**Movie genre graph analysis**

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**Business case-**

**Help a production studio decide which genres to invest in based on profitability and audience reception.**

1. Introduction- This project explores trends in movie genres, ratings, and audience reception using a sample dataset. The aim is to derive actionable insights for movie producers and marketers.

2. Methodology –

Tools: Python, Pandas, Matplotlib, Seaborn –

Data: A self-generated dataset for analytical purposes –

Visualizations: Bar plot, line chart, pie chart, histogram, and box plot ---

3. Data analysis-

Bar Plot: Genre Distribution –

Line Chart: Yearly Trends in Ratings –

Pie Chart: Genre Representation –

Histogram: Rating Distribution –

Box Plot: Ratings by Genre

4. Key Insights –

Genre Popularity: Action leads in frequency, but Sci-Fi outperforms in quality. –

Audience Trends: Ratings peaked around 2010, followed by a decline post-2015. –

Rating Distribution: A bimodal pattern indicates distinct audience preferences.

Graph type analysis-

Bar Plot for genre distribution-

A graph with blue bars

Description automatically generated

Dominant Genre: Action movies have the highest count, indicating their popularity or frequency in the dataset.

Moderate Representation: Sci-Fi and Thriller genres are moderately represented with equal counts, showing a balanced interest or production in these categories.

Least Represented Genres: War, Drama, and Noir have the lowest counts, suggesting these genres are less common in the dataset.

Trend Observation: The dataset shows a clear preference for Action movies, while genres like War and Noir have less preference.

Line chart for year and ratings-

A graph with blue lines

Description automatically generated

Initial Variability (2000–2005):Ratings start at a moderate level, but there is a sharp decline followed by a significant rise. This suggests that the quality of movies during this period was inconsistent.

Peak Period (2005–2010):The average ratings steadily increased, reaching a peak around 2010. This indicates a period of high-quality movie releases or favorable audience reception.

Decline After 2010:From 2010 onwards, there is a gradual decline in average ratings, with a sharper drop after 2015. This could point to a shift in audience preferences, changes in movie quality, or external factors influencing ratings.

Trend Summary: The graph highlights fluctuations in movie quality or audience perception over time, with the peak in 2010 standing out as the most notable period for high-rated movies.

Pie chart for genre distribution-

A pie chart with different colored circles

Description automatically generated

Dominant Genre:Action is the most represented genre, accounting for 30% of the dataset. This aligns with its popularity and frequent production in the film industry.

Moderately Represented Genres:Sci-Fi and Thriller each make up 20% of the dataset, indicating a balanced interest in these genres.

Least Represented Genres:War, Drama, and Noir are the least represented genres, each contributing only 10% to the dataset.

Distribution Summary:The dataset exhibits a clear preference for Action movies, with Sci-Fi and Thriller also being prominent. The remaining genres have limited representation, suggesting a skew towards mainstream genres.

Distribution of movie ratings(histogram)-

A graph of a movie rating

Description automatically generated

 **Bimodal Distribution:**

* The histogram indicates a bimodal distribution with peaks around ratings **7.25–7.5** and **8.5–9.0**. This suggests that movies in the dataset tend to cluster in these two distinct rating ranges.

 **Rating Gaps:**

* There is a noticeable gap between 7.75 and 8.25, indicating fewer movies with ratings in this range.

 **Popularity Insight:**

* Movies are either rated moderately or very highly, with fewer average ratings in between

Boxplot for genre and ratings-

A chart with different colored squares and lines

Description automatically generated

 **Genre with Highest Ratings:**

* **Sci-Fi** movies have the highest median rating with a very narrow interquartile range (IQR), indicating consistent quality and audience reception.

 **Action Genre:**

* Action movies have a wide range of ratings, with the highest overall rating but a lower median compared to Sci-Fi. This indicates varying audience reception, with some highly-rated outliers.

 **Thriller Genre:**

* Thriller movies show the lowest median rating and a relatively wide spread, highlighting inconsistency in quality or audience perception.

 **Less Represented Genres:**

* **War**, **Drama**, and **Noir** genres show limited data points but generally have moderate ratings.

 **Summary:**

* Sci-Fi is consistently rated well, while Action and Thriller show variability in audience reception. War, Drama, and Noir lack enough data for detailed insights but appear to have moderate ratings.

**Key Insights:**

1. Action is the most frequently produced genre but has inconsistent ratings compared to Sci-Fi.
2. Sci-Fi movies are consistently well-rated, making them a strong performer in terms of quality.
3. The overall rating trends indicate a decline in average ratings post-2010, signaling potential changes in audience preferences or movie quality.
4. Thriller movies face challenges with consistent audience satisfaction, as seen in the wide variability in ratings.

**Conclusion:**

This analysis reveals trends in movie genres, audience reception, and rating distributions over time. Action and Sci-Fi dominate in terms of popularity and quality, respectively, while Thriller and niche genres like War and Noir have variable performances. The study highlights the importance of understanding genre-specific trends for producers and marketers aiming to cater to audience preferences.