rupertreach

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Rupert reaching data for PA grant

Let's recreate one of our python box plots to show we've loaded the data.

Testlink http://spencelab.com.

Get started

```
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(tidyr)
library(ggplot2)
library(ggpubr)
library(car)
```

```
## Loading required package: carData
```

```
##
## Attaching package: 'car'
```

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

```
library(Hmisc)
```

```
## Loading required package: lattice
```

```
## Loading required package: survival
```

```
## Loading required package: Formula
```

```
##
## Attaching package: 'Hmisc'
```

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

```
##     src, summarize
```

```
## The following objects are masked from 'package:base':
##
##     format.pval, units
```

```
library(rstatix)
```

```
##
## Attaching package: 'rstatix'
```

```
## The following object is masked from 'package:stats':
##
##     filter
```

```
library(emmeans)
library(nlme)
```

```
##
## Attaching package: 'nlme'
```

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

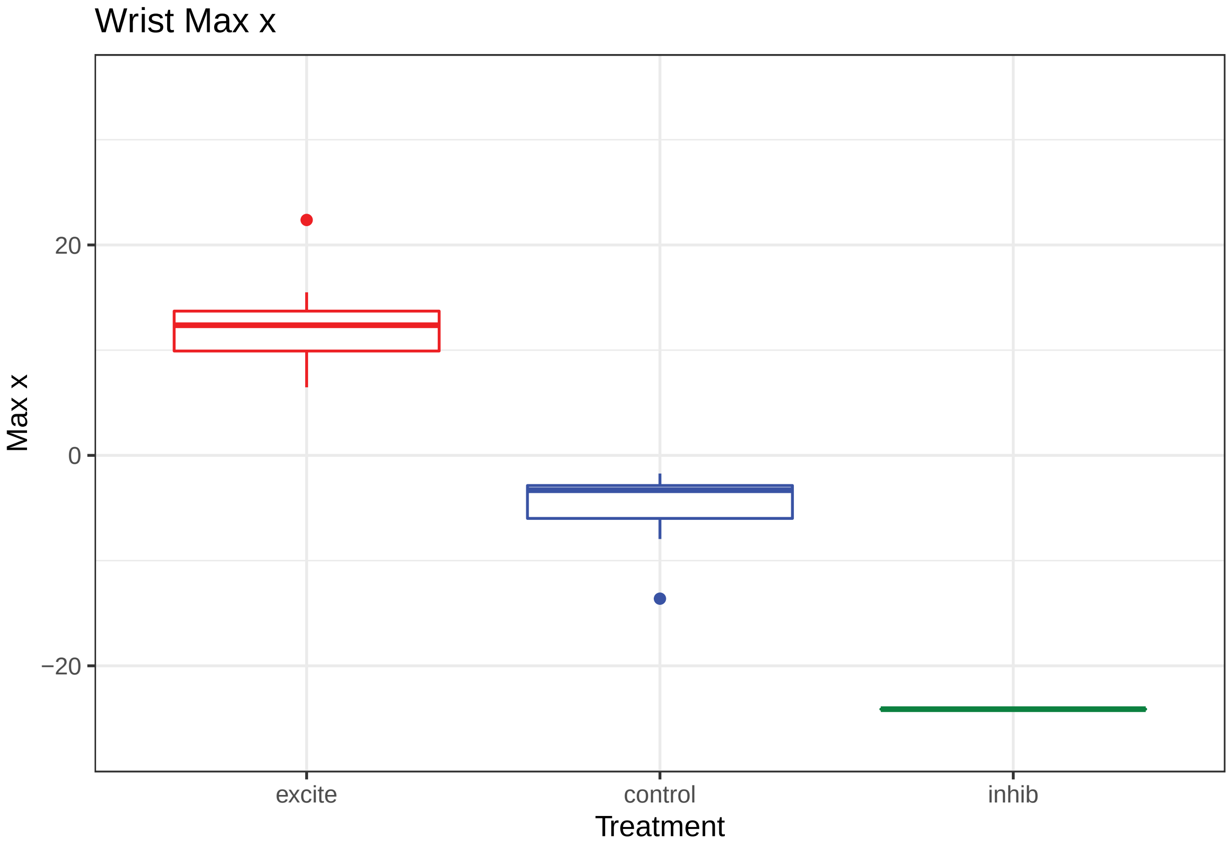
```
library(stringr)

theme_update(plot.title = element_text(hjust = 0.5))
# maybe the plain BW background looks better than the grey stuff
# https://www.datanovia.com/en/lessons/combine-multiple-ggplots-into-a-figure/
#
theme_set(theme_bw())
#+
#    theme(legend.position = "top")
#  )
dfx <- read.csv("alldata_x.csv")
dfy <- read.csv("alldata_y.csv")
```

prepare data, aggregate and stats

```
dfx$treatment <- factor(dfx$treatment)
dfx$treatment <- relevel(dfx$treatment,'excite')
dfxt <- dfx %>% filter(time==0.4)
dfxt %>% group_by(treatment) %>%
  summarise(
    count = n(),
    mean = mean(x, na.rm = TRUE),
    sd = sd(x, na.rm = TRUE),
    median = median(x, na.rm = TRUE),
    IQR = IQR(x, na.rm = TRUE)
  )
```

```
## # A tibble: 3 x 6
##   treatment count  mean    sd median   IQR
##   <fct>     <int> <dbl> <dbl>  <dbl> <dbl>
## 1 excite       11  12.4  4.51   12.4  3.79
## 2 control       7  -5.20  4.21  -3.31  3.13
## 3 inhib         1 -24.1   NA    -24.1   0
```

```
dfxt %>% ggplot(aes(x = treatment, y = x))+
  geom_boxplot(aes(color = treatment), show.legend = FALSE)+
  ylab("Max x") +
  xlab("Treatment") +
  coord_cartesian(ylim = c(-27, 35)) +
  scale_color_manual(values = c("#ED2024","#3953A4","#0C8140"))+
  ggtitle("Wrist Max x")
```



```
  #stat_compare_means(aes(group = treatment), label =  "p.signif",
  #                   method='t.test',  hide.ns = TRUE )
ggsave('xbox.pdf',width=2.5,height=3,units='in')
kruskal.test(x ~ treatment, data = dfxt)
```

```
##
##  Kruskal-Wallis rank sum test
##
## data:  x by treatment
## Kruskal-Wallis chi-squared = 13.642, df = 2, p-value = 0.001091
```

```
pairwise.wilcox.test(dfxt$x, dfxt$treatment,
                 p.adjust.method = "BH")
```

```
##
##  Pairwise comparisons using Wilcoxon rank sum exact test
##
## data:  dfxt$x and dfxt$treatment
```

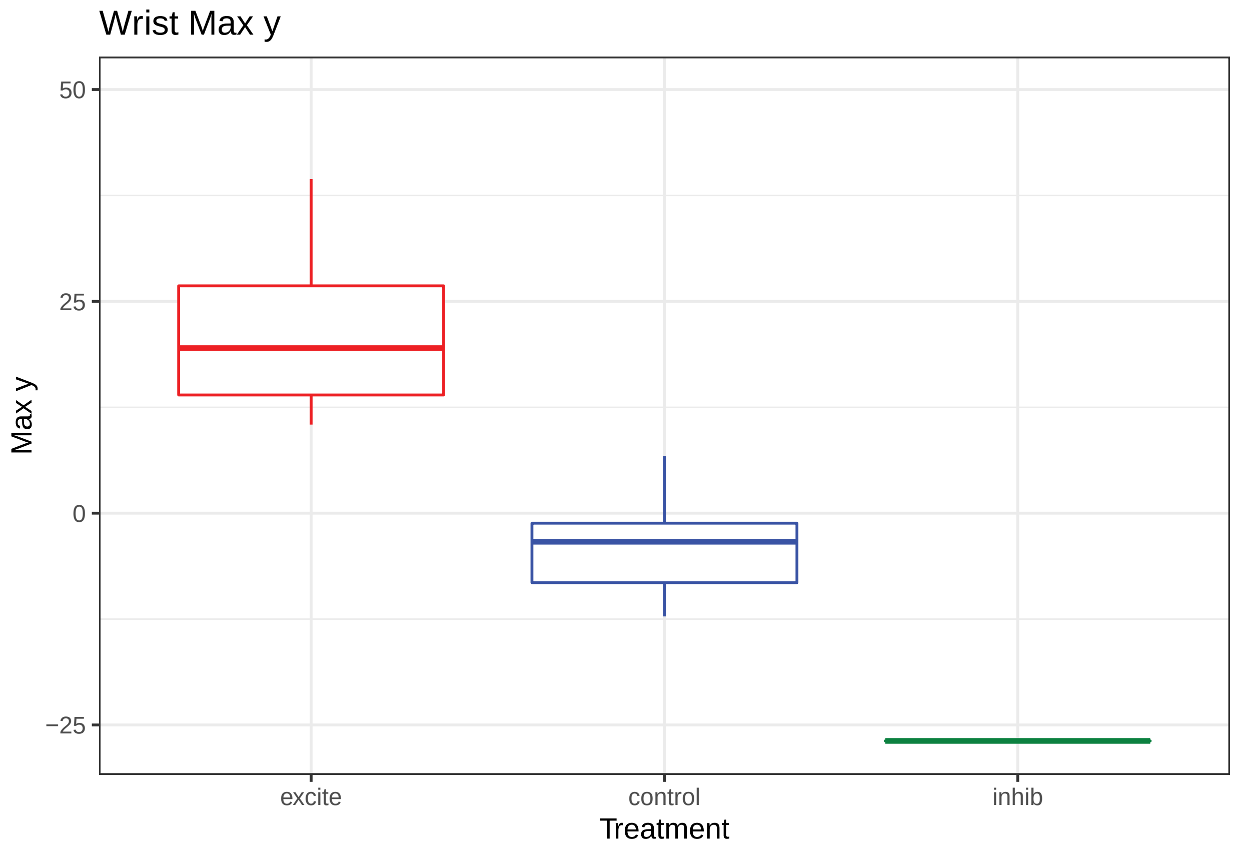
```
##
##         excite  control
## control 0.00019 -
## inhib   0.25000 0.25000
##
## P value adjustment method: BH
```

y coord box plot

```
dfy$treatment <- factor(dfy$treatment)
dfy$treatment <- relevel(dfy$treatment,'excite')
dfyt <- dfy %>% filter(time==0.4)
dfyt %>% group_by(treatment) %>%
  summarise(
    count = n(),
    mean = mean(y, na.rm = TRUE),
    sd = sd(y, na.rm = TRUE),
    median = median(y, na.rm = TRUE),
    IQR = IQR(y, na.rm = TRUE)
  )
```

```
## # A tibble: 3 x 6
##   treatment count   mean    sd median   IQR
##   <fct>     <int>  <dbl> <dbl>  <dbl> <dbl>
## 1 excite       11  20.7   8.79  19.5  12.9
## 2 control       7  -3.94  6.35  -3.37  7.02
## 3 inhib         1 -26.9  NA    -26.9   0
```

```
dfyt %>% ggplot(aes(x = treatment, y = y))+
  geom_boxplot(aes(color = treatment), show.legend = FALSE)+
  ylab("Max y") +
  xlab("Treatment") +
  coord_cartesian(ylim = c(-27, 50)) +
  scale_color_manual(values = c("#ED2024","#3953A4","#0C8140"))+
  ggtitle("Wrist Max y")
```



```
  #stat_compare_means(aes(group = treatment), label =  "p.signif",
  #                    method='t.test',  hide.ns = TRUE )
ggsave('ybox.pdf',width=2.5,height=3,units='in')
kruskal.test(y ~ treatment, data = dfyt)
```

```
##
##  Kruskal-Wallis rank sum test
##
## data:  y by treatment
## Kruskal-Wallis chi-squared = 13.642, df = 2, p-value = 0.001091
```

```
pairwise.wilcox.test(dfyt$y, dfyt$treatment,
                 p.adjust.method = "BH")
```

```
##
##  Pairwise comparisons using Wilcoxon rank sum exact test
##
## data:  dfyt$y and dfyt$treatment
##
##         excite  control
## control 0.00019 -
## inhib   0.25000 0.25000
##
## P value adjustment method: BH
```