .0524464 -0.29 0.775 .8873077 1.093267

3 | .6701801 .0827882 -3.24 0.001 .5260676 .8537712

4 | 1.002243 .0636429 0.04 0.972 .8849557 1.135076

5 | .8291736 .0706504 -2.20 0.028 .7016461 .9798799

6 | .7432166 .0359168 -6.14 0.000 .6760521 .8170538

7 | 1.043112 .2331979 0.19 0.850 .6730331 1.616685

8 | .4798432 .0192488 -18.30 0.000 .4435613 .5190928

9 | .5466142 .0258038 -12.80 0.000 .4983087 .5996023

10 | .8492674 .1017992 -1.36 0.173 .6714496 1.074176

11 | 1.433418 .27272 1.89 0.058 .9872441 2.081235

12 | .9709782 .0722474 -0.40 0.692 .839217 1.123427

13 | 1.548143 .1776522 3.81 0.000 1.236329 1.938598

14 | .4002605 .0710784 -5.16 0.000 .282609 .5668909

15 | .6994143 .039735 -6.29 0.000 .6257145 .7817947

17 | .5938238 .0281151 -11.01 0.000 .5411987 .6515661

|

time |

2000 | 1.058091 .0594688 1.00 0.315 .947725 1.18131

2002 | .9397216 .0568704 -1.03 0.304 .8346145 1.058065

2003 | .8772744 .0624436 -1.84 0.066 .7630406 1.00861

2004 | .7843515 .0483624 -3.94 0.000 .6950665 .8851056

2005 | .7054958 .0431633 -5.70 0.000 .6257727 .7953756

2006 | .6964618 .0452133 -5.57 0.000 .6132513 .7909629

2007 | .6661019 .0450512 -6.01 0.000 .5834054 .7605203

2008 | .6010528 .0429572 -7.12 0.000 .5224892 .6914297

2009 | .5532833 .0404691 -8.09 0.000 .4793886 .6385685

2010 | .551635 .0392776 -8.35 0.000 .4797825 .6342481

2011 | .5054063 .0362111 -9.52 0.000 .4391917 .5816037

2012 | .4539266 .036613 -9.79 0.000 .3875512 .53167

2013 | .459534 .0392825 -9.10 0.000 .388646 .5433518

2014 | .4349945 .0362903 -9.98 0.000 .3693775 .5122678

2015 | .405753 .0347903 -10.52 0.000 .3429869 .4800052

|

\_cons | .0001112 7.44e-06 -135.95 0.000 .0000975 .0001267

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

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

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

note: sp75\_1322\_ss\_1lag omitted because of collinearity

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

Fitting Poisson model:

Iteration 0: log pseudolikelihood = -72194.139

Iteration 1: log pseudolikelihood = -36834.616

Iteration 2: log pseudolikelihood = -21858.531

Iteration 3: log pseudolikelihood = -20368.935

Iteration 4: log pseudolikelihood = -20258.742

Iteration 5: log pseudolikelihood = -20257.585

Iteration 6: log pseudolikelihood = -20257.585

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 = -16807.595

Iteration 1: log pseudolikelihood = -16658.982

Iteration 2: log pseudolikelihood = -16645.012

Iteration 3: log pseudolikelihood = -16644.958

Iteration 4: log pseudolikelihood = -16644.958

Negative binomial regression Number of obs = 6,253

Wald chi2(106) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16644.958 Pseudo R2 = 0.0428

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

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

| Robust

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

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

sp48\_11\_ss\_1lag | 1.061292 .0637577 0.99 0.322 .9434055 1.193909

sp48\_25\_ss\_1lag | .9508147 .0637833 -0.75 0.452 .8336714 1.084418

sp48\_26\_ss\_1lag | 1.071596 .0583257 1.27 0.204 .9631659 1.192232

sp48\_27\_ss\_1lag | .9729253 .0687515 -0.39 0.698 .8470901 1.117453

sp48\_28\_ss\_1lag | .9511009 .0677109 -0.70 0.481 .8272328 1.093517

sp48\_4\_ss\_1lag | 1.637673 .1878798 4.30 0.000 1.307899 2.050596

sp48\_5\_ss\_1lag | 1.051664 .0980483 0.54 0.589 .8760282 1.262513

sp48\_6\_ss\_1lag | .9797022 .0834123 -0.24 0.810 .8291296 1.157619

sp48\_7\_ss\_1lag | 1.070166 .0445846 1.63 0.104 .9862544 1.161217

sp48\_8\_ss\_1lag | 1.224707 .2143108 1.16 0.247 .8691221 1.725772

sp75\_100\_ss\_1lag | 1.275142 .2010125 1.54 0.123 .9362151 1.736766

sp75\_1002\_ss\_1lag | .958347 .0538512 -0.76 0.449 .858405 1.069925

sp75\_1003\_ss\_1lag | .950323 .0398795 -1.21 0.225 .8752887 1.03179

sp75\_1003\_2\_ss\_1lag | .8957218 .056523 -1.75 0.081 .7915157 1.013647

sp75\_1311\_ss\_1lag | .8506878 .0903354 -1.52 0.128 .6908444 1.047515

sp75\_1315\_ss\_1lag | .9437607 .3298059 -0.17 0.868 .475775 1.87207

sp75\_1316\_ss\_1lag | .7566952 .1450704 -1.45 0.146 .5196755 1.101818

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

sp75\_1322\_ss\_1lag | 1 (omitted)

sp75\_1400\_ss\_1lag | 1.14959 .0595284 2.69 0.007 1.038642 1.27239

sp75\_1400\_1\_ss\_1lag | .7843541 .1942067 -0.98 0.327 .4827852 1.274296

sp75\_1403\_10\_ss\_1lag | 1.051802 .0179228 2.96 0.003 1.017254 1.087523

sp75\_1403\_5\_ss\_1lag | .9798889 .0122793 -1.62 0.105 .956115 1.004254

sp75\_1403\_6\_ss\_1lag | .9868575 .0083841 -1.56 0.119 .9705611 1.003428

sp75\_1403\_7\_ss\_1lag | 1.009006 .0375988 0.24 0.810 .9379406 1.085456

sp75\_1403\_8\_ss\_1lag | .963786 .0121143 -2.93 0.003 .9403325 .9878246

sp75\_1404\_ss\_1lag | .8535172 .0663881 -2.04 0.042 .7328317 .9940777

sp75\_1404\_1\_ss\_1lag | .7866651 .0768559 -2.46 0.014 .6495744 .9526883

sp75\_1405\_ss\_1lag | .9729942 .0120852 -2.20 0.028 .9495936 .9969716

sp75\_1405\_1\_ss\_1lag | 1.413358 .3402428 1.44 0.151 .8817375 2.265505

sp75\_153\_ss\_1lag | 1.638182 .2841024 2.85 0.004 1.166117 2.301347

sp75\_155\_ss\_1lag | .8929343 .0943754 -1.07 0.284 .7258634 1.09846

sp75\_156\_ss\_1lag | 1.047704 .1948506 0.25 0.802 .7276681 1.508496

sp75\_1719\_2\_ss\_1lag | .6101266 .3177052 -0.95 0.343 .2198783 1.693003

sp75\_1719\_4\_ss\_1lag | .9480491 .083298 -0.61 0.544 .798072 1.126211

sp75\_1720\_ss\_1lag | 1.084042 .0325514 2.69 0.007 1.022084 1.149757

sp75\_1725\_ss\_1lag | 1.00157 .0034957 0.45 0.653 .9947415 1.008445

sp75\_1906\_ss\_1lag | 1.665239 .3258723 2.61 0.009 1.13476 2.443707

sp75\_1916\_ss\_1lag | 1.085365 .070128 1.27 0.205 .956264 1.231896

sp75\_203\_ss\_1lag | 1.013224 .0136367 0.98 0.329 .9868459 1.040307

sp75\_204\_ss\_1lag | 1.080995 .0233119 3.61 0.000 1.036256 1.127664

sp75\_205\_ss\_1lag | 1.509892 .1692887 3.67 0.000 1.212019 1.880973

sp75\_207\_ss\_1lag | 1.21596 .0925224 2.57 0.010 1.047494 1.411521

sp75\_208\_ss\_1lag | 1.01108 .0148562 0.75 0.453 .9823772 1.040621

sp75\_209\_ss\_1lag | 1.079347 .0517466 1.59 0.111 .9825445 1.185686

sp75\_212\_ss\_1lag | 1.078888 .0453085 1.81 0.071 .9936418 1.171449

sp75\_213\_ss\_1lag | 1.07851 .0911993 0.89 0.371 .9137897 1.272923

sp75\_215\_ss\_1lag | .8477315 .064253 -2.18 0.029 .7307054 .9835

sp75\_332\_ss\_1lag | .918397 .0837361 -0.93 0.350 .7681056 1.098095

sp75\_334\_ss\_1lag | 1.021347 .0397524 0.54 0.587 .9463311 1.102309

sp75\_337\_ss\_1lag | .9636292 .0272016 -1.31 0.189 .911763 1.018446

sp75\_340\_ss\_1lag | .9960078 .0124326 -0.32 0.749 .9719361 1.020676

sp75\_343\_ss\_1lag | 1.007753 .0736763 0.11 0.916 .8732193 1.163014

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

sp75\_388\_ss\_1lag | 1.068356 .0719318 0.98 0.326 .9362785 1.219065

sp75\_389\_ss\_1lag | .8579238 .1689542 -0.78 0.436 .5832012 1.262057

sp75\_500\_ss\_1lag | 1.107612 .1062454 1.07 0.287 .9177787 1.336711

sp75\_500\_1\_ss\_1lag | .8178857 .1121731 -1.47 0.143 .625101 1.070126

sp75\_501\_ss\_1lag | .8991034 .1374042 -0.70 0.486 .6663862 1.213091

sp75\_501\_2\_ss\_1lag | .7380176 .2374066 -0.94 0.345 .3928719 1.386381

sp75\_502\_ss\_1lag | 1.445114 .4463126 1.19 0.233 .7888869 2.647215

sp75\_503\_ss\_1lag | 1.011799 .0049285 2.41 0.016 1.002185 1.021505

sp75\_505\_ss\_1lag | .6972121 .1702333 -1.48 0.140 .4320491 1.125115

sp75\_506\_1\_ss\_1lag | 1.001369 .1210585 0.01 0.991 .7901138 1.269107

sp75\_507\_ss\_1lag | 1.065165 .0656662 1.02 0.306 .9439334 1.201967

sp75\_507\_1\_ss\_1lag | 1.028597 .038751 0.75 0.454 .9553827 1.107422

sp75\_509\_ss\_1lag | 1.178421 .0901995 2.14 0.032 1.014255 1.369158

sp75\_512\_1\_ss\_1lag | 1.063041 .1714043 0.38 0.705 .7750017 1.458134

sp75\_523\_ss\_1lag | .9048018 .018853 -4.80 0.000 .8685949 .942518

sp75\_523\_3\_ss\_1lag | .9875328 .0102053 -1.21 0.225 .9677321 1.007739

sp75\_524\_ss\_1lag | .9925073 .1613362 -0.05 0.963 .7217177 1.364898

sp75\_602\_ss\_1lag | .9931428 .0526458 -0.13 0.897 .8951382 1.101877

sp75\_603\_ss\_1lag | 1.078363 .0455851 1.78 0.074 .9926185 1.171513

sp75\_604\_ss\_1lag | 1.011712 .0049518 2.38 0.017 1.002053 1.021464

sp75\_605\_ss\_1lag | 1.012793 .0264562 0.49 0.627 .962245 1.065997

sp75\_606\_ss\_1lag | 1.001605 .0145021 0.11 0.912 .9735812 1.030436

sp75\_607\_ss\_1lag | 1.003594 .041767 0.09 0.931 .924982 1.088887

sp75\_703\_3\_ss\_1lag | 1.089608 .0609496 1.53 0.125 .976465 1.215862

sp75\_807\_ss\_1lag | 1.014904 .0162642 0.92 0.356 .9835222 1.047287

sp75\_810\_ss\_1lag | 1.059975 .0823074 0.75 0.453 .9103317 1.234218

sp75\_811\_ss\_1lag | .8558288 .0873222 -1.53 0.127 .7007076 1.04529

sp75\_812\_ss\_1lag | .9882766 .1516085 -0.08 0.939 .7316414 1.334931

sp75\_816\_ss\_1lag | .9810833 .0695361 -0.27 0.788 .8538378 1.127292

sp75\_817\_ss\_1lag | 1.52317 .7536858 0.85 0.395 .5775133 4.017305

sp75\_906\_ss\_1lag | .6890606 .2081056 -1.23 0.218 .3812265 1.245466

mine\_time | 1.010567 .0055876 1.90 0.057 .9996745 1.021578

onsite\_insp\_hours | .9998383 .0000374 -4.32 0.000 .999765 .9999116

|

state |

1 | .8105065 .086257 -1.97 0.048 .6579132 .9984916

2 | 1.114728 .0580928 2.08 0.037 1.00649 1.234606

3 | .6582902 .080249 -3.43 0.001 .5183839 .8359557

4 | 1.012081 .0573525 0.21 0.832 .9056897 1.13097

5 | .8523989 .0712607 -1.91 0.056 .7235729 1.004161

6 | .7642081 .0342886 -5.99 0.000 .6998738 .8344561

7 | 1.030789 .2131301 0.15 0.883 .6873401 1.545851

8 | .4777938 .0180192 -19.58 0.000 .4437505 .5144488

9 | .576101 .0244366 -13.00 0.000 .530143 .626043

10 | .888916 .0931074 -1.12 0.261 .7239418 1.091485

11 | 1.466302 .265854 2.11 0.035 1.027762 2.091963

12 | 1.030654 .0703764 0.44 0.658 .9015509 1.178246

13 | 1.514353 .1596191 3.94 0.000 1.231705 1.861861

14 | .3954306 .0691209 -5.31 0.000 .2807249 .5570056

15 | .7250848 .0385621 -6.04 0.000 .6533102 .8047447

17 | .6102301 .0291685 -10.33 0.000 .5556572 .6701628

|

time |

2000 | 1.075639 .0479245 1.64 0.102 .9856935 1.173793

2002 | .9665318 .0484381 -0.68 0.497 .8761084 1.066288

2003 | .8700079 .0463733 -2.61 0.009 .7837045 .9658152

2004 | .8103286 .0399966 -4.26 0.000 .7356091 .8926377

2005 | .7355137 .0369936 -6.11 0.000 .6664668 .811714

2006 | .7265776 .0383702 -6.05 0.000 .6551345 .8058115

2007 | .7029807 .0396076 -6.26 0.000 .629484 .7850586

2008 | .6240382 .0367437 -8.01 0.000 .5560221 .7003745

2009 | .5640151 .0342865 -9.42 0.000 .5006638 .6353825

2010 | .5680662 .0349164 -9.20 0.000 .5035928 .640794

2011 | .514488 .0313594 -10.90 0.000 .4565541 .5797733

2012 | .4550364 .0304811 -11.75 0.000 .3990502 .5188775

2013 | .4486631 .0320658 -11.21 0.000 .3900186 .5161256

2014 | .4411142 .032303 -11.18 0.000 .3821352 .509196

2015 | .4209779 .0322465 -11.29 0.000 .3622915 .4891707

|

\_cons | .0001066 5.72e-06 -170.55 0.000 .000096 .0001185

ln(hours) | 1 (exposure)

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

/lnalpha | -1.23711 .0577265 -1.350252 -1.123968

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

alpha | .2902218 .0167535 .259175 .3249876

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

(est1 stored)

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

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(1) = 7225.25

(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 -20257.58 107 40729.17 41450.44

nbin | 6,253 -17389.65 -16644.96 108 33505.92 34233.92

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

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

.

. pause "next"

.

. // final model + diagnostics/assessment

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

. predict cssv2\_yhat

(option n assumed; predicted number of events)

. gen cssv2\_res = dv - cssv2\_yhat

.

. summ dv cssv2\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cssv2\_yhat | 6,253 10.45407 14.9715 .0034768 207.3319

. /\*

> pause "next"

>

> scatter dv cssv2\_yhat

>

> pause "next"

>

> scatter cssv2\_res dv

>

> pause "next"

>

> scatter cssv2\_res cssv2\_yhat

> \*/

. pause "complete: C.SSV.2"

.