In [2]:

```
# upload some important libraries for data cleaning, analysis, and visualization
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
```

In [3]:

```
# upload csv Netflix data  for analysis
df = pd.read_csv('mymoviedb.csv')
df.head()
```

Out[3]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Original_Language	Genre	
0	12/15/2021	Spider-Man: No Way Home	5083.954	8940	8.3	en	Action, Adventure, Science Fiction	https
1	3/1/2022	The Batman	3827.658	1151	8.1	en	Crime, Mystery, Thriller	https:/
2	2/25/2022	No Exit	2618.087	122	6.3	en	Thriller	https://i
3	11/24/2021	Encanto	2402.201	5076	7.7	en	Animation, Comedy, Family, Fantasy	https:/
4	12/22/2021	The King's Man	1895.511	1793	7.0	en	Action, Adventure, Thriller, War	https://

In [4]:

```
# know about the data which type of data and their column data types
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 9826 entries, 0 to 9825
Data columns (total 8 columns):
 #   Column             Non-Null Count  Dtype  
---  ------             --------------  -----  
 0   Release_Date       9826 non-null   object 
 1   Title              9826 non-null   object 
 2   Popularity         9826 non-null   float64
 3   Vote_Count         9826 non-null   int64  
 4   Vote_Average       9826 non-null   float64
 5   Original_Language  9826 non-null   object 
 6   Genre              9826 non-null   object 
 7   Poster_Url         9826 non-null   object 
dtypes: float64(2), int64(1), object(5)
memory usage: 614.3+ KB
```

- In this data a little mistake Release_Date data types is object so it need to convert into date datatypes and retrive year from this for further analysis

In [5]:

```
df['Release_Date'] = pd.to_datetime(df['Release_Date'])
print(df['Release_Date'].dtypes)
```

```
datetime64[ns]
```

In [6]:

```
df['Release_Date'] = df['Release_Date'].dt.year
df['Release_Date'].dtypes
```

Out[6]:

```
dtype('int32')
```

◆ Now drop unwanted column which are not important for our analusis

In [7]:

```
# create a list of unwanted columns and drop them from data
cols = ['Original_Language','Poster_Url']
df.drop(cols, axis=1, inplace=True, errors='ignore')
df.head()
```

Out[7]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	8.3	Action, Adventure, Science Fiction
1	2022	The Batman	3827.658	1151	8.1	Crime, Mystery, Thriller
2	2022	No Exit	2618.087	122	6.3	Thriller
3	2021	Encanto	2402.201	5076	7.7	Animation, Comedy, Family, Fantasy
4	2021	The King's Man	1895.511	1793	7.0	Action, Adventure, Thriller, War

◆ From analysis we want to know which movie is more popular by their Rating, and Rating in data is a number format which is not better understood so now convert them into four string word like popular,Average,below average, not popular

In [8]:

```
# Build a function to convert numeric data into  stings
def catigorical_col(df, col, labels):
    edges = [df[col].describe()['min'],
            df[col].describe()['25%'],
            df[col].describe()['50%'],
            df[col].describe()['75%'],
            df[col].describe()['max']]
    df[col] = pd.cut(df[col], edges,labels=labels, duplicates='drop')
    return df
```

In [9]:

```
# create labels list for interchange
labels = ['Not_Popular','Below_avg','Average','Popular']
catigorical_col(df, 'Vote_Average', labels)
df.head()
```

Out[9]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Action, Adventure, Science Fiction
1	2022	The Batman	3827.658	1151	Popular	Crime, Mystery, Thriller
2	2022	No Exit	2618.087	122	Below_avg	Thriller
3	2021	Encanto	2402.201	5076	Popular	Animation, Comedy, Family, Fantasy
4	2021	The King's Man	1895.511	1793	Average	Action, Adventure, Thriller, War

In [10]:

```
df.nunique()
```

Out[10]:

```
Release_Date      102
Title            9512
Popularity       8159
Vote_Count       3266
Vote_Average        4
Genre            2337
dtype: int64
```

In [11]:

```
df.describe()
```

Out[11]:

	Release_Date	Popularity	Vote_Count
count	9826.000000	9826.000000	9826.000000
mean	2006.202931	40.323951	1392.943721
std	15.686202	108.879332	2611.303856
min	1902.000000	13.354000	0.000000
25%	2000.000000	16.128250	146.000000
50%	2011.000000	21.195000	444.000000
75%	2017.000000	35.179250	1376.000000
max	2024.000000	5083.954000	31077.000000

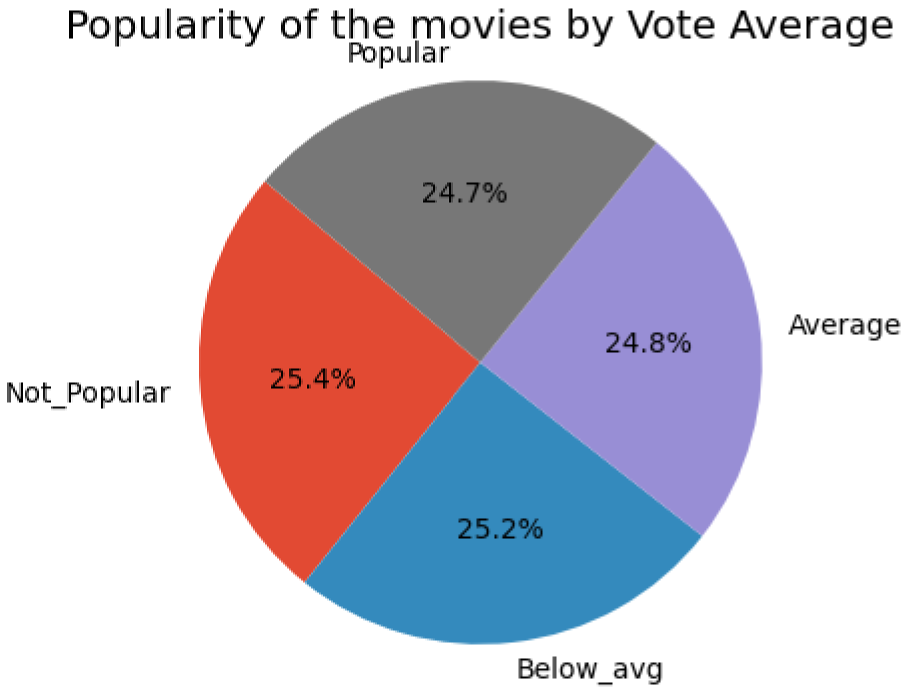
In [12]:

```
# Counts which movie is most popular in the last few years
Rating = df['Vote_Average'].value_counts()
print(Rating)
```

```
Vote_Average
Not_Popular    2467
Popular        2450
Average        2411
Below_avg      2398
Name: count, dtype: int64
```

In [13]:

```
plt.style.use('ggplot')
plt.figure(figsize=(4,4))
plt.pie(Rating, labels=labels, autopct='%1.1f%%', startangle=140)
plt.title('Popularity of the movies by Vote Average')
plt.axis('equal')
plt.show()
```



◆ Genre is important column but in this mutliple catergories is situated due to we cannot find which type of movie popular or not_popular

In [14]:

```
df['Genre'] = df['Genre'].str.split(', ')
df = df.explode('Genre').reset_index(drop=True)
df.head()
```

Out[14]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Action
1	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Adventure
2	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Science Fiction
3	2022	The Batman	3827.658	1151	Popular	Crime
4	2022	The Batman	3827.658	1151	Popular	Mystery

In [15]:

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

Out[15]:

```
CategoricalDtype(categories=['Action', 'Adventure', 'Animation', 'Comedy', 'Crime',
                  'Documentary', 'Drama', 'Family', 'Fantasy', 'History',
                  'Horror', 'Music', 'Mystery', 'Romance', 'Science Fiction',
                  'TV Movie', 'Thriller', 'War', 'Western'],
, ordered=False, categories_dtype=object)
```

In [16]:

```
# Drop null values from the data and check them
df.dropna(inplace=True)
df.isna().sum()
```

Out[16]:

```
Release_Date    0
Title           0
Popularity      0
Vote_Count      0
Vote_Average    0
Genre           0
dtype: int64
```

In [17]:

```
df.nunique()
```

Out[17]:

```
Release_Date     100
Title           9414
Popularity      8087
Vote_Count      3265
Vote_Average       4
Genre             19
dtype: int64
```

In [18]:

```
df.head()
```

Out[18]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Action
1	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Adventure
2	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Science Fiction
3	2022	The Batman	3827.658	1151	Popular	Crime
4	2022	The Batman	3827.658	1151	Popular	Mystery

Visualization and Analysis of the data

In [29]:

```
# Set the Style of the visualization or graph
sns.set_style('whitegrid')
sns.set_palette('dark')
sns.set_context('paper')
```

What is most frequent genre of movie release on the netflix

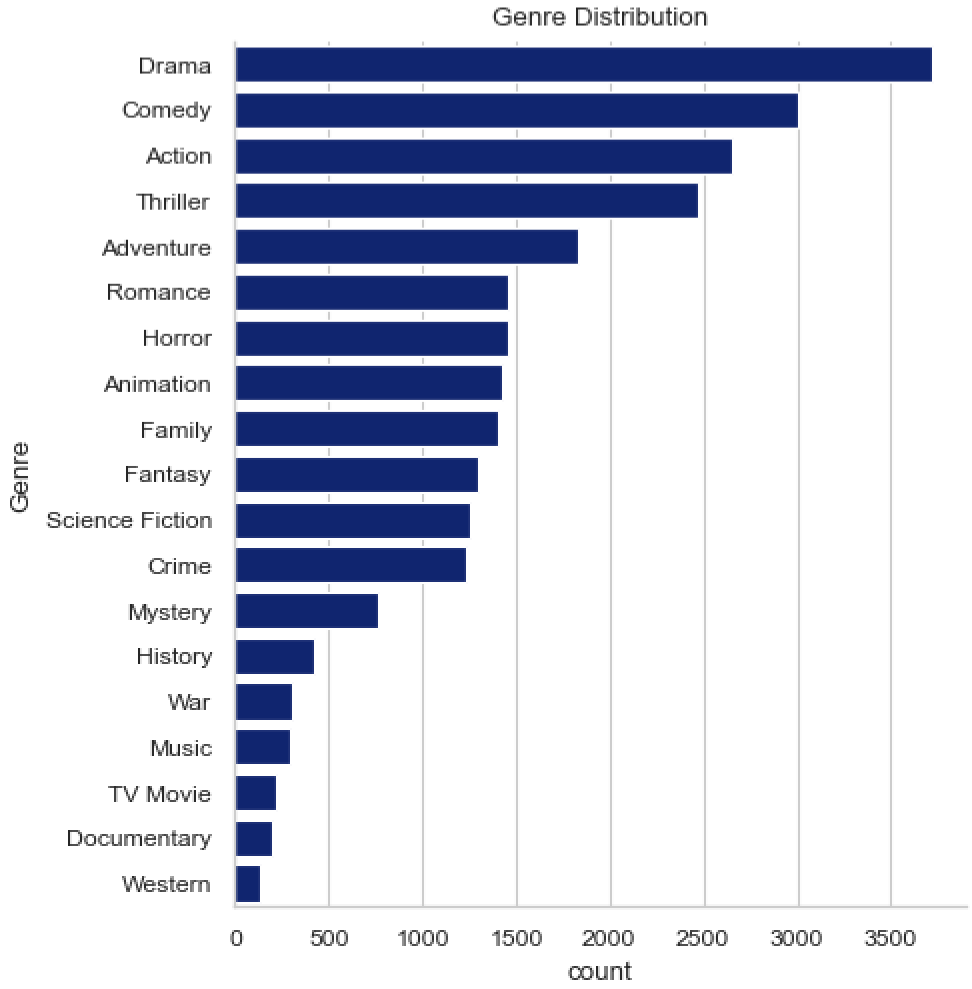
```
In [21]:
```

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

```
Out[21]:
count      25551
unique        19
top        Drama
freq        3715
Name: Genre, dtype: object
```

```
In [34]:
```

```python
sns.catplot(data=df, kind='count', y = 'Genre', order = df['Genre'].value_counts().index
plt.title("Genre Distribution")
plt.show()
```

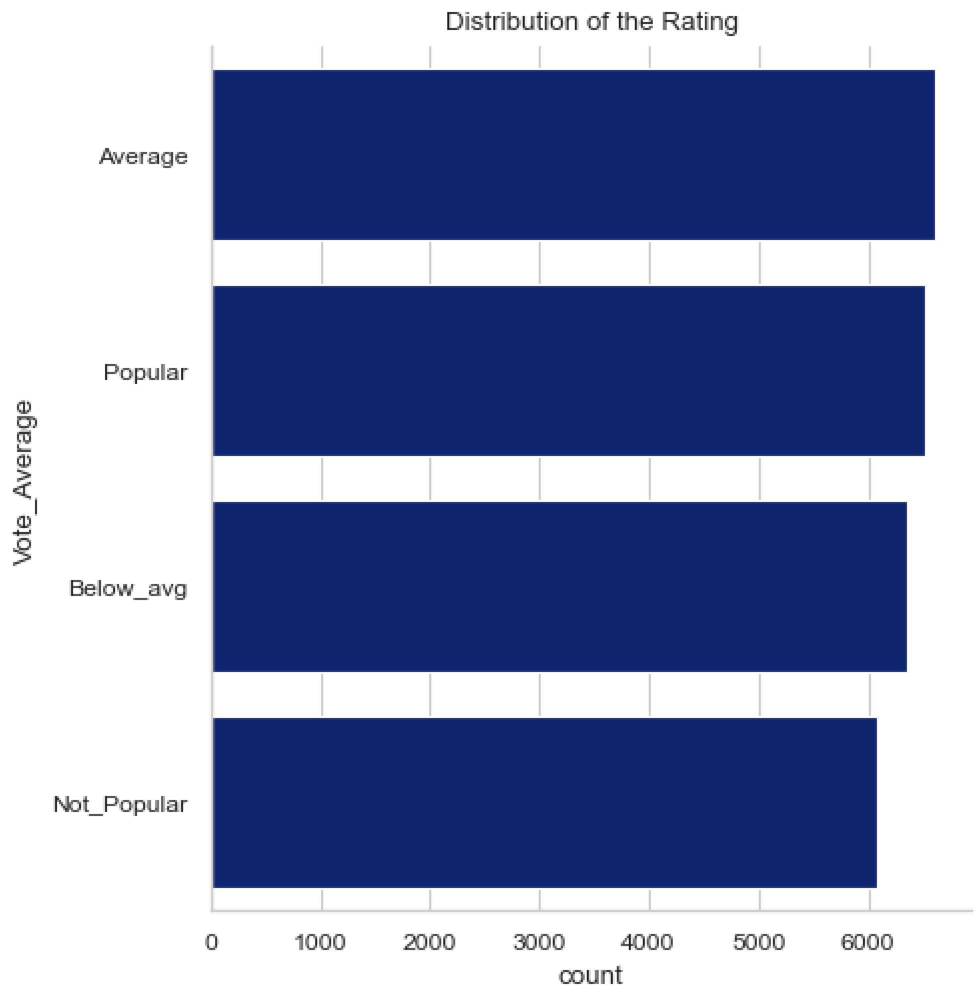


- 📊 After analyzing the genre distribution of movies on the Netflix platform, we found that:
- ✅ Drama is the most frequently available genre, dominating the content library. This indicates a strong viewer preference or content strategy focused on emotionally engaging, story-driven content.
- ⚠️ On the other hand, Western movies are the least represented genre on Netflix, suggesting either low demand or limited production in this category.
- 📈 This insight can help content teams, marketers, and data analysts understand platform focus and identify potential genre gaps.

Which has highest vote in the vote average column?

In [39]:

```
sns.catplot(y = 'Vote_Average', kind='count', data = df , order= df['Vote_Average'].valu
plt.title('Distribution of the Rating')
plt.show()
```



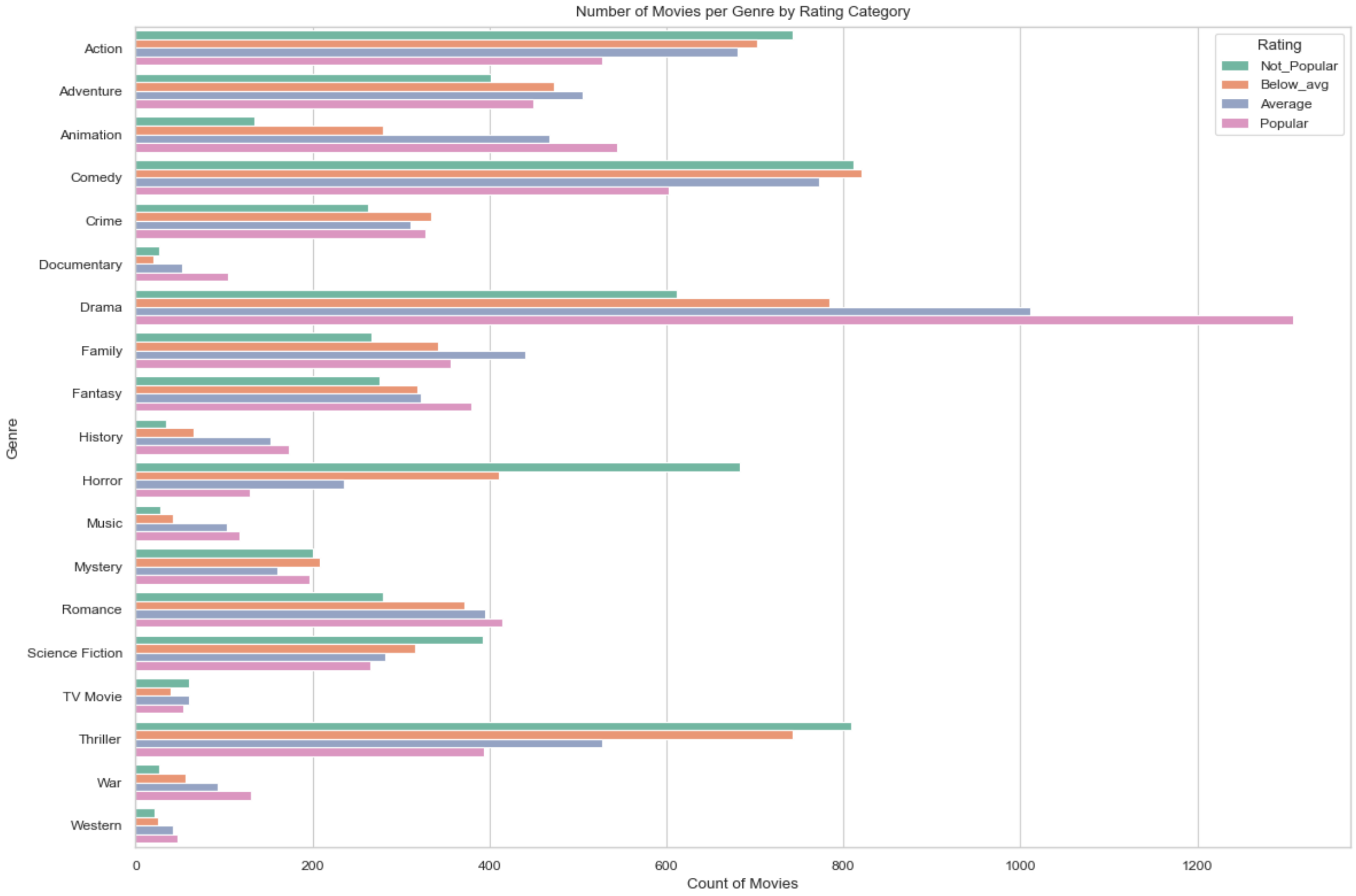
● This indicates that the majority of movies on the platform tend to receive mid-level (average) audience ratings, suggesting a large portion of the content is neither extremely good nor bad, but falls into the average quality range.

What Genre has highest vote_Average/Rating?

In [49]:

```
plt.figure(figsize=(12, 8))
sns.countplot(data = df, y='Genre', hue='Vote_Average', palette='Set2')

plt.title("Number of Movies per Genre by Rating Category")
plt.xlabel("Count of Movies")
plt.ylabel("Genre")
plt.legend(title='Rating')
plt.tight_layout()
plt.show()
```



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

In [43]:

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

Out[43]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
25786	2021	The United States vs. Billie Holiday	13.354	152	Average	Music
25787	2021	The United States vs. Billie Holiday	13.354	152	Average	Drama
25788	2021	The United States vs. Billie Holiday	13.354	152	Average	History
25789	1984	Threads	13.354	186	Popular	War
25790	1984	Threads	13.354	186	Popular	Drama
25791	1984	Threads	13.354	186	Popular	Science Fiction

The united states, thread' has the highest lowest rate in our dataset and it has genres of music , drama , 'war', 'sci-fi' and history`.

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

In [44]:

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

Out[44]:

	Release_Date	Title	Popularity	Vote_Count	Vote_Average	Genre
0	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Action
1	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Adventure
2	2021	Spider-Man: No Way Home	5083.954	8940	Popular	Science Fiction

Spider-Man: No Way Home has the Highest popularity in our dataset and it has genre action, adventure, Science Fiction

Which year has the most filmmed movies?

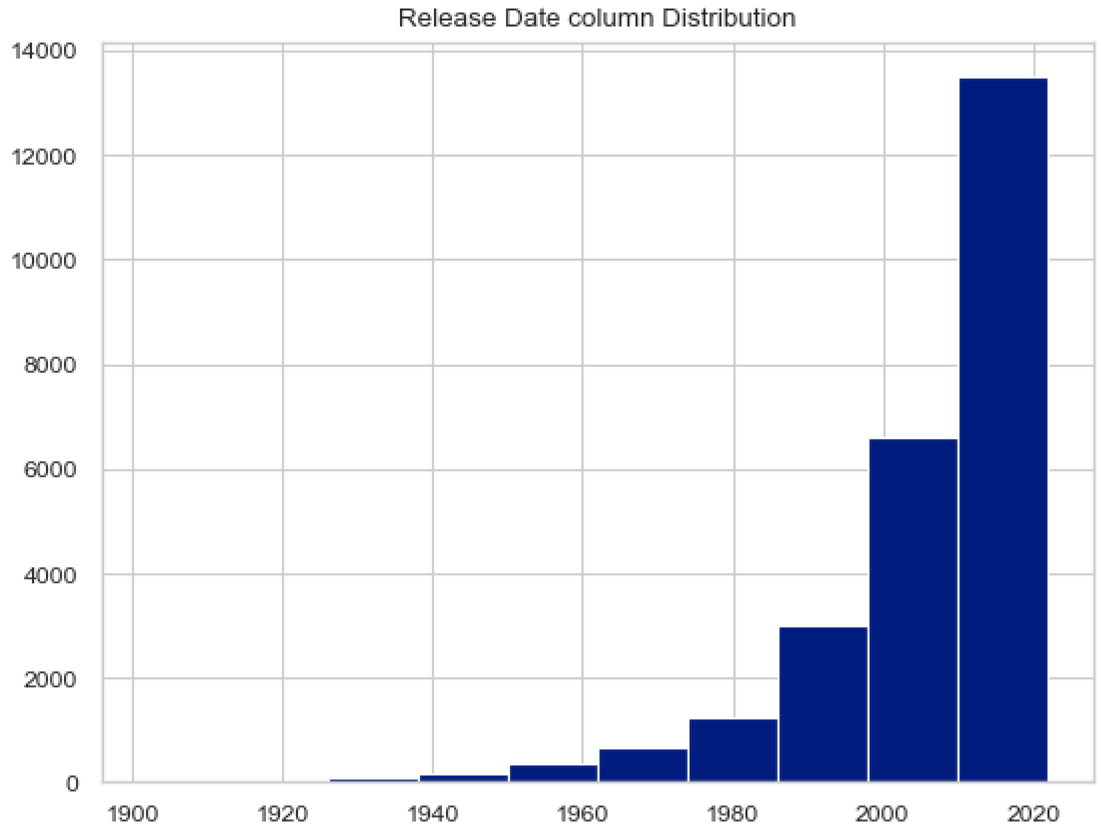
In [52]:

```
Most_common_year = df['Release_Date'].value_counts()
film_count = df['Release_Date'].value_counts().max()
print(f" Most movies Release in : {Most_common_year} ({film_count} film)")
df['Release_Date'].hist()
plt.title('Release Date column Distribution')
plt.show
```

```
 Most movies Release in : Release_Date
2021    1636
2018    1384
2017    1365
2019    1271
2016    1209
        ...
1920       4
1902       3
1925       2
1929       2
1930       2
Name: count, Length: 100, dtype: int64 (1636 film)
```

Out[52]:

```
<function matplotlib.pyplot.show(close=None, block=None)>
```



🎬 2020 was the most active year for film releases on Netflix