MTG: Pay to win?

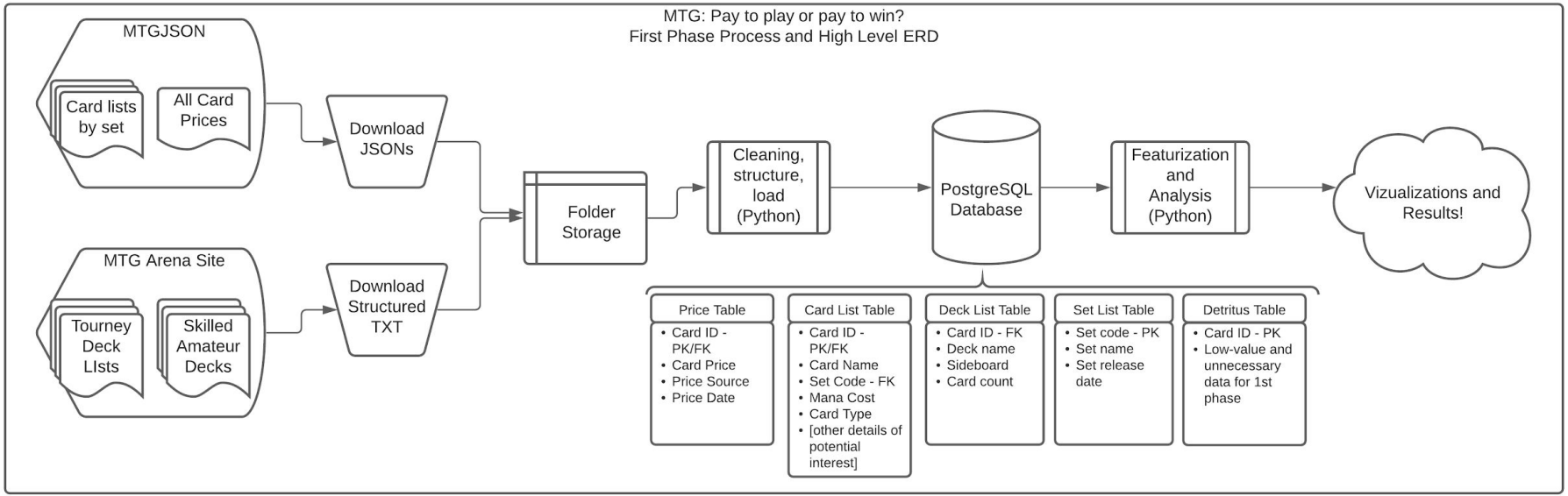
QITOAHC
2/26/2021

Objective

Explore the ‘truthiness’ of statements from my friends that Magic: The Gathering is a game where the person who spends the most money on their deck will always be the one who wins.

Create data sets for decks from skilled amateur and world-champion competitors and conduct a hypothesis test around the average price of each category of deck

Data and processing



‘Standard’ Data Variability

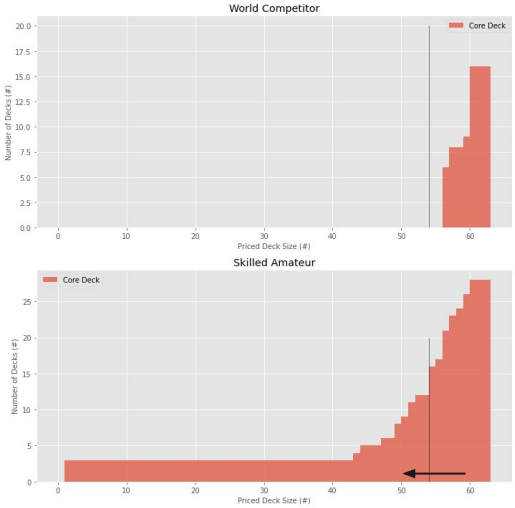
- Variability required custom processing to build consistent features for analysis

Non-Standard Variability

- Variability required custom processing to accurately match across data sets

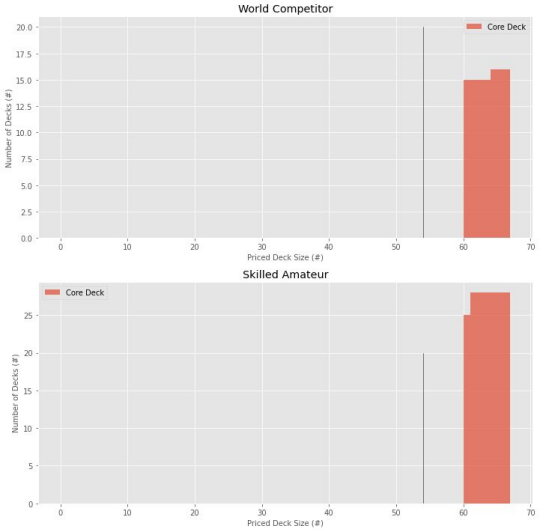
EDA To Identify Quality Issues

Post-processing impact of ‘small’ issues

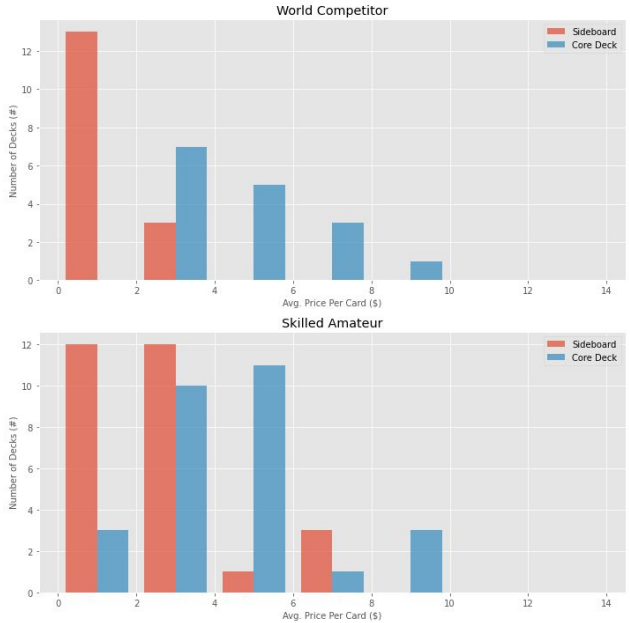


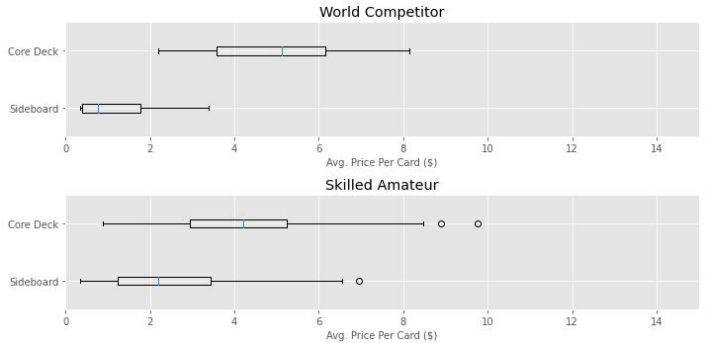
Manual data collection
+
bug fix

Post-remediation and re-run



EDA To Inform Hypothesis Test





- Use core decks only
- Independent distributions
- Non-normal
- Low n

→ Mann Whitney U test

Hypothesis test and next steps

- Mann-Whitney U Test assessing null hypothesis of World Competitor deck price not being greater than the Skilled Amateur deck price, with alpha = .05

my friends like math/science so they won't accept a wishy-washy answer

  - P-value = .19 → failure to reject the null hypothesis! Or put another way, there must be more than investment in high price cards that makes the difference between World Competitor performance.

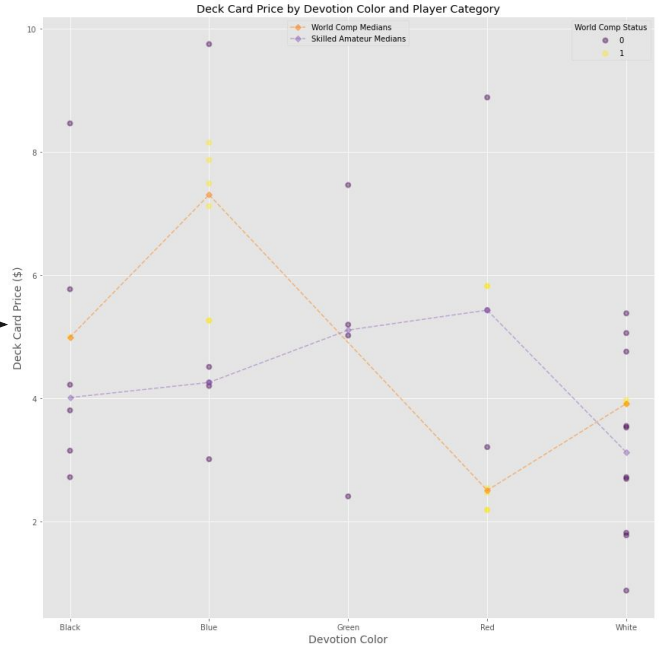
- From here, wanted to start building towards card-level analysis that might begin to inform models for card 'value' assessment and/or deck-building models...

Additional EDA with Light Featurization

4{R}{R} → $\frac{R}{2}$

1{U} → $\frac{B}{1}$

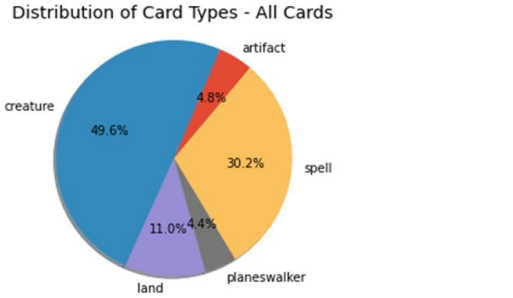
Deck Devotion is to Red →

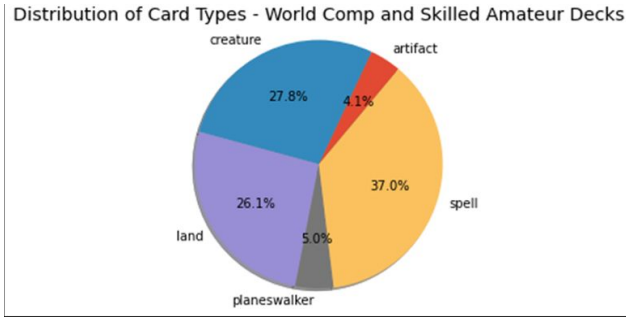


Additional EDA with Light Featurization

Card types in data sets

After type ‘featurization’





Down the rabbit hole...