

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	12.20	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

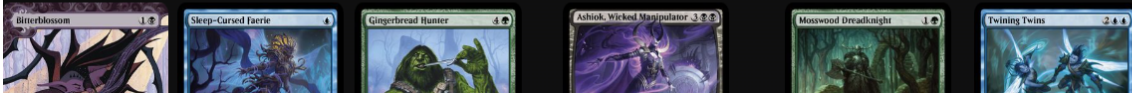


7. Realm-Scorcher Hellkite 8. Imodane's Recruiter 9. Virtue of Loyalty 10. Spellbook Vendor 11. Goblin Bombardment 12. Gumdrops Poisoner 13. Talion's Messenger



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.

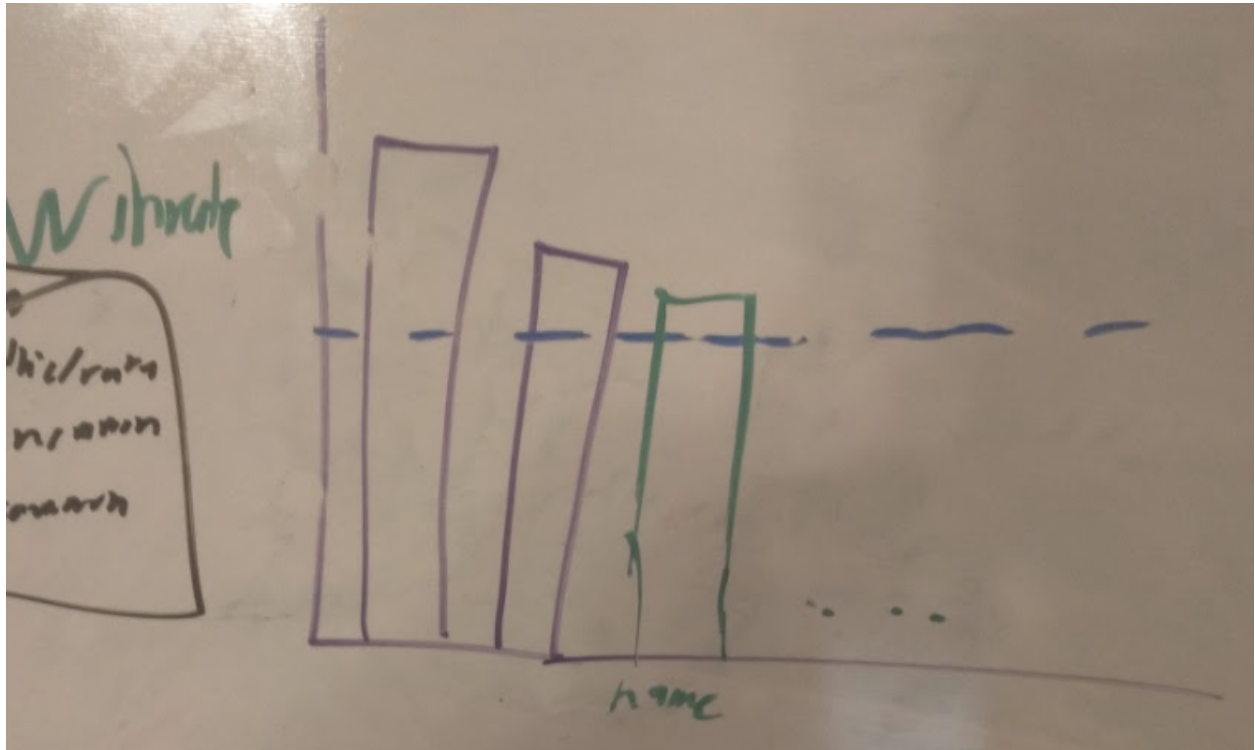
Design Evolution

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

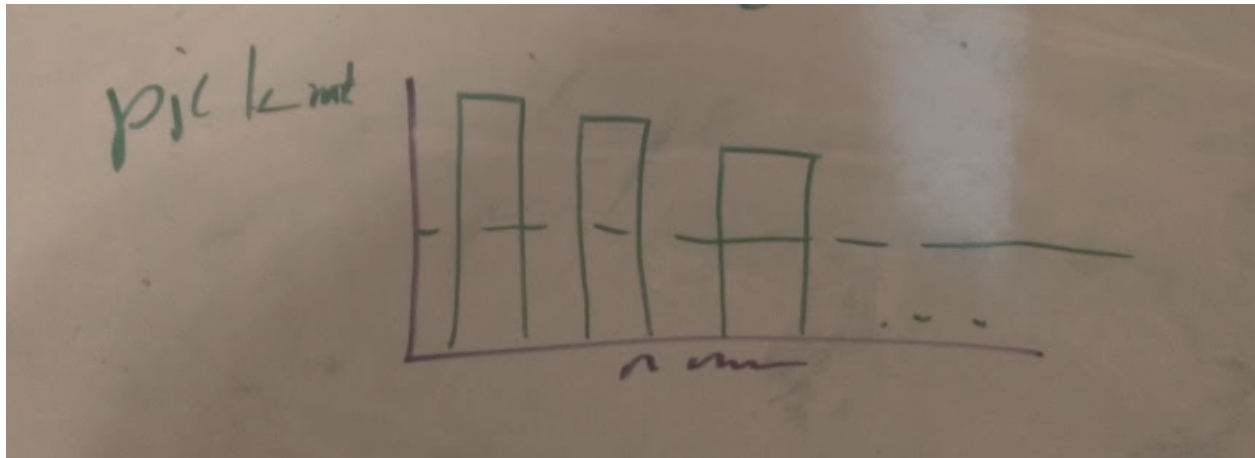
dotted line showcasing the average to give the user a quick way of deducing how the data compares relative to the average.

Implementation

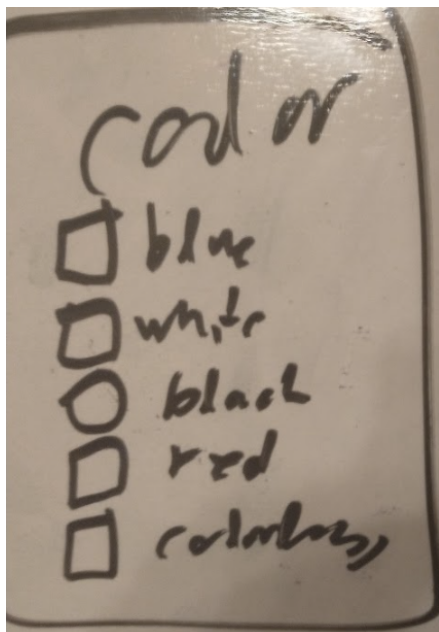
I implemented bar charts and a line that signifies the average to the user. This allows them to easily make comparisons on whether a card is good or not. By default, I sort by highest winrate/pickrate since that is what users are generally looking for. Below are some sketches of how I created my design.



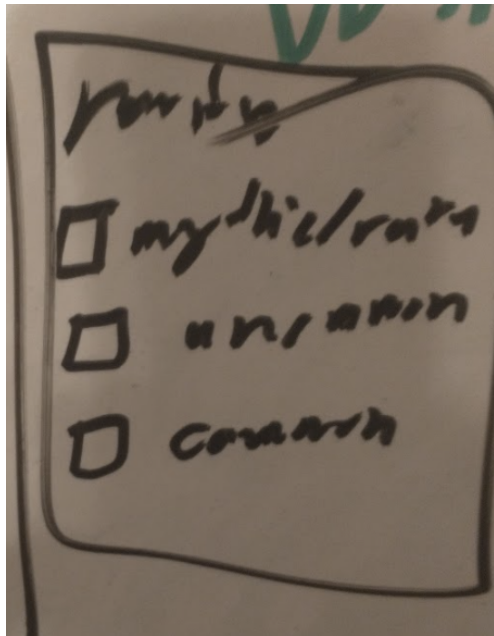
The winrate bar graph.



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

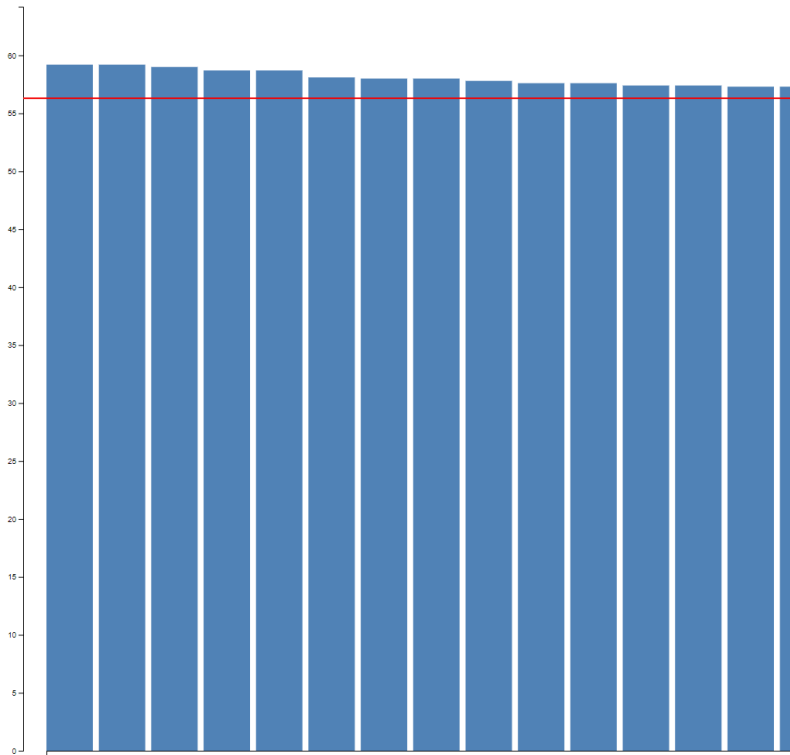
The color selection.

☐ Rare/Mythic ☐ Uncommon ☐ Common

Rarity selection

Magic Set: Data Type:

Choosing what type of data type to be used



The bar chart itself.

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. I was also surprised about the general trends reflected in the colors, I thought that they would be more balanced in the sets than they were.