. // Model SP.B.SSV.1

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

note: sp47\_44\_ss != 0 predicts failure perfectly

sp47\_44\_ss dropped and 1 obs not used

note: sp71\_701\_ss != 0 predicts failure perfectly

sp71\_701\_ss dropped and 1 obs not used

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

sp72\_610\_ss dropped and 1 obs not used

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

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

note: sp75\_1101\_20\_ss != 0 predicts failure perfectly

sp75\_1101\_20\_ss dropped and 1 obs not used

note: sp75\_1107\_14\_ss != 0 predicts success perfectly

sp75\_1107\_14\_ss dropped and 1 obs not used

note: sp75\_1400\_2\_ss != 0 predicts success perfectly

sp75\_1400\_2\_ss dropped and 1 obs not used

note: sp75\_1400\_4\_ss != 0 predicts success perfectly

sp75\_1400\_4\_ss dropped and 1 obs not used

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

sp75\_1403\_11\_ss dropped and 1 obs not used

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

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

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

sp75\_1403\_4\_ss dropped and 3 obs not used

note: sp75\_1404\_ss != 0 predicts success perfectly

sp75\_1404\_ss dropped and 3 obs not used

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

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

note: sp75\_1431\_ss != 0 predicts failure perfectly

sp75\_1431\_ss dropped and 1 obs not used

note: sp75\_1432\_ss != 0 predicts failure perfectly

sp75\_1432\_ss dropped and 2 obs not used

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

sp75\_1437\_ss dropped and 5 obs not used

note: sp75\_151\_ss != 0 predicts success perfectly

sp75\_151\_ss dropped and 2 obs not used

note: sp75\_153\_ss != 0 predicts success perfectly

sp75\_153\_ss dropped and 1 obs not used

note: sp75\_155\_ss != 0 predicts success perfectly

sp75\_155\_ss dropped and 1 obs not used

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

sp75\_156\_ss dropped and 1 obs not used

note: sp75\_1721\_ss != 0 predicts failure perfectly

sp75\_1721\_ss dropped and 3 obs not used

note: sp75\_1727\_ss != 0 predicts failure perfectly

sp75\_1727\_ss dropped and 1 obs not used

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

sp75\_519\_ss dropped and 2 obs not used

note: sp75\_600\_ss != 0 predicts success perfectly

sp75\_600\_ss dropped and 1 obs not used

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

sp75\_705\_8\_ss dropped and 2 obs not used

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

sp75\_800\_2\_ss dropped and 1 obs not used

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

sp75\_803\_2\_ss dropped and 2 obs not used

note: sp75\_806\_ss != 0 predicts failure perfectly

sp75\_806\_ss dropped and 3 obs not used

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

sp75\_814\_ss dropped and 2 obs not used

note: sp75\_818\_ss != 0 predicts success perfectly

sp75\_818\_ss dropped and 3 obs not used

note: sp75\_819\_ss != 0 predicts success perfectly

sp75\_819\_ss dropped and 1 obs not used

note: sp75\_831\_ss != 0 predicts success perfectly

sp75\_831\_ss dropped and 1 obs not used

note: sp77\_103\_ss != 0 predicts failure perfectly

sp77\_103\_ss dropped and 1 obs not used

note: sp77\_1106\_ss != 0 predicts failure perfectly

sp77\_1106\_ss dropped and 1 obs not used

note: sp77\_1433\_ss != 0 predicts success perfectly

sp77\_1433\_ss dropped and 1 obs not used

note: sp77\_1915\_ss != 0 predicts failure perfectly

sp77\_1915\_ss dropped and 4 obs not used

note: sp77\_315\_ss != 0 predicts success perfectly

sp77\_315\_ss dropped and 1 obs not used

note: sp77\_409\_ss != 0 predicts failure perfectly

sp77\_409\_ss dropped and 2 obs not used

note: sp77\_411\_ss != 0 predicts success perfectly

sp77\_411\_ss dropped and 1 obs not used

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

sp77\_413\_ss dropped and 1 obs not used

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

sp77\_502\_1\_ss dropped and 1 obs not used

note: sp77\_514\_ss != 0 predicts failure perfectly

sp77\_514\_ss dropped and 1 obs not used

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

sp77\_515\_ss dropped and 3 obs not used

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

sp77\_605\_ss dropped and 5 obs not used

note: sp77\_606\_ss != 0 predicts failure perfectly

sp77\_606\_ss dropped and 1 obs not used

note: sp77\_701\_3\_ss != 0 predicts success perfectly

sp77\_701\_3\_ss dropped and 1 obs not used

note: sp77\_704\_8\_ss != 0 predicts success perfectly

sp77\_704\_8\_ss dropped and 1 obs not used

note: sp77\_801\_1\_ss != 0 predicts failure perfectly

sp77\_801\_1\_ss dropped and 1 obs not used

note: sp77\_803\_ss != 0 predicts failure perfectly

sp77\_803\_ss dropped and 5 obs not used

note: sp77\_900\_2\_ss != 0 predicts failure perfectly

sp77\_900\_2\_ss dropped and 1 obs not used

note: sp77\_901\_1\_ss != 0 predicts failure perfectly

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

note: sp77\_902\_3\_ss != 0 predicts failure perfectly

sp77\_902\_3\_ss dropped and 4 obs not used

Iteration 0: log pseudolikelihood = -12849.198

Iteration 1: log pseudolikelihood = -12033.121

Iteration 2: log pseudolikelihood = -12024.765

Iteration 3: log pseudolikelihood = -12020.628

Iteration 4: log pseudolikelihood = -12018.532

Iteration 5: log pseudolikelihood = -12018.333

Iteration 6: log pseudolikelihood = -12018.332

Logistic regression Number of obs = 28,241

Wald chi2(325) = .

Log pseudolikelihood = -12018.332 Prob > chi2 = .

(Std. Err. adjusted for 1,544 clusters in mineid)

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| Robust

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

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

sp47\_41\_ss | .3863249 .3752362 -0.98 0.327 .0575683 2.59252

sp47\_44\_ss | 1 (omitted)

sp48\_11\_ss | 1.228083 .2654553 0.95 0.342 .8039644 1.875938

sp48\_25\_ss | .4633503 .0972241 -3.67 0.000 .3071165 .6990621

sp48\_26\_ss | 1.552026 .2659475 2.57 0.010 1.10928 2.171484

sp48\_27\_ss | .8543619 .2398741 -0.56 0.575 .4927823 1.481251

sp48\_28\_ss | 1.14708 .3982269 0.40 0.693 .5808787 2.265175

sp48\_4\_ss | 2.660239 3.711412 0.70 0.483 .1727322 40.97019

sp48\_5\_ss | 1.762682 .8387346 1.19 0.234 .6936619 4.479196

sp48\_6\_ss | .78127 .2030953 -0.95 0.342 .4693824 1.300396

sp48\_7\_ss | 1.28765 .3184223 1.02 0.307 .7930577 2.090697

sp48\_8\_ss | 1.976399 .7702787 1.75 0.080 .9207219 4.242488

sp71\_701\_ss | 1 (omitted)

sp72\_503\_ss | .6188822 .2412196 -1.23 0.218 .2882957 1.32855

sp72\_610\_ss | 1 (omitted)

sp72\_620\_ss | 1.774439 1.342833 0.76 0.449 .402626 7.820245

sp72\_630\_ss | 1.044197 .0383243 1.18 0.239 .9717213 1.122079

sp75\_100\_ss | .9836451 .6645629 -0.02 0.981 .2616713 3.697607

sp75\_1001\_1\_ss | .1268423 .1509378 -1.74 0.083 .012313 1.306663

sp75\_1001\_ss | 1.961803 2.050312 0.64 0.519 .2529595 15.21457

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

sp75\_1100\_2\_ss | 1.060063 .059117 1.05 0.296 .9503036 1.1825

sp75\_1101\_20\_ss | 1 (omitted)

sp75\_1102\_ss | .9258877 .1617523 -0.44 0.659 .6574363 1.303956

sp75\_1103\_4\_ss | 1.07634 .1089368 0.73 0.467 .8826715 1.312502

sp75\_1104\_ss | .5171024 .219889 -1.55 0.121 .2247075 1.189969

sp75\_1106\_2\_ss | 1.309654 .2361769 1.50 0.135 .9197187 1.864912

sp75\_1106\_3\_ss | 1.229151 .1120256 2.26 0.024 1.028078 1.46955

sp75\_1106\_4\_ss | 1.373046 .5181533 0.84 0.401 .6553346 2.876784

sp75\_1106\_5\_ss | .6982884 .1403122 -1.79 0.074 .4709738 1.035316

sp75\_1106\_6\_ss | .2930649 .2626608 -1.37 0.171 .0505907 1.697685

sp75\_1106\_ss | .971813 .3318745 -0.08 0.933 .4976191 1.897878

sp75\_1107\_14\_ss | 1 (omitted)

sp75\_1400\_1\_ss | .6219101 .5110735 -0.58 0.563 .1242301 3.113352

sp75\_1400\_2\_ss | 1 (omitted)

sp75\_1400\_3\_ss | .5575272 .1976382 -1.65 0.099 .2783064 1.116887

sp75\_1400\_4\_ss | 1 (omitted)

sp75\_1400\_ss | .669399 .1522839 -1.76 0.078 .4285902 1.045509

sp75\_1401\_ss | .2000055 .153151 -2.10 0.036 .0445911 .8970895

sp75\_1403\_10\_ss | .9610808 .1048423 -0.36 0.716 .7760758 1.190188

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

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

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

sp75\_1403\_5\_ss | .9886337 .0565045 -0.20 0.841 .8838646 1.105822

sp75\_1403\_6\_ss | 1.03492 .0819514 0.43 0.665 .8861416 1.208676

sp75\_1403\_7\_ss | 1.046504 .2330029 0.20 0.838 .6764282 1.619048

sp75\_1403\_8\_ss | 1.059985 .0701304 0.88 0.379 .9310711 1.206748

sp75\_1403\_9\_ss | .5768794 .2209591 -1.44 0.151 .2723038 1.222127

sp75\_1404\_1\_ss | .8854941 1.090491 -0.10 0.921 .0792367 9.895666

sp75\_1404\_ss | 1 (omitted)

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

sp75\_1405\_ss | .8579265 .0586595 -2.24 0.025 .7503268 .9809565

sp75\_1431\_ss | 1 (omitted)

sp75\_1432\_ss | 1 (omitted)

sp75\_1433\_ss | .9925637 .5277806 -0.01 0.989 .350062 2.814309

sp75\_1434\_ss | .9142264 .4767015 -0.17 0.863 .3290145 2.540343

sp75\_1435\_ss | .1415096 .1469127 -1.88 0.060 .0184963 1.08265

sp75\_1437\_ss | 1 (omitted)

sp75\_150\_ss | 2.259917 3.34868 0.55 0.582 .1238244 41.24568

sp75\_151\_ss | 1 (omitted)

sp75\_153\_ss | 1 (omitted)

sp75\_155\_ss | 1 (omitted)

sp75\_156\_ss | 1 (omitted)

sp75\_1600\_2\_ss | 1.159888 .4228091 0.41 0.684 .5677162 2.369741

sp75\_1712\_10\_ss | .391436 .440207 -0.83 0.404 .043192 3.547462

sp75\_1712\_6\_ss | 1.852957 1.404649 0.81 0.416 .419377 8.187019

sp75\_1720\_ss | .9630431 .0985085 -0.37 0.713 .7880928 1.176831

sp75\_1721\_ss | 1 (omitted)

sp75\_1725\_ss | 1.026939 .0187246 1.46 0.145 .9908873 1.064302

sp75\_1726\_ss | 1.506021 .52757 1.17 0.242 .7579652 2.992355

sp75\_1727\_ss | 1 (omitted)

sp75\_1728\_ss | 8.551631 14.44602 1.27 0.204 .3119889 234.4007

sp75\_1729\_ss | .4895604 .2513591 -1.39 0.164 .1789645 1.339201

sp75\_1730\_ss | .5122162 .3575687 -0.96 0.338 .1303903 2.012155

sp75\_1731\_ss | .9653297 .0227928 -1.49 0.135 .9216746 1.011053

sp75\_1903\_ss | 4.466944 2.790414 2.40 0.017 1.31305 15.19637

sp75\_1909\_ss | 1.090112 .0658131 1.43 0.153 .9684596 1.227045

sp75\_1910\_ss | 1.032333 .1115998 0.29 0.768 .8352208 1.275965

sp75\_1911\_ss | .9298329 .1286138 -0.53 0.599 .7090344 1.21939

sp75\_1912\_ss | 1.14346 .7425945 0.21 0.836 .3202041 4.083333

sp75\_1913\_ss | 2.694642 2.617703 1.02 0.308 .401424 18.08834

sp75\_1914\_ss | 1.022104 .0535374 0.42 0.676 .9223789 1.13261

sp75\_1915\_ss | .9382221 .6517132 -0.09 0.927 .240458 3.660767

sp75\_202\_ss | 1.01029 .0106604 0.97 0.332 .9896107 1.031402

sp75\_208\_ss | .9942686 .0555656 -0.10 0.918 .8911146 1.109364

sp75\_211\_ss | .9374804 .0548209 -1.10 0.270 .8359622 1.051327

sp75\_212\_ss | .9170197 .1178254 -0.67 0.500 .7128695 1.179634

sp75\_214\_ss | .7403732 .3472542 -0.64 0.522 .2952671 1.856463

sp75\_312\_ss | .6131229 .2127954 -1.41 0.159 .3105436 1.210521

sp75\_320\_ss | .9525406 .167604 -0.28 0.782 .6746998 1.344796

sp75\_324\_ss | .9960577 .2710452 -0.01 0.988 .5843288 1.697898

sp75\_337\_ss | 1.374987 .3446183 1.27 0.204 .8413149 2.247183

sp75\_340\_ss | 1.143473 .0779906 1.97 0.049 1.000391 1.30702

sp75\_342\_ss | .9996646 .0461582 -0.01 0.994 .913169 1.094353

sp75\_344\_ss | 1.78098 .7137386 1.44 0.150 .8119608 3.906459

sp75\_352\_ss | 1.013648 .1889687 0.07 0.942 .7034006 1.460737

sp75\_382\_ss | .9575031 .4942877 -0.08 0.933 .3481193 2.633615

sp75\_503\_ss | 1.021183 .0194292 1.10 0.271 .9838033 1.059982

sp75\_504\_ss | .3006745 .2134338 -1.69 0.090 .0747948 1.20871

sp75\_505\_ss | .5688432 .5791542 -0.55 0.580 .0773325 4.184303

sp75\_506\_1\_ss | 1.329162 .8393589 0.45 0.652 .3855214 4.582551

sp75\_506\_ss | .4951114 .2641612 -1.32 0.188 .1740018 1.408809

sp75\_507\_ss | .7559348 .1841435 -1.15 0.251 .4689582 1.218525

sp75\_511\_1\_ss | 1.642033 1.471907 0.55 0.580 .2833811 9.514654

sp75\_511\_ss | 1.320537 .2158998 1.70 0.089 .9584828 1.819353

sp75\_512\_1\_ss | 5.104422 3.905082 2.13 0.033 1.139578 22.86383

sp75\_512\_2\_ss | 1.056353 .201882 0.29 0.774 .7263305 1.536329

sp75\_512\_ss | 1.000902 .0238909 0.04 0.970 .9551555 1.04884

sp75\_513\_1\_ss | .2159632 .4838661 -0.68 0.494 .0026746 17.43811

sp75\_513\_ss | .5282434 .2256619 -1.49 0.135 .2286687 1.220286

sp75\_514\_ss | 1.129044 .1059432 1.29 0.196 .9393748 1.35701

sp75\_515\_ss | .961558 .0636081 -0.59 0.553 .844632 1.094671

sp75\_516\_1\_ss | 1.262375 1.851424 0.16 0.874 .0712524 22.36544

sp75\_516\_2\_ss | .7785638 .8696483 -0.22 0.823 .0871987 6.951495

sp75\_516\_ss | 1.183157 .1562493 1.27 0.203 .9133376 1.532686

sp75\_517\_1\_ss | 1.710052 1.255458 0.73 0.465 .4055907 7.209921

sp75\_517\_ss | .9728575 .0160833 -1.66 0.096 .94184 1.004896

sp75\_518\_1\_ss | .8197282 .1578841 -1.03 0.302 .5619839 1.195683

sp75\_518\_ss | 1.195662 .0935312 2.28 0.022 1.025706 1.393779

sp75\_519\_ss | 1 (omitted)

sp75\_520\_ss | 1.167922 .1538429 1.18 0.239 .9021743 1.511949

sp75\_523\_1\_ss | .9647349 .0825683 -0.42 0.675 .8157491 1.140931

sp75\_523\_2\_ss | .9741841 .0829111 -0.31 0.759 .8245116 1.151026

sp75\_523\_ss | .9153092 .0695429 -1.16 0.244 .7886706 1.062282

sp75\_600\_1\_ss | .7134127 .3879738 -0.62 0.535 .2457161 2.071324

sp75\_600\_ss | 1 (omitted)

sp75\_601\_1\_ss | .9259664 .065654 -1.08 0.278 .8058279 1.064016

sp75\_601\_2\_ss | .580576 .3762854 -0.84 0.402 .1629951 2.067966

sp75\_601\_3\_ss | .228197 .1644707 -2.05 0.040 .0555667 .9371406

sp75\_601\_ss | 1.040341 .0842237 0.49 0.625 .8876962 1.219234

sp75\_602\_ss | 1.177552 .1872826 1.03 0.304 .8621876 1.608269

sp75\_603\_ss | 1.237428 .3048773 0.86 0.387 .7634863 2.005575

sp75\_604\_ss | 1.084922 .0256933 3.44 0.001 1.035715 1.136467

sp75\_605\_ss | 1.052254 .110887 0.48 0.629 .8558957 1.293662

sp75\_606\_ss | 1.022354 .0504083 0.45 0.654 .9281797 1.126084

sp75\_607\_ss | .9930611 .1878678 -0.04 0.971 .6854018 1.438821

sp75\_700\_1\_ss | .4436382 .3557327 -1.01 0.311 .0921489 2.135834

sp75\_700\_ss | .9247373 .1831286 -0.40 0.693 .6272667 1.363278

sp75\_701\_1\_ss | 1.029494 .133947 0.22 0.823 .7977635 1.328536

sp75\_701\_2\_ss | .7912541 .3035486 -0.61 0.542 .3730524 1.678271

sp75\_701\_3\_ss | .873574 .2843259 -0.42 0.678 .461589 1.653271

sp75\_701\_4\_ss | 1.925573 1.620819 0.78 0.436 .3698922 10.02408

sp75\_701\_5\_ss | .5918383 .2089204 -1.49 0.137 .2962967 1.182169

sp75\_701\_ss | 1.099499 .0616153 1.69 0.091 .9851313 1.227145

sp75\_703\_2\_ss | 2.372974 2.04956 1.00 0.317 .4366185 12.89686

sp75\_703\_3\_ss | .7756244 .283046 -0.70 0.486 .3793371 1.585907

sp75\_703\_ss | 1.226925 .1709379 1.47 0.142 .9337421 1.612165

sp75\_704\_ss | 3.288553 3.184645 1.23 0.219 .4928317 21.94377

sp75\_705\_1\_ss | 2.627501 1.605997 1.58 0.114 .7929877 8.706015

sp75\_705\_8\_ss | 1 (omitted)

sp75\_705\_ss | 3.65603 2.115855 2.24 0.025 1.175963 11.36647

sp75\_706\_ss | 1.090355 .3416614 0.28 0.783 .5899905 2.015073

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

sp75\_800\_3\_ss | .0721477 .0972739 -1.95 0.051 .0051355 1.013594

sp75\_800\_4\_ss | 13.37887 13.764 2.52 0.012 1.781209 100.4903

sp75\_800\_ss | .8621447 .2180796 -0.59 0.558 .5251322 1.415441

sp75\_801\_ss | 1.382442 .846398 0.53 0.597 .41639 4.5898

sp75\_802\_ss | .4380021 .2568448 -1.41 0.159 .1387813 1.382361

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

sp75\_803\_ss | 1.044306 .2581113 0.18 0.861 .6433457 1.695162

sp75\_804\_ss | .7867467 .1371607 -1.38 0.169 .5590328 1.107217

sp75\_805\_ss | .1130047 .0792703 -3.11 0.002 .0285757 .4468851

sp75\_806\_ss | 1 (omitted)

sp75\_807\_ss | .9720398 .074508 -0.37 0.711 .8364469 1.129613

sp75\_808\_ss | 1.580889 .4990506 1.45 0.147 .8515231 2.934988

sp75\_809\_ss | .9522098 .156948 -0.30 0.766 .6893397 1.315322

sp75\_810\_ss | 1.081854 .297209 0.29 0.775 .6314292 1.853584

sp75\_811\_ss | .6177895 .279182 -1.07 0.287 .2547877 1.497968

sp75\_812\_ss | 1.042507 .5900208 0.07 0.941 .3438194 3.161025

sp75\_814\_ss | 1 (omitted)

sp75\_815\_ss | 4.149411 2.498746 2.36 0.018 1.274673 13.50747

sp75\_816\_ss | 1.394081 .3685267 1.26 0.209 .8303708 2.340475

sp75\_818\_ss | 1 (omitted)

sp75\_819\_ss | 1 (omitted)

sp75\_820\_ss | 2.514851 1.84723 1.26 0.209 .5960466 10.6107

sp75\_821\_ss | .364492 .1857813 -1.98 0.048 .1342243 .989794

sp75\_825\_ss | 1.387213 .7336386 0.62 0.536 .4920151 3.91118

sp75\_827\_ss | .7080128 .6484317 -0.38 0.706 .117617 4.261985

sp75\_831\_ss | 1 (omitted)

sp75\_900\_2\_ss | .7093681 .6264672 -0.39 0.697 .1256454 4.004948

sp75\_900\_3\_ss | 1.4528 .5562447 0.98 0.329 .6859613 3.076889

sp75\_900\_4\_ss | 1.083436 .7156038 0.12 0.903 .2968857 3.953825

sp75\_900\_ss | 1.038168 .0781072 0.50 0.619 .8958332 1.203119

sp75\_901\_ss | .8228265 .3226783 -0.50 0.619 .3815069 1.774656

sp75\_902\_1\_ss | 2.534664 2.023856 1.16 0.244 .5299816 12.12216

sp75\_902\_2\_ss | 1.783679 .6849277 1.51 0.132 .8403448 3.785957

sp75\_902\_4\_ss | .7836689 .1847182 -1.03 0.301 .4937378 1.243852

sp75\_902\_ss | .9110593 .0877409 -0.97 0.333 .7543457 1.10033

sp75\_903\_ss | 1.26617 .1843128 1.62 0.105 .9518859 1.68422

sp75\_904\_ss | 1.003578 .0500001 0.07 0.943 .9102127 1.106521

sp75\_905\_ss | 4.198486 4.300198 1.40 0.161 .5639882 31.2547

sp75\_907\_ss | .4531946 .2028208 -1.77 0.077 .1885131 1.089502

sp77\_103\_ss | 1 (omitted)

sp77\_1103\_ss | .9495695 .1867977 -0.26 0.793 .645773 1.396284

sp77\_1104\_ss | 1.014011 .04957 0.28 0.776 .9213649 1.115973

sp77\_1106\_ss | 1 (omitted)

sp77\_1111\_ss | .7404994 .5710168 -0.39 0.697 .1633589 3.356654

sp77\_1112\_ss | 1.390994 .5260596 0.87 0.383 .6628415 2.919046

sp77\_1403\_ss | 1.018396 1.304467 0.01 0.989 .0827197 12.53788

sp77\_1433\_ss | 1 (omitted)

sp77\_1434\_ss | 3.779349 2.469137 2.04 0.042 1.050285 13.59962

sp77\_1437\_ss | .5941644 .5013958 -0.62 0.537 .1136594 3.106045

sp77\_1438\_ss | 2.334512 2.692431 0.74 0.462 .2434955 22.38211

sp77\_1605\_ss | .9871939 .0466548 -0.27 0.785 .8998594 1.083004

sp77\_1606\_ss | 1.058786 .0671735 0.90 0.368 .9349847 1.198979

sp77\_1710\_ss | .8996583 .0787541 -1.21 0.227 .7578186 1.068046

sp77\_1802\_ss | .0998621 .0463439 -4.96 0.000 .0402139 .2479849

sp77\_1906\_ss | .0328375 .0452928 -2.48 0.013 .0021994 .4902669

sp77\_1915\_ss | 1 (omitted)

sp77\_1916\_ss | 1.354085 1.132601 0.36 0.717 .2628289 6.976196

sp77\_200\_ss | .9340402 .0856227 -0.74 0.457 .7804347 1.117878

sp77\_202\_ss | .8550212 .0690554 -1.94 0.052 .7298439 1.001668

sp77\_203\_ss | 1.852165 1.407673 0.81 0.417 .4175936 8.214965

sp77\_204\_ss | .9266813 .1192234 -0.59 0.554 .7201417 1.192457

sp77\_205\_ss | 1.050053 .0522173 0.98 0.326 .9525381 1.15755

sp77\_206\_ss | 1.35841 .3416801 1.22 0.223 .8297147 2.223992

sp77\_207\_ss | 1.173383 .2148675 0.87 0.383 .8195388 1.680003

sp77\_208\_ss | 1.144069 .1220643 1.26 0.207 .9281854 1.410164

sp77\_210\_ss | 1.167949 .320948 0.56 0.572 .6815801 2.001386

sp77\_216\_ss | 1.483602 2.14871 0.27 0.785 .0867995 25.35815

sp77\_315\_ss | 1 (omitted)

sp77\_400\_ss | 1.058952 .047264 1.28 0.199 .9702527 1.15576

sp77\_401\_ss | 1.145421 .307462 0.51 0.613 .67683 1.938432

sp77\_402\_ss | 1.067482 .1953291 0.36 0.721 .7457732 1.527969

sp77\_403\_1\_ss | .61389 .2913679 -1.03 0.304 .2421522 1.556298

sp77\_403\_ss | 5.276906 3.962478 2.22 0.027 1.211168 22.99082

sp77\_404\_ss | .9738696 .0302466 -0.85 0.394 .9163556 1.034993

sp77\_405\_ss | 1.466318 .4514751 1.24 0.214 .8019473 2.681086

sp77\_408\_ss | 1.223035 .6334256 0.39 0.697 .4431907 3.375104

sp77\_409\_ss | 1 (omitted)

sp77\_410\_ss | .9819437 .0534613 -0.33 0.738 .8825584 1.092521

sp77\_411\_ss | 1 (omitted)

sp77\_412\_ss | 1.684752 .613235 1.43 0.152 .8254794 3.438476

sp77\_413\_ss | 1 (omitted)

sp77\_500\_ss | 1.163919 .5420183 0.33 0.744 .4672311 2.899437

sp77\_501\_ss | .8021823 .2498989 -0.71 0.479 .4356157 1.477211

sp77\_502\_1\_ss | 1 (omitted)

sp77\_502\_2\_ss | 1.009802 .3738781 0.03 0.979 .4887419 2.086376

sp77\_502\_ss | .9846353 .0588532 -0.26 0.796 .8757854 1.107014

sp77\_503\_1\_ss | 4.143515 3.016906 1.95 0.051 .9945039 17.2636

sp77\_503\_ss | .4104313 .2385203 -1.53 0.125 .1313919 1.282072

sp77\_504\_ss | 1.051925 .1852452 0.29 0.774 .7448816 1.485533

sp77\_505\_ss | .826191 .1185924 -1.33 0.183 .6235884 1.094619

sp77\_506\_1\_ss | .9223096 .2924663 -0.26 0.799 .4954034 1.717096

sp77\_506\_ss | .827722 .1930595 -0.81 0.418 .5240209 1.307436

sp77\_507\_ss | .6710412 .2819414 -0.95 0.342 .2945185 1.528924

sp77\_508\_1\_ss | 3.318487 2.335055 1.70 0.088 .8355874 13.17918

sp77\_508\_ss | 1.535681 1.175403 0.56 0.575 .3426065 6.883454

sp77\_509\_ss | .7609381 .1650744 -1.26 0.208 .497386 1.16414

sp77\_510\_ss | .0851258 .0206041 -10.18 0.000 .0529705 .1368006

sp77\_511\_ss | 1.85849 1.434002 0.80 0.422 .4096164 8.432243

sp77\_512\_ss | 1.033814 .1249878 0.28 0.783 .8157033 1.310245

sp77\_513\_ss | 1.166047 .187748 0.95 0.340 .8504764 1.598712

sp77\_514\_ss | 1 (omitted)

sp77\_515\_ss | 1 (omitted)

sp77\_516\_ss | .9190563 .0979712 -0.79 0.428 .7457689 1.132609

sp77\_600\_ss | 1.251966 .79926 0.35 0.725 .3582467 4.375251

sp77\_601\_ss | .5169873 .2765694 -1.23 0.217 .1811832 1.475169

sp77\_602\_ss | .9777193 .4815356 -0.05 0.964 .3723829 2.567075

sp77\_603\_ss | .3190257 .2666241 -1.37 0.172 .0620066 1.641395

sp77\_604\_ss | .5300834 .2426774 -1.39 0.166 .2161005 1.300268

sp77\_605\_ss | 1 (omitted)

sp77\_606\_ss | 1 (omitted)

sp77\_700\_1\_ss | 3.280312 2.50217 1.56 0.119 .7355835 14.62845

sp77\_700\_ss | .4844827 .5776922 -0.61 0.543 .0468074 5.014667

sp77\_701\_1\_ss | .4620299 .2958884 -1.21 0.228 .1316899 1.621017

sp77\_701\_2\_ss | .5818831 .2786938 -1.13 0.258 .2275891 1.487716

sp77\_701\_3\_ss | 1 (omitted)

sp77\_701\_4\_ss | .4875872 .2318342 -1.51 0.131 .1920125 1.238155

sp77\_701\_ss | 1.017281 .1261473 0.14 0.890 .7977891 1.29716

sp77\_704\_1\_ss | 3.132278 1.876863 1.91 0.057 .967876 10.1368

sp77\_704\_8\_ss | 1 (omitted)

sp77\_704\_9\_ss | 30.90552 28.28501 3.75 0.000 5.140538 185.8076

sp77\_704\_ss | .0919012 .0827753 -2.65 0.008 .015727 .5370283

sp77\_705\_ss | .5598002 .2516795 -1.29 0.197 .2319225 1.351211

sp77\_800\_1\_ss | 1.132714 1.11617 0.13 0.899 .1641917 7.814287

sp77\_800\_2\_ss | .6530635 .7096611 -0.39 0.695 .077622 5.494474

sp77\_800\_ss | 1.053587 1.761824 0.03 0.975 .0397447 27.92943

sp77\_801\_1\_ss | 1 (omitted)

sp77\_802\_ss | .4474733 .4869128 -0.74 0.460 .0530325 3.775653

sp77\_803\_ss | 1 (omitted)

sp77\_804\_ss | 6.454202 7.295706 1.65 0.099 .7041429 59.15948

sp77\_805\_ss | .2831556 .2688279 -1.33 0.184 .0440448 1.820354

sp77\_807\_1\_ss | .6482098 .5615739 -0.50 0.617 .1186536 3.5412

sp77\_807\_2\_ss | .4914501 .3071046 -1.14 0.256 .1444003 1.672595

sp77\_807\_3\_ss | 1.007357 .4808487 0.02 0.988 .3952515 2.567399

sp77\_807\_ss | 1.044898 .6402163 0.07 0.943 .314439 3.47225

sp77\_808\_ss | 1.52315 1.2595 0.51 0.611 .3012175 7.70203

sp77\_809\_ss | .6449354 .1765402 -1.60 0.109 .37715 1.102855

sp77\_810\_ss | 2.471822 2.880554 0.78 0.437 .2518047 24.26446

sp77\_900\_1\_ss | 6.207399 18.83117 0.60 0.547 .0162423 2372.305

sp77\_900\_2\_ss | 1 (omitted)

sp77\_900\_ss | .5890418 .2221259 -1.40 0.160 .2812941 1.233479

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

sp77\_901\_ss | 1.625699 .7314595 1.08 0.280 .6730614 3.926683

sp77\_902\_3\_ss | 1 (omitted)

sp77\_902\_ss | 2.824297 1.117907 2.62 0.009 1.300139 6.135234

sp77\_903\_ss | .2445818 .2976489 -1.16 0.247 .0225184 2.65651

sp77\_904\_ss | 1.100414 .2094634 0.50 0.615 .757757 1.598019

mine\_time | .9987197 .0021493 -0.60 0.552 .9945161 1.002941

onsite\_insp\_hours | 1.001116 .0002534 4.41 0.000 1.000619 1.001613

|

state |

AL | 2.137463 .4827746 3.36 0.001 1.372914 3.327774

AR | 2.34885 .1928936 10.40 0.000 1.999643 2.759041

CO | .905061 .1731977 -0.52 0.602 .6219953 1.316948

IL | 1.738211 .2304761 4.17 0.000 1.340412 2.254065

IN | 1.133895 .2450443 0.58 0.561 .7423713 1.731908

MD | 1.223483 .3252548 0.76 0.448 .7266272 2.060081

MT | .7516203 .058951 -3.64 0.000 .6445212 .8765159

NM | 1.652302 .1205601 6.88 0.000 1.432127 1.906326

OH | 1.038476 .2541412 0.15 0.877 .6428152 1.677672

OK | 1.076407 .3765594 0.21 0.833 .5422512 2.136743

PA | 1.312594 .1352617 2.64 0.008 1.072543 1.606371

TN | 1.695195 .2613478 3.42 0.001 1.253112 2.293238

UT | .6597804 .1386272 -1.98 0.048 .4370715 .99597

VA | .7799751 .0599638 -3.23 0.001 .6708742 .9068184

WV | 1.281186 .0750017 4.23 0.000 1.142305 1.436951

WY | 3.024609 .3316461 10.09 0.000 2.439695 3.749754

|

time |

2000 | 1.207593 .1922871 1.18 0.236 .8838576 1.649905

2000.25 | 1.129801 .1780369 0.77 0.439 .8295975 1.538638

2000.5 | 1.656368 .2623483 3.19 0.001 1.21433 2.259314

2000.75 | .9677799 .1564767 -0.20 0.839 .7049349 1.32863

2001 | 1.074515 .1701432 0.45 0.650 .7878251 1.465532

2001.5 | 1.290092 .2106276 1.56 0.119 .9368039 1.776612

2001.75 | 1.184006 .1876262 1.07 0.286 .8678937 1.615257

2002 | 1.028801 .1735704 0.17 0.866 .7391359 1.431986

2002.25 | .8315942 .1395653 -1.10 0.272 .598488 1.155493

2002.5 | 1.139839 .1906238 0.78 0.434 .8212787 1.581963

2002.75 | 1.143393 .194053 0.79 0.430 .8198457 1.594625

2003 | .9896959 .1745453 -0.06 0.953 .7004574 1.398369

2003.25 | .9311614 .1678545 -0.40 0.692 .6540099 1.325762

2003.5 | 1.203708 .2061074 1.08 0.279 .8605427 1.68372

2003.75 | .7914725 .1368141 -1.35 0.176 .5640232 1.110643

2004 | .9206317 .1581068 -0.48 0.630 .6575108 1.289048

2004.25 | .9194435 .1494074 -0.52 0.605 .6686623 1.26428

2004.5 | .8241413 .1491548 -1.07 0.285 .5780287 1.175043

2004.75 | .7361731 .1318746 -1.71 0.087 .5182027 1.045828

2005 | .693066 .121271 -2.10 0.036 .4918509 .9765978

2005.25 | .8858922 .1490436 -0.72 0.471 .6370503 1.231936

2005.5 | .796844 .1345845 -1.34 0.179 .5722792 1.109529

2005.75 | .6032857 .1063732 -2.87 0.004 .4270084 .8523335

2006 | .8901929 .1483466 -0.70 0.485 .6421482 1.234051

2006.25 | .7262476 .1196498 -1.94 0.052 .525834 1.003046

2006.5 | .8021582 .1341365 -1.32 0.187 .5779929 1.113262

2006.75 | .7513546 .1353764 -1.59 0.113 .5278111 1.069576

2007 | .6912946 .1193766 -2.14 0.033 .4928025 .9697358

2007.25 | .6219194 .1097994 -2.69 0.007 .4400025 .879049

2007.5 | .7841839 .1374468 -1.39 0.165 .5561919 1.105633

2007.75 | .7076041 .125253 -1.95 0.051 .5001718 1.001063

2008 | .5758036 .0997563 -3.19 0.001 .4100211 .8086163

2008.25 | .643273 .1120155 -2.53 0.011 .4572697 .9049368

2008.5 | .6120785 .1069966 -2.81 0.005 .43452 .8621929

2008.75 | .4646844 .0852244 -4.18 0.000 .3243736 .665688

2009 | .4805395 .0882195 -3.99 0.000 .3353218 .6886466

2009.25 | .4667182 .0823853 -4.32 0.000 .3302176 .6596435

2009.5 | .5451309 .0958513 -3.45 0.001 .3862181 .7694299

2009.75 | .4330685 .0795226 -4.56 0.000 .3021717 .6206679

2010 | .4597634 .0881572 -4.05 0.000 .3157338 .6694956

2010.25 | .4850126 .0878632 -3.99 0.000 .3400574 .6917574

2010.5 | .5964217 .1104986 -2.79 0.005 .4148126 .8575409

2010.75 | .4491429 .083475 -4.31 0.000 .3120221 .6465226

2011 | .5731571 .105739 -3.02 0.003 .3992452 .8228254

2011.25 | .5874083 .1066476 -2.93 0.003 .4115279 .8384573

2011.5 | .6741705 .1178836 -2.25 0.024 .4785541 .9497482

2011.75 | .443906 .0824957 -4.37 0.000 .3083922 .6389674

2012 | .6090838 .1112919 -2.71 0.007 .4257409 .8713822

2012.25 | .5455345 .10167 -3.25 0.001 .3786044 .7860654

2012.5 | .6627474 .1239596 -2.20 0.028 .4593462 .9562158

2012.75 | .407441 .0801239 -4.57 0.000 .2771243 .5990386

2013 | .4101683 .0779174 -4.69 0.000 .2826598 .5951962

2013.25 | .3546052 .0705428 -5.21 0.000 .2401113 .5236938

2013.5 | .4357054 .0872613 -4.15 0.000 .2942508 .6451611

2013.75 | .4946318 .1004564 -3.47 0.001 .3322069 .7364706

2014 | .302677 .0629696 -5.74 0.000 .201323 .4550566

2014.25 | .3824818 .0791324 -4.65 0.000 .2549788 .5737431

2014.5 | .4221896 .0853937 -4.26 0.000 .2840143 .6275883

2014.75 | .4349261 .0894156 -4.05 0.000 .2906822 .6507472

2015 | .4385626 .0950712 -3.80 0.000 .2867536 .6707401

2015.25 | .4195025 .0910434 -4.00 0.000 .274158 .6419014

2015.5 | .5963196 .1277951 -2.41 0.016 .391797 .9076054

2015.75 | .2769991 .0640229 -5.55 0.000 .1760922 .4357293

2016 | .446545 .1034442 -3.48 0.001 .2835832 .7031533

|

\_cons | .0000139 1.70e-06 -91.78 0.000 .000011 .0000177

lnhours | 1 (offset)

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

(est1 stored)

**. lfit**

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

number of observations = 28241

number of covariate patterns = 28187

Pearson chi2(27857) = 191930.06

Prob > chi2 = 0.0000

**. linktest**

Iteration 0: log likelihood = -16061.488

Iteration 1: log likelihood = -12120.48

Iteration 2: log likelihood = -11973.935

Iteration 3: log likelihood = -11967.406

Iteration 4: log likelihood = -11967.311

Iteration 5: log likelihood = -11967.311

Logistic regression Number of obs = 28,241

LR chi2(2) = 8188.35

Prob > chi2 = 0.0000

Log likelihood = -11967.311 Pseudo R2 = 0.2549

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

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

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

\_hat | 1.122697 .0196548 57.12 0.000 1.084175 1.16122

\_hatsq | .0718 .0064249 11.18 0.000 .0592074 .0843927

\_cons | -.0434641 .0206967 -2.10 0.036 -.084029 -.0028993

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

**. estat classification**

Logistic model for MR\_indicator

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

Classified | D ~D | Total

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

+ | 3162 1207 | 4369

- | 4065 19807 | 23872

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

Total | 7227 21014 | 28241

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

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Sensitivity Pr( +| D) 43.75%

Specificity Pr( -|~D) 94.26%

Positive predictive value Pr( D| +) 72.37%

Negative predictive value Pr(~D| -) 82.97%

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

False + rate for true ~D Pr( +|~D) 5.74%

False - rate for true D Pr( -| D) 56.25%

False + rate for classified + Pr(~D| +) 27.63%

False - rate for classified - Pr( D| -) 17.03%

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

Correctly classified 81.33%

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

**. summ MR\_indicator spbssv1\_yhat**

Variable | Obs Mean Std. Dev. Min Max

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

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

spbssv1\_yhat | 28,241 .2559045 .2330863 5.63e-06 .9979938