

Site selection for Starbucks by using GIS

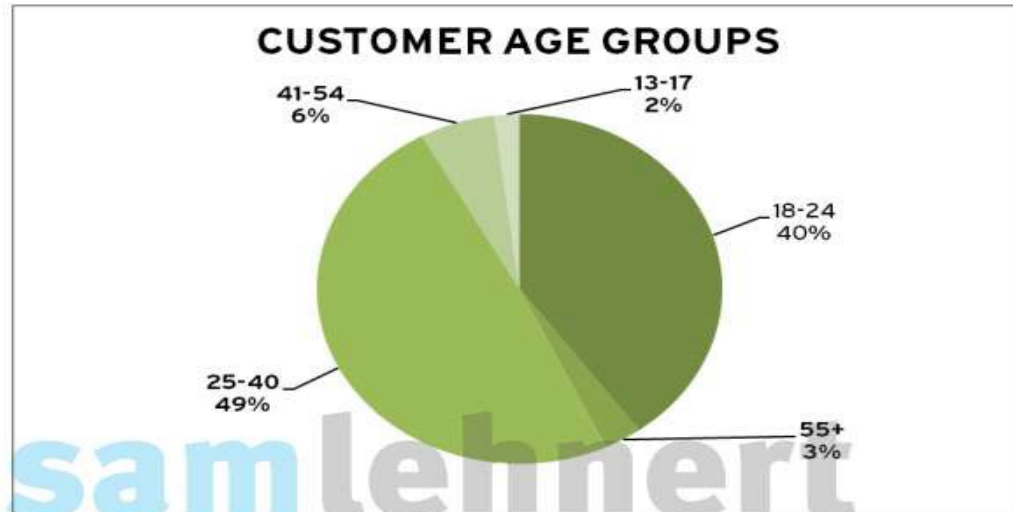
By Dailin Zhou

Back ground: Defining problem

Coffee is the second highest traded commodity and the largest valuable US food import (Global Exchange, n.d.). As the lead of the coffee industry, Starbucks is highly applauded for its site-selection. One can easily find articles or even books share actionable insights into how Starbucks gained market dominance through finding the best real estate locations. While admitting Starbucks' genius, I can't help to question its site selection in Monterey Park, the city I live. Based upon my personal experience, it's very inconvenient for me to grab one latte. There is only one Starbucks within Monterey Park and stores are limited within the entire Chinatown, nine shops within four populated cities. As for China town, I am referring to Monterey Park, Alhambra, Rosemead and San Gabriel as a whole. Most of the people in these four geographically connected cities are Chinese. Does this area really have limited market?

Though Green tea has long been a tradition and popular beverage among Chinese, the favor of coffee will not necessarily be diminished due to this reason. The fast expansion of Starbucks in China can well explain that. With currently 570 stores in China, the coffee giant aim to raise the number up to 1500 by 2015, making China its 2nd biggest market. Evidently Chinese people start to embrace the coffee culture. Since drinking culture no longer remains an issue, let us look at Starbucks' target group.

Summarize from several online articles and two reports *Understanding Starbucks* (Coriolis Research) and *Starbucks coffee 2011-2013 advertising & marketing plan*, I would like to say, as a brand marketing its image of selling high quality coffee, Starbucks largely target college students, and people with income that is above average. The core target age group is people from 18-45.



Source: Internal Research June 2010

Source: Starbucks coffee 2011-2013 advertising & marketing plan

Starbucks' site selection strategy is to cluster stores in high-traffic, high-visibility locations in each of its target markets in order to realize operating and marketing efficiencies and enhance brand awareness. The market segmentation has the largest percentage of coffee drinker and purchasing power. That may explain why there are more stores in more affluent neighborhood. Yet there is one thing Starbucks should consider, on the issue of tasty food and beverage, Chinese people are more than willing to pay for the bills. As I yelp, there are 12 milk tea shops/stations within Monterey Park and the average price of one milk tea is 4 dollars. That is more than a Venti cup of latte. And milk tea shops are usually packed with people from noon to midnight. Even if these four cities are not affluent as nearby Pasadena, the purchasing power can still meet Starbucks' need. Will milk tea rival with coffee and take its market share? Since they are two very different drinks and most milk tea shop don't sell coffee or good coffee, I am not positive a coffee drinker will choose these milk tea shops for coffee. With all possible concerns disappear, I would like to make an analysis of Starbucks' current site selection within Chinatown and making suggestion for the potential site following its location strategy.

Methodology

This project use GIS to assist site selection for Starbucks. Instead of looking at those confusing numbers and Excels, the use of GIS visualize all these data like store locations, business cluster locations on a map. It can also integrate market segment modeling reflecting physiographic characters and demographic features. Presume the market segmentation is sound and comprehensive and all other outer environmental factors (like public policies, the change in economy) not taking into account, GIS

can most effectively figure out areas for potential business. Actually, Starbucks is using Esri's Business Analyst Online to address a need for better efficiency by Store Development Managers (SDM).

Modeling for Starbucks and collecting data

Before going for data, there should be comprehensive data types we need to collect. Under the guidance of Starbucks's site strategy and marketing segmentation, I will list these as below

- Locations of current Starbucks shops within Monterey Park, Alhambra, and San Gabriel

This dataset can help locate the existing Starbucks stores and help decision maker have a general idea of the store density at a quick look. It also avoids choosing the new site nearby an existing store. I would suggest that's at least within 7-8mins' walking distance. If we presume the average walking speed is 3.2mile/hour. The distance will be 0.4 miles. And two stores can locate in the same business clusters when this one covers a large area (like South Coast Plaza).

Data set source: Yelp

Comparing store locations provided by the official site's locator or Google map, Yelp also provides zip codes which would make Geocoding more precisely.

Results: 9 stores in total

- Location of its competitors

According to Pittman (2006) "Site selection is both an art and a science, and location decisions are usually made only after a careful analysis of data sets and sophisticated financial and risk modeling". The repercussions can be avoided, reduced or eliminated by analyzing location costs, benefits, and return on investment (Pittman). Under this assumption, it is not ideal to launch a store nearby a competitor's store.

Referring to Starbucks' competitor in North America, they are mainly

1. Dunkin's donut
2. The coffee bean and tea leafs
3. Peet's coffee
4. Einstein Bros. Bagels

Dataset source: Yelp

Results: 0

With its headquarter in Los Angeles, even The coffee bean and tea leaf launches no shop within this area. I don't need to bring this factor into our analysis.

- Location of College

College student is the main target group of Starbucks. The free wifi and easy atmosphere attract young college students to spend several hours there doing school work with a cup of coffee. It also attracts early birds to grab a cup of coffee for morning classes and students buried into school works for refreshment.

Dataset source: Yelp

Besides the zip code it provides, reviews and homepage links help me define if the institution is a small language school/ studio or well facilitated educational institution offering a wide variety of degrees in Bachelor's, Master's and PhD. The colleges chosen here are regular college providing comprehensive courses, mostly community college.

Results: 4

- Location of major business cluster

Starbucks always cluster stores in high-traffic, high-visibility locations. Within China town, there are restaurants along the main streets and many food courts. Yet the most high density areas are around major supermarkets. It may take more than 20 minutes to find a parking space during weekend and one can definitely not miss the Starbucks logo when driving around the plaza. These supermarkets are usually located in business clusters. Some are around AMC.

Dataset source: Yelp

Results: 9

These choices are made based upon my personal experience living in this area.

- Population and Age group within these four city

Since Starbucks' target age group fall into 18-45. Finding where those people live within China town can facilitate site selection. Apparently store should be launch in areas with high density of the target age group.

Date source: US census

Since age groups provided by US census are divided by a 5 years' gap: 15-19, 20-24, 25-29, 30-34, 35-39, 40-44 etc. For the convenience of calculation and mapping, I add up the number of people from 20 to 44 making it match Starbucks' demographic requirement.

Maps/Shapefiles

Source: US census –Tiger shapefile

- Census tract shapefile – Los Angeles county , California

This map is used to combine with data of population from 20-44 as I mentioned

above for reflecting demographic character.

- Los Angeles county city boundary
Source: Los Angeles county GIS data portal
This shapefile draws boundary of the county's 88 incorporated cities and unincorporated areas. It makes the selected area more clear to see with boundary
- All streets map , Los Angeles county , California
Source: US census –Tiger shapefile
This shapefile includes all streets within LA County, when added as a layer above the city boundary layer; it can show location of the coffee stores, business clusters and colleges more precisely. The streets here are not labeled for a clear look. This data was planned to be used as address locator since the existing one -10.0 US street code service (ArcGIS Online) does a better work in locating, the latter one was used.

Map analysis

With all data collected, we now visualize them on a map by ArcGIS. Since all data downloaded from US census are county based, the initial map is county based. We then zoom to the areas we need for clear view.

- The first layer we added here is city boundary layer. As we can see, the four cities: San Gabriel, Monterey Park, Alhambra and Rosemead are selected with name labeled and bold city boundaries.
- Above this layer is census tract layer showing population of people aged form 20 -44. The population breaks into 5 classes with different color representing different density (refer picture 1).The highest density area within Chinatown fall into blue zone and the 2nd highest is in green color. To follow the criteria of high density, I would like to set the new store in blue and green zone with the blue takes priority.
- On top of these layer I place the all street layers featuring roads

Exam existing stores

After geocoding addresses of Starbucks' stores, business clusters and colleges, one can see how these places spread out on a map and how reasonable these stores are located. According to Starbuck's principle of setting stores in high density areas I set buffer of 7-8 minutes' walking distance which is around 0.4 miles of colleges and 10 minutes' walking distance (0.5 mile) butter for business cluster. We assume these are acceptable walking distance if one is carrying activities in these areas. It turns out 7 out of 9 stores all fall into the buffer zone whether it is a college buffer zone or that is

of a business cluster. The two stores that are not fall into the buffer zone are both in the city of Alhambra and all locate in green zone what we consider populated area. One of these two shops locates at the intersection of two main streets and provides drive through service. We also make a 0.5 miles buffer zone around current Starbuck stores. It is not suggested to launch a new shop within these areas for avoiding resource waste. Two closely located stores will cause competition, take each other's business and reduce profits. Luckily there is no such store fall into any other's buffer zone.

Suggested area for new stores

Item number	Item name	Points
1	Within Overlap areas of two business cluster buffer area	4
2	Within College buffer area	2
3	Within one Business cluster buffer area	2
4	Within Blue zone buffer area	1
5	Within Green zone buffer area	0.5
6	Within the exiting Starbuck buffer zone	-2

The above listed items are guidance for picking up suitable areas. Value for each item is listed in the Points column. An area meet either the item will get corresponding points and all points will be added up for a final score. Obviously, the higher the score, the better the area will be.

Results:

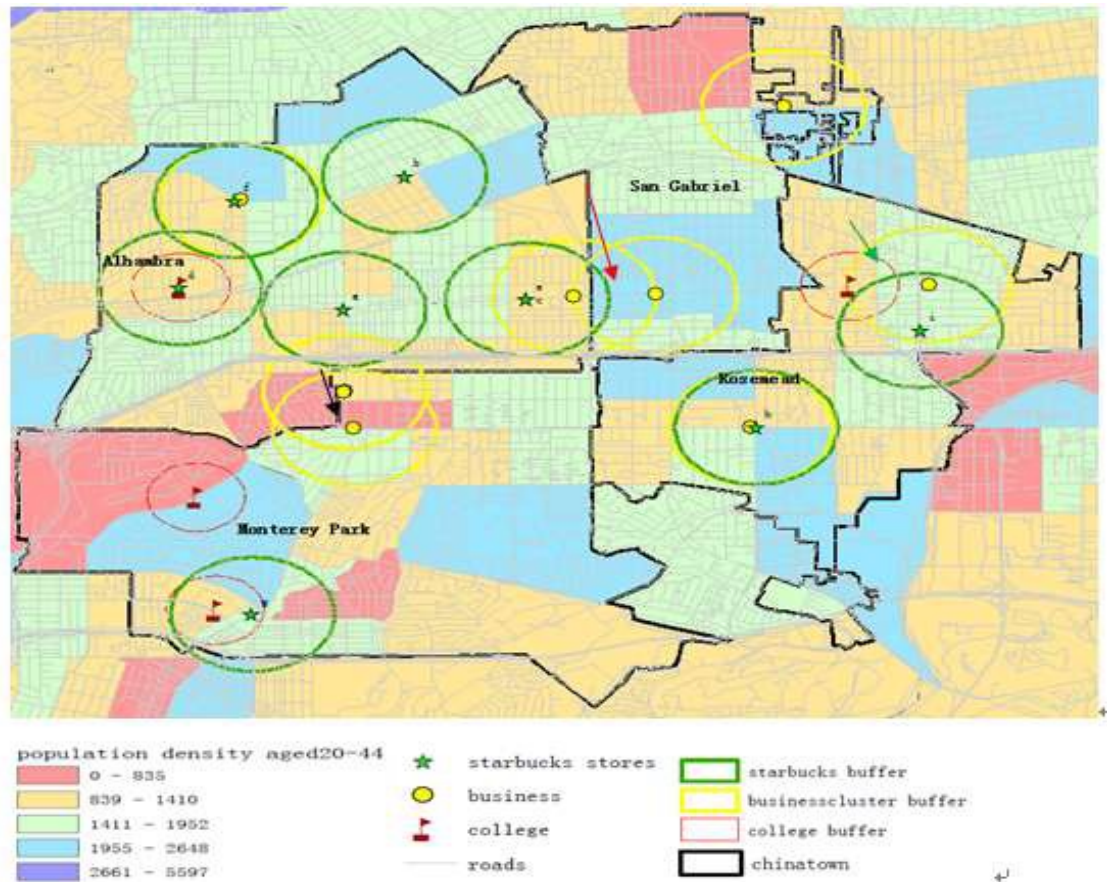
Areas	Item meet	Sore	Ranking
A	1, 5	4.5+1	1
B	1,4	5	2
C	2,3,5	4.5	3

A: green overlapping zone between two business cluster buffer, pointed by the black arrow

B: blue overlapping zone between two business cluster and not including store C's buffer, pointed by the red arrow

C: green overlapping zone between a college buffer and a business buffer, not including store i's buffer zone, point by the green arrow

For a clear view please refer to the PDF version of the site selection map.



Following the model, I list the top three areas as above. In considering the coffee shop density, I added one extra point for place A. As we can see, though both area B and C are outside the existing coffee shops' buffer, they are very close to the nearby coffee shop. Place A get far more distance away from the only Starbucks in Monterey Park or any other coffee shop nearby. In the final analysis, I would recommend area A the most optimal place for launching a new coffee store within Chinatown.

Conclusion

Drawn from the analysis, 7 out of 9 current stores are located within our defined high-density area and the rest two stores are in the comparably high density area. Following the same strategy, I choose area A the optimal place for investing a new coffee shop.

Within this analysis, though the finding matches our hypothesis, only 3 variables are involved. Without data limitation, I will also include the population density of the F1 Chinese students. I will consider them as the perfect group fall into Starbucks' market segmentation. Apart from choosing an area near school, most of this group will choose to live in Chinatown for convenience of daily life. If the percentage of students who put living convenience ahead of transportation convenience is high this

could change or help us narrow down the optimal area. Of course, a better data will be the spending pattern (like how much are they willing to pay for a cup of coffee on a weekly basis) of people living within Chinatown. It does a more precise job than considering the age variable alone.

Though with limitation, I will consider this analysis useful for the first stage of site selection. The site selection will be more accurate and precise with more useful variable and data used.