





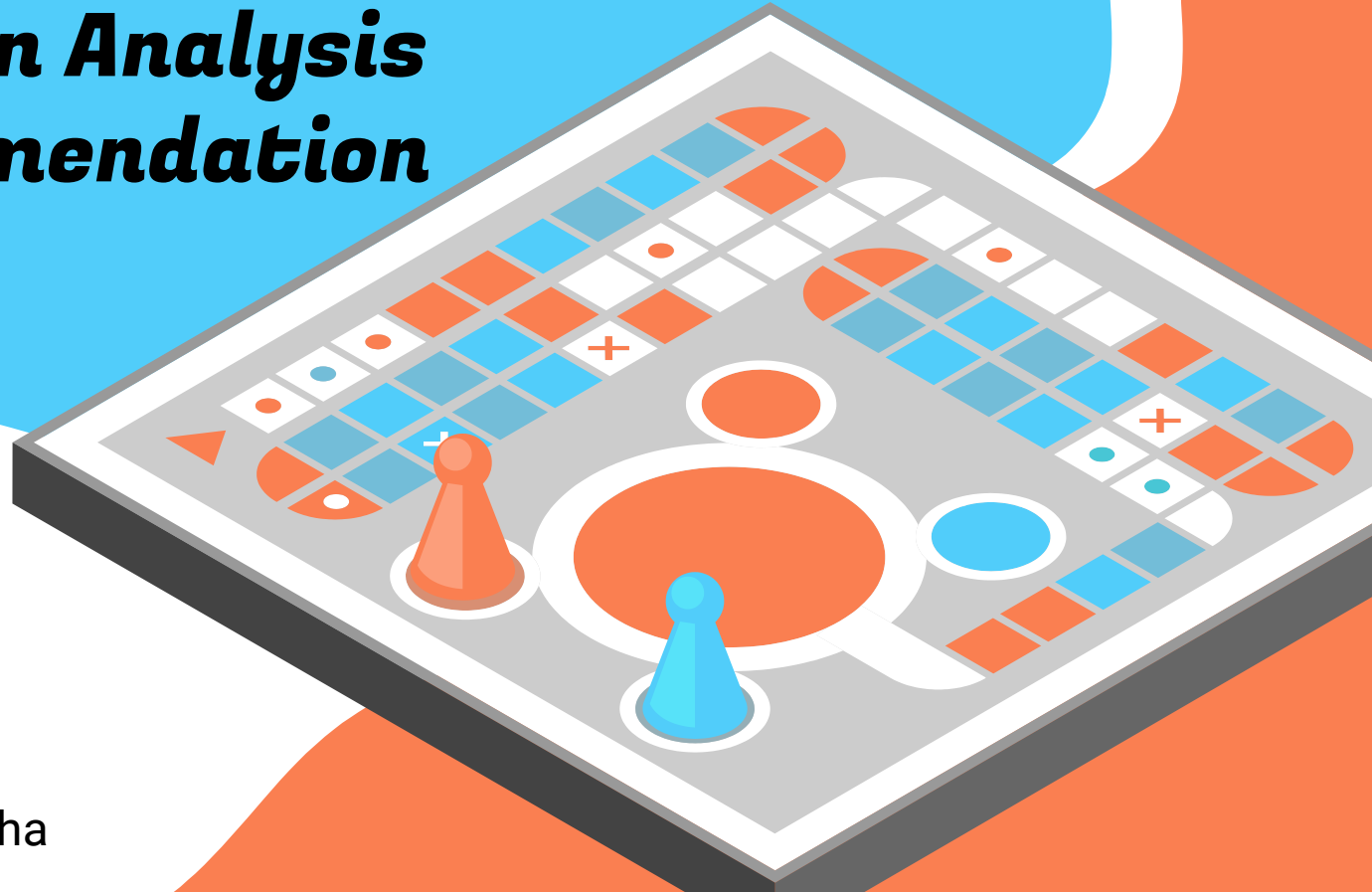


Successful Board Game Design Analysis and Recommendation System

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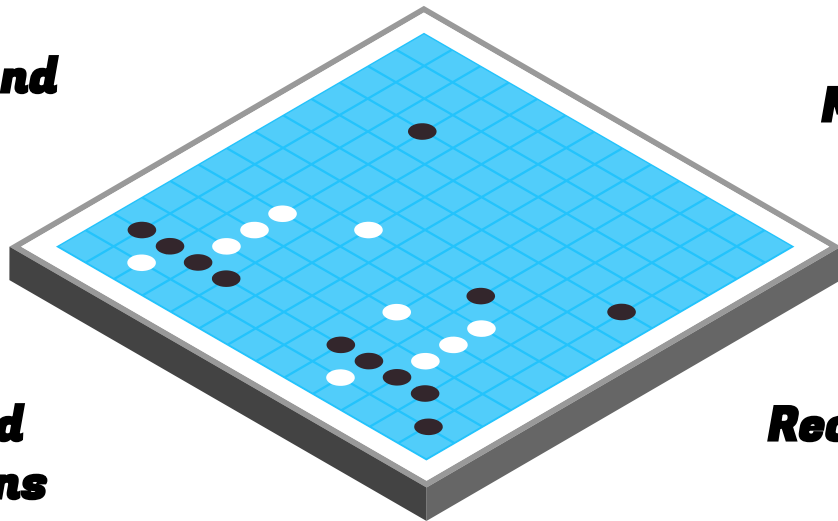
Overview

01
***Motivation and
Objective***

02
Methodology

03
***Dataset and
Visualizations***

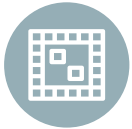
04
***Recommendation
System***



Motivation



Board games have reportedly increased in popularity



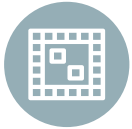
How to design a successful board game for the contemporary market



Objectives



Based on datasets, understand the characteristics of successful board games.



Use this data to build a recommendation design based system to match these trends.



Methodology



Data Collection



Data Pre-processing



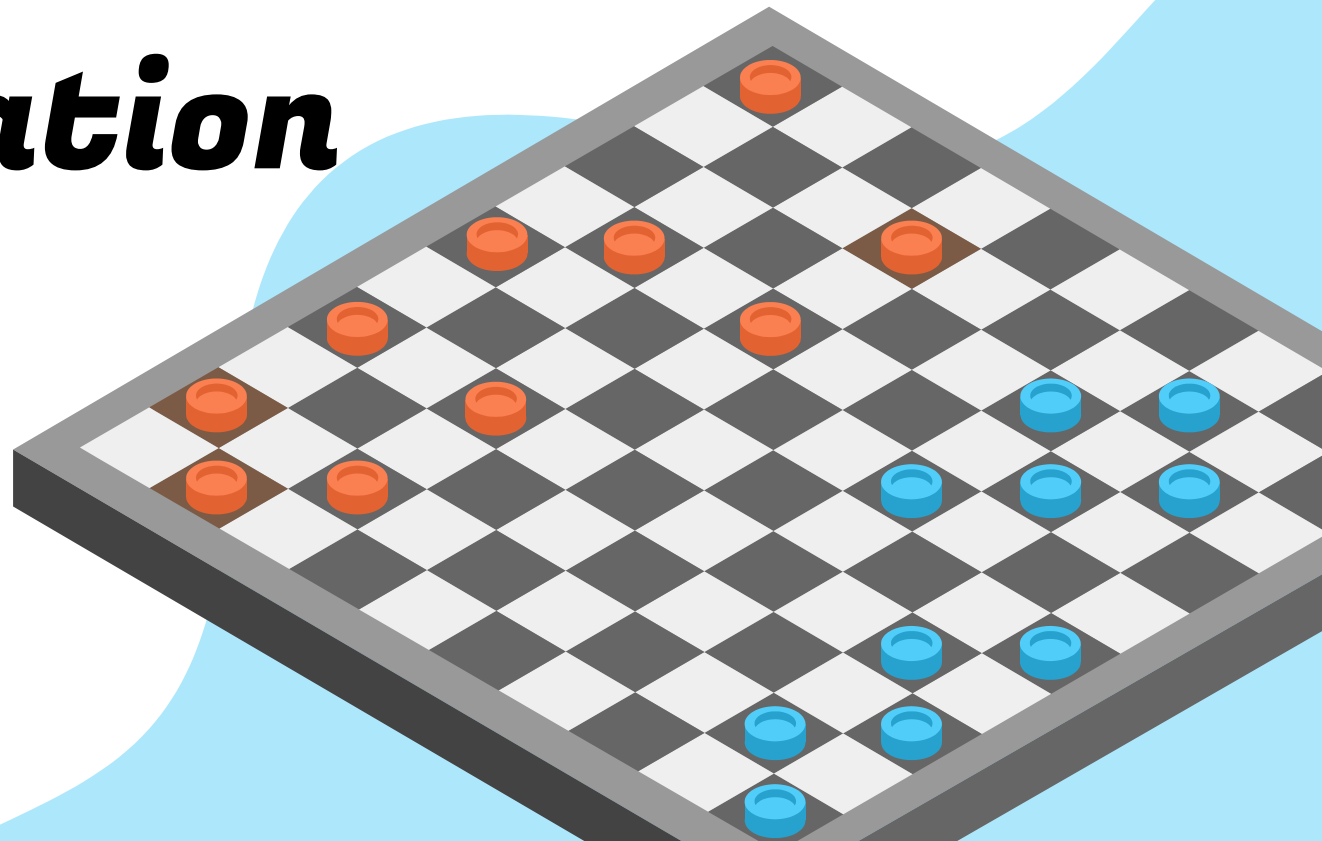
Data Visualization



***Recommendation
System***



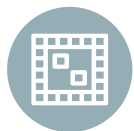
Dataset and Data Visualization



Data Set



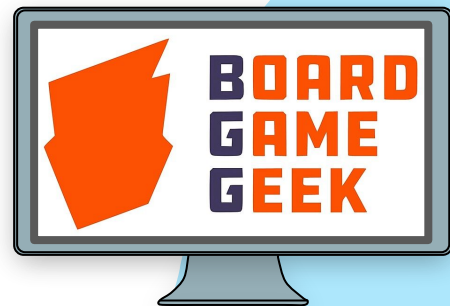
2021 Board Games Data-set
from the BoardGameGeek



20343 different board games, and
13 design features of each game

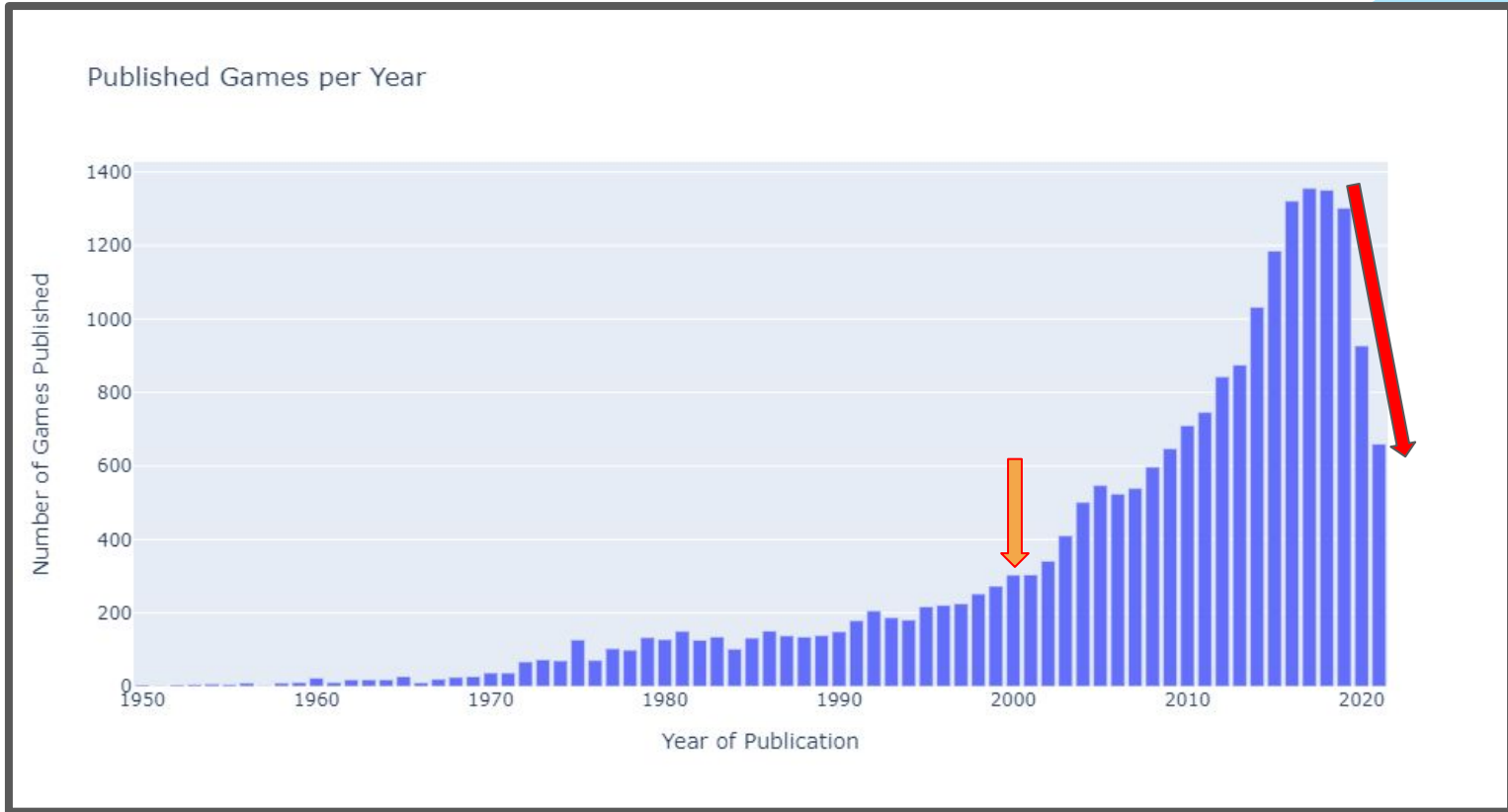


Over 47 data points per games
including user rating, ownership

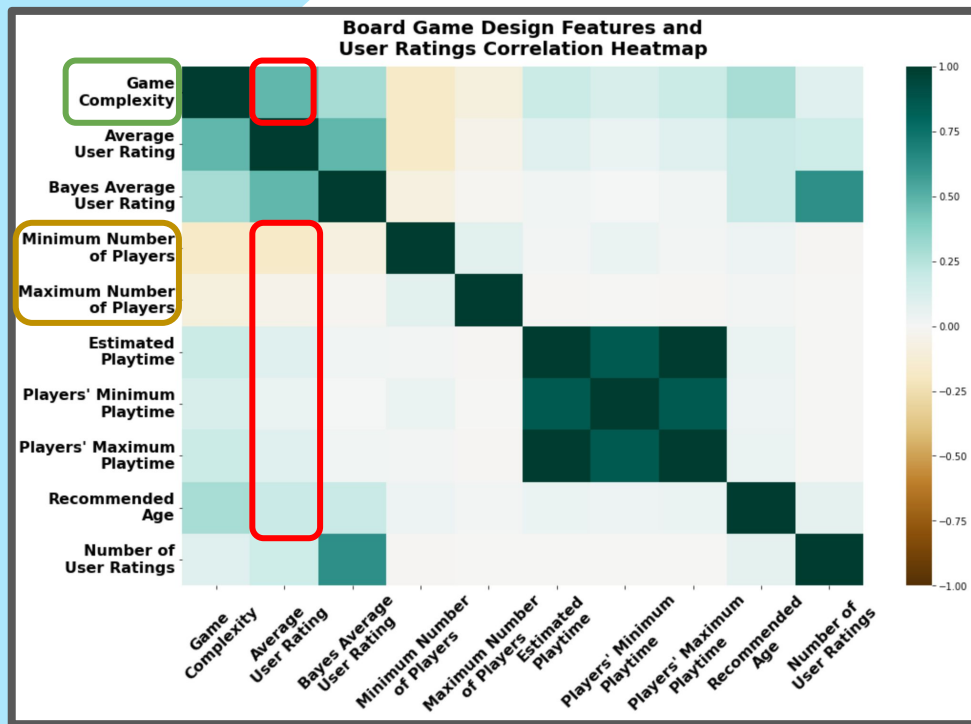


BGGId	Name	Description	YearPublished	GameWeight	AvgRating	BayesAvgRating	StdDev	MinPlayers	MaxPlayers	...	Rank:partygames	Rank:chil
0	1	Die Macher	die macher game seven sequential political rac...	1986	4.3206	7.61428	7.10363	1.579790	3	5 ...	21926	
1	2	Dragonmaster	dragonmaster tricktaking card game base old ga...	1981	1.9630	6.64537	5.78447	1.454400	3	4 ...	21926	
2	3	Samurai	samurai set medieval japan player complete gain...	1998	2.4859	7.45601	7.23994	1.182270	2	4 ...	21926	

Major Raise in Publishment Starting in 2000s



Board Game Design Elements and User Ratings Correlation

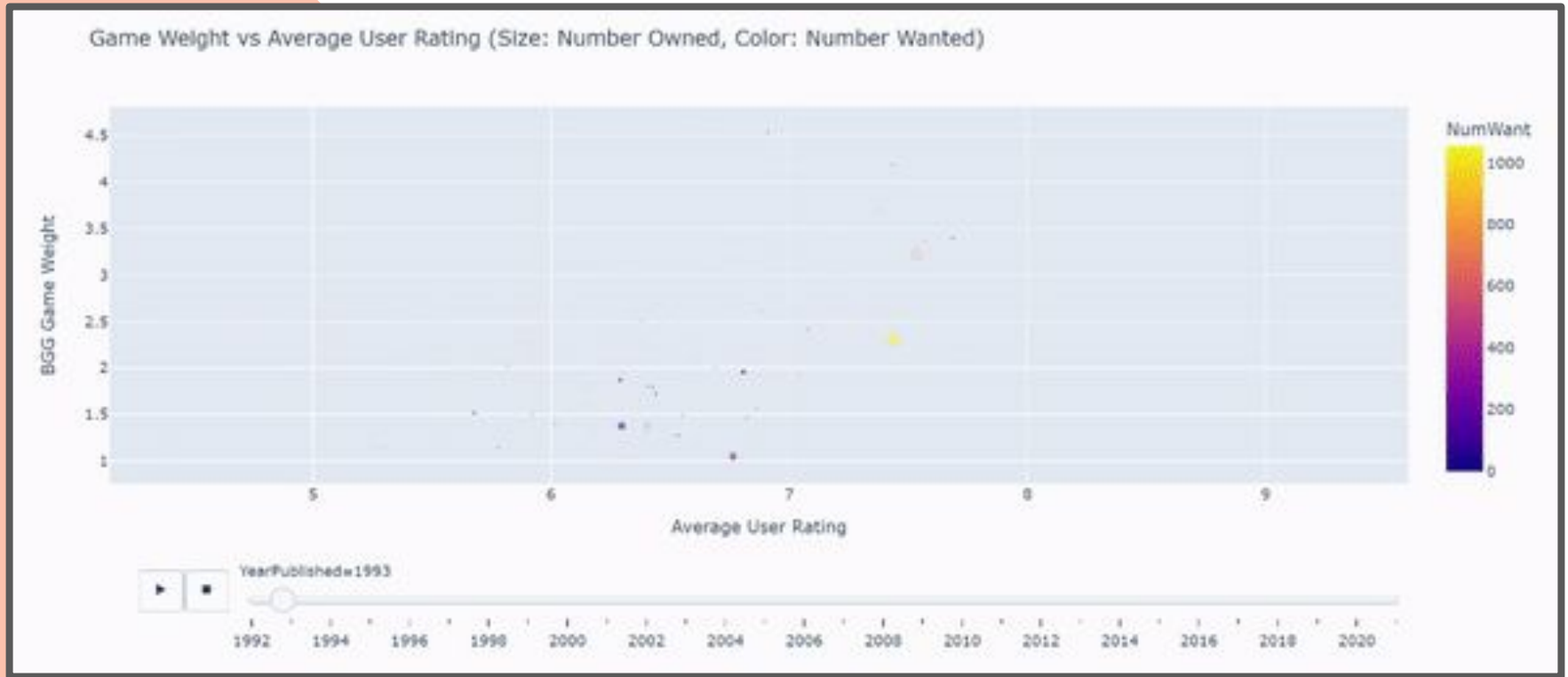


Board Game Complexity has the **highest positive correlation** with the **Average User Rating** (i.e., **0.48**).

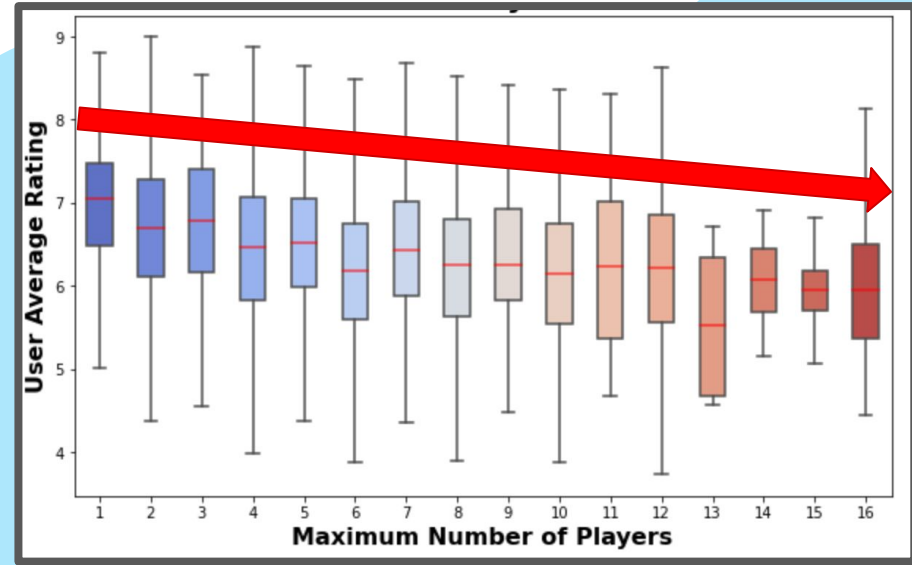
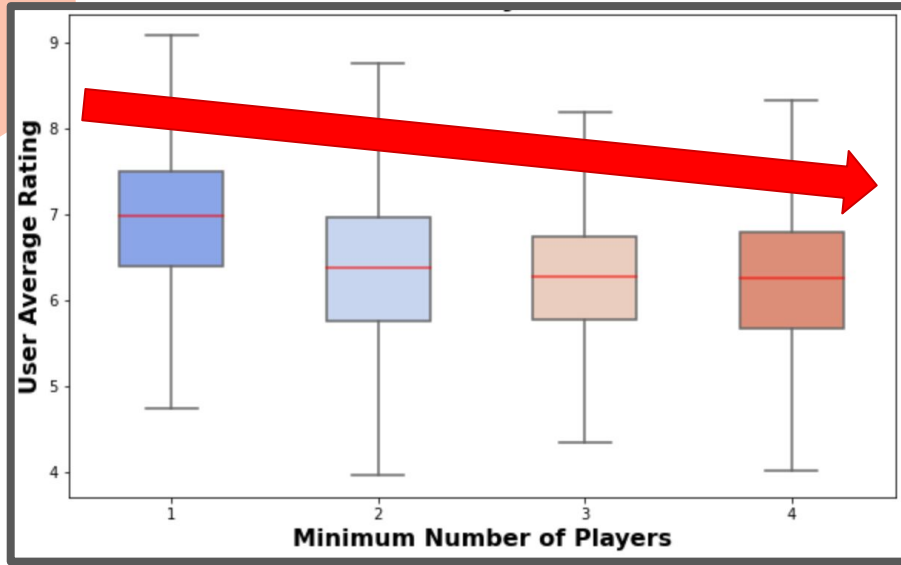


Minimum Number of Players has the **lowest negative correlation** with the **Average User Rating** (i.e., **-0.17**).

Trend since 1992 show increased complexity leads to higher user rating and desire of ownership



Effects of Minimum and Maximum Number of Players on the Average User Rating

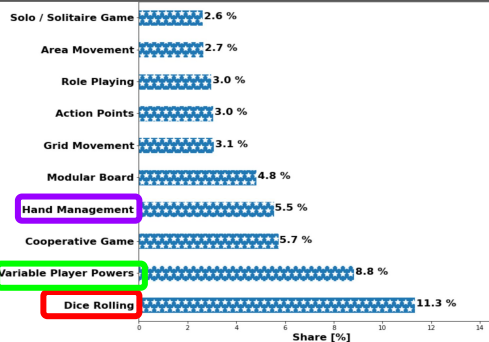


Median of the average user rating steadily declines as the minimum and maximum numbers of players increases.

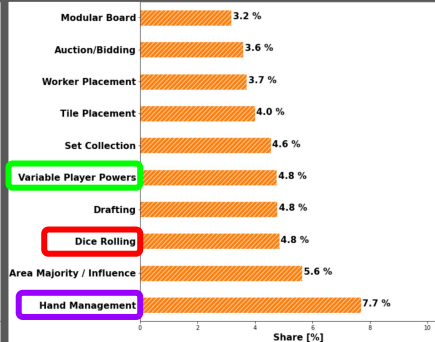
Top 10 Mechanics of Each Board Game Category



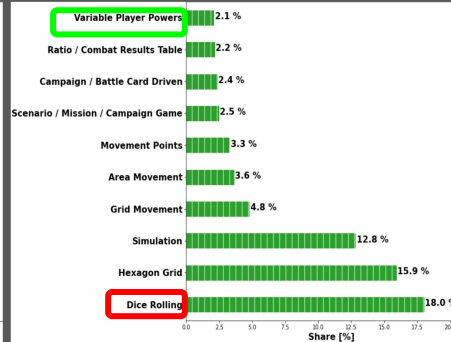
Thematic



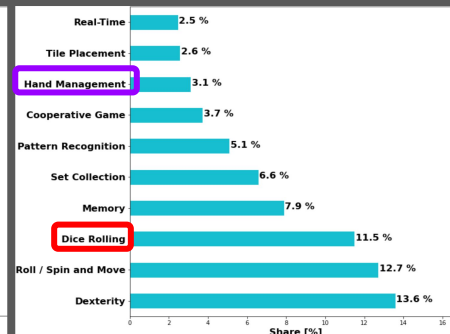
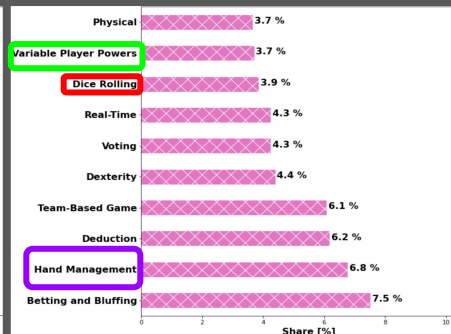
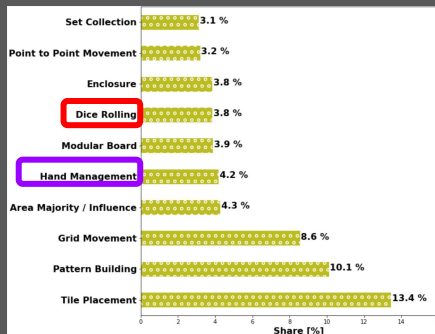
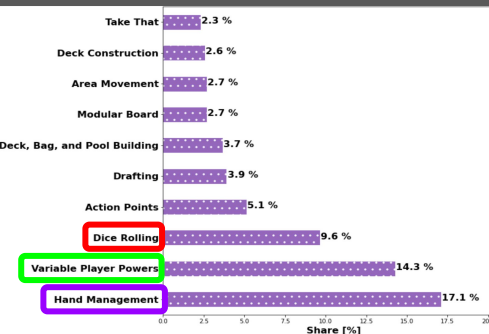
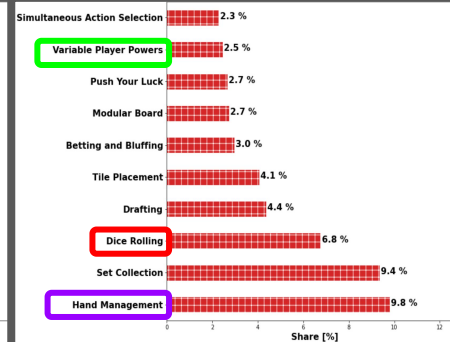
Strategy



War



Family



Crafts, Games, and Science (CGS)



Abstract

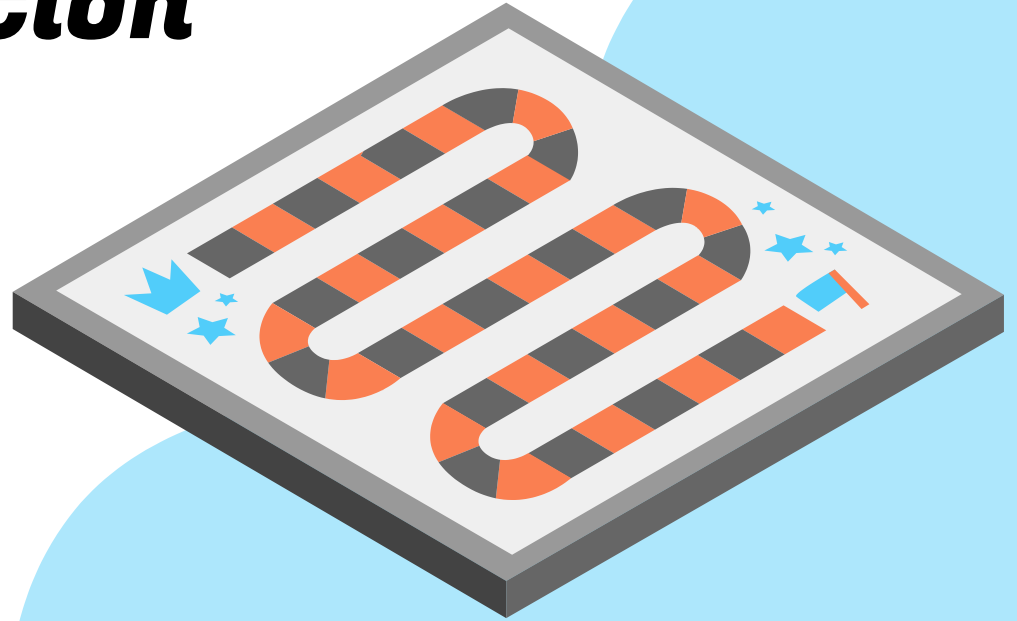


Party



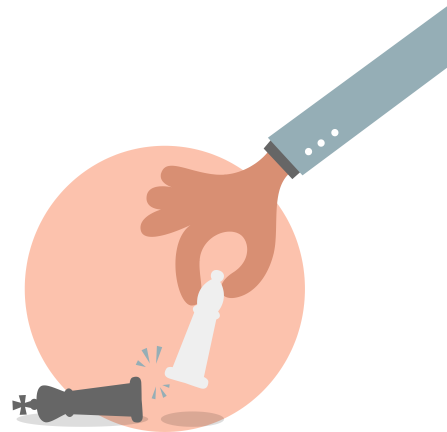
Childrens

Recommendation System using surpr!se



Recommender Overview

- The analysis we did is for the overall dataset, what if we wanted more in depth insight for a specific game?
- We created a Recommender System with Surprise, which leverages user reviews from BGG to recommend features, to improve a specific game!



Case Study: Terraforming Mars



1. Find reviewers who gave average or poor rating to your game.
2. Then for those reviewers, find games they enjoyed within the same category as your targeted game using our Recommender Model.
3. Then you can do some analysis on the top rated features/mechanics, and see ways you could possibly improve your game!

Case Study: Terraforming Mars

	GameWeight	MinPlayers	MaxPlayers	ComAgeRec	MfgPlaytime	Mechanics
0	3.0417	1	4	11.0	100	Hexagon Grid, Once-Per-Game Abilities, Tile Pl...
1	2.6	2	2	10.0	45	Hand Management, Take That
2	4.3158	3	7	16.0	300	Auction/Bidding, Tile Placement, Stock Holding...
3	2.8	1	6	12.5	180	Dice Rolling, Modular Board, Variable Player P...
4	3.1667	2	6	12.0	120	Auction/Bidding, Network and Route Building

8.4

Terraforming Mars (2016)

Compete with rival CEOs to make Mars habitable and build your corporate empire. ✍

77K Ratings & 11K Comments · GeekBuddy Analysis

1–5 Players

Community: 1–4 — Best: 3

120 Min

Playing Time

Age: 12+

Community: 12+

Weight: 3.25 / 5

'Complexity' Rating ?



***Thank you and hope
you find this
presentation
interesting and
inspiring!***

—Group 1

We Value Your Feedback. Please Rate Us How We Did:
Successful Board Game Design Analysis and Recommendation System for Board Game Designers

Sources and References

1. <https://www.kaggle.com/andrewmvd/board-games>
2. <https://boardgamegeek.com/>
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6. <https://slidesmania.com>