

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
import plotly.express as px
from datetime import datetime
```

df=pd.read\_csv("/content/netflix\_titles (1).csv")

df.head()

|   | show_id | type    | title                 | director        | cast                                              | country       | date_added         | release_year | rating | duration  | listed_in                                         | description                                       |
|---|---------|---------|-----------------------|-----------------|---------------------------------------------------|---------------|--------------------|--------------|--------|-----------|---------------------------------------------------|---------------------------------------------------|
| 0 | s1      | Movie   | Dick Johnson Is Dead  | Kirsten Johnson | NaN                                               | United States | September 25, 2021 | 2020         | PG-13  | 90 min    | Documentaries                                     | As her father nears the end of his life, filmm... |
| 1 | s2      | TV Show | Blood & Water         | NaN             | Ama Oamata, Khosi Ngema, Gail Mabalane, Thaban... | South Africa  | September 24, 2021 | 2021         | TV-MA  | 2 Seasons | International TV Shows, TV Dramas, TV Mysteries   | After crossing paths at a party, a Cape Town L... |
| 2 | s3      | TV Show | Ganglands             | Julien Leclercq | Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi... | NaN           | September 24, 2021 | 2021         | TV-MA  | 1 Season  | Crime TV Shows, International TV Shows, TV Act... | To protect his family from a powerful drug lor... |
| 3 | s4      | TV Show | Jailbirds New Orleans | NaN             | NaN                                               | NaN           | September 24, 2021 | 2021         | TV-MA  | 1 Season  | Docuseries, Reality TV                            | Feuds, flirtations and toilet talk go down amo... |
| 4 | s5      | TV Show | Kota Factory          | NaN             | Mayur More, Jitendra Kumar, Ranjan Raj, Alam K... | India         | September 24, 2021 | 2021         | TV-MA  | 2 Seasons | International TV Shows, Romantic TV Shows, TV ... | In a city of coaching centers known to train L... |

df.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 8807 entries, 0 to 8806
Data columns (total 12 columns):
#   Column                Non-Null Count  Dtype
---  -
0   show_id               8807 non-null   object
1   type                  8807 non-null   object
2   title                 8807 non-null   object
3   director              6173 non-null   object
4   cast                  7982 non-null   object
5   country               7976 non-null   object
6   date_added            8797 non-null   object
7   release_year          8807 non-null   int64
8   rating                8803 non-null   object
9   duration              8804 non-null   object
10  listed_in             8807 non-null   object
11  description            8807 non-null   object
dtypes: int64(1), object(11)
memory usage: 825.8+ KB
```

df.describe()

|       | release_year |
|-------|--------------|
| count | 8807.000000  |
| mean  | 2014.180198  |
| std   | 8.819312     |
| min   | 1925.000000  |
| 25%   | 2013.000000  |
| 50%   | 2017.000000  |
| 75%   | 2019.000000  |
| max   | 2021.000000  |

df.isnull().sum()

|              | 0    |
|--------------|------|
| show_id      | 0    |
| type         | 0    |
| title        | 0    |
| director     | 2634 |
| cast         | 825  |
| country      | 831  |
| date_added   | 10   |
| release_year | 0    |
| rating       | 4    |
| duration     | 3    |
| listed_in    | 0    |
| description  | 0    |
| dtype: int64 |      |

```
def convert_date(date_str):
    if isinstance(date_str, str):
        date_str = date_str.lstrip()
        try:
            return datetime.strptime(date_str, "%B %d, %Y")
        except ValueError:
            print(f"Warning: Could not convert '{date_str}' to datetime.")
            return None
    else:
        print(f"Warning: Input is not a string: '{date_str}'")
        return None

df['date_added'] = df['date_added'].apply(convert_date)
```

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

Warning: Input is not a string: 'nan'

df\_1 = df[df['date\_added'].isnull()]

df\_1

|      | show_id | type    | title                                       | director | cast                                               | country        | date_added | release_year | rating | duration   | listed_in                                         | description                                        |
|------|---------|---------|---------------------------------------------|----------|----------------------------------------------------|----------------|------------|--------------|--------|------------|---------------------------------------------------|----------------------------------------------------|
| 6066 | s6067   | TV Show | A Young Doctor's Notebook and Other Stories | NaN      | Daniel Radcliffe, Jon Hamm, Adam Godley, Chris...  | United Kingdom | NaN        | 2013         | TV-MA  | 2 Seasons  | British TV Shows, TV Comedies, TV Dramas          | Set during the Russian Revolution, this comic ...  |
| 6174 | s6175   | TV Show | Anthony Bourdain: Parts Unknown             | NaN      | Anthony Bourdain                                   | United States  | NaN        | 2018         | TV-PG  | 5 Seasons  | Docuseries                                        | This CNN original series has chef Anthony Bour...  |
| 6795 | s6796   | TV Show | Frasier                                     | NaN      | Kelsey Grammer, Jane Leeves, David Hyde Pierce...  | United States  | NaN        | 2003         | TV-PG  | 11 Seasons | Classic & Cult TV, TV Comedies                    | Frasier Crane is a snooty but lovable Seattle ...  |
| 6806 | s6807   | TV Show | Friends                                     | NaN      | Jennifer Aniston, Courteney Cox, Lisa Kudrow, ...  | United States  | NaN        | 2003         | TV-14  | 10 Seasons | Classic & Cult TV, TV Comedies                    | This hit sitcom follows the merry misadventure...  |
| 6901 | s6902   | TV Show | Gunslinger Girl                             | NaN      | Yuuka Nanri, Kanako Mitsuhashi, Eri Sendai, Am...  | Japan          | NaN        | 2008         | TV-14  | 2 Seasons  | Anime Series, Crime TV Shows                      | On the surface, the Social Welfare Agency appe...  |
| 7196 | s7197   | TV Show | Kikori                                      | NaN      | Igor Dmitriev                                      | NaN            | NaN        | 2010         | TV-Y   | 2 Seasons  | Kids' TV                                          | A wacky rabbit and his gang of animal pals hav...  |
| 7254 | s7255   | TV Show | La Familia P. Luche                         | NaN      | Eugenio Derbez, Consuelo Duval, Luis Manuel Áv...  | United States  | NaN        | 2012         | TV-14  | 3 Seasons  | International TV Shows, Spanish-Language TV Sh... | This irreverent sitcom features Ludovico, Feder... |
| 7406 | s7407   | TV Show | Maron                                       | NaN      | Marc Maron, Judd Hirsch, Josh Brener, Nora Zeh...  | United States  | NaN        | 2016         | TV-MA  | 4 Seasons  | TV Comedies                                       | Marc Maron stars as Marc Maron, who interviews...  |
| 7847 | s7848   | TV Show | Red vs. Blue                                | NaN      | Burnie Burns, Jason Saldana, Gustavo Sorola, G...  | United States  | NaN        | 2015         | NR     | 13 Seasons | TV Action & Adventure, TV Comedies, TV Sci-Fi ... | This parody of first-person shooter games, mil...  |
| 8182 | s8183   | TV Show | The Adventures of Figaro Pho                | NaN      | Luke Jurevicius, Craig Behenna, Charlotte Hamli... | Australia      | NaN        | 2015         | TV-Y7  | 2 Seasons  | Kids' TV, TV Comedies                             | Imagine your worst fears, then multiply them: ...  |

```
df_1.loc[df_1.index[0], 'date_added'] = pd.to_datetime('2012-12-06')
df_1.loc[df_1.index[1], 'date_added'] = pd.to_datetime('2013-04-14')
df_1.loc[df_1.index[2], 'date_added'] = pd.to_datetime('2023-10-12')
df_1.loc[df_1.index[3], 'date_added'] = pd.to_datetime('1994-09-22')
df_1.loc[df_1.index[4], 'date_added'] = pd.to_datetime('2008-01-07')
df_1.loc[df_1.index[5], 'date_added'] = pd.to_datetime('2003-12-22')
df_1.loc[df_1.index[6], 'date_added'] = pd.to_datetime('2002-08-07')
df_1.loc[df_1.index[7], 'date_added'] = pd.to_datetime('2013-05-03')
df_1.loc[df_1.index[8], 'date_added'] = pd.to_datetime('2003-04-01')
df_1.loc[df_1.index[9], 'date_added'] = pd.to_datetime('2012-10-31')
```

df\_1

|      | show_id | type    | title                                       | director | cast                                               | country        | date_added | release_year | rating | duration   | listed_in                                         | description                                        |
|------|---------|---------|---------------------------------------------|----------|----------------------------------------------------|----------------|------------|--------------|--------|------------|---------------------------------------------------|----------------------------------------------------|
| 6066 | s6067   | TV Show | A Young Doctor's Notebook and Other Stories | NaN      | Daniel Radcliffe, Jon Hamm, Adam Godley, Chris...  | United Kingdom | 2012-12-06 | 2013         | TV-MA  | 2 Seasons  | British TV Shows, TV Comedies, TV Dramas          | Set during the Russian Revolution, this comic ...  |
| 6174 | s6175   | TV Show | Anthony Bourdain: Parts Unknown             | NaN      | Anthony Bourdain                                   | United States  | 2013-04-14 | 2018         | TV-PG  | 5 Seasons  | Docuseries                                        | This CNN original series has chef Anthony Bour...  |
| 6795 | s6796   | TV Show | Frasier                                     | NaN      | Kelsey Grammer, Jane Leeves, David Hyde Pierce...  | United States  | 2023-10-12 | 2003         | TV-PG  | 11 Seasons | Classic & Cult TV, TV Comedies                    | Frasier Crane is a snooty but lovable Seattle ...  |
| 6806 | s6807   | TV Show | Friends                                     | NaN      | Jennifer Aniston, Courteney Cox, Lisa Kudrow, ...  | United States  | 1994-09-22 | 2003         | TV-14  | 10 Seasons | Classic & Cult TV, TV Comedies                    | This hit sitcom follows the merry misadventure...  |
| 6901 | s6902   | TV Show | Gunslinger Girl                             | NaN      | Yuuka Nanri, Kanako Mitsuhashi, Eri Sendai, Am...  | Japan          | 2008-01-07 | 2008         | TV-14  | 2 Seasons  | Anime Series, Crime TV Shows                      | On the surface, the Social Welfare Agency appe...  |
| 7196 | s7197   | TV Show | Kikori                                      | NaN      | Igor Dmitriev                                      | NaN            | 2003-12-22 | 2010         | TV-Y   | 2 Seasons  | Kids' TV                                          | A wacky rabbit and his gang of animal pals hav...  |
| 7254 | s7255   | TV Show | La Familia P. Luche                         | NaN      | Eugenio Derbez, Consuelo Duval, Luis Manuel Áv...  | United States  | 2002-08-07 | 2012         | TV-14  | 3 Seasons  | International TV Shows, Spanish-Language TV Sh... | This irreverent sitcom features Ludovico, Feder... |
| 7406 | s7407   | TV Show | Maron                                       | NaN      | Marc Maron, Judd Hirsch, Josh Brener, Nora Zeh...  | United States  | 2013-05-03 | 2016         | TV-MA  | 4 Seasons  | TV Comedies                                       | Marc Maron stars as Marc Maron, who interviews...  |
| 7847 | s7848   | TV Show | Red vs. Blue                                | NaN      | Burnie Burns, Jason Saldana, Gustavo Sorola, G...  | United States  | 2003-04-01 | 2015         | NR     | 13 Seasons | TV Action & Adventure, TV Comedies, TV Sci-Fi ... | This parody of first-person shooter games, mil...  |
| 8182 | s8183   | TV Show | The Adventures of Figaro Pho                | NaN      | Luke Jurevicius, Craig Behenna, Charlotte Hamli... | Australia      | 2012-10-31 | 2015         | TV-Y7  | 2 Seasons  | Kids' TV, TV Comedies                             | Imagine your worst fears, then multiply them: ...  |

df\_1['date\_added']=pd.to\_datetime(df\_1['date\_added'])

df=df.set\_index("show\_id")

df\_1=df\_1.set\_index("show\_id")

df.update(df\_1)

df.reset\_index()

|      | show_id | type    | title                 | director        | cast                                              | country       | date_added | release_year | rating | duration  | listed_in                                         | description                                       |
|------|---------|---------|-----------------------|-----------------|---------------------------------------------------|---------------|------------|--------------|--------|-----------|---------------------------------------------------|---------------------------------------------------|
| 0    | s1      | Movie   | Dick Johnson Is Dead  | Kirsten Johnson | NaN                                               | United States | 2021-09-25 | 2020         | PG-13  | 90 min    | Documentaries                                     | As her father nears the end of his life, filmm... |
| 1    | s2      | TV Show | Blood & Water         | NaN             | Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban... | South Africa  | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, TV Dramas, TV Mysteries   | After crossing paths at a party, a Cape Town t... |
| 2    | s3      | TV Show | Ganglands             | Julien Leclercq | Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi... | NaN           | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Crime TV Shows, International TV Shows, TV Act... | To protect his family from a powerful drug lor... |
| 3    | s4      | TV Show | Jailbirds New Orleans | NaN             | NaN                                               | NaN           | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Docuseries, Reality TV                            | Feuds, flirtations and toilet talk go down amo... |
| 4    | s5      | TV Show | Kota Factory          | NaN             | Mayur More, Jitendra Kumar, Ranjan Raj, Alam K... | India         | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, Romantic TV Shows, TV ... | In a city of coaching centers known to train l... |
| ...  | ...     | ...     | ...                   | ...             | ...                                               | ...           | ...        | ...          | ...    | ...       | ...                                               | ...                                               |
| 8802 | s8803   | Movie   | Zodiac                | David Fincher   | Mark Ruffalo, Jake Gyllenhaal, Robert Downey J... | United States | 2019-11-20 | 2007         | R      | 158 min   | Cult Movies, Dramas, Thrillers                    | A political cartoonist, a crime reporter and a... |
| 8803 | s8804   | TV Show | Zombie Dumb           | NaN             | NaN                                               | NaN           | 2019-07-01 | 2018         | TV-Y7  | 2 Seasons | Kids' TV, Korean TV Shows, TV Comedies            | While living alone in a spooky town, a young g... |
| 8804 | s8805   | Movie   | Zombieland            | Ruben Fleischer | Jesse Eisenberg, Woody Harrelson, Emma Stone, ... | United States | 2019-11-01 | 2009         | R      | 88 min    | Comedies, Horror Movies                           | Looking to survive in a world taken over by zo... |
| 8805 | s8806   | Movie   | Zoom                  | Peter Hewitt    | Tim Allen, Courteney Cox, Chevy Chase, Kate Ma... | United States | 2020-01-11 | 2006         | PG     | 88 min    | Children & Family Movies, Comedies                | Dragged from civilian life, a former superhero... |
| 8806 | s8807   | Movie   | Zubaan                | Mozez Singh     | Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan... | India         | 2019-03-02 | 2015         | TV-14  | 111 min   | Dramas, International Movies, Music & Musicals    | A scrappy but poor boy worms his way into a ty... |

8807 rows × 12 columns

df.head()

|         | type    | title                 | director        | cast                                              | country       | date_added | release_year | rating | duration  | listed_in                                         | description                                       |
|---------|---------|-----------------------|-----------------|---------------------------------------------------|---------------|------------|--------------|--------|-----------|---------------------------------------------------|---------------------------------------------------|
| show_id |         |                       |                 |                                                   |               |            |              |        |           |                                                   |                                                   |
| s1      | Movie   | Dick Johnson Is Dead  | Kirsten Johnson | NaN                                               | United States | 2021-09-25 | 2020         | PG-13  | 90 min    | Documentaries                                     | As her father nears the end of his life, filmm... |
| s2      | TV Show | Blood & Water         | NaN             | Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban... | South Africa  | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, TV Dramas, TV Mysteries   | After crossing paths at a party, a Cape Town t... |
| s3      | TV Show | Ganglands             | Julien Leclercq | Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi... | NaN           | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Crime TV Shows, International TV Shows, TV Act... | To protect his family from a powerful drug lor... |
| s4      | TV Show | Jailbirds New Orleans | NaN             | NaN                                               | NaN           | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Docuseries, Reality TV                            | Feuds, flirtations and toilet talk go down amo... |
| s5      | TV Show | Kota Factory          | NaN             | Mayur More, Jitendra Kumar, Ranjan Raj, Alam K... | India         | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, Romantic TV Shows, TV ... | In a city of coaching centers known to train l... |

df.info()

```
<class 'pandas.core.frame.DataFrame'>
Index: 8807 entries, s1 to s8807
Data columns (total 11 columns):
#   Column      Non-Null Count  Dtype
---  -
0   type         8807 non-null   object
1   title        8807 non-null   object
2   director     6173 non-null   object
3   cast         7982 non-null   object
4   country      7976 non-null   object
5   date_added   8807 non-null   datetime64[ns]
6   release_year 8807 non-null   int64
7   rating       8803 non-null   object
8   duration     8804 non-null   object
9   listed_in    8807 non-null   object
10  description   8807 non-null   object
dtypes: datetime64[ns](1), int64(1), object(9)
memory usage: 1.1+ MB
```

df['release\_year'] = pd.to\_datetime(df['release\_year'], format='%Y').dt.year

df

|         | type    | title                 | director        | cast                                              | country       | date_added | release_year | rating | duration  | listed_in                                         | description                                       |
|---------|---------|-----------------------|-----------------|---------------------------------------------------|---------------|------------|--------------|--------|-----------|---------------------------------------------------|---------------------------------------------------|
| show_id |         |                       |                 |                                                   |               |            |              |        |           |                                                   |                                                   |
| s1      | Movie   | Dick Johnson Is Dead  | Kirsten Johnson | NaN                                               | United States | 2021-09-25 | 2020         | PG-13  | 90 min    | Documentaries                                     | As her father nears the end of his life, filmm... |
| s2      | TV Show | Blood & Water         | NaN             | Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban... | South Africa  | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, TV Dramas, TV Mysteries   | After crossing paths at a party, a Cape Town L... |
| s3      | TV Show | Ganglands             | Julien Leclercq | Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi... | NaN           | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Crime TV Shows, International TV Shows, TV Act... | To protect his family from a powerful drug lor... |
| s4      | TV Show | Jailbirds New Orleans | NaN             | NaN                                               | NaN           | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Docuseries, Reality TV                            | Feuds, flirtations and toilet talk go down amo... |
| s5      | TV Show | Kota Factory          | NaN             | Mayur More, Jitendra Kumar, Ranjan Raj, Alam K... | India         | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, Romantic TV Shows, TV ... | In a city of coaching centers known to train l... |
| ...     | ...     | ...                   | ...             | ...                                               | ...           | ...        | ...          | ...    | ...       | ...                                               | ...                                               |
| s8803   | Movie   | Zodiac                | David Fincher   | Mark Ruffalo, Jake Gyllenhaal, Robert Downey J... | United States | 2019-11-20 | 2007         | R      | 158 min   | Cult Movies, Dramas, Thrillers                    | A political cartoonist, a crime reporter and a... |
| s8804   | TV Show | Zombie Dumb           | NaN             | NaN                                               | NaN           | 2019-07-01 | 2018         | TV-Y7  | 2 Seasons | Kids' TV, Korean TV Shows, TV Comedies            | While living alone in a spooky town, a young g... |
| s8805   | Movie   | Zombieland            | Ruben Fleischer | Jesse Eisenberg, Woody Harrelson, Emma Stone, ... | United States | 2019-11-01 | 2009         | R      | 88 min    | Comedies, Horror Movies                           | Looking to survive in a world taken over by zo... |
| s8806   | Movie   | Zoom                  | Peter Hewitt    | Tim Allen, Courteney Cox, Chevy Chase, Kate Ma... | United States | 2020-01-11 | 2006         | PG     | 88 min    | Children & Family Movies, Comedies                | Dragged from civilian life, a former superhero... |
| s8807   | Movie   | Zubaan                | Mozez Singh     | Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan... | India         | 2019-03-02 | 2015         | TV-14  | 111 min   | Dramas, International Movies, Music & Musicals    | A scrappy but poor boy worms his way into a ty... |

8807 rows × 11 columns

|         | type    | title                 | director        | cast                                              | country       | date_added | release_year | rating | duration  | listed_in                                         | description                                       |
|---------|---------|-----------------------|-----------------|---------------------------------------------------|---------------|------------|--------------|--------|-----------|---------------------------------------------------|---------------------------------------------------|
| show_id |         |                       |                 |                                                   |               |            |              |        |           |                                                   |                                                   |
| s1      | Movie   | Dick Johnson Is Dead  | Kirsten Johnson | NaN                                               | United States | 2021-09-25 | 2020         | PG-13  | 90 min    | Documentaries                                     | As her father nears the end of his life, filmm... |
| s2      | TV Show | Blood & Water         | NaN             | Ama Qamata, Khosi Ngema, Gail Mabalane, Thaban... | South Africa  | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, TV Dramas, TV Mysteries   | After crossing paths at a party, a Cape Town L... |
| s3      | TV Show | Ganglands             | Julien Leclercq | Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabi... | NaN           | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Crime TV Shows, International TV Shows, TV Act... | To protect his family from a powerful drug lor... |
| s4      | TV Show | Jailbirds New Orleans | NaN             | NaN                                               | NaN           | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Docuseries, Reality TV                            | Feuds, flirtations and toilet talk go down amo... |
| s5      | TV Show | Kota Factory          | NaN             | Mayur More, Jitendra Kumar, Ranjan Raj, Alam K... | India         | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, Romantic TV Shows, TV ... | In a city of coaching centers known to train l... |
| ...     | ...     | ...                   | ...             | ...                                               | ...           | ...        | ...          | ...    | ...       | ...                                               | ...                                               |
| s8803   | Movie   | Zodiac                | David Fincher   | Mark Ruffalo, Jake Gyllenhaal, Robert Downey J... | United States | 2019-11-20 | 2007         | R      | 158 min   | Cult Movies, Dramas, Thrillers                    | A political cartoonist, a crime reporter and a... |
| s8804   | TV Show | Zombie Dumb           | NaN             | NaN                                               | NaN           | 2019-07-01 | 2018         | TV-Y7  | 2 Seasons | Kids' TV, Korean TV Shows, TV Comedies            | While living alone in a spooky town, a young g... |
| s8805   | Movie   | Zombieland            | Ruben Fleischer | Jesse Eisenberg, Woody Harrelson, Emma Stone, ... | United States | 2019-11-01 | 2009         | R      | 88 min    | Comedies, Horror Movies                           | Looking to survive in a world taken over by zo... |
| s8806   | Movie   | Zoom                  | Peter Hewitt    | Tim Allen, Courteney Cox, Chevy Chase, Kate Ma... | United States | 2020-01-11 | 2006         | PG     | 88 min    | Children & Family Movies, Comedies                | Dragged from civilian life, a former superhero... |
| s8807   | Movie   | Zubaan                | Mozez Singh     | Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan... | India         | 2019-03-02 | 2015         | TV-14  | 111 min   | Dramas, International Movies, Music & Musicals    | A scrappy but poor boy worms his way into a ty... |

8807 rows × 11 columns

df.isnull().sum()

|              |       |
|--------------|-------|
|              | 0     |
| type         | 0     |
| title        | 0     |
| director     | 2634  |
| cast         | 825   |
| country      | 831   |
| date_added   | 0     |
| release_year | 0     |
| rating       | 4     |
| duration     | 3     |
| listed_in    | 0     |
| description  | 0     |
| dtype:       | int64 |

```
df["director"]=df["director"].fillna("unknown")
df["cast"]=df["cast"].fillna("unknown")
df["country"]=df["country"].fillna("unknown")
```

df["director"].isnull().sum()

np.int64(0)

df["rating"].isnull().sum()

np.int64(4)

df\_1 = df[df["rating"].isnull()]

|         | type    | title                                             | director        | cast                                              | country   | date_added | release_year | rating | duration | listed_in                            | description                                       |
|---------|---------|---------------------------------------------------|-----------------|---------------------------------------------------|-----------|------------|--------------|--------|----------|--------------------------------------|---------------------------------------------------|
| show_id |         |                                                   |                 |                                                   |           |            |              |        |          |                                      |                                                   |
| s5990   | Movie   | 13TH: A Conversation with Oprah Winfrey & Ava ... | unknown         | Oprah Winfrey, Ava DuVernay                       | unknown   | 2017-01-26 | 2017         | NaN    | 37 min   | Movies                               | Oprah Winfrey sits down with director Ava DuVe... |
| s6828   | TV Show | Gargantia on the Verdurous Planet                 | unknown         | Kaito Ishikawa, Hisako Kanemoto, Ai Kayano, Ka... | Japan     | 2016-12-01 | 2013         | NaN    | 1 Season | Anime Series, International TV Shows | After falling through a wormhole, a space-dwel... |
| s7313   | TV Show | Little Lunch                                      | unknown         | Flynn Curry, Olivia Deeble, Madison Lu, Oisín ... | Australia | 2018-02-01 | 2015         | NaN    | 1 Season | Kids' TV, TV Comedies                | Adopting a child's perspective, this show take... |
| s7538   | Movie   | My Honor Was Loyalty                              | Alessandro Pepe | Leone Frisa, Paolo Vaccarino, Francesco Miglio... | Italy     | 2017-03-01 | 2015         | NaN    | 115 min  | Dramas                               | Amid the chaos and horror of World War II, a c... |

```
df.loc["s5990", 'rating'] = ('TV-MA')
df.loc["s6828", 'rating'] = ('TV-14')
df.loc["s7313", 'rating'] = ('G')
df.loc["s7538", 'rating'] = ('R')
```

df["rating"]

|         | rating |
|---------|--------|
| show_id |        |
| s1      | PG-13  |
| s2      | TV-MA  |
| s3      | TV-MA  |
| s4      | TV-MA  |
| s5      | TV-MA  |
| ...     | ...    |
| s8803   | R      |
| s8804   | TV-Y7  |
| s8805   | R      |
| s8806   | PG     |
| s8807   | TV-14  |

8807 rows × 1 columns

dtype: object

df.update(df\_1)

df.info()



```
<class 'pandas.core.frame.DataFrame'>
Index: 8887 entries, s1 to s8887
Data columns (total 11 columns):
#   Column      Non-Null Count  Dtype
---  -
0   type         8887 non-null   object
1   title        8887 non-null   object
2   director     8887 non-null   object
3   cast         8887 non-null   object
4   country      8887 non-null   object
5   date_added   8887 non-null   datetime64[ns]
6   release_year 8887 non-null   int64
7   rating       8883 non-null   object
8   duration     8884 non-null   object
9   listed_in    8887 non-null   object
10  description   8887 non-null   object
dtypes: datetime64[ns](1), int64(1), object(9)
memory usage: 1.1+ MB
```

df[df["duration"].isnull()]

|         | type  | title                                | director   | cast       | country       | date_added | release_year | rating | duration | listed_in | description                                       |
|---------|-------|--------------------------------------|------------|------------|---------------|------------|--------------|--------|----------|-----------|---------------------------------------------------|
| show_id |       |                                      |            |            |               |            |              |        |          |           |                                                   |
| s5542   | Movie | Louis C.K. 2017                      | Louis C.K. | Louis C.K. | United States | 2017-04-04 | 2017         | 74 min | NaN      | Movies    | Louis C.K. muses on religion, eternal love, gi... |
| s5795   | Movie | Louis C.K.: Hilarious                | Louis C.K. | Louis C.K. | United States | 2016-09-16 | 2010         | 84 min | NaN      | Movies    | Emmy-winning comedy writer Louis C.K. brings h... |
| s5814   | Movie | Louis C.K.: Live at the Comedy Store | Louis C.K. | Louis C.K. | United States | 2016-08-15 | 2015         | 66 min | NaN      | Movies    | The comic puts his trademark hilarious/thought... |

```
df.loc["s5542", "duration"] = "74 min"
df.loc["s5795", "duration"] = "84 min"
df.loc["s5814", "duration"] = "66 min"
```

| df.isnull().sum() |       |  |  |  |  |  |  |  |  |  |
|-------------------|-------|--|--|--|--|--|--|--|--|--|
|                   | 0     |  |  |  |  |  |  |  |  |  |
| type              | 0     |  |  |  |  |  |  |  |  |  |
| title             | 0     |  |  |  |  |  |  |  |  |  |
| director          | 0     |  |  |  |  |  |  |  |  |  |
| cast              | 0     |  |  |  |  |  |  |  |  |  |
| country           | 0     |  |  |  |  |  |  |  |  |  |
| date_added        | 0     |  |  |  |  |  |  |  |  |  |
| release_year      | 0     |  |  |  |  |  |  |  |  |  |
| rating            | 0     |  |  |  |  |  |  |  |  |  |
| duration          | 0     |  |  |  |  |  |  |  |  |  |
| listed_in         | 0     |  |  |  |  |  |  |  |  |  |
| description       | 0     |  |  |  |  |  |  |  |  |  |
| dtype:            | int64 |  |  |  |  |  |  |  |  |  |

Start coding or generate with AI.

```
df["type"].unique()

array(['Movie', 'TV Show'], dtype=object)

df['genres'] = df['listed_in'].str.split(',').str[0]

df_1=df[df["type"]=="Movie"]
df_2=df[df["type"]!="Movie"]
```

| df_1                   |       |                                  |                               |                                                   |                                                   |            |              |        |          |                                                  |                                                   |                          |
|------------------------|-------|----------------------------------|-------------------------------|---------------------------------------------------|---------------------------------------------------|------------|--------------|--------|----------|--------------------------------------------------|---------------------------------------------------|--------------------------|
|                        | type  | title                            | director                      | cast                                              | country                                           | date_added | release_year | rating | duration | listed_in                                        | description                                       | genres                   |
| show_id                |       |                                  |                               |                                                   |                                                   |            |              |        |          |                                                  |                                                   |                          |
| s1                     | Movie | Dick Johnson Is Dead             | Kirsten Johnson               | unknown                                           | United States                                     | 2021-09-25 | 2020         | PG-13  | 90 min   | Documentaries                                    | As her father nears the end of his life, filmm... | Documentaries            |
| s7                     | Movie | My Little Pony: A New Generation | Robert Cullen, José Luis Ucha | Vanessa Hudgens, Kimiko Glenn, James Marsden, ... | unknown                                           | 2021-09-24 | 2021         | PG     | 91 min   | Children & Family Movies                         | Equestria's divided. But a bright-eyed hero be... | Children & Family Movies |
| s8                     | Movie | Sankofa                          | Haile Gerima                  | Kofi Ghanaba, Oyafunmike Ogunlano, Alexandra D... | United States, Ghana, Burkina Faso, United Kin... | 2021-09-24 | 1993         | TV-MA  | 125 min  | Dramas, Independent Movies, International Movies | On a photo shoot in Ghana, an American model s... | Dramas                   |
| s10                    | Movie | The Starling                     | Theodore Melfi                | Melissa McCarthy, Chris O'Dowd, Kevin Kline, T... | United States                                     | 2021-09-24 | 2021         | PG-13  | 104 min  | Comedies, Dramas                                 | A woman adjusting to life after a loss contend... | Comedies                 |
| s13                    | Movie | Je Suis Karl                     | Christian Schwochow           | Luna Wedler, Jannis Niewöhner, Milan Peschel, ... | Germany, Czech Republic                           | 2021-09-23 | 2021         | TV-MA  | 127 min  | Dramas, International Movies                     | After most of her family is murdered in a terr... | Dramas                   |
| ...                    | ...   | ...                              | ...                           | ...                                               | ...                                               | ...        | ...          | ...    | ...      | ...                                              | ...                                               | ...                      |
| s8802                  | Movie | Zinzana                          | Majid Al Ansari               | Ali Suliman, Saleh Bakri, Yasa, Ali Al-Jabri, ... | United Arab Emirates, Jordan                      | 2016-03-09 | 2015         | TV-MA  | 96 min   | Dramas, International Movies, Thrillers          | Recovering alcoholic Talal wakes up inside a s... | Dramas                   |
| s8803                  | Movie | Zodiac                           | David Fincher                 | Mark Ruffalo, Jake Gyllenhaal, Robert Downey J... | United States                                     | 2019-11-20 | 2007         | R      | 158 min  | Cult Movies, Dramas, Thrillers                   | A political cartoonist, a crime reporter and a... | Cult Movies              |
| s8805                  | Movie | Zombieland                       | Ruben Fleischer               | Jesse Eisenberg, Woody Harrelson, Emma Stone, ... | United States                                     | 2019-11-01 | 2009         | R      | 88 min   | Comedies, Horror Movies                          | Looking to survive in a world taken over by zo... | Comedies                 |
| s8806                  | Movie | Zoom                             | Peter Hewitt                  | Tim Allen, Courteney Cox, Chevy Chase, Kate Ma... | United States                                     | 2020-01-11 | 2006         | PG     | 88 min   | Children & Family Movies, Comedies               | Dragged from civilian life, a former superhero... | Children & Family Movies |
| s8807                  | Movie | Zubaan                           | Mozez Singh                   | Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan... | India                                             | 2019-03-02 | 2015         | TV-14  | 111 min  | Dramas, International Movies, Music & Musicals   | A scrappy but poor boy worms his way into a ty... | Dramas                   |
| 6131 rows × 12 columns |       |                                  |                               |                                                   |                                                   |            |              |        |          |                                                  |                                                   |                          |

| df_2                   |         |                       |                 |                                                    |                                               |            |              |        |           |                                                   |                                                   |                        |
|------------------------|---------|-----------------------|-----------------|----------------------------------------------------|-----------------------------------------------|------------|--------------|--------|-----------|---------------------------------------------------|---------------------------------------------------|------------------------|
|                        | type    | title                 | director        | cast                                               | country                                       | date_added | release_year | rating | duration  | listed_in                                         | description                                       | genres                 |
| show_id                |         |                       |                 |                                                    |                                               |            |              |        |           |                                                   |                                                   |                        |
| s2                     | TV Show | Blood & Water         | unknown         | Ama Gamata, Khosi Ngema, Gail Mabalané, Thaban...  | South Africa                                  | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, TV Dramas, TV Mysteries   | After crossing paths at a party, a Cape Town L... | International TV Shows |
| s3                     | TV Show | Ganglands             | Julien Leclercq | Sami Bouajila, Tracy Gotoas, Samuel Jouy, Nabil... | unknown                                       | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Crime TV Shows, International TV Shows, TV Act... | To protect his family from a powerful drug lor... | Crime TV Shows         |
| s4                     | TV Show | Jailbirds New Orleans | unknown         | unknown                                            | unknown                                       | 2021-09-24 | 2021         | TV-MA  | 1 Season  | Docuseries, Reality TV                            | Feuds, flirtations and toilet talk go down amo... | Docuseries             |
| s5                     | TV Show | Kota Factory          | unknown         | Mayur More, Jitendra Kumar, Ranjan Raj, Alam K...  | India                                         | 2021-09-24 | 2021         | TV-MA  | 2 Seasons | International TV Shows, Romantic TV Shows, TV ... | In a city of coaching centers known to train L... | International TV Shows |
| s6                     | TV Show | Midnight Mass         | Mike Flanagan   | Kate Siegel, Zach Gilford, Hamish Linklater, H...  | unknown                                       | 2021-09-24 | 2021         | TV-MA  | 1 Season  | TV Dramas, TV Horror, TV Mysteries                | The arrival of a charismatic young priest brin... | TV Dramas              |
| ...                    | ...     | ...                   | ...             | ...                                                | ...                                           | ...        | ...          | ...    | ...       | ...                                               | ...                                               | ...                    |
| s8796                  | TV Show | Yu-Gi-Oh! Arc-V       | unknown         | Mike Liscio, Emily Bauer, Billy Bob Thompson, ...  | Japan, Canada                                 | 2018-05-01 | 2015         | TV-Y7  | 2 Seasons | Anime Series, Kids' TV                            | Now that he's discovered the Pendulum Summonin... | Anime Series           |
| s8797                  | TV Show | Yunus Emre            | unknown         | Gökhan Altalay, Payidar Tüfekçioğlu, Baran Akbu... | Turkey                                        | 2017-01-17 | 2016         | TV-PG  | 2 Seasons | International TV Shows, TV Dramas                 | During the Mongol invasions, Yunus Emre leaves... | International TV Shows |
| s8798                  | TV Show | Zak Storm             | unknown         | Michael Johnston, Jessica Gee-George, Christin...  | United States, France, South Korea, Indonesia | 2018-09-13 | 2016         | TV-Y7  | 3 Seasons | Kids' TV                                          | Teen surfer Zak Storm is mysteriously transpor... | Kids' TV               |
| s8801                  | TV Show | Zindagi Gulzar Hai    | unknown         | Sanam Saeed, Fawad Khan, Ayesha Omer, Mehreen ...  | Pakistan                                      | 2016-12-15 | 2012         | TV-PG  | 1 Season  | International TV Shows, Romantic TV Shows, TV ... | Strong-willed, middle-class Kashaf and carefre... | International TV Shows |
| s8804                  | TV Show | Zombie Dumb           | unknown         | unknown                                            | unknown                                       | 2019-07-01 | 2018         | TV-Y7  | 2 Seasons | Kids' TV, Korean TV Shows, TV Comedies            | While living alone in a spooky town, a young g... | Kids' TV               |
| 2676 rows × 12 columns |         |                       |                 |                                                    |                                               |            |              |        |           |                                                   |                                                   |                        |

```
df_1["duration(min)"] = pd.to_numeric(df_1["duration"].str.extract('(\\d+)', expand=False), errors='coerce').fillna(0).astype(int)
```

| df_1                   |       |                                  |                               |                                                   |                                                   |            |              |        |          |                                                  |                                                   |                          |               |
|------------------------|-------|----------------------------------|-------------------------------|---------------------------------------------------|---------------------------------------------------|------------|--------------|--------|----------|--------------------------------------------------|---------------------------------------------------|--------------------------|---------------|
|                        | type  | title                            | director                      | cast                                              | country                                           | date_added | release_year | rating | duration | listed_in                                        | description                                       | genres                   | duration(min) |
| show_id                |       |                                  |                               |                                                   |                                                   |            |              |        |          |                                                  |                                                   |                          |               |
| s1                     | Movie | Dick Johnson Is Dead             | Kirsten Johnson               | unknown                                           | United States                                     | 2021-09-25 | 2020         | PG-13  | 90 min   | Documentaries                                    | As her father nears the end of his life, filmm... | Documentaries            | 90            |
| s7                     | Movie | My Little Pony: A New Generation | Robert Cullen, José Luis Ucha | Vanessa Hudgens, Kimiko Glenn, James Marsden, ... | unknown                                           | 2021-09-24 | 2021         | PG     | 91 min   | Children & Family Movies                         | Equestria's divided. But a bright-eyed hero be... | Children & Family Movies | 91            |
| s8                     | Movie | Sankofa                          | Haile Gerima                  | Kofi Ghanaba, Oyafunmike Ogunlano, Alexandra D... | United States, Ghana, Burkina Faso, United Kin... | 2021-09-24 | 1993         | TV-MA  | 125 min  | Dramas, Independent Movies, International Movies | On a photo shoot in Ghana, an American model s... | Dramas                   | 125           |
| s10                    | Movie | The Starling                     | Theodore Melfi                | Melissa McCarthy, Chris O'Dowd, Kevin Kline, T... | United States                                     | 2021-09-24 | 2021         | PG-13  | 104 min  | Comedies, Dramas                                 | A woman adjusting to life after a loss contend... | Comedies                 | 104           |
| s13                    | Movie | Je Suis Karl                     | Christian Schwochow           | Luna Wedler, Jannis Niewöhner, Milan Peschel, ... | Germany, Czech Republic                           | 2021-09-23 | 2021         | TV-MA  | 127 min  | Dramas, International Movies                     | After most of her family is murdered in a terr... | Dramas                   | 127           |
| ...                    | ...   | ...                              | ...                           | ...                                               | ...                                               | ...        | ...          | ...    | ...      | ...                                              | ...                                               | ...                      | ...           |
| s8802                  | Movie | Zinzana                          | Majid Al Ansari               | Ali Suliman, Saleh Bakri, Yasa, Ali Al-Jabri, ... | United Arab Emirates, Jordan                      | 2016-03-09 | 2015         | TV-MA  | 96 min   | Dramas, International Movies, Thrillers          | Recovering alcoholic Talal wakes up inside a s... | Dramas                   | 96            |
| s8803                  | Movie | Zodiac                           | David Fincher                 | Mark Ruffalo, Jake Gyllenhaal, Robert Downey J... | United States                                     | 2019-11-20 | 2007         | R      | 158 min  | Cult Movies, Dramas, Thrillers                   | A political cartoonist, a crime reporter and a... | Cult Movies              | 158           |
| s8805                  | Movie | Zombieland                       | Ruben Fleischer               | Jesse Eisenberg, Woody Harrelson, Emma Stone, ... | United States                                     | 2019-11-01 | 2009         | R      | 88 min   | Comedies, Horror Movies                          | Looking to survive in a world taken over by zo... | Comedies                 | 88            |
| s8806                  | Movie | Zoom                             | Peter Hewitt                  | Tim Allen, Courteney Cox, Chevy Chase, Kate Ma... | United States                                     | 2020-01-11 | 2006         | PG     | 88 min   | Children & Family Movies, Comedies               | Dragged from civilian life, a former superhero... | Children & Family Movies | 88            |
| s8807                  | Movie | Zubaan                           | Mozezz Singh                  | Vicky Kaushal, Sarah-Jane Dias, Raaghav Chanan... | India                                             | 2019-03-02 | 2015         | TV-14  | 111 min  | Dramas, International Movies, Music & Musicals   | A scrappy but poor boy worms his way into a ty... | Dramas                   | 111           |
| 6131 rows × 13 columns |       |                                  |                               |                                                   |                                                   |            |              |        |          |                                                  |                                                   |                          |               |

```
df_1.describe()
```

|       | date_added                    | release_year | duration(min) |
|-------|-------------------------------|--------------|---------------|
| count | 6131                          | 6131.000000  | 6131.000000   |
| mean  | 2019-05-07 03:32:47.639863040 | 2013.121514  | 99.564998     |
| min   | 2008-01-01 00:00:00           | 1942.000000  | 3.000000      |
| 25%   | 2018-04-01 00:00:00           | 2012.000000  | 87.000000     |
| 50%   | 2019-06-19 00:00:00           | 2016.000000  | 98.000000     |
| 75%   | 2020-07-23 12:00:00           | 2018.000000  | 114.000000    |
| max   | 2021-09-25 00:00:00           | 2021.000000  | 312.000000    |
| std   | NaN                           | 9.678169     | 28.289504     |

Double-click (or enter) to edit

- Insighths:
- 1.Average length of movie runtime is around 99.56 min.
  - 2.(25, 50 & 75) percentile of movie length is 87, 98 & 114 minutes.
  - 3.Standard deviation movie runtime length is 28.28 min.

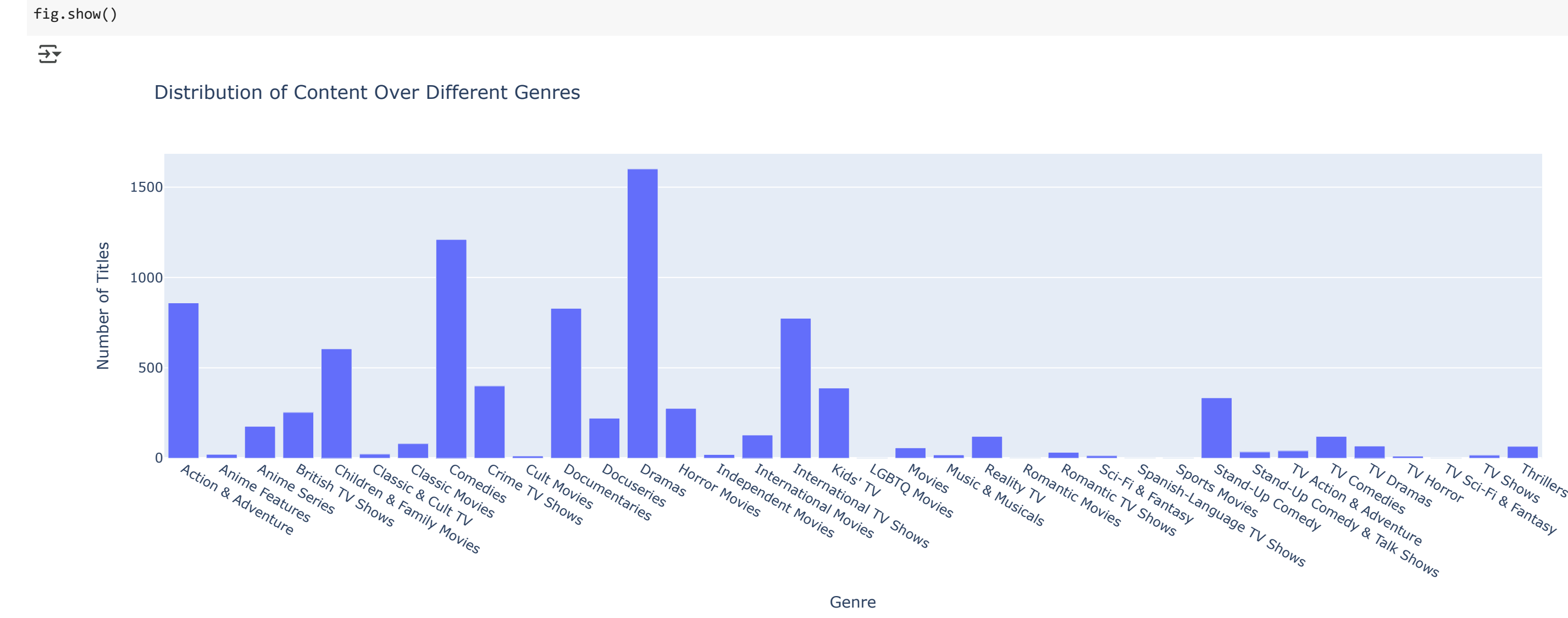
```
genres=df[["genres"]].value_counts()
genres
```

|                              | count |
|------------------------------|-------|
| genres                       |       |
| Dramas                       | 1600  |
| Comedies                     | 1210  |
| Action & Adventure           | 859   |
| Documentaries                | 829   |
| International TV Shows       | 774   |
| Children & Family Movies     | 605   |
| Crime TV Shows               | 399   |
| Kids' TV                     | 388   |
| Stand-Up Comedy              | 334   |
| Horror Movies                | 275   |
| British TV Shows             | 253   |
| Docuseries                   | 221   |
| Anime Series                 | 176   |
| International Movies         | 128   |
| TV Comedies                  | 120   |
| Reality TV                   | 120   |
| Classic Movies               | 80    |
| TV Dramas                    | 67    |
| Thrillers                    | 65    |
| Movies                       | 57    |
| TV Action & Adventure        | 40    |
| Stand-Up Comedy & Talk Shows | 34    |
| Romantic TV Shows            | 32    |
| Classic & Cult TV            | 22    |
| Anime Features               | 21    |
| Independent Movies           | 20    |
| Music & Musicals             | 18    |
| TV Shows                     | 16    |
| Sci-Fi & Fantasy             | 13    |
| Cult Movies                  | 12    |
| TV Horror                    | 11    |
| Romantic Movies              | 3     |
| Spanish-Language TV Shows    | 2     |
| LGBTQ Movies                 | 1     |
| TV Sci-Fi & Fantasy          | 1     |
| Sports Movies                | 1     |

dtype: int64

```
genre_counts = df.groupby('genres').size().reset_index()
genre_counts.rename(columns={0: 'count'}, inplace=True)
```

```
fig = px.bar(genre_counts, x='genres', y='count',
              title='Distribution of Content Over Different Genres',
              labels={'genres': 'Genre', 'count': 'Number of Titles'})
```



```
df[["release_year"]].value_counts()
```

|              | count |
|--------------|-------|
| release_year |       |
| 2018         | 1147  |
| 2017         | 1032  |
| 2019         | 1030  |
| 2020         | 953   |
| 2016         | 902   |
| ...          | ...   |
| 1961         | 1     |
| 1925         | 1     |
| 1959         | 1     |
| 1966         | 1     |
| 1947         | 1     |

74 rows × 1 columns

dtype: int64

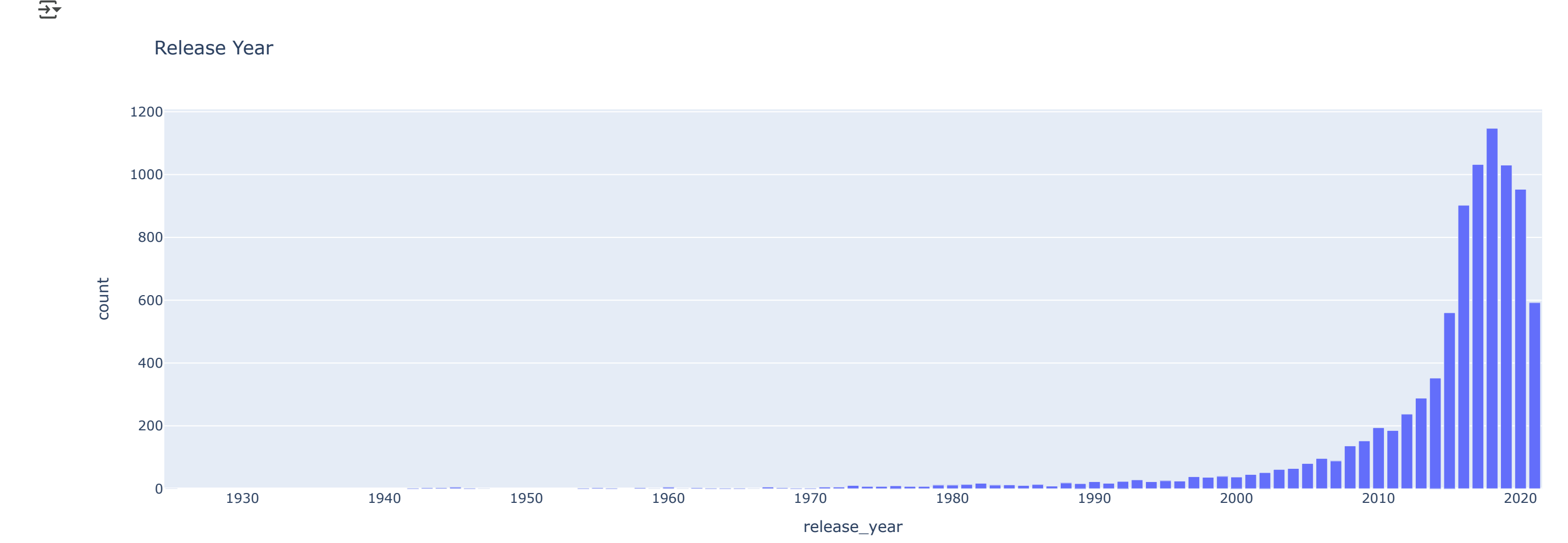
```
release=df.groupby("release_year").size().reset_index()
release
```

|     | release_year | 0    |
|-----|--------------|------|
| 0   | 1925         | 1    |
| 1   | 1942         | 2    |
| 2   | 1943         | 3    |
| 3   | 1944         | 3    |
| 4   | 1945         | 4    |
| ... | ...          | ...  |
| 69  | 2017         | 1032 |
| 70  | 2018         | 1147 |
| 71  | 2019         | 1030 |
| 72  | 2020         | 953  |
| 73  | 2021         | 592  |

74 rows × 2 columns

```
release.rename(columns={0: 'count'}, inplace=True)
```

```
ss=px.bar(release,x="release_year",y="count",title="Release Year")
ss.show()
```



```
country=df.groupby("country").size().reset_index()
country
```



```
country      country      0
0      , France, Algeria  1
1      , South Korea    1
2      Argentina        56
3      Argentina, Brazil, France, Poland, Germany, De...  1
4      Argentina, Chile  2
...      ...            ...
744     Venezuela, Colombia  1
745     Vietnam          7
746     West Germany     1
747     Zimbabwe         1
748     unknown          831

749 rows x 2 columns
```

```
country.rename(columns={0: 'count'}, inplace=True)
```

```
px.choropleth(country,locations=country['country'],locationmode='country names',projection='orthographic',color = country['count'])
```



```
df['date_added'] = pd.to_datetime(df['date_added'])
df['year_added'] = df['date_added'].dt.year
df['month_added'] = df['date_added'].dt.month
monthly_counts = df.groupby(['year_added', 'month_added']).size().reset_index(name='count')
monthly_counts['DAY'] = 1
monthly_counts['date'] = pd.to_datetime(monthly_counts[['year_added', 'month_added', 'DAY']].rename(columns={'year_added': 'year', 'month_added': 'month', 'DAY': 'day'}))
monthly_counts.set_index('date', inplace=True)
```

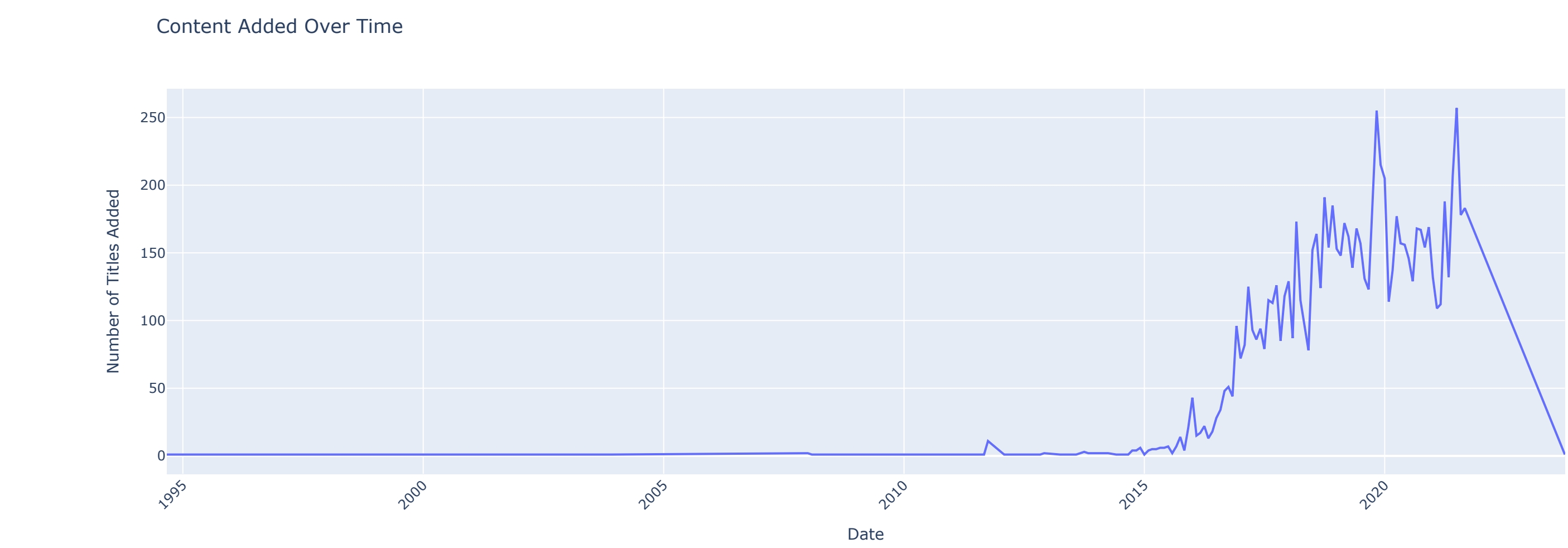
| monthly_counts |            |             |       |     |
|----------------|------------|-------------|-------|-----|
|                | year_added | month_added | count | DAY |
| Date           |            |             |       |     |
| 1994-09-01     | 1994       | 9           | 1     | 1   |
| 2002-08-01     | 2002       | 8           | 1     | 1   |
| 2003-04-01     | 2003       | 4           | 1     | 1   |
| 2003-12-01     | 2003       | 12          | 1     | 1   |
| 2008-01-01     | 2008       | 1           | 2     | 1   |
| ...            | ...        | ...         | ...   | ... |
| 2021-06-01     | 2021       | 6           | 207   | 1   |
| 2021-07-01     | 2021       | 7           | 257   | 1   |
| 2021-08-01     | 2021       | 8           | 178   | 1   |
| 2021-09-01     | 2021       | 9           | 183   | 1   |
| 2023-10-01     | 2023       | 10          | 1     | 1   |

116 rows x 4 columns

```
fig = px.line(monthly_counts, x=monthly_counts.index, y='count',
              title='Content Added Over Time',
              labels={'Date': 'Date', 'count': 'Number of Titles Added'})
```

```
fig.update_layout(xaxis_tickangle=-45)
```

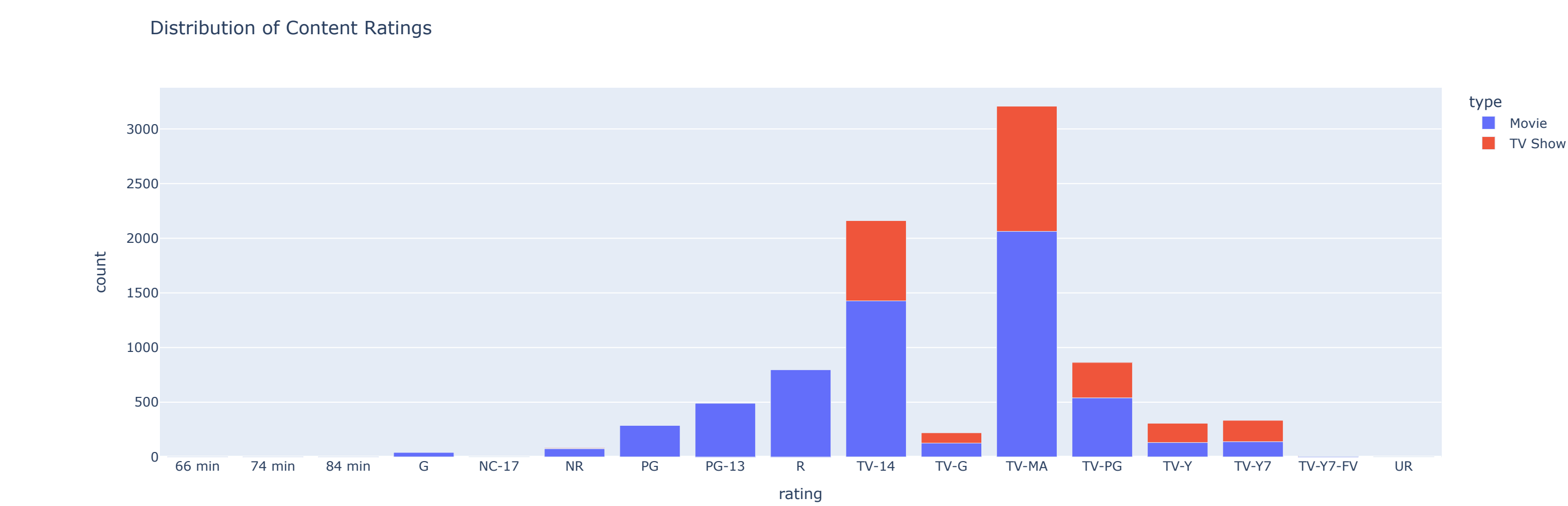
```
fig.show()
```



```
rating=df.groupby(["rating","type"]).size().reset_index(name="count")
rating
```

|    | rating   | type    | count |
|----|----------|---------|-------|
| 0  | 66 min   | Movie   | 1     |
| 1  | 74 min   | Movie   | 1     |
| 2  | 84 min   | Movie   | 1     |
| 3  | G        | Movie   | 41    |
| 4  | G        | TV Show | 1     |
| 5  | NC-17    | Movie   | 3     |
| 6  | NR       | Movie   | 75    |
| 7  | NR       | TV Show | 5     |
| 8  | PG       | Movie   | 287   |
| 9  | PG-13    | Movie   | 490   |
| 10 | R        | Movie   | 798   |
| 11 | R        | TV Show | 2     |
| 12 | TV-14    | Movie   | 1427  |
| 13 | TV-14    | TV Show | 734   |
| 14 | TV-G     | Movie   | 126   |
| 15 | TV-G     | TV Show | 94    |
| 16 | TV-MA    | Movie   | 2063  |
| 17 | TV-MA    | TV Show | 1145  |
| 18 | TV-PG    | Movie   | 540   |
| 19 | TV-PG    | TV Show | 323   |
| 20 | TV-Y     | Movie   | 131   |
| 21 | TV-Y     | TV Show | 176   |
| 22 | TV-Y7    | Movie   | 139   |
| 23 | TV-Y7    | TV Show | 195   |
| 24 | TV-Y7-FV | Movie   | 5     |
| 25 | TV-Y7-FV | TV Show | 1     |
| 26 | UR       | Movie   | 3     |

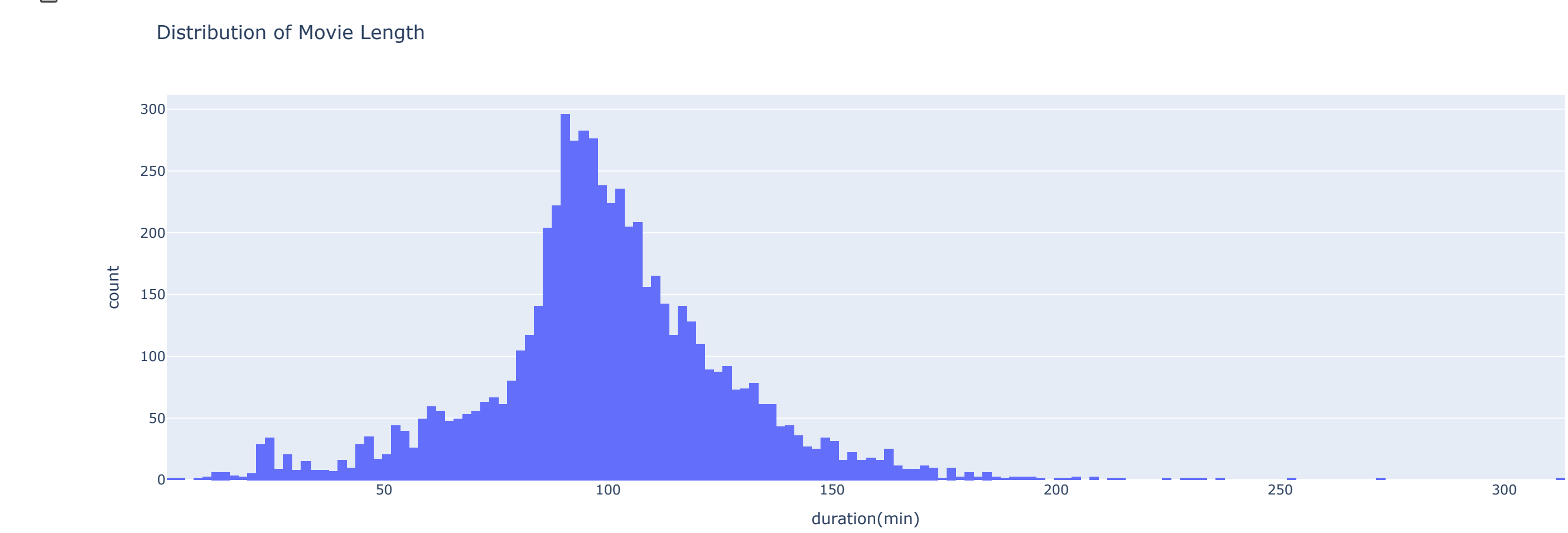
```
fig=px.bar(rating, x="rating",y="count",color='type',title='Distribution of Content Ratings')
fig.show()
```



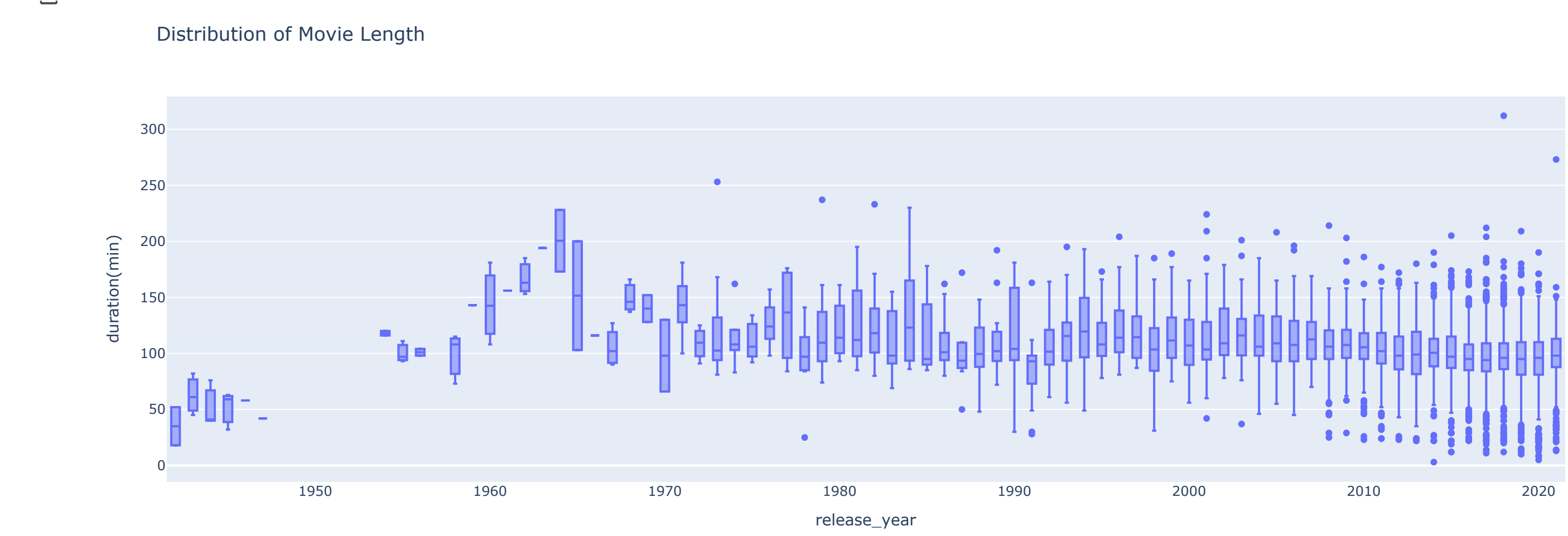
```
df_1["duration(min)"].describe()
```

```
df_1.duration(min)
count    6131.000000
mean      99.564998
std       28.289504
min         3.000000
25%       87.000000
50%       98.000000
75%      114.000000
max      312.000000
dtype: float64
```

```
fig=px.histogram(df_1,x="duration(min)",title="Distribution of Movie Length")
fig.show()
```



```
jj=px.box(df_1,x="release_year",y="duration(min)",title="Distribution of Movie Length")
jj.show()
```



.As we can see over here that most of the movie length is between 75 - 137 minutes.

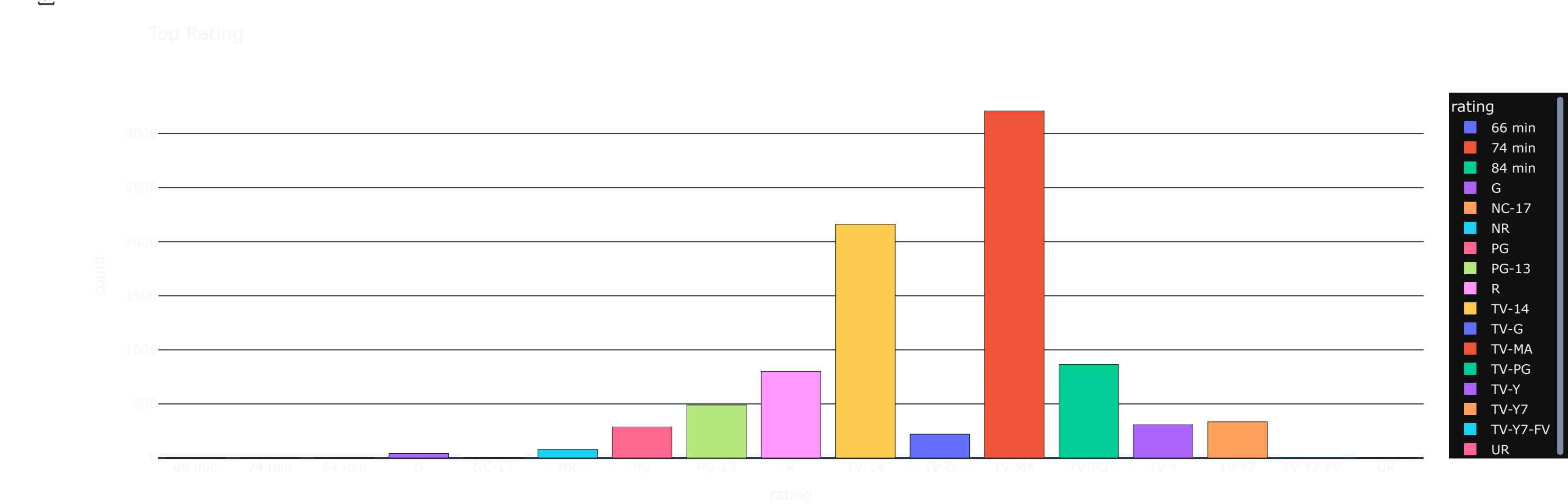
.Chances of Movie length lower or higher than (75 - 137) minutes range is quite low.

.Box Plot also suggest the same. While there might be slight variations across release years, the overall trend suggests consistency in movie lengths

```
rating=df.groupby("rating").size().reset_index(name="count")
rating
```

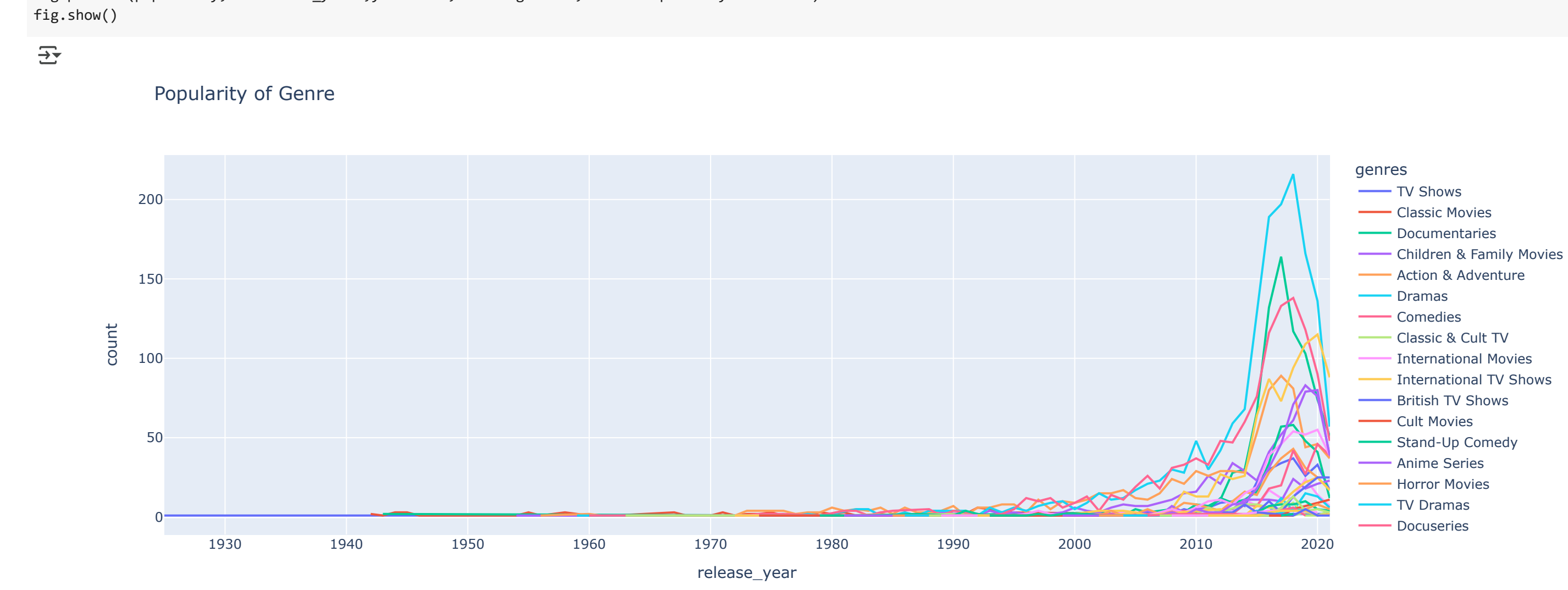
|    | rating   | count |
|----|----------|-------|
| 0  | 66 min   | 1     |
| 1  | 74 min   | 1     |
| 2  | 84 min   | 1     |
| 3  | G        | 42    |
| 4  | NC-17    | 3     |
| 5  | NR       | 80    |
| 6  | PG       | 287   |
| 7  | PG-13    | 490   |
| 8  | R        | 800   |
| 9  | TV-14    | 2161  |
| 10 | TV-G     | 220   |
| 11 | TV-MA    | 3208  |
| 12 | TV-PG    | 863   |
| 13 | TV-Y     | 307   |
| 14 | TV-Y7    | 334   |
| 15 | TV-Y7-FV | 6     |
| 16 | UR       | 3     |

```
fig=px.bar(rating,x="rating",y="count",title="Top Rating",color="rating",template="plotly_dark")
fig.show()
```



```
popularity=df.groupby(["release_year","genres"]).size().reset_index(name="count")

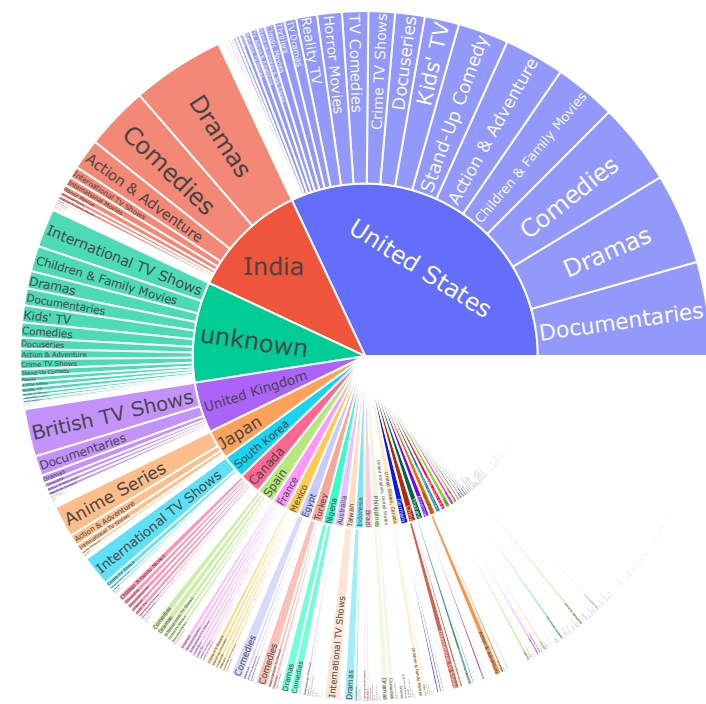
fig=px.line(popularity,x="release_year",y="count",color="genres",title="Popularity of Genre")
fig.show()
```



```
country_genre_counts = df.groupby(['country', 'genres']).size().reset_index(name='count')
```

```
fig = px.sunburst(country_genre_counts,
                  path=[ 'country', 'genres'],
                  values='count',
                  title='Content: Distribution Across Countries and Genres (Sunburst Chart)',
                  labels={'count': 'Number of Titles'})
fig.show()
```

Content Distribution Across Countries and Genres (Sunburst Chart)





| Country            | Drama | International TV Shows |
|--------------------|-------|------------------------|
| 1, United States   | 1000  | 500                    |
| 2, United Kingdom  | 900   | 500                    |
| 3, France          | 800   | 500                    |
| 4, Germany         | 700   | 500                    |
| 5, Italy           | 600   | 500                    |
| 6, Spain           | 500   | 500                    |
| 7, Netherlands     | 400   | 500                    |
| 8, Belgium         | 300   | 500                    |
| 9, Norway          | 200   | 500                    |
| 10, Poland         | 100   | 500                    |
| 11, Portugal       | 100   | 500                    |
| 12, Czech Republic | 100   | 500                    |
| 13, Sweden         | 100   | 500                    |
| 14, United Kingdom | 100   | 500                    |
| 15, United Kingdom | 100   | 500                    |
| 16, United Kingdom | 100   | 500                    |
| 17, United Kingdom | 100   | 500                    |
| 18, United Kingdom | 100   | 500                    |
| 19, United Kingdom | 100   | 500                    |
| 20, United Kingdom | 100   | 500                    |
| 21, United Kingdom | 100   | 500                    |
| 22, United Kingdom | 100   | 500                    |
| 23, United Kingdom | 100   | 500                    |
| 24, United Kingdom | 100   | 500                    |
| 25, United Kingdom | 100   | 500                    |
| 26, United Kingdom | 100   | 500                    |
| 27, United Kingdom | 100   | 500                    |
| 28, United Kingdom | 100   | 500                    |
| 29, United Kingdom | 100   | 500                    |
| 30, United Kingdom | 100   | 500                    |
| 31, United Kingdom | 100   | 500                    |
| 32, United Kingdom | 100   | 500                    |
| 33, United Kingdom | 100   | 500                    |
| 34, United Kingdom | 100   | 500                    |
| 35, United Kingdom | 100   | 500                    |
| 36, United Kingdom | 100   | 500                    |
| 37, United Kingdom | 100   | 500                    |
| 38, United Kingdom | 100   | 500                    |
| 39, United Kingdom | 100   | 500                    |
| 40, United Kingdom | 100   | 500                    |
| 41, United Kingdom | 100   | 500                    |

|    | genres                       | count |
|----|------------------------------|-------|
| 0  | Dramas                       | 1600  |
| 1  | Comedies                     | 1210  |
| 2  | Action & Adventure           | 859   |
| 3  | Documentaries                | 829   |
| 4  | International TV Shows       | 774   |
| 5  | Children & Family Movies     | 605   |
| 6  | Crime TV Shows               | 399   |
| 7  | Kids' TV                     | 388   |
| 8  | Stand-Up Comedy              | 334   |
| 9  | Horror Movies                | 275   |
| 10 | British TV Shows             | 253   |
| 11 | Docuseries                   | 221   |
| 12 | Anime Series                 | 176   |
| 13 | International Movies         | 128   |
| 14 | TV Comedies                  | 120   |
| 15 | Reality TV                   | 120   |
| 16 | Classic Movies               | 80    |
| 17 | TV Dramas                    | 67    |
| 18 | Thrillers                    | 65    |
| 19 | Movies                       | 57    |
| 20 | TV Action & Adventure        | 40    |
| 21 | Stand-Up Comedy & Talk Shows | 34    |
| 22 | Romantic TV Shows            | 32    |
| 23 | Classic & Cult TV            | 22    |
| 24 | Anime Features               | 21    |
| 25 | Independent Movies           | 20    |
| 26 | Music & Musicals             | 18    |
| 27 | TV Shows                     | 16    |
| 28 | Sci-Fi & Fantasy             | 13    |
| 29 | Cult Movies                  | 12    |
| 30 | TV Horror                    | 11    |
| 31 | Romantic Movies              | 3     |
| 32 | Spanish-Language TV Shows    | 2     |
| 33 | LGBTQ Movies                 | 1     |
| 34 | Sports Movies                | 1     |
| 35 | TV Sci-Fi & Fantasy          | 1     |

| Genre                     | Count (approx.) |
|---------------------------|-----------------|
| Dramas                    | 1600            |
| Comedies                  | 1200            |
| Action & Adventure        | 850             |
| Documentaries             | 800             |
| International TV Shows    | 750             |
| Children's & Family Shows | 600             |
| Crime                     | 400             |
| Kids TV Shows             | 380             |
| Stand-Up Comedy           | 350             |
| Horror Movies             | 280             |
| British Movies            | 250             |
| TV Shows                  | 220             |
| Anime Series              | 180             |
| Documentaries             | 150             |
| International Movies      | 120             |
| Reality TV                | 100             |
| Comedies                  | 80              |
| Classic TV                | 60              |
| TV Dramas                 | 50              |
| Thrillers                 | 40              |
| Movies                    | 30              |
| TV Action & Adventure     | 20              |
| Romantic TV Shows         | 15              |
| Classic TV Shows          | 10              |
| Anime Features            | 10              |
| Independent Movies        | 10              |
| Music TV Shows            | 10              |
| Sci-Fi & Fantasy          | 10              |
| Cult Movies               | 10              |
| TV Horror                 | 10              |
| Romantic                  | 10              |
| Spanish Language TV Shows | 10              |
| LGBTQ Movies              | 10              |
| Sports Movies             | 10              |
| TV Sci-Fi & Fantasy       | 10              |
| TV Shows                  | 10              |

| Content Type | Number of Titles |
|--------------|------------------|
| Movie        | 6100             |
| TV Show      | 2700             |

- 1 Content Distribution:** Netflix offers a diverse range of content, with a strong focus on international movies and TV shows. The United States remains a significant contributor, but other countries, particularly India, are emerging as major content creators.
- 2 Genre Preferences:** Dramas, comedies, and documentaries are the most common genres available on Netflix, reflecting a broad appeal to different viewer preferences. International movies and TV shows offer a wide variety of genres, catering to diverse tastes.
- 3 Content Trends Over Time:** The volume of content added to Netflix has steadily increased over the years, with movies experiencing significant growth in recent years. This demonstrates Netflix's commitment to expanding its content library and catering to evolving viewer demands.
- 4 Content Ratings:** While most of the content on Netflix is suitable for mature audiences, a substantial portion is also available for younger viewers (teens), ensuring a wide range of options for different age groups.