

R Notebook

This is an R Markdown Notebook. When you execute code within the notebook, the results appear beneath the code.

Try executing this chunk by clicking the *Run* button within the chunk or by placing your cursor inside it and pressing *Ctrl+Shift+Enter*.

Add a new chunk by clicking the *Insert Chunk* button on the toolbar or by pressing *Ctrl+Alt+I*.

When you save the notebook, an HTML file containing the code and output will be saved alongside it (click the *Preview* button or press *Ctrl+Shift+K* to preview the HTML file).

The preview shows you a rendered HTML copy of the contents of the editor. Consequently, unlike *Knit*, *Preview* does not run any R code chunks. Instead, the output of the chunk when it was last run in the editor is displayed.

```
library(tidyverse)
```

```
## -- Attaching packages -----  
## v ggplot2 3.2.0      v purrr   0.3.2  
## v tibble  2.1.3      v dplyr  0.8.3  
## v tidyr   0.8.3      v stringr 1.4.0  
## v readr   1.3.1      v forcats 0.4.0  
  
## -- Conflicts -----  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag()    masks stats::lag()
```

```
library(gridExtra)
```

```
##  
## Attaching package: 'gridExtra'  
  
## The following object is masked from 'package:dplyr':  
##  
##      combine
```

```
library(grid)
```

Some plotting functions

```
plot_mriqc_metric <- function(mriqc,metric){  
  
  return (ggplot(data=mriqc, mapping = aes_string(x="subj", y=metric)) + geom_jitter(width=0.1, aes(col=  
})  
  
grid_arrange_shared_legend <- function(...) {  
  plots <- list(...)  
  g <- ggplotGrob(plots[[1]] + theme(legend.position="bottom"))$grobs  
  legend <- g[[which(sapply(g, function(x) x$name) == "guide-box")]]  
  lheight <- sum(legend$height)  
  
  grid.arrange(arrangeGrob(grobs=lapply(plots, function(x)  
    x + theme(legend.position="none",aspect.ratio=0.6))),
```

```

    legend,
    ncol = 1,
    heights = unit.c(unit(1, "npc") - lheight, lheight),
    widths = unit(0.5, "npc")

  )
}

```

Read in the functional data:

```

func<- read.csv('/projects/gherman/SPINS_human_phantoms/group_bold.tsv', sep='\t') %>%
  mutate(subj = substr(bids_name,1, 6), year = substr(bids_name, 8, 13), site=substr(bids_name, 14, 16))

```

Plot some fmri metrics

```

tsnr <- plot_mriqc_metric(func,"tsnr")

snr <- plot_mriqc_metric(func, "snr")

fd_mean <- plot_mriqc_metric(func,"fd_mean")

fd_perc <- plot_mriqc_metric(func, "fd_perc")

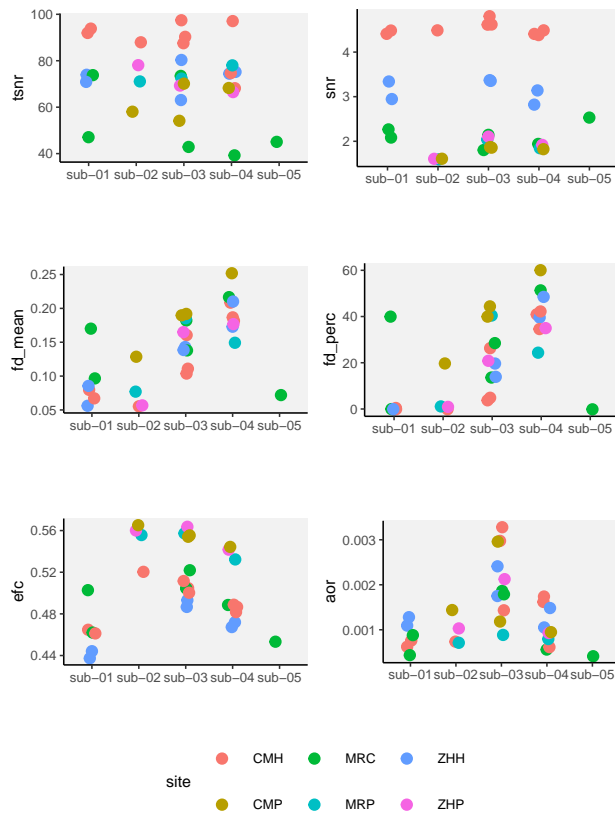
#gsr <- plot_mriqc_metric("gsr")

efc <- plot_mriqc_metric(func, "efc")

aor <- plot_mriqc_metric(func, "aor")

plt <- grid_arrange_shared_legend(tsnr, snr, fd_mean, fd_perc, efc, aor)

```



Read in the T1 data:

```
T1 <- read.csv('/projects/gherman/SPINS_human_phantoms/group_T1w.tsv', sep='\t') %>%
  mutate(subj = substr(bids_name,1, 6), year = substr(bids_name, 8, 13), site=substr(bids_name, 14, 16))

cnr <- plot_mriqc_metric(T1,"cnr")

snr_total <- plot_mriqc_metric(T1, "snr_total")

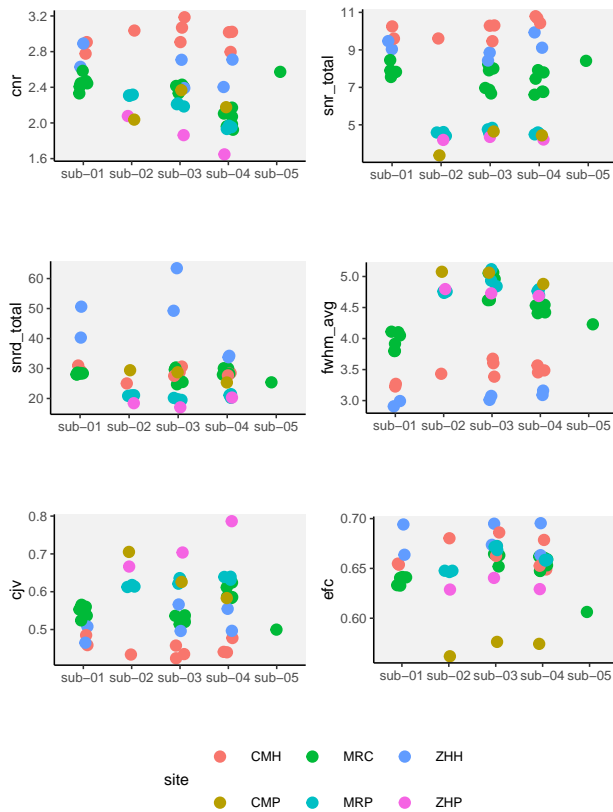
snrd_total <- plot_mriqc_metric(T1, "snrd_total")

fwhm_avg <- plot_mriqc_metric(T1, "fwhm_avg")

cjb <- plot_mriqc_metric(T1, "cjb")

efc <- plot_mriqc_metric(T1, "efc")

grid_arrange_shared_legend(cnr, snr_total,snrd_total, fwhm_avg, cjb, efc)
```



Read in the T2 data:

```
T2 <- read.csv('/projects/gherman/SPINS_human_phantoms/group_T2w.tsv', sep='\t') %>%
  mutate(subj = substr(bids_name,1, 6), year = substr(bids_name, 8, 13), site=substr(bids_name, 14, 16))

cnr <- plot_mriqc_metric(T2,"cnr")

snr_total <- plot_mriqc_metric(T2, "snr_total")

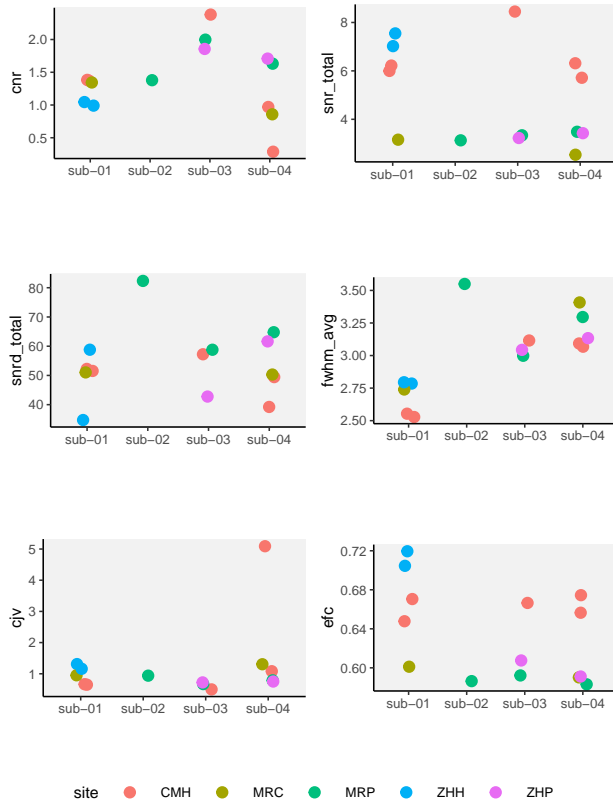
snrd_total <- plot_mriqc_metric(T2, "snrd_total")

fwhm_avg <- plot_mriqc_metric(T2, "fwhm_avg")

cqv <- plot_mriqc_metric(T2, "cqv")

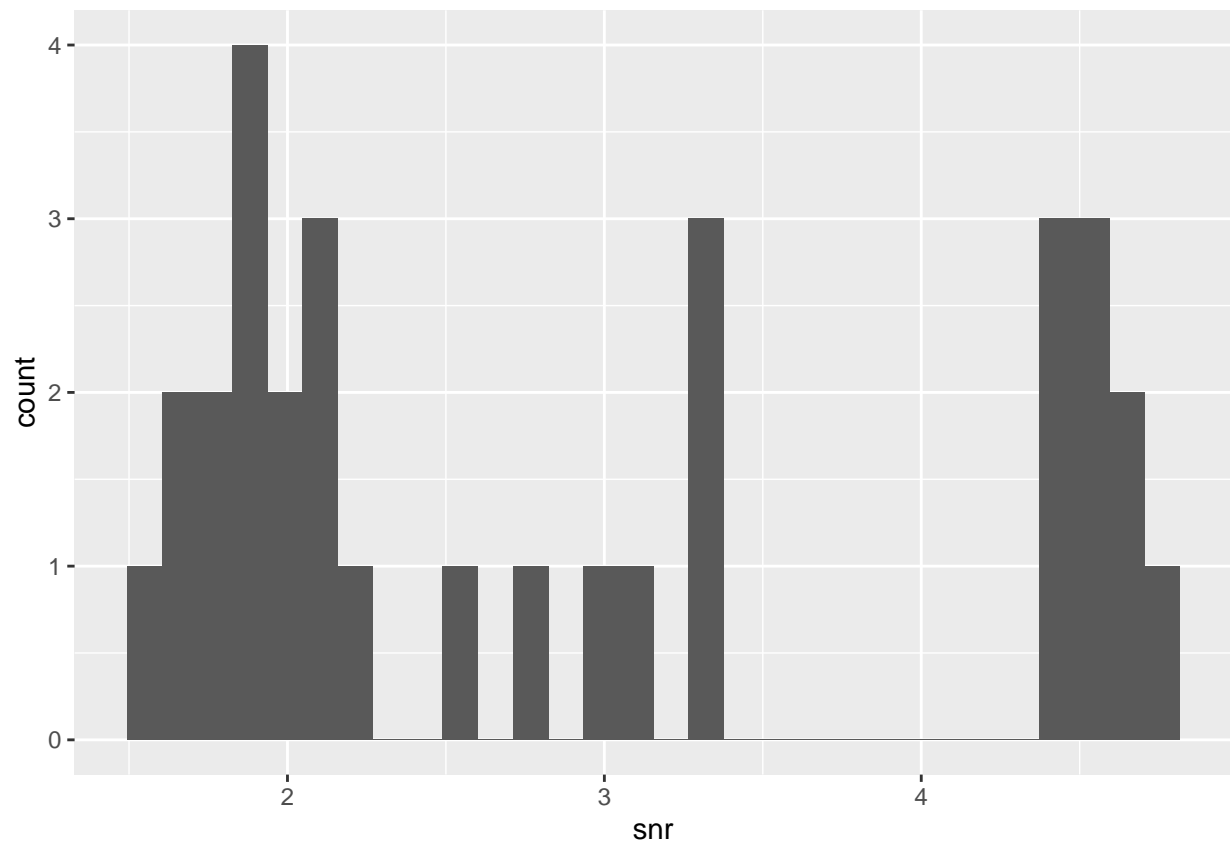
efc <- plot_mriqc_metric(T2, "efc")

grid_arrange_shared_legend(cnr, snr_total,snrd_total, fwhm_avg, cqv, efc)
```



ewwwwwwwwww a very ugly histogram lol

```
ggplot(data=func)+ geom_histogram(mapping=aes(x=snr ), stat="bin") # geom_bar(mapping=aes(x=snr, y=.pr
## `stat_bin()` using `bins = 30`. Pick better value with `binwidth`.
```



Should run the DTI pipelines on the human phantom data once they become available and we decide on the kind of metrics to use.