Visualizing Movie Ratings

Data Computing

March 17, 2016

A set of 100,000 ratings of movies by individuals was collected in the late 1990s by the *grouplens* research team at the University of Minnesota. They provide the data directly at `http://grouplens.org/datasets/movielens/100k/`. These data were reformatted by DTK and can be downloaded to your own computer with this statement:

```
download.file("http://tiny.cc/dcf/MovieLens.rda", destfile = "MovieLens.rda")
```

Use `load()` to read in the data to your R session. `MovieLens.rda` contains three data tables:

- `Ratings` has the individual movie ratings and the time at which they were entered. It also includes an ID variable for both the user and the movie.
- `Movies` provides the name of the movie and information about genres.
- `Users` gives basic information about the person who made the rating.

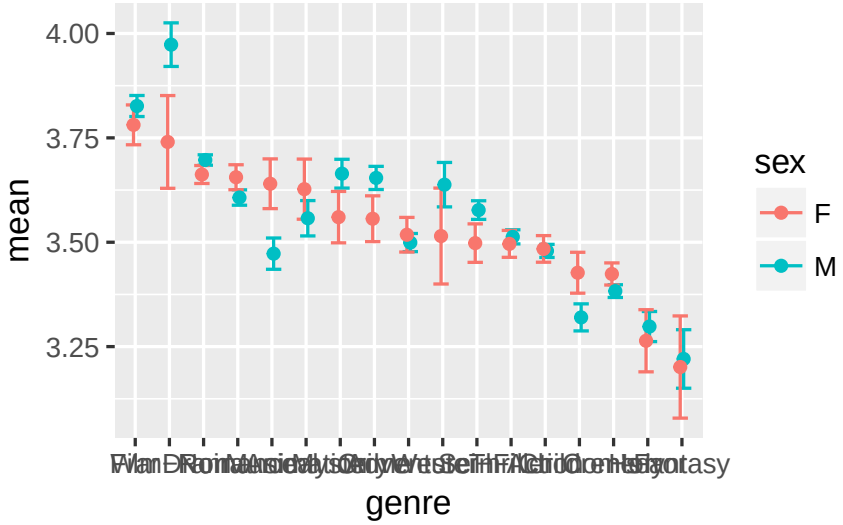
Your task: Construct each of these graphics.

One: Showing the appeal of different genres to the different sexes

```
## Joining, by = "movie_id"
```

```
## Joining, by = "user_id"
```

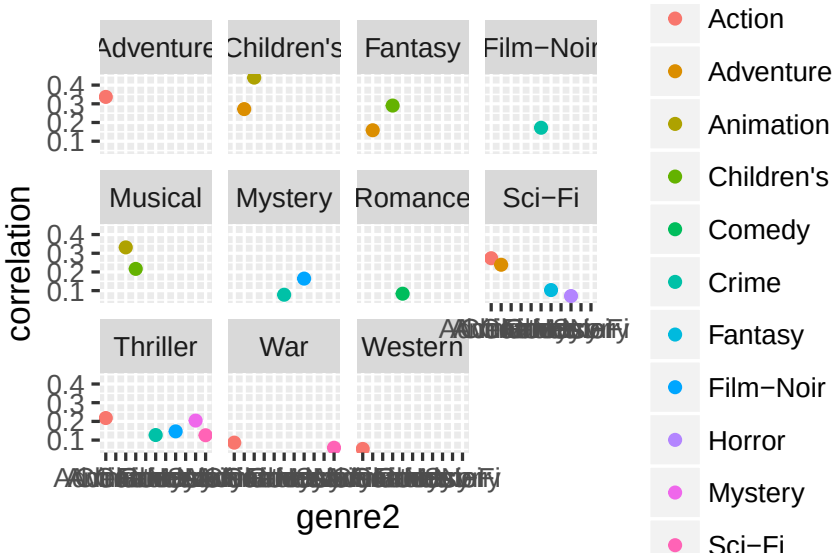
```
## Joining, by = "genre"
```



Which genres are connected?

Look at correlation between genres?

```
Genres <- Movies[,6:23]
tmp <- cor(Genres) %>% as.data.frame(stringsAsFactors = FALSE)
tmp$genre <- row.names(tmp)
Genre_pairs <-
  tmp %>%
  gather(key = genre2, value = correlation, -genre) %>%
  filter(genre != genre2) %>%
  filter(genre > genre2) %>%
  group_by(genre) %>%
#  filter(rank(desc(correlation)) <= 3) %>%
  filter(correlation > 0.05)
Genre_pairs %>%
  ggplot(aes(x = genre2, y = correlation)) +
  geom_point(aes(color = genre2)) +
  facet_wrap( ~ genre)
```



As a network

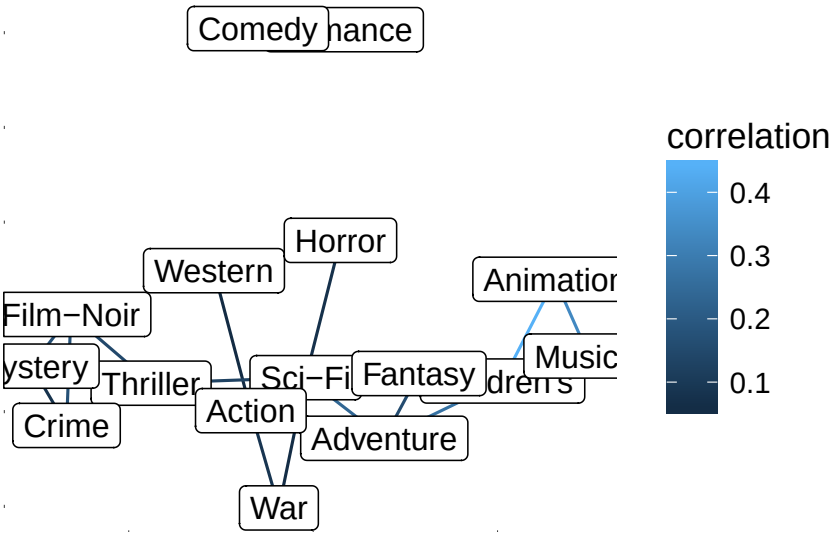
```
library(igraph)
```

```
##
## Attaching package: 'igraph'
```

```
## The following objects are masked from 'package:tidyr':
##
##     %>%, crossing
```

```
## The following objects are masked from 'package:dplyr':
```

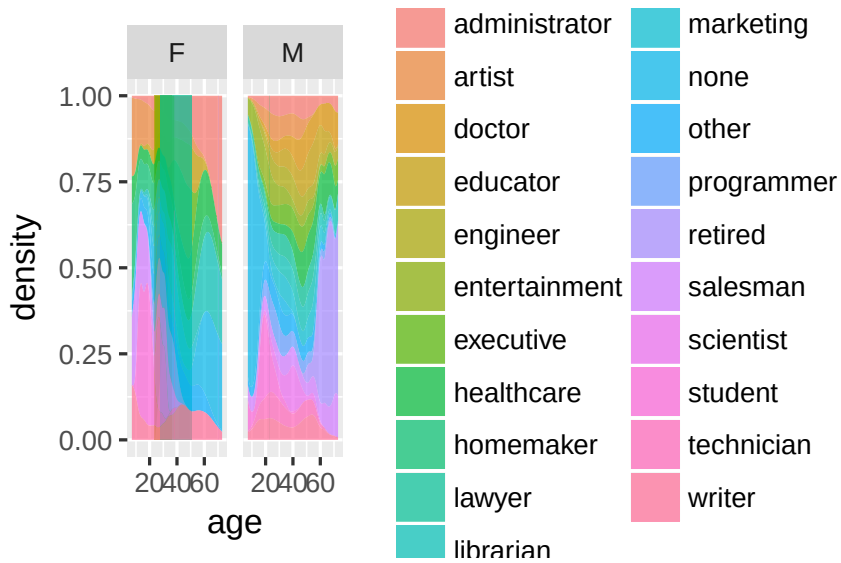
```
##
##     %>%, as_data_frame, groups, union

## The following objects are masked from 'package:stats':
##
##     decompose, spectrum

## The following object is masked from 'package:base':
##
##     union

Vertices <-
  Genre_pairs %>%
  edgesToVertices(from = genre, to = genre2)
Edges <-
  Vertices %>%
  edgesForPlotting(ID = ID, x, y, Edges = Genre_pairs, from = genre, to = genre2)
Vertices %>%
  ggplot(aes(x = x, y = y)) + geom_point()+
  geom_segment(data = Edges,
               aes(x = x, y = y, xend = xend, yend = yend,
                   color = correlation)) +
  theme_map() +
    geom_label(aes(label = ID), fill = "white")

## Warning: 'panel.margin' is deprecated. Please
## use 'panel.spacing' property instead
```



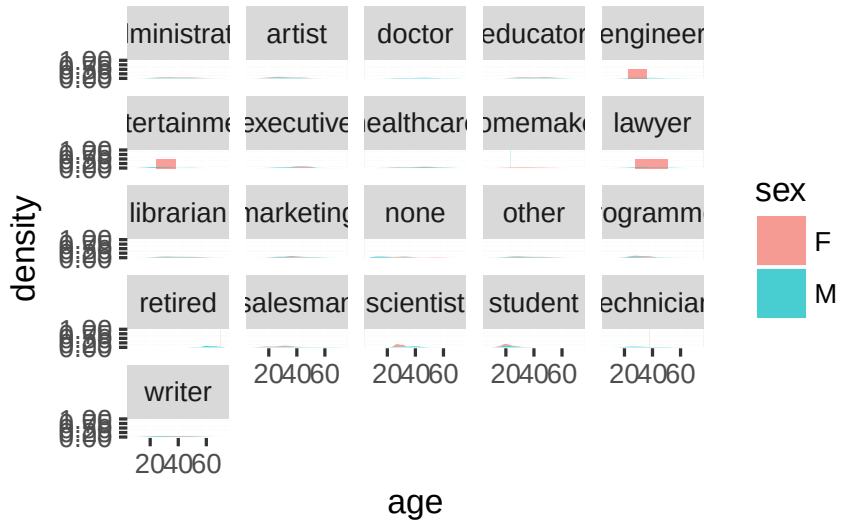
Who are the reviewers?

```
Users %>%
  ggplot(aes(x = age)) +
```

```
  geom_density(aes(fill = occupation),
               color = NA, alpha = .7, position = "fill") +
  facet_wrap( ~ sex)
```




```
Users %>%
  ggplot(aes(x = age)) +
  geom_density(aes(fill = sex),
               color = NA, alpha = .7, position = "stack") +
  facet_wrap( ~ occupation)
```



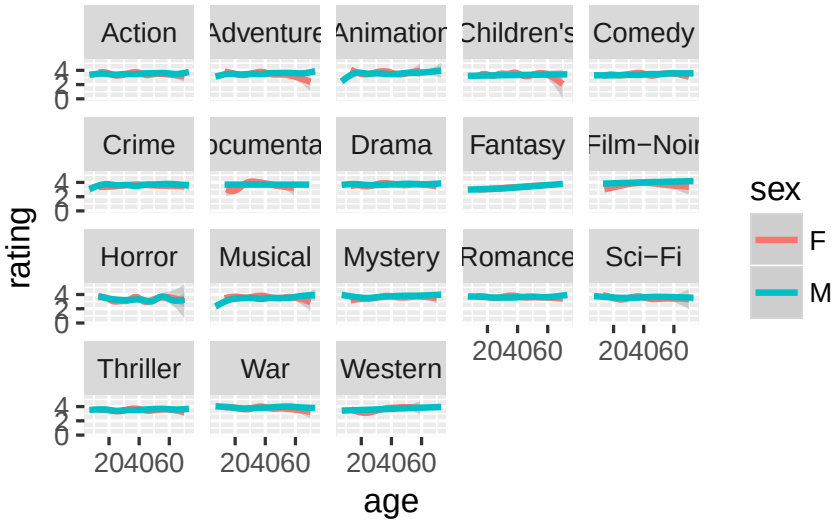

```
Users %>%
  group_by(occupation) %>%
  tally() %>%
  arrange(desc(n))
```

```
## # A tibble: 21 × 2
##       occupation     n
##            <chr> <int>
## 1        student   196
## 2          other   105
## 3       educator    95
## 4  administrator    79
## 5       engineer    67
## 6     programmer    66
## 7      librarian    51
## 8         writer    45
## 9      executive    32
## 10     scientist    31
## # ... with 11 more rows
```

Ratings as people age

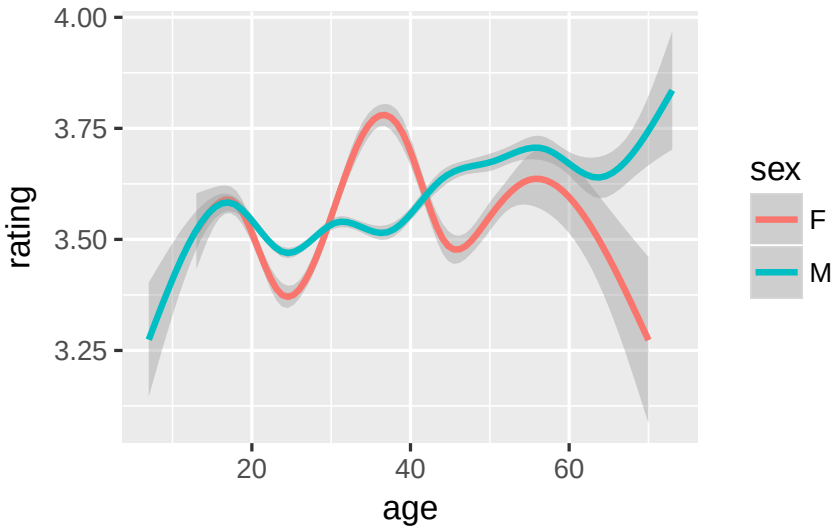
```
All %>%
  filter( genre != "unknown") %>%
  ggplot(aes(x = age, color = sex, y = rating)) +
  geom_smooth() +
  facet_wrap( ~ genre)
```

```
## `geom_smooth()` using method = 'gam'
```




```
All %>%
  ggplot(aes(x = age, color = sex, y = rating)) +
  geom_smooth()
```

```
## `geom_smooth()` using method = 'gam'
```


4.00
3.75
3.50
3.25
rating
20
40
60
age
sex
F
M