car_viz

call built-in data mtcars.

```
data(mtcars)
```

Select only car models where mpg<20

```
mtcars_mpg2 <- mtcars[mtcars$mpg < 20,]
```

Reduce the variables to mpg, cyl, disp, hp, gears

```
mtcars_mpg2 <- mtcars_mpg2[, c(1,2,3,4,10)]
```

read the R file hand_functions.R so that it can be used

notice that with echo = TRUE

```
source(file = "hand_functions.R", echo = TRUE)
```

```
##
## > sum_special <- function(df_x) {
## +     try(if (!is.data.frame(df_x))
## +         stop("Input data must be a data frame."))
## +     sp_means <- apply(df_ .... [TRUNCATED]
```

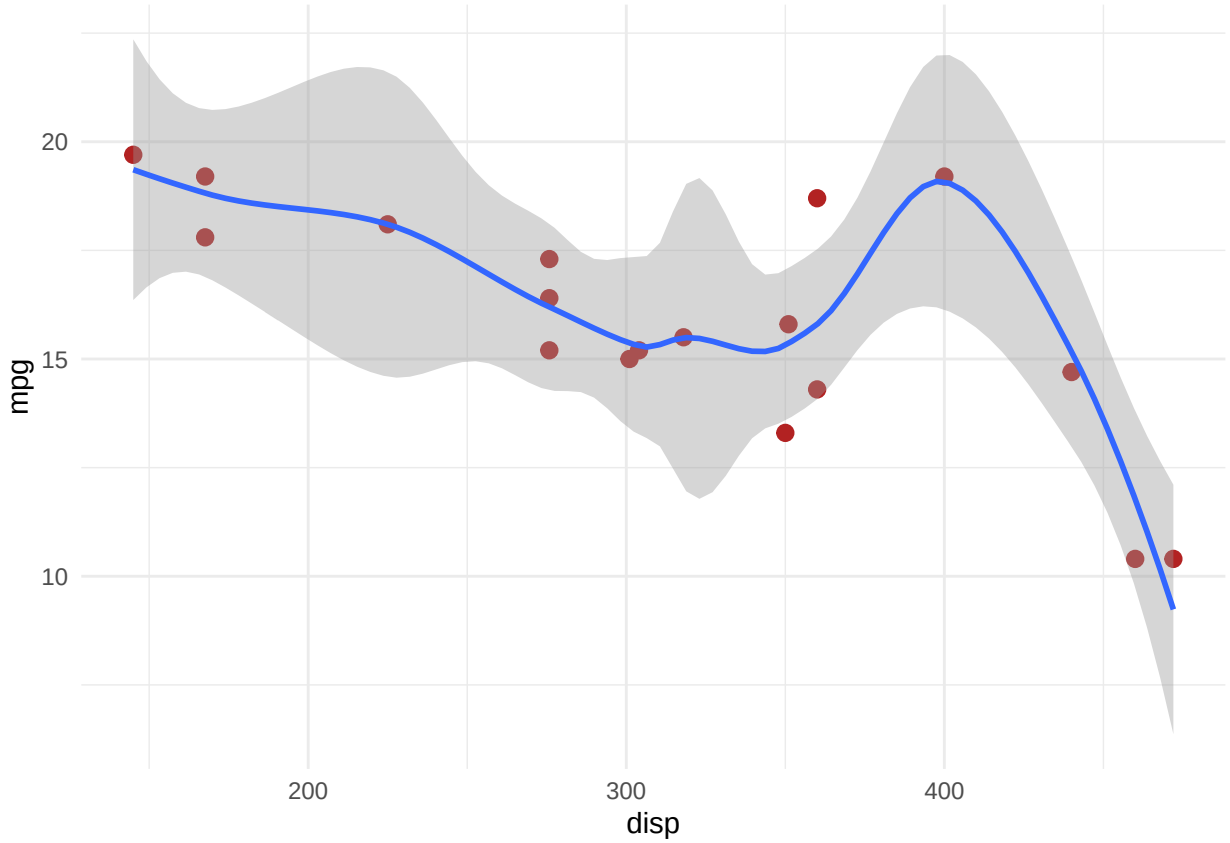
Now use the function from hand_functions.R

```
sp_out <- sum_special(mtcars_mpg2)
```

```
# library(esquisse)
#
# esquisser(data = mtcars_mpg2, viewer = "browser")
```

```
ggplot(mtcars_mpg2) +
  aes(x = disp, y = mpg) +
  geom_point(shape = "bullet", size = 4L, colour = "#B22222") +
  geom_smooth(span = 0.5) +
  theme_minimal()
```

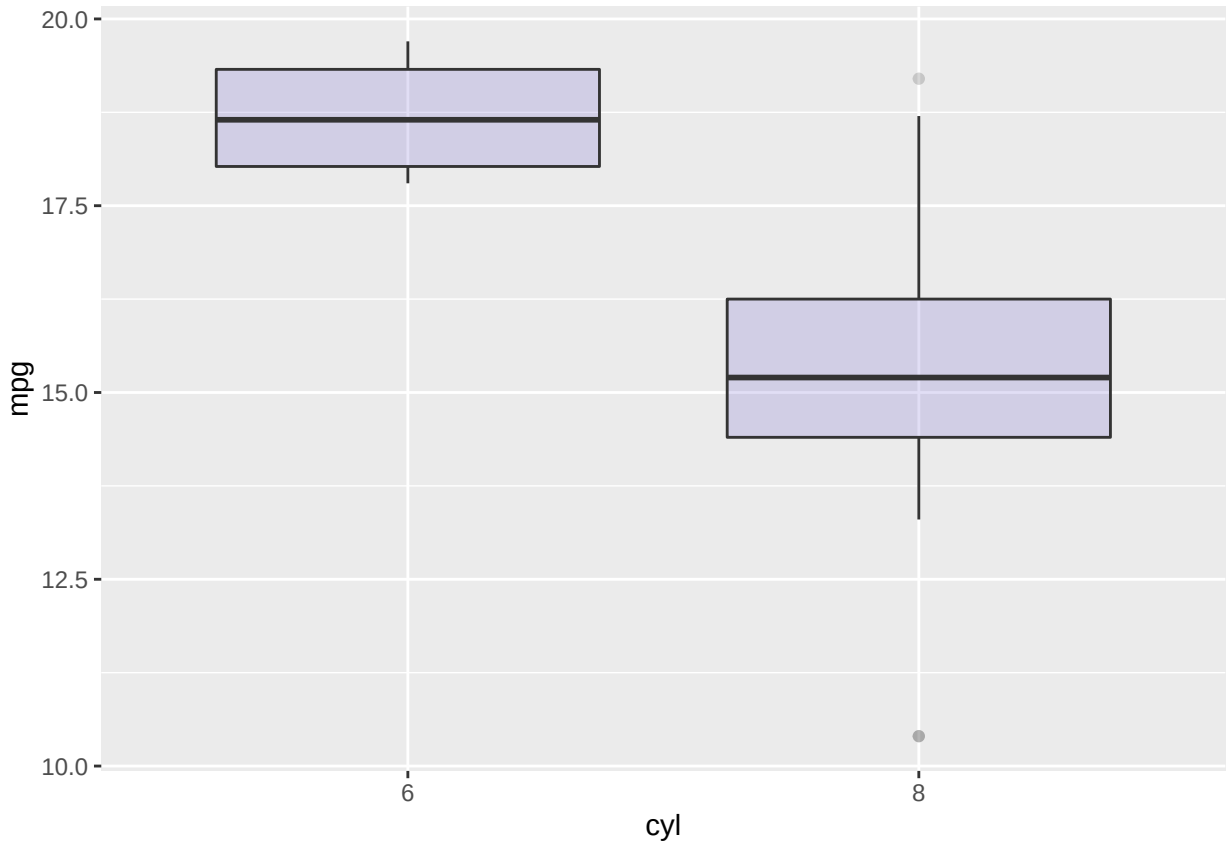
```
## `geom_smooth()` using method = 'loess' and formula 'y ~ x'
```



note that this boxplot cannot be made with esquisse() unless the data is adjusted. What adjustment is needed?

We need to use cylinders as the x input rather than disp.

```
ggplot(mtcars_mpg2, aes(x=as.factor(cyl), y=mpg)) +
  geom_boxplot(fill="slateblue", alpha=0.2) +
  xlab("cyl")
```


20.0
17.5
15.0
12.5
10.0
mpg
6
8
cyl