The Normal Curve

EDP 613

Week 5

Prepping a New R Script

1. Open up a blank R script using the menu path **File > New File > R Script**.
2. Save this script as `whatever.R` (replacing the term `whatever`) in your R folder. Remember to note where the file is!
3. After you have saved this file as `whatever.R`, go to the menu and this week try running running this shortcut to **Session > Set Working Directory > To Source File Location** at the top of your script

```
setwd(dirname(rstudioapi::getActiveDocumentContext()$path))
```

Getting ready for this session

Get the files

> - `Box Office.csv`
> - `teampolview.csv`

and save it in the same location as this script.

> - Install the packages `viridis` and `patchwork`.
> - Load up `tidyverse` and `viridis`

This week try using `pacman` to do it

```
pacman::p_load(tidyverse,
               patchwork,
               viridis)
```

Last week's R activity

Load up data

```
boxoffice <- read_csv("Box Office.csv")
```

Before we go on

Thes solutions are just one of **many** ways to get to the actual answer. Your work may and will likely vary.

```
boxoffice %>%
  arrange(Rank) %>%
  head(5) %>%
  summarize(mean_pos =
              mean(AllPos,
                   na.rm = TRUE)) %>%
  pull()
```

```
[1] 205.2
```

```
boxoffice %>%
  arrange(Rank) %>%
  tail(5) %>%
  summarize(mean_neg =
              mean(AllNeg,
                   na.rm = TRUE)) %>%
  pull()
```

```
[1] 33.2
```

```
boxoffice %>%
  group_by(year) %>%
  count(name = "number of movies") %>%
  ungroup()
```

```
# A tibble: 55 × 2
    year `number of movies`
   <dbl>              <int>
 1  1937                  1
 2  1939                  1
 3  1940                  2
 4  1942                  1
 5  1950                  1
 6  1953                  1
 7  1955                  1
 8  1956                  1
 9  1961                  1
10  1964                  1
# … with 45 more rows
```

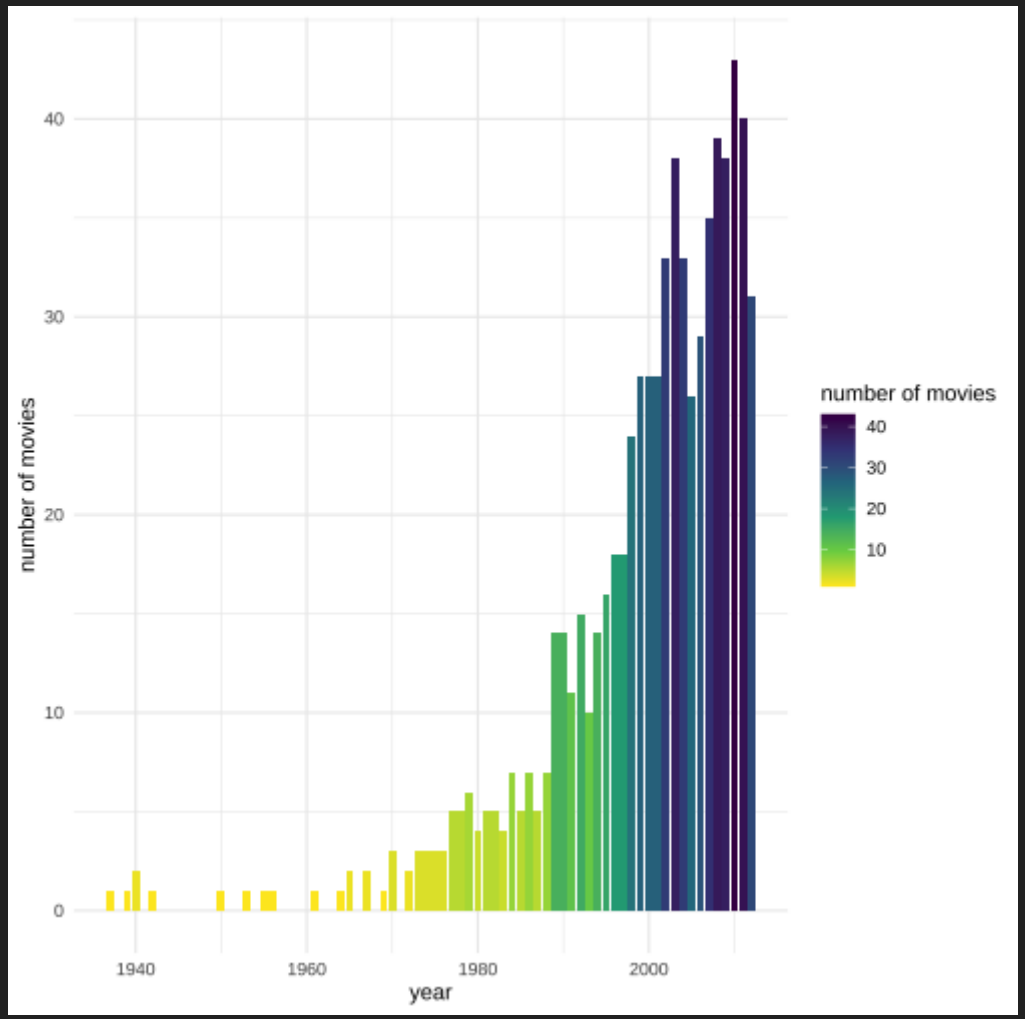
```
boxoffice_annualnum %>%
  summarize(median =
              median(`number of movies`,
                     na.rm = TRUE)) %>%
  pull()
```

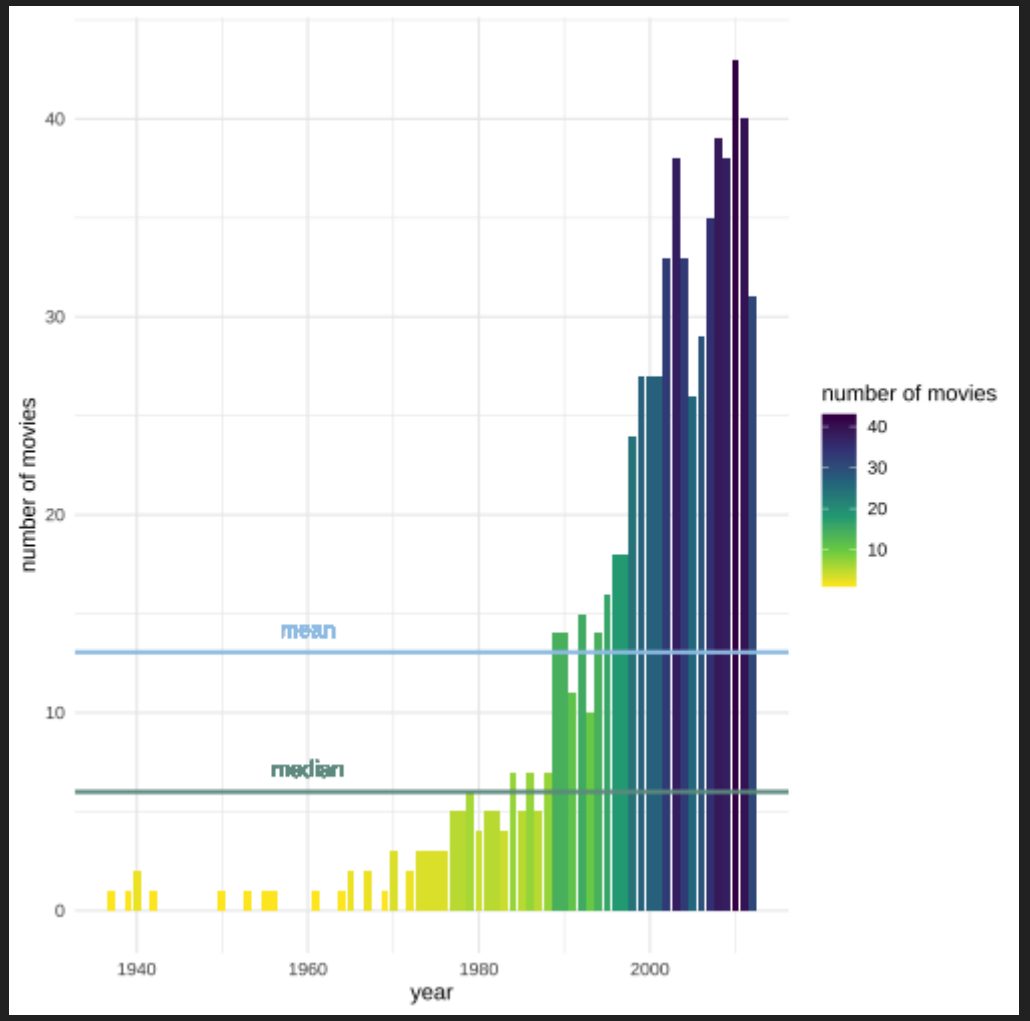
```
[1] 6
```

```r
boxoffice_annualnum %>%
  summarize(mean =
              mean(`number of movies`,
                   na.rm = TRUE)) %>%
  pull()
```

```
[1] 13.05455
```

```
ggplot(boxoffice_annualnum,
       aes(year,
           `number of movies`,
           fill = `number of movies`)) +
  geom_bar(stat = "identity") +
  theme_minimal() +
  scale_fill_viridis_c(direction = -1)
```




number of movies
40
30
20
10
0
mean
median
1940
1960
1980
2000
year
number of movies
40
30
20
10

```r
boxoffice %>%
  group_by(year) %>%
  tally(name = "number of movies") %>%
  ungroup() %>%
  filter(`number of movies` ==
           max(`number of movies`))
```

```
# A tibble: 1 × 2
   year `number of movies`
  <dbl>              <int>
1  2010                 43
```

```
boxoffice %>%
  group_by(year) %>%
  summarise(`number of movies` = n()) %>%
  ungroup() %>%
  filter(`number of movies` ==
           max(`number of movies`))
```

```
# A tibble: 1 × 2
   year `number of movies`
  <dbl>              <int>
1  2010                 43
```

```r
boxoffice %>%
  group_by(year) %>%
  mutate(`number of movies` = n()) %>%
  ungroup() %>%
  distinct(year, .keep_all=TRUE) %>%
  filter(`number of movies` ==
           max(`number of movies`)) %>%
  select(year, `number of movies`)
```

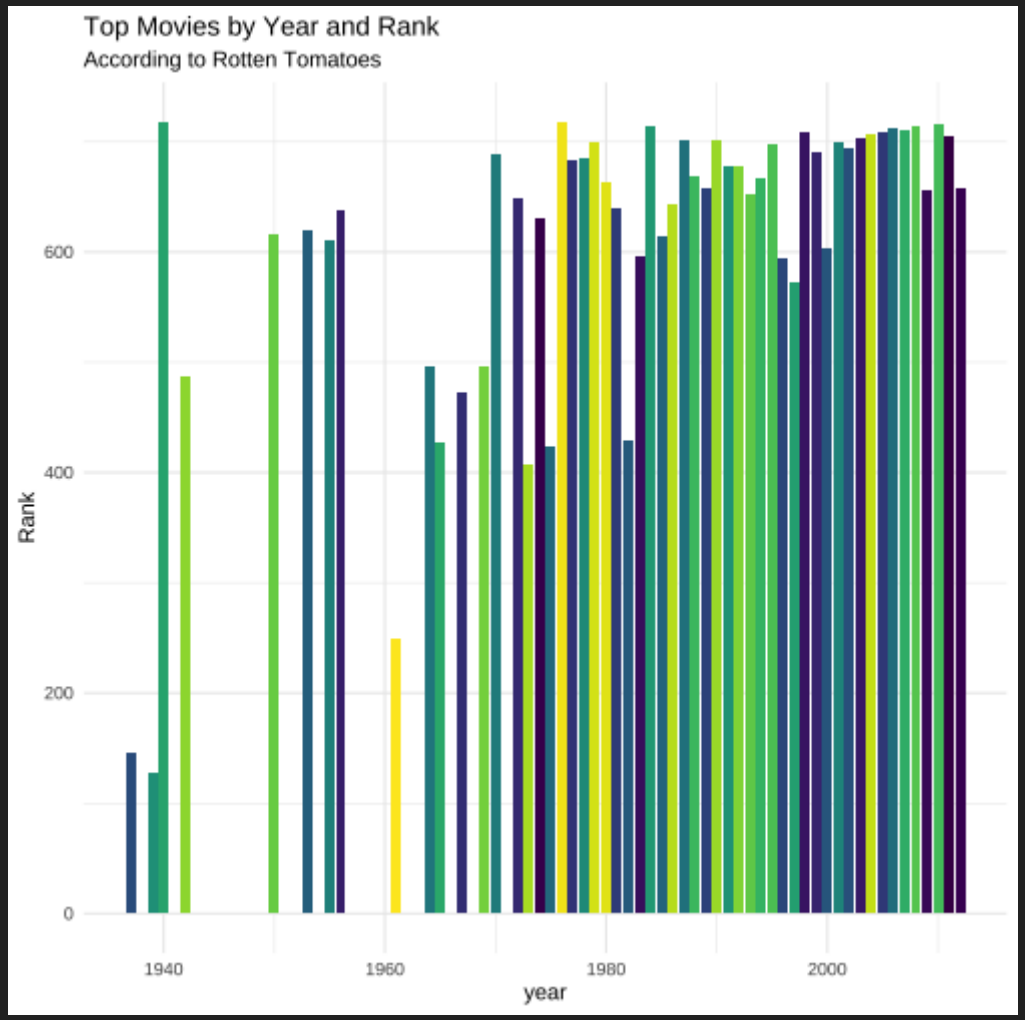
```
# A tibble: 1 × 2
   year `number of movies`
  <dbl>              <int>
1  2010                 43
```

```
boxoffice %>%
  group_by(year) %>%
  filter(Rank == max(Rank)) %>%
  select(Rank, Movie, year)%>%
  arrange(-year) %>%
  ungroup()
```

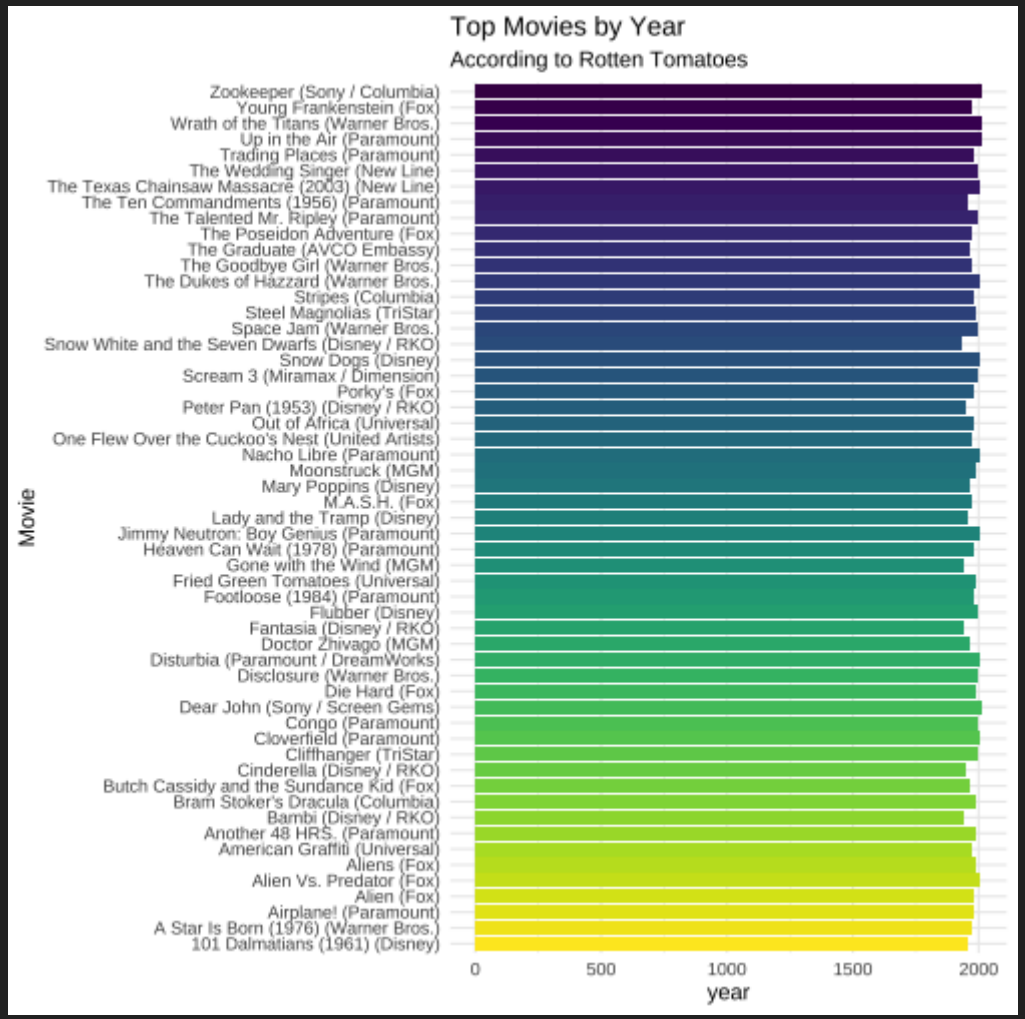
```
# A tibble: 55 × 3
    Rank Movie                                        year
   <dbl> <chr>                                       <dbl>
 1   658 Wrath of the Titans (Warner Bros.)           2012
 2   705 Zookeeper (Sony / Columbia)                  2011
 3   716 Dear John (Sony / Screen Gems)               2010
 4   656 Up in the Air (Paramount)                    2009
 5   714 Cloverfield (Paramount)                      2008
 6   711 Disturbia (Paramount / DreamWorks)           2007
 7   712 Nacho Libre (Paramount)                      2006
 8   708 The Dukes of Hazzard (Warner Bros.)          2005
 9   706 Alien Vs. Predator (Fox)                     2004
10   704 The Texas Chainsaw Massacre (2003) (New Line)  2003
# … with 45 more rows
```

```
top_movie_year <-
  boxoffice %>%
  group_by(year) %>%
  filter(Rank == max(Rank)) %>%
  select(Rank, Movie, year)%>%
  arrange(-year) %>%
  ungroup()
```

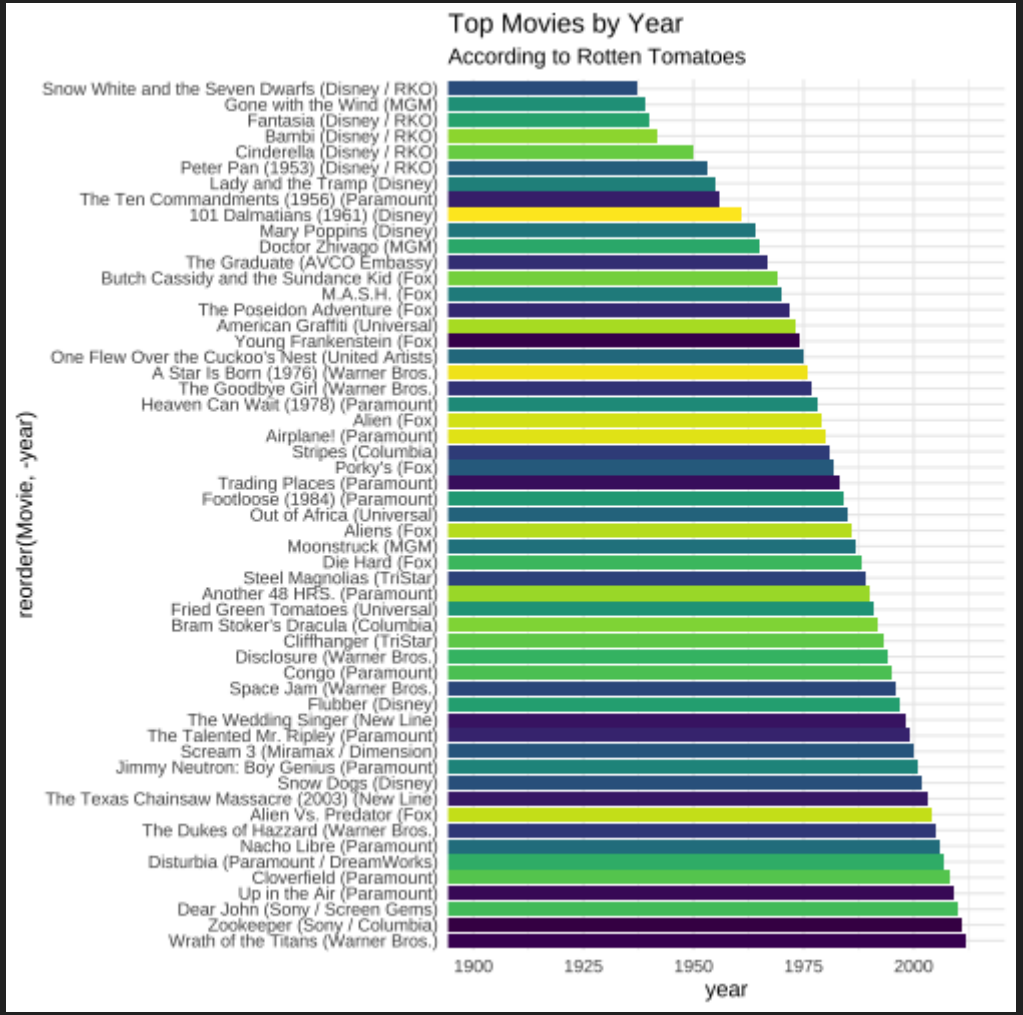
```
ggplot(top_movie_year,
       aes(year,
           Rank,
           fill = Movie)) +
  geom_bar(stat = "identity",
           show.legend = FALSE) +
  theme_minimal() +
  scale_fill_viridis_d(direction = -1) +
  labs(title = "Top Movies by Year and Rank",
       subtitle = "According to Rotten Tomatoes")
```



```
ggplot(top_movie_year,
       aes(year,
           Movie,
           fill = Movie)) +
  geom_bar(stat = "identity",
           show.legend = FALSE) +
  theme_minimal() +
  scale_fill_viridis_d(direction = -1) +
  labs(title = "Top Movies by Year",
       subtitle = "According to Rotten Tomatoes")
```



```
ggplot(top_movie_year,
       aes(year,
           reorder(Movie, -year),
           fill = Movie)) +
  geom_bar(stat = "identity",
           show.legend = FALSE) +
  theme_minimal() +
  scale_fill_viridis_d(direction = -1) +
  labs(title = "Top Movies by Year",
       subtitle = "According to Rotten Tomatoes") +
  coord_cartesian(xlim = c(1900, 2015))
```



Ok now on to the normal curve!

Load up data

```
nfl_pol <- read_csv("teampolview.csv")
```

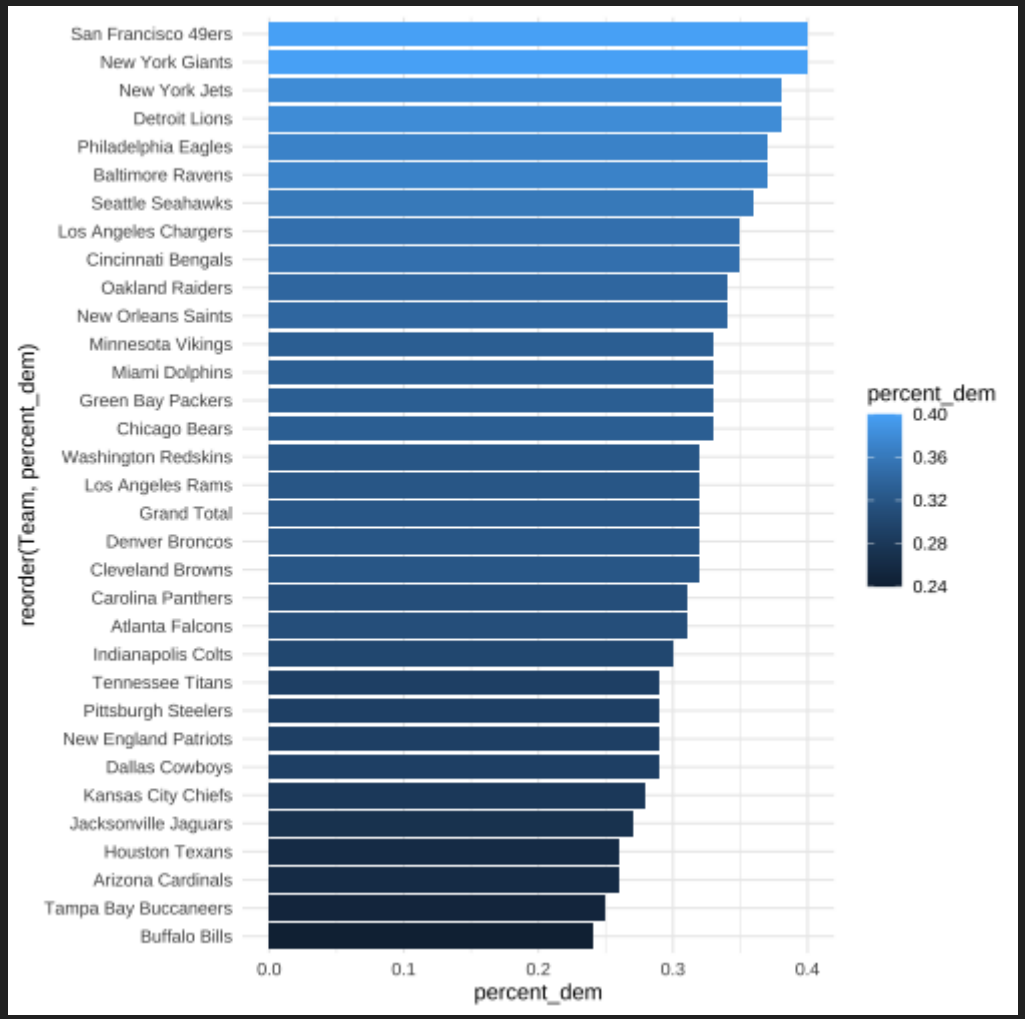
```
nfl_pol %>%
  select(Team, `Total Respondents`, `Total Democrats
  rowwise(Team) %>%
  mutate(`Total Republicans` = sum(c(Republican,`Oth
  select(-c(Republican,`Other Republican`)) %>%
  mutate(percent_dem = round(`Total Democrats`/`Tota
  mutate(percent_rep = round(`Total Republicans`/`To
```

```
# A tibble: 33 × 6
# Rowwise:  Team
   Team    `Total Responde… `Total Democrat… `Total Republic… percent_dem
   <chr>              <dbl>             <dbl>            <dbl>       <dbl>
 1 Arizon…              148                39               32        0.26
 2 Atlant…              188                59               44        0.31
 3 Baltim…              150                56               27        0.37
 4 Buffal…               92                22               16        0.24
 5 Caroli…              164                51               45        0.31
 6 Chicag…              285                94               55        0.33
 7 Cincin…              106                37               32        0.35
 8 Clevel…              105                34               28        0.32
 9 Dallas…              438               128              129        0.29
10 Denver…              313               100               87        0.32
# … with 23 more rows, and 1 more variable: percent_rep <dbl>
```

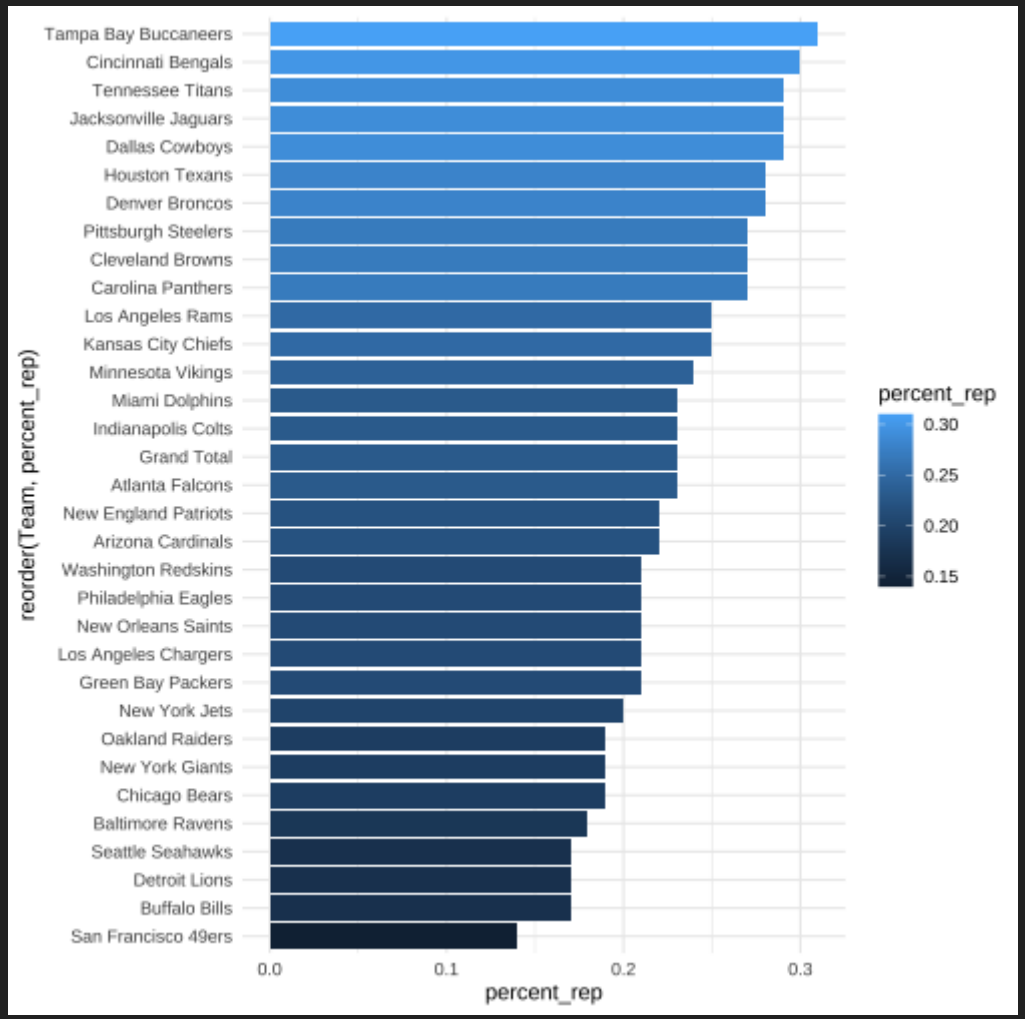
Give it a variable

```
nfl_percentages <-
  nfl_pol %>%
  select(Team, `Total Respondents`, `Total Democrats`, Republican, `Other Republican`) %>%
  rowwise(Team) %>%
  mutate(`Total Republicans` = sum(c(Republican,`Other Republican`))) %>%
  select(-c(Republican,`Other Republican`)) %>%
  mutate(percent_dem = round(`Total Democrats`/`Total Respondents`,2)) %>%
  mutate(percent_rep = round(`Total Republicans`/`Total Respondents`,2))
```

```
ggplot(nfl_percentages,
       aes(reorder(Team, percent_dem),
                          percent_dem,
                          fill = percent_dem)) +
  geom_bar(stat="identity") +
  coord_flip() +
  theme_minimal()
```



```
ggplot(nfl_percentages, aes(reorder(Team, percent_re
                            percent_rep,
                            fill = percent_rep)) +
  geom_bar(stat="identity") +
  coord_flip() +
  theme_minimal()
```



Let's compare them!

But first we need to assign variables

```
p1 <- ggplot(nfl_percentages, aes(reorder(Team, percent_dem),
                                  percent_dem,
                                  fill = percent_dem)) +
  geom_bar(stat="identity") +
  coord_flip() +
  theme_minimal()
```

```
p2 <- ggplot(nfl_percentages, aes(reorder(Team, percent_rep),
                                  percent_rep,
                                  fill = percent_rep)) +
  geom_bar(stat="identity") +
  coord_flip() +
  theme_minimal()
```

Patch it together using `Patchwork`

```
p1 + p2
```

A better way

That's not really a comparison...at least not teamwise! Let's try something different

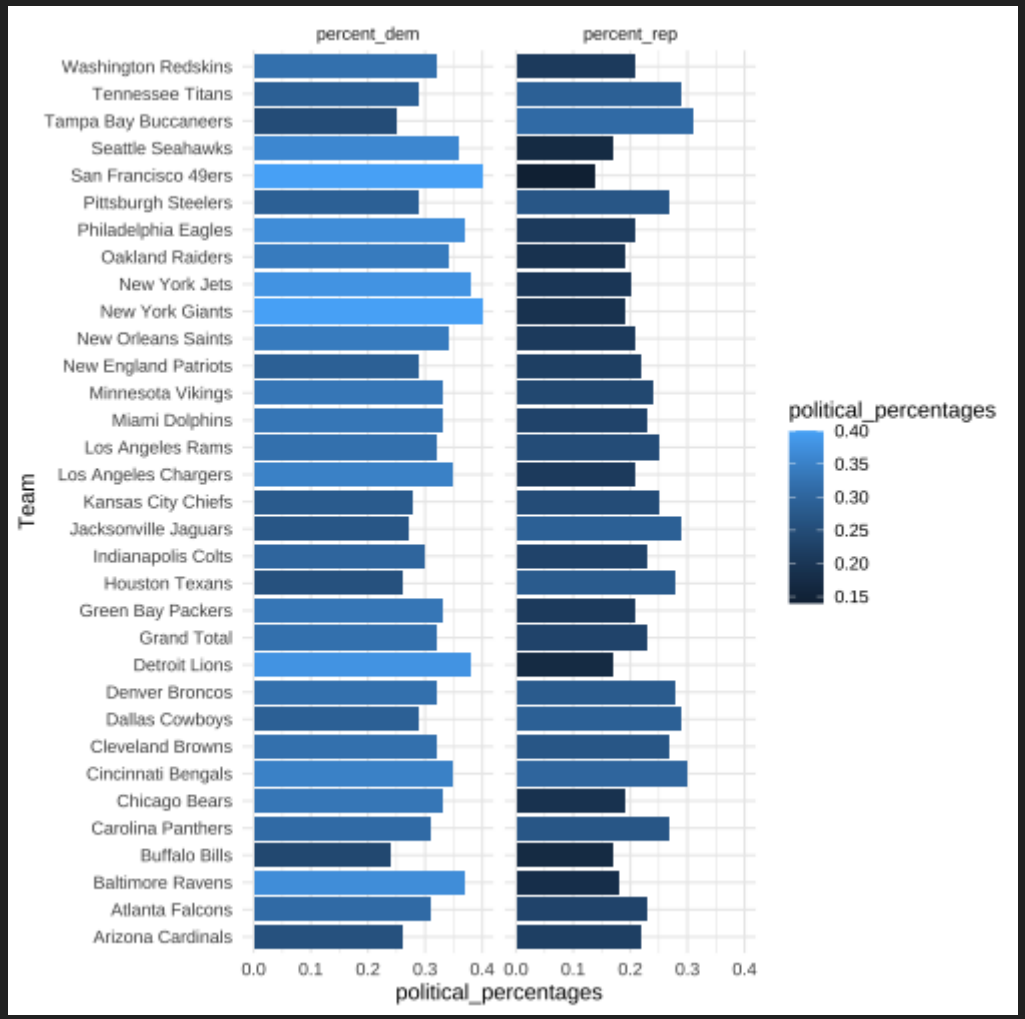
```
nfl_percentages %>%
  pivot_longer(c(percent_dem, percent_rep),
               names_to = "type",
               values_to = "political_percentages")
```

```
# A tibble: 66 × 6
   Team      `Total Responden… `Total Democrats` `Total Republica… type
   <chr>                 <dbl>             <dbl>              <dbl> <chr>
 1 Arizona …               148                39                 32 perce…
 2 Arizona …               148                39                 32 perce…
 3 Atlanta …               188                59                 44 perce…
 4 Atlanta …               188                59                 44 perce…
 5 Baltimor…               150                56                 27 perce…
 6 Baltimor…               150                56                 27 perce…
 7 Buffalo …                92                22                 16 perce…
 8 Buffalo …                92                22                 16 perce…
 9 Carolina…               164                51                 45 perce…
10 Carolina…               164                51                 45 perce…
# … with 56 more rows, and 1 more variable: political_percentages <dbl>
```

Give it a variable

```
nlf_percentages_long <- nfl_percentages %>%
  pivot_longer(c(percent_dem, percent_rep),
               names_to = "type",
               values_to = "political_percentages")
```

```
ggplot(nlf_percentages_long, aes(Team,
                                 political_percentag
                            fill =  political_percen
  geom_bar(stat="identity") +
  coord_flip() +
  theme_minimal() +
  facet_wrap(.~type)
```



Your turn

Try these on your own

1. Compare how the different ethnicities within each political party differ.
2. Compare how each specific ethnicity between each political party differ.
3. Which ethnicity in each political party is the most conservative? the most liberal?

That's it for today!