```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

df = pd.read_csv('mymoviedb.csv', lineterminator= '\n')

df.head()
```

```
  Release_Date                      Title  \
0   2021-12-15  Spider-Man: No Way Home
1   2022-03-01               The Batman
2   2022-02-25                  No Exit
3   2021-11-24                  Encanto
4   2021-12-22           The King's Man

                                            Overview  Popularity
Vote_Count  \
0  Peter Parker is unmasked and no longer able to...    5083.954
8940
1  In his second year of fighting crime, Batman u...    3827.658
1151
2  Stranded at a rest stop in the mountains durin...    2618.087
122
3  The tale of an extraordinary family, the Madri...    2402.201
5076
4  As a collection of history's worst tyrants and...    1895.511
1793

   Vote_Average Original_Language                                Genre
\
0           8.3                en  Action, Adventure, Science Fiction

1           8.1                en           Crime, Mystery, Thriller

2           6.3                en                            Thriller

3           7.7                en  Animation, Comedy, Family, Fantasy

4           7.0                en    Action, Adventure, Thriller, War


                                        Poster_Url
0  https://image.tmdb.org/t/p/original/1g0dhYtq4i...
1  https://image.tmdb.org/t/p/original/74xTEgt7R3...
2  https://image.tmdb.org/t/p/original/vDHsLnOWKl...
3  https://image.tmdb.org/t/p/original/4j0PNHkMr5...
4  https://image.tmdb.org/t/p/original/aq4Pwv5Xeu...
```

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9827 entries, 0 to 9826
Data columns (total 9 columns):
 #   Column             Non-Null Count  Dtype  
---  ------             --------------  -----  
 0   Release_Date       9827 non-null   object 
 1   Title              9827 non-null   object 
 2   Overview           9827 non-null   object 
 3   Popularity         9827 non-null   float64
 4   Vote_Count         9827 non-null   int64  
 5   Vote_Average       9827 non-null   float64
 6   Original_Language  9827 non-null   object 
 7   Genre              9827 non-null   object 
 8   Poster_Url         9827 non-null   object 
dtypes: float64(2), int64(1), object(6)
memory usage: 691.1+ KB
```

```
df['Genre'].head()
```

```
0    Action, Adventure, Science Fiction
1               Crime, Mystery, Thriller
2                              Thriller
3    Animation, Comedy, Family, Fantasy
4      Action, Adventure, Thriller, War
Name: Genre, dtype: object
```

```
df.duplicated().sum()
```

```
np.int64(0)
```

```
df.describe()
```

```
        Popularity    Vote_Count  Vote_Average
count  9827.000000   9827.000000   9827.000000
mean     40.326088   1392.805536      6.439534
std     108.873998   2611.206907      1.129759
min      13.354000      0.000000      0.000000
25%      16.128500    146.000000      5.900000
50%      21.199000    444.000000      6.500000
75%      35.191500   1376.000000      7.100000
max    5083.954000  31077.000000     10.000000
```

```
# Convert Release_Date to datetime format
df['Release_Date'] = pd.to_datetime(df['Release_Date'])

# Extract the year from the Release_Date column
df['year'] = df['Release_Date'].dt.year

# Droping the columns

cols = ['Overview', 'Original_Language', 'Poster_Url']
```

```
df.drop(cols, axis=1, inplace=True)

df.head()
```

```
  Release_Date                    Title  Popularity  Vote_Count
Vote_Average  \
0   2021-12-15  Spider-Man: No Way Home    5083.954        8940
8.3
1   2022-03-01               The Batman    3827.658        1151
8.1
2   2022-02-25                  No Exit    2618.087         122
6.3
3   2021-11-24                  Encanto    2402.201        5076
7.7
4   2021-12-22           The King's Man    1895.511        1793
7.0

                                  Genre  year
0  Action, Adventure, Science Fiction  2021
1           Crime, Mystery, Thriller  2022
2                           Thriller  2022
3  Animation, Comedy, Family, Fantasy  2021
4   Action, Adventure, Thriller, War  2021
```

Categorizing 'Vote_Average' Column

We would cut the 'Vote_Average' values and make 4 categories: 'popular' 'average' 'below_avg' 'not_popular' to describe it more using catigorize_col() function provided above.

```
def categorize_col(df, col_name):
    # Define bins and their corresponding category labels
    bins = [0, 4, 6, 8, 10]  # Thresholds for the categories
    labels = ['not_popular', 'below_avg', 'average', 'popular']  #
Category labels

    # Use panda's cut method to categorize values in the column
    df[col_name] = pd.cut(df[col_name], bins=bins, labels=labels,
include_lowest=True)
    return df

df = categorize_col(df, 'Vote_Average')
df
```

```
     Release_Date                                Title  Popularity  \
0      2021-12-15  Spider-Man: No Way Home    5083.954
1      2022-03-01               The Batman    3827.658
2      2022-02-25                  No Exit    2618.087
3      2021-11-24                  Encanto    2402.201
4      2021-12-22           The King's Man    1895.511
```

```
...           ...                                    ...          ...
9822   1973-10-15                                Badlands      13.357
9823   2020-10-01                         Violent Delights      13.356
9824   2016-05-06                             The Offering      13.355
9825   2021-03-31  The United States vs. Billie Holiday      13.354
9826   1984-09-23                                 Threads      13.354

      Vote_Count Vote_Average                                  Genre
year
0           8940      popular  Action, Adventure, Science Fiction
2021
1           1151      popular              Crime, Mystery, Thriller
2022
2            122      average                             Thriller
2022
3           5076      average  Animation, Comedy, Family, Fantasy
2021
4           1793      average    Action, Adventure, Thriller, War
2021
...          ...          ...                                 ...   ..
.
9822         896      average                        Drama, Crime
1973
9823           8  not_popular                              Horror
2020
9824          94    below_avg           Mystery, Thriller, Horror
2016
9825         152      average                Music, Drama, History
2021
9826         186      average         War, Drama, Science Fiction
1984

[9827 rows x 7 columns]
```

```
df['Vote_Average'].value_counts()
```

```
Vote_Average
average        6603
below_avg      2705
popular         314
not_popular     205
Name: count, dtype: int64
```

```
df.isna().sum() # checking for the null values
```

```
Release_Date    0
Title           0
Popularity      0
Vote_Count      0
Vote_Average    0
```

```
Genre           0
year            0
dtype: int64
```

we'd split genres into a list and then explode our dataframe to have only one genre per row for each movie

```
df['Genre'] = df['Genre'].str.split(', ')

df = df.explode('Genre').reset_index(drop = True)

# casting column into category

df['Genre'] = df['Genre'].astype('category')
```

Data Visualization

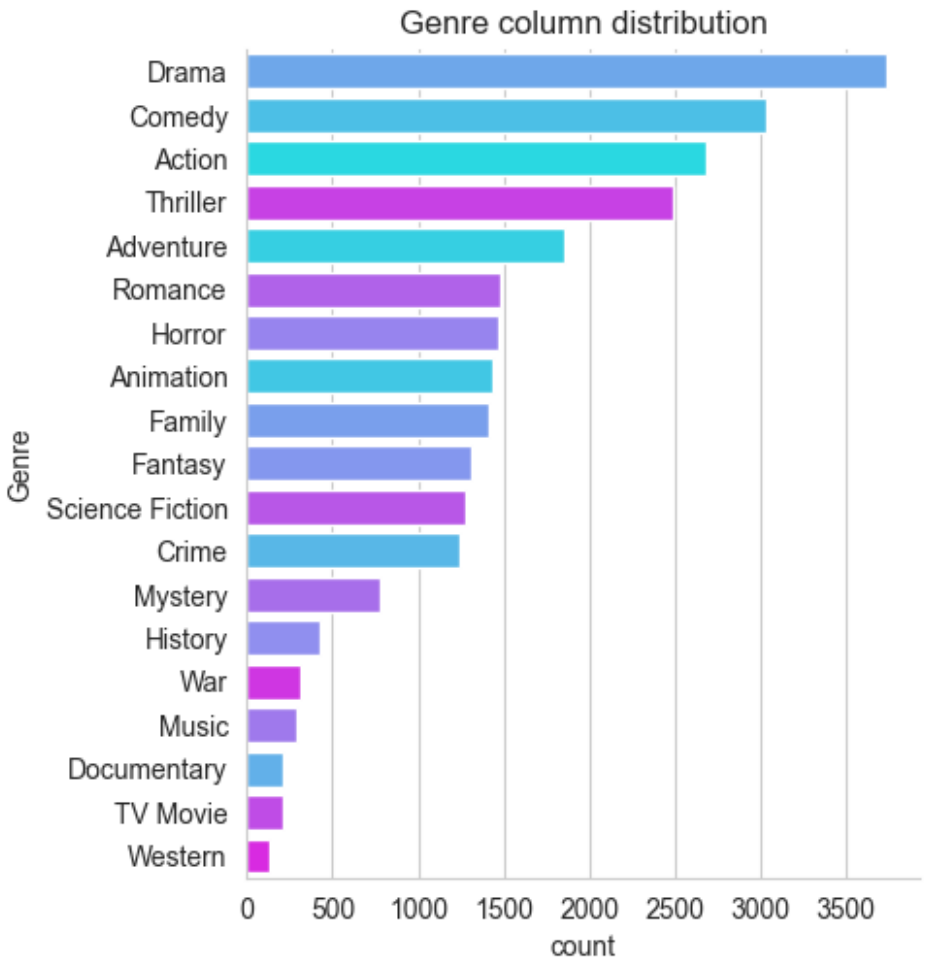
```
sns.set_style('whitegrid')
```

What is the most frequent genre of movies released on Netflix ?

```
df['Genre'].describe()
```

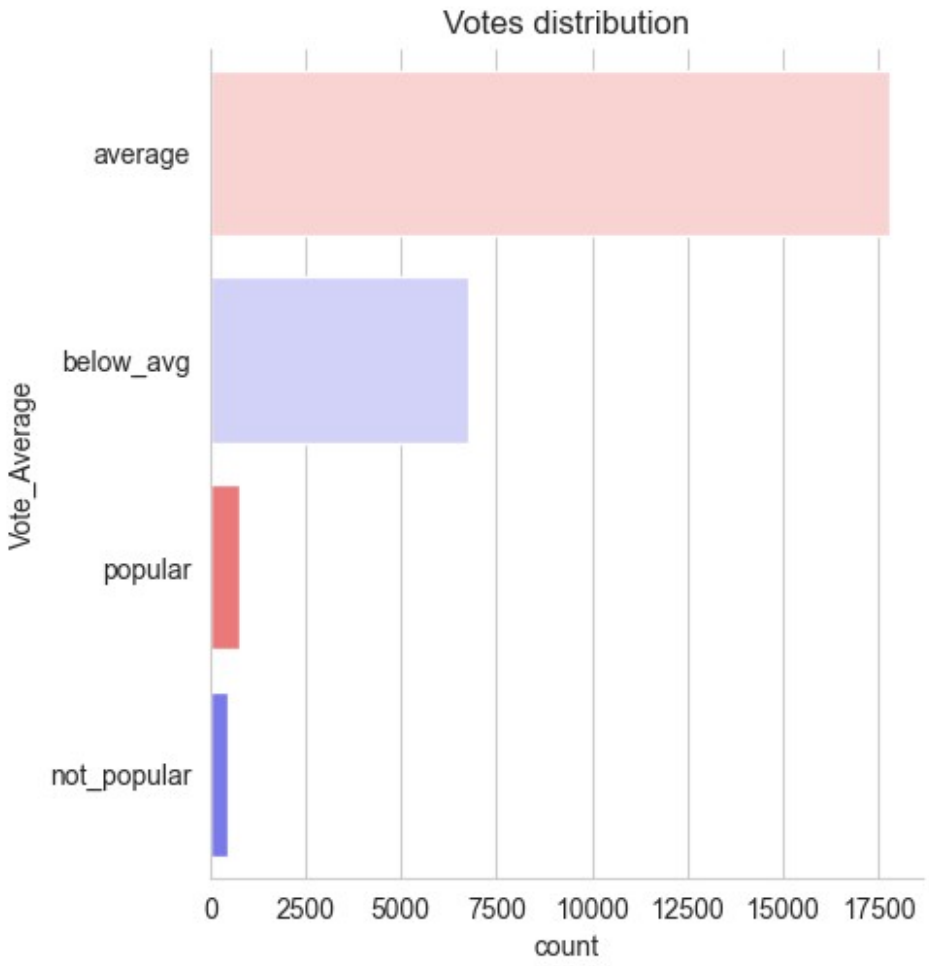
```
count     25793
unique       19
top       Drama
freq       3744
Name: Genre, dtype: object
```

```
sns.catplot(y= 'Genre', data = df, kind = 'count', hue='Genre',
            order = df["Genre"].value_counts().index,
            palette= 'cool'
                )
plt.title("Genre column distribution")
plt.show()
```



Which has highest votes in vote avg column ?

```
sns.catplot(y= 'Vote_Average', data = df, kind = 'count',
hue='Vote_Average',
            order = df["Vote_Average"].value_counts().index,
            palette= 'bwr'
                )
plt.title("Votes distribution")
plt.show()
```



What movie got the highest popularity ? what's its genre ?

```
df[df['Popularity'] == df['Popularity'].max()]
```

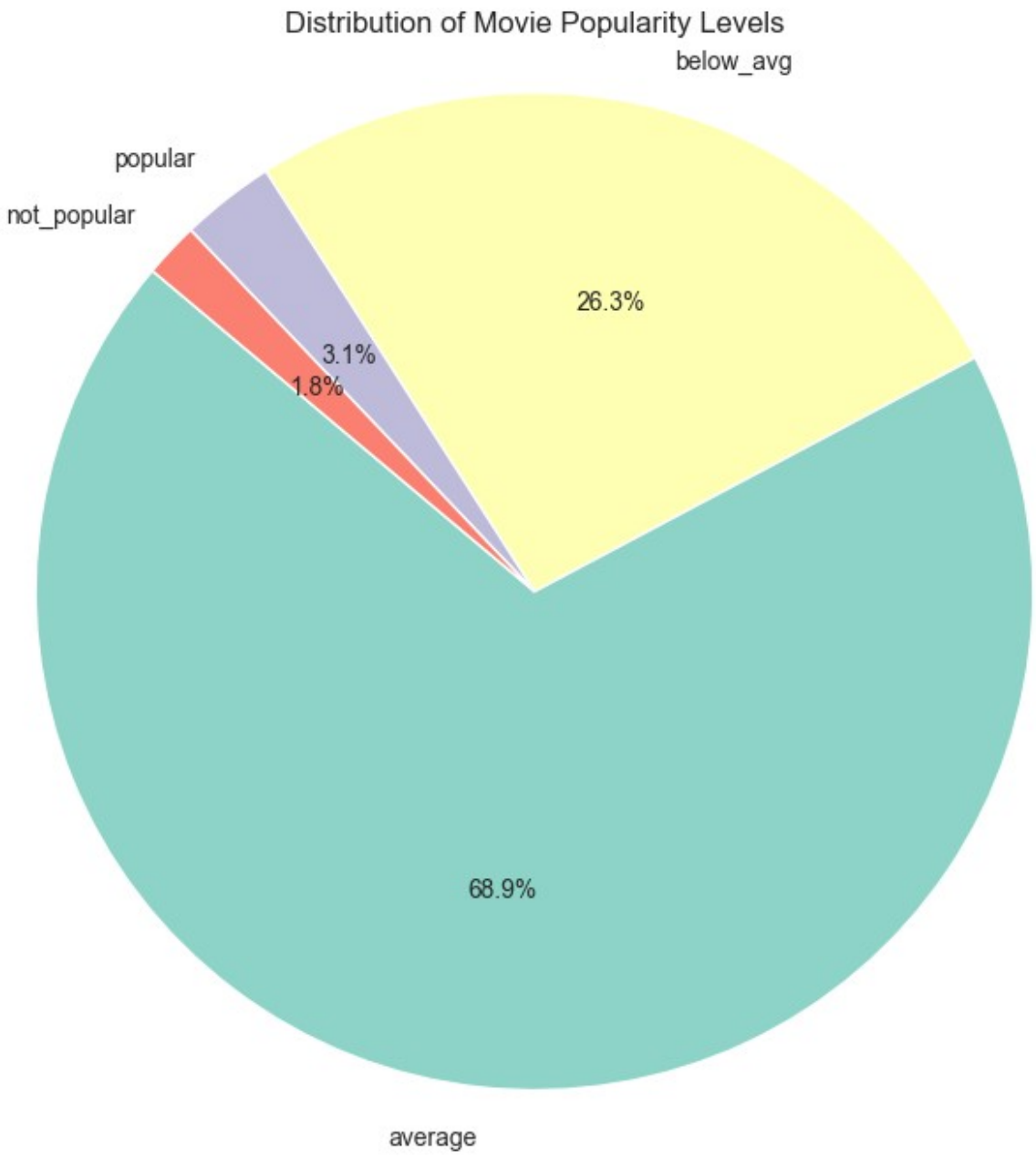
```
  Release_Date                    Title  Popularity  Vote_Count
Vote_Average  \
0   2021-12-15  Spider-Man: No Way Home    5083.954        8940
popular
1   2021-12-15  Spider-Man: No Way Home    5083.954        8940
popular
2   2021-12-15  Spider-Man: No Way Home    5083.954        8940
popular

             Genre  year
0           Action  2021
1        Adventure  2021
2  Science Fiction  2021
```

What movie got the lowest popularity ? What's its genre ?

```
df[df['Popularity'] == df['Popularity'].min()]
```

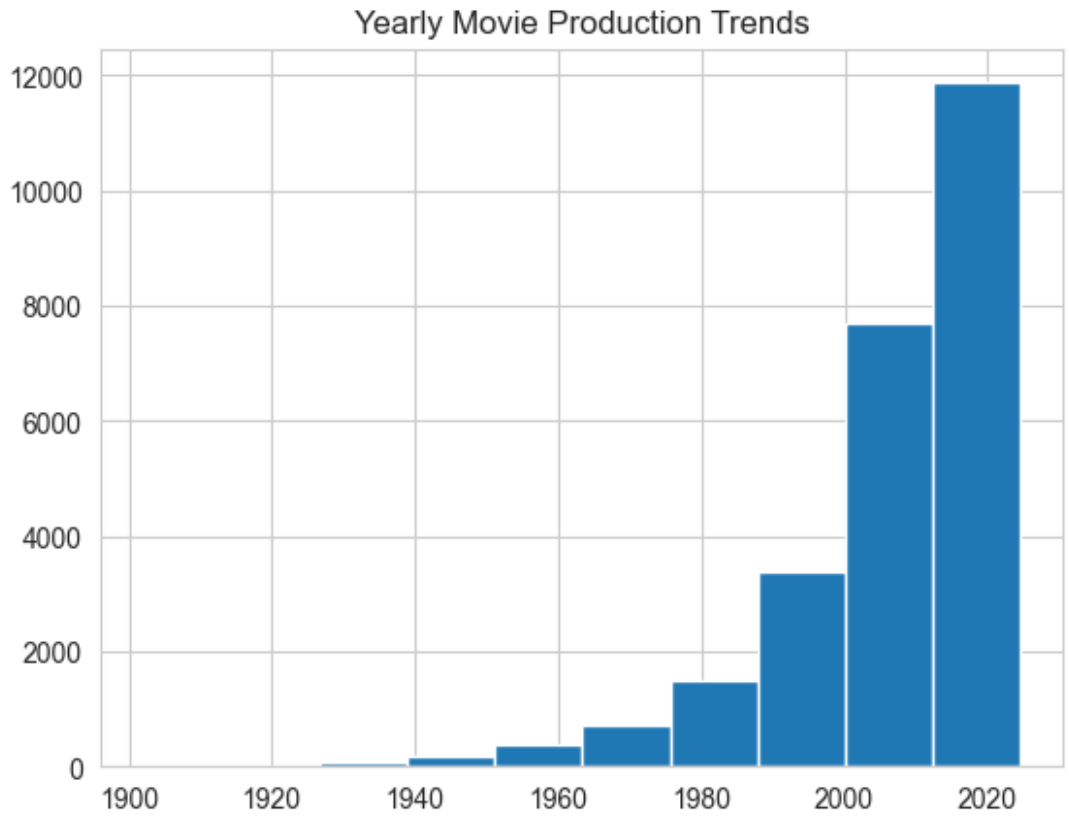
```
      Release_Date                                  Title
Popularity  \
25787   2021-03-31  The United States vs. Billie Holiday      13.354

25788   2021-03-31  The United States vs. Billie Holiday      13.354

25789   2021-03-31  The United States vs. Billie Holiday      13.354

25790   1984-09-23                               Threads      13.354

25791   1984-09-23                               Threads      13.354

25792   1984-09-23                               Threads      13.354


       Vote_Count Vote_Average            Genre  year
25787         152      average            Music  2021
25788         152      average            Drama  2021
25789         152      average          History  2021
25790         186      average              War  1984
25791         186      average            Drama  1984
25792         186      average  Science Fiction  1984
```

```
# Vote_Average category counts
vote_counts = df['Vote_Average'].value_counts()

# Pie chart
plt.figure(figsize=(8, 8))
plt.pie(vote_counts, labels=vote_counts.index, autopct='%1.1f%%',
startangle=140, colors=plt.cm.Set3.colors)
plt.title('Distribution of Movie Popularity Levels')
plt.axis('equal')
plt.show()
```

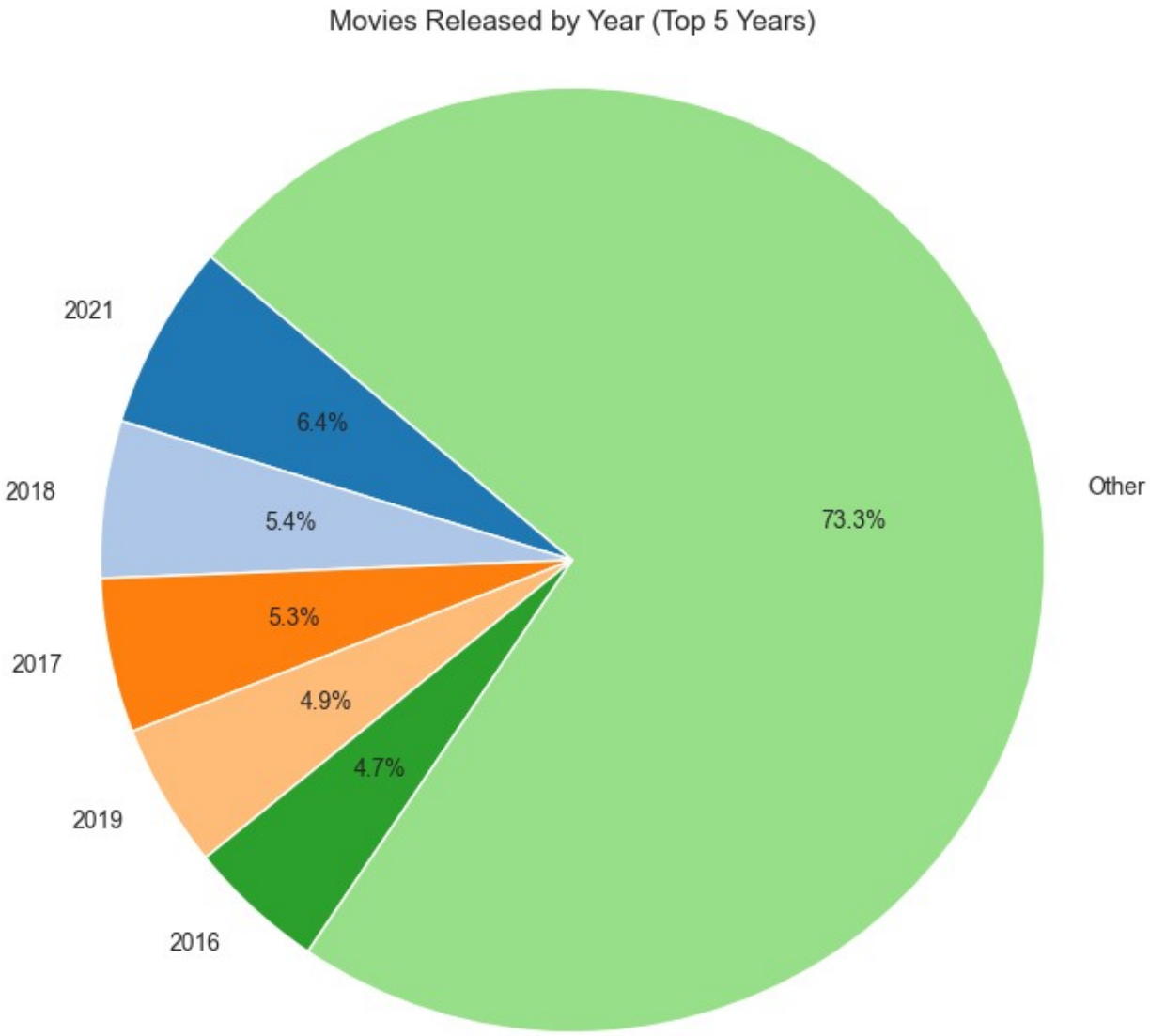


Which year has the most filmmed movies ?

```
df["Release_Date"].hist()
plt.title("Yearly Movie Production Trends")
plt.show()
```




```
# Yearly movie count
year_counts = df['year'].value_counts().head(5)  # Top 5 years
other_years = df['year'].value_counts()[5:].sum()
year_counts['Other'] = other_years

# Pie chart
plt.figure(figsize=(8, 8))
plt.pie(year_counts, labels=year_counts.index, autopct='%1.1f%%',
startangle=140, colors=plt.cm.tab20.colors)
plt.title('Movies Released by Year (Top 5 Years)')
plt.axis('equal')
plt.show()
```



Conclusion

Drama is the most frequent genre in the dataset, accounting for over 14% of all entries across 19 different genres.

Approximately 25.5% of the movies in the dataset (6,520 entries) are classified as popular based on audience votes. Among these, Drama once again leads, representing more than 18.5% of the popular films.

"Spider-Man: No Way Home" holds the highest popularity score in the dataset. It belongs to the genres of Action, Adventure, and Science Fiction.

The film with the lowest popularity score is "The United States, Thread", which spans multiple genres including Music, Drama, War, Science Fiction, and History.

The year 2020 saw the highest number of films produced, making it the peak year for filmmaking activity in the dataset