Open in Colab

Can we predict movie success?

In [14]:

```
import pandas as pd
import matplotlib.pyplot as plt
import numpy as np
from collections import Counter
import seaborn as sns
import datetime as dt
import pprint
%pprint
%matplotlib inline
```

```
Pretty printing has been turned OFF
```

In [15]:

```
df = pd.read_csv('../group_projects/tmdb_movies_data.csv')
df.columns
```

Out[15]:

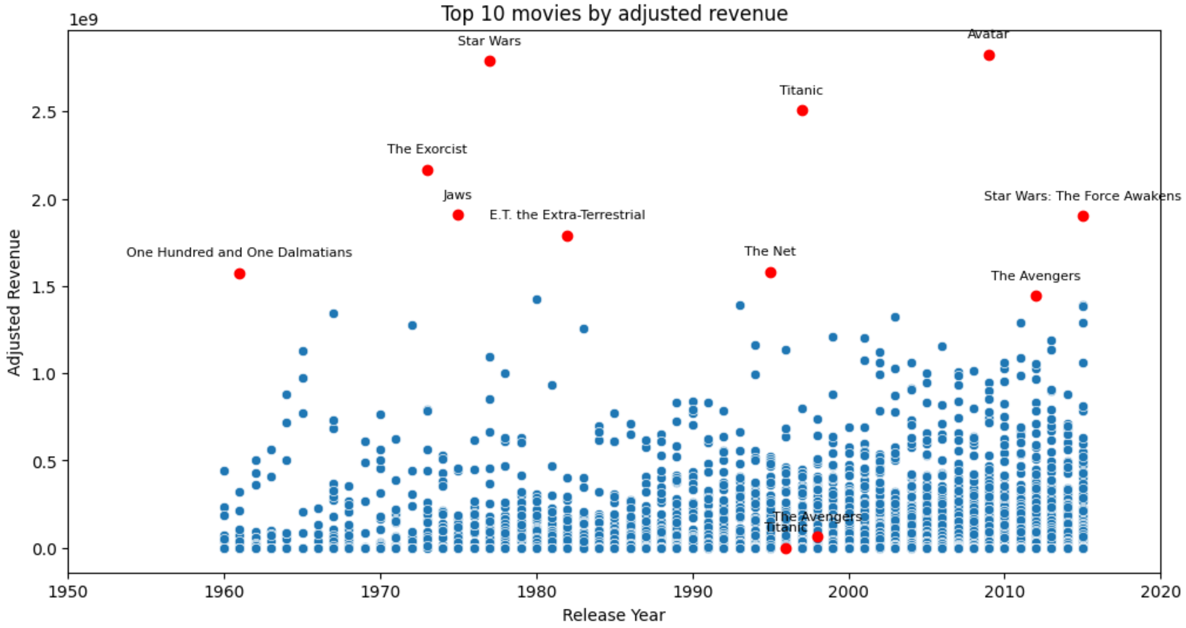
```
Index(['id', 'imdb_id', 'popularity', 'budget', 'revenue', 'original_titl
e',
       'cast', 'homepage', 'director', 'tagline', 'keywords', 'overview',
       'runtime', 'genres', 'production_companies', 'release_date',
       'vote_count', 'vote_average', 'release_year', 'budget_adj',
       'revenue_adj'],
      dtype='object')
```

By genre

Top 10 movies by adjusted Revenue

In [16]:

```
fig = plt.figure(figsize=(12,6))
# create scatter plot
ax = sns.scatterplot(data=df, x='release_year', y='revenue_adj')

# set top 10 revenue movies to different color
top10_movies = df.sort_values('revenue_adj', ascending=False).head(10)['orig

for i, point in df.iterrows():
    if point['original_title'] in top10_movies:
        ax.scatter(point['release_year'], point['revenue_adj'], color='red')
        ax.annotate(point['original_title'], (point['release_year'], point['

# show every 10 years on x-axis
xticks = ax.get_xticks()
ax.set_xticks(xticks[::1])
ax.set(title='Top 10 movies by adjusted revenue', xlabel='Release Year', yla

plt.show()
```



In [17]:

```
df[df['original_title']=='Titanic']
```

Out[17]:

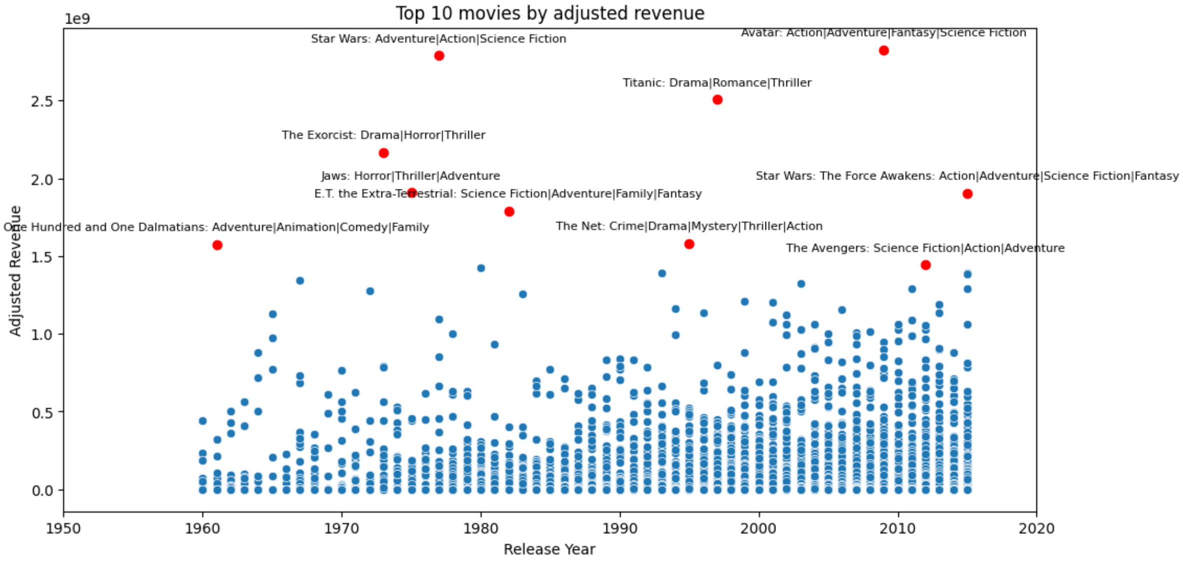
	id	imdb_id	popularity	budget	revenue	original_title	cast
5231	597	tt0120338	4.355219	200000000	1845034188	Titanic	Kate Winslet|Leonardo DiCaprio|Frances Fisher|...
8630	2699	tt0115392	0.219364	13000000	0	Titanic	Peter Gallagher|George C. Scott|Catherine Zeta...

2 rows × 21 columns

In [18]:

```
fig = plt.figure(figsize=(12,6))
# create scatter plot
ax = sns.scatterplot(data=df, x='release_year', y='revenue_adj')

# set top 10 revenue movies to different color
top10_movies = df.sort_values('revenue_adj', ascending=False).head(10)
top10_movies_title = [row['original_title'] for index, row in top10_movies.i
top10_movies_id = [row['imdb_id'] for index, row in top10_movies.iterrows()]

for i, point in df.iterrows():
    if point['imdb_id'] in top10_movies_id:
        ax.scatter(point['release_year'], point['revenue_adj'], color='red')
        ax.annotate(point['original_title']+': '+point['genres'], (point['re

# show every 10 years on x-axis
xticks = ax.get_xticks()
```

```
ax.set_xticks(xticks[::1])
ax.set(title='Top 10 movies by adjusted revenue', xlabel='Release Year', yla

plt.show()
```



Top 10 movies by ROI

ROI: Return on investment, the ratio of net profit over the total cost of the investment

ROI = (Revenue-Budget)/Budget

In [19]:
```
len(df[df['budget_adj']==0])
```

Out[19]:
```
5696
```

In [20]:
```
len(df[df['budget_adj']<1000])
```

Out[20]:
```
5754
```

In [21]:
```
df['roi'] = df.apply(lambda row: (row['revenue_adj'] - row['budget_adj'])/ro
```

In [23]:
```
len(df[df['roi']=='NA'])
```

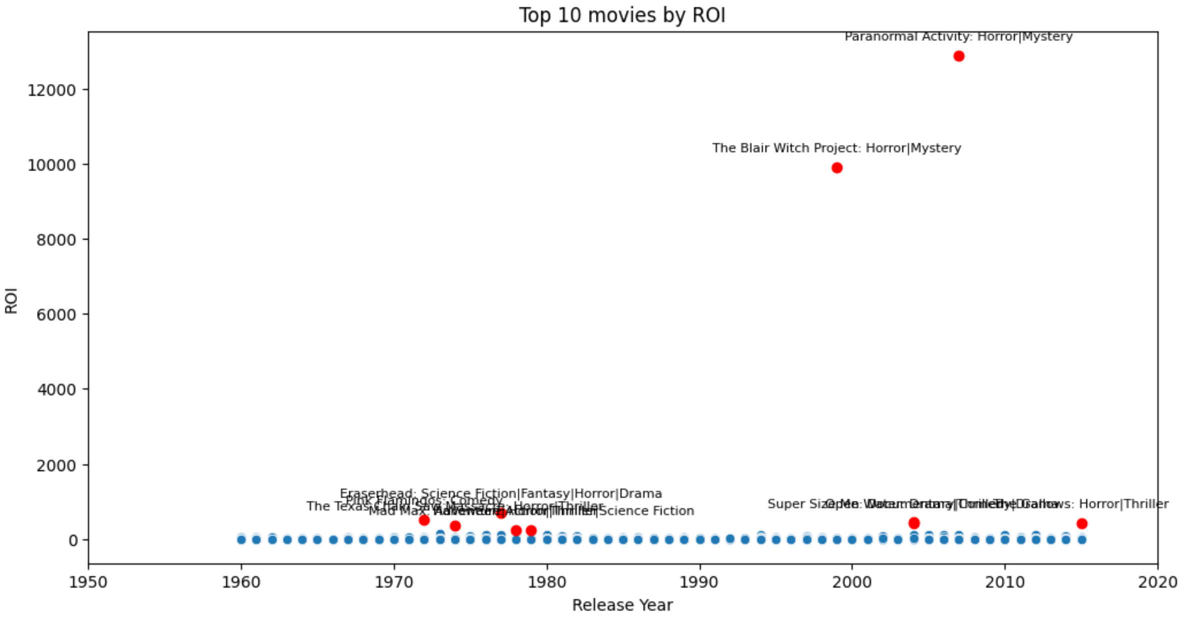
Out[23]:
```
5754
```

In [26]:
```
df_roi = df[df['roi']!='NA']
```

In [27]:
```
df_roi.to_csv('movie_data_roi.csv')
```

In [28]:
```
fig = plt.figure(figsize=(12,6))
# create scatter plot
ax = sns.scatterplot(data=df_roi, x='release_year', y='roi')

# set top 10 revenue movies to different color
top10_movies = df_roi.sort_values('roi', ascending=False).head(10)
```

```
top10_movies_title = [row['original_title'] for index, row in top10_movies.i
top10_movies_id = [row['imdb_id'] for index, row in top10_movies.iterrows()]

for i, point in df_roi.iterrows():
    if point['imdb_id'] in top10_movies_id:
        ax.scatter(point['release_year'], point['roi'], color='red')
        ax.annotate(point['original_title']+': '+point['genres'], (point['re

# show every 10 years on x-axis
xticks = ax.get_xticks()
ax.set_xticks(xticks[::1])
ax.set(title='Top 10 movies by ROI', xlabel='Release Year', ylabel='ROI')

plt.show()
```



In [29]:

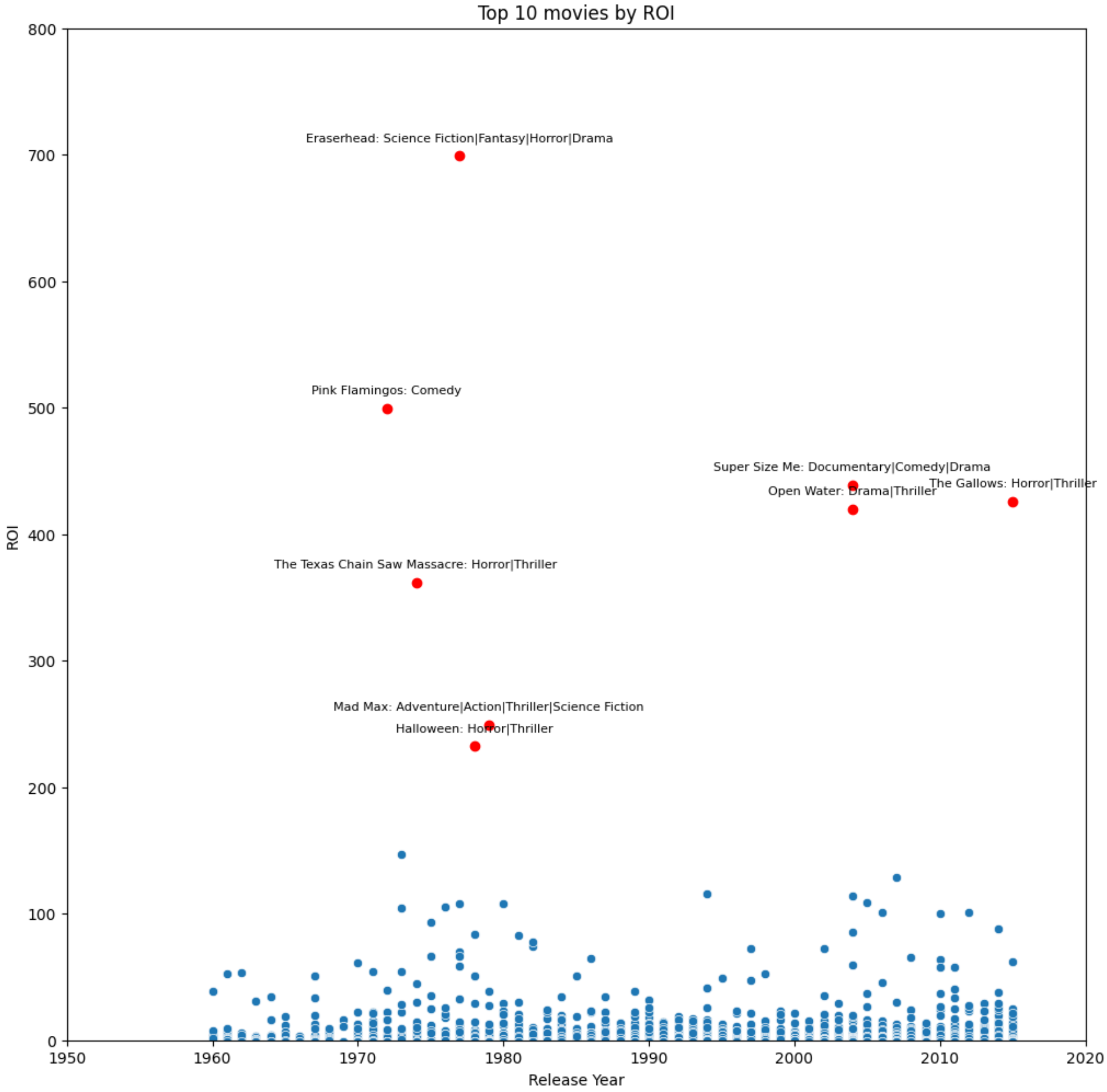
```
df_roi[df_roi['original_title'] == 'Paranormal Activity']['roi']
```

Out[29]:

```
7447    12889.386664
Name: roi, dtype: object
```

In [30]:

```
fig = plt.figure(figsize=(12,12))
# create scatter plot
ax = sns.scatterplot(data=df_roi, x='release_year', y='roi')

# set top 10 revenue movies to different color
top10_movies = df_roi.sort_values('roi', ascending=False).head(10)
top10_movies_title = [row['original_title'] for index, row in top10_movies.i
top10_movies_id = [row['imdb_id'] for index, row in top10_movies.iterrows()]

for i, point in df_roi.iterrows():
    if point['imdb_id'] in top10_movies_id:
        ax.scatter(point['release_year'], point['roi'], color='red')
        ax.annotate(point['original_title']+': '+point['genres'], (point['re

# show every 10 years on x-axis
xticks = ax.get_xticks()
ax.set_xticks(xticks[::1])
ax.set_ylim(0, 800)

ax.set(title='Top 10 movies by ROI', xlabel='Release Year', ylabel='ROI')

plt.show()
```



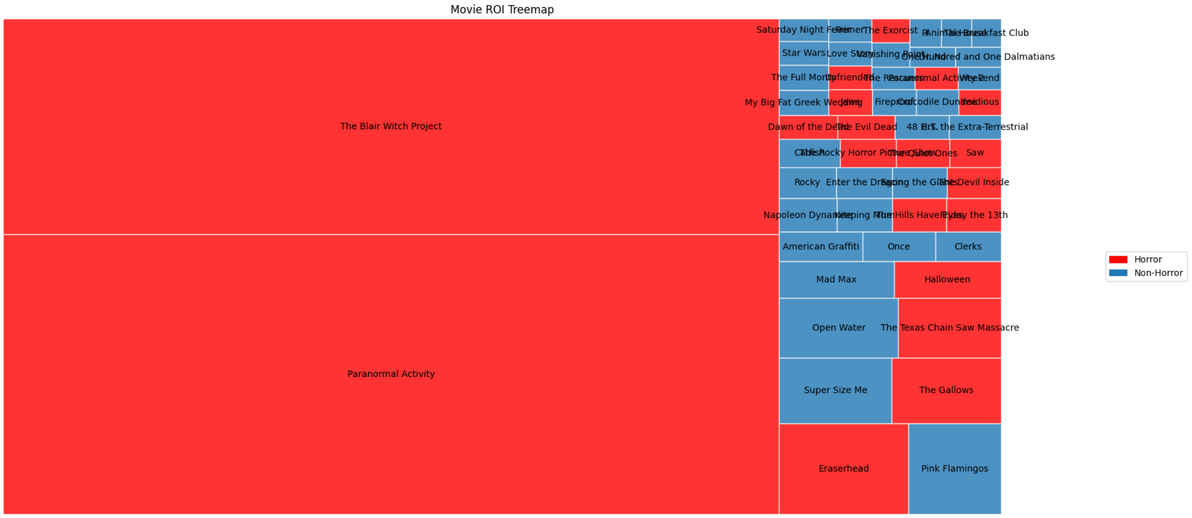
Visual ROI with part-to-whole

Part-to-Whole: charts show how much of a whole an individual part takes up.

In [103…

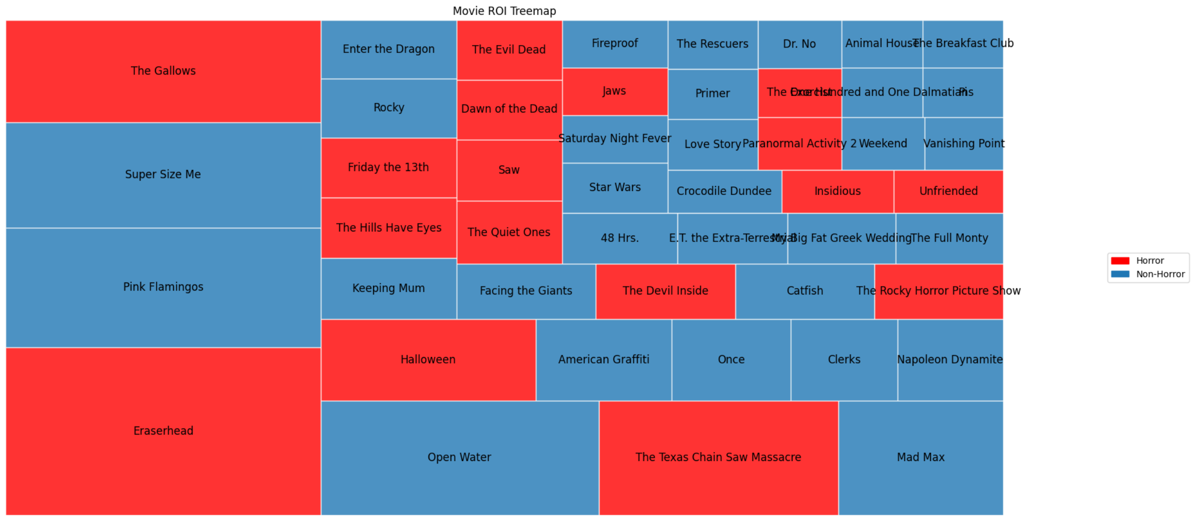
```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import squarify

# create sample data
# set top 10 revenue movies to different color
top50_movies = df_roi.sort_values('roi', ascending=False).head(50)
```

```
top50_movies_title = [row['original_title'] for index, row in top50_movies.i
top50_movies_id = [row['imdb_id'] for index, row in top50_movies.iterrows()]

data = top50_movies

df = data

# define color palette
blue = '#1f77b4'

# add color column based on genre
df['color'] = df['genres'].apply(lambda x: 'red' if 'Horror' in x else blue)

# calculate treemap sizes
sizes = df['roi'].values
labels = df['original_title'].values
colors = df['color'].values

# define function to map square size to font size
def adjust_font_size(size):
    return int(0.05*size)


# create treemap
plt.figure(figsize=(20, 10))
squarify.plot(sizes=sizes, label=labels, color=colors, alpha=0.8, edgecolor=

# set title and axis labels
plt.title('Movie ROI Treemap')
plt.axis('off')

# add legend
horror_patch = mpatches.Patch(color='red', label='Horror')
non_horror_patch = mpatches.Patch(color=blue, label='Non-Horror')
plt.legend(handles=[horror_patch, non_horror_patch], loc='center left', bbox

# show plot
plt.show()
```



In [104…

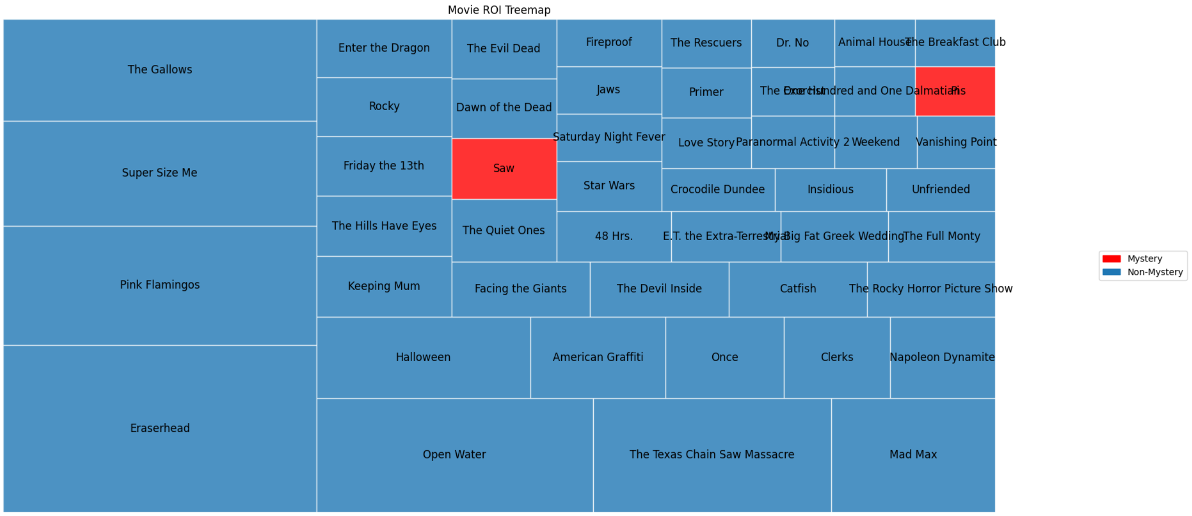
```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import squarify

# create sample data
# set top 10 revenue movies to different color
top50_movies = df_roi.sort_values('roi', ascending=False).head(50)
top50_movies_title = [row['original_title'] for index, row in top50_movies.i
top50_movies_id = [row['imdb_id'] for index, row in top50_movies.iterrows()]

data = top50_movies

df = pd.DataFrame(data[2:])
# df = data

# define color palette
blue = '#1f77b4'

# add color column based on genre
df['color'] = df['genres'].apply(lambda x: 'red' if 'Horror' in x else blue)

# calculate treemap sizes
sizes = df['roi'].values
labels = df['original_title'].values
colors = df['color'].values

# define function to map square size to font size
def adjust_font_size(size):
    return int(0.05*size)


# create treemap
plt.figure(figsize=(20, 10))
squarify.plot(sizes=sizes, label=labels, color=colors, alpha=0.8, edgecolor=

# set title and axis labels
plt.title('Movie ROI Treemap')
plt.axis('off')

# add legend
horror_patch = mpatches.Patch(color='red', label='Horror')
non_horror_patch = mpatches.Patch(color=blue, label='Non-Horror')
plt.legend(handles=[horror_patch, non_horror_patch], loc='center left', bbox

# show plot
plt.show()
```



In [105…

```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import squarify

# create sample data
# set top 10 revenue movies to different color
top50_movies = df_roi.sort_values('roi', ascending=False).head(50)
top50_movies_title = [row['original_title'] for index, row in top50_movies.i
top50_movies_id = [row['imdb_id'] for index, row in top50_movies.iterrows()]

data = top50_movies

df = pd.DataFrame(data[2:])
# df = data

# define color palette
blue = '#1f77b4'

# add color column based on genre
df['color'] = df['genres'].apply(lambda x: 'red' if 'Mystery' in x else blue

# calculate treemap sizes
sizes = df['roi'].values
labels = df['original_title'].values
colors = df['color'].values

# define function to map square size to font size
def adjust_font_size(size):
    return int(0.05*size)


# create treemap
plt.figure(figsize=(20, 10))
squarify.plot(sizes=sizes, label=labels, color=colors, alpha=0.8, edgecolor=

# set title and axis labels
plt.title('Movie ROI Treemap')
plt.axis('off')
```

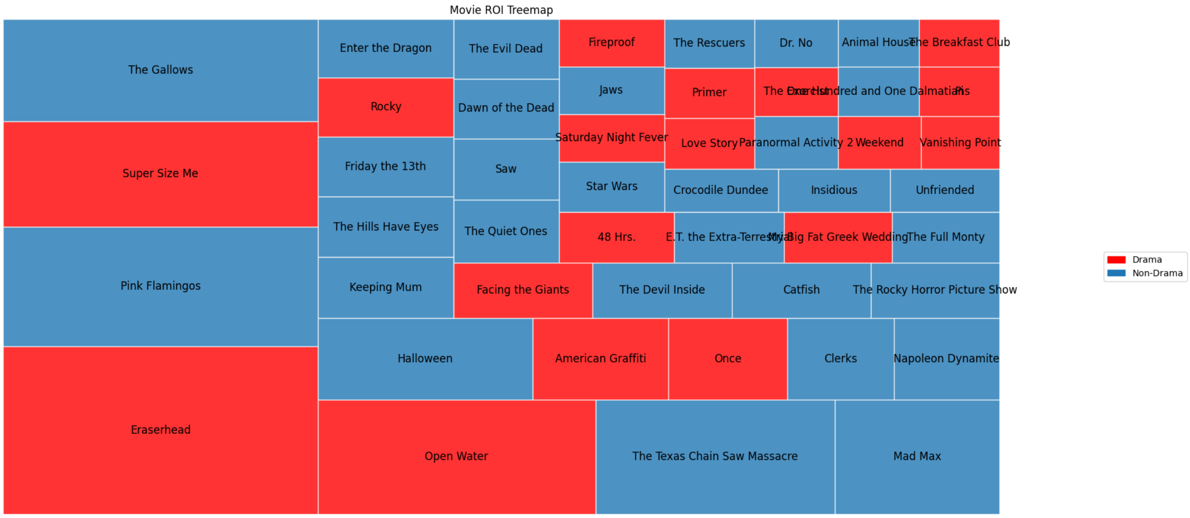
```
# add legend
horror_patch = mpatches.Patch(color='red', label='Mystery')
non_horror_patch = mpatches.Patch(color=blue, label='Non-Mystery')
plt.legend(handles=[horror_patch, non_horror_patch], loc='center left', bbox

# show plot
plt.show()
```



In [106…

```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import squarify

# create sample data
# set top 10 revenue movies to different color
top50_movies = df_roi.sort_values('roi', ascending=False).head(50)
top50_movies_title = [row['original_title'] for index, row in top50_movies.i
top50_movies_id = [row['imdb_id'] for index, row in top50_movies.iterrows()]

data = top50_movies

df = pd.DataFrame(data[2:])
# df = data

# define color palette
blue = '#1f77b4'

# add color column based on genre
df['color'] = df['genres'].apply(lambda x: 'red' if 'Drama' in x else blue)

# calculate treemap sizes
sizes = df['roi'].values
labels = df['original_title'].values
colors = df['color'].values

# define function to map square size to font size
def adjust_font_size(size):
    return int(0.05*size)
```

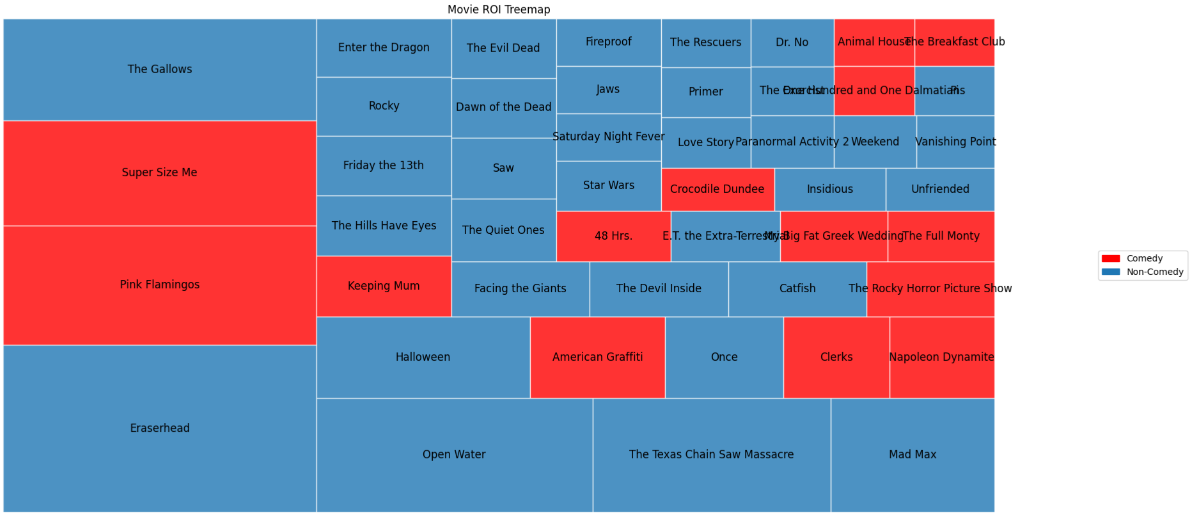
```
# create treemap
plt.figure(figsize=(20, 10))
squarify.plot(sizes=sizes, label=labels, color=colors, alpha=0.8, edgecolor=

# set title and axis labels
plt.title('Movie ROI Treemap')
plt.axis('off')

# add legend
horror_patch = mpatches.Patch(color='red', label='Drama')
non_horror_patch = mpatches.Patch(color=blue, label='Non-Drama')
plt.legend(handles=[horror_patch, non_horror_patch], loc='center left', bbox

# show plot
plt.show()
```



In [107…

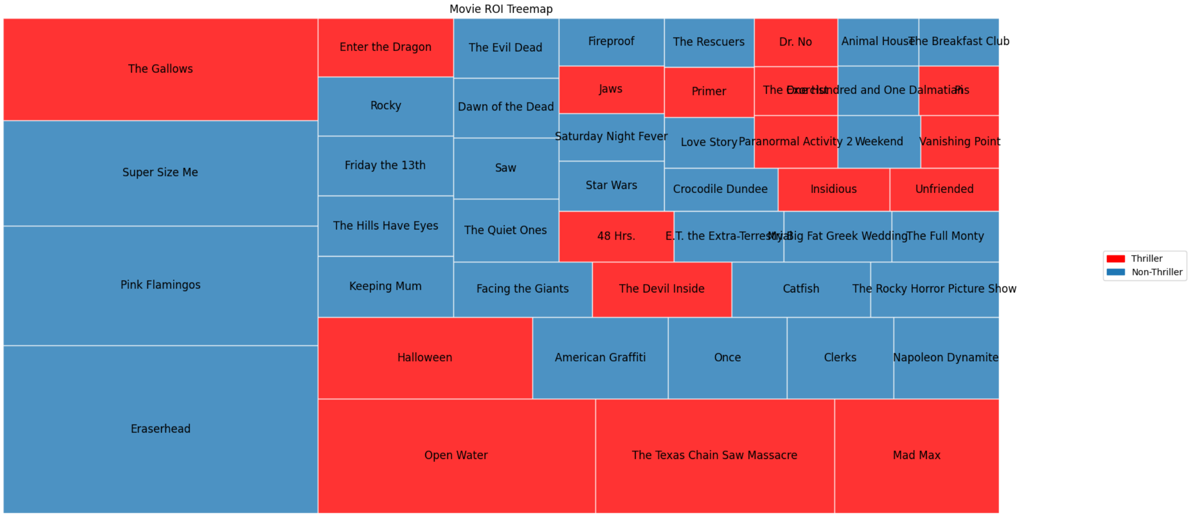
```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import squarify

# create sample data
# set top 10 revenue movies to different color
top50_movies = df_roi.sort_values('roi', ascending=False).head(50)
top50_movies_title = [row['original_title'] for index, row in top50_movies.i
top50_movies_id = [row['imdb_id'] for index, row in top50_movies.iterrows()]

data = top50_movies

df = pd.DataFrame(data[2:])
# df = data

# define color palette
blue = '#1f77b4'

# add color column based on genre
df['color'] = df['genres'].apply(lambda x: 'red' if 'Comedy' in x else blue)

# calculate treemap sizes
```

```
sizes = df['roi'].values
labels = df['original_title'].values
colors = df['color'].values

# define function to map square size to font size
def adjust_font_size(size):
    return int(0.05*size)


# create treemap
plt.figure(figsize=(20, 10))
squarify.plot(sizes=sizes, label=labels, color=colors, alpha=0.8, edgecolor=

# set title and axis labels
plt.title('Movie ROI Treemap')
plt.axis('off')

# add legend
horror_patch = mpatches.Patch(color='red', label='Comedy')
non_horror_patch = mpatches.Patch(color=blue, label='Non-Comedy')
plt.legend(handles=[horror_patch, non_horror_patch], loc='center left', bbox

# show plot
plt.show()
```



In [108…

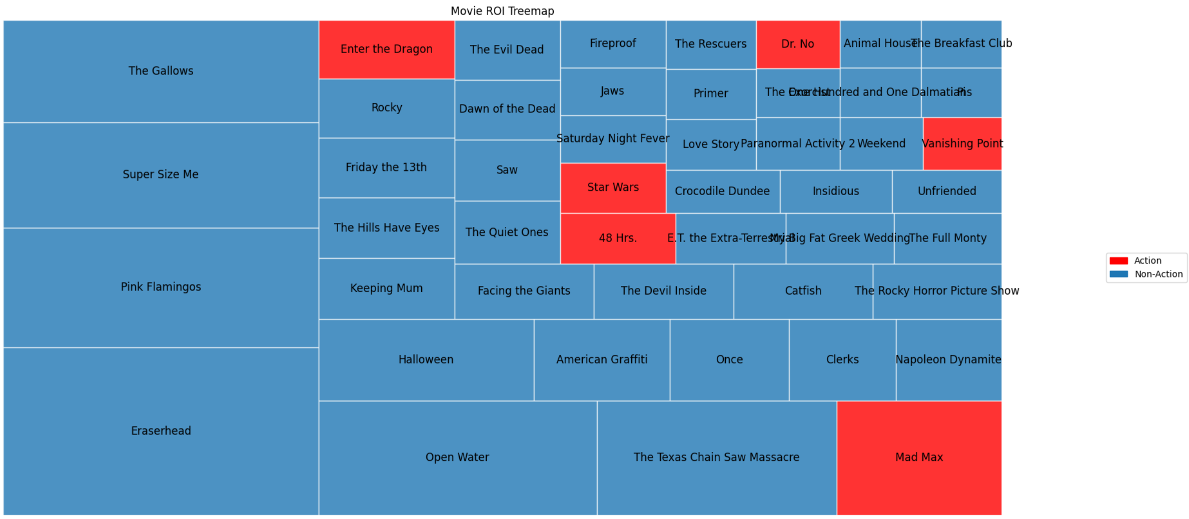
```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import squarify

# create sample data
# set top 10 revenue movies to different color
top50_movies = df_roi.sort_values('roi', ascending=False).head(50)
top50_movies_title = [row['original_title'] for index, row in top50_movies.i
top50_movies_id = [row['imdb_id'] for index, row in top50_movies.iterrows()]

data = top50_movies

df = pd.DataFrame(data[2:])
# df = data
# define color palette
blue = '#1f77b4'

# add color column based on genre
df['color'] = df['genres'].apply(lambda x: 'red' if 'Thriller' in x else blu

# calculate treemap sizes
sizes = df['roi'].values
labels = df['original_title'].values
colors = df['color'].values

# define function to map square size to font size
def adjust_font_size(size):
    return int(0.05*size)


# create treemap
plt.figure(figsize=(20, 10))
squarify.plot(sizes=sizes, label=labels, color=colors, alpha=0.8, edgecolor=

# set title and axis labels
plt.title('Movie ROI Treemap')
plt.axis('off')

# add legend
horror_patch = mpatches.Patch(color='red', label='Thriller')
non_horror_patch = mpatches.Patch(color=blue, label='Non-Thriller')
plt.legend(handles=[horror_patch, non_horror_patch], loc='center left', bbox

# show plot
plt.show()
```



In [109…

```
import pandas as pd
import matplotlib.pyplot as plt
import matplotlib.patches as mpatches
import squarify

# create sample data
# set top 10 revenue movies to different color
```

```
top50_movies = df_roi.sort_values('roi', ascending=False).head(50)
top50_movies_title = [row['original_title'] for index, row in top50_movies.i
top50_movies_id = [row['imdb_id'] for index, row in top50_movies.iterrows()]

data = top50_movies

df = pd.DataFrame(data[2:])
# df = data

# define color palette
blue = '#1f77b4'

# add color column based on genre
df['color'] = df['genres'].apply(lambda x: 'red' if 'Action' in x else blue)

# calculate treemap sizes
sizes = df['roi'].values
labels = df['original_title'].values
colors = df['color'].values

# define function to map square size to font size
def adjust_font_size(size):
    return int(0.05*size)


# create treemap
plt.figure(figsize=(20, 10))
squarify.plot(sizes=sizes, label=labels, color=colors, alpha=0.8, edgecolor=

# set title and axis labels
plt.title('Movie ROI Treemap')
plt.axis('off')

# add legend
horror_patch = mpatches.Patch(color='red', label='Action')
non_horror_patch = mpatches.Patch(color=blue, label='Non-Action')
plt.legend(handles=[horror_patch, non_horror_patch], loc='center left', bbox

# show plot
plt.show()
```

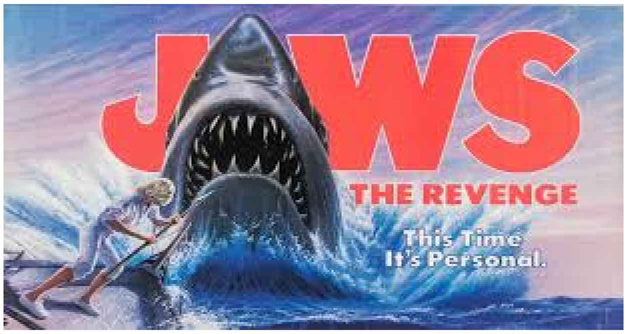


In [69]:
```
import sys
sys.path.insert(0, 'src')
import pandas as pd
import matplotlib.pyplot as plt

import mpl_extra.treemap as tr
```

In [ ]:
```
# f = pd.DataFrame({'title':list('ABCDEFG'),
#                     'counts':[100, 30, 25, 2, 2, 2, 2]})
# df['labels'] = [f'{a} - {b}' for a,b in zip(df['title'], df['counts'])]
# plt.figure(figsize=(20, 10))
fig, ax = plt.subplots(figsize=(20,10), dpi=100, subplot_kw=dict(aspect=1.15
df['color'] = df['genres'].apply(lambda x: 'red' if 'Horror' in x else blue)

tr.treemap(ax, df, area='roi', labels='original_title',
           cmap='Set2', fill='color',
           rectprops=dict(ec='w'),
           textprops=dict(c='w'))

ax.axis('off')
```

By Tagline

Everyone wants to be found
BILL MURRAY SCARLETT JOHANSSON
Lost In Translation
FOCUS FEATURES
www.lost-in-translation.com
The new film written and directed by Sofia Coppola



Pre-processing

- (skip) NLP pre-process movie tagline
- Filter top and bottom movies sorted by ROI

NLP

In [95]:
```
import pandas as pd

df = pd.read_csv('movie_data_roi.csv')
```

In [96]:
```
import nltk
# nltk.download('stopwords')
from nltk.corpus import stopwords
from nltk.stem.snowball import SnowballStemmer
import re
import os
import csv
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import spacy
import contractions
import unicodedata
import sys
import warnings

if not sys.warnoptions:
    warnings.simplefilter("ignore")

nlp = spacy.load('en_core_web_sm')
stop_words = set(stopwords.words('english'))
re_stop_words = re.compile(r"\b(" + "|".join(stop_words) + ")\\W", re.I)

def cleanHtml(sentence):
    cleanr = re.compile('<.*?>')
    cleantext = re.sub(cleanr, ' ', str(sentence))
    return cleantext

def cleanPunc(sentence): #function to clean the word of any punctuation or s
    cleaned = re.sub(r'[?|!|\'|"|#]',r'',sentence)
    cleaned = re.sub(r'[.|,|)|(|\|/]',r' ',cleaned)
    cleaned = cleaned.strip()
    cleaned = cleaned.replace("\n"," ")
    return cleaned

def keepAlpha(sentence):
    alpha_sent = ""
    for word in sentence.split():
        alpha_word = re.sub('[^a-z A-Z]+', ' ', word)
        alpha_sent += alpha_word
        alpha_sent += " "
    alpha_sent = alpha_sent.strip()
    return alpha_sent

def removeSpecial(sentence):
    # Remove special characters using regular expression
    clean_text = re.sub(r'[^\w\s]', '', sentence)
    return clean_text

def removeAccent(sentence):
    # Remove accent characters using the unicodedata module
    no_accent_text = ''.join(char for char in unicodedata.normalize('NFD', s
    return no_accent_text

def removeContraction(sentence):
    # Expand contractions using contractions library
    expanded_text = contractions.fix(sentence)
    return expanded_text

def removeStopWords(sentence):
    global re_stop_words
    return re_stop_words.sub(" ", sentence)

def lemmatization(sentence):
    doc = nlp(sentence)
    lemmas = [token.lemma_ for token in doc if not token.is_stop]
    lemmas = [l.strip() for l in lemmas]
    lemmas = list(filter(len, lemmas))
    return lemmas
```

In [97]:

```
df['tagline'] = df['tagline'].str.lower()
df['tagline'] = df['tagline'].apply(cleanHtml)
df['tagline'] = df['tagline'].apply(cleanPunc)
df['tagline'] = df['tagline'].apply(keepAlpha)
df['tagline'] = df['tagline'].apply(removeSpecial)
df['tagline'] = df['tagline'].apply(removeAccent)
df['tagline'] = df['tagline'].apply(removeContraction)
# df['tagline'] = df['tagline'].apply(removeStopWords)
df['tagline'] = df['tagline'].apply(lemmatization)
```

In [99]:

```
df['tagline']
```

Out[99]:

```
0                                        [park, open]
1                                       [lovely, day]
2                                   [choice, destroy]
3                                 [generation, story]
4                              [vengeance, hit, home]
                              ...
10861                                           [nan]
10862    [cinerama, sweep, drama, speed, spectacle]
10863                                           [nan]
10864                          [woody, allen, strike]
10865                            [shock, imagination]
Name: tagline, Length: 10866, dtype: object
```

In [100…

```
df.to_csv('movie_preprocessed.csv')
```

Sort by ROI

In [1]:

```
import pandas as pd
df = pd.read_csv('movie_preprocessed.csv')
```

In [2]:

```
top = df.sort_values('roi', ascending=False).head(100)
bottom = df.sort_values('roi', ascending=False).tail(100)
```

In [3]:
```
top[['tagline', 'roi']][:10]
```

Out[3]:

	tagline	roi
7447	['happen', 'sleep']	12889.386664
2449	['scary', 'movie', 'time', 'true', 'story']	9919.000003
1354	['nightmare', 'end']	699.000000
7277	['exercise', 'poor', 'taste']	499.000000
7178	['reality', 'base', 'movie', 'begin', 'end', '...	438.616585
242	['school', 'spirit']	425.644100
7057	['scream', 'want']	419.522723
9762	['survive', 'leave']	362.047059
7827	['maximum', 'force', 'future']	249.000000
10759	['night', 'come', 'home']	232.333333

In [4]:
```
bottom[['tagline', 'roi']][:10]
```

Out[4]:

	tagline	roi
10801	['experience', 'terror', 'suspense']	NaN
10803	['nan']	NaN
10804	['nan']	NaN
10805	['survive']	NaN
10806	['death', 'living', 'dead']	NaN
10807	['nan']	NaN
10808	['evil', 'die', 'wait', 'bear']	NaN
10809	['nan']	NaN
10811	['nan']	NaN
10812	['trap', 'underwater', 'time', 'run']	NaN

In [5]:
```
print('before filter: ', len(df))
df_filtered = df[df['roi'].notna()]
df_filtered = df_filtered[df_filtered['tagline'].apply(lambda x: 'nan' not i
print('after filter: ', len(df_filtered))
```

```
before filter:  10866
after filter:  4511
```

In [6]:
```
top = df_filtered.sort_values('roi', ascending=False).head(100)
bottom = df_filtered.sort_values('roi', ascending=False).tail(100)
```

In [7]:
```
top[['tagline', 'roi']][:10]
```

Out[7]:

	tagline	roi
7447	['happen', 'sleep']	12889.386664
2449	['scary', 'movie', 'time', 'true', 'story']	9919.000003
1354	['nightmare', 'end']	699.000000
7277	['exercise', 'poor', 'taste']	499.000000
7178	['reality', 'base', 'movie', 'begin', 'end', '...	438.616585
242	['school', 'spirit']	425.644100
7057	['scream', 'want']	419.522723
9762	['survive', 'leave']	362.047059
7827	['maximum', 'force', 'future']	249.000000
10759	['night', 'come', 'home']	232.333333

In [8]:

```
bottom[['tagline', 'roi']][:10]
```

Out[8]:

	tagline	roi
8059	['come', 'home']	-1.0
2750	['war', 'hell', 'peace', 'f', 'boring']	-1.0
8084	['sex', 'clothe', 'popularity', 'problem']	-1.0
2759	['young', 'man', 'old', 'woman', 'ex', 'husban...	-1.0
2784	['future']	-1.0
2797	['love', 'make', 'world', 'round']	-1.0
2811	['pick', 'wrong']	-1.0
2822	['small', 'time', 'girl', 'big', 'time', 'drea...	-1.0
7914	['s', 'head', 'heel', 'head', 'straight', 'tro...	-1.0
7904	['galaxy', 'heart', 'come', 'supergirl']	-1.0

In [9]:

```
df_filtered.sort_values('roi', ascending=False).tail(100)[['roi', 'revenue_a
```

Out[9]:

	roi	revenue_adj
7354	-1.0	0.0
3441	-1.0	0.0
3451	-1.0	0.0
3461	-1.0	0.0
3476	-1.0	0.0
...	...	...
7831	-1.0	0.0
3028	-1.0	0.0
3034	-1.0	0.0
7810	-1.0	0.0
10865	-1.0	0.0

100 rows × 2 columns

In [10]:

```
print('before filter: ', len(df))
df_filtered = df_filtered[df_filtered['revenue_adj'].apply(lambda x: x > 0)]
print('after filter: ', len(df_filtered))
```

```
before filter:  10866
after filter:  3556
```

In [128…

```
top = df_filtered.sort_values('roi', ascending=False).head(100)
bottom = df_filtered.sort_values('roi', ascending=True).head(100)
top[['tagline', 'roi']][:10]
```

Out[128]:

	tagline	roi
7447	['happen', 'sleep']	12889.386664
2449	['scary', 'movie', 'time', 'true', 'story']	9919.000003
1354	['nightmare', 'end']	699.000000
7277	['exercise', 'poor', 'taste']	499.000000
7178	['reality', 'base', 'movie', 'begin', 'end', '...	438.616585
242	['school', 'spirit']	425.644100
7057	['scream', 'want']	419.522723
9762	['survive', 'leave']	362.047059
7827	['maximum', 'force', 'future']	249.000000
10759	['night', 'come', 'home']	232.333333

In [129…

```
bottom[['revenue_adj','tagline', 'roi']][:10]
```

Out[129]:

	revenue_adj	tagline	roi
8142	2.861934	['shop', 'work']	-1.000000
7158	13.853345	['fall', 'love', 'world', 'watch']	-0.999999
8226	8.585801	['world', 'love', 'safe', 'trust', 'deadly']	-0.999999
6707	155.760359	['unexpected', 'unbelievable', 'unforgettable']	-0.999998
5060	27.263111	['know', 'desire', 'dead', 'wrong']	-0.999998
4970	296.338161	['story', 'boy', 'man', 'bear']	-0.999998
9332	124.885242	['cowabunga', 'new', 'turtle', 'movie']	-0.999997
10294	22.642049	['evil', 'finally', 'find', 'home']	-0.999995
7506	48.376755	['director', 'frank', 'oz', 'come', 'story', '...	-0.999995
3239	3.038360	['ph', 'd', 'horribleness']	-0.999985

Compare movie taglines

1. Compare common word frequency between Success and Failure
2. Compare word emotion between Success and Failure

Tagline Freq comparison

In [130…

```
from collections import Counter
import ast

success_tagline_words = [word for tagline in top['tagline'].apply(ast.litera
sucess_tagline_word_count = Counter(success_tagline_words)

failure_tagline_words = [word for tagline in bottom['tagline'].apply(ast.lit
failure_tagline_word_count = Counter(failure_tagline_words)
```

In [179…

```
total = list(set(success_tagline_words+failure_tagline_words))
len(total)
```

Out[179]:

```
442
```

In [131…

```
common = list(set(success_tagline_words).intersection(failure_tagline_words)
len(common)
```

Out[131]:

```
72
```

In [132…

```
sucess_tagline_word_count['love']
```

Out[132]:

```
7
```

In [143…

```
failure_tagline_word_count['love']
```

```
Out[143]: 6
```

```
In [142…
```

```
import pandas as pd
import plotly.graph_objects as go

common_word_count_success = [sucess_tagline_word_count[word] for word in com
common_word_count_failure = [failure_tagline_word_count[word] for word in co

all_clean = {'Success': common_word_count_success, 'Failure': common_word_co
all_clean = pd.DataFrame(all_clean, index=common)

# filter words where LUKE and THREEPIO count > 0
common_words = all_clean[(all_clean['Success'] > 0) & (all_clean['Failure']

# add a column to calculate the difference
common_words['difference'] = abs(common_words['Success'] - common_words['Fai

# sort the dataframe by the difference in descending order
common_words = common_words.sort_values('difference', ascending=False)

# select top 25 words
common_words_25 = common_words.head(26)[1:]
# common_words_25 = common_words

# create traces for pyramid plot
trace1 = go.Bar(x=common_words_25['Success'], y=common_words_25.index.tolist
                name='Success', orientation='h')
                # text = [f'{common_words_25.loc[i].Success}, {i}' for i in
                # hoverinfo='text')

trace2 = go.Bar(x=[-x for x in common_words_25['Failure']], y=common_words_2
                name='Failure', orientation='h')
                # , text = [f'{common_words_25.loc[i].Failure}, {i}' for i i
                # hoverinfo='text')

# create layout for pyramid plot
layout = go.Layout(barmode='relative', title='Words in Common',
                   xaxis=dict(title='', showgrid=False, zeroline=False, show
                   yaxis=dict(title='Word', showgrid=False, zeroline=False,
                  width=800, height=800)

# create the figure and plot
fig = go.Figure(data=[trace1, trace2], layout=layout)
fig.update_layout(
    title={
        'text': "Words in Common",
        'y':0.9,
        'x':0.5,
        'xanchor': 'center',
        'yanchor': 'top'},
    bargap=0.2,
    bargroupgap=0.1)
fig.update_yaxes(categoryorder='total ascending')
fig.show()
```

Tagline word sentiment comparison

In [145…

```
!pip install -q transformers
```

In [ ]:

```
from transformers import pipeline
sentiment_pipeline = pipeline("sentiment-analysis")
```

In [151…

```
success_sentiment = []
for tagline in top['tagline'].apply(ast.literal_eval):
    for word in tagline:
        success_sentiment.append(sentiment_pipeline(word))
```

In [152…

```
failure_sentiment = []
for tagline in bottom['tagline'].apply(ast.literal_eval):
    for word in tagline:
        failure_sentiment.append(sentiment_pipeline(word))
```

In [177…

```
failure_sentiment[0]
```

Out[177]:

```
[{'label': 'POSITIVE', 'score': 0.96024489402771}]
```

In [168…

```
success_labels = [row[0]['label'] for row in success_sentiment]
failure_labels = [row[0]['label'] for row in failure_sentiment]
```

In [169…

```
set(failure_labels)
```

Out[169]:

```
{'NEGATIVE', 'POSITIVE'}
```

In [176…

```
import plotly.express as px
import pandas as pd

# Create sample data
success_data = pd.DataFrame({
    'Sentiment': ['NEGATIVE', 'POSITIVE'],
    'Counts': [sum(1 for l in success_labels if l == 'NEGATIVE'), sum(1 for
})

# Create pie chart
fig = px.pie(success_data, values='Counts', names='Sentiment',
             title='Word counts by Sentiment (Success)',
             hole=0.5)

# Show figure
fig.show()
```

In [175…

```
import plotly.express as px
import pandas as pd

# Create sample data
failure_data = pd.DataFrame({
    'Sentiment': ['NEGATIVE', 'POSITIVE'],
    'Counts': [sum(1 for l in failure_labels if l == 'NEGATIVE'), sum(1 for
})

# Create pie chart
fig = px.pie(failure_data, values='Counts', names='Sentiment',
             title='Word counts by Sentiment (failure)',
             hole=0.5)

# Show figure
fig.show()
```

In [ ]:

```
all_sentiment = []
i = -1
for tagline in df_filtered['tagline'].apply(ast.literal_eval):
    i+=1
    if i%10 == 0:
        print(i)
    for word in tagline:
        all_sentiment.append(sentiment_pipeline(word))
```

In [ ]:

```
all_labels = [row[0]['label'] for row in all_sentiment]
```

In [ ]:

```
import plotly.express as px
import pandas as pd

# Create sample data
all_data = pd.DataFrame({
    'Sentiment': ['NEGATIVE', 'POSITIVE'],
    'Counts': [sum(1 for l in all_labels if l == 'NEGATIVE'), sum(1 for l in
})

# Create pie chart
fig = px.pie(all_data, values='Counts', names='Sentiment',
             title='Word counts by Sentiment (All)',
             hole=0.5)

# Show figure
fig.show()
```

By reviews / production company