

Review of ggplot with Social Service Agency Data

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1 Make Sure You Have Installed ggplot! (1 Time)

```
install.packages("ggplot2")
```

2 Call Library (Each Time)

```
library(ggplot2)
```

3 Load Simulated Data

Table 1: Table continues below

ID	age	gender	race_ethnicity	family_income	program
2892	23	Male	African American	42359	Program B
1971	39	Female	Asian American	66500	Program C
4728	26	Female	Asian American	52726	Program C
1020	24	Male	Latinx	52911	Program D
4429	36	Female	Asian American	50287	Program C
3136	33	Male	African American	45570	Program C

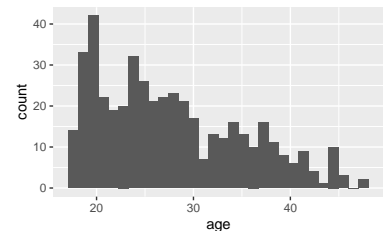
mental_health_T1	mental_health_T2	latitude	longitude
95.25	106.8	42.16	-83.6
82.64	96.3	42.29	-83.88
80.49	98.72	42.14	-83.78
93.82	91.67	42.24	-83.68
83.37	99.69	42.18	-83.64
75.28	92.9	42.21	-83.7

4 Basic ggplot

A ggplot call consists of the data, an aesthetic, geometrie(s), and options.

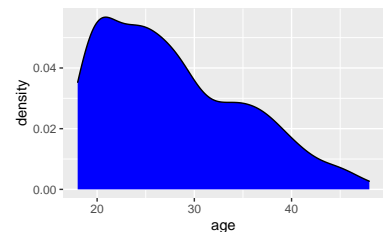
4.1 Histogram

```
ggplot(data = clients, # data I am using
       aes(x = age)) + # what I am graphing
  geom_histogram() # how I am graphing it
```



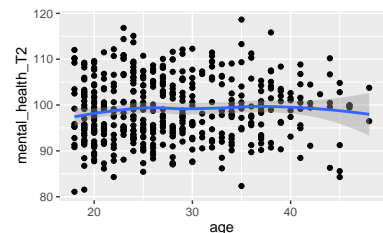
4.2 Density

```
ggplot(data = clients, # data I am using
       aes(x = age)) + # what I am graphing
  geom_density(fill = "blue") # how I am graphing it
```



4.3 Scatterplot With Smoother

```
ggplot(data = clients, # data I am using
       aes(x = age, # what I am graphing
           y = mental_health_T2)) +
  geom_point() + # how I am graphing it
  geom_smooth() # how I am graphing it
```



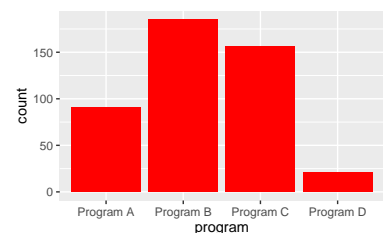
5 Bar Charts Are Tricky

https://agrogan1.github.io/myposts/bar_charts_in_ggplot2.html

5.1 Bar Chart Counting Up Observations

Simple bar chart counting up a *categorical* variable.

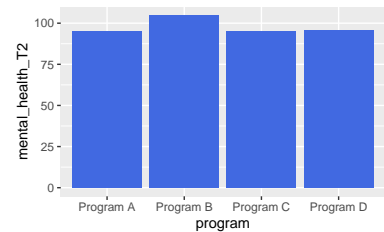
```
ggplot(data = clients, # data I am using
       aes(x = program)) + # what I am graphing
  geom_bar(fill = "red") # how I am graphing it
```



5.2 Bar Chart of Means

Bar chart of means of a *continuous* variable by a *categorical* variable.

```
ggplot(data = clients, # data I am using
       aes(x = program, # what I am graphing
           y = mental_health_T2)) + # what I am graphing
  stat_summary(fun = mean, # summarizing y
              geom = "bar", # with bars
              fill = "royalblue")
```



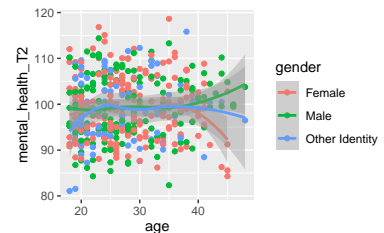
6 Get Some Extra Information on the Graph!

6.1 Add information to the aesthetic.

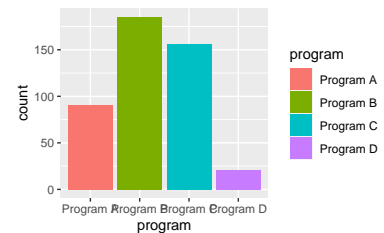
Color as information.

```
ggplot(data = clients, # data I am using
       aes(x = age, # what I am graphing
           y = mental_health_T2, # what I am graphing
           color = gender)) + # adding info to aesthetic
  geom_point() + # how I am graphing it
  geom_smooth() # how I am graphing it
```

Try adding *color as information* with one of the bar charts from earlier.

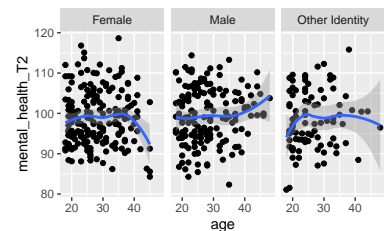


```
ggplot(data = clients, # data I am using
       aes(x = program, # what I am graphing
           fill = program)) + # what I am graphing
  geom_bar() # how I am graphing it
```



6.2 Facet Wrap (Small Multiples)

```
ggplot(data = clients, # data I am using
       aes(x = age, # what I am graphing
           y = mental_health_T2)) + # what I am graphing
  geom_point() + # how I am graphing it
  geom_smooth() + # how I am graphing it
  facet_wrap(~gender) # facet wrap on gender
```



6.3 Both!

```
ggplot(data = clients, # data I am using
       aes(x = age, # what I am graphing
           y = mental_health_T2, # what I am graphing
           color = gender)) + # what I am graphing
  geom_point() + # how I am graphing it
```

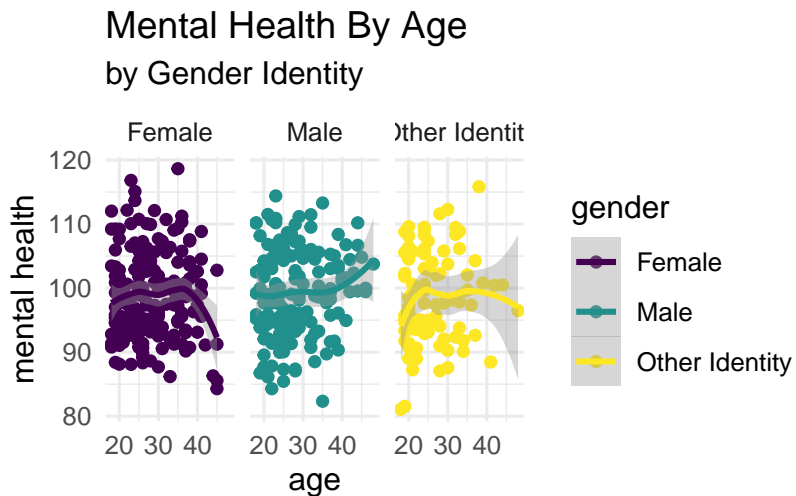
```
geom_smooth() + # how I am graphing it
facet_wrap(~gender) # facet wrap on gender
```

7 Add Labels and Options

<https://jrnold.github.io/ggthemes/>

```
library(ggthemes) # for themes
```

```
ggplot(data = clients, # data I am using
       aes(x = age, # what I am graphing
           y = mental_health_T2, # what I am graphing
           color = gender)) + # what I am graphing
  geom_point() + # how I am graphing it
  geom_smooth() + # how I am graphing it
  facet_wrap(~gender) + # facet wrap on gender
  labs(title = "Mental Health By Age",
       subtitle = "by Gender Identity",
       x = "age",
       y = "mental health") +
  scale_color_viridis_d() + # beautiful colors!
  theme_minimal()
```



7.1 Lots Of Things Are Possible!

<https://agrogan1.github.io/dataviz/how-to-choose-a-chart/how-to-choose-a-chart-v3.html>

<https://agrogan1.github.io/R/introduction-to-ggplot2/background.html>