Welcome

Final Project Submission

Please fill out:

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- Student pace: part time

Overview.

Microsoft wants to open a new movies studio. My work is to explore current and the well known studios and come up with well informed insights that will help making decisions. I will gather data from different studios, examine those data using data descriptive statistics and visualizations. At the end of this data analysis I will have well detailed report that Microsoft can use to build their new studio.

Business Problem

Microsoft want to open a movie studio. I have been tasked to provide well informed insights, where Microsoft should give priority when starting there new venture. Microsoft, being a new venture, should have high quality films for it to be competitive or as well take the highest market share. With this in mind they need knowledge that will assist them achieve their goal. By analyzing the movies that have been most recently watched, i can make recommendations about attributes that Microsoft's movies should have in order to achieve the highest revenue. I have based my analysis on four main factors:

- Genre type
- Release date
- Production House
- Runtime minutes
- Year of Release
- Production Budget

The above insights, I believe they will give us the most highly watched and profitable movies.

Data Understanding

I utilized five data sets provided by this project for my analysis.

- Boom movie data
- im.db data
- rt.movie_info data
- tmbd.movies data
- tn_movies_budgets data

```python
# import libraries
import pandas as pd
import numpy as np
import csv
import sqlite3
import matplotlib.pyplot as plt
pd.options.display.float_format = '{:.2f}'.format
import seaborn as sns

tn_movie =
pd.read_csv("/home/ict/Downloads/dsc-phase-1-project-v2-4/tn.movie_bud
gets.csv")
tn_movie.head(5)
```

```
   id  release_date                                        movie  \
0   1  Dec 18, 2009                                       Avatar   
1   2  May 20, 2011  Pirates of the Caribbean: On Stranger Tides   
2   3   Jun 7, 2019                                 Dark Phoenix   
3   4   May 1, 2015                      Avengers: Age of Ultron   
4   5  Dec 15, 2017            Star Wars Ep. VIII: The Last Jedi   

  production_budget domestic_gross worldwide_gross  
0      $425,000,000   $760,507,625  $2,776,345,279  
1      $410,600,000   $241,063,875  $1,045,663,875  
2      $350,000,000    $42,762,350    $149,762,350  
3      $330,600,000   $459,005,868  $1,403,013,963  
4      $317,000,000   $620,181,382  $1,316,721,747  
```

I was curious to check how release date affected the watch.

```python
tn_movie['production_budget'] =
tn_movie['production_budget'].str.replace(',', '').str.replace('$',
'').astype(int)
tn_movie['production_budget'].describe()
```

```
/snap/jupyter/6/lib/python3.7/site-packages/ipykernel_launcher.py:1:
FutureWarning: The default value of regex will change from True to
False in a future version. In addition, single character regular
expressions will *not* be treated as literal strings when regex=True.
  """Entry point for launching an IPython kernel.

count        5782.00
mean     31587757.10
std      41812076.83
min          1100.00
25%       5000000.00
50%      17000000.00
75%      40000000.00
max     425000000.00
Name: production_budget, dtype: float64
```

```
tn_movie['domestic_gross'] =
tn_movie['domestic_gross'].str.replace(',', '').str.replace('$',
'').astype(int)
tn_movie['domestic_gross'].describe()
```

```
/snap/jupyter/6/lib/python3.7/site-packages/ipykernel_launcher.py:1:
FutureWarning: The default value of regex will change from True to
False in a future version. In addition, single character regular
expressions will *not* be treated as literal strings when regex=True.
  """Entry point for launching an IPython kernel.
```

```
count        5782.00
mean     41873326.87
std      68240597.36
min             0.00
25%       1429534.50
50%      17225945.00
75%      52348661.50
max     936662225.00
Name: domestic_gross, dtype: float64
```

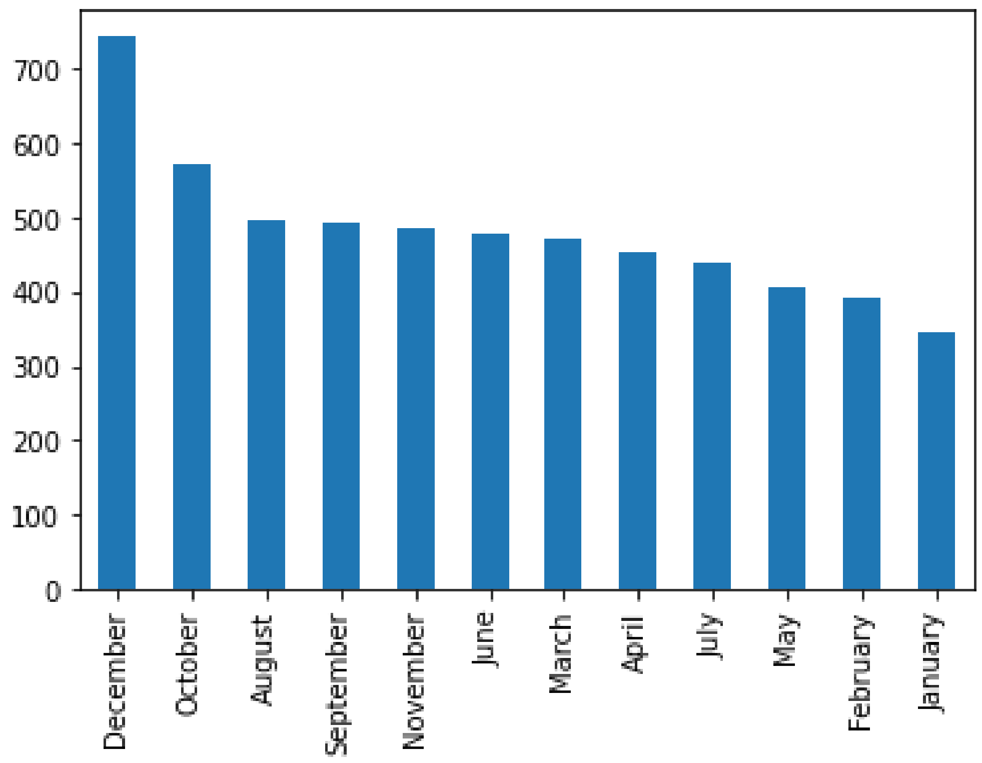
```
# converting string into integer and then get descriptive statistics
tn_movie['worldwide_gross'] =
tn_movie['worldwide_gross'].str.replace(',', '').str.replace('$',
'').astype(int)
tn_movie['worldwide_gross'].describe()
```

```
/snap/jupyter/6/lib/python3.7/site-packages/ipykernel_launcher.py:2:
FutureWarning: The default value of regex will change from True to
False in a future version. In addition, single character regular
expressions will *not* be treated as literal strings when regex=True.
```

```
count         5782.00
mean      91487460.91
std      174719968.78
min              0.00
25%        4125414.75
50%       27984448.50
75%       97645836.50
max     2776345279.00
Name: worldwide_gross, dtype: float64
```

```
# convert release date column to datetime values
tn_movie['release_date'] = pd.to_datetime(tn_movie['release_date'])
# create release month column
tn_movie['release_month'] = tn_movie['release_date'].dt.strftime('%B')
# plotting graph for release month
tn_movie['release_month'].value_counts().plot(kind='bar')
```

```
<AxesSubplot:>
```



```
#exploring bom.movie_gross data
bom_movie = pd.read_csv("/home/ict/python/moringa/projects/Phase1-
project/data/bom.movie_gross.csv")
bom_movie
```

```
                                              title      studio
domestic_gross  \
0                                       Toy Story 3          BV
415000000.00
1                        Alice in Wonderland (2010)          BV
334200000.00
2     Harry Potter and the Deathly Hallows Part 1          WB
296000000.00
3                                         Inception          WB
292600000.00
4                               Shrek Forever After        P/DW
238700000.00
...                                             ...         ...
...
3382                                      The Quake       Magn.
6200.00
3383                    Edward II (2018 re-release)          FM
4800.00
3384                                       El Pacto        Sony
2500.00
3385                                       The Swan  Synergetic
2400.00
```

```
3386                            An Actor Prepares       Grav.
1700.00

     foreign_gross  year
0        652000000  2010
1        691300000  2010
2        664300000  2010
3        535700000  2010
4        513900000  2010
...            ...   ...
3382           NaN  2018
3383           NaN  2018
3384           NaN  2018
3385           NaN  2018
3386           NaN  2018

[3387 rows x 5 columns]
```

```
bom_movie['domestic_gross'].describe()
```

```
count        3359.00
mean     28745845.07
std      66982498.24
min           100.00
25%        120000.00
50%       1400000.00
75%      27900000.00
max     936700000.00
Name: domestic_gross, dtype: float64
```

```
# converting string integr and then get descriptive statistics
a = bom_movie['foreign_gross'].dropna().reset_index()
a['foreign_gross'] = pd.to_numeric(a['foreign_gross'],
errors='coerce')
a['foreign_gross'].describe()
```

```
count        2032.00
mean     75057041.63
std     137529351.20
min           600.00
25%       3775000.00
50%      18900000.00
75%      75050000.00
max     960500000.00
Name: foreign_gross, dtype: float64
```

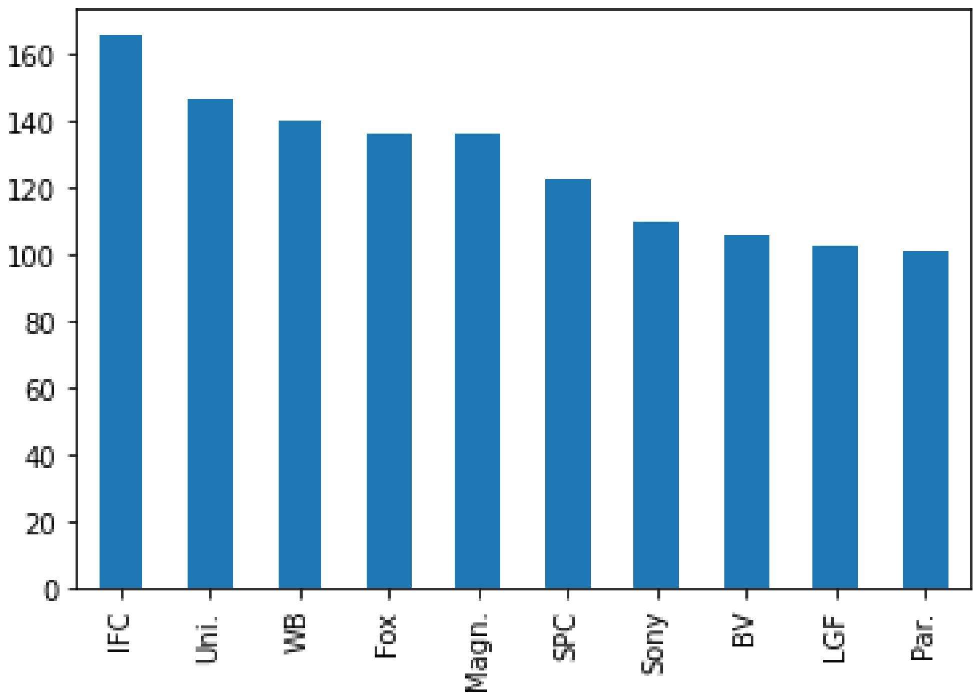
I was curious about how the studio impacted the number of watch.

```
bom_movie_studio = bom_movie['studio'].value_counts().head(10)
bom_movie_studio
```

```
IFC      166
Uni.     147
WB       140
Fox      136
Magn.    136
SPC      123
Sony     110
BV       106
LGF      103
Par.     101
Name: studio, dtype: int64
```

```
# plotting studio
bom_movie['studio'].value_counts().head(10).plot(kind = 'bar')
```

```
<AxesSubplot:>
```



```
bom_movie['year'].value_counts().head(10)
```

```
2015    450
2016    436
2012    400
2011    399
2014    395
2013    350
2010    328
2017    321
2018    308
Name: year, dtype: int64
```

```
rt_reviews = pd.read_csv('/home/ict/python/moringa/projects/Phase1-
project/data/rt.movie_info.tsv', sep='\t')
rt_reviews.head(3)
```

```
   id                                           synopsis rating  \
0   1  This gritty, fast-paced, and innovative police...      R
1   3  New York City, not-too-distant-future: Eric Pa...      R
2   5  Illeana Douglas delivers a superb performance ...      R

                                 genre          director  \
0  Action and Adventure|Classics|Drama  William Friedkin
1    Drama|Science Fiction and Fantasy  David Cronenberg
2    Drama|Musical and Performing Arts    Allison Anders

                         writer  theater_date      dvd_date
currency  \
0                 Ernest Tidyman   Oct 9, 1971  Sep 25, 2001      NaN

1  David Cronenberg|Don DeLillo  Aug 17, 2012   Jan 1, 2013        $

2                 Allison Anders  Sep 13, 1996  Apr 18, 2000      NaN


  box_office      runtime             studio
0        NaN  104 minutes                NaN
1    600,000  108 minutes  Entertainment One
2        NaN  116 minutes                NaN
```

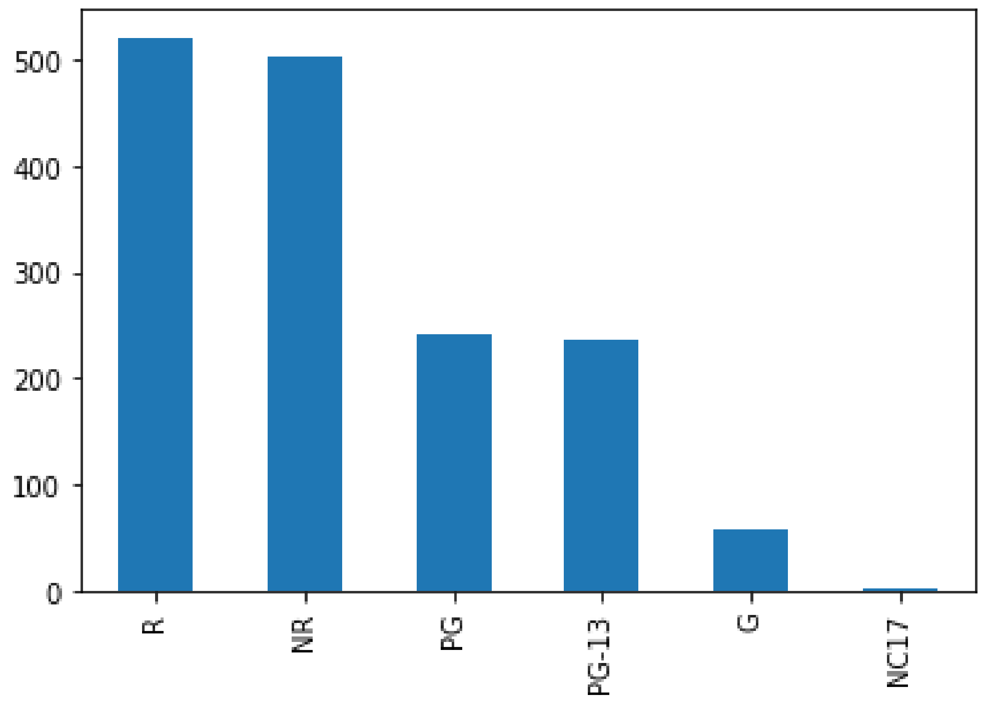
I wanted to know whether rating impacted the watching.

```
rt_reviews['rating'].value_counts()
```

```
R        521
NR       503
PG       240
PG-13    235
G         57
NC17       1
Name: rating, dtype: int64
```

```
rt_reviews['rating'].value_counts().plot(kind = 'bar')
```

```
<AxesSubplot:>
```



I was also curious and checked whether runtime minutes affected the watch

```
rt_reviews['runtime'].value_counts().head(30)
```

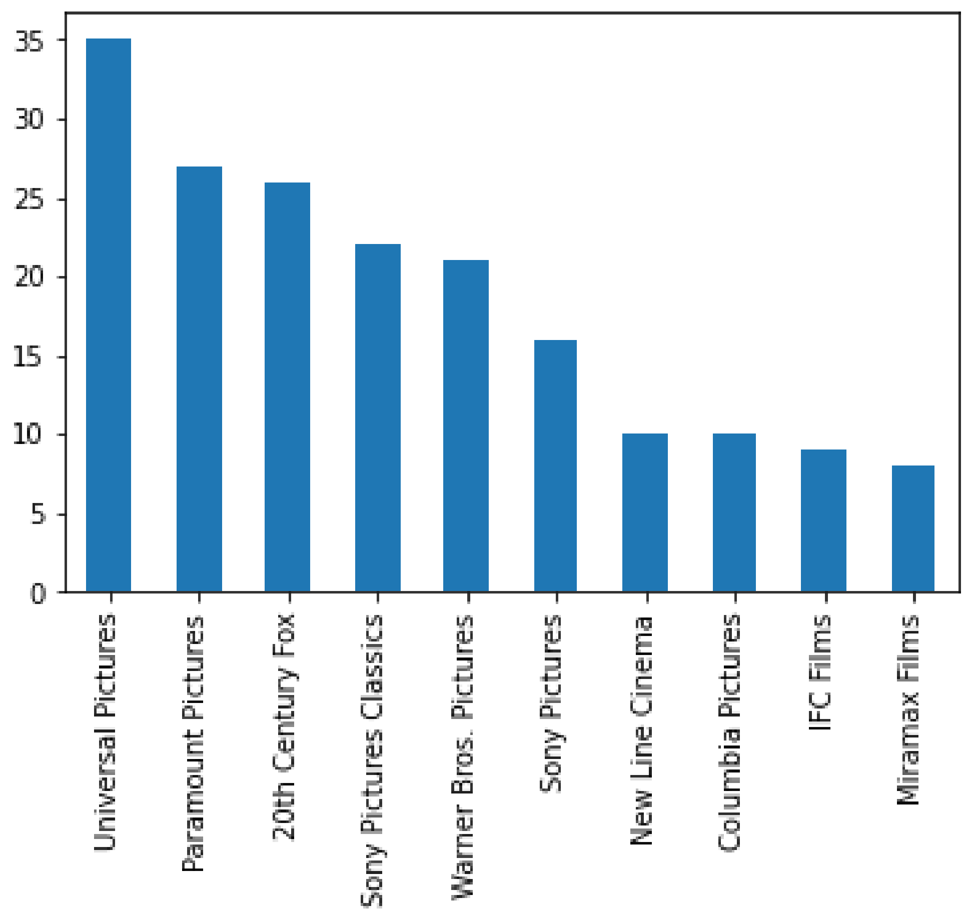
```
90 minutes     72
95 minutes     66
100 minutes    51
93 minutes     47
96 minutes     43
98 minutes     41
91 minutes     40
92 minutes     38
94 minutes     37
105 minutes    36
89 minutes     36
110 minutes    35
104 minutes    35
120 minutes    33
108 minutes    33
85 minutes     32
97 minutes     29
101 minutes    28
99 minutes     28
114 minutes    27
88 minutes     27
103 minutes    26
111 minutes    26
115 minutes    25
102 minutes    25
```

```
107 minutes    24
86 minutes     23
106 minutes    23
109 minutes    22
80 minutes     21
Name: runtime, dtype: int64
```

I was curious about how the studio impacted the number of watch.

```
rt_reviews['studio'].value_counts().head(10).plot(kind = 'bar')
```

```
<AxesSubplot:>
```



I was curious about how the studio impacted the number of watch.

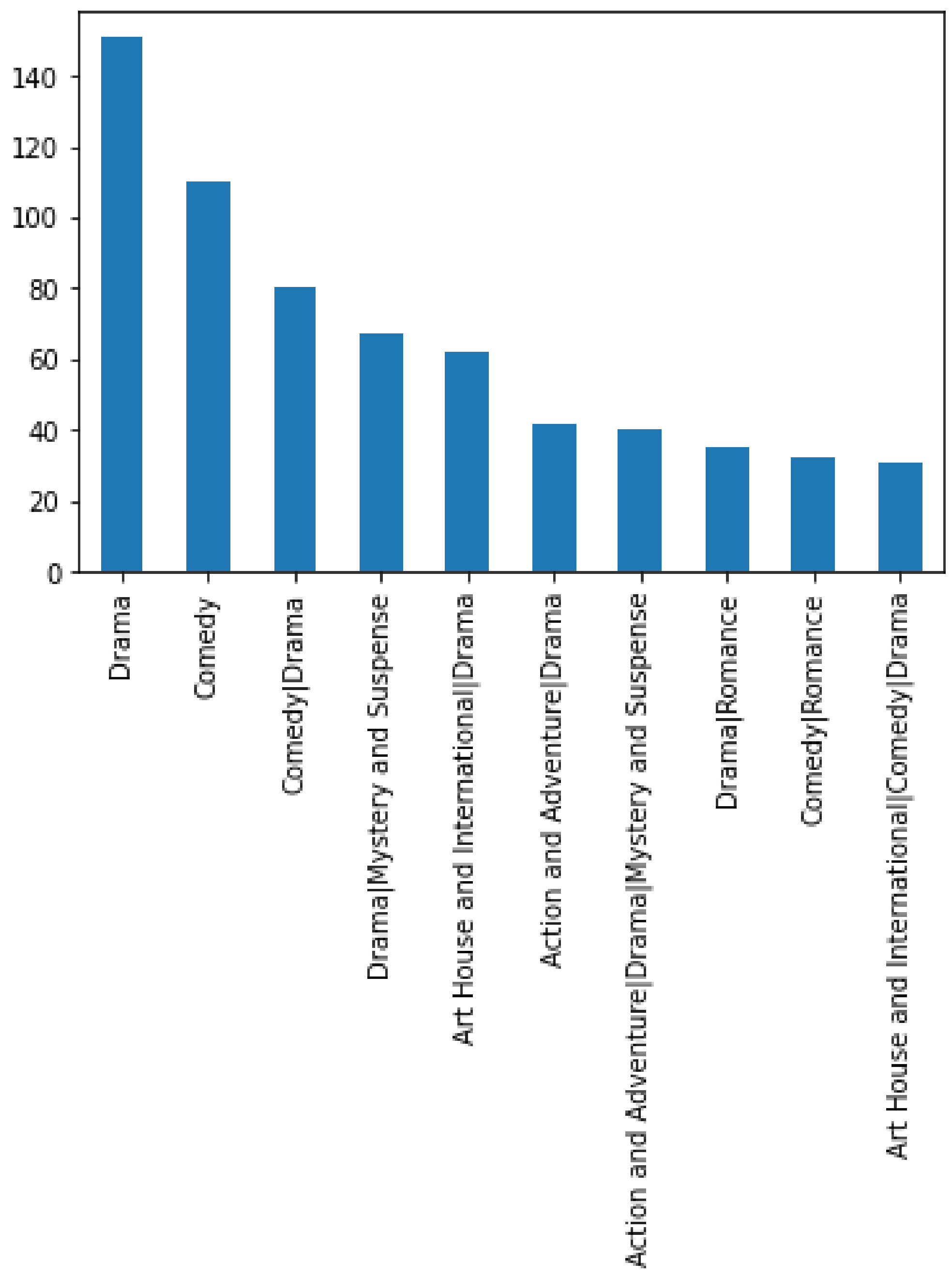
```
rt_reviews['genre'].value_counts()
```

```
Drama
151
Comedy
110
Comedy|Drama
80
Drama|Mystery and Suspense
67
```

```
Art House and International|Drama
62

...
Art House and International|Drama|Sports and Fitness
1
Comedy|Documentary|Musical and Performing Arts|Special Interest
1
Comedy|Cult Movies|Mystery and Suspense|Science Fiction and Fantasy
1
Action and Adventure|Art House and International|Mystery and Suspense|
Special Interest      1
Comedy|Drama|Kids and Family|Sports and Fitness
1
Name: genre, Length: 299, dtype: int64
```

```
genre_count.head(10).plot(kind = 'bar')
```

```
<AxesSubplot:>
```



```
tmdb_review = pd.read_csv('/home/ict/python/moringa/projects/Phase1-
project/data/tmdb.movies.csv', )
tmdb_review.sample(10)

       Unnamed: 0        genre_ids      id original_language  \
22866       22866             [27]  487472                en
3231         3231      [99, 10402]   79201                en
21820       21820             [28]  455252                en
23464       23464             [27]  540957                en
11755       11755         [28, 18]  257447                en
8384         8384             [18]  179109                fr
```

```
6528         6528              []  135698               en
16447       16447            [35]  318974               en
23035       23035  [99, 36, 10770]  580698               en
13914       13914              []  302685               en

                                          original_title
popularity  \
22866                                            Whisper        0.68

3231                               God Bless Ozzy Osbourne        2.83

21820     King Arthur and the Knights of the Round Table        2.11

23464                                        The Armoire        0.60

11755                                         Tapped Out        3.73

8384                                         Les salauds        5.42

6528   Tyler Perry's I Don't Want to Do Wrong - The Play        1.11

16447                             Ari Shaffir: Paid Regular        0.63

23035                                   High Tech Airport        0.64

13914  Abducted by Aliens: UFO Encounters of the 4th ...        0.60


      release_date                                               title
\
22866   2017-10-31                                             Whisper

3231    2011-04-24                                God Bless Ozzy Osbourne

21820   2017-05-02     King Arthur and the Knights of the Round Table

23464   2017-07-01                                         The Armoire

11755   2014-05-27                                          Tapped Out

8384    2013-10-06                                            Bastards

6528    2012-10-23  Tyler Perry's I Don't Want to Do Wrong - The Play

16447   2015-01-13                             Ari Shaffir: Paid Regular

23035   2017-01-01                                   High Tech Airport
```

```
13914   2014-01-14  Abducted by Aliens: UFO Encounters of the 4th ...


       vote_average  vote_count
22866          6.00           2
3231           7.00          13
21820          3.10           8
23464          6.50           2
11755          5.80          34
8384           5.90          49
6528           8.50           4
16447          7.00           1
23035         10.00           1
13914          5.00           1
```

```
tmdb_review.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 26517 entries, 0 to 26516
Data columns (total 10 columns):
 #   Column             Non-Null Count  Dtype  
---  ------             --------------  -----  
 0   Unnamed: 0         26517 non-null  int64  
 1   genre_ids          26517 non-null  object 
 2   id                 26517 non-null  int64  
 3   original_language  26517 non-null  object 
 4   original_title     26517 non-null  object 
 5   popularity         26517 non-null  float64
 6   release_date       26517 non-null  object 
 7   title              26517 non-null  object 
 8   vote_average       26517 non-null  float64
 9   vote_count         26517 non-null  int64  
dtypes: float64(2), int64(3), object(5)
memory usage: 2.0+ MB
```

I was curious and wanted to know genre id representation and went further to fetch all the information needed. Here is the representation.

- MOVIE
- Action 28
- Adventure 12
- Animation 16
- Comedy 35
- Crime 80
- Documentary 99
- Drama 18
- Family 10751
- Fantasy 14

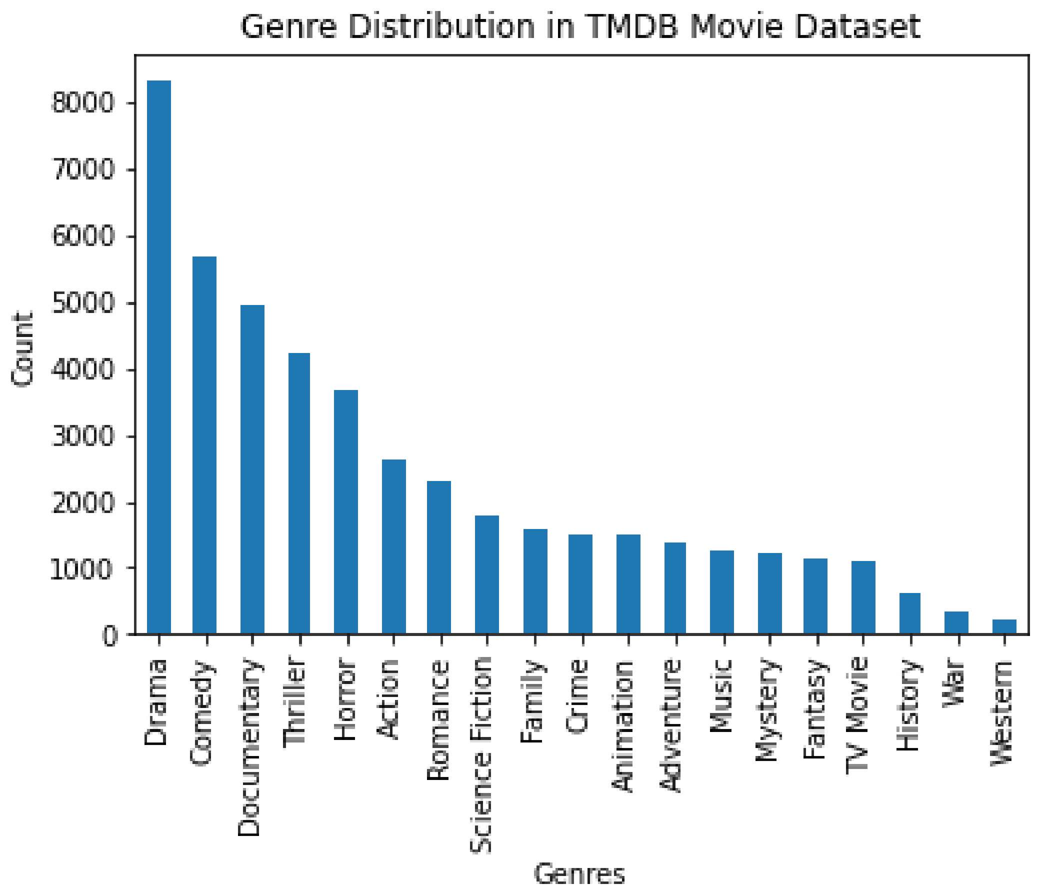
- History 36
- Horror 27
- Music 10402
- Mystery 9648
- Romance 10749
- Science Fiction 878
- TV Movie 10770
- Thriller 53
- War 10752
- Western 37

```
import ast

# convert the genre_ids column to list of integers
tmdb_review['genre_ids'] = tmdb_review['genre_ids'].apply(lambda x:
ast.literal_eval(x) if x != '[]' else [])

# explode the genre_ids column
tmdb_review = tmdb_review.explode('genre_ids')

# count the number of occurrences of each genre id
genre_counts = tmdb_review['genre_ids'].value_counts()

print(genre_counts)
```

```
18       8303
35       5652
99       4965
53       4207
27       3683
28       2612
10749    2321
878      1762
10751    1565
80       1515
16       1486
12       1400
10402    1267
9648     1237
14       1139
10770    1084
36        622
10752     330
37        205
Name: genre_ids, dtype: int64
```

From the the above value count i was curious to see visualization on how genre performed.

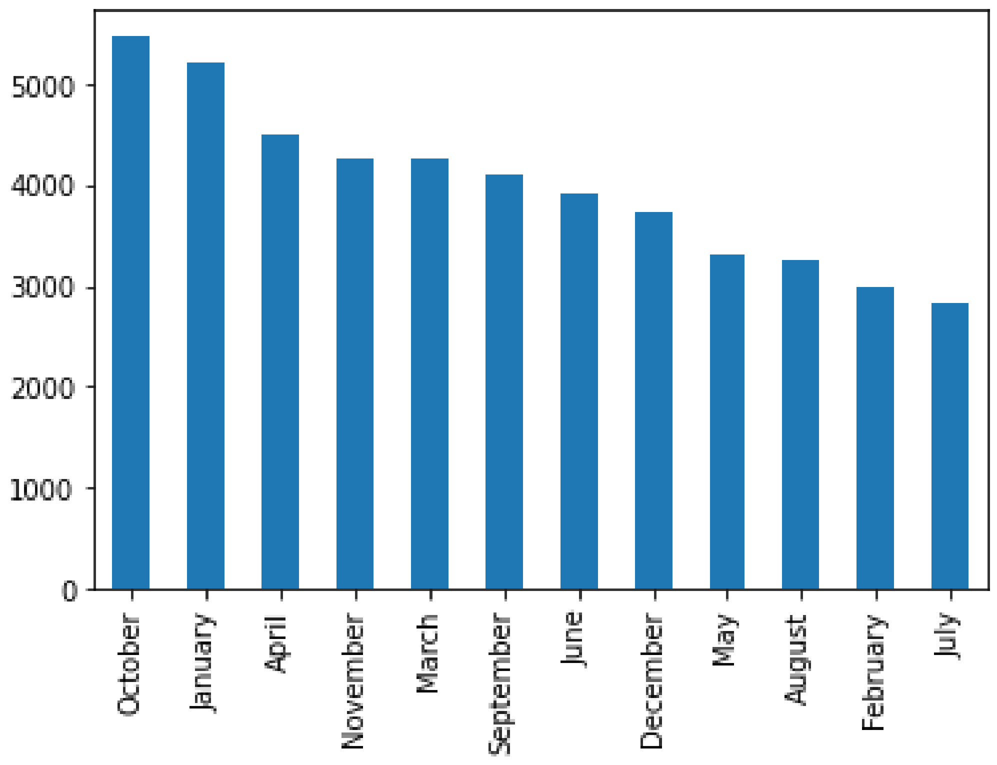
```
# define a dictionary to map genre IDs to names
genre_dict = {
    28: "Action",
    12: "Adventure",
    16: "Animation",
    35: "Comedy",
    80: "Crime",
    99: "Documentary",
    18: "Drama",
    10751: "Family",
    14: "Fantasy",
    36: "History",
    27: "Horror",
    10402: "Music",
    9648: "Mystery",
    10749: "Romance",
    878: "Science Fiction",
    10770: "TV Movie",
    53: "Thriller",
    10752: "War",
    37: "Western"
}

# create a Series with the count of each genre
genre_counts = pd.Series({
    genre_dict[k]: v for k, v in genre_counts.items()
})

# plot the bar chart
genre_counts.plot(kind="bar")
plt.xticks(rotation=90)
plt.xlabel("Genres")
plt.ylabel("Count")
plt.title("Genre Distribution in TMDB Movie Dataset")
plt.show()
```



I grouped release date the the months to see how it affected the watch.

```
# convert release date column to datetime values
tmdb_review['release_date'] =
pd.to_datetime(tmdb_review['release_date'])
# create release month column
tmdb_review['release_month'] =
tmdb_review['release_date'].dt.strftime('%B')
tmdb_review['release_month'].value_counts().plot(kind='bar')
```

```
<AxesSubplot:>
```



```
tmdb_review['release_month'].value_counts().head(30)
```

```
January      3132
October      3035
April        2566
March        2406
November     2338
September    2264
June         2166
December     1929
May          1865
August       1698
February     1614
July         1504
Name: release_month, dtype: int64
```

```
im_movies = sqlite3.connect('/home/ict/python/moringa/projects/Phase1-
project/data/im.db')

cursor = im_movies.cursor()

#execute the query to retrieve table names
cursor.execute("SELECT name FROM sqlite_master WHERE type='table';")

#fetch the results and print them out
tables = cursor.fetchall()
print(tables)
```

```
[('movie_basics',), ('directors',), ('known_for',), ('movie_akas',),
('movie_ratings',), ('persons',), ('principals',), ('writers',)]
```

```
IM_movies_review = pd.read_sql("""
SELECT *
FROM movie_basics
JOIN movie_ratings
    USING(movie_id);
""", im_movies)

IM_movies_review
```

```
        movie_id                      primary_title
original_title  \
0      tt0063540                          Sunghursh
Sunghursh
1      tt0066787  One Day Before the Rainy Season              Ashad Ka
Ek Din
2      tt0069049       The Other Side of the Wind  The Other Side of
the Wind
3      tt0069204                  Sabse Bada Sukh              Sabse
Bada Sukh
4      tt0100275         The Wandering Soap Opera        La Telenovela
Errante
...          ...                                ...
...
73851  tt9913084                  Diabolik sono io             Diabolik
sono io
73852  tt9914286                Sokagin Çocuklari           Sokagin
Çocuklari
73853  tt9914642                          Albatross
Albatross
73854  tt9914942       La vida sense la Sara Amat  La vida sense la
Sara Amat
73855  tt9916160                         Drømmeland
Drømmeland

       start_year  runtime_minutes                genres
averagerating  \
0            2013           175.00    Action,Crime,Drama
7.00
1            2019           114.00       Biography,Drama
7.20
2            2018           122.00                 Drama
6.90
3            2018              NaN          Comedy,Drama
6.10
4            2017            80.00  Comedy,Drama,Fantasy
6.50
...           ...              ...                   ...              ..
.
```

```
73851        2019            75.00          Documentary
6.20
73852        2019            98.00         Drama,Family
8.70
73853        2017              NaN          Documentary
8.50
73854        2019              NaN                 None
6.60
73855        2019            72.00          Documentary
6.50

       numvotes
0            77
1            43
2          4517
3            13
4           119
...         ...
73851         6
73852       136
73853         8
73854         5
73855        11

[73856 rows x 8 columns]
```

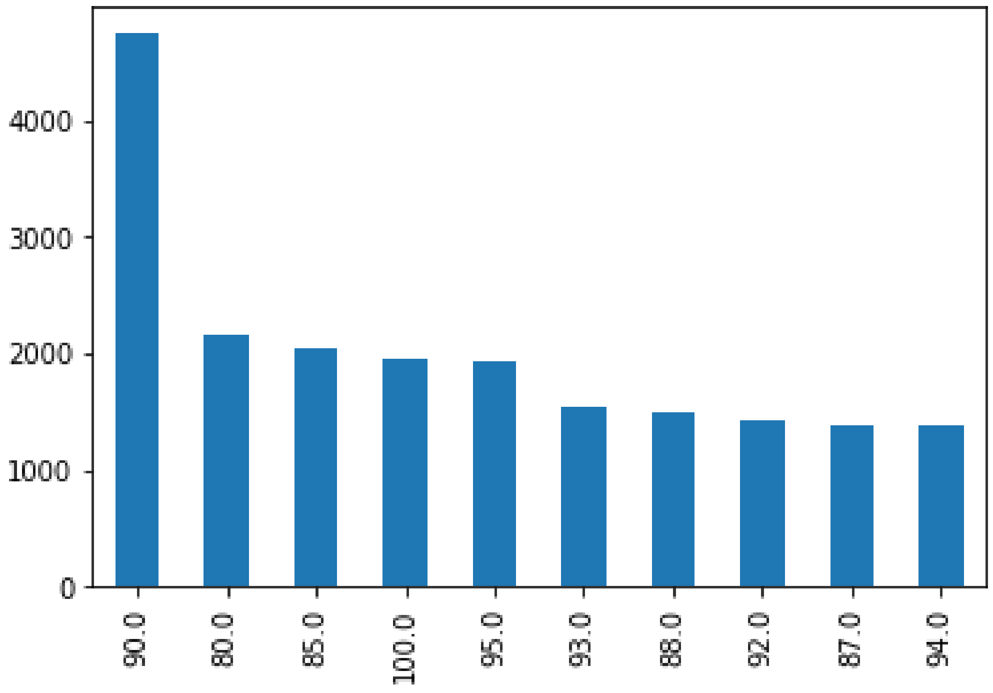
```
# IM_movies_review['runtime_minutes'].plot(kind = 'bar')
# plt.show()

IM_movies_review['runtime_minutes'].value_counts().head(30)
```

```
90.00     4742
80.00     2166
85.00     2057
100.00    1957
95.00     1933
93.00     1547
88.00     1487
92.00     1434
87.00     1381
94.00     1378
86.00     1352
75.00     1297
98.00     1284
91.00     1273
96.00     1266
82.00     1252
89.00     1247
97.00     1226
84.00     1208
105.00    1198
```

```
83.00     1155
110.00    1019
70.00      937
99.00      907
120.00     902
102.00     898
81.00      886
78.00      864
104.00     811
101.00     789
Name: runtime_minutes, dtype: int64
```

```
IM_movies_review['runtime_minutes'].value_counts().head(10).plot(kind
= 'bar')
```

```
<AxesSubplot:>
```



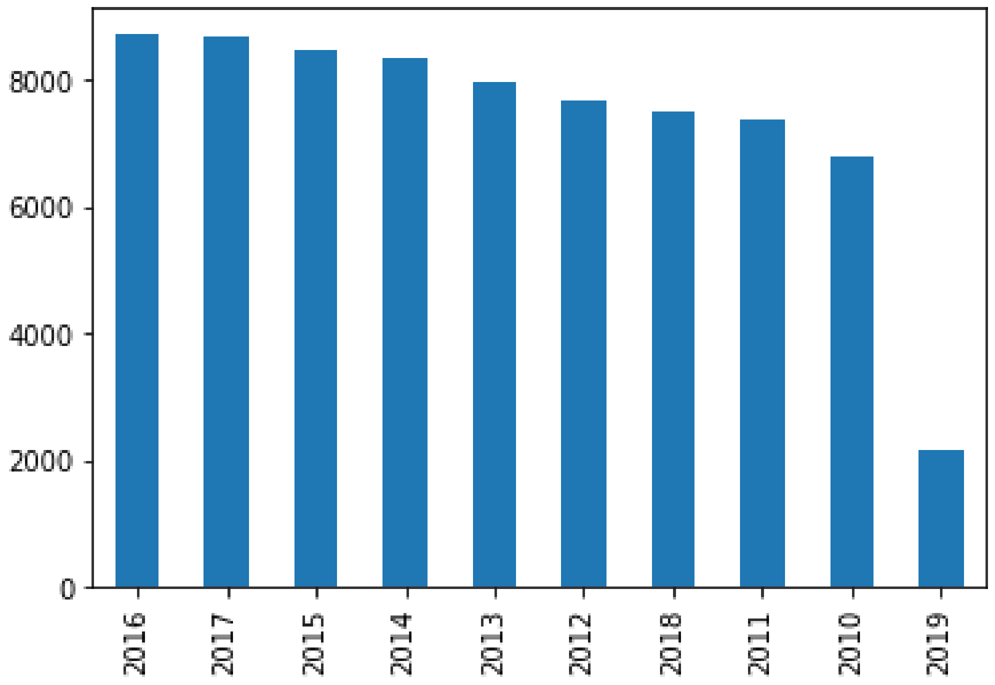
```
IM_movies_review['start_year'].value_counts()
```

```
2016    8721
2017    8713
2015    8494
2014    8371
2013    7990
2012    7680
2018    7526
2011    7389
2010    6792
```

```
2019    2180
Name: start_year, dtype: int64
```

```
IM_movies_review['start_year'].value_counts().plot(kind = 'bar')
```

```
<AxesSubplot:>
```



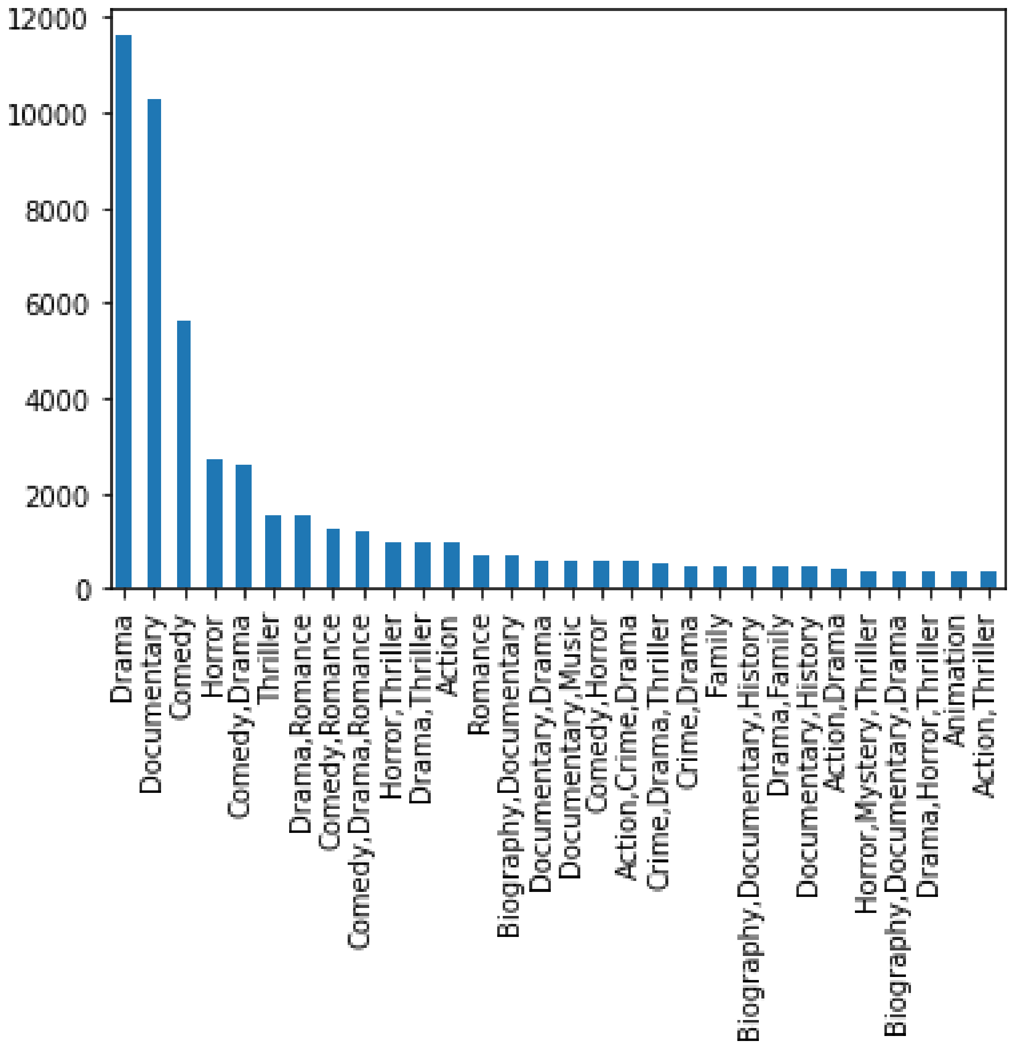
```
#count of every genre
IM_movies_review['genres'].value_counts().head(30)
```

```
Drama                            11612
Documentary                      10313
Comedy                            5613
Horror                            2692
Comedy,Drama                      2617
Thriller                          1555
Drama,Romance                     1510
Comedy,Romance                    1236
Comedy,Drama,Romance              1208
Horror,Thriller                   1004
Drama,Thriller                     990
Action                             979
Romance                            717
Biography,Documentary              694
Documentary,Drama                  582
Documentary,Music                  579
Comedy,Horror                      579
Action,Crime,Drama                 562
Crime,Drama,Thriller               504
Crime,Drama                        494
```

```
Family                               491
Biography,Documentary,History        479
Drama,Family                         478
Documentary,History                  476
Action,Drama                         395
Horror,Mystery,Thriller              378
Biography,Documentary,Drama          377
Drama,Horror,Thriller                356
Animation                            348
Action,Thriller                      345
Name: genres, dtype: int64
```

```
#how movies are watched based on genres
IM_movies_review['genres'].value_counts().head(30).plot(kind = 'bar')
```

```
<AxesSubplot:>
```



```
merged_data = pd.merge(IM_movies_review,tmdb_review,how = 'outer')
merged_data.shape
```

```
(111286, 18)

merged_data

         movie_id                   primary_title  \
0       tt0063540                       Sunghursh
1       tt0066787  One Day Before the Rainy Season
2       tt0069049      The Other Side of the Wind
3       tt0069049      The Other Side of the Wind
4       tt0069204                 Sabse Bada Sukh
...           ...                             ...
111281        NaN                             NaN
111282        NaN                             NaN
111283        NaN                             NaN
111284        NaN                             NaN
111285        NaN                             NaN

                    original_title  start_year  runtime_minutes  \
0                        Sunghursh     2013.00           175.00
1                   Ashad Ka Ek Din     2019.00           114.00
2       The Other Side of the Wind     2018.00           122.00
3       The Other Side of the Wind     2018.00           122.00
4                  Sabse Bada Sukh     2018.00              NaN
...                             ...         ...              ...
111281                        Jaws         NaN              NaN
111282       Laboratory Conditions         NaN              NaN
111283       Laboratory Conditions         NaN              NaN
111284             _EXHIBIT_84xxx_         NaN              NaN
111285             _EXHIBIT_84xxx_         NaN              NaN

                    genres  averagerating  numvotes  Unnamed: 0
genre_ids  \
0       Action,Crime,Drama           7.00     77.00         NaN
NaN
1          Biography,Drama           7.20     43.00         NaN
NaN
2                    Drama           6.90   4517.00    24185.00
35
3                    Drama           6.90   4517.00    24185.00
18
4             Comedy,Drama           6.10     13.00         NaN
NaN
...                    ...            ...       ...         ...
...
111281                 NaN            NaN       NaN    26508.00
16
111282                 NaN            NaN       NaN    26512.00
27
111283                 NaN            NaN       NaN    26512.00
18
```

```
111284                 NaN            NaN       NaN    26513.00
18
111285                 NaN            NaN       NaN    26513.00
53

              id original_language  popularity release_date  \
0            NaN               NaN         NaN          NaT
1            NaN               NaN         NaN          NaT
2      299782.00                en        9.80   2018-11-02
3      299782.00                en        9.80   2018-11-02
4            NaN               NaN         NaN          NaT
...          ...               ...         ...          ...
111281 514492.00                en        0.60   2018-05-29
111282 488143.00                en        0.60   2018-10-13
111283 488143.00                en        0.60   2018-10-13
111284 485975.00                en        0.60   2018-05-01
111285 485975.00                en        0.60   2018-05-01

                             title  vote_average  vote_count
release_month
0                              NaN           NaN         NaN
NaN
1                              NaN           NaN         NaN
NaN
2       The Other Side of the Wind          7.00       64.00
November
3       The Other Side of the Wind          7.00       64.00
November
4                              NaN           NaN         NaN
NaN
...                            ...           ...         ...
...
111281                        Jaws          0.00        1.00
May
111282       Laboratory Conditions          0.00        1.00
October
111283       Laboratory Conditions          0.00        1.00
October
111284             _EXHIBIT_84xxx_          0.00        1.00
May
111285             _EXHIBIT_84xxx_          0.00        1.00
May

[111286 rows x 18 columns]
```

```
merged_data.isnull().sum()
```

```
movie_id             19592
primary_title        19592
original_title           0
```

```
start_year           19592
runtime_minutes      27655
genres               20448
averagerating        19592
numvotes             19592
Unnamed: 0           58357
genre_ids            61033
id                   58357
original_language    58357
popularity           58357
release_date         58357
title                58357
vote_average         58357
vote_count           58357
release_month        58357
dtype: int64
```

```
merged_data.loc[merged_data.duplicated(subset=['title'])].head(4)
```

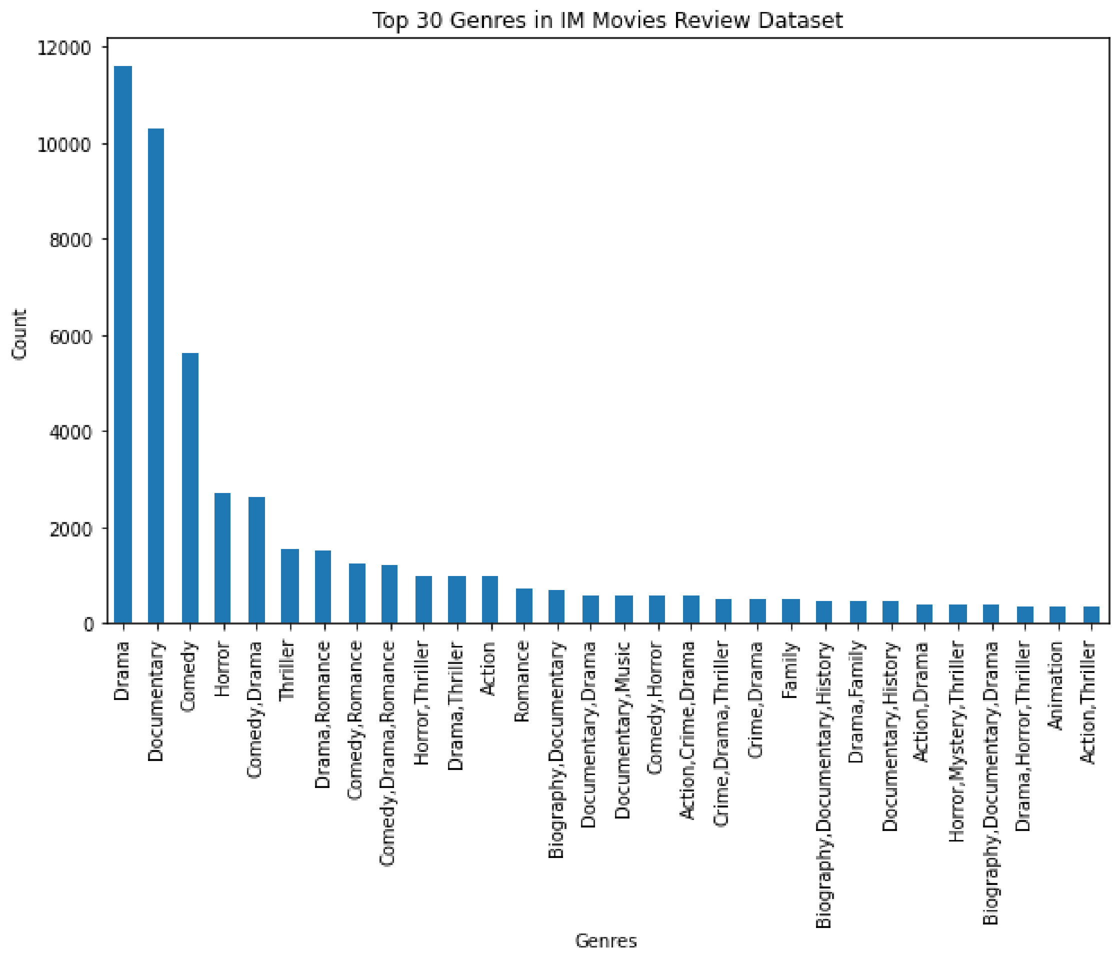
```
    movie_id                    primary_title
original_title  \
1  tt0066787  One Day Before the Rainy Season             Ashad Ka Ek
Din
3  tt0069049       The Other Side of the Wind  The Other Side of the
Wind
4  tt0069204                   Sabse Bada Sukh             Sabse Bada
Sukh
5  tt0100275         The Wandering Soap Opera       La Telenovela
Errante

   start_year  runtime_minutes                genres  averagerating
numvotes  \
1     2019.00           114.00       Biography,Drama           7.20
43.00
3     2018.00           122.00                 Drama           6.90
4517.00
4     2018.00              NaN          Comedy,Drama           6.10
13.00
5     2017.00            80.00  Comedy,Drama,Fantasy           6.50
119.00

   Unnamed: 0 genre_ids        id original_language  popularity
release_date  \
1         NaN       NaN       NaN               NaN         NaN
NaT
3    24185.00        18 299782.00                en        9.80
2018-11-02
4         NaN       NaN       NaN               NaN         NaN
NaT
5         NaN       NaN       NaN               NaN         NaN
```

```
NaT
                              title  vote_average  vote_count release_month
1                               NaN           NaN         NaN           NaN
3   The Other Side of the Wind             7.00       64.00      November
4                               NaN           NaN         NaN           NaN
5                               NaN           NaN         NaN           NaN
```

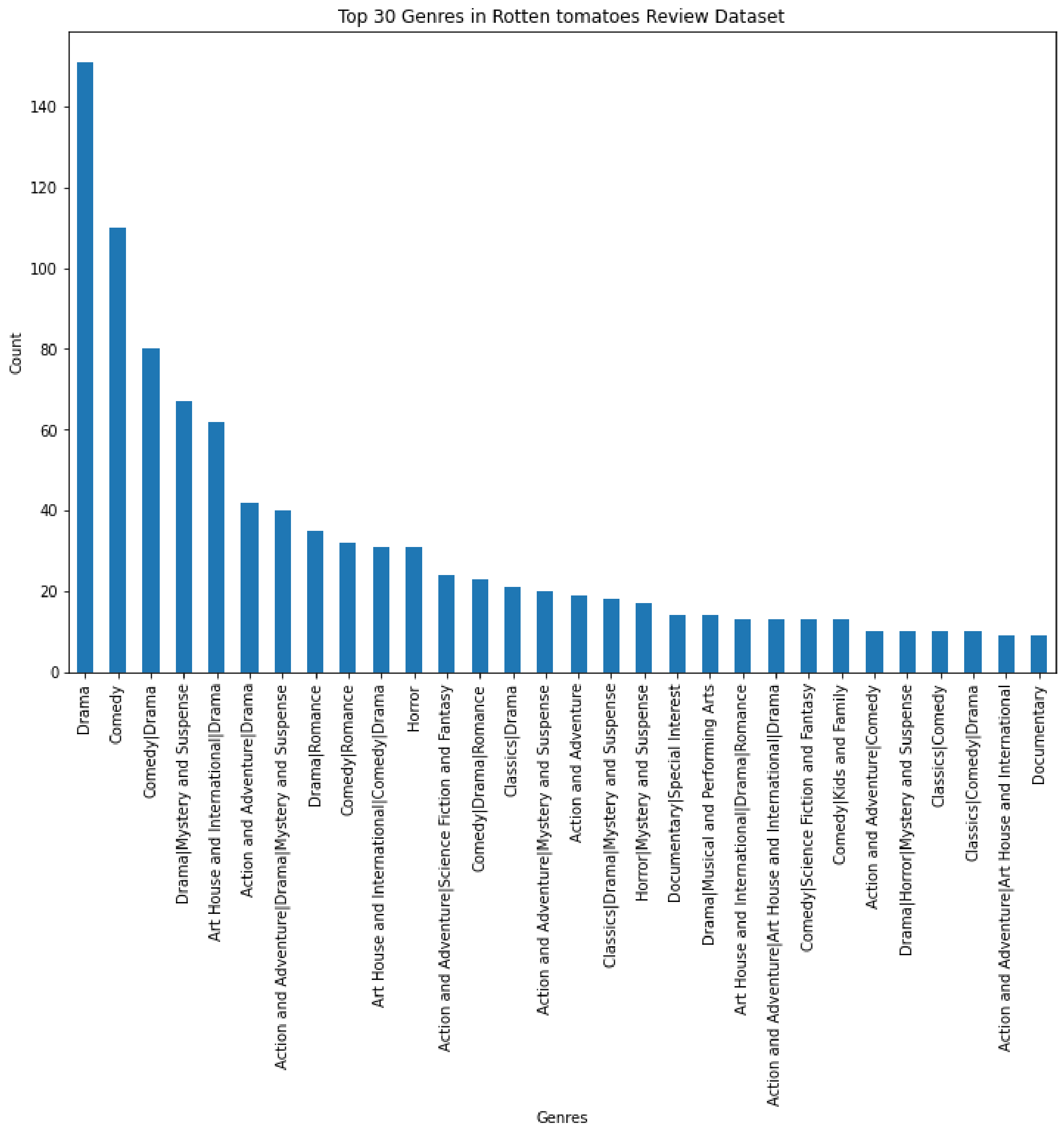
Data plotting for visualization

Genre plotting

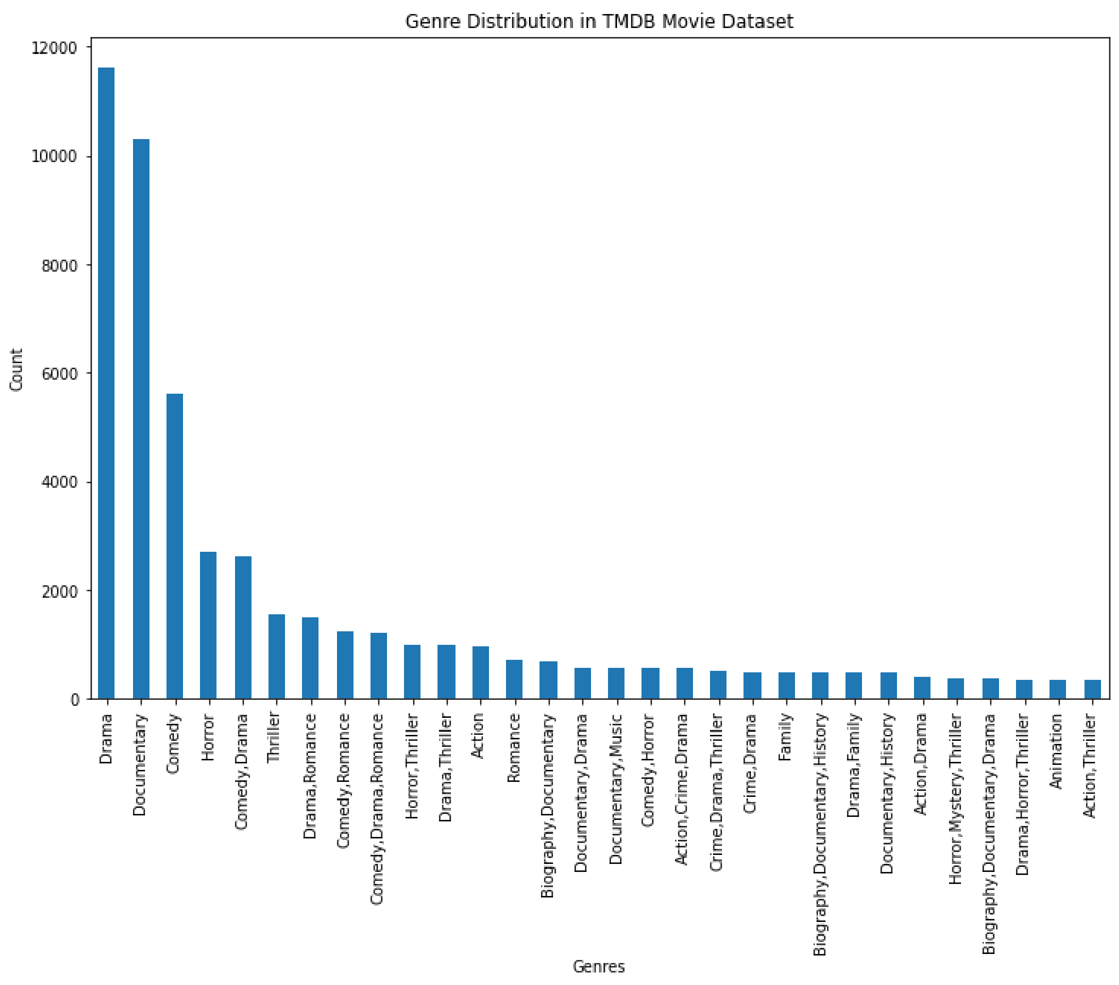
```python
# set figure size
plt.figure(figsize=(10, 6))

# plot bar chart
IM_movies_review['genres'].value_counts().head(30).plot(kind='bar')

# set x and y labels and title
plt.xlabel('Genres')
plt.ylabel('Count')
plt.title('Top 30 Genres in IM Movies Review Dataset')

# show the plot
plt.show()
```



```
# set figure size
plt.figure(figsize=(12, 8))

# plot bar chart
rt_reviews['genre'].value_counts().head(30).plot(kind='bar')

# set x and y labels and title
plt.xlabel('Genres')
plt.ylabel('Count')
plt.title('Top 30 Genres in Rotten tomatoes Review Dataset')

# show the plot
plt.show()
```

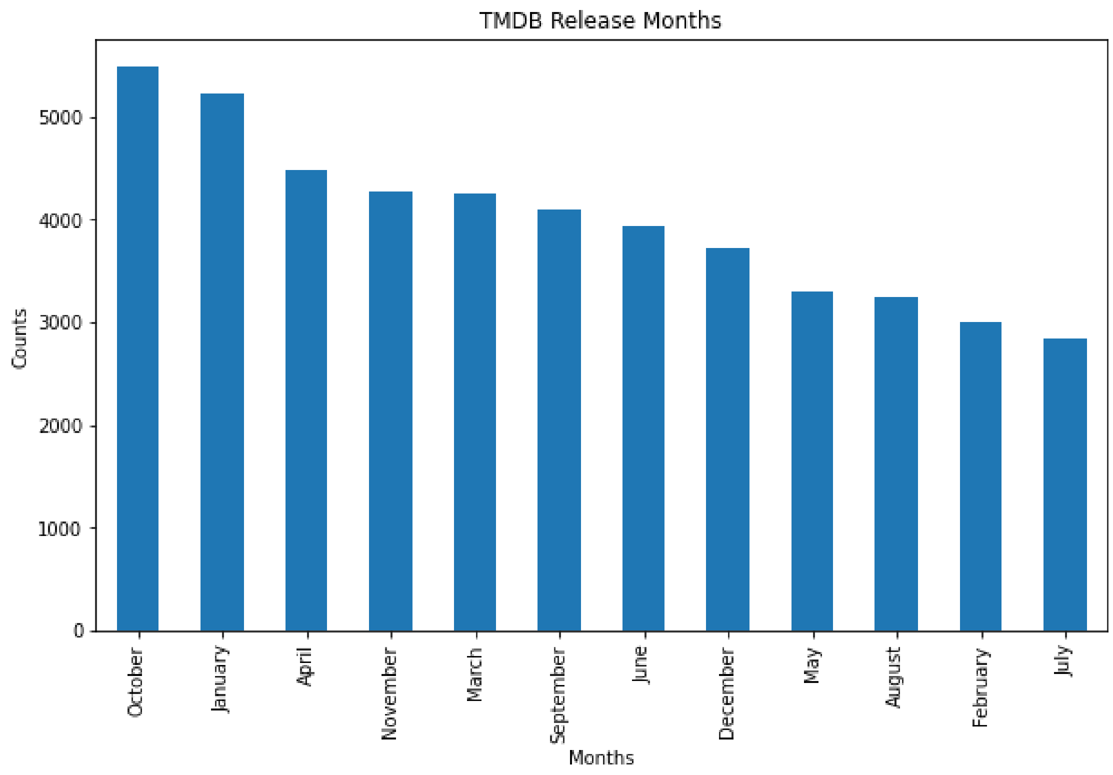


```
# set figure size
plt.figure(figsize=(12, 8))


# plot the bar chart
genre_counts.plot(kind="bar")
plt.xticks(rotation=90)
plt.xlabel("Genres")
plt.ylabel("Count")
plt.title("Genre Distribution in TMDB Movie Dataset")
plt.show()
```



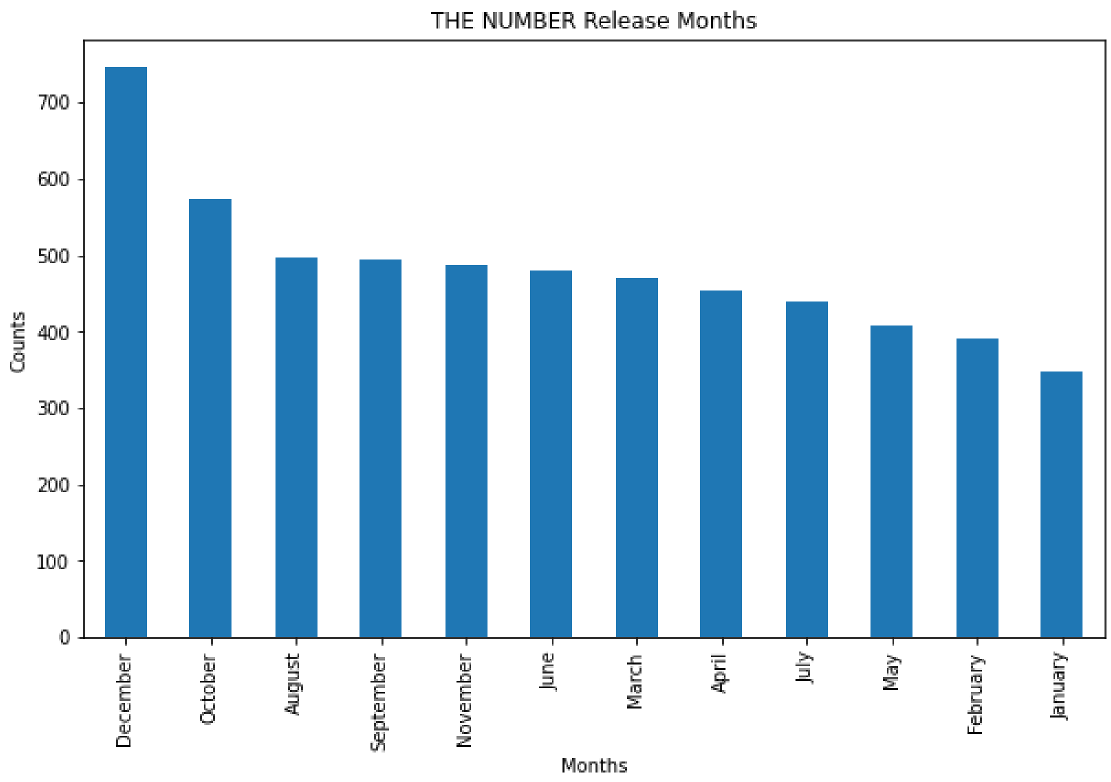
Plotting Release months for better visualization

```
plt.figure(figsize=(10,6))

# ploting the bar chart
tmdb_review['release_month'].value_counts().head(30).plot(kind =
'bar')
plt.xlabel('Months')
plt.ylabel('Counts')
plt.title('TMDB Release Months')
plt.show()
```



In this dataset, movie release months were fairly evenly distributed throughout the year, with the most releases in October and the least in July.

```
plt.figure(figsize=(10,6))
# ploting the bar chart
tn_movie['release_month'].value_counts().plot(kind='bar')
plt.xlabel('Months')
plt.ylabel('Counts')
plt.title('THE NUMBER Release Months')
plt.show()
```

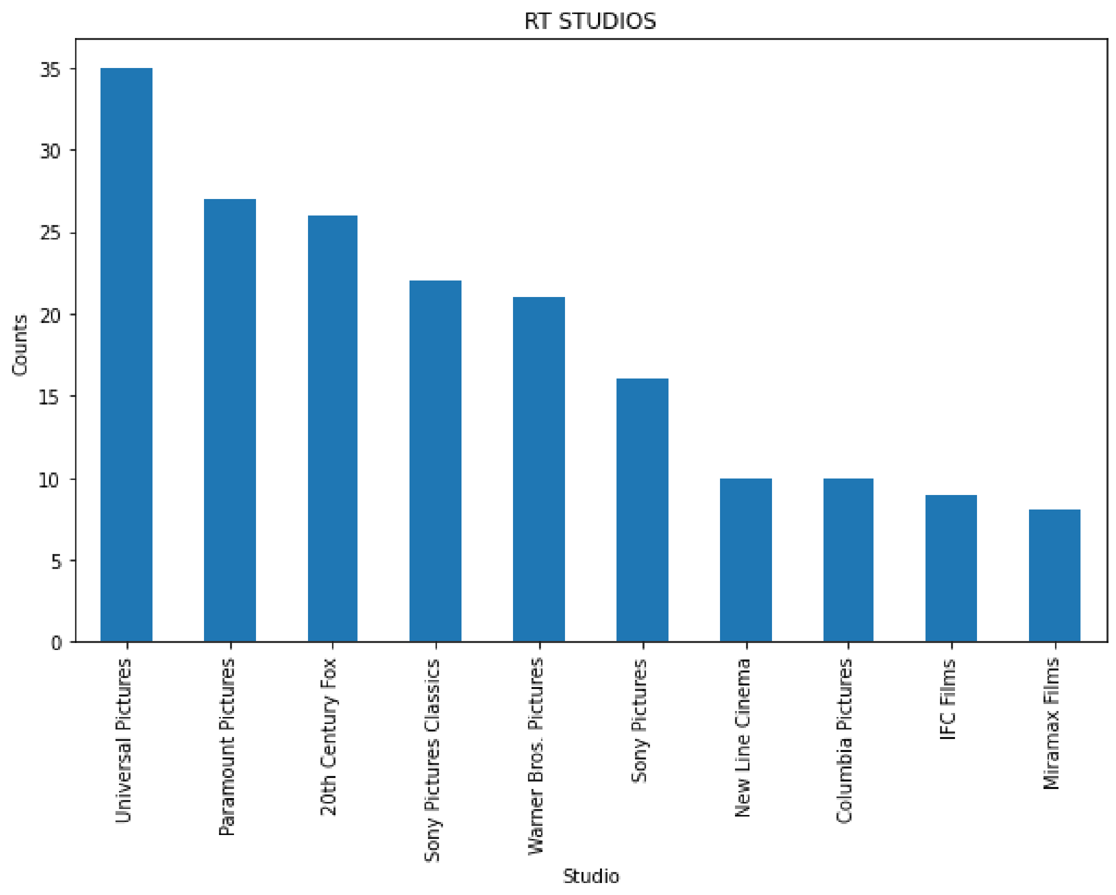


In this dataset, movie release months were fairly evenly distributed throughout the year, with the most releases in December and the least in January.

Data visualization on studio

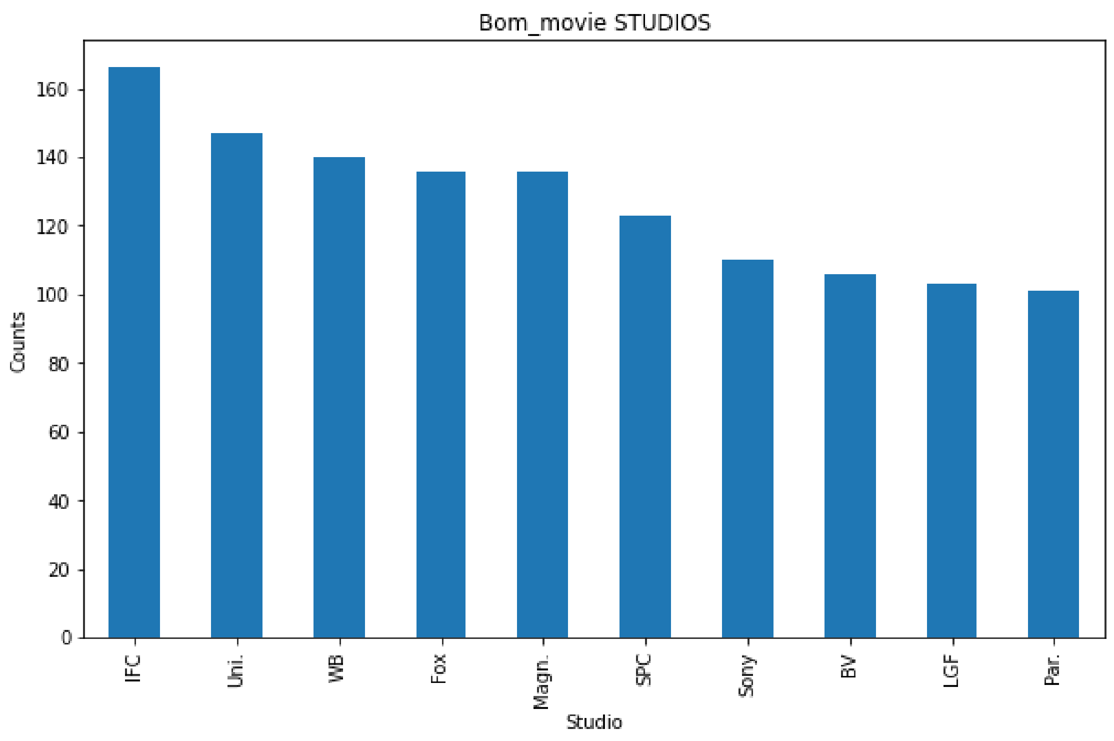
I wanted to see which studio has the most watch.

```
plt.figure(figsize=(10,6))

# ploting the bar chart
rt_reviews['studio'].value_counts().head(10).plot(kind = 'bar')
plt.xlabel('Studio')
plt.ylabel('Counts')
plt.title('RT STUDIOS')
plt.show()
```



In this dataset Universal picture was the most studio that produced the best performing movies

```
plt.figure(figsize=(10,6))

# ploting the bar chart
bom_movie['studio'].value_counts().head(10).plot(kind = 'bar')
plt.xlabel('Studio')
plt.ylabel('Counts')
plt.title('Bom_movie STUDIOS')
plt.show()
```



Recommendations

Release Month Recommendations

From my findings above, the following is my recommendations regarding release month.

1. Release movie between August and December for the the highest sale/watch
2. Release movie on January it has the second biggest wave of sale/watch.

Genre

from the above analysis, all three datasets have one thing in common. Drama performed best than all other genres. Followed by comedy then documentaries. These are the areas to focus more on for the new studio to have a competitive grounds to compete with the existing ones.

Runtime

From all the above analysis in all datasets, its true and evident that 90 minutes are most preferred from the rest. As an analyst i would recommend taht the new upcoming microsoft studio to embark on 90 minutes timed movies for it to thrive and make good profit

Studio Recommendations.

From the above data analysis I would recommend that our major concentration should be on Universal pictures, followed by 20th century fox.

Conclusions

From the above analysis I would highly recomend microsoft to use data to create the new studio with all insight provided which will grately hekp them theri new venture.