Chicken-Joint Project Proposal

Team Members, Majors

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Project Description

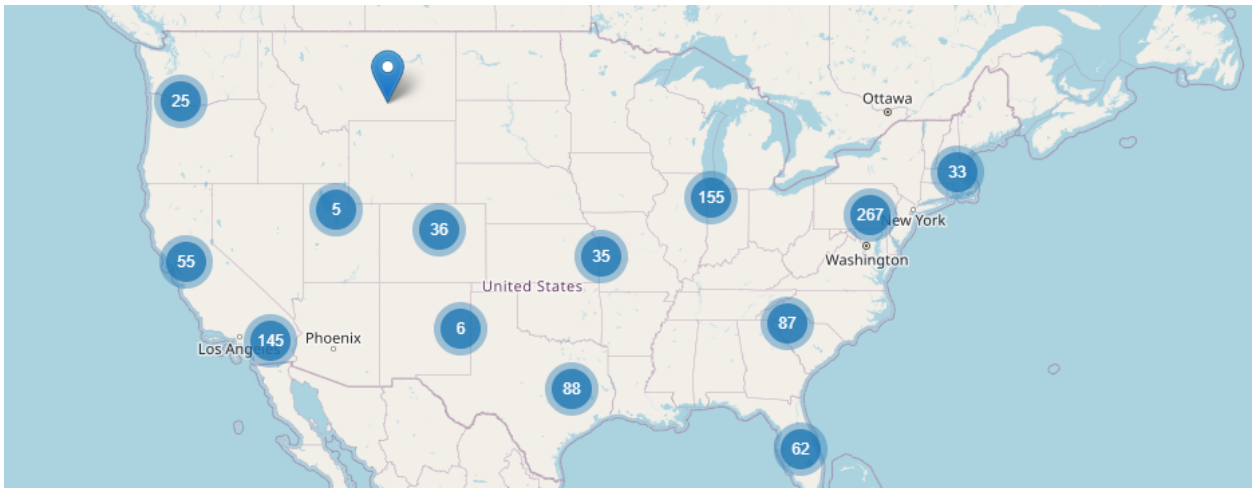
We want to leverage the SafeGraph, Census and Weather data to create an application that predicts the best location to place a Fast Food Chicken Restaurant/Franchise.

Business Needs / Value

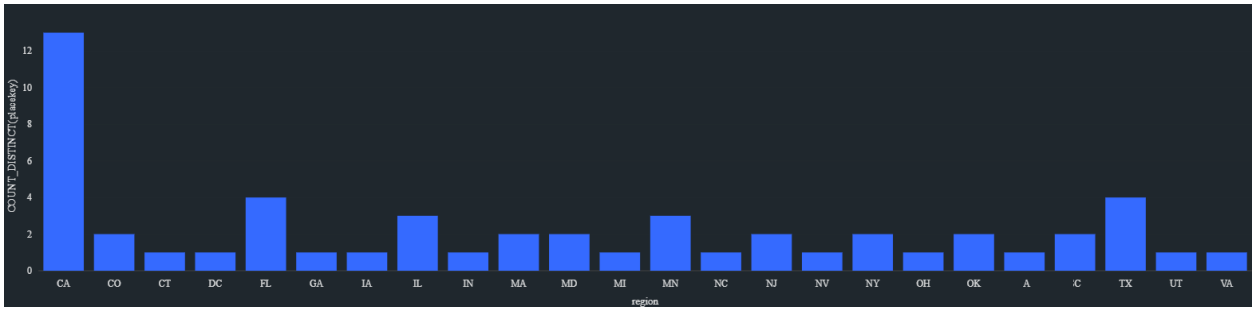
Fast food chicken franchises have a market share of $55.6 billion, with an 8.4% annualized market size growth since 2018. (source) In order to keep growing, these franchises will need to open new brick-and-mortar locations. Our model will be able to predict what census tracts new locations should be opened up in. This will allow us to sell our information to any chicken franchise who wants to expand.

SafeGraph Data Explanation and Visualizations

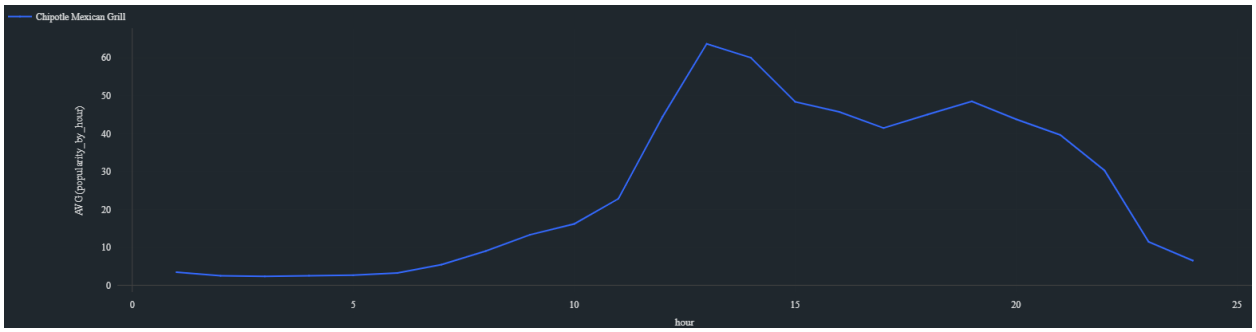
We are able to use data bricks to get the latitude and longitude of the current locations and we can put them on a map.



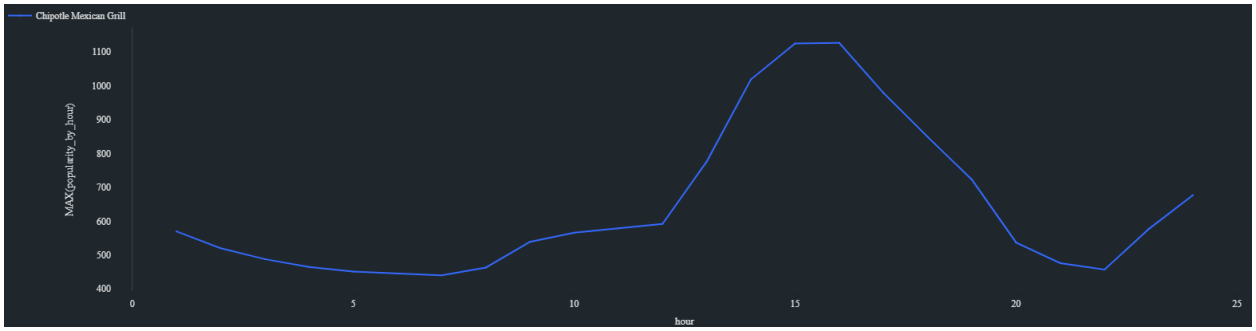
We are also able to break it down by state, the number of locations in each of them.



This a visualization of the average number of all visitors per hour for all locations. We can also pull the total sum of visitors, but the graph looks extremely similar.

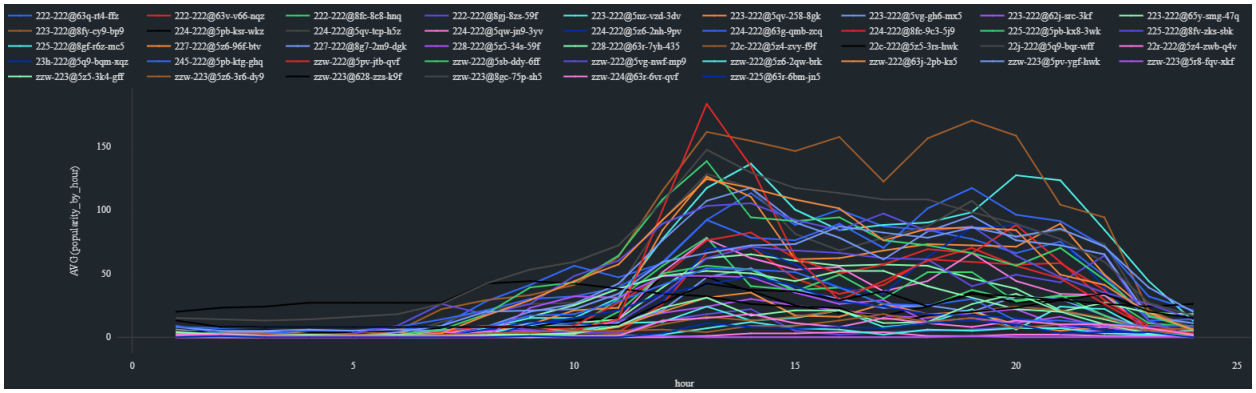


This a visualization of the max of all visitors per hour for all locations.



All of these graphs are useful for us to analyze what kind of trends the chipotle locations have and we are able to use similar graphs to see all other types of companies so that is why it is important.

This graph shows the visitor count for every single location



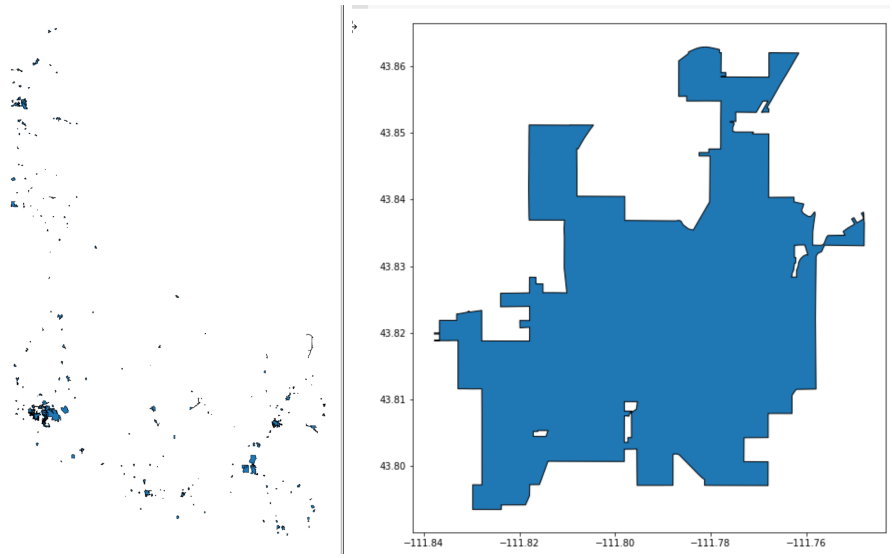
Additional Data We Will Leverage

Additionally, we will leverage Census Tract Shapefiles for each state. These shape files give us the geospatial data of each census tract, in a GeoDataFrame, below is an example of Idaho.

```
idaho = gpd.read_file("/tl_2019_16_place.shp")
idaho.head()
```

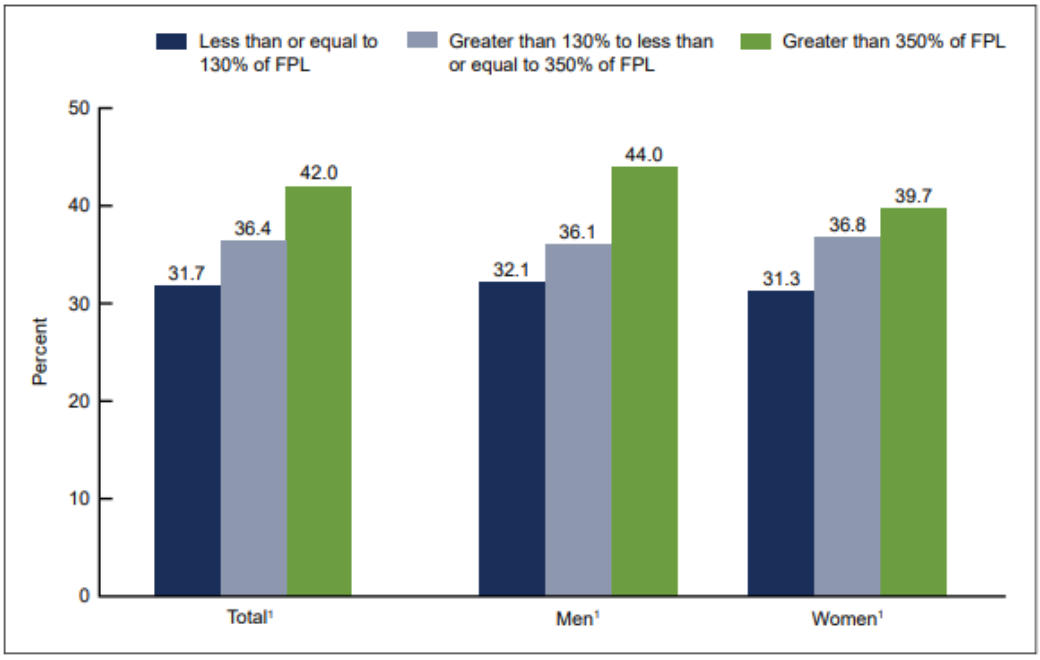
	STATEFP	PLACEFP	PLACENS	GEOID	NAME	NAMELSAD	LSAD	CLASSFP	PCICBSA	PCINECTA	MTFCC	FUNCSTAT	ALAND	AWATER	INTPTLAT	INTPTLON	geometry
0	16	01000	02409677	1601000	Albion	Albion city	25	C1	N	N	G4110	A	1220574	0	+42.4098076	-113.5804379	POLYGON ((-113.58871 42.41490, -113.58870 42.4...
1	16	20980	02410308	1620980	Declo	Declo city	25	C1	N	N	G4110	A	716839	0	+42.5195992	-113.6287318	POLYGON ((-113.63798 42.51948, -113.63798 42.5...
2	16	58330	02411295	1658330	Oakley	Oakley city	25	C1	N	N	G4110	A	11973102	4001	+42.2420603	-113.8830582	POLYGON ((-113.90391 42.24678, -113.90152 42.2...
3	16	52030	02411075	1652030	Menan	Menan city	25	C1	N	N	G4110	A	2673003	0	+43.7217913	-111.9923527	POLYGON ((-112.00538 43.72250, -112.00508 43.7...
4	16	55450	02411190	1655450	Mud Lake	Mud Lake city	25	C1	N	N	G4110	A	368820	0	+43.8428551	-112.4795039	POLYGON ((-112.48601 43.84129, -112.48594 43.8...

These census tracts can be mapped, here is the map for Idaho, beside the mapped census information for Rexburg.



This information can be leveraged by layering with current restaurant locations, mapping that data to a specific census tract for model training.

We will also support our model with data from the CDC's various research projects into fast food and how much it is eaten and how much people typically spend at restaurants. Here's an example graph from the CDC about what percentage of calories Americans get from fast food on any given day.



Source Graph
Source Data
FPL = Federal Poverty Level

Successful Product Description

In layman terms, our model will have an input of current chicken restaurants location data, census data, and spatial data for census tracts, and output of predicted number of average daily customers for each census tract. After filtering this data we will have the best census tracts that you should investigate as a possible location for your next building based on how many customers are predicted to visit daily.