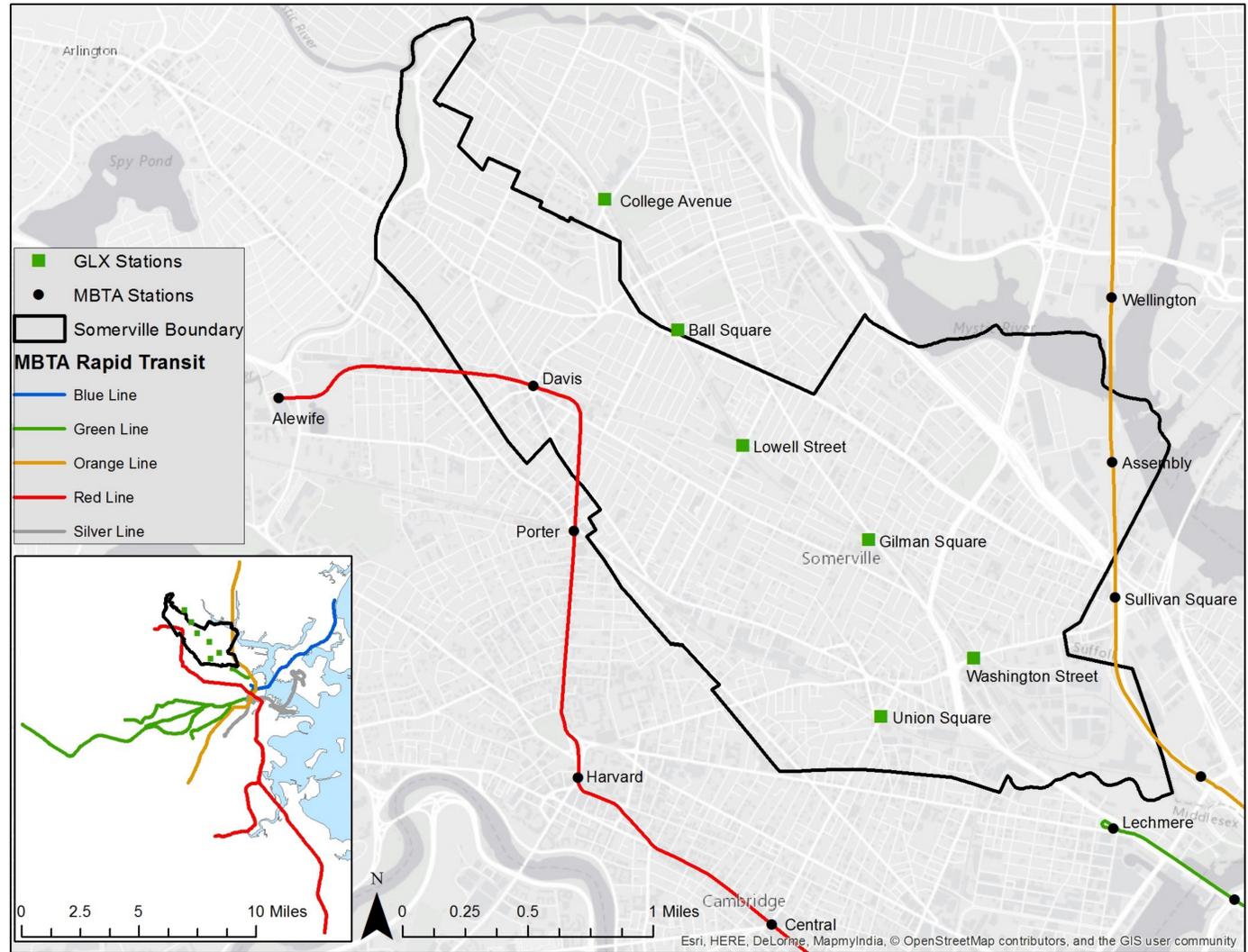
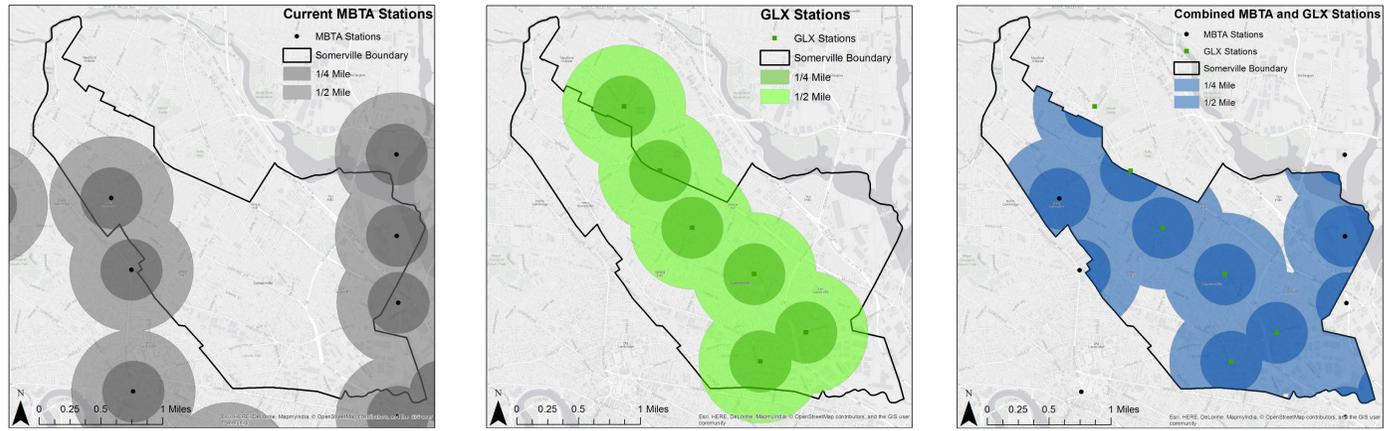


Introduction

The Green Line Extension (GLX) is an initiative to expand rapid transit access to the greater Boston area by extending the Green Line north from its current terminus at Lechmere station. The GLX project arose out of a promise to increase public transportation available to Somerville and Medford residents and offset the increase in car traffic from the Central Artery/Tunnel Project. Since its inception however the project has had various delays which have left residents wondering if it will ever happen. The purpose of this project therefore was to use spatial analysis to illustrate which areas of Somerville have the greatest potential to benefit from the GLX by examining current transportation use and proposed walksheds.



Walksheds



Methods

The first step was to create a new shapefile of the proposed GLX stations using documents published by MassDOT and the MBTA. Data on current MBTA stations and lines was obtained from MassGIS. The walksheds were created using half mile and quarter mile buffers around the MBTA and GLX stations. The combined buffer was a union of the other layers that was then clipped to Somerville's boundary. The variables I examined in my analysis were means of transportation to work and vehicle availability. These data sets were obtained from the ACS 5-Year Estimates which I accessed through the US Census Bureau website. The data was joined with TIGER line census tracts for Middlesex County and then clipped to Somerville's boundary. Total population was calculated using city block data from MassGIS that was intersected with various buffer layers.

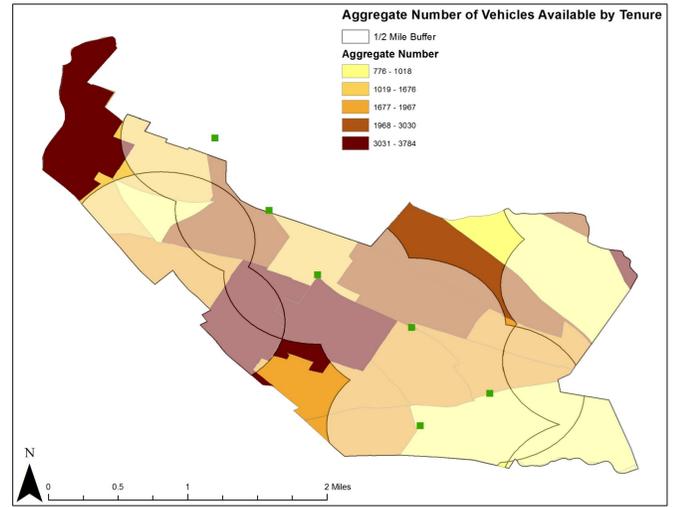
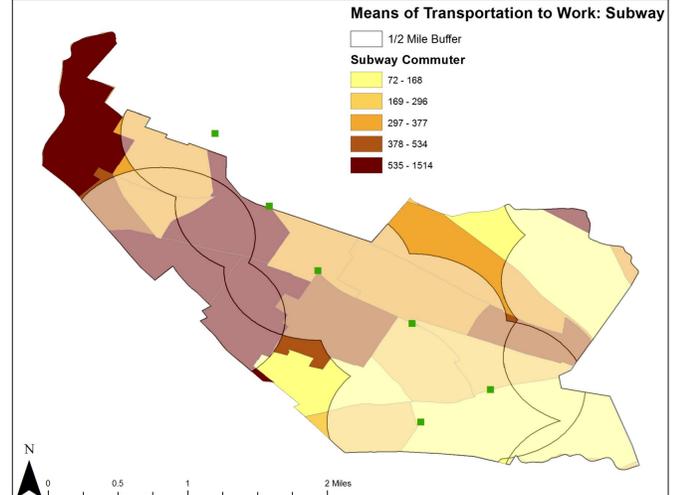
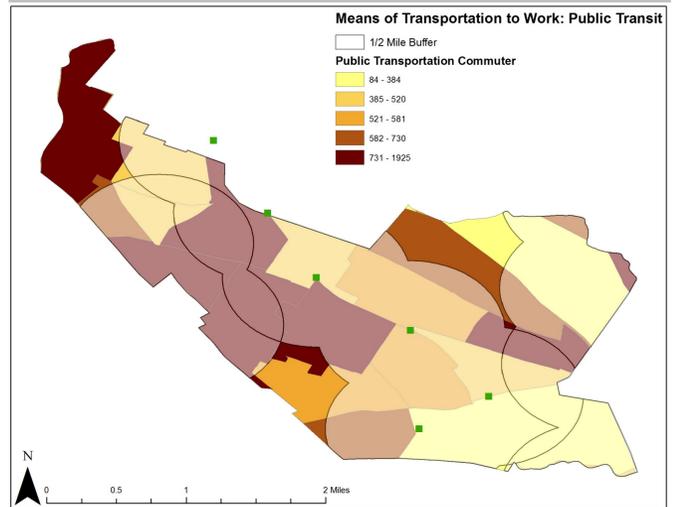
Results and Discussion

The public transit map unsurprisingly shows the greatest use in the census tracts closest to the Davis and Porter stations and the subway data confirms that these are people using the Red Line to commute to work. Some of these areas however fall outside the half mile walkshed of the Red Line stations and are significantly closer to the GLX stations. Although the census tract data assumes even distribution, this indicates that these areas have the potential to benefit from extended rapid transit access. In addition, there are areas that are in the highest quantile on the public transit map but lighter on the subway commuter map suggesting that people are using other forms of public transit such as buses. These areas are also closer to the proposed GLX stations so depending on the destination of these commuters they might also benefit from new rapid transit access.

There is less of a correlation between the public transit and vehicle availability maps than I hypothesized. I assumed the areas with the greatest public transit use would also have the fewest number of vehicles available. The opposite however appears to be true in many areas, such as the northern most census tract which has high public transit use and number of vehicles available. This finding indicates that Somerville may still be highly vehicle dependent; however because most of the census tracts with the fewest number of vehicles available fall within the GLX walkshed, Somerville has the potential to shift towards a less car dependent community.

	Population Within Area	Percent of Total Population
Somerville	81550	100%
Current Quarter Mile Walkshed	6358	7.8%
Current Half Mile Walkshed	23199	28.4%
Combined MBTA and GLX Quarter Mile Walkshed	23916	29.3%
Combined Half Mile Walkshed	60722	74.5%

Transportation Use



Sources

US Census Bureau, ACS 5-Year Estimates, 2012-2014; TIGER Products, 2014; MassGIS, MBTA Rapid Transit, 2014; Census 2010; City of Somerville MIS, 2005.
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Intro to GIS
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