The supplementary file

Yiliu Cao

2023-04-06

In this file, I will show the generated data in the experiment.

```r
# Set up the factorial design with complete blocks
# The default number of block is 2 and the number of factor is 3
n <- 50
x1 <- rep(c(-1, 1), 2^3*n)
x2 <- rep(c(-1, -1, 1, 1), 2^3*n/2)
x3 <- rep(c(rep(-1, 4),rep(1,4)), 2^3*n/4)

# Distinguish the blocks for each observation
blk <- (c(rep(1, 2^3*n), rep(2, 2^3*n)))
run <- c(1:(2^3*n*2))
data <- data.frame(Run = run,
            M = x1,
            O = x2,
            P = x3,
            Block = blk)
```

Generate the outcome:

```r
# Set up the outcome
set.seed(305)
# Different factor has different effects on the outcome
rating <- c()
for (i in 1:nrow(data)){
  basic <- 50
  if (data[i,2] == 1){
    basic <- basic + rnorm(1, 15, 5)
  }
  if (data[i,3] == 1){
    basic <- basic + rnorm(1, 15, 10)
  }
  if (data[i,4] == 1){
    basic <- basic + rnorm(1, 10, 5)
  }
  if (basic > 100){
    basic <- 100
  }
  else if (basic < 0){
    basic <- 0
  }
  rating[i] <- round(basic, 0)
}
data$Rating <- rating
```

```
# You can choose to export the data set
# write.csv(data, "data_FP.csv", row.names = FALSE)
```

In my codes, you can find the I set the first half observations to be the block 1 and the second half to be block 2. However, the number of observations is huge, I will only present 40 observations for each block (Runs 1 to 40 and Runs 401 to 440).

For the block 1"

```
print(data[c(1:40), ])
```

```
##     Run  M  O  P Block Rating
## 1     1 -1 -1 -1     1     50
## 2     2  1 -1 -1     1     69
## 3     3 -1  1 -1     1     64
## 4     4  1  1 -1     1     75
## 5     5 -1 -1  1     1     63
## 6     6  1 -1  1     1     79
## 7     7 -1  1  1     1     77
## 8     8  1  1  1     1    100
## 9     9 -1 -1 -1     1     50
## 10   10  1 -1 -1     1     71
## 11   11 -1  1 -1     1     50
## 12   12  1  1 -1     1     92
## 13   13 -1 -1  1     1     50
## 14   14  1 -1  1     1     72
## 15   15 -1  1  1     1     72
## 16   16  1  1  1     1     71
## 17   17 -1 -1 -1     1     50
## 18   18  1 -1 -1     1     62
## 19   19 -1  1 -1     1     81
## 20   20  1  1 -1     1     55
## 21   21 -1 -1  1     1     61
## 22   22  1 -1  1     1     68
## 23   23 -1  1  1     1     69
## 24   24  1  1  1     1     91
## 25   25 -1 -1 -1     1     50
## 26   26  1 -1 -1     1     72
## 27   27 -1  1 -1     1     80
## 28   28  1  1 -1     1     79
## 29   29 -1 -1  1     1     64
## 30   30  1 -1  1     1     73
## 31   31 -1  1  1     1     70
## 32   32  1  1  1     1    100
## 33   33 -1 -1 -1     1     50
## 34   34  1 -1 -1     1     68
## 35   35 -1  1 -1     1     68
## 36   36  1  1 -1     1     88
## 37   37 -1 -1  1     1     55
## 38   38  1 -1  1     1     72
## 39   39 -1  1  1     1     60
## 40   40  1  1  1     1     88
```

For the block 2:

```
print(data[c(401:440), ])
```

```
##       Run  M  O  P Block Rating
## 401 401 -1 -1 -1     2     50
## 402 402  1 -1 -1     2     59
## 403 403 -1  1 -1     2     61
## 404 404  1  1 -1     2    100
## 405 405 -1 -1  1     2     51
## 406 406  1 -1  1     2     79
## 407 407 -1  1  1     2     73
## 408 408  1  1  1     2     84
## 409 409 -1 -1 -1     2     50
## 410 410  1 -1 -1     2     72
## 411 411 -1  1 -1     2     61
## 412 412  1  1 -1     2     72
## 413 413 -1 -1  1     2     58
## 414 414  1 -1  1     2     74
## 415 415 -1  1  1     2     63
## 416 416  1  1  1     2    100
## 417 417 -1 -1 -1     2     50
## 418 418  1 -1 -1     2     67
## 419 419 -1  1 -1     2     71
## 420 420  1  1 -1     2     76
## 421 421 -1 -1  1     2     62
## 422 422  1 -1  1     2     73
## 423 423 -1  1  1     2     65
## 424 424  1  1  1     2     89
## 425 425 -1 -1 -1     2     50
## 426 426  1 -1 -1     2     75
## 427 427 -1  1 -1     2     70
## 428 428  1  1 -1     2     73
## 429 429 -1 -1  1     2     62
## 430 430  1 -1  1     2     74
## 431 431 -1  1  1     2     79
## 432 432  1  1  1     2     94
## 433 433 -1 -1 -1     2     50
## 434 434  1 -1 -1     2     72
## 435 435 -1  1 -1     2     72
## 436 436  1  1 -1     2     73
## 437 437 -1 -1  1     2     60
## 438 438  1 -1  1     2     78
## 439 439 -1  1  1     2     70
## 440 440  1  1  1     2     88
```

If you want the full data, you can run the following code:

```
# write.csv(data, "data_FP.csv", row.names = FALSE)
```

Then you can have a data named "data_FP.csv" locally.