# Assignment 1

1/31/2022

## Background

You're approached by a faculty member in the NYU A3SR program who would like you to help them develop a simple visualization tool to help them see the distribution of their students grades. The faculty member teaches 2 class so the application will need to be able to switch between 2 different datasets.

Some of the assignments are on a continuous scale, while others are on a discrete scale. The faculty member would prefer to see grades as a histogram for continuous variables and a barchart for discrete variables. For the continuous assignments, the faculty member likes the idea of having the option to group the histogram by any of the discrete variables (i.e. a grouped histogram).

Due to privacy laws the faculty member can not share the grades with you but asks you to code up a prototype using the `penguins` and `mtcars` datasets.

Can you build the prototype?

## Data

Assignment 1 will involve using both the `penguins` and `mtcars` datasets. `mtcars` is native to R and penguins is in the `palmerpenguins` package. The code chunk below is an example of how to load both datasets

```
require(palmerpenguins)
penguins
mtcars
```

## Part 1

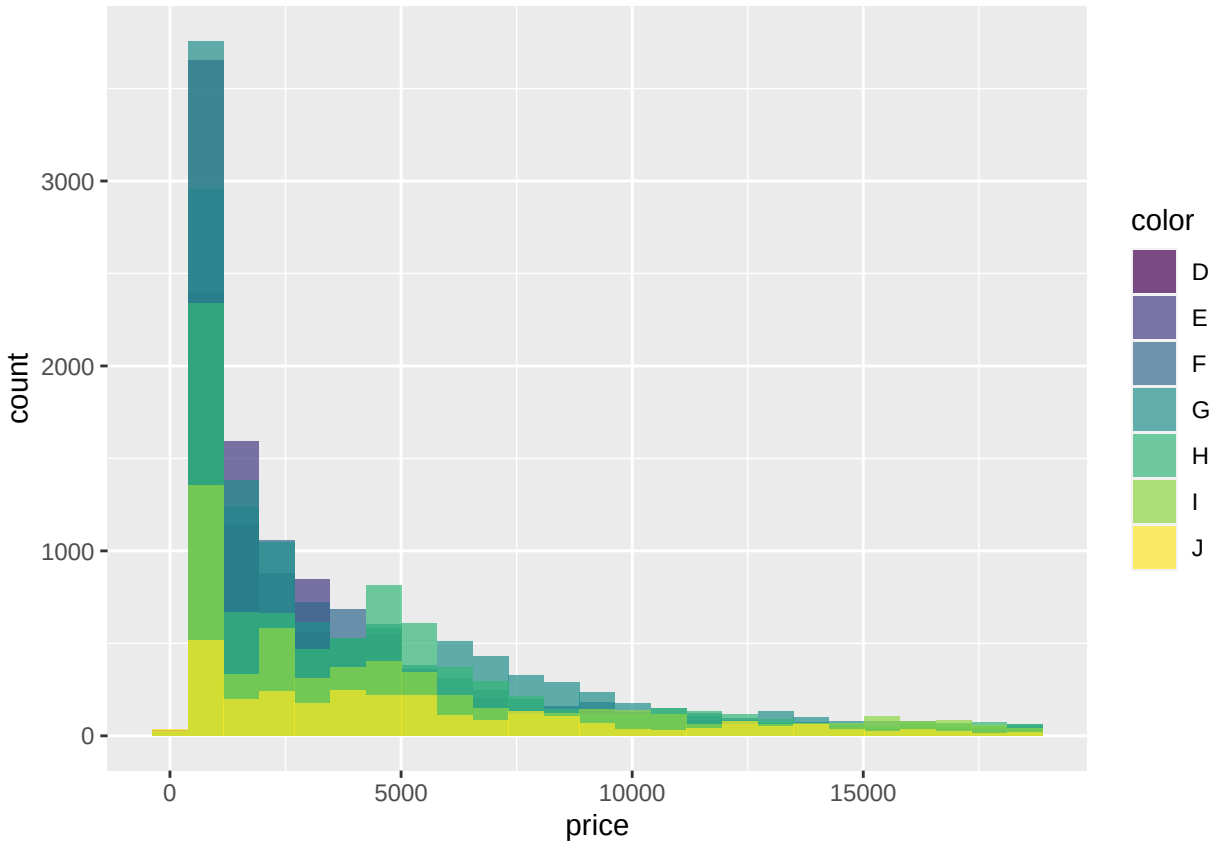
### Simple Data Summary

1. Create a Shiny app named hw1_part1
2. In hw1_part1 you will create a data visualization app with the following criteria:

- The user can switch between either the `penguins` dataset or the `mtcars` dataset
- The app allows the user to select a variable and see a histogram if the variable is continuous and a bar chart for discete variables.
- When the user has selected a continuous variable, give them the option to color the histogram by a discrete variable.

An example of this type of a plot is shown below:

```
library(ggplot2)
ggplot(data = diamonds, aes(price, fill = color)) +
  geom_histogram(bins = 25, alpha = .7, position = 'identity')
```




- Any variable that is a string or has less than 5 unique values is a discrete variable

# Part 2

## Changing the UI

1. Create a Shiny app named hw1_part2
2. Recreate your app from part1 but with a some simple UI modifications

Modifying the UI could include any of the following:

- Changing the inputs used to select data, variables or plots (radio buttons instead of a drop down etc.)
- Adding new inputs such as the option to change bins
- Reorganizing the page layout (grid arrangement, tabs etc.)

# Grading

**Submit to GitHub by 10PM Sunday February 6**

10 point scale discussed in class: 4 points for attempting all sections 3 points for submitting an app that compiles and runs 3 points for style

- commented code
- well designed UI
- good use of R/R Shiny functions