

Who's in Command?

Deck builder for Magic: The Gathering's Commander Format



What is Commander?



"Commander is an exciting, unique way to play Magic that is all about awesome legendary creatures, big plays, and battling your friends in epic multiplayer games! In Commander, each player chooses a legendary creature as the commander of their deck. They then play with a 99-card deck that contains only cards of their commander's colors. Also, other than basic lands, each deck can only use one copy of any card. During the game, you can cast your commander multiple times, meaning your favorite Legendary Creature can come back again and again to lead the charge as you battle for victory."

- Wizards of the Coast

Commander is a casual and social format of Magic: The Gathering with a more diverse card pool.

- Me

How can I get more people to start playing Commander?



The Data



- 260,000+ Magic the Gathering Cards from Scryfall API with 30 features per card.
- Web-scraped EDHrec.com to add 33 more features per card showing the popularity of a card in each color combination.
- 18,000 cards remaining after removing duplicate cards, banned cards, and foreign prints.

Getting Started

Choosing your Commander



Latent Dirichlet Allocation

Used to create general topics to categorize each card.

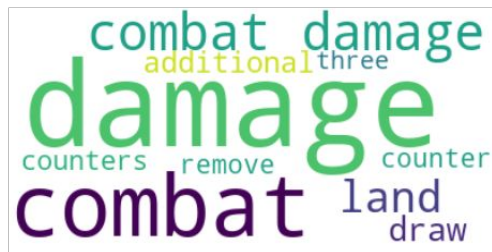
- Limited the number of topics to 5 to allow the most overlap in topics.
 - Want to be able to recommend cards based on multiple topics.
- Created stopwords iteratively by running the model and adding words that were explaining all of the topics.
- Trained the model on a corpora of individual text lines because a card can have multiple text lines that fit into different topics.



Word Clouds and Token Frequency

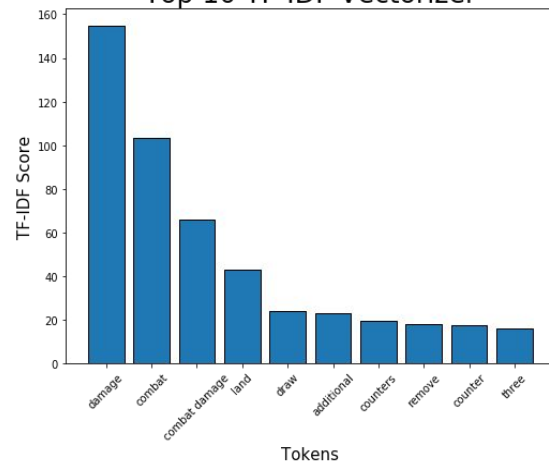


Word Cloud



Consistant Damage

Top 10 TF-IDF Vectorizer

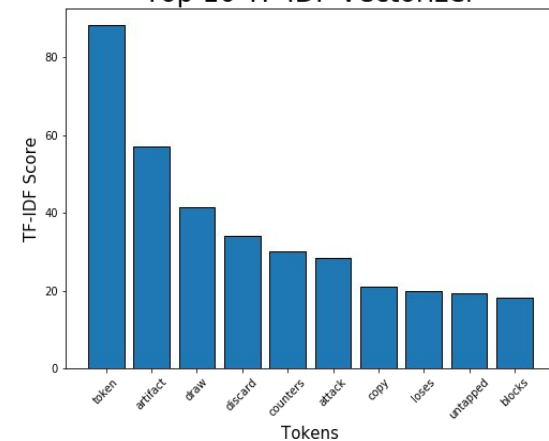


Army Makers

Word Cloud

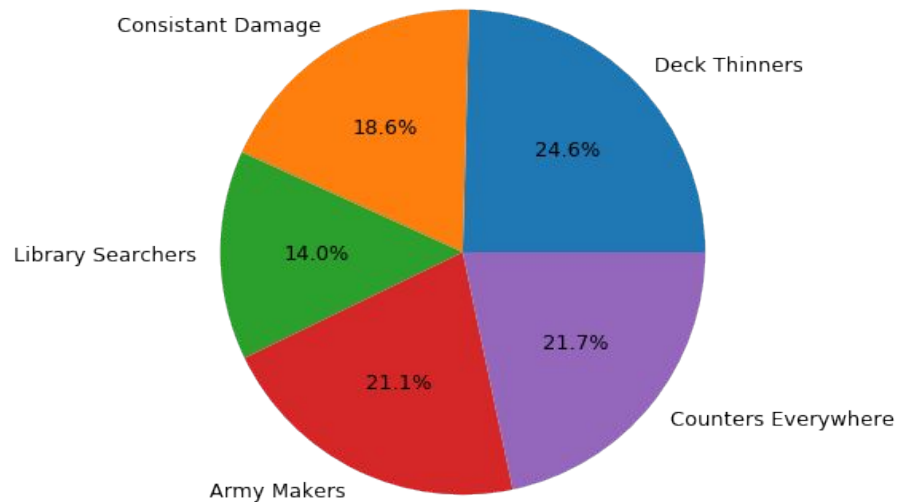
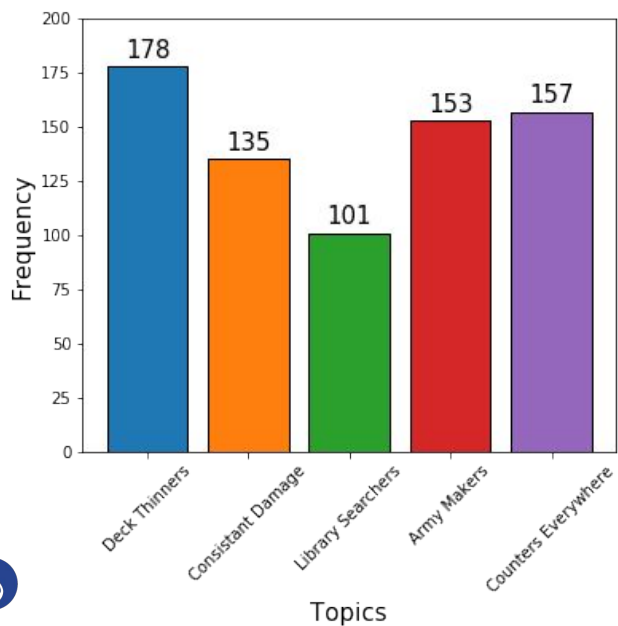


Top 10 TF-IDF Vectorizer



Topic Distribution

Distribution of LDA Topic Labels



Recommending a Commander

Content-Based Recommendation System

For those new to Commander:

- Provide a list of LDA-generated topics to choose from.
- Create a 'perfect' Commander whose topic scores are evenly distributed amongst the chosen topics.
- Generate a list of Commanders with topic scores most similar to the 'perfect' or chosen Commander.
- More popular Commanders had their scores increased.

For the veterans of Commander:

- Ask for a Commander that they have played before.



Building the Deck

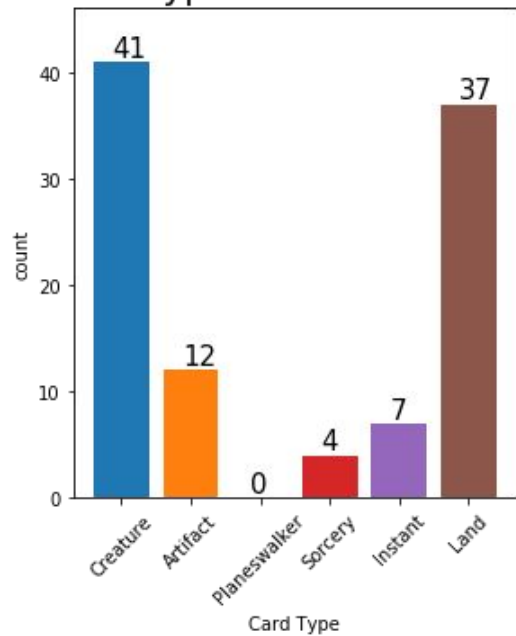


Building the Deck

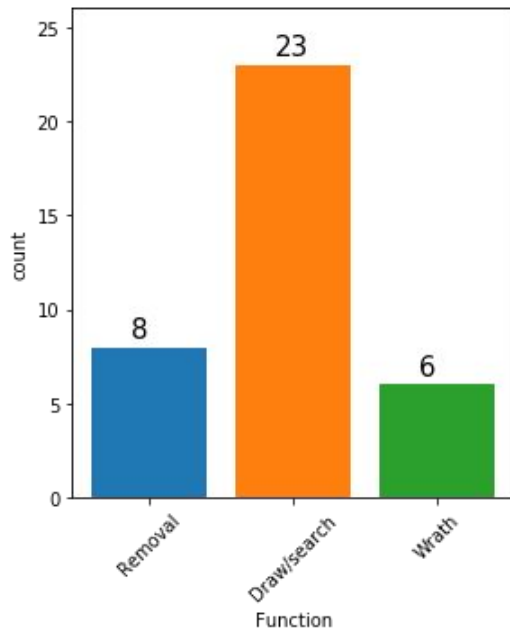
- Choose a Commander to build the deck around.
- Perform topic modeling with more topics to get more specific.
- Build the deck one card at a time, including the card with a topic score closest to the average topic score of the current deck.
- Included various weights to build a more well-rounded and consistent deck.



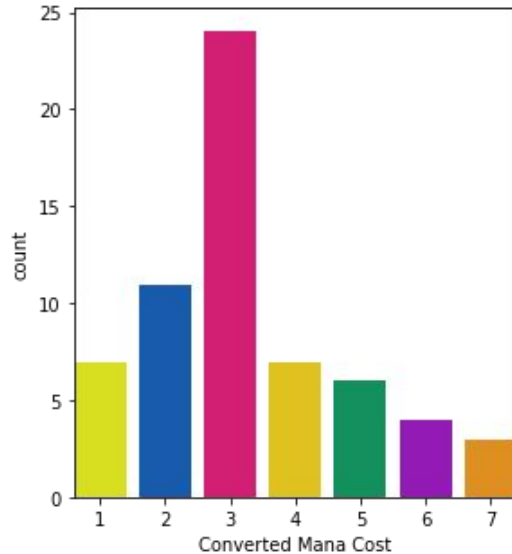
Type Distribution



Card Functions

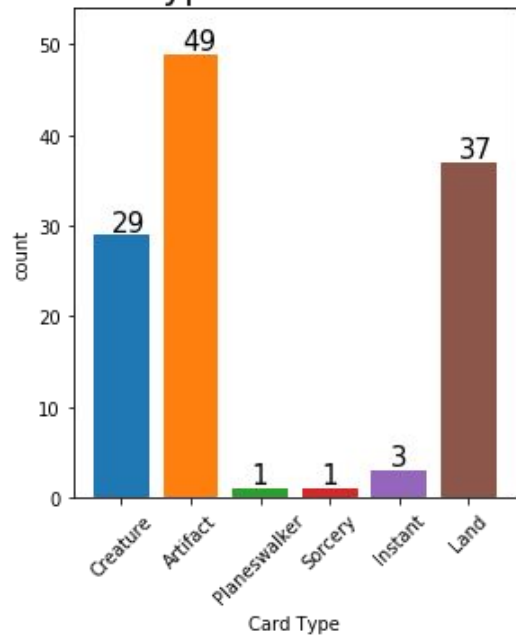


Mana Curve

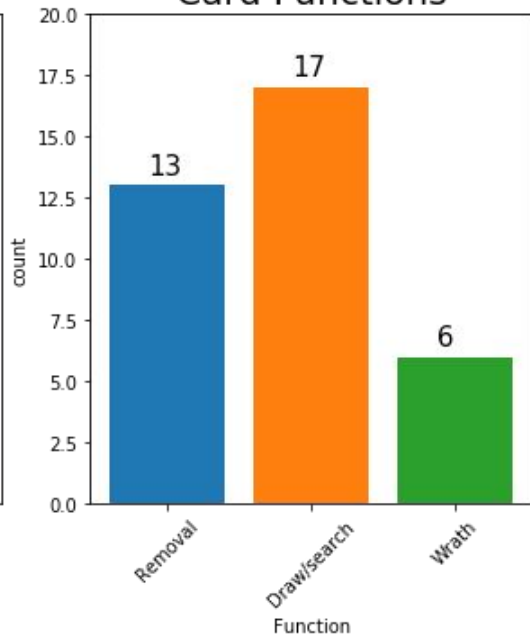


Specs of a deck built around Niv-Mizzet Reborn.

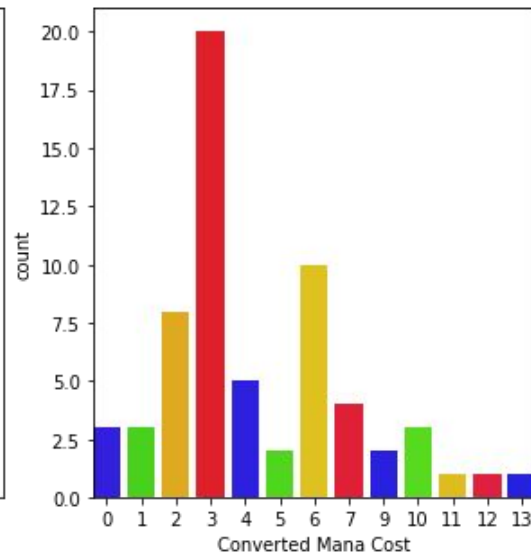
Type Distribution



Card Functions



Mana Curve



Specs of a deck built around Kozilek, the Great Distortion.

Conclusions

Difficult to compare one deck to another.

Only real way of determining the quality of a deck is through play-testing.

These decks are built in a vacuum. Certain cards will do better/worse depending on the decks you are playing against.

Meant to be a good starting point to get your foot in the door.

Defaults to creating decks with all legal cards, but can also be given a custom pool of cards to make decks out of.

