Exercise: Coordinates, Axes, and Scales

Overview

This exercises provides some practice cleaning up axes for data visualizations and is designed to be completed in 60 minutes or fewer. Although you should have time to complete the parts, if you are unable, *as with all exercises, you are encouraged to complete it outside of class time* so that you are able to incorporate your experiences and knowledge into future exercises. You may need to consult course reading materials located at the course site as some elements may not have been covered in the basic content contained in associated videos. If you would like to acquire extra credit for your work, you can send me a knit html file of what you have accomplished.

This exercise assumes you have an understanding of {dplyr} functions like `select()`, `filter()`, `mutate()`, and `summarize()` and {ggplot2} functions like `ggplot()`, `geom_point()`, `geom_bar()`, and as `aes()`. Your ability to work through the exercise will also be influenced in part by your prior practice using these functions as part of your *course allocation time outside of class*.

This exercise focuses on:

- Creating data visualizations
- Adjusting axes scales (e.g., labels, breaks)
- Using functions in {scales}

This exercise uses:

- {here}, {dplyr}, {ggplot2} functions and functions from relevant `Base R` libraries (e.g., `read.csv()`, `readRDS()`, `saveRDS()`, etc.)
- {scales} library functions
- Your knowledge from past in-class exercises, videos, homework, etc. and corresponding modules from the course site.

Data Set

In this exercise, you will create several plots using `ggplot2` and modify axis labels and breaks using the `scales` library. Use the provided data set to complete the tasks.

```r
data <- data.frame(
  Category = rep(c("A", "B", "C", "D"), each = 5),
  Proportion = runif(20, 0.01, 1),
  Revenue = round(runif(20, 1000, 50000), 2),
  Time = rep(2015:2019, 4)
)
```
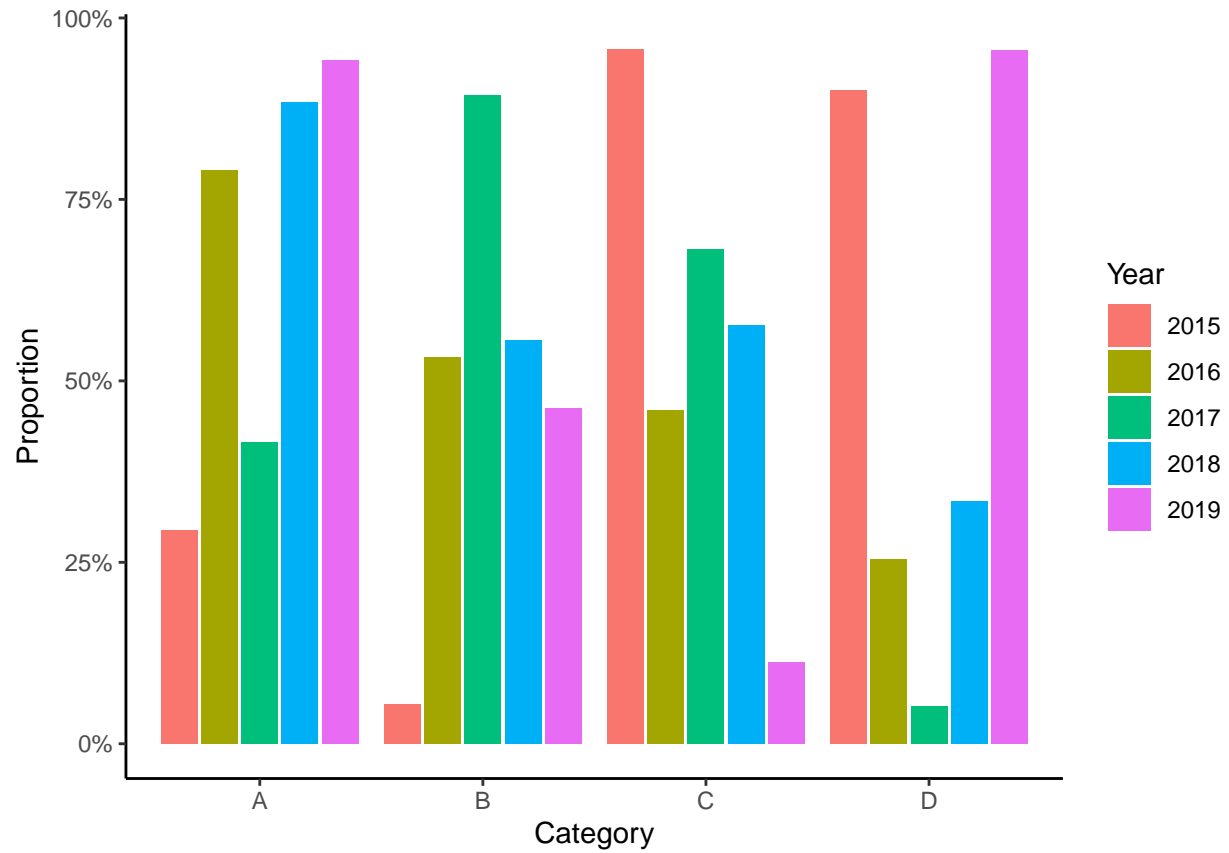
Problem 1

Review {scales} functions that would allow you to display your axis as percentages and replicate this plot.
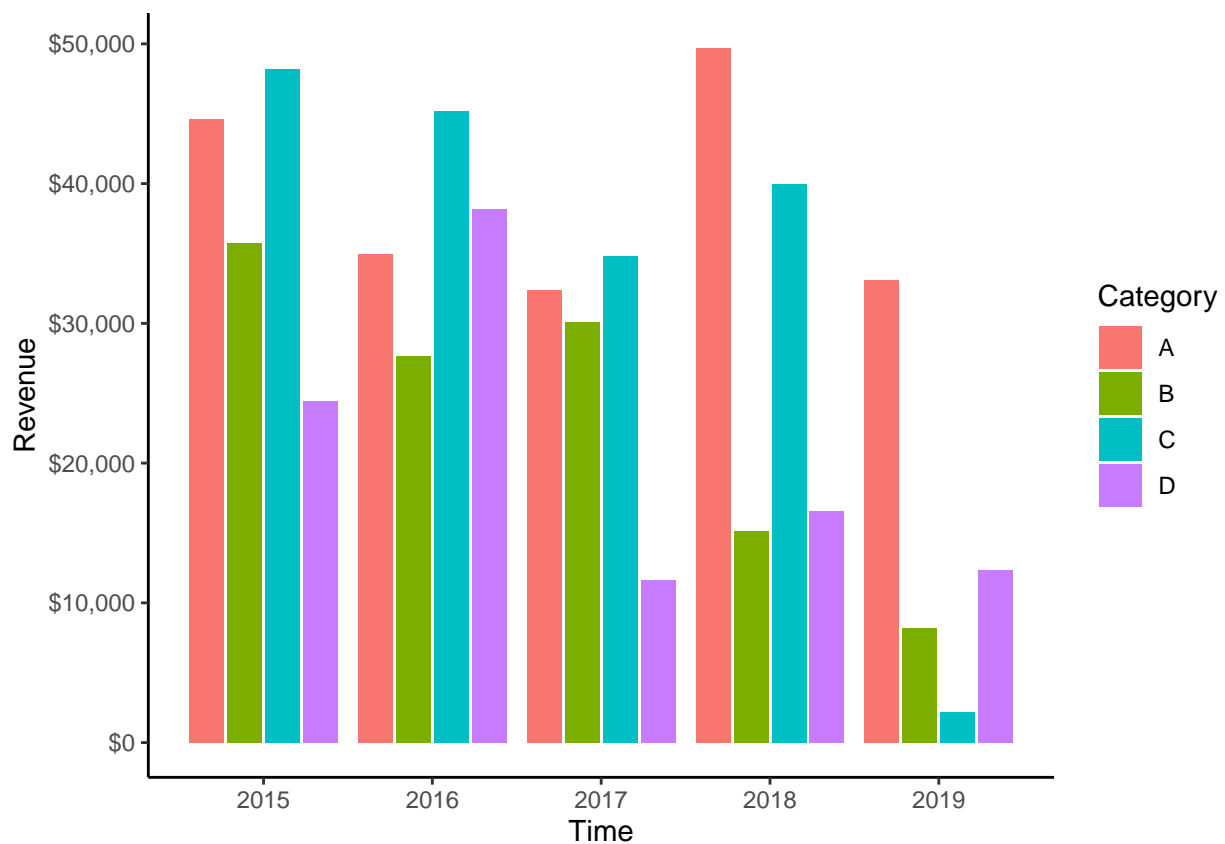
Problem 2

Review {scales} functions that would allow you to display your axis as percentages and replicate this plot.

Problem 3

Replicate the plot, making sure to limit the x-axis to display only the years 2016, 2018, and 2019 by changing the scale and not by filtering your data. This may not be a plot you would create but it nevertheless provides experience for working with axis scales and axis scale layers. Consider also labeling your axis to make sense based on your modification.
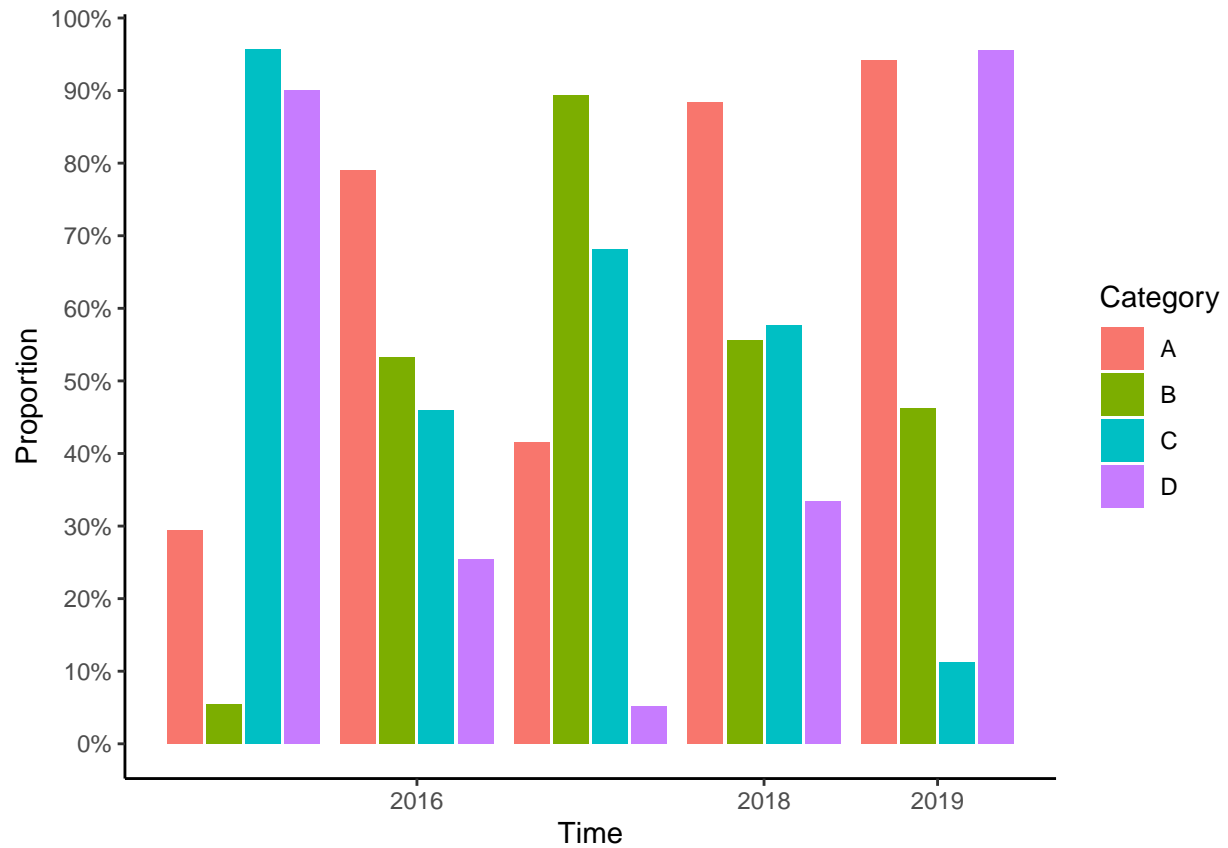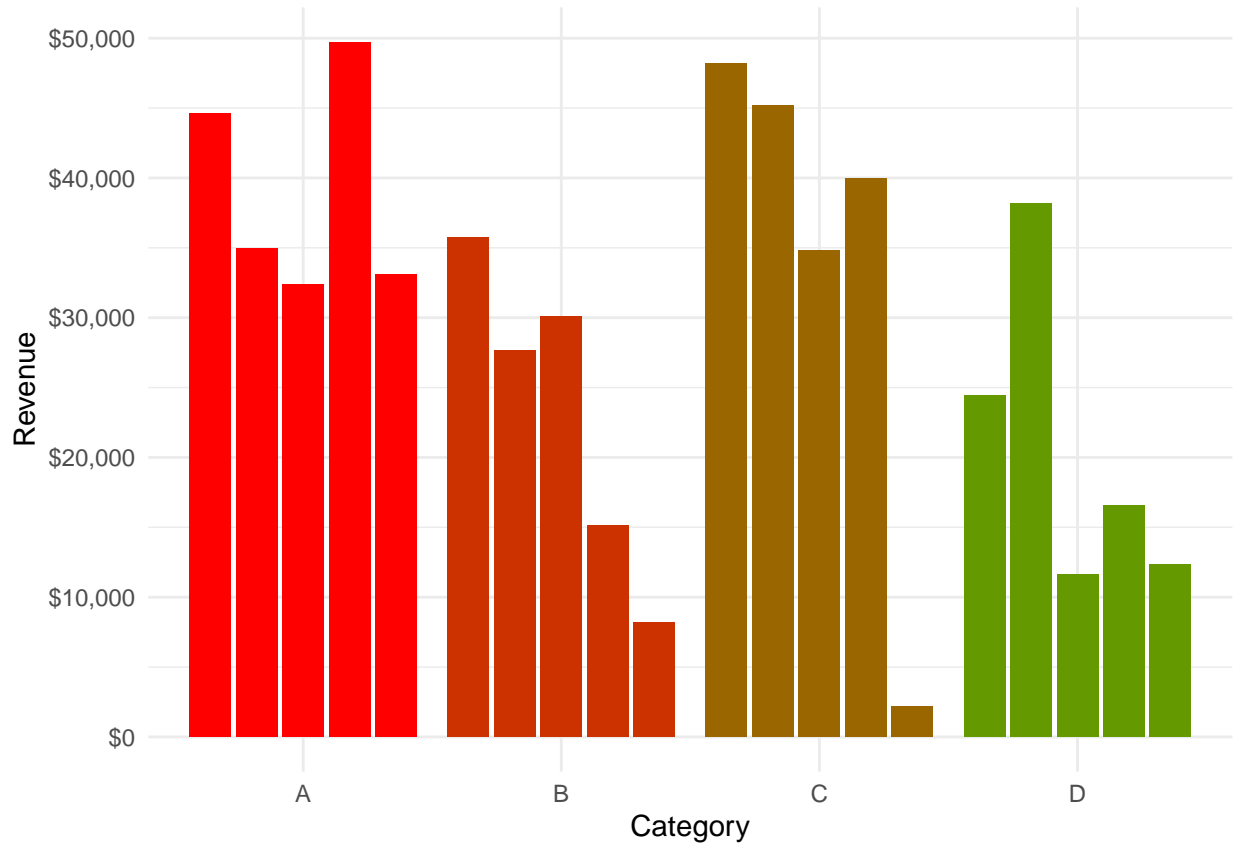
Problem 4

Create a custom color palette of discrete colors using `{monochromeR}` in order to change the colors of either `Category` or `Year` for one of your plots.
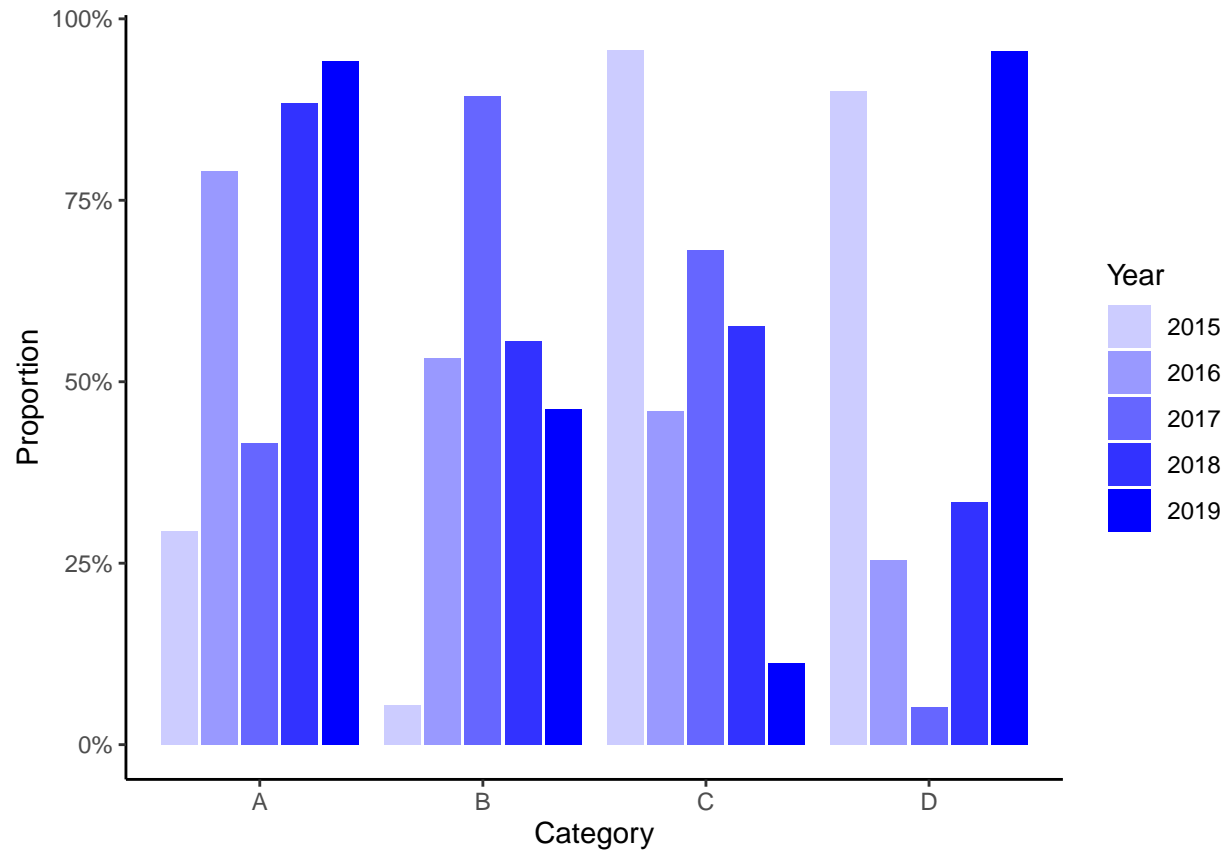
Problem 5 (Bonus): Mutating a Custom Color Palette

Having created a custom palette, add a column to your data frame (e.g., `cat_color`) that contains the custom colors that would correspond to a variable that you would use for adding color to the plot. Consider what {dplyr} function you might use to create variables with more than two unique elements. These color values in the variable can now be referenced by their `"identity"` when applying a color. Use `scale_*_identity()` to color your bars or points of your plot. This problem will provide you with practice with using colors if they are in a data frame already.

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