

# Two Sided Statistical Test

Michael Haggmann \*

Stefan Riezler

```
library(tidyverse)

## -- Attaching packages ----- tidyverse 1.3.0 --

## v ggplot2 3.3.3      v purrr   0.3.4
## v tibble  3.1.1      v dplyr   1.0.4
## v tidyr   1.1.3      v stringr 1.4.0
## v readr   1.4.0      v forcats 0.5.1

## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()

library(cowplot)
library(ggpattern)

##
## Attaching package: 'ggpattern'

## The following objects are masked from 'package:ggplot2':
##
##     flip_data, flipped_names, gg_dep, has_flipped_aes, remove_missing,
##     should_stop, waiver

library(latex2exp)

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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <80>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <82>
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <e2>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <82>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <80>  
  
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :  
## conversion failure on 'reject H ' in 'mbscsToSbcs': dot substituted for <e2>
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <82>
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <80>
```

