Steam Games Review Analysis with Hadoop MapReduce

Isai Tinoco Gutierrez, Russell Ferrall

Project Motivation & Goals

- Motivation: Why analyze Steam Reviews dataset? (large, diverse, interesting for analysis).
- Goal: Identify highest/lowest rated games & games with most reviews.
- Tool: Hadoop MapReduce (distributed processing).

Dataset Description

- Source: Kaggle Steam Games Reviews (2024).
- https://www.kaggle.com/datasets/artermiloff/steam-games-reviews-2024

- Size: 128M reviews, 80k games, 30M+ users, >5 GB.

- Attributes used: (appid, language, voted_up, early_access)

Data Cleaning

- Filters applied in MapReduce Mapper:
  - English reviews only.
  - Exclude early access reviews.
  - Remove corrupted/malformed rows.

System Setup

- Hadoop 3.4.1 on pseudo-distributed mode.
- Input data stored in HDFS
- JAR built with Maven (pom.xml)
- Diagram: **HDFS Input -> Mapper -> Combiner -> Reducer -> HDFS Output.**

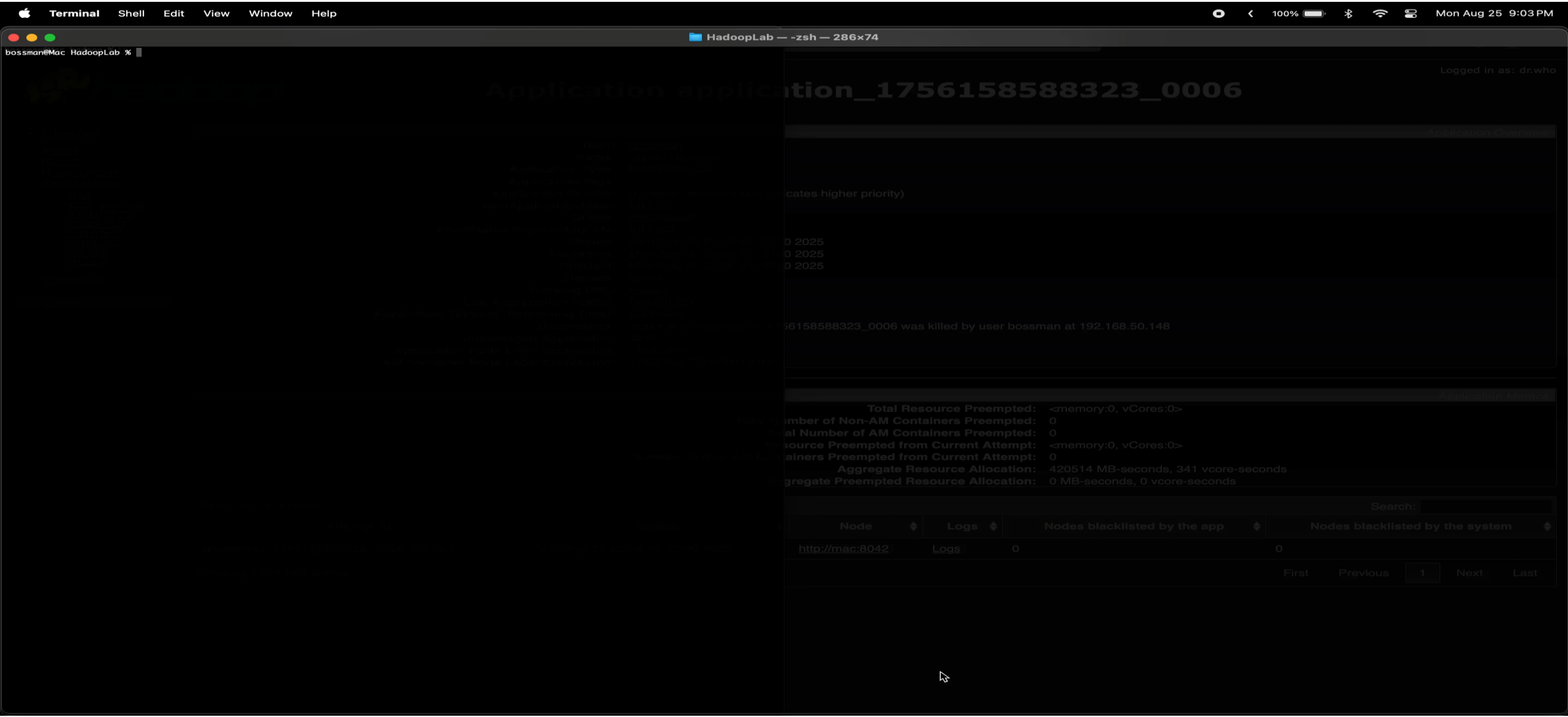
MapReduce Implementation

- Mapper: emits (appid, (positive, total)).
- Combiner: aggregate partial (sum, count)
- Reducer: compute average = sum/count per game

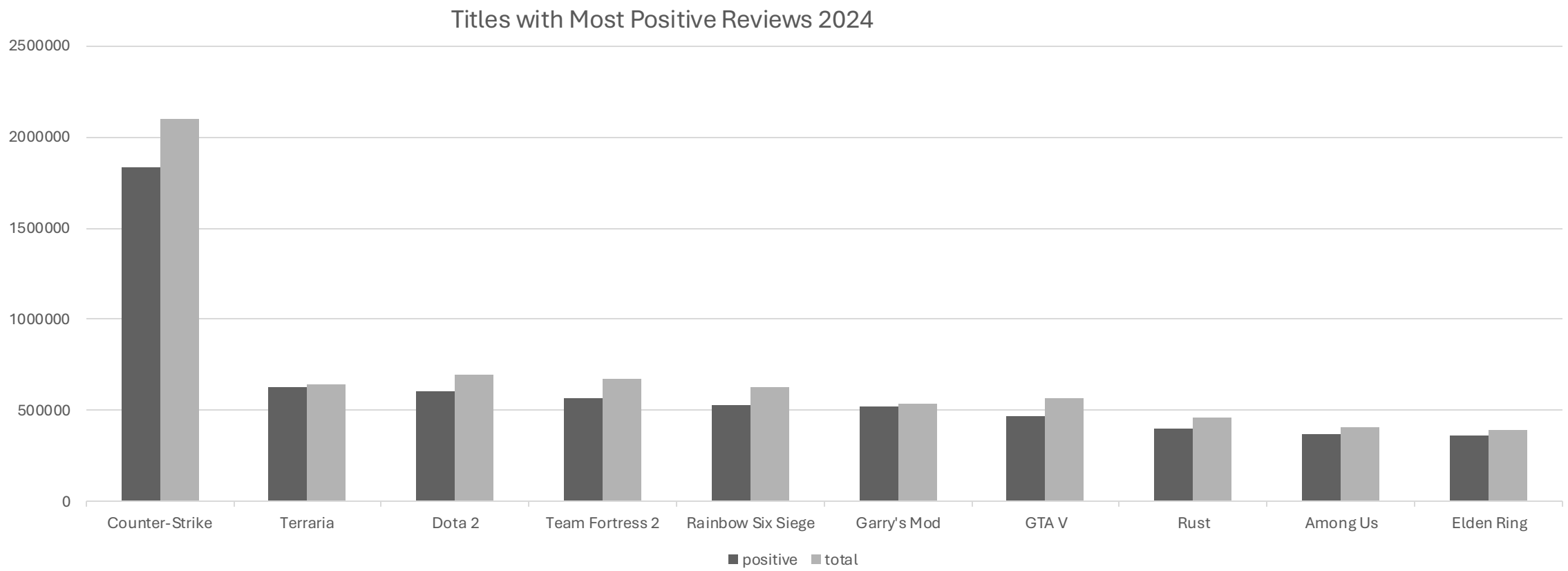
Hadoop Execution

- Input in HDFS: /user/$USER/steam/SteamReviews2024
- Output in HDFS: /user/$USER/steam/out_appstats_
- Example commands: hadoop jar target/HadoopLab-1.0-SNAPSHOT.jar
- Cluster mode: pseudo-distributed

Demo


Terminal Shell Edit View Window Help
100% Mon Aug 25 9:03 PM
HadoopLab — -zsh — 286×74
bossman@Mac HadoopLab %
Logged in as: dr.who
Application Overview
Application Metrics
Total Resource Preempted: <memory:0, vCores:0>
Number of Non-AM Containers Preempted: 0
Number of AM Containers Preempted: 0
Resource Preempted from Current Attempt: <memory:0, vCores:0>
Containers Preempted from Current Attempt: 0
Aggregate Resource Allocation: 420514 MB-seconds, 341 vcore-seconds
Aggregate Preempted Resource Allocation: 0 MB-seconds, 0 vcore-seconds
Search:
Node
Logs
Nodes blacklisted by the app
Nodes blacklisted by the system
http://mac:8042
Logs
0
0
First
Previous
1
Next
Last

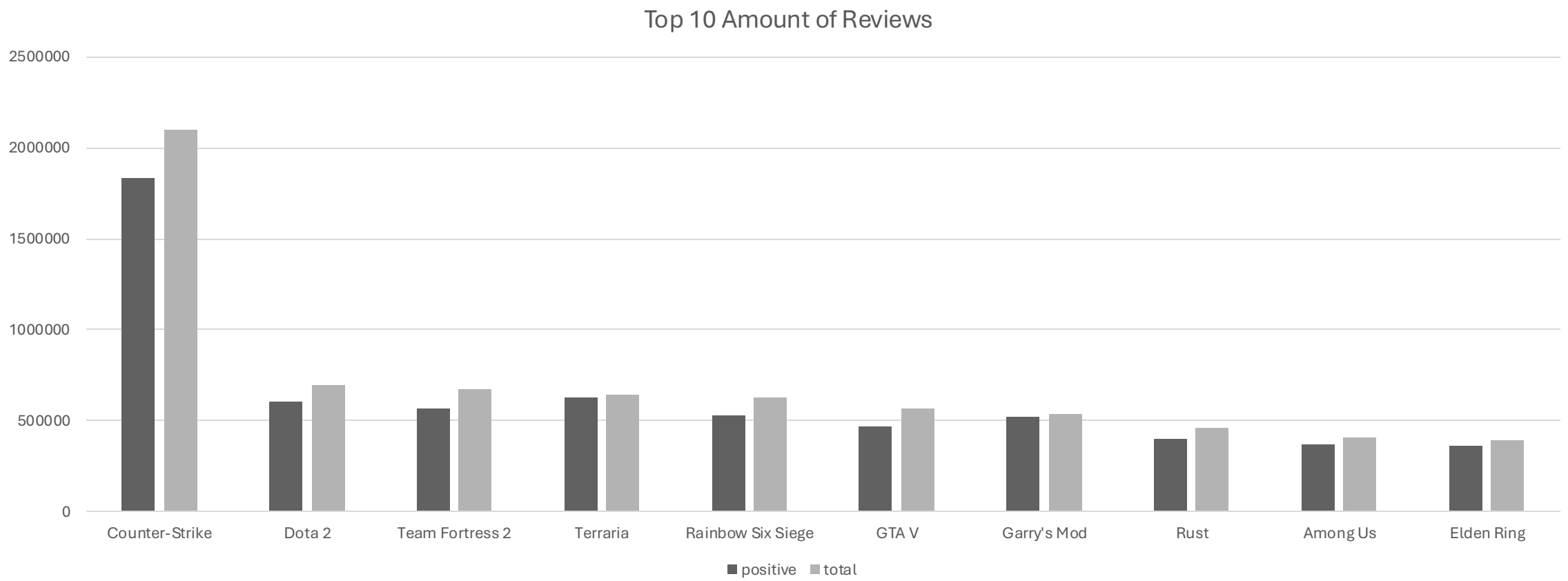
Most Amount of Positive Reviews



Results: Most Positive Reviews

- Chart: "Titles with Most Positive Reviews 2024".
- Key findings: *Counter-Strike* leads (~ 1.9M positives).
- Other strong games: *Terraria*, *Dota 2*, *Rainbow Six Siege*.

Most Amount of Reviews



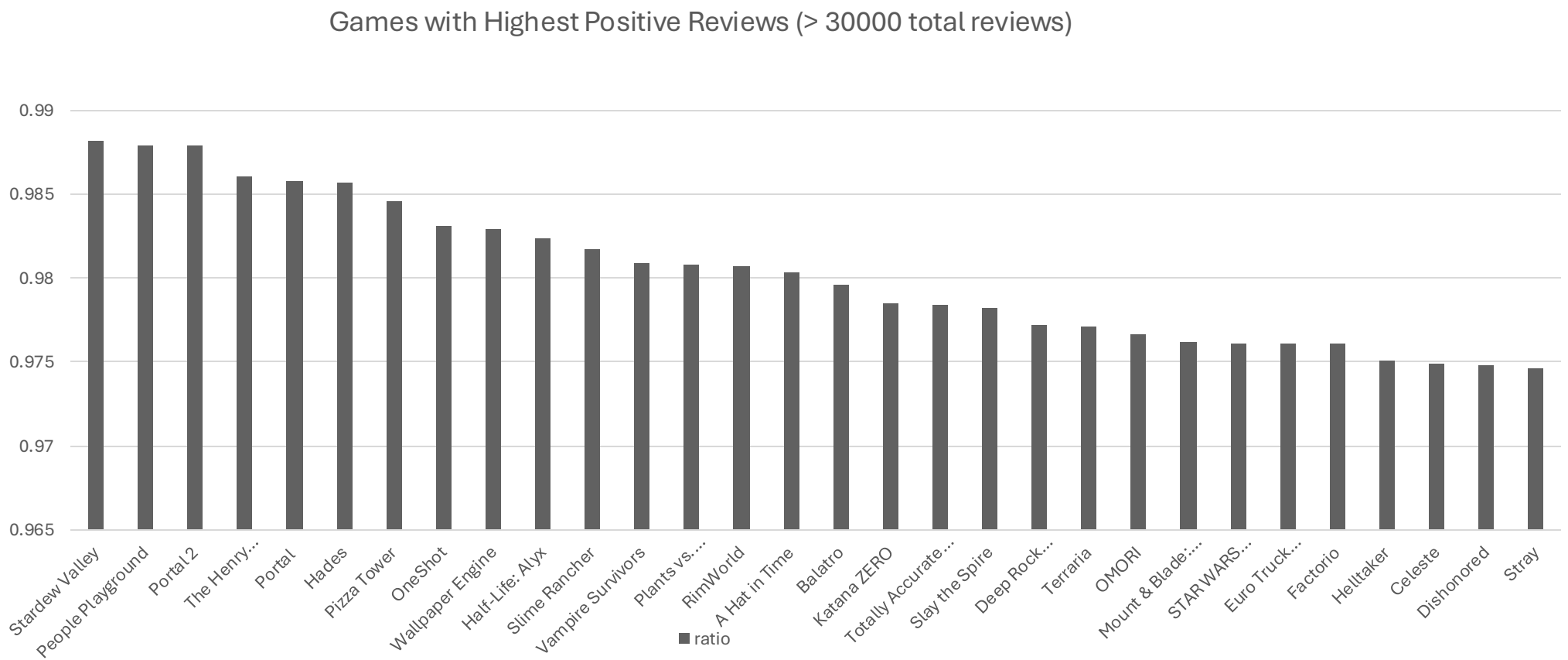
Results: Most Reviewed Games

- Chart: "Top 10 Amount of Reviews".
- *Counter-Strike & Dota 2* dominate review counts.
- *Among Us* & *Elden Ring* appear with high review activity.

Insights

- Community-driven games (e.g., *Counter-Strike, Dota 2*) maintain massive engagement.
- Newer titles (*Elden Ring*, *Among Us*) competitive but smaller.
- Ratio of positive to total reviews highlights reputation differences.

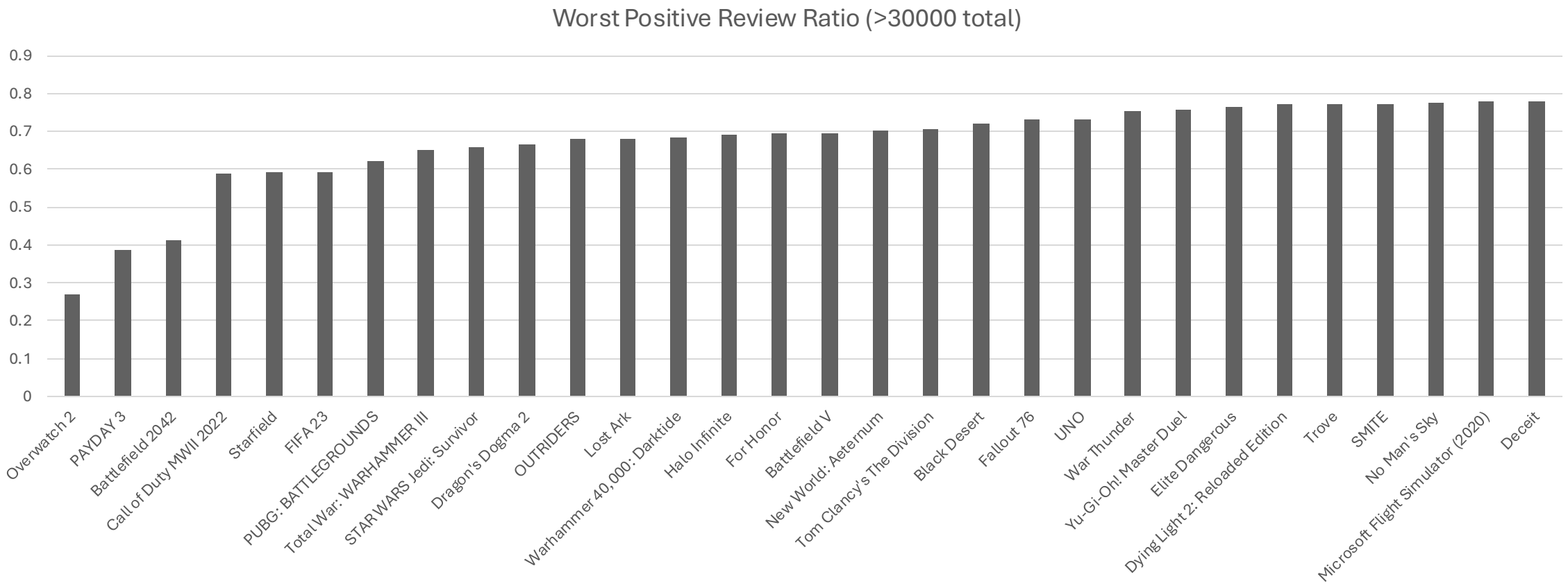
Highest Review Ratio



Highest Review Ratio (2024)

- Many games show extremely high positive review ratios (97.5%+).
- *Stardew Valley* and *People Playground* lead with nearly 99% positive reviews.
- Indicates that popular indie and community-driven games often receive overwhelmingly positive feedback.

Worst Review Ratio



Worst Review Ratio (2024)

- A few games had much lower positivity, with *Overwatch 2* falling under 25%.
- Only 3 games dropped below 50% positive reviews overall (*Overwatch 2, PAYDAY 3, Battlefield 2042*), meaning most retain strong player approval.
- Suggests that community backlash or poor updates can drastically affect ratings despite high visibility.

Key Takeaways

- In 2024, most games received overwhelmingly positive reviews, Top 30 games barely dipped under 97.5% positivity.
- For games with more than 30,000 reviews, only 3 dropped below 50% positivity.
- This contrast highlights how **most games trend positivity**, but a few major titles experience strong community dissatisfaction.

Conclusion

- **Most Popular Games:**
- *Counter-Strike, Terraria,* and *Dota 2* dominate in both total reviews and positive feedback.
- **Positivity Trends:**
- Majority of games in 2024 maintain **97.5%+ positive reviews**, showing overall satisfaction.
- **Outliers:**
- Only a handful of games (*Overwatch 2, Battlefield 2042*) fall below **50% positivity**, highlighting cases of strong backlash.
- **Takeaway:**
- Steam reviews reflect **both loyalty and frustration –** successful games build trust, while poorly received updates erode it quickly.