MPA 634  
Data Science and R for Administrators  
Combined Homework #2 and #3

Aesthetic Mappings and Facets

1. **Definitions, Concepts, and vocabulary**  
     
   Explain how aesthetics, scaling, and mapping are related to each other within the context of the grammar of graphics and ggplot.

Aesthetics controls the graphics of the plot and can be used to change the color, shape, etc. of the points and can be based on the different variables to differentiate each one. Scaling assigns a unique aesthetic to each unique variable, so it’s done in the aesthetic call. Mapping is a bit different and assigns a color or other aesthetic to the certain type of mapping. For example, you could change the color of a linear mapping to change the color of the line but not by the type of variable.

1. **Code Interpretation**

1 ggplot(data = mpg, mapping = aes(x = displ, y = hwy, color = class)) +

2 geom\_point(position = "jitter", show.legend = FALSE) +

3 geom\_smooth(method = "lm", se = FALSE, show.legend = FALSE,

4 color = "black",

5 size = 0.50) +

6 geom\_smooth(se = FALSE, show.legend = FALSE) +

7 facet\_wrap(vars(class))

1: This line calls the ggplot function and tells it to use the mpg data that presumably has already been loaded. It tells it to put the displ data on the x-axis and the hwy mpg data on the y-axis and to color the data by the class (so each class has a different color)

2: This line plots the data as points and applies the “jitter” positioning to the points so that a small amount of randomness will be added to the data and differentiate points that have the same original values. Setting se=FALSE tells it to remove the confidence intervals from the plot.

3: This line plots a smooth fit line to the data, but it’s a linear fit line because the method is “lm.” Again, the confidence interval is set to FALSE so it doesn’t show and the legend is also suppressed since it’s set to FALSE.

4: The color of the line is set to black

5: The thickness/size of the line is set to .5

6: This line plots a second fit line without the confidence interval or legend as well, but because the method is not explicitly stated, it will go to the default method using the LOESS method.

7: This line makes the plot faceted based on the variable of class so that there is an “individual” plot of each class

1. **Code Creation**

Use ggplot to create a graph like the following:

A screenshot of a cell phone

Description automatically generated  
  
# Homework 2/3

# Initial: January 14, 2019

# Revision: January 14, 2019

# Derrik Adams

# Libraries

library(tidyverse)

# mpg data set

data(mpg)

#Code for Hmwk 2 & 3

ggplot(data = mpg) +

geom\_bar(mapping = aes(x = class, fill = drv), position = "fill")+

facet\_grid(rows = vars(year))

