

Findbeta extensions ver1

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Candidates for inclusion in priorGen()

Summary of candidate functions

- Updated basic findbeta (original function with percentiles)
 - Mean, Median, Mode
- Raw findbeta (standard location and scale measures (mean,median,mode,variance,range))
 - Mean, Median, Mode
- Abstract findbeta (general statements of how low/high are the mean and variance)
 - Mean
- Panel findbeta (Multiple experts or sources of information contribute to define this prior, based on simple averaging)
 - Mean, Median, Mode

Updated basic findbeta

```
source("~/GitHub/PriorGen-1/R/findbeta.r")
findbeta(themedian = 0.5, lower.v = T, percentile = 0.999, percentile.value = 0.999, silent = F)

## The desired Beta distribution that satisfies the specified conditions is: Beta( 1 , 1 )
## Verification: The percentile value 1 corresponds to the 0.999 th percentile
## Descriptive statistics for this distribution can be found below:

## $parameters
## a b
## 1 1
##
## $summary
##      Min.   1st Qu.   Median     Mean  3rd Qu.     Max.
## 0.0005798 0.2548675 0.5011664 0.5009285 0.7471612 0.9999125
##
## $input
##      themedian      percentile percentile.value
##           0.500           0.999           0.999

#findbeta(themode = 0.5, lower.v = T, percentile = 0.80, percentile.value = 0.95, silent = T)
fb_per=findbeta(themean = 0.5, lower.v = T, percentile = 0.90, percentile.value = 0.95, silent = T)
fb_per$parameters

##           a           b
## 0.6658199 0.6658199

fb_per$summary

##      Min.   1st Qu.   Median     Mean  3rd Qu.     Max.
## 0.0000004 0.1923723 0.4975507 0.4977591 0.8030204 0.9999862

fb_per$input

##      themean      percentile percentile.value
##           0.50           0.90           0.95
```

Raw findbeta (mean/median/mode/variance/range input)

```
source("~/GitHub/PriorGen-1/R/findbeta_raw.r")
findbeta_raw(themedian = 0.5,therange = c(0,1), silent = T)

## $parameters
##      a      b
## 1.392904 1.392904
##
## $summary
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.001807 0.292863 0.501206 0.500180 0.706959 0.999769
##
## $input
##      themedian      scalemetric percentile.value
##      0.5000      1.0000      0.9999
#findbeta_raw(themode = 0.5,therange = c(0,1), silent = T)
fb_raw=findbeta_raw(themean = 0.8,thevariance = 0.2,silent = T)
fb_raw$parameters

##      a      b
## 5.157879 1.289470

fb_raw$summary

##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.1156 0.7171 0.8315 0.8004 0.9130 0.9997

fb_raw$input

##      themean      scalemetric percentile.value
##      0.80000000      0.05140606      0.99900000
```

Abstract findbeta (General statements input)

```
source("~/GitHub/PriorGen-1/R/findbeta_abstract.r")
findbeta_abstract(themean.cat = "Low",thevariance.cat = "High", silent = T)

## $parameters
##      a      b
## 2.165306 5.052381
##
## $summary
##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.005002 0.179534 0.281517 0.301788 0.404139 0.867105
##
## $input
##      themean      scalemetric percentile.value
##      0.3000      0.1345      0.9990

#findbeta_abstract(themean.cat = "Very low",thevariance.cat = "Low", silent = T)
fb_abstract=findbeta_abstract(themean.cat = "Low",thevariance.cat = "High",silent = T)
fb_abstract$parameters

##      a      b
## 2.165306 5.052381
fb_abstract$summary

##      Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.005002 0.179534 0.281517 0.301788 0.404139 0.867105
fb_abstract$input

##      themean      scalemetric percentile.value
##      0.3000      0.1345      0.9990
```

Panel findbeta (Vector input)

```
source("~/GitHub/PriorGen-1/R/findbeta_panel.r")
#findbeta_panel(themedian.vec = c(0.2,0.02,0.5,0.03,0.04,0.05),silent = T)
findbeta_panel(themode.vec = c(0.2,0.02,0.5,0.03,0.04,0.05),silent = F)

## $parameters
##      a      b
## 4.570939 22.935768
##
## $summary
##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.01882 0.11591 0.15828 0.16678 0.20848 0.51874
##
## $input
##      themode      percentile percentile.value
##      0.1400      0.9999      0.4990

fb_panel=findbeta_panel(themean.vec = c(0.2,0.02,0.5,0.03,0.04,0.05),silent = T)
fb_panel$parameters

##      a      b
## 11.90200 73.11232

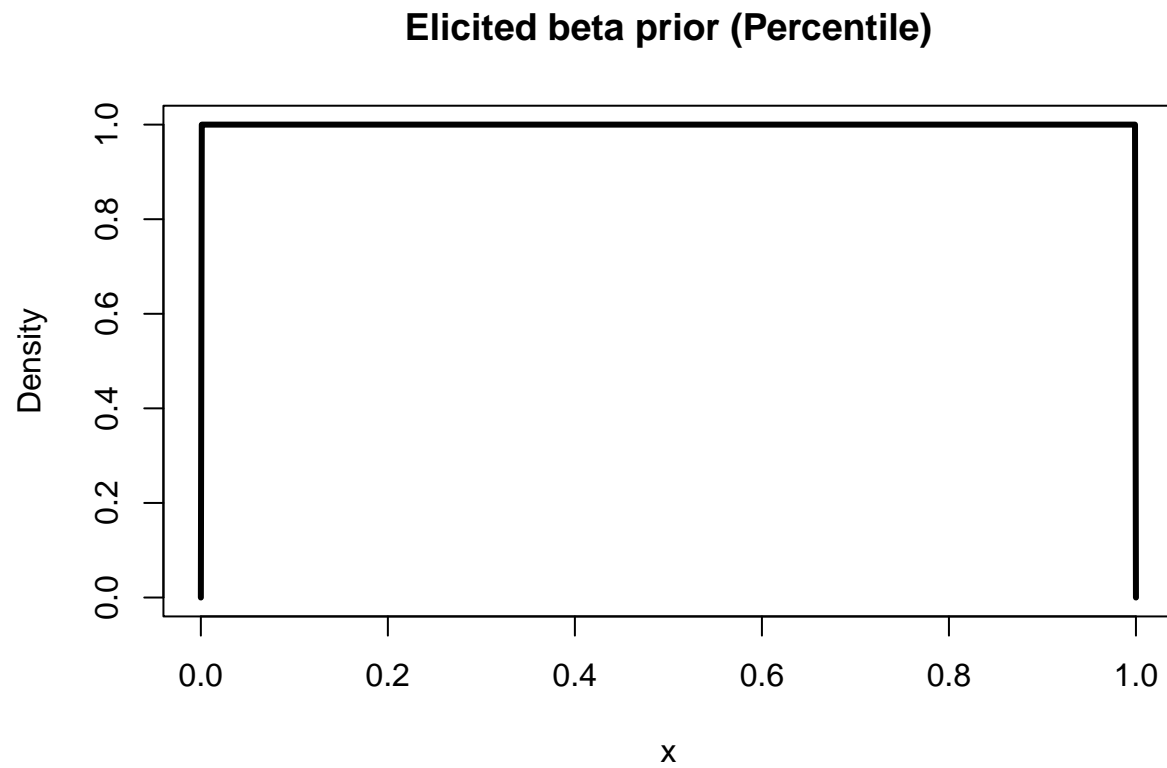
fb_panel$summary

##   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
## 0.04516 0.11378 0.13739 0.14026 0.16347 0.30894

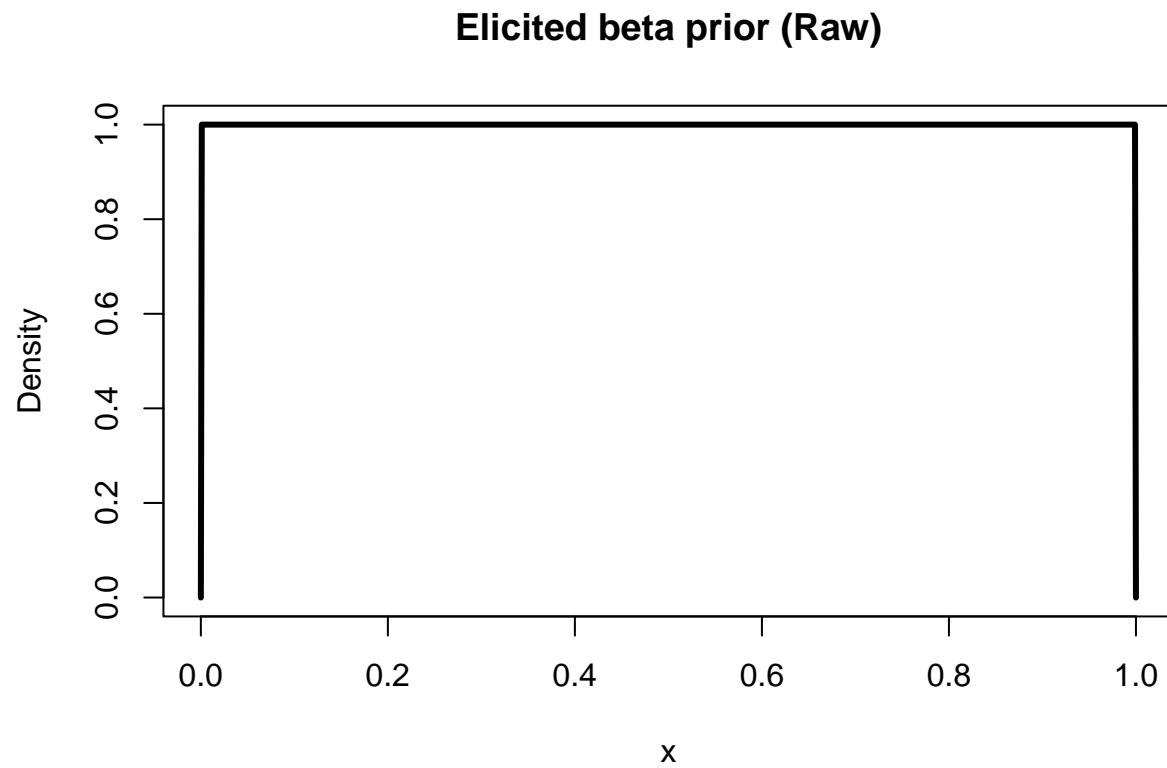
fb_panel$input

##      themean      percentile percentile.value
##      0.1400000      0.9999000      0.2773494
```

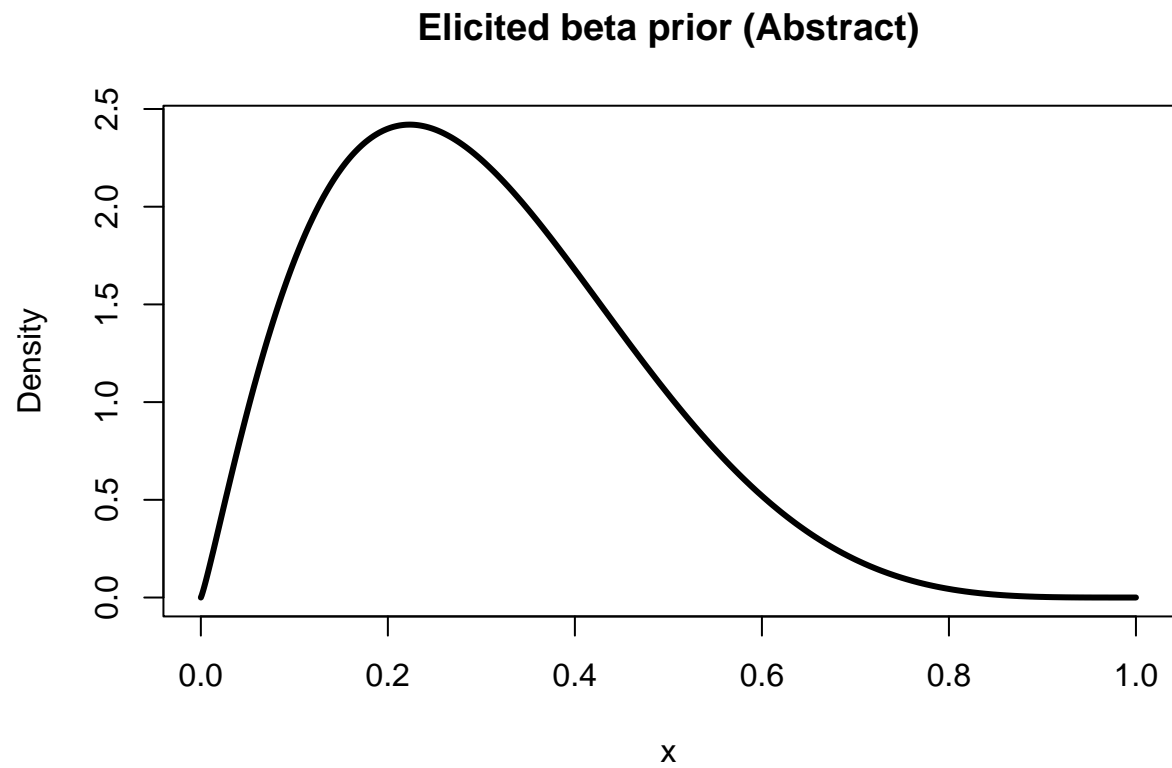
```
source("~/GitHub/PriorGen-1/R/findbeta_plot.r")  
fb_pr=findbeta(themean = 0.5,lower.v = T,percentile = 0.999,percentile.value = 0.999,silent = T)  
findbeta_plot(fb_pr,main="Elicited beta prior (Percentile)",ylab = "Density",lwd=3,type="l")
```



```
source("~/GitHub/PriorGen-1/R/findbeta_plot.r")  
fb_raw=findbeta_raw(themean = 0.5,thevariance = 0.5)  
findbeta_plot(fb_raw,main="Elicited beta prior (Raw)",ylab = "Density",lwd=3,type="l")
```



```
source("~/GitHub/PriorGen-1/R/findbeta_plot.r")  
fb_abstract=findbeta_abstract(themean.cat = "Low",thevariance.cat = "High")  
findbeta_plot(fb_abstract,main="Elicited beta prior (Abstract)",ylab = "Density",lwd=3,type="l")
```




```
source("~/GitHub/PriorGen-1/R/findbeta_plot.r")
fb_panel1=findbeta_panel(themean.vec = c(0.2,0.02,0.5,0.03,0.04,0.05),silent = T)
fb_panel2=findbeta_panel(themean.vec = c(0.2,0.02,0.5,0.4,0.04,0.05),silent =T)
findbeta_plot(fb_panel1,main="Elicited beta prior (Panel)",ylab = "Density",lwd=3,type="l")
findbeta_plot(fb_panel2,lwd=3,type="l",lines = T)
```

