Box Office Performance

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Executive Summary

- **Objective**
  - Identify any seasonal trends in box office revenue.
  - Identify any correlation between a movie's budget and its box office success.
  - Identify any trends or patterns in box office success based on movie genre.
  - Identify actors that resulted in high profit.
- **Key Findings and Recommendations**
  - Prioritize adventure, family, and sci-fi movies
  - Release during June, July, or November
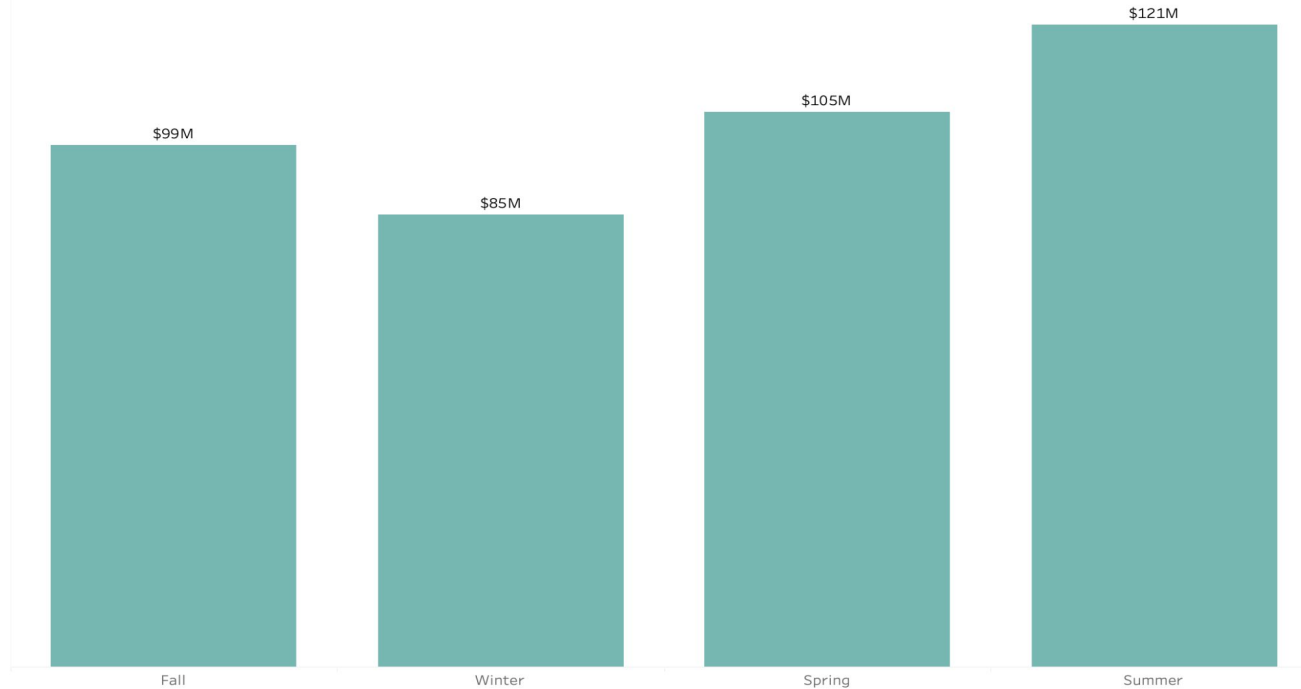 - Cast actors that are famous for a specific genre

Context

- A new director has allocated funds toward filming a new movie but does not know what genre to film, what actors to include, and what season to release the new film in.

- Tasked with determining how the director should spend the allocated funds to produce a movie that generates a high profit.

- Data was provided about movies released between 2012 and 2016.

  - The data set includes release date, genre, cast, directors, box office revenue, and budget.

Methodology

- Data Cleaning
    - Some movies had the incorrect actors listed
        - Used ChatGPT to clean up actors in each movie
    - Created a new data column: Profit = Revenue - Budget
    - Removed Wikipedia page links column
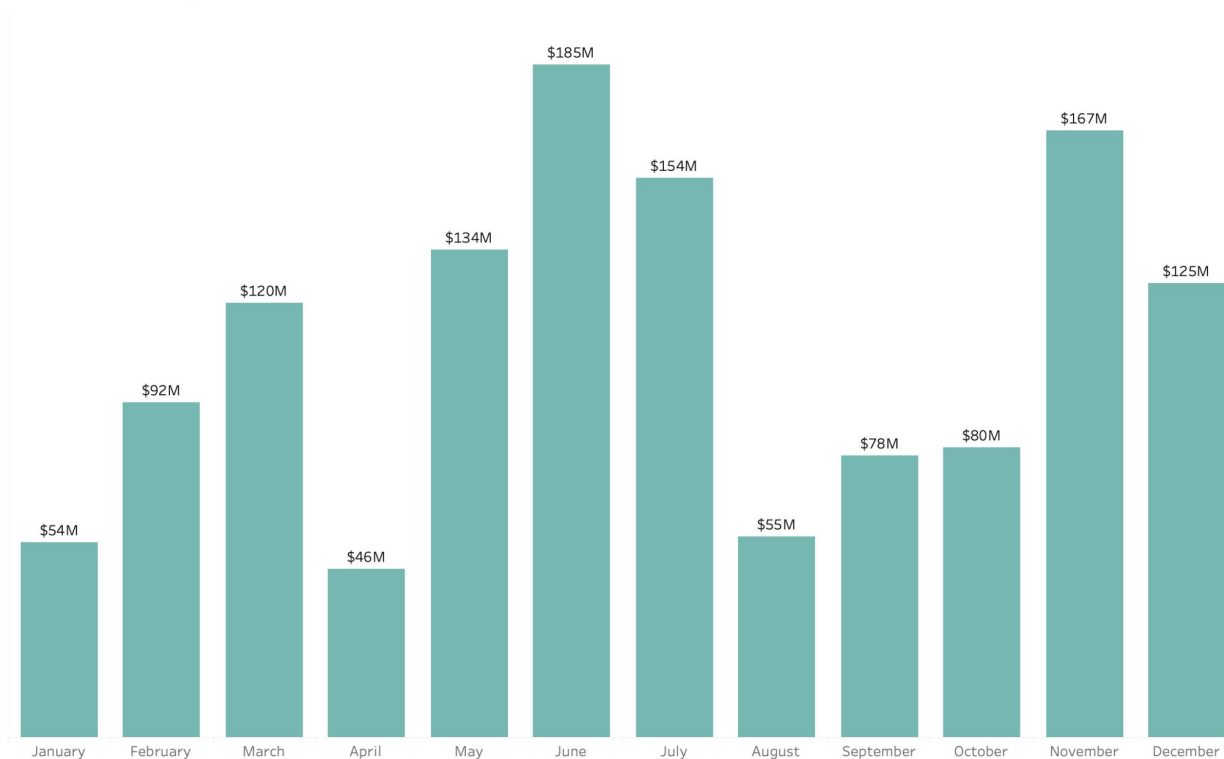   - Kept all data rows

Seasonal Average Profit

Seasonal Average Profit

- There is variation in average profit across different seasons.

- This suggests a correlation between the seasons and impact on profitability.

Seasonal Average Profit by Months

Average Profit by Month of Release

- November had a significantly higher average profit compared to other months in the Fall.

- August is one of the weakest months in terms of average profit, especially in the summer season.

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Insights

Reasons for why movies may make higher profit in the Summer:
- Summer is a popular time for studios to release their big budget films (for example, Man of Steel, Dawn of the Planet of the Apes)
- Increased potential audience from student summer vacation from school

Reasons for why movies may make less profit in the Winter:
- January and February are often referred to as "dump months" in the film industry. This is when studios release films that they don't expect to do well in the box office.

Reasons for higher profits in November:
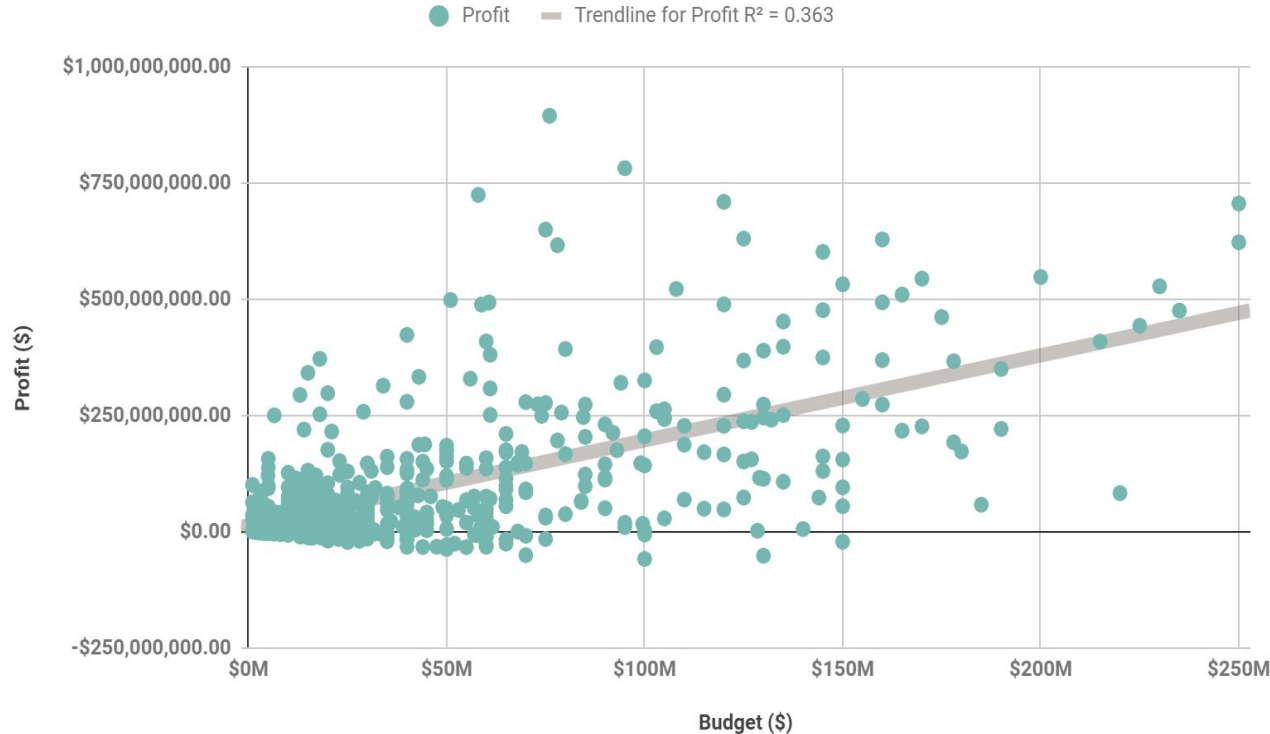- The start of the holiday season can lead to increase in cinema attendance.

Reasons for lower profits in August:
- August is in the end of summer which means many big budget films had already been released and many studios may choose to hold back until fall or winter.
- In many regions, August is the month students are back in school which may lead to a decrease in cinema attendance.

Correlation between Profit and Budget

Profit vs Budget Overall

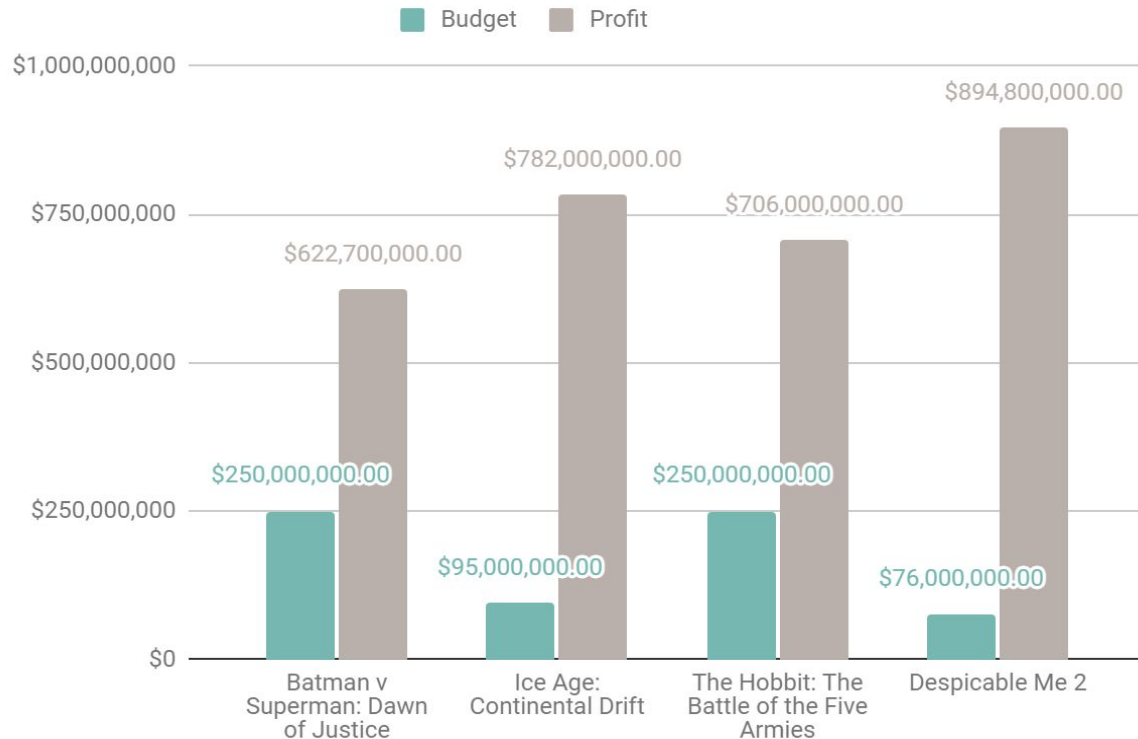● Profit   ━━ Trendline for Profit R² = 0.363

Profit ($) vs Budget ($)

- As shown by data, a higher movie budget may mean better profit and overall success.

- A lower budget may indicate that a movie is less likely to gain much profit and succeed.

Top High Profit Movies

Budget ■ Profit ■

$1,000,000,000

$894,800,000.00

$782,000,000.00

$750,000,000

$706,000,000.00

$622,700,000.00

$500,000,000

$250,000,000.00 $250,000,000.00

$250,000,000

$95,000,000.00

$76,000,000.00

$0

Batman v Superman: Dawn of Justice   Ice Age: Continental Drift   The Hobbit: The Battle of the Five Armies   Despicable Me 2
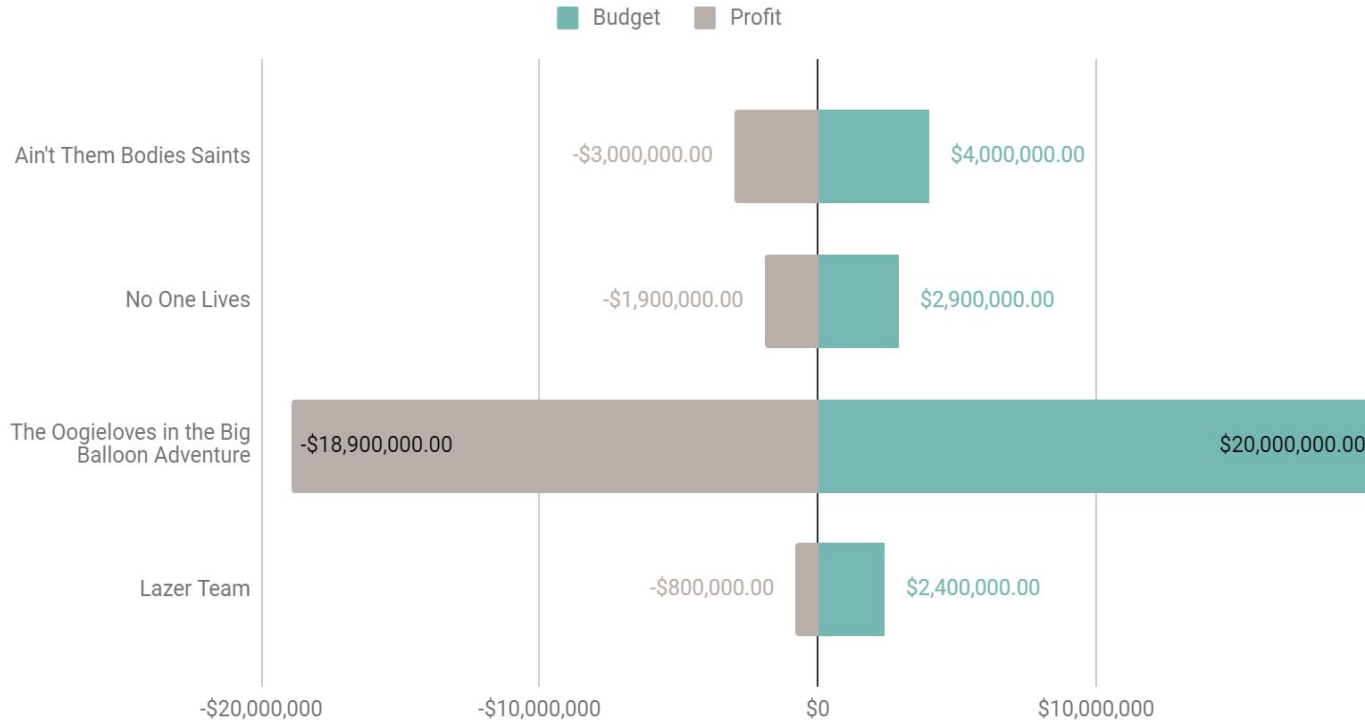
- As shown in this chart these are the top 4 movies that produced well in box office

- Making profit gains for having high budget

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Top Low Profit Movies

Top Low Profit Movies

■ Budget ■ Profit

Ain't Them Bodies Saints
-$3,000,000.00 $4,000,000.00

No One Lives
-$1,900,000.00 $2,900,000.00

The Oogieloves in the Big Balloon Adventure
-$18,900,000.00 $20,000,000.00

Lazer Team
-$800,000.00 $2,400,000.00

-$20,000,000   -$10,000,000 $0 $10,000,000

- We can see from this data there was no profit gain from these low budget movies

- Rather than gaining profit these low budget movies loss revenue for producing these movies

Insights

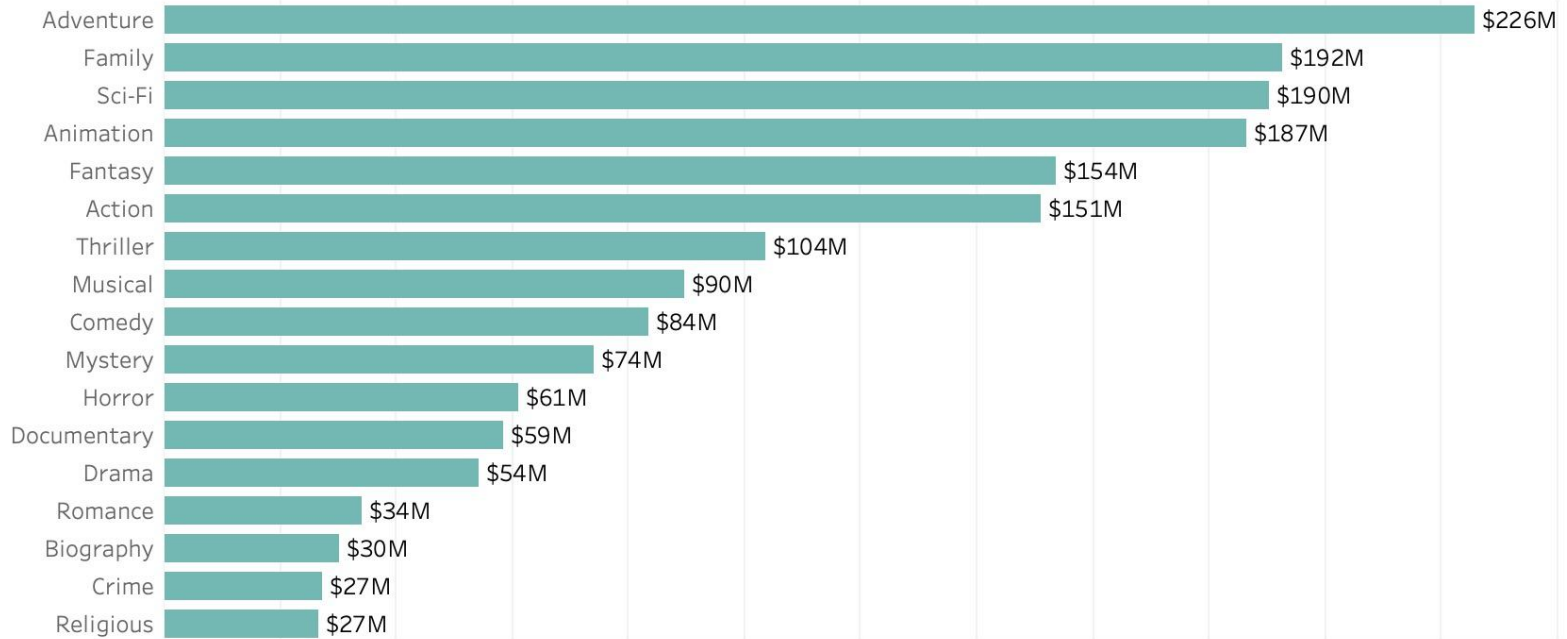*Reasons for why high budget movies had high profit:*

- High quality equipment and props used
- Big names and famous actors are casted
- Film location
- Bigger vision
- Significant movie details

Reasons for why low budget movies had low profit:

- Less production
- Cast lower tier and less notable actors
- Not enough vision
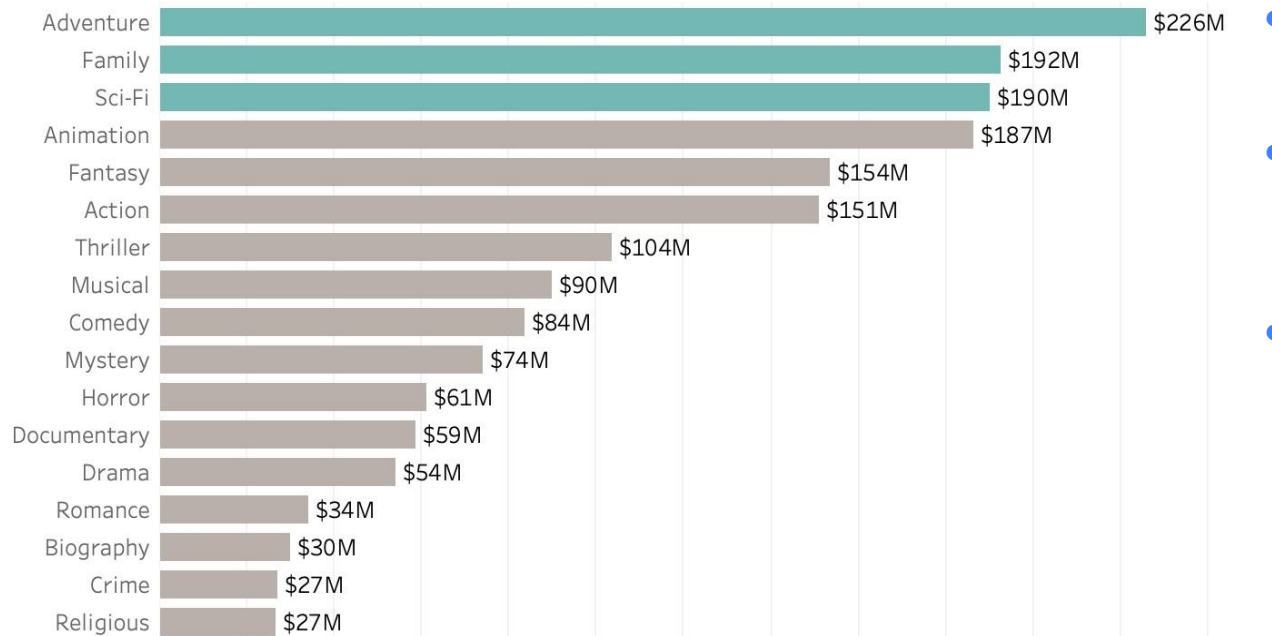- Lacking in advertisement
- Limitations in resources

Source: Penn Data Project. "Do Higher Rated Films Really Make More Money? — A Statistical Analysis." Medium, 23 March 2023, 1.

Movie Genre Trends

Average Profit by Genre

Genre	Profit
Adventure	$226M
Family	$192M
Sci-Fi	$190M
Animation	$187M
Fantasy	$154M
Action	$151M
Thriller	$104M
Musical	$90M
Comedy	$84M
Mystery	$74M
Horror	$61M
Documentary	$59M
Drama	$54M
Romance	$34M
Biography	$30M
Crime	$27M
Religious	$27M

Best Performing Genres

Best Performing Genres

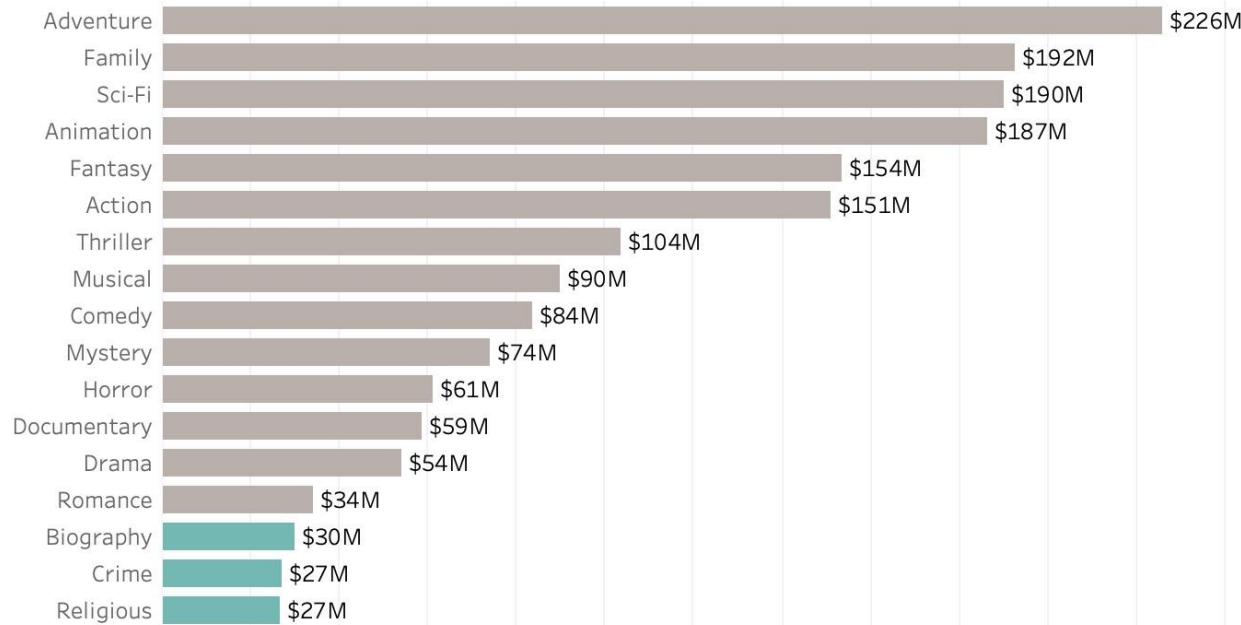| Genre	Value
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Crime	$27M
Religious	$27M

- Adventure is the best performing genre.

- Family is the second best performing genre and Sci-Fi is the third best.

- Animation follows closely behind Family and Sci-Fi.

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Worst Performing Genres

Worst Performing Genres

Genre	Value
Adventure	$226M
Family	$192M
Sci-Fi	$190M
Animation	$187M
Fantasy	$154M
Action	$151M
Thriller	$104M
Musical	$90M
Comedy	$84M
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Horror	$61M
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Drama	$54M
Romance	$34M
Biography	$30M
Crime	$27M
Religious	$27M

- Crime and Religious are tied for the worst performing genre.

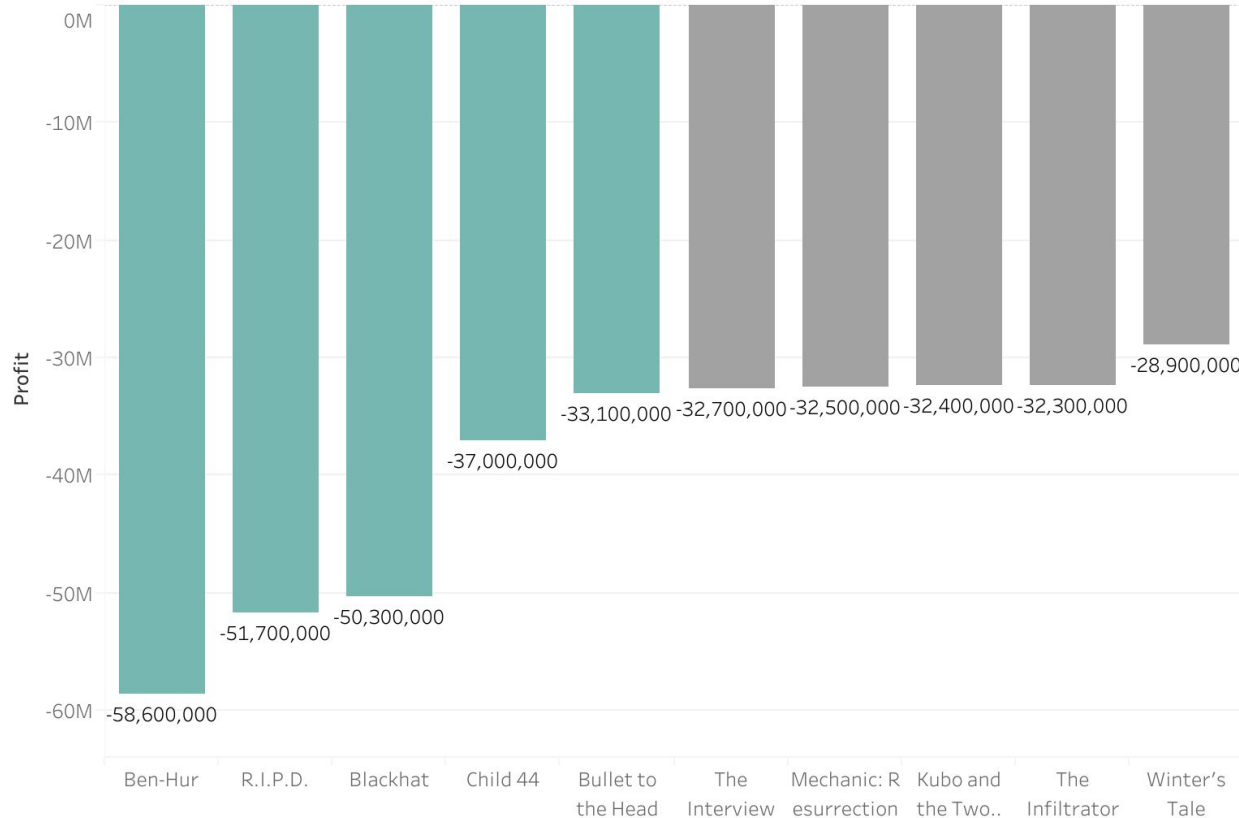- Biography is the second worst performing genre.

Insights

Reasons for why certain genres performed better than others:

- Adventure movies like Ice Age: Continental Drift ($782M), The Hobbit: The Battle of the Five Armies ($706M), The Croods ($452M), and The Secret Life of Pets ($649M) all received extremely high profits.

  - All of these movies except The Hobbit also have a secondary genre of family which is a reason why movies in the family genre also perform well.

- The Maze Runner, Divergent, The Hunger Games, and The Host are all sci-fi movies that are based on best-selling novels.

- All of the religious movies are about Christianity. If movies about other religions are included then the religious genre may perform better.

- A third of all movies in the crime genre did not make a profit.
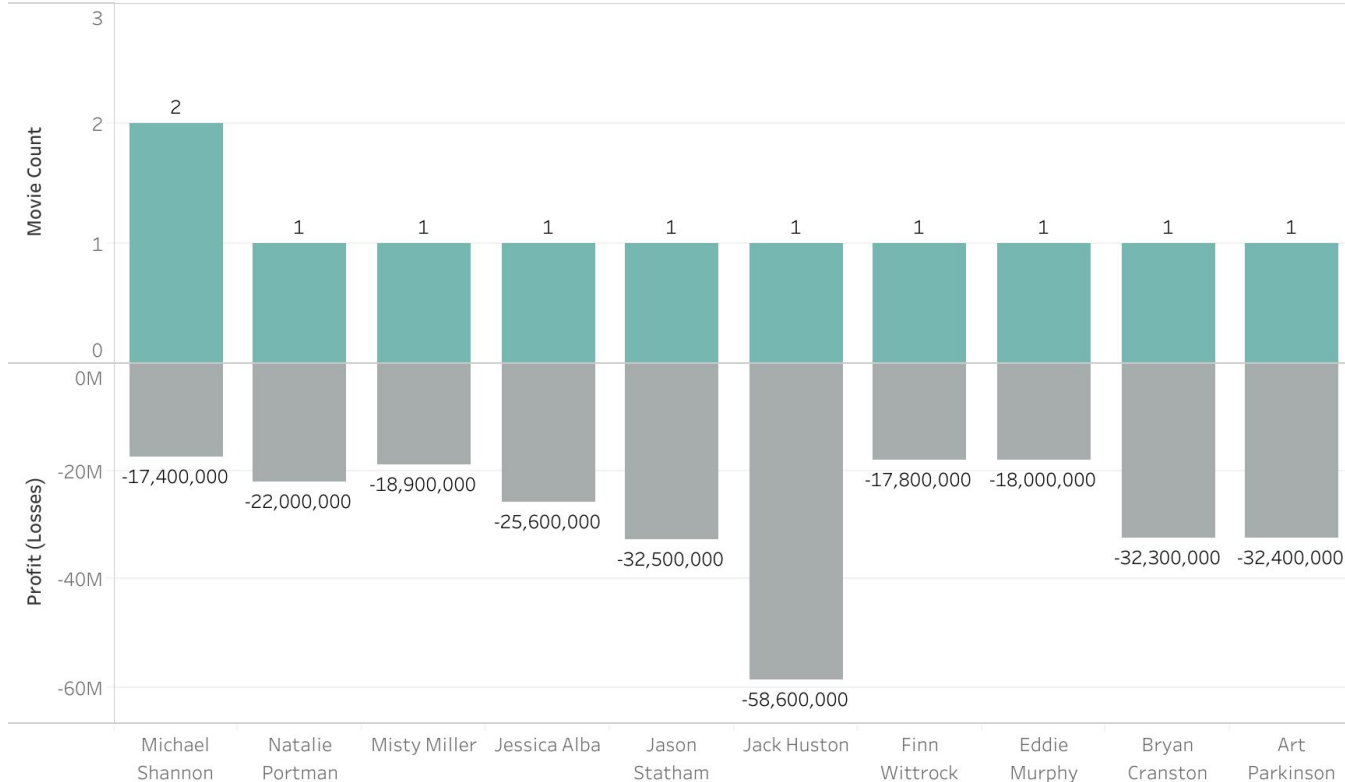
Least Profitable Movies

Lowest Profitable Movies

- Ben-Hur had the biggest loss.

- These ten movies fell under the genres of Action, Adventure, Crime, Drama, and Fantasy.

The chart shows profit values for each movie:
- Ben-Hur: -58,600,000
- R.I.P.D.: -51,700,000
- Blackhat: -50,300,000
- Child 44: -37,000,000
- Bullet to the Head: -33,100,000
- The Interview: -32,700,000
- Mechanic: Resurrection: -32,500,000
- Kubo and the Two..: -32,400,000
- The Infiltrator: -32,300,000
- Winter's Tale: -28,900,000

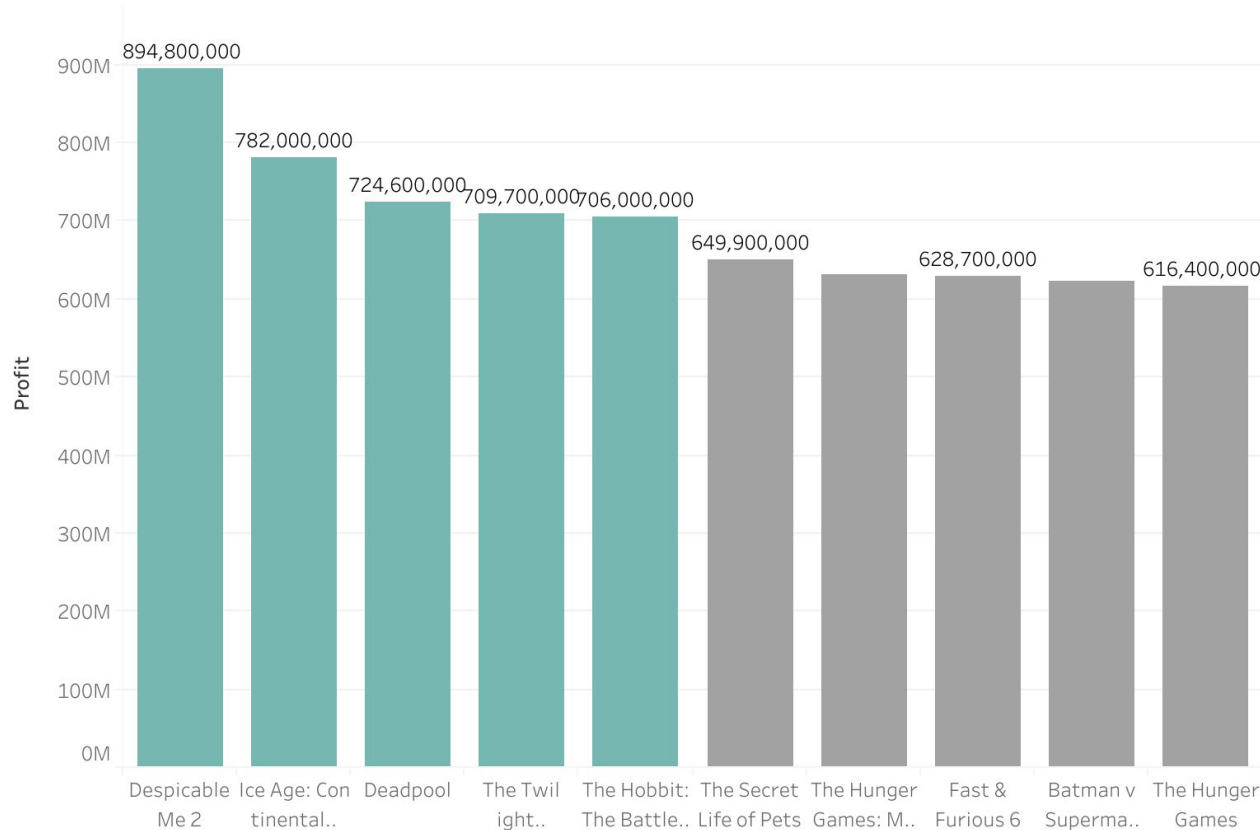# Actors with the Highest Loss in Profit

Actors w/ Highest Losses

- Jack Huston was in only one movie from 2012-2016 therefore resulting in the actor with the highest losses.

- No correlation as there are many other actors.
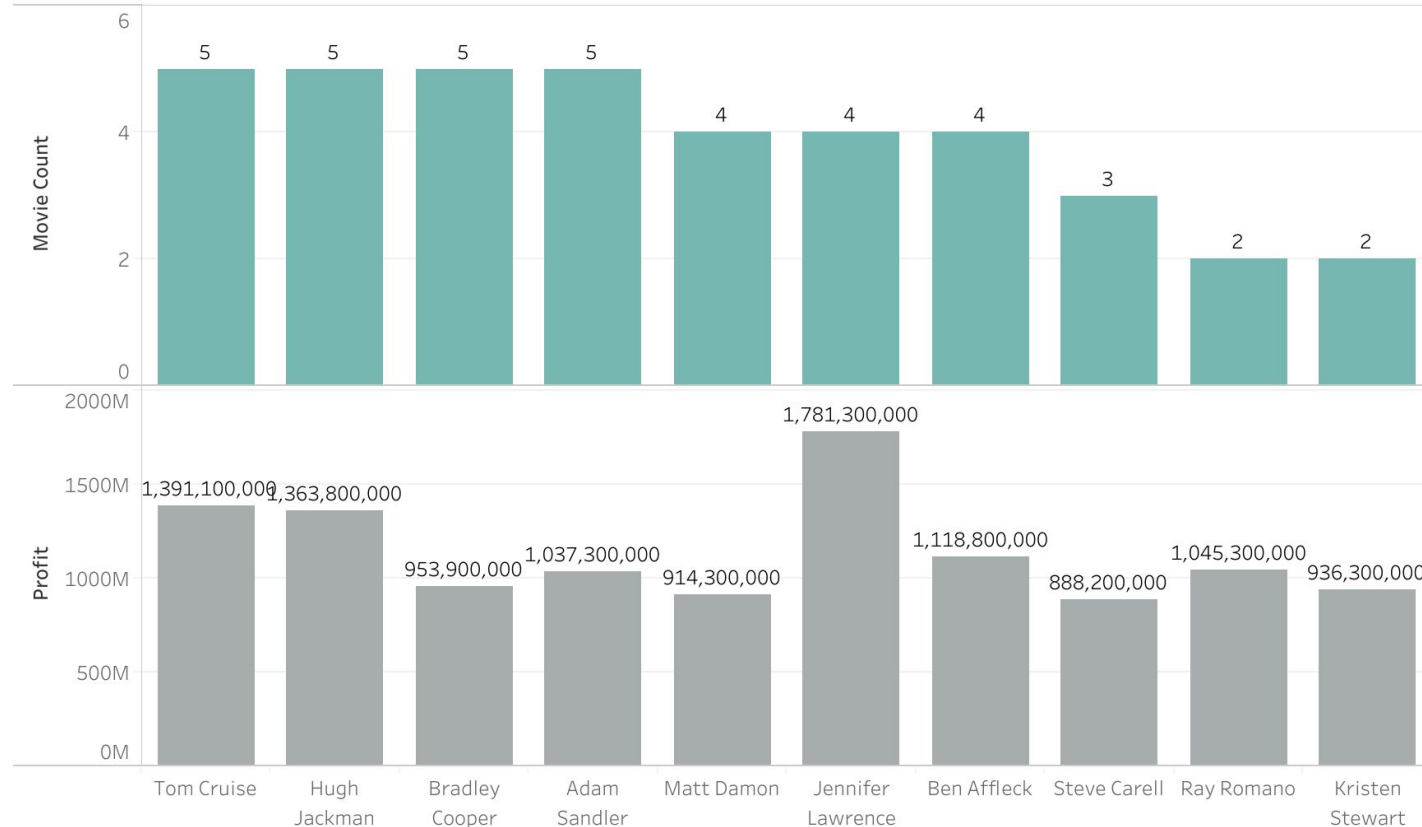
Most Profitable Movies

Highest Profitable Movies

- Despicable Me 2 and Ice Age made the most in profits, and was released in July

- All other movies on the chart were released in late fall and early winter

Actors with the Highest Profit

Actors w/ Highest Profits

- All actors had multiple profiting movies.

- Many of these actors specialize in a genre.

Insights

- Movie that did the worst was Ben-hur due to being a remake of the original movie released in 1959. 94% of the audience were over the age of 25.

- Most profitable movies fell into the genres of Action, Adventure, Fantasy, Sci-Fi and Comedy.

- Highest profitable movies casts well known actors that all specialized or were well known in a genre such as Steve Carell being in all comedy.

- Some of the most profitable movies were also a series that had multiple movies casting the same actors.

Conclusion

- **Call to Action:** Release a movie that falls into both the adventure and family genre and release it during the summer months of June or July, casting actors that are well-known for the genre. The director should consider a higher budget movie since these often attract a larger audience. In order to create an opportunity for a potential series the director can end the movie with an open ending that leaves room for another movie.