**Basic Visualizations**

1. **Top 10 Most Popular Movies (By Popularity Score)**
   * **Purpose**: Identify the most popular movies based on their popularity score.
   * **Chart Type**: Horizontal Bar Chart
   * **Data**: title, popularity
2. **Top 10 Most Prolific Directors (By Movie Count)**
   * **Purpose**: Show the most prolific directors based on the number of movies they directed.
   * **Chart Type**: Treemap (tile area size represents movie count)
   * **Data**: Director (value count)
3. **Genre Distribution**
   * **Purpose**: Display the distribution of movie genres to see which genres are most common in the dataset.
   * **Chart Type**: Pie Chart (each genre represented as a slice proportional to its frequency)
   * **Data**: genres\_list (value count)
4. **Total Number of Movies Per Year**
   * **Purpose**: Show the trend of movie releases over time, highlighting the frequency of releases per year.
   * **Chart Type**: Line Chart (trend over time) or Bar Chart (highlight differences between years)
   * **Data**: release\_year (value count)
5. **Adult vs. Non-Adult Movies Count**
   * **Purpose**: Compare the number of adult vs. non-adult movies to understand the distribution of adult content.
   * **Chart Type**: Vertical Bar Chart
   * **Data**: adult (value count)
6. **Most Starred Actor/Actress**
   * **Purpose**: Identify actors with the most frequent appearances in high-grossing or highly-rated movies.
   * **Chart Type**: Word Cloud (actor name size represents frequency)
   * **Data**: Star1, Star2, Star3, Star4 (value count)

**Intermediate Visualizations**

1. **Number of Movie Releases by Genre Over Time**
   * **Purpose**: Track the release trend for each genre over time to see how different genres have evolved.
   * **Chart Type**: Stacked Area Chart
   * **Data**: genres\_list, release\_year
2. **Average Movie Runtime by Decade**
   * **Purpose**: Show how the average runtime of movies has changed over the decades.
   * **Chart Type**: Line Chart
   * **Data**: runtime, release\_year
3. **Frequent Actors/Actresses Across Genres**
   * **Purpose**: Identify actors’ appearance frequencies across different genres to see which genres certain actors are associated with.
   * **Chart Type**: Heatmap (actors on one axis, genres on the other, colors representing frequency)
   * **Data**: Cast\_list, genres\_list
4. **Average Popularity and Sentiment by Genre**
   * **Purpose**: Compare average popularity and sentiment across genres to see which genres are most popular and tend to have positive or negative sentiment.
   * **Chart Type**: Vertical Bar Chart
   * **Data**: popularity, overview\_sentiment, genres\_list
5. **Sentiment vs. Vote Average by Release Year**
   * **Purpose**: Analyze if older movies differ in sentiment and ratings compared to recent movies.
   * **Chart Type**: Bubble Chart (sentiment vs. vote average, bubble size representing release year)
   * **Data**: overview\_sentiment, vote\_average, release\_year

**Advanced Visualizations**

1. **Number of Movies by Production Country (Interactive)**
   * **Purpose**: Display the geographical distribution of movie production to see which countries produce the most movies.
   * **Chart Type**: Choropleth Map (interactive)
   * **Data**: production\_countries (grouped by country and counted)
2. **Data Comparison Tools (Real-Time Popularity Tracker)**
   * **Purpose**: Allow users to compare multiple popular movies based on real-time metrics like ratings, vote count, and social media mentions.
   * **Chart Type**: Spider (Radar) Chart
   * **Data**: Real-time metrics such as popularity, vote\_count, social\_media\_mentions, and other popularity indicators for selected movies
3. **Real-Time Trending Movies Chart**
   * **Purpose**: Display dynamically updating rankings of trending movies, with bars adjusting as new popularity data comes in.
   * **Chart Type**: Live-Updating Bar Chart
   * **Data**: Real-time popularity metrics, including user interactions, ratings, and social media trends

# Search Functionality (Movies)

1. **Frequency of movies acted by each actors (within cast\_list)**

* **Purpose**: Show the frequency of movies each main actor in the cast has appeared in, indicating their experience and prominence in the dataset.
* **Chart Type**: Horizontal Bar Chart
* **Data**: Cast\_list (count of movies per actor)
* **Description**: Display a horizontal bar chart showing the number of movies each actor in the selected cast has appeared in. This highlights which actors are more experienced, popular, or frequently cast, giving users insight into the prominence of each cast member.

1. **Movie Ratings Breakdown**

* **Purpose**: Show the distribution of ratings to illustrate how different audiences rated the movie.
* **Chart Type**: Histogram or Bar Chart
* **Data**: vote\_average, vote\_count (breakdown by rating levels)
* **Description**: Display a histogram showing the frequency of each rating, from 1 to 10, or group ratings into ranges (e.g., 1-3, 4-6, 7-10). This gives an idea of how polarizing or popular the movie is.

1. **Keyword Frequency in Movie Overviews**

* **Purpose**: Highlight the most common themes or elements in a movie’s storyline based on keyword frequency.
* **Chart Type**: Word Cloud
* **Data**: all\_combined\_keywords
* **Description**: Display a word cloud where each keyword’s size represents its frequency in the overview. This helps users get a quick sense of key themes, like "adventure," "love," "war," or "mystery," which can define the movie’s main focus.

# Used for Personal Movie Recommendation (Based on Genre)

**Comparison of Movies based on popularity**

* **Purpose**: Provide a context of how the movie ranks compared to others in the same genre.
* **Chart Type**: Horizontal Bar Chart or Radar (Spider) Chart
* **Data**: vote\_average, popularity, genres\_list
* **Description**: Compare the movie’s rating and popularity against similar movies in the same genre. This comparison can highlight whether it’s a standout in its category.