

Rarity Radar: Factors of Affecting Card Price

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Motivation

- Card market prices constantly fluctuate, making it difficult to invest confidently. Due to our mutual interest in card games, we devised a way to solve this problem in the Pokémon TCG.
- We first determined whether rarity alone contributed to the price. Then, the project was expanded to determine what other factors affected the price.

Data Description

- Pokémon TCG Data [1]**
 - Information on the name, type, battle information, rarity, image, and illustrators of the card in JSON format.
- TCGdex Pricing History [2]**
 - The average price, lowest price, and highest price according to card grade are stored in JSON format.

Methodology

- Merge two datasets into one dataframe. Then, we sort them by rarity and grades.

Set ID	Number	Name	Rarity	Grade	Month	Average	rarity_rank
swsh5	155	Tyranitar V	Rare Ultra	holo-nearmint	2024-05	18767.00	7
swsh5	155	Tyranitar V	Rare Ultra	holo-nearmint	2024-06	17478.89	7
swsh4	188	Pikachu VMAX	Rare Rainbow	holo-good	2023-03	16151.90	31

- Fetch the decklist webpage, extract each deck's name and index, and scrape the card list for each deck into a DataFrame [3].

Deck Name	Card Name	Count	Set Price (USD)
Vikavolt V	Vikavolt V	2.00	DAA \$1.26
Vikavolt V	Galarian Zigzagoon	0.98	SSH \$0.12
Vikavolt V	Crobat V	0.92	DAA \$0.50

- Create and analyze the following graphs:
 - Heatmaps, scatterplots, boxplots, and linegraphs
 - K-means clustering using Spark via Jetstream2

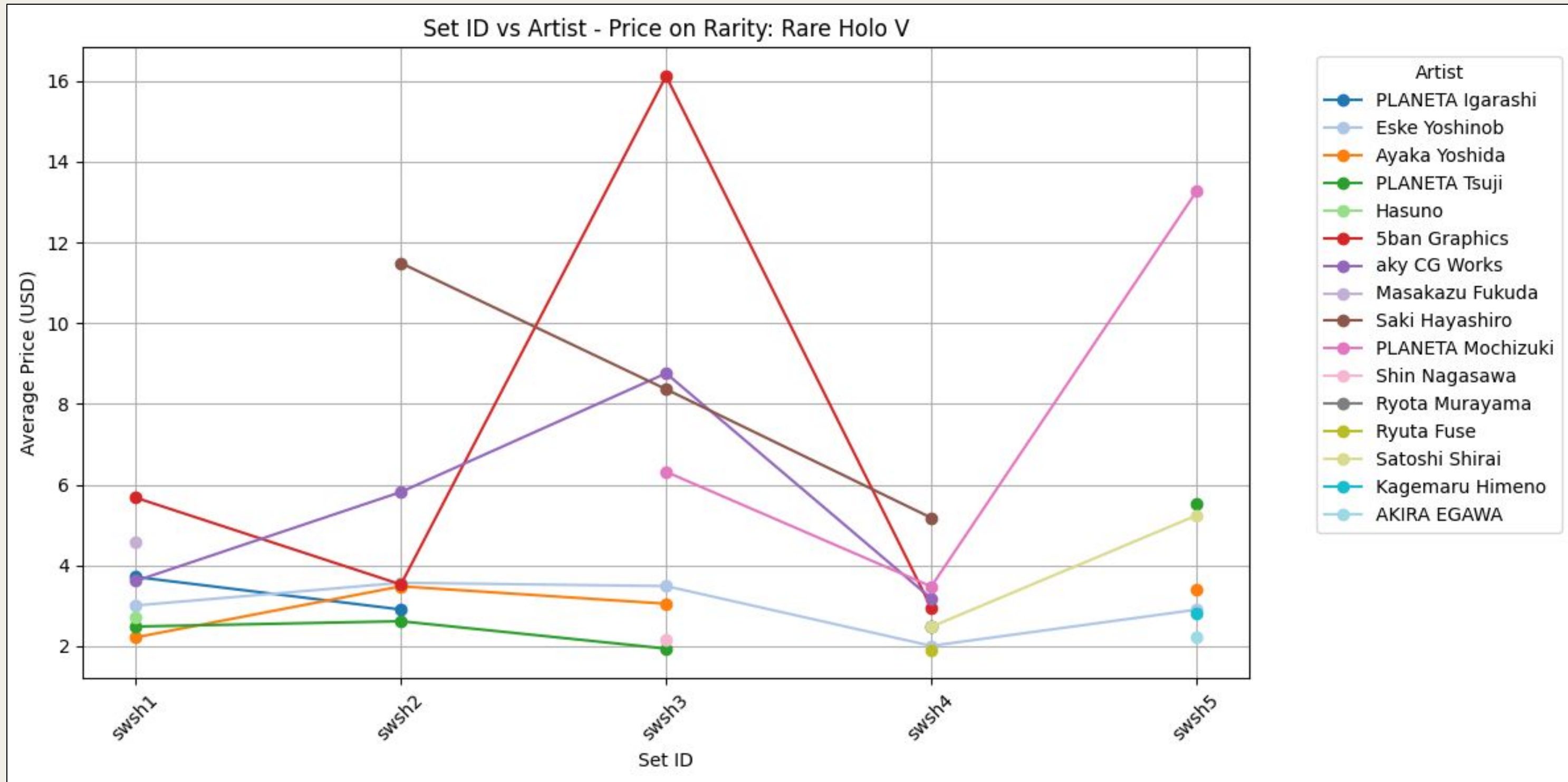
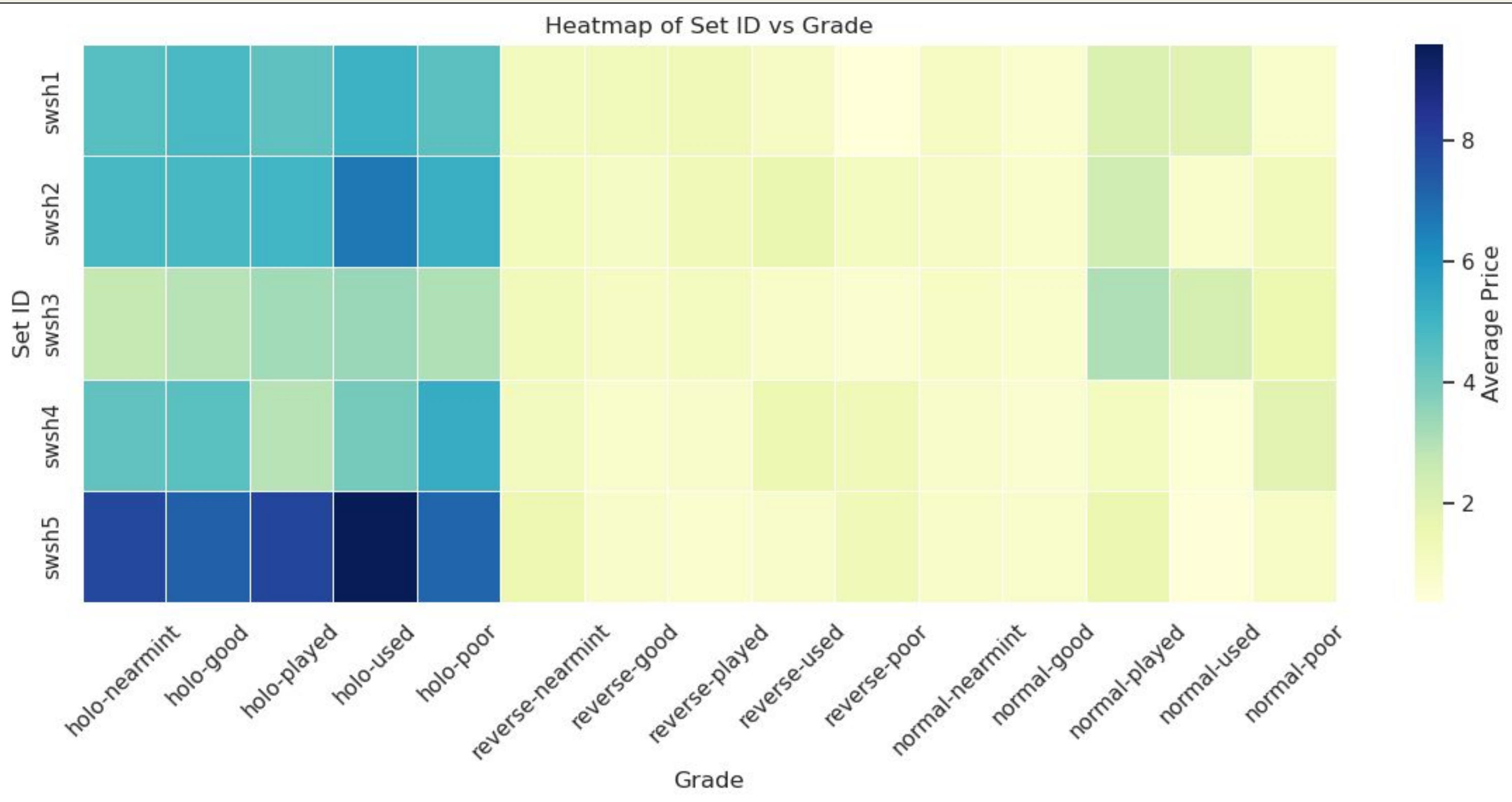
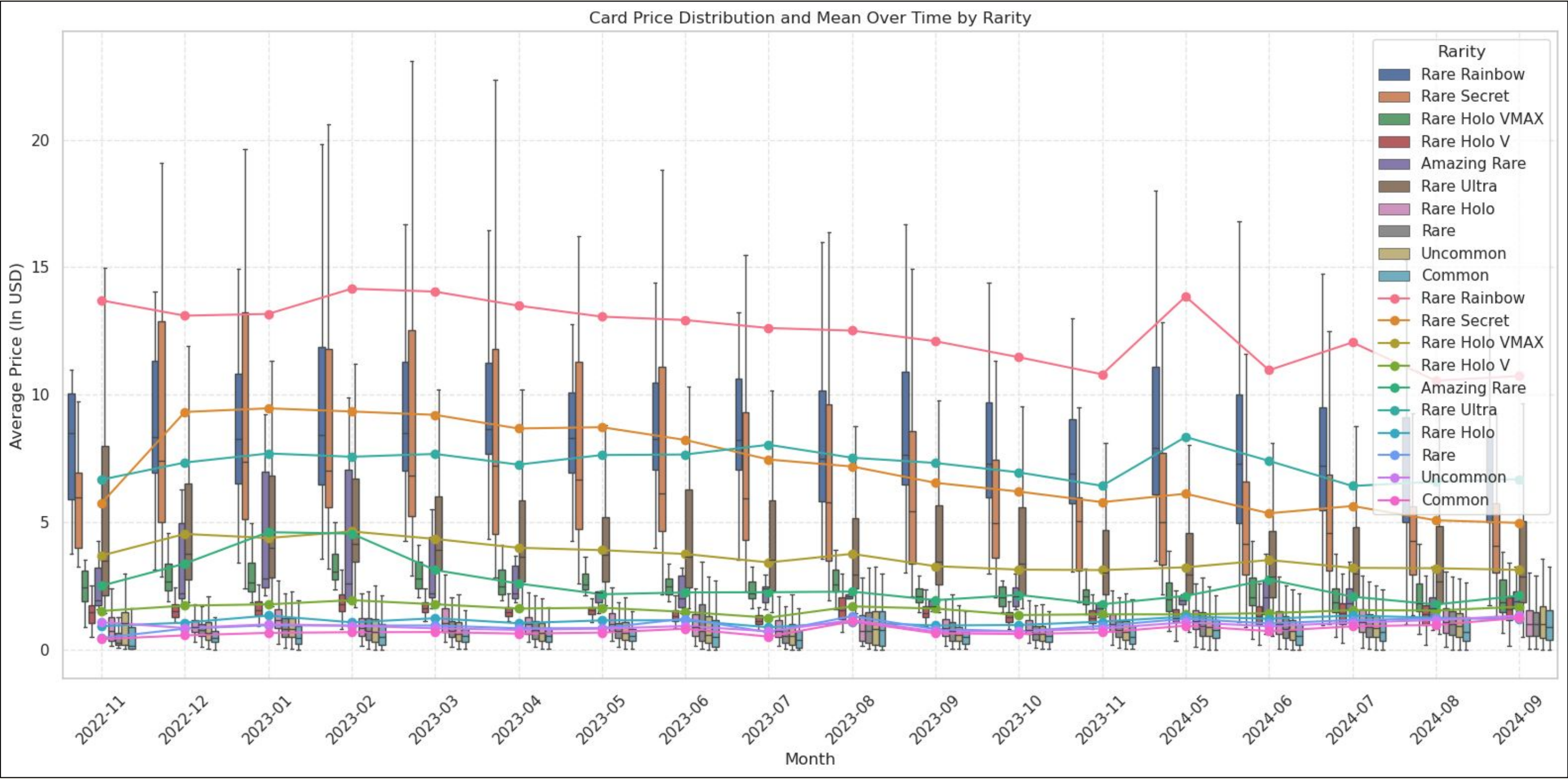
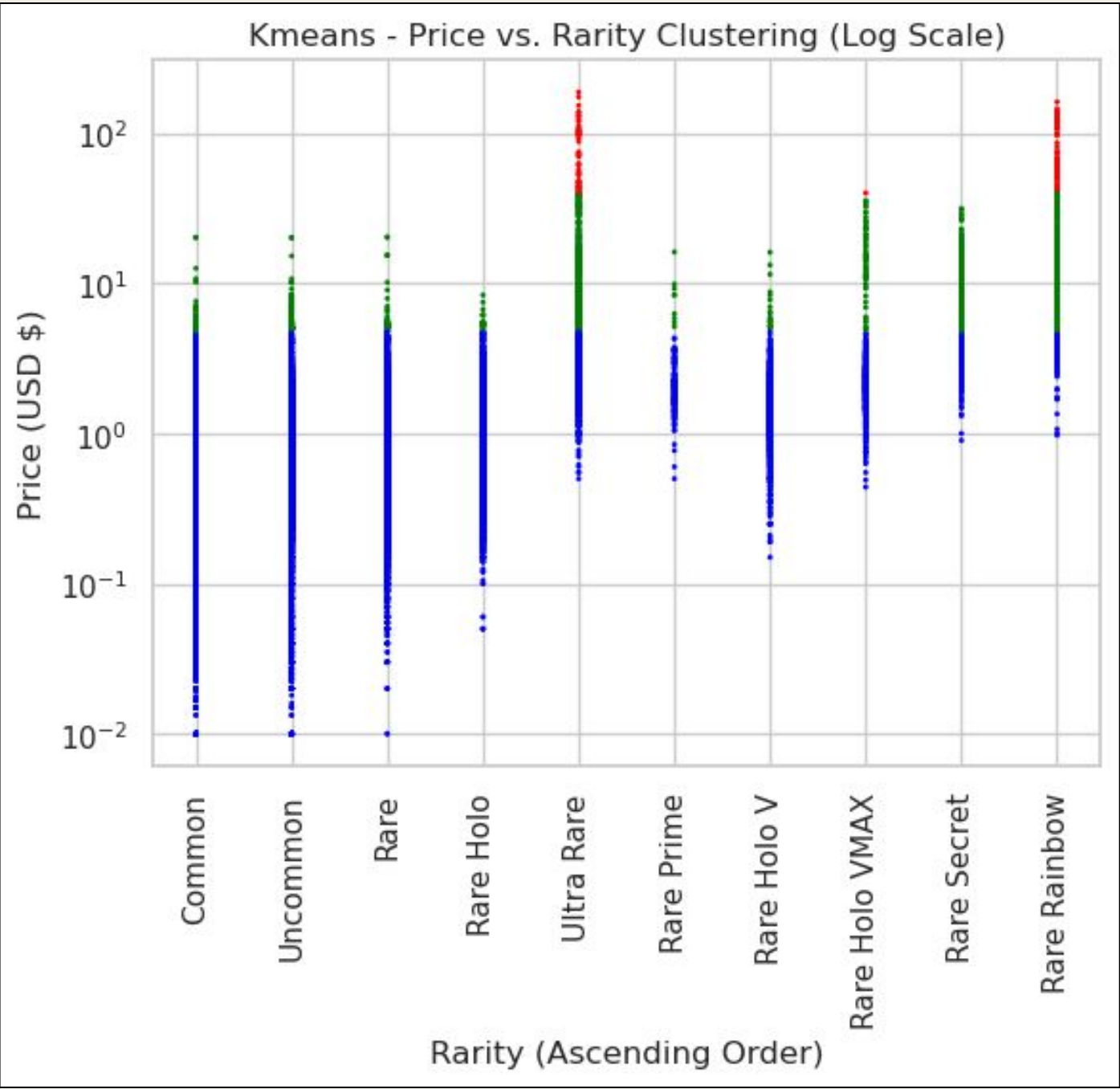
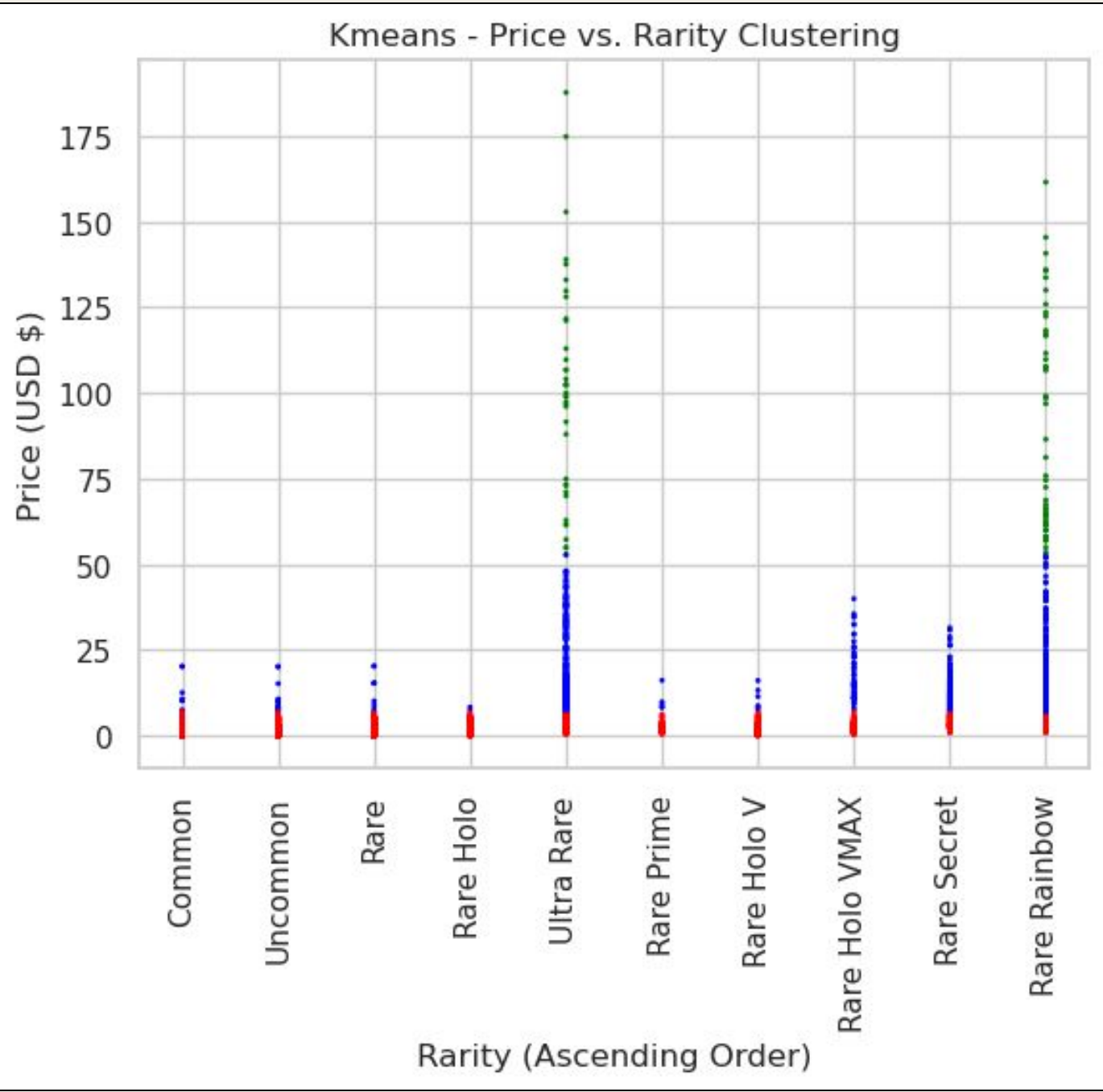
Conclusion

- Graphs show that higher rarity have higher prices. Rarity influences card prices, though there are exceptions.
- Being part of a meta deck has low influence on a card's price, as they remain low.
- Certain illustrators tend to be associated with higher card prices, though not universally.

Future Work

- Predict the card price based on the market trend.
- Estimate what card would be appealing to customers.

Main Findings (Graphs/Results)



References

- [1] <https://github.com/PokemonTCG/pokemon-tcg-data>
- [2] <https://github.com/tcgdex/price-history>
- [3] <https://limitlesstcg.com/decks>



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