Homework1_Data_Visualization_Beam

Beam

2023-12-24

Homework 1 of data visualization

Create 5 visual charts of mtcars and knit them into Rmarkdown pdf file..

Explore mpg data set

```
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
```

```
library(tidyverse)
```

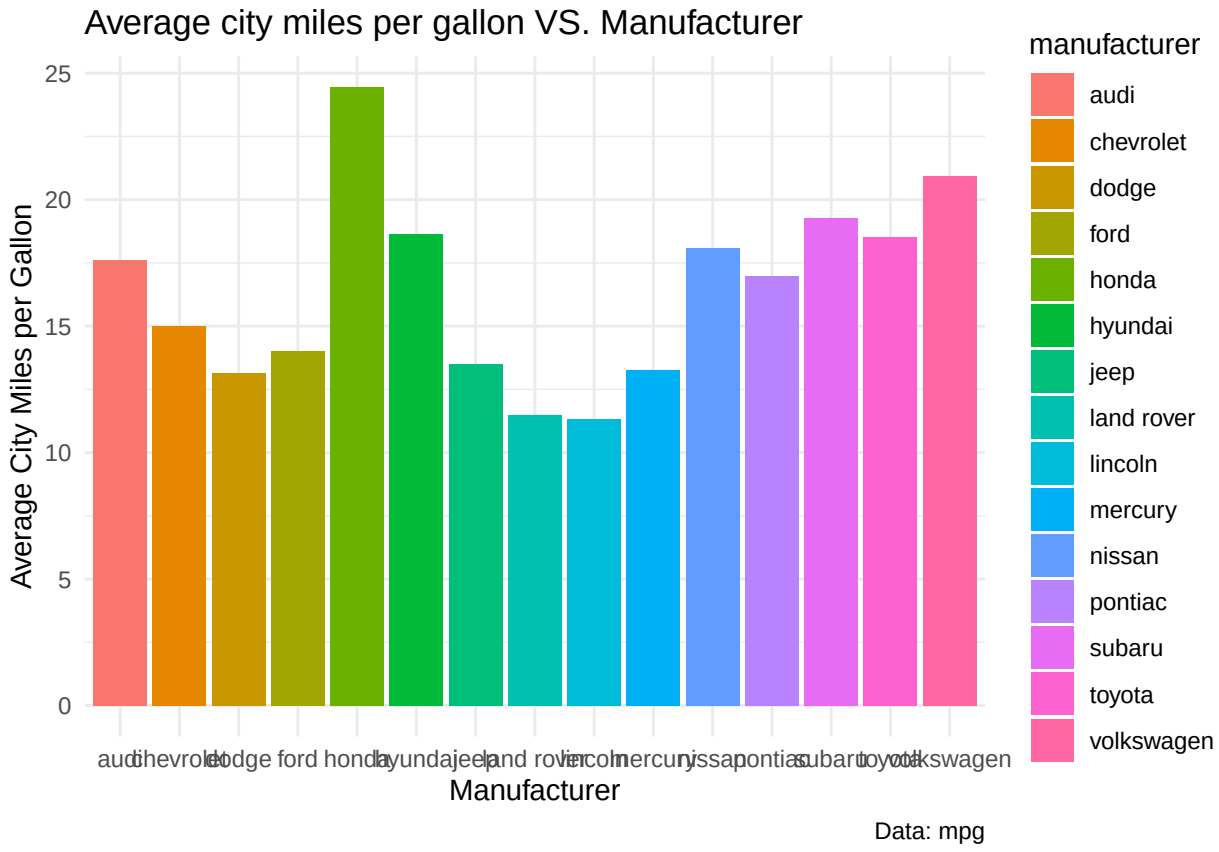
```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v forcats   1.0.0     v readr     2.1.4
## v ggplot2   3.4.4     v stringr   1.5.1
## v lubridate 1.9.3     v tibble    3.2.1
## v purrr     1.0.2     v tidyr     1.3.0
## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(ggthemes)
head(mpg)
```

```
## # A tibble: 6 x 11
##   manufacturer model displ  year   cyl trans      drv     cty   hwy fl    class
##   <chr>        <chr> <dbl> <int> <int> <chr>      <chr> <int> <int> <chr> <chr>
## 1 audi         a4      1.8  1999     4 auto(l5)   f        18    29 p     compa~
## 2 audi         a4      1.8  1999     4 manual(m5) f        21    29 p     compa~
## 3 audi         a4      2    2008     4 manual(m6) f        20    31 p     compa~
## 4 audi         a4      2    2008     4 auto(av)   f        21    30 p     compa~
## 5 audi         a4      2.8  1999     6 auto(l5)   f        16    26 p     compa~
## 6 audi         a4      2.8  1999     6 manual(m5) f        18    26 p     compa~
```

1.) Average City Miles per Gallon by each Manufacturer

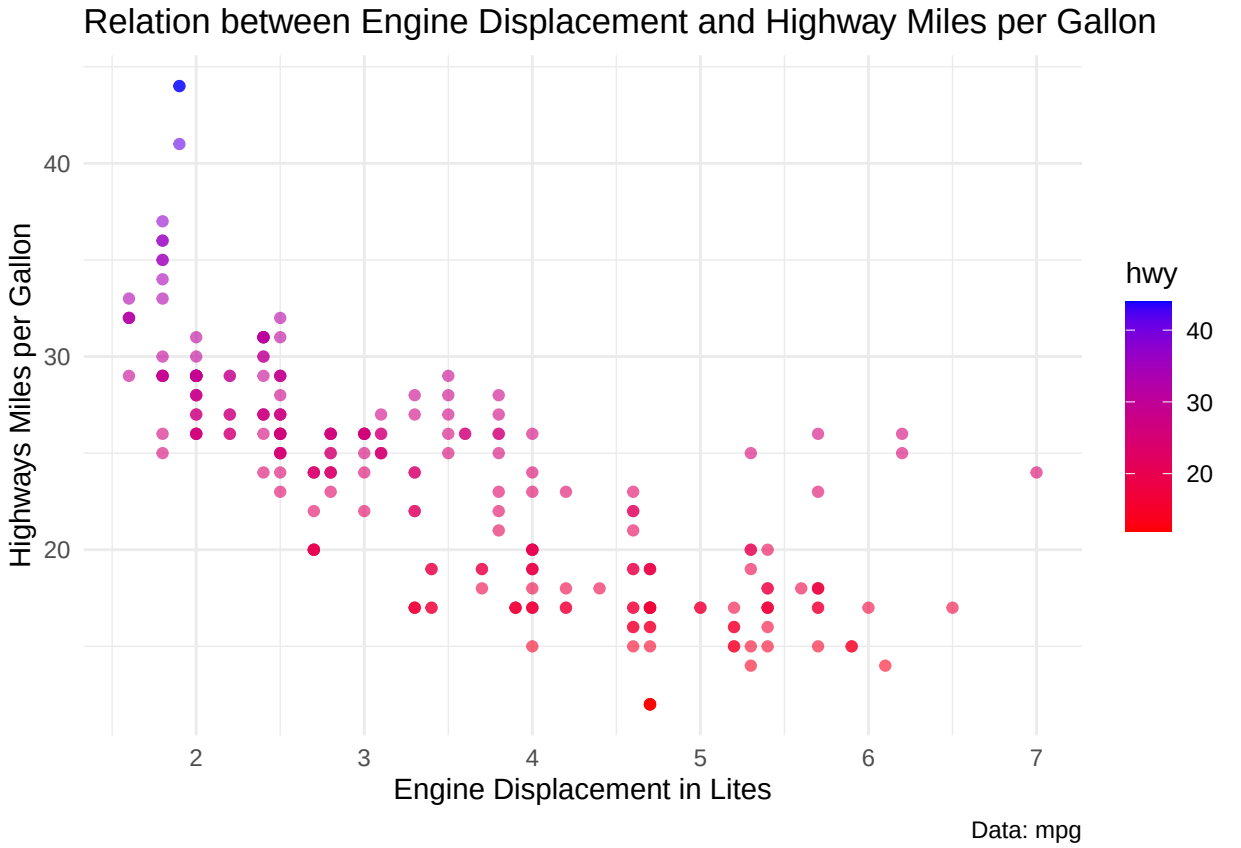
```
m1 <- mpg %>%
  group_by(manufacturer) %>%
  summarise(avg_cty = mean(cty)) %>%
  arrange(avg_cty)


ggplot(m1,
       aes(manufacturer, avg_cty)) +
  geom_col(aes(fill = manufacturer)) +
  labs(
    title = "Average city miles per gallon VS. Manufacturer",
    caption = "Data: mpg",
    y = "Average City Miles per Gallon",
    x = "Manufacturer") +
  theme_minimal()
```



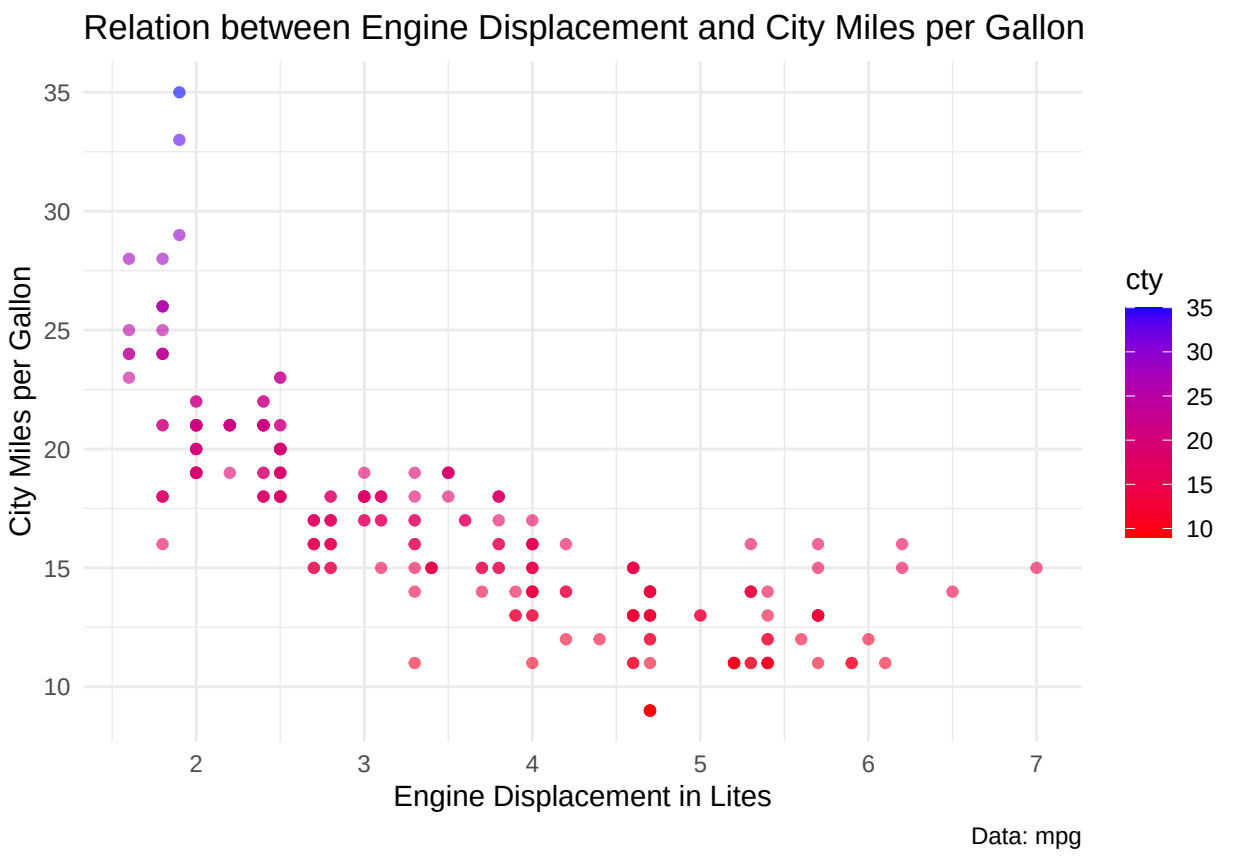
2.) Average City Miles per Gallon by Each Manufacturer

```
ggplot(mpg, aes(displ, hwy, color = hwy)) +
    geom_point(alpha = 0.6) +
    theme_minimal() +
    scale_color_gradient(low = "red", high = "blue") +
    labs(
      title = "Relation between Engine Displacement and Highway Miles per Gallon",
```

```
      caption = "Data: mpg",
      y = "Highways Miles per Gallon",
      x = "Engine Displacement in Lites")
```




```
ggplot(mpg, aes(displ, cty, color = cty)) +
    geom_point(alpha = 0.6) +
    theme_minimal() +
    scale_color_gradient(low = "red", high = "blue") +
    labs(
      title = "Relation between Engine Displacement and City Miles per Gallon",
      caption = "Data: mpg",
      y = "City Miles per Gallon",
      x = "Engine Displacement in Lites")
```

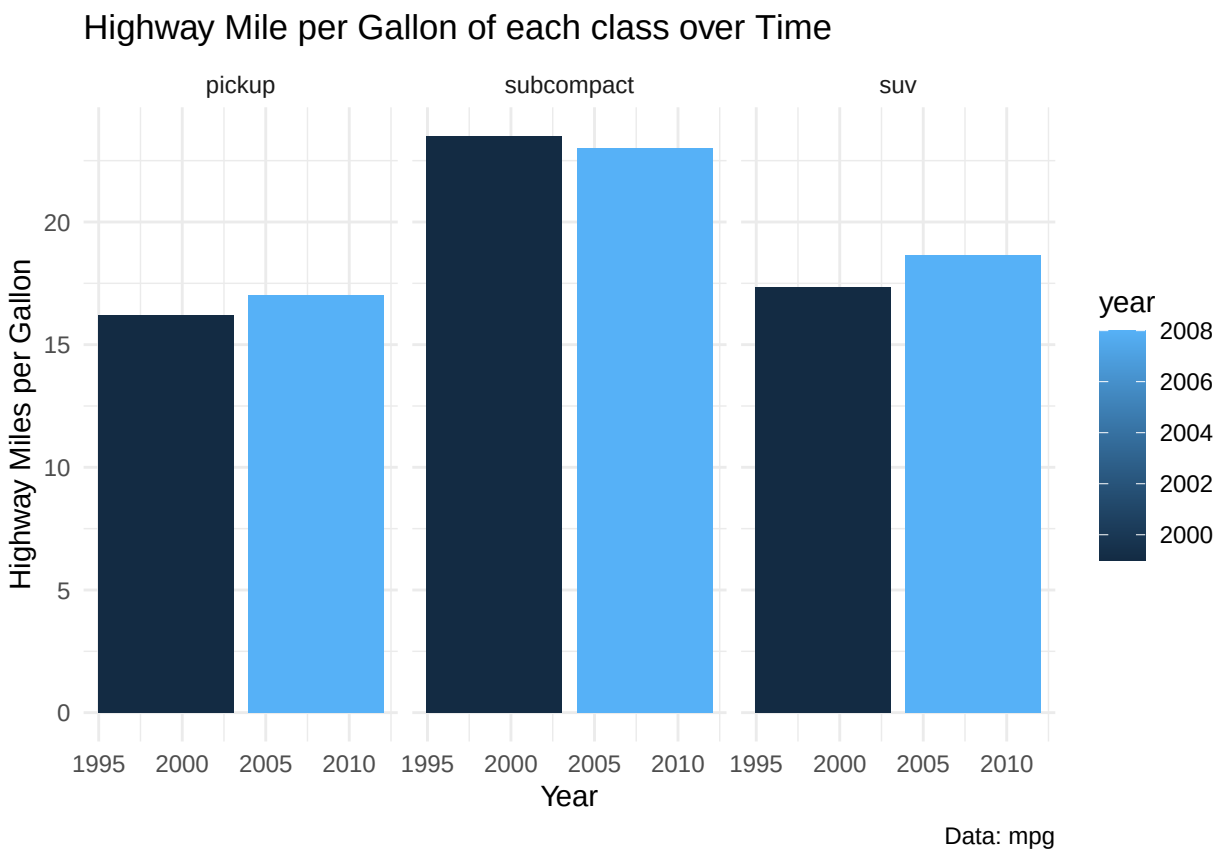


3.) Highway Mile per Gallon of each class over time

```
m2 <- mpg %>%
  filter(manufacturer == "ford") %>%
  group_by(class, year) %>%
  summarise(avg_hwy = mean(hwy))
```

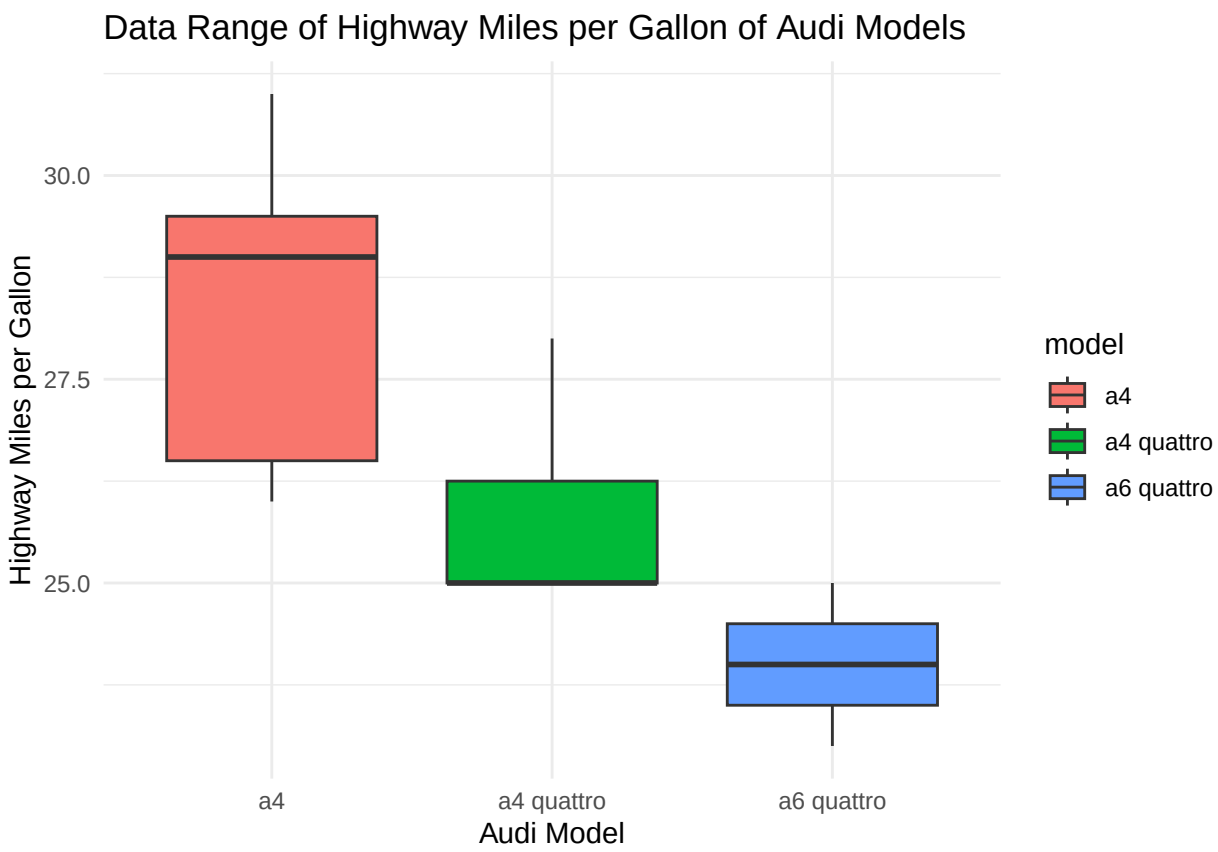
```
## `summarise()` has grouped output by 'class'. You can override using the
## `.groups` argument.
```

```
ggplot(m2, aes(year, avg_hwy)) +
  geom_col(aes(fill = year)) +
  theme_minimal() +
  facet_wrap(~class) +
  labs(
      title = "Highway Mile per Gallon of each class over Time",
      caption = "Data: mpg",
      y = "Highway Miles per Gallon",
      x = "Year")
```



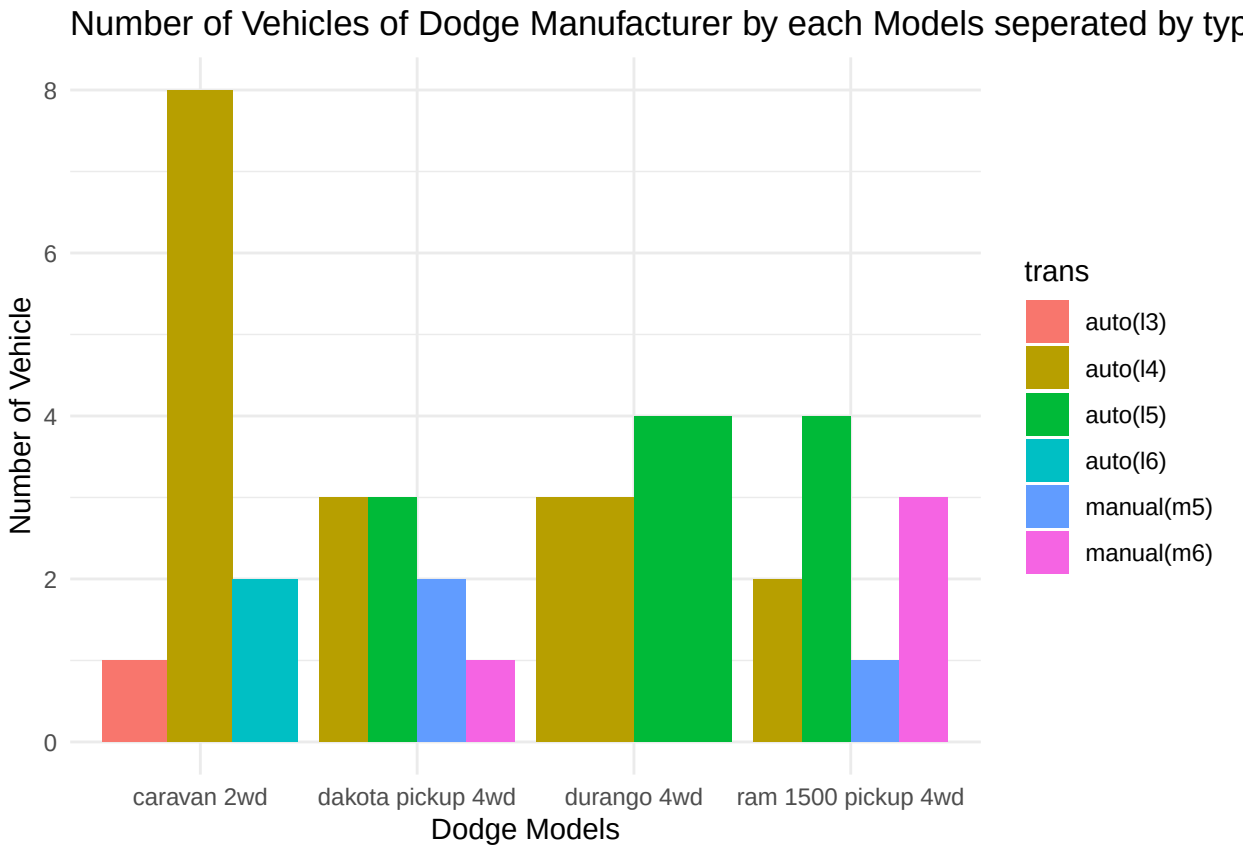
4.) Data Range of Highway Miles per Gallon of Audi Models

```
m4 <- mpg %>%
  filter(manufacturer == "audi")

ggplot(m4, aes(model, hwy)) +
  geom_boxplot(aes(fill = model)) +
  theme_minimal() +
  labs(
      title = "Data Range of Highway Miles per Gallon of Audi Models",
      y = "Highway Miles per Gallon",
      x = "Audi Model")
```



5.) Number of Vehicles of Dodge Manufacturer by each Models seperated by type of transmission

```
m5 <- mpg %>%
  filter(manufacturer == "dodge")

ggplot(m5, aes(model, fill = trans)) +
  geom_bar(position = "dodge") +
  theme_minimal() +
  labs(
      title = "Number of Vehicles of Dodge Manufacturer by each Models seperated by type of transmissio
      x = "Dodge Models",
      y = "Number of Vehicle")
```


Number of Vehicles of Dodge Manufacturer by each Models seperated by typ
Number of Vehicle
8
6
4
2
0
caravan 2wd
dakota pickup 4wd
durango 4wd
ram 1500 pickup 4wd
Dodge Models
trans
auto(l3)
auto(l4)
auto(l5)
auto(l6)
manual(m5)
manual(m6)