In [36]:
```
import pandas as pd

# Load your dataset
Game_of_thrones = pd.read_csv('C:/Users/Abhinav/Desktop/DataAnalysisCourseMaterials/DataAnalysis/data/game_of_thrones.c
Game_of_thrones
```

Out[36]:

	No. overall	No. in season	Season	Title	Directed by	Written by	Novel(s) adapted	Original air date	U.S. viewers(millions)	Imdb rating
0	1	1	1	"Winter Is Coming"	Tim Van Patten	David Benioff & D. B. Weiss	A Game of Thrones	17-Apr-11	2.22	9.1
1	2	2	1	"The Kingsroad"	Tim Van Patten	David Benioff & D. B. Weiss	A Game of Thrones	24-Apr-11	2.20	8.8
2	3	3	1	"Lord Snow"	Brian Kirk	David Benioff & D. B. Weiss	A Game of Thrones	1-May-11	2.44	8.7
3	4	4	1	"Cripples, Bastards, and Broken Things"	Brian Kirk	Bryan Cogman	A Game of Thrones	8-May-11	2.45	8.8
4	5	5	1	"The Wolf and the Lion"	Brian Kirk	David Benioff & D. B. Weiss	A Game of Thrones	15-May-11	2.58	9.1
...	...	...	...	...	...	...	...	...	...	...
68	69	2	8	"A Knight of the Seven Kingdoms"	David Nutter	Bryan Cogman	Outline from A Dream of Spring and original co...	NaN	10.29	7.8
69	70	3	8	"The Long Night"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	28-Apr-19	12.02	7.4
70	71	4	8	"The Last of the Starks"	David Nutter	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	5-May-19	11.80	5.4
71	72	5	8	"The Bells"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	12-May-19	12.48	5.9
72	73	6	8	"The Iron Throne"	David Benioff & D. B. Weiss	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	19-May-19	13.61	4.0

73 rows × 10 columns

In [42]:
```
# 1. Remove episodes with missing IMDb ratings
Game_of_thrones = Game_of_thrones.dropna(subset=['Imdb rating'])
Game_of_thrones
```

Out[42]:

	No. overall	No. in season	Season	Title	Directed by	Written by	Novel(s) adapted	Original air date	U.S. viewers(millions)	Imdb rating
59	60	10	6	"The Winds of Winter"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from The Winds of Winter and original ...	2016-06-26	8.89	9.9
47	48	8	5	"Hardhome"	Miguel Sapochnik	David Benioff & D. B. Weiss	A Feast for Crows, A Dance with Dragons and or...	NaT	7.01	9.9
58	59	9	6	"Battle of the Bastards"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from The Winds of Winter and original ...	2016-06-19	7.66	9.9
28	29	9	3	"The Rains of Castamere"	David Nutter	David Benioff & D. B. Weiss	A Storm of Swords	2013-06-02	5.22	9.9
63	64	4	7	"The Spoils of War"	Matt Shakman	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2017-08-06	10.17	9.8
...	...	...	...	...	...	...	...	...	...	...
67	68	1	8	"Winterfell"	David Nutter	Dave Hill	Outline from A Dream of Spring and original co...	NaT	11.76	7.5
69	70	3	8	"The Long Night"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-04-28	12.02	7.4
71	72	5	8	"The Bells"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-12	12.48	5.9
70	71	4	8	"The Last of the Starks"	David Nutter	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-05	11.80	5.4
72	73	6	8	"The Iron Throne"	David Benioff & D. B. Weiss	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-19	13.61	4.0

73 rows × 10 columns

In [39]:
```
# 2. Convert 'Original air date' to a datetime object
Game_of_thrones['Original air date'] = pd.to_datetime(Game_of_thrones['Original air date'], errors='coerce')
Game_of_thrones
```

Out[39]:

	No. overall	No. in season	Season	Title	Directed by	Written by	Novel(s) adapted	Original air date	U.S. viewers(millions)	Imdb rating
0	1	1	1	"Winter Is Coming"	Tim Van Patten	David Benioff & D. B. Weiss	A Game of Thrones	2011-04-17	2.22	9.1
1	2	2	1	"The Kingsroad"	Tim Van Patten	David Benioff & D. B. Weiss	A Game of Thrones	2011-04-24	2.20	8.8
2	3	3	1	"Lord Snow"	Brian Kirk	David Benioff & D. B. Weiss	A Game of Thrones	2011-05-01	2.44	8.7
3	4	4	1	"Cripples, Bastards, and Broken Things"	Brian Kirk	Bryan Cogman	A Game of Thrones	2011-05-08	2.45	8.8
4	5	5	1	"The Wolf and the Lion"	Brian Kirk	David Benioff & D. B. Weiss	A Game of Thrones	2011-05-15	2.58	9.1
...	...	...	...	...	...	...	...	...	...	...
68	69	2	8	"A Knight of the Seven Kingdoms"	David Nutter	Bryan Cogman	Outline from A Dream of Spring and original co...	NaT	10.29	7.8
69	70	3	8	"The Long Night"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-04-28	12.02	7.4
70	71	4	8	"The Last of the Starks"	David Nutter	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-05	11.80	5.4
71	72	5	8	"The Bells"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-12	12.48	5.9
72	73	6	8	"The Iron Throne"	David Benioff & D. B. Weiss	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-19	13.61	4.0

73 rows × 10 columns

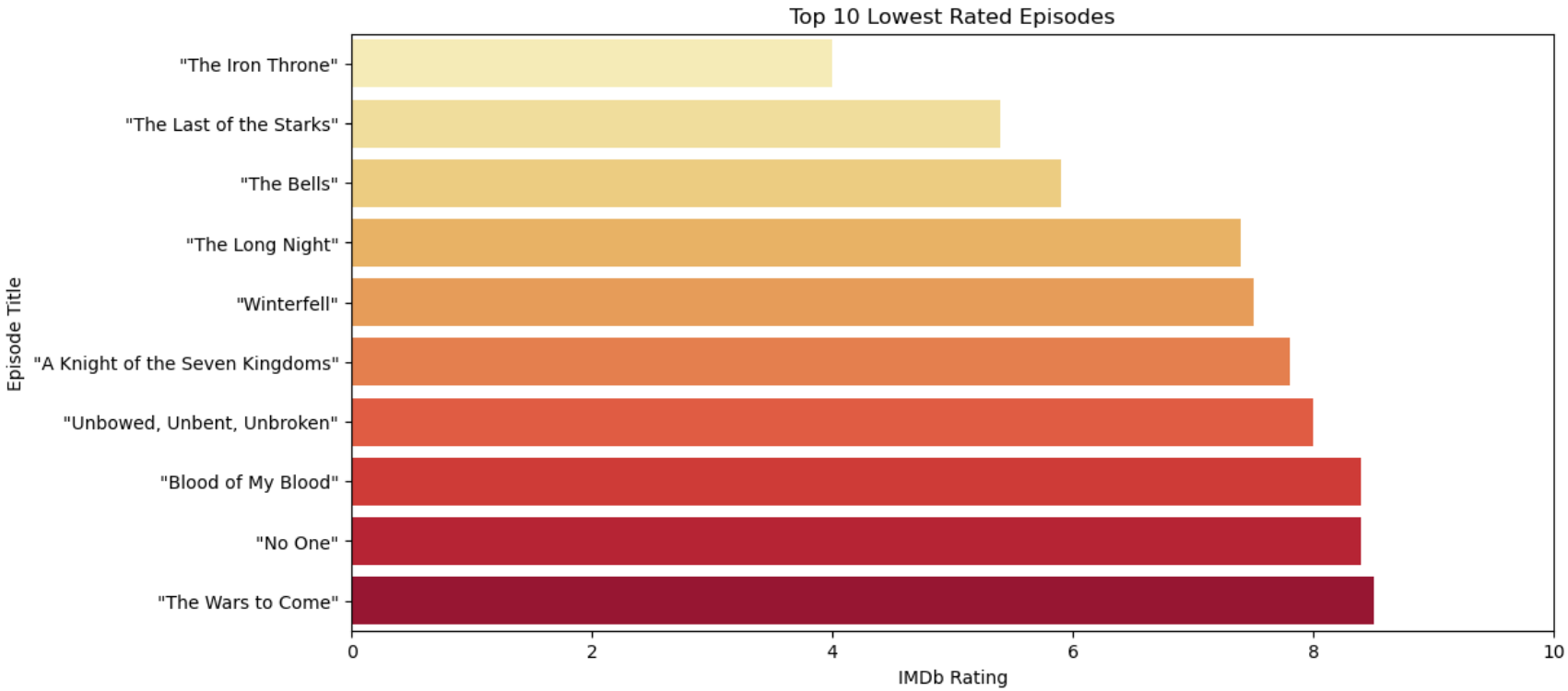
In [40]:
```
# 3. Fill missing viewers with 0
Game_of_thrones['U.S. viewers(millions)'].fillna(0, inplace=True)
Game_of_thrones
```

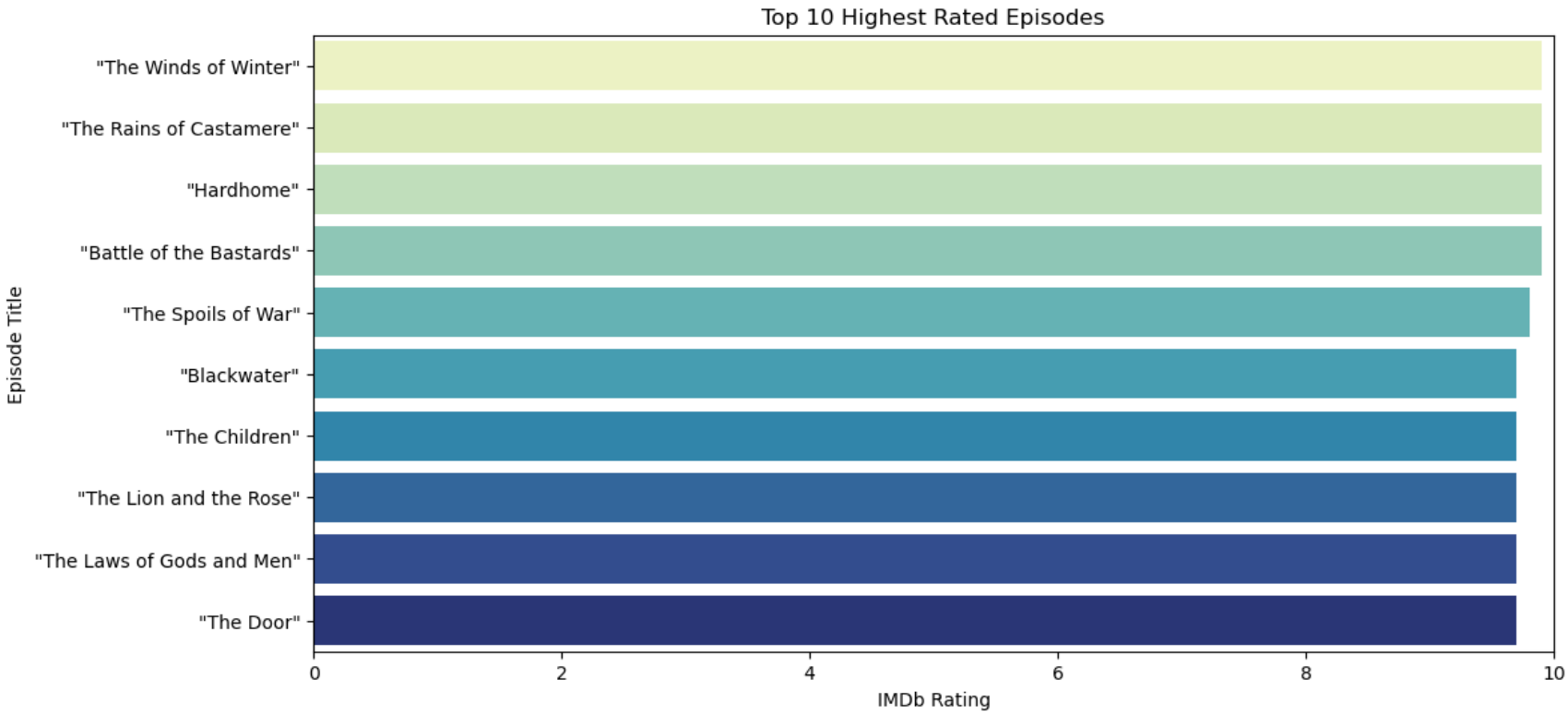
Out[40]:

	No. overall	No. in season	Season	Title	Directed by	Written by	Novel(s) adapted	Original air date	U.S. viewers(millions)	Imdb rating
0	1	1	1	"Winter Is Coming"	Tim Van Patten	David Benioff & D. B. Weiss	A Game of Thrones	2011-04-17	2.22	9.1
1	2	2	1	"The Kingsroad"	Tim Van Patten	David Benioff & D. B. Weiss	A Game of Thrones	2011-04-24	2.20	8.8
2	3	3	1	"Lord Snow"	Brian Kirk	David Benioff & D. B. Weiss	A Game of Thrones	2011-05-01	2.44	8.7
3	4	4	1	"Cripples, Bastards, and Broken Things"	Brian Kirk	Bryan Cogman	A Game of Thrones	2011-05-08	2.45	8.8
4	5	5	1	"The Wolf and the Lion"	Brian Kirk	David Benioff & D. B. Weiss	A Game of Thrones	2011-05-15	2.58	9.1
...	...	...	...	...	...	...	...	...	...	...
68	69	2	8	"A Knight of the Seven Kingdoms"	David Nutter	Bryan Cogman	Outline from A Dream of Spring and original co...	NaT	10.29	7.8
69	70	3	8	"The Long Night"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-04-28	12.02	7.4
70	71	4	8	"The Last of the Starks"	David Nutter	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-05	11.80	5.4
71	72	5	8	"The Bells"	Miguel Sapochnik	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-12	12.48	5.9
72	73	6	8	"The Iron Throne"	David Benioff & D. B. Weiss	David Benioff & D. B. Weiss	Outline from A Dream of Spring and original co...	2019-05-19	13.61	4.0

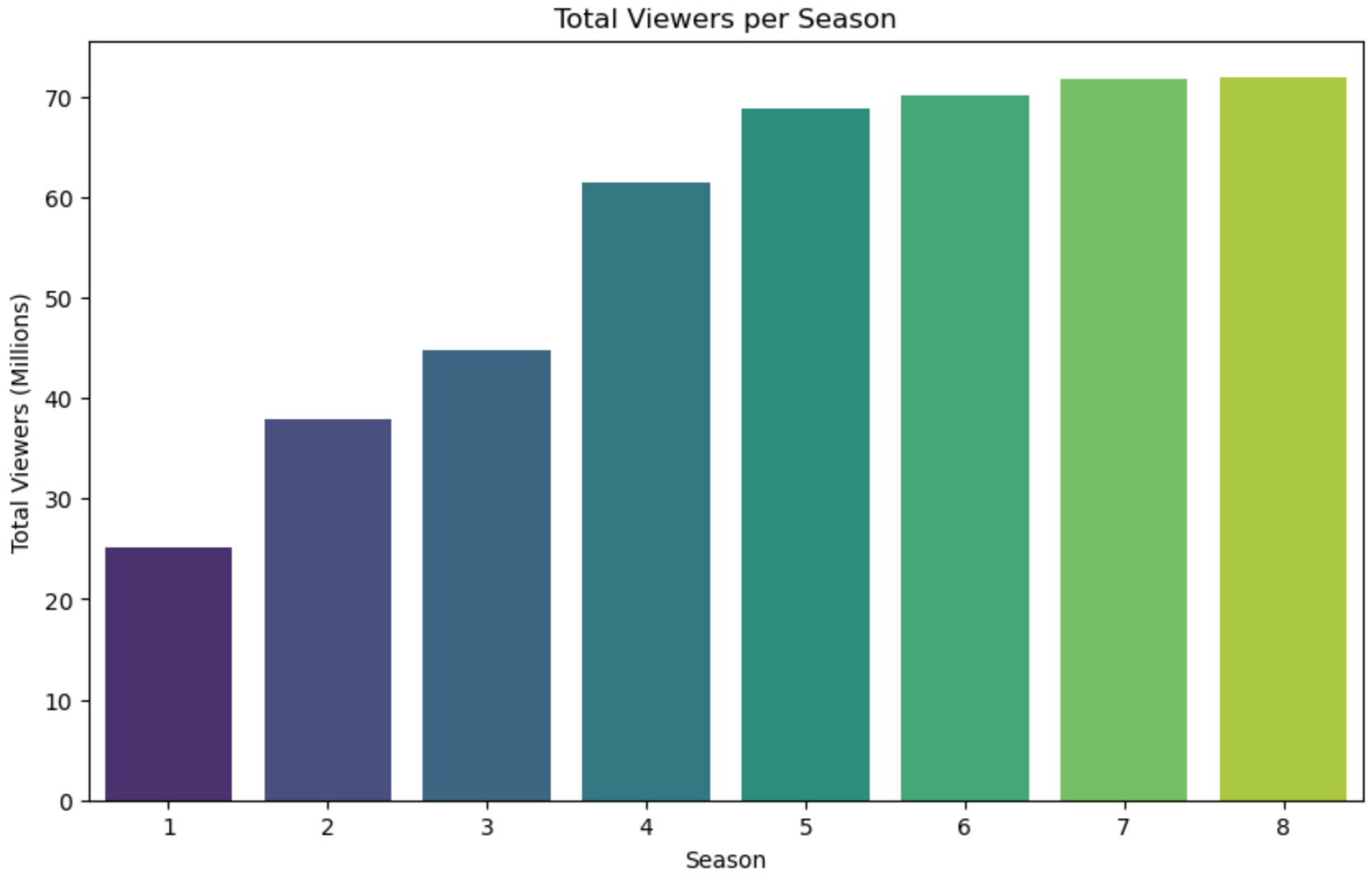
73 rows × 10 columns

In [53]:
```
import matplotlib.pyplot as plt
import seaborn as sns

# Sort the DataFrame by IMDb rating in ascending order to get lowest-rated episodes
lowest_rated_episodes = Game_of_thrones.sort_values('Imdb rating').head(10)

# Sort the DataFrame by IMDb rating in descending order to get highest-rated episodes
highest_rated_episodes = Game_of_thrones.sort_values('Imdb rating', ascending=False).head(10)

# Create a bar plot for the lowest-rated episodes with a bright color palette
plt.figure(figsize=(12, 6))
sns.barplot(x='Imdb rating', y='Title', data=lowest_rated_episodes, palette='YlOrRd')
plt.xlabel('IMDb Rating')
plt.ylabel('Episode Title')
plt.title('Top 10 Lowest Rated Episodes')
plt.xlim(0, 10)  # Set the rating scale from 0 to 10
plt.show()

# Create a bar plot for the highest-rated episodes with a bright color palette
plt.figure(figsize=(12, 6))
sns.barplot(x='Imdb rating', y='Title', data=highest_rated_episodes, palette='YlGnBu')
plt.xlabel('IMDb Rating')
plt.ylabel('Episode Title')
plt.title('Top 10 Highest Rated Episodes')
plt.xlim(0, 10)  # Set the rating scale from 0 to 10
plt.show()
```


Top 10 Lowest Rated Episodes
"The Iron Throne"
"The Last of the Starks"
"The Bells"
"The Long Night"
"Winterfell"
"A Knight of the Seven Kingdoms"
"Unbowed, Unbent, Unbroken"
"Blood of My Blood"
"No One"
"The Wars to Come"
Episode Title
0
2
4
6
8
10
IMDb Rating

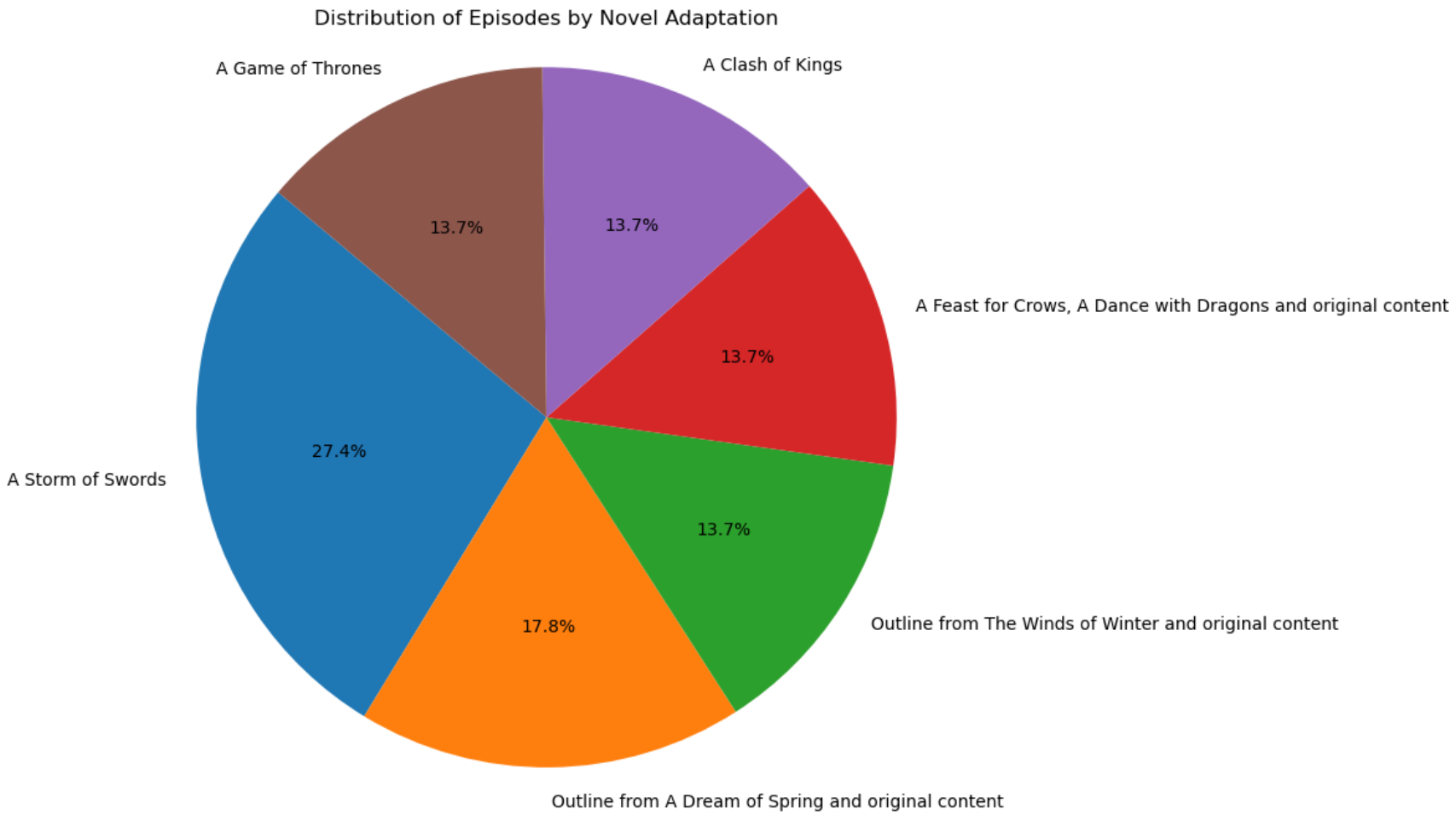


In [44]:
```
import seaborn as sns

# Group the data by season and calculate the total viewers
season_viewers = Game_of_thrones.groupby('Season')['U.S. viewers(millions)'].sum()

# Create a bar plot
plt.figure(figsize=(10, 6))
sns.barplot(x=season_viewers.index, y=season_viewers.values, palette='viridis')
plt.xlabel('Season')
plt.ylabel('Total Viewers (Millions)')
plt.title('Total Viewers per Season')
plt.show()
```



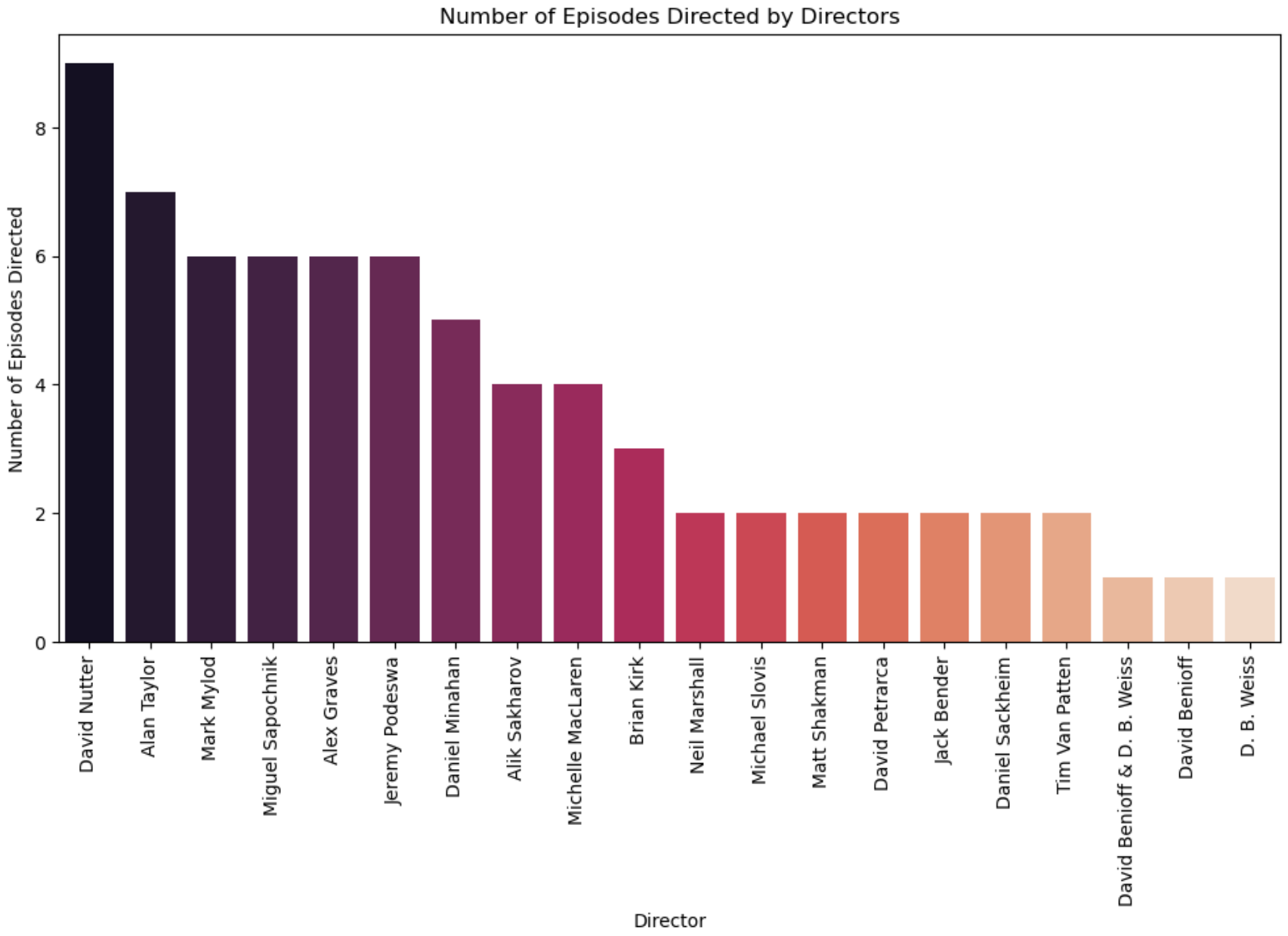
In [58]:
```
import matplotlib.pyplot as plt

# Count the number of episodes adapted from each novel
novel_counts = Game_of_thrones['Novel(s) adapted'].value_counts()

# Create a pie chart
plt.figure(figsize=(8, 8))
plt.pie(novel_counts, labels=novel_counts.index, autopct='%1.1f%%', startangle=140)
plt.title('Distribution of Episodes by Novel Adaptation')
```

```
plt.axis('equal')  # Equal aspect ratio ensures that pie is drawn as a circle.
plt.show()
```



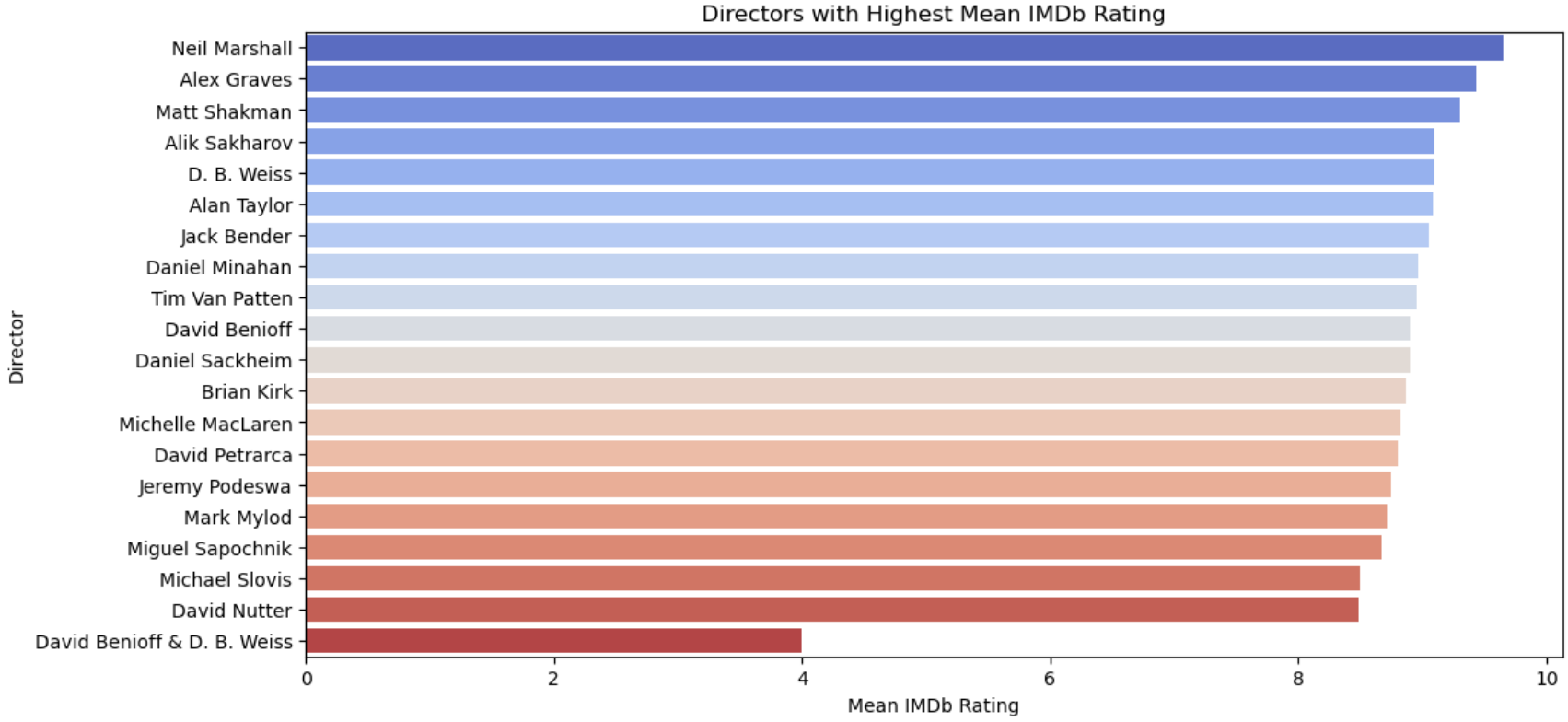
In [45]:
```
# Group the data by director and count the number of episodes
director_episodes = Game_of_thrones.groupby('Directed by')['Title'].count().reset_index()

# Sort by the number of episodes directed
director_episodes = director_episodes.sort_values(by='Title', ascending=False)

# Create a bar plot
plt.figure(figsize=(12, 6))
sns.barplot(x=director_episodes['Directed by'], y=director_episodes['Title'], palette='rocket')
plt.xlabel('Director')
plt.ylabel('Number of Episodes Directed')
```

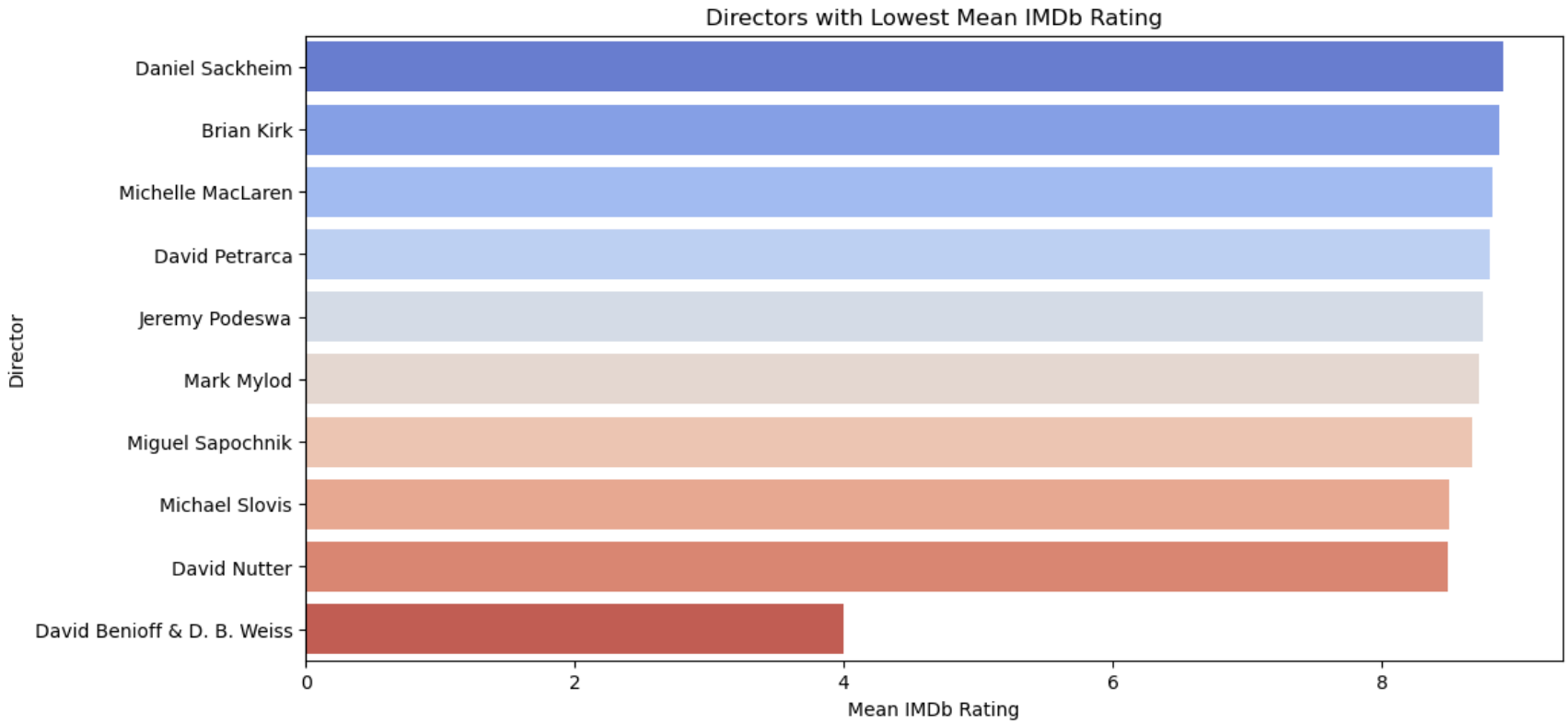
```
plt.title('Number of Episodes Directed by Directors')
plt.xticks(rotation=90)
plt.show()
```



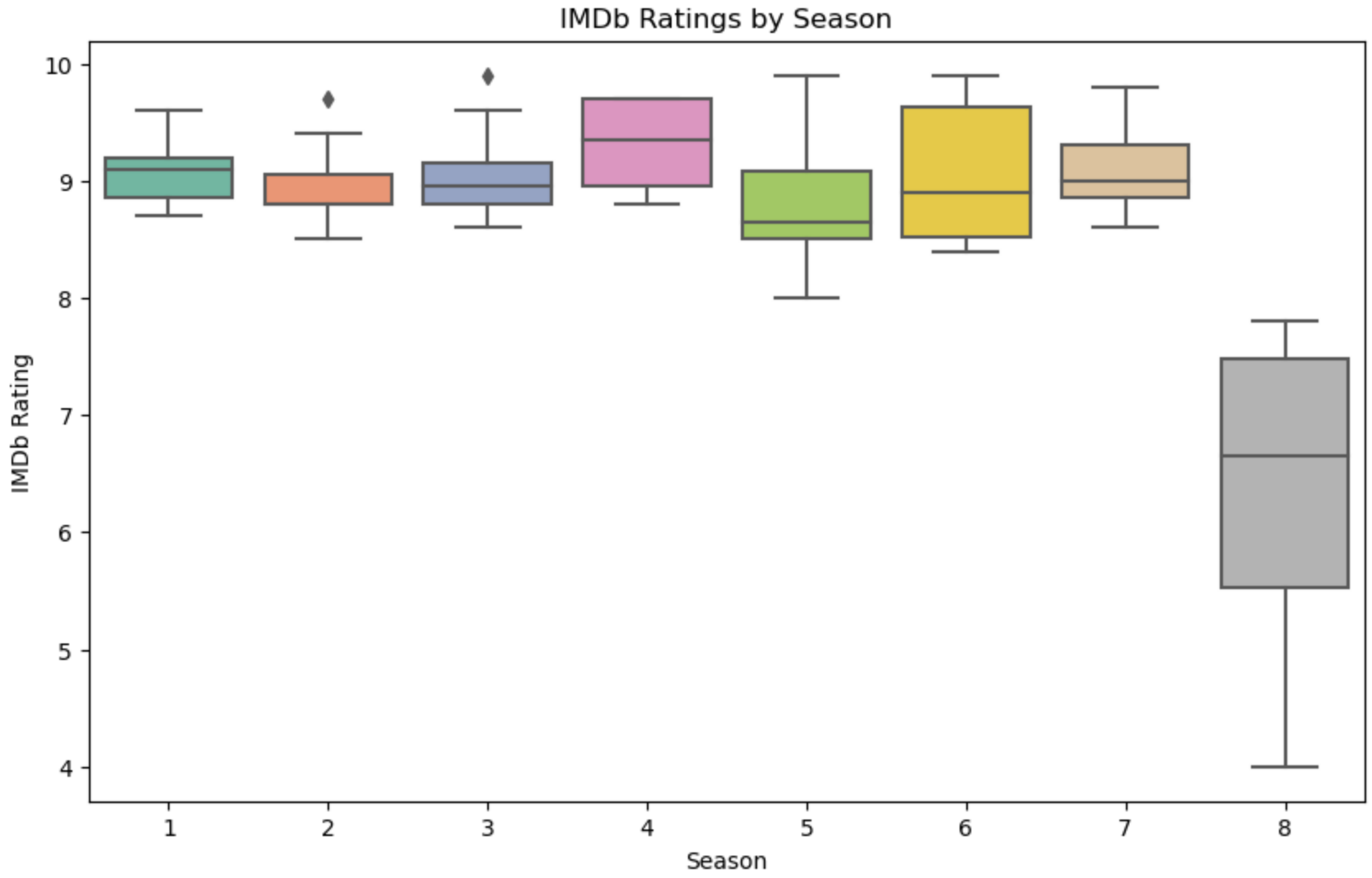
In [48]:
```
# Calculate the mean IMDb rating for each director
director_ratings = Game_of_thrones.groupby('Directed by')['Imdb rating'].mean().reset_index()
```

```
# Sort by mean IMDb rating
director_ratings = director_ratings.sort_values(by='Imdb rating', ascending=False)

# Create a bar plot for directors with the highest ratings
plt.figure(figsize=(12, 6))
sns.barplot(x=director_ratings['Imdb rating'], y=director_ratings['Directed by'], palette='coolwarm')
plt.xlabel('Mean IMDb Rating')
plt.ylabel('Director')
plt.title('Directors with Highest Mean IMDb Rating')
plt.show()

# Create a bar plot for directors with the lowest ratings
director_ratings_lowest = director_ratings.tail(10)  # Adjust the number as needed
plt.figure(figsize=(12, 6))
sns.barplot(x=director_ratings_lowest['Imdb rating'], y=director_ratings_lowest['Directed by'], palette='coolwarm')
plt.xlabel('Mean IMDb Rating')
plt.ylabel('Director')
plt.title('Directors with Lowest Mean IMDb Rating')
plt.show()
```



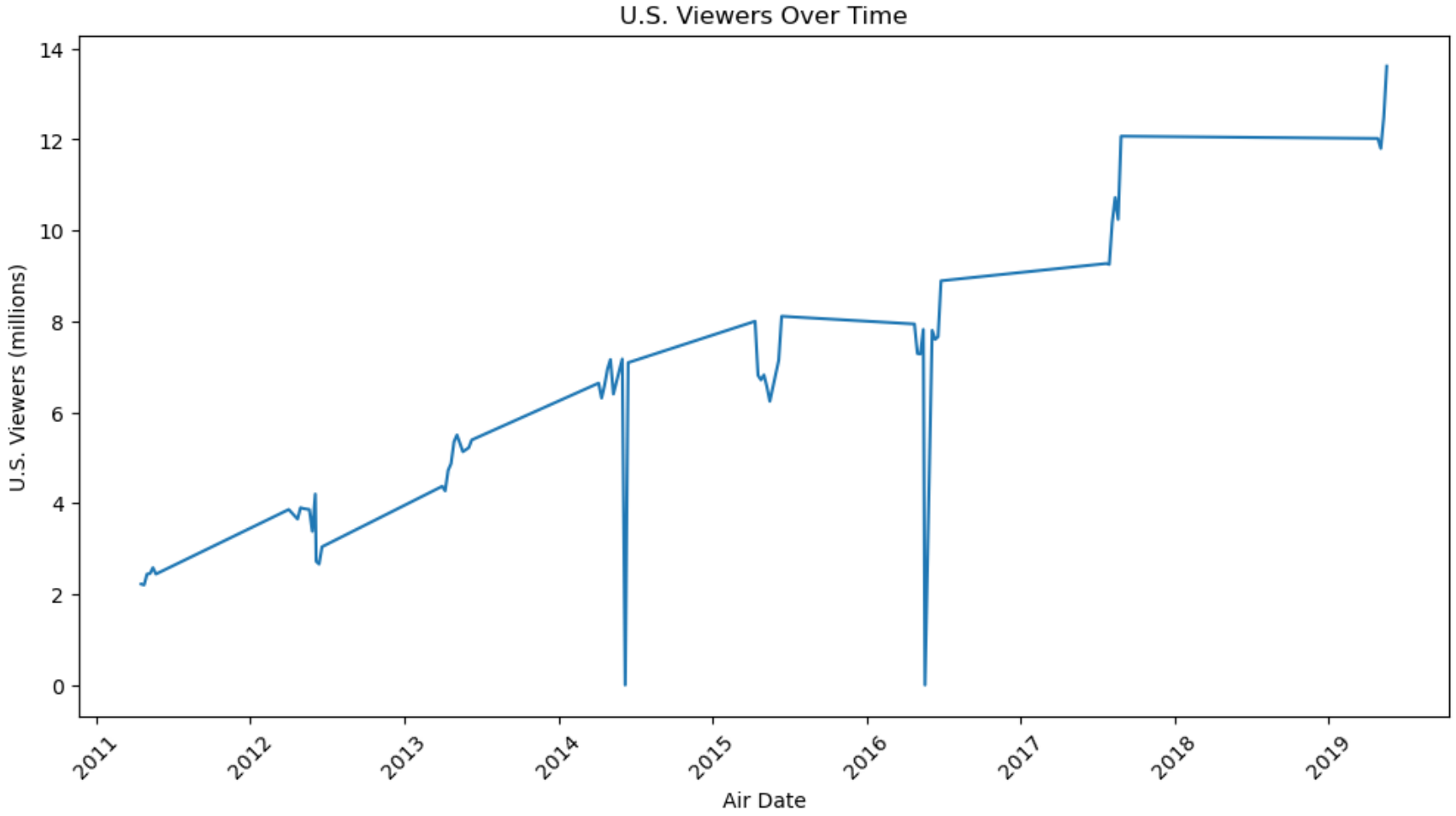


In [57]:
```
import matplotlib.pyplot as plt
import seaborn as sns

# Create a box plot for IMDb ratings by season
plt.figure(figsize=(10, 6))
sns.boxplot(x='Season', y='Imdb rating', data=Game_of_thrones, palette='Set2')
plt.xlabel('Season')
plt.ylabel('IMDb Rating')
plt.title('IMDb Ratings by Season')
plt.show()
```



In [55]:
```
import matplotlib.pyplot as plt
import pandas as pd

# Convert the "Original air date" column to a datetime format
Game_of_thrones['Original air date'] = pd.to_datetime(Game_of_thrones['Original air date'])

# Group episodes by their air date and sum the viewers for each date
viewers_time_series = Game_of_thrones.groupby('Original air date')['U.S. viewers(millions)'].sum()

# Create a time series plot
```

```
plt.figure(figsize=(12, 6))
plt.plot(viewers_time_series.index, viewers_time_series.values)
plt.xlabel('Air Date')
plt.ylabel('U.S. Viewers (millions)')
plt.title('U.S. Viewers Over Time')
plt.xticks(rotation=45)
plt.show()
```



In [ ]: