Data Analysis Project 1 — Team Report

Dataset: Wallisch & Whritner (2017) Movie Ratings Replication Set
α = 0.005

Question 4 — Gender Differences Across All Movies

D (Do):
Performed Welch's independent-samples *t*-tests comparing male (code 2) and female (code 1) ratings for each of the 400 movies. Excluded missing data and self-described gender responses.

Y (Why):
The Welch's *t*-test was chosen because it does not assume equal variances and is robust to unequal sample sizes. This test identifies whether gender significantly affects movie ratings.

F (Find):
Out of 400 movies, **45 (11.25%)** showed statistically significant differences between male and female viewers at α = 0.005.
As shown in **Figure 1**, most *p*-values cluster above 0.005, suggesting few meaningful gender-based rating differences.

A (Answer):
Since only 11.25% of movies differed by gender, we conclude that movie enjoyment is **largely not gendered**. This aligns with Wallisch & Whritner (2017), who found weak demographic effects on movie taste.

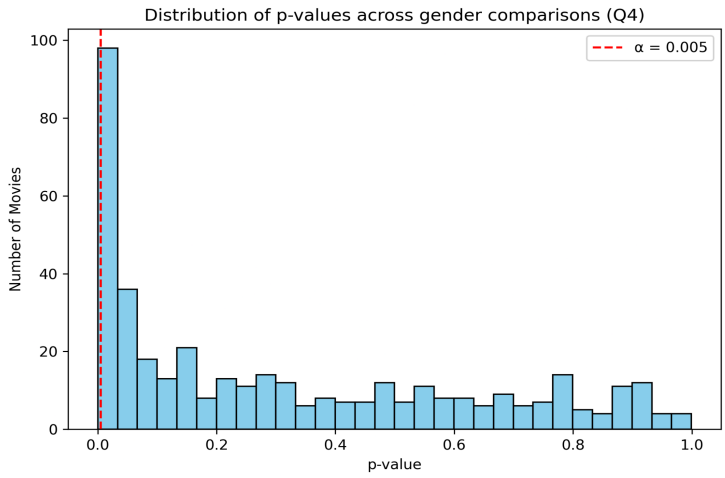

Figure 1. Distribution of *p*-values across gender-based comparisons (α = 0.005).

Question 5 — “Only Child” Effect for *The Lion King (1994)*

D (Do):
Compared mean ratings of *The Lion King (1994)* between participants who are only children (coded 1) and those with siblings (coded 0) using Welch’s *t*-test.

Y (Why):
The Welch’s *t*-test was used to compare group means while accounting for unequal variances and sample sizes.

F (Find):
Mean rating (only children) = 3.35; mean rating (with siblings) = 3.48.
$t(\text{df} \approx \text{variable}) = -1.792$, $p = 0.0746 > 0.005$.
See **Figure 2** for a visual comparison.

A (Answer):
Since $p > 0.005$, there is **no statistically significant difference** between only children and participants with siblings in their enjoyment of *The Lion King (1994)*.
Both groups rate the film highly and similarly.

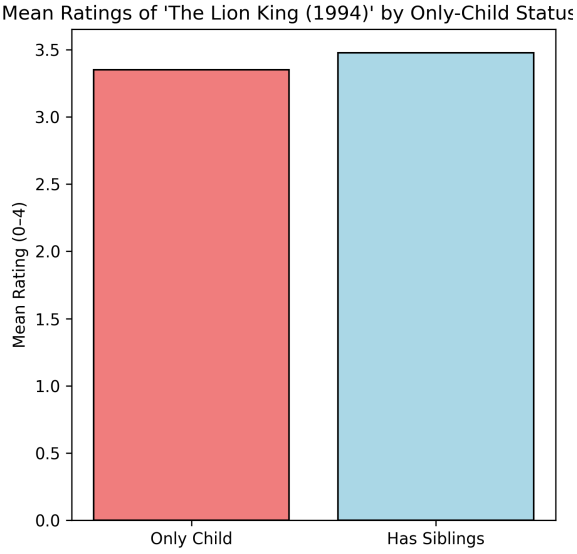

Figure 2. Comparison of *The Lion King (1994)* mean ratings by only-child status.

Question 6 — “Only Child” Effects Across All Movies

D (Do):
Repeated Welch’s *t*-tests from Question 5 for each of the 400 movies, comparing only children and participants with siblings.

Y (Why):
This systematic approach estimates how widespread “only child” effects are across the entire dataset.

F (Find):
Only **5 movies (1.25%)** showed significant differences (α = 0.005).
As seen in **Figure 3**, the *p*-value distribution is heavily skewed above 0.005, indicating minimal systematic effects.

A (Answer):
Because only 1.25% of movies exhibit significant differences, we conclude that **“only child” status rarely affects movie ratings**. This suggests personal taste rather than family structure drives enjoyment patterns.

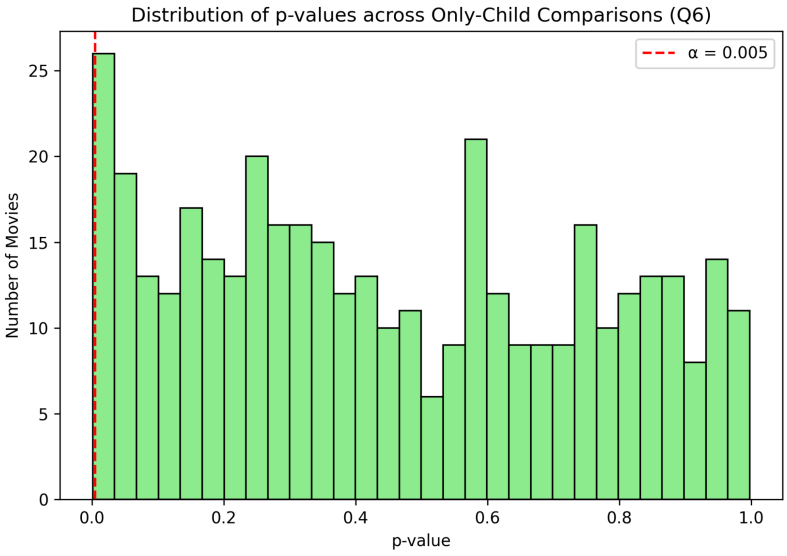

Figure 3. Distribution of *p*-values across “only child” comparisons (α = 0.005).

Question 7 — Social Watching Preference and *The Wolf of Wall Street (2013)*

D (Do):
Compared *The Wolf of Wall Street (2013)* ratings between participants who prefer watching movies socially (coded 0) versus those who prefer to watch alone (coded 1) using Welch's *t*-test.

Y (Why):
This test determines whether social viewing preference relates to enjoyment of a socially charged, intense film, accounting for unequal group variances.

F (Find):
Mean rating (social watchers) = 3.03; mean rating (prefer alone) = 3.15.
$t(\text{df} \approx \text{variable}) = -1.604$, $p = 0.1092 > 0.005$.
See **Figure 4** for a comparison.

A (Answer):
Since $p > 0.005$, there is **no significant relationship** between social viewing preference and enjoyment of *The Wolf of Wall Street (2013)*.
Both groups rated the film similarly, suggesting that viewing context preference does not influence appreciation for this movie.

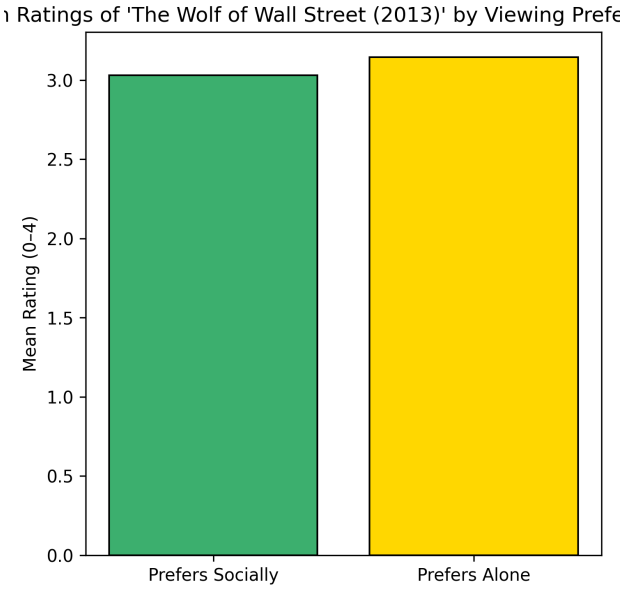

Figure 4. Mean ratings of *The Wolf of Wall Street (2013)* by viewing preference.