3-30-2012

Served or Unserved? A Site-Suitability Analysis of Social Services in Atlanta, Georgia Using Geographic Information Systems

Cheryl Case
Georgia State University

Follow this and additional works at: https://scholarworks.gsu.edu/univ_lib_sbra

Served or Unserved? A site-suitability analysis of social services in Atlanta, Georgia using Geographic Information Systems
By: Cheryl Case, M.A., Georgia State University
Original Submission Date: December 7th , 2011

1. Background

In August 2011, as a graduate research assistant, I collaborated with a team to create a

third edition of the Atlanta Community Resource Directory.[1] The directory includes pertinent

information on the location, hours of operation, contact information, description of services

provided, maps of social services, and additional information regarding community-based

services within the City of Atlanta. The services included were employment/training services,

health clinics, HIV/AIDS assistance, prisoner reentry services, housing/shelters, food and

clothing services, lesbian gay bisexual transgender and queer (LGBTQ) services, addiction

programs, community centers, multi-service providers, and church-based service providers.

A large portion of creating the directory involved mapping social services. However,

through the process, questions regarding the apparent gaps in the provision of social services in

zip codes 30310, 30314, 30311, and 30318 emerged. Although the maps showed where social

services were located, they also brought into question the accessibility of these locations to

individuals seeking these services.

In addition to questions regarding access, on October 22, 2011 one of the listed

HIV/AIDS Assistance organizations, Atlanta Harm Reduction Coalition, Inc. (AHRC) was

---

[1] The resource guide was created by Mary Anne Adams, Georgia State University (GSU) Director of Center of Excellence (CoEx) for Health Disparities Research Community Engagement and Outreach Core; Demarcus Peters Executive Director of the English Avenue Neighborhood Association (EANA); Jack Reed GSU Department of Geosciences cartographer; and Cheryl Case GSU Graduate Research Assistant CoEx Community Engagement and Outreach Core.

forced to discontinue services and relocate.[2] Since the end of October, AHRC has been searching

for a building that would enable them to continue to serve in the 30310, 30314, and 30318 zip

codes. AHRC has served the English Avenue neighborhood (in 30318) for over 17 years; yet,

despite the needs that AHRC was meeting in their community, zoning codes led to the

organization temporarily discontinuing their service. Currently, AHRC is still searching for a

new facility to run their operations and remain in these zip codes because of the high prevalence

and incidence of HIV in these communities.

2. The Geographic Problem

The experience of AHRC is common among community organizations. The closure of

important services in communities in need happens all too often. As cities continue to grow, the

lack of planned and regulated development of social services exacerbates already rampant

disparities by limiting access (Cinnamon 2008). According to Wolch (1996), these services also

have an number of struggles, such as: lack of community acceptance, often rely strictly on

volunteers and donations, and are segmented in separate government agencies. In this way,

provision and care social services have created a complex system of barriers to accessing

services in a fragmented system.

Nevertheless, localized social services are critical to providing quality care throughout

neighborhoods and communities. More specifically, localized services, like community clinics,

have the ability to reduce traffic in hospital ERs and acute treatment centers. In addition, many

localized social services provide education and preventative care that can provide valuable

services for illnesses and infections, poverty, hunger, mental health, substance abuse, and

---

[2] AHRC is a health service provider specializing in the prevention, diagnosis and treatment of; substance use, HIV/AIDS, STDs, hepatitis, and other communicable diseases

homelessness. Yet, for many who need these resources, it is not a question of whether there is a resource available, but whether they can *access* the resources needed.

Service providers do not have the training and/or equipment to serve all of those seeking services. The influence of location and distance to health-services outcomes are well documented. Studies show that health services are heavily influenced by spatial access (Cinnamon et al. 2008:9). In particular, Cinnamon (2008) explains that these services are more likely to be used when localized. Drawing from Karr and Hodgson's (2008) site-suitability assessment on evacuation shelters, they asked the following two questions: (1) Are facilities located in physically and socially suitable areas, and (2) Are current facilities located in physically and socially unsuitable areas (situated in areas with demand)? In addition, for this analysis it is critical to ask (3) Are there current gaps in the social services that limit access, and (4) Are there places that are over-served with duplicate services?
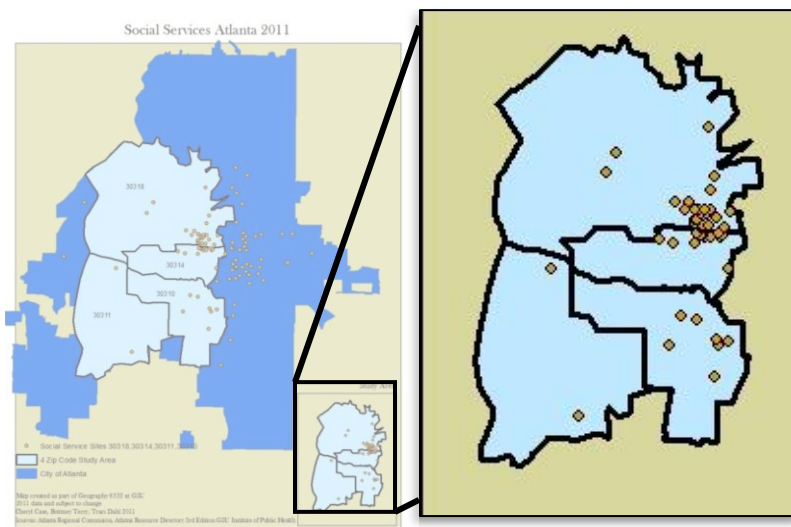

Figure 1: Excerpt of "Map 1:Service Access Atlanta 2011". T*his map shows where social services are located in the City of Atlanta and the number that fall within the study area. For full size, see Appendix page 25).*

To excavate this multifaceted problem further, it appears that there are two key problems at bay when examining the spatial accessibility of social services in the City of Atlanta. First, the

spatial gaps in the social service provision in 30310, 303014, 30311 and 30318 zip codes. These

zip codes and the communities within them are classified as low-income neighborhoods. For

instance, 30310, 30314, and 30318 contain "Weed and Seed" neighborhoods with 30% low-

income residents. [3] Meanwhile, the range of income for individual households is $19,438

(30314) to $28, 589 (30318); totaling to an average income for individual households of $25,035

for all four zip-codes.[4] Currently the federal poverty threshold for a family of four is $22,350. As

an average, these four zip codes hover just above the poverty line.[5] Furthermore, this study area

encompasses 197, 231 people, or 47% of the population in the City of Atlanta.[6] In other words,

understanding social services in these zip codes would illustrate the optimality, accessibility, and

sufficiency of social service and care provision for half of the City of Atlanta.

    As highlighted previously by AHRC, 30314, 30310, and 30318 have some of the highest

prevalence and incidence of HIV in the City of Atlanta. According to the HIV/AIDS

Epidemiology Section of the Georgia Department of Public Health, based on 2009 surveillance

data zip codes 30314, 30310, and 30318 were in the top ten of all zip codes in Georgia with the

Highest HIV Infection Rates (see Table 2).

---

[3] Weed and Seed, a community-based strategy sponsored by the U.S. Department of Justice
(DOJ), is an innovative, comprehensive multiagency approach to law enforcement, crime
prevention, and community revitalization. CCDO oversees the Weed and Seed initiative. In
particular, Atlanta Weed and Seed coordinates federal, state, municipal and community resources
to co-design neighborhood action plans that reduce crime, monitor juveniles, keep students in
school, revitalize neighborhoods and build community capacity. This data was collected from a
Weed and Seed Evaluation presented by Dr. Michael J. Rich from Emory University, to the U.S.
Department of Justice Community Capacity Development Office National Conference Tampa,
FL July 13-16, 2009 (http://www.atlantaga.gov/mayor/weed_seed.aspx).
[4] Income based on 2010 Census Data. Accessed December 7th, 2011 www.census.gov
[5] Federal Poverty Threshold Statistics 2011. Accessed December 7th, 2011
http://aspe.hhs.gov/poverty/11fedreg.shtml
[6] The Official population of the City of Atlanta is 420, 003.
http://quickfacts.census.gov/qfd/states/13/1304000.html Accessed December 7th, 2011

Table 2: Top 10 Zip Codes in the State of Georgia with Highest HIV Infection Rates 2009

Rank	ZIP Code	Rate per 100,000	City
1	30308	224.7	Atlanta
2	30318	111.8	Atlanta
3	30324	103.4	Atlanta
4	30314	95.7	Atlanta
5	30315	84.4	Atlanta
6	30310	80.4	Atlanta
7	30316	67.7	Atlanta
8	30349	48.0	Atlanta
9	30032	44.2	Decatur
10	30909	28.3	Augusta

In addition, these zip codes also bear the burden of many other chronic diseases and illnesses. Therefore, by taking into account socioeconomics and physical needs in these four zip codes, it is critical to identify gaps in social services to improve service to these communities.

To tackle the problem of service in care provision in these communities, it is essential to understand the current urban landscape. To determine what is a suitable site for a social service, it is important to factor in public transit and walkable access, population serviced, proximity to other existing services, ability to fill current service gaps and duplicated services. In addition, to identifying potential sites for social services, it is necessary to know city-zoning codes where social services are permitted and where they are not. Moreover, these factors inform where service and what type of services ought to be located. Therefore, using the above criteria this site-suitability analysis will ask: **Are current social service providers optimally, accessibly, and sufficiently located in 30310, 30311, 30314, and 30318?** Following the analysis, the total population served and unserved will be identified, and recommendations will be given regarding where future social service sites could be located for better service in care provision.

3. **Analytical Methods**

For this research I utilized a six-fold methodology which included: (1) *Data Processing and Mapping Social Services*; (2) *Buffering, Creating an Access Radius, and Choosing the Distance;*

(3) Zoning Classification Maps; (4) Unmet Service Needs, A Population Perspective; (5) Site search analysis; and (6) Value Focused Approach. In particular, I will discuss these methods and how they were used in conducting and analyzing this research.

GIS based site suitability approaches are used extensively throughout geographic research and problem solving to evaluate facility locations. For instance, GIS can be used to assess locations for anything, i.e. commercial buildings, waste dumping sites, evacuation shelters, health clinics, and regional planning (Miller et al., 1998; Janssen and Rietveld, 1990; Eastman; Church, 2002; Karr and Hodgson 2008; Foley 2002; Murad 2004; Osri and Gelentti 2010; Malczewski 2004; Cinnamon 2008). However, despite the utility of GIS to assess and evaluate current and future sites, literature is limited on site suitability studies for social services in under-served communities. In particular, there is a need for assessments that examine both city planning dynamics, such as zoning codes, and existing gaps in social services. This type of assessment will be able to identify potential areas of need and potential areas for the development of social service sites.

Method 1: Data Processing and Mapping Social Services

Before the mapping of social services began, I retrieved tabular data on social service sites using the third edition of the Georgia State University Atlanta Community Research Directory and working with collaborates and community members. Since the directory was published in August 2011, it was critical to update the information in the guide and validate each service site address using Google searches, yellow pages, and contacting individual service providers. After each source was validated and those no longer in operation were removed from the data file, I edited and cleaned the data set. This included processing and extracting the

relevant information needed to conduct a site-suitability analysis; such as address information, service type, subtype, and name.

Based on the services each site provided, I specified attribute categories for each organization (i.e. Addiction Services, LGBTQ, Community Centers, etc). In particular, I used the nearly identical categories as the Atlanta Community Resource Directory; with the exception of two new categories church-based services and multi-service providers. These new categories, although not previously classified in the directory, were included to draw attention to two additional critical types of service organizations.

Each service provider was then geocoded using the ArcGIS10 address locator. Once mapped, each service site was symbolized based on its specified type and subtype attributes. The symbols utilized in this analysis were identical and/or very similar to those illustrated in the resource directory.[7]

The map of resources was then overlayed with MARTA bus stops, train stations, and bus routes, zoning classifications, and census block population datum.[8] By mapping the social service sites in relationship to these other data, we were able to visualize where sites are located and how accessible these sites are by public transit. Once all the resources were mapped, two separate series of maps were created: (1) those focusing on zoning code classifications (Maps

---

[7] The social service sites mapped came from data collected from the Georgia State Institute of Public Health Third Edition Atlanta Resource Directory 2011. Based on the description of services provided, each resource was categorized into the following groups: Clinics, Addiction Services, HIV / AIDS assistance, Community Centers, LGBTQ services, Youth programs, General Service Providers, Service Provider Churches, Housing, Shelters, Food & Clothing, Legal Services, Prisoner Reentry Services, and Employment Training.

[8] In addition to social service sites, 2009 Census Block population data, 2010 zoning code maps, 2010 MARTA bus stops, bus routes, and rail stations were mapped. Sources: Atlanta Regional Commission: http://www.atlantaregional.com/, City of Atlanta Zoning Codes: http://www.atlantaga.gov/government/planning/zoning.aspx.

2A-6A, see Appendix) and (2) those focusing on population density (Maps 2B-6B, see

Appendix).

Method 2: Buffering, Creating an Access Radius, and Choosing the Distance

After each social service was mapped, services were grouped into clusters of two and

three for analysis purposes. The service categories were grouped into five different maps (see

Maps 2A-6B in Appendix). A 0.6 mile point buffer zone was created around each social service

to define the parameters of an acceptable access radius.[9] Then, each of these buffers were

merged with a (0.25 miles) line buffer around MARTA bus routes, bus stops, and rail stations to

incorporate distance to public transit services. Together, the point and line buffers were clipped

to the parameters of the study area and made up the "access radius". These radii were then used

to analyze (1) how many people were served and left unserved and (2) the zoning codes for

current and prospective service sites. Furthermore, these access radii identified spaces outside of

the catchment area for social services and show both reached and unreached spaces by any social

services or public.

Throughout the literature a variety of distances are considered acceptable when defining

access in a site-suitability analysis. According to Cinnamon et al. (2008), accessibility for

palliative care services is measured as one-hour real drive time. According to Karr and Hodgson

(2008) accessibility and site suitability of evacuation shelters included a 10 mile radius and a 50

meter by 50 meter area with needed services. In light of our study area, which targeted people in

need of social assistance services due to physical, emotional, mental, and/or financial needs, we

---

[9] United Nations Access to Social Services by the Poor and Disadvantaged in Asia and the
Pacific: Major Trends and Issues Social Policy Paper No. 11, 2002 ST/ESCAP/2240. Accessed
December 10th, 2011 http://www.unescap.org/esid/psis/publications/spps/11/chap4.pdf

drew on the United Nation's (UN) review of access to social services.[10] In this review, the UN recommends that for developed countries, that accessible and ideal social services would be within 1 km (0.6 miles) walking distance.

Since we are mapping social services that provide care for marginalized and disenfranchised populations, it is critical to factor in limited mobility and barriers to transportation services. Because the study area and population focused on groups with potential difficulty with mobility, we chose to define accessibility to transit as a 0.25 mile (0.4 km) distance. We reduced the accessible distance for social service sites by half in consideration of the challenges presented either by a 1 km walk to a service site or by using public transportation to reach a site 1 km away.

Method 3: Zoning Classification Maps

To create maps 2A-6A, the maps of social service providers, public transportation facilities, and public transit and social service buffer zones were overlayed with City of Atlanta zoning code layers. To create the zoning code layer, data from the Atlanta Regional Commission 2010 zoning data and City of Atlanta Zoning Code Ordinances 2011 was used. Following which, through a series of geoprocessing techniques (intersecting, clipping, dissolving, and merging) a cholropeth map of the zoning codes was created to show areas that were (and were not) zoned for social service providers.

Maps 2A-6A (see Appendix) illustrates access to social service sites in relationship to access to public transportation and City of Atlanta zoning codes (for example, see Figure 2

---

[10] United Nations Access to Social Services by the Poor and Disadvantaged in Asia and the Pacific: Major Trends and Issues Social Policy Paper No. 11, 2002 ST/ESCAP/2240. Accessed December 10th, 2011 http://www.unescap.org/esid/psis/publications/spps/11/chap4.pdf

below). By creating a series of maps that provides zoning information, policy makers will be
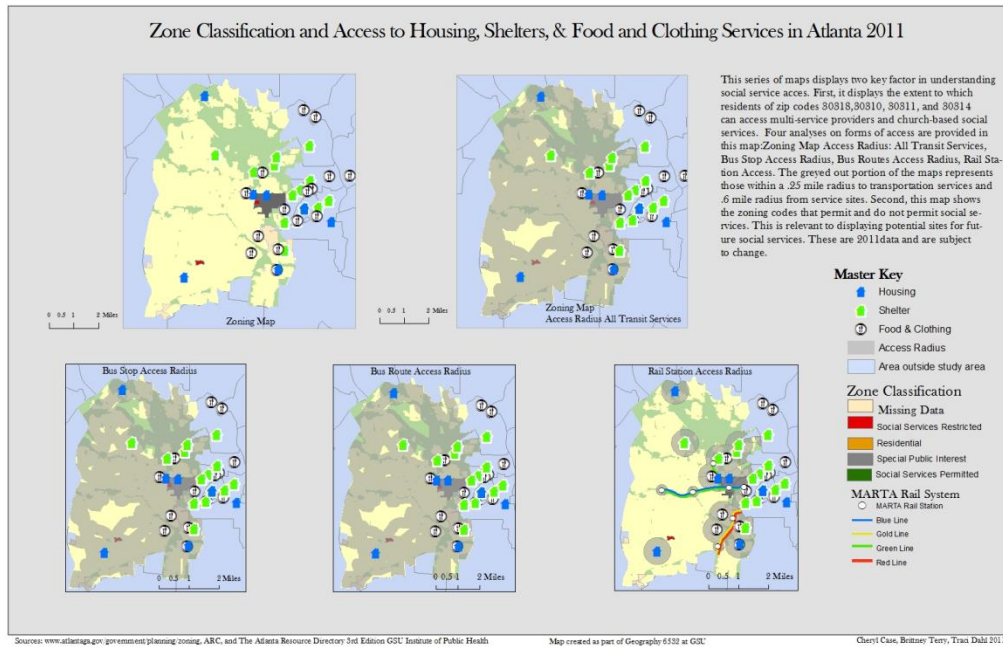
able to narrow their search for potential places.

Figure 2: Map 6A Zone Classification and Access to Housing, Shelters & Food and Clothing Services in Atlanta 2011.[11] (*See Appendix*)

Although zoning is subject to change over time, this information revealed where social

service sites are and are not permitted. In addition, the zoning codes also brought to light the

"special permit" policies that social services have to apply for, even when in permitted zones.

This is a critical insight because zoning ordinances are an important factor in determining where

potential social service sites can be developed. In particular, the zoning maps highlight

residential areas and special public interest areas that may allow social services by special

permit; however, the process of implementing social services is complicated because of the

neighborhood politics and planning system (Wolch 1996). Ultimately, the zoning code maps (see

Maps 2A-5A in Appendix, as well as above Figure 2) illustrate social service gaps in access, as

---

[11]Although each map appears smaller in this paper, each was designed to be 11x13 inches format.

well as the capabilities and limitations for developing social services in regards to zoning

policies.

Method 4: Unmet Service Needs, a Population Perspective

When thinking specifically about social services, knowing how many people have (and

do not have) access is critical. Looking at the population around an area can reveal multiple

factors about the service such as: if the service may be overcrowded, if the service may be under-

utilized, if it is optimal and sufficient for the population, and may also influence how policy

makers utilize resources. In this study after forming multiple access radii regarding social

service sites and public transportation lines, it was critical to find out how many people are being

served (or unserved) by these sites.

In order to measure the population with and without access to social services, Maps 2B-

6B (see Appendix, and example Figure 3 below) were created. These data sources were joined

based on their location in the study area. Following which, through a series of geoprocessing

techniques (intersecting, clipping, dissolving, and merging) a cholropeth map of the zoning

codes was created to show areas that were (and were not) zoned for social service providers. In

particular, these maps overlay social service providers, public transportation facilities, and public

transit and social service access radius over U.S. Census block population density data. [12]

Once the chloropleth map was created, a new attribute was created to represent the

population without access. To estimate the total population served, the method of apportionment

was utilized.[13] More specifically, the areas outside the access radius were extracted and

---

[12] Source: 2009 Atlanta Regional Commission Census Block Population Density Data

[13] The population apportionment was built by using the geoproccessing erase tool. Then I erased
the buffer from census block population clipped layer. This created a new layer of the non-served
sections of the map. Then, I joined it with the 2009 census block population data. After joining
these two layers, I created a proportion by dividing the area of both polygons. Then I multiplied

populated using proportions to generate an estimate of the population. This apportionment shows

the served and unserved populations and the four most unserved groups geographically.

Although this may not show the exact number of people living in these unserved areas, it does

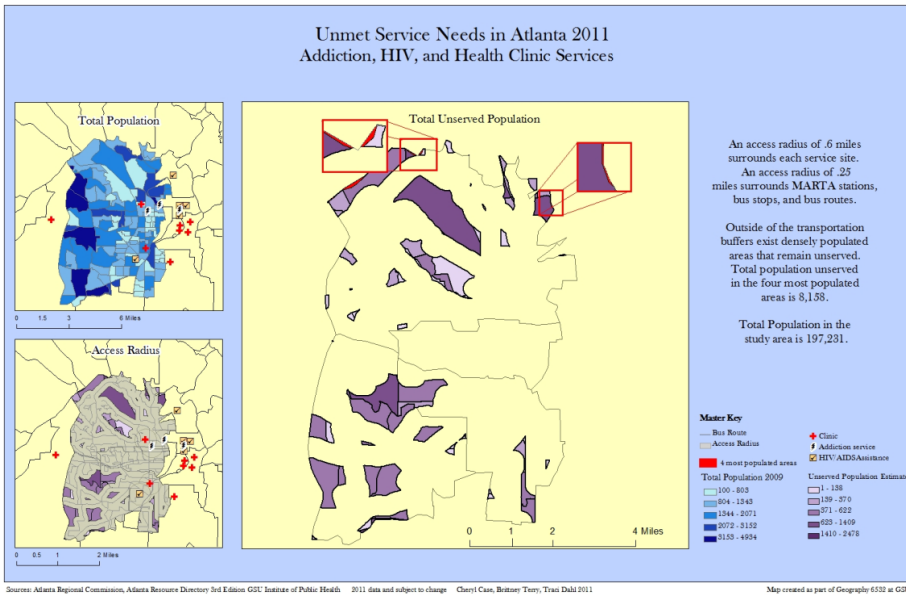provide a valuable estimate and projection.

Figure 3: Map 3B Unmet Service Needs in Atlanta 2011: Addiction, HIV, and Health Clinic Services[14] *(see Appendix).*

       Within GIS, population apportionment is used to estimate populations and spatial

distributions (Gorr and Kurland 2010:307-316). Whether population apportionment is used to

estimate the population exposed (Tang et al 2010), or most effected by lack of social services,

population variables are critical in developing GIS analysis. Ultimately, in the absence of

---

the proportion by the total population. This gave me a measurable estimate of the population
without access to social service as defined by a .6 mile walking distance to a social service site
and .25 mile walking distance to a MARTA train station, bus stop, and/or bus route.

[14] Although each map appears smaller in this paper, each was designed to be 11x13 inches
format.

qualitative methods and research, apportionment is the standard method used in GIS to conduct site-suitability analyses (Hirschfield et al. 2001:334-335; Gabe et al. 2005) [15]

Method 5: Site search analysis

Broadly defined, site suitability analyses aim to identify the optimal future use of geographic space based on specific goals, requirements, preferences, population, and/or indicators (Hopkins, 1977; Collins et al., 2001). Within site-suitability analyses is the site search approach. The site search analysis works to identify potential sites without pre-determined locations and/or facilities. The site-search analysis not only determines site suitability but also spatial characteristics, criteria, and boundaries that inform the evaluation (Malczewski 2004). Therefore, to apply geographic problem solving and a site suitability analysis to identifying potential sites for social services, I will use a site search analysis.

Drawing from previous site-suitability analyses, I tailored this assessment to determine suitability through factoring in (1) the population within the target study area, (2) access to public transportation lines (within 0.25 miles of a bus stop, bus line, and rail station or 0.6 miles from a social service site), and (3) the spatial relationships among the services, i.e. distance, duplication of services, and service differentiation. Ultimately, this paper presents a vector-based site search analysis. In this study, a potential site for a social service is defined by areas outside the access radius, the greatest level of the population unserved, and located in zoning codes that permits social services.

Method 6: Value Focused Approach

To answer the question of the optimality, accessibility, and sufficiency of social service providers in the study area, I utilized the value-focused approach to measure and evaluate

---

[15] Also see Kurland and Gorr 2007:259 and Gorr and Kurland 2010:307-316.

decision alternatives (Zucca et al 2008). Using a value-focused approach and taking into account a spatial decision problem, like the site-suitability analysis considered here, options can be described by a defined set of maps providing information on each criterion. Therefore, the spatial decision problem can be visualized by making a "table of maps" and showing the progression of the analysis (Sharifi et al., 2006; Zucca 2008). Ultimately, this table can visualize important information displayed in the maps and found in the analysis.

Table 3: Sequence of activities performed in this study

Beginning : *Development of a conceptual framework and research question*
• Remapping social services from the Atlanta Community Resource Directory 2011 in the study area
• Identification of the main objective of the analysis: to identify unserved areas within the study area (zip codes 30310, 30311, 30314, and 30318). Then recommend these locations as potential places for social service sites.
• Conduct a site-suitability analysis. Using a site-search analysis framework, to narrow the scope for future development of social services in the study area.
• Identify potential sites for social services such as population in unserved areas, areas unserved by public transit, areas unserved by social service, and current zoning codes for potential sites.
• Create an access radius of .25 miles around public transit services and .6 mile radius around social service sites to determine which areas do not have access.
Design Analysis: *Designing a series of maps that conduct a site-suitability*
• Map 1: includes all social service sites from the Atlanta Community Resource Directory and highlights those in the study area.
• Maps 2A-6A: includes all social services grouped into specific categories in the study area. These maps examine zoning codes for areas unserved and identify which areas would and would not be eligible for the development of a social service.
• Maps 2B-6B: includes all social services grouped into specific categories in the study area. These maps examine the population levels within the unserved areas to identify which areas have the greatest amount of people unserved.
• Map 7: includes all social service sites from the Atlanta Community Resource Directory and highlights those in the study area. This map examines populations most unserved and with least amount of access.
Analysis: *Answering research question and recommending potential social service sites in the study area.*
• Are their sufficient, accessible, and optimal services?
Total Unserved Population:
• 16,824 people unserved by any social service; 21,656 people unserved by community centers, youth programs, and LGBTQ services; 23,063 people unserved by shelters, housing, and food & clothing services; 23,330 people unserved by church-based social services and multi-service providers; 27,380 people unserved by employment/training services, prisoner reentry services, and legal services; 23,330 people unserved by HIV assistance, clinics, and addiction services.
• Top 4 most underserved areas for all social services were almost identical and included high population density in small areas. On average more than 30% of the unserved populations were in these areas.
Zoning Ordinances:
• None of the spaces that did not allow social services conflicted with the areas and populations most unserved.
• Areas zoned residential and Special Public Interest may be hard for some social service to obtain a special permit because of sentiments like "Not in my Backyard" (Wolch 1996:658).

• Church-based social services do not need a special permit to operate as a social service sites. Social Service partnerships with churches may be a way to extend service in care provision into spaces where it is hard to obtain a special permit.
Ultimate Analysis
• 8.5% of the study observation is unserved by any social service.
• 13.8% of the study population is unserved by prisoner reentry services, employment/training services, and legal services.
• There are only three addiction services, no LGBTQ services, and no legal services in the study area.
• Most services are downtown and are not localized within the study area.
• Target the four most unserved regions in the northwest corner, north, northeast corner and south center of the study area. These areas are highlighted in red in Maps 2A-7 .

Table adapted from value-focused approach (Zucca 2008:754).

Therefore, the methods incorporated into this methodology will be mapping social service sites, creating access radii, mapping zoning codes, and population apportionments. These methods ultimately create a site suitability analysis, which enables a visual assessment of potential suitable sites.

4. Research Findings

The access radius created for social service sites and all public transit lines services a total population of 180, 407. That is 91.4% of the population within the study area. In this view, it appears that the social service sites in 30310, 30311, 30314, and 30318 are sufficient. Yet, 8.5% (16,824 people) remain unserved. To analyze the differentiation and number of services available further, some services appear to be more accessible than others.

All seven maps show that the four most underserved areas are on the periphery of the study area and in small but with highly dense populations (see Maps 1-7 in Appendix). Although there is a large portion of the population served, it is notable that there are densely populated areas that do not have access to these particular services (see highlighted red areas in Maps 2B-7, in Appendix).

Additionally, when examining zoning ordinances, none of the social services mapped appeared to be in any violation. Likewise, none of the most unserved areas was in a zone that did

not allow social services; although all social service providers (with the exception of churches) are required to obtain a special permit to administer services. This reveals that zoning, from a birds-eye view, is not a barrier to creating potential service sites in unserved areas.

When analyzing the accessibility of community centers, LGBTQ services, and youth programs in the study area, only 87.6% of the population appears to be served. Within the study area, 21, 656 people are unserved by these social services (11%). In particular, further examination shows that LGBTQ services are the least available, followed by community centers, and then youth programs. In fact, there were no LGBTQ services inside the study area.

Nevertheless, the sites that have the most potential for development appear in red on Map 4B (see Appendix, pg 28). These red areas represent the four most unserved areas in Map 4B and show that 8,158 of the unserved population are located in these four areas. In other words, 38% of total unserved population is concentrated in these most unserved regions. It would be ideal to service this population. In addition, other potential sites are visible on Maps 4A and 4B (see Appendix, pg 28) that are dark purple representing higher population levels. Because of their population levels, these sites are also recommended as future places to provide these services.

Table 3: Served and Unserved Populations

Social Service Access	Total Population in 30310, 30311, 30314, and 30318 (people)				4 Most Underserved Areas (people)	
	Served	Unserved	% Unserved	% Served	Total Population	% Unserved
Community Centers, LGBTQ Services, Youth Programs	175,575	21,656	12.4	87.6	8,158	38
Shelters, Housing, Food & Clothing	174,168	23,063	13.2	86.8	8,244	38.1
Employment/Training, Prisoner Reentry, Legal Services	169,863	27,368	13.9	86.1	8,370	30.6
Church-based service and Multi-service Providers	173,901	23,330	11.9	88.1	8,158	35
HIV Assistance, Clinics, Addiction Assistance	175,575	21,656	12.4	87.6	8,158	38
All Social Services Sites	180,407	16,824	8.5	91.5	6,525	38.8
* Total Study Area Population 197, 231						

Based on Maps 2A-7, see Appendix

Interestingly, the population unserved by LGBTQ services, community centers, and youth programs was nearly the same for clinics, HIV assistance, and addiction services. These services were limited in the study area and included only three addiction assistance services. 11% of the population in the study area is unserved by these facilities, which is surprising considering the number of clinics that are on Maps 3A and 3B (see Appendix, pg 27).

When analyzing the accessibility of Shelters, Housing, and Food & Clothing in the study area 86.8% of the population is served. However, this leaves 11.7% of the population unserved by these social services. 8,244 of those unserved reside in the top four unserved areas. Interestingly, when assessing this map (see Map 6A and 6B in Appendix, pg. 30) there was, numerically speaking, a large amount of services. In particular, these services were clustered together, and a large portion was located just outside of the study area in downtown Atlanta.

When analyzing the accessibility of Church-based Services and Multi-Service Providers in the study area 88.1% of the population is served. This leaves 11.8% of the population unserved, totaling to 23,330 people. When evaluating the map (see Maps 2A and 2B in Appendix) there was a smaller amount of services when compared to other maps. However it was interesting that the churches providing social services were highly concentrated.

It is possible that churches are highly congregated together because of the location that they are in, zoned for Special Public Interest (SPI) (see Maps 2A and 2B in Appendix). This zoning ordinance is complicated and pertains specifically to the Vine City neighborhood in zip code 30314. Within the SPI zone ordinances are particularly difficult to navigate. Therefore, because churches do not need a special permit to operate social services, partnerships between churches and social service providers may be important to serving unserved communities.

86.1% of the population is served when analyzing the accessibility of employment / training services, legal services, prisoner reentry services in the study area. This leaves the largest portion of any segment of social services, 13.8% (27,368 people) unserved. When evaluating the map, (see Map 5A and 5B in Appendix) there appear to be few services. In fact, there are no legal services or prisoner reentry services in the study area. Meanwhile, employment / training services appeared to have the most highly accessible locations near MARTA rail stations, bus stops, and bus routes.

5. Conclusion

Returning to the primary research question: a**re current social service providers optimally, accessibly, and sufficiently located in 30310, 30311, 30314, and 30318? ,** I suggest an answer. We have answered our research question in part by showing that the provision of social services in the study area is both sufficient and insufficient. On one hand, over 90% of the population in the study area is served by at least one social service. On the other hand, when examining the sites in five segments their ability to serve individuals in the study area went down by about 5%. In this way, the services appear to be sufficient. In summary of these findings, through our GIS site-suitability analysis we were able to: spatially identify underserved and served populations, identify that there were no zoning code violations in the services mapped, and make suggestions on how to provide these social services to people within the study area.

When excavating access and optimal locations, 16,824 people remain without access to any social services within the study area. Plus, access to the individual service is between 21,000 and 27,000 people without access to a diverse array of critical services. Although those not being serviced are only 8.5-13.9% of the total study area population, in this way the services appear to

be insufficient. Therefore, what is discovered is that accessibility and optimality to social services are limited, but not wholly inaccessible and suboptimal.

These findings suggest that there are many social services available, but that there is still a need for greater public transit and access; as well as a need for social services in specified locations. When analyzing the results, the top four unserved geographies and populations were almost consistent in each map (see Maps 2B-7 in Appendix). These areas represented over 30% of the unserved population and densely populated areas that do not have access to a number of service sites. Nevertheless, although creating a map of social services in our study area is a useful map to service providers and community residents, it alone does not reveal how accessible, optimal, and sufficient current social service sites are. Additionally, a map of social services does not provide the needed analysis to plan to and advocate for future social services in the study area.

According to Wolch (1996) the discrepancies in service provision are a result of intentions to position social service sites in locations that reduce users-travel cost. Despite good intentions, Wolch explains that this approach had little quantitative data, did not factor in political and social contexts, and often ended up following the "path of least resistance". In this way, locational decisions on community-based services were seldom based on analytical principles of efficiency or equity (Wolch 1996:654). Instead, she suggests that social services be located where service users, providers, neighborhood land uses, and resident attitudes intersect and are taken into account in planning decisions. Therefore, she suggests a service-hub approach that integrates services with current providers and those based in housing and neighborhoods. Ultimately, this model focuses on clustering services within short travel distances. In this view, even though the clustering of social services downtown could be viewed as a "duplication of

services", it could also be viewed as a service hub. Thus, this analysis could not determine if this clustering of services could be classified as a duplicative effort, further research is needed.

Nevertheless, in this light, I recommend that the highlighted red areas in Maps 2B-7 (see Appendix) be the future sites for fair share service hubs. These areas are the most unserved by any social services and also by almost all other social services. These areas are prime locations for future social service development (see Figure 4).
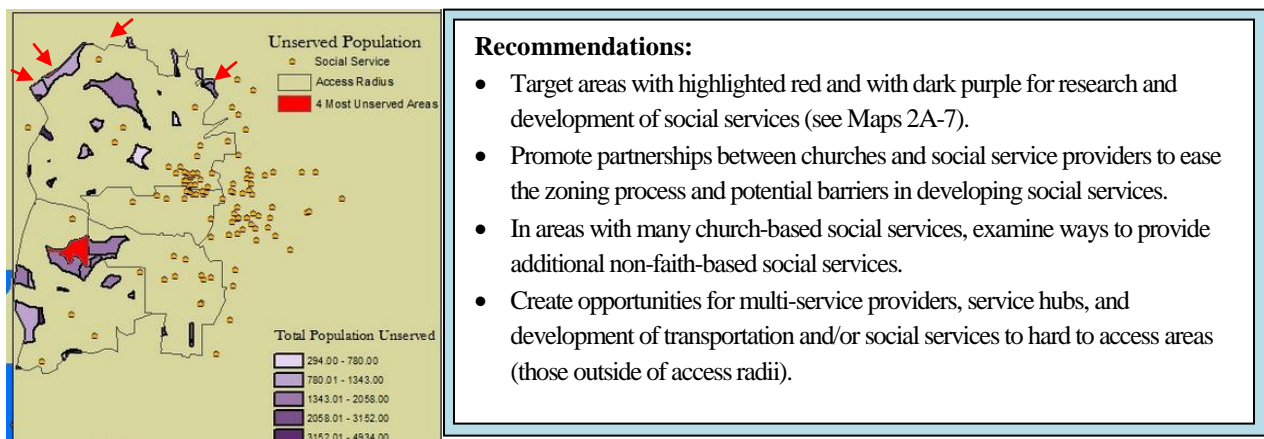
Figure 4: Excerpt and Recommendations from "Map 7 Service Access Atlanta 2011". *For full map, see Appendix pg 31.*

To develop social service hubs the next step after this research must begin with gathering qualitative and quantitative information about these geographies and communities; as well as garnering community and political support.

The question of access to social services is not limited to geographic locations. Access encompasses socioeconomics, language(s), and types of services, waiting lists, quality of services, insurance requirements, IDs and proper documentation requirements, operation hours, visibility to the community. Taking a complex understanding of accessibility is critical to improve the planning and development of social services. Additionally, words like "sufficient" and "optimal" are more complex than quantifying a certain number of social services and the

programs they provide; encompassing quality of services, staffing, personnel, geographic locations, and capacity and capabilities. Although it would be ideal to explore the dynamics of sufficiency, access, and optimality, this analysis is only quantitative. The inability to explore the depths of access is a limitation of this research. Nevertheless, when attempting to answer this question of accessibility, sufficiency, and optimality of social service sites, GIS is one of the most useful tools.

It is ideal to collect qualitative data on social services in our study area (Foley 2002). However, for the purposes for this preliminary analysis, the insight of local knowledge and qualitative data is limited. Although GIS continues to be critiqued for, first forging research with technology and not with communities and individuals qualitatively, this analysis is a preliminary effort. In this way, it is my hope that after the maps and analysis has been completed, that these maps can be passed on to community leaders, service organizations, and policy makers.

Some of the critical questions will be identifying the population demographics and socioeconomics, what their level of need for social services are, finding out if they access other social programs, and what services are most in demand. Although these are only a few questions, they mark the beginnings of identifying how to serve marginalized populations and communities geographically.

Following the completion of these maps and analysis, I provided these maps to Urban Performance (UP), a new non-profit community wellness center in the English Avenue Neighborhood (zip code 30318). [16] When working with UP, I tailored pieces of these maps and

---

[16] Urban Performance (UP) is a prospective urban wellness and fitness center at 575 Travis Street 30318 Atlanta, GA. In collaboration with New Life Covenant Church they will open January 2012. I have communicated with founder Laura Pritchard and since these maps are in the study area we agreed to meet and see how they could be useful in planning the future development of UP.

innovated a new map for their grant proposal to the Arthur Blank Foundation (see Figure 5). This

map also served to help founder Laura Pritchard conceptualize the underserved area that they

were located within and identify potential community partners.
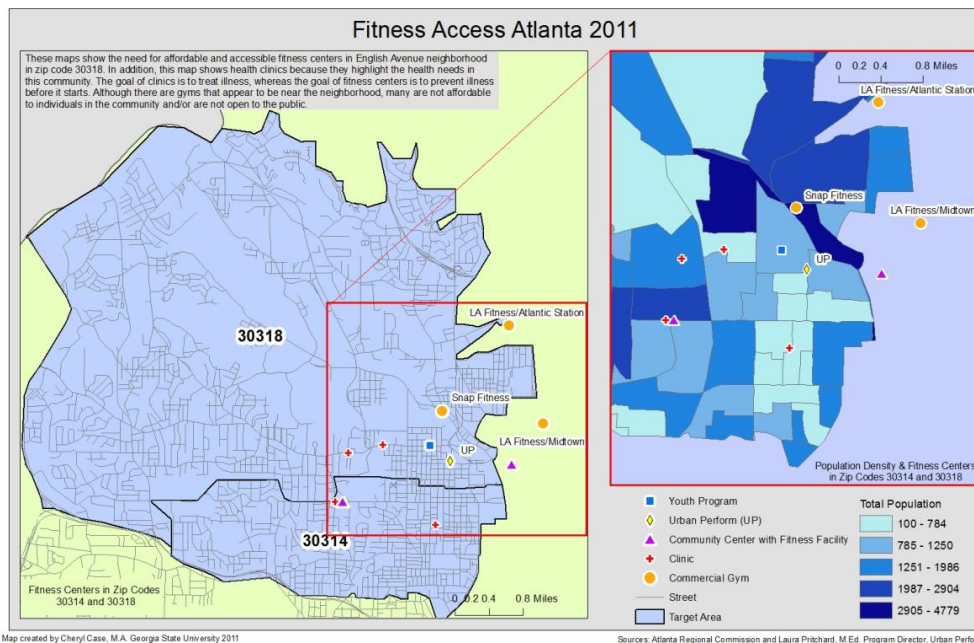

Figure 5: Fitness Access Atlanta 2011; *This map was created in partnership with Laura Pritchard, UP founder, original size 11 x 13 inches, and based on the needs she described for her organization and the community UP services.*

Additionally, I presented these maps to faculty and staff at the Georgia State Institute of Public

Health Center of Excellence for Health Disparities Research Community Research Center and

Community Engagement and Outreach Core and Mission Year President Leroy Barber. For

Barber, I utilized these maps and data to provide a presentation for consulting purposes regarding

Zone 850, a new faith-based social service initiative in zip 30318, 30310, and 30315.

In addition to the work listed above, I will share these maps with other key community

contacts within the study area such as, English Avenue Neighborhood Association, SisterLove

Inc., and Eco-Action. Ideally, after providing information to local community organizations it

would then be critical to deliver these maps and data analysis to policy makers. These policy

makers then may be able to act on these recommendations, and innovate access to additional

transit services, and create new social service sites in underserved geographies. Ultimately,

informing their decisions to make it possible to have better service in care provision for the City

of Atlanta and for the people who need it most.

Bibliography

Church, R.L., 2002. Geographical information systems and location science. Computers and Operations Research, 29(6): 541–562.

Collins, M.G., Steiner, F.R., Rushman, M.J., 2001. Land-use suitability analysis in the United States: historical development and promising technological achievements. *Environmental Management*, 28(5):611–621.

Cinnamon J, Schuurman, N, Crooks, VA. 2008. A method to determine spatial access to specialized palliative care services using GIS. *BMC Health Services Research,* 8:140.

Foley, R.2002. Assessing the applicability of GIS in a health and social care setting: planning services for informal carers in East Sussex, England. *Social Science & Medicine*, 55:79–96.

Gorr, WL. and Kurland, KS. 2010. *GIS Tutorial 1: Basic Workbook*. ESRI Press: California, pp. 307-316.

Gabe, T , Falk, G. and McCarty, M , and Mason, VW. 2005. CRS Report for Congress: Hurricane Katrina: Social-Demographic Characteristics of Impacted Areas. November 4th, 2005*Congressional Research Service: Library of Congress*, pp. 27-29.

Hopkins, L.1977.Methods for generating land suitability maps: a comparative evaluation. *Journal for American Institute of Planners*, 34(1):19–29.

Hirschfield, A , Yarwood, D, and Bowers, K. 2001. Crime Pattern Analysis, Spatial Targeting and GIS: The Development of New Approaches for use in Evaluating Community Safety Initiatives in *Regional Science in Business Advanced Spatial Science*. Eds. Clarke, G. and Madden, M. Springer-Verlag Berlin: Heidelberg, pp. 334-335.

Janssen, R., Rietveld, P., 1990. Multicriteria analysis and geographical information systems: an application to agricultural land use in the Netherlands. In: Scholten, H.J., Stillwell, J.C.H. (Eds.), *Geographical Information Systems for Urban and Regional Planning.* Kluwer Academic Publishers: Dordrecht, pp. 129–139.

Karr, B. and Hodgson, ME. *2008.* A GIS-Based Model to Determine Site Suitability of Emergency Evacuation Shelters *Transactions in GIS*, 12(2): 227–248.

Kurland, KS and Gorr, WL. 2007. *GIS Tutorial for Health,* 2nd edition. ESRI Press: California, pp. 259.

Malczewski, J. 2004. GIS-based land-use suitability analysis: a critical overview. *Progress in Planning*, 6: 3–65.

Miller, W., Collins, W.M.G., Steiner, F.R., Cook, E., 1998. An approach for greenway suitability analysis. Landscape and Urban Planning 42 (2–4), 91–105.

Murad, AA. 2004. Creating a GIS application for local health care planning in Saudi Arabia. *International Journal of Environmental Health Research*, 14(3): 185 – 199.

Orsi, F. and Gelletti, D. 2010. Identifying priority areas for Forest Landscape Restoration in Chiapas (Mexico): An operational approach combining ecological and socioeconomic criteria. *Landscape and Urban Planning*, 94:20–30.

Tang, T, Zhao, W. Gong, H, Li, X, Li, Z, Bernosky, JD, Zhao, W. and Li, S. 2010. GIS spatial analysis of population exposure to fine particulate air pollution in Beijing, China. *Environmental Geosciences,* 17(1):1-16.

UN. 2002. United Nations: Access to Social Services by the Poor and Disadvantaged in Asia and the Pacific: Major Trends and Issues Social Policy Paper No. 11, 2002 ST/ESCAP/2240. Accessed December 10th, 2011 http://www.unescap.org/esid/psis/publications/spps/11/chap4.pdf.

Wolch, JR. 1996. Community Based Human Service Delivery. *Housing Policy Debate*, 7(4):649-671.

Zucca , A. Sharifi, AM, Fabbri, AG. 2008. Application of spatial multi-criteria analysis to site selection for a local park: A case study in the Bergamo Province, Italy. *Journal of Environmental Management*, 88:752–769.
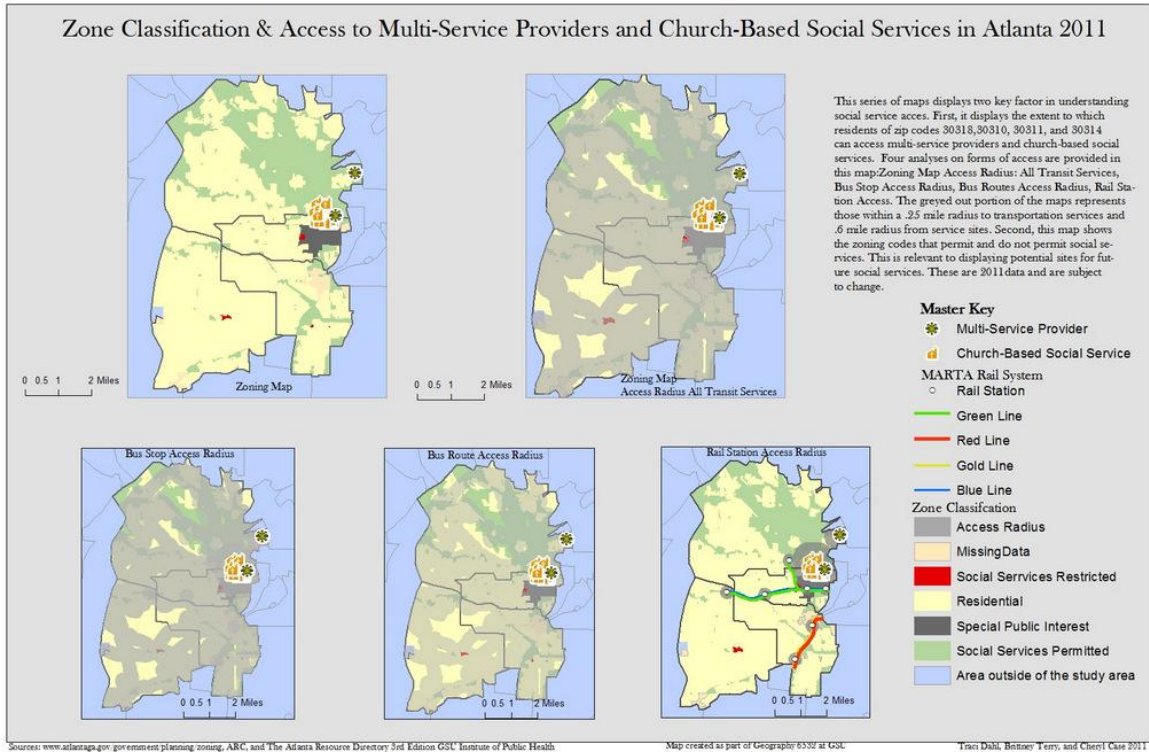
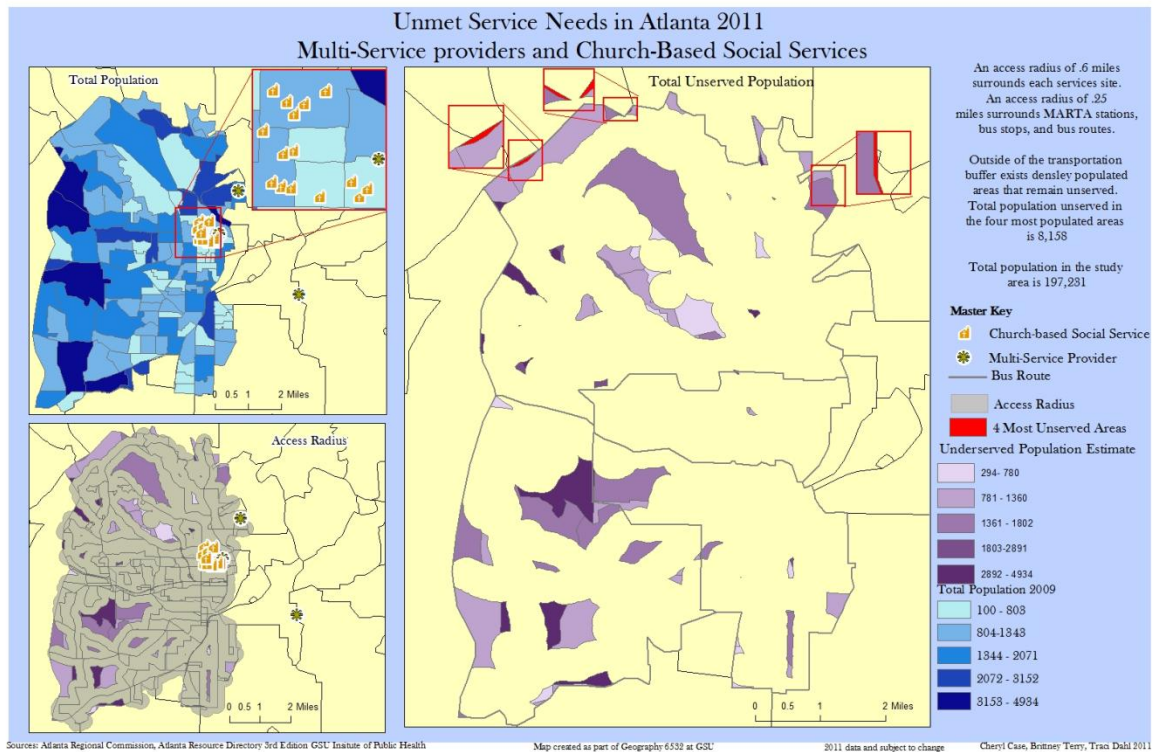Map 1: Social Services Atlanta 2011; *original size 8.5 x 11 inches*
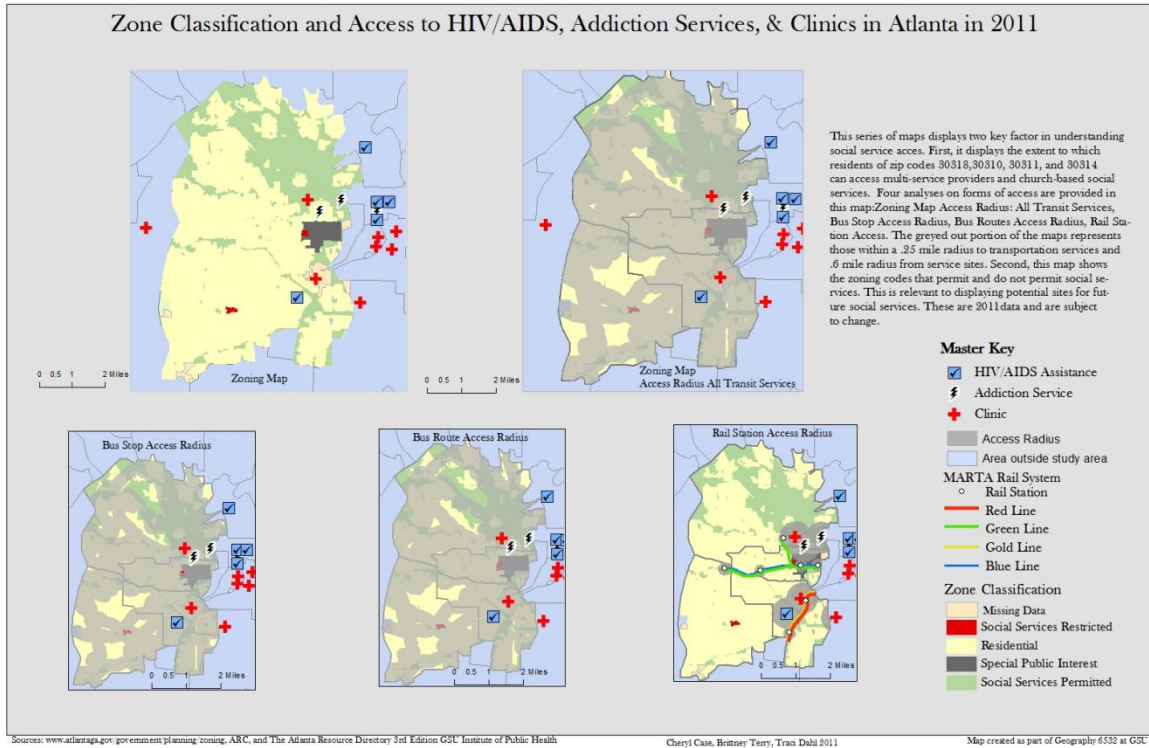

Social Services Atlanta 2011
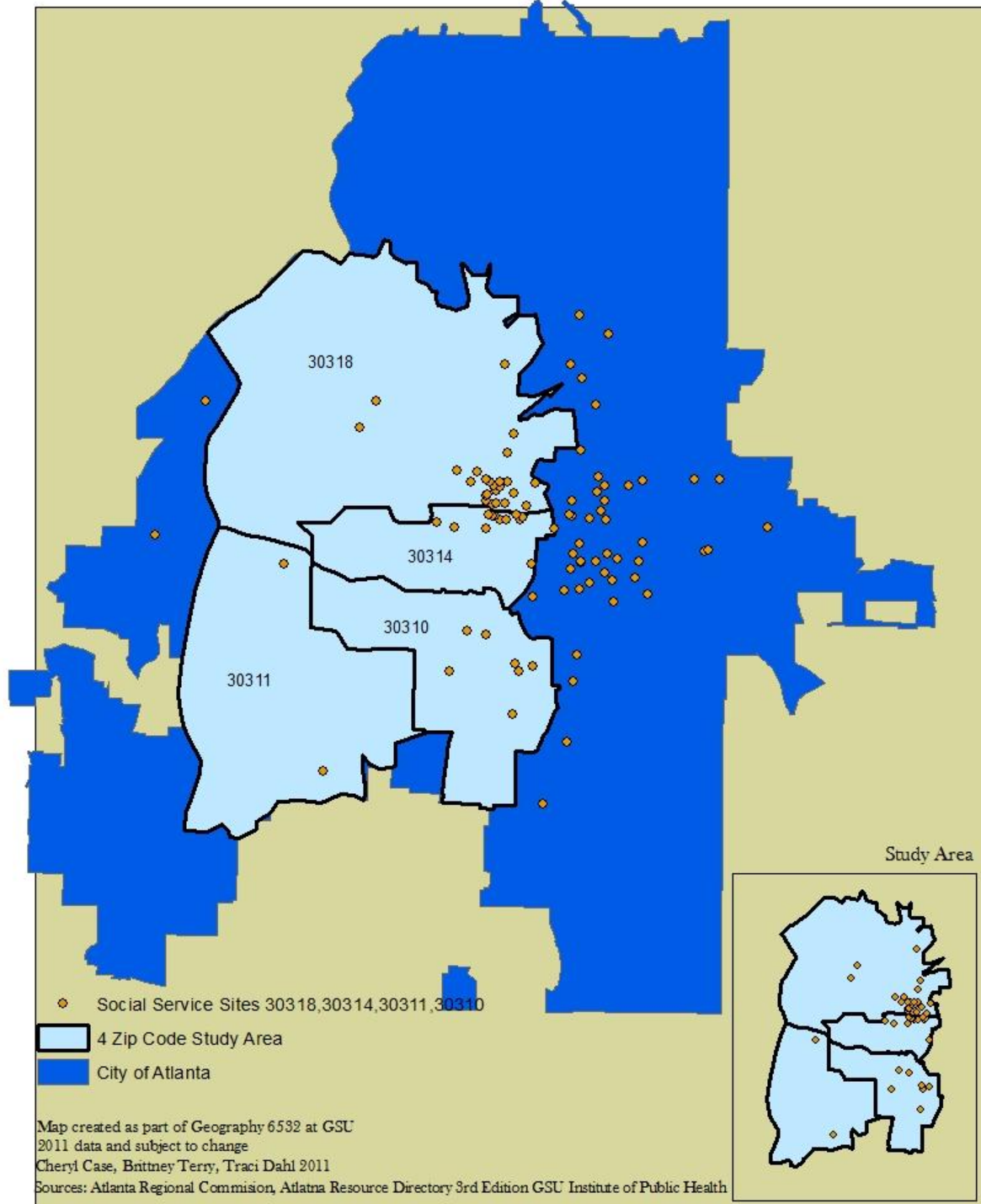
Map 2A: Zone Classification & Access to Multi-Service Providers and Church-Based Social Services in Atlanta 2011; *original size 11 x 13 inches.*
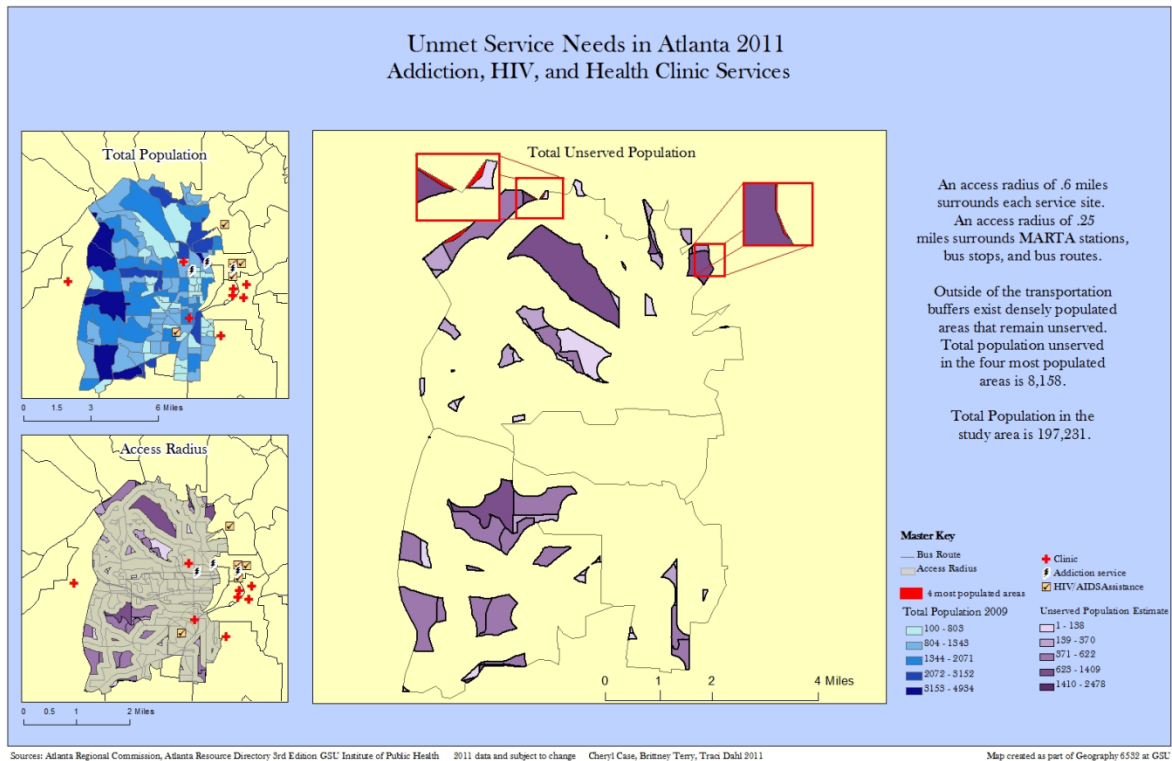

Map 2B: Unmet Service Needs in Atlanta 2011 Multi-Service providers and Church-Based Social Services; *original size 11 x 13 inches.*
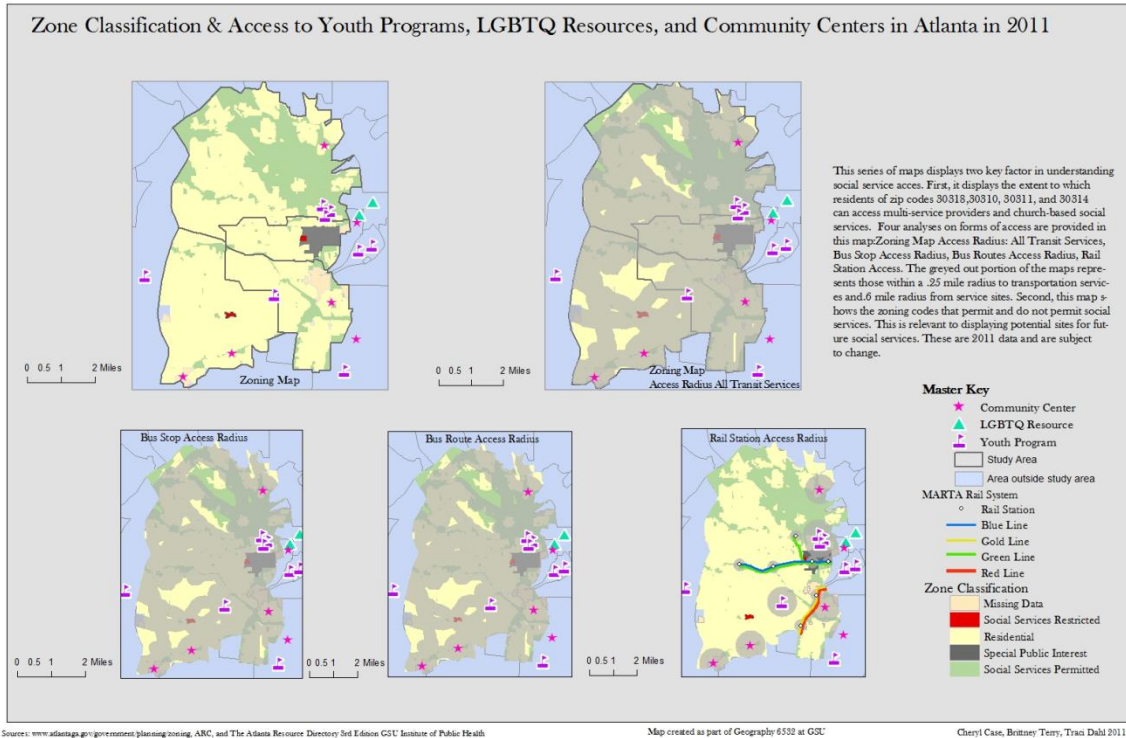
Map 3A: Zone Classification & Access to HIV, Addiction Services, & Clinics in Atlanta 2011; *original size 11 x 13 inches.*

Map 3B: Unmet Service Needs in Atlanta 2011 Addiction, HIV, and Health Clinic Services; *original size 11 x 13 inches.*

Map 4A: Zone Classification & Access to Youth Programs, LGBTQ Resources, and Community Centers in Atlanta 2011; *original size 11 x 13 inches.*
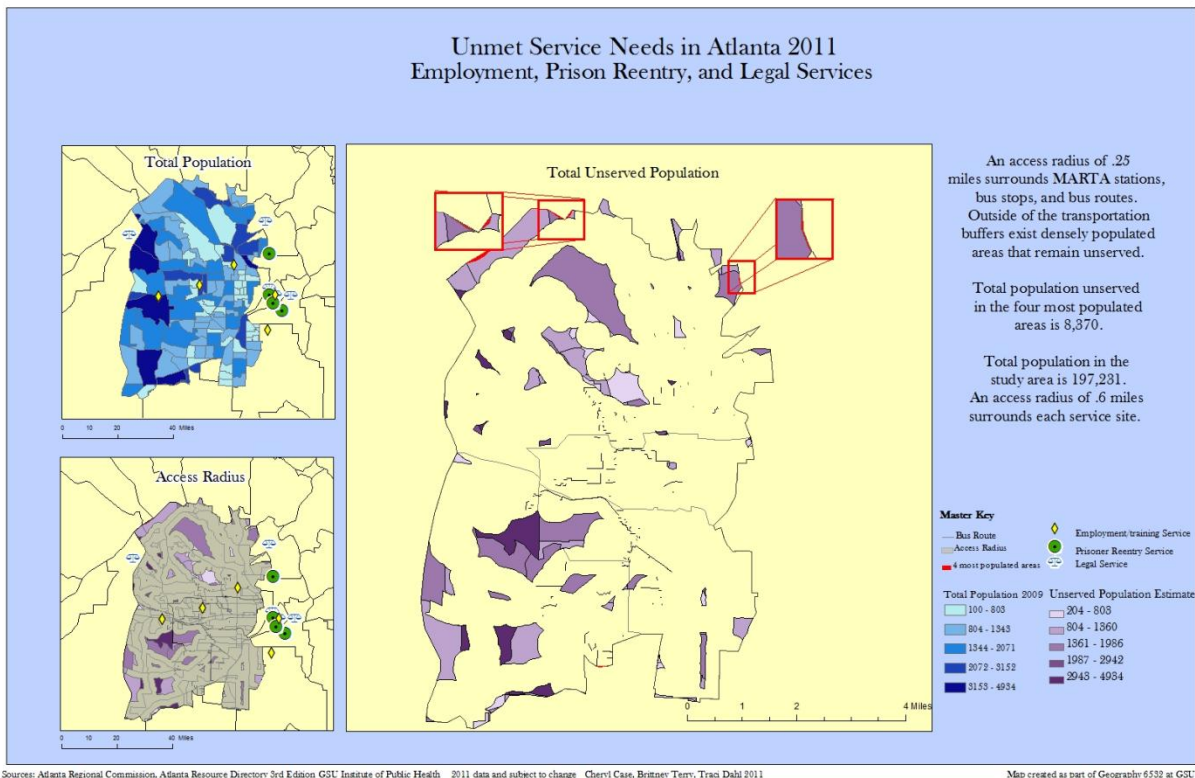

Map 4B: Unmet Service Needs in Atlanta 2011 Community Centers, LGBTQ Resources, & Youth Programs; *original size 11 x 13 inches.*
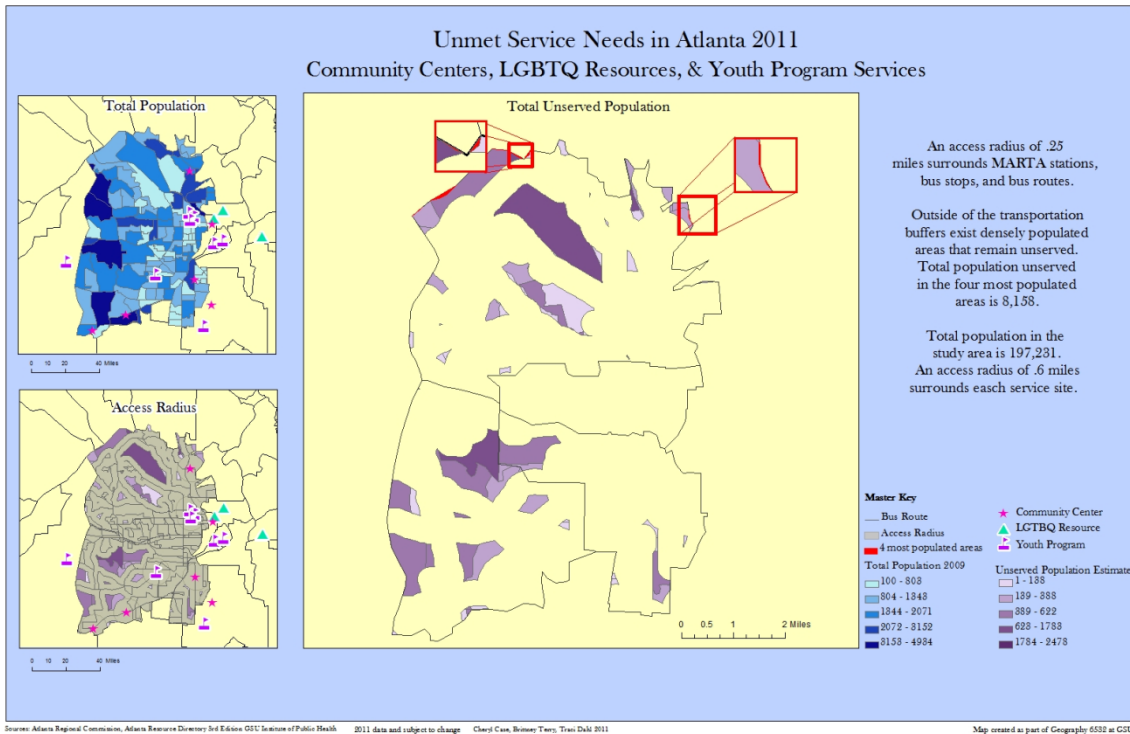
Map 5A: Zone Classification and Access to Employment / Training, Legal & Prison Reentry Services in Atlanta in 2011; *original map 11 x 13 inches.*
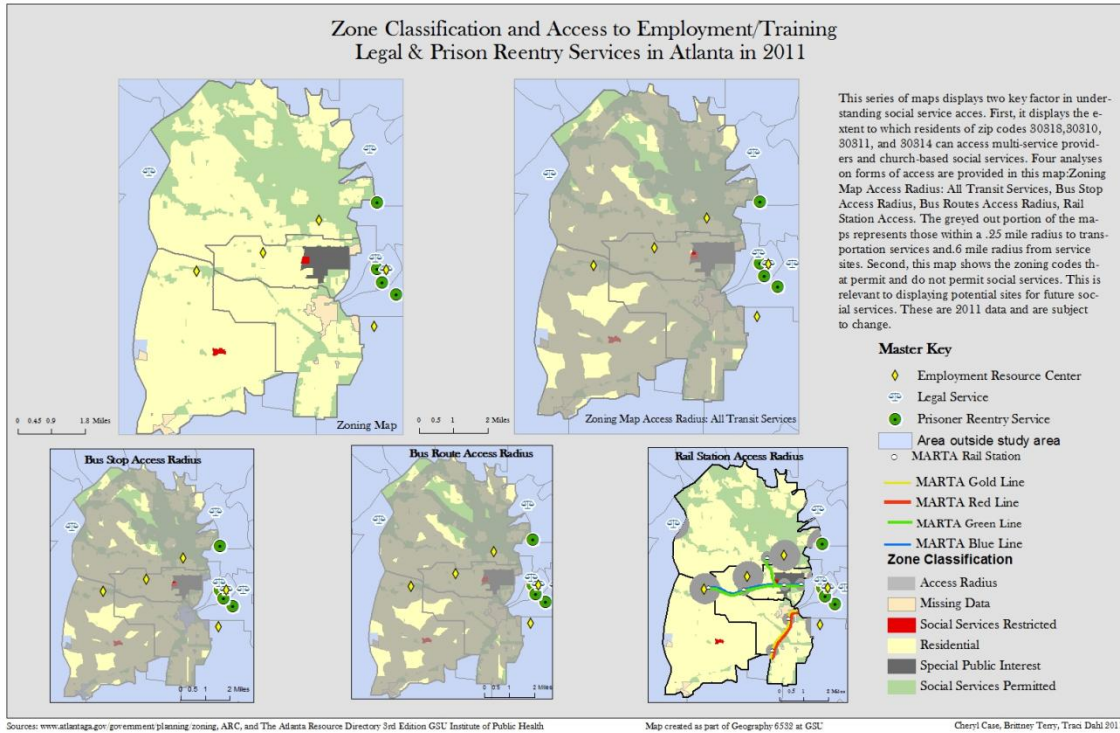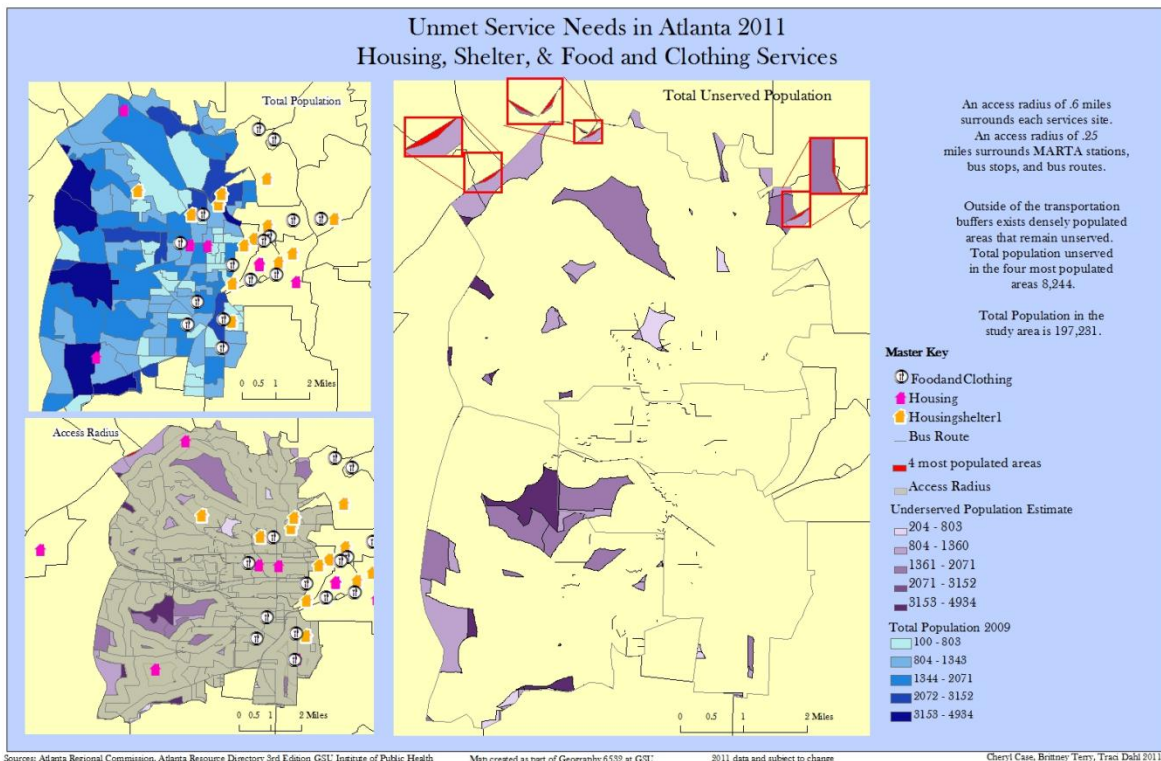

Map 5B: Unmet Service Needs in Atlanta 2011 Employment, Prison Reentry, and Legal Services; *original size 11 x 13 inches.*

Map 6A: Zone Classification and Access to Housing, Shelters, & Food and Clothing Services in Atlanta 2011; *original size 11 x 13 inches.*
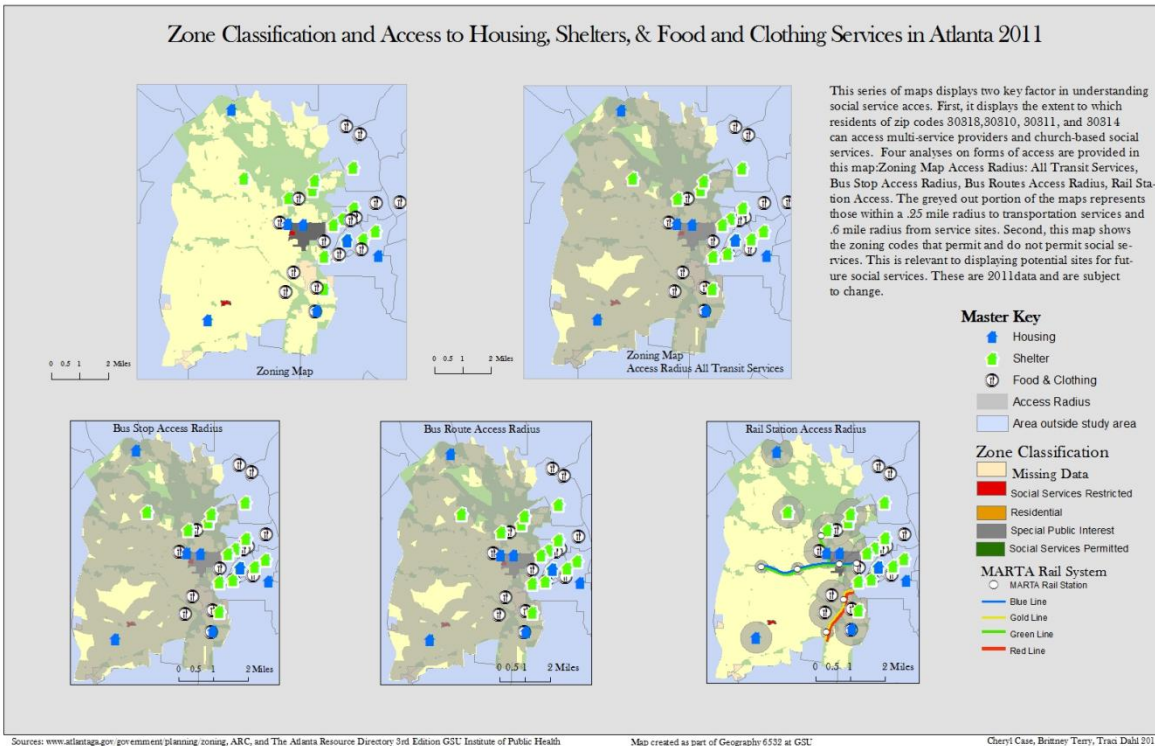
Map 6B: Unmet Service Needs in Atlanta 2011 Housing, Shelter, & Food and Clothing Services; *original size 11 x 13 inches.*

Map 7: Service Access Atlanta 2011 ; *original size 11 x 13 inches*