COURSERA_CAPSTONE COURSE: DISCOVERING "FOOD DESERTS" OPPORTUNITIES IN CHICAGO BY ALDI

2/7/2020

OVERVIEW

1. Project Background and Description

This Food Desert project demonstrates that there is an potential economic opportunity for a major supermarket food chains to profitably invest in the economically poorer neighborhoods of Chicago to reduce the impacts of Food Deserts in Chicago.

I have chosen ALDI as example of a supermarket that has developed in the food deserts of Chicago since it appears that they have developed a low cost business model that is profitable.

2. Project Scope and Audience

***Scope:** Using Foursquare this project will find the location sites that ALDI can explore in Chicago food deserts currently in Chicago. Using Folium, the project will discover and display where the ALDI supermarkets are currently in Chicago communities. The 'Hardship Index' of each community can referenced as well as the associated average income of the residents of these communities, it can then be shown which of these communities are being served by ALDI and which present the opportunity for further supermarket investment.*

*The **Audience** for this project is the strategy executives of the ALDI Supermarket Chains or their competitors.*

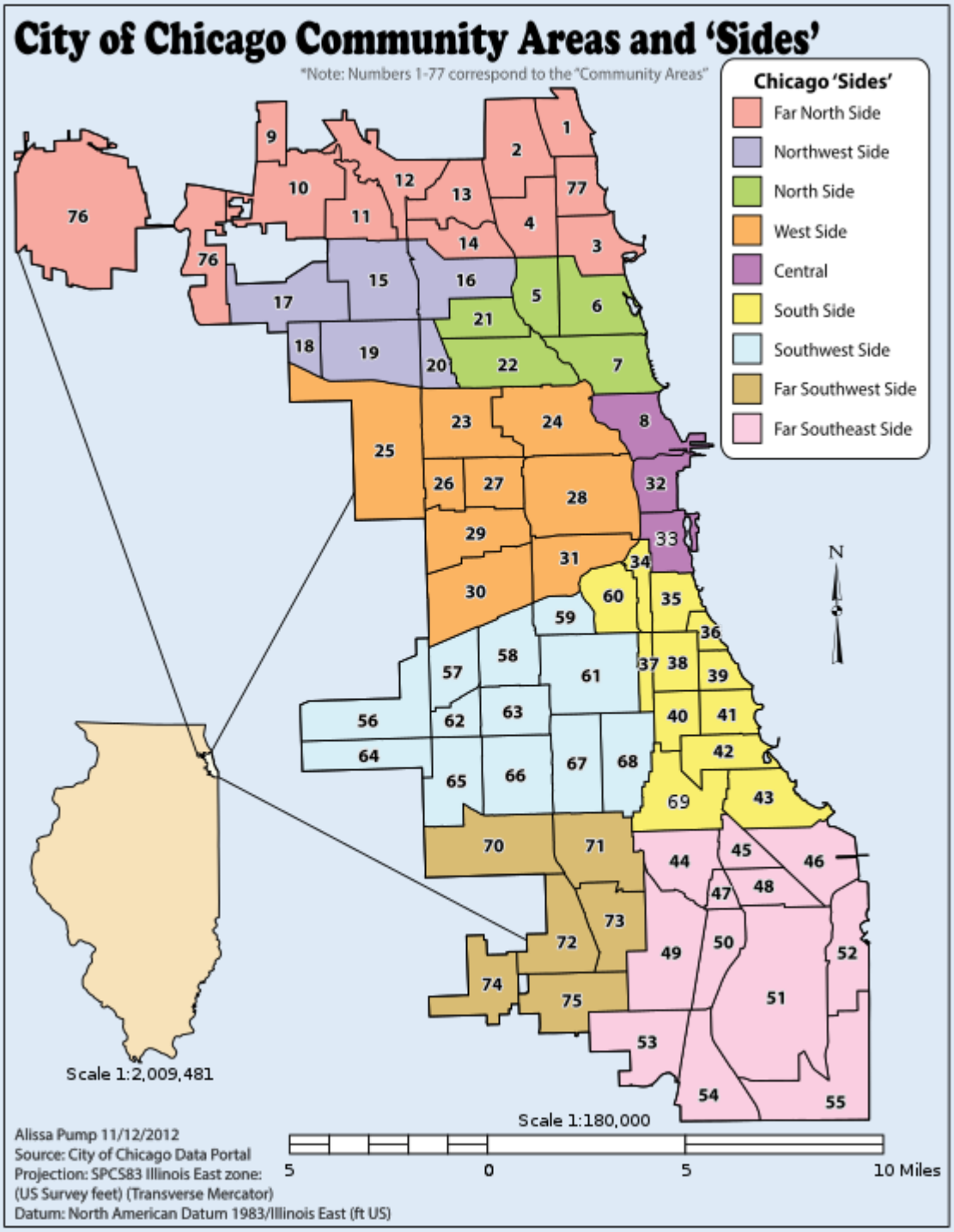
The resulting information will act as a guide to picking the potentially profitable 'Food Deserts' to place a supermarket.

3. Why ALDI

- *ALDI Supermarket Chains were chosen by me for the following reasons*
    - *They have Significant Net Profits due to their strategic choices*

- *They have innovative, low cost technology for offering quality groceries economically*
- *ALDI pays good wages which the neighborhood resident could take advantage of.*

4. A picture of Chicago



Here is a Wikipedia view of Chicago by Alicia Pump. She and the Chicago maps use the term phrase 'Community Areas'. This project will use the term "neighborhood".

5. Getting the shape files of Chicago

In this project we will explore ALDI's expansion into "Food Deserts" in the City of Chicago. The food deserts are based on the 2010 census. *Here is a reference for learning more about Census Tracts.* Since that census ALDI's has placed supermarkets in Chicago neighborhoods that contained food deserts. When an ALDI supermarket is introduced in a food deserts the area is no longer a food desert. By definition, a food desert does not contain a supermarket.

The food desert definition that we will use in this project is from https://www.ers.usda.gov/data-products/food-access-research-atlas/documentation A low-income census tract with at least 500 people, or 33 percent of the population, living more than ½ mile (urban areas) or more than 10 miles (rural areas) from the nearest supermarket, supercenter, or large grocery store. We are concerned only with the urban areas and I extended the distance to .6 of a mile.

To get the Chicago data we need, Chicago provides a website: https://data.cityofchicago.org website. This website has the shape files that are used throughout this project. The first map "shapefile" that we have in the program flow is of Chicago itself: https://data.cityofchicago.org/Facilities-Geographic-Boundaries/Boundaries-City/ewy2-6yfk This shapefile gives us the geometry of the city of Chicago.

Next, we download a key shape for the project namely what I call the Neighborhood Map in the program and project but is technically a Community Area in the Chicago Data Portal: https://data.cityofchicago.org/Facilities-Geographic-Boundaries/Boundaries-Community-Areas-current-/cauq-8yn6 This Neighborhood Map provides the geometry for each Chicago neighborhood.

I also provide the neighborhood names using representative_point; crediting: Labeling Technique from https://stackoverflow.com/questions/38899190/geopandas-label-polygons

Next, define the centroid of each neighborhood. This will define one point as the reference point for the neighborhood

6. Bring in the Food Access Data

Our next step is to get the food desert census tracts that exist in Chicago neighborhoods. Food Access Information can be found here: food-access-research-atlas. From here download the food access file: https://www.ers.usda.gov/webdocs/DataFiles/80591/DataDownload2015.xlsx?v=0 This file contains the low income/low food access census tracts for the entire United States by state, 72865 entries. Therefore, I extracted the state of Illinois and then extracted Cook County, where Chicago is. Cook County has 1315 entries. This excel file is part of the repository.

Then we intersect (inner join) the geospatial map of Chicago neighborhoods with Cook County census food access file in that there are additional cities in Cook County. This identifies only Chicago neighborhoods and further identifies the neighborhoods that have food deserts.

7. Where are the ALDI's: (Let us find Chicago's ALDI)

I hand researched the individual ALDI's in Chicago. I looked up each individual ALDI and obtained its geocodes from Google. With this information I built the Chicago_ALDI_goecodes2.csv file that is part of this github.

There are 34 ALDI's. These are located on the plotted map as green dots.

A final plotted map put it all together Chicago (black lines), census tracts (blue lines), food deserts (orange blocks), ALDI's (green dots).

A summary follows:

1. The address of all the ALDI's
2. The distance from each ALDI to the centroid of the food desert in each neighborhood
    a. ALDI's within a ½ of the centroid of what was formerly a food desert (7)
    b. ALDI's outside of a ½ mile range (some of these are counted twice since they are counted by a distance from more than one food desert)

8. Foursquare

The Foursquare is used to find the "TIPS". We have all the information that Foursquare "venue" offers except the "ID". We need the ID to get the "TIPS". Our next step is to get the TIPS, we got 6 TIPS one unfortunately was a complaint. However, this is something that ALDI can fix.

9. MAPS

There are three folium maps. The first map is only an OpenStreetMap of Chicago. The next two maps are with annotation. In the first map is of the existing ALDI's in the food desert, the annotation gives the formatted address and the tip. Just click on the blue Marker.

In the second map the annotation is the addresses of the proposed ALDI.