Homework 7

Enter your name and EID here

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This homework is due on April 4, 2022 at 11:00am. Please submit as a pdf file on Canvas.

Problem 1: (2 pts)

Use the color picker app from the **colorspace** package (`colorspace::choose_color()`) to create a qualitative color scale containing four colors. One of the four colors should be `#4D670C`, so you need to find three additional colors that go with this one. Use the function `swatchplot()` to plot your colors. `swatchplot()` takes in a vector of colors.

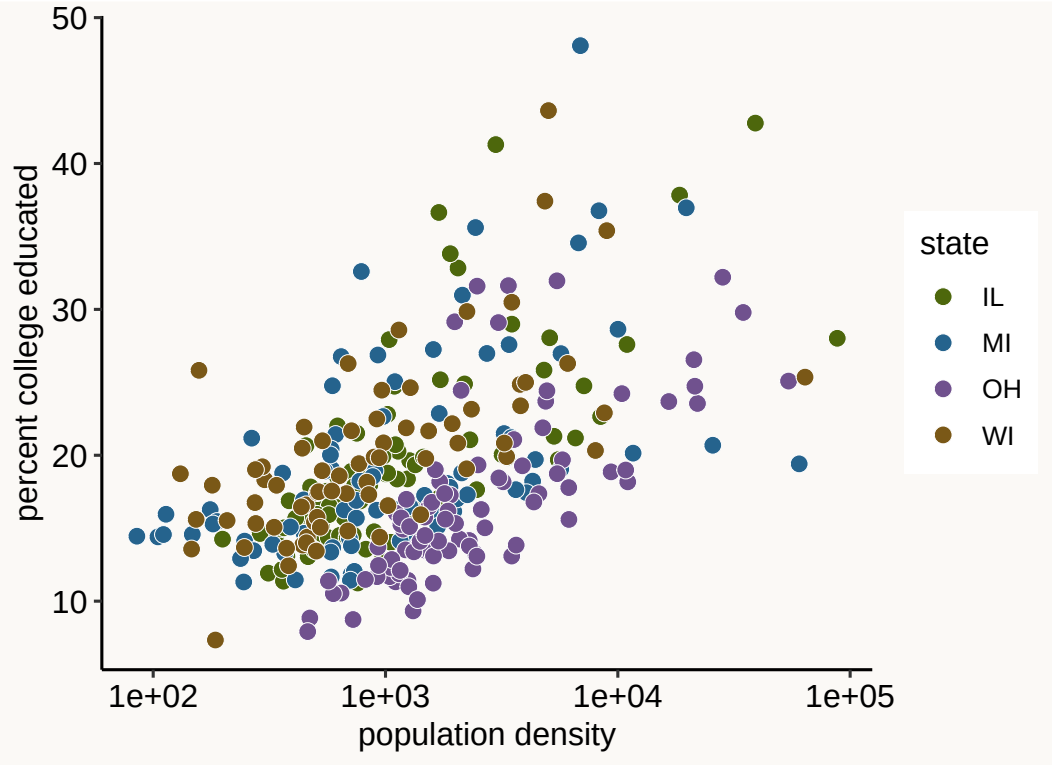
```
# creating a color space
#colorspace::choose_color()

palette <- c("#4D670C", "#25638D", "#70518E", "#7A5817")

swatchplot(palette)
```

Problem 2: (4 pts)

For this problem, we will work with the `midwest2` dataset (derived from `midwest`). In the following plot, you may notice that the axis tick labels are smaller than the axis titles, and also in a different color (gray instead of black).

1. Use the colors you chose in Problem 1 to color the points.
2. Make the axis tick labels the same size (`size = 12`) and give them the color black (`color = "black"`)
3. Set the entire plot background to the color `"#FBF9F6"`. Make sure there are no white areas remaining, such as behind the plot panel or under the legend.

```
ggplot(midwest2, aes(popdensity, percollege, fill = state)) +
  geom_point(shape = 21, size = 3, color = "white", stroke = 0.2) +
  scale_x_log10(name = "population density") +
  scale_y_continuous(name = "percent college educated") +
  scale_fill_manual(values = palette) +
  theme_classic(12) +
  theme(
    axis.text = element_text(
      size = 12,
      color = "black"
    ),
    plot.background = element_rect(
      fill = "#FBF9F6"
    ),
    panel.background = element_rect(
      fill = "#FBF9F6"
    ),
    legend.box.background = element_rect(
      fill = "#FBF9F6",
      color = "#FBF9F6"
    )
  )
```



Problem 3: (4 pts)

For this problem, we will work with the `oceanbuoys` dataset from the `naniar` library that contains west pacific tropical atmosphere ocean data for 1993 and 1997.

Write a function that converts temperature from Celcius to Fahrenheit. Then, use this function and any other data wrangling code you learned from class to make a summary table of average sea temperature and air temperature (in Fahrenheit) for 1997 and 1993. The formula for converting Celcius to Fahrenheit is `Fahrenheit = (Celcius*1.8) + 32`.

```
f2c <- function(oldvar){
  oceanbuoys |>
    mutate(new_var = (.data$oldvar*1.8) + 32
    )
}

oceanbuoys_table <-
  oceanbuoys |>
    filter(year > 1993, year < 1997)
```

```
## Warning in Ops.factor(year, 1993): '>' not meaningful for factors
```

```
## Warning in Ops.factor(year, 1997): '<' not meaningful for factors
```

```
summary(oceanbuoys)
```

```
##    year         latitude         longitude         sea_temp_c      air_temp_c
##  1993:274   Min.   :-5.000   Min.   :-110.0   Min.   :21.84   Min.   :22.06
```

```
##  1997:291   1st Qu.:-2.000   1st Qu.:-110.0   1st Qu.:23.60   1st Qu.:23.45
##             Median :-2.000   Median :-110.0   Median :26.65   Median :25.78
##             Mean   :-1.788   Mean   :-104.7   Mean   :25.90   Mean   :25.34
##             3rd Qu.: 0.000   3rd Qu.: -95.0   3rd Qu.:28.21   3rd Qu.:27.19
##             Max.   : 0.000   Max.   : -95.0   Max.   :29.55   Max.   :28.50
##     humidity        wind_ew          wind_ns
##  Min.   :71.60   Min.   :-8.100   Min.   :-6.200
##  1st Qu.:81.90   1st Qu.:-5.200   1st Qu.: 1.900
##  Median :85.80   Median :-4.200   Median : 3.100
##  Mean   :84.98   Mean   :-4.013   Mean   : 2.945
##  3rd Qu.:88.40   3rd Qu.:-3.000   3rd Qu.: 4.200
##  Max.   :94.80   Max.   : 1.800   Max.   : 7.300
```