RWorksheet_Delgado#4c.Rmd

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```
# 1. Using the mpg Dataset
# a. Importing mpg.csv File into R
mpg_data <-read.csv(file.path("C:", "Rworksheets", "worksheet#4", "mpg.csv"), header = TRUE, sep = ",",

# b. Categorical Variables
# Categorical variables in mpg are: manufacturer, model, trans, drv, fl, class.

# c. Continuous Variables
# Continuous variables in mpg are: displ, year, cyl, cty, hwy.
```

```
# 2. Analysis of Manufacturers and Models
# a. Find Manufacturer with Most Models and Model with Most Variations
library(dplyr)
```

```
##
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':
##
##     filter, lag
```

```
## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union
```

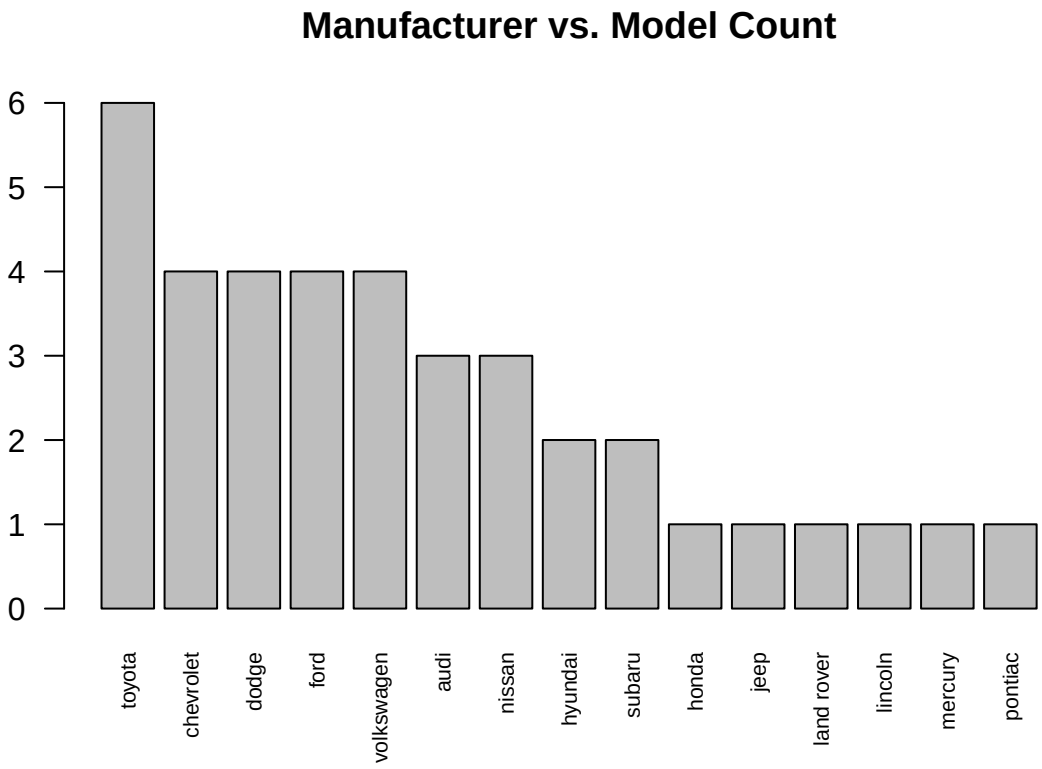
```
most_models <- mpg_data %>%
  group_by(manufacturer) %>%
  summarize(model_count = n_distinct(model)) %>%
  arrange(desc(model_count))

most_models
```

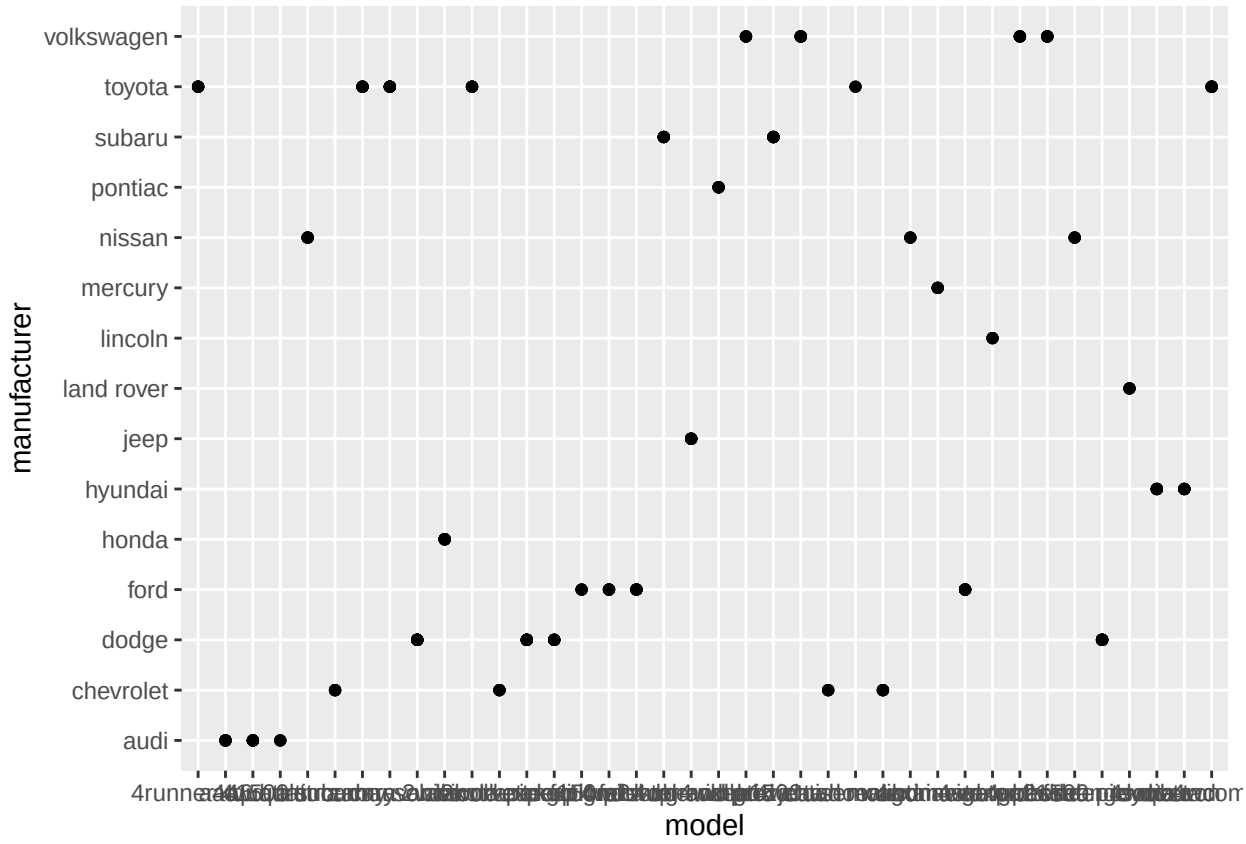
```
## # A tibble: 15 x 2
##    manufacturer model_count
##    <chr>              <int>
##  1 toyota                 6
##  2 chevrolet              4
##  3 dodge                  4
##  4 ford                   4
##  5 volkswagen             4
##  6 audi                   3
##  7 nissan                 3
##  8 hyundai                2
##  9 subaru                 2
## 10 honda                  1
```

```
## 11 jeep                  1
## 12 land rover            1
## 13 lincoln               1
## 14 mercury               1
## 15 pontiac               1
```

```r
# b. Plotting Manufacturer and Model Counts with barplot()
barplot(most_models$model_count, names.arg = most_models$manufacturer,
        main = "Manufacturer vs. Model Count", las = 2, cex.names = 0.7)
```

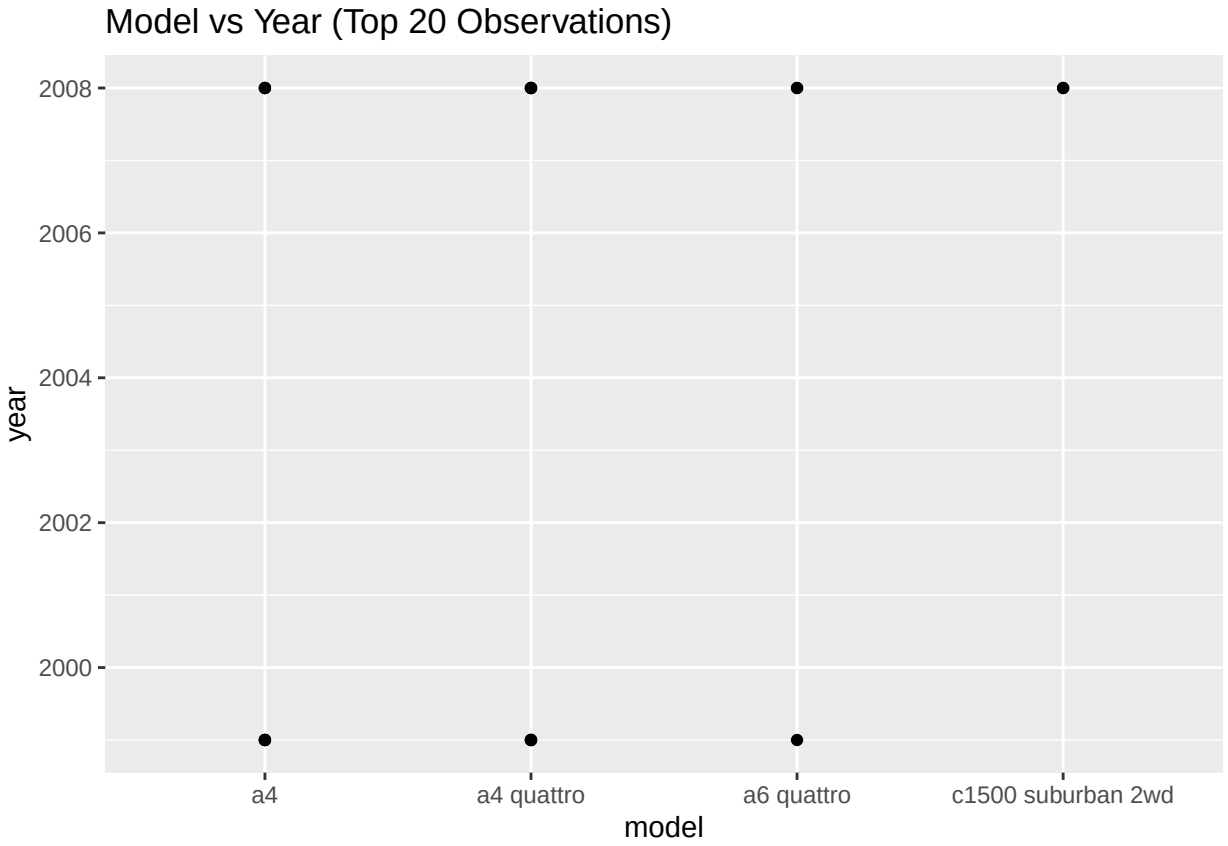



```r
#3. Exploring Model and Manufacturer Relationship
#a. Plotting the Relationship with ggplot
library(ggplot2)
ggplot(mpg_data, aes(x = model, y = manufacturer)) + geom_point()
```




```
# b. Improving Data Presentation
# This scatterplot is likely cluttered due to many models. To make it more readable, consider summarizi
```

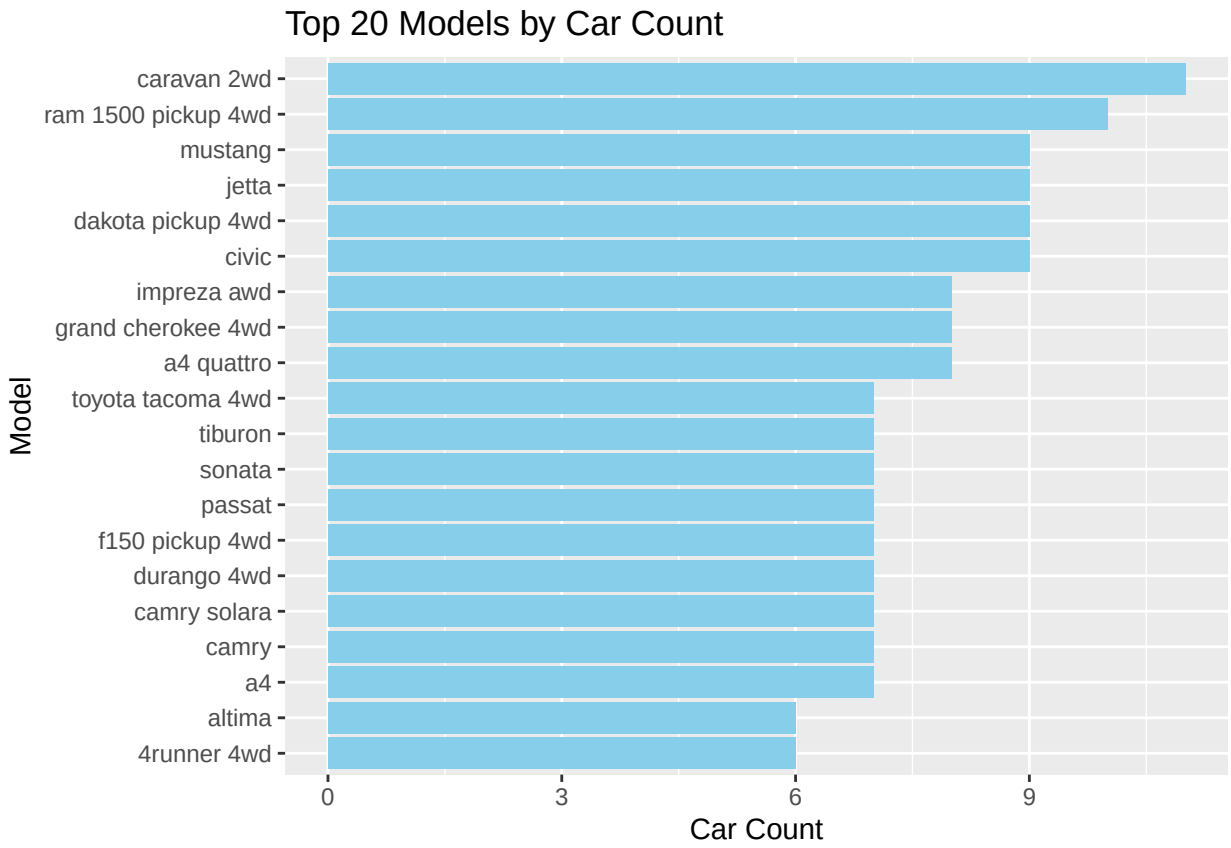
```
# 4. Plotting Model and Year (Top 20 Observations)
top20_data <- head(mpg_data, 20)
ggplot(top20_data, aes(x = model, y = year)) + geom_point() +
  labs(title = "Model vs Year (Top 20 Observations)")
```



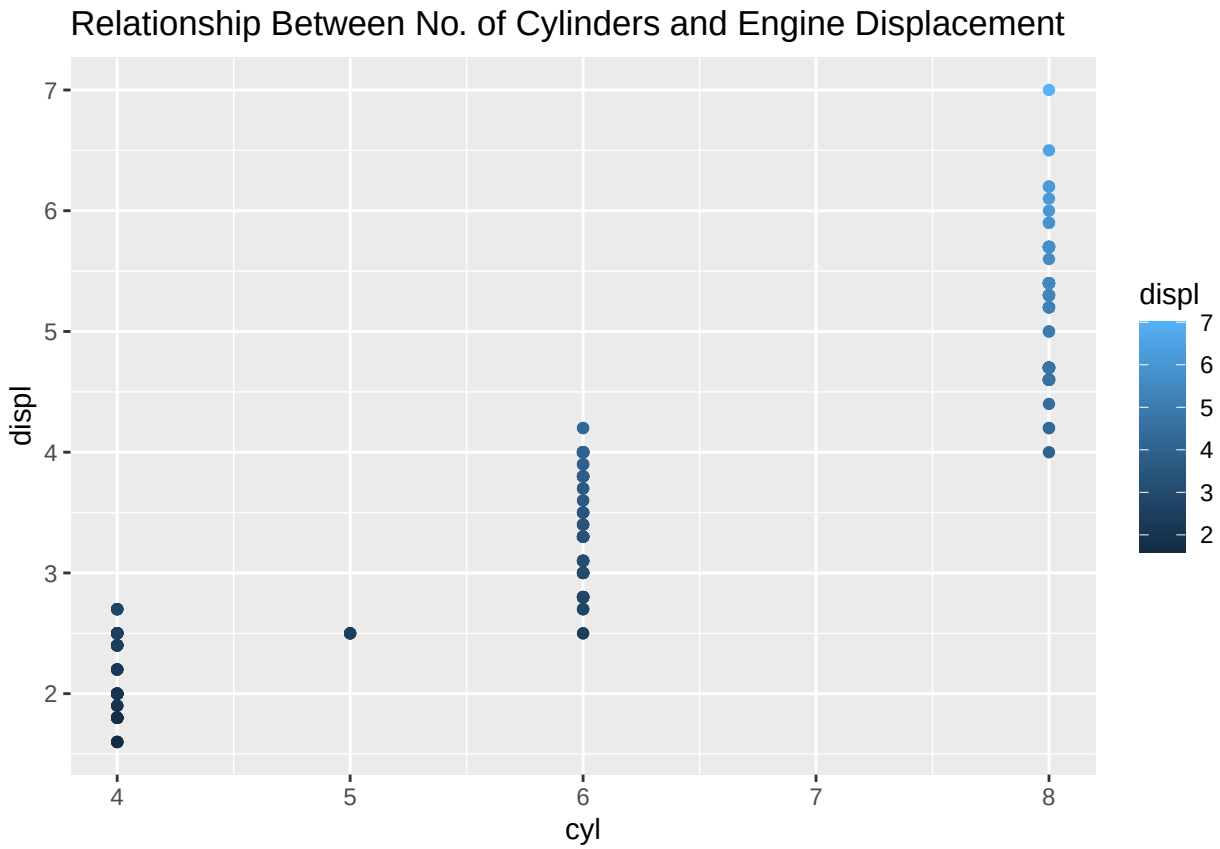

```
# 5. Count Cars per Model with Pipe and Plot
# a. Grouping and Counting Models
model_count <- mpg_data %>%
  group_by(model) %>%
  summarize(car_count = n()) %>%
  arrange(desc(car_count))
model_count
```

```
## # A tibble: 38 x 2
##    model               car_count
##    <chr>                   <int>
##  1 caravan 2wd                11
##  2 ram 1500 pickup 4wd        10
##  3 civic                       9
##  4 dakota pickup 4wd           9
##  5 jetta                       9
##  6 mustang                     9
##  7 a4 quattro                  8
##  8 grand cherokee 4wd          8
##  9 impreza awd                 8
## 10 a4                          7
## # i 28 more rows
```

```
# b. Plotting with geom_bar() and coord_flip()
ggplot(model_count[1:20, ], aes(x = reorder(model, car_count), y = car_count)) +
  geom_bar(stat = "identity", fill = "skyblue") +
  coord_flip() +
  labs(title = "Top 20 Models by Car Count", x = "Model", y = "Car Count")
```

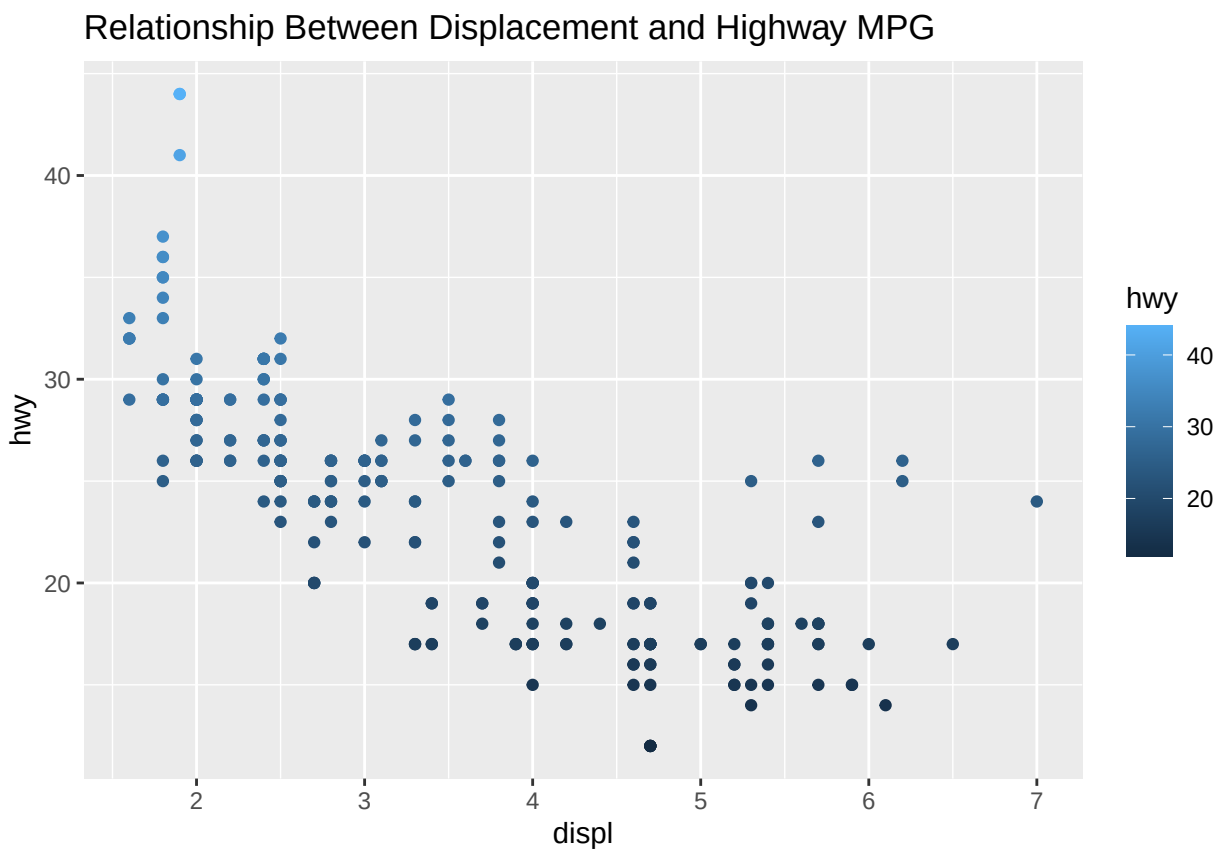



```
# 6. Plotting Cylinders vs. Displacement with Color
ggplot(mpg_data, aes(x = cyl, y = displ, color = displ)) +
  geom_point() +
  labs(title = "Relationship Between No. of Cylinders and Engine Displacement")
```




```
# This plot displays the relationship between the number of cylinders (cyl) and engine displacement (di
```

```
# 7. Plotting Displacement vs. Highway MPG
ggplot(mpg_data, aes(x = displ, y = hwy, color = hwy)) + geom_point() +
  labs(title = "Relationship Between Displacement and Highway MPG")
```




```
# This plot shows how highway miles per gallon (hwy) varies with engine displacement (displ), with colo
```

```
# 8. Importing traffic.csv into R
# a. Number of Observations and Variables
traffic_data <- read.csv(file.path("C:", "Rworksheets", "worksheet#4", "traffic.csv"), header = TRUE, s

dim(traffic_data)  # Returns the number of rows and columns
```

```
## [1] 48120     4
```

```
names(traffic_data)  # Lists the variable names
```

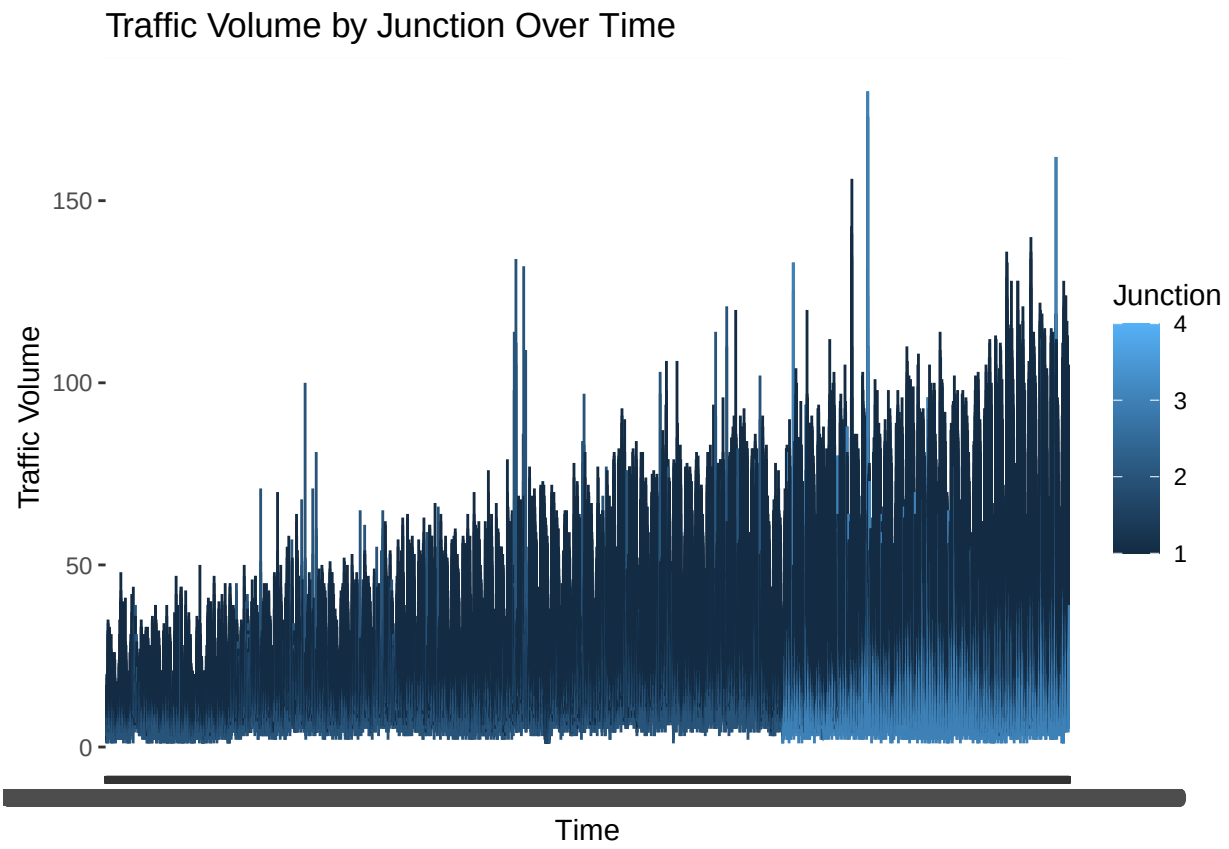
```
## [1] "DateTime" "Junction" "Vehicles" "ID"
```

```
# b. Subsetting Traffic Dataset by Junctions
traffic_junctions <- traffic_data %>%
  group_by(Junction) %>%
  summarize(count = n())
traffic_junctions
```

```
## # A tibble: 4 x 2
##   Junction count
##      <int> <int>
## 1        1 14592
## 2        2 14592
## 3        3 14592
## 4        4  4344
```

```
# If the column names are correct, create the plot
ggplot(traffic_data, aes(x = DateTime, y = Vehicles, color = Junction)) +
```

```
  geom_line() +
  labs(title = "Traffic Volume by Junction Over Time", x = "Time", y = "Traffic Volume")
```




```
# 9. Importing alexa_file.xlsx
# a. Number of Observations and Columns
library(readxl)
alexa_data <- read_excel("C:/Rworksheets/worksheet#4/alexa_file.xlsx")
dim(alexa_data)  # Shows rows and columns
```

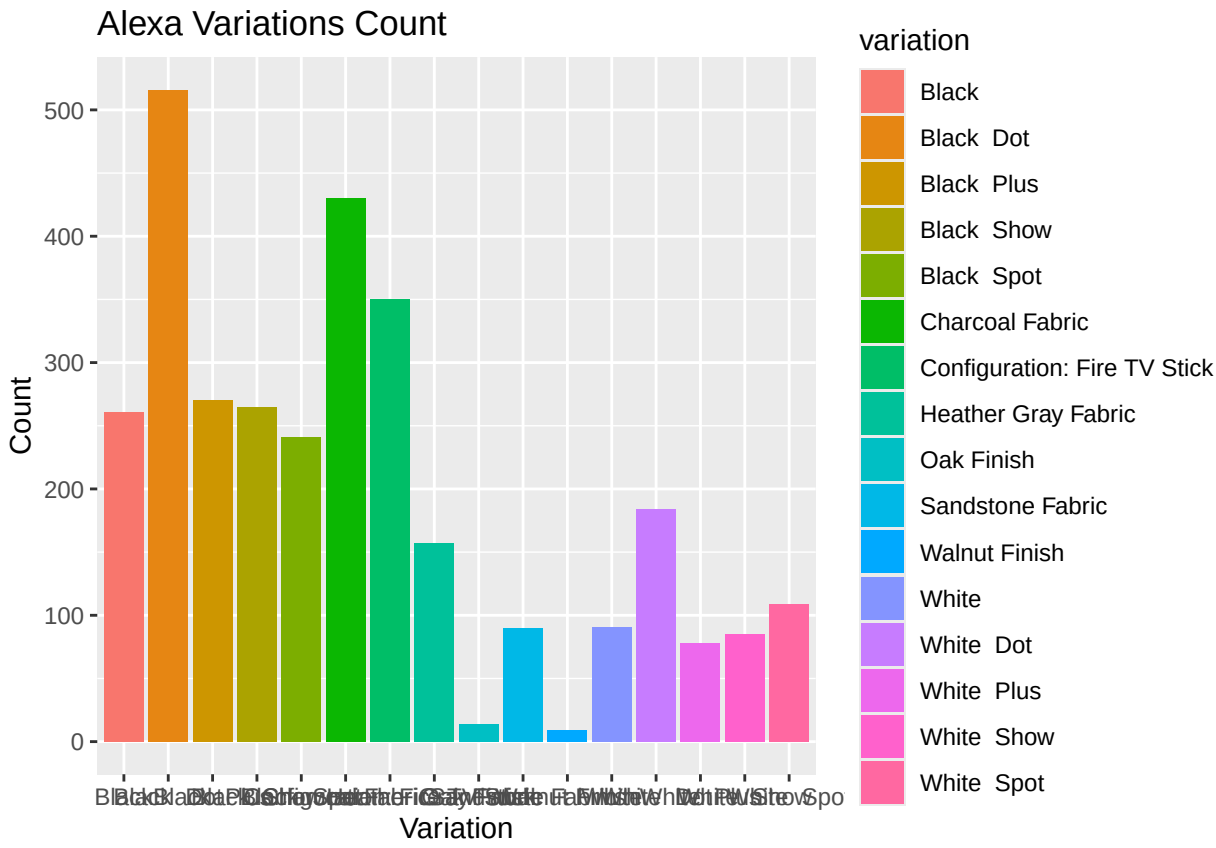
```
## [1] 3150    5
```

```
# b. Grouping and Summing Variations
variation_counts <- alexa_data %>%
  group_by(variation) %>%
  summarize(total_count = n())
variation_counts
```

```
## # A tibble: 16 x 2
##    variation                       total_count
##    <chr>                                 <int>
##  1 Black                                   261
##  2 Black  Dot                              516
##  3 Black  Plus                             270
##  4 Black  Show                             265
##  5 Black  Spot                             241
##  6 Charcoal Fabric                         430
##  7 Configuration: Fire TV Stick            350
##  8 Heather Gray Fabric                     157
```

```
##  9 Oak Finish                        14
## 10 Sandstone Fabric                  90
## 11 Walnut Finish                      9
## 12 White                             91
## 13 White  Dot                       184
## 14 White  Plus                       78
## 15 White  Show                       85
## 16 White  Spot                      109
```

```
# c. Plotting Variations with ggplot
ggplot(variation_counts, aes(x = variation, y = total_count, fill = variation)) +
  geom_bar(stat = "identity") +
  labs(title = "Alexa Variations Count", x = "Variation", y = "Count")
```




```
# d. Plotting Date vs. Verified Reviews with geom_line()
ggplot(alexa_data, aes(x = date, y = verified_reviews)) +
  geom_line() +
  labs(title = "Verified Reviews Over Time", x = "Date", y = "Verified Reviews")
```

are some serious flaws, particularly if you are the last one to bed or the first to wake. It doesn't seem like the engineer

expensive alternative option to fill the gap. Ordered the Amazon Fire Stick from Best Buy. Instructions were short and

one of the lights by saying "Alexa, turn off the second light". In the Alexa app, I created a 'Group' with &#34
but lately I've been getting terrible support. The guy that took my call just rambled off a (completely unhelpful) script an

nting to add this bulb to my Alexa Echo Plus. Everything I tried ended in a Discovery Failed message. I tried to set
ight multiple pages. The one thing that I am not a fan of is the home screen cards do not really rotate that much - they

```r
# e. Plotting Relationship of Variations and Ratings
variation_ratings <- alexa_data %>%
  group_by(variation) %>%
  summarize(avg_rating = mean(rating, na.rm = TRUE))

ggplot(variation_ratings, aes(x = variation, y = avg_rating, fill = variation)) +
  geom_bar(stat = "identity") +
  labs(title = "Average Ratings by Variation", x = "Variation", y = "Average Rating")
```