```
        *---------------------------------------------*

// Modified non-differential simulation program //

*---------------------------------------------*
```

* Author: Peter J Godolphin

* Version: 2

* Date created: 14 March 2019

* Last modified: 03 January 2020

* Programmed in: Stata 15.1


/* DESCRIPTION:

This program creates a dataset with a binary outcome. The parameters used to

create this dataset can be modified to mimic specific trial circumstances. The

program then misclassifies a random selection of the participants to ensure that

the treatment effect remains constant. The outcome is analysed to produce a risk

ratio and this output is produced, as is the number of misclassifications. */


/* PARAMETERS:

- N: Sample size (set up for 3000)

- A: Event rate (set up for 10%)

- B: Proportion of events in control group (set up for 60%)

- C: Proportion of events in treatment group (set up for 40%)

// B & C are used to determine treatment effect, here it is 0.67

// Setting B to 0.55 and C to 0.45 will give 0.82

// Setting B to 0.525 and C to 0.475 will give 0.90

- X: Sets level of non-differential  misclassification

// Users can increase X until the treatment effect is non significant */


*---------*

// START //

*---------*


capture program drop simulate_non

       program define simulate_non

       version 15.1

       syntax, [N(int 3000) A(real 0.1) B(real 0.6) C(real 0.4) X(real 0)]


       * Set up dataset with desired event rate and true treatment effect

       clear

       set obs `n'

       qui gen refno = _n

       qui gen trt = 1 if refno <= `n'/2

       qui replace trt = 2 if refno > `n'/2

       qui gen outcome = 1 if refno <= `n'*`a'*`b'

       qui replace outcome = 1 if refno > `n'/2 & refno <= (`n'/2 + `n'*`a'*`c')

       qui replace outcome = 0 if outcome == .


       * Non-differential misclassification

       set seed 1111

       qui gen rand1 = runiform() if trt == 1 & outcome == 1

       sort rand1

       qui gen n1 = _n if trt == 1 & outcome == 1

       qui replace outcome = 0 if n1 <= `b'*`x'*10

       qui gen count1 = 1 if n1 <= `b'*`x'*10

       qui gen rand2 = runiform() if trt == 2 & outcome == 1

       sort rand2

       qui gen n2 = _n if trt == 2 & outcome == 1

       qui replace outcome = 0 if n2 <= `c'*`x'*10

```
        qui gen count2 = 1 if n2 <= `c'*`x'*10

        qui sum count1

        gen c1 = `r(N)'

        qui sum count2

        qui gen c2 = `r(N)'

        qui gen count = c1 + c2


        glm outcome trt, family(binomial) link(log) eform


        * Display the number of misclassifications

        qui sum count

        display as text "Total number of misclassifications: `r(mean)'"
end


*_____*
// END //
*_____*
```