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Finding Optimum Location for Business (Office)

PROJECT REPORT

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Finding Optimum Location For Office Complex

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Finding Optimum Location for Office Complex: Project Report

Introduction

The basic purpose of the business is to make life easier and efficient to meet the satisfactory demand of the client or costumer in many aspects of life. Some client might want to spend a luxurious and fancy life style, for which they are willing to spend money. Whereas some people might want to spend money on basic material essential for their survival. As we look into a larger perspective the basic principal is to maintain the quality of life. The definition of quality of life can be different to different people. Hence, the orientation of the Business and the service provided by the businesses are different, according to the need of each individual different business provides services in a unique way.

A Business cannot develop unless there is any competition or selection of the best. Hence, in a modern business scenario there are multiple businesses establishments that competes with each other to provide best possible service to the client and they profit from doing business respectively. The office also works in a similar way, the difference is that office is bound by walls on all sides and directly or indirectly influences the outcome of a business.

Problem Statement

According Forbes Magazine more than 1 percentage Job Growth was seen in year 2014. The new businesses and offices are blooming in Mankato much more frequent, compared to previous couple of years. To make the commercially booming area or zone more manageable and organized, service area assessment of crucial and sensitive area of the Mankato is very essential. Logical allocation of business area or zones in terms of Service Areas of essential services like Fire Brigade response time, Police and EMS response time to the business locations information will allow perspective business owners to select proper locations across Mankato to suite their business orientation with maximum efficiency and effectiveness.

Goal

The main goal is to find the optimum location of the Business (Office) locations in Mankato with the help of GIS Software. As we all know, Mankato is growing very fast commercially. Hence, it is essential to create a balance between demand and supply of the basic services including the emergency services. The emergency services (Fire Department, EMS, and Ambulance) and safety – Security services (Police Department) are one of the most essential services that can affect all aspects of life. Hence, selection of the site locations will be analyzed on the basis of surrounding Basic facilities and services. The Target locations should have proper road access for easy access. The motive behind such an analysis it to show how secure and organized the city of Mankato is to the perspective business owners. Depending on service area of respective businesses, allocation of the New Business (Office) can be determined.

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Background

Looking at the census data, the Population Demographics for Mankato, Minnesota in 2010 was 39,309 and it is expected to be 40,411 for 2014 and 2015. According to the Feburauary edition of MN Valley Business Magazine, the article by John Considine III explains well on the current demographic landscape of the region. The article points out some of the key issues on the five year demographic estimates from the American Community Survey, prepared by U.S. Census Bureau in December 2013. Some of the key issues were the question on what makes Mankato unique as compared to other metropolitan areas in Minnesota? The answer was the workforce.

Numerous comparison on metropolitan areas were done amongst Duluth, Minneapolis-Saint Paul, Saint Cloud, and Rochester to the Mankato –North Mankato Metropolitan Statistical Area (MSA). Although Mankato MSA is made up of Blue Earth and Nicollet Counties, they are the smallest among all other MSAs. Looking at the demographic statistics, Mankato connected MSA has the population of individuals of 16 years of age and over of 79,506, which is half the number of Saint Cloud with 150,211. The key factor is the highest rate of residents in the labor force of 73% (58,108). On top of that Mankato has the highest employment rate of 69% (54,565).

All of them have the average shortest commute compared to all Minnesota MSA's. The top three businesses area that attracts most of the workforce in Mankato are: a) Educational services, and health care and assistance, b) Manufacturing and c) Retail trade.

Another interesting fact is that Blue Earth County has the highest percentage of 18-24 years population with either college degree or currently under process to get one. That is 19.09% of Total Population of MSA with average household income of $65,950 compared to St. Cloud with $66,045. Minneaplis-Saint Paul MSA reflect high living cost compared income. Hence, Mankato – North Mankato shows income figure shows the balance of business profitability and resident affordability.

Literature review

For the Literature review, I have gathered the related information to the project from various sources. One of the source is from http://www.prenhall.com/scarborough "conducting a Feasibility Analysis and Crafting a Business Plan." There are different components while conducting business feasibility analysis. We can consider three components that are interrelated: an industry and market feasibility analysis, a product or service feasibility analysis, and a financial feasibility analysis.

Industry and Market Feasibility Analysis

In this process of business idea, basic analysis between the motive of the industry and targeted market would seem to be good start. We need to concentrate on how to determine the attractiveness of an industry in a location as a new business and identify profitable area or categories, small business can occupy in the particular location. To figure out the attractiveness of the new industry we can put fourth coupe of questions as:

1) Size of Industry
2) Growth scale

3) Profitability
4) Profit Margin
5) Demand value of the product to the costumers
6) Current and future trend of the industry
7) Threats
8) Opportunities
9) Competition
10) Age of the industry

These questions can help us answer the level of demand, supply and services in the target area.

Develop a Business Plan

Why do we need a business plan? To increase the likelihood of Success. The implications of lack of planning might lead to high failure rate. A business plan is the summary of the proposed business in a written form that includes operational and financial details, opportunities and strategies. The plan serves as the road map for the business endeavor.

Business plan also functions to attract lenders and investors. Usually when small business approach the lenders with inadequate preparation to convince the practicality of the business concept have to return empty handed. Hence, a solid business plan is very essential to convince the money lenders and for applying loans to attracts the investors for successful start of a business. Hence service area analysis can be a part of feasibility analysis of the target location of the business.

The success of Business plan depends on the Reality test. Reality comprises of external component that tests the business model proving the survival of a product and service. The focus is given on potential customers, market size, target location, degree of competition and market attraction. Competitive test evaluates the position of the new company with key competitors. The strength and weakness stand up with the competition to determine the survival of the new business or company. Value test provide a general idea to the investors or lenders how they will be able to get the money back with profit.

According to the article by Nina Zipkin “How to Find the Best Location” posted on Entrepreneur.com, location needs to be on the top of the to-do list when we are looking to start a new business. Proper location might be the single most important thing we can do at startup. Although we have a one of a kind master piece products, they needs to be presented in a proper manner that will allow the costumer to get attracted in buying them, hence location.

"In the brick-and-mortar retail world, it's said that the three most important decisions [you'll make] are location, location and location," affirms Irene Dickey, a lecturer in management and marketing at the University of Dayton's School of Business in Dayton, Ohio. "Careful determination of new sites is critical for most retail and consumer service businesses."

Sophisticated location analysis tools like GIS tool is available that can calculate traffic pattern information, demographic and lifestyle data, and competitive analyses. The business owner can look on optimum traffic flow in the business location as it can be related to specific targeted trade

area. It is a very good idea to make our own evaluation of a particular property, this will help our business to grow in another location.

"Know what your business plan [says] when you're looking for a location," says Tartt. "Know what your strategic objectives are."

Answering these 22 questions for each of the sites we're considering can help us decide on the best retail location for our business:

1. Is the facility located in an area zoned for our type of business?
2. Is the facility large enough for our business? Does it offer room for all the retail, office, storage or workroom space we need?
3. Does it meet our layout requirements?
4. Does the building need any repairs?
5. Do the existing utilities-lighting, heating and cooling-meet our needs or will we have to do any rewiring or plumbing work? Is ventilation adequate?
6. Are the lease terms and rent favorable?
7. Is the location convenient to where we live?
8. Can we find a number of qualified employees in the area in which the facility is located?
9. Do people we want for customers live nearby? Is the population density of the area sufficient for our sales needs?
10. Is the trade area heavily dependent on seasonal business?
11. If we choose a location that's relatively remote from our customer base, will we be able to afford the higher advertising expenses?
12. Is the facility consistent with the image we'd like to maintain?
13. Is the facility located in a safe neighborhood with a low crime rate?
14. Is exterior lighting in the area adequate to attract evening shoppers and make them feel safe?
15. Will crime insurance be prohibitively expensive?
16. Are neighboring businesses likely to attract customers who will also patronize our business?
17. Are there any competitors located close to the facility? If so, can we compete with them successfully?
18. Is the facility easily accessible to our potential customers?
19. Is parking space available and adequate?
20. Is the area served by public transportation?
21. Can suppliers make deliveries conveniently at this location?
22. If our business expands in the future, will the facility be able to accommodate this growth?

According to Business Case Studies online “Factors affecting the location of a business”, a business has to consider various factors to balance several factors in making a decision. For instance, we may choose a site with cheapest land or buildings, we might choose the location based on the location convenient for key employees to recruit staff with right skills. We can choose easy access site to raw material.

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Availability of Employees for many small businesses is important as the ability to attract and retain the qualified employees can determine the successes and failure of a business, especially when considering new immerging business. Considering all the important aspects it would be a wise decision to consider the location of the Business (Office) with availability of qualified employment workforce within half- hour drive distance.

Considering most of the essential factors to determine the optimum location of the Business (Office) location analysis needs to be done in terms of services availability surrounding the location.

Study area

Mankato is one of the City in Blue Earth County, Minnesota State. It is the fourth largest city in Minnesota outside of the Minneapolis-Saint Paul metropolitan area. It is located along a large bend of the Minnesota River at its confluence with the Blue Earth River. The total area of Mankato is 18.26 square miles. The target area are all the business locations, Airport, Clinics, Courier service, Day Care, Fire Stations, Housing, Police Stations, Restaurants and Schools in Mankato area.

Data availability

For the data Business Addresses, Courier Delivery Service and housing was taken from online Yellow pages. The Address for Airport, Clinic, Daycare and Schools was taken from Google Search. Restaurants addresses was taken from Visit Mankato. World Street map, World Imagery and Road Network was taken from ESRI software package.

Methodology

Methodology can be divided into different sections.

Address Geocode

All the addresses were collected in the raw unorganized format that is hard to Geocode in GIS software without filtering it out. Hence, Microsoft excel was used to filter the raw address data to filter and standardize with the help of formulas. Then all the addresses were categorized and subjected to geocoding through ArcMap 10.3 software. As the result, I was able to get 2500 Business Addresses, 1 Airport, 54 Clinics, 9 Courier, 25 Day Care,4 Fire Stations, 70 Different Housing Locations, 3 Police Stations, 177 Restaurants and 31 Schools. All the geocoding results were had a 99 percentage accuracy.

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Service Area

The Service Area method was used to analyze the service area of different services that might or will affect Businesses locations directly or indirectly. Hence all the services are subjected to three time frame to see the effective service area in specific time frame.

Service	Time in Minutes
Airport	5, 10, 15
Clinic	2, 5, 10
Courier	2, 5, 10
Day Care	2, 5, 10
Fire Department	2, 5, 10
Housing	5, 10, 15
Police	3, 5, 10
Restaurants	1, 2, 5
School	5, 10, 15

Selection Process

The selection process was executed with the concept of Set Theory intersection. The concept is to overlay all the service area layers on top of each other including the Business addresses, finally intersect all the service area with Business area to get the final intersected result business area. This result would be common to all the service area and will be easily accessible in fastest possible time. For this purpose the best timeframe or closest best timeframe is considered for the Service area for the process of intersection.

Service	Time in Minutes
Airport	15
Clinic	5
Courier	5
Day Care	5
Fire Department	5
Housing	10
Police	5
Restaurants	1
School	10

Businesses = 2500

Model

The whole process starting from the Geocoding the addresses was redone in the model builder with the model elements to automate the process. The main motive behind doing this is to save time and effort with the re occurring steps to achieve similar or different results with same process steps. In this process I was able to use the Arc GIS Online tools as Model element for Geocoding and Service area connecting with each other with the help of connectors to get the final result in 29.11 minutes.

Result

With the minimum drive time service area the most optimum area in the Mankato are 215 locations which is 10 percentage of the total business currently functioning.

A comparison was done between the Mean Center of the Business locations before the Selection Process and after the Selection Process. The result was drastically different with each other in terms of locations. The final Location mean center had more access to all the service across Mankato and thus the Best Business (Office) Location in Mankato.

Conclusion

It shows that Business tend to flourish where the basic service are readily available. The result shows that about 10 percentage of the businesses are properly covered with the basic services around them. This could mean a lot of the business are very old when the service facility was not built or the Business area developed so haphazardly with consideration of all the basic services in the densely populated area. If look at Downtown area of Mankato, most of the building are multi-use with office, housing and restaurants. This kind of urban design is good for services with walking distance, but it is hard for the large scale service facilities to access each and every corner in the limited time frame.

While choosing the location of the business it is very important to consider the facilities around it. Majority of businesses rely on a combination of three groups- Customers, Suppliers, and employees. The optimal location for the availability all the groups easily with close proximity is very essential for the successes of any business.

Competition has always been crucial part of any prospering businesses, hence especially at this situation poor choice of location will definitely result in the failure of the business. Thus, the calculation of the Service area has proven to be the optimal locations for the prospective business owners. It can be the guide line for establishing new business.

On top of that, the surrounding neighboring business and its scale can be studied for further detail analysis. Land values can also be the next step to be considered, because land cost can raise the initial cost of the Business investment that can hamper the business in the long run. The plot or parcel information can be collected from the Blue Earth County Beacon website.

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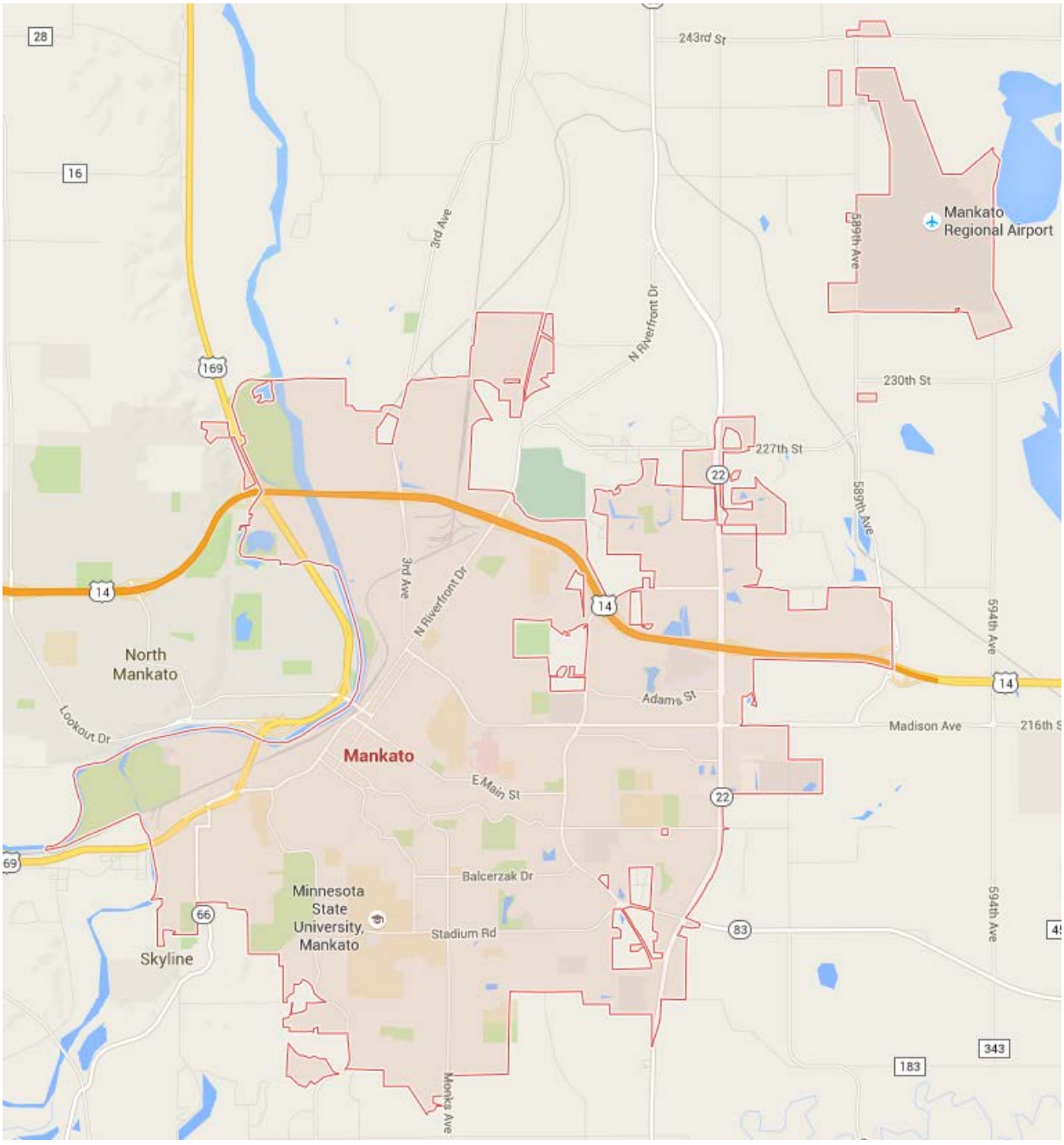
Appendix



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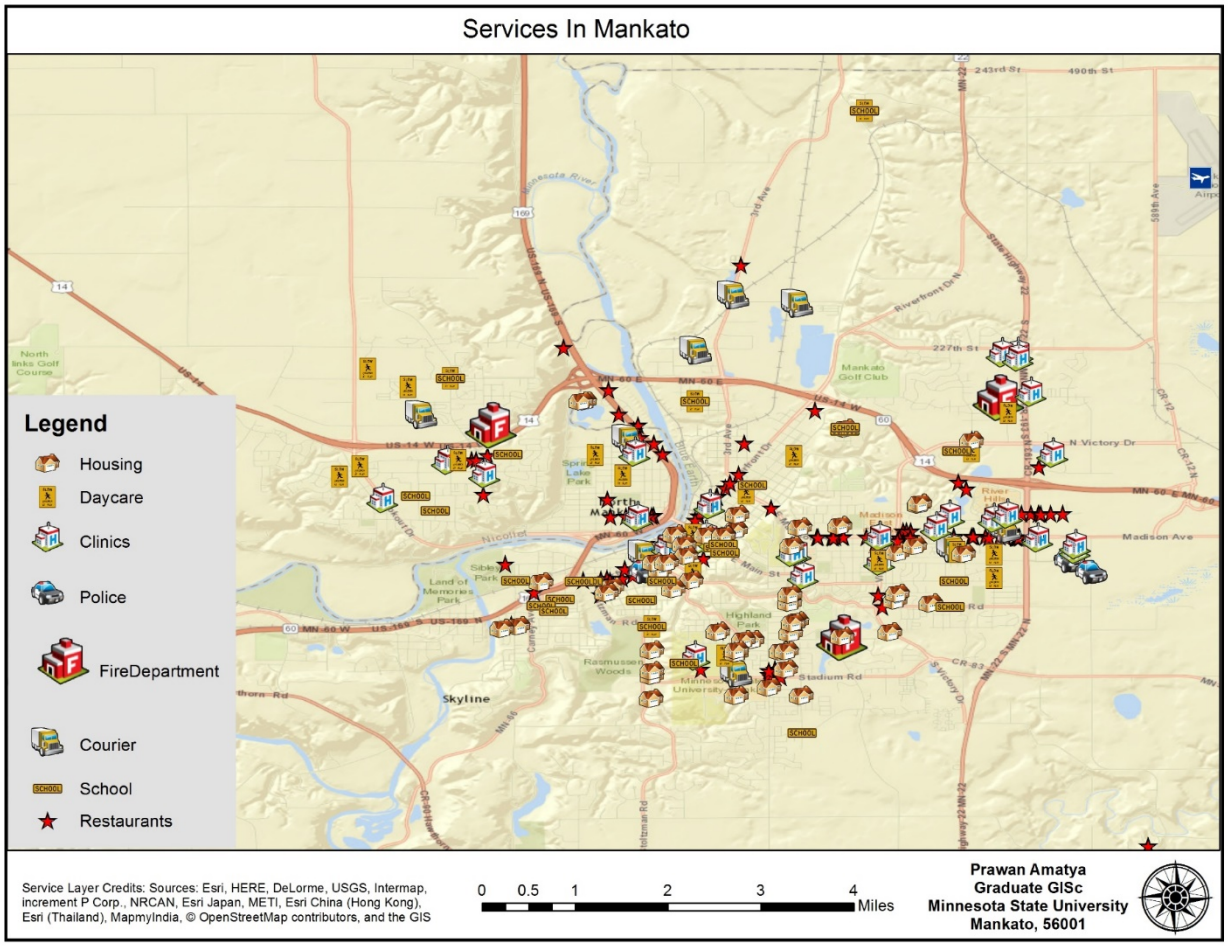
Raw address data and filtered data

	A	B	C	D	E	F	G
1	101 Main Restaurant	101 Main Restaurant					
2	101 Main St | Mankato, MN 56001	101 Main St		Mankato	MN	56001	
3		PO Box 3246		Mankato	MN	56001	
4	The cozy atmosphere of our '101 Main' Restaurant is the perfect place to enjoy breakfast, business... read more	1900 Adams Street		Mankato	MN	56001	(507) 386-1010
5		1855 Madison Avenue		Mankato	MN	56001	
6	Add to Suitcase	520 S. Riverfront Drive		Mankato	MN	56001	
7	Map It!	1010 Raintree Road		Mankato	MN	56001	
8	american restaurants	1861 Madison Avenue		Mankato	MN	56001	
9	restaurants	River Hills Mall		Mankato	MN	56001	
10	fine dining restaurants	1600 Warren Street	Suite 12	Mankato	MN	56001	



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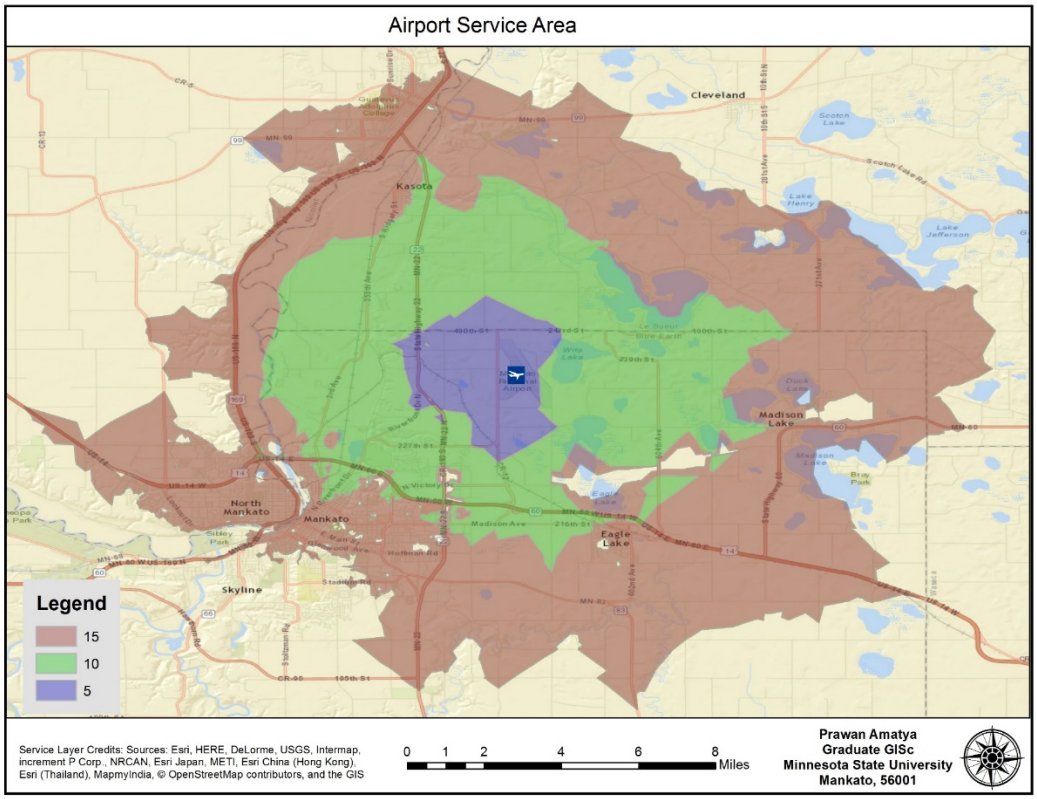

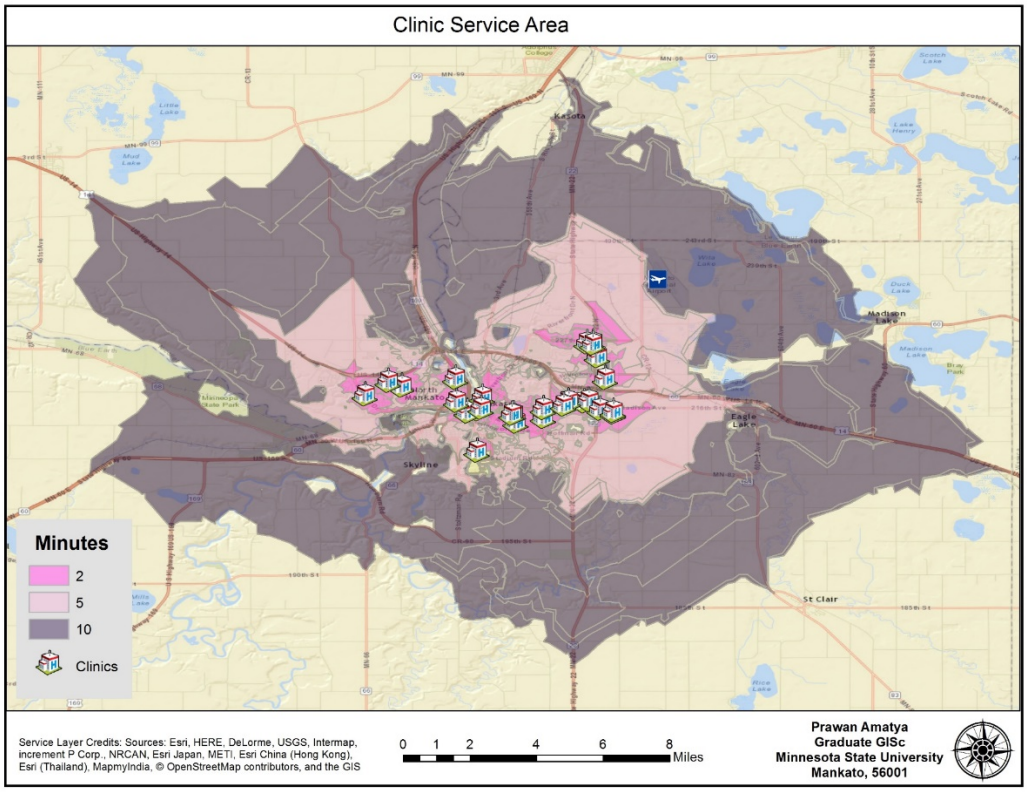

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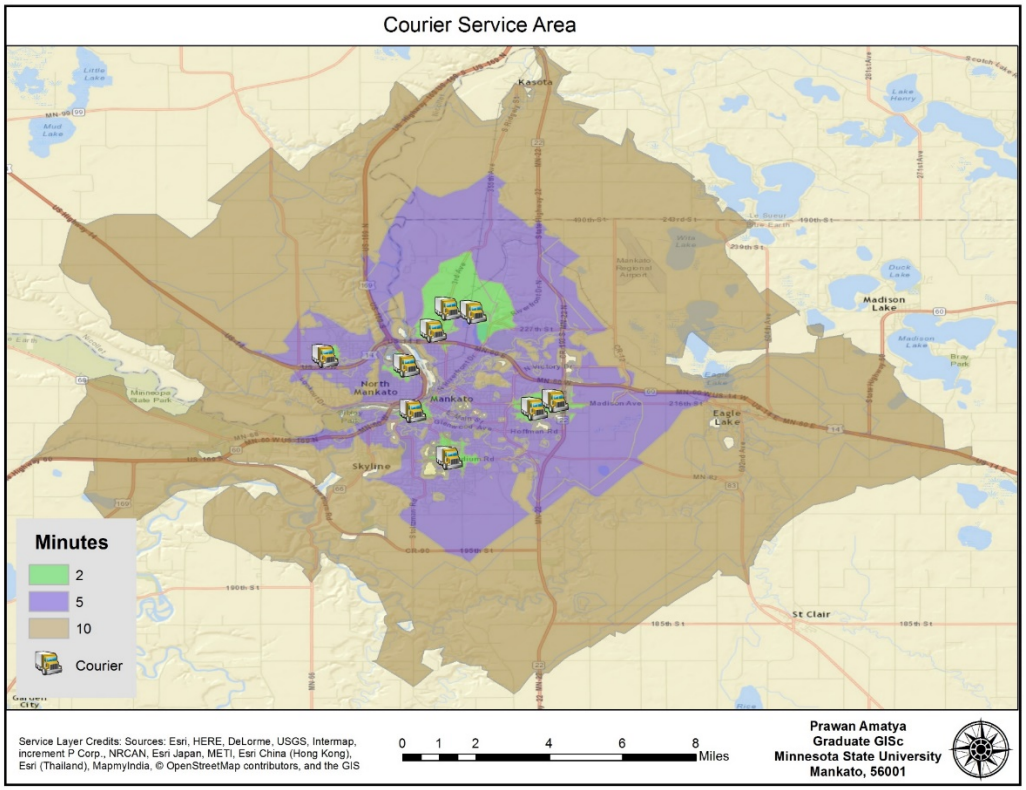

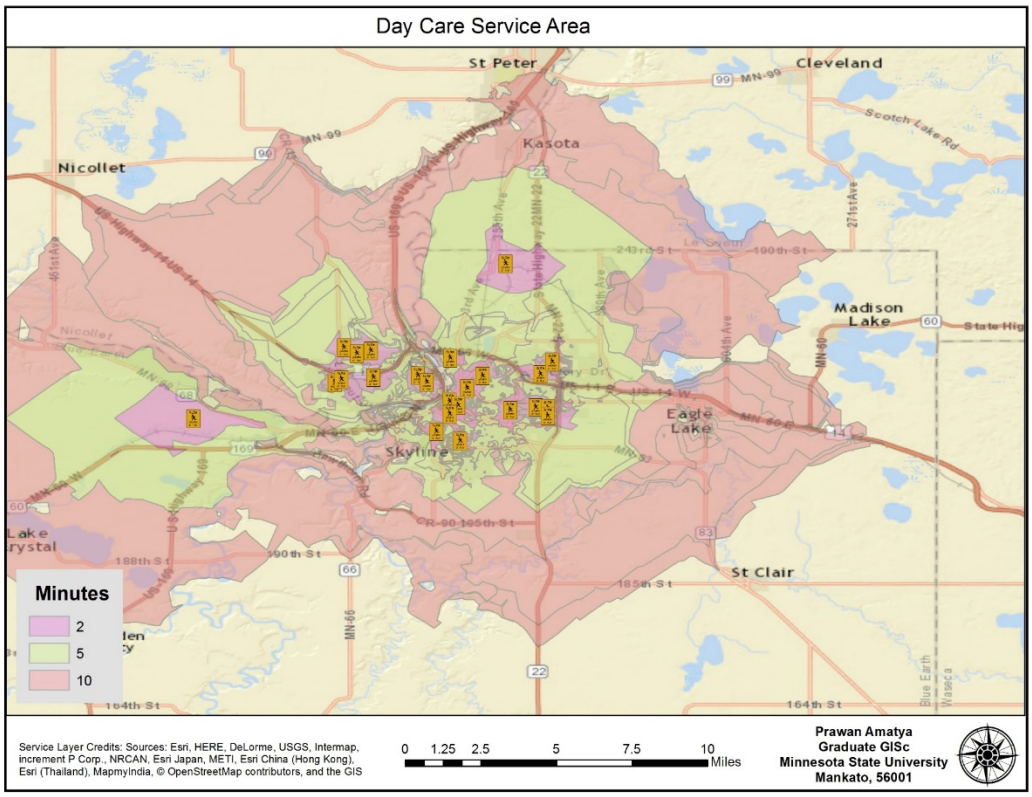

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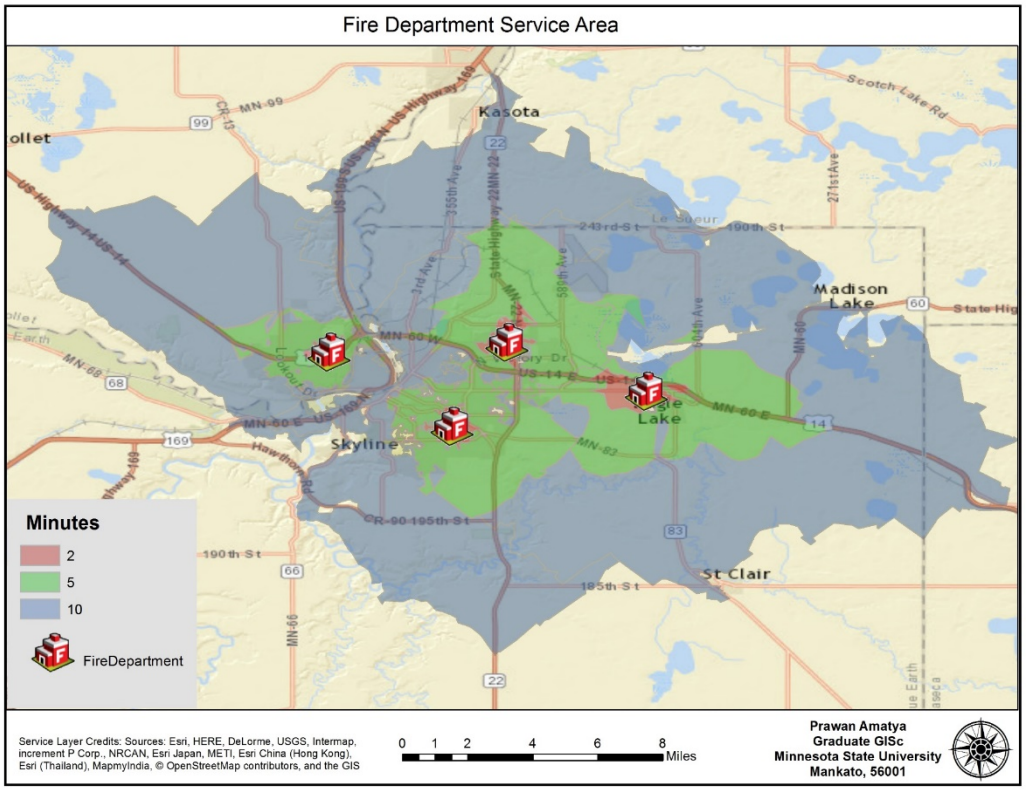

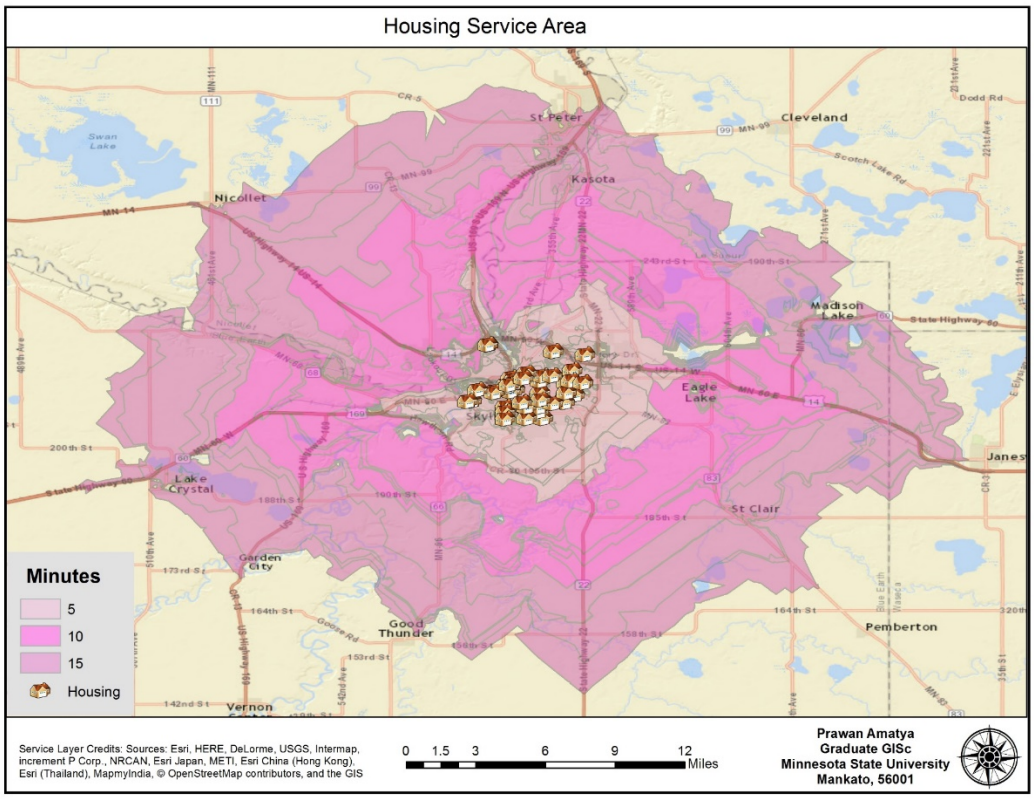

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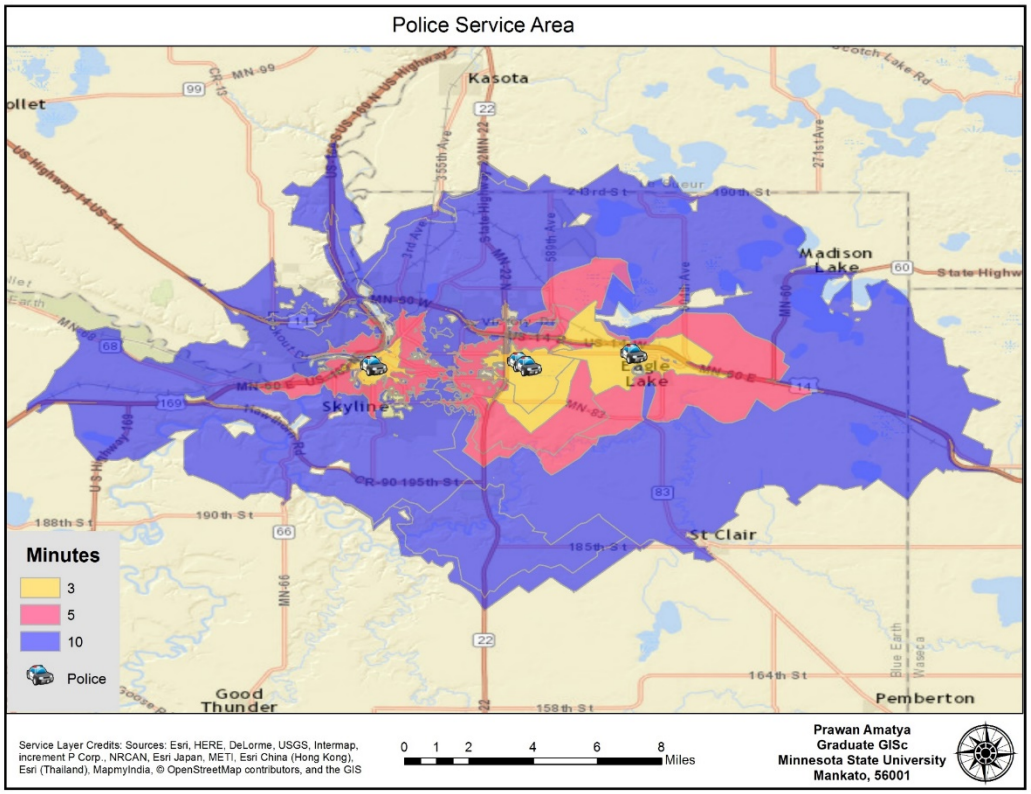

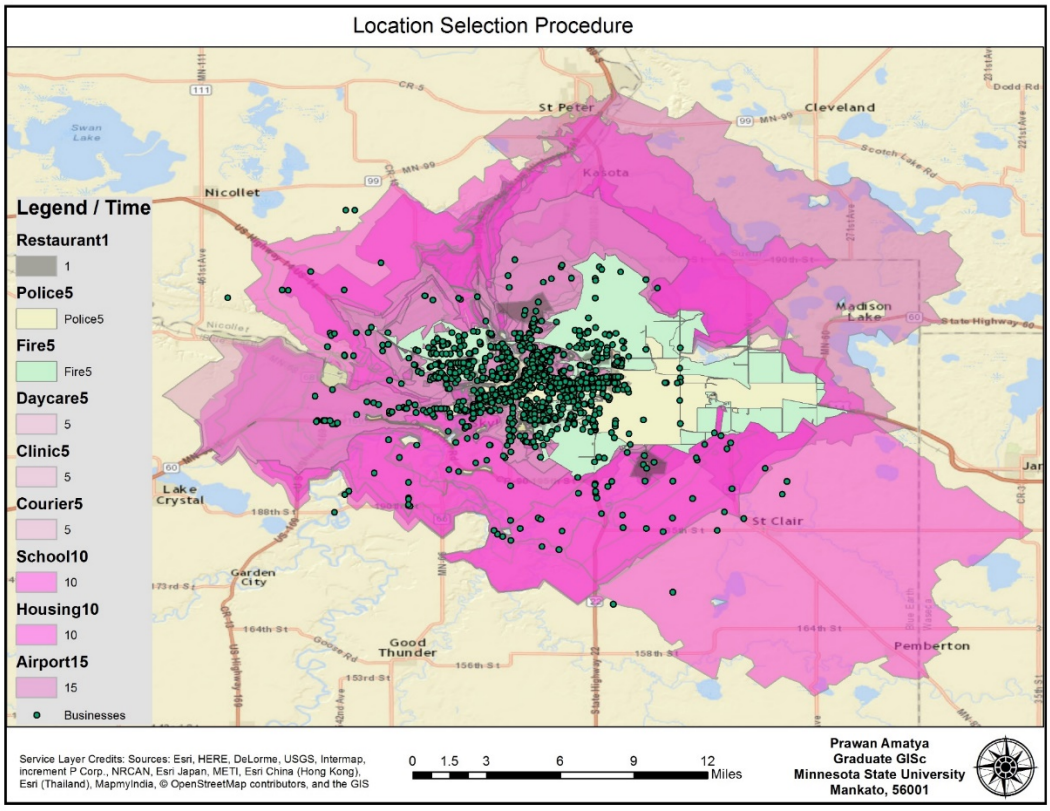

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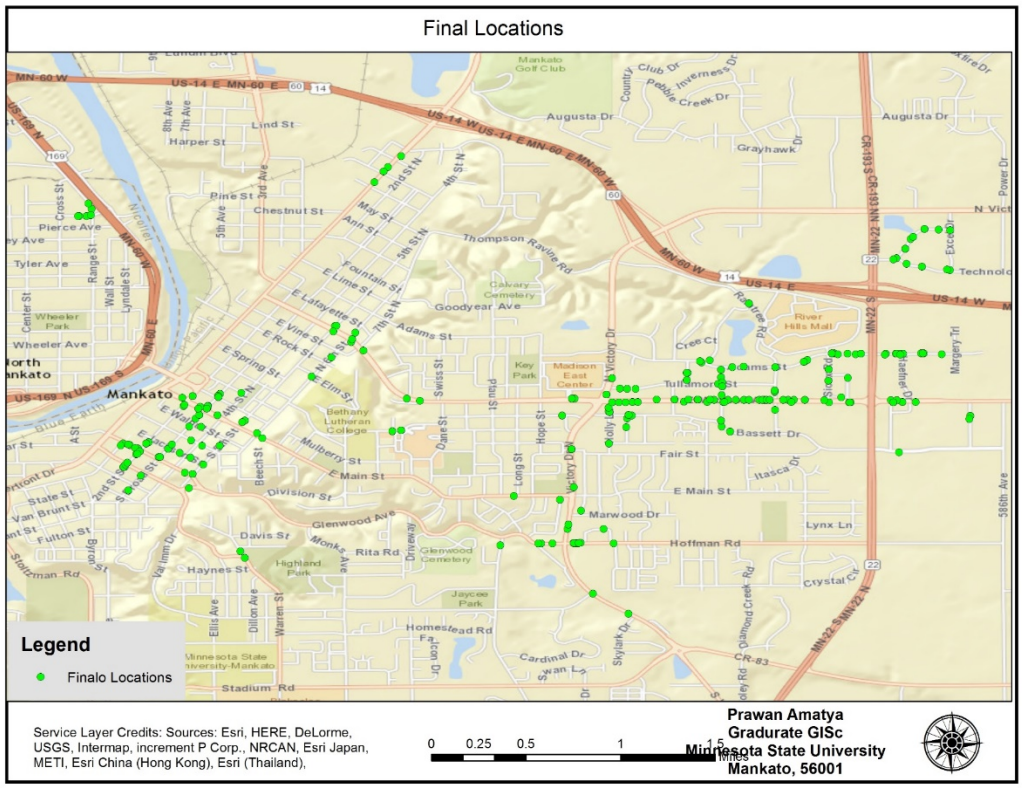

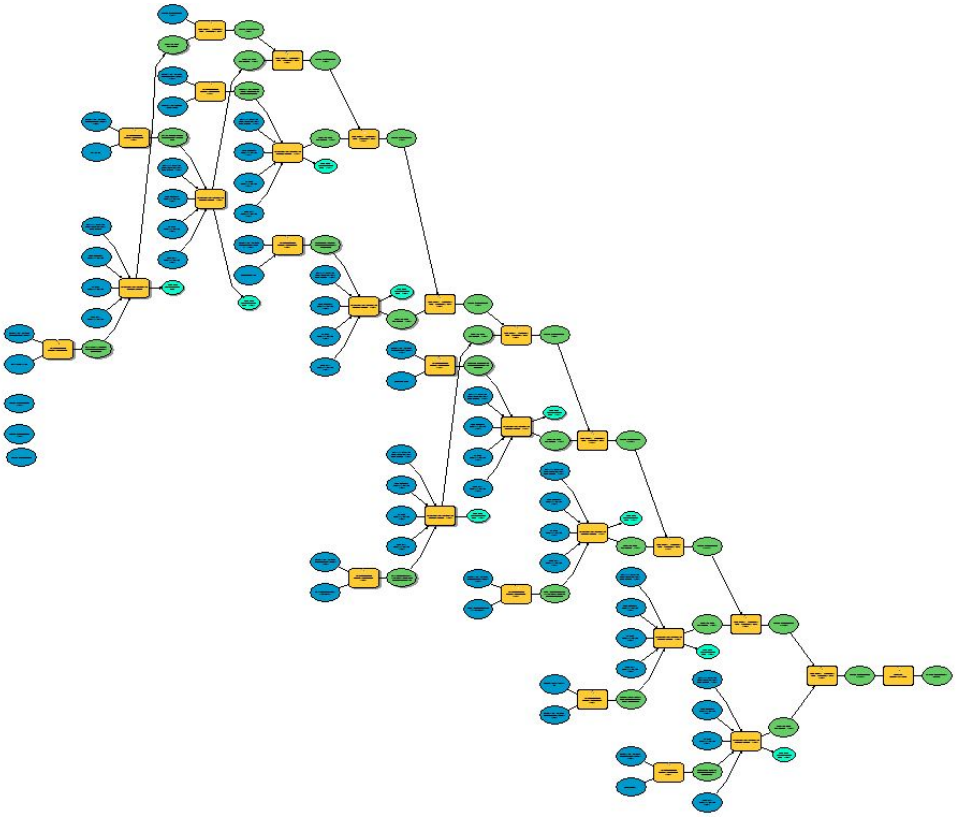

Model

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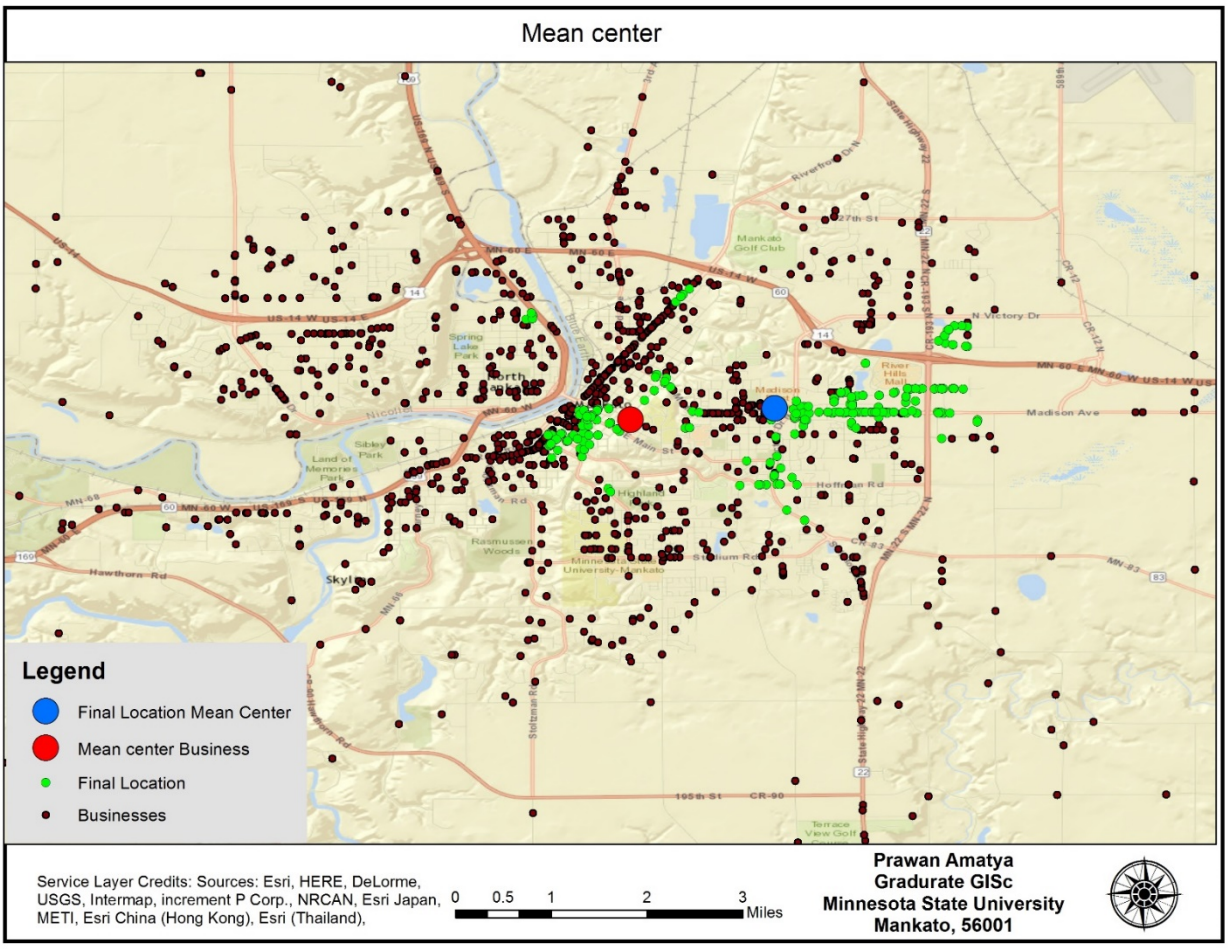

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