. // Model SP.B.PP.2

**. logit MR\_indicator `subpart\_penpoints\_lag\_1\_vars' `covariates' ib(freq).state ///**

**> ib(freq).time if sample\_pp == 1, vce(cl mineid) offset(lnhours) iter(50) or**

note: sp48\_24\_pp\_1lag != 0 predicts failure perfectly

sp48\_24\_pp\_1lag dropped and 1 obs not used

note: sp48\_4\_pp\_1lag != 0 predicts failure perfectly

sp48\_4\_pp\_1lag dropped and 1 obs not used

note: sp71\_701\_pp\_1lag != 0 predicts success perfectly

sp71\_701\_pp\_1lag dropped and 1 obs not used

note: sp72\_610\_pp\_1lag != 0 predicts success perfectly

sp72\_610\_pp\_1lag dropped and 2 obs not used

note: sp75\_1003\_1\_pp\_1lag != 0 predicts success perfectly

sp75\_1003\_1\_pp\_1lag dropped and 6 obs not used

note: sp75\_1401\_1\_pp\_1lag != 0 predicts success perfectly

sp75\_1401\_1\_pp\_1lag dropped and 1 obs not used

note: sp75\_1403\_11\_pp\_1lag != 0 predicts success perfectly

sp75\_1403\_11\_pp\_1lag dropped and 3 obs not used

note: sp75\_1403\_3\_pp\_1lag != 0 predicts success perfectly

sp75\_1403\_3\_pp\_1lag dropped and 2 obs not used

note: sp75\_1403\_4\_pp\_1lag != 0 predicts success perfectly

sp75\_1403\_4\_pp\_1lag dropped and 2 obs not used

note: sp75\_1437\_pp\_1lag != 0 predicts success perfectly

sp75\_1437\_pp\_1lag dropped and 4 obs not used

note: sp75\_1727\_pp\_1lag != 0 predicts failure perfectly

sp75\_1727\_pp\_1lag dropped and 1 obs not used

note: sp75\_519\_pp\_1lag != 0 predicts failure perfectly

sp75\_519\_pp\_1lag dropped and 1 obs not used

note: sp75\_601\_2\_pp\_1lag != 0 predicts failure perfectly

sp75\_601\_2\_pp\_1lag dropped and 6 obs not used

note: sp75\_702\_1\_pp\_1lag != 0 predicts failure perfectly

sp75\_702\_1\_pp\_1lag dropped and 2 obs not used

note: sp75\_702\_pp\_1lag != 0 predicts failure perfectly

sp75\_702\_pp\_1lag dropped and 2 obs not used

note: sp75\_703\_4\_pp\_1lag != 0 predicts failure perfectly

sp75\_703\_4\_pp\_1lag dropped and 3 obs not used

note: sp75\_705\_3\_pp\_1lag != 0 predicts success perfectly

sp75\_705\_3\_pp\_1lag dropped and 1 obs not used

note: sp75\_800\_2\_pp\_1lag != 0 predicts failure perfectly

sp75\_800\_2\_pp\_1lag dropped and 1 obs not used

note: sp75\_803\_2\_pp\_1lag != 0 predicts failure perfectly

sp75\_803\_2\_pp\_1lag dropped and 3 obs not used

note: sp75\_832\_pp\_1lag != 0 predicts failure perfectly

sp75\_832\_pp\_1lag dropped and 3 obs not used

note: sp75\_902\_1\_pp\_1lag != 0 predicts failure perfectly

sp75\_902\_1\_pp\_1lag dropped and 4 obs not used

note: sp77\_103\_pp\_1lag != 0 predicts failure perfectly

sp77\_103\_pp\_1lag dropped and 1 obs not used

note: sp77\_104\_pp\_1lag != 0 predicts failure perfectly

sp77\_104\_pp\_1lag dropped and 2 obs not used

note: sp77\_1432\_pp\_1lag != 0 predicts success perfectly

sp77\_1432\_pp\_1lag dropped and 1 obs not used

note: sp77\_1438\_pp\_1lag != 0 predicts success perfectly

sp77\_1438\_pp\_1lag dropped and 1 obs not used

note: sp77\_1802\_pp\_1lag != 0 predicts failure perfectly

sp77\_1802\_pp\_1lag dropped and 1 obs not used

note: sp77\_305\_pp\_1lag != 0 predicts success perfectly

sp77\_305\_pp\_1lag dropped and 1 obs not used

note: sp77\_309\_pp\_1lag != 0 predicts success perfectly

sp77\_309\_pp\_1lag dropped and 1 obs not used

note: sp77\_314\_pp\_1lag != 0 predicts success perfectly

sp77\_314\_pp\_1lag dropped and 2 obs not used

note: sp77\_315\_pp\_1lag != 0 predicts success perfectly

sp77\_315\_pp\_1lag dropped and 1 obs not used

note: sp77\_403\_2\_pp\_1lag != 0 predicts success perfectly

sp77\_403\_2\_pp\_1lag dropped and 1 obs not used

note: sp77\_605\_pp\_1lag != 0 predicts failure perfectly

sp77\_605\_pp\_1lag dropped and 7 obs not used

note: sp77\_606\_1\_pp\_1lag != 0 predicts success perfectly

sp77\_606\_1\_pp\_1lag dropped and 1 obs not used

note: sp77\_704\_1\_pp\_1lag != 0 predicts failure perfectly

sp77\_704\_1\_pp\_1lag dropped and 1 obs not used

note: sp77\_801\_pp\_1lag != 0 predicts failure perfectly

sp77\_801\_pp\_1lag dropped and 2 obs not used

note: sp77\_901\_1\_pp\_1lag != 0 predicts success perfectly

sp77\_901\_1\_pp\_1lag dropped and 2 obs not used

note: sp77\_902\_2\_pp\_1lag != 0 predicts success perfectly

sp77\_902\_2\_pp\_1lag dropped and 1 obs not used

note: sp75\_1001\_pp\_1lag omitted because of collinearity

note: sp75\_1106\_6\_pp\_1lag omitted because of collinearity

note: sp75\_1431\_pp\_1lag omitted because of collinearity

note: sp75\_511\_1\_pp\_1lag omitted because of collinearity

note: sp75\_806\_pp\_1lag omitted because of collinearity

note: sp75\_834\_pp\_1lag omitted because of collinearity

note: sp77\_413\_pp\_1lag omitted because of collinearity

note: sp77\_606\_pp\_1lag omitted because of collinearity

note: sp77\_804\_pp\_1lag omitted because of collinearity

Iteration 0: log pseudolikelihood = -6419.4255

Iteration 1: log pseudolikelihood = -5992.0459

Iteration 2: log pseudolikelihood = -5982.9274

Iteration 3: log pseudolikelihood = -5982.8192

Iteration 4: log pseudolikelihood = -5982.8191

Logistic regression Number of obs = 14,132

Wald chi2(322) = .

Log pseudolikelihood = -5982.8191 Prob > chi2 = .

(Std. Err. adjusted for 867 clusters in mineid)

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

| Robust

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

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

sp47\_41\_pp\_1lag | .9961835 .002489 -1.53 0.126 .9913171 1.001074

sp47\_42\_pp\_1lag | .9826582 .0078663 -2.19 0.029 .9673609 .9981975

sp47\_44\_pp\_1lag | 1.001025 .0039077 0.26 0.793 .9933953 1.008713

sp48\_11\_pp\_1lag | 1.005884 .0024663 2.39 0.017 1.001062 1.01073

sp48\_24\_pp\_1lag | 1 (omitted)

sp48\_25\_pp\_1lag | 1.004853 .0043696 1.11 0.266 .9963255 1.013454

sp48\_26\_pp\_1lag | 1.002702 .0033575 0.81 0.420 .9961424 1.009304

sp48\_27\_pp\_1lag | 1.003833 .0031017 1.24 0.216 .9977717 1.00993

sp48\_28\_pp\_1lag | .9984379 .0039436 -0.40 0.692 .9907384 1.006197

sp48\_4\_pp\_1lag | 1 (omitted)

sp48\_5\_pp\_1lag | .9923495 .0065768 -1.16 0.247 .9795425 1.005324

sp48\_6\_pp\_1lag | .9966776 .0019666 -1.69 0.092 .9928307 1.000539

sp48\_7\_pp\_1lag | 1.001594 .0020406 0.78 0.434 .9976028 1.005602

sp48\_8\_pp\_1lag | 1.00256 .0038837 0.66 0.509 .994977 1.010201

sp71\_701\_pp\_1lag | 1 (omitted)

sp72\_503\_pp\_1lag | .9951487 .0033186 -1.46 0.145 .9886655 1.001674

sp72\_610\_pp\_1lag | 1 (omitted)

sp72\_620\_pp\_1lag | .9983016 .0237142 -0.07 0.943 .952888 1.04588

sp72\_630\_pp\_1lag | 1.000424 .0003622 1.17 0.241 .9997147 1.001134

sp75\_100\_pp\_1lag | .9973359 .0059009 -0.45 0.652 .9858372 1.008969

sp75\_1001\_1\_pp\_1lag | .9944294 .0134554 -0.41 0.680 .968404 1.021154

sp75\_1001\_pp\_1lag | 1 (omitted)

sp75\_1003\_1\_pp\_1lag | 1 (omitted)

sp75\_1100\_2\_pp\_1lag | 1.000881 .0004043 2.18 0.029 1.000089 1.001674

sp75\_1101\_20\_pp\_1lag | .995836 .0080284 -0.52 0.605 .9802243 1.011696

sp75\_1102\_pp\_1lag | .9989532 .0022992 -0.46 0.649 .994457 1.00347

sp75\_1103\_4\_pp\_1lag | 1.001136 .0005897 1.93 0.054 .9999809 1.002293

sp75\_1104\_pp\_1lag | .9992776 .0017998 -0.40 0.688 .9957563 1.002811

sp75\_1106\_2\_pp\_1lag | .9994803 .0020319 -0.26 0.798 .9955058 1.003471

sp75\_1106\_3\_pp\_1lag | 1.001522 .0007652 1.99 0.047 1.000023 1.003023

sp75\_1106\_4\_pp\_1lag | .9984572 .0048453 -0.32 0.750 .9890057 1.007999

sp75\_1106\_5\_pp\_1lag | 1.000571 .0024588 0.23 0.816 .9957638 1.005402

sp75\_1106\_6\_pp\_1lag | 1 (omitted)

sp75\_1106\_pp\_1lag | 1.004247 .0075453 0.56 0.573 .989567 1.019145

sp75\_1107\_14\_pp\_1lag | .997609 .010554 -0.23 0.821 .9771364 1.01851

sp75\_1400\_1\_pp\_1lag | 1.013765 .0150694 0.92 0.358 .9846562 1.043735

sp75\_1400\_2\_pp\_1lag | .9938556 .0110235 -0.56 0.578 .9724831 1.015698

sp75\_1400\_3\_pp\_1lag | 1.002493 .0023659 1.06 0.291 .9978669 1.007141

sp75\_1400\_4\_pp\_1lag | .9968159 .0062387 -0.51 0.610 .9846629 1.009119

sp75\_1400\_pp\_1lag | .9988258 .0034971 -0.34 0.737 .991995 1.005704

sp75\_1401\_1\_pp\_1lag | 1 (omitted)

sp75\_1401\_pp\_1lag | 1.039647 .0113478 3.56 0.000 1.017642 1.062128

sp75\_1403\_10\_pp\_1lag | 1.001834 .0013685 1.34 0.180 .9991553 1.00452

sp75\_1403\_11\_pp\_1lag | 1 (omitted)

sp75\_1403\_3\_pp\_1lag | 1 (omitted)

sp75\_1403\_4\_pp\_1lag | 1 (omitted)

sp75\_1403\_5\_pp\_1lag | .9990466 .0008841 -1.08 0.281 .9973153 1.000781

sp75\_1403\_6\_pp\_1lag | .9996792 .0006346 -0.51 0.613 .9984362 1.000924

sp75\_1403\_7\_pp\_1lag | 1.000836 .0027114 0.31 0.758 .9955359 1.006165

sp75\_1403\_8\_pp\_1lag | .9986775 .0005343 -2.47 0.013 .9976308 .9997253

sp75\_1403\_9\_pp\_1lag | 1.003942 .0052348 0.75 0.451 .9937344 1.014255

sp75\_1404\_1\_pp\_1lag | .9767284 .0112802 -2.04 0.041 .954868 .9990892

sp75\_1404\_pp\_1lag | 1.003042 .0111819 0.27 0.785 .9813639 1.0252

sp75\_1405\_1\_pp\_1lag | 1.025354 .018378 1.40 0.162 .9899591 1.062014

sp75\_1405\_pp\_1lag | .9991827 .0008653 -0.94 0.345 .9974881 1.00088

sp75\_1431\_pp\_1lag | 1 (omitted)

sp75\_1432\_pp\_1lag | 1.00325 .0078966 0.41 0.680 .9878918 1.018847

sp75\_1433\_pp\_1lag | 1.000021 .0041186 0.01 0.996 .9919814 1.008126

sp75\_1434\_pp\_1lag | .9991545 .0052466 -0.16 0.872 .9889242 1.009491

sp75\_1435\_pp\_1lag | 1.006591 .0249154 0.27 0.791 .958923 1.056628

sp75\_1437\_pp\_1lag | 1 (omitted)

sp75\_150\_pp\_1lag | 1.0136 .0102301 1.34 0.181 .9937467 1.033851

sp75\_151\_pp\_1lag | .9811097 .0120649 -1.55 0.121 .9577455 1.005044

sp75\_153\_pp\_1lag | 1.001863 .0087758 0.21 0.832 .9848097 1.019212

sp75\_156\_pp\_1lag | .9965498 .0108338 -0.32 0.751 .9755407 1.018011

sp75\_160\_pp\_1lag | 1.011364 .0104179 1.10 0.273 .9911504 1.03199

sp75\_1600\_2\_pp\_1lag | .9982079 .0010728 -1.67 0.095 .9961074 1.000313

sp75\_1712\_10\_pp\_1lag | .9979569 .0036807 -0.55 0.579 .9907689 1.005197

sp75\_1712\_6\_pp\_1lag | 1.001535 .0023525 0.65 0.514 .9969352 1.006157

sp75\_1720\_pp\_1lag | .9984032 .0015443 -1.03 0.302 .995381 1.001435

sp75\_1721\_pp\_1lag | 1.018195 .0104868 1.75 0.080 .9978472 1.038957

sp75\_1725\_pp\_1lag | 1.000336 .0002294 1.46 0.143 .9998865 1.000786

sp75\_1726\_pp\_1lag | 1.007101 .0040705 1.75 0.080 .9991542 1.01511

sp75\_1727\_pp\_1lag | 1 (omitted)

sp75\_1728\_pp\_1lag | 1.005026 .0078075 0.65 0.519 .9898398 1.020446

sp75\_1729\_pp\_1lag | 1.002613 .0057068 0.46 0.647 .9914904 1.013861

sp75\_1730\_pp\_1lag | .9998498 .0054449 -0.03 0.978 .9892348 1.010579

sp75\_1731\_pp\_1lag | 1.000002 .0001827 0.01 0.991 .999644 1.00036

sp75\_1903\_pp\_1lag | 1.000592 .0026727 0.22 0.825 .995367 1.005844

sp75\_1909\_pp\_1lag | 1.000037 .0003854 0.09 0.924 .9992815 1.000792

sp75\_1910\_pp\_1lag | 1.000233 .0006411 0.36 0.716 .9989773 1.00149

sp75\_1911\_pp\_1lag | 1.000888 .0007073 1.26 0.209 .9995022 1.002275

sp75\_1912\_pp\_1lag | .9952916 .0039848 -1.18 0.238 .9875121 1.003132

sp75\_1913\_pp\_1lag | .9995192 .0057051 -0.08 0.933 .9883997 1.010764

sp75\_1914\_pp\_1lag | .9998956 .0004202 -0.25 0.804 .9990723 1.000719

sp75\_1915\_pp\_1lag | 1.007311 .0057352 1.28 0.201 .9961326 1.018615

sp75\_202\_pp\_1lag | 1.000075 .0001321 0.57 0.572 .9998158 1.000334

sp75\_208\_pp\_1lag | 1.00081 .0008455 0.96 0.338 .9991545 1.002469

sp75\_211\_pp\_1lag | 1.000645 .000753 0.86 0.392 .9991698 1.002122

sp75\_212\_pp\_1lag | .9965394 .0019332 -1.79 0.074 .9927576 1.000336

sp75\_214\_pp\_1lag | 1.000862 .0016356 0.53 0.598 .9976615 1.004073

sp75\_312\_pp\_1lag | 1.000914 .0013576 0.67 0.501 .9982564 1.003578

sp75\_320\_pp\_1lag | .9989839 .0008614 -1.18 0.238 .9972969 1.000674

sp75\_324\_pp\_1lag | .9986352 .0028697 -0.48 0.635 .9930265 1.004276

sp75\_337\_pp\_1lag | .9970013 .0014727 -2.03 0.042 .9941191 .9998919

sp75\_340\_pp\_1lag | .9998831 .0006311 -0.19 0.853 .998647 1.001121

sp75\_341\_pp\_1lag | .9872843 .0175023 -0.72 0.470 .9535694 1.022191

sp75\_342\_pp\_1lag | 1.000144 .0003914 0.37 0.713 .999377 1.000911

sp75\_344\_pp\_1lag | .9915461 .0044044 -1.91 0.056 .9829512 1.000216

sp75\_352\_pp\_1lag | .9943182 .0032888 -1.72 0.085 .9878931 1.000785

sp75\_382\_pp\_1lag | .9999463 .0031757 -0.02 0.987 .9937413 1.00619

sp75\_503\_pp\_1lag | .9999905 .0001578 -0.06 0.952 .9996813 1.0003

sp75\_504\_pp\_1lag | 1.004939 .0038771 1.28 0.202 .9973688 1.012567

sp75\_505\_pp\_1lag | .9978301 .0073674 -0.29 0.769 .9834942 1.012375

sp75\_506\_1\_pp\_1lag | 1.002242 .004645 0.48 0.629 .9931788 1.011387

sp75\_506\_pp\_1lag | .9959609 .0036573 -1.10 0.270 .9888184 1.003155

sp75\_507\_pp\_1lag | 1.000705 .0018258 0.39 0.699 .9971328 1.00429

sp75\_511\_1\_pp\_1lag | 1 (omitted)

sp75\_511\_pp\_1lag | .996937 .0020524 -1.49 0.136 .9929225 1.000968

sp75\_512\_1\_pp\_1lag | .9911121 .010119 -0.87 0.382 .9714763 1.011145

sp75\_512\_2\_pp\_1lag | 1.000304 .0006637 0.46 0.647 .9990043 1.001606

sp75\_512\_pp\_1lag | 1.000214 .0002121 1.01 0.314 .9997979 1.000629

sp75\_513\_1\_pp\_1lag | .9970562 .0076858 -0.38 0.702 .9821055 1.012235

sp75\_513\_pp\_1lag | .9981241 .0027607 -0.68 0.497 .9927278 1.00355

sp75\_514\_pp\_1lag | .9990436 .0009912 -0.96 0.335 .9971028 1.000988

sp75\_515\_pp\_1lag | .9986629 .0005079 -2.63 0.009 .9976679 .9996589

sp75\_516\_1\_pp\_1lag | .994983 .0092881 -0.54 0.590 .9769441 1.013355

sp75\_516\_2\_pp\_1lag | 1.000271 .0016056 0.17 0.866 .9971289 1.003423

sp75\_516\_pp\_1lag | .9999047 .0006923 -0.14 0.891 .9985487 1.001263

sp75\_517\_1\_pp\_1lag | 1.014079 .0095237 1.49 0.137 .995584 1.032918

sp75\_517\_pp\_1lag | 1.000176 .0002069 0.85 0.396 .9997701 1.000581

sp75\_518\_1\_pp\_1lag | .9997415 .000997 -0.26 0.795 .9977894 1.001697

sp75\_518\_pp\_1lag | 1.000528 .000656 0.81 0.421 .9992433 1.001815

sp75\_519\_pp\_1lag | 1 (omitted)

sp75\_520\_pp\_1lag | 1.00419 .0016839 2.49 0.013 1.000895 1.007496

sp75\_523\_1\_pp\_1lag | .9953228 .0017758 -2.63 0.009 .9918484 .9988095

sp75\_523\_2\_pp\_1lag | 1.000455 .0014901 0.31 0.760 .9975388 1.00338

sp75\_523\_pp\_1lag | .9984155 .0019753 -0.80 0.423 .9945516 1.002294

sp75\_600\_1\_pp\_1lag | .9779832 .017249 -1.26 0.207 .9447535 1.012382

sp75\_600\_pp\_1lag | .9999931 .0233613 -0.00 1.000 .9552381 1.046845

sp75\_601\_1\_pp\_1lag | .9997472 .0005982 -0.42 0.673 .9985754 1.00092

sp75\_601\_2\_pp\_1lag | 1 (omitted)

sp75\_601\_3\_pp\_1lag | 1.015199 .0118084 1.30 0.195 .9923168 1.038609

sp75\_601\_pp\_1lag | .9987289 .0009365 -1.36 0.175 .996895 1.000566

sp75\_602\_pp\_1lag | 1.002956 .0020988 1.41 0.158 .9988513 1.007078

sp75\_603\_pp\_1lag | 1.000022 .0023563 0.01 0.992 .9954147 1.004651

sp75\_604\_pp\_1lag | 1.000465 .0002807 1.66 0.097 .9999154 1.001016

sp75\_605\_pp\_1lag | .9996845 .0009004 -0.35 0.726 .9979212 1.001451

sp75\_606\_pp\_1lag | 1.000125 .0004432 0.28 0.778 .9992567 1.000994

sp75\_607\_pp\_1lag | 1.002845 .0020538 1.39 0.165 .9988277 1.006878

sp75\_700\_1\_pp\_1lag | .9831931 .0103582 -1.61 0.108 .9630995 1.003706

sp75\_700\_pp\_1lag | 1.000463 .0031455 0.15 0.883 .9943166 1.006647

sp75\_701\_1\_pp\_1lag | .9967381 .0032101 -1.01 0.310 .9904663 1.00305

sp75\_701\_2\_pp\_1lag | .9957016 .0038237 -1.12 0.262 .9882355 1.003224

sp75\_701\_3\_pp\_1lag | 1.002784 .0040326 0.69 0.489 .9949111 1.010719

sp75\_701\_4\_pp\_1lag | 1.018713 .0083686 2.26 0.024 1.002442 1.035248

sp75\_701\_5\_pp\_1lag | 1.005395 .0061456 0.88 0.379 .9934218 1.017513

sp75\_701\_pp\_1lag | 1.001518 .0006857 2.22 0.027 1.000175 1.002863

sp75\_702\_1\_pp\_1lag | 1 (omitted)

sp75\_702\_pp\_1lag | 1 (omitted)

sp75\_703\_1\_pp\_1lag | .9891829 .0158351 -0.68 0.497 .9586285 1.020711

sp75\_703\_2\_pp\_1lag | .9987479 .0139743 -0.09 0.929 .9717309 1.026516

sp75\_703\_3\_pp\_1lag | 1.006815 .003204 2.13 0.033 1.000555 1.013115

sp75\_703\_4\_pp\_1lag | 1 (omitted)

sp75\_703\_pp\_1lag | .9999378 .001454 -0.04 0.966 .997092 1.002792

sp75\_704\_pp\_1lag | 1.005061 .004976 1.02 0.308 .9953552 1.014861

sp75\_705\_1\_pp\_1lag | 1.005967 .0052896 1.13 0.258 .9956526 1.016388

sp75\_705\_3\_pp\_1lag | 1 (omitted)

sp75\_705\_8\_pp\_1lag | .9964975 .0128245 -0.27 0.785 .9716763 1.021953

sp75\_705\_pp\_1lag | 1.013724 .0114635 1.21 0.228 .9915035 1.036443

sp75\_706\_pp\_1lag | .9957393 .0039471 -1.08 0.281 .9880332 1.003506

sp75\_800\_2\_pp\_1lag | 1 (omitted)

sp75\_800\_3\_pp\_1lag | 1.00151 .0058461 0.26 0.796 .9901168 1.013034

sp75\_800\_4\_pp\_1lag | .9984002 .0043191 -0.37 0.711 .9899708 1.006901

sp75\_800\_pp\_1lag | 1.005443 .0038299 1.43 0.154 .9979644 1.012977

sp75\_801\_pp\_1lag | .9954951 .0092085 -0.49 0.625 .9776093 1.013708

sp75\_802\_pp\_1lag | .9924066 .0067688 -1.12 0.264 .9792282 1.005762

sp75\_803\_2\_pp\_1lag | 1 (omitted)

sp75\_803\_pp\_1lag | 1.004191 .0033339 1.26 0.208 .9976784 1.010747

sp75\_804\_pp\_1lag | .9961634 .007013 -0.55 0.585 .9825125 1.010004

sp75\_805\_pp\_1lag | 1.007078 .0078177 0.91 0.364 .9918711 1.022517

sp75\_806\_pp\_1lag | 1 (omitted)

sp75\_807\_pp\_1lag | 1.000219 .0005069 0.43 0.665 .9992264 1.001213

sp75\_808\_pp\_1lag | .9989609 .0040433 -0.26 0.797 .9910675 1.006917

sp75\_809\_pp\_1lag | 1.001703 .0016249 1.05 0.294 .9985238 1.004893

sp75\_810\_pp\_1lag | .9983226 .002239 -0.75 0.454 .9939439 1.002721

sp75\_811\_pp\_1lag | 1.002892 .0019004 1.52 0.127 .9991746 1.006624

sp75\_812\_pp\_1lag | .99025 .0048505 -2.00 0.045 .9807887 .9998026

sp75\_814\_pp\_1lag | .9985979 .0067578 -0.21 0.836 .9854403 1.011931

sp75\_815\_pp\_1lag | 1.014917 .0062407 2.41 0.016 1.002759 1.027223

sp75\_816\_pp\_1lag | 1.00114 .001304 0.88 0.382 .9985879 1.003699

sp75\_818\_pp\_1lag | 1.010889 .0067512 1.62 0.105 .9977429 1.024208

sp75\_820\_pp\_1lag | .9995817 .0045948 -0.09 0.927 .9906165 1.008628

sp75\_821\_pp\_1lag | .9986317 .0044073 -0.31 0.756 .9900308 1.007307

sp75\_825\_pp\_1lag | 1.007197 .005452 1.32 0.185 .996568 1.01794

sp75\_827\_pp\_1lag | 1.004107 .0096739 0.43 0.671 .9853242 1.023248

sp75\_831\_pp\_1lag | 1.000216 .020096 0.01 0.991 .9615937 1.040389

sp75\_832\_pp\_1lag | 1 (omitted)

sp75\_834\_pp\_1lag | 1 (omitted)

sp75\_900\_2\_pp\_1lag | .9947494 .0095248 -0.55 0.582 .9762553 1.013594

sp75\_900\_3\_pp\_1lag | 1.002835 .0033012 0.86 0.390 .9963859 1.009327

sp75\_900\_4\_pp\_1lag | 1.000334 .0021001 0.16 0.874 .9962261 1.004458

sp75\_900\_pp\_1lag | .9998146 .0010364 -0.18 0.858 .9977854 1.001848

sp75\_901\_pp\_1lag | .9997919 .0037847 -0.05 0.956 .9924014 1.007237

sp75\_902\_1\_pp\_1lag | 1 (omitted)

sp75\_902\_2\_pp\_1lag | 1.006941 .0071933 0.97 0.333 .992941 1.021139

sp75\_902\_4\_pp\_1lag | .9968808 .0019808 -1.57 0.116 .9930061 1.000771

sp75\_902\_pp\_1lag | .9999622 .0010501 -0.04 0.971 .9979061 1.002023

sp75\_903\_pp\_1lag | 1.001612 .001906 0.85 0.397 .9978832 1.005355

sp75\_904\_pp\_1lag | .9995874 .0005038 -0.82 0.413 .9986004 1.000575

sp75\_905\_pp\_1lag | 1.00507 .0098458 0.52 0.606 .9859567 1.024554

sp75\_907\_pp\_1lag | .9987833 .0034261 -0.35 0.723 .9920908 1.005521

sp77\_103\_pp\_1lag | 1 (omitted)

sp77\_104\_pp\_1lag | 1 (omitted)

sp77\_1103\_pp\_1lag | 1.000622 .0012581 0.49 0.621 .998159 1.003091

sp77\_1104\_pp\_1lag | .9998413 .0005653 -0.28 0.779 .9987339 1.00095

sp77\_1106\_pp\_1lag | 1.001902 .0321322 0.06 0.953 .9408621 1.066901

sp77\_1111\_pp\_1lag | 1.002098 .0151031 0.14 0.889 .972929 1.032141

sp77\_1112\_pp\_1lag | .998039 .0047383 -0.41 0.679 .9887952 1.007369

sp77\_1403\_pp\_1lag | .9926598 .0043399 -1.69 0.092 .9841901 1.001202

sp77\_1432\_pp\_1lag | 1 (omitted)

sp77\_1433\_pp\_1lag | 1.001632 .0105371 0.15 0.877 .9811907 1.022498

sp77\_1434\_pp\_1lag | 1.006505 .0086766 0.75 0.452 .9896415 1.023655

sp77\_1437\_pp\_1lag | 1.020542 .0126999 1.63 0.102 .995952 1.04574

sp77\_1438\_pp\_1lag | 1 (omitted)

sp77\_1605\_pp\_1lag | 1.00045 .0005979 0.75 0.452 .9992787 1.001622

sp77\_1606\_pp\_1lag | 1.000044 .0008834 0.05 0.960 .998314 1.001777

sp77\_1710\_pp\_1lag | 1.000719 .0013872 0.52 0.604 .998004 1.003442

sp77\_1802\_pp\_1lag | 1 (omitted)

sp77\_1906\_pp\_1lag | .9990629 .0111544 -0.08 0.933 .9774381 1.021166

sp77\_1915\_pp\_1lag | .9969808 .0060865 -0.50 0.620 .9851225 1.008982

sp77\_1916\_pp\_1lag | .9950421 .0077234 -0.64 0.522 .980019 1.010295

sp77\_200\_pp\_1lag | 1.007216 .0018092 4.00 0.000 1.003677 1.010769

sp77\_202\_pp\_1lag | .996533 .0009333 -3.71 0.000 .9947055 .9983638

sp77\_203\_pp\_1lag | 1.011328 .0075721 1.50 0.132 .996595 1.026278

sp77\_204\_pp\_1lag | .9978742 .0019859 -1.07 0.285 .9939895 1.001774

sp77\_205\_pp\_1lag | 1.00132 .000665 1.99 0.047 1.000017 1.002624

sp77\_206\_pp\_1lag | 1.002094 .0034691 0.60 0.546 .9953173 1.008916

sp77\_207\_pp\_1lag | .9971587 .0019277 -1.47 0.141 .9933877 1.000944

sp77\_208\_pp\_1lag | 1.001926 .0009674 1.99 0.046 1.000032 1.003824

sp77\_210\_pp\_1lag | .9983258 .0041694 -0.40 0.688 .9901872 1.006531

sp77\_216\_pp\_1lag | 1.00265 .0035035 0.76 0.449 .9958067 1.00954

sp77\_305\_pp\_1lag | 1 (omitted)

sp77\_309\_pp\_1lag | 1 (omitted)

sp77\_314\_pp\_1lag | 1 (omitted)

sp77\_315\_pp\_1lag | 1 (omitted)

sp77\_400\_pp\_1lag | 1.000226 .0008473 0.27 0.790 .9985665 1.001888

sp77\_401\_pp\_1lag | 1.000207 .0032712 0.06 0.950 .993816 1.006639

sp77\_402\_pp\_1lag | .9994146 .0035574 -0.16 0.869 .9924664 1.006411

sp77\_403\_1\_pp\_1lag | .9968799 .0035926 -0.87 0.386 .9898633 1.003946

sp77\_403\_2\_pp\_1lag | 1 (omitted)

sp77\_403\_pp\_1lag | 1.007419 .010654 0.70 0.485 .9867521 1.028518

sp77\_404\_pp\_1lag | .9997994 .0004515 -0.44 0.657 .9989149 1.000685

sp77\_405\_pp\_1lag | .996837 .0070042 -0.45 0.652 .9832032 1.01066

sp77\_408\_pp\_1lag | .9984243 .0061043 -0.26 0.796 .9865315 1.010461

sp77\_409\_pp\_1lag | .9926091 .01294 -0.57 0.569 .9675684 1.018298

sp77\_410\_pp\_1lag | 1.001301 .0009952 1.31 0.191 .9993519 1.003253

sp77\_411\_pp\_1lag | .9791631 .0128751 -1.60 0.109 .9542508 1.004726

sp77\_412\_pp\_1lag | 1.00673 .0052918 1.28 0.202 .9964116 1.017156

sp77\_413\_pp\_1lag | 1 (omitted)

sp77\_500\_pp\_1lag | .9939955 .0073007 -0.82 0.412 .9797889 1.008408

sp77\_501\_pp\_1lag | 1.009096 .0043084 2.12 0.034 1.000686 1.017575

sp77\_502\_1\_pp\_1lag | 1.057434 .0199604 2.96 0.003 1.019028 1.097289

sp77\_502\_2\_pp\_1lag | 1.004727 .0030441 1.56 0.120 .998778 1.010711

sp77\_502\_pp\_1lag | 1.000323 .0005956 0.54 0.588 .9991562 1.001491

sp77\_503\_1\_pp\_1lag | .9831197 .011905 -1.41 0.160 .960061 1.006732

sp77\_503\_pp\_1lag | 1.007612 .0062325 1.23 0.220 .9954705 1.019902

sp77\_504\_pp\_1lag | 1.000621 .0025179 0.25 0.805 .9956985 1.005569

sp77\_505\_pp\_1lag | .99902 .001229 -0.80 0.425 .996614 1.001432

sp77\_506\_1\_pp\_1lag | .9989237 .0017063 -0.63 0.528 .995585 1.002273

sp77\_506\_pp\_1lag | .9993398 .0020973 -0.31 0.753 .9952376 1.003459

sp77\_507\_pp\_1lag | .9922466 .0068406 -1.13 0.259 .9789295 1.005745

sp77\_508\_1\_pp\_1lag | .9935122 .0076386 -0.85 0.397 .9786531 1.008597

sp77\_508\_pp\_1lag | 1.008357 .0049189 1.71 0.088 .9987617 1.018044

sp77\_509\_pp\_1lag | .9988442 .0024399 -0.47 0.636 .9940736 1.003638

sp77\_510\_pp\_1lag | 1.007929 .0184524 0.43 0.666 .9724046 1.044752

sp77\_511\_pp\_1lag | .9777679 .0100281 -2.19 0.028 .9583094 .9976216

sp77\_512\_pp\_1lag | .9993831 .0009555 -0.65 0.519 .9975121 1.001258

sp77\_513\_pp\_1lag | .9959114 .0016295 -2.50 0.012 .9927228 .9991103

sp77\_514\_pp\_1lag | .9733905 .0134637 -1.95 0.051 .9473565 1.00014

sp77\_515\_pp\_1lag | 1.017637 .0117838 1.51 0.131 .9948012 1.040997

sp77\_516\_pp\_1lag | .9996041 .0008519 -0.46 0.642 .9979358 1.001275

sp77\_600\_pp\_1lag | 1.005803 .0077819 0.75 0.455 .9906661 1.021172

sp77\_601\_pp\_1lag | 1.003587 .0108036 0.33 0.739 .9826344 1.024987

sp77\_602\_pp\_1lag | 1.005934 .0138572 0.43 0.668 .9791373 1.033463

sp77\_603\_pp\_1lag | 1.018467 .0121228 1.54 0.124 .9949821 1.042507

sp77\_604\_pp\_1lag | 1.006745 .0042719 1.58 0.113 .9984065 1.015152

sp77\_605\_pp\_1lag | 1 (omitted)

sp77\_606\_1\_pp\_1lag | 1 (omitted)

sp77\_606\_pp\_1lag | 1 (omitted)

sp77\_700\_1\_pp\_1lag | 1.009016 .0112672 0.80 0.422 .9871723 1.031342

sp77\_700\_pp\_1lag | .9996668 .0074064 -0.04 0.964 .9852554 1.014289

sp77\_701\_1\_pp\_1lag | 1.006104 .0070258 0.87 0.384 .9924275 1.019969

sp77\_701\_2\_pp\_1lag | 1.00313 .0045309 0.69 0.489 .9942893 1.01205

sp77\_701\_3\_pp\_1lag | .9993315 .0255803 -0.03 0.979 .9504318 1.050747

sp77\_701\_4\_pp\_1lag | 1.011797 .0085106 1.39 0.163 .9952533 1.028616

sp77\_701\_pp\_1lag | .9976387 .001611 -1.46 0.143 .9944863 1.000801

sp77\_703\_pp\_1lag | 1.028196 .0212918 1.34 0.179 .9873 1.070785

sp77\_704\_1\_pp\_1lag | 1 (omitted)

sp77\_704\_8\_pp\_1lag | 1.000515 .0109568 0.05 0.963 .9792684 1.022222

sp77\_704\_9\_pp\_1lag | .9848995 .0162966 -0.92 0.358 .9534712 1.017364

sp77\_704\_pp\_1lag | .996898 .0093134 -0.33 0.739 .9788102 1.01532

sp77\_705\_pp\_1lag | 1.001227 .0028404 0.43 0.666 .9956751 1.006809

sp77\_800\_1\_pp\_1lag | 1.000229 .010359 0.02 0.982 .9801306 1.02074

sp77\_800\_2\_pp\_1lag | .9992818 .0060783 -0.12 0.906 .9874393 1.011266

sp77\_800\_pp\_1lag | .9978732 .0122898 -0.17 0.863 .9740741 1.022254

sp77\_801\_pp\_1lag | 1 (omitted)

sp77\_802\_pp\_1lag | .9964223 .0085051 -0.42 0.675 .9798914 1.013232

sp77\_803\_pp\_1lag | 1.004232 .0109876 0.39 0.699 .9829265 1.026

sp77\_804\_pp\_1lag | 1 (omitted)

sp77\_805\_pp\_1lag | 1.006992 .0116525 0.60 0.547 .984411 1.030092

sp77\_807\_1\_pp\_1lag | 1.004709 .0094093 0.50 0.616 .986435 1.023321

sp77\_807\_2\_pp\_1lag | .9907772 .0145485 -0.63 0.528 .9626691 1.019706

sp77\_807\_3\_pp\_1lag | 1.011253 .0162123 0.70 0.485 .9799713 1.043533

sp77\_807\_pp\_1lag | 1.001617 .0081865 0.20 0.843 .9856995 1.017791

sp77\_808\_pp\_1lag | 1.052004 .0227248 2.35 0.019 1.008394 1.0975

sp77\_809\_pp\_1lag | 1.001247 .0030589 0.41 0.683 .9952695 1.00726

sp77\_810\_pp\_1lag | .994879 .0083589 -0.61 0.541 .97863 1.011398

sp77\_900\_1\_pp\_1lag | 1.025571 .0140768 1.84 0.066 .998349 1.053536

sp77\_900\_2\_pp\_1lag | 1.006294 .0054865 1.15 0.250 .9955978 1.017105

sp77\_900\_pp\_1lag | .9985115 .0069584 -0.21 0.831 .9849661 1.012243

sp77\_901\_1\_pp\_1lag | 1 (omitted)

sp77\_901\_pp\_1lag | .9854164 .0111687 -1.30 0.195 .9637675 1.007552

sp77\_902\_2\_pp\_1lag | 1 (omitted)

sp77\_902\_3\_pp\_1lag | .9969334 .0122321 -0.25 0.802 .9732449 1.021199

sp77\_902\_pp\_1lag | 1.007396 .0063169 1.18 0.240 .9950914 1.019854

sp77\_903\_pp\_1lag | .9961323 .0081529 -0.47 0.636 .9802804 1.012241

sp77\_904\_pp\_1lag | .9992653 .001559 -0.47 0.638 .9962143 1.002326

mine\_time | .9974297 .0024742 -1.04 0.300 .992592 1.002291

onsite\_insp\_hours | 1.000646 .0002731 2.37 0.018 1.000111 1.001181

|

state |

AL | 2.199298 .5746909 3.02 0.003 1.31783 3.670359

AR | 2.37749 .2621175 7.86 0.000 1.915465 2.950961

CO | .8478978 .2438206 -0.57 0.566 .482584 1.489752

IL | 1.329112 .2236352 1.69 0.091 .9557384 1.848349

IN | .8836688 .2384743 -0.46 0.647 .5206874 1.499692

KY | .9339748 .0775916 -0.82 0.411 .7936337 1.099133

MD | 1.254561 .3094252 0.92 0.358 .7736615 2.034381

MT | .5546541 .0765766 -4.27 0.000 .4231592 .7270105

NM | 1.40149 .1895897 2.50 0.013 1.075082 1.826998

OH | .7044685 .1931296 -1.28 0.201 .4116283 1.205641

OK | .7822813 .4289356 -0.45 0.654 .2670775 2.291334

PA | 1.026746 .1596426 0.17 0.865 .757033 1.392551

TN | 1.259827 .2041244 1.43 0.154 .9170532 1.730723

UT | .6489427 .1912063 -1.47 0.142 .3642554 1.15613

VA | .6252737 .070493 -4.17 0.000 .5013097 .7798915

WY | 2.623107 .4543664 5.57 0.000 1.867986 3.683482

|

time |

2007 | 1.628065 .2990484 2.65 0.008 1.135848 2.333583

2007.25 | 1.559788 .2931482 2.37 0.018 1.07917 2.254454

2007.5 | 1.722842 .3169058 2.96 0.003 1.201358 2.470692

2007.75 | 1.672057 .3058027 2.81 0.005 1.168355 2.392916

2008 | 1.196277 .2133095 1.01 0.315 .8434378 1.696721

2008.25 | 1.307468 .2575249 1.36 0.173 .8887392 1.923479

2008.5 | 1.358274 .2500711 1.66 0.096 .9468329 1.948506

2009 | 1.055612 .1946709 0.29 0.769 .73541 1.51523

2009.25 | 1.033251 .1970552 0.17 0.864 .7110007 1.501557

2009.5 | 1.165981 .2233081 0.80 0.423 .8010689 1.697123

2009.75 | .8935859 .1789733 -0.56 0.574 .6034649 1.323185

2010 | .9586666 .1798078 -0.23 0.822 .6637675 1.384584

2010.25 | .9902425 .1886261 -0.05 0.959 .6817115 1.438409

2010.5 | 1.261744 .2473737 1.19 0.236 .859186 1.852914

2010.75 | .9977733 .1912527 -0.01 0.991 .6852894 1.452746

2011 | 1.24501 .2280249 1.20 0.231 .8695093 1.782671

2011.25 | 1.236336 .2304839 1.14 0.255 .8579285 1.781647

2011.5 | 1.428128 .2572736 1.98 0.048 1.003287 2.032867

2011.75 | .9626508 .1772481 -0.21 0.836 .671029 1.381008

2012 | 1.245882 .2277041 1.20 0.229 .8707769 1.782572

2012.25 | 1.218733 .2352233 1.02 0.305 .8348749 1.779082

2012.5 | 1.456967 .2807368 1.95 0.051 .9987002 2.125514

2012.75 | .9233867 .1879235 -0.39 0.695 .6196564 1.375993

2013 | .8864546 .1731631 -0.62 0.537 .6044771 1.29997

2013.25 | .7466036 .1543568 -1.41 0.158 .4978611 1.119623

2013.5 | .9986173 .2061814 -0.01 0.995 .666276 1.496732

2013.75 | .9701268 .2088834 -0.14 0.888 .6361382 1.479468

2014 | .6702152 .1409137 -1.90 0.057 .4438619 1.012

2014.25 | .8538034 .1822335 -0.74 0.459 .5619267 1.297287

2014.5 | .9633475 .1973829 -0.18 0.855 .6447301 1.439421

2014.75 | 1.010396 .2114126 0.05 0.961 .6704844 1.522632

2015 | .9171655 .1957692 -0.41 0.685 .603613 1.393596

2015.25 | .923668 .2115952 -0.35 0.729 .5895512 1.447139

2015.5 | 1.301381 .2803156 1.22 0.221 .8532114 1.984961

2015.75 | .6077019 .1456446 -2.08 0.038 .3799161 .9720609

2016 | 1.03971 .2375488 0.17 0.865 .6644053 1.627014

|

\_cons | 7.90e-06 1.22e-06 -75.86 0.000 5.83e-06 .0000107

lnhours | 1 (offset)

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

**. lfit**

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

number of observations = 14132

number of covariate patterns = 14130

Pearson chi2(13803) = 46066.26

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -8175.5322

Iteration 1: log likelihood = -6073.1754

Iteration 2: log likelihood = -5984.8375

Iteration 3: log likelihood = -5977.8958

Iteration 4: log likelihood = -5977.8385

Iteration 5: log likelihood = -5977.8385

Logistic regression Number of obs = 14,132

LR chi2(2) = 4395.39

Prob > chi2 = 0.0000

Log likelihood = -5977.8385 Pseudo R2 = 0.2688

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

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

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

\_hat | 1.054611 .0265506 39.72 0.000 1.002573 1.10665

\_hatsq | .0332825 .0104153 3.20 0.001 .012869 .0536961

\_cons | -.0229536 .0287268 -0.80 0.424 -.079257 .0333498

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

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 1738 668 | 2406

- | 2011 9715 | 11726

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

Total | 3749 10383 | 14132

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

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

Sensitivity Pr( +| D) 46.36%

Specificity Pr( -|~D) 93.57%

Positive predictive value Pr( D| +) 72.24%

Negative predictive value Pr(~D| -) 82.85%

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

False + rate for true ~D Pr( +|~D) 6.43%

False - rate for true D Pr( -| D) 53.64%

False + rate for classified + Pr(~D| +) 27.76%

False - rate for classified - Pr( D| -) 17.15%

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

Correctly classified 81.04%

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**. summ MR\_indicator spbpp2\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

MR\_indicator | 30,289 .24187 .428223 0 1

spbpp2\_yhat | 26,012 .2217955 .2214072 8.46e-06 .998445