BA_TSD_comparison.R

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```
library(BlandAltmanLeh)
library(blandr)
library(captioner)
library(cowplot)
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

```
library(ggdist)
library(ggExtra)
library(ggplot2)
library(ggpubr)
```

```
##
## Attaching package: 'ggpubr'
```

```
## The following object is masked from 'package:cowplot':
##
##     get_legend
```

```
library(ggthemes)
```

```
##
## Attaching package: 'ggthemes'
```

```
## The following object is masked from 'package:cowplot':
##
##     theme_map
```

```
library(janitor)
```

```
##
## Attaching package: 'janitor'
```

```
## The following objects are masked from 'package:stats':
##
##     chisq.test, fisher.test
```

```
library(kableExtra)
```

```
##
## Attaching package: 'kableExtra'
```

```
## The following object is masked from 'package:dplyr':
##
##     group_rows
```

```
library(knitr)
library(readr)
library(tidyquant)
```

```
## Loading required package: lubridate
```

```
##
## Attaching package: 'lubridate'
```

```
## The following object is masked from 'package:cowplot':
##
##     stamp
```

```
## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
```

```
## Loading required package: PerformanceAnalytics
```

```
## Loading required package: xts
```

```
## Loading required package: zoo
```

```
##
## Attaching package: 'zoo'
```

```
## The following objects are masked from 'package:base':
##
##     as.Date, as.Date.numeric
```

```
##
## Attaching package: 'xts'
```

```
## The following objects are masked from 'package:dplyr':
##
##     first, last
```

```
##
## Attaching package: 'PerformanceAnalytics'
```

```
## The following object is masked from 'package:graphics':
##
##     legend
```

```
## Loading required package: quantmod
```

```
## Loading required package: TTR
```

```
## Registered S3 method overwritten by 'quantmod':
##   method            from
##   as.zoo.data.frame zoo
```

```
library(tidyr)
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.2 --
## v tibble  3.1.8     v stringr 1.4.0
## v purrr   0.3.4     v forcats 0.5.1
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x lubridate::as.difftime() masks base::as.difftime()
## x lubridate::date()        masks base::date()
## x dplyr::filter()          masks stats::filter()
## x xts::first()             masks dplyr::first()
## x kableExtra::group_rows() masks dplyr::group_rows()
## x lubridate::intersect()   masks base::intersect()
## x dplyr::lag()             masks stats::lag()
## x xts::last()              masks dplyr::last()
## x lubridate::setdiff()     masks base::setdiff()
## x lubridate::stamp()       masks cowplot::stamp()
## x lubridate::union()       masks base::union()
```

```
library(zeallot)

source("/Volumes/InmanDrive4/Dropbox/Dropbox/KPI/University_of_Dundee/Dissertation/Lab Notebooks/library
# Using just columns needed for graphing (Sample\#, program, logLR, efficiency, true contributor, and d


MT <- read_csv("/Volumes/InmanDrive4/Dropbox/Dropbox/KPI/University_of_Dundee/Dissertation/Data/Output_
```

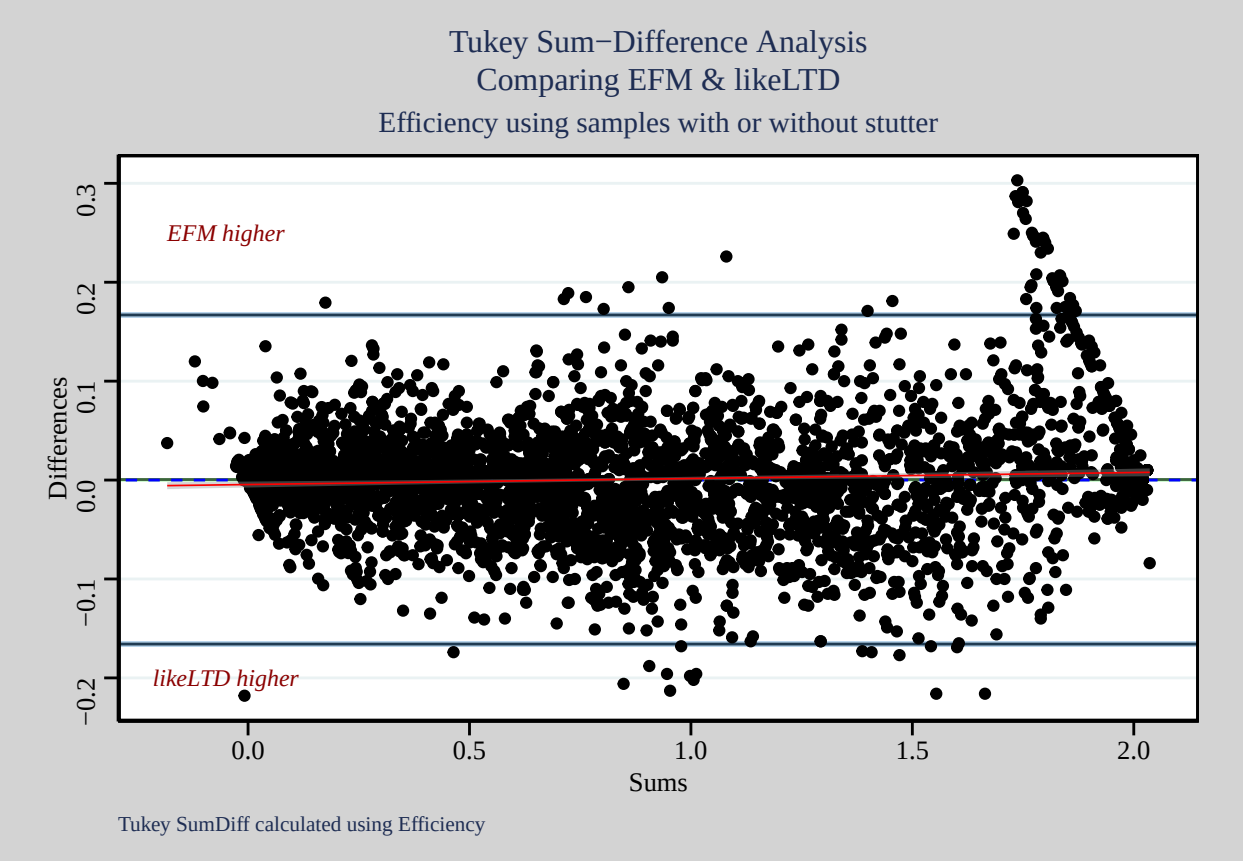
```
## Rows: 7933 Columns: 33
## -- Column specification --------------------------------------------------------
## Delimiter: ","
## chr  (7): Pr, St, TC, C1, C2, C3, C4
## dbl (26): Sample, Rep, lLR, Eff, NC, TotDNA, amtDNA, D1, D2, D3, D4, CSF1PO,...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
baEff <- MT %>%
 pivot_wider(id_cols = c("Sample","TC","St","TotDNA", "NC"), names_from = "Pr", values_from = "Eff") %>%
 rename("Eff.EFM" = EFM, "Eff.likeLTD" = likeLTD)

baEff <- na.omit(baEff)

balLR <- MT %>%
 pivot_wider(id_cols = c("Sample","TC","St","TotDNA"), names_from = "Pr", values_from = "lLR") %>%
 rename("TotlogLR.EFM" = EFM, "TotlogLR.likeLTD" = likeLTD)

balLR <- na.omit(balLR)


EffCompTSD <- TukeySumDiffPlotKPI(baEff$Eff.EFM, baEff$Eff.likeLTD, two = 3 )  +
  geom_point(aes(color = baEff$Stutter, shape = baEff$Stutter)) +
  labs(color = "Stutter", shape = "Stutter") +
  annotate("text", x = -0.05, y = .25, label = "EFM higher",
  family = "serif", fontface = "italic", colour = "darkred", size = 3) +
  annotate("text", x = -0.05, y = -0.2, label = "likeLTD higher",
  family = "serif", fontface = "italic", colour = "darkred", size = 3) +
  geom_smooth(method = lm, se = TRUE, color = "red", size = .3, fullrange = TRUE) +
  labs(title = "Tukey Sum-Difference Analysis\nComparing EFM & likeLTD", subtitle = "Efficiency using sa
```

```
  theme_stata(base_family = "serif") +
  panel_border(color = "black") +
  scale_color_stata() +
  theme(plot.title = element_text(size = 12, hjust = 0.5),
  legend.position = "bottom",
  legend.text = element_text(size = 8),
  legend.title = element_text(size = 9),
  plot.background = element_rect(fill = "lightgray"))

  EffCompTSD
```

```
## Warning: Unknown or uninitialised column: `Stutter`.
## Unknown or uninitialised column: `Stutter`.
## Unknown or uninitialised column: `Stutter`.
```

```
## `geom_smooth()` using formula 'y ~ x'
```




```
  EffCompBA <- baPlotKPI(baEff$Eff.EFM, baEff$Eff.likeLTD, two = 3 )  +
    geom_point(aes(color = baEff$Stutter, shape = baEff$Stutter)) +
    labs(color = "Stutter", shape = "Stutter") +
    annotate("text", x = -0.05, y = .25, label = "EFM higher",
             family = "serif", fontface = "italic", colour = "darkred", size = 3) +
    annotate("text", x = -0.05, y = -0.2, label = "likeLTD higher",
             family = "serif", fontface = "italic", colour = "darkred", size = 3) +
    geom_smooth(method = lm, se = TRUE, color = "red", size = .3, fullrange = TRUE) +
    labs(title = "Bland-Altman Analysis\nComparing EFM & likeLTD", subtitle = "Efficiency using samples
    theme_stata(base_family = "serif") +
```

```
    panel_border(color = "black") +
    scale_color_stata() +
    theme(plot.title = element_text(size = 12, hjust = 0.5),
          legend.position = "bottom",
          legend.text = element_text(size = 8),
          legend.title = element_text(size = 9),
          plot.background = element_rect(fill = "lightgray"))

  EffCompBA
```

```
## Warning: Unknown or uninitialised column: `Stutter`.
## Unknown or uninitialised column: `Stutter`.
## Unknown or uninitialised column: `Stutter`.
```

```
## `geom_smooth()` using formula 'y ~ x'
```