A diagram of a graph

Description automatically generated with medium confidence

**Purpose:**

Plotly’s interactive bubble scatter plot is a very good tool for visualizing multi-dimensional data, for the relationships between movie genres and IMDB ratings, with worldwide gross sales and production budget. We can observe which movies from different genres financially did very well even though they did not always have the highest IMDB ratings or vice versa. This plot is a good starting point in analyses.

**Justification:**

**Position & Length**: IMDB Rating is placed on X-axis and shows how audience and critical reviews vary across different movies. Movies with higher ratings can easily be identified and can be compared to those with lower ratings across genres. Major Genre is placed on Y-axis and allows a clear comparison of how different genres relate to the IMDB Rating and their overall financial performance.

**Colour:** The colour of each bubble represents the Production Budget, providing the level of financial investment in each movie. Movies with higher production budgets are indicated with lighter colours, allowing users to quickly differentiate between low-budget and high-budget films. This highlights potential trends, such as whether higher-budget movies tend to achieve higher IMDB ratings or specific genres with higher budgets tend to achieve lower IMDB Ratings.

**Size**: The bubble size represents the financial performance of a movie for worldwide total sales, with larger bubbles are identified as higher sales at the world box office. This makes it easy to spot the most successful movies financially even though they are not highly rated. Hovering over any bubble provides detailed information, such as the movie title, total sales, and budget, offering further context.

**Design trade-offs**: The plot's interactivity improves the user experience by allowing detailed exploration of data points without cluttering the view. However, including many variables can make the plot more challenging to understand at first, especially for viewers unfamiliar with this type of visualization. Also it makes it harder to differentiate movies when movies have the same IMDB Rating.

**Interpret**:

Many of the movies have an IMDB Rating of 4 and above.

Larger bubbles signify movies with higher sales, especially in three main genres, Action, Adventure and Thriller. Some of these high sales genres also have the highest budgets shown with lighter colours even though they are not always rated close to 10. ‘Titanic’ is a very good example of being a very profitable Thriller movie despite achieving only 7.4 rating. Whereas another Thriller movie ‘Inception’ has a similar budget with a decent profit but not as high as Titanic, achieves a rating of 9.1. In Adventure category, ‘Avatar’ is the most profitable movie of all with a rating of 8.3. Another similar example is Adventure movie ‘Spiderman-3’ with one of the highest budgets with a high profit but again a lower rating of 6.4

Looking at this plot, we can safely say a high IMDB rating do not always produce a profitable movie.

There are not enough movies for Concert, Black Comedy or Documentary categories when compared to the rest of the categories.