Restaurants That Sell Tacos and Burritos: Or how I learned to love ArcPro and Python, and not want to throw my computer out the window.

Introduction:

After much deliberation and discussion I've chosen to focus on a hypothetical of optimizing ROI for a customer inquiring about the possibility of opening a restaurant. Via spatial analysis of the desired market they wish to compete in, I've selected a city in which I believe would be a good choice for their initial investment. I conducted my analysis via investigation of the provided data in an attempt to make a correspondence to other publically available data sets, and finalized my findings by means of visualization.

Methods of Analysis:

The investigation of the initial data set began with examining it's contents for viability. The first observation in which I made when examining the data set was the attached spatial data in the form of latitude and longitude that the majority of the data points contained. Of the initial 77260 data points, 55636 contained direct spatial data. Given that this amounts to 72% of the initial data set size, I proceeded to trim the data set of data points that lacked direct spatial data with Python Pandas. Had this hypothetical scenario not been under significant time restraint, an investigation into the uses of the geopy python client for retaining some of the original data would be highly encouraged due to it's supposed ability of geocoding address. Further cleaning of the initial data set was conducted by the removal of duplicate data entries based on any occurance of duplicate latitude and longitude coordinates.

With the cleaning stage completed, I began the visualization stage of the project. Via the use of ArgPro I converted the modified csv file into a shapefile, and "clipped" the shape file to only visualize data within the bounds of the borders of Texas. I then converted the representation of the shape file from being a strictly point based representation to a heatmap based representation. I also overlaid a public population density dataset for each county in Texas underneath the heatmap layer.

Derived from the initial visualization, I suggest that my client should consider College Station for their business venture given its high population density, and the moderate occurrence of Tacos or Burritos on restaurant menus in the city. I suggest this over entering a market like

Houston due to the likelihood of Houston being at market capacity, and what that would bring in terms of fierce competition. From the standpoint of a beginning business venture, a wise initial investment would be in market that has established a preference for the item to be sold, while not being overly saturated with options.

The final step in the visualization stage was utilizing ArcPro once more, with the focus this time of limiting the heat map coverage to specifically data points within the borders of college station. I then found a public dataset for the major apartments and condominiums in College Station to observe if there was any correlation between the location of the restaurants and their proximity to housing.

Conclusion:

Analysis of the spatial data via ArcMap provides the following useful information:

- All hotspots of Restaurants that list Tacos or Burritos on their menu are within 6,000 feet of an apartment complex.
- The Northern end of town has an established high density of Taco and Burrito selling restaurants, along with the middle of college station

What can be drawn from this information is that it would be wise to advise the customer to set the location of the restaurant within 6000 feet of an apartment complex / residential housing. It also shows a clear trend of a market for restaurants selling burritos and tacos.