```
-------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------
      name:  <unnamed>
       log:  M:\Projects\TomRea\2019-RO1\Stata\runlots.log
  log type:  text
 opened on:   7 Jul 2019, 21:12:47

.
. * do FACTorialshell 25 28 1 0.030 0.025 0.13 0.15 0.17 0.168 0.188 0.208 0.02 339985 1000
.
. * do FACTorialshell 25 28 1 0.0325 0.024 0.13 0.15 0.17 0.168 0.188 0.208 0.02 3999067 1000
.
. *do FACTorialshell 25 28 1 0.033 0.021 0.13 0.15 0.17 0.168 0.188 0.208 0.02 1098266 1000
.
. *do FACTorialshell 25 28 1 0.033 0.022 0.13 0.15 0.17 0.168 0.188 0.208 0.02 3900674 1000
.
. *do FACTorialshell 25 28 1 0.0325 0.023 0.13 0.15 0.17 0.168 0.188 0.208 0.02 5522551 1000
.
. *do FACTorialshell 25 28 1 0.034 0.022 0.13 0.15 0.17 0.168 0.188 0.208 0.02 3647508 1000
.
. *do FACTorialshell 25 28 1 0.035 0.023 0.13 0.15 0.17 0.168 0.188 0.208 0.02 115462 1000
.
. *do FACTorialshell 25 28 1 0.035 0.024 0.127 0.151 0.175 0.168 0.188 0.208 0.02 663091 1000
.
. do FACTorialshell 25 28 1 0.036 0.025 0.126 0.151 0.175 0.168 0.188 0.208 0.02 488765 1000

.
. ******************************************************************************
. *
. * Program to try out power and sample size for FACT project
. *
. * this is the "shell" program for FACTorial.do
. *
. *
. * Author: Susanne May
. * Date: 07/05/2019
. *
. *
. * this program requires input parameters, NOTE input parameter do not seem to work, directly code
the values instead
. *
. *        1 = nperp number of observations per period (we assume 6 periods for each agency)
. *            e.g. with 28 agencies, 6 periods and 25 observations per period the total is 4200
. *        2 = na number of agencies
. *        3 = add indicator for additive effect (1 yes, 0 no)
. *        4 = betaigel effect if igel if additive
. *        5 = betarate effect of compression rate if additive
. *        6 = betab120 background rate for anticipated lowest survival group (referent)
. *        7 = betab110 survival rate for BVM with rate 110 if not additive
. *        8 = betab100 survival rate for BVM with rate 100 if not additive
. *        9 = betai120 survival rate for igel with rate 120 if not additive
. *       10 = betai110 survival rate for igel with rate 110 if not additive
. *       11 = betai100 survival rate for igel with rate 100 if not additive
. *       12 = sigma1 variance for normally distributed random effect of cluster / agency
. *       13 = random number seed
. *       14 = number of replications
. *
. *       . do FACTorial 25 28 1 0.038 0.02 0.13 0.15 0.17 0.168 0.188 0.208 0.03 539083 10000
. *
. * run this file once as
. *
. *    do FACTorial
. *
. * before running runlots.do
. *
. ******************************************************************************
.
.     display "Simulation started  $S_DATE   $S_TIME"
Simulation started   7 Jul 2019   21:12:47
```

```
.
.     clear

.     use one

.     replace nummer=1 in 1
(1 real change made)

.     save,replace
file one.dta saved

.     clear

.
.     simulate     totaln=r(totaln)  ///
>          mean120b=r(mean120b) ///
>          sd120b=r(sd120b) ///
>          mean110b=r(mean110b) ///
>          sd110b=r(sd110b) ///
>          mean100b=r(mean100b) ///
>          sd100b=r(sd100b) ///
>          mean120i=r(mean120i) ///
>          sd120i=r(sd120i) ///
>          mean110i=r(mean110i) ///
>          sd110i=r(sd110i) ///
>          mean100i=r(mean100i) ///
>          sd100i=r(sd100i) ///
>          meanb=r(meanb) ///
>          meani=r(meani) ///
>          mean100=r(mean100) ///
>          mean110=r(mean110) ///
>          mean120=r(mean120) ///
>          glmbinb0=r(glmbinb0) ///
>          glmbinbigel=r(glmbinbigel) ///
>          glmbinb100=r(glmbinb100) ///
>          glmbinb110=r(glmbinb110) ///
>          glmbinbigelp=r(glmbinbigelp) ///
>          glmbinb100p=r(glmbinb100p) ///
>          glmbinb110p=r(glmbinb110p) ///
>          glmbinb100110p=r(glmbinb100110p) ///
>          glmbinbigelp05=r(glmbinbigelp05) ///
>          glmbinb100p05=r(glmbinb100p05) ///
>          glmbinb110p05=r(glmbinb110p05) ///
>          glmbinb100110p05=r(glmbinb100110p05) ///
>          mixb0=r(mixb0) ///
>          mixbigel=r(mixbigel) ///
>          mixb100=r(mixb100) ///
>          mixb110=r(mixb110) ///
>          mixbigelp=r(mixbigelp) ///
>          mixb100p=r(mixb100p) ///
>          mixb110p=r(mixb110p) ///
>          mixb100110p=r(mixb100110p) ///
>          mixbigelp05=r(mixbigelp05) ///
>          mixb100p05=r(mixb100p05) ///
>          mixb110p05=r(mixb110p05) ///
>          mixb100110p05=r(mixb100110p05) ///
>          geebinb0=r(geebinb0) ///
>          geebinbigel=r(geebinbigel) ///
>          geebinb100=r(geebinb100) ///
>          geebinb110=r(geebinb110) ///
>          geebinbigelp=r(geebinbigelp) ///
>          geebinb100p=r(geebinb100p) ///
>          geebinb110p=r(geebinb110p) ///
>          geebinb100110p=r(geebinb100110p) ///
>          geebinbigelp05=r(geebinbigelp05) ///
>          geebinb100p05=r(geebinb100p05) ///
>          geebinb110p05=r(geebinb110p05) ///
>          geebinb100110p05=r(geebinb100110p05) ///
>          geelinb0=r(geelinb0) ///
>          geelinbigel=r(geelinbigel) ///
```

```
>          geelinb100=r(geelinb100) ///
>          geelinb110=r(geelinb110) ///
>          geelinbigelp=r(geelinbigelp) ///
>          geelinb100p=r(geelinb100p) ///
>          geelinb110p=r(geelinb110p) ///
>          geelinb100110p=r(geelinb100110p) ///
>          geelinbigelp05=r(geelinbigelp05) ///
>          geelinb100p05=r(geelinb100p05) ///
>          geelinb110p05=r(geelinb110p05) ///
>          geelinb100110p05=r(geelinb100110p05) ///
>          regb0=r(regb0) ///
>          regbigel=r(regbigel) ///
>          regb100=r(regb100) ///
>          regb110=r(regb110) ///
>          regbigelp=r(regbigelp) ///
>          regb100p=r(regb100p) ///
>          regb110p=r(regb110p) ///
>          regb100110p=r(regb100110p) ///
>          regbigelp05=r(regbigelp05) ///
>          regb100p05=r(regb100p05) ///
>          regb110p05=r(regb110p05) ///
>          regb100110p05=r(regb100110p05) ///
>          logitb0=r(logitb0) ///
>          logitbigel=r(logitbigel) ///
>          logitb100=r(logitb100) ///
>          logitb110=r(logitb110) ///
>          logitbigelp=r(logitbigelp) ///
>          logitb100p=r(logitb100p) ///
>          logitb110p=r(logitb110p) ///
>          logitb100110p=r(logitb100110p) ///
>          logitbigelp05=r(logitbigelp05) ///
>          logitb100p05=r(logitb100p05) ///
>          logitb110p05=r(logitb110p05) ///
>          logitb100110p05=r(logitb100110p05) ///
>          glmmixigeldiff=r(glmmixigeldiff) ///
>          glmgeebinigeldiff=r(glmgeebinigeldiff) ///
>          glmmgeelinigeldiff=r(glmmgeelinigeldiff) ///
>          glmregigeldiff=r(glmregigeldiff) ///
>             , reps(`14'): simula, nperp(`1') na(`2') add(`3') betaigel(`4') betarate(`5') ///
>             betab120(`6') betab110(`7') betab100(`8')  betai120(`9') betai110(`10')
betai100(`11') sigma1(`12')  ///
>             seed(`13')
```

```
         command:  simula, nperp(25) na(28) add(1) betaigel(0.036) betarate(0.025) betab120(0.126)
betab110(0.151) betab100(0.175) betai120(0.168) betai110(0.188)
                       betai100(0.208) sigma1(0.02) seed(488765)
          totaln:  r(totaln)
        mean120b:  r(mean120b)
          sd120b:  r(sd120b)
        mean110b:  r(mean110b)
          sd110b:  r(sd110b)
        mean100b:  r(mean100b)
          sd100b:  r(sd100b)
        mean120i:  r(mean120i)
          sd120i:  r(sd120i)
        mean110i:  r(mean110i)
          sd110i:  r(sd110i)
        mean100i:  r(mean100i)
          sd100i:  r(sd100i)
           meanb:  r(meanb)
           meani:  r(meani)
         mean100:  r(mean100)
         mean110:  r(mean110)
         mean120:  r(mean120)
        glmbinb0:  r(glmbinb0)
     glmbinbigel:  r(glmbinbigel)
      glmbinb100:  r(glmbinb100)
      glmbinb110:  r(glmbinb110)
    glmbinbigelp:  r(glmbinbigelp)
     glmbinb100p:  r(glmbinb100p)
```

```
     glmbinb110p:  r(glmbinb110p)
   glmbinb100110p:  r(glmbinb100110p)
   glmbinbigelp05:  r(glmbinbigelp05)
    glmbinb100p05:  r(glmbinb100p05)
    glmbinb110p05:  r(glmbinb110p05)
glmbinb100110p05:  r(glmbinb100110p05)
           mixb0:  r(mixb0)
         mixbigel:  r(mixbigel)
          mixb100:  r(mixb100)
          mixb110:  r(mixb110)
        mixbigelp:  r(mixbigelp)
         mixb100p:  r(mixb100p)
         mixb110p:  r(mixb110p)
      mixb100110p:  r(mixb100110p)
      mixbigelp05:  r(mixbigelp05)
       mixb100p05:  r(mixb100p05)
       mixb110p05:  r(mixb110p05)
    mixb100110p05:  r(mixb100110p05)
         geebinb0:  r(geebinb0)
       geebinbigel:  r(geebinbigel)
        geebinb100:  r(geebinb100)
        geebinb110:  r(geebinb110)
     geebinbigelp:  r(geebinbigelp)
      geebinb100p:  r(geebinb100p)
      geebinb110p:  r(geebinb110p)
   geebinb100110p:  r(geebinb100110p)
   geebinbigelp05:  r(geebinbigelp05)
    geebinb100p05:  r(geebinb100p05)
    geebinb110p05:  r(geebinb110p05)
geebinb100110p05:  r(geebinb100110p05)
         geelinb0:  r(geelinb0)
       geelinbigel:  r(geelinbigel)
        geelinb100:  r(geelinb100)
        geelinb110:  r(geelinb110)
     geelinbigelp:  r(geelinbigelp)
      geelinb100p:  r(geelinb100p)
      geelinb110p:  r(geelinb110p)
   geelinb100110p:  r(geelinb100110p)
   geelinbigelp05:  r(geelinbigelp05)
    geelinb100p05:  r(geelinb100p05)
    geelinb110p05:  r(geelinb110p05)
geelinb100110p05:  r(geelinb100110p05)
           regb0:  r(regb0)
         regbigel:  r(regbigel)
          regb100:  r(regb100)
          regb110:  r(regb110)
        regbigelp:  r(regbigelp)
         regb100p:  r(regb100p)
         regb110p:  r(regb110p)
      regb100110p:  r(regb100110p)
      regbigelp05:  r(regbigelp05)
       regb100p05:  r(regb100p05)
       regb110p05:  r(regb110p05)
    regb100110p05:  r(regb100110p05)
          logitb0:  r(logitb0)
        logitbigel:  r(logitbigel)
         logitb100:  r(logitb100)
         logitb110:  r(logitb110)
       logitbigelp:  r(logitbigelp)
        logitb100p:  r(logitb100p)
        logitb110p:  r(logitb110p)
    logitb100110p:  r(logitb100110p)
    logitbigelp05:  r(logitbigelp05)
     logitb100p05:  r(logitb100p05)
     logitb110p05:  r(logitb110p05)
  logitb100110p05:  r(logitb100110p05)
   glmmixigeldiff:  r(glmmixigeldiff)
glmgeebinigeld~f:  r(glmgeebinigeldiff)
glmmgeelinigel~f:  r(glmmgeelinigeldiff)
   glmregigeldiff:  r(glmregigeldiff)
```

```
Simulations (1000)
----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5
..................................................    50
..................................................   100
..................................................   150
..................................................   200
..................................................   250
..................................................   300
..................................................   350
..................................................   400
..................................................   450
..................................................   500
..................................................   550
..................................................   600
..................................................   650
..................................................   700
..................................................   750
..................................................   800
..................................................   850
..................................................   900
..................................................   950
..................................................  1000

.
. ***
.     display "Program was run as: do FACTorialshell `*'"
Program was run as: do FACTorialshell 25 28 1 0.036 0.025 0.126 0.151 0.175 0.168 0.188 0.208 0.02
488765 1000

.     display "with arguments: nperp na add betaigel betarate betab120 beatb110 betab100 beai120
betai110 betai100 sigma1 seed"
with arguments: nperp na add betaigel betarate betab120 beatb110 betab100 beai120 betai110 betai100
sigma1 seed

.     sum totaln mean120b mean110b mean100b mean120i mean110i mean100i  sd120b sd110b sd100b sd120i
sd110i sd100i

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
      totaln |      1,000        4200           0       4200       4200
    mean120b |      1,000     .126239    .0141626   .0842857   .1692308
    mean110b |      1,000    .1513423    .0142552   .1046154   .1911111
    mean100b |      1,000    .1763099    .0154023       .112   .2295652
    mean120i |      1,000    .1622076    .0150543        .12      .2096
-------------+---------------------------------------------------------
    mean110i |      1,000    .1869483    .0151938      .1392        .24
    mean100i |      1,000    .2114853    .0164817     .16375   .2608696
      sd120b |      1,000    .3316715    .0160172   .2780145   .3752444
      sd110b |      1,000    .3580869    .0139111   .3062929   .3934679
      sd100b |      1,000    .3808245    .0131266   .3155769   .4209194
-------------+---------------------------------------------------------
      sd120i |      1,000     .368342    .0138127   .3251939   .4073491
      sd110i |      1,000    .3896651    .0122979   .3464324   .4274395
      sd100i |      1,000    .4081563    .0116832   .3702801   .4394912

.     sum glmbinb0-glmbinb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    glmbinb0 |      1,000    .1264051    .0121281   .0879149   .1663826
 glmbinbigel |      1,000    .0356146     .011924  -.0015678   .0733496
  glmbinb100 |      1,000    .0496798    .0140247  -.0003224   .0900714
  glmbinb110 |      1,000    .0249482    .0138102  -.0206123   .0708066
glmbinbigelp |      1,000    .0328458    .0955504   4.20e-16   .8852859
-------------+---------------------------------------------------------
 glmbinb100p |      1,000    .0138919     .055879   5.13e-15   .9787068
 glmbinb110p |      1,000      .17663     .236965   1.78e-08   .9973777
glmb~100110p |      1,000    .0207989    .0695462   8.64e-15   .8928344
glmbinbig~05 |      1,000        .867    .3397446          0          1
```

```
glmbin~00p05 |      1,000        .943    .2319586          0          1
-------------+---------------------------------------------------------
glmbinb11~05 |      1,000        .459    .4985655          0          1
glmb~0110p05 |      1,000        .896    .3054133          0          1

.     sum mixb0-mixb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
       mixb0 |      1,000    .1264375    .0121468   .0871652   .1666042
    mixbigel |      1,000     .035578    .0119837  -.0020952   .0736177
     mixb100 |      1,000    .0496585    .0140636  -.0010257   .0897128
     mixb110 |      1,000      .02493     .013849  -.0208689   .0719319
   mixbigelp |      1,000    .0338499    .0978355   9.70e-16   .8502024
-------------+---------------------------------------------------------
    mixb100p |      1,000    .0142679    .0558949   1.96e-14   .9336739
    mixb110p |      1,000     .178509    .2396425   3.58e-08          1
 mixb100110p |      1,000    .0215814    .0700863   1.21e-14   .8852465
 mixbigelp05 |      1,000        .862    .3450726          0          1
  mixb100p05 |      1,000        .936    .2448754          0          1
-------------+---------------------------------------------------------
  mixb110p05 |      1,000         .47    .4993489          0          1
mixb10011~05 |      1,000          .9    .3001501          0          1

.     sum geebinb0-geebinb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    geebinb0 |      1,000    .1264085    .0121259   .0879157   .1663831
 geebinbigel |      1,000    .0356106    .0119208  -.0015801   .0733515
  geebinb100 |      1,000    .0496755    .0140259  -.0003227   .0900743
  geebinb110 |      1,000    .0249472    .0138065  -.0206102   .0709285
geebinbigelp |      1,000    .0334371    .0962401   8.01e-11   .8901523
-------------+---------------------------------------------------------
 geebinb100p |      1,000    .0134126     .055937   3.84e-11   .9820005
 geebinb110p |      1,000    .1788097    .2365282   8.47e-08   .9984127
geeb~100110p |      1,000    .0216412    .0684806   3.53e-12   .8743598
geebinbig~05 |      1,000        .858    .3492248          0          1
geebin~00p05 |      1,000         .94    .2376057          0          1
-------------+---------------------------------------------------------
geebinb11~05 |      1,000        .458    .4984822          0          1
geeb~0110p05 |      1,000        .898    .3027997          0          1

.     sum geelinb0-geelinb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    geelinb0 |      1,000    .1264375    .0121468   .0871652   .1666042
 geelinbigel |      1,000     .035578    .0119837  -.0020952   .0736177
  geelinb100 |      1,000    .0496585    .0140636  -.0010257   .0897128
  geelinb110 |      1,000      .02493     .013849  -.0208689   .0719319
geelinbigelp |      1,000    .0338499    .0978355   9.70e-16   .8502024
-------------+---------------------------------------------------------
 geelinb100p |      1,000    .0142679    .0558949   1.96e-14   .9336739
 geelinb110p |      1,000     .178509    .2396425   3.58e-08          1
geel~100110p |      1,000    .0215814    .0700863   1.21e-14   .8852465
geelinbig~05 |      1,000        .862    .3450726          0          1
geelin~00p05 |      1,000        .936    .2448754          0          1
-------------+---------------------------------------------------------
geelinb11~05 |      1,000         .47    .4993489          0          1
geel~0110p05 |      1,000          .9    .3001501          0          1

.     sum regb0-regb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
       regb0 |      1,000    .1264375    .0121468   .0871652   .1666042
    regbigel |      1,000     .035578    .0119837  -.0020952   .0736177
     regb100 |      1,000    .0496585    .0140636  -.0010257   .0897128
     regb110 |      1,000      .02493     .013849  -.0208689   .0719319
```

```
   regbigelp |      1,000    .0346537      .09854   1.13e-10   .8558321
-------------+---------------------------------------------------------
    regb100p |      1,000    .0139161    .0561135   4.79e-11   .9430854
    regb110p |      1,000    .1813767    .2393867   6.16e-08          1
 regb100110p |      1,000     .022606    .0697101   3.38e-12   .8669469
 regbigelp05 |      1,000         .86    .3471607          0          1
  regb100p05 |      1,000        .939    .2394501          0          1
-------------+---------------------------------------------------------
  regb110p05 |      1,000        .454    .4981286          0          1
regb10011~05 |      1,000        .891    .3117952          0          1

.     sum logitb0-logitb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
     logitb0 |      1,000   -1.924993    .1012932  -2.277572  -1.609721
  logitbigel |      1,000    .2563233    .0871666  -.0151602   .5447571
   logitb100 |      1,000    .3587563    .1031545  -.0071255   .7095464
   logitb110 |      1,000    .1909624    .1070102  -.1565745   .5925114
 logitbigelp |      1,000    .0344622    .0977545   1.69e-10   .8574194
-------------+---------------------------------------------------------
  logitb100p |      1,000    .0137991     .055783   8.40e-11   .9434217
  logitb110p |      1,000     .181119    .2390359   8.60e-08   .9992844
logi~100110p |      1,000    .0224678    .0693925   1.51e-10   .8652891
logitbige~05 |      1,000        .858    .3492248          0          1
logitb100p05 |      1,000        .939    .2394501          0          1
-------------+---------------------------------------------------------
logitb110p05 |      1,000        .455    .4982201          0          1
logitb1001~5 |      1,000         .89    .3130463          0          1

.     sum glmmixigeldiff-glmregigeldiff

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
glmmixigel~f |      1,000    .0000367    .0012779  -.0045205   .0047106
glmgeebini~f |      1,000    3.97e-06    .0001115  -.0006296   .0008807
glmmgeelin~f |      1,000    .0000367    .0012779  -.0045205   .0047106
glmregigel~f |      1,000    .0000367    .0012779  -.0045205   .0047106

.     sum glmbinbigel mixbigel geebinbigel geelinbigel regbigel

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
 glmbinbigel |      1,000    .0356146     .011924  -.0015678   .0733496
    mixbigel |      1,000     .035578    .0119837  -.0020952   .0736177
 geebinbigel |      1,000    .0356106    .0119208  -.0015801   .0733515
 geelinbigel |      1,000     .035578    .0119837  -.0020952   .0736177
    regbigel |      1,000     .035578    .0119837  -.0020952   .0736177

.     sum meanb meani mean100 mean110 mean120

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
       meanb |      1,000    .1512214    .0092154   .1214286   .1809524
       meani |      1,000    .1869571    .0094595   .1552381   .2195238
     mean100 |      1,000    .1940107    .0113987   .1464286   .2278571
     mean110 |      1,000    .1689943    .0105238   .1385714   .2078571
     mean120 |      1,000    .1442629    .0109451   .1092857   .1735714

.     sum glmbinb100110p05 mixb100110p05 geebinb100110p05 geelinb100110p05 regb100110p05
logitb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
glmb~0110p05 |      1,000        .896    .3054133          0          1
mixb10011~05 |      1,000          .9    .3001501          0          1
geeb~0110p05 |      1,000        .898    .3027997          0          1
geel~0110p05 |      1,000          .9    .3001501          0          1
regb10011~05 |      1,000        .891    .3117952          0          1
-------------+---------------------------------------------------------
```

```
logitb1001~5 |      1,000         .89    .3130463          0          1

.     sum glmbinbigelp05 mixbigelp05 geebinbigelp05 geelinbigelp05 regbigelp05 logitbigelp05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
glmbinbig~05 |      1,000        .867    .3397446          0          1
 mixbigelp05 |      1,000        .862    .3450726          0          1
geebinbig~05 |      1,000        .858    .3492248          0          1
geelinbig~05 |      1,000        .862    .3450726          0          1
 regbigelp05 |      1,000         .86    .3471607          0          1
-------------+---------------------------------------------------------
logitbige~05 |      1,000        .858    .3492248          0          1

.
.     capture save results.dta, replace

.
.     display "Simulation ended  $S_DATE   $S_TIME"
Simulation ended   7 Jul 2019   21:32:12

.
.
.
.
.
.
end of do-file

.
. do FACTorialshell 25 28 1 0.037 0.026 0.125 0.151 0.175 0.168 0.188 0.208 0.02 334001 1000

.
. ************************************************************************
. *
. * Program to try out power and sample size for FACT project
. *
. * this is the "shell" program for FACTorial.do
. *
. *
. * Author: Susanne May
. * Date: 07/05/2019
. *
. *
. * this program requires input parameters, NOTE input parameter do not seem to work, directly code
the values instead
. *
. *       1 = nperp number of observations per period (we assume 6 periods for each agency)
. *           e.g. with 28 agencies, 6 periods and 25 observations per period the total is 4200
. *       2 = na number of agencies
. *       3 = add indicator for additive effect (1 yes, 0 no)
. *       4 = betaigel effect if igel if additive
. *       5 = betarate effect of compression rate if additive
. *       6 = betab120 background rate for anticipated lowest survival group (referent)
. *       7 = betab110 survival rate for BVM with rate 110 if not additive
. *       8 = betab100 survival rate for BVM with rate 100 if not additive
. *       9 = betai120 survival rate for igel with rate 120 if not additive
. *      10 = betai110 survival rate for igel with rate 110 if not additive
. *      11 = betai100 survival rate for igel with rate 100 if not additive
. *      12 = sigma1 variance for normally distributed random effect of cluster / agency
. *      13 = random number seed
. *      14 = number of replications
. *
. *       . do FACTorial 25 28 1 0.038 0.02 0.13 0.15 0.17 0.168 0.188 0.208 0.03 539083 10000
. *
. * run this file once as
. *
. *    do FACTorial
. *
. * before running runlots.do
```

```
. *
. ************************************************************************
.
.     display "Simulation started  $S_DATE   $S_TIME"
Simulation started   7 Jul 2019   21:32:12


.
.     clear

.     use one

.     replace nummer=1 in 1
(1 real change made)

.     save,replace
file one.dta saved

.     clear

.
.     simulate     totaln=r(totaln)  ///
>          mean120b=r(mean120b) ///
>          sd120b=r(sd120b) ///
>          mean110b=r(mean110b) ///
>          sd110b=r(sd110b) ///
>          mean100b=r(mean100b) ///
>          sd100b=r(sd100b) ///
>          mean120i=r(mean120i) ///
>          sd120i=r(sd120i) ///
>          mean110i=r(mean110i) ///
>          sd110i=r(sd110i) ///
>          mean100i=r(mean100i) ///
>          sd100i=r(sd100i) ///
>          meanb=r(meanb) ///
>          meani=r(meani) ///
>          mean100=r(mean100) ///
>          mean110=r(mean110) ///
>          mean120=r(mean120) ///
>          glmbinb0=r(glmbinb0) ///
>          glmbinbigel=r(glmbinbigel) ///
>          glmbinb100=r(glmbinb100) ///
>          glmbinb110=r(glmbinb110) ///
>          glmbinbigelp=r(glmbinbigelp) ///
>          glmbinb100p=r(glmbinb100p) ///
>          glmbinb110p=r(glmbinb110p) ///
>          glmbinb100110p=r(glmbinb100110p) ///
>          glmbinbigelp05=r(glmbinbigelp05) ///
>          glmbinb100p05=r(glmbinb100p05) ///
>          glmbinb110p05=r(glmbinb110p05) ///
>          glmbinb100110p05=r(glmbinb100110p05) ///
>          mixb0=r(mixb0) ///
>          mixbigel=r(mixbigel) ///
>          mixb100=r(mixb100) ///
>          mixb110=r(mixb110) ///
>          mixbigelp=r(mixbigelp) ///
>          mixb100p=r(mixb100p) ///
>          mixb110p=r(mixb110p) ///
>          mixb100110p=r(mixb100110p) ///
>          mixbigelp05=r(mixbigelp05) ///
>          mixb100p05=r(mixb100p05) ///
>          mixb110p05=r(mixb110p05) ///
>          mixb100110p05=r(mixb100110p05) ///
>          geebinb0=r(geebinb0) ///
>          geebinbigel=r(geebinbigel) ///
>          geebinb100=r(geebinb100) ///
>          geebinb110=r(geebinb110) ///
>          geebinbigelp=r(geebinbigelp) ///
>          geebinb100p=r(geebinb100p) ///
>          geebinb110p=r(geebinb110p) ///
>          geebinb100110p=r(geebinb100110p) ///
```

```
>          geebinbigelp05=r(geebinbigelp05) ///
>          geebinb100p05=r(geebinb100p05) ///
>          geebinb110p05=r(geebinb110p05) ///
>          geebinb100110p05=r(geebinb100110p05) ///
>          geelinb0=r(geelinb0) ///
>          geelinbigel=r(geelinbigel) ///
>          geelinb100=r(geelinb100) ///
>          geelinb110=r(geelinb110) ///
>          geelinbigelp=r(geelinbigelp) ///
>          geelinb100p=r(geelinb100p) ///
>          geelinb110p=r(geelinb110p) ///
>          geelinb100110p=r(geelinb100110p) ///
>          geelinbigelp05=r(geelinbigelp05) ///
>          geelinb100p05=r(geelinb100p05) ///
>          geelinb110p05=r(geelinb110p05) ///
>          geelinb100110p05=r(geelinb100110p05) ///
>          regb0=r(regb0) ///
>          regbigel=r(regbigel) ///
>          regb100=r(regb100) ///
>          regb110=r(regb110) ///
>          regbigelp=r(regbigelp) ///
>          regb100p=r(regb100p) ///
>          regb110p=r(regb110p) ///
>          regb100110p=r(regb100110p) ///
>          regbigelp05=r(regbigelp05) ///
>          regb100p05=r(regb100p05) ///
>          regb110p05=r(regb110p05) ///
>          regb100110p05=r(regb100110p05) ///
>          logitb0=r(logitb0) ///
>          logitbigel=r(logitbigel) ///
>          logitb100=r(logitb100) ///
>          logitb110=r(logitb110) ///
>          logitbigelp=r(logitbigelp) ///
>          logitb100p=r(logitb100p) ///
>          logitb110p=r(logitb110p) ///
>          logitb100110p=r(logitb100110p) ///
>          logitbigelp05=r(logitbigelp05) ///
>          logitb100p05=r(logitb100p05) ///
>          logitb110p05=r(logitb110p05) ///
>          logitb100110p05=r(logitb100110p05) ///
>          glmmixigeldiff=r(glmmixigeldiff) ///
>          glmgeebinigeldiff=r(glmgeebinigeldiff) ///
>          glmmgeelinigeldiff=r(glmmgeelinigeldiff) ///
>          glmregigeldiff=r(glmregigeldiff) ///
>             , reps(`14'): simula, nperp(`1') na(`2') add(`3') betaigel(`4') betarate(`5') ///
>             betab120(`6') betab110(`7') betab100(`8')  betai120(`9') betai110(`10')
betai100(`11') sigma1(`12')  ///
>             seed(`13')
```

```
         command:  simula, nperp(25) na(28) add(1) betaigel(0.037) betarate(0.026) betab120(0.125)
betab110(0.151) betab100(0.175) betai120(0.168) betai110(0.188)
                       betai100(0.208) sigma1(0.02) seed(334001)
          totaln:  r(totaln)
        mean120b:  r(mean120b)
          sd120b:  r(sd120b)
        mean110b:  r(mean110b)
          sd110b:  r(sd110b)
        mean100b:  r(mean100b)
          sd100b:  r(sd100b)
        mean120i:  r(mean120i)
          sd120i:  r(sd120i)
        mean110i:  r(mean110i)
          sd110i:  r(sd110i)
        mean100i:  r(mean100i)
          sd100i:  r(sd100i)
           meanb:  r(meanb)
           meani:  r(meani)
         mean100:  r(mean100)
         mean110:  r(mean110)
         mean120:  r(mean120)
```

```
        glmbinb0:  r(glmbinb0)
     glmbinbigel:  r(glmbinbigel)
      glmbinb100:  r(glmbinb100)
      glmbinb110:  r(glmbinb110)
    glmbinbigelp:  r(glmbinbigelp)
     glmbinb100p:  r(glmbinb100p)
     glmbinb110p:  r(glmbinb110p)
  glmbinb100110p:  r(glmbinb100110p)
  glmbinbigelp05:  r(glmbinbigelp05)
   glmbinb100p05:  r(glmbinb100p05)
   glmbinb110p05:  r(glmbinb110p05)
glmbinb100110p05:  r(glmbinb100110p05)
           mixb0:  r(mixb0)
        mixbigel:  r(mixbigel)
         mixb100:  r(mixb100)
         mixb110:  r(mixb110)
       mixbigelp:  r(mixbigelp)
        mixb100p:  r(mixb100p)
        mixb110p:  r(mixb110p)
     mixb100110p:  r(mixb100110p)
     mixbigelp05:  r(mixbigelp05)
      mixb100p05:  r(mixb100p05)
      mixb110p05:  r(mixb110p05)
   mixb100110p05:  r(mixb100110p05)
        geebinb0:  r(geebinb0)
     geebinbigel:  r(geebinbigel)
      geebinb100:  r(geebinb100)
      geebinb110:  r(geebinb110)
    geebinbigelp:  r(geebinbigelp)
     geebinb100p:  r(geebinb100p)
     geebinb110p:  r(geebinb110p)
  geebinb100110p:  r(geebinb100110p)
  geebinbigelp05:  r(geebinbigelp05)
   geebinb100p05:  r(geebinb100p05)
   geebinb110p05:  r(geebinb110p05)
geebinb100110p05:  r(geebinb100110p05)
        geelinb0:  r(geelinb0)
     geelinbigel:  r(geelinbigel)
      geelinb100:  r(geelinb100)
      geelinb110:  r(geelinb110)
    geelinbigelp:  r(geelinbigelp)
     geelinb100p:  r(geelinb100p)
     geelinb110p:  r(geelinb110p)
  geelinb100110p:  r(geelinb100110p)
  geelinbigelp05:  r(geelinbigelp05)
   geelinb100p05:  r(geelinb100p05)
   geelinb110p05:  r(geelinb110p05)
geelinb100110p05:  r(geelinb100110p05)
           regb0:  r(regb0)
        regbigel:  r(regbigel)
         regb100:  r(regb100)
         regb110:  r(regb110)
       regbigelp:  r(regbigelp)
        regb100p:  r(regb100p)
        regb110p:  r(regb110p)
     regb100110p:  r(regb100110p)
     regbigelp05:  r(regbigelp05)
      regb100p05:  r(regb100p05)
      regb110p05:  r(regb110p05)
   regb100110p05:  r(regb100110p05)
          logitb0:  r(logitb0)
       logitbigel:  r(logitbigel)
        logitb100:  r(logitb100)
        logitb110:  r(logitb110)
      logitbigelp:  r(logitbigelp)
       logitb100p:  r(logitb100p)
       logitb110p:  r(logitb110p)
   logitb100110p:  r(logitb100110p)
   logitbigelp05:  r(logitbigelp05)
    logitb100p05:  r(logitb100p05)
```

```
    logitb110p05:  r(logitb110p05)
 logitb100110p05:  r(logitb100110p05)
  glmmixigeldiff:  r(glmmixigeldiff)
glmgeebinigeld~f:  r(glmgeebinigeldiff)
glmmgeelinigel~f:  r(glmmgeelinigeldiff)
  glmregigeldiff:  r(glmregigeldiff)

Simulations (1000)
----+--- 1 ---+--- 2 ---+--- 3 ---+--- 4 ---+--- 5
..................................................    50
..................................................   100
..................................................   150
..................................................   200
..................................................   250
..................................................   300
..................................................   350
..................................................   400
..................................................   450
..................................................   500
..................................................   550
..................................................   600
..................................................   650
..................................................   700
..................................................   750
..................................................   800
..................................................   850
..................................................   900
..................................................   950
..................................................  1000

.
. ***
.     display "Program was run as: do FACTorialshell `*'"
Program was run as: do FACTorialshell 25 28 1 0.037 0.026 0.125 0.151 0.175 0.168 0.188 0.208 0.02
334001 1000

.     display "with arguments: nperp na add betaigel betarate betab120 beatb110 betab100 beai120
betai110 betai100 sigma1 seed"
with arguments: nperp na add betaigel betarate betab120 beatb110 betab100 beai120 betai110 betai100
sigma1 seed

.     sum totaln mean120b mean110b mean100b mean120i mean110i mean100i  sd120b sd110b sd100b sd120i
sd110i sd100i

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
      totaln |      1,000        4200           0       4200       4200
    mean120b |      1,000    .1253688    .0131787   .0785714       .168
    mean110b |      1,000    .1509617    .0138656   .1075862   .2025806
    mean100b |      1,000    .1772081    .0152574   .1321739   .2228571
    mean120i |      1,000    .1614792    .0139296   .1148387   .2068966
-------------+---------------------------------------------------------
    mean110i |      1,000    .1886231    .0152577   .1416667   .2466667
    mean100i |      1,000    .2139886    .0166131       .162   .2868966
      sd120b |      1,000    .3307776    .0149741   .2692611   .3742407
      sd110b |      1,000    .3577425    .0136162    .310071   .4021821
      sd100b |      1,000    .3815974    .0129394   .3389746   .4164608
-------------+---------------------------------------------------------
      sd120i |      1,000    .3677508    .0128224   .3190331   .4053603
      sd110i |      1,000    .3910074    .0121672   .3489989   .4313587
      sd100i |      1,000    .4099149    .0116407   .3688198   .4526251

.     sum glmbinb0-glmbinb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    glmbinb0 |      1,000    .1250847    .0108784   .0929528   .1612625
 glmbinbigel |      1,000    .0368236     .011509   .0028193   .0706844
  glmbinb100 |      1,000    .0520867     .013801   .0054082   .0898324
  glmbinb110 |      1,000     .026252    .0130338  -.0154857   .0673304
```

```
glmbinbigelp |      1,000     .022419    .0690818   2.61e-12   .8196716
-------------+---------------------------------------------------------
 glmbinb100p |      1,000    .0091127    .0398462   1.89e-17   .7299913
 glmbinb110p |      1,000    .1535554    .2169563   3.22e-09   .9931399
glmb~100110p |      1,000    .0155803    .0532405   2.64e-20   .7047125
glmbinbig~05 |      1,000        .894    .3079917          0          1
glmbin~00p05 |      1,000        .958    .2006895          0          1
-------------+---------------------------------------------------------
glmbinb11~05 |      1,000        .488    .5001061          0          1
glmb~0110p05 |      1,000        .919    .2729716          0          1

.     sum mixb0-mixb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
       mixb0 |      1,000    .1250352    .0109494   .0891284   .1612817
    mixbigel |      1,000    .0368542    .0115922   .0001597   .0712191
     mixb100 |      1,000    .0521215     .013885   .0048294   .0938859
     mixb110 |      1,000    .0263173    .0130648  -.0168999   .0691094
   mixbigelp |      1,000    .0229181    .0716198   7.14e-15   .9896375
-------------+---------------------------------------------------------
    mixb100p |      1,000    .0096857    .0424919   1.06e-16   .7714291
    mixb110p |      1,000    .1531497    .2143945   6.98e-09          1
 mixb100110p |      1,000    .0158382    .0538657   9.65e-19   .6935269
 mixbigelp05 |      1,000        .886    .3179703          0          1
  mixb100p05 |      1,000        .956    .2051977          0          1
-------------+---------------------------------------------------------
  mixb110p05 |      1,000         .49    .5001501          0          1
mixb10011~05 |      1,000        .915    .2790212          0          1

.     sum geebinb0-geebinb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    geebinb0 |      1,000    .1250859    .0108745   .0926748   .1613884
 geebinbigel |      1,000    .0368217    .0115022   .0028246   .0706698
  geebinb100 |      1,000    .0520831    .0138035   .0053808   .0897973
  geebinb110 |      1,000    .0262559    .0130321  -.0155938   .0673135
geebinbigelp |      1,000    .0225086    .0692306   1.22e-09   .8053921
-------------+---------------------------------------------------------
 geebinb100p |      1,000    .0078803    .0360482   2.85e-10   .6930982
 geebinb110p |      1,000    .1532964     .214481   4.08e-07   .9814458
geeb~100110p |      1,000    .0145529    .0495863   1.77e-10   .6515192
geebinbig~05 |      1,000        .899    .3014795          0          1
geebin~00p05 |      1,000         .96    .1960572          0          1
-------------+---------------------------------------------------------
geebinb11~05 |      1,000        .476    .4996736          0          1
geeb~0110p05 |      1,000        .928    .2586173          0          1

.     sum geelinb0-geelinb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
    geelinb0 |      1,000    .1250352    .0109494   .0891284   .1612817
 geelinbigel |      1,000    .0368542    .0115922   .0001597   .0712191
  geelinb100 |      1,000    .0521215     .013885   .0048294   .0938859
  geelinb110 |      1,000    .0263173    .0130648  -.0168999   .0691094
geelinbigelp |      1,000    .0229181    .0716198   7.14e-15   .9896375
-------------+---------------------------------------------------------
 geelinb100p |      1,000    .0096857    .0424919   1.06e-16   .7714291
 geelinb110p |      1,000    .1531497    .2143945   6.98e-09          1
geel~100110p |      1,000    .0158382    .0538657   9.65e-19   .6935269
geelinbig~05 |      1,000        .886    .3179703          0          1
geelin~00p05 |      1,000        .956    .2051977          0          1
-------------+---------------------------------------------------------
geelinb11~05 |      1,000         .49    .5001501          0          1
geel~0110p05 |      1,000        .915    .2790212          0          1

.     sum regb0-regb100110p05
```

```
    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
       regb0 |      1,000    .1250352    .0109494   .0891284   .1612817
    regbigel |      1,000    .0368542    .0115922   .0001597   .0712191
     regb100 |      1,000    .0521215     .013885   .0048294   .0938859
     regb110 |      1,000    .0263173    .0130648  -.0168999   .0691094
   regbigelp |      1,000    .0232009    .0715686   1.71e-09   .9888169
-------------+---------------------------------------------------------
    regb100p |      1,000    .0083984    .0382318   5.02e-11   .7255685
    regb110p |      1,000    .1536611    .2121149   2.86e-07          1
 regb100110p |      1,000    .0151164    .0511416   3.06e-10   .6333252
 regbigelp05 |      1,000        .886    .3179703          0          1
  regb100p05 |      1,000         .96    .1960572          0          1
-------------+---------------------------------------------------------
  regb110p05 |      1,000        .477    .4997206          0          1
regb10011~05 |      1,000        .927    .2602667          0          1

.     sum logitb0-logitb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
     logitb0 |      1,000   -1.935007    .0919428  -2.273576  -1.659152
  logitbigel |      1,000    .2648344    .0837765   .0013685   .5130908
   logitb100 |      1,000    .3753613    .1000304   .0374718   .6628711
   logitb110 |      1,000    .2008158    .1000715  -.1388202   .5495195
 logitbigelp |      1,000    .0231773    .0715291   2.33e-09   .9873252
-------------+---------------------------------------------------------
  logitb100p |      1,000    .0083632    .0380447   1.06e-10   .7189172
  logitb110p |      1,000    .1539069    .2125261   4.00e-07   .9967955
logi~100110p |      1,000    .0153255    .0515509   7.45e-10   .6377913
logitbige~05 |      1,000        .888    .3155243          0          1
logitb100p05 |      1,000         .96    .1960572          0          1
-------------+---------------------------------------------------------
logitb110p05 |      1,000        .477    .4997206          0          1
logitb1001~5 |      1,000        .928    .2586173          0          1

.     sum glmmixigeldiff-glmregigeldiff

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
glmmixigel~f |      1,000   -.0000306    .0013405  -.0054525    .006125
glmgeebini~f |      1,000    1.86e-06    .0001171  -.0005653   .0005529
glmmgeelin~f |      1,000   -.0000306    .0013405  -.0054525    .006125
glmregigel~f |      1,000   -.0000306    .0013405  -.0054525    .006125

.     sum glmbinbigel mixbigel geebinbigel geelinbigel regbigel

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
 glmbinbigel |      1,000    .0368236     .011509   .0028193   .0706844
    mixbigel |      1,000    .0368542    .0115922   .0001597   .0712191
 geebinbigel |      1,000    .0368217    .0115022   .0028246   .0706698
 geelinbigel |      1,000    .0368542    .0115922   .0001597   .0712191
    regbigel |      1,000    .0368542    .0115922   .0001597   .0712191

.     sum meanb meani mean100 mean110 mean120

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
       meanb |      1,000     .151219    .0086644   .1209524   .1890476
       meani |      1,000    .1879981    .0092273   .1566667   .2190476
     mean100 |      1,000    .1955907    .0114886   .1607143   .2335714
     mean110 |      1,000    .1696579    .0108209   .1342857   .2064286
     mean120 |      1,000    .1435771    .0096527   .1085714   .1707143

.     sum glmbinb100110p05 mixb100110p05 geebinb100110p05 geelinb100110p05 regb100110p05
logitb100110p05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
```

```
glmb~0110p05 |      1,000        .919    .2729716          0          1
mixb10011~05 |      1,000        .915    .2790212          0          1
geeb~0110p05 |      1,000        .928    .2586173          0          1
geel~0110p05 |      1,000        .915    .2790212          0          1
regb10011~05 |      1,000        .927    .2602667          0          1
-------------+---------------------------------------------------------
logitb1001~5 |      1,000        .928    .2586173          0          1

.     sum glmbinbigelp05 mixbigelp05 geebinbigelp05 geelinbigelp05 regbigelp05 logitbigelp05

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
glmbinbig~05 |      1,000        .894    .3079917          0          1
 mixbigelp05 |      1,000        .886    .3179703          0          1
geebinbig~05 |      1,000        .899    .3014795          0          1
geelinbig~05 |      1,000        .886    .3179703          0          1
 regbigelp05 |      1,000        .886    .3179703          0          1
-------------+---------------------------------------------------------
logitbige~05 |      1,000        .888    .3155243          0          1

.
.     capture save results.dta, replace

.
.     display "Simulation ended  $S_DATE   $S_TIME"
Simulation ended   7 Jul 2019   21:51:47

.
.
.
.
.
.
end of do-file

.
.
. log close
      name:  <unnamed>
       log:  M:\Projects\TomRea\2019-RO1\Stata\runlots.log
  log type:  text
 closed on:   7 Jul 2019, 21:51:47
-------------------------------------------------------------------------------------------------------------------
-------------------------------------------------------------------------------
```