



NFL Fandom

Which city should have
the next NFL expansion
team?

Robbie Geoghegan - Sebastian Osorio - Shivank Sood
Vikrant Vaidya - Matthew Zlotnik



Problem Statement: Where the NFL should expand to next

- The NFL made revenues of \$22B over the 2018 season and is nearing revenues of \$25B in 2019
- Revenues are based on a business model with two parts: national revenue and local revenue
- The NFL has been investigating new markets to expand into, location is extremely important - an expansion team's success is therefore heavily dependent on local fans
- Our project seeks to analyse how successful an expansion team would be in a new location and make a recommendation of where to expand for the NFL

NFL Business Model	
National Revenue	Local Revenue
<ul style="list-style-type: none">▪ TV deals▪ Merchandising▪ Licensing <p>2018 Total: \$8 B (shared evenly by teams)</p>	<ul style="list-style-type: none">▪ Ticket sales▪ Concessions▪ Corporate sponsors <p>2018 Total: \$14 B (team-based*)</p>

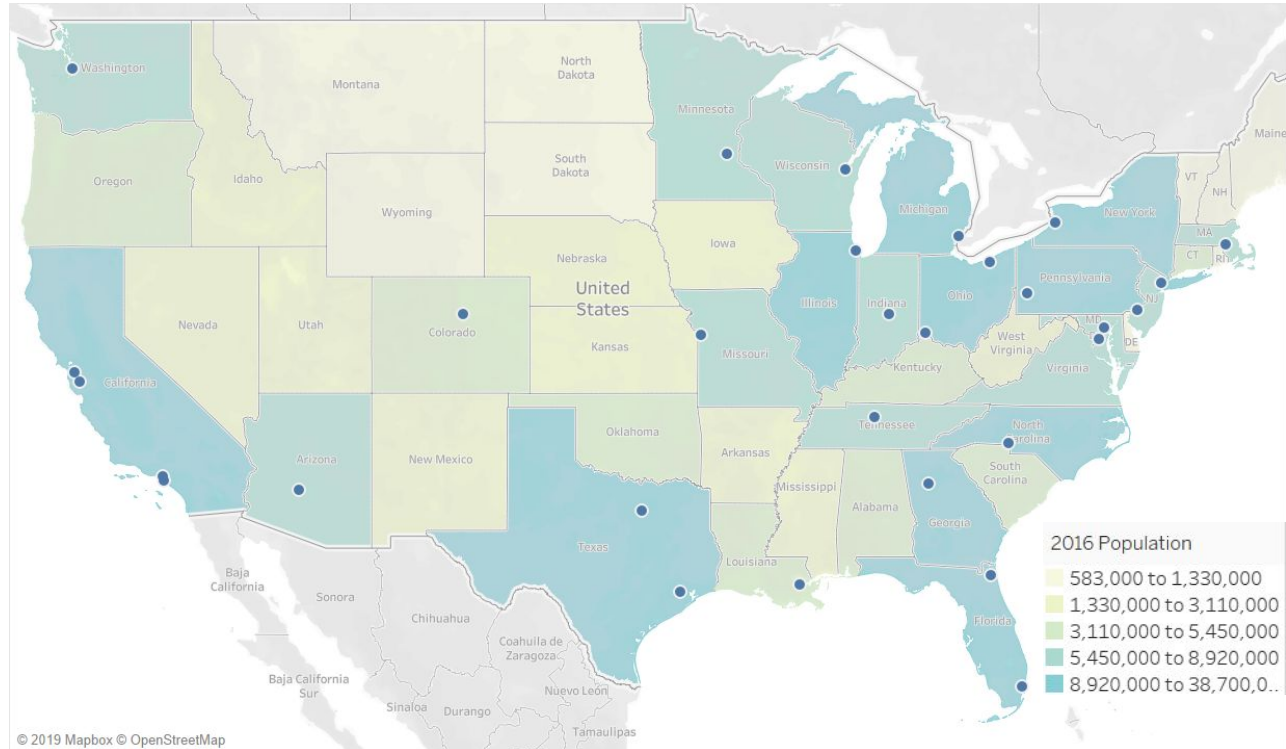
*Cowboys earned the most local revenue in 2018 at \$950M while Oakland Raiders made the least at \$357M

Source: [tps://www.investopedia.com/articles/personal-finance/062515/how-nfl-makes-money.asp#:~:targetText=According%20to%20the%20Green%20Bay,national%20revenue%20from%20the%20league.](https://www.investopedia.com/articles/personal-finance/062515/how-nfl-makes-money.asp#:~:targetText=According%20to%20the%20Green%20Bay,national%20revenue%20from%20the%20league.)

Source: <https://www.statista.com/statistics/193553/revenue-of-national-football-league-teams-in-2010/>

Current NFL team locations

- There's 32 teams right now in the NFL
- They are usually in the most populated areas
- Cities with 2 teams:
 - New York
 - Los Angeles



We chose to use Twitter as a source of information

Source	Pros	Cons	Our data source
Tweepy and Twitter's API	<ul style="list-style-type: none">• Primary source• Newest information	<ul style="list-style-type: none">• Limited to ~3,000 tweets at a time• Can't filter by keywords and location when downloading	
Get Old Tweets package in Python	<ul style="list-style-type: none">• Can download large amounts of tweets at once• Can filter by keywords (i.e. #NFL) and location	<ul style="list-style-type: none">• Possibly incomplete and dated• Location information based on user bio - not ideal accuracy	
Download repositories of tweets	<ul style="list-style-type: none">• Cleaned and consolidated already	<ul style="list-style-type: none">• Unclear how it data downloaded and how complete the information is	

Data and pre-processing

Twitter Data

- 100 most populous cities
- Target overseas markets
- Up to 500 tweets per location
- #NFL

Secondary Data

- Population by city
- NFL teams info and location

Twitter Pre-processing

- Lemmatize
- Remove stopwords
- Tokenize
- Lowerize

Secondary Data Pre-processing

- General data cleaning
- Used insights in target city selection

A sepia-toned photograph of a football team huddled on a field. The players are wearing dark jerseys with white numbers and light-colored pants. The image is used as a background for the text overlay.

Sentiment Analysis

Keywords Analysis

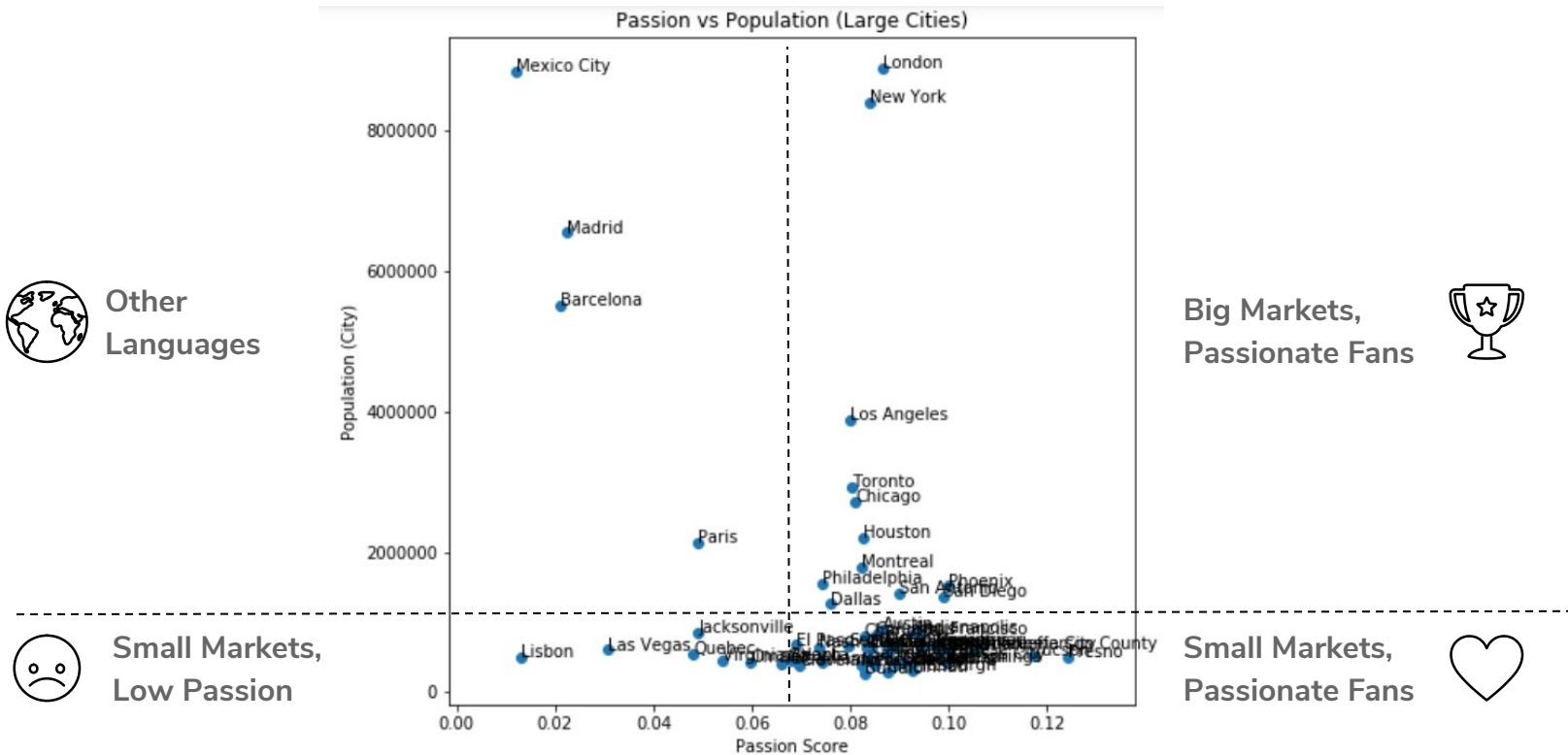
Conclusion

Strong Sentiments Likely Breed Passionate Fanbases

- Vader Sentiment Analyzer
- Passion Score



Passion and Population





Sentiment Analysis

Keywords Analysis

Conclusion

Similar Tweets Across Cities - A Good Indicator ?

- Created corpus of frequently occurring words , splitting them into 3 distinct topics for similarity analysis
- Spacy similarity analysis of tweets with these words - grouped by a city

BET CRAZY

'Betting' 'sportsbetting'
'bettingtips' 'mybookie' 'bet'
'fantasyfootball' 'sportspicks'
'expertpicks' 'guaranteedpick'
'fantasy' 'gamblingtwitter'

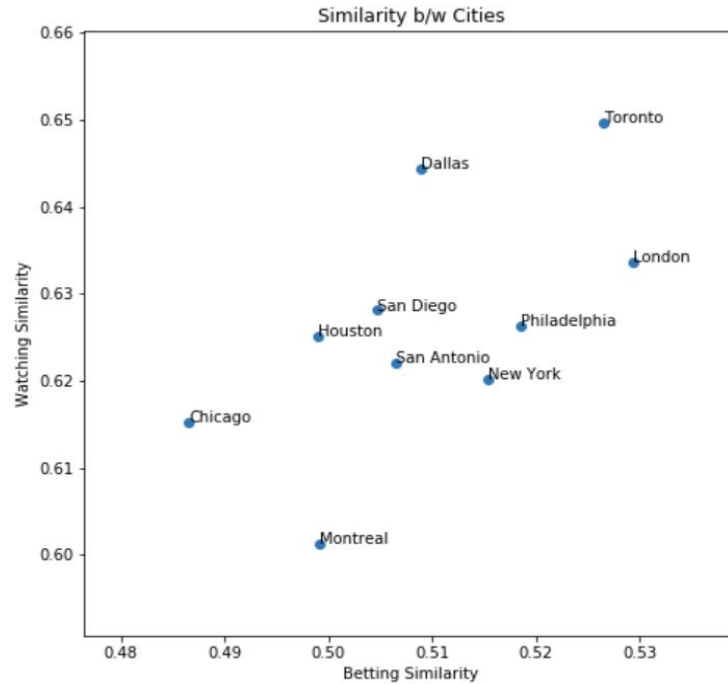
WATCHMAN

'Youtube' 'podcast' 'watching'
'live' 'fireball' 'bigscreen tv'
'nflsunday' 'weekend'

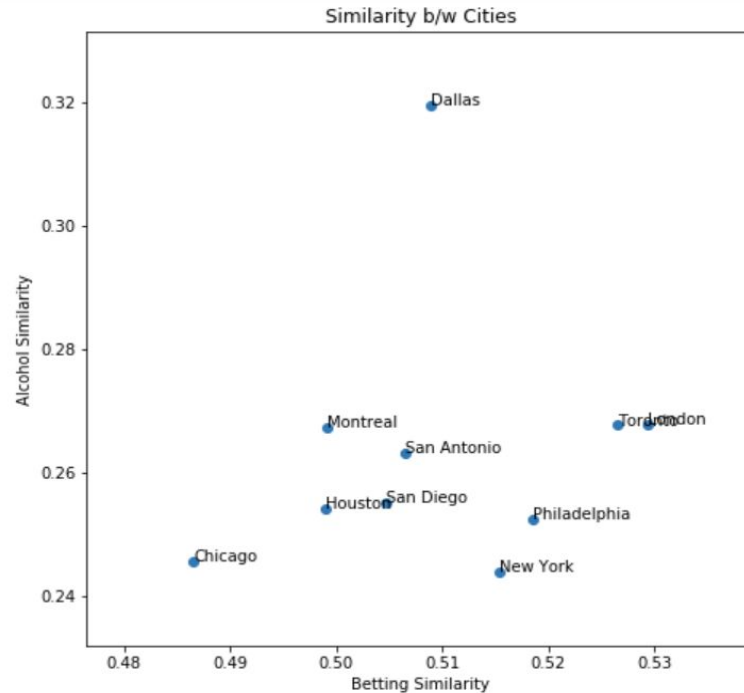
HIGH SPIRITED

'Tequila' 'whiskey' 'beer'
'sportsbar' 'partytime'

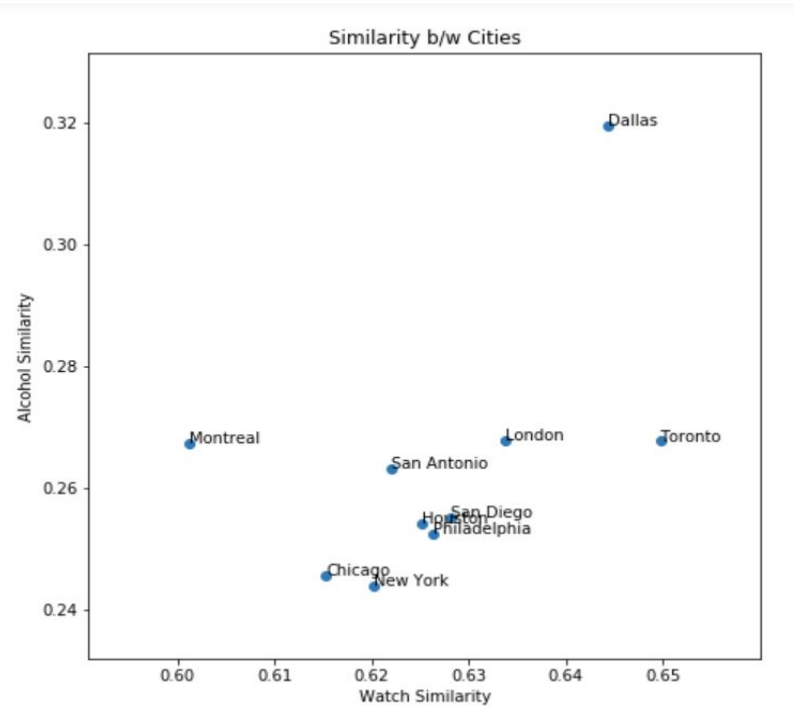
Which Are The Similar Cities . . . ?



Which Are The Similar Cities . . . ?



Which Are The Similar Cities . . . ?





Sentiment Analysis

Keywords Analysis

Conclusion

Insights & Recommendations



London is the most attractive market based on passion and market size - the NFL should target this location for its next team location



Jacksonville is the least attractive market of any location with a team and could be a candidate for moving to London (interestingly Jacksonville has played in London each year from 2013 and treats these games as 'home' matches)



Toronto is the second most attractive market based on passion and market size - the NFL should begin to hold games in Toronto to prepare it for further possible expansions



Conversations in these locations about “watchman” and “high spirits” **map to key revenue streams** of TV deals, sponsorships and concessions



Betting is legal and a popular topic in these markets - this presents **opportunities for increased viewership and new revenue streams**¹

1) <https://www.casino.org/news/sports-betting-will-attract-millennials-increase-fan-engagement/#:~:targetText=A%20new%20study%20concludes%20that,hurt%20illegal%20underground%20gambling%20rings.>

Questions?

