

First Phase Report

Introduction and Problem Statement

In the DFW market the potential for growth is unlimited. Many companies have set up headquarters in this market aiming for long-term prosperity. There is ample land, resources, buildings and the capital to make a companies' vision a reality. In this case the vision that is yearning to become a reality is how to properly analyze the DFW area to find the target locations to deliver goods to any person in the time frame of one hour from the time the item is ordered to being in the customers' hands. For XYZ Corporation it is a lofty goal, but it is one that with much research and analyzing will become a reality.

XYZ Corporation has been subcontracted to specialize in one hour deliver service and they have gotten it down to an exact science. The item will be picked in the fulfillment center. The cycle goes from the customer choosing the item, to the item being put into the package and then packed up and shipped out to the loading dock for departure. The picking and packing aspect of this process will take approximately 40 minutes. This means the time frame from when the packaged box leaves the distribution center to the customers' address is were the main focus will be placed. It is a delivery window of 20 min-30 minutes that XYZ Corporation must hit on average to maintain their promise to the customer. The corporation must find the most optimal locations in the metroplex for their distribution centers to routinely hit this goal.

Overall there should be 4 to 5 locations chosen in this 4 county area, and factors such as traffic, drive time areas, and building requirements will all have to be to the given parameters. For our problem statement we wanted to examine the areas where a majority of customers would be coming from and where XYZ should set up using factors such as looking at trends in the market such as certain age groups and certain income brackets that would react more favorable to XYZ corporation's services. Skewering the customers to a favorable segment of the general population, what factors and tools will allow us to properly place the locations for these new distribution centers to routinely hit a 20 minute delivery route? This is our problem statement which is stated as a question in this case. In the rest of this report we will be looking into data that shows us what will ultimately allow us to establish these distribution centers.

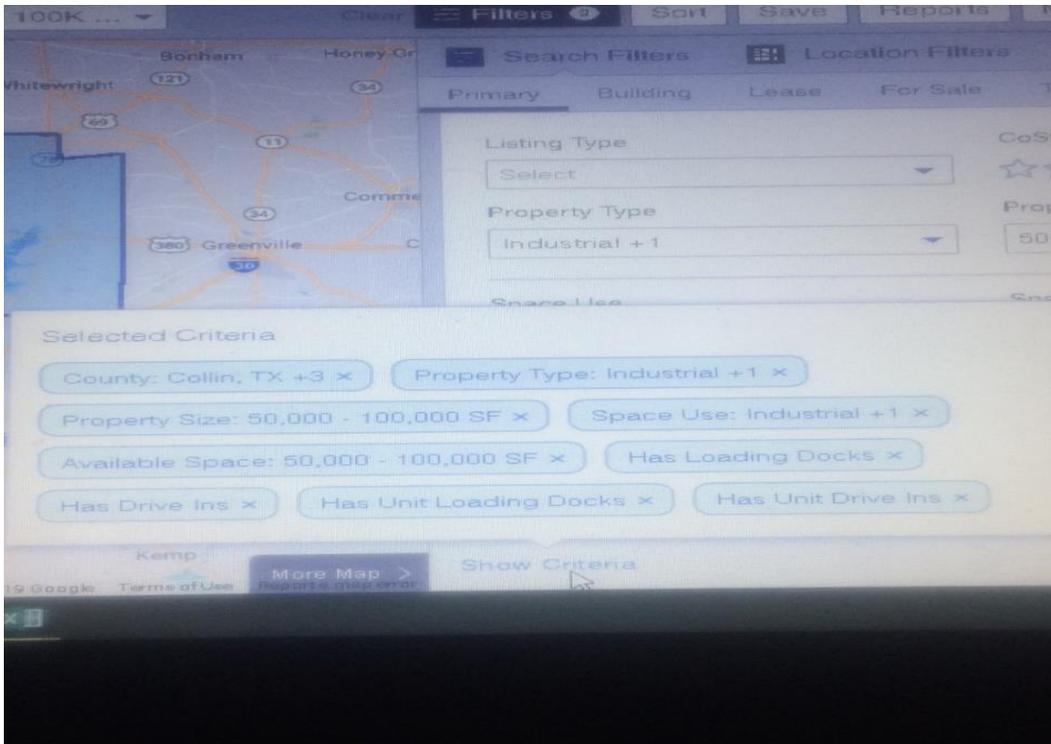
Goals for Analysis

The ultimately goal of our is to find the factors that might keep us from reaching the 20 minute delivery route routinely and find the best way to control these aspects on a regular basis. First of all when looking for warehouses that will be optimal for these distribution centers we need to apply parameters that will set us up for the most success. We were able to go into Costar and apply certain filters and these filters resulted in 20 properties. The factors going back to the problem statement that will allow us move quickly from the warehouse to the customer's front door, were things such as finding a distribution center that has ample space in this case 50,000 to 100,000 square feet. The space use and property type both under industrial and flex, as these must coincide with the distribution type layout. The building

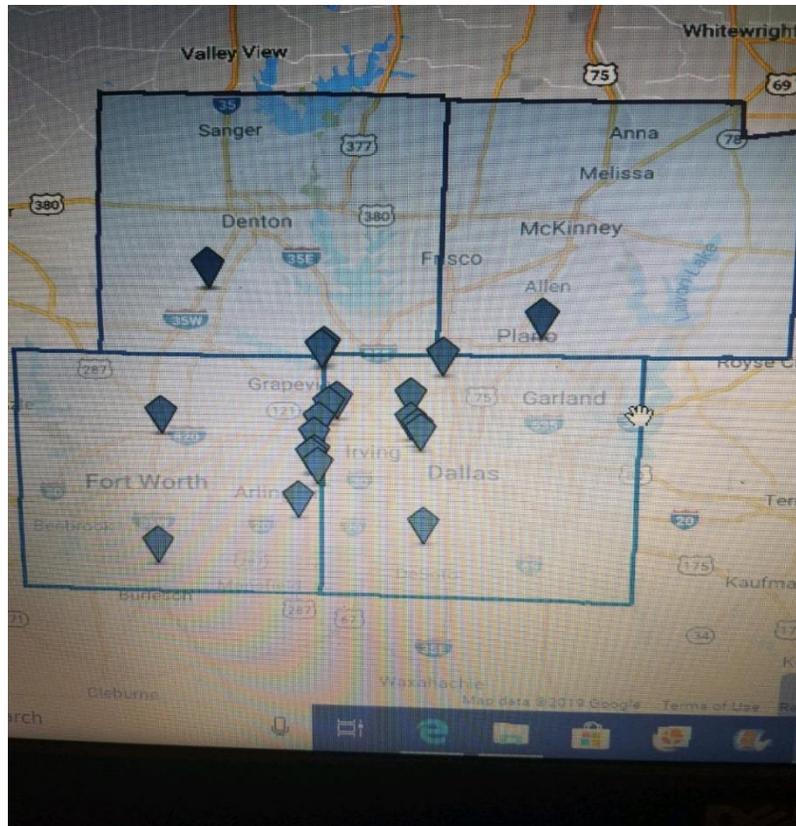
would also have loading docks and drive-ins and these must be easily accessible for delivery vehicles coming from the packing warehouse as well as vans going on delivery.

We are looking to run our goods from vans/cars as this will be quicker than unloading from massive 18 wheelers and will be able to get through the city more quickly. The twenty properties will adequately be able to pick and pack the orders in the forty minute time frame that is required. Parking should be adequate and have ample room for employees and employee delivery cars. Delivery at the beginning of the goods to the distribution centers would be undertaken by 18 wheelers. They would be docked in the loading docks and then unloaded and ran through a conveyor belt system throughout the building. The main keys for the delivery route to take 20 minutes or less will be traffic redundancy, what amount of traffic will there be for all hours of the day and at certain times such as rush hour traffic. It is important to find alternative routes off of main travel highways to get the product to the customer in the 20 minute time frame in the case of high traffic on the highways. It is also essential to have major highways flowing right off from the distribution center.

Filters for building criteria in Costar



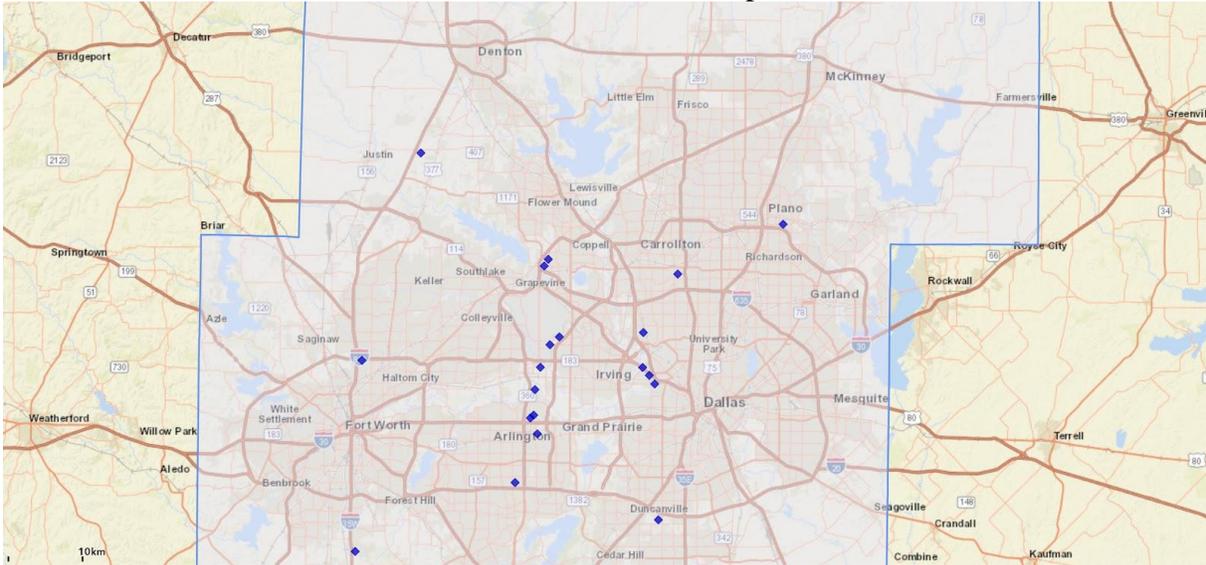
Final 20 locations in Costar for potential locations



Analytical Choices

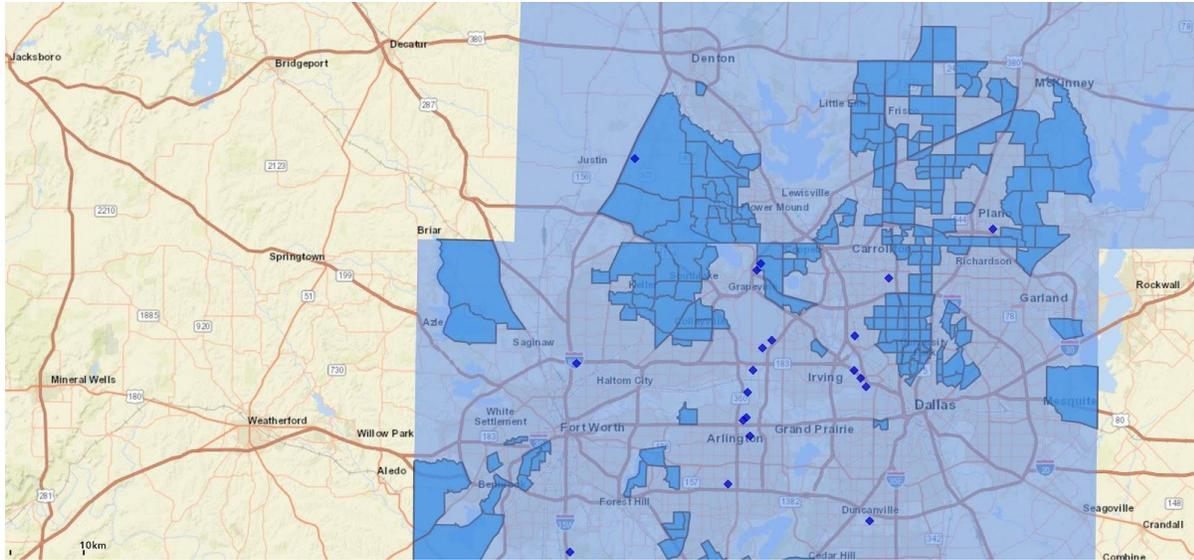
Starting off we were able to convert the Costar data over to an excel spreadsheet and through this we were able to save our own information on a new excel spreadsheet and then upload it to business analyst a product of ESRI. To find our target neighborhoods we used 5 variables that would highlight neighborhoods that would exhibit these attributes. In the final report, tools such as area of influence and catchment areas will be implemented to show who and what the customer's influences are by a certain distribution center. As for catchment areas it will be key to show these as they will show which customers are being delivered to by a certain distribution center.

Potential Locations Map



In the following maps certain tools were used to find the target data that the company was aiming for. A market profile is made up of certain qualifiers, qualifiers such as average house hold income. The house hold income variable is important as it allows us to make sure that the areas we are settling in will be doing well financially and can afford our services. In this market segment we are targeting an above average Household income exceeding \$150,000. Other variables such as how much money the average household spent on remodeling in the last 12 months were also layered into the data. Certain aspects that might seem farfetched such as exercising are also analyzed as this might show a more task oriented person. This profile is examined, because these variables with the age frame represents wealth. The age frame is more of a middle aged target consumer base for this market segment at ages 45-54.

Market Profile #1

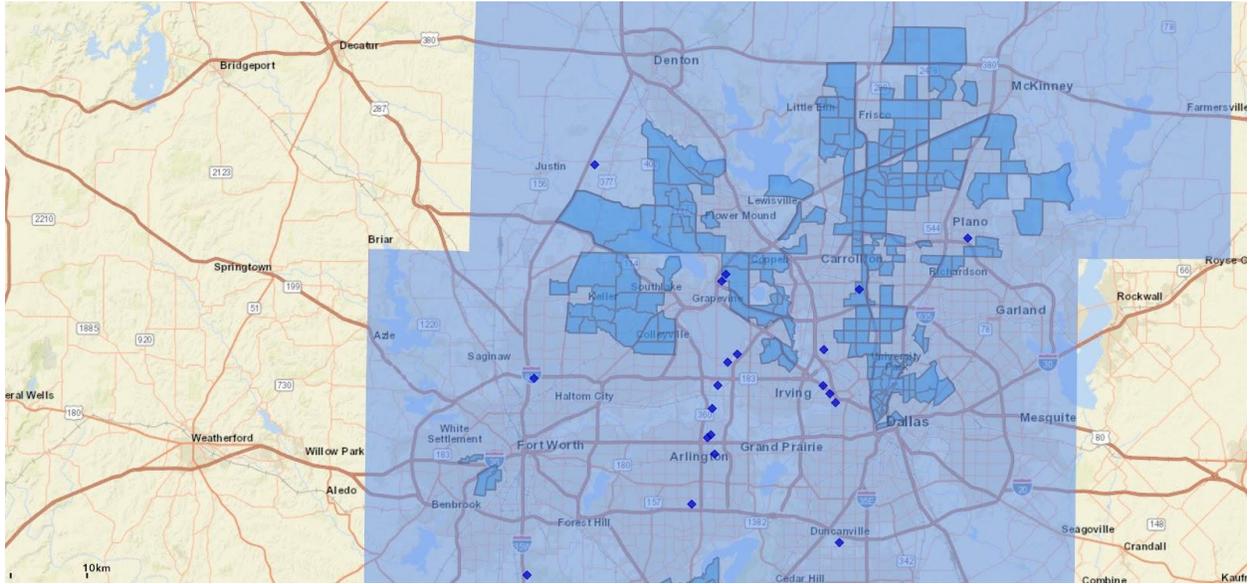


Target Sliders for Market #1

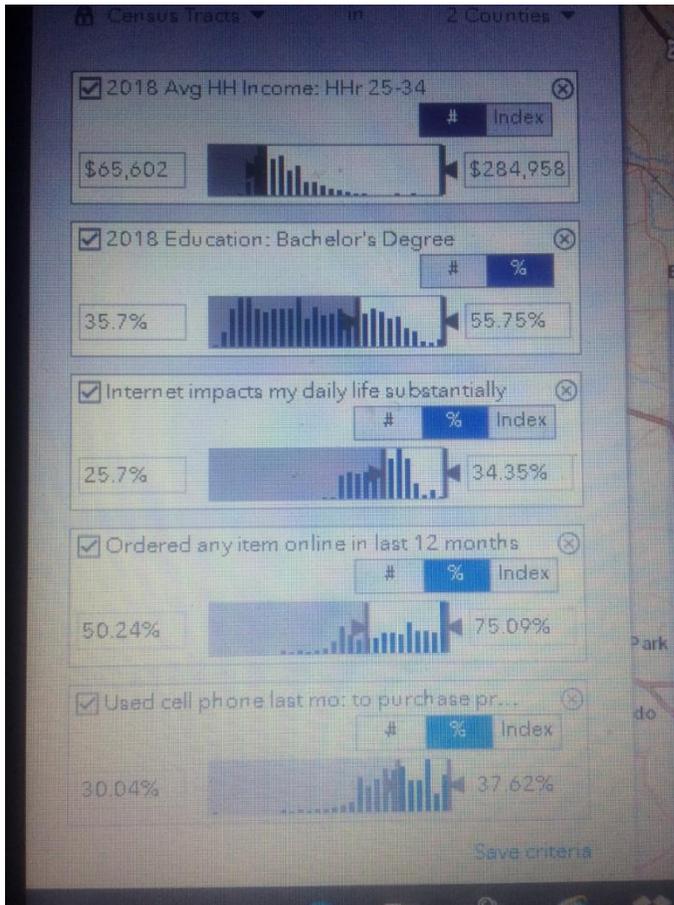


For the second market we wanted to analyze it was a younger demographic. The focuses of the parameter sliders were more oriented on the educational background and how active this consumer base is with the internet and ordering items offline. This is a key target aspect as it highlights what areas are prone to use the internet to purchase items. We can deduce that this area is very likely to be ordering items offline and would want their ordered item as quickly as possible.

Market Profile #2

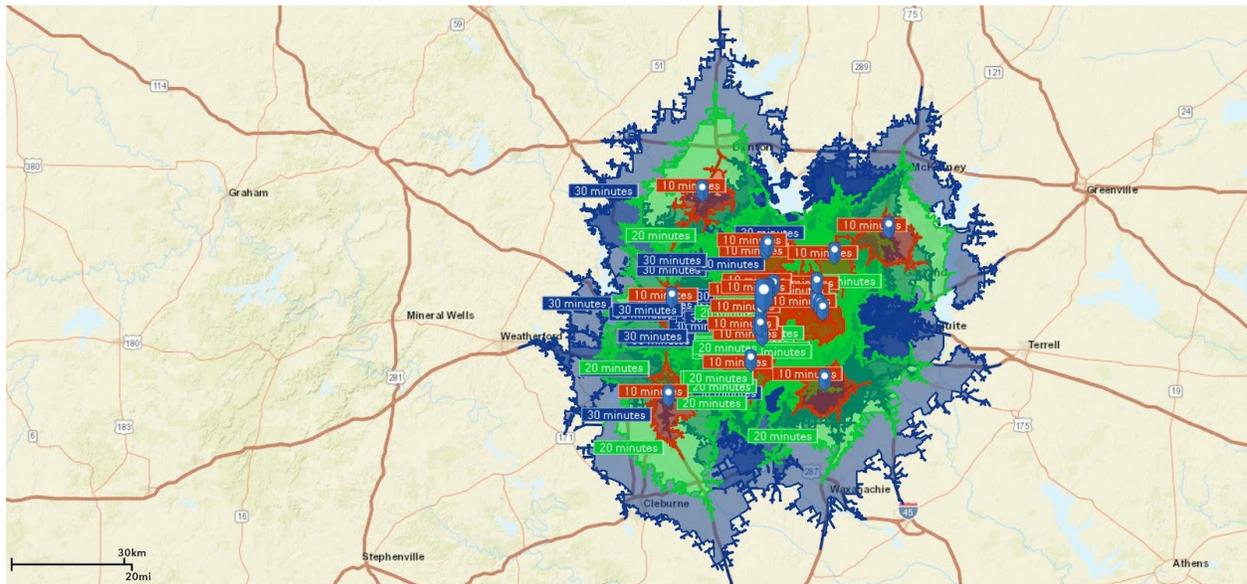


Target Sliders #2



The last set of data that was examined was using the tool of finding the average drive times for each potential distribution facility. This was implemented by taking the historic traffic data at Mondays at noon in that area and applying it to each area to see how far out the nearest potential distribution center would take to reach the customer's address.

Drive times overview



Data Understanding

Using the data we have gathered we can start to narrow down which potential areas we want to eliminate and which potential areas we can envision a future potential distribution site. We must keep in mind that we have to try and eliminate barriers such as wasted time getting out of the warehouse and make delivery as optimal and efficient as possible. We can break down the elimination process step by step. First we take filters in Costar to find which locations meet our desired criteria, we then map those areas out into business analyst. We take the desired market values and it highlights in blue the areas, we can then see which potential areas are in these catchment areas of the selected parameters. Then taking drive time data shows if these potential

distribution centers are in optimal locations to reach out to these selected markets. We have not definitively made the final choices where the actual distribution centers will be placed. Some strong candidates however are the Carrollton, Dallas, Grapevine, and Plano potential locations and if a fifth center is a possibility then potentially an Arlington location would be added. However these are subject to change, but the drive times, average traffic redundancy, proximity to both desired markets and a central location to all of the counties.

Overall Plan

For the optimal distribution centers our main focuses are on loading docks, ease of access, and multiple incoming and outgoing means of access from the facility. The facilities that would be most efficient would have ample room to allow for future growth and for flexibility to deal with all seasons. To locate these we would be using the median model, which targets locations that are closest to our consumers in regards to drive time and distance of travel. To optimize our delivery times we plan to use certain delivery techniques. The main technique we will use is ray sweep where the delivery driver would never cross paths with his own delivery route and would go out in a line to hit the closest target not coming back to the distribution center. Overall we plan to establish our distribution centers in areas where we have concluded the money will be. Once we have established these centers we will run delivery systems with the upmost efficiency. XYZ Corporation will become a staple of excellent transportation delivery services

Programs used

Costar

Business Analyst by ESRI

Works Cited

Coyle, John J., Robert A. Novack, Brian J. Gibson, and Edward J. Bardi (2012), *Transportation*, 8th edition, South-Western Cengage Publishing, Mason, OH, ISBN 978-1-133-59296-9