. // Model SP.B.SSV.4

**. eststo: logit MR\_indicator `subpart\_ss\_lag\_all\_vars' `covariates' ib(freq).state ib(freq).time, vce(cl mineid) offset(lnhours) iter(50) or**

note: sp75\_705\_8\_ss\_c\_lag\_all != 0 predicts failure perfectly

sp75\_705\_8\_ss\_c\_lag\_all dropped and 2 obs not used

note: sp77\_1906\_ss\_c\_lag\_all != 0 predicts success perfectly

sp77\_1906\_ss\_c\_lag\_all dropped and 22 obs not used

note: sp77\_413\_ss\_c\_lag\_all != 0 predicts success perfectly

sp77\_413\_ss\_c\_lag\_all dropped and 4 obs not used

note: sp77\_502\_1\_ss\_c\_lag\_all != 0 predicts success perfectly

sp77\_502\_1\_ss\_c\_lag\_all dropped and 30 obs not used

note: sp77\_515\_ss\_c\_lag\_all != 0 predicts failure perfectly

sp77\_515\_ss\_c\_lag\_all dropped and 4 obs not used

note: sp77\_605\_ss\_c\_lag\_all != 0 predicts failure perfectly

sp77\_605\_ss\_c\_lag\_all dropped and 22 obs not used

note: sp77\_700\_1\_ss\_c\_lag\_all != 0 predicts failure perfectly

sp77\_700\_1\_ss\_c\_lag\_all dropped and 6 obs not used

note: sp48\_4\_ss\_c\_lag\_all omitted because of collinearity

note: sp71\_701\_ss\_c\_lag\_all omitted because of collinearity

note: sp75\_1101\_20\_ss\_c\_lag\_all omitted because of collinearity

note: sp75\_1432\_ss\_c\_lag\_all omitted because of collinearity

note: sp77\_1106\_ss\_c\_lag\_all omitted because of collinearity

note: sp77\_411\_ss\_c\_lag\_all omitted because of collinearity

note: sp77\_606\_ss\_c\_lag\_all omitted because of collinearity

note: sp77\_801\_1\_ss\_c\_lag\_all omitted because of collinearity

note: sp77\_900\_2\_ss\_c\_lag\_all omitted because of collinearity

note: sp77\_901\_1\_ss\_c\_lag\_all omitted because of collinearity

Iteration 0: log pseudolikelihood = -6701.3771

Iteration 1: log pseudolikelihood = -6170.9985

Iteration 2: log pseudolikelihood = -6145.5232

Iteration 3: log pseudolikelihood = -6142.3786

Iteration 4: log pseudolikelihood = -6142.2723

Iteration 5: log pseudolikelihood = -6142.2513

Iteration 6: log pseudolikelihood = -6142.2462

Iteration 7: log pseudolikelihood = -6142.2451

Iteration 8: log pseudolikelihood = -6142.2449

Iteration 9: log pseudolikelihood = -6142.2448

Iteration 10: log pseudolikelihood = -6142.2448

Logistic regression Number of obs = 13,707

Wald chi2(326) = .

Log pseudolikelihood = -6142.2448 Prob > chi2 = .

(Std. Err. adjusted for 801 clusters in mineid)

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| Robust

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

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

sp47\_41\_ss\_c\_lag\_all | 1.010161 .7557883 0.01 0.989 .2330952 4.377717

sp47\_44\_ss\_c\_lag\_all | 1.272302 1.061369 0.29 0.773 .2480321 6.526384

sp48\_11\_ss\_c\_lag\_all | 1.278905 .1870752 1.68 0.093 .9601219 1.70353

sp48\_25\_ss\_c\_lag\_all | .8441434 .1050353 -1.36 0.173 .6614587 1.077283

sp48\_26\_ss\_c\_lag\_all | 1.365623 .2233725 1.91 0.057 .9910631 1.881743

sp48\_27\_ss\_c\_lag\_all | 1.033962 .1302549 0.27 0.791 .8077435 1.323537

sp48\_28\_ss\_c\_lag\_all | .908464 .1490245 -0.59 0.558 .6586831 1.252965

sp48\_4\_ss\_c\_lag\_all | 1 (omitted)

sp48\_5\_ss\_c\_lag\_all | .9762467 .1295618 -0.18 0.856 .75265 1.266269

sp48\_6\_ss\_c\_lag\_all | 1.094165 .1224939 0.80 0.421 .8785958 1.362625

sp48\_7\_ss\_c\_lag\_all | 1.08178 .1385462 0.61 0.539 .8416344 1.390447

sp48\_8\_ss\_c\_lag\_all | .7467749 .181515 -1.20 0.230 .4637588 1.202506

sp71\_701\_ss\_c\_lag\_all | 1 (omitted)

sp72\_503\_ss\_c\_lag\_all | .6173822 .1287334 -2.31 0.021 .4102664 .9290568

sp72\_610\_ss\_c\_lag\_all | 1.041859 .6689534 0.06 0.949 .2959866 3.667294

sp72\_620\_ss\_c\_lag\_all | 1.779639 .9989542 1.03 0.304 .5922868 5.347266

sp72\_630\_ss\_c\_lag\_all | .9788808 .013678 -1.53 0.127 .9524361 1.00606

sp75\_100\_ss\_c\_lag\_all | .7137945 .3146661 -0.76 0.444 .3008383 1.693609

sp75\_1001\_1\_ss\_c\_lag\_all | 2.961589 3.987977 0.81 0.420 .2115072 41.46907

sp75\_1001\_ss\_c\_lag\_all | .3492686 .4016997 -0.91 0.360 .0366588 3.327673

sp75\_1003\_1\_ss\_c\_lag\_all | 2.3969 1.083052 1.93 0.053 .9886217 5.811252

sp75\_1100\_2\_ss\_c\_lag\_all | 1.014914 .0225374 0.67 0.505 .971689 1.060062

sp75\_1101\_20\_ss\_c\_lag\_all | 1 (omitted)

sp75\_1102\_ss\_c\_lag\_all | .8489286 .0688058 -2.02 0.043 .7242376 .9950874

sp75\_1103\_4\_ss\_c\_lag\_all | .9793408 .052179 -0.39 0.695 .8822306 1.08714

sp75\_1104\_ss\_c\_lag\_all | 1.106141 .1874873 0.60 0.552 .7934777 1.542007

sp75\_1106\_2\_ss\_c\_lag\_all | 1.067364 .1002444 0.69 0.488 .8879119 1.283085

sp75\_1106\_3\_ss\_c\_lag\_all | 1.009616 .0384354 0.25 0.802 .9370262 1.08783

sp75\_1106\_4\_ss\_c\_lag\_all | 1.195151 .2731169 0.78 0.435 .7636694 1.870424

sp75\_1106\_5\_ss\_c\_lag\_all | .919102 .0930639 -0.83 0.405 .7536594 1.120862

sp75\_1106\_6\_ss\_c\_lag\_all | .9266052 .426715 -0.17 0.869 .3757545 2.284995

sp75\_1106\_ss\_c\_lag\_all | 1.304676 .3274861 1.06 0.289 .7977059 2.133842

sp75\_1107\_14\_ss\_c\_lag\_all | 9.01e-06 .0000119 -8.81 0.000 6.80e-07 .0001194

sp75\_1400\_1\_ss\_c\_lag\_all | .6081869 .2690857 -1.12 0.261 .2555243 1.447578

sp75\_1400\_2\_ss\_c\_lag\_all | 4.89e-07 7.19e-07 -9.88 0.000 2.74e-08 8.73e-06

sp75\_1400\_3\_ss\_c\_lag\_all | .7714632 .1613263 -1.24 0.215 .5120522 1.162295

sp75\_1400\_4\_ss\_c\_lag\_all | .5428549 .4300322 -0.77 0.441 .1149183 2.564356

sp75\_1400\_ss\_c\_lag\_all | .9176647 .0983821 -0.80 0.423 .7437508 1.132246

sp75\_1401\_ss\_c\_lag\_all | 3.828213 2.440008 2.11 0.035 1.097644 13.35153

sp75\_1403\_10\_ss\_c\_lag\_all | 1.014125 .0401329 0.35 0.723 .9384396 1.095916

sp75\_1403\_11\_ss\_c\_lag\_all | 1603.086 3333.433 3.55 0.000 27.22583 94391.42

sp75\_1403\_3\_ss\_c\_lag\_all | 1.42e-06 2.34e-06 -8.19 0.000 5.68e-08 .0000356

sp75\_1403\_4\_ss\_c\_lag\_all | 31.32036 25.41958 4.24 0.000 6.382523 153.6955

sp75\_1403\_5\_ss\_c\_lag\_all | .9869456 .0140718 -0.92 0.357 .9597472 1.014915

sp75\_1403\_6\_ss\_c\_lag\_all | .9748276 .0186285 -1.33 0.182 .9389917 1.012031

sp75\_1403\_7\_ss\_c\_lag\_all | 1.048031 .0801128 0.61 0.539 .9022091 1.217422

sp75\_1403\_8\_ss\_c\_lag\_all | .9641356 .0292576 -1.20 0.229 .9084638 1.023219

sp75\_1403\_9\_ss\_c\_lag\_all | 1.013988 .2715285 0.05 0.959 .5999229 1.713838

sp75\_1404\_1\_ss\_c\_lag\_all | .4299632 .1557874 -2.33 0.020 .2113575 .8746714

sp75\_1404\_ss\_c\_lag\_all | 1.594208 .8713839 0.85 0.394 .5461141 4.653785

sp75\_1405\_1\_ss\_c\_lag\_all | 1.944689 2.288152 0.57 0.572 .1937817 19.51585

sp75\_1405\_ss\_c\_lag\_all | 1.002393 .0333639 0.07 0.943 .9390885 1.069966

sp75\_1431\_ss\_c\_lag\_all | .7823155 .5920899 -0.32 0.746 .1774827 3.448322

sp75\_1432\_ss\_c\_lag\_all | 1 (omitted)

sp75\_1433\_ss\_c\_lag\_all | 1.006043 .3374972 0.02 0.986 .5212712 1.941641

sp75\_1434\_ss\_c\_lag\_all | .9443428 .211846 -0.26 0.799 .6083846 1.465822

sp75\_1435\_ss\_c\_lag\_all | .2574448 .2498041 -1.40 0.162 .0384366 1.72434

sp75\_1437\_ss\_c\_lag\_all | .7760289 .8171411 -0.24 0.810 .098533 6.11187

sp75\_150\_ss\_c\_lag\_all | 11.97617 5.589677 5.32 0.000 4.797707 29.89524

sp75\_151\_ss\_c\_lag\_all | .3013063 .1675776 -2.16 0.031 .1012967 .8962336

sp75\_153\_ss\_c\_lag\_all | .3531345 .5582905 -0.66 0.510 .0159304 7.828047

sp75\_155\_ss\_c\_lag\_all | .0419931 .0357254 -3.73 0.000 .0079254 .2225019

sp75\_156\_ss\_c\_lag\_all | .2301654 .1207645 -2.80 0.005 .0823051 .6436552

sp75\_1600\_2\_ss\_c\_lag\_all | 1.071475 .1815964 0.41 0.684 .7686312 1.49364

sp75\_1712\_10\_ss\_c\_lag\_all | 1.251685 .3378331 0.83 0.406 .7374859 2.124402

sp75\_1712\_6\_ss\_c\_lag\_all | 1562274 1161339 19.19 0.000 363918.4 6706721

sp75\_1720\_ss\_c\_lag\_all | 1.001184 .0554829 0.02 0.983 .8981366 1.116054

sp75\_1721\_ss\_c\_lag\_all | .718364 .1502705 -1.58 0.114 .4767454 1.082437

sp75\_1725\_ss\_c\_lag\_all | 1.000988 .0046143 0.21 0.830 .9919847 1.010073

sp75\_1726\_ss\_c\_lag\_all | 1.348152 .1598388 2.52 0.012 1.06861 1.700821

sp75\_1727\_ss\_c\_lag\_all | 1.204906 .3104946 0.72 0.469 .7271187 1.996646

sp75\_1728\_ss\_c\_lag\_all | 2.012323 .2914598 4.83 0.000 1.514997 2.672905

sp75\_1729\_ss\_c\_lag\_all | .8294946 .1465334 -1.06 0.290 .5867398 1.172686

sp75\_1730\_ss\_c\_lag\_all | .9684985 .370771 -0.08 0.933 .4573333 2.050997

sp75\_1731\_ss\_c\_lag\_all | 1.003221 .0052683 0.61 0.540 .9929486 1.013601

sp75\_1903\_ss\_c\_lag\_all | 2.410681 1.282176 1.65 0.098 .8499799 6.837081

sp75\_1909\_ss\_c\_lag\_all | 1.005158 .0195634 0.26 0.792 .9675369 1.044243

sp75\_1910\_ss\_c\_lag\_all | 1.023478 .0417543 0.57 0.569 .9448269 1.108675

sp75\_1911\_ss\_c\_lag\_all | .8916489 .0676409 -1.51 0.131 .7684602 1.034586

sp75\_1912\_ss\_c\_lag\_all | 1.18543 .4367133 0.46 0.644 .5758281 2.44039

sp75\_1913\_ss\_c\_lag\_all | .9710963 .3527445 -0.08 0.936 .4765065 1.979046

sp75\_1914\_ss\_c\_lag\_all | 1.002769 .0163651 0.17 0.865 .9712014 1.035362

sp75\_1915\_ss\_c\_lag\_all | 1.020184 .3930637 0.05 0.959 .4794258 2.170878

sp75\_202\_ss\_c\_lag\_all | 1.000006 .0024219 0.00 0.998 .9952708 1.004765

sp75\_208\_ss\_c\_lag\_all | .9835175 .0228542 -0.72 0.474 .9397289 1.029347

sp75\_211\_ss\_c\_lag\_all | 1.00112 .0280913 0.04 0.968 .9475491 1.057721

sp75\_212\_ss\_c\_lag\_all | .9575374 .0494211 -0.84 0.401 .865412 1.05947

sp75\_214\_ss\_c\_lag\_all | .9848428 .1713408 -0.09 0.930 .7002881 1.385023

sp75\_312\_ss\_c\_lag\_all | 1.137063 .1905759 0.77 0.443 .818691 1.579243

sp75\_320\_ss\_c\_lag\_all | .7754756 .0612236 -3.22 0.001 .6643025 .9052537

sp75\_324\_ss\_c\_lag\_all | .9496697 .0971113 -0.51 0.614 .7771957 1.160419

sp75\_337\_ss\_c\_lag\_all | 1.087303 .1064842 0.85 0.393 .8974056 1.317384

sp75\_340\_ss\_c\_lag\_all | 1.014999 .028806 0.52 0.600 .9600822 1.073058

sp75\_342\_ss\_c\_lag\_all | 1.007855 .0120842 0.65 0.514 .9844468 1.031821

sp75\_344\_ss\_c\_lag\_all | 1.129729 .2175683 0.63 0.526 .7745437 1.647792

sp75\_352\_ss\_c\_lag\_all | .8474861 .0767476 -1.83 0.068 .7096571 1.012084

sp75\_382\_ss\_c\_lag\_all | 1.988099 .575599 2.37 0.018 1.127187 3.506548

sp75\_503\_ss\_c\_lag\_all | 1.000085 .0046241 0.02 0.985 .9910631 1.00919

sp75\_504\_ss\_c\_lag\_all | .6447752 .168414 -1.68 0.093 .3864347 1.075822

sp75\_505\_ss\_c\_lag\_all | 1.75451 .6173787 1.60 0.110 .8803069 3.496854

sp75\_506\_1\_ss\_c\_lag\_all | 1.505438 .3068228 2.01 0.045 1.009671 2.244637

sp75\_506\_ss\_c\_lag\_all | 1.26814 .3678296 0.82 0.413 .7182451 2.239041

sp75\_507\_ss\_c\_lag\_all | 1.001842 .0970559 0.02 0.985 .8285854 1.211328

sp75\_511\_1\_ss\_c\_lag\_all | 1.098358 .4011944 0.26 0.797 .536819 2.247295

sp75\_511\_ss\_c\_lag\_all | 1.033716 .07593 0.45 0.652 .8951125 1.193782

sp75\_512\_1\_ss\_c\_lag\_all | .3050665 .2379438 -1.52 0.128 .0661424 1.407049

sp75\_512\_2\_ss\_c\_lag\_all | 1.070276 .0951786 0.76 0.445 .899082 1.274067

sp75\_512\_ss\_c\_lag\_all | .9985314 .0105269 -0.14 0.889 .9781108 1.019378

sp75\_513\_1\_ss\_c\_lag\_all | .7033434 .5976303 -0.41 0.679 .1330155 3.719055

sp75\_513\_ss\_c\_lag\_all | 1.127578 .2178297 0.62 0.534 .7721619 1.646588

sp75\_514\_ss\_c\_lag\_all | .9887296 .0371157 -0.30 0.763 .9185958 1.064218

sp75\_515\_ss\_c\_lag\_all | .9312394 .0347961 -1.91 0.057 .8654777 1.001998

sp75\_516\_1\_ss\_c\_lag\_all | .7685149 .2736298 -0.74 0.460 .3824563 1.544268

sp75\_516\_2\_ss\_c\_lag\_all | .1895414 .1620145 -1.95 0.052 .0354913 1.012247

sp75\_516\_ss\_c\_lag\_all | 1.003969 .062225 0.06 0.949 .8891269 1.133645

sp75\_517\_1\_ss\_c\_lag\_all | .9324213 .3651244 -0.18 0.858 .4328052 2.008778

sp75\_517\_ss\_c\_lag\_all | 1.00402 .0035993 1.12 0.263 .9969899 1.011099

sp75\_518\_1\_ss\_c\_lag\_all | .8589409 .064201 -2.03 0.042 .7418922 .9944565

sp75\_518\_ss\_c\_lag\_all | 1.073168 .0386276 1.96 0.050 1.000068 1.151611

sp75\_519\_ss\_c\_lag\_all | 5.784965 6.242246 1.63 0.104 .6979346 47.9498

sp75\_520\_ss\_c\_lag\_all | .9278259 .0534584 -1.30 0.194 .8287489 1.038748

sp75\_523\_1\_ss\_c\_lag\_all | 1.049259 .0460957 1.09 0.274 .9626929 1.143608

sp75\_523\_2\_ss\_c\_lag\_all | .9873049 .027217 -0.46 0.643 .935376 1.042117

sp75\_523\_ss\_c\_lag\_all | 1.020561 .0321889 0.65 0.519 .9593822 1.085641

sp75\_600\_1\_ss\_c\_lag\_all | .7300249 .2044048 -1.12 0.261 .4217002 1.26378

sp75\_600\_ss\_c\_lag\_all | 1.144574 .433732 0.36 0.722 .5446081 2.40549

sp75\_601\_1\_ss\_c\_lag\_all | 1.017953 .0297297 0.61 0.542 .9613202 1.077922

sp75\_601\_2\_ss\_c\_lag\_all | 1.029076 .1880952 0.16 0.875 .7192241 1.472416

sp75\_601\_3\_ss\_c\_lag\_all | 1.600796 .5607312 1.34 0.179 .8057026 3.180513

sp75\_601\_ss\_c\_lag\_all | .9726592 .0429162 -0.63 0.530 .8920794 1.060518

sp75\_602\_ss\_c\_lag\_all | 1.156117 .1051104 1.60 0.111 .9674165 1.381626

sp75\_603\_ss\_c\_lag\_all | .9428644 .0701646 -0.79 0.429 .8149029 1.090919

sp75\_604\_ss\_c\_lag\_all | 1.011014 .0076766 1.44 0.149 .9960794 1.026172

sp75\_605\_ss\_c\_lag\_all | 1.077579 .0463044 1.74 0.082 .9905404 1.172265

sp75\_606\_ss\_c\_lag\_all | .9830041 .0183844 -0.92 0.359 .9476238 1.019705

sp75\_607\_ss\_c\_lag\_all | .9304718 .063303 -1.06 0.289 .8143165 1.063196

sp75\_700\_1\_ss\_c\_lag\_all | 1.346888 .3726598 1.08 0.282 .7831032 2.316561

sp75\_700\_ss\_c\_lag\_all | 1.053042 .1036343 0.53 0.599 .8683111 1.277074

sp75\_701\_1\_ss\_c\_lag\_all | .9976356 .1120322 -0.02 0.983 .8005417 1.243254

sp75\_701\_2\_ss\_c\_lag\_all | .9162844 .2892602 -0.28 0.782 .4935327 1.701158

sp75\_701\_3\_ss\_c\_lag\_all | .841773 .1248567 -1.16 0.246 .6294189 1.125771

sp75\_701\_4\_ss\_c\_lag\_all | 1.083123 .3538487 0.24 0.807 .5709478 2.054752

sp75\_701\_ss\_c\_lag\_all | 1.027971 .0284036 1.00 0.318 .9737812 1.085176

sp75\_703\_2\_ss\_c\_lag\_all | 1.388191 .4027984 1.13 0.258 .7860748 2.451514

sp75\_703\_3\_ss\_c\_lag\_all | 1.347821 .2507561 1.60 0.109 .9359877 1.940861

sp75\_703\_ss\_c\_lag\_all | 1.017922 .0698409 0.26 0.796 .8898414 1.164439

sp75\_704\_ss\_c\_lag\_all | .8414642 .3185046 -0.46 0.648 .400724 1.766957

sp75\_705\_1\_ss\_c\_lag\_all | 1.349329 .4438775 0.91 0.362 .7081173 2.571168

sp75\_705\_8\_ss\_c\_lag\_all | 1 (omitted)

sp75\_705\_ss\_c\_lag\_all | .840174 .1675614 -0.87 0.383 .5683404 1.242024

sp75\_706\_ss\_c\_lag\_all | .6509234 .1143985 -2.44 0.015 .4612463 .9186009

sp75\_800\_2\_ss\_c\_lag\_all | .5502697 .0655437 -5.02 0.000 .4356999 .6949664

sp75\_800\_3\_ss\_c\_lag\_all | 1.434871 .3712765 1.40 0.163 .8640963 2.382667

sp75\_800\_4\_ss\_c\_lag\_all | 1.138807 .4871921 0.30 0.761 .4923774 2.633916

sp75\_800\_ss\_c\_lag\_all | .8967807 .1114675 -0.88 0.381 .7028847 1.144164

sp75\_801\_ss\_c\_lag\_all | 1.678851 1.069495 0.81 0.416 .4816847 5.851426

sp75\_802\_ss\_c\_lag\_all | .7532331 .2190946 -0.97 0.330 .4259302 1.332049

sp75\_803\_2\_ss\_c\_lag\_all | .1462091 .0213797 -13.15 0.000 .1097756 .1947345

sp75\_803\_ss\_c\_lag\_all | .8998422 .1096327 -0.87 0.386 .7086957 1.142544

sp75\_812\_ss\_c\_lag\_all | 1.07179 .3413006 0.22 0.828 .5741871 2.000627

sp75\_814\_ss\_c\_lag\_all | .4251259 .1475696 -2.46 0.014 .2153023 .8394338

sp75\_815\_ss\_c\_lag\_all | 2.136736 1.185555 1.37 0.171 .7202224 6.339207

sp75\_816\_ss\_c\_lag\_all | .7754237 .0906781 -2.18 0.030 .6165942 .9751662

sp75\_818\_ss\_c\_lag\_all | 5.969711 4.179313 2.55 0.011 1.513696 23.54333

sp75\_819\_ss\_c\_lag\_all | .0659152 .0592589 -3.02 0.002 .0113172 .3839108

sp75\_820\_ss\_c\_lag\_all | .9536404 .2033419 -0.22 0.824 .6278927 1.448384

sp75\_821\_ss\_c\_lag\_all | .5769825 .1633099 -1.94 0.052 .3313122 1.004819

sp75\_825\_ss\_c\_lag\_all | .4293325 .1495361 -2.43 0.015 .2169307 .8497018

sp75\_827\_ss\_c\_lag\_all | 1.267497 1.693449 0.18 0.859 .0924043 17.38607

sp75\_831\_ss\_c\_lag\_all | 3.366103 1.304525 3.13 0.002 1.574876 7.194629

sp75\_900\_2\_ss\_c\_lag\_all | .5408127 .2875743 -1.16 0.248 .1907326 1.533447

sp75\_900\_3\_ss\_c\_lag\_all | 1.312205 .2675628 1.33 0.183 .8799115 1.956881

sp75\_900\_4\_ss\_c\_lag\_all | 1.567583 .1822223 3.87 0.000 1.248197 1.968691

sp75\_900\_ss\_c\_lag\_all | .9540816 .0244072 -1.84 0.066 .9074238 1.003138

sp75\_901\_ss\_c\_lag\_all | .8309574 .1545156 -1.00 0.319 .5771633 1.196351

sp75\_902\_1\_ss\_c\_lag\_all | 1.406544 .5008121 0.96 0.338 .699964 2.826383

sp75\_902\_2\_ss\_c\_lag\_all | 1.334654 .0814024 4.73 0.000 1.184275 1.504127

sp75\_902\_4\_ss\_c\_lag\_all | 1.300968 .1624766 2.11 0.035 1.0185 1.661775

sp75\_902\_ss\_c\_lag\_all | .964596 .039489 -0.88 0.379 .8902228 1.045183

sp75\_903\_ss\_c\_lag\_all | 1.103619 .0421907 2.58 0.010 1.023949 1.189488

sp75\_904\_ss\_c\_lag\_all | 1.031347 .011245 2.83 0.005 1.009541 1.053624

sp75\_905\_ss\_c\_lag\_all | .1638344 .110594 -2.68 0.007 .0436329 .6151714

sp75\_907\_ss\_c\_lag\_all | .9119865 .1742709 -0.48 0.630 .6270943 1.326307

sp77\_103\_ss\_c\_lag\_all | .914304 .1165807 -0.70 0.482 .7121246 1.173884

sp77\_1103\_ss\_c\_lag\_all | .9933823 .0895139 -0.07 0.941 .8325579 1.185273

sp77\_1104\_ss\_c\_lag\_all | 1.006527 .013992 0.47 0.640 .9794733 1.034328

sp77\_1106\_ss\_c\_lag\_all | 1 (omitted)

sp77\_1111\_ss\_c\_lag\_all | 1.144522 .8819577 0.18 0.861 .2527532 5.182649

sp77\_1112\_ss\_c\_lag\_all | 1.068498 .1728048 0.41 0.682 .7782368 1.46702

sp77\_1403\_ss\_c\_lag\_all | 1.271026 .5100204 0.60 0.550 .5788895 2.790701

sp77\_1433\_ss\_c\_lag\_all | .4276151 .4614959 -0.79 0.431 .0515714 3.545659

sp77\_1434\_ss\_c\_lag\_all | 1.380545 .4798947 0.93 0.354 .6984933 2.728593

sp77\_1437\_ss\_c\_lag\_all | .6404481 .4348445 -0.66 0.512 .1692561 2.423391

sp77\_1438\_ss\_c\_lag\_all | 3.563053 3.768777 1.20 0.230 .4482021 28.32505

sp77\_1605\_ss\_c\_lag\_all | 1.023151 .0240057 0.98 0.329 .9771662 1.0713

sp77\_1606\_ss\_c\_lag\_all | 1.015164 .037718 0.41 0.685 .9438653 1.091848

sp77\_1710\_ss\_c\_lag\_all | .9441477 .0392972 -1.38 0.167 .8701845 1.024398

sp77\_1802\_ss\_c\_lag\_all | .7949765 .5827498 -0.31 0.754 .1889685 3.344408

sp77\_1906\_ss\_c\_lag\_all | 1 (omitted)

sp77\_1915\_ss\_c\_lag\_all | 1.692882 .5743418 1.55 0.121 .8706439 3.291643

sp77\_1916\_ss\_c\_lag\_all | .9603236 .2956757 -0.13 0.895 .5252181 1.755883

sp77\_200\_ss\_c\_lag\_all | .9844179 .0251816 -0.61 0.539 .9362797 1.035031

sp77\_202\_ss\_c\_lag\_all | 1.014749 .0463239 0.32 0.748 .9278989 1.109728

sp77\_203\_ss\_c\_lag\_all | .6581613 .2142807 -1.28 0.199 .3476984 1.24584

sp77\_204\_ss\_c\_lag\_all | 1.055266 .060498 0.94 0.348 .9431113 1.180758

sp77\_205\_ss\_c\_lag\_all | .9966635 .0214529 -0.16 0.877 .9554911 1.03961

sp77\_206\_ss\_c\_lag\_all | 1.081461 .1028397 0.82 0.410 .8975681 1.303031

sp77\_207\_ss\_c\_lag\_all | 1.198778 .1031868 2.11 0.035 1.012676 1.419082

sp77\_208\_ss\_c\_lag\_all | 1.070016 .0451657 1.60 0.109 .9850558 1.162304

sp77\_210\_ss\_c\_lag\_all | .9754219 .1437774 -0.17 0.866 .7306766 1.302146

sp77\_216\_ss\_c\_lag\_all | .745502 .6213403 -0.35 0.725 .1455503 3.818428

sp77\_315\_ss\_c\_lag\_all | .1654516 .1682117 -1.77 0.077 .0225564 1.213591

sp77\_400\_ss\_c\_lag\_all | .9972359 .0244853 -0.11 0.910 .950382 1.0464

sp77\_401\_ss\_c\_lag\_all | 1.027719 .1106919 0.25 0.800 .8321366 1.269271

sp77\_402\_ss\_c\_lag\_all | .9242667 .0793091 -0.92 0.359 .7811919 1.093546

sp77\_403\_1\_ss\_c\_lag\_all | 1.781607 .5867533 1.75 0.080 .9342814 3.397395

sp77\_403\_ss\_c\_lag\_all | 1.485908 .9758517 0.60 0.546 .4101815 5.382797

sp77\_404\_ss\_c\_lag\_all | .9947947 .0114606 -0.45 0.651 .9725841 1.017513

sp77\_405\_ss\_c\_lag\_all | 1.022523 .112694 0.20 0.840 .8238739 1.26907

sp77\_408\_ss\_c\_lag\_all | 1.107985 .3453503 0.33 0.742 .60148 2.041018

sp77\_409\_ss\_c\_lag\_all | .2919889 .357728 -1.00 0.315 .026456 3.222623

sp77\_410\_ss\_c\_lag\_all | .9893631 .025256 -0.42 0.675 .9410803 1.040123

sp77\_411\_ss\_c\_lag\_all | 1 (omitted)

sp77\_412\_ss\_c\_lag\_all | .7293824 .1511667 -1.52 0.128 .4858936 1.094887

sp77\_413\_ss\_c\_lag\_all | 1 (omitted)

sp77\_500\_ss\_c\_lag\_all | .9876959 .3005542 -0.04 0.968 .5440065 1.793257

sp77\_501\_ss\_c\_lag\_all | 1.031393 .1877776 0.17 0.865 .7218592 1.473655

sp77\_502\_1\_ss\_c\_lag\_all | 1 (omitted)

sp77\_502\_2\_ss\_c\_lag\_all | 1.241998 .2338669 1.15 0.250 .8586981 1.796392

sp77\_502\_ss\_c\_lag\_all | 1.067968 .0268377 2.62 0.009 1.016641 1.121885

sp77\_503\_1\_ss\_c\_lag\_all | 1.345548 .7480138 0.53 0.593 .4525858 4.000342

sp77\_503\_ss\_c\_lag\_all | .7668131 .2511984 -0.81 0.418 .4035027 1.457245

sp77\_504\_ss\_c\_lag\_all | .9127469 .0786839 -1.06 0.290 .7708539 1.080759

sp77\_505\_ss\_c\_lag\_all | .8695687 .0713641 -1.70 0.089 .7403673 1.021317

sp77\_506\_1\_ss\_c\_lag\_all | 1.163208 .1982205 0.89 0.375 .8329242 1.624461

sp77\_506\_ss\_c\_lag\_all | .8208838 .1046734 -1.55 0.122 .6393555 1.053952

sp77\_507\_ss\_c\_lag\_all | 1.408872 .343676 1.41 0.160 .8734382 2.272538

sp77\_508\_1\_ss\_c\_lag\_all | 1.768403 1.870507 0.54 0.590 .2224504 14.05818

sp77\_508\_ss\_c\_lag\_all | .7904523 .2482459 -0.75 0.454 .4271212 1.462851

sp77\_509\_ss\_c\_lag\_all | .7993929 .0614209 -2.91 0.004 .6876362 .9293127

sp77\_510\_ss\_c\_lag\_all | .777214 .2746092 -0.71 0.476 .3888568 1.553429

sp77\_511\_ss\_c\_lag\_all | 4.36857 5.008369 1.29 0.198 .4618224 41.32412

sp77\_512\_ss\_c\_lag\_all | .9644454 .0435026 -0.80 0.422 .8828422 1.053591

sp77\_513\_ss\_c\_lag\_all | 1.20024 .1190558 1.84 0.066 .9881762 1.457812

sp77\_514\_ss\_c\_lag\_all | .0996305 .0902281 -2.55 0.011 .0168858 .5878463

sp77\_515\_ss\_c\_lag\_all | 1 (omitted)

sp77\_516\_ss\_c\_lag\_all | .9406276 .0493345 -1.17 0.243 .8487377 1.042466

sp77\_600\_ss\_c\_lag\_all | 1.316618 .3561637 1.02 0.309 .7748147 2.237287

sp77\_601\_ss\_c\_lag\_all | 1.358329 .5096018 0.82 0.414 .6511203 2.833666

sp77\_602\_ss\_c\_lag\_all | 1.415629 .42259 1.16 0.244 .7885895 2.541254

sp77\_603\_ss\_c\_lag\_all | 1.525915 .7307974 0.88 0.378 .5968558 3.901137

sp77\_604\_ss\_c\_lag\_all | 1.000155 .2724968 0.00 1.000 .5863455 1.706008

sp77\_605\_ss\_c\_lag\_all | 1 (omitted)

sp77\_606\_ss\_c\_lag\_all | 1 (omitted)

sp77\_700\_1\_ss\_c\_lag\_all | 1 (omitted)

sp77\_700\_ss\_c\_lag\_all | .6014735 .3914635 -0.78 0.435 .1679654 2.153839

sp77\_701\_1\_ss\_c\_lag\_all | 1.353607 .4417248 0.93 0.354 .7140332 2.566058

sp77\_701\_2\_ss\_c\_lag\_all | .4787418 .1609471 -2.19 0.028 .2477067 .9252624

sp77\_701\_ss\_c\_lag\_all | 1.041306 .0619841 0.68 0.497 .9266387 1.170163

sp75\_804\_ss\_c\_lag\_all | .9523902 .0678182 -0.69 0.493 .8283278 1.095034

sp75\_805\_ss\_c\_lag\_all | .9081761 .2737976 -0.32 0.749 .5029783 1.6398

sp75\_806\_ss\_c\_lag\_all | .8154914 .6068273 -0.27 0.784 .189679 3.506061

sp75\_807\_ss\_c\_lag\_all | 1.069135 .035092 2.04 0.042 1.002522 1.140175

sp75\_808\_ss\_c\_lag\_all | 1.018573 .2021729 0.09 0.926 .6903039 1.502949

sp75\_809\_ss\_c\_lag\_all | .9575952 .072366 -0.57 0.566 .8257645 1.110472

sp75\_810\_ss\_c\_lag\_all | 1.07077 .1204327 0.61 0.543 .858933 1.334853

sp75\_811\_ss\_c\_lag\_all | 1.095063 .2348538 0.42 0.672 .7192592 1.66722

sp77\_704\_1\_ss\_c\_lag\_all | 1.095573 .2232977 0.45 0.654 .7347689 1.633547

sp77\_704\_8\_ss\_c\_lag\_all | 4.03463 3.513198 1.60 0.109 .732168 22.23293

sp77\_704\_9\_ss\_c\_lag\_all | 1.392268 .3645483 1.26 0.206 .8333864 2.325946

sp77\_704\_ss\_c\_lag\_all | .6722697 .3162138 -0.84 0.399 .2674029 1.690133

sp77\_705\_ss\_c\_lag\_all | .9357341 .2767339 -0.22 0.822 .5241049 1.670655

sp77\_800\_1\_ss\_c\_lag\_all | 2.140506 1.203606 1.35 0.176 .7110266 6.443874

sp77\_800\_2\_ss\_c\_lag\_all | .7726028 .2684519 -0.74 0.458 .3910157 1.526576

sp77\_800\_ss\_c\_lag\_all | .9835879 .6207584 -0.03 0.979 .2854999 3.388601

sp77\_801\_1\_ss\_c\_lag\_all | 1 (omitted)

sp77\_802\_ss\_c\_lag\_all | 1.569542 1.104399 0.64 0.522 .395212 6.233269

sp77\_803\_ss\_c\_lag\_all | 1.140051 .4317278 0.35 0.729 .5427269 2.394788

sp77\_804\_ss\_c\_lag\_all | .8517396 .2143782 -0.64 0.524 .5200727 1.394921

sp77\_805\_ss\_c\_lag\_all | .8594378 1.567093 -0.08 0.934 .0241068 30.64008

sp77\_807\_1\_ss\_c\_lag\_all | 1.035069 .3944723 0.09 0.928 .4904221 2.184582

sp77\_807\_2\_ss\_c\_lag\_all | 1.198864 .2720116 0.80 0.424 .7684926 1.870251

sp77\_807\_3\_ss\_c\_lag\_all | 1.540248 .4707711 1.41 0.158 .8461046 2.803866

sp77\_807\_ss\_c\_lag\_all | .6425316 .2224757 -1.28 0.201 .3259621 1.266549

sp77\_808\_ss\_c\_lag\_all | .8785603 .3437312 -0.33 0.741 .408079 1.891467

sp77\_809\_ss\_c\_lag\_all | .7556188 .1195697 -1.77 0.077 .5541254 1.03038

sp77\_810\_ss\_c\_lag\_all | 1.339956 .7958551 0.49 0.622 .4183375 4.291946

sp77\_900\_1\_ss\_c\_lag\_all | .5729732 .2785607 -1.15 0.252 .2209572 1.4858

sp77\_900\_2\_ss\_c\_lag\_all | 1 (omitted)

sp77\_900\_ss\_c\_lag\_all | 1.058529 .2923479 0.21 0.837 .6160493 1.818823

sp77\_901\_1\_ss\_c\_lag\_all | 1 (omitted)

sp77\_901\_ss\_c\_lag\_all | 1.162193 .3248964 0.54 0.591 .671925 2.010183

sp77\_902\_ss\_c\_lag\_all | 1.116816 .3375192 0.37 0.715 .6176397 2.019426

sp77\_903\_ss\_c\_lag\_all | 1.614785 .3019323 2.56 0.010 1.119327 2.329551

sp77\_904\_ss\_c\_lag\_all | .9603405 .0479343 -0.81 0.418 .8708403 1.059039

mine\_time | .9949691 .0048603 -1.03 0.302 .9854885 1.004541

onsite\_insp\_hours | 1.000973 .0002746 3.55 0.000 1.000435 1.001512

|

state |

AL | 1.11426 .4506002 0.27 0.789 .5043889 2.461543

CO | .7231038 .2268102 -1.03 0.301 .3910308 1.337181

IL | 1.773092 .3323654 3.06 0.002 1.227931 2.560287

IN | .8406854 .3412825 -0.43 0.669 .3793865 1.862881

MD | 1.222071 .5805506 0.42 0.673 .4816475 3.100729

NM | 4.163461 4.211425 1.41 0.159 .5733859 30.23166

OH | .7243343 .2367622 -0.99 0.324 .3816875 1.374581

OK | 1.915472 .9661408 1.29 0.198 .7127547 5.14768

PA | 1.256911 .239216 1.20 0.230 .8655723 1.82518

TN | 1.297932 .3969363 0.85 0.394 .7127479 2.363569

UT | .8202307 .2700868 -0.60 0.547 .4301808 1.563943

VA | .8075693 .1006281 -1.72 0.086 .6325792 1.030967

WV | 1.143766 .1136003 1.35 0.176 .9414451 1.389568

WY | 2.596407 1.185121 2.09 0.037 1.061316 6.351856

|

time |

2000.25 | .8938018 .1772778 -0.57 0.571 .6059165 1.318468

2000.5 | 1.289871 .259578 1.26 0.206 .8694561 1.913573

2000.75 | .654545 .1383659 -2.00 0.045 .4325157 .9905517

2001 | .8674687 .1756923 -0.70 0.483 .583252 1.290183

2001.25 | .8513303 .1811631 -0.76 0.449 .5609994 1.291914

2001.5 | .8951341 .1957675 -0.51 0.612 .5830808 1.374192

2001.75 | .8901942 .1926455 -0.54 0.591 .5824754 1.360479

2002 | .7599281 .1677912 -1.24 0.214 .4929788 1.171431

2002.25 | .5636177 .1322398 -2.44 0.015 .3558524 .8926872

2002.5 | .815907 .1782626 -0.93 0.352 .5317002 1.252029

2002.75 | .8062615 .1817602 -0.96 0.339 .5183041 1.254201

2003 | .7228964 .1741718 -1.35 0.178 .4508073 1.159208

2003.25 | .6460333 .1643273 -1.72 0.086 .3924102 1.063578

2003.5 | .8319233 .1974181 -0.78 0.438 .5225049 1.324574

2003.75 | .6041633 .1465889 -2.08 0.038 .3755141 .9720362

2004 | .6217634 .1447361 -2.04 0.041 .393985 .9812296

2004.25 | .6886873 .1504068 -1.71 0.088 .4488722 1.056626

2004.5 | .5662813 .136321 -2.36 0.018 .3532826 .9076996

2004.75 | .5077712 .1224451 -2.81 0.005 .3165246 .8145705

2005 | .498731 .1211258 -2.86 0.004 .3098394 .802779

2005.25 | .5475556 .1374083 -2.40 0.016 .3348269 .8954392

2005.5 | .6612776 .1546506 -1.77 0.077 .418135 1.045806

2005.75 | .4089157 .0999936 -3.66 0.000 .2532132 .6603606

2006 | .7048591 .1682602 -1.47 0.143 .4414769 1.125373

2006.25 | .5312742 .1294652 -2.60 0.009 .329527 .8565374

2006.5 | .6775228 .1589968 -1.66 0.097 .4277296 1.073195

2006.75 | .4912032 .1196409 -2.92 0.004 .3047449 .7917459

2007 | .593843 .135722 -2.28 0.023 .3794291 .9294214

2007.25 | .4483225 .1144824 -3.14 0.002 .2717879 .7395217

2007.5 | .6723933 .1633479 -1.63 0.102 .4176733 1.082455

2007.75 | .6698421 .159145 -1.69 0.092 .4204739 1.067102

2008 | .4651545 .1156575 -3.08 0.002 .2857273 .7572561

2008.25 | .4631394 .1141992 -3.12 0.002 .2856443 .7509273

2008.5 | .4373175 .1124546 -3.22 0.001 .2641882 .7239029

2008.75 | .5214244 .128293 -2.65 0.008 .3219281 .8445469

2009 | .3829125 .1020375 -3.60 0.000 .2271296 .6455433

2009.25 | .3909726 .0980304 -3.75 0.000 .2391776 .6391049

2009.5 | .4198018 .1026953 -3.55 0.000 .2599061 .6780662

2009.75 | .3126031 .081549 -4.46 0.000 .1874734 .5212511

2010 | .4048964 .1039195 -3.52 0.000 .2448371 .6695926

2010.25 | .4762608 .1204944 -2.93 0.003 .2900615 .7819871

2010.5 | .5253411 .138526 -2.44 0.015 .3133213 .8808314

2010.75 | .3800419 .0953062 -3.86 0.000 .232471 .6212899

2011 | .4515199 .1188994 -3.02 0.003 .2694813 .7565281

2011.25 | .4567021 .1160786 -3.08 0.002 .2775146 .7515888

2011.5 | .571089 .1457003 -2.20 0.028 .3463692 .9416042

2011.75 | .3311973 .0941227 -3.89 0.000 .1897512 .5780815

2012 | .3921963 .0984758 -3.73 0.000 .2397601 .6415494

2012.25 | .3811 .0994663 -3.70 0.000 .2284953 .6356245

2012.5 | .6692246 .1748419 -1.54 0.124 .401039 1.116753

2012.75 | .4024264 .1110451 -3.30 0.001 .2343186 .6911401

2013 | .2986939 .0791641 -4.56 0.000 .1776761 .5021388

2013.25 | .260031 .0721366 -4.86 0.000 .1509693 .4478799

2013.5 | .3591658 .094445 -3.89 0.000 .2145191 .6013456

2013.75 | .4231313 .1205392 -3.02 0.003 .2420973 .739538

2014 | .2795575 .0774605 -4.60 0.000 .162412 .4811984

2014.25 | .3131486 .0916278 -3.97 0.000 .1764767 .5556656

2014.5 | .4148282 .1139947 -3.20 0.001 .2420796 .7108505

2014.75 | .4942373 .1401819 -2.48 0.013 .2834699 .8617159

2015 | .4412282 .1326121 -2.72 0.006 .244812 .795232

2015.25 | .3362323 .1037298 -3.53 0.000 .1836701 .6155175

2015.5 | .490737 .1455636 -2.40 0.016 .2743869 .8776763

2015.75 | .2866245 .0947161 -3.78 0.000 .1499791 .5477671

2016 | .414453 .1295094 -2.82 0.005 .2246413 .7646472

|

\_cons | .000019 2.99e-06 -68.97 0.000 .0000139 .0000259

lnhours | 1 (offset)

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

Note: 0 failures and 1 success completely determined.

(est1 stored)

**. lfit**

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

number of observations = 13707

number of covariate patterns = 13707

Pearson chi2(13348) = 73944.56

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -8756.2377

Iteration 1: log likelihood = -6238.8547

Iteration 2: log likelihood = -6117.0115

Iteration 3: log likelihood = -6116.344

Iteration 4: log likelihood = -6116.3438

Logistic regression Number of obs = 13,707

LR chi2(2) = 5279.79

Prob > chi2 = 0.0000

Log likelihood = -6116.3438 Pseudo R2 = 0.3015

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

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

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

\_hat | 1.057155 .0219743 48.11 0.000 1.014086 1.100224

\_hatsq | .0660962 .0086204 7.67 0.000 .0492004 .0829919

\_cons | -.0916013 .0269949 -3.39 0.001 -.1445104 -.0386922

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

Note: 0 failures and 13 successes completely determined.

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 2750 905 | 3655

- | 1865 8187 | 10052

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

Total | 4615 9092 | 13707

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

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

Sensitivity Pr( +| D) 59.59%

Specificity Pr( -|~D) 90.05%

Positive predictive value Pr( D| +) 75.24%

Negative predictive value Pr(~D| -) 81.45%

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False + rate for true ~D Pr( +|~D) 9.95%

False - rate for true D Pr( -| D) 40.41%

False + rate for classified + Pr(~D| +) 24.76%

False - rate for classified - Pr( D| -) 18.55%

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

Correctly classified 79.79%

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

**. summ MR\_indicator spbssv4\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

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

spbssv4\_yhat | 13,707 .3366893 .2822003 .0000184 1