Homework 7

Ethan Chang - ehc586

This homework is due on Mar. 28, 2023 at 11:00pm. 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 `#A23C42`, 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.

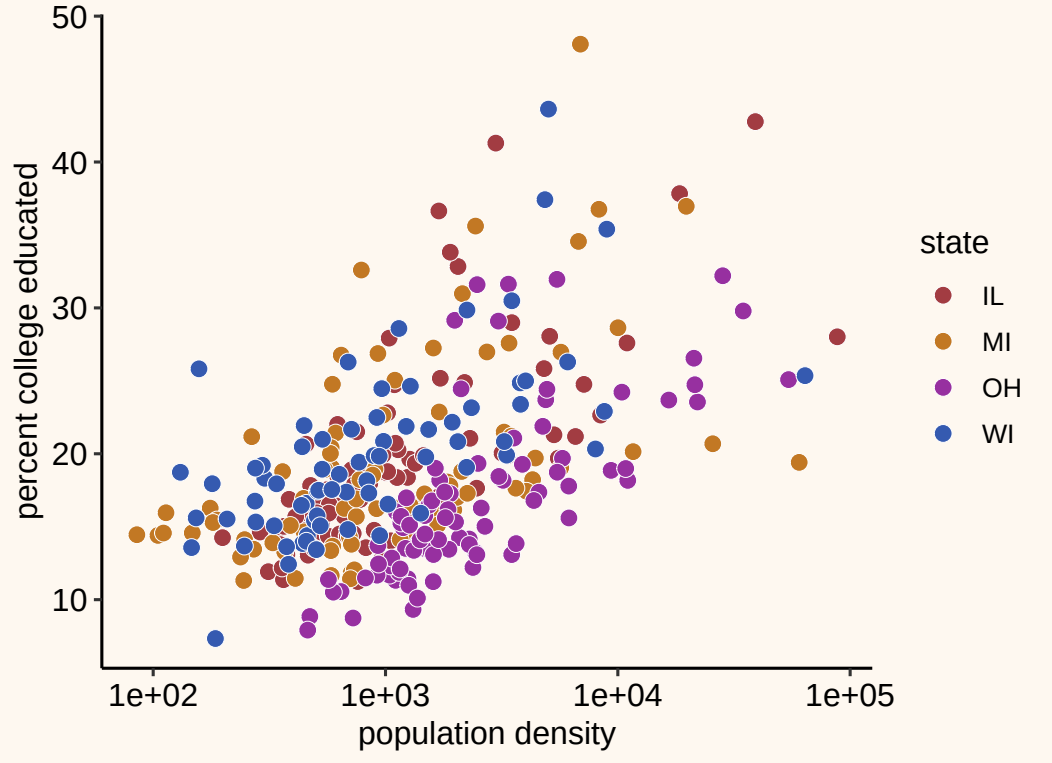
```
#choose_color()
swatchplot(c("#A23C42", "#C27824", "#9730A0", "#355AB0"))
```

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 `"#FEF8F0"`. 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 = c("#A23C42", "#C27824", "#9730A0", "#355AB0")) +
  theme_classic(12) +
  theme(
    axis.text = element_text(size = 12, color = "black"),
    plot.background = element_rect(fill = "#FEF8F0"),
    panel.background = element_rect(fill = "#FEF8F0"),
    legend.background = element_rect(fill = "#FEF8F0")
  )
```



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 Celsius to Fahrenheit. Then, use this function and any other data wrangling code you learned in class to make a summary table of average sea temperature and air temperature (in Fahrenheit) for each year in the dataset. The formula for converting Celsius to Fahrenheit is `Fahrenheit = (Celsius*1.8) + 32`.

```
C_to_F <- function(Celsius) {
  Fahrenheit <- (Celsius*1.8) + 32
}

oceanbuoys %>%
  group_by(year) %>%
  summarize(
```

```
    avg_sea_temp_f = sum(C_to_F(sea_temp_c))/n(),
    avg_air_temp_f = sum(C_to_F(air_temp_c))/n()
  )
```

```
## # A tibble: 2 x 3
##   year  avg_sea_temp_f avg_air_temp_f
##   <fct>          <dbl>          <dbl>
## 1 1993            74.5           74.2
## 2 1997            82.6           80.8
```