main

September 22, 2021

1 Clustered dotplots

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

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

✔ tibble  3.1.4     ✔ dplyr   1.0.7
✔ tidyr   1.1.3     ✔ stringr 1.4.0
✔ readr   2.0.1     ✔ 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]: dt <- data.table::fread("../../_m/
     ↪clincial_phenotypes_enrichment_analysis_3brainRegions.tsv")
     dt %>% head(2)
```
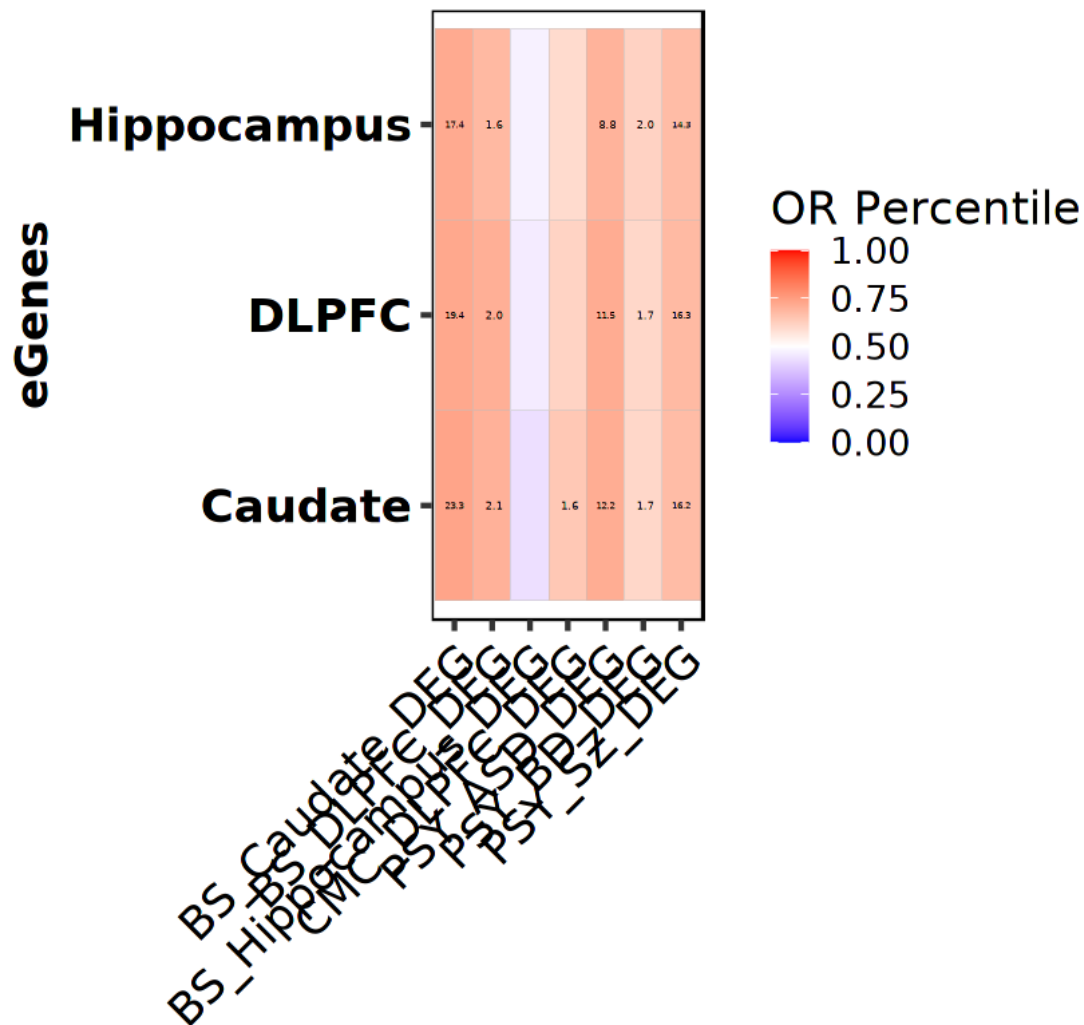
A data.table: 2 × 5

Tissue	Comparison	OR	P-value	FDR
<chr>	<chr>	<dbl>	<dbl>	<dbl>
Caudate	BS_Caudate_DEG	2.756170	1.392999e-25	5.432696e-24
Caudate	BS_DLPFC_DEG	2.349303	4.310847e-03	8.848580e-03

```
[4]: tile_plot <- dt %>% filter(str_detect(Comparison, "DEG")) %>%
         mutate(`-log10(FDR)`= -log10(FDR),
```

```r
          `OR Percentile`= OR / (1+OR),
          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)) %>%
  ggplot(aes(x = Comparison, y = Tissue, fill = `OR Percentile`,
             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_gradient2(midpoint = 0.5, low = "blue", mid = "white",
                       high = "red", space = "Lab", limits=c(0,1)) +
  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
```
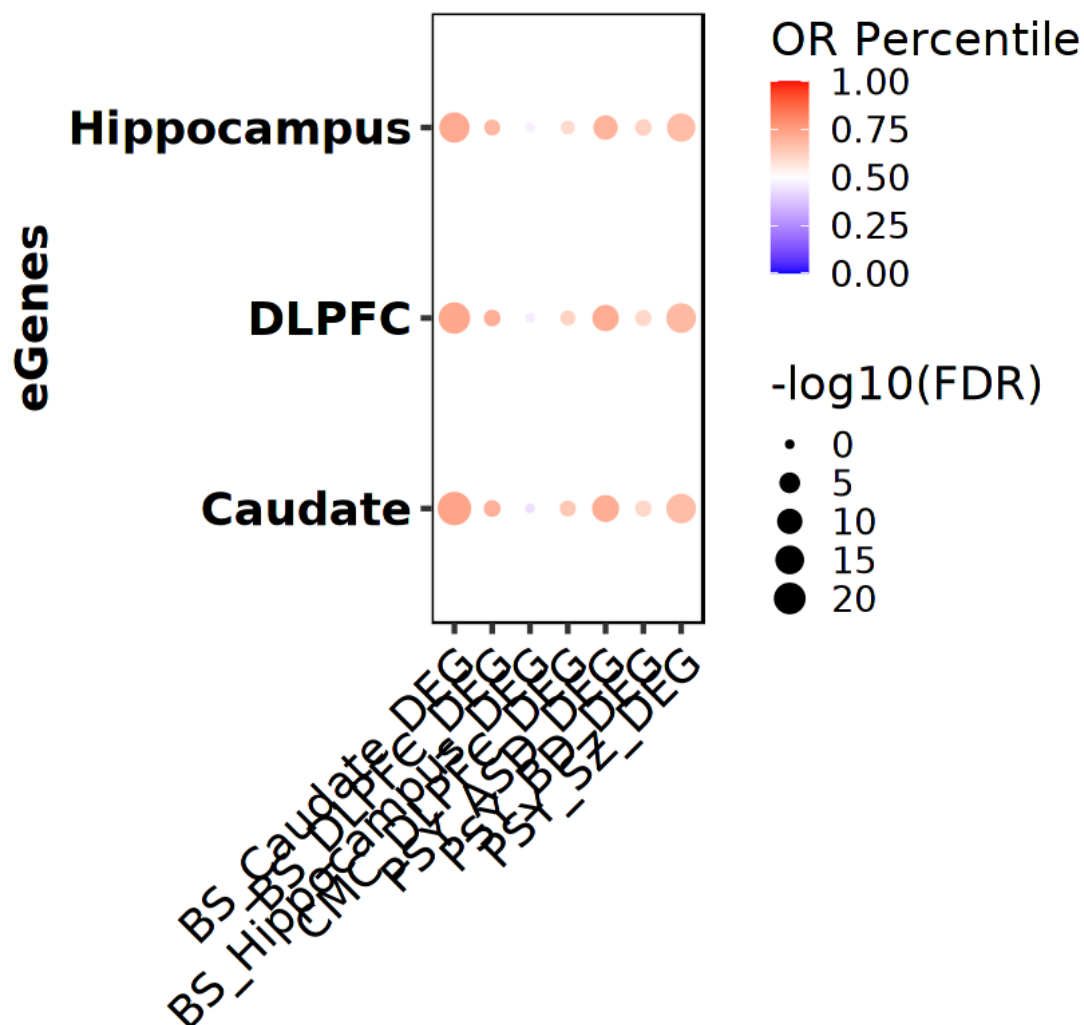
dotplot


```
[6]: tile_plot <- dt %>% filter(str_detect(Comparison, "TWAS")) %>%
         mutate(`-log10(FDR)`= -log10(FDR),
                `OR Percentile`= OR / (1+OR),
                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)) %>%
         ggplot(aes(x = Comparison, y = Tissue, fill = `OR Percentile`,
                 label = ifelse(p.fdr.sig,
                             format(round(`-log10(FDR)`,1), nsmall=1), ""))) +
```

```r
    ylab('eGenes') + xlab('') +
    geom_tile(color = "grey") + ggfittext::geom_fit_text(contrast = TRUE) +
    scale_fill_gradient2(midpoint = 0.5, low = "blue", mid = "white",
                         high = "red", space = "Lab", limits=c(0,1)) +
    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
```
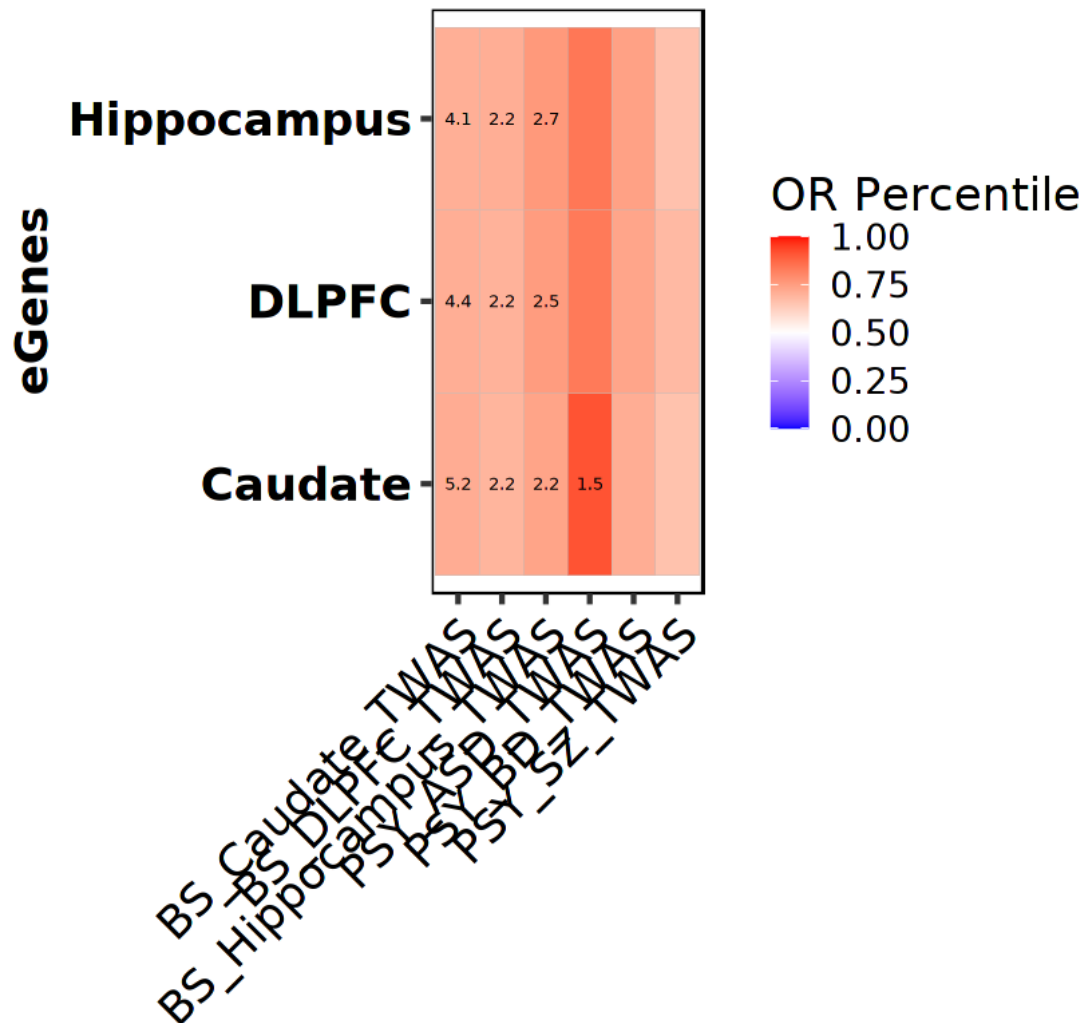
```
[7]: dotplot <- dt %>% filter(str_detect(Comparison, "TWAS")) %>%
        mutate(`-log10(FDR)` = -log10(FDR), `OR Percentile` = OR / (1+OR)) %>%
        ggplot(aes(x=`Comparison`, y=Tissue, color=`OR Percentile`,
                   size=`-log10(FDR)`)) +
        geom_point() + ylab('eGenes') + xlab('') +
        scale_color_gradient2(midpoint = 0.5, low = "blue", mid = "white",
                              high = "red", space = "Lab", limits=c(0,1)) +
        #scale_size_continuous(limits=c(0, 10)) +
        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
```
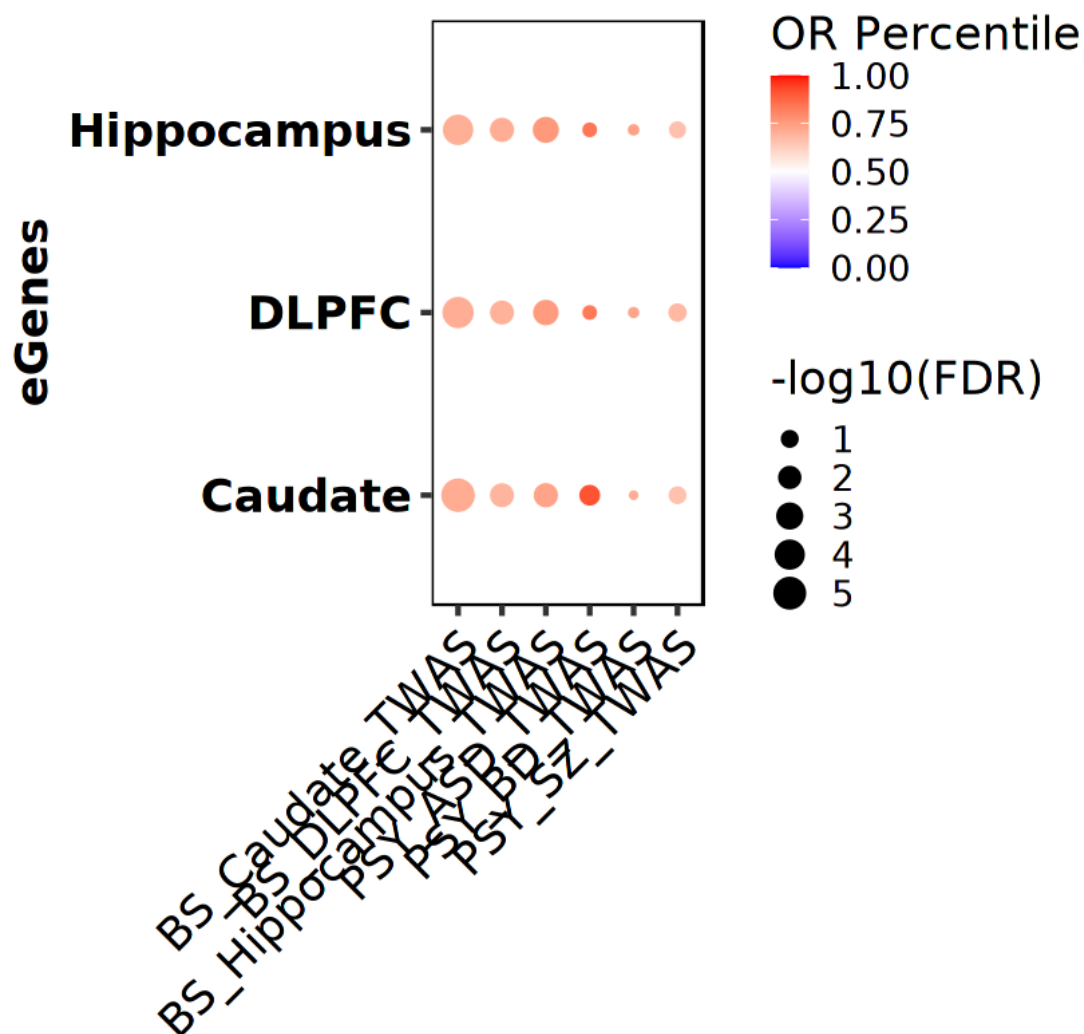
1.2 Reproducibility Information

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

```
[1] "2021-09-22 09:22:56 EDT"
```

```
   user  system elapsed
  7.220   0.207   7.747
```

```
 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     2021-09-22

 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    1.14.0   2021-02-21 [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        0.6.27   2020-10-24 [1] CRAN (R 4.0.2)
 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       0.6.2     2021-06-14 [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            1.1.0     2021-05-17 [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      1.0.0     2021-02-15 [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         1.6.2     2021-07-29 [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        * 2.0.1     2021-08-10 [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        * 1.1.3    2021-03-03 [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
```