

Understanding Mobility Access to Basic Resources For Atlanta Residents

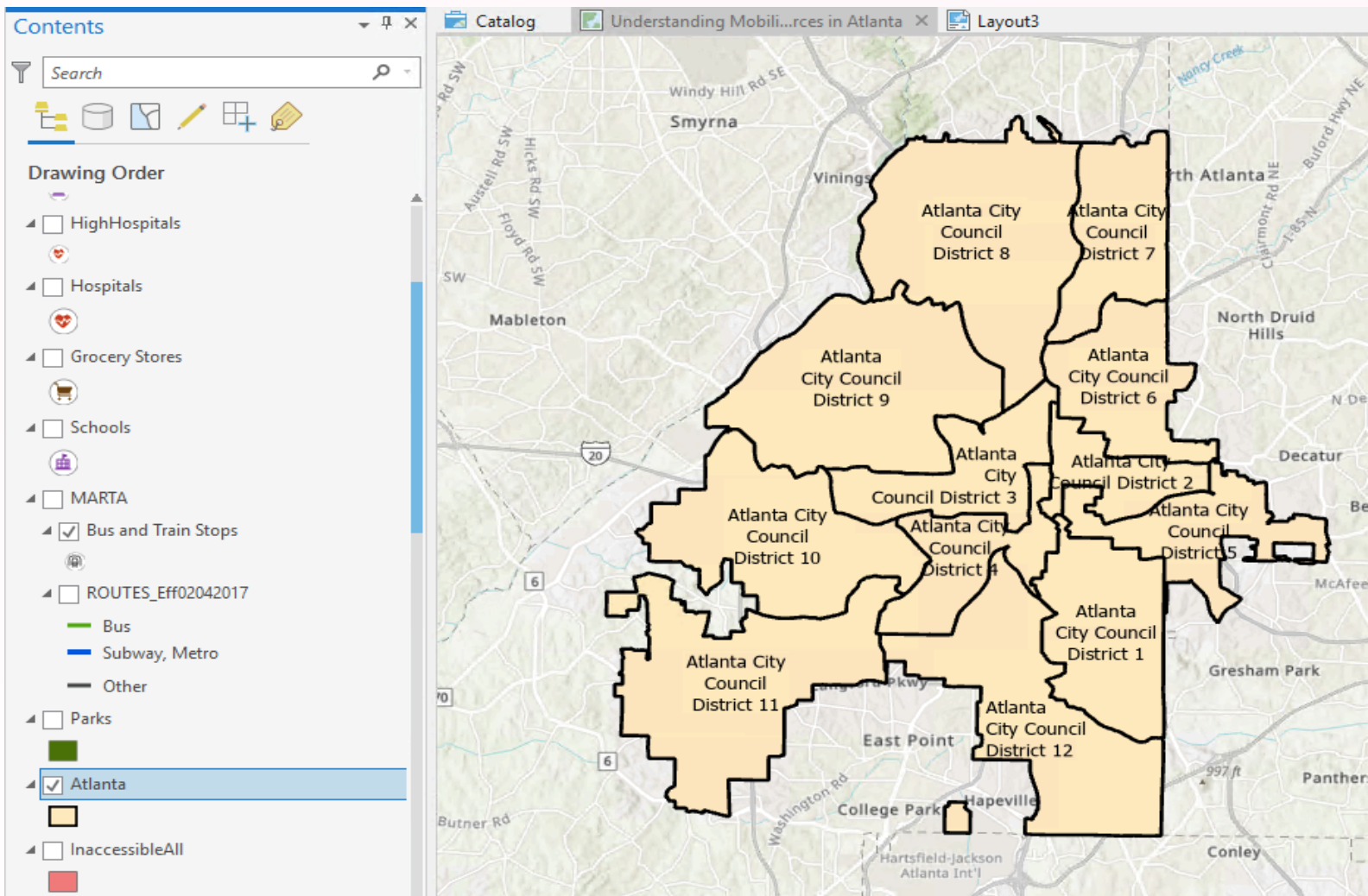
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Introduction

My research question is: How does the MARTA transportation system in place support mobility access to basic resources defined as public schools, hospitals, parks, and grocery stores? Mobility access will be defined as being able to travel to a bus or train station in less than 15 minutes (or .5 miles). The motivation of this work is the desire to give a voice to vulnerable populations of people. Families and individuals with lower incomes are normally unseen when planning and repairing infrastructure. This explains issues such as the state of roads and bridges being in poorer conditions in lower-income neighborhoods compared to higher-income neighborhoods.

This work will shine a light on lower-income communities being subject to such conditions. People that should be interested are those who are concerned about certain neighborhoods of Atlanta not having proper access to basic resources. Also, community-oriented organizations in Atlanta that offer free resources, such as healthy food delivery and educational programs for youth, would want to understand where it would be best to focus their efforts. In addition, if MARTA was considering expanding their routes, this work would give transparency on which neighborhoods in Atlanta their expansion would have the biggest effect on. The primary focus of this analysis is to understand the efficiency of the MARTA network for its customers at different income levels.

In this practical, basic resources are defined as public schools, hospitals, parks, and grocery stores. Although these resources are not necessarily needed to stay alive, they were chosen because the lack of these resources normally are an indication of poverty. According to USNews, students who do not attend well-ranked schools are at a higher risk of falling into or remaining in poverty due to lack of resources. According to Rendia, people who live farther from hospitals have limited access to health care and thus are more likely to not see a doctor when symptoms arise. According to the National Recreation and Parks Association, having access to parks can increase positive effects on health and quality of life and aid in fighting against mental health issues. According to the Food Trust, people without proper access to grocery stores are vulnerable to living in food deserts and food swamps, having little access to healthy food options.



Atlanta, GA geographically divided by City Council Districts

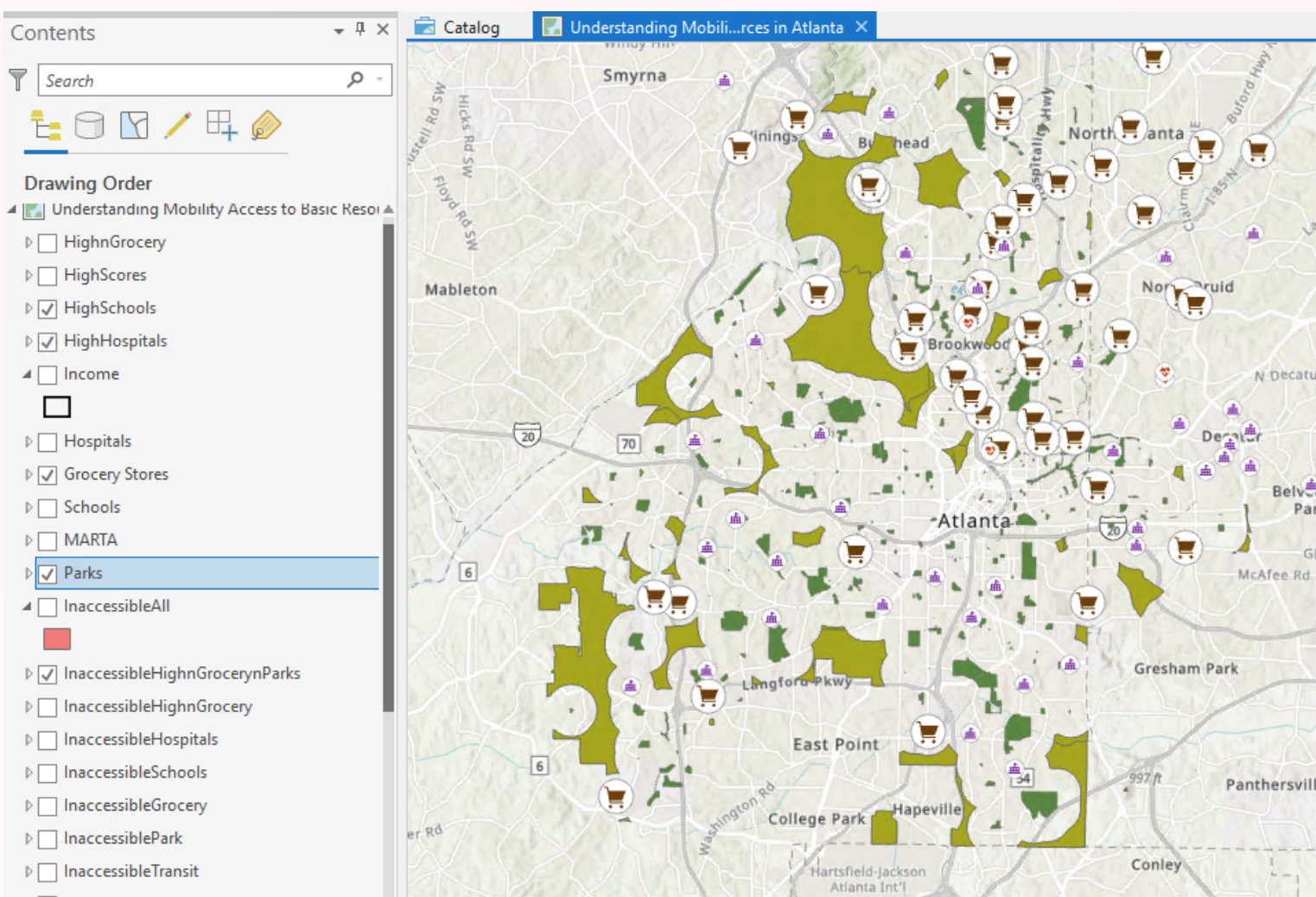
Methodology

I planned to approach the problem by employing spatial analysis using queries. Including using the geoprocessing tools Buffer, Erase and Make Feature Layer.

I have incorporated the spatial concepts of relative location, critical distance, mobility, and boundaries in the questions I asked. The relative location describes the distance and direction. My question explores the relative locations between the MARTA bus and train stops in Atlanta and basic resources. Mobility describes any type of movement from one place to another. My question explores the ease or limitations for the people of Atlanta to move from their homes to basic resources and MARTA bus/train stops. Boundaries describe real or imaginary lines that separate two things. Within my question, I explored the boundaries of neighborhoods and their relationship to average income.

I have incorporated the spatial concept of critical distance in the processes I followed. The critical distance is the willingness of people to travel beyond a certain distance which costs, effort, and/or means influences. In my process, I used the buffer tool to remove areas of neighborhoods that are less than the critical distance of .5 miles away from basic resources, which would be about 15 minutes of walking. After that distance, I expect effort and means to play a large role in their access to certain basic resources.

I have incorporated the spatial concepts of absolute location, neighborhood, and scale in the methods I used. An absolute location where a coordinate system is used to identify a location. I used the coordinate system StatePlane Georgia West FIPS 1002 Feet from the datum NAD 1983 to identify the locations of hospitals, grocery stores, schools, MARTA bus/train stops, and parks using the longitude and latitude. A neighborhood is an area that contains common characteristics that can distinguish it from other areas. My methods use the neighborhoods of Atlanta to define areas of Atlanta that lack access to MARTA bus/train stops and basic resources. A scale represents the approximate size of the actual region with the reduced size to be viewed on a screen or paper. A scale is present on my map to help the audience understand relative distances between areas of Atlanta and MARTA bus/train stops.



Areas in Atlanta (light green) that are more than .5 miles (15-minute walk) from at least one of the following features, a high-ranking hospital, high ranking school, park, or grocery store:

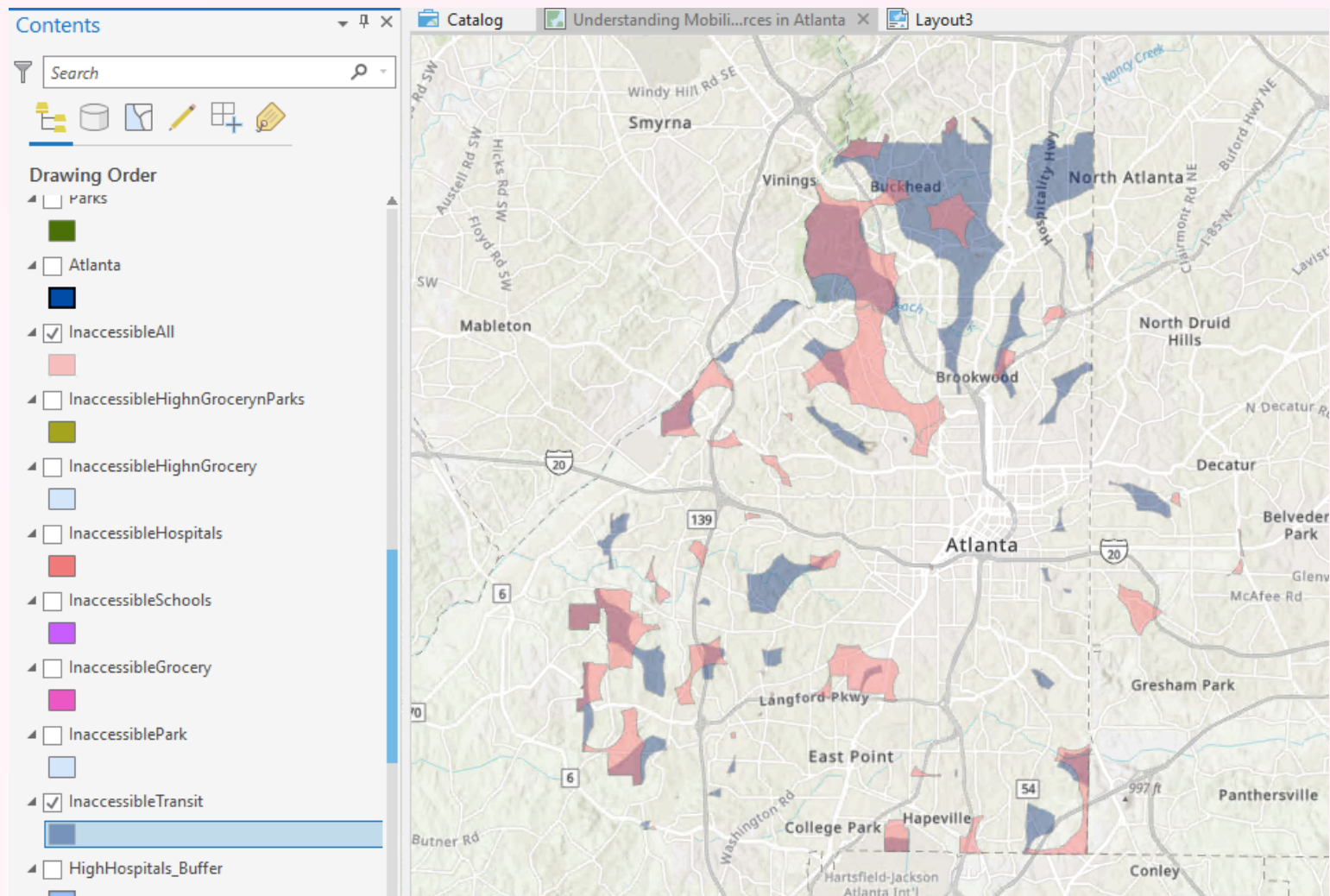
Results

My analysis of income disparities was not as useful as expected. Therefore, I did not want to use incomes because although the dataset is accurate, the lack of division distorts that data. It does not highlight smaller communities, instead of many communities in which large differences in their income are combined. Possible outliers in the income data that would distort the data was a major concern. When disregarding the income calculated, my analysis displays the transportation disparity in Atlanta. My data can be used as a display of communities that do not have reasonable access to MARTA.

The only city council district that has full access to MARTA was City Council District 4. I would expect the lack of MARTA accessibility for other districts to be attributed to a lack of demand. Specifically, many people in that area have access to other modes of transportation, therefore there would be very little use of MARTA. Even though MARTA has access to those features, not all areas have access to MARTA.

Fortunately for the residents that live near MARTA (less than .5 miles), there are many train/bus stops that are near majority of basic resources in Atlanta. Only two schools and one park were more than .5 miles away from a MARTA bus/train stop. In which one school was high ranking and the other was not. This is interesting because it can be used as evidence that within the Atlanta metro area there is a lack of social bias in whom the MARTA network chooses to serve. Yet, there would need to be a deeper investigation of this. Additionally, the biggest area that was inaccessible to MARTA was northern Atlanta. Notably the Buckhead area, one of the richest areas of Atlanta. This could possibly be explained by the low demand for MARTA since people in that area would be more likely to own cars. This would remove their reliance on public transportation.

Despite this, many areas are not close to at least feature. Meaning, people residing in certain areas may have difficulty accessing basic resources, such as education, medical assistance, or food. Unfortunately, even more residents do not have access to high performing basic resources. This exhibits if the distance is a priority for certain residents, some residents may not be able to have access to schools that may provide a better education for their child, or hospitals that may be able to provide themselves with better medical care.



Areas in Atlanta that are more than .5 miles (15-minute walk) from at least one of the following features, a hospital, school, park, or grocery store (red) overlaid with areas in Atlanta that are more than .5 miles (15-minute walk) from a MARTA bus or train station (blue)

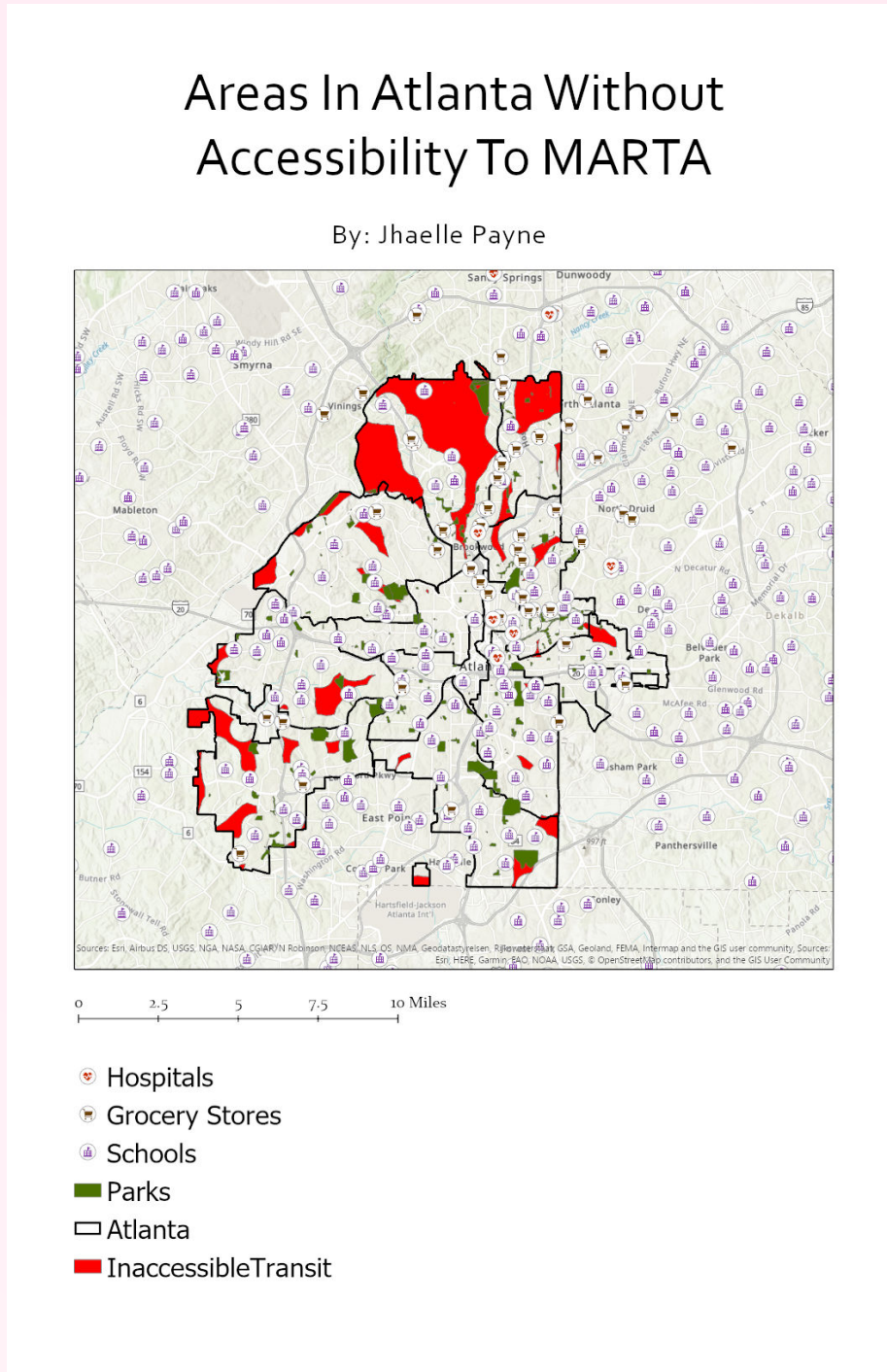
Conclusion

The purpose of my practical was to demonstrate how the MARTA bus and train transportation infrastructure in Atlanta supports mobility access to public schools, hospitals, parks, and grocery stores.

I had four objectives. First, to distinguish areas in Atlanta that were more than .5 miles away from a MARTA bus or train stop. Second, to distinguish areas that are more than .5 miles from a school, hospital, grocery store, or park. Third, to compare the income levels of the distinguished areas to non-distinguished areas. Fourth, to map where all basic resources are in Atlanta. Specifically schools, hospitals, grocery stores, and parks.

My results revealed four outcomes. First, MARTA bus/train stops are within .5 miles of basic resources in Atlanta, with the exception of two schools and a park. Second, there are areas in Atlanta that are more than .5 miles from MARTA bus/train stops. Therefore, certain areas in Atlanta are not able to fully take advantage of this access. Third, there are areas in Atlanta that are more than .5 miles from high performing basic resources. This demonstrates that not all Atlanta residents are able to access high-quality education, medical care. Fourth, there are areas in Atlanta that are more than .5 miles from at least one basic resource. This exhibits that some people residing in certain areas of Atlanta have a difficult time obtaining these resources.

To answer my research question clearly, the MARTA transportation system supports access to basic resources defined as public schools, hospitals, parks, and grocery stores. However, the MARTA transportation system does not provide access to all residents of Atlanta. Therefore, regardless if MARTA supports these resources, its inaccessibility to some individuals renders this useless to them.



Acknowledgements

The authors gratefully acknowledges the helpful discussions provided by Michael Page and Wenlu Ye