Two Sided Statistical Test

Michael Hagmann *   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(ggrepel)
library(viridis)
```

```
## Loading required package: viridisLite
```

```
##
## Attaching package: 'viridis'
```

```
## The following object is masked from 'package:viridisLite':
##
##     viridis.map
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '( /2)-quantile' in 'mbcsToSbcs': dot substituted for <ce>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '( /2)-quantile' in 'mbcsToSbcs': dot substituted for <b1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '(1- /2)-quantile' in 'mbcsToSbcs': dot substituted for
## <ce>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '(1- /2)-quantile' in 'mbcsToSbcs': dot substituted for
## <b1>

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '( /2)-quantile' in 'mbcsToSbcs': dot substituted for <ce>

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '( /2)-quantile' in 'mbcsToSbcs': dot substituted for <b1>

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '(1- /2)-quantile' in 'mbcsToSbcs': dot substituted for
## <ce>

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on '(1- /2)-quantile' in 'mbcsToSbcs': dot substituted for
## <b1>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'distribution of test statistic under H ' in 'mbcsToSbcs':
## dot substituted for <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'distribution of test statistic under H ' in 'mbcsToSbcs':
## dot substituted for <82>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'distribution of test statistic under H ' in 'mbcsToSbcs':
## dot substituted for <80>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'distribution of test statistic under H ' in 'mbcsToSbcs':
## dot substituted for <e2>

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'distribution of test statistic under H ' in 'mbcsToSbcs':
## dot substituted for <82>
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, :
## conversion failure on 'distribution of test statistic under H ' in 'mbcsToSbcs':
## dot substituted for <80>

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

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

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

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## conversion failure on 'accept H ' in 'mbcsToSbcs': dot substituted for <82>

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## conversion failure on 'accept H ' in 'mbcsToSbcs': dot substituted for <80>
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## conversion failure on 'accept H ' in 'mbcsToSbcs': dot substituted for <e2>

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## conversion failure on 'accept H ' in 'mbcsToSbcs': dot substituted for <82>
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## conversion failure on 'accept H ' in 'mbcsToSbcs': dot substituted for <80>

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## conversion failure on 'accept H ' in 'mbcsToSbcs': dot substituted for <e2>

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## conversion failure on 'accept H ' in 'mbcsToSbcs': dot substituted for <80>

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## conversion failure on 'reject H ' in 'mbcsToSbcs': dot substituted for <e2>
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