main

October 13, 2021

1 Clustered dotplots

[1]:
```
library(ggplot2)
library(tidyverse)
```

```
── Attaching packages ─────────────────────────────────────── tidyverse 1.3.1 ──

✔ tibble  3.1.4      ✔ dplyr   1.0.7
✔ tidyr   1.1.4      ✔ stringr 1.4.0
✔ readr   2.0.2      ✔ forcats 0.5.1
✔ purrr   0.3.4

── Conflicts ────────────────────────────────────────── tidyverse_conflicts() ──
✖ dplyr::filter() masks stats::filter()
✖ dplyr::lag()    masks stats::lag()
```

[2]:
```
save_plot <- function(p, fn, w, h){
    for(ext in c(".pdf", ".png", ".svg")){
        ggsave(filename=paste0(fn,ext), plot=p, width=w, height=h)
    }
}
```

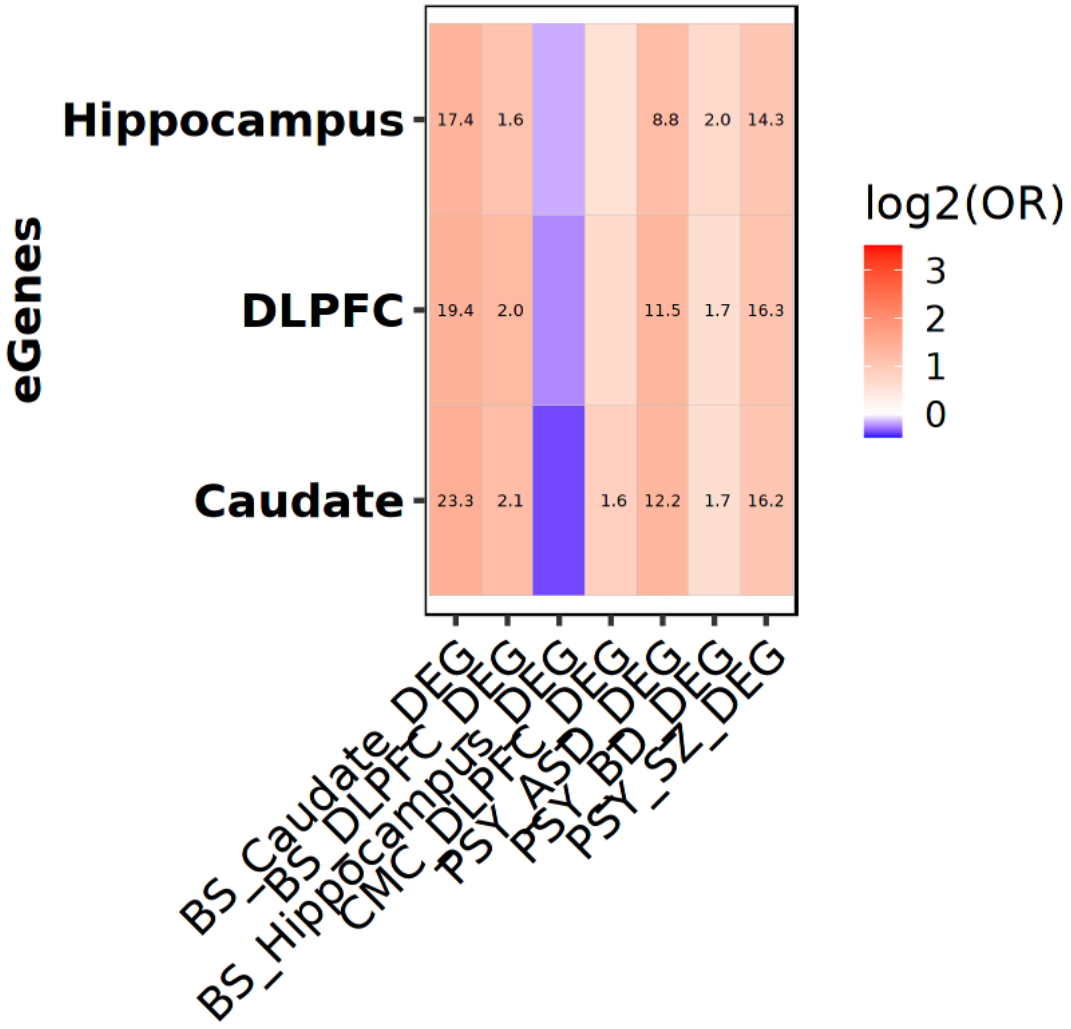
1.1 Get data

[3]:
```
err = 0.0000001
dt <- data.table::fread("../../_m/
↪clincial_phenotypes_enrichment_analysis_3brainRegions.tsv") %>%
    mutate(`-log10(FDR)`= -log10(FDR), `OR Percentile`= OR / (1+OR),
           `log2(OR)` = log2(OR+err), p.fdr.sig=FDR < 0.05,
           p.fdr.cat=cut(FDR, breaks=c(1,0.05,0.01,0.005,0),
                         labels=c("<= 0.005","<= 0.01","<= 0.05","> 0.05"),
                         include.lowest=TRUE))
y0 <- min(dt$`log2(OR)`)-0.1
y1 <- max(dt$`log2(OR)`)+0.1
dt %>% head(2)
```

A data.table: 2 × 10

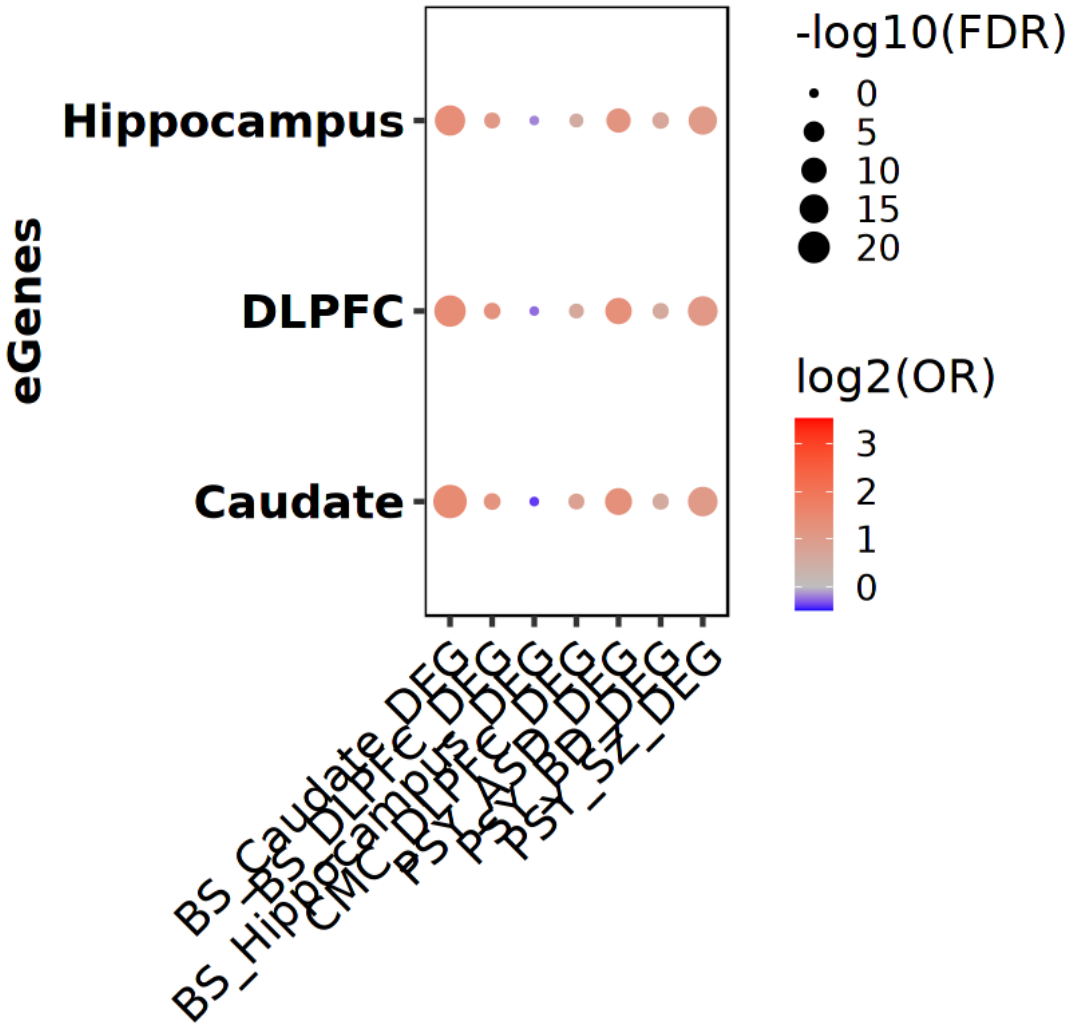
Tissue <chr>	Comparison <chr>	OR <dbl>	P-value <dbl>	FDR <dbl>	-log10(FDR) <dbl>	O <dbl>
Caudate	BS_Caudate_DEG	2.756170	1.392999e-25	5.432696e-24	23.264985	0.
Caudate	BS_DLPFC_DEG	2.349303	4.310847e-03	8.848580e-03	2.053126	0.

[4]:
```
tile_plot <- dt %>% filter(str_detect(Comparison, "DEG")) %>%
    ggplot(aes(x = Comparison, y = Tissue, fill = `log2(OR)`,
               label = ifelse(p.fdr.sig,
                              format(round(`-log10(FDR)`,1), nsmall=1), ""))) +
    ylab('eGenes') + xlab('') +
    geom_tile(color = "grey") + ggfittext::geom_fit_text(contrast = TRUE) +
    scale_fill_gradientn(colors=c("blue", "white", "red"),
                         values=scales::rescale(c(y0, 0, y1)),
                         limits=c(y0, y1)) +
    ggpubr::theme_pubr(base_size = 20, border=TRUE) +
    theme(axis.text.x = element_text(angle = 45, hjust=1),
          legend.position="right",
          axis.title=element_text(face="bold"),
          axis.text.y=element_text(face="bold"))
save_plot(tile_plot, "tileplot_enrichment_deg", 9, 6)
tile_plot
```



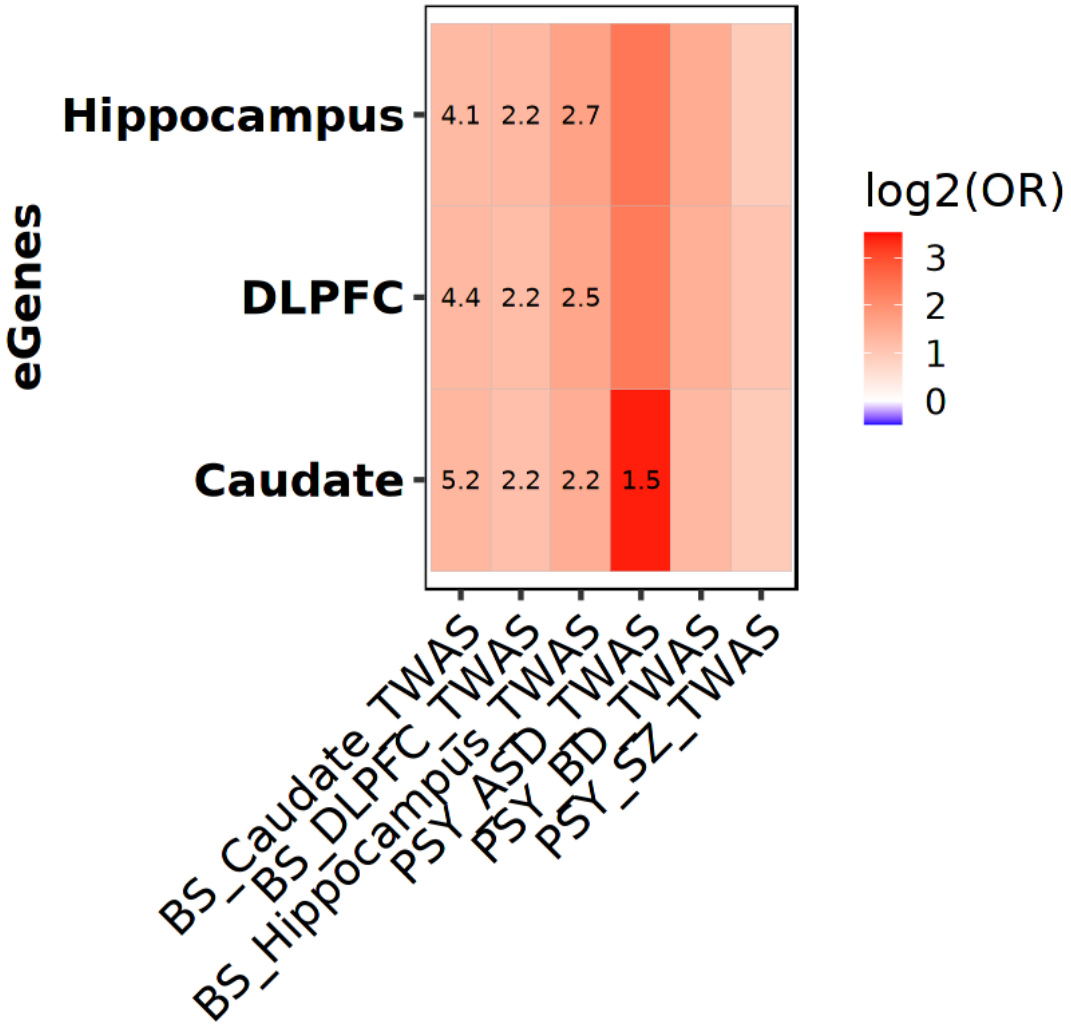
[5]:
```
dotplot <- dt %>% filter(str_detect(Comparison, "DEG")) %>%
    ggplot(aes(x=`Comparison`, y=Tissue, color=`log2(OR)`,
               size=`-log10(FDR)`)) +
    geom_point() + ylab('eGenes') + xlab('') +
    scale_color_gradientn(colors=c("blue", "grey", "red"),
                          values=scales::rescale(c(y0, 0, y1)),
                          limits=c(y0, y1)) +
    ggpubr::theme_pubr(base_size=20, border=TRUE) +
    theme(axis.text.x = element_text(angle = 45, hjust=1),
          legend.position="right",
          axis.title=element_text(face="bold"),
          axis.text.y=element_text(face="bold"))
save_plot(dotplot, "dotplot_enrichment_deg", 10, 7)
```

dotplot



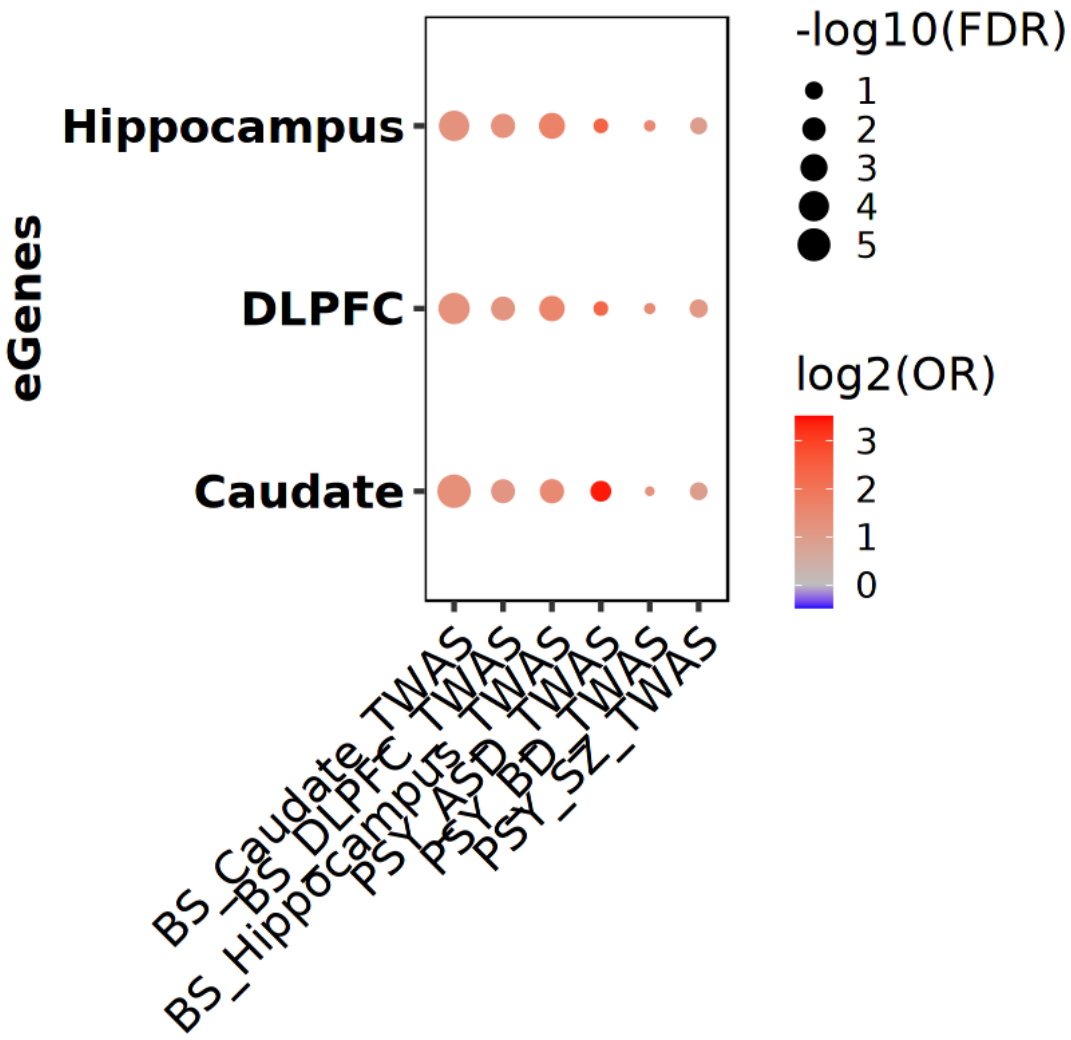
[6]:
```
tile_plot <- dt %>% filter(str_detect(Comparison, "TWAS")) %>%
    ggplot(aes(x = Comparison, y = Tissue, fill = `log2(OR)`,
               label = ifelse(p.fdr.sig,
                              format(round(`-log10(FDR)`,1), nsmall=1), ""))) +
    ylab('eGenes') + xlab('') +
    geom_tile(color = "grey") + ggfittext::geom_fit_text(contrast = TRUE) +
    scale_fill_gradientn(colors=c("blue", "white", "red"),
                         values=scales::rescale(c(y0, 0, y1)),
                         limits=c(y0, y1)) +
    ggpubr::theme_pubr(base_size = 20, border=TRUE) +
    theme(axis.text.x = element_text(angle = 45, hjust=1),
```

```
          legend.position="right",
          axis.title=element_text(face="bold"),
          axis.text.y=element_text(face="bold"))
save_plot(tile_plot, "tileplot_enrichment_twas", 8, 6)
tile_plot
```



[7]:
```
dotplot <- dt %>% filter(str_detect(Comparison, "TWAS")) %>%
    ggplot(aes(x=`Comparison`, y=Tissue, color=`log2(OR)`,
               size=`-log10(FDR)`)) +
    geom_point() + ylab('eGenes') + xlab('') +
    scale_color_gradientn(colors=c("blue", "grey", "red"),
                          values=scales::rescale(c(y0, 0, y1)),
                          limits=c(y0, y1)) +
```

```
    ggpubr::theme_pubr(base_size=20, border=TRUE) +
    theme(axis.text.x = element_text(angle = 45, hjust=1),
          legend.position="right",
          axis.title=element_text(face="bold"),
          axis.text.y=element_text(face="bold"))
save_plot(dotplot, "dotplot_enrichment_twas", 9, 7)
dotplot
```



1.2 Reproducibility Information

[8]:
```
Sys.time()
proc.time()
options(width = 120)
sessioninfo::session_info()
```

```
[1] "2021-10-13 15:26:51 EDT"
```

```
   user  system elapsed
 15.518   0.791  20.392
```

```
 Session info
 setting  value
 version  R version 4.0.3 (2020-10-10)
 os       Arch Linux
 system   x86_64, linux-gnu
 ui       X11
 language (EN)
 collate  en_US.UTF-8
 ctype    en_US.UTF-8
 tz       America/New_York
 date     2021-10-13

 Packages
 package     * version  date       lib source
 abind         1.4-5    2016-07-21 [1] CRAN (R 4.0.2)
 assertthat    0.2.1    2019-03-21 [1] CRAN (R 4.0.2)
 backports     1.2.1    2020-12-09 [1] CRAN (R 4.0.2)
 base64enc     0.1-3    2015-07-28 [1] CRAN (R 4.0.2)
 broom         0.7.9    2021-07-27 [1] CRAN (R 4.0.3)
 Cairo         1.5-12.2 2020-07-07 [1] CRAN (R 4.0.2)
 car           3.0-11   2021-06-27 [1] CRAN (R 4.0.3)
 carData       3.0-4    2020-05-22 [1] CRAN (R 4.0.2)
 cellranger    1.1.0    2016-07-27 [1] CRAN (R 4.0.2)
 cli           3.0.1    2021-07-17 [1] CRAN (R 4.0.3)
 colorspace    2.0-2    2021-06-24 [1] CRAN (R 4.0.3)
 crayon        1.4.1    2021-02-08 [1] CRAN (R 4.0.3)
 curl          4.3.2    2021-06-23 [1] CRAN (R 4.0.3)
 data.table    1.14.2   2021-09-27 [1] CRAN (R 4.0.3)
 DBI           1.1.1    2021-01-15 [1] CRAN (R 4.0.2)
 dbplyr        2.1.1    2021-04-06 [1] CRAN (R 4.0.3)
 digest        0.6.28   2021-09-23 [1] CRAN (R 4.0.3)
 dplyr       * 1.0.7    2021-06-18 [1] CRAN (R 4.0.3)
 ellipsis      0.3.2    2021-04-29 [1] CRAN (R 4.0.3)
 evaluate      0.14     2019-05-28 [1] CRAN (R 4.0.2)
 fansi         0.5.0    2021-05-25 [1] CRAN (R 4.0.3)
 farver        2.1.0    2021-02-28 [1] CRAN (R 4.0.3)
 fastmap       1.1.0    2021-01-25 [1] CRAN (R 4.0.2)
```

```
forcats     * 0.5.1    2021-01-27 [1] CRAN (R 4.0.2)
foreign       0.8-80   2020-05-24 [2] CRAN (R 4.0.3)
fs            1.5.0    2020-07-31 [1] CRAN (R 4.0.2)
generics      0.1.0    2020-10-31 [1] CRAN (R 4.0.2)
ggfittext     0.9.1    2021-01-30 [1] CRAN (R 4.0.3)
ggplot2     * 3.3.5    2021-06-25 [1] CRAN (R 4.0.3)
ggpubr        0.4.0    2020-06-27 [1] CRAN (R 4.0.2)
ggsignif      0.6.3    2021-09-09 [1] CRAN (R 4.0.3)
glue          1.4.2    2020-08-27 [1] CRAN (R 4.0.2)
gtable        0.3.0    2019-03-25 [1] CRAN (R 4.0.2)
haven         2.4.3    2021-08-04 [1] CRAN (R 4.0.3)
hms           1.1.1    2021-09-26 [1] CRAN (R 4.0.3)
htmltools     0.5.2    2021-08-25 [1] CRAN (R 4.0.3)
httr          1.4.2    2020-07-20 [1] CRAN (R 4.0.2)
IRdisplay     1.0      2021-01-20 [1] CRAN (R 4.0.2)
IRkernel      1.2      2021-05-11 [1] CRAN (R 4.0.3)
jsonlite      1.7.2    2020-12-09 [1] CRAN (R 4.0.2)
labeling      0.4.2    2020-10-20 [1] CRAN (R 4.0.2)
lifecycle     1.0.1    2021-09-24 [1] CRAN (R 4.0.3)
lubridate     1.7.10   2021-02-26 [1] CRAN (R 4.0.3)
magrittr      2.0.1    2020-11-17 [1] CRAN (R 4.0.2)
modelr        0.1.8    2020-05-19 [1] CRAN (R 4.0.2)
munsell       0.5.0    2018-06-12 [1] CRAN (R 4.0.2)
openxlsx      4.2.4    2021-06-16 [1] CRAN (R 4.0.3)
pbdZMQ        0.3-5    2021-02-10 [1] CRAN (R 4.0.3)
pillar        1.6.3    2021-09-26 [1] CRAN (R 4.0.3)
pkgconfig     2.0.3    2019-09-22 [1] CRAN (R 4.0.2)
purrr       * 0.3.4    2020-04-17 [1] CRAN (R 4.0.2)
R6            2.5.1    2021-08-19 [1] CRAN (R 4.0.3)
Rcpp          1.0.7    2021-07-07 [1] CRAN (R 4.0.3)
readr       * 2.0.2    2021-09-27 [1] CRAN (R 4.0.3)
readxl        1.3.1    2019-03-13 [1] CRAN (R 4.0.2)
repr          1.1.3    2021-01-21 [1] CRAN (R 4.0.2)
reprex        2.0.1    2021-08-05 [1] CRAN (R 4.0.3)
rio           0.5.27   2021-06-21 [1] CRAN (R 4.0.3)
rlang         0.4.11   2021-04-30 [1] CRAN (R 4.0.3)
rstatix       0.7.0    2021-02-13 [1] CRAN (R 4.0.3)
rstudioapi    0.13     2020-11-12 [1] CRAN (R 4.0.2)
rvest         1.0.1    2021-07-26 [1] CRAN (R 4.0.3)
scales        1.1.1    2020-05-11 [1] CRAN (R 4.0.2)
sessioninfo   1.1.1    2018-11-05 [1] CRAN (R 4.0.2)
shades        1.4.0    2019-08-02 [1] CRAN (R 4.0.3)
stringi       1.7.4    2021-08-25 [1] CRAN (R 4.0.3)
stringr     * 1.4.0    2019-02-10 [1] CRAN (R 4.0.2)
svglite       2.0.0    2021-02-20 [1] CRAN (R 4.0.3)
systemfonts   1.0.2    2021-05-11 [1] CRAN (R 4.0.3)
tibble      * 3.1.4    2021-08-25 [1] CRAN (R 4.0.3)
tidyr       * 1.1.4    2021-09-27 [1] CRAN (R 4.0.3)
```

```
 tidyselect    1.1.1    2021-04-30 [1] CRAN (R 4.0.3)
 tidyverse   * 1.3.1    2021-04-15 [1] CRAN (R 4.0.3)
 tzdb          0.1.2    2021-07-20 [1] CRAN (R 4.0.3)
 utf8          1.2.2    2021-07-24 [1] CRAN (R 4.0.3)
 uuid          0.1-4    2020-02-26 [1] CRAN (R 4.0.2)
 vctrs         0.3.8    2021-04-29 [1] CRAN (R 4.0.3)
 withr         2.4.2    2021-04-18 [1] CRAN (R 4.0.3)
 xml2          1.3.2    2020-04-23 [1] CRAN (R 4.0.2)
 zip           2.2.0    2021-05-31 [1] CRAN (R 4.0.3)

[1] /home/jbenja13/R/x86_64-pc-linux-gnu-library/4.0
[2] /usr/lib/R/library
```