

fdrcontrol

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The **fdrcontrol** package tends to replace `p.adjust(method='BH')` or `p.adjust(method='fdr')` for a faster filtering step.

The `FDRcontrol` function takes in a vector of p-values and an alpha value (threshold) for controlling false discovery rate. The algorithm used was described in [here](#).

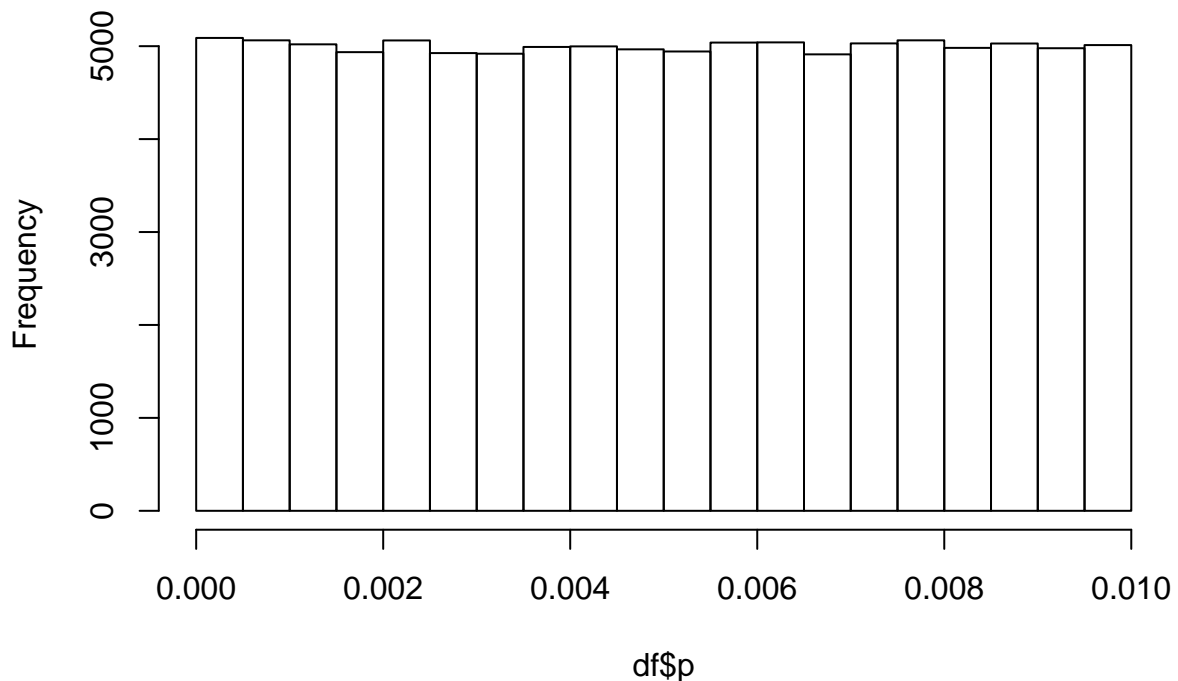
The function returns 1 when the datapoint is below the threshold and 0 if it is above the threshold.

```
set.seed(0)
library(fdrcontrol)
library(dplyr)

alpha <- 0.01

#simulate data
df <- data.frame(p = sample(1000,100000,replace=T)/100000)
hist(df$p)
```

Histogram of df\$p



```
df %>%
  mutate(fdr = FDRcontrol(p,alpha))%>% #usage of the function FDRcontrol
  mutate(padj = p.adjust(p,method='fdr')) -> df
df %>%
  filter(fdr==1, padj > alpha) #none of the data point disagree
```

```
## [1] p      fdr  padj
## <0 rows> (or 0-length row.names)
```

To compare the speed of computation:

```
library(microbenchmark)
microbenchmark(df %>% mutate(FDR = FDRcontrol(p,0.01)),
               df %>% mutate(padj = p.adjust(p,method='fdr')))
```

```
## Unit: milliseconds
##                               expr      min       lq
##      df %>% mutate(FDR = FDRcontrol(p, 0.01)) 41.93847 44.50514
##      df %>% mutate(padj = p.adjust(p, method = "fdr")) 48.21131 51.19042
##      mean      median      uq      max neval cld
## 50.43945 48.58615 51.26322 106.3675   100  a
## 64.32566 55.57415 62.46754 121.7180   100  b
```

““