Exploring Factors Influencing Movie Success

Stat 184 Final Project

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Introduction

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Hypotheses and Research Questions

1. How do audience ratings compare across the five most common movie genres?
2. Which top studios have the best return on investment, and is there a relationship between movie budget and profit?
3. Who are the most frequently featured stars among in the movie dataset?

Data Provenance

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Main Dataset

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Secondary Dataset

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Merged and Final Dataset

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FAIR and CARE Principles

FAIR SARA CARE LAYAN

EDA: Exploratory Data Analysis

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Genre and Rating

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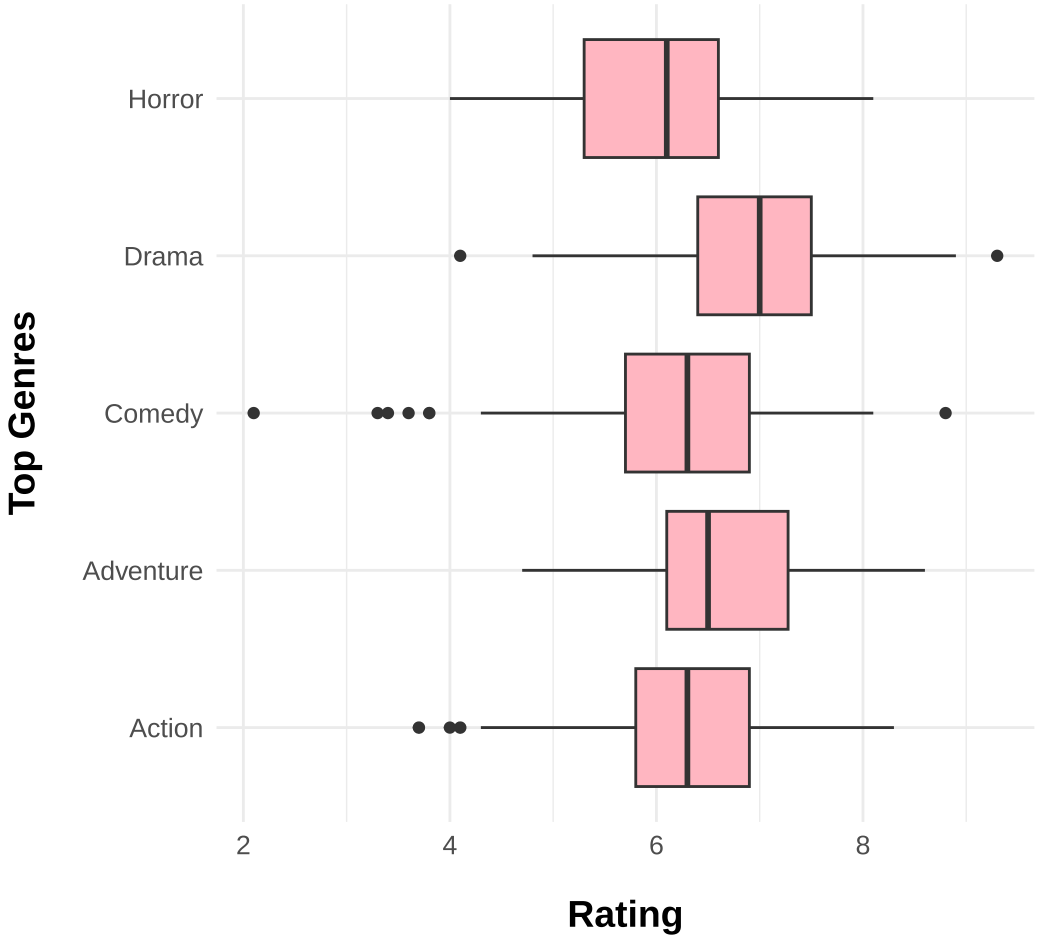
Summary

Table 1: Summary Table of Ratings by the Top 5 Movie Genres

Genre	FilmCount	MinRating	Q1Rating	MedianRating	Q3Rating	MeanRating	MaxRating	SdRating
Comedy	208	2.1	5.7	6.3	6.900	6.263942	8.8	0.9452131
Drama	207	4.1	6.4	7.0	7.500	6.906763	9.3	0.7832919
Action	199	3.7	5.8	6.3	6.900	6.301507	8.3	0.8837750
Adventure	94	4.7	6.1	6.5	7.275	6.563830	8.6	0.8893457
Horror	77	4.0	5.3	6.1	6.600	5.974026	8.1	0.9505404

Box Plot

Figure 1: Distribution of Ratings for Top 5 Genres



Companies and Movies

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Conclusion

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Sources and References

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Code Appendix

```
# Load all necessary packages -----
library(tidyverse)
library(rvest)
library(dplyr)
library(janitor)
library(knitr)
library(kableExtra)
library(ggplot2)

#Define global elements ----
psuPalette <- c("#1E407C", "#BC204B", "#3EA39E", "#E98300",
                "#999999", "#AC8DCE", "#F2665E", "#99CC00")

basePart <- "https://raw.githubusercontent.com/Stat184-Spring2025/"
mainPart <- "Sec4_FP_Layan_Sara/main/Data/MoviesJoined.csv"
url <- paste0(basePart,mainPart)
MoviesJoined <- read.csv(url, header = TRUE)

# Creating a summary table of Ratings by Genres ----

Genre_summary <- MoviesJoined%>%
  group_by(Genre)%>%      # Groups the data by Genre column
  summarise(           # Calculates summary statistics for each genre
    FilmCount = n(),      # Number of films in each genre
    MinRating = min(Rating, na.rm = TRUE),   #Minimum rating (ignores NA values)
    Q1Rating = quantile(Rating, 0.25, na.rm = TRUE),  # First quartile
    MedianRating = median(Rating, na.rm = TRUE),      # Median rating
    Q3Rating = quantile(Rating, 0.75, na.rm = TRUE),  # Third quartile
    MeanRating = mean(Rating, na.rm = TRUE),     # Mean (average) rating
    MaxRating = max(Rating, na.rm = TRUE),      # Maximum rating
    SdRating = sd(Rating, na.rm = TRUE)        # Standard deviation of ratings
  ) %>%
  arrange(desc(FilmCount))%>%          # Sorts the genres by film count
  slice_head(n=5)       # Selects the top 5 movie genres with the most films

# Displaying the summary table ----
Genre_summary%>%
  kable(
    booktabs = TRUE,
    align = c("l", rep("c",8)), # Left-aligns the first column, centers the rest
    format = "latex"
  )%>%
  kableExtra::kable_styling(
    font_size = 16,          # Sets font size of the table
    latex_options = c("striped","scale_down"),
  )%>%
  row_spec(0, bold = TRUE, background = "pink")%>%  # Styles the header
  column_spec(1, italic = TRUE) # Styles the 1 column

# Wrangling Data ----
## Get Top 5 Genres
TopGenres <- MoviesJoined %>%
  count(Genre, sort = TRUE) %>%  # Counts num of movies per genre and sorts them
  slice_max(order_by = n, n = 5) %>%  # Selects top 5 genres w most movies
  pull(Genre)

## Show data for only the Top 5 genres
MovieGenre <- MoviesJoined %>%
  filter(Genre %in% TopGenres)  # Filter movies of only the top 5 genres


# Create the box plot for Genre and Ratings----
ggplot(
  data = MovieGenre,
  mapping = aes(
    x = Rating,      # Set the x-axis to represent Rating
    y = Genre    # Set the y-axis to represent Genre
  )
) +
geom_boxplot(fill = "lightpink") +   # Creates box plot with pink boxes
labs(                #labels the x and y axis
  y = "Top Genres",
  x = "Rating"
) +
theme_minimal()+
theme(
  text = element_text(size = 12),
  axis.title.x = element_text(face = "bold",   # Make the x-axis title bold
                              size = 14,    # Set font size to 14
                              margin = margin(t = 15)
                              ),
  axis.title.y = element_text(face = "bold",
                              size = 14,
                              margin = margin(r = 15)
                              ) # margin pushes titles away from axis
)
```