means and yuen's robust t

Dr. Mario Martinez

4/23/2022

R Markdown

```
library(magrittr)

a <- readRDS("C:\\Users\\mario\\OneDrive\\Desktop\\twitter_shiny\\twittter\\data\\tweetschool.rds")

o <- readxl::read_excel("C:\\Users\\mario\\OneDrive\\Desktop\\twitter -11-25-21\\data\\latest data 11-28-21\\teaching online 12-3-21 - Copy.xlsx")

a1 <- setdiff(a$content, o$content) %>% data.frame() # n = 7701
o1 <- setdiff(o$content,a$content) %>% data.frame() # n = 4392




saveRDS(to1, "c:/users/mario/downloads/to1.rds")
saveRDS(ts1, "c:/users/mario/downloads/ts1.rds")
```

Here, we pick up the code with the data from the storage device on the computer. Quants methods wilcox tests

```
ts <- readRDS("C:\\Users\\mario\\OneDrive\\Desktop\\twitter -11-25-21\\data\\Latest-data-12-4-21\\ts1.rds") # n = 7701
to <- readRDS("C:\\Users\\mario\\OneDrive\\Desktop\\twitter -11-25-21\\data\\Latest-data-12-4-21\\to1.rds") # n = 4392

library(WRS2)

## Warning: package 'WRS2' was built under R version 4.1.3

library(plotrix)

ts1 <- syuzhet::get_nrc_sentiment(ts)

data <- data.frame(cbind(ts1,ts))

to1 <- syuzhet::get_nrc_sentiment(to)

data1 <- data.frame(cbind(to1,to))
```

```r
#data$kind <- rep("ts", 2000)
#data1$kind <- rep("to", 2000)

data$kind <- rep("ts", 7701)
data1$kind <- rep("to", 4392)


options(scipen=999)

#

dataTeachschoolpos <-data[,c("kind", "positive")]

# shapiro.test(dataTeachschoolpos$positive)

mean(dataTeachschoolpos$positive)

## [1] 2.756655

plotrix::std.error(dataTeachschoolpos$positive)

## [1] 0.01567726

dataTeachonlinepos <- data1[,c("kind", "positive")]

# shapiro.test(dataTeachonlinepos$positive)

mean(dataTeachonlinepos$positive)

## [1] 2.889117

plotrix::std.error(dataTeachonlinepos$positive)

## [1] 0.02142073

now_data_pos <- data.frame(rbind(dataTeachonlinepos,dataTeachschoolpos))



(rpositive <- wilcox.test(now_data_pos$positive~now_data_pos$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_pos$positive by now_data_pos$kind
## W = 17792915, p-value = 0.0000009277
## alternative hypothesis: true location shift is not equal to 0

(ypositive <- WRS2::yuenbt(now_data_pos$positive~now_data_pos$kind))
```

```
## Call:
## WRS2::yuenbt(formula = now_data_pos$positive ~ now_data_pos$kind)
##
## Test statistic: 4.949 (df = NA), p-value = 0
##
## Trimmed mean difference:  0.13222
## 95 percent confidence interval:
## 0.0815     0.183
```

```
(d1 <- effectsize::cohens_d(now_data_pos$positive~now_data_pos$kind,  pooled_
sd = FALSE))
```

```
## Registered S3 method overwritten by 'parameters':
##   method                          from
##   format.parameters_distribution datawizard
```

```
## Cohen's d |       95% CI
## ------------------------
## 0.09      | [0.06, 0.13]
##
## - Estimated using un-pooled SD.
```

```
effectsize::d_to_r(d1)
```

```
##     Cohens_d        CI     CI_low    CI_high
## 1 0.04732731 0.4290568 0.02874464 0.06585832
```

```
#

dataTeachschoolAnger <- data[, c("kind", "anger")]

# shapiro.test(dataTeachschoolAnger$anger)

mean(dataTeachschoolAnger$anger)
```

```
## [1] 0.3898195
```

```
plotrix::std.error(dataTeachschoolAnger$anger)
```

```
## [1] 0.007596367
```

```
dataTeachonlineAnger <- data1[,c("kind", "anger")]

# shapiro.test(dataTeachonlineAnger$anger)


mean(dataTeachonlineAnger$anger)
```

```
## [1] 0.2556922
```

```
plotrix::std.error(dataTeachonlineAnger$anger)
```

```
## [1] 0.008095361

now_data_anger <- data.frame(rbind(dataTeachschoolAnger,dataTeachonlineAnger)
)

(ranger <- wilcox.test(now_data_anger$anger~now_data_anger$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_anger$anger by now_data_anger$kind
## W = 15287565, p-value < 0.00000000000000022
## alternative hypothesis: true location shift is not equal to 0

(ypositive <- WRS2::yuenbt(now_data_anger$anger~now_data_anger$kind))

## Call:
## WRS2::yuenbt(formula = now_data_anger$anger ~ now_data_anger$kind)
##
## Test statistic: -11.3755 (df = NA), p-value = 0
##
## Trimmed mean difference:  -0.15382
## 95 percent confidence interval:
## -0.1821     -0.1255

(d2 <- effectsize::cohens_d(now_data_anger$anger~now_data_anger$kind,  pooled
_sd = FALSE))

## Cohen's d |         95% CI
## -------------------------
## -0.22     | [-0.26, -0.19]
##
## - Estimated using un-pooled SD.

effectsize::d_to_r(d2)

##    Cohens_d        CI     CI_low     CI_high
## 1 -0.110162 0.4290568 -0.1278178 -0.09239632

#

dataTeachschoolAnticipation <- data[, c("kind", "anticipation")]

# shapiro.test(dataTeachschoolAnticipation$anticipation)

mean(dataTeachschoolAnticipation$anticipation)

## [1] 0.7852227

plotrix::std.error(dataTeachschoolAnticipation$anticipation)

## [1] 0.0102917
```

```r
dataTeachonlineAnticipation <- data1[,c("kind", "anticipation")]

# shapiro.test(dataTeachonlineAnticipation$anticipation)

mean(dataTeachonlineAnticipation$anticipation)

## [1] 0.8422131

plotrix::std.error(dataTeachonlineAnticipation$anticipation)

## [1] 0.01403281

now_data_anticipation <- data.frame(rbind(dataTeachschoolAnticipation,dataTea
chonlineAnticipation))

(ranticipation <- wilcox.test(now_data_anticipation$anticipation~now_data_ant
icipation$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_anticipation$anticipation by now_data_anticipation$kind
## W = 17459771, p-value = 0.001367
## alternative hypothesis: true location shift is not equal to 0

(yanticipation <- WRS2::yuenbt(now_data_anticipation$anticipation~now_data_an
ticipation$kind))

## Call:
## WRS2::yuenbt(formula = now_data_anticipation$anticipation ~ now_data_antic
ipation$kind)
##
## Test statistic: 2.8434 (df = NA), p-value = 0.01002
##
## Trimmed mean difference:  0.062
## 95 percent confidence interval:
## 0.0204     0.1036

(d3 <- effectsize::cohens_d(now_data_anticipation$anticipation~now_data_antic
ipation$kind,  pooled_sd = FALSE))

## Cohen's d |       95% CI
## ------------------------
## 0.06      | [0.02, 0.10]
##
## - Estimated using un-pooled SD.

effectsize::d_to_r(d3)

##     Cohens_d        CI     CI_low    CI_high
## 1 0.03107068 0.4290568 0.01247398 0.04963343
```

```
#


dataTeachschoolDisgust <- data[, c("kind", "disgust")]

# shapiro.test(dataTeachschoolDisgust$disgust)


mean(dataTeachschoolDisgust$disgust)

## [1] 0.3068433

plotrix::std.error(dataTeachschoolDisgust$disgust)

## [1] 0.006705102

dataTeachonlineDisgust <- data1[,c("kind", "disgust")]

# shapiro.test(dataTeachonlineDisgust$disgust)


mean(dataTeachonlineDisgust$disgust)

## [1] 0.1773679

plotrix::std.error(dataTeachonlineDisgust$disgust)

## [1] 0.006673303

now_data_disgust <- data.frame(rbind(dataTeachschoolDisgust,dataTeachonlineDi
sgust))

(rdisgust <- wilcox.test(now_data_disgust$disgust~now_data_disgust$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_disgust$disgust by now_data_disgust$kind
## W = 15259224, p-value < 0.00000000000000022
## alternative hypothesis: true location shift is not equal to 0

(ydisgust <- WRS2::yuenbt(now_data_disgust$disgust~now_data_disgust$kind))

## Call:
## WRS2::yuenbt(formula = now_data_disgust$disgust ~ now_data_disgust$kind)
##
## Test statistic: -10.1553 (df = NA), p-value = 0
##
## Trimmed mean difference:  -0.08353
## 95 percent confidence interval:
## -0.0989     -0.0682
```

```
(d4 <- effectsize::cohens_d(now_data_disgust$disgust~now_data_disgust$kind,
pooled_sd = FALSE))

## Cohen's d |         95% CI
## -------------------------
## -0.25     | [-0.28, -0.21]
##
## - Estimated using un-pooled SD.

effectsize::d_to_r(d4)

##    Cohens_d        CI     CI_low    CI_high
## 1 -0.123428 0.4290568 -0.1408438 -0.1058919

#

dataTeachschoolFear <- data[, c("kind", "fear")]

# shapiro.test(dataTeachschoolFear$fear)


mean(dataTeachschoolFear$fear)

## [1] 0.7058824

plotrix::std.error(dataTeachschoolFear$fear)

## [1] 0.01013822

dataTeachonlineFear <- data1[,c("kind", "fear")]

# shapiro.test(dataTeachonlineFear$fear)


mean(dataTeachonlineFear$fear)

## [1] 0.4913479

plotrix::std.error(dataTeachonlineFear$fear)

## [1] 0.01122434

now_data_fear <- data.frame(rbind(dataTeachschoolFear,dataTeachonlineFear))

(rdisgust <- wilcox.test(now_data_fear$fear~now_data_fear$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_fear$fear by now_data_fear$kind
## W = 14689235, p-value < 0.00000000000000022
## alternative hypothesis: true location shift is not equal to 0
```

```
(ydisgust <- WRS2::yuenbt(now_data_fear$fear~now_data_fear$kind))
```

```
## Call:
## WRS2::yuenbt(formula = now_data_fear$fear ~ now_data_fear$kind)
##
## Test statistic: -12.7037 (df = NA), p-value = 0
##
## Trimmed mean difference:  -0.19594
## 95 percent confidence interval:
## -0.2262     -0.1657
```

```
(d5 <- effectsize::cohens_d(now_data_fear$fear~now_data_fear$kind,  pooled_sd
= FALSE))
```

```
## Cohen's d |         95% CI
## -------------------------
## -0.26     | [-0.30, -0.23]
##
## - Estimated using un-pooled SD.
```

```
effectsize::d_to_r(d5)
```

```
##     Cohens_d        CI     CI_low    CI_high
## 1 -0.1297055 0.4290568 -0.1473435 -0.1119375
```

```
#



dataTeachschoolJoy <- data[, c("kind", "joy")]

# shapiro.test(dataTeachschoolJoy$joy)


mean(dataTeachschoolJoy$joy)
```

```
## [1] 1.527334
```

```
plotrix::std.error(dataTeachschoolJoy$joy)
```

```
## [1] 0.008828204
```

```
dataTeachonlineJoy <- data1[,c("kind", "joy")]

# shapiro.test(dataTeachonlineJoy$joy)


mean(dataTeachonlineJoy$joy)
```

```
## [1] 1.51867
```

```
plotrix::std.error(dataTeachonlineJoy$joy)
```

```
## [1] 0.01146838

now_data_joy <- data.frame(rbind(dataTeachschoolJoy,dataTeachonlineJoy))

(rjoy <- wilcox.test(now_data_joy$joy~now_data_joy$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_joy$joy by now_data_joy$kind
## W = 16722630, p-value = 0.2418
## alternative hypothesis: true location shift is not equal to 0

(yjoy <- WRS2::yuenbt(now_data_joy$joy~now_data_joy$kind))

## Call:
## WRS2::yuenbt(formula = now_data_joy$joy ~ now_data_joy$kind)
##
## Test statistic: -2.3335 (df = NA), p-value = 0.02003
##
## Trimmed mean difference:  -0.03588
## 95 percent confidence interval:
## -0.0656     -0.0061

(d6 <- effectsize::cohens_d(now_data_joy$joy~now_data_joy$kind,  pooled_sd =
FALSE))

## Cohen's d |        95% CI
## -------------------------
## -0.01     | [-0.05, 0.03]
##
## - Estimated using un-pooled SD.

effectsize::d_to_r(d6)

##      Cohens_d        CI      CI_low    CI_high
## 1 -0.00564472 0.4290568 -0.02411945 0.01283609

#

dataTeachschoolSadness <- data[, c("kind", "sadness")]

# shapiro.test(dataTeachschoolSadness$sadness)


mean(dataTeachschoolSadness$sadness)

## [1] 0.5810934

plotrix::std.error(dataTeachschoolSadness$sadness)

## [1] 0.009232616
```

```r
dataTeachonlineSadness <- data1[,c("kind", "sadness")]

# shapiro.test(dataTeachonlineSadness$sadness)


mean(dataTeachonlineSadness$sadness)

## [1] 0.4385246

plotrix::std.error(dataTeachonlineSadness$sadness)

## [1] 0.01060124

now_data_sadness <- data.frame(rbind(dataTeachschoolSadness,dataTeachonlineSa
dness))

(rsadness <- wilcox.test(now_data_sadness$sadness~now_data_sadness$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_sadness$sadness by now_data_sadness$kind
## W = 15384127, p-value < 0.00000000000000022
## alternative hypothesis: true location shift is not equal to 0

(ysadness <- WRS2::yuenbt(now_data_sadness$sadness~now_data_sadness$kind))

## Call:
## WRS2::yuenbt(formula = now_data_sadness$sadness ~ now_data_sadness$kind)
##
## Test statistic: -8.9918 (df = NA), p-value = 0
##
## Trimmed mean difference:  -0.13636
## 95 percent confidence interval:
## -0.1653     -0.1074

(d7 <- effectsize::cohens_d(now_data_sadness$sadness~now_data_sadness$kind,
pooled_sd = FALSE))

## Cohen's d |         95% CI
## -------------------------
## -0.19     | [-0.22, -0.15]
##
## - Estimated using un-pooled SD.

effectsize::d_to_r(d7)

##      Cohens_d        CI     CI_low     CI_high
## 1 -0.09359266 0.4290568 -0.1115164 -0.07557295

#
```

```r
dataTeachschoolSurprise <- data[, c("kind", "surprise")]

# shapiro.test(dataTeachschoolSurprise$surprise)

mean(dataTeachschoolSurprise$surprise)

## [1] 1.26555

plotrix::std.error(dataTeachschoolSurprise$surprise)

## [1] 0.006321945

dataTeachonlineSurprise <- data1[,c("kind", "surprise")]

# shapiro.test(dataTeachonlineSurprise$surprise)


mean(dataTeachonlineSurprise$surprise)

## [1] 1.245446

plotrix::std.error(dataTeachonlineSurprise$surprise)

## [1] 0.007767

now_data_surprise <- data.frame(rbind(dataTeachschoolSurprise,dataTeachonline
Surprise))

(rsurprise <- wilcox.test(now_data_surprise$surprise~now_data_surprise$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_surprise$surprise by now_data_surprise$kind
## W = 16618384, p-value = 0.03103
## alternative hypothesis: true location shift is not equal to 0

(ysurprise <- WRS2::yuenbt(now_data_surprise$surprise~now_data_surprise$kind)
)

## Call:
## WRS2::yuenbt(formula = now_data_surprise$surprise ~ now_data_surprise$kind
)
##
## Test statistic: -3.2359 (df = NA), p-value = 0.00167
##
## Trimmed mean difference:  -0.04217
## 95 percent confidence interval:
## -0.0682     -0.0161

(d8 <- effectsize::cohens_d(now_data_surprise$surprise~now_data_surprise$kind
,  pooled_sd = FALSE))
```

```
## Cohen's d |         95% CI
## -------------------------
## -0.04     | [-0.07,  0.00]
##
## - Estimated using un-pooled SD.
```

```
effectsize::d_to_r(d8)
```

```
##      Cohens_d        CI      CI_low       CI_high
## 1 -0.01878042 0.4290568 -0.03709923 -0.0004417097
```

```
#
```

```
dataTeachschoolNegative <- data[, c("kind", "negative")]
```

```
# shapiro.test(dataTeachschoolNegative$negative)
```

```
mean(dataTeachschoolNegative$negative)
```

```
## [1] 1.181665
```

```
plotrix::std.error(dataTeachschoolNegative$negative)
```

```
## [1] 0.01367244
```

```
dataTeachonlineNegative <- data1[,c("kind", "negative")]
```

```
# shapiro.test(dataTeachonlineNegative$negative)
```

```
mean(dataTeachonlineNegative$negative)
```

```
## [1] 0.8239982
```

```
plotrix::std.error(dataTeachonlineNegative$negative)
```

```
## [1] 0.015294
```

```
now_data_negative <- data.frame(rbind(dataTeachschoolNegative,dataTeachonline
Negative))
```

```
(rnegative <- wilcox.test(now_data_negative$negative~now_data_negative$kind))
```

```
##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_negative$negative by now_data_negative$kind
## W = 13995819, p-value < 0.0000000000000022
## alternative hypothesis: true location shift is not equal to 0
```

```
(ynegative <- WRS2::yuenbt(now_data_negative$negative~now_data_negative$kind)
)

## Call:
## WRS2::yuenbt(formula = now_data_negative$negative ~ now_data_negative$kind
)
##
## Test statistic: -17.1123 (df = NA), p-value = 0
##
## Trimmed mean difference:  -0.42863
## 95 percent confidence interval:
## -0.4751     -0.3821

(d9 <- effectsize::cohens_d(now_data_negative$negative~now_data_negative$kind
,  pooled_sd = FALSE))

## Cohen's d |         95% CI
## -------------------------
## -0.32     | [-0.36, -0.29]
##
## - Estimated using un-pooled SD.

effectsize::d_to_r(d9)

##     Cohens_d        CI     CI_low   CI_high
## 1 -0.1589748 0.4290568 -0.1764397 -0.141352

#

dataTeachschoolTrust <- data[, c("kind", "trust")]

# shapiro.test(dataTeachschoolTrust$trust)


mean(dataTeachschoolTrust$trust)

## [1] 2.79665

plotrix::std.error(dataTeachschoolTrust$trust)

## [1] 0.01332051

dataTeachonlineTrust <- data1[,c("kind", "trust")]

# shapiro.test(dataTeachonlineTrust$trust)


mean(dataTeachonlineTrust$trust)

## [1] 2.133197

plotrix::std.error(dataTeachonlineTrust$trust)
```

```
## [1] 0.01598062

now_data_trust <- data.frame(rbind(dataTeachschoolTrust,dataTeachonlineTrust)
)

(rtrust <- wilcox.test(now_data_trust$trust~now_data_trust$kind))

##
##  Wilcoxon rank sum test with continuity correction
##
## data:  now_data_trust$trust by now_data_trust$kind
## W = 11273781, p-value < 0.00000000000000022
## alternative hypothesis: true location shift is not equal to 0

(ytrust <- WRS2::yuenbt(now_data_trust$trust~now_data_trust$kind))

## Call:
## WRS2::yuenbt(formula = now_data_trust$trust ~ now_data_trust$kind)
##
## Test statistic: -27.2579 (df = NA), p-value = 0
##
## Trimmed mean difference:  -0.68186
## 95 percent confidence interval:
## -0.7317     -0.632

(d10 <- effectsize::cohens_d(now_data_trust$trust~now_data_trust$kind,  poole
d_sd = FALSE))

## Cohen's d |         95% CI
## -------------------------
## -0.59     | [-0.63, -0.56]
##
## - Estimated using un-pooled SD.

effectsize::d_to_r(d10)

##     Cohens_d        CI     CI_low    CI_high
## 1 -0.2850748 0.4290568 -0.3014455 -0.2684378
```