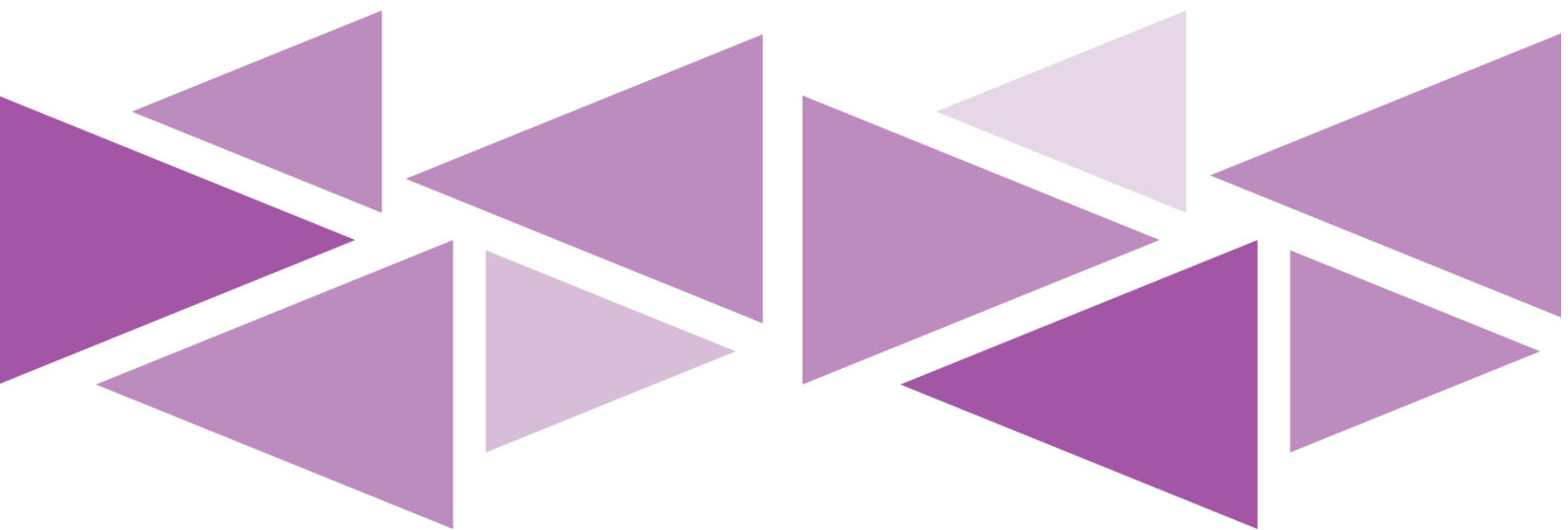# APPLICATION REPORT ON:

A Comparative Analysis of Age Restrictions and Quality: Disney+ vs Netflix Movies

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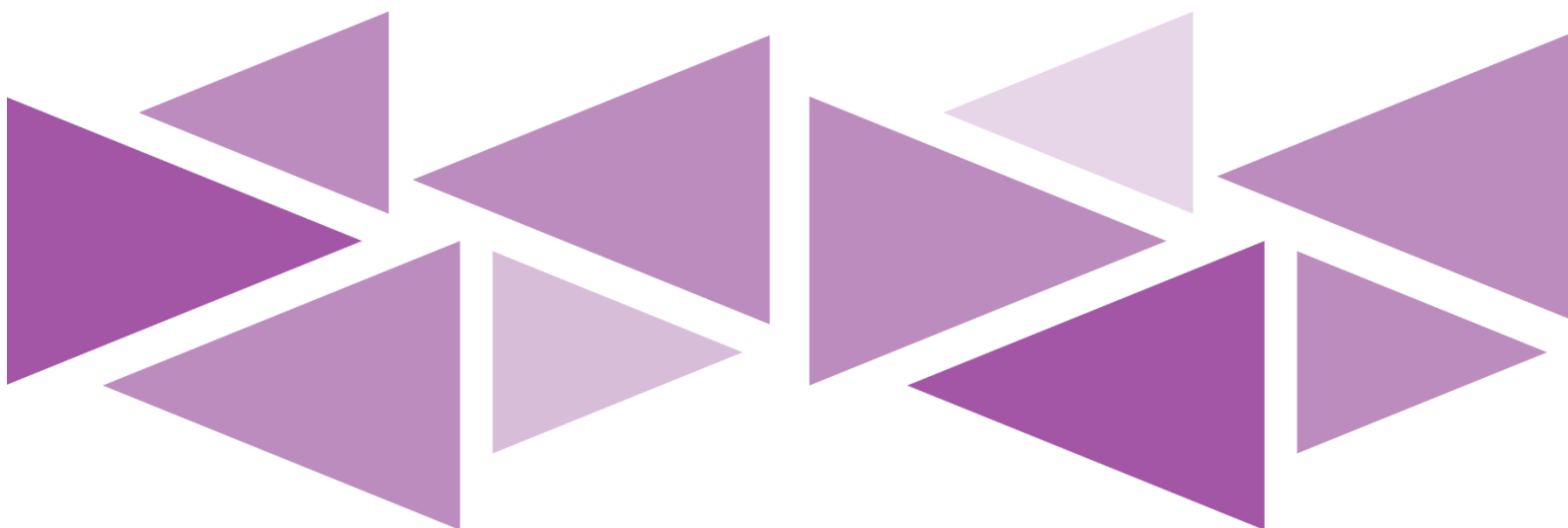
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GITHUB LINK: https://github.com/KedarParab/TU-Dortmund-Statistical-Report

DATE: 15th November 2024

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INTRODUCTION / MOTIVATION

In recent years, streaming services such as Netflix and Disney+ have become increasingly popular, offering a wide range of movies to viewers all over the world. While Netflix is known for its mature content, Disney+ is often seen as a family-friendly platform. But with Disney+ adding movies like those from the Marvel and Star Wars series, it's important to see if this perception is still accurate.

This report focuses on two main questions:

1. Does Disney+ really have movies with lower age restrictions compared to Netflix?
2. Are the movies on Netflix better rated than those on Disney+?

To answer these questions, we analyze a dataset containing movies from both streaming services. We will use simple statistics to compare their age ratings and Rotten Tomatoes score.

MOTIVATION:

With the ever-increasing number of streaming platforms, understanding what sets them apart is important. My interest is this analysis came from a curiosity about how platforms like Disney+ and Netflix shape their libraries to attract specific audiences. Disney+ has built a strong reputation as a family-oriented platform, but I wondered if that reputation truly matches the range of movies it offers, especially when compared to Netflix, which caters to a broader age range.

Additionally, I wanted to explore how the quality of movies on these platforms compares. By analyzing Rotten Tomatoes Score, I hoped to see if one platform generally offers better-rated movies. This analysis provides a chance to dig deeper into these perceptions and see if the data aligns with how each platform is viewed by audiences and critics alike.
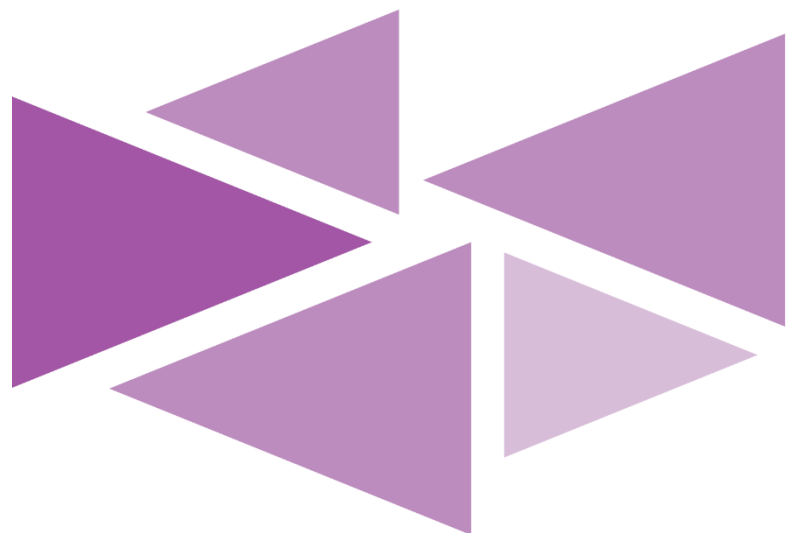
DETAILED DESCRIPTION OF THE PROBLEM

The aim of this project is to explore the differences between the movie catalogs of Disney+ and Netflix, focusing on age restrictions and movie quality, as measured by Rotten Tomatoes scores. Specifically, we address the following research questions:

1. AGE RESTICTION COMPARISON:
   o Is the age restriction for movies on Disney+ generally lower than the that of Netflix? Given the family-oriented perception of Disney+, it is crucial to understand if the data supports this reputation when compared to Netflix's broader catalog.

2. QUALITY OF MOVIES:
   o Are the movies on Netflix better rated than those on Disney+? Using Rotten Tomatoes scores as a measure of movie quality, we assess it one platform consistently offers higher rated movies.

DATASET OVERVIEW:

1. SOURCE: The dataset is sourced from a Kaggle repository containing information about movies available on Netflix, Disney+, Hulu and Amazon Prime Video.

2. VARIABLES: The Primary variables of interest for this analysis are:
   o Age: Age restrictions of the movies.
   o Rotten Tomatoes: Movie ratings (in percentage).
   o Netflix and Disney+: Binary indicators (1 if a movie is available on the respective platform, 0 otherwise).

3. Data Cleaning: Missing Vales were identified in the Age (1,991 entries) and Rotten Tomatoes (7 entries) columns. The analysis focuses on entries available on either Netflix or Disney+, with age restrictions and Rotten Tomatoes score cleaned and converted for analysis.
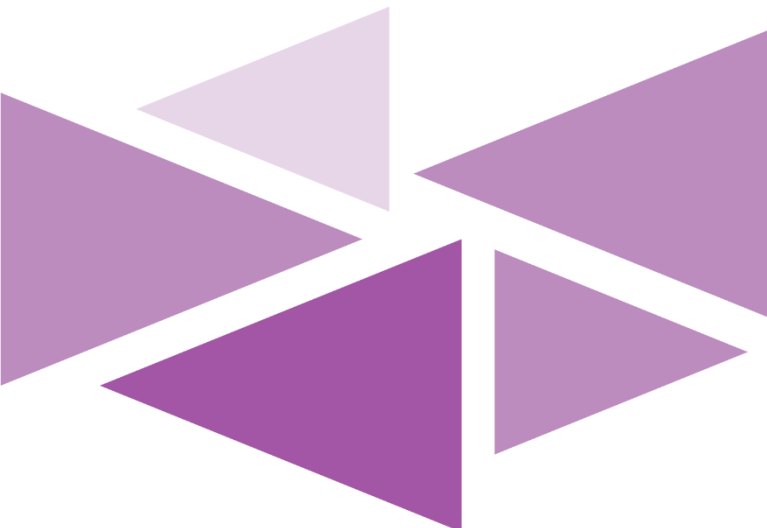
METHODS USED

The analysis combined descriptive statistics and inferential statistics to address the research questions.

DESCRIPTIVE ANALYSIS:

The descriptive analysis provides a summary of the data.

- <u>AGE DISTRIBUTION:</u> We calculate the frequency of different age restriction categories (e.g. "all", "7+", "13+", "16+", and "18+") for both Netflix and Disney+. The distributions are visualized using bar charts to highlight differences between the two platforms.
- <u>ROTTEN TOMATOES SCORES:</u> Summary statistics such as the mean, median, standard deviation, and range are computed for the Rotten Tomatoes scores of movies available on both platforms. This helps understand the general quality of movies on each platform.

INFERENTIAL ANALYSIS:

To answer the research questions more rigorously, the following hypothesis tests are used:

1. <u>HYPOTHESIS TESTING FOR AGE RESTRICTIONS:</u>
   - <u>NULL HYPOTHESIS (H0):</u> The age restriction distribution of movies on Disney+ is not lower than that of Netflix.
   - <u>ALTERNATIVE HPYOTHESIS (H1):</u> The age restriction distribution of movies on Disney+ is not lower than on Netflix.
   - <u>TEST SELECTION:</u> A chi-square test is chosen to compare the distributions of categorical age restriction data between Disney+ and Netflix.

2. <u>HYPOTHESIS TESTING FOR ROTTEN TOMATOES SCORES:</u>
   - <u>NULL HYPOTHESIS:</u> There is no difference in the Rotten Tomatoes Scores of movies on Netflix and Disney+.
   - <u>ALTERNATIVE HYPOTHESIS:</u> There is a significant difference in Rotten Tomatoes scores between the two platforms.
   - <u>TEST SELECTION:</u> An independent two-sample t-test is used to compare the mean Rotten Tomatoes scores between movies available on Netflix and Disney+.

The rationale for choosing these tests is based on the nature of the data:

   - The chi-square test is suitable for comparing distributions of categorical variables, making it ideal for age restriction analysis.
   - The t-test is used for comparing the means of two independent groups, fitting the comparison of Rotten Tomatoes scores between Netflix and Disney+.

EVALUATION

From our analysis we found:

DESCRIPTIVE ANALYSIS:

1. Age Distribution:
   a. Disney+ has more movies for "all ages" and "7+ categories.
   b. Netflix has more content with higher age restrictions like "18+" and "7+" categories.
2. Rotten Tomatoes Scores:
   a. The average Rotten Tomatoes score for Netflix movies is around 54.45, while for Disney+ it is about 58.31.

INFERENTIAL ANALYSIS:

1. Chi-Square Test for Age Restrictions:
   a. The test results show a very low p-value, which means there is a significant difference in age restrictions between Disney+ and Netflix. Disney+ does tend to have more family-friendly movies.
2. T-test for Rotten Tomatoes Scores:
   a. The test result shows a significant difference in the average scores between the two platforms, with Disney+ movies having slightly better ratings than those on Netflix.
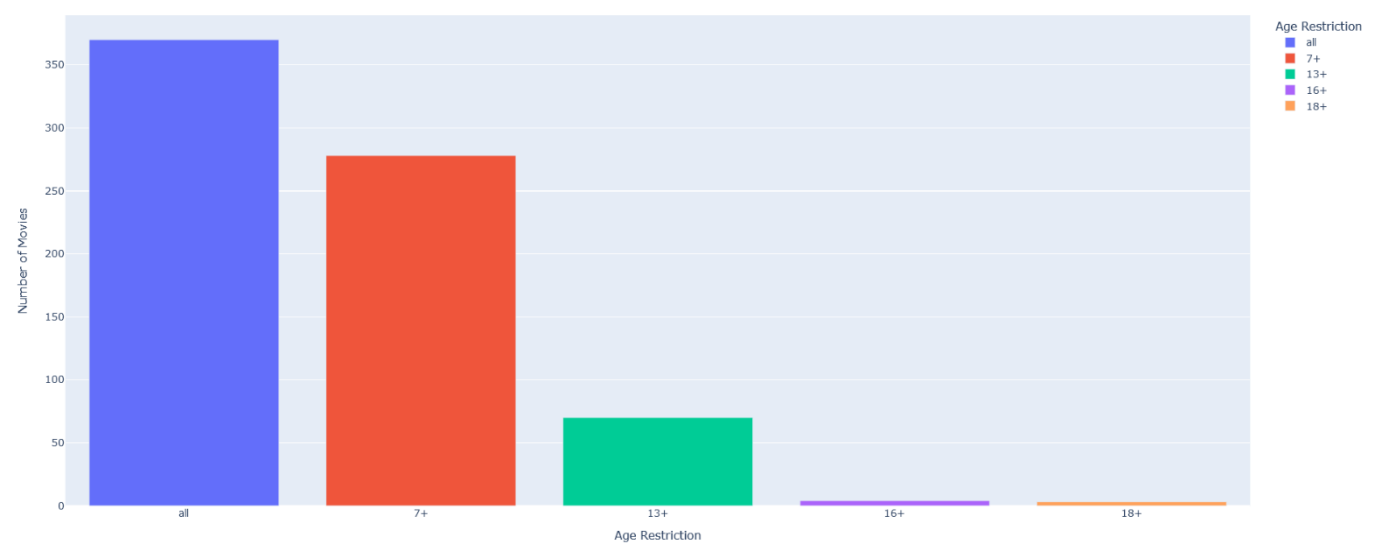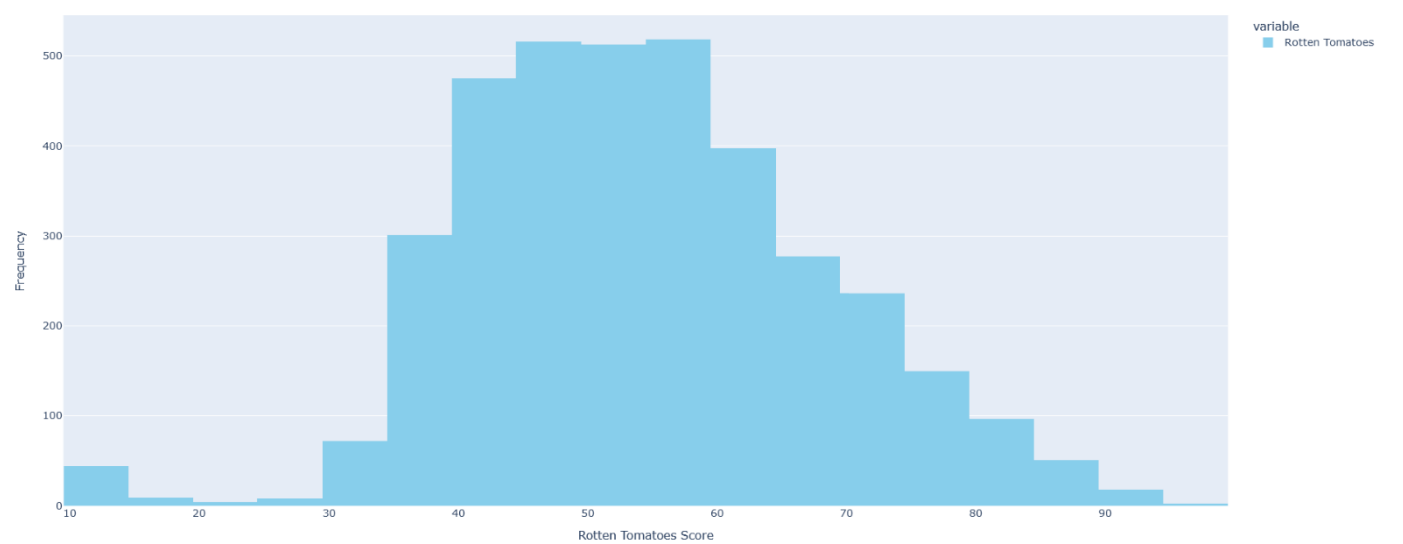
Below are the Individual Graphs for the Analysis:
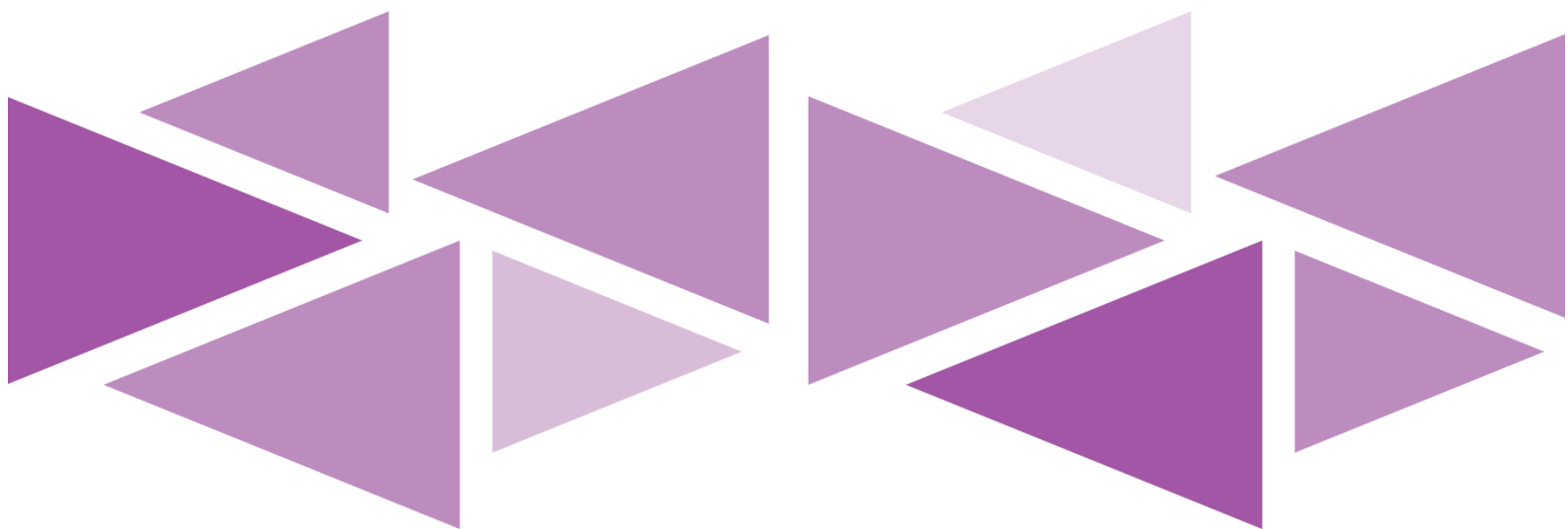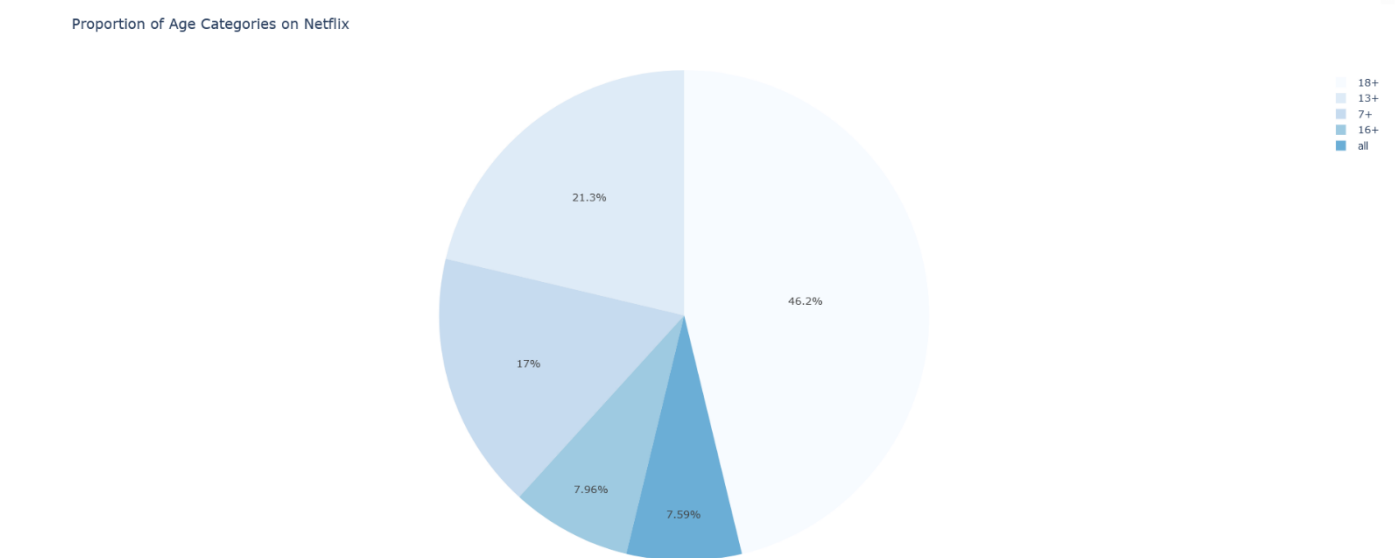
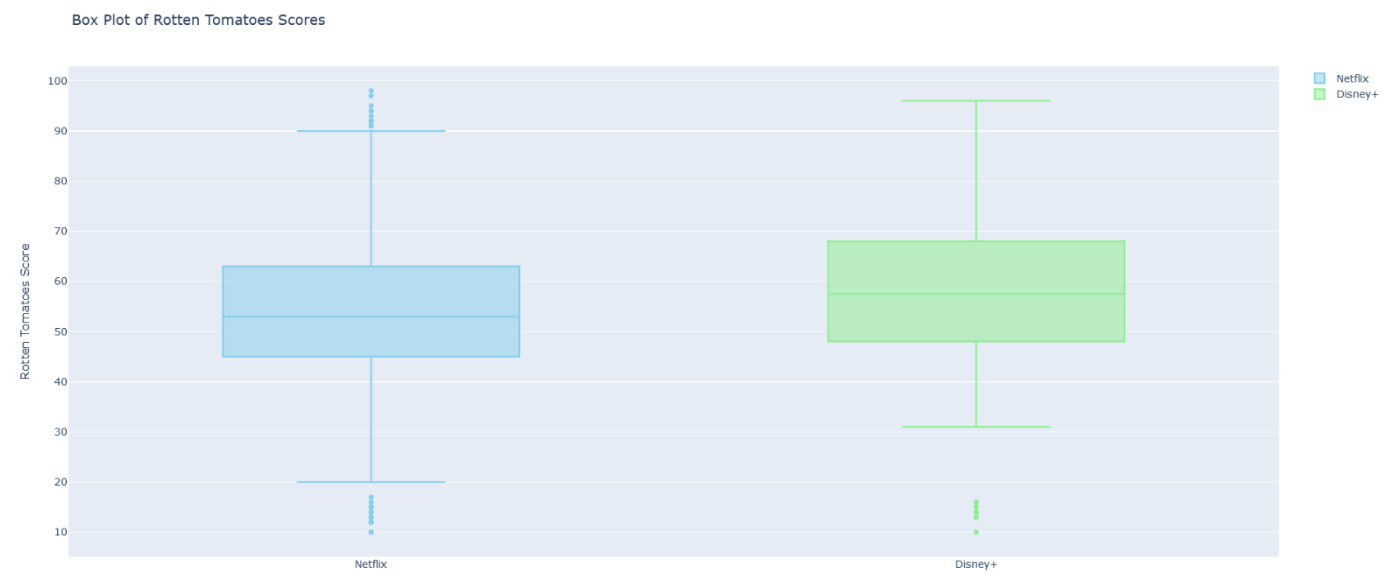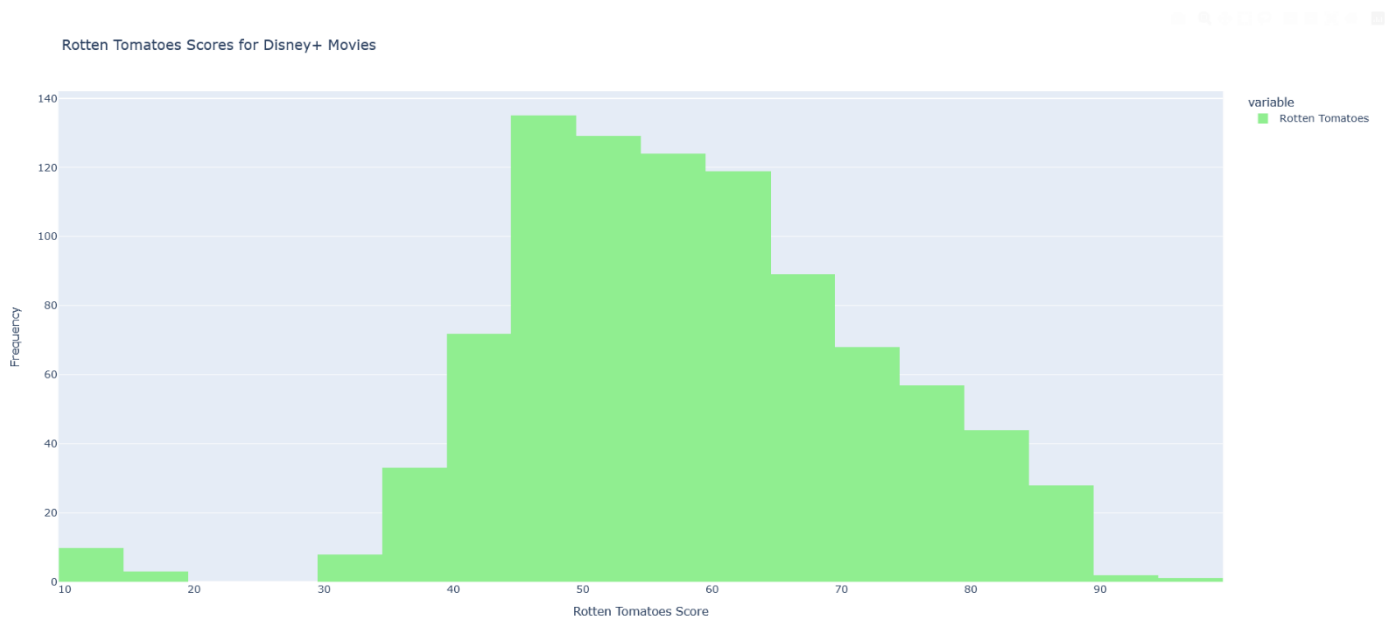## Age Distribution of Netflix Movies
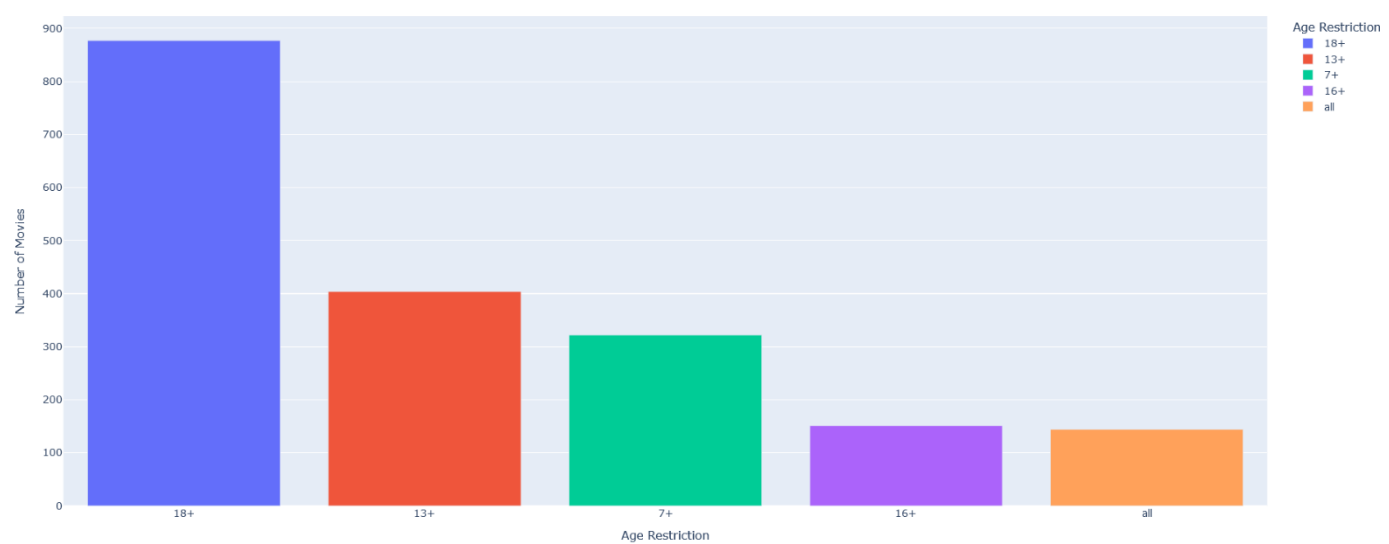
Age Distribution of Disney+ Movies

Rotten Tomatoes Scores for Netflix Movies

Rotten Tomatoes Scores for Disney+ Movies

Box Plot of Rotten Tomatoes Scores

Proportion of Age Categories on Netflix

SUMMARY AND FINDINGS

We set out to compare the movie catalogs of Disney+ and Netflix in terms of age restrictions and ratings. Our findings are:

- Age Restrictions: Disney+ has more content for younger viewers, while Netflix has a wider range of content with higher age ratings.
- Movie Quality: Disney+ movies tend to have slightly higher Rotten Tomatoes scores compared to Netflix.

DISCUSSION

These results match the general reputation of the platforms. Disney+ is known for being a family-friendly service, while Netflix caters to a broader audience. Despite this, Disney+ includes some well rated movies, which might explain the slightly higher average scores.

FURTHER ANALYSIS

Future Analysis could include:

- Looking at ratings from viewers instead of just critics.
- Examining other features like movie genres.
- Analyzing how each platform changes its content over time.

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