Assignment 2 – 20231499 – Tapan Auti

Part 1

1. Tints -

[#340a6b, #3d1b6b, #472c6b, #53406b , #5e556b]

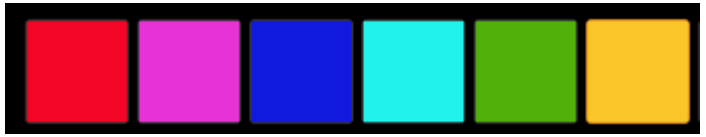
2. Shades –

[#340a6b , #290854 , #1f0640 , #15042b , #0b0217]

3. Tones -

[#340a6b , #351263 , #361b5a , #382451 , #392e47]

4.**Qualitative Palette-**



[#f30522 , #e732d8 , #1219de , #51b10b , #6be614 , #fac529]

The above Qualitative Palette can be used for qualitative data but when it comes to quantitative data, I think amongst the all we can use the Tints palette but not the other two as the similarity between the colors is very high.

Part 2

1. **Plot 1 – ggplot color**

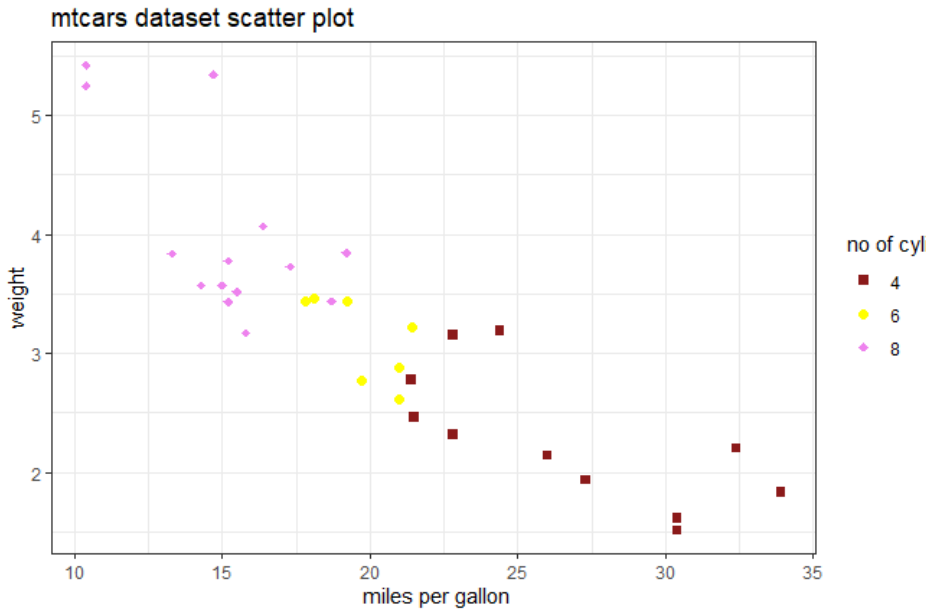


Figure 1 : mtcars ggplot color

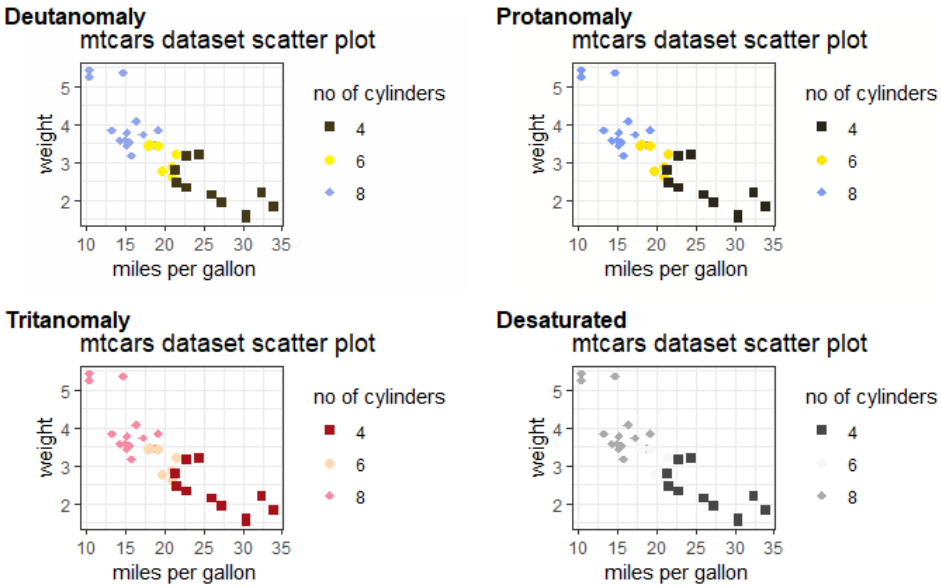


Figure 2: mtcars ggplot color CVD

Palette used - "firebrick4","yellow","violet"

This plot is CVD accessible as in all types of color blindness we can clearly differentiate between the plotting.

2. Plot 2 – Okabe Ito palette

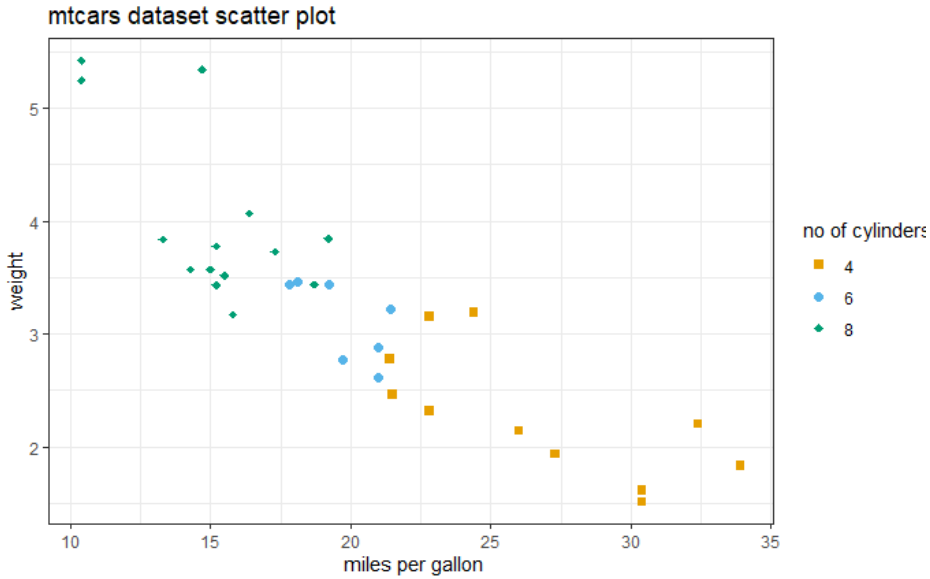


Figure 3: mtcars Okabe Ito

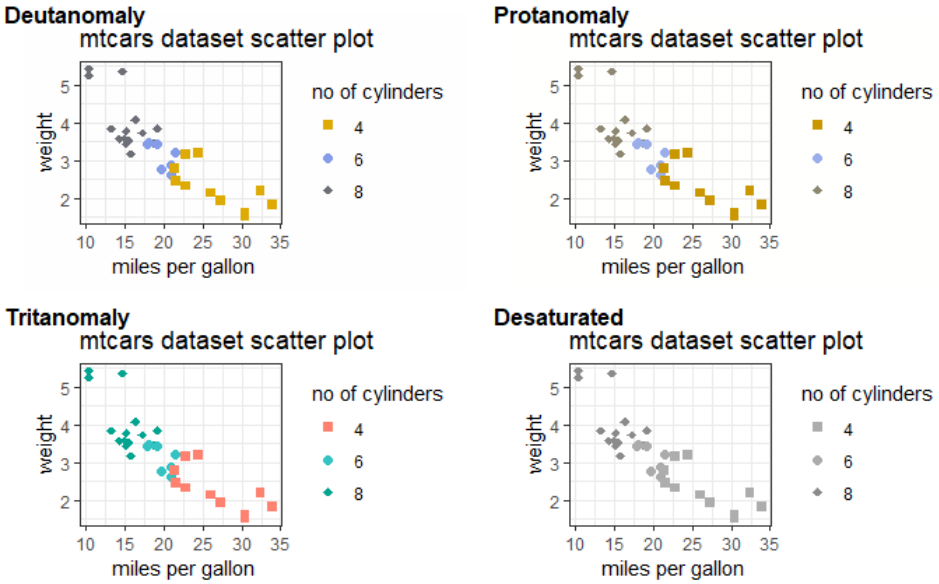


Figure 4: mtcars Okabe Ito CVD

Palette Used – Okabe Ito palette with grey

This plot is CVD accessible as in all types of color blindness we can clearly differentiate between the plotting.

3. Plot 3 – Viridis Palette

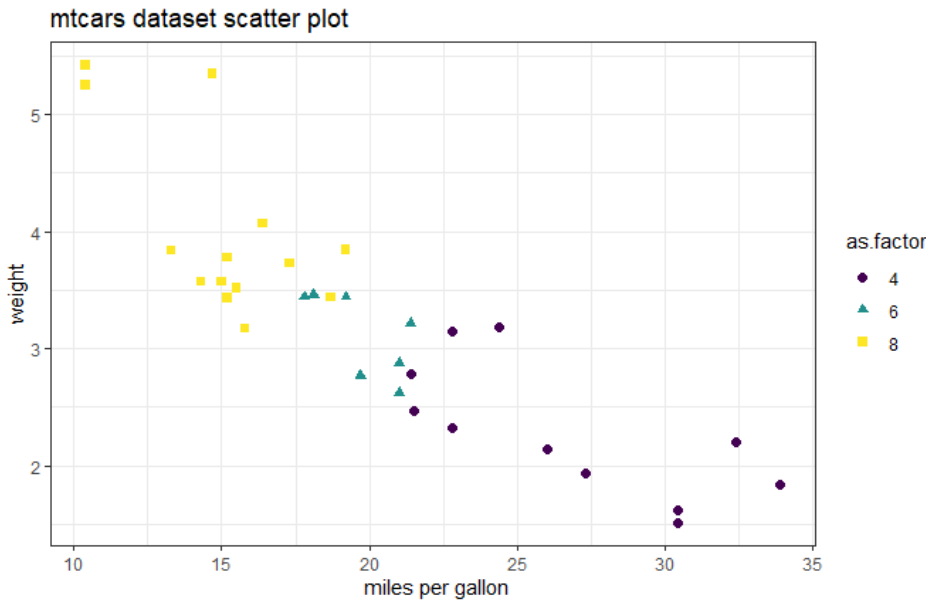


Figure 5: mtcars viridis palette

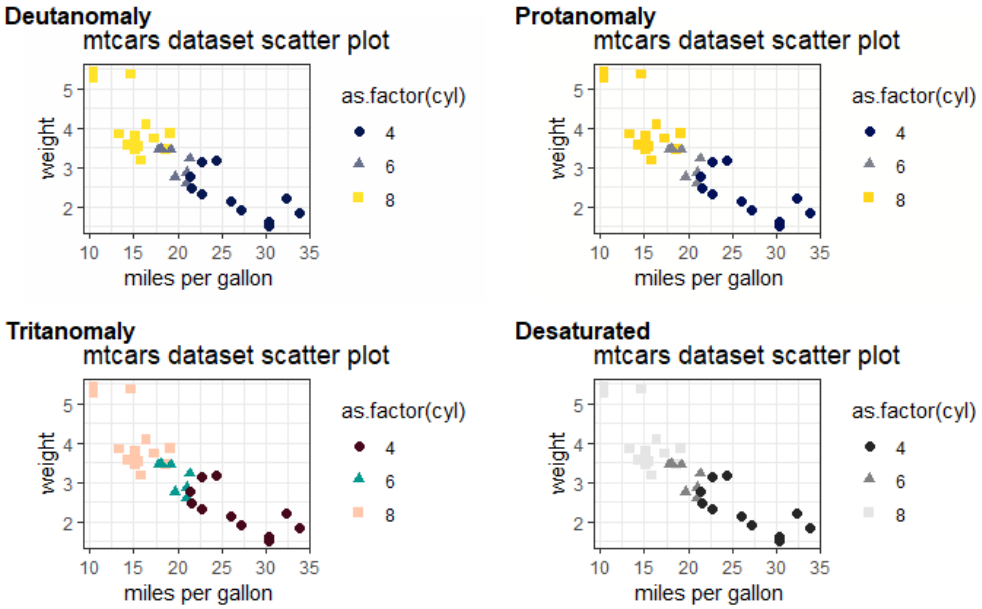


Figure 6: mtcars viridis palette CVD

Palette Used – viridis_d

This plot is CVD accessible as in all types of color blindness we can clearly differentiate between the plotting.

Conclusion - In some cases there still can be some discrepancy with color blind people in plot 1 and 2 as the similarity between colors is very high but in Plot 3 – viridis palette in every plot there is clear definition of the shapes and colors and we can cleary see the plot and differentiate it. So the Viridis Palette according to me is the most suitable one.

Appendix

Code –

```
library(ggplot2)
library(colorblindr)
library(viridis)

plot1 <- ggplot(mtcars,aes(x = mpg,y = wt,
color=as.factor(cyl), shape=as.factor(cyl)))   +
geom_point(size=2) +
xlab(" miles per gallon")+
ylab("weight")+
ggtitle("mtcars dataset scatter plot")+
theme_bw()+scale_color_manual(values =
c("firebrick4","yellow","violet"), name = "no of
cylinders")+scale_shape_manual(values =
c(15,19,18),name = "no of cylinders")palette_OkabeIto <-
c("#E69F00", "#56B4E9", "#009E73", "#F0E442",
"#0072B2", "#D55E00", "#CC79A7", "#999999")

plot2 <- ggplot(mtcars,aes(x = mpg,y = wt,
color=as.factor(cyl), shape=as.factor(cyl)) )  +
geom_point(size=2) +
xlab(" miles per gallon")+
ylab("weight")+
ggtitle("mtcars dataset scatter plot")+
theme_bw()+scale_color_manual(values =
palette_OkabeIto, name = "no of
cylinders")+scale_shape_manual(values =
c(15,19,18),name = "no of cylinders")

plot3 <- ggplot(mtcars,aes(x = mpg,y = wt,
color=as.factor(cyl), shape=as.factor(cyl)) )  +
geom_point(size=2) +
xlab(" miles per gallon")+
ylab("weight")+
ggtitle("mtcars dataset scatter plot")+
theme_bw()+scale_color_viridis_d()

plot1
cvd_grid(plot1)

plot2
cvd_grid(plot2)

plot3
cvd_grid(plot3)
```