

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

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

## 1 Normally-distributed test statistics

```
alts <- c("alt_z_large", "alt_t_large")

alt <- alts[1]

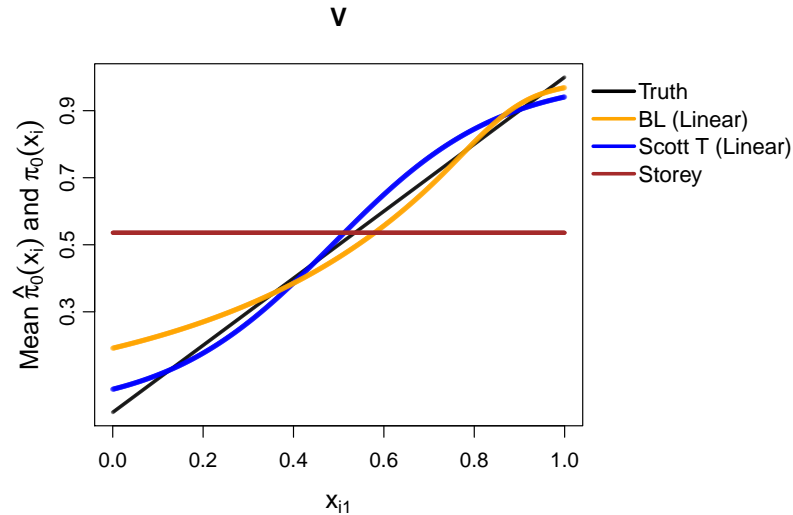
print("V")

## [1] "V"

load(paste(alt, "simResults_5.RData", sep="/"))
load(paste(alt, "simResults_pi0x_thresh_5.RData", sep="/"))
load(paste(alt, "simResults_pi0x_Scott_emp_5.RData", sep="/"))
load(paste(alt, "simResults_pi0x_Scott_5.RData", sep="/"))

pi0StoreyMean <- mean(apply(pValuesSims, 1, function(p){qvalue(p)$pi0}))

plotMeanPi0(pi0, pi0MeansVars, pi0hatScottMean, pi0StoreyMean, pi0StoreyMean, tme=tme, main=
  ylim=c(0,1))
legend("topright", inset=c(-0.45,0), ##x=-0.2, y=0.45, ##"bottomright", ##x=-100, y=0.3,
  legend=c("Truth",
    "BL (Linear)",
    "Scott T (Linear)",
    "Storey"),
  col=c("black",
    "orange",
    "blue",
    "brown"),
  bty="n",
  lwd=c(3,3,3,3), lty=c(1,1,1,1),
  cex=1.2, x.intersp=0.2, y.intersp=1.0)
```



## 2 T-distributed test statistics

```
alt <- alts[2]

print("V")

## [1] "V"

load(paste(alt,"simResults_5.RData",sep="/"))
load(paste(alt,"simResults_pi0x_thresh_5.RData",sep="/"))
load(paste(alt,"simResults_pi0x_Scott_emp_5.RData",sep="/"))
load(paste(alt,"simResults_pi0x_Scott_5.RData",sep="/"))

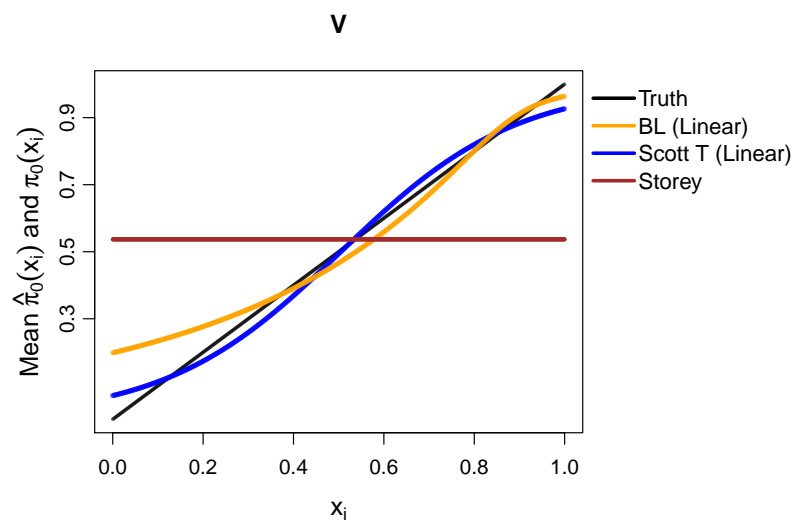
pi0StoreyMean <- mean(apply(pValuesSims, 1, function(p){qvalue(p)$pi0}))

plotMeanPi0(pi0, pi0MeansVars, pi0hatScottMean, pi0StoreyMean, tme=tme, main="V",
            ylim=c(0,1))
legend("topright", inset=c(-0.45,0), ##x=-0.2, y=0.45, ##"bottomright", ##x=-100, y=0.3,
      legend=c("Truth",
                "BL (Linear)",
                "Scott T (Linear)",
                "Storey"),
      col=c("black",
            "orange",
            "blue",
```

```

      "brown"),
    bty="n",
    lwd=c(3,3,3,3), lty=c(1,1,1,1),
    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          2018-09-06

## Packages -----
## package      * version date          source
## colorspace    1.2-6   2015-03-11 CRAN (R 3.3.1)
## devtools       1.12.0  2016-06-24 CRAN (R 3.3.3)
## digest         0.6.12  2017-01-27 CRAN (R 3.3.3)
## evaluate       0.10    2016-10-11 CRAN (R 3.3.1)
## ggplot2        2.2.1   2016-12-30 CRAN (R 3.3.3)
## gtable         0.2.0   2016-02-26 CRAN (R 3.3.1)

```

##	highr	0.6	2016-05-09	CRAN (R 3.3.1)
##	knitr	* 1.17	2017-08-10	CRAN (R 3.3.3)
##	lazyeval	0.2.0	2016-06-12	CRAN (R 3.3.1)
##	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)
##	munsell	0.4.3	2016-02-13	CRAN (R 3.3.1)
##	plyr	1.8.4	2016-06-08	CRAN (R 3.3.1)
##	qvalue	* 2.4.2	2016-05-16	Bioconductor
##	Rcpp	0.12.13	2017-09-28	CRAN (R 3.3.3)
##	reshape2	1.4.1	2014-12-06	CRAN (R 3.3.1)
##	rlang	0.1.4	2017-11-05	CRAN (R 3.3.3)
##	scales	0.4.1	2016-11-09	CRAN (R 3.3.3)
##	stringi	1.1.1	2016-05-27	CRAN (R 3.3.0)
##	stringr	1.2.0	2017-02-18	CRAN (R 3.3.3)
##	tibble	1.3.3	2017-05-28	CRAN (R 3.3.3)
##	withr	1.0.2	2016-06-20	CRAN (R 3.3.1)