

Basic Info

Title: Better drafting with 17Lands.

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Link:

<https://github.com/dataviscourse2023/final-project-toshi-17lands>

Overview and Motivation

I like to play a card game called Magic the Gathering.

There is a specific format called limited where one picks cards presented to them and builds a deck. On one of the online platforms, MTGArena, 17Lands has designed a community site that aggregates specific data about the cards picked. While 17 lands has a lot of the data, there is a lot of unnecessary data that clutters card evaluation. On top of that, the data is presented in a way that is hard to draw conclusions from.

The deck color selection filters for performance numbers of cards only when played in that maindeck color combination. This helps understand, for example, which red cards perform better when paired with green than with blue. Splashes are included, so selecting RG also includes RGU and RGB decks, for example.

Metric definitions are [here](#).

WOE PremierDraft All Users Color All Decks Rarity

09/05/2023 11/03/2023

Columns: ☒ Seen ☒ Picked ☒ Played in Deck ☒ Opening Hand ☒ Drawn in Game ☒ Ever in Hand ☒ Not Seen ☒ Improvement when Drawn

Export data

| Name | Color | Rarity | # Seen | ALSA | # Picked | ATA | # GP | % GP | GP WR | # OH | OH WR | # GD | GD WR | # GH | GH WR | # GNS | GNS WR | IWD |
|-------------------------|-------|--------|--------|------|----------|-------|--------|-------|-------|-------|-------|-------|-------|--------|-------|--------|--------|--------|
| Archon of the Wild Rose | W | R | 13237 | 1.62 | 8046 | 1.56 | 41930 | 86.1% | 55.1% | 6856 | 57.0% | 10658 | 58.8% | 17514 | 58.1% | 24469 | 52.9% | 5.3pp |
| Archer's Glory | W | C | 377477 | 6.76 | 61862 | 9.28 | 202660 | 53.7% | 55.9% | 32026 | 55.5% | 47354 | 57.4% | 79380 | 56.6% | 124114 | 55.4% | 1.3pp |
| Armory Mice | W | C | 376195 | 6.77 | 55263 | 9.42 | 174617 | 51.8% | 55.1% | 31080 | 55.4% | 36697 | 51.7% | 67777 | 53.4% | 106050 | 56.1% | -2.7pp |
| Besotted Knight | W | C | 342040 | 5.62 | 44945 | 8.23 | 167352 | 61.6% | 53.7% | 27533 | 53.6% | 39311 | 54.1% | 66844 | 53.9% | 100438 | 53.6% | 0.3pp |
| Break the Spell | W | C | 402191 | 8.23 | 40877 | 12.09 | 18622 | 7.6% | 50.0% | 2889 | 48.4% | 4314 | 51.1% | 7203 | 50.0% | 11393 | 50.0% | 0.0pp |
| Charmed Clother | W | C | 366581 | 6.46 | 45497 | 9.68 | 105453 | 42.4% | 52.5% | 16019 | 51.3% | 25812 | 53.3% | 41831 | 52.6% | 63638 | 52.5% | 0.1pp |
| Cheesy House Mouse | W | U | 125002 | 4.87 | 21181 | 6.60 | 85874 | 66.3% | 55.8% | 15287 | 58.1% | 18470 | 53.6% | 33757 | 55.6% | 52120 | 55.9% | -0.3pp |
| Cooped Up | W | C | 240659 | 3.74 | 54733 | 4.89 | 283138 | 84.7% | 55.2% | 48017 | 54.4% | 70130 | 57.9% | 118147 | 56.5% | 164128 | 54.2% | 2.2pp |
| Cursed Courser | W | U | 105410 | 4.09 | 20821 | 5.39 | 93086 | 74.1% | 53.6% | 15977 | 53.8% | 22400 | 53.2% | 38377 | 53.5% | 54810 | 53.7% | -0.2pp |
| Discerning Financier | W | U | 124671 | 5.07 | 14794 | 7.54 | 41222 | 46.7% | 51.5% | 7149 | 50.9% | 9681 | 51.2% | 16830 | 51.1% | 24412 | 51.8% | -0.7pp |
| Dutiful Griffin | W | U | 132521 | 5.47 | 15825 | 8.07 | 39634 | 42.0% | 51.7% | 6219 | 48.3% | 9957 | 52.6% | 16176 | 50.9% | 23515 | 52.1% | -1.2pp |
| Enraged Interloper | W | U | 163647 | 7.78 | 16503 | 11.7% | 2675 | 2.7% | 48.7% | 398 | | 622 | 47.7% | 3020 | 46.7% | 1651 | 49.9% | -3.0pp |
| Expet the Interlopers | W | R | 16197 | 2.01 | 8294 | 1.97 | 39658 | 78.9% | 54.4% | 6548 | 54.8% | 10176 | 58.3% | 16724 | 57.0% | 22922 | 52.6% | 4.4pp |
| Frostbridge Guard | W | C | 367846 | 6.60 | 40803 | 9.75 | 98377 | 40.0% | 52.5% | 17199 | 52.4% | 23170 | 51.7% | 40369 | 52.0% | 57935 | 52.8% | -0.8pp |
| Gallant Pie-Wheeler | W | U | 116189 | 4.59 | 19603 | 6.20 | 80772 | 68.3% | 54.3% | 13667 | 54.5% | 17717 | 52.4% | 31384 | 53.3% | 49477 | 54.9% | -1.6pp |
| Glass Casket | W | U | 98852 | 3.80 | 20156 | 5.00 | 92653 | 76.3% | 54.2% | 16340 | 53.8% | 22213 | 54.9% | 38553 | 54.4% | 53959 | 54.0% | 0.4pp |
| Hopeful Vigil | W | C | 254252 | 3.97 | 64462 | 5.01 | 337014 | 84.8% | 56.1% | 60815 | 59.7% | 79323 | 56.2% | 140138 | 57.7% | 196644 | 55.0% | 2.7pp |
| Kellan's Lightblades | W | C | 311497 | 4.98 | 48948 | 7.04 | 205771 | 70.2% | 53.3% | 34902 | 52.2% | 52068 | 55.2% | 86970 | 54.0% | 118577 | 52.7% | 1.3pp |
| Knight of Doves | W | U | 125211 | 5.26 | 14538 | 7.61 | 39545 | 45.8% | 50.3% | 6603 | 47.4% | 9365 | 50.4% | 15968 | 49.2% | 23528 | 51.0% | -1.8pp |
| Moment of Valor | W | C | 377863 | 6.88 | 40565 | 10.36 | 67677 | 27.5% | 52.9% | 10415 | 51.5% | 16274 | 54.3% | 26689 | 53.2% | 40940 | 52.7% | 0.5pp |
| Moonshaker Cavalry | W | M | 9679 | 2.34 | 2751 | 2.47 | 9400 | 58.4% | 50.5% | 1381 | 46.2% | 2274 | 53.0% | 3655 | 50.4% | 5718 | 50.5% | -0.1pp |
| Runes into Motion | W | C | 92287 | 8.28 | 39314 | 12.30 | 20169 | 8.4% | 49.2% | 3604 | 46.3% | 5727 | 51.8% | 9603 | 49.2% | 11453 | 49.2% | 1.0pp |

Above is a picture of the data from 17 lands. Note how hard it is to decipher trends and information from the data.

My project is to aggregate and decipher relevant data for draft improvement and to build good visualizations that describe card data for magic players.

Related Works

Draftsim and 17 lands have been inspirations as they have card ratings, though the methods they rate them are ambiguous. Sefat looked at my original drawings and recommended I incorporate more charts. The lectures mentioned that bar charts are good on categorical data, which helped me decide between line charts and bar charts.

Tier 1: Incredible Bombs



1. Gruff Triplets 2. Virtue of Persistence 3. Redcap Gutter-Dweller 4. Horned Loch-Whale 5. Lord Skitter, Sewer King 6. Faunsbane Troll

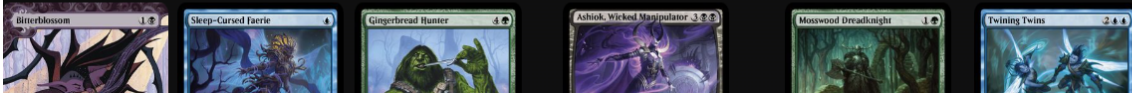


7. Realm-Scorcher Hellkite 8. Imodane's Recruiter 9. Virtue of Loyalty 10. Spellbook Vendor 11. Goblin Bombardment 12. Gumdrop Poisoner 13. Talion's Messenger



14. The Goose Mother

Tier 2: Great First Picks



Above is a picture of the Draftsim tierlist. They build it off human intuition.

WOE Tiers
 Last updated: 2023-10-25 19:38

Want to create your own ratings? [Click here](#) to start from scratch or [click here](#) to use these tiers as a starting point.

Filters: ☐ Invert

💬 = Has comment | ❤️ = Synergy | ⚡ = Build-Around

| | White | Blue | Black | Red | Green | Multicolor | Colorless | Land |
|----|---|---|--|---|--|---|-----------|---|
| A+ | Spellbook Vendor Virtue of Loyalty | Horned Loch-Whale | Virtue of Persistence | Goblin Bombardment Redcap Gutter-Dweller Realm-Scorcher Hellkite | Gruff Triplets | Imodane's Recruiter | | |
| A | | Sleep-Cursed Faerie Tallon's Messenger | Lord Skitter, Sewer King Bitterblossom Gumdrop Poisoner | Goddric, Cloaked Reveler | | Faunsbane Troll Mosswood Dreadknight Gingerbread Hunter | | |
| A- | Werefox Bodyguard Regal Bunnicorn Expel the Interlopers | | Ashiok, Wicked Manipulator | Torch the Tower Song of Totentanz | Welcome to Sweettooth The Huntsman's Redemption Tough Cookie | Heartflame Duelist Twining Twins The Goose Mother Greta, Sweettooth Scourge Kellan, the Fae-Blooded | | |
| B+ | The Princess Takes Flight Archon of the Wild Rose | Hatching Plans Extraordinary Journey | Candy Grapple The Witch's Vanity | | Agatha's Champion | Decadent Dragon Devouring Sugarmaw Ash, Party Crasher Picnic Ruiner | | |
| B | Three Blind Mice Hopeful Vigil | Picklock Prankster | Faerie Dreamthief Tangled Colony Sweettooth Witch Spiteful Hexmage Rat Out Twisted Sewer-Witch Hopeless Nightmare High Fae Negotiator | Cut In Witchstalker Frenzy Monstrous Rage Twisted Fealty | Elvish Archivist Utopia Sprawl Feral Encounter Royal Treatment | Frolicking Familiar Woodland Acolyte Talon, the Kindly Lord Scalding Viper Syr Armont, the Redeemer | | Restless Cottage Restless Vinestalk |
| B- | Archon's Glory | Ingenious Prodigy Tenacious Tomeseeker | The End Mintstrosity Faerie Fencing Lord Skitter's Butcher Specter of | Charming Scoundrel Embereth Veteran Flick a Coin | Tanglespan Lookout Up the Beanstalk Hollow Scavenger Brave the Wilds Hamlet Glutton Fervorous | Hylda of the Icy Crown Threadbind Clique Yenna, Redtooth Regent Johann, Apprentice Sorcerer | | Edgewall Inn Restless Fortress Restless Bivouac |

Above is a picture of the 17lands tierlist. It is unclear how they form this.

Questions

The questions I'm trying to answer now are "What are the highest winrate cards in a specific subset of cards?", "How does the winrate compare to the average in 17lands data?", "What cards can I expect to see at certain picks in

the draft?” “What cards are most likely to be picked in a specific subset?”

I initially planned on having these questions deal with live pack data, but it turns out that there isn't an API to access live data for MTGArena, so I've had to change my questions I'm asking. As such, these are many new questions that came up in my analysis of the data.

Data

The Data from 17lands is saved under CSV. The data I'm collecting from is the export data button in the site.

[https://www.17lands.com/card_data?expansion=\[set symbols\]](https://www.17lands.com/card_data?expansion=[set symbols]).

Most of the data there is superfluous for humans to try and understand, so I filter out only the sections I need for my project. It's also poorly named to work with D3, so I have to rename some of the columns. I also do some basic aggregation to determine relative to general winrate in 17 lands.

The current data used is only the sets that are currently being drafted. I will update the sets as they get released accordingly.

Exploratory Data Analysis

I deduced that bar charts would be the most straightforward way to explore the data. When I looked at my data through the bar chart, I realized that the winrates

on 17 lands are a little deceptive; the average winrate for 17land users is about 55%, as opposed to the average 50%. This helped me reevaluate how to prioritize cards based on the data from 17lands. I hypothesized that the average 17 land users would have higher winrate, but I wasn't expecting it to be this high. One thing I noticed lost in the data was how often a card was picked relative to the winrate, though I'm currently struggling to think of a good visualization tool to represent this.

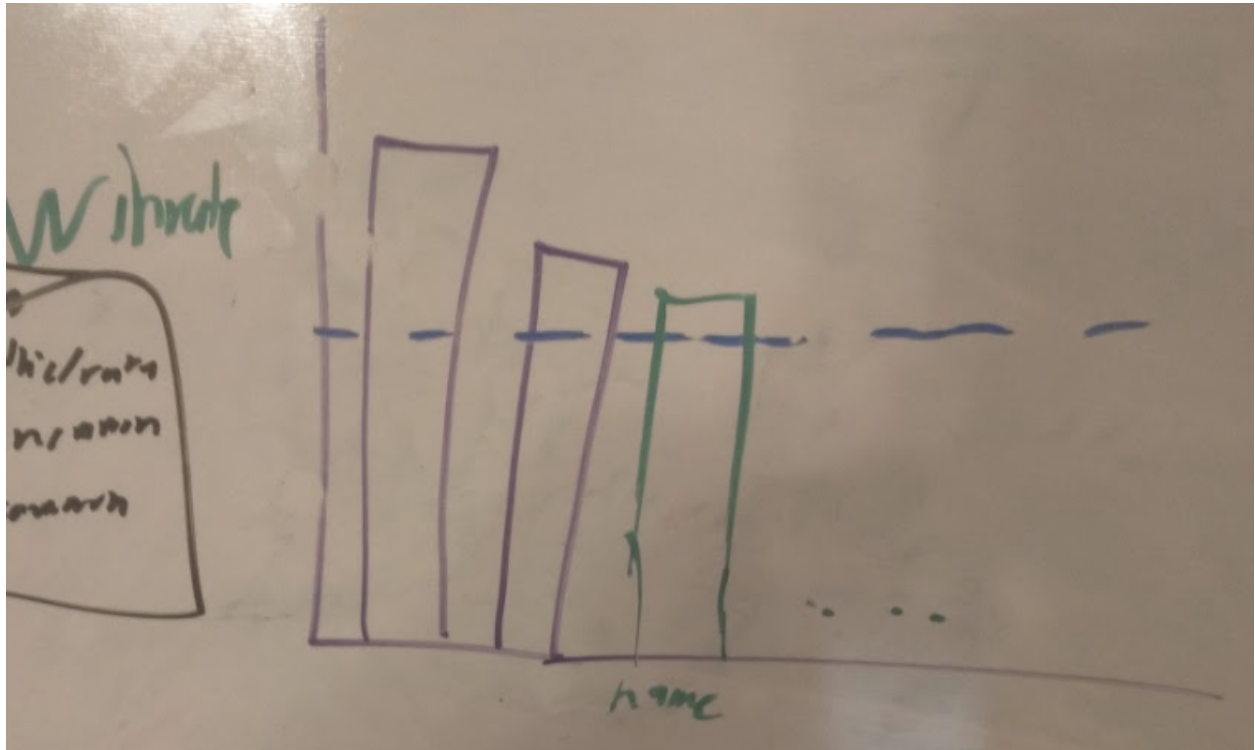
Design Evolution

I've had to make a big change from my initial project proposal. I didn't realize how little access I had to live data in MTGA, so I'm relying instead solely on the data that 17lands collects. I considered a line chart, but in the course, we learned that this should imply some form of continuity between the points, and cards are categorical in nature, so I decided to go with pie charts or bar charts. After thinking about how many cards there were, I deduced a pie chart wouldn't be that helpful, and opted for utilizing bar charts. I decided to have the ceiling of the bar charts to be the min of 5 percent higher than the highest winrate and 100, as it's generally unreasonable to expect cards to have over 80% winrate, so the extra space near the top suggests that the best cards should have close to 100. I decided to start the data at 0 because it gives a better relative scale of the data. I decided to include the

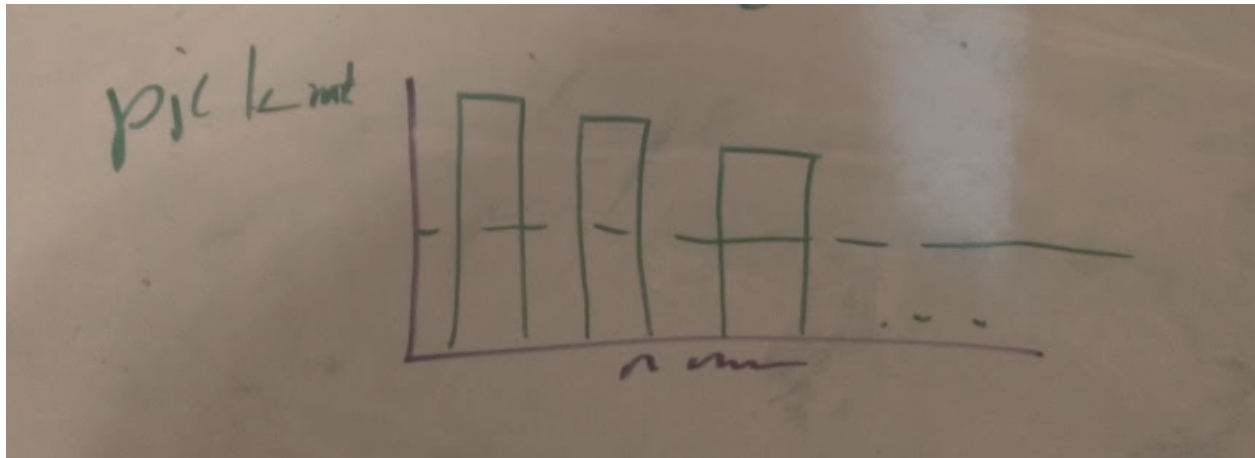
dotted line showcasing the average to give the user a quick way of deducing how the data compares relative to the average.

Implementation

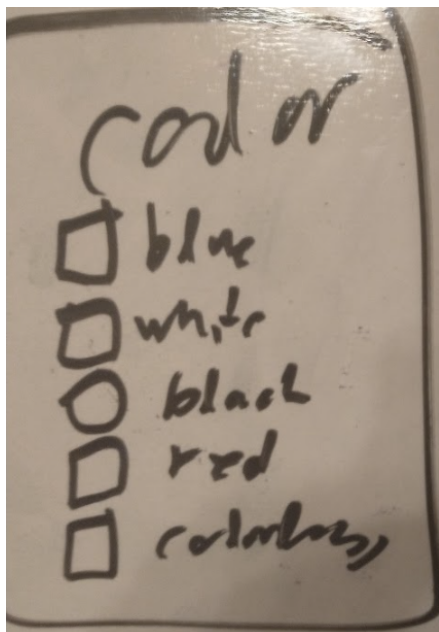
I implemented bar charts and a line that signifies the average to the user. This allows them to easily make comparisons on whether a card is good or not. By default, I sort by highest winrate/pickrate since that is what users are generally looking for. Below are some sketches of how I created my design.



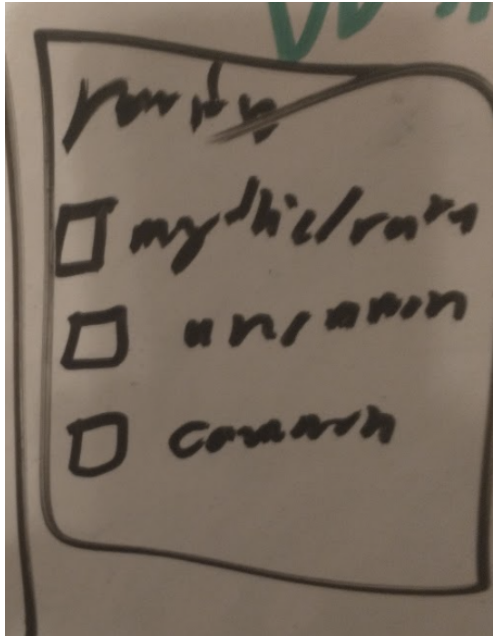
The winrate bar graph.



The pickrate bar graph.



The color checkboxes. By default, I plan on having it being subset of the selected colors (if only blue is selected, won't show blue/green cards. If blue, green, and white are selected, will show blue/green cards).



The rarity checkboxes.

These are pictures of the implemented design.

☐ White ☐ Blue ☐ Black ☐ Red ☐ Green ☐ Colorless

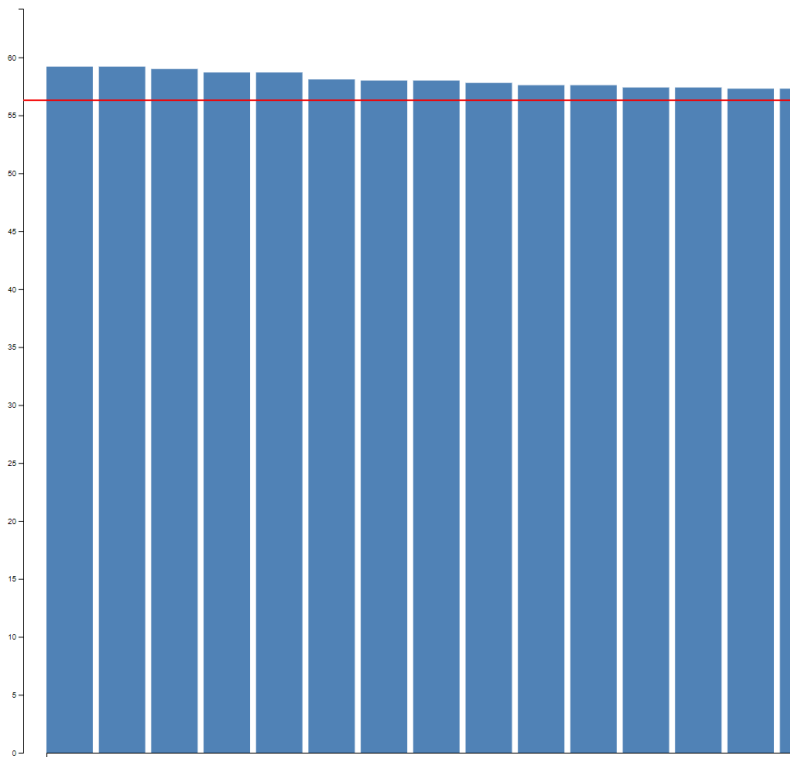
The color selection.

☐ Rare/Mythic ☐ Uncommon ☐ Common

Rarity selection

Magic Set: Data Type:

Choosing what type of data type to be used



The bar chart itself.

In the future, I plan on adding functionality to the checkboxes that allow the user to filter data. I also plan on allowing them to select a subset of cards.

Evaluation

I learned that 17land users generally have higher winrates. I was also surprised at how much the win rate differed through cards. The pickrates were less flat than I expected.

To do:

I will need to add the names of the cards at the bottom; d3 was giving more trouble than I was anticipating. I also need to add functionality to the different filters.