```
//This is the simulation program including mis-classifications in the
//predictive marker

**************************************************************************
**
//Simulation program
**************************************************************************
**
      clear
      prog drop _all

      capture program drop eme_trial
      program eme_trial, rclass

      clear
      drop _all
      set more off

      set seed 1234567890

      local num=1000
      set obs `num'

**************************************************************************
**
//Data generation
**************************************************************************
**
      gen treat=1
      replace treat=0 if _n > `num'/2

      generate e1=uniform()
//generate e1 consisting of random numbers drawn from a uniform
distribution

//e1 is a standard normally distributed random variate
      generate x1=0
      replace x1=1 if e1>0.9

      generate e2=uniform()
      generate x2=0
      replace x2=1 if e2>0.8

      generate e3=uniform()
      generate x3=0
      replace x3=1 if e3>0.7

      generate e4=uniform()
      generate x4=0
      replace x4=1 if e4>0.6

      generate e5=uniform()
      generate x5=0
      replace x5=1 if e5>0.5

      generate e6=uniform()
      generate x6=0
      replace x6=1 if e6>0.1

      generate e7=uniform()
      generate x7=0
```

```
      replace x7=1 if e7>0.2

      generate e8=uniform()
      generate x8=0
      replace x8=1 if e8>0.3

      generate e9=uniform()
      generate x9=0
      replace x9=1 if e9>0.4

      generate e10=uniform()
      generate x10=0
      replace x10=1 if e10>0.5

//change here to vary percentage/the effects of predictive marker
prevalence, here means 50% participants are predictive marker
positive

//    replace x10=1 if e10>0.1
//90% participants are predictive marker positive

      generate x11=treat*x10

//create the new variable to geneate misclassifications in the
predictive marker prevalence as follows
      generate x10mc=uniform()<.50  //50%:50%
      replace x10mc=uniform()<.2 if x10==0
      replace x10mc=uniform()<.8 if x10==1

      generate x11mc=treat*x10mc

      generate e12=50+5*invnorm(uniform())

      generate
m=5*x1+5*x2+5*x3+5*x4+5*x5+5*x6+5*x7+5*x8+5*x9+5*x10+5*treat+20*x11+e
12
      generate e13=5*invnorm(uniform())

      generate
y=5*x1+5*x2+5*x3+5*x4+5*x5+5*x6+5*x7+5*x8+5*x9+5*x10+10*treat+2*m+e13


*********************************************************************
****
//Estimators
*********************************************************************
****
//No interactions
*********************************************************************
****
//NO adjustment for confounders with misclassification
      regress y x10mc treat m

//Adjustment for some confounders with misclassification

      regress y x10mc treat m x1 x2 x3 x4

//Adjustment for ALL confounders with misclassification
      regress y x10mc treat m x1 x2 x3 x4 x5 x6 x7 x8 x9
```

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***********************************************************************
****
//Including the interaction of treat*x10mc (i.e. x11mc)
***********************************************************************
****
//NO adjustment for confounders with misclassification
      regress y x10mc treat m x11mc
//Adjustment for some confounders with misclassification

      regress y x10mc treat m x11mc x1 x2 x3 x4
//Adjustment for ALL confounders with misclassification
      regress y x10mc treat m x11mc x1 x2 x3 x4 x5 x6 x7 x8 x9

***********************************************************************
****
//   Instrumental variable estimators
***********************************************************************
****
//NO adjustment for confounders with misclassification
      ivregress 2sls y x10mc treat (m=x11mc)
//Adjustment for some confounders with misclassification

      ivregress 2sls y x10mc treat x1 x2 x3 x4 (m=x11mc)
//Adjustment for ALL confounders with misclassification
      ivregress 2sls y x10mc treat x1 x2 x3 x4 x5 x6 x7 x8 x9
(m=x11mc)
***********************************************************************
****
```