Analyzing movie ratings according to their Genres

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Dataset details:

- **Data Source:** IMDB Movie Dataset
- **Location:** https://grouplens.org/datasets/movielens/
- **Filename:** ml-20m.zip

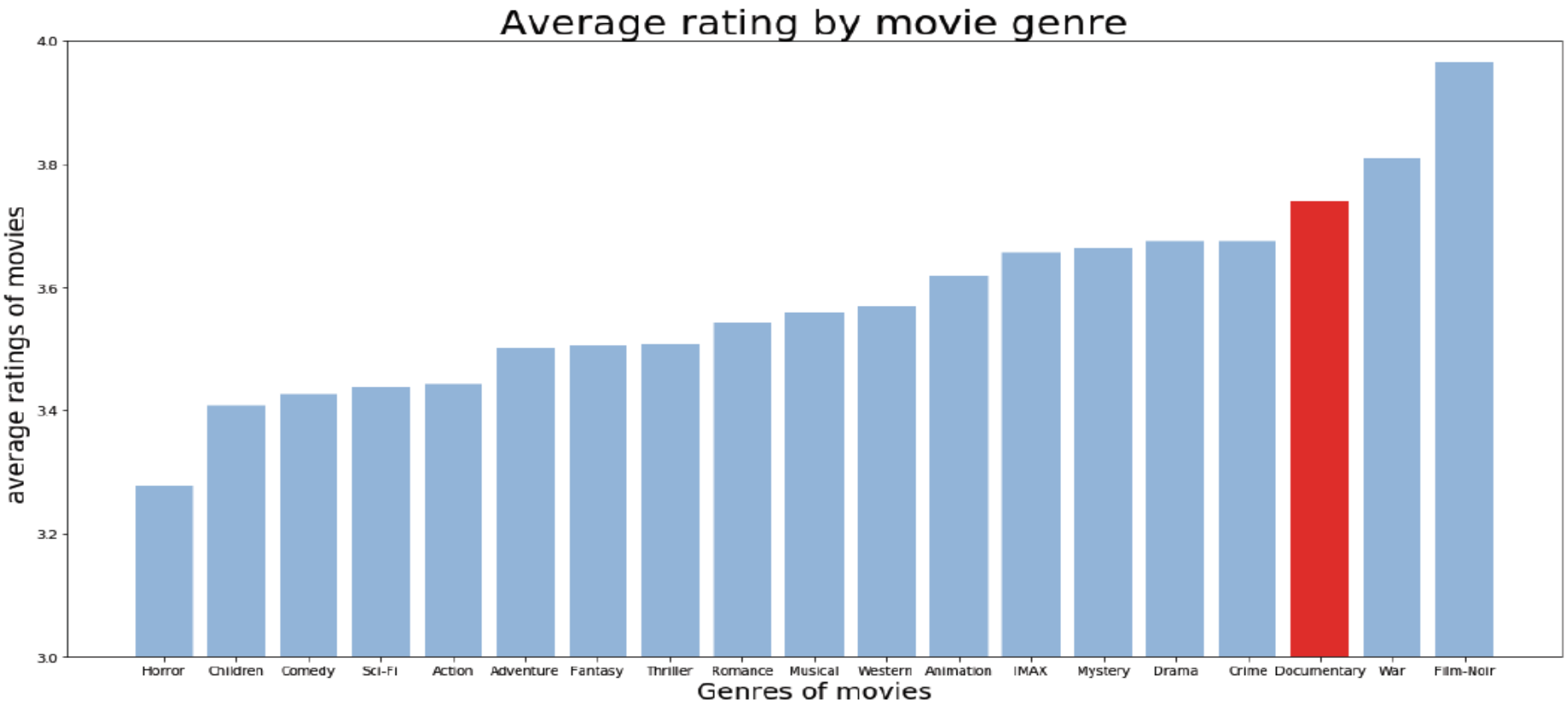
Motivation

In this project, I would like to explore distributions of ratings within generes and analyze what type of generes are highly rated or low rated compared to others. As I am very much interested in Documentary movies, I would like to compare Documentary movies with other generes. This analysis could be helpful to movie producers.

Research Question:

Do Documentary movies tend to be rated more highly than other movie genres?

This plot represent the average rating by movie genre ascending order



Findings

This bar plot figure show that:

- On average, Film-Noir genre has best average of rating.
- On average, Horror genre movies have least rating.
- On average, Documentary genre is in 17thposition.
- Though, average ratings will be affected by the number of movies in the genres.

Conclusion

To conclude:

- Comparison of the ratings by genres showed what type of genres are highly rated across genres and within genres.
- Documentary movie are haily rated comparing to others movies genres, it’s ranked as the third most highest rating movie genre

Acknowledgements

I didn’t yet got feedback on my work from no one.

References

I did all the work by my self.

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Initial exploration of the Dataset

In [1]:

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
%matplotlib inline
```

Importing data

In [2]:

```
movies = pd.read_csv('./movielens/movies.csv', sep=',')
movies.head()
```

Out[2]:

	movieId	title	genres
0	1	Toy Story (1995)	Adventure|Animation|Children|Comedy|Fantasy
1	2	Jumanji (1995)	Adventure|Children|Fantasy
2	3	Grumpier Old Men (1995)	Comedy|Romance
3	4	Waiting to Exhale (1995)	Comedy|Drama|Romance
4	5	Father of the Bride Part II (1995)	Comedy

In [3]:

```
movies.shape
```

Out[3]:

```
(27278, 3)
```

In [4]:

```
movies.columns
```

Out[4]:

```
Index(['movieId', 'title', 'genres'], dtype='object')
```

In [5]:

```
movies.describe()
```

Out[5]:

	movieId
count	27278.000000
mean	59855.480570

	movieId
std	44429.314697
min	1.000000
25%	6931.250000
50%	68068.000000
75%	100293.250000
max	131262.000000

Know we will clean our data but let us first check if there is any null value

In [6]:

```
movies.isnull().values.any()
```

Out[6]:

```
False
```

As the result show we don't have any NAN value in movies data frame so it is already cleaned and we don't have to execute dropna() method in this case

Now we will see the list of diffrents genres of movies

In [7]:

```
genres = list({gen.split('|')[0] for gen in movies.genres})
genres.remove('(no genres listed)')
print(genres)
```

```
['IMAX', 'Romance', 'Children', 'Documentary', 'Drama', 'Crime', 'War', 'Sci-Fi', 'Action', 'Comed
y', 'Horror', 'Thriller', 'Film-Noir', 'Fantasy', 'Musical', 'Adventure', 'Mystery', 'Animation',
'Western']
```

In [8]:

```
movies_new_columns= ["movieId","title","genres"]
movies_new_columns = np.append( movies_new_columns ,list(genres))
movies_new_columns
```

Out[8]:

```
array(['movieId', 'title', 'genres', 'IMAX', 'Romance', 'Children',
       'Documentary', 'Drama', 'Crime', 'War', 'Sci-Fi', 'Action',
       'Comedy', 'Horror', 'Thriller', 'Film-Noir', 'Fantasy', 'Musical',
       'Adventure', 'Mystery', 'Animation', 'Western'], dtype='<U11')
```

We will add every genres type as a columns with a value True if the genre is related to the film the and false in the other case

In [9]:

```
movies_genr_expaned = pd.DataFrame(movies, columns=movies_new_columns)
movies_genr_expaned = movies_genr_expaned.fillna(False)
for genr in genres:
    movies_genr_expaned[genr] = movies_genr_expaned['genres'].str.contains(genr)
```

The distribution of movie rating by genres

In [10]:

```
movies_genr_expaned[genres].sum().sort_values()/movies_genr_expaned[genres].sum().sum()*100
```

Out[10]:

```
IMAX            0.361891
```

```
Film-Noir        0.609306
Western          1.248154
Animation        1.896233
Musical          1.912851
Children         2.103028
War              2.204579
Fantasy          2.607090
Mystery          2.795421
Sci-Fi           3.218242
Adventure        4.300222
Documentary      4.562408
Horror           4.820901
Crime            5.426514
Action           6.499261
Romance          7.620015
Thriller         7.714180
Comedy          15.461595
Drama           24.638109
dtype: float64
```

Know we will handle ratings

In [11]:

```
ratings = pd.read_csv('./movielens/ratings.csv', sep=',')
ratings.head()
```

Out[11]:

	userId	movieId	rating	timestamp
0	1	2	3.5	1112486027
1	1	29	3.5	1112484676
2	1	32	3.5	1112484819
3	1	47	3.5	1112484727
4	1	50	3.5	1112484580

In [12]:

```
ratings.shape
```

Out[12]:

```
(20000263, 4)
```

In [13]:

```
ratings.columns
```

Out[13]:

```
Index(['userId', 'movieId', 'rating', 'timestamp'], dtype='object')
```

In [14]:

```
ratings.describe()
```

Out[14]:

	userId	movieId	rating	timestamp
count	2.000026e+07	2.000026e+07	2.000026e+07	2.000026e+07
mean	6.904587e+04	9.041567e+03	3.525529e+00	1.100918e+09
std	4.003863e+04	1.978948e+04	1.051989e+00	1.621694e+08
min	1.000000e+00	1.000000e+00	5.000000e-01	7.896520e+08
25%	3.439500e+04	9.020000e+02	3.000000e+00	9.667977e+08

	userId	movieId	rating	timestamp
50%	6.914100e+04	2.167000e+03	3.500000e+00	1.103556e+09
75%	1.036370e+05	4.770000e+03	4.000000e+00	1.225642e+09
max	1.384930e+05	1.312620e+05	5.000000e+00	1.427784e+09

In [15]:

```
ratings.isnull().values.any()
```

Out[15]:

```
False
```

*As the result show we don't have any NAN value in ratings data frame so it is already cleaned and we don't have to execute dropna() method in this case too**

know we will define our research questions: *Do **Documentary** movies tend to be rated more highly than other movie genres ?*

Joining the 2 dataframes

In [16]:

```
joined_data = pd.merge(ratings, movies_genr_expaned, how='inner')
joined_data.head()
```

Out[16]:

	userId	movieId	rating	timestamp	title	genres	IMAX	Romance	Children	Documentary	...	Comedy	Horr
0	1	2	3.5	1112486027	Jumanji (1995)	Adventure|Children|Fantasy	False	False	True	False	...	False	Fals
1	5	2	3.0	851527569	Jumanji (1995)	Adventure|Children|Fantasy	False	False	True	False	...	False	Fals
2	13	2	3.0	849082742	Jumanji (1995)	Adventure|Children|Fantasy	False	False	True	False	...	False	Fals
3	29	2	3.0	835562174	Jumanji (1995)	Adventure|Children|Fantasy	False	False	True	False	...	False	Fals
4	34	2	3.0	846509384	Jumanji (1995)	Adventure|Children|Fantasy	False	False	True	False	...	False	Fals

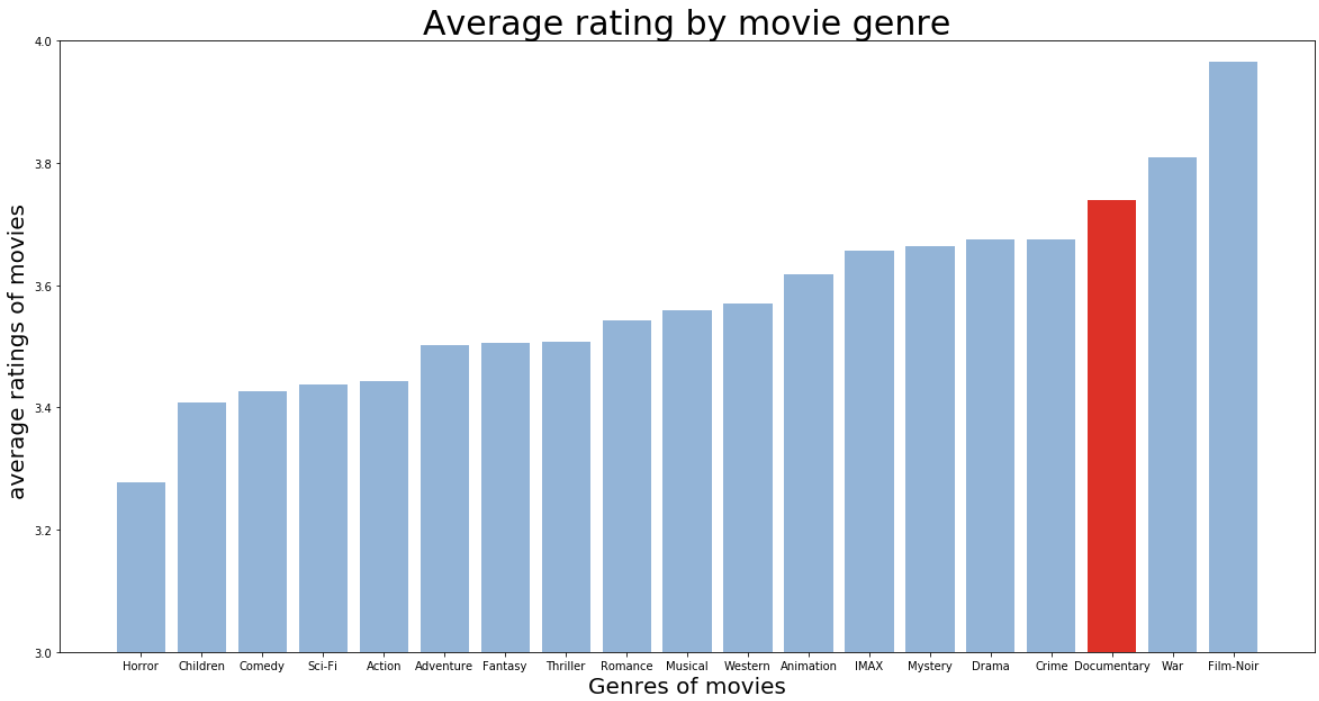
5 rows × 25 columns

Genres distribution by average ratings: the average rating will be affected by the number of movies in every genre.

In [22]:

```
avg_ratings = {genre : joined_data[joined_data[genre]]['rating'].mean() for genre in genres}
avg_ratings = pd.Series(avg_ratings)
#sorting avg rating values
avg_ratings=avg_ratings.sort_values()



#building a nice chart bar with 2017 trend colors

plt.bar(avg_ratings.index,avg_ratings.values, color=["#93B4D7","#93B4D7","#93B4D7","#93B4D7","#93B4
D7","#93B4D7","#93B4D7","#93B4D7","#93B4D7","#93B4D7","#93B4D7","#93B4D7","#93B4D7","#93
B4D7","#93B4D7","#dd3127","#93B4D7","#93B4D7"])
plt.xlabel("Genres of movies",fontsize=20)
plt.ylabel("average ratings of movies ",fontsize=20)
plt.title( "Average rating by movie genre",fontsize=30)


# we have limited y bar values between 3.0 and 4.0 because all the avereges of genres are between
those 2 values
plt.ylim(3.0,4.0)
```

```
from pylab import rcParams
rcParams['figure.figsize'] = (20, 10)

plt.show()
```



In [ ]: