. // Model SP.B.PP.1

**. eststo: logit MR\_indicator `subpart\_penalty\_point\_vars' `covariates' ib(freq).state ib(freq).time if sample\_pp == 1, vce(cl mineid) offset(lnhours) iter(50) or**

note: sp48\_24\_pp != 0 predicts failure perfectly

sp48\_24\_pp dropped and 1 obs not used

note: sp48\_4\_pp != 0 predicts success perfectly

sp48\_4\_pp dropped and 1 obs not used

note: sp71\_701\_pp != 0 predicts success perfectly

sp71\_701\_pp dropped and 1 obs not used

note: sp72\_610\_pp != 0 predicts success perfectly

sp72\_610\_pp dropped and 2 obs not used

note: sp72\_620\_pp != 0 predicts success perfectly

sp72\_620\_pp dropped and 4 obs not used

note: sp75\_1001\_1\_pp != 0 predicts success perfectly

sp75\_1001\_1\_pp dropped and 5 obs not used

note: sp75\_1003\_1\_pp != 0 predicts success perfectly

sp75\_1003\_1\_pp dropped and 6 obs not used

note: sp75\_1400\_1\_pp != 0 predicts success perfectly

sp75\_1400\_1\_pp dropped and 5 obs not used

note: sp75\_1401\_1\_pp != 0 predicts success perfectly

sp75\_1401\_1\_pp dropped and 1 obs not used

note: sp75\_1403\_11\_pp != 0 predicts success perfectly

sp75\_1403\_11\_pp dropped and 3 obs not used

note: sp75\_1403\_3\_pp != 0 predicts success perfectly

sp75\_1403\_3\_pp dropped and 1 obs not used

note: sp75\_1403\_4\_pp != 0 predicts success perfectly

sp75\_1403\_4\_pp dropped and 1 obs not used

note: sp75\_1403\_9\_pp != 0 predicts success perfectly

sp75\_1403\_9\_pp dropped and 10 obs not used

note: sp75\_1404\_1\_pp != 0 predicts success perfectly

sp75\_1404\_1\_pp dropped and 2 obs not used

note: sp75\_1405\_1\_pp != 0 predicts success perfectly

sp75\_1405\_1\_pp dropped and 3 obs not used

note: sp75\_1437\_pp != 0 predicts success perfectly

sp75\_1437\_pp dropped and 4 obs not used

note: sp75\_150\_pp != 0 predicts success perfectly

sp75\_150\_pp dropped and 5 obs not used

note: sp75\_156\_pp != 0 predicts success perfectly

sp75\_156\_pp dropped and 5 obs not used

note: sp75\_1728\_pp != 0 predicts success perfectly

sp75\_1728\_pp dropped and 5 obs not used

note: sp75\_1729\_pp != 0 predicts success perfectly

sp75\_1729\_pp dropped and 14 obs not used

note: sp75\_512\_1\_pp != 0 predicts success perfectly

sp75\_512\_1\_pp dropped and 5 obs not used

note: sp75\_519\_pp != 0 predicts success perfectly

sp75\_519\_pp dropped and 1 obs not used

note: sp75\_600\_1\_pp != 0 predicts success perfectly

sp75\_600\_1\_pp dropped and 7 obs not used

note: sp75\_702\_1\_pp != 0 predicts success perfectly

sp75\_702\_1\_pp dropped and 2 obs not used

note: sp75\_703\_1\_pp != 0 predicts success perfectly

sp75\_703\_1\_pp dropped and 3 obs not used

note: sp75\_703\_4\_pp != 0 predicts failure perfectly

sp75\_703\_4\_pp dropped and 2 obs not used

note: sp75\_705\_3\_pp != 0 predicts success perfectly

sp75\_705\_3\_pp dropped and 1 obs not used

note: sp75\_705\_pp != 0 predicts success perfectly

sp75\_705\_pp dropped and 4 obs not used

note: sp75\_803\_2\_pp != 0 predicts success perfectly

sp75\_803\_2\_pp dropped and 3 obs not used

note: sp75\_814\_pp != 0 predicts success perfectly

sp75\_814\_pp dropped and 8 obs not used

note: sp75\_820\_pp != 0 predicts success perfectly

sp75\_820\_pp dropped and 6 obs not used

note: sp75\_834\_pp != 0 predicts failure perfectly

sp75\_834\_pp dropped and 1 obs not used

note: sp77\_103\_pp != 0 predicts success perfectly

sp77\_103\_pp dropped and 1 obs not used

note: sp77\_104\_pp != 0 predicts success perfectly

sp77\_104\_pp dropped and 2 obs not used

note: sp77\_1432\_pp != 0 predicts success perfectly

sp77\_1432\_pp dropped and 1 obs not used

note: sp77\_1434\_pp != 0 predicts success perfectly

sp77\_1434\_pp dropped and 8 obs not used

note: sp77\_1438\_pp != 0 predicts success perfectly

sp77\_1438\_pp dropped and 1 obs not used

note: sp77\_1802\_pp != 0 predicts success perfectly

sp77\_1802\_pp dropped and 1 obs not used

note: sp77\_1906\_pp != 0 predicts success perfectly

sp77\_1906\_pp dropped and 6 obs not used

note: sp77\_1916\_pp != 0 predicts success perfectly

sp77\_1916\_pp dropped and 3 obs not used

note: sp77\_216\_pp != 0 predicts success perfectly

sp77\_216\_pp dropped and 52 obs not used

note: sp77\_409\_pp != 0 predicts success perfectly

sp77\_409\_pp dropped and 1 obs not used

note: sp77\_510\_pp != 0 predicts failure perfectly

sp77\_510\_pp dropped and 1 obs not used

note: sp77\_606\_1\_pp != 0 predicts success perfectly

sp77\_606\_1\_pp dropped and 1 obs not used

note: sp77\_703\_pp != 0 predicts success perfectly

sp77\_703\_pp dropped and 1 obs not used

note: sp77\_704\_1\_pp != 0 predicts success perfectly

sp77\_704\_1\_pp dropped and 1 obs not used

note: sp77\_801\_pp != 0 predicts failure perfectly

sp77\_801\_pp dropped and 1 obs not used

note: sp77\_802\_pp != 0 predicts failure perfectly

sp77\_802\_pp dropped and 3 obs not used

note: sp77\_500\_pp != 0 predicts success perfectly

sp77\_500\_pp dropped and 2 obs not used

note: sp77\_807\_3\_pp != 0 predicts success perfectly

sp77\_807\_3\_pp dropped and 3 obs not used

note: sp77\_808\_pp != 0 predicts success perfectly

sp77\_808\_pp dropped and 3 obs not used

note: sp77\_901\_1\_pp != 0 predicts success perfectly

sp77\_901\_1\_pp dropped and 1 obs not used

note: 9.state != 0 predicts success perfectly

9.state dropped and 7 obs not used

note: 17.state != 0 predicts success perfectly

17.state dropped and 8 obs not used

note: sp75\_1001\_pp omitted because of collinearity

note: sp75\_1106\_6\_pp omitted because of collinearity

note: sp75\_1431\_pp omitted because of collinearity

note: sp75\_1727\_pp omitted because of collinearity

note: sp75\_511\_1\_pp omitted because of collinearity

note: sp75\_800\_2\_pp omitted because of collinearity

note: sp75\_806\_pp omitted because of collinearity

note: sp77\_305\_pp omitted because of collinearity

note: sp77\_309\_pp omitted because of collinearity

note: sp77\_314\_pp omitted because of collinearity

note: sp77\_315\_pp omitted because of collinearity

note: sp77\_403\_2\_pp omitted because of collinearity

note: sp77\_413\_pp omitted because of collinearity

note: sp77\_606\_pp omitted because of collinearity

note: sp77\_804\_pp omitted because of collinearity

note: sp77\_902\_2\_pp omitted because of collinearity

Iteration 0: log pseudolikelihood = -1550.6622

Iteration 1: log pseudolikelihood = -1370.6418

Iteration 2: log pseudolikelihood = -1357.5267

Iteration 3: log pseudolikelihood = -1348.7489

Iteration 4: log pseudolikelihood = -1346.8385

Iteration 5: log pseudolikelihood = -1346.1671

Iteration 6: log pseudolikelihood = -1346.1304

Iteration 7: log pseudolikelihood = -1346.1302

Iteration 8: log pseudolikelihood = -1346.1302

Logistic regression Number of obs = 3,103

Wald chi2(271) = .

Log pseudolikelihood = -1346.1302 Prob > chi2 = .

(Std. Err. adjusted for 720 clusters in mineid)

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| Robust

MR\_indicator | Odds Ratio Std. Err. z P>|z| [95% Conf. Interval]

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

sp47\_41\_pp | .9917926 .0027412 -2.98 0.003 .9864346 .9971798

sp47\_42\_pp | .9915779 .0090603 -0.93 0.355 .973978 1.009496

sp47\_44\_pp | 1.006108 .0059643 1.03 0.304 .9944862 1.017866

sp48\_11\_pp | 1.01011 .0059206 1.72 0.086 .9985725 1.021781

sp48\_24\_pp | 1 (omitted)

sp48\_25\_pp | .9989602 .0075133 -0.14 0.890 .9843425 1.013795

sp48\_26\_pp | 1.000105 .0031442 0.03 0.973 .9939615 1.006287

sp48\_27\_pp | 1.005919 .0044485 1.33 0.182 .9972376 1.014676

sp48\_28\_pp | .9930717 .0065273 -1.06 0.290 .9803605 1.005948

sp48\_4\_pp | 1 (omitted)

sp48\_5\_pp | .9997381 .0065613 -0.04 0.968 .9869606 1.012681

sp48\_6\_pp | .9977201 .0030983 -0.74 0.462 .991666 1.003811

sp48\_7\_pp | 1.001252 .0031756 0.39 0.693 .9950471 1.007495

sp48\_8\_pp | .9991539 .0049073 -0.17 0.863 .9895819 1.008819

sp71\_701\_pp | 1 (omitted)

sp72\_503\_pp | .9900158 .0053568 -1.85 0.064 .9795722 1.000571

sp72\_610\_pp | 1 (omitted)

sp72\_620\_pp | 1 (omitted)

sp72\_630\_pp | 1.000367 .0005185 0.71 0.479 .9993512 1.001384

sp75\_100\_pp | 1.001891 .0098032 0.19 0.847 .9828604 1.02129

sp75\_1001\_1\_pp | 1 (omitted)

sp75\_1001\_pp | 1 (omitted)

sp75\_1003\_1\_pp | 1 (omitted)

sp75\_1100\_2\_pp | .9996798 .0005628 -0.57 0.569 .9985774 1.000783

sp75\_1101\_20\_pp | 1.016237 .0112073 1.46 0.144 .9945068 1.038442

sp75\_1102\_pp | 1.001653 .0024659 0.67 0.502 .9968318 1.006498

sp75\_1103\_4\_pp | 1.000793 .0007521 1.05 0.291 .99932 1.002268

sp75\_1104\_pp | .9978216 .0036991 -0.59 0.556 .9905977 1.005098

sp75\_1106\_2\_pp | 1.001089 .0040764 0.27 0.789 .9931309 1.00911

sp75\_1106\_3\_pp | 1.000399 .0013422 0.30 0.766 .9977723 1.003034

sp75\_1106\_4\_pp | .9936764 .0075774 -0.83 0.405 .9789354 1.008639

sp75\_1106\_5\_pp | 1.006065 .0033111 1.84 0.066 .9995963 1.012576

sp75\_1106\_6\_pp | 1 (omitted)

sp75\_1106\_pp | .9953959 .0081688 -0.56 0.574 .9795135 1.011536

sp75\_1107\_14\_pp | .9871557 .0217464 -0.59 0.557 .9454405 1.030711

sp75\_1400\_1\_pp | 1 (omitted)

sp75\_1400\_2\_pp | .9853879 .0130032 -1.12 0.265 .9602288 1.011206

sp75\_1400\_3\_pp | .9974699 .0037895 -0.67 0.505 .9900702 1.004925

sp75\_1400\_4\_pp | .9994672 .0155109 -0.03 0.973 .9695242 1.030335

sp75\_1400\_pp | 1.016556 .0114208 1.46 0.144 .9944162 1.039189

sp75\_1401\_1\_pp | 1 (omitted)

sp75\_1401\_pp | 1.007705 .0142863 0.54 0.588 .98009 1.036099

sp75\_1403\_10\_pp | 1.003788 .0019732 1.92 0.054 .9999284 1.007663

sp75\_1403\_11\_pp | 1 (omitted)

sp75\_1403\_3\_pp | 1 (omitted)

sp75\_1403\_4\_pp | 1 (omitted)

sp75\_1403\_5\_pp | .9985865 .001669 -0.85 0.397 .9953206 1.001863

sp75\_1403\_6\_pp | .99911 .0012559 -0.71 0.479 .9966515 1.001575

sp75\_1403\_7\_pp | .9980379 .0055798 -0.35 0.725 .9871615 1.009034

sp75\_1403\_8\_pp | .9960255 .004793 -0.83 0.408 .9866756 1.005464

sp75\_1403\_9\_pp | 1 (omitted)

sp75\_1404\_1\_pp | 1 (omitted)

sp75\_1404\_pp | 1.002997 .0163393 0.18 0.854 .9714784 1.035538

sp75\_1405\_1\_pp | 1 (omitted)

sp75\_1405\_pp | 1.002321 .0023311 1.00 0.319 .9977626 1.0069

sp75\_1431\_pp | 1 (omitted)

sp75\_1432\_pp | 1.01498 .0127098 1.19 0.235 .9903721 1.040198

sp75\_1433\_pp | .9977097 .0073666 -0.31 0.756 .9833753 1.012253

sp75\_1434\_pp | .9963869 .0209053 -0.17 0.863 .9562443 1.038215

sp75\_1435\_pp | .9947751 .014646 -0.36 0.722 .9664796 1.023899

sp75\_1437\_pp | 1 (omitted)

sp75\_150\_pp | 1 (omitted)

sp75\_151\_pp | .9676176 .0173912 -1.83 0.067 .9341248 1.002311

sp75\_153\_pp | 1.021988 .0159179 1.40 0.163 .9912605 1.053667

sp75\_156\_pp | 1 (omitted)

sp75\_160\_pp | 1.023749 .018585 1.29 0.196 .9879635 1.060831

sp75\_1600\_2\_pp | .9990759 .0014918 -0.62 0.536 .9961564 1.002004

sp75\_1712\_10\_pp | .9939497 .0078653 -0.77 0.443 .9786529 1.009486

sp75\_1712\_6\_pp | 1.000601 .0036778 0.16 0.870 .9934183 1.007835

sp75\_1720\_pp | .9993356 .0018784 -0.35 0.724 .9956608 1.003024

sp75\_1721\_pp | 1.002609 .0077726 0.34 0.737 .9874897 1.017959

sp75\_1725\_pp | 1.000411 .0003058 1.34 0.179 .9998118 1.001011

sp75\_1726\_pp | 1.011695 .0084025 1.40 0.162 .9953598 1.028299

sp75\_1727\_pp | 1 (omitted)

sp75\_1728\_pp | 1 (omitted)

sp75\_1729\_pp | 1 (omitted)

sp75\_1730\_pp | 1.004632 .0083433 0.56 0.578 .9884119 1.021118

sp75\_1731\_pp | .9996239 .0001907 -1.97 0.049 .9992502 .9999977

sp75\_1903\_pp | 1.004876 .0129171 0.38 0.705 .9798754 1.030515

sp75\_1909\_pp | 1.000362 .000615 0.59 0.556 .999157 1.001568

sp75\_1910\_pp | 1.000323 .0012139 0.27 0.790 .9979464 1.002705

sp75\_1911\_pp | .999715 .0010868 -0.26 0.793 .9975871 1.001847

sp75\_1912\_pp | .9921772 .006698 -1.16 0.245 .9791357 1.005392

sp75\_1913\_pp | 1.004152 .0068099 0.61 0.541 .9908935 1.017589

sp75\_1914\_pp | 1.001121 .0008835 1.27 0.204 .9993913 1.002854

sp75\_1915\_pp | 1.007547 .0074888 1.01 0.312 .9929756 1.022332

sp75\_202\_pp | 1.000457 .0001583 2.89 0.004 1.000146 1.000767

sp75\_208\_pp | .9987951 .0011309 -1.06 0.287 .996581 1.001014

sp75\_211\_pp | .9990194 .001025 -0.96 0.339 .9970124 1.00103

sp75\_212\_pp | .9992746 .0038078 -0.19 0.849 .9918393 1.006766

sp75\_214\_pp | 1.00007 .0022413 0.03 0.975 .9956873 1.004473

sp75\_312\_pp | .9989897 .0014201 -0.71 0.477 .9962103 1.001777

sp75\_320\_pp | .9985384 .0009889 -1.48 0.140 .9966022 1.000478

sp75\_324\_pp | 1.000834 .0048953 0.17 0.865 .9912857 1.010475

sp75\_337\_pp | .9982618 .0016702 -1.04 0.298 .9949937 1.001541

sp75\_340\_pp | .9984809 .0009034 -1.68 0.093 .9967118 1.000253

sp75\_341\_pp | .9626714 .0665739 -0.55 0.582 .8406455 1.10241

sp75\_342\_pp | 1.000344 .0004508 0.76 0.445 .9994612 1.001228

sp75\_344\_pp | .9837142 .0078001 -2.07 0.038 .9685445 .9991215

sp75\_352\_pp | 1.000396 .0069282 0.06 0.954 .9869087 1.014068

sp75\_382\_pp | 1.007688 .0080237 0.96 0.336 .9920838 1.023537

sp75\_503\_pp | 1.000114 .000202 0.56 0.573 .9997179 1.00051

sp75\_504\_pp | .9966367 .0047163 -0.71 0.477 .9874356 1.005924

sp75\_505\_pp | 1.007817 .0072451 1.08 0.279 .9937166 1.022118

sp75\_506\_1\_pp | 1.013056 .0076591 1.72 0.086 .9981552 1.02818

sp75\_506\_pp | 1.004474 .0046223 0.97 0.332 .9954554 1.013575

sp75\_507\_pp | 1.000923 .0026875 0.34 0.731 .9956698 1.006205

sp75\_511\_1\_pp | 1 (omitted)

sp75\_511\_pp | .9962747 .0025666 -1.45 0.147 .991257 1.001318

sp75\_512\_1\_pp | 1 (omitted)

sp75\_512\_2\_pp | 1.003334 .0012785 2.61 0.009 1.000831 1.005843

sp75\_512\_pp | .9998737 .0002438 -0.52 0.605 .999396 1.000352

sp75\_513\_1\_pp | 1.020131 .0154207 1.32 0.187 .9903499 1.050807

sp75\_513\_pp | 1.002001 .0039094 0.51 0.608 .9943676 1.009692

sp75\_514\_pp | 1.000893 .0011698 0.76 0.445 .9986032 1.003189

sp75\_515\_pp | .9991063 .0006843 -1.31 0.192 .997766 1.000448

sp75\_516\_1\_pp | 1.002838 .0130774 0.22 0.828 .9775316 1.028799

sp75\_516\_2\_pp | 1.001887 .002051 0.92 0.357 .9978749 1.005915

sp75\_516\_pp | .998383 .0010643 -1.52 0.129 .9962992 1.000471

sp75\_517\_1\_pp | 1.043388 .0135058 3.28 0.001 1.01725 1.070198

sp75\_517\_pp | .999642 .0002402 -1.49 0.136 .9991714 1.000113

sp75\_518\_1\_pp | 1.000597 .0016032 0.37 0.709 .99746 1.003744

sp75\_518\_pp | 1.000729 .0009878 0.74 0.460 .9987947 1.002667

sp75\_519\_pp | 1 (omitted)

sp75\_520\_pp | .9975783 .0025152 -0.96 0.336 .9926607 1.00252

sp75\_523\_1\_pp | 1.000411 .0017832 0.23 0.818 .9969221 1.003912

sp75\_523\_2\_pp | 1.00309 .0015277 2.03 0.043 1.0001 1.006089

sp75\_523\_pp | .9954172 .0022137 -2.07 0.039 .9910878 .9997655

sp75\_600\_1\_pp | 1 (omitted)

sp75\_600\_pp | .9962686 .0178992 -0.21 0.835 .9617973 1.031975

sp75\_601\_1\_pp | .9991724 .0008466 -0.98 0.328 .9975144 1.000833

sp75\_601\_2\_pp | 1.005137 .0150607 0.34 0.732 .9760482 1.035093

sp75\_601\_3\_pp | 1.008439 .0140431 0.60 0.546 .9812873 1.036342

sp75\_601\_pp | .999084 .0010165 -0.90 0.368 .9970936 1.001078

sp75\_602\_pp | 1.000783 .0025023 0.31 0.754 .9958907 1.0057

sp75\_603\_pp | 1.009815 .0052119 1.89 0.058 .9996509 1.020082

sp75\_604\_pp | 1.000728 .000478 1.52 0.127 .9997921 1.001666

sp75\_605\_pp | .9999096 .0012138 -0.07 0.941 .9975334 1.002291

sp75\_606\_pp | 1.00076 .0006729 1.13 0.259 .9994421 1.00208

sp75\_607\_pp | .998209 .0023028 -0.78 0.437 .9937057 1.002733

sp75\_700\_1\_pp | 1.00571 .0093069 0.62 0.538 .9876329 1.024117

sp75\_700\_pp | .9985122 .0042608 -0.35 0.727 .9901959 1.006898

sp75\_701\_1\_pp | 1.001303 .0084989 0.15 0.878 .9847836 1.0181

sp75\_701\_2\_pp | 1.005794 .0050379 1.15 0.249 .9959683 1.015717

sp75\_701\_3\_pp | 1.004496 .0084885 0.53 0.596 .9879954 1.021271

sp75\_701\_4\_pp | .9997484 .0123384 -0.02 0.984 .9758558 1.024226

sp75\_701\_5\_pp | .9966439 .0093571 -0.36 0.720 .978472 1.015153

sp75\_701\_pp | 1.000962 .0009414 1.02 0.307 .9991181 1.002808

sp75\_702\_1\_pp | 1 (omitted)

sp75\_702\_pp | .9889969 .0180602 -0.61 0.545 .9542254 1.025035

sp75\_703\_1\_pp | 1 (omitted)

sp75\_703\_2\_pp | .9938452 .0215745 -0.28 0.776 .9524469 1.037043

sp75\_703\_3\_pp | 1.001777 .002655 0.67 0.503 .9965869 1.006994

sp75\_703\_4\_pp | 1 (omitted)

sp75\_703\_pp | 1.005432 .0021247 2.56 0.010 1.001276 1.009605

sp75\_704\_pp | 1.009194 .0074918 1.23 0.218 .9946165 1.023985

sp75\_705\_1\_pp | 1.02852 .022023 1.31 0.189 .9862493 1.072603

sp75\_705\_3\_pp | 1 (omitted)

sp75\_705\_8\_pp | .988101 .0075973 -1.56 0.120 .9733222 1.003104

sp75\_705\_pp | 1 (omitted)

sp75\_706\_pp | 1.000292 .0039984 0.07 0.942 .9924858 1.00816

sp75\_800\_2\_pp | 1 (omitted)

sp75\_800\_3\_pp | 1.01463 .0073375 2.01 0.045 1.000351 1.029114

sp75\_800\_4\_pp | .9919551 .0052816 -1.52 0.129 .9816571 1.002361

sp75\_800\_pp | .9998473 .0068817 -0.02 0.982 .9864499 1.013427

sp75\_801\_pp | 1.004428 .0133717 0.33 0.740 .9785595 1.030981

sp75\_802\_pp | .9895424 .0077438 -1.34 0.179 .9744807 1.004837

sp75\_803\_2\_pp | 1 (omitted)

sp75\_803\_pp | 1.000492 .0040693 0.12 0.904 .9925484 1.0085

sp75\_804\_pp | .9963302 .0075758 -0.48 0.629 .9815921 1.01129

sp75\_805\_pp | 1.011387 .008908 1.29 0.199 .9940772 1.028998

sp75\_806\_pp | 1 (omitted)

sp75\_807\_pp | 1.00022 .0006987 0.31 0.753 .9988514 1.00159

sp75\_808\_pp | 1.007552 .0054839 1.38 0.167 .9968606 1.018358

sp75\_809\_pp | 1.002618 .0022658 1.16 0.247 .9981865 1.007068

sp75\_810\_pp | .9973175 .0029831 -0.90 0.369 .9914879 1.003181

sp75\_811\_pp | 1.000346 .0030747 0.11 0.910 .9943383 1.006391

sp75\_812\_pp | .9722991 .0080272 -3.40 0.001 .9566927 .9881602

sp75\_814\_pp | 1 (omitted)

sp75\_815\_pp | 1.005894 .012849 0.46 0.645 .981023 1.031395

sp75\_816\_pp | 1.003125 .0020314 1.54 0.123 .9991518 1.007115

sp75\_818\_pp | 1.021378 .0155822 1.39 0.166 .9912898 1.05238

sp75\_820\_pp | 1 (omitted)

sp75\_821\_pp | 1.03636 .0151609 2.44 0.015 1.007067 1.066505

sp75\_825\_pp | .9865389 .00864 -1.55 0.122 .9697494 1.003619

sp75\_827\_pp | 1.019764 .022737 0.88 0.380 .9761596 1.065315

sp75\_831\_pp | .9874171 .0224151 -0.56 0.577 .9444473 1.032342

sp75\_832\_pp | .9601156 .0175593 -2.23 0.026 .9263095 .9951555

sp75\_834\_pp | 1 (omitted)

sp75\_900\_2\_pp | .9782797 .021088 -1.02 0.308 .9378089 1.020497

sp75\_900\_3\_pp | .9890514 .0038648 -2.82 0.005 .9815055 .9966553

sp75\_900\_4\_pp | 1.001975 .0031599 0.63 0.531 .9958011 1.008188

sp75\_900\_pp | 1.000408 .001375 0.30 0.767 .9977164 1.003106

sp75\_901\_pp | .9942864 .0048669 -1.17 0.242 .984793 1.003871

sp75\_902\_1\_pp | 1.017522 .0219188 0.81 0.420 .9754558 1.061402

sp75\_902\_2\_pp | 1.006091 .0105581 0.58 0.563 .9856088 1.026999

sp75\_902\_4\_pp | 1.004559 .0034014 1.34 0.179 .9979141 1.011248

sp75\_902\_pp | 1.000598 .0014722 0.41 0.685 .9977162 1.003487

sp75\_903\_pp | 1.003015 .002027 1.49 0.136 .9990495 1.006995

sp75\_904\_pp | 1.002141 .0007097 3.02 0.003 1.000751 1.003533

sp75\_905\_pp | .9903109 .0122922 -0.78 0.433 .9665093 1.014699

sp75\_907\_pp | .998047 .0042372 -0.46 0.645 .9897768 1.006386

sp77\_103\_pp | 1 (omitted)

sp77\_104\_pp | 1 (omitted)

sp77\_1103\_pp | .9998573 .0018122 -0.08 0.937 .9963118 1.003415

sp77\_1104\_pp | .9998501 .0007469 -0.20 0.841 .9983873 1.001315

sp77\_1106\_pp | 1.008482 .0264939 0.32 0.748 .957869 1.061769

sp77\_1111\_pp | .9868715 .0145092 -0.90 0.369 .9588399 1.015723

sp77\_1112\_pp | 1.006375 .0161693 0.40 0.692 .975177 1.03857

sp77\_1403\_pp | 1.00655 .0097977 0.67 0.502 .9875292 1.025938

sp77\_1432\_pp | 1 (omitted)

sp77\_1433\_pp | .9871498 .0119749 -1.07 0.286 .9639563 1.010901

sp77\_1434\_pp | 1 (omitted)

sp77\_1437\_pp | .9991634 .0182509 -0.05 0.963 .964025 1.035583

sp77\_1438\_pp | 1 (omitted)

sp77\_1605\_pp | .999833 .00065 -0.26 0.797 .9985598 1.001108

sp77\_1606\_pp | 1.000876 .0009363 0.94 0.349 .999043 1.002713

sp77\_1710\_pp | .9987027 .001652 -0.78 0.433 .9954702 1.001946

sp77\_1802\_pp | 1 (omitted)

sp77\_1906\_pp | 1 (omitted)

sp77\_1915\_pp | .9967083 .0068547 -0.48 0.632 .9833634 1.010234

sp77\_1916\_pp | 1 (omitted)

sp77\_200\_pp | .9989159 .0027738 -0.39 0.696 .9934942 1.004367

sp77\_202\_pp | .9941602 .0017971 -3.24 0.001 .9906443 .9976886

sp77\_203\_pp | .9836125 .013954 -1.16 0.244 .9566398 1.011346

sp77\_204\_pp | .9990552 .0044315 -0.21 0.831 .9904073 1.007779

sp77\_205\_pp | 1.001669 .0008392 1.99 0.046 1.000026 1.003316

sp77\_206\_pp | 1.008502 .0051113 1.67 0.095 .9985334 1.01857

sp77\_207\_pp | .9988717 .002428 -0.46 0.642 .9941242 1.003642

sp77\_208\_pp | 1.003729 .0014291 2.61 0.009 1.000932 1.006534

sp77\_210\_pp | 1.000926 .0050865 0.18 0.855 .9910065 1.010946

sp77\_216\_pp | 1 (omitted)

sp77\_305\_pp | 1 (omitted)

sp77\_309\_pp | 1 (omitted)

sp77\_314\_pp | 1 (omitted)

sp77\_315\_pp | 1 (omitted)

sp77\_400\_pp | 1.000997 .0009297 1.07 0.283 .9991768 1.002821

sp77\_401\_pp | .9981822 .0041312 -0.44 0.660 .990118 1.006312

sp77\_402\_pp | 1.002113 .0030544 0.69 0.489 .996144 1.008117

sp77\_403\_1\_pp | 1.005275 .0087171 0.61 0.544 .9883346 1.022507

sp77\_403\_2\_pp | 1 (omitted)

sp77\_403\_pp | 1.020048 .0110993 1.82 0.068 .998524 1.042036

sp77\_404\_pp | 1.000129 .0004913 0.26 0.793 .9991665 1.001092

sp77\_405\_pp | 1.007437 .0075463 0.99 0.323 .9927546 1.022337

sp77\_408\_pp | 1.003335 .0093459 0.36 0.721 .9851834 1.021821

sp77\_409\_pp | 1 (omitted)

sp77\_410\_pp | 1.000466 .001194 0.39 0.696 .9981287 1.002809

sp77\_411\_pp | .9468431 .0196927 -2.63 0.009 .9090221 .9862376

sp77\_412\_pp | 1.010161 .0084838 1.20 0.229 .9936696 1.026927

sp77\_413\_pp | 1 (omitted)

sp77\_500\_pp | 1 (omitted)

sp77\_501\_pp | 1.003013 .00759 0.40 0.691 .9882471 1.018

sp77\_502\_1\_pp | 1.002222 .0296538 0.08 0.940 .9457545 1.062061

sp77\_502\_2\_pp | 1.000138 .0049622 0.03 0.978 .990459 1.009911

sp77\_502\_pp | .9987979 .0008694 -1.38 0.167 .9970953 1.000503

sp77\_503\_1\_pp | .9874283 .0167721 -0.74 0.456 .9550967 1.020854

sp77\_503\_pp | .9887914 .0086667 -1.29 0.198 .9719501 1.005924

sp77\_504\_pp | .9921579 .0025467 -3.07 0.002 .987179 .9971619

sp77\_505\_pp | 1.000792 .001389 0.57 0.568 .9980734 1.003518

sp77\_506\_1\_pp | .9984364 .0019795 -0.79 0.430 .9945642 1.002324

sp77\_506\_pp | 1.001102 .002722 0.40 0.686 .9957807 1.006451

sp77\_507\_pp | .9980657 .0070051 -0.28 0.783 .98443 1.01189

sp77\_508\_1\_pp | .9972185 .0075955 -0.37 0.715 .9824423 1.012217

sp77\_508\_pp | .9977034 .0056241 -0.41 0.683 .9867411 1.008787

sp77\_509\_pp | 1.001274 .0034674 0.37 0.713 .9945006 1.008093

sp77\_510\_pp | 1 (omitted)

sp77\_511\_pp | .9856678 .0109413 -1.30 0.193 .9644549 1.007347

sp77\_512\_pp | 1.000983 .0020538 0.48 0.632 .9969657 1.005016

sp77\_513\_pp | .9988478 .001783 -0.65 0.518 .9953593 1.002348

sp77\_514\_pp | .9081981 .0198122 -4.41 0.000 .8701852 .9478715

sp77\_515\_pp | 1.016542 .0404575 0.41 0.680 .9402609 1.099012

sp77\_516\_pp | 1.000431 .0011296 0.38 0.703 .9982195 1.002647

sp77\_600\_pp | .9998386 .0077078 -0.02 0.983 .9848452 1.01506

sp77\_601\_pp | .9944765 .0113995 -0.48 0.629 .972383 1.017072

sp77\_602\_pp | .9938406 .0124424 -0.49 0.622 .9697507 1.018529

sp77\_603\_pp | 1.023668 .0145039 1.65 0.099 .9956322 1.052494

sp77\_604\_pp | 1.001097 .0070507 0.16 0.876 .9873727 1.015012

sp77\_605\_pp | .9643664 .0260201 -1.34 0.179 .9146929 1.016737

sp77\_606\_1\_pp | 1 (omitted)

sp77\_606\_pp | 1 (omitted)

sp77\_700\_1\_pp | 1.000039 .0172943 0.00 0.998 .9667109 1.034516

sp77\_700\_pp | 1.001128 .0063637 0.18 0.859 .9887333 1.013679

sp77\_701\_1\_pp | 1.007526 .0101898 0.74 0.458 .987751 1.027697

sp77\_701\_2\_pp | .9955496 .0049194 -0.90 0.367 .9859543 1.005238

sp77\_701\_3\_pp | 1.031554 .0244362 1.31 0.190 .9847551 1.080577

sp77\_701\_4\_pp | 1.009414 .0108117 0.87 0.382 .9884442 1.030829

sp77\_701\_pp | .9995731 .0019632 -0.22 0.828 .9957328 1.003428

sp77\_703\_pp | 1 (omitted)

sp77\_704\_1\_pp | 1 (omitted)

sp77\_704\_8\_pp | 1.004199 .0145805 0.29 0.773 .9760249 1.033187

sp77\_704\_9\_pp | .9939358 .0123255 -0.49 0.624 .9700696 1.018389

sp77\_704\_pp | .992263 .0112429 -0.69 0.493 .9704703 1.014545

sp77\_705\_pp | 1.000542 .0040804 0.13 0.894 .9925764 1.008572

sp77\_800\_1\_pp | 1.00492 .0087786 0.56 0.574 .9878606 1.022274

sp77\_800\_2\_pp | 1.007044 .0073388 0.96 0.335 .9927629 1.021531

sp77\_800\_pp | .9849047 .0133561 -1.12 0.262 .9590721 1.011433

sp77\_801\_pp | 1 (omitted)

sp77\_802\_pp | 1 (omitted)

sp77\_803\_pp | .9949454 .0100623 -0.50 0.616 .9754179 1.014864

sp77\_804\_pp | 1 (omitted)

sp77\_805\_pp | .9969476 .0165428 -0.18 0.854 .9650459 1.029904

sp77\_807\_1\_pp | 1.006231 .0129239 0.48 0.629 .9812172 1.031883

sp77\_807\_2\_pp | 1.034019 .0188142 1.84 0.066 .9977936 1.07156

sp77\_807\_3\_pp | 1 (omitted)

sp77\_807\_pp | 1.002761 .0073252 0.38 0.706 .9885062 1.017221

sp77\_808\_pp | 1 (omitted)

sp77\_809\_pp | .9957634 .0037885 -1.12 0.264 .9883658 1.003216

sp77\_810\_pp | .9991846 .0088237 -0.09 0.926 .9820392 1.016629

sp77\_900\_1\_pp | 1.006202 .0179114 0.35 0.728 .971702 1.041928

sp77\_900\_2\_pp | 1.000708 .0062103 0.11 0.909 .9886103 1.012955

sp77\_900\_pp | .9988977 .0073263 -0.15 0.880 .9846412 1.013361

sp77\_901\_1\_pp | 1 (omitted)

sp77\_901\_pp | 1.014048 .011944 1.18 0.236 .9909067 1.03773

sp77\_902\_2\_pp | 1 (omitted)

sp77\_902\_3\_pp | 1.010695 .0125688 0.86 0.392 .9863587 1.035632

sp77\_902\_pp | 1.006498 .0181051 0.36 0.719 .9716311 1.042617

sp77\_903\_pp | .9922079 .0083638 -0.93 0.353 .9759499 1.008737

sp77\_904\_pp | .9974052 .0020607 -1.26 0.209 .9933744 1.001452

mine\_time | 1.010118 .0162052 0.63 0.530 .9788506 1.042384

onsite\_insp\_hours | 1.000555 .0002519 2.20 0.028 1.000061 1.001049

|

state |

1 | 1.561229 .6688141 1.04 0.298 .6742499 3.615034

2 | 3.285494 1.098882 3.56 0.000 1.705704 6.328455

3 | 1.00322 .7283394 0.00 0.996 .2417814 4.162649

4 | 1.745834 .7060129 1.38 0.168 .7902752 3.856805

5 | 1.089124 .4370243 0.21 0.832 .4960462 2.39129

6 | .8045907 .1306252 -1.34 0.181 .5853055 1.106031

7 | 1.746885 .4579756 2.13 0.033 1.044979 2.920259

8 | .3313495 .1876655 -1.95 0.051 .1091927 1.005493

9 | 1 (empty)

10 | .4307559 .1835207 -1.98 0.048 .1868884 .9928418

11 | .3295193 .1855432 -1.97 0.049 .1092931 .9935025

12 | .9567576 .2560092 -0.17 0.869 .5662881 1.616466

13 | 1.608412 .9598984 0.80 0.426 .4993455 5.180759

14 | 1.112174 .5097626 0.23 0.817 .4529252 2.730984

15 | .5404197 .1005719 -3.31 0.001 .3752519 .7782864

17 | 1 (empty)

|

time |

2007 | 1.289183 .2393098 1.37 0.171 .8959979 1.854908

2009 | .4521057 .0875892 -4.10 0.000 .3092656 .6609193

2010 | .7410891 .1547796 -1.43 0.151 .4921454 1.115957

2011 | .8723089 .1599871 -0.74 0.456 .6089119 1.249644

2012 | .838731 .1773828 -0.83 0.406 .5541183 1.26953

2013 | .6016146 .1403651 -2.18 0.029 .3808213 .95042

2014 | .4729436 .1174552 -3.02 0.003 .2906792 .769493

2015 | .6652113 .1550341 -1.75 0.080 .4212876 1.050366

|

\_cons | 8.29e-06 1.62e-06 -60.05 0.000 5.66e-06 .0000121

lnhours | 1 (offset)

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

(est1 stored)

**. lfit**

Logistic model for MR\_indicator, goodness-of-fit test

number of observations = 3103

number of covariate patterns = 3103

Pearson chi2(2828) = 2747.83

Prob > chi2 = 0.8571

**. linktest**

Iteration 0: log likelihood = -2148.1535

Iteration 1: log likelihood = -1346.7776

Iteration 2: log likelihood = -1344.4211

Iteration 3: log likelihood = -1344.3654

Iteration 4: log likelihood = -1344.3654

Logistic regression Number of obs = 3,103

LR chi2(2) = 1607.58

Prob > chi2 = 0.0000

Log likelihood = -1344.3654 Pseudo R2 = 0.3742

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

MR\_indicator | Coef. Std. Err. z P>|z| [95% Conf. Interval]

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

\_hat | 1.062837 .0403999 26.31 0.000 .9836548 1.142019

\_hatsq | -.0231967 .0186492 -1.24 0.214 -.0597485 .0133551

\_cons | .0362851 .0548158 0.66 0.508 -.0711519 .1437221

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

**. estat classification**

Logistic model for MR\_indicator

-------- True --------

Classified | D ~D | Total

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

+ | 1265 305 | 1570

- | 351 1182 | 1533

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

Total | 1616 1487 | 3103

Classified + if predicted Pr(D) >= .5

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

Sensitivity Pr( +| D) 78.28%

Specificity Pr( -|~D) 79.49%

Positive predictive value Pr( D| +) 80.57%

Negative predictive value Pr(~D| -) 77.10%

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

False + rate for true ~D Pr( +|~D) 20.51%

False - rate for true D Pr( -| D) 21.72%

False + rate for classified + Pr(~D| +) 19.43%

False - rate for classified - Pr( D| -) 22.90%

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

Correctly classified 78.86%

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

**. summ MR\_indicator spbpp1\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

MR\_indicator | 6,253 .5525348 .4972722 0 1

spbpp1\_yhat | 5,939 .4675231 .3012282 .0003526 .9999999