```r
## Load libraries
library(splines)
library(MASS)
library(FDRreg)

## Loading required package:  fda
## Warning:  package 'fda' was built under R version 3.3.3
## Loading required package:  Matrix
##
## Attaching package:  'fda'
## The following object is masked from 'package:graphics':
##
##     matplot
## Loading required package:  BayesLogit
## Warning:  package 'BayesLogit' was built under R version 3.3.2
## Loading required package:  mvtnorm
## Warning:  package 'mvtnorm' was built under R version 3.3.2

library(curl)

library(doParallel) ##to make cluster (on Windows)

## Loading required package:  foreach
## Loading required package:  iterators
## Loading required package:  parallel

library(foreach) ##to use foreach function that does the parallel processing
library(doRNG) ##for reproducible seeds when doing parallel processing

## Loading required package:  rngtools
## Warning:  package 'rngtools' was built under R version 3.3.2
## Loading required package:  pkgmaker
## Warning:  package 'pkgmaker' was built under R version 3.3.2
## Loading required package:  registry
## Warning:  package 'registry' was built under R version 3.3.2
##
## Attaching package:  'pkgmaker'
## The following object is masked from 'package:base':
##
##     isNamespaceLoaded

##Source functions
source("../functions.R")

options(warn=1)
```

Define nulltype for Scott method:

```
nulltype <- "empirical"
```

Nothing from alternative distribution, since this is for the global null:

```
folder <- "global_null"
```

1 Probability of being a false positive is 1

Perform estimation and save estimates:

```
set.seed(880184)

print(folder)

## [1] "global_null"

load(paste(folder,"simResults_0.RData",sep="/"))
ntest <- ncol(zValuesSims)

pi0hatScottMat_emp <- estimate_Scott_sims(zValuesSims, tme, nulltype)

pi0hatScottMean_emp <- colMeans(pi0hatScottMat_emp[,1:ntest])
pi0hatScottVar_emp <- apply(pi0hatScottMat_emp[,1:ntest],2,var)

pi0hat.ScottMat_emp <- pi0hatScottMat_emp[,1:ntest]
FDR.ScottMat_emp <- pi0hatScottMat_emp[,(ntest+1):(2*ntest)]

##save full results
save(file=paste(folder,"simResults_pi0x_Scott_emp_0_full.RData",sep="/"),
     list=c("pi0hat.ScottMat_emp", "FDR.ScottMat_emp"))

##save summary results
save(file=paste(folder,"simResults_pi0x_Scott_emp_0.RData",sep="/"),
     list=c("tme", "pi0",
            "pi0hatScottMean_emp","pi0hatScottVar_emp"))
```

Session info:

```
devtools::session_info()

## Session info ------------------------------------------------

##  setting  value
##  version  R version 3.3.1 (2016-06-21)
##  system   x86_64, mingw32
```

```
## ui         RTerm
## language (EN)
## collate   English_United States.1252
## tz        America/New_York
## date      2018-09-17

## Packages -------------------------------------------------
## package    * version date
## assertthat   0.1     2013-12-06
## BayesLogit * 0.6     2016-10-20
## bindr        0.1     2016-11-13
## bindrcpp     0.2     2017-06-17
## codetools    0.2-14  2015-07-15
## colorspace   1.2-6   2015-03-11
## curl       * 0.9.7   2016-04-10
## devtools     1.12.0  2016-06-24
## digest       0.6.12  2017-01-27
## doParallel * 1.0.10  2015-10-14
## doRNG      * 1.6     2014-03-07
## dplyr        0.7.4   2017-09-28
## evaluate     0.10    2016-10-11
## fda        * 2.4.4   2014-12-16
## FDRreg     * 0.2-1   2017-05-03
## foreach    * 1.4.3   2015-10-13
## ggdendro     0.1-20  2016-04-27
## ggplot2      2.2.1   2016-12-30
## glue         1.1.1   2017-06-21
## gridExtra    2.2.1   2016-02-29
## gtable       0.2.0   2016-02-26
## highr        0.6     2016-05-09
## iterators  * 1.0.8   2015-10-13
## knitr      * 1.17    2017-08-10
## lattice      0.20-33 2015-07-14
## lazyeval     0.2.0   2016-06-12
## magrittr     1.5     2014-11-22
## MASS       * 7.3-45  2016-04-21
## Matrix     * 1.2-6   2016-05-02
## memoise      1.0.0   2016-01-29
## mosaic       0.14.4  2016-07-29
## mosaicData   0.14.0  2016-06-17
## munsell      0.4.3   2016-02-13
## mvtnorm    * 1.0-6   2017-03-02
## pkgconfig    2.0.1   2017-03-21
## pkgmaker   * 0.22    2014-05-14
## plyr         1.8.4   2016-06-08
```

```
##  purrr         0.2.4   2017-10-18
##  R6            2.1.2   2016-01-26
##  Rcpp          0.12.13 2017-09-28
##  registry    * 0.3     2015-07-08
##  rlang         0.1.4   2017-11-05
##  rngtools    * 1.2.4   2014-03-06
##  scales        0.4.1   2016-11-09
##  stringi       1.1.1   2016-05-27
##  stringr       1.2.0   2017-02-18
##  tibble        1.3.3   2017-05-28
##  tidyr         0.7.2   2017-10-16
##  withr         1.0.2   2016-06-20
##  xtable        1.8-2   2016-02-05
##  source
##  CRAN (R 3.3.1)
##  CRAN (R 3.3.2)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.1)
##  CRAN (R 3.3.1)
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##  CRAN (R 3.3.1)
##  CRAN (R 3.3.3)
##  CRAN (R 3.3.1)
##  CRAN (R 3.3.3)
##  Github (jgscott/FDRreg@8025d1a)
##  CRAN (R 3.3.1)
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```

```
##   CRAN (R 3.3.3)
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##   CRAN (R 3.3.3)
##   CRAN (R 3.3.2)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.0)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.3)
##   CRAN (R 3.3.1)
##   CRAN (R 3.3.1)
```