

**Feasibility of Online Grocery Shopping and Delivery
in Manhattan:
A Geospatial Marketing Analysis**

By

SARAH N. DOW

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Introduction

Whether one enjoys it or not, shopping for food is a vital part of our lives. Going to the supermarket whether to pick up the necessities such as bread, milk, and eggs, or pushing a shopping cart through aisles containing a wide and overwhelming spectrum of produce and goods, is a stressful task that takes preparation, planning, and time out of our busy schedules, even if it is just once a week. The retailing of food has changed in many ways since the early 1800's, molded by the continuously changing lifestyles and the advancement of technology. The most recent and growing trend is electronic commerce.

The internet has eliminated the need for consumers to travel to stores to purchase goods. The food industry has embraced this movement and is taking advantage of this new concept of online grocery shopping and delivery. Although everyone eats and almost everyone shops online, this concept is most viable in an area containing a working population and families who earn above the average income, the population that has ample expendable income allocated for food, and those who value time and convenience. This method also appeals to consumers who have difficulty traveling to a grocery store, or who face barriers such as lack of transportation or difficulty carrying bags of groceries from the store to the home. Online grocery shopping appeals to various market segments, but spatial factors such as warehousing and transportation options influence specific adopter groups and the likelihood of innovation adoption.

History of Grocery Stores

By necessity, all household units shop for food to sustain themselves. Grocery shopping has changed shape over time. With the emergence of new technology such as refrigeration, registers, inventory equipment, and the internet, the ability to shop has become easier, faster, and certainly more efficient. Lifestyles have dramatically changed as a result of the changes in technology. The grocery store has a long history and is constantly changing as new forms of food retailing appear and become part of everyday life. The earliest form of grocery shopping was the public market. They were the main food markets for the nation, much longer than any other establishment for food retailing in U.S. history. For about three hundred years, many cities and towns depended on the public market as their main retail food source. Butcher, farmers and other merchants sold their goods on the street without buildings. (Mayo)

For example, New York City's first marketplace was located near Broadway Street. In 1856, the city's first open public market was located near the shore in what is presently Battery Park. Market houses were needed to replace the open market. Permanent structures enabled butchers, farmers and customers to do business regularly in any type of weather. Modified markets soon replaced market houses. The new market area was noticeably larger with floor plans that could be rearranged as needed. The most important advancement in building technology was refrigeration. Meat, fish, and dairy products needed to be refrigerated to prolong freshness (Mayo). New York City's Grand Street Market contained an ice house as early as 1820, yet, refrigeration in public markets was rare. By 1890, Mechanical refrigeration which used chilled brine or liquid ammonia enabled all merchants who rented food stalls to keep their products cold and to transport perishable foods over longer distances. By the mid 1800's, grocery stores started to offer a wider variety of goods. Grocery stores were bigger, had larger inventory,

and had higher rents with a larger floor area than market stalls. Grocery stores offered a new service: home delivery. (Marion)

Site location became a vital issue. Market analysts recommended areas near department stores where the target customer would benefit by reducing their shopping trips and save time. Competition for urban land was increasing and suburban growth where public markets would not be viable became a barrier. The transformation of general stores to grocery stores was a result of changes in the economy and settlement patterns. (Mayo)

Grocery shopping is a tradition that began in the early 1900's and became more prominent in the 1900's as cities grew larger. Large grocery stores offered specialty items such as sugar, chocolate, cheese, coffee, tea, olive oil, and wine, all non perishable and imported items. In 1930, Michael Cullen introduced one stop shopping and opened the nation's first self service grocery store, Piggly Wiggly, in Memphis Tennessee. Shortly after Piggly Wiggly, The Great Atlantic and Pacific Tea Company, more commonly known as A&P, was established in Queens, New York, and spread Cullen's concept. A&P became the fifth largest corporation in America (History of Grocer Stores, CBS). Supermarkets became an essential part of life for generations; people could not imagine life without supermarkets. Times have changed; today, people shop at discount grocery stores and low price mega stores such as Target, Costco, and Walmart. It has become a growing trend that threatens the traditional grocery store. Over the last two decades, about 10,000 supermarkets claimed bankruptcy. "Today's customers aren't satisfied with just the convenience of one stop shopping, they demand super saving and super service" (Alfano). Traditional grocery stores must create excitement and attract customers which Whole Foods grocery store was able to accomplish. Whole Foods tries to re-educate people about the art of cooking and preparing food. At Whole Foods, you get what you pay for; there is an astonishing

selection but a bit on the pricey side (History of Grocery Stores, CBS). Surviving grocery chains are taking notions from high and low end competitors. Money saving customers are attracted to "big box" discounters. Mass in mass marketing is a thing of the past. "They are getting better prices at Walmart, they are getting better offerings because of people like Whole Foods. The world of retailing is always evolving (Alfano)". According to Alfano, Americans average 2.3 trips to the supermarket each week, spending \$24.64 a visit.

Variables that Affect Consumer Grocery Shopping Behavior and Experience

Grocery shopping is an essential and routine type of customer behavior. The grocery shopping experience is characterized by buying goals that must be achieved through the processing of products, brands, and point-of-purchase information, and repetition at regular time intervals, such as once a week. These experiences create a unique context in which purchase intentions and outcomes often differ depending on a variety of situational factors. (Iyer, Park, and Smith)

Store knowledge or the information consumers have about a specific store's layout and aisle configurations, including locations of products and brands, based on familiarity and repetitive shopping experiences in that store and time available for shopping (consumers' perceptions of the time required to find and purchase goods relative to the actual time available to find and purchase goods) have an impact on shopping behaviors. Failure to make intended purchases, impulse buying, brand and product class switching, and the quantity of goods increase time spent in a grocery store and require more decision making, causing grocery shopping to become a stressful task. Information processing activities that reconcile these relationships are different across shopping conditions (Iyer, Park and Smith). Research on in-store customer behavior has mainly focused on the effects of in-store display arrangements on such purchase outcomes as sales and brand switching. Unplanned or impulse buying can result from shelf displays and configuration, the type of store and product, the amount and frequency of purchase, and consumer demographic characteristics. Consumers are stressed by grocery shopping because of time pressure, especially if the consumer is not familiar with the layout of the store. This pressure results in the failure to make intended purchases of non staple items that are less frequently bought than staple items such as milk and bread. Time pressure may limit the time

required for some customers to properly process in-store product information such as sales, new products, ingredients, etc. Time pressure tends to delay retrieval of information that is not well rehearsed but that, if retrieved, may cause changes in the distinctness of previously unrecognized needs such as food and product at home, future family consumption needs, etc. (Iyer, Park, and Smith)

Gender and Consumption in 19th Century New York City and Advancement in the Internet

There was rapid expansion of New York's retail district in the 19th century which reflected the growing economy. The economy was shaped by the shopping habits of the middle class, particularly women. Producers and retailers are consumer oriented by marketing certain goods and services to the demands of the specific groups of consumers.

Women earned about 76 percent of what men earn (U.S. Census Bureau) or about \$30,724 versus \$40,668 as a median income. Despite a significant income gap between the genders, but women control three-quarters of family finances. The International Dairy • Deli • Bakery Association's report illustrates the influence women have on the grocery industry with sales of food and beverages made for women increasing 80 percent annually between 2000 and 2004, totaling \$4.6 billion by 2004. "Women will deliberate more about the decision. They take more care in shopping and want to make wise decisions," said Sharon Franke, director food appliances at Good Housekeeping Magazine. "Part of the appeal is being able to get everything in one place. We know from our readers that time management and clutter are the two things that come up over and over as problems".

The internet is a great resource for women to research and shop for all categories of goods from groceries to kitchen appliances and furniture. The Internet also saves invaluable time. A December 2004 ACNielsen/NetRating study found that the average Internet-savvy consumer spent 51.5 hours per month online, at home, or at work. For working mothers, it is the convenience and time-saving measure of shopping at work or late at night after the kids are in bed that makes this form of shopping so essential. "As broadband access picks up at home, women will be shopping more online at home. The slowness of dial-up was an impediment. And

now the convenience of broadband is becoming overwhelming," Franke said. "Without a doubt, it is the working woman who will gravitate to online shopping where they can shop in the middle of the night or at work. It is the stay-at-home mom or the older woman who are likely to shop during the day or going store to store." (Moran)

The advancement of information and communication technology had a large impact on retailing and consumption. Electronic commerce, home based consumption changed retail completely. Retailing has changed radically since the 1950's due to rising incomes and increasing mobility. The expansion and advancement of information and communication technology that emerged in the late 1990's changed the economy. "One of the main effects of e-commerce is to create increasingly frequent and rapid direct interaction between businesses and other businesses and consumers, leading to an increased emphasis on connectivity, speed and consumer service (Cumbers and Mackinnon, 187)". The internet eliminates the need for the connection between buyers and sellers. Electronic technology transformed the structure of markets and created opportunities for new or small firms. A new means of shopping is available to consumers and shopping no longer needs to be a physical time-consuming task.

Retail Location is Not Relevant and Does Not Fit the Model of Electronic Consumption at Home

The Internet has radically changed the way consumers shop. Online business has spurred a revolution. The concept of e-commerce is about using the internet to do business better and faster. Customers have controlled access to computer systems and are able serve themselves. Shopping websites and E-commerce have no need for location analysis for a specific site. However, many of the demographic variables used for location analysis and site location must be evaluated by an online retailer to find the target customer and target region. In both regular commerce and e-commerce you need to find a way to attract customers to your place of business. Marketing strategy, advertising and word of mouth draws people into the firm. (Rietbergen and Weltevreden)

In order to do business, orders are taken and payments are processed. In a retail store there are no orders. Customers simply find the products they want, get in a line at the register, and pay the cashier. In e-commerce, orders have to be placed and items shipped. Orders are handled through interactive, online forms. Money is another issue easily handled in traditional commerce. Customers in a retail store pay by check, cash, or credit or debit cards. Online customers cannot pay by cash or check, only through electronic means. Also, there are issues of security that surround online payment that do not come into play in the traditional retail store. Online transactions are processed through secure electronic connections and special merchant accounts for accepting payment. Once payment is processed, delivery of the product must take place. Shopping in traditional stores is as easy as putting the item in a bag and handing it over to the customer. Shopping in the world of e-commerce is more difficult, requiring shipping and transportation similar to catalog and mail order businesses. For businesses that integrate e-

commerce into their existing business plan, fulfillment is as easy as hiring an extra employee to ship online orders. In Internet startup businesses, fulfillment must often be outsourced to a facility that can handle order processing and shipping in a more timely and professional manner.

(Definition of E-commerce).

Evolution of Online Grocery Shopping/Delivery

Supermarkets generally have strong, steady sales, even during times of recession. More people today are eating at home, and are traveling less due to the current economic situation that requires consumers to keep a close watch of their expenses. The range of a good is the maximum distance a consumer is willing to travel to purchase a good or service. Many people would prefer to travel a shorter distance to shop for groceries and non specialty items to save expenses on transportation and gas. Local home delivery for a variety of products particularly milk, newspapers, hot food and organic vegetables exist in many cities and eliminates the customer's need to leave the house to buy basic goods that are purchased often. (Rietbergen and Weltevreden)

Online grocery shopping proved to be a failure when the last of the big internet grocery shopping service, Webvan closed in 2001. In 2003, bigger grocery chains brought this feature back to life. Companies such as Albertson's, Ahold USA, Safeway and other grocery chains took a more cautious approach to the online market. Webvan made the mistake of assuming that a great amount of customers would quickly adopt. The company invested heavily in warehouses, transportation fleets and marketing but overestimated the number of customers. There were not enough orders of goods flowing through the system to make up the carrying costs of the equipment and buildings. The second wave of internet grocers involves the traditional chains avoiding the mistake Webvan made by using their stores as the warehouses. (Tedeschi)

Through online shopping, customers register personal information on the site such as their frequent shopper cards and are shown lists of items they have recently bought, to speed selection of the basics. Prices offered on the websites match those in the stores. The customer can view a schedule of delivery times and choose the day and time they want their groceries

delivered. Peapod, an online grocery service, uses Stop & Shop as its distribution center as well as warehouses. In 2000, Peapod's revenue was growing at an annual rate of 40%. It is estimated that 4.5 million of the nation's household bought groceries online in 2008. Forrester Research estimated that 18% or 19 million of the nation's households utilize the online grocery shopping service. The target customer has a household income of \$70,000 and has a disposable income of \$125.00 allocated to groceries and has at least three people in the household. Online grocery shopping and delivery is likely to be confined to big metropolitan areas. Albertson's marketing strategy involves broadcasting and print advertising to introduce the concept but word of mouth and seeing the delivery trucks on the road are the biggest marketing tools. (Tedeschi)

Many large food companies such as Kraft Foods, are focusing on their online business (Online Grocers: Ready to Deliver?). As retailers improve their websites, usability and incentives, marketers are beginning to place more resources behind those sites. Automated warehouses are used for other complimentary services like banking or photo printing, along with modern technology and devices such as handheld scanners, making the online experience more efficient. Web grocers will benefit from the growing numbers of women shopping online. "Women make the majority of food purchases and household decisions, so it's no surprise that they are utilizing the Internet as a tool for daily living," said Kenneth Cassar, director of strategic analysis for Nielsen//NetRatings. Consumers today have fewer security concerns and are willing to process transactions over the Internet.

This transformation of grocery shopping is very convenient and fits the present culture of E-shopping. The special features and applications included in some of these websites are geared toward helping customers buy exactly what they want. A customer can be notified when an item is available, or when an item goes on sale. In addition, customer may select pre-cut or pre-seasoned

vegetables, meat, or fish. Even further, a customer can view recipes, nutritional facts, cooking videos or build a shopping list. They can demand specific items such as unprocessed meat, fish, poultry, fruits and vegetables, food grown or raised in the United States or wherever and whatever they desire. The website acts as a means of communication that the physical store does not provide. Grocery shopping is faster, more reliable, more individualized, and much more convenient (Bittman and Murphy). Analysts say that the current group of Web grocers will earn significant profits if they can utilize the latest technology and gear consumer attitudes toward the Internet. "There's nowhere to go but up for the category," said Kate Del Hagen, retail analyst at Forrester, Cambridge, Mass. The firm expects 4% growth in the online grocery business, to \$17.4 million, by 2008.

Examples of Successful Online Grocer Companies

Peapod successfully targets dual income couples and/or families. It is biased more towards the age group 25-54 who have kids. Customers of Peapod include convenience-driven people, the disabled, and the internet savvy. Busy families with kids order the most. An estimated 65% of purchases consist of produce, meats, and dairy. Produce like bananas, apples and vegetables sell more online than at retail stores. Popular items are natural/organic goods and low carbohydrate items. (Online Grocers: Ready to Deliver?)

Safeway's typical customers are time-starved; they have no objections about someone else selecting their food. Customers who prefer to pick their own meats and produce but order shelf-stable and staples online. Drivers go through rigorous training on driver safety and how to treat customers courteously and respectfully. (Online Grocers: Ready to Deliver?)

FreshDirect customers are families and single professionals who earn at least \$75,000. They are busy people involved in many activities and are Internet-oriented. FreshDirect customers often are 'Foodies' who care about the quality and value of their food. The company bakes its own breads and pies, roast coffee, and butchers meat they buy directly from suppliers. An estimated 74% of company's sales are from perishables. Shoppers can specify how ripe they want their fruits/veggies. (Online Grocers: Ready to Deliver?)

Impromptu Gourmet customers are connoisseurs who want to dine on fine restaurant-quality food at home. (Online Grocers: Ready to Deliver?)

Value Platform and Competition

The basis of retail marketing strategy is the firm's value platform which differentiates one business from its competitors. Retailers aspire to create and maintain a unique value platform that allows it to achieve an advantage over its competitors. The value platform includes policies regarding merchandising, pricing, advertising, promotion, store atmosphere, service, and location. The business must understand its customer's needs and wants as well as the competition. Consumers differ in needs, income, location, and ability to use retail services. Socioeconomic status, age, education, and lifestyle are a few factors that influence a business's value platform.

Peapod was established in 1989 and has since expanded and has become the nation's leading internet grocer. It serves over 280,000 customers in Chicago, New England, and the Mid-Atlantic metropolitan regions. It works with sister supermarket companies such as Stop and Shop and Giant Food. Peapod stages its deliveries out of two free standing 75,000 square foot warehouses and is supported by 17 additional "wareooms" of 7,000 square feet each that are housed within partnering grocery stores. Peapod offers over 8,000 food items including meat, seafood, produce, organic, kosher, and prepared foods, and non grocery items such as cosmetics, school and office supplies usually found in a grocery store. Peapod is growing at a rate of 25% a year in most areas. This internet grocery utilizes Roadnet Transportation Suite Web Services for effective and efficient vehicle tracking GPS solutions and deliveries. Deliveries are always within a two hour window or times the customer specifies. (Peapod)

Launched in the fall of 2002 by Joe Fedele, founder of New York's Fairway Uptown specialty foods store, FreshDirect today boasts 160,000 customers and delivers 25,000 orders per

week from its 300,000-square-foot facility in Queens. The site offers about 5,000 perishable items and 3,000 packaged foods.

Fresh Direct claims to be the smartest way to shop for food. It is easy to get the freshest food and popular name brand groceries while still saving money and time. The food at FreshDirect come directly from local farms, dairies, and fisheries, not middlemen like most grocery stores. As a result, it is fresher and less expensive for the customer. Meals can be created by top chefs to custom-cut meats and bakery fresh goods. The food is made to order in the cleanest, most technologically advanced food facilities in the country. Customers can select from thousands of organic, all natural, local and artisanal products, in addition to over 600 meals and side dishes that are prepared fresh each day by chefs. FreshDirect's website provides free One-click Recipes, which adds everything to your cart with one click, Nutrition Sort to scan ingredient facts and many more applications. With FreshDirect, you can order up to a week in advance and select the time-slot that is most convenient. This internet grocer delivers to many neighborhoods in Manhattan, Brooklyn and Queens as well as selected areas of Staten Island, Westchester, Southern Fairfield and Nassau Counties. They also deliver in Riverdale, Jersey City, Hoboken and now more New Jersey areas along the Hudson River. The minimum order is \$30 in addition to delivery fee of \$5.79 to \$6.79, depending on the area of delivery.

(FreshDirect.com)

FreshDirect has succeeded where other online grocers such as Webvan failed. The cost of delivering to an apartment in New York City is the same whether FreshDirect is delivering one box or 10 boxes. The company has been able to create a database of customer orders that help the company develop a better understanding of what individual people want and the quantities

they buy. The prices are fair and the incorporation of celebrity chefs appeal to many people.

(Bloomsburg Businessweek)

The Food Emporium currently has 16 stores throughout Manhattan. Its name exemplifies gourmet food, exceptional quality, service, taste and style. It is also an online grocer that provides pick-up or same day delivery. Free delivery on orders of \$75.00 or more. (The Food Emporium)

D'Agastino provides online shopping and delivery for orders of \$50 or more plus \$6.99 for delivery or within a two hour time span. This store provides catering, rewards and savings, and shopping tips. (D'Agastino's)

Demographics of Online Shoppers

The demography of certain retail entities differ depending on the business' value platform, target customer, and target area. A profile of online shoppers reveals detailed information about the population of people who shop online. Many are females close to the age of 42, have a median household income of \$65,000, less than half have a college degree, more than half are married and have children younger than 18, and many are full time employees. Forrester Research, Inc.'s profile of online shoppers consists of 36% of the North American population, still a significant amount of the population for retailers to feel obligated to create websites. (Forrester Research, Inc.)

Table 1.

2-1 A Profile Of Online Shoppers		Early Adopters	Mainstream Consumers	Sidelined Citizens
Percentage of online shoppers		53%	38%	9%
Female		45%	56%	65%
Mean age		43	42	43
Mean household income (US\$)		\$100,300	\$65,500	\$30,600
College degree		64%	44%	24%
Married		66%	61%	62%
Children younger than 18		62%	67%	71%
Employed full-time		83%	72%	62%
Mean online tenure (years)		9.6	8.1	7.0
Mean eCommerce tenure (years)		5.6	4.4	3.6
Mean online spend		\$660	\$446	\$261
Broadband at home		81%	68%	53%
Mobile phone		90%	84%	76%

Base: 21,932 US adults who shop online

Source: Forrester Research, Inc.

Warehousing

The costs of warehousing are justified by savings in outbound shipping costs achieved through volume loads. Online grocery shopping and delivery serves clusters of customers, reducing costs and frequency of small shipments and transportation costs. The distribution warehouse is located in a strategic area that is convenient to customers. Cost effective routes from the warehouse location to the target area can aid in the cost tradeoffs of warehousing operating costs and transportation savings. Finding a warehouse requires the evaluation of several decisions; construct a new building or to buy or lease an existing one. The prerequisites of a warehouse for a grocery business that must be considered include the maximum and minimum size warehouse and the best location in regards to transportation and proximity to the target area. The warehouse location should not really matter as long as the product can be delivered in a timely fashion and at a reasonable price. (Ackerman)

Truck Routing in New York City

Since transportation is so closely linked with warehousing, the transportation requirements for the warehouse are very important. All warehouses depend on trucks as their source for shipment. Zones and transportation costs to specific sites must be considered. There are almost 1,000 miles of roadway within New York City. These roads are one of the most complex truck route systems in the country. The New York City Truck Route Network consists of a series of roadway segments and follows the New York City Traffic Rules. The system creates the routing requirements for all truck trips made on the New York City arterials which are comprised of Local Truck Routes and Through Truck Routes. (Motorists: NYC Truck and Commercial Vehicle Homepage)

A truck is defined as a vehicle with two axels and six tires, or three or more axels and must follow the Truck Route Network. The type of truck route taken revolves around the origin and destination of the trip. The Local Truck route is a network for trucks with an origin and destination for the purpose of delivery, loading or servicing within a borough. Trucks should only use non-designated routes to reach their destination. The Through or 'Thru' Truck Route is a network largely composed of major urban arterials and highways and must be used by trucks that have neither an origin or destination within the borough. (Motorists: NYC Truck and Commercial Vehicle Homepage)

Trucks are excluded from traveling on certain parkways including: Belt Parkway (Brooklyn and Queens), F.D.R Drive (Manhattan), Henry Hudson Parkway (North of 59th Street to the Bronx-Westchester county line), Cross Island Parkway (Brooklyn/Queens), Bronx River Parkway (Bronx), Hutchinson River Parkway, Mosholu Parkway (Bronx), Pelham Parkway (Bronx), Ocean Parkway (Brooklyn), Korean War Veterans Parkway (Staten Island), and Grand

Central Parkway. Certain segments of roadways throughout Manhattan exclude access to commercial vehicles. These segments are located on Fifth Avenue, Park Avenue, and the Brooklyn Bridge (Motorists: NYC Truck and Commercial Vehicle Homepage).

Urban freight transport is the transport of consumer goods, industrial goods, waste materials, and construction materials. The constant steady stream of freight transportation between its origin and destination within and outside of the urban area creates traffic and various other problems within urban areas. Urban freight transport involves transportation planning, environmental planning and economic planning. Transport policies, guidelines and regulations are needed to prevent or minimize problems. Traffic within urban areas creates congestion, poor accessibility, air pollution (greenhouse gasses, acidification and the use of natural resources), noise, safety and intrusion. These are some of the main reasons policies are necessary and must be enforced. (Binsbergen, Nemoto, and Visser)

The six areas of objectives for urban freight transport are: efficiency, economic, road safety, environmental, infrastructure, and urban structure. Efficiency includes minimizing or reducing transport costs as well as improving the quality of transport services; access, reliability, travel time, flexibility or security of products within the vehicle (Binsbergen, Nemoto, and Visser). Efficiency improvements influence the creation of economic opportunities because urban transport serves the society and has an effect on income, price, market share, etc. Environmental objectives and concerns involve the reduction of local air pollution from carbon monoxide, nitrogen dioxide, ozone, aerosols, benzene and lead. It also includes the reduction of traffic noise, improvement of general safety; reduction of number of accidents resulting from traffic issues, reduction of other forms of any risk, physical hindrance and vibration (Binsbergen, Nemoto, and Visser). The reduction of the consumption of urban space for transport

infrastructures and delivery points are also addressed. The reduction of emissions which influence climate change and slowing down of the exhaustion of natural resources are other major issues. Reduction of road maintenance costs is an example infrastructure objective while preservation and revitalization of historic city centers, and maintaining the level of services within urban areas are associated with urban structure objectives. Many of the transport flows coming from outside the urban area can affect the effectiveness of certain local measures (Binsbergen, Nemoto, and Visser). The government creates policies to mitigate and regulate traffic. Freight transport policy and planning include network strategies; specific routes for use by trucks, designation of routes that restrict certain vehicles that exceed specific weights, heights, lengths, or loads. There are parking or loading strategies such as curbside use, off street facilities and truck parking facilities. Location and land use may prohibit freight truck passage. Pricing strategies solve congestion. (Binsbergen, Nemoto, and Visser)

Problem Statement

The online grocery shopping and delivery service caters to the current lifestyle that includes internet savvy consumers and people who value time and convenience. New York City is a fast paced environment where most people who live in the area have careers, work late, have no need for vehicle ownership, may have families, and utilize the internet. Everyone must eat to live, therefore, my questions regarding online grocery shopping and delivery in Manhattan are: What area to Locate/Market Online Grocery Shopping and Delivery in the New York Metropolitan Area? What target group is the best population to market based on demographics? The best location for warehousing based on criteria (square feet, lease/rent/selling price, and address/area in relation to proximity to the target area)? Which warehouse provides the most cost effective route from to the target area?

Exploratory Research Problem on Location Analysis

Based on the consumer shopping and transportation literature, the adoption of online grocery shopping likely will be influenced by several factors including age, income, residential location, gender, and level of education. Specifically, adoption is most likely to occur on the upper east side of the New York Metropolitan area. The target customer is a middle aged women who has an income of \$75,000 and higher and has earned a bachelor's degree or further education. The Upper East and West side is composed of financially successful people who will utilize the online grocery shopping and delivery because this group tends to work many hours, do not drive because cars are not practical for the city lifestyle, and shopping online saves time. Women are the main consumers of groceries. Consumers who have an income of \$75,000 have enough disposable income allocated for food and the additional cost of delivery. A higher educational attainment is usually correlated with income. The warehousing will be located in New Jersey where many low cost industrial parks and warehousing are found. New Jersey's proximity to the city will result in the best cost effective routes to the target area.

Study Area

My area of study is the Upper East Side and the Upper West Side of Manhattan, New York shown in Figure 1. These areas are affluent areas of a highly urban region. The Upper East Side covers land from 59th to 96th street along Fifth Avenue and Central Park. It was once known as the "Silk Stocking District" and is now the most affluent area of Manhattan and has some of the most expensive real estate in the country. These areas are distinguished wealthy areas. The 2000 census indicates 207,543 people residing in the Upper East Side. The Upper East Side maintains one of the highest pricing per square foot in the United States. Average cost per square foot is close to \$1,200 per square foot as of 2006. Due to the high population density and land prices there are many luxury residential high rises and skyscrapers in the neighborhood.

The Upper West Side lies between Central Park and the Hudson River between West 58th Street and 110th or 125th Street. Like the Upper East Side, the Upper West Side is primarily a residential and commercial area, with many of its residents working in more commercial areas in Midtown and Lower Manhattan.



Figure 1.

It holds the reputation of being an affluent cultural and artistic area, in contrast to the Upper East Side, which is perceived to be traditionally home to affluent commercial and business types. The neighborhood is upscale with the median household income above the Manhattan average.

Methodology

Information and data retrieved and observed for this thesis involved four phases. The first phase entailed the collection of demographic, socioeconomic, and housing profiles of Manhattan shown in Table 2. GIS was a vital tool to map the variables on a census tract level to show spatial patterns and distributions. Included in this phase are the characteristics of people who utilize the internet as a medium to shop. The second phase required gathering warehousing information such as location, approximate pricing, and proximity to the target area. The third phase required the use of GIS to map the routes from the various warehousing locations to the target area to determine which location provided the most cost effective route. Lastly, the fourth phase involved the study of existing online grocers in Manhattan and insight of their target area and the statistics of its target customer.

The following maps were created using data gathered from the U.S Census Bureau using the 2000 Census Tracts in New York County (Manhattan), NY. These variables show the spatial patterns and population distributions and will ultimately help determine the characteristics of the target customer. The data were mapped using various websites: U.S. Census Bureau, TIGER Files, NYS Clearinghouse, ESRI, Select Phone- a marketing program created by a company called ProCD that utilizes CFCC Codes to map retail stores, and the ArcGIS software. Using GIS, I was able to map all the roads and major roads in New York City. I researched warehousing locations and industrial parks around the perimeter of Manhattan to buy, lease, or build a warehouse. Craigs List was the only option available that had information such as approximates pricing and square footage of possible warehouses.

Data

Table 2. Census Variables Used in Analysis

Demographic	Total Population Sex Sex by Age Ethnic Groups Educational Attainment
Socioeconomic	Employment Median Household Income Household Income Levels Annual Expenditure on Food
Housing	Total Households
Other	Families Presence of a Spouse Married Couple Families Disabled Population Vehicle Ownership Dispersal of Grocery Stores Cost Effective Routes