. // Model C.SSV.3

.

. // poisson model

. glm dv `ss\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, family(poisson) link(log) vce(cl mineid) exposure(hours) iter(50) eform

note: sp75\_373\_ss\_c\_4lag omitted because of collinearity

Iteration 0: log pseudolikelihood = -22613.209

Iteration 1: log pseudolikelihood = -20239.934

Iteration 2: log pseudolikelihood = -20228.935

Iteration 3: log pseudolikelihood = -20228.742

Iteration 4: log pseudolikelihood = -20228.714

Iteration 5: log pseudolikelihood = -20228.71

Iteration 6: log pseudolikelihood = -20228.71

Iteration 7: log pseudolikelihood = -20228.71

Iteration 8: log pseudolikelihood = -20228.71

Iteration 9: log pseudolikelihood = -20228.71

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,141

Scale parameter = 1

Deviance = 20929.4389 (1/df) Deviance = 3.408148

Pearson = 25421.19403 (1/df) Pearson = 4.139585

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

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

AIC = 6.505904

Log pseudolikelihood = -20228.70955 BIC = -32747.92

(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\_c\_4lag | 1.007051 .0170483 0.42 0.678 .974185 1.041025

sp48\_25\_ss\_c\_4lag | .9845441 .0201716 -0.76 0.447 .9457917 1.024884

sp48\_26\_ss\_c\_4lag | 1.027885 .0241411 1.17 0.242 .9816419 1.076307

sp48\_27\_ss\_c\_4lag | .9950007 .0210673 -0.24 0.813 .9545545 1.037161

sp48\_28\_ss\_c\_4lag | .9799654 .0176982 -1.12 0.262 .9458843 1.015274

sp48\_4\_ss\_c\_4lag | 1.093844 .136987 0.72 0.474 .8557671 1.398154

sp48\_5\_ss\_c\_4lag | 1.000339 .0354702 0.01 0.992 .9331794 1.072332

sp48\_6\_ss\_c\_4lag | 1.010973 .0245074 0.45 0.653 .9640628 1.060166

sp48\_7\_ss\_c\_4lag | 1.020745 .0116114 1.80 0.071 .9982384 1.043758

sp48\_8\_ss\_c\_4lag | .9903355 .033342 -0.29 0.773 .9270959 1.057889

sp75\_100\_ss\_c\_4lag | 1.008364 .050308 0.17 0.867 .9144299 1.111948

sp75\_1002\_ss\_c\_4lag | .9957052 .0091595 -0.47 0.640 .9779138 1.01382

sp75\_1003\_ss\_c\_4lag | .9935839 .0102963 -0.62 0.535 .9736071 1.013971

sp75\_1003\_2\_ss\_c\_4lag | .9763305 .0181553 -1.29 0.198 .9413874 1.012571

sp75\_1311\_ss\_c\_4lag | .9776145 .0370515 -0.60 0.550 .9076265 1.052999

sp75\_1315\_ss\_c\_4lag | .809825 .105471 -1.62 0.105 .6273809 1.045324

sp75\_1316\_ss\_c\_4lag | .9820031 .0282906 -0.63 0.528 .928091 1.039047

sp75\_1318\_ss\_c\_4lag | 9.18e-07 9.20e-07 -13.86 0.000 1.28e-07 6.55e-06

sp75\_1322\_ss\_c\_4lag | 1358248 1367922 14.02 0.000 188675.3 9777843

sp75\_1400\_ss\_c\_4lag | 1.021125 .0147972 1.44 0.149 .9925306 1.050542

sp75\_1400\_1\_ss\_c\_4lag | .9481974 .0483887 -1.04 0.297 .8579461 1.047943

sp75\_1403\_10\_ss\_c\_4lag | 1.012602 .0034441 3.68 0.000 1.005874 1.019375

sp75\_1403\_5\_ss\_c\_4lag | .9955364 .0018559 -2.40 0.016 .9919056 .9991805

sp75\_1403\_6\_ss\_c\_4lag | .9975045 .0020767 -1.20 0.230 .9934426 1.001583

sp75\_1403\_7\_ss\_c\_4lag | 1.000266 .0124856 0.02 0.983 .9760911 1.025039

sp75\_1403\_8\_ss\_c\_4lag | .9920178 .0036427 -2.18 0.029 .9849038 .9991832

sp75\_1404\_ss\_c\_4lag | .9837894 .036031 -0.45 0.655 .9156449 1.057005

sp75\_1404\_1\_ss\_c\_4lag | .9663885 .0313619 -1.05 0.292 .9068344 1.029854

sp75\_1405\_ss\_c\_4lag | .993731 .0033007 -1.89 0.058 .9872828 1.000221

sp75\_1405\_1\_ss\_c\_4lag | 1.156585 .0906254 1.86 0.063 .9919299 1.348573

sp75\_153\_ss\_c\_4lag | 1.234771 .0864844 3.01 0.003 1.076385 1.416464

sp75\_155\_ss\_c\_4lag | .9914499 .053151 -0.16 0.873 .8925621 1.101294

sp75\_156\_ss\_c\_4lag | .7412247 .0538971 -4.12 0.000 .6427705 .8547592

sp75\_1719\_2\_ss\_c\_4lag | .9348647 .0811608 -0.78 0.438 .7885899 1.108272

sp75\_1719\_4\_ss\_c\_4lag | .9892427 .0219581 -0.49 0.626 .9471283 1.03323

sp75\_1720\_ss\_c\_4lag | 1.023419 .0107058 2.21 0.027 1.002649 1.044618

sp75\_1725\_ss\_c\_4lag | .9992864 .0008973 -0.79 0.427 .9975292 1.001047

sp75\_1906\_ss\_c\_4lag | 1.174518 .0829607 2.28 0.023 1.022672 1.348911

sp75\_1916\_ss\_c\_4lag | 1.020419 .0156706 1.32 0.188 .9901631 1.0516

sp75\_203\_ss\_c\_4lag | 1.003515 .0045947 0.77 0.443 .99455 1.012561

sp75\_204\_ss\_c\_4lag | 1.016799 .0082405 2.06 0.040 1.000775 1.033079

sp75\_205\_ss\_c\_4lag | 1.142304 .0565045 2.69 0.007 1.036757 1.258597

sp75\_207\_ss\_c\_4lag | 1.082557 .0307208 2.80 0.005 1.023989 1.144474

sp75\_208\_ss\_c\_4lag | 1.006254 .0047577 1.32 0.187 .9969725 1.015622

sp75\_209\_ss\_c\_4lag | 1.023055 .0263801 0.88 0.377 .9726353 1.076087

sp75\_212\_ss\_c\_4lag | 1.030231 .0192972 1.59 0.112 .9930948 1.068756

sp75\_213\_ss\_c\_4lag | 1.036531 .0067244 5.53 0.000 1.023435 1.049795

sp75\_215\_ss\_c\_4lag | 1.058503 .0998053 0.60 0.547 .8798998 1.27336

sp75\_332\_ss\_c\_4lag | .968022 .0298039 -1.06 0.291 .911335 1.028235

sp75\_334\_ss\_c\_4lag | .994328 .009692 -0.58 0.560 .9755123 1.013507

sp75\_337\_ss\_c\_4lag | .9877742 .0077333 -1.57 0.116 .9727329 1.003048

sp75\_340\_ss\_c\_4lag | .9975581 .0038443 -0.63 0.526 .9900518 1.005121

sp75\_343\_ss\_c\_4lag | 1.040034 .023715 1.72 0.085 .9945772 1.087569

sp75\_373\_ss\_c\_4lag | 1 (omitted)

sp75\_388\_ss\_c\_4lag | 1.008354 .0212056 0.40 0.692 .9676368 1.050785

sp75\_389\_ss\_c\_4lag | .9762344 .0527246 -0.45 0.656 .8781774 1.08524

sp75\_500\_ss\_c\_4lag | .990033 .022064 -0.45 0.653 .9477192 1.034236

sp75\_500\_1\_ss\_c\_4lag | .9172014 .0570245 -1.39 0.164 .8119767 1.036062

sp75\_501\_ss\_c\_4lag | .9826919 .0573118 -0.30 0.765 .876545 1.101693

sp75\_501\_2\_ss\_c\_4lag | .851566 .1131509 -1.21 0.227 .6563203 1.104894

sp75\_502\_ss\_c\_4lag | 1.088562 .1017138 0.91 0.364 .9063961 1.307339

sp75\_503\_ss\_c\_4lag | 1.001467 .0011878 1.24 0.217 .9991414 1.003797

sp75\_505\_ss\_c\_4lag | .7901678 .0925583 -2.01 0.044 .6280753 .9940929

sp75\_506\_1\_ss\_c\_4lag | 1.019323 .0535701 0.36 0.716 .9195543 1.129917

sp75\_507\_ss\_c\_4lag | 1.015449 .0208611 0.75 0.456 .9753746 1.057171

sp75\_507\_1\_ss\_c\_4lag | 1.016664 .0103591 1.62 0.105 .9965616 1.037171

sp75\_509\_ss\_c\_4lag | 1.070569 .036381 2.01 0.045 1.001586 1.144303

sp75\_512\_1\_ss\_c\_4lag | 1.150474 .0797455 2.02 0.043 1.004328 1.317887

sp75\_523\_ss\_c\_4lag | .9872923 .0063383 -1.99 0.046 .9749474 .9997936

sp75\_523\_3\_ss\_c\_4lag | .9924335 .0028488 -2.65 0.008 .9868657 .9980327

sp75\_524\_ss\_c\_4lag | 1.059432 .043582 1.40 0.160 .9773657 1.148389

sp75\_602\_ss\_c\_4lag | 1.010745 .0154 0.70 0.483 .981008 1.041384

sp75\_603\_ss\_c\_4lag | 1.018284 .0118742 1.55 0.120 .9952752 1.041825

sp75\_604\_ss\_c\_4lag | 1.001679 .0011634 1.44 0.149 .9994012 1.003962

sp75\_605\_ss\_c\_4lag | .9944808 .0074281 -0.74 0.459 .9800281 1.009147

sp75\_606\_ss\_c\_4lag | 1.001322 .0053906 0.25 0.806 .9908126 1.011944

sp75\_607\_ss\_c\_4lag | .9943992 .0110259 -0.51 0.612 .973022 1.016246

sp75\_703\_3\_ss\_c\_4lag | 1.013057 .0191141 0.69 0.492 .9762785 1.051221

sp75\_807\_ss\_c\_4lag | 1.004046 .0051368 0.79 0.430 .994028 1.014164

sp75\_810\_ss\_c\_4lag | 1.057104 .0238395 2.46 0.014 1.011397 1.104876

sp75\_811\_ss\_c\_4lag | .9572468 .0302484 -1.38 0.167 .8997596 1.018407

sp75\_812\_ss\_c\_4lag | .9614019 .0399907 -0.95 0.344 .8861315 1.043066

sp75\_816\_ss\_c\_4lag | 1.005977 .0190496 0.31 0.753 .9693246 1.044015

sp75\_817\_ss\_c\_4lag | .9484424 .1069707 -0.47 0.639 .7603396 1.183081

sp75\_906\_ss\_c\_4lag | .8272689 .0787767 -1.99 0.046 .6864217 .9970167

mine\_time | 1.01024 .0058377 1.76 0.078 .9988634 1.021747

onsite\_insp\_hours | .99985 .0000327 -4.58 0.000 .9997859 .9999142

|

state |

1 | .8772072 .0717526 -1.60 0.109 .7472687 1.02974

2 | 1.425434 .0943009 5.36 0.000 1.252089 1.622778

3 | .6192172 .0622527 -4.77 0.000 .508473 .7540814

4 | 1.087487 .0534385 1.71 0.088 .9876356 1.197435

5 | .9833995 .0903838 -0.18 0.855 .8212898 1.177507

6 | .8960148 .0457361 -2.15 0.031 .8107119 .9902933

7 | 1.070817 .1785785 0.41 0.682 .7722568 1.484803

8 | .4803532 .0179526 -19.62 0.000 .4464245 .5168605

9 | .6200064 .0241211 -12.29 0.000 .5744874 .6691319

10 | 1.045604 .1067519 0.44 0.662 .8559786 1.277237

11 | 1.680177 .2376358 3.67 0.000 1.273402 2.216893

12 | .9804025 .0816405 -0.24 0.812 .8327656 1.154213

13 | 1.503043 .1496309 4.09 0.000 1.23661 1.826881

14 | .3910376 .0574964 -6.39 0.000 .293131 .5216453

15 | .7763396 .0535795 -3.67 0.000 .6781186 .8887873

17 | .6749842 .0394146 -6.73 0.000 .6019898 .7568296

|

time |

2000 | 1.072479 .0467645 1.60 0.109 .9846299 1.168167

2002 | .9668975 .040118 -0.81 0.417 .8913799 1.048813

2003 | .8395275 .0352542 -4.17 0.000 .7731976 .9115477

2004 | .8269363 .0382596 -4.11 0.000 .7552484 .9054288

2005 | .7744232 .0365716 -5.41 0.000 .7059614 .8495243

2006 | .753857 .0390044 -5.46 0.000 .6811583 .8343148

2007 | .7433346 .0428223 -5.15 0.000 .6639692 .8321866

2008 | .6771841 .0412256 -6.40 0.000 .6010177 .7630029

2009 | .6013202 .0374737 -8.16 0.000 .5321816 .6794411

2010 | .590745 .0387113 -8.03 0.000 .5195426 .6717056

2011 | .5168616 .0318398 -10.71 0.000 .4580769 .58319

2012 | .4592742 .0301692 -11.85 0.000 .4037919 .5223799

2013 | .4399902 .0343185 -10.53 0.000 .3776162 .512667

2014 | .4623923 .0367531 -9.70 0.000 .3956881 .5403413

2015 | .430727 .0362401 -10.01 0.000 .3652452 .5079485

|

\_cons | .0000975 4.89e-06 -184.03 0.000 .0000883 .0001076

ln(hours) | 1 (exposure)

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.

. quietly poisson dv `ss\_lag\_4\_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 = 20929.44

Prob > chi2(6142) = 0.0000

Pearson goodness-of-fit = 25421.18

Prob > chi2(6142) = 0.0000

.

. pause "next"

.

. // negative binomial model

. glm dv `ss\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, family(nbinomial) link(log) vce(cl mineid) exposure(hours) iter(50) eform

note: sp75\_373\_ss\_c\_4lag omitted because of collinearity

Iteration 0: log pseudolikelihood = -17713.998

Iteration 1: log pseudolikelihood = -17471.555

Iteration 2: log pseudolikelihood = -17466.17

Iteration 3: log pseudolikelihood = -17466.135

Iteration 4: log pseudolikelihood = -17466.127

Iteration 5: log pseudolikelihood = -17466.125

Iteration 6: log pseudolikelihood = -17466.125

Iteration 7: log pseudolikelihood = -17466.125

Iteration 8: log pseudolikelihood = -17466.125

Generalized linear models No. of obs = 6,253

Optimization : ML Residual df = 6,138

Scale parameter = 1

Deviance = 3844.278678 (1/df) Deviance = .626308

Pearson = 5124.17728 (1/df) Pearson = .8348285

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

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

AIC = 5.623261

Log pseudolikelihood = -17466.12453 BIC = -49806.85

(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\_c\_4lag | 1.023261 .0212189 1.11 0.267 .9825069 1.065706

sp48\_25\_ss\_c\_4lag | .9848138 .0248873 -0.61 0.545 .937224 1.03482

sp48\_26\_ss\_c\_4lag | 1.041557 .0257136 1.65 0.099 .9923587 1.093193

sp48\_27\_ss\_c\_4lag | .9709965 .0265139 -1.08 0.281 .9203963 1.024378

sp48\_28\_ss\_c\_4lag | .99162 .0270094 -0.31 0.757 .9400708 1.045996

sp48\_4\_ss\_c\_4lag | 1.03276 .1108627 0.30 0.764 .8368088 1.274596

sp48\_5\_ss\_c\_4lag | 1.047311 .0354276 1.37 0.172 .9801259 1.119101

sp48\_6\_ss\_c\_4lag | .9833117 .0322113 -0.51 0.607 .9221627 1.048515

sp48\_7\_ss\_c\_4lag | 1.02057 .0161986 1.28 0.200 .9893105 1.052818

sp48\_8\_ss\_c\_4lag | 1.110135 .0755524 1.54 0.125 .9715067 1.268546

sp75\_100\_ss\_c\_4lag | 1.08452 .0673987 1.31 0.192 .9601487 1.225001

sp75\_1002\_ss\_c\_4lag | 1.007972 .0405089 0.20 0.843 .9316222 1.090578

sp75\_1003\_ss\_c\_4lag | .9826651 .0128415 -1.34 0.181 .9578158 1.008159

sp75\_1003\_2\_ss\_c\_4lag | .9750263 .0165833 -1.49 0.137 .9430594 1.008077

sp75\_1311\_ss\_c\_4lag | .9523127 .0398627 -1.17 0.243 .8773024 1.033736

sp75\_1315\_ss\_c\_4lag | .6406086 .0957802 -2.98 0.003 .4778877 .8587359

sp75\_1316\_ss\_c\_4lag | .9208463 .0554214 -1.37 0.171 .8183843 1.036137

sp75\_1318\_ss\_c\_4lag | 1.61e-06 1.61e-06 -13.30 0.000 2.25e-07 .0000115

sp75\_1322\_ss\_c\_4lag | 735826.2 741339.8 13.41 0.000 102140 5300964

sp75\_1400\_ss\_c\_4lag | 1.041997 .0179886 2.38 0.017 1.007329 1.077857

sp75\_1400\_1\_ss\_c\_4lag | .94344 .0657493 -0.84 0.403 .8229874 1.081522

sp75\_1403\_10\_ss\_c\_4lag | 1.01664 .0062116 2.70 0.007 1.004538 1.028888

sp75\_1403\_5\_ss\_c\_4lag | .994463 .0037464 -1.47 0.141 .9871472 1.001833

sp75\_1403\_6\_ss\_c\_4lag | .9971141 .0026495 -1.09 0.277 .9919347 1.00232

sp75\_1403\_7\_ss\_c\_4lag | .9974252 .0127426 -0.20 0.840 .9727603 1.022716

sp75\_1403\_8\_ss\_c\_4lag | .9893721 .0031734 -3.33 0.001 .9831717 .9956115

sp75\_1404\_ss\_c\_4lag | 1.003503 .073403 0.05 0.962 .8694726 1.158194

sp75\_1404\_1\_ss\_c\_4lag | .9017474 .0306896 -3.04 0.002 .8435591 .9639495

sp75\_1405\_ss\_c\_4lag | .9904339 .0046502 -2.05 0.041 .9813614 .9995902

sp75\_1405\_1\_ss\_c\_4lag | 1.235776 .0812384 3.22 0.001 1.086382 1.405713

sp75\_153\_ss\_c\_4lag | 1.108705 .08353 1.37 0.171 .9565035 1.285126

sp75\_155\_ss\_c\_4lag | 1.085993 .0809308 1.11 0.268 .9384118 1.256784

sp75\_156\_ss\_c\_4lag | .7756113 .0650367 -3.03 0.002 .6580653 .9141537

sp75\_1719\_2\_ss\_c\_4lag | .8255072 .1774343 -0.89 0.372 .5417062 1.257992

sp75\_1719\_4\_ss\_c\_4lag | .9881097 .023217 -0.51 0.611 .9436371 1.034678

sp75\_1720\_ss\_c\_4lag | 1.03127 .0117695 2.70 0.007 1.008458 1.054597

sp75\_1725\_ss\_c\_4lag | 1.00085 .001161 0.73 0.464 .9985771 1.003128

sp75\_1906\_ss\_c\_4lag | 1.172297 .0811014 2.30 0.022 1.023647 1.342534

sp75\_1916\_ss\_c\_4lag | 1.009901 .0213999 0.46 0.642 .9688168 1.052727

sp75\_203\_ss\_c\_4lag | 1.002335 .0046845 0.50 0.618 .9931958 1.011559

sp75\_204\_ss\_c\_4lag | 1.028643 .0080357 3.62 0.000 1.013013 1.044514

sp75\_205\_ss\_c\_4lag | 1.121159 .0354241 3.62 0.000 1.053835 1.192784

sp75\_207\_ss\_c\_4lag | 1.056411 .0348781 1.66 0.096 .990216 1.127031

sp75\_208\_ss\_c\_4lag | .9991388 .0055318 -0.16 0.876 .9883553 1.01004

sp75\_209\_ss\_c\_4lag | 1.027567 .0227965 1.23 0.220 .9838442 1.073233

sp75\_212\_ss\_c\_4lag | 1.026089 .0182579 1.45 0.148 .9909207 1.062505

sp75\_213\_ss\_c\_4lag | 1.01811 .0199854 0.91 0.361 .9796832 1.058044

sp75\_215\_ss\_c\_4lag | 1.020007 .146289 0.14 0.890 .7700594 1.351084

sp75\_332\_ss\_c\_4lag | .9606116 .0317108 -1.22 0.223 .9004275 1.024818

sp75\_334\_ss\_c\_4lag | 1.000339 .0141446 0.02 0.981 .9729964 1.028449

sp75\_337\_ss\_c\_4lag | .987094 .0102338 -1.25 0.210 .9672385 1.007357

sp75\_340\_ss\_c\_4lag | .9983439 .0047804 -0.35 0.729 .9890183 1.007758

sp75\_343\_ss\_c\_4lag | .9908025 .0294876 -0.31 0.756 .9346613 1.050316

sp75\_373\_ss\_c\_4lag | 1 (omitted)

sp75\_388\_ss\_c\_4lag | 1.023444 .0241809 0.98 0.327 .9771313 1.071953

sp75\_389\_ss\_c\_4lag | .953861 .0595981 -0.76 0.450 .8439199 1.078125

sp75\_500\_ss\_c\_4lag | 1.043215 .0375629 1.17 0.240 .9721314 1.119497

sp75\_500\_1\_ss\_c\_4lag | .9076453 .0672217 -1.31 0.191 .7850092 1.04944

sp75\_501\_ss\_c\_4lag | .8979601 .0681664 -1.42 0.156 .7738204 1.042015

sp75\_501\_2\_ss\_c\_4lag | .8056917 .1189064 -1.46 0.143 .6033175 1.075949

sp75\_502\_ss\_c\_4lag | 1.125591 .1371855 0.97 0.332 .8864157 1.429302

sp75\_503\_ss\_c\_4lag | 1.003086 .0016477 1.88 0.061 .9998623 1.006321

sp75\_505\_ss\_c\_4lag | .9095792 .0843173 -1.02 0.307 .7584637 1.090803

sp75\_506\_1\_ss\_c\_4lag | .9420945 .0471772 -1.19 0.234 .8540217 1.03925

sp75\_507\_ss\_c\_4lag | 1.011922 .0236922 0.51 0.613 .9665359 1.05944

sp75\_507\_1\_ss\_c\_4lag | 1.002777 .0138272 0.20 0.841 .9760393 1.030247

sp75\_509\_ss\_c\_4lag | 1.056561 .0340366 1.71 0.088 .9919128 1.125422

sp75\_512\_1\_ss\_c\_4lag | 1.003405 .0727693 0.05 0.963 .8704527 1.156665

sp75\_523\_ss\_c\_4lag | .9759968 .0069272 -3.42 0.001 .9625138 .9896687

sp75\_523\_3\_ss\_c\_4lag | .9968393 .003593 -0.88 0.380 .9898219 1.003906

sp75\_524\_ss\_c\_4lag | 1.008252 .055872 0.15 0.882 .9044818 1.123927

sp75\_602\_ss\_c\_4lag | 1.024029 .0298877 0.81 0.416 .9670938 1.084315

sp75\_603\_ss\_c\_4lag | 1.040785 .0261315 1.59 0.111 .9908079 1.093283

sp75\_604\_ss\_c\_4lag | 1.003699 .0015779 2.35 0.019 1.000611 1.006796

sp75\_605\_ss\_c\_4lag | 1.001243 .0100674 0.12 0.902 .981704 1.02117

sp75\_606\_ss\_c\_4lag | .9990522 .0053599 -0.18 0.860 .988602 1.009613

sp75\_607\_ss\_c\_4lag | 1.002968 .0133891 0.22 0.824 .9770667 1.029557

sp75\_703\_3\_ss\_c\_4lag | 1.008397 .0221532 0.38 0.703 .9658989 1.052765

sp75\_807\_ss\_c\_4lag | 1.003296 .0062253 0.53 0.596 .9911688 1.015572

sp75\_810\_ss\_c\_4lag | 1.029259 .0302971 0.98 0.327 .9715584 1.090387

sp75\_811\_ss\_c\_4lag | .9336376 .0353024 -1.82 0.069 .8669478 1.005457

sp75\_812\_ss\_c\_4lag | .9689628 .0577253 -0.53 0.597 .8621788 1.088972

sp75\_816\_ss\_c\_4lag | .9839773 .0275959 -0.58 0.565 .93135 1.039578

sp75\_817\_ss\_c\_4lag | 1.106244 .1930768 0.58 0.563 .7857558 1.557451

sp75\_906\_ss\_c\_4lag | .916598 .0857768 -0.93 0.352 .7629956 1.101123

mine\_time | 1.011992 .0061897 1.95 0.051 .9999324 1.024196

onsite\_insp\_hours | .9998271 .0000391 -4.42 0.000 .9997505 .9999038

|

state |

1 | .7954385 .098564 -1.85 0.065 .6239257 1.014099

2 | .9887895 .0581172 -0.19 0.848 .8811981 1.109517

3 | .6729121 .082762 -3.22 0.001 .5287719 .856344

4 | 1.013945 .0638841 0.22 0.826 .8961567 1.147215

5 | .8324252 .0713543 -2.14 0.032 .7036901 .9847115

6 | .743108 .0359407 -6.14 0.000 .6759014 .8169973

7 | 1.037951 .2418989 0.16 0.873 .657356 1.638902

8 | .4833996 .0195029 -18.02 0.000 .4466469 .5231765

9 | .5552719 .0274664 -11.89 0.000 .5039659 .611801

10 | .8628263 .1019544 -1.25 0.212 .6844513 1.087688

11 | 1.535033 .2517909 2.61 0.009 1.113001 2.117094

12 | .9738604 .0718401 -0.36 0.720 .8427619 1.125352

13 | 1.540602 .1788679 3.72 0.000 1.227054 1.934271

14 | .4045072 .070262 -5.21 0.000 .2877892 .5685621

15 | .7007563 .0398893 -6.25 0.000 .6267782 .7834659

17 | .6044378 .0368576 -8.26 0.000 .5363482 .6811714

|

time |

2000 | 1.067652 .060924 1.15 0.251 .9546789 1.193995

2002 | .9289483 .0558613 -1.23 0.220 .825668 1.045147

2003 | .8722688 .062001 -1.92 0.055 .7588341 1.00266

2004 | .7824462 .0490835 -3.91 0.000 .6919232 .8848121

2005 | .7034409 .0438109 -5.65 0.000 .622607 .7947695

2006 | .6966351 .0453634 -5.55 0.000 .6131644 .7914689

2007 | .6640147 .0452362 -6.01 0.000 .5810176 .7588677

2008 | .5996263 .0432593 -7.09 0.000 .5205612 .6907001

2009 | .5481928 .0404845 -8.14 0.000 .4743198 .6335711

2010 | .546811 .0394584 -8.37 0.000 .4746939 .6298843

2011 | .5025436 .0362835 -9.53 0.000 .4362317 .5789357

2012 | .4513228 .0366246 -9.80 0.000 .3849575 .5291293

2013 | .455051 .0390935 -9.16 0.000 .3845328 .5385015

2014 | .4328245 .0364681 -9.94 0.000 .3669383 .5105411

2015 | .403412 .0351362 -10.42 0.000 .3401036 .478505

|

\_cons | .0001114 7.54e-06 -134.54 0.000 .0000975 .0001272

ln(hours) | 1 (exposure)

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

.

. pause "next"

.

. eststo clear

. eststo: nbreg dv `ss\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) exposure(hours) iter(50) irr

note: sp75\_373\_ss\_c\_4lag omitted because of collinearity

Fitting Poisson model:

Iteration 0: log pseudolikelihood = -129516.54

Iteration 1: log pseudolikelihood = -60222.476

Iteration 2: log pseudolikelihood = -31634.734

Iteration 3: log pseudolikelihood = -21983.763

Iteration 4: log pseudolikelihood = -20424.751

Iteration 5: log pseudolikelihood = -20233.276

Iteration 6: log pseudolikelihood = -20228.721

Iteration 7: log pseudolikelihood = -20228.71

Iteration 8: log pseudolikelihood = -20228.71

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 = -16804.187

Iteration 1: log pseudolikelihood = -16652.399

Iteration 2: log pseudolikelihood = -16637.286

Iteration 3: log pseudolikelihood = -16637.225

Iteration 4: log pseudolikelihood = -16637.225

Negative binomial regression Number of obs = 6,253

Wald chi2(109) = .

Dispersion = mean Prob > chi2 = .

Log pseudolikelihood = -16637.225 Pseudo R2 = 0.0433

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

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

| Robust

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

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

sp48\_11\_ss\_c\_4lag | 1.019702 .0194672 1.02 0.307 .9822521 1.05858

sp48\_25\_ss\_c\_4lag | .984778 .0227414 -0.66 0.507 .9411993 1.030374

sp48\_26\_ss\_c\_4lag | 1.043401 .0241937 1.83 0.067 .9970433 1.091913

sp48\_27\_ss\_c\_4lag | .9769978 .0246228 -0.92 0.356 .9299105 1.026469

sp48\_28\_ss\_c\_4lag | .9769336 .0218384 -1.04 0.297 .9350552 1.020688

sp48\_4\_ss\_c\_4lag | 1.055066 .1112546 0.51 0.611 .8580689 1.29729

sp48\_5\_ss\_c\_4lag | 1.041709 .0329952 1.29 0.197 .9790064 1.108428

sp48\_6\_ss\_c\_4lag | .9908101 .0305348 -0.30 0.764 .9327345 1.052502

sp48\_7\_ss\_c\_4lag | 1.021478 .0146266 1.48 0.138 .9932084 1.050551

sp48\_8\_ss\_c\_4lag | 1.072324 .0677689 1.10 0.269 .9473966 1.213725

sp75\_100\_ss\_c\_4lag | 1.063884 .0598575 1.10 0.271 .9528026 1.187915

sp75\_1002\_ss\_c\_4lag | .993575 .022331 -0.29 0.774 .950757 1.038321

sp75\_1003\_ss\_c\_4lag | .9841236 .0124644 -1.26 0.206 .9599946 1.008859

sp75\_1003\_2\_ss\_c\_4lag | .9796959 .0177557 -1.13 0.258 .9455061 1.015122

sp75\_1311\_ss\_c\_4lag | .9516919 .0332396 -1.42 0.156 .8887234 1.019122

sp75\_1315\_ss\_c\_4lag | .7027023 .0887406 -2.79 0.005 .5486275 .900047

sp75\_1316\_ss\_c\_4lag | .9445721 .0471177 -1.14 0.253 .8565939 1.041586

sp75\_1318\_ss\_c\_4lag | 7.49e-09 7.51e-09 -18.66 0.000 1.05e-09 5.35e-08

sp75\_1322\_ss\_c\_4lag | 1.50e+08 1.51e+08 18.71 0.000 2.09e+07 1.08e+09

sp75\_1400\_ss\_c\_4lag | 1.036783 .0155603 2.41 0.016 1.00673 1.067734

sp75\_1400\_1\_ss\_c\_4lag | .9480933 .0652942 -0.77 0.439 .8283802 1.085107

sp75\_1403\_10\_ss\_c\_4lag | 1.013673 .0051317 2.68 0.007 1.003665 1.023781

sp75\_1403\_5\_ss\_c\_4lag | .9946709 .0032334 -1.64 0.100 .9883538 1.001028

sp75\_1403\_6\_ss\_c\_4lag | .996779 .0024447 -1.32 0.188 .991999 1.001582

sp75\_1403\_7\_ss\_c\_4lag | 1.00102 .0122402 0.08 0.934 .9773149 1.0253

sp75\_1403\_8\_ss\_c\_4lag | .9899918 .0031054 -3.21 0.001 .9839239 .9960971

sp75\_1404\_ss\_c\_4lag | .9999431 .0647778 -0.00 0.999 .8807106 1.135318

sp75\_1404\_1\_ss\_c\_4lag | .9173417 .0291638 -2.71 0.007 .8619261 .9763201

sp75\_1405\_ss\_c\_4lag | .9912123 .0043329 -2.02 0.043 .9827562 .9997412

sp75\_1405\_1\_ss\_c\_4lag | 1.213244 .0856572 2.74 0.006 1.056457 1.3933

sp75\_153\_ss\_c\_4lag | 1.148887 .0827249 1.93 0.054 .9976705 1.323024

sp75\_155\_ss\_c\_4lag | 1.068838 .0718844 0.99 0.322 .9368381 1.219437

sp75\_156\_ss\_c\_4lag | .7595716 .059403 -3.52 0.000 .651628 .8853964

sp75\_1719\_2\_ss\_c\_4lag | .8507768 .1526064 -0.90 0.368 .598595 1.2092

sp75\_1719\_4\_ss\_c\_4lag | .9867509 .022785 -0.58 0.564 .9430885 1.032435

sp75\_1720\_ss\_c\_4lag | 1.029477 .0106706 2.80 0.005 1.008774 1.050605

sp75\_1725\_ss\_c\_4lag | 1.000578 .0010466 0.55 0.581 .9985288 1.002631

sp75\_1906\_ss\_c\_4lag | 1.167808 .0806557 2.25 0.025 1.019959 1.337089

sp75\_1916\_ss\_c\_4lag | 1.011321 .0203314 0.56 0.576 .9722472 1.051965

sp75\_203\_ss\_c\_4lag | 1.002566 .0045257 0.57 0.570 .9937348 1.011475

sp75\_204\_ss\_c\_4lag | 1.028131 .0077136 3.70 0.000 1.013124 1.043362

sp75\_205\_ss\_c\_4lag | 1.131023 .0357135 3.90 0.000 1.063148 1.203232

sp75\_207\_ss\_c\_4lag | 1.068756 .0339696 2.09 0.036 1.004208 1.137453

sp75\_208\_ss\_c\_4lag | 1.002444 .004966 0.49 0.622 .9927574 1.012224

sp75\_209\_ss\_c\_4lag | 1.026443 .020932 1.28 0.201 .9862263 1.0683

sp75\_212\_ss\_c\_4lag | 1.027541 .0179031 1.56 0.119 .9930441 1.063237

sp75\_213\_ss\_c\_4lag | 1.021484 .0135942 1.60 0.110 .9951839 1.048478

sp75\_215\_ss\_c\_4lag | 1.055288 .1534108 0.37 0.711 .7936502 1.403179

sp75\_332\_ss\_c\_4lag | .9731885 .0303492 -0.87 0.383 .9154866 1.034527

sp75\_334\_ss\_c\_4lag | .9968494 .0120788 -0.26 0.795 .9734542 1.020807

sp75\_337\_ss\_c\_4lag | .9899323 .0097359 -1.03 0.304 .971033 1.009199

sp75\_340\_ss\_c\_4lag | .9967263 .0040611 -0.80 0.421 .9887984 1.004718

sp75\_343\_ss\_c\_4lag | 1.00458 .0280174 0.16 0.870 .9511411 1.061022

sp75\_373\_ss\_c\_4lag | 1 (omitted)

sp75\_388\_ss\_c\_4lag | 1.019027 .0224841 0.85 0.393 .9758977 1.064061

sp75\_389\_ss\_c\_4lag | .9684239 .0565126 -0.55 0.582 .8637607 1.085769

sp75\_500\_ss\_c\_4lag | 1.032888 .0378181 0.88 0.377 .9613632 1.109735

sp75\_500\_1\_ss\_c\_4lag | .913724 .0647523 -1.27 0.203 .7952313 1.049873

sp75\_501\_ss\_c\_4lag | .9323226 .0583555 -1.12 0.263 .8246851 1.054009

sp75\_501\_2\_ss\_c\_4lag | .8256942 .1109582 -1.43 0.154 .6345024 1.074497

sp75\_502\_ss\_c\_4lag | 1.098841 .1144977 0.90 0.366 .8958614 1.34781

sp75\_503\_ss\_c\_4lag | 1.002753 .0015803 1.74 0.081 .9996608 1.005855

sp75\_505\_ss\_c\_4lag | .8890037 .0761495 -1.37 0.170 .7516092 1.051514

sp75\_506\_1\_ss\_c\_4lag | .9522757 .0437317 -1.06 0.287 .8703073 1.041964

sp75\_507\_ss\_c\_4lag | 1.016264 .0227406 0.72 0.471 .9726568 1.061827

sp75\_507\_1\_ss\_c\_4lag | 1.008573 .0137905 0.62 0.532 .9819036 1.035968

sp75\_509\_ss\_c\_4lag | 1.057974 .0333325 1.79 0.074 .9946194 1.125364

sp75\_512\_1\_ss\_c\_4lag | 1.053943 .0733098 0.76 0.450 .9196227 1.207883

sp75\_523\_ss\_c\_4lag | .9800312 .0063861 -3.10 0.002 .9675942 .992628

sp75\_523\_3\_ss\_c\_4lag | .9956639 .0031439 -1.38 0.169 .9895209 1.001845

sp75\_524\_ss\_c\_4lag | 1.020278 .0523319 0.39 0.696 .9226965 1.12818

sp75\_602\_ss\_c\_4lag | 1.012088 .0227448 0.53 0.593 .9684769 1.057664

sp75\_603\_ss\_c\_4lag | 1.035623 .0222632 1.63 0.103 .992894 1.08019

sp75\_604\_ss\_c\_4lag | 1.003431 .0014959 2.30 0.022 1.000504 1.006368

sp75\_605\_ss\_c\_4lag | 1.000042 .0087351 0.00 0.996 .9830672 1.01731

sp75\_606\_ss\_c\_4lag | 1.000044 .0051068 0.01 0.993 .9900843 1.010103

sp75\_607\_ss\_c\_4lag | .9997819 .0123823 -0.02 0.986 .9758053 1.024348

sp75\_703\_3\_ss\_c\_4lag | 1.01199 .0191362 0.63 0.529 .9751699 1.0502

sp75\_807\_ss\_c\_4lag | 1.004977 .0056079 0.89 0.374 .9940455 1.016029

sp75\_810\_ss\_c\_4lag | 1.039468 .0271034 1.48 0.138 .9876807 1.09397

sp75\_811\_ss\_c\_4lag | .945302 .032713 -1.63 0.104 .8833118 1.011643

sp75\_812\_ss\_c\_4lag | .9730981 .0536385 -0.49 0.621 .8734482 1.084117

sp75\_816\_ss\_c\_4lag | .990012 .0241766 -0.41 0.681 .9437429 1.03855

sp75\_817\_ss\_c\_4lag | 1.096093 .1974604 0.51 0.611 .7700238 1.560238

sp75\_906\_ss\_c\_4lag | .8942697 .0920532 -1.09 0.278 .7308843 1.094179

mine\_time | 1.009701 .0056367 1.73 0.084 .9987134 1.020809

onsite\_insp\_hours | .99984 .0000376 -4.26 0.000 .9997664 .9999136

|

state |

1 | .818243 .0903047 -1.82 0.069 .6590831 1.015838

2 | 1.116731 .0645909 1.91 0.056 .9970474 1.250782

3 | .65957 .0798815 -3.44 0.001 .5202003 .836279

4 | 1.019721 .0572483 0.35 0.728 .9134697 1.138332

5 | .8512619 .0703591 -1.95 0.051 .7239509 1.000961

6 | .7630257 .0343127 -6.01 0.000 .6986526 .8333301

7 | 1.0261 .2203559 0.12 0.905 .6735866 1.563097

8 | .4799004 .0187171 -18.82 0.000 .4445825 .5180238

9 | .5840668 .0258991 -12.13 0.000 .5354488 .6370991

10 | .9094991 .0973308 -0.89 0.375 .737412 1.121746

11 | 1.572605 .2401771 2.96 0.003 1.165788 2.121388

12 | 1.03578 .0698421 0.52 0.602 .9075518 1.182125

13 | 1.503649 .1588985 3.86 0.000 1.22235 1.849684

14 | .3986837 .068943 -5.32 0.000 .2840751 .5595307

15 | .7263974 .0387953 -5.99 0.000 .6542044 .8065572

17 | .6215769 .0391822 -7.54 0.000 .5493357 .7033184

|

time |

2000 | 1.089137 .0495769 1.88 0.061 .9961762 1.190772

2002 | .9554309 .0473386 -0.92 0.357 .8670116 1.052867

2003 | .8674228 .0464676 -2.66 0.008 .7809661 .9634507

2004 | .809585 .0401815 -4.26 0.000 .73454 .892297

2005 | .733503 .0373322 -6.09 0.000 .6638644 .8104467

2006 | .7268094 .0383147 -6.05 0.000 .6554632 .8059216

2007 | .7030881 .0395749 -6.26 0.000 .6296481 .7850939

2008 | .6244881 .0369752 -7.95 0.000 .556065 .7013307

2009 | .5603583 .0341896 -9.49 0.000 .4971995 .6315401

2010 | .5644645 .0347565 -9.29 0.000 .500293 .636867

2011 | .5124737 .0313209 -10.94 0.000 .4546202 .5776896

2012 | .4520244 .0304583 -11.78 0.000 .3961013 .5158428

2013 | .4441957 .0317611 -11.35 0.000 .3861102 .5110193

2014 | .43936 .032352 -11.17 0.000 .3803145 .5075726

2015 | .4181828 .0322086 -11.32 0.000 .359589 .4863244

|

\_cons | .0001067 5.74e-06 -169.95 0.000 .000096 .0001185

ln(hours) | 1 (exposure)

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

/lnalpha | -1.242668 .057831 -1.356015 -1.129321

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

alpha | .2886132 .0166908 .2576857 .3232527

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

(est1 stored)

. esttab using `"`directory'Model.`injury\_label'.`time\_label'.`violation\_level\_label'.C.SSV.3.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.3.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.3.csv)

. est store nbin

.

. pause "next"

.

. // test for over-dispersion

. lrtest pois nbin, stats force

Likelihood-ratio test LR chi2(0) = -7182.97

(Assumption: nbin nested in pois) Prob > chi2 = .

Akaike's information criterion and Bayesian information criterion

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

Model | Obs ll(null) ll(model) df AIC BIC

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

nbin | 6,253 -17389.65 -16637.23 111 33496.45 34244.68

pois | 6,253 -24975.69 -20228.71 111 40679.42 41427.65

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

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

.

. pause "next"

.

. // final model + diagnostics/assessment

. quietly nbreg dv `ss\_lag\_4\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) exposure(hours) iter(50) irr

. predict cssv3\_yhat

(option n assumed; predicted number of events)

. gen cssv3\_res = dv - cssv3\_yhat

.

. summ dv cssv3\_yhat

Variable | Obs Mean Std. Dev. Min Max

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

dv | 6,253 9.976651 14.85334 0 200

cssv3\_yhat | 6,253 10.4412 14.916 1.52e-08 194.3401

. /\*

> pause "next"

>

> scatter dv cssv3\_yhat

>

> pause "next"

>

> scatter cssv3\_res dv

>

> pause "next"

>

> scatter cssv3\_res cssv3\_yhat

> \*/

. pause "complete: C.SSV.3"

.