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

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

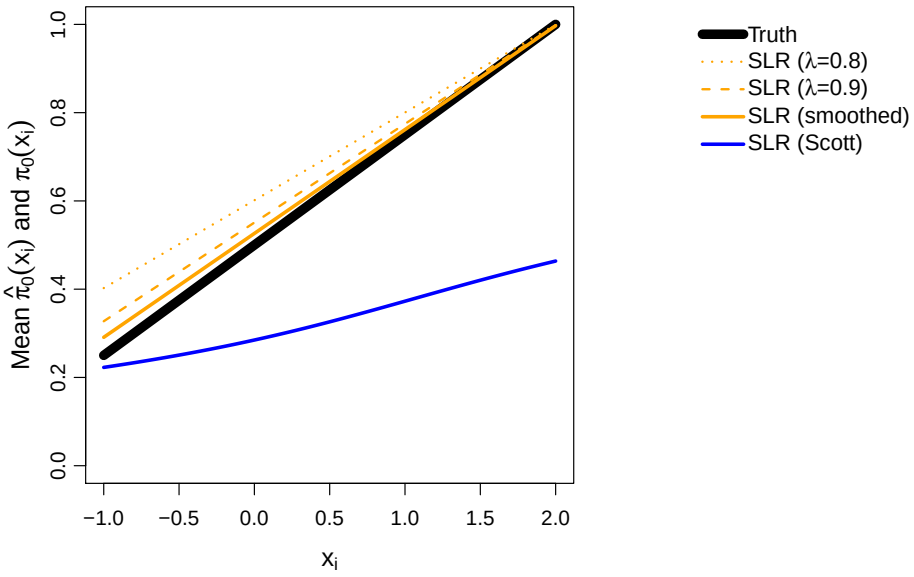
1 Probability of being a false positive as a linear function of time

Load results:

```
load("simResults_pi0x_noThresh_1.RData")
load("simResults_pi0x_Scott_1.RData")
```

1.1 Plot for means

```
plotMeanPi0(pi0, pi0MeansVars, pi0hatScottMean, tme=tme)

legend("topright", inset=c(-0.71,0),
       legend=c("Truth", expression(paste("SLR (", lambda, "=0.8)")),
                expression(paste("SLR (", lambda, "=0.9)")),
                "SLR (smoothed)", "SLR (Scott)"),
       col=c("black", "orange", "orange", "orange", "blue"), bty="n",
       lwd=c(8,2,2,3,3), lty=c(1,3,2,1,1),
       cex=1.2, x.intersp=0.2, y.intersp=1.0)
```



2 Probability of being a false positive as a smooth function of time

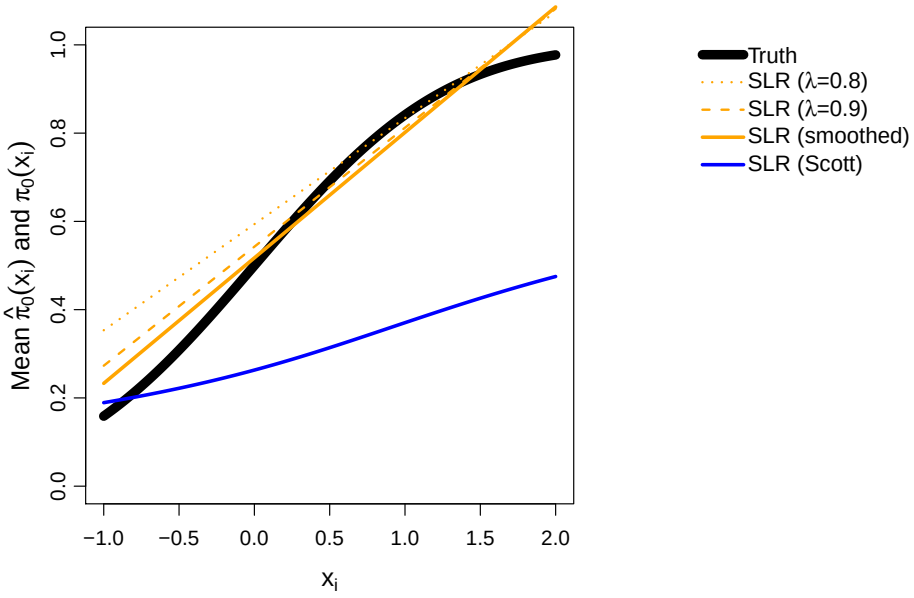
Load results:

```
load("simResults_pi0x_noThresh_2.RData")
load("simResults_pi0x_Scott_2.RData")
```

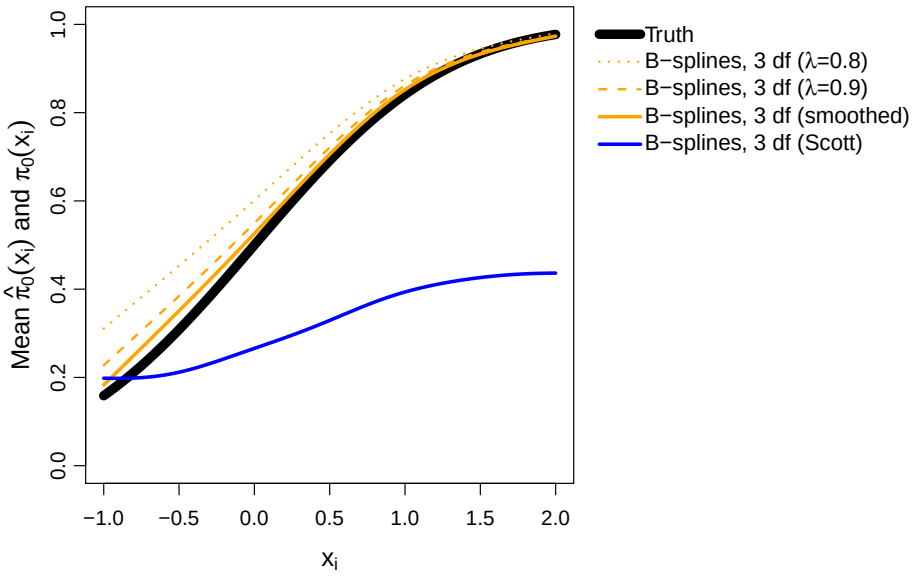
2.1 Plot for means

```
plotMeanPi0(pi0, pi0Lin.MeansVars, pi0hatLin.ScottMean, tme=tme)

legend("topright", inset=c(-0.71,0),##x=-0.2, y=0.45,##"bottomright", ##x=-100, y=0.3,
       legend=c("Truth",
                expression(paste("SLR (", lambda, "=0.8)")),
                expression(paste("SLR (", lambda, "=0.9)")),
                "SLR (smoothed)",
                "SLR (Scott)"),
       col=c("black",
             rep("orange",3),
```

```
              "blue"),
       bty="n",
       lwd=c(8,2,2,3,3), lty=c(1,3,2,1,1),
       cex=1.2, x.intersp=0.2, y.intersp=1.0)
```




```
plotMeanPi0(pi0, pi0Spl.MeansVars, pi0hatSpl.ScottMean, tme=tme)

legend("topright", inset=c(-0.71,0),##x=-0.2, y=0.45,##"bottomright", ##x=-100, y=0.3,
       legend=c("Truth",
                expression(paste("B-splines, 3 df (", lambda, "=0.8)")),
                expression(paste("B-splines, 3 df (", lambda, "=0.9)")),
                "B-splines, 3 df (smoothed)",
                "B-splines, 3 df (Scott)"),
       col=c("black",
             rep("orange",3),
             "blue"),
       bty="n",
       lwd=c(8,2,2,3,3), lty=c(1,3,2,1,1),
       cex=1.2, x.intersp=0.2, y.intersp=1.0)
```



3 Probability of being a false positive as a sine + step function

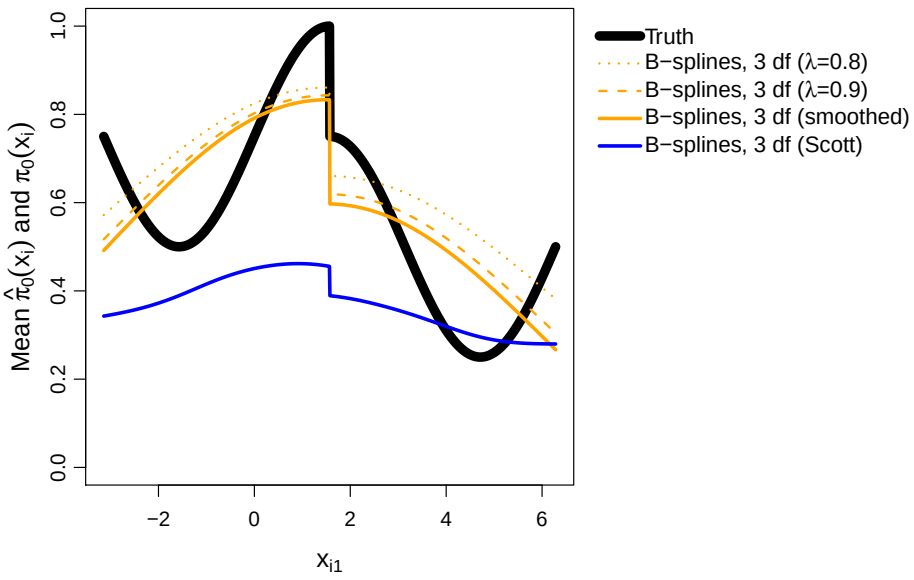
Load results:

```
load("simResults_pi0x_noThresh_3.RData")
load("simResults_pi0x_Scott_3.RData")
```

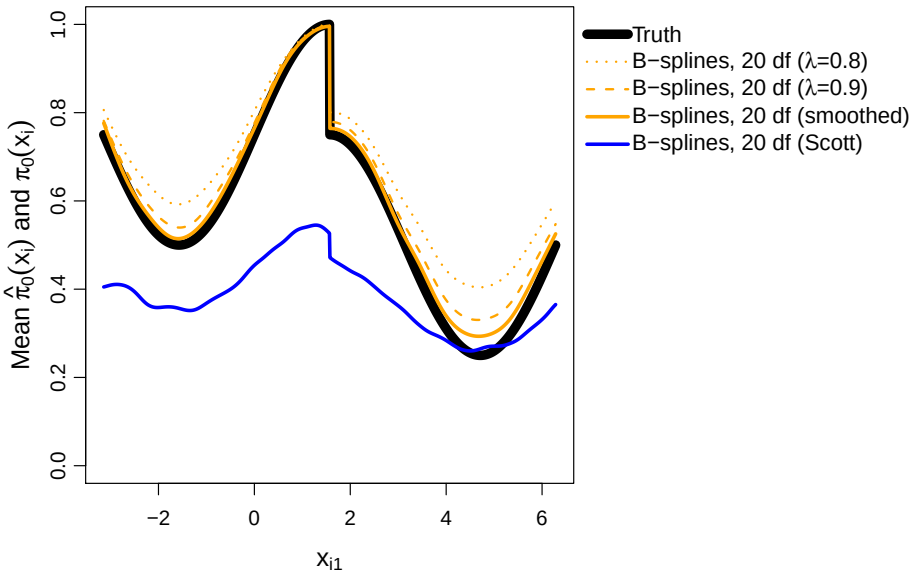
3.1 Plot for means

```
plotMeanPi0(pi0, pi0_3.MeansVars, pi0hat3.ScottMean, tme=tme1, TRUE)

legend("topright", inset=c(-0.71,0),
       legend=c("Truth",
                expression(paste("B-splines, 3 df (", lambda, "=0.8)")),
                expression(paste("B-splines, 3 df (", lambda, "=0.9)")),
                "B-splines, 3 df (smoothed)",
                "B-splines, 3 df (Scott)"),
       col=c("black", rep("orange",3), "blue"),
       bty="n",
```

```
       lwd=c(8,2,2,3,3), lty=c(1,3,2,1,1),
       cex=1.2, x.intersp=0.2, y.intersp=1.0)
```




```
plotMeanPi0(pi0, pi0_20.MeansVars, pi0hat20.ScottMean, tme=tme1, TRUE)

legend("topright", inset=c(-0.71,0),
       legend=c("Truth",
                expression(paste("B-splines, 20 df (", lambda, "=0.8)")),
                expression(paste("B-splines, 20 df (", lambda, "=0.9)")),
                "B-splines, 20 df (smoothed)",
                "B-splines, 20 df (Scott)"),
       col=c("black", rep("orange",3), "blue"),
       bty="n",
       lwd=c(8,2,2,3,3), lty=c(1,3,2,1,1),
       cex=1.2, x.intersp=0.2, y.intersp=1.0)
```



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     2017-01-04

## Packages -----------------------------------------------------

##  package  * version date       source
##  devtools   1.12.0  2016-06-24 CRAN (R 3.3.1)
##  digest     0.6.9   2016-01-08 CRAN (R 3.3.1)
##  evaluate   0.10    2016-10-11 CRAN (R 3.3.2)
##  highr      0.6     2016-05-09 CRAN (R 3.3.1)
##  knitr    * 1.15.1  2016-11-22 CRAN (R 3.3.2)
##  magrittr   1.5     2014-11-22 CRAN (R 3.3.1)
##  MASS     * 7.3-45  2016-04-21 CRAN (R 3.3.1)
```

```
##  memoise    1.0.0   2016-01-29 CRAN (R 3.3.1)
##  stringi    1.1.1   2016-05-27 CRAN (R 3.3.0)
##  stringr    1.0.0   2015-04-30 CRAN (R 3.3.1)
##  withr      1.0.2   2016-06-20 CRAN (R 3.3.1)
```