# AC50002
# R Programming Assignment

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Part 1

```r
library(dplyr)
library(ggplot2)
install.packages("babynames")
library(babynames)
babynames
View(babynames)

# Filter for male names in the 20th century (1900-1999)
babynames_20th_century_male <- babynames %>%
  filter(year >= 1900, year <= 1999, sex == "M")

# Find the three most popular male names by summing up their occurrences over the 20th century
top_male_names_20th_century <- babynames_20th_century_male %>%
  group_by(name) %>%
  summarise(total = sum(n)) %>%
  arrange(desc(total)) %>%
  slice(1:3) %>%
  pull(name)

# Filter original data to only include these top names
top_male_names_data <- babynames_20th_century_male %>%
  filter(name %in% top_male_names_20th_century)

# Plot the popularity trends of the top 3 male names over the 20th century
ggplot(top_male_names_data, aes(x = year, y = prop, color = name)) +
  geom_line() +
  labs(title = "Popularity of the Three Most Popular Male Names (1900-1999)",
       x = "Year", y = "Proportion") +
  theme_minimal()
```
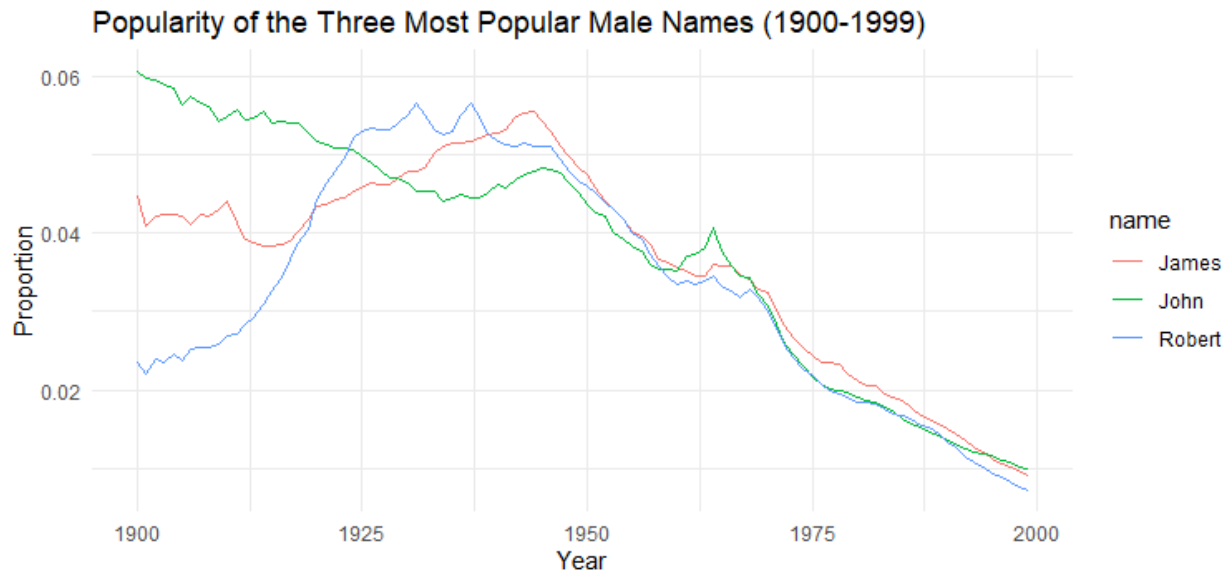
Plot

## Popularity of the Three Most Popular Male Names (1900-1999)



Graph: The graph below gives the changing proportions-popularity-of the three most popular male baby names-James, John, and Robert-over the 20th century in the USA. Each line corresponds to the proportion of babies who were given one of these names in a particular year.

James and John were very popular during the early and mid-20th century, but their popularity showed a decline in the latter half.
Robert peaked during the 1940s but eventually saw the same declining trend.
This map shows the trends across the century and reflects the cultural and societal changes.

Part 2
Insights Report: Anime Dataset Analysis

## Dataset Description

The dataset used for analysis in this report is the Anime Recommendations Database from Kaggle. It was gathered by the Kaggle user community to support insights on anime preferences and recommendation systems. The dataset contains data on anime titles, their genres, types-for example, TV or movie-user engagement in the number of members, ratings, the number of episodes, and the year of release. The dataset shall mainly serve developers and researchers in understanding consumption trends in anime and in building data-driven recommendation models.

| | anime_id | name | genre | type | episodes | rating | members |
|---|---|---|---|---|---|---|---|
| 1 | 32281 | Kimi no Na wa. | Drama, Romance, School, Supernatural | Movie | 1 | 9.37 | 200630 |
| 2 | 5114 | Fullmetal Alchemist: Brotherhood | Action, Adventure, Drama, Fantasy, Magic, Military, Shounen | TV | 64 | 9.26 | 793665 |
| 3 | 28977 | Gintama° | Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen | TV | 51 | 9.25 | 114262 |
| 4 | 9253 | Steins;Gate | Sci-Fi, Thriller | TV | 24 | 9.17 | 673572 |
| 5 | 9969 | Gintama&#039; | Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen | TV | 51 | 9.16 | 151266 |
| 6 | 32935 | Haikyuu!!: Karasuno Koukou VS Shiratorizawa Gakuen Koukou | Comedy, Drama, School, Shounen, Sports | TV | 10 | 9.15 | 93351 |
| 7 | 11061 | Hunter x Hunter (2011) | Action, Adventure, Shounen, Super Power | TV | 148 | 9.13 | 425855 |
| 8 | 820 | Ginga Eiyuu Densetsu | Drama, Military, Sci-Fi, Space | OVA | 110 | 9.11 | 80679 |
| 9 | 15335 | Gintama Movie: Kanketsu-hen - Yorozuya yo Eien Nare | Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen | Movie | 1 | 9.10 | 72534 |
| 10 | 15417 | Gintama&#039;: Enchousen | Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen | TV | 13 | 9.11 | 81109 |
| 11 | 4181 | Clannad: After Story | Drama, Fantasy, Romance, Slice of Life, Supernatural | TV | 24 | 9.06 | 456749 |
| 12 | 28851 | Koe no Katachi | Drama, School, Shounen | Movie | 1 | 9.05 | 102733 |
| 13 | 918 | Gintama | Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen | TV | 201 | 9.04 | 336376 |
| 14 | 2904 | Code Geass: Hangyaku no Lelouch R2 | Action, Drama, Mecha, Military, Sci-Fi, Super Power | TV | 25 | 8.98 | 572888 |

Cleaning and tidying of the dataset were performed using R's tidy verse. Handling missing values, categorizing episode counts into meaningful ranges, and preparing data for exploration data analysis and visualization were performed.

| anime_id | title | genre | type | episodes | rating | members | year |
|---|---|---|---|---|---|---|---|
| 32281 | Kimi no Na wa. | Drama | Movie | 1 | 9.37 | 200630 | 2016 |
| 5114 | Fullmetal Alchemist: Brotherhood | Action | TV | 64 | 9.26 | 793665 | 2009 |
| 28977 | Gintama° | Action | TV | 51 | 9.25 | 114262 | 2015 |
| 9253 | Steins;Gate | Sci-Fi | TV | 24 | 9.17 | 673572 | 2011 |
| 9969 | Gintama&#039; | Action | TV | 51 | 9.16 | 151266 | 2011 |
| 32935 | Haikyuu!!: Karasuno Koukou VS Shiratorizawa Gakuen Koukou | Comedy | TV | 10 | 9.15 | 93351 | 2016 |
| 11061 | Hunter x Hunter (2011) | Action | TV | 148 | 9.13 | 425855 | 2011 |
| 820 | Ginga Eiyuu Densetsu | Drama | OVA | 110 | 9.11 | 80679 | 1988 |
| 15335 | Gintama Movie: Kanketsu-hen - Yorozuya yo Eien Nare | Action | Movie | 1 | 9.10 | 72534 | 2013 |
| 15417 | Gintama&#039;: Enchousen | Action | TV | 13 | 9.11 | 81109 | 2012 |
| 4181 | Clannad: After Story | Drama | TV | 24 | 9.06 | 456749 | 2008 |
| 28851 | Koe no Katachi | Drama | Movie | 1 | 9.05 | 102733 | 2016 |
| 918 | Gintama | Action | TV | 201 | 9.04 | 336376 | 2006 |
| 2904 | Code Geass: Hangyaku no Lelouch R2 | Action | TV | 25 | 8.98 | 572888 | 2008 |

**Main Findings**

**1. Proportion of Anime Types**

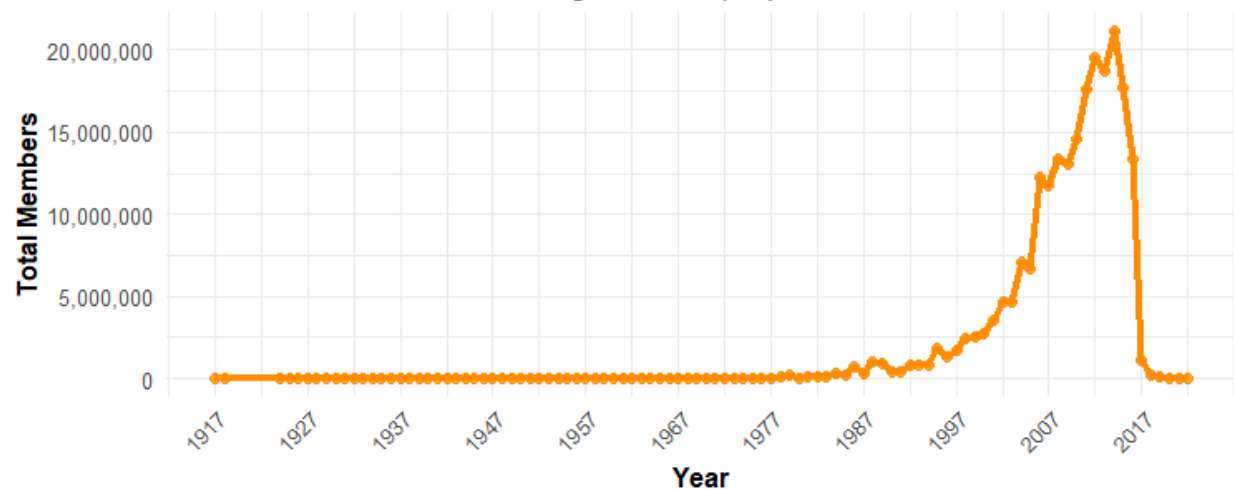Proportion of Anime Types in the Dataset
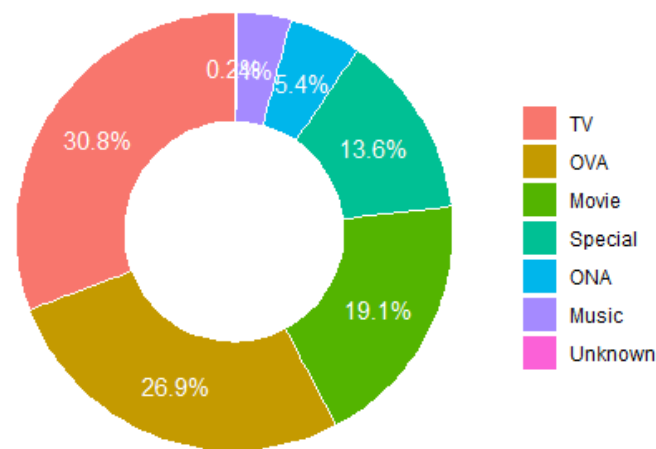


TV series dominate most of the dataset at 30.8%, followed by OVA at 26.9%, and Movies at 19.1%. Other formats take smaller shares, such as specials and ONAs. This distribution underlines the central role of TV series in anime production, reflecting their serialized nature and long-standing popularity among audiences.

This breakdown is only the first step into deeper insights into the nature and trends of these types, to be furthered in the following visualizations.

2. **User Engagement Over Time**

This graph shows the total number of members interacting with anime per year. From the early 1900s to the 2000s, the engagement was mostly flat, increasing dramatically from about 2000 and peaking between 2010 and 2015. This growth coincides with the rise of streaming platforms like Crunchyroll, Netflix, and Hulu, which democratized access to anime globally.

The subsequent decline in viewership may be a sign of saturation or the shifting of viewer preferences to other forms of entertainment or platforms. This trend underlines how important accessibility and internationalization are for industry development.

3. **Popularity of TV Series by Episode Length**



**Popularity of TV Series by Episode Length**
Average members for short, medium, and long episodic TV series
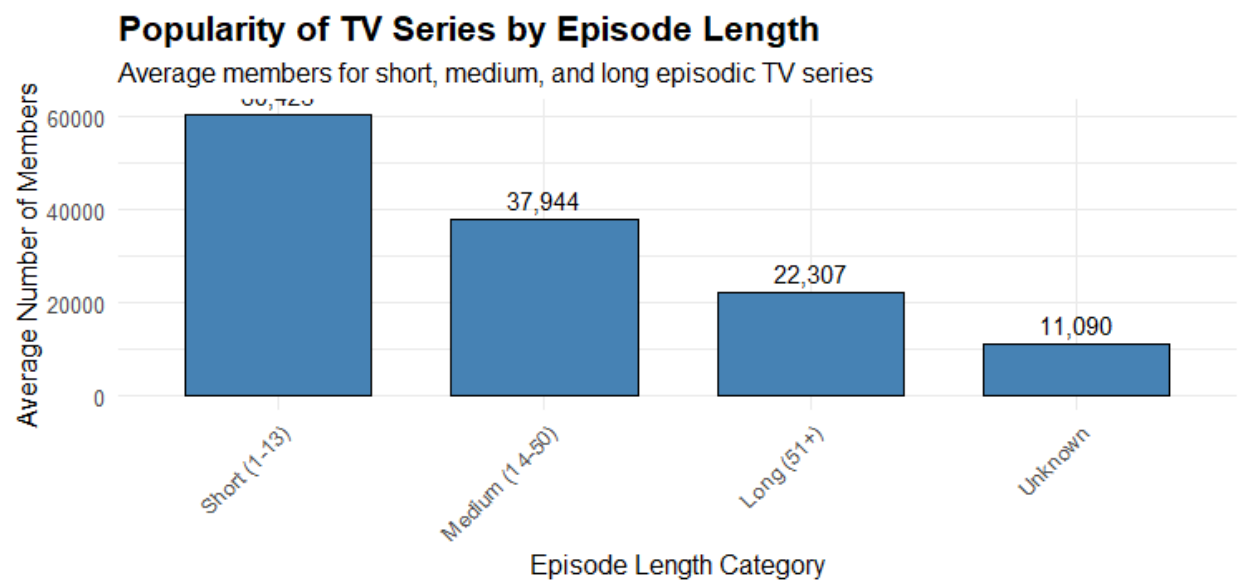
Analyzing TV series by episode length reveals:

Short series (1–13 episodes) are the most popular, with an average of over 50,000 members per series.

Medium-length series (14–50 episodes) get medium engagement, averaging ~37,944 members.

Long series (51+ episodes) are less popular, averaging ~22,307 members. The insight reflects a broader trend in the audience's preference for shorter formats, probably due to modern consumption habits of binge-watching. Studios now increasingly look at the short-format series to give the audiences what they want while ensuring maximum engagement for minimal production cost.

## 4. **Popularity of Movies and TV Series Over Time**

### Popularity of Movies and TV Series Over Time
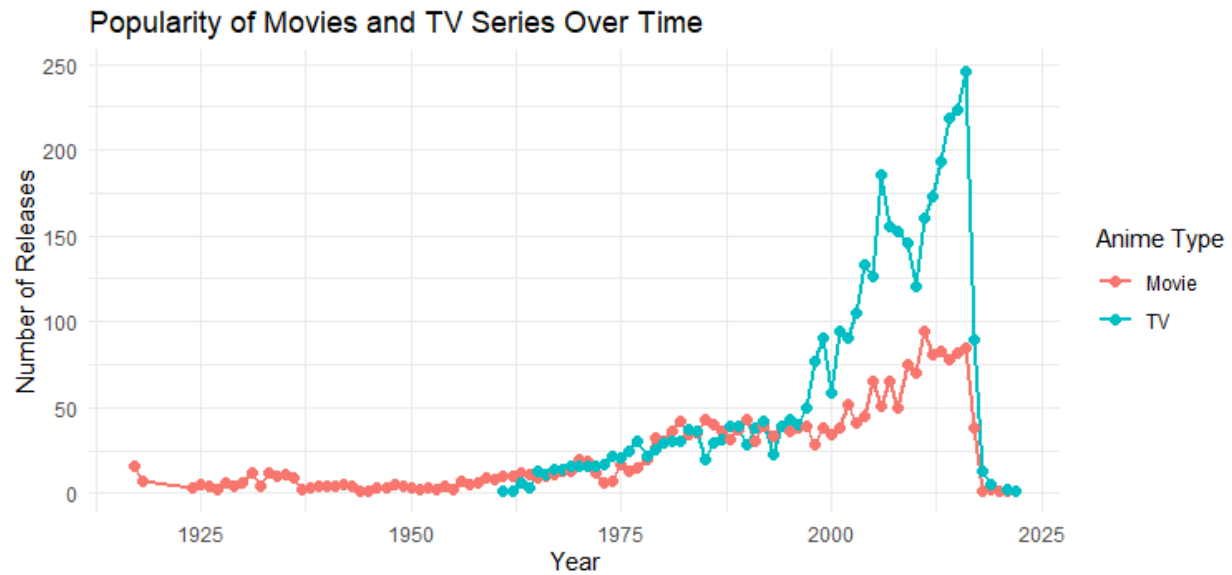


A comparison of movie and TV-series production trends shows that TV series is leading in terms of volume continuously. However, movies have seen a constant rise with a peak at the same time as that of the TV series, in the early 2000s. Movies can often supplement TV series with higher-budget, self-contained narratives or expansions of already popular series.

This dual focus on TV and movie formats really points out the ability of this industry to cater to both serialized storytelling enthusiasts and audiences seeking self-contained narratives.

## 5. **TV Series Production Trends by Episode Length**

### TV Series Production Trends by Episode Length
Short, Medium, and Long episodic TV series trends over the years
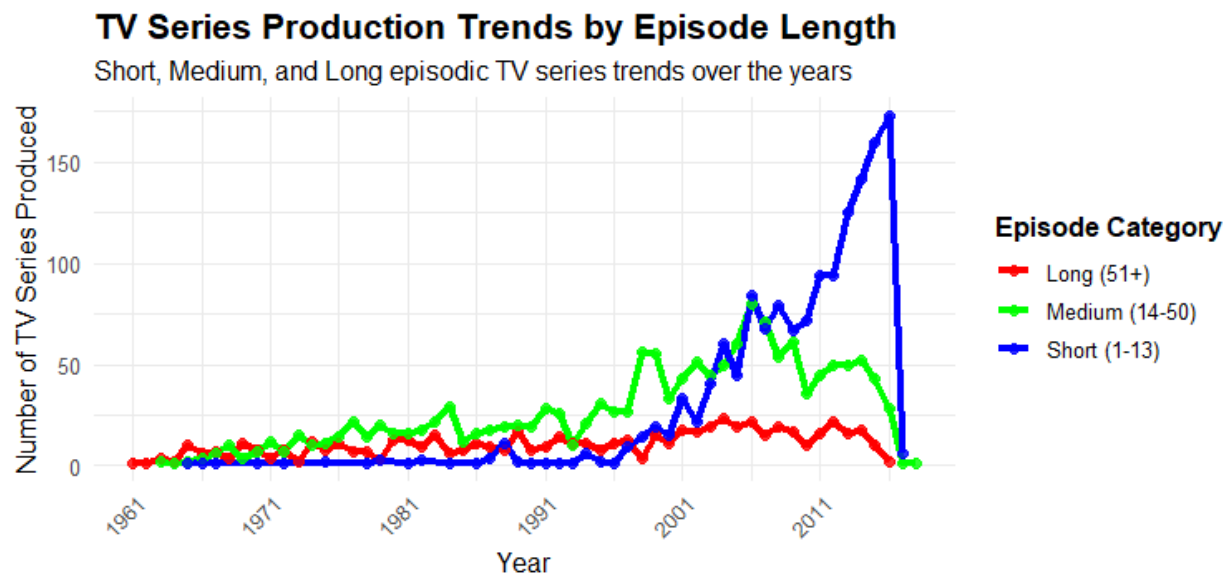
Here are television series production trends:

Short series (1–13 episodes) have seen tremendous growth, becoming the most produced category over the past few years.

Medium-length series (14–50 episodes) have relatively stable production but with a gentle decline after 2010.

Long-running series (51+ episodes) have always been fewer, reflecting their high cost and lower audience demand. Those trends reflect the industry moving towards shorter, tightly written stories that are going to ring true with today's audiences. That strategic shift allows studios to maintain production quality while keeping costs in line.

6. **Average Ratings Over the Years**
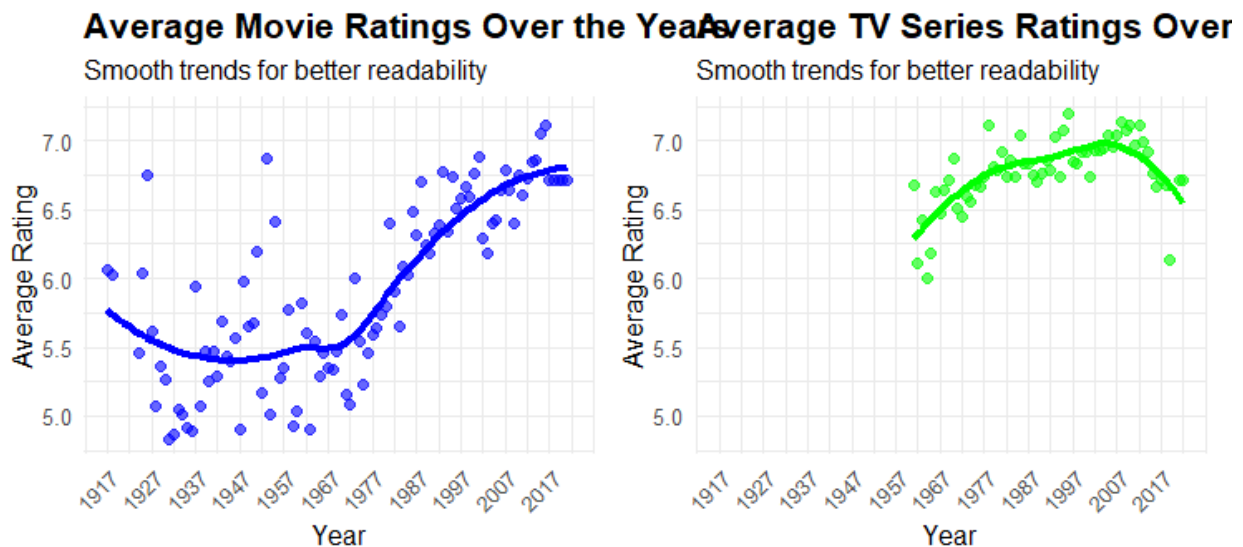


The average ratings of movies and TV series reveal interesting patterns:

Films manifest stable rating highs, reflecting enhanced production quality and storytelling over time.

TV series ratings, after an initial rise, plateau, indicating that the industry has achieved a stable balance of quality in serialized content. Such upward trends in movie ratings speak to their growing role as a medium for premium high-budget projects, which should, in turn, bring critical acclaim. On the other hand, the stabilization in ratings for TV series speaks of an anime industry maturity that should meet audience expectations.

**Commentary and Hypotheses**

Audience Preferences Shape Production

The popularity of shorter series has increased over time, which aligns with production trends from the dataset. This probably mirrors the audience's demand for binge-worthy yet concise storytelling that can fit into busy lifestyles.

Hypothesis: Short-form anime will still be king in the future because their appeal is directed toward global audiences on streaming platforms.

Globalization and Engagement Trends:

The sharp increase in user engagement from 2000 onward is against the background of internationalization of anime. Streaming services have played a very important role in pushing this trend because they make anime more accessible to audiences beyond Japan.

Hypothesis: Older anime titles, if more accessible, say, through remastering classics—will regain interest with a younger audience.

Films like Flagship Projects:

The consistently high ratings of movies underline their importance as flagship projects attracting global attention. Studios often use movies to expand on popular series or produce standalone masterpieces.

**Hypothesis**: Studios that produce fewer, higher-budget films are likely to see stronger returns in terms of critical acclaim and international reach. Ratings Reflect Industry Maturity The stabilization of the ratings of TV series may be a clear sign that the industry has reached a certain phase of consistency in meeting viewer expectations. However, the plateau could also indicate a saturation point, requiring innovation in storylines and formats to maintain interest.


**Conclusion**

This analysis presents a dynamic anime industry that is continuously moving along the lines of changing audience preferences, new technologies, and market needs. Shorter formats are prevalent now due to modern viewing habits, while high-quality movies act as flagship projects for industry. User engagement trends point out the critical role of accessibility, with streaming platforms driving a global anime boom in the early 2000s. These findings are interlinked with each other and present the industry's adaptability and how production strategies need to change according to the evolving audience's behavior.

Future research may want to explore genre-specific trends, the impact of streaming platforms on niche genres, and the role that cultural globalization has played in shaping anime's success. These insights are very valuable to producers, marketers, and distributors trying to negotiate the shifting landscape of anime.