1) Abstract:

This paper sets out to examine the relationship between economically sustainable places and ethnic communities. Using simple and easily repeated GIS processing, we examined if on a citywide scale ethnic communities were located in economically sustainable areas. The ever changing nature of sustainability combined with the struggles to establish broader sustainability context has limited the fined grained comparisons between sustainable economics and ethnic communities. The research questions were tackled by using modified version of a previously established economic sustainability index and overlaying that with an all generalized ethnic community classification system at the census tract level, a very pinpoint level of analysis. Classifying ethnic communities through based on percent of ethnic groups varied based on proximity to city center compared to an economic sustainability index composed of factors that address economic success and economic diversity. Results show a negative relationship between ethnic communities and sustainable economies.

2) Introduction:

2.1 Background and Significance

This express purpose of this paper is to explore the relationship between sustainable economies and ethnic communities. To grasp the sustainable economies of areas with strong ethnic communities and ethnic economies is only possible by understanding that this relatively specific topic stands at the crossroads of two very large research subjects. Two key overarching concepts to understanding the research and its importance, are sustainability and the race place relationship. These topics are broad and only overlap in very specific subsections of the research. In order to completely understand the scope of the following research it is imperative to have an in depth understanding of the two pronged specific concepts surrounding ethnic geographies and economic sustainability (see Figure 1 for a graphical representation).
Combining an in depth understanding of the social construct of ethnic communities with the relationship between sustainable economies and ethnic communities should provide vital insight to the components of a sustainable economy. The link between community makeup and economic success informs the connection between social sustainability and economic sustainably. Additionally, heathy communities that produce healthy economies should be studies so that their supportive components can be replicated in policies and incentives programs. The following section outlines sustainability, with a focus on economic sustainability. Once the core concepts of economic sustainability have been expounded upon, there will be a lengthy discussion about the critical components of ethnic and racial geographies. Providing in-depth information regarding the composition of these communities will become explanatory as to their role in creating stronger more resilient economies.

2.2 Understanding Sustainability and Its Components
Sustainability research has seen explosive growth in recent years. The beginning of the uptick in sustainability discussion is often sourced back to the Brundtland’s *Our Common Future* (Brundtland, 1987) and the Rio Summit in 1992 where sustainability reached a new unprecedented level of global attention. Research under the umbrella term of sustainability is produced by every kind of agency at incredible speeds. The in vogue status of sustainability research has created a research environment that is oversaturated while having varying directions of focus ranging from purely ecological sustainability to economic sustainability analytical support systems (Coenen, 2010). Additionally, the myriad of research has created many, often conflicting or vague, definitions of sustainability and associated theory. Key concepts are constantly being reestablished and revisited, as early as 1991 there were critical reviews of sustainable concepts that focused on the lack of consistent definitions. Sharachchandra work on sustainable development, what should be a well-defined concept, gives a lengthy discussion on this vagueness and how the poor definition process devalues the concept and put it in danger of becoming a useless cliché (Sharachchandra, 1991). With few widely accepted foundational works to base the next step of research on there is a need to reaffirm the most basic background theory in each piece of sustainability based research. Therefore, in order to understand sustainability it is imperative to address this varying definitions and its components as thoroughly as possible.

The most basic definition of sustainable development is “Development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland, 1987). Conceptually this definition functions extraordinarily well, emphasizing that the main goal of sustainability is a temporal component. It cannot be considered sustainable, if the system does not have foresight to be able to function indefinitely. Certainly the reverse is true, in that it is not sustainable if the associated resource use is too difficult to obtain or too costly to replace.

Many scholars and professionals consider approaching sustainability through economic sustainability, environmental sustainability, and social sustainability as the three pillars of sustainability. There has been a more recent expansion to include a fourth factor, organizational sustainability, which has become accepted to varying degrees across different invested parties (O’Connor, 2006).
Environmental sustainability, also referred to as ecological sustainability, is the portion of sustainability that is more concerned with natural resource production and replacement. Research in this realm includes considering how many fish we can eat, or trees we can chop down in order while still maintaining a healthy supply for future generations. More complex research into environmental sustainability results in projects concerned with how to address declining populations of certain species. The world of environmental sustainability is massive and the natural resources are integral to economic success. Understanding the pressures that economic progress puts onto the environment is just one of the crucial meeting points between the two sustainable realms.

Social sustainability most in vogue topics include wage disparities, equity, and poverty. Addressing broadly the social constructs that hinder and assist in creating meaningful experiences for different groups of people. How communities relate to themselves and others are key pieces of social sustainability (O'Connor, 2006). Creating living situations that foster growth and healthy living are crucial to the sustainability of the social realm. Community makeup, groups of people that supply the workforce with capable and varieties of skills are key components to economic sustainability.

Organizational sustainability, or institutional sustainability, a parent term that includes political sustainability as well as other key organizations, is primarily concerned with the structure and viability of the government. This extends to the other forms of sustainability through many different kinds of policies. Citizen participation is part of social sustainability while environmental regulations critically impact environmental sustainability. Finally, organizational sustainability merges with economic sustainability in the incentives and other rules and regulations places on the market. (O’connor, 2006).

Economic sustainability, the performance, production, and output of the economy (O’Connor, 2006). A theoretically fully sustainable economy takes the social implications, environmental impacts, and organizational requirements into consideration in order to develop an economy that relies on industries that will not exhaust the ability of future generations to function appropriately. Spangenberg (2005) modifies O’Connor (2005) derivation of criteria for economic and general sustainability, a crucial theoretical model to understanding how the economic sustainability interrelates to the other sustainability subcategories (Spangenberg,
Notice that growth is in no way part of this criteria. Despite pure economists reliance on growth of indicators such as GDP, PPP, and GNP the research associated with sustainability isn’t interested in growth (Sharachchandra 1991, Spangenberg 2005). Because economic growth factors do not necessarily decrease social issues such as poverty, and have little to do with environmental sustainability, they are not considered prime movers of sustainable economies (Sharachchandra, 1991).

Figure 2: The Sustainability interlinkages of the economic system

Source: Spangenberg (2005) modified from O’Connor (20005)

These system wide criteria can be used to analyze which criteria interact with the others and subsequently that criteria’s effect on sustainability (Spangenber, 2005). Some examples include resource scarcity could be referring to human resources, among other factors, then the sustainability measure could associated partially comprised of educational attainment based measures. In relation to natural resources the general sustainability rule is to not use renewable resources beyond their regenerative capacity, and not to use none-renewable resources without developing a process to replace one resource with another (Robert et al 2002, Spangenber 2005). Finally resource scarcity applied to organizational sustainability could be the reliability of the legal system, and increasing the reliability would increase sustainable economies. In order for an
economy to be sustainable it must prove to be diverse, resilient, social capital efficient, natural capital efficient, resource rich, and successful (Goerner 2009, O’Connor 2006, Graymore 2009, Spangenberg 2005, and LeBel 1999). The system criteria approach outlined above applied to the different aspects of sustainability would give an idea of the economics sustainability of an area. The final piece of economic sustainability theory are to marry the challenges, orientors, and key criteria with the systems criteria (Spangenberg, 2005).

Table 1: Challenges, orientors, and key criteria

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Orientors</th>
<th>Key criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal state</td>
<td>Existence and reproduction: the system must be able to continuously exist and reproduce itself in the normal state of the system environment</td>
<td>Structural integrity, reliability of conditions for reproduction, supply of goods from the given resource base, markets, supply and demand, basic property rights, limited corruption</td>
</tr>
<tr>
<td>Resource scarcity</td>
<td>Effectivity: the system must be effective (not necessarily efficient) in providing essential resources</td>
<td>Capability to influence the natural, social and economic environment, securing access to vital resources</td>
</tr>
<tr>
<td>Diversity</td>
<td>Freedom of Action: As the system environment is not homogenous, the system must be able to cope with diversity of supplies, and also of challenges</td>
<td>The capability to react to a diversity of environmental states requires a corresponding diversity of system structures, processes, and resources used (natural, human, intellectual, technical and institutional resources)</td>
</tr>
<tr>
<td>Variability</td>
<td>Security: As the system environment is not constant, the system must cope with variability, i.e., states of the environment distant from the normal state</td>
<td>Security needs early warning and stress detecting institutions, robustness against minor or short term pressures (enhanced by redundancies) and resilience in case of more serious pressures. Repair-, control- and steering mechanisms are part of resilience</td>
</tr>
<tr>
<td>Change</td>
<td>Adaptability: As the system environment evolves, the system must cope with changes in the normal state of its environment by adapting its own structures</td>
<td>The capability to evolve as a reaction to external pressures is dependent on the innovation potential within the system, and the way it is realised. A diversity of options, not just one best, and redundancy are needed to be prepared when optimality conditions begin to change. Flexibility of institutions and reserves that can be managed for the change process is necessary</td>
</tr>
<tr>
<td>Other systems</td>
<td>Co-existence: Every system is dependent on exchange with its environment. Undermining the viability of the system environment is thus a lethal strategy</td>
<td>This refers to population, society and the natural environment as much as to other economies. Information exchange is essential for detecting risky developments, as is adequate information processing. Co-existence in co-evolution requires a principle of reciprocity</td>
</tr>
</tbody>
</table>

Source: Spangerberg (2005)
In the best case scenario the remaining research would be based on metrics developed by addressing the challenges with the systems wide criteria approach, but given the difficulties in repeating this process it was imperative to utilize an already established methodological framework. Economic sustainability measures can be extrapolated from Graymore (2009) and Richards et al (2007), to include a much more accessible and limited set of measures. Using Analytical hierarchy processes and sustainability impact rating they created an index of sustainability (Rochards et al 2007, Graymore 2009). The economic factors included were household income, unemployment rate, and economic diversity. These will be discussed in detail during the methodologies section.

2.3 Ethnic and Racial Geographies

A complete look at the structures and history that have created and dictated ethnic and racial space is beyond the scope of this paper, but key themes that have developed over the course of ethnicity and race study need to be explained in order to understand the economic implications of these spaces. Although often used interchangeably, ethnicity and race are not the same thing. While both are social constructs, race is not supported by science as a way of classifying groups, but rather is used as a way cluster people for social domination purposes (Graves, 2004). In modern America this manifests itself when one group of people stereotypes another, often in a derogatory way, resulting in a negative impact on society. These interactions often result in significant conflicts (Frazier et al, 2011). In contrast, ethnicity, is a group-constructed identity using its cultural attributes, which include facets like language, cultural-traditions, cultural history, and religion (Frazier et al, 2011). Race often effects an ethnic group’s view on itself, and certainly helps to form the totality of the ethnic group’s identity.

Ethnic geography is “the study of the spatial and ecological aspects of ethnicity” (McKee, 2000). Thusly a close study of ethnic geographies is to explore the impacts of movements and the effects on the landscape that a particular ethnic group has had and might potentially have on a place. Racial geographies assesses the role of a controlling society in its creation of a racial ideology and subsequent spatial restricting that follows (Frazier et al, 2011). Finally, multicultural geographies are the study of both racial and ethnic geographies and seeks to
understand places, the spatial patterns associated with them, and the cultural landscapes that are created within them.

A brief explanation of the development of the prominent place making theories surrounding multicultural geographies has to start with the assimilation-acculturation model. This model expounds that ethnic groups will gradually merge into host cultures until all that remains is symbolic ethnicity with little or no social or psychological impacts (Gans, 1979). Another explanatory model of ethnic geographies is the ethnicity pluralism model, which focuses on resiliency of ethnic groups in maintaining cultural differences over time making America a mosaic of ethnicities (Alba, 1992). One of the key differences between these two explanatory theories is that in ethnicity pluralism the ethnic groups are more dynamic and demonstrate significant change over time and between different ethnic groups. In contrast, the assimilation model does not do a complete enough job explaining the various differences between ethnic groups. Research has shown that despite the use of overarching terms like ethnic groups, or even subcategories such as Asian ethnics, there has proven to be significant differences between and within ethnic groups (Frazier, 2011). For example, while Japanese and Chinese ethnics are categorized together as Asian ethnics they have been known to demonstrate differing spatial patterns when mapped separately.

A more contemporary model, power-conflict, explains the inequity in power and resources between different ethnic groups. Some of the reasons given by power-conflict series include differences in access to economic capital, government legalized exploitation, and race relations (Feason, 1994). Moving on from the theory of how they are formed and develop and into the variety of frameworks that the ethnic communities take physical form, including the ghetto, ethnic enclave, ethnoburb, and the general uptown versus downtown structure. Both ghettos and enclaves are formed through push factors from mainstream society such as discrimination, and pull factors like ethnic interests and solidarity. Ghettos are urban residential districts which are almost entirely made up of a single ethnic group and the concentration is brought on by racism (Johnston, 1994). Ethnic enclaves have a more complex structure in which the primary institutions and businesses of the neighborhood are run by members of the ethnic group (Jaret, 1991). The uptown versus downtown distinction shows that within one ethnic group there can exist more than one community structure, specifically that the downtown population will be poorer, less educated, and more spatially constrained than the richer, more
educated, and living ethnically mixed uptown population (often uptown can manifest itself as suburban). In other words, the distinction between the groups includes geographic distinctions, economic conditions, and social status variation (Kwong, 1996). The final ethnic community structure to be discussed is the Ethnoburb. This structure takes many years to develop and is characterized by multiethnic, multicultural, multilingual, and often multinational communities, where an ethnic group might be concentrated but is not essentially the majority (Li, 2009). These Ethnoburbs are suburban ethnic clusters of residential and business districts that exist within a larger metropolitan area (Li, 2009). Table 2 shows a comparison between the different structures.

Table 2: Comparison between Ghetto, Enclave, and Ethnoburb

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Ghetto</th>
<th>Enclave</th>
<th>Ethnoburb</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamics</td>
<td>forced segregation</td>
<td>forced &amp; voluntary</td>
<td>voluntary</td>
</tr>
<tr>
<td>Spatial form</td>
<td>small scale</td>
<td>small scale</td>
<td>small to medium scale</td>
</tr>
<tr>
<td>Population</td>
<td>high density</td>
<td>high density</td>
<td>medium density</td>
</tr>
<tr>
<td>Location</td>
<td>inner city</td>
<td>inner city and suburbs</td>
<td>suburbs</td>
</tr>
<tr>
<td>Economy</td>
<td>few ethnically owned businesses</td>
<td>bias towards services and labor-intensive sectors</td>
<td>ethnically owned business of all kinds</td>
</tr>
<tr>
<td>Internal stratification</td>
<td>minimum</td>
<td>not much</td>
<td>very stratified</td>
</tr>
<tr>
<td>Interaction</td>
<td>mainly within group</td>
<td>mainly within group</td>
<td>both within and among different groups</td>
</tr>
<tr>
<td>Tension</td>
<td>intergroup</td>
<td>mainly intergroup</td>
<td>inter- &amp; intragroup</td>
</tr>
<tr>
<td>Community</td>
<td>mainly inward</td>
<td>mainly inward</td>
<td>both inward &amp; outward</td>
</tr>
<tr>
<td>Example</td>
<td>traditional Chinatown (nineteenth century)</td>
<td>contemporary Chinatown</td>
<td>Chinese ethnoburb in the San Gabriel Valley</td>
</tr>
</tbody>
</table>

Source: Li (2009)

These different spatially constrained ethnic communities all encompass unique economic characteristics, some of which might lend themselves to more sustainable economies. The varying forms of economies that develop from ethnic communities usually have two components, the internal structure and the broader place in societal economies (Li, 2009). The most basic, and arguably more historically significant, impact that various ethnic and racial groups have had on the American economy comes from being forced into specific industries because of racialization. There are countless examples such as Asian immigrants virtually taking a useless portion of California and turning it into one of the most productive crop producing environments in the world and Irish immigrant’s role in digging canals that effectively created
the city of Chicago (Frazier et al, 2011). The process repeats itself innumerably throughout American history so that during periods of economic hardship jobs that immigrants were willing to do often resulted in some form of conflict. To survive in the receiving society the immigrant groups often were forced into two paths, being concentrated into certain occupations and or establishing businesses and economic networks of their own (Li, 2009). Despite ethnic businesses often employing only members of their ethnic communities they sometimes served customers across ethnic boundaries (Li, 2009).

The ethnic economies, the parts of the economy that were created through ethnically owned businesses can be categorized in a number of ways including ethnic economic niche, ethnic enclave economy, and contemporary integrated ethnic economies. Ethnic economic niches are occupations or self-employed business type pushed as pathways to economic endurance. Sometimes large numbers of a particular ethnic group will work in these specific establishments such as Italian fruit stands, Jewish clothing stores, and Chinese laundry and restaurant (Li, 2009). Often, ethnic groups find themselves forced into these niches by the mainstream society because of lack of financial skills, lack of English skills, and/or job experience often restricts ethnic groups to various manual labor or small business occupations. Although these niches are part of the larger economy through business links, they are relatively independent. They often operate on the periphery of the dominant economy making them less important to the system as a whole (Li, 2009). The spatial concentration of these businesses varies as well, industries such as restaurants are more likely to be clustered within the ethnic communities, while services such as laundry are more likely to be located closer to potential customers in a more spatially distributed pattern.

The ethnic enclave economy is a grouping of ethnic niche businesses that form a more or less self-contained economic system with relatively weak ties to the dominant economy. Some argue that the hiring of co-ethnics which perpetuates labor-market segregation is a staple characteristic of the enclave economy (Wilson and Portes, 1980).

Integrated ethnic economies are characterized by ethnic businesses being incorporated into the mainstream economy while maintaining some level of ethnic distinction, usually through ownership, operation, and support networks all being supplied through a single ethnic group. The relatively recent trend of economic restructuring have allowed many ethnic economies to transform from more limited structures into integrated with national and international economic
systems (Li, 2009). The restructuring process involves reducing costs, capturing market share, and increasing profits. Cost reduction can often be accomplished through moving labor-intensive plants overseas or establishing local plants with particularly low cost labor. Ethnic groups have become more involved in the greater economy as worsening capital-labor relationships caused employers to seek none-unionized and low wage laborers (Li, 2009). Franchising processes involve risk taking, hard work, risk, and cheap labor. Subcontracting, may require below minimum wage payment schedules, no overtime pay, no social security tax, industrial homework, child labor, and substandard conditions. Labor supplied through ethnic communities and increases in franchising and subcontracting ethnic economies have become even more integrated into mainstream economies (Li, 2009).

While many of the jobs that various ethnic groups are occupying are certainly not the most sustainable jobs themselves, they are necessary for the diversity in job market and labor force requirements that create and support sustainable economies. Additionally, some ethnic businesses have become integral and directly involved in the international trade and global business cycles, ethnic communities often host multicultural individuals who have ties to American and foreign economies allowing for easier interaction on an international level. This can manifest itself through access to global capital, often by way of cultural ties to their home countries. Access to global capital further ties ethnic economies to the greater economies in a sustainable way. The more sources of capital the less likely an area is to be effected by failings in one economy. In California the ties to easy Asian capital allowed markets to stay healthier in the 1990s when there was a dip in the American economy which caused a tightening of capital and otherwise would have hindered investment and growth opportunities. (Li, 2009) How the ethnoburb and ethnic economies in general relate to these economic strengthening portions of their communities can be best represented graphically (see Figure 3).

Figure 3: The ethnic economy and ethnoburb in socioeconomic context
Often occurring in ethnoburbs, ethnic communities can be transformed from the more limited ethnic service center to a global economic outpost (Li, 2009). The sustainable merits of the ethnic community’s development into a space of global economic position is evident through global access to capital and robust business network. These areas while not particularly common, can become very resilient economic areas. Contrasting to the manual labor that exists in many ethnic communities, specifically the ethnic enclaves and ghettos, might seem like the ethnoburb is the sustainable ethnic spatial form and the ghetto is the unsustainable, but this isn’t the case. Ethnic enclave’s unique family ties, business networks, and willingness to do jobs others don’t want to maintain these ethnic communities as significant economic places in the greater economic domain.

2.4 Unifying Ethnic Communities, Ethnic Economies, and Sustainable Economies

While the research presented to this point has established the reasoning as to explain the expectation that ethnic communities will have greater sustainable economies than none-ethnic communities there are a few crucial missing pieces. There are a lot of spatial patterns and spatial constraints that inform the complex relationship between the ethnic economies and the ethnic communities. To add to the multifaceted nature of this research, economic spaces have their own
spatial constraints. The practical applications of these issues will be addressed in the methodologies section, but it is imperative to understand the theoretical constraints.

The first spatial issue is that economies aren’t spatially bound by districts, cities limits, or census tracts. Many economists would argue that the metropolitan statistical area is even too small to get an accurate picture of a place’s economy. The supply chains that exist on the regional level are often considered the best combination of size and completeness in terms of geographically based economic units (Duranton, 2008).

Due to the specificity of the none-spatial components of the definitions of the various ethnic community types, classifying the ethnic spaces becomes difficult if not impossible. To differentiate between them is difficult enough in and of themselves. There is a significant scholarly debate around simple components to ethnic community classification such as percent thresholds to consider an area as an ethnic community (Liu, 2011). Never-the-less methodologies have been developed with these and other prominent issues in mind.

3 Methodology:

3.1 Introduction and Background

As the above research shows, there are many different potential approaches to handling economic sustainability and ethnic communities. Borrowing from previous research methodologies while maintaining a simple, easy to replicate, and open data source oriented approach were the primary driving forces behind the methodologies output. The most common practice seen in previous research is to use public use micro data for demographic information, especially racial data (Liu, 2011). In order to reduce the scale and allow for a smaller spatial analysis, census tracts were used as the geographic boundary. Census tracts were chosen in order to attempt having a finer grained scope. Additionally, public use microdata areas are so large that there is a concern that individual communities might get lost in the aggregation process. It is also important to keep in mind that the research methodologies established in this paper were designed with special consideration publically available data. The methodologies were focused
on so small scale and public availability so that with little to no modification the research could be repeated across almost any municipal geography and low resource researchers easily.

3.2 Geographic Boundaries

The research was completed on the Atlanta area. Traditional city classifications might include metropolitan statistical area or core base statistical area, but studies completed in Atlanta often rely on the ten county Atlanta region. The Atlanta Regional Commission (ARC), a prominent regional planning agency for the region classifies the Atlanta area in a number of different ways, one of the most popular being the ten county division. This division includes Cherokee, Clayton, Cobb, DeKalb, Douglas, Fayette, Fulton, Gwinnett, Henry, and Rockdale Counties. Map 1 shows the ten county area delineation.

Map 1: Map showing the location of the ten county Atlanta region in the state of Georgia

3.3 Defining Economic Sustainability
Economic sustainability, in its theoretical format was described in detail in section 2.2 Understanding Sustainability and its components. Borrowing from Graymore et al (2009) the economic sustainability index was created using the three metrics of diversity index, unemployment rate, and median household income. In their research, Michelle et al, use these same metrics to determine economic sustainability, combining the three together to create an economic sustainability index. They use an extraordinarily complex weight creating system involving a multistep process to determine which factors have the most impact, but for simplification purposes the weights used here were modified from the same work that Graymore et al (2009) and Graymore (2014) based their research on, Richards (2007). Because the economic sustainability metrics were in these research pieces were part of a greater index, in order for them to fit appropriately into this research design they modified while keeping the same proportions to one another. The following table succinctly states the data and weights.

Table 3: Measures and Weights for Economic Sustainability Index Calculations

<table>
<thead>
<tr>
<th>Metric</th>
<th>Calculation</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment</td>
<td>Percent Employed</td>
<td>30.67%</td>
</tr>
<tr>
<td>Employment Diversity</td>
<td>Percent of Industries with more than 5% of census tract employment</td>
<td>23.67%</td>
</tr>
<tr>
<td>Income</td>
<td>Median Household Income, Normalized across score of 100 based on range of data</td>
<td>45.67%</td>
</tr>
</tbody>
</table>

In order to create a more readable economic sustainability index median household income had to be normalized to a scale 1-100. This was unnecessary for the other two metrics as they are percentages and already on that scale. The formula used was \( ((n - \text{Min}(N)) - (\text{Max}(N) - \text{Min}(N))) \times 100 \) Where \( n \) is the median household income for the given census tract, \( N \) is the median household income across all census tracts in the dataset.

3.4 Defining Ethnic Communities
Due to the nature of the ACS questions, the data source used to gather racial data for this research, the earlier definitions of race and ethnicity do not fit the research schema. Accepted practice is that since the question asks for self-identification into a number of different racial groups, that the census definition of ‘race’ is a kind of hybrid of the academic definitions of race and ethnicity. Given data availability limitations, census race based data is accepted for race and ethnicity studies.

Therefore the statistically based definition of ethnic communities is based on the threshold associated with percent of an area of a specific ethnic group. As previously mentioned in section 2.3 Ethnic and Racial Geographies, research has determined that lumping ethnic groups together can create mixed results, but for the purposes of the study an area will be considered to be an ‘ethnic community’ if it surpasses the defined threshold. While some research creates statistical categories based on the average percent of a given race in the geographic unit compared to the average of the whole study area (Liu, 2011). This is criticized because an area that has a percent of an ethnic group within its boundaries will likely reflect this portion of the population regardless of the comparative percent to other areas. Thusly, if an area has thirty percent Latino population even if the city has an average of thirty-five percent Latino, will still exhibit the spatial and cultural changes of having such a high percent of Latino population. The threshold used in this research to determine if an area houses an ethnic community is 50%.

Ethnic communities will be split into two categories, uptown and downtown. Because there is a known spatial concentration of poverty in inner city ghettos and a concentration of income in the suburbs, the ethnic community’s indicator was split into two categories based on proximity to the city of Atlanta. Any census tract within the city limits of Atlanta was considered downtown for the purposes of this distinction.

Table 4: Summary of Ethnic Community Metrics
<table>
<thead>
<tr>
<th>Area Description</th>
<th>Determining Factors</th>
<th>Count*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uptown Ethnic Community</td>
<td>Outside of Atlanta city limits and has at least a single census defined none-white racial group above 50% of the population</td>
<td>324</td>
</tr>
<tr>
<td>Downtown Ethnic Community</td>
<td>Inside Atlanta city limits and has at least a single census defined none-white racial group above 50% of the population</td>
<td>94</td>
</tr>
<tr>
<td>Uptown Nonethnic Community</td>
<td>Outside of Atlanta city limits and all census defined none-white racial groups are below 50% of the population</td>
<td>247</td>
</tr>
<tr>
<td>Downtown Nonethnic Community</td>
<td>Inside Atlanta city limits and all census defined none-white racial groups are below 50% of the population</td>
<td>67</td>
</tr>
</tbody>
</table>

*732 Total

Map 2: Map showing the location of Uptown and Downtown Ethnic Communities in Atlanta
3.5 Data and Data Sources

Commensurate with the goal of publicly accessible data the sources were limited to nationally available data. Leaning heavily on the American Community Survey, data produced by the United States Census Bureau. Table 4 has the breakdown of the data sources used. All data processing and manipulation was done in Microsoft Excel 2013 and ArcMap V.10.3.1. All maps were created in ArcMap V.10.3.1. The data showed minor inconsistencies that were removed to preserve index accuracies. These included 0 or null values for the data in four census tracts (GEOID: 13063980000, 13121003700, 13121006801, and 13121980000), leaving a total of 732 census tracts in the study area.
Table 5: Data Sources

<table>
<thead>
<tr>
<th>Data</th>
<th>Used for Indicator</th>
<th>Organization</th>
<th>Data Set</th>
<th>Census Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income</td>
<td>Median Household Income</td>
<td>United States Census Bureau</td>
<td>ACS 2014 5 Year Estimates</td>
<td>DP03</td>
</tr>
<tr>
<td>Employment</td>
<td>Employment Diversity</td>
<td>United States Census Bureau</td>
<td>ACS 2014 5 Year Estimates</td>
<td>C24050</td>
</tr>
<tr>
<td>Demographic</td>
<td>Race</td>
<td>United States Census Bureau</td>
<td>ACS 2014 5 Year Estimates</td>
<td>B02001</td>
</tr>
<tr>
<td>Employment</td>
<td>Unemployment Rate</td>
<td>United States Census Bureau</td>
<td>ACS 2014 5 Year Estimates</td>
<td>S2301</td>
</tr>
</tbody>
</table>

4 Results

4.1 Ethnic Communities:
Within the Atlanta city limits there is a very clear spatial distribution of ethnicity. The southern portion represents the areas of concentration of ethnic groups, while the northern area is provides none-ethnic spaces. The uptown area has a slightly less clear spatial pattern. While there is still a similar general north south orientation the east and western parts also represent ethnic communities. The parts of the region that are uptown but not in the north are clustered along the fringes of the boundary. To the Southwest and Southeast of the city of Atlanta the uptown areas demonstrate strong grouping. The Nonethnic areas are together with other nonethnic areas, and the ethnic communities occupy all the spaces to the south that are adjacent to the city limits. This indicates fairly large levels of segregation. Looking to the area adjacent to the eastern north
eastern portion of the city you get the most mixed area, which is still very segregated. Finally, directly north of the city is the largest concentration of uptown nonethnic census tracts.

4.2 Economic Sustainability

The ten county area has what appears to be a relatively strong mixture of economically sustainable census tracts. There does appear to be a concentration of the lowest quantile of economic sustainability in the west central and south central areas, with a contracting concentration of stronger economically sustainable census tracts in the northern part of the city limits.
In order to better understand the clustering effects, a hot spot analysis was run. The results, as seen in Map 5, show very clear collection of highly economically sustainable areas to the north while the city limits are wholly unsustainable in comparison. The hot spots for economic sustainability lie directly north of the city and spread to the east, while the city and the area directly east of it represent a concentration of areas lacking in economic sustainability.

Map 5: Economic Sustainability Hot Spot Analysis

4.3 Interaction between Economic Sustainability and Ethnic Communities
The comparison between economic sustainability and ethnic communities is represented below by a series of six charts.

![Chart 1: Quantile breakdown of economic sustainability by ethnic community type.](chart)

Each quantile represents 20% of the values in the dataset, the first quantile holds all the lowest 20% of values. Downtown Ethnic community’s structure has over 50% of the census tracts within made up of this smallest cohort. This indicates that the Downtown Ethnic communities are dominated by unsustainable areas. The uptown ethnic and downtown nonethnic show a similar distribution with roughly a quarter of their census tracts representing the least economically sustainable areas. The uptown ethnic communities have a much better distribution across the varying levels of economic sustainability. While the downtown none-ethnic is the most internally polarized, showing 37% in the bottom 40% of economically sustainable areas, but 42% of the census tracts present in the top 20% of economically sustainable areas. Finally the uptown nonethnic communities are constructed of over half by economically sustainable areas, with only 8% in the least economically sustainable grouping. While the individual makeup
of each kind of area is informative, it doesn’t succinctly answer the question, are ethnic communities assisting in sustainability of the economy.

![Comparing Ethnic and Nonethnic Economic Sustainability](chart2.png)

Chart 2: Concentrations of economic sustainability in Atlanta Ethnic and Nonethnic communities

Ethnic communities have 47% of their communities in weak economically sustainable conditions, while nonethnic communities have only 27% in the same weak condition. Additionally, the nonethnic communities have 54% of their communities in strong economically sustainable conditions, while the ethnic communities have only 28% with the same strengths. These findings indicate that the ethnic communities are not located in areas with high economic sustainability.

5 Conclusion and Methodological review

5.1 Conclusion:
This research set out to show a relationship between ethnic communities and sustainable economies. Due to a number of significant factors such as diverse employment base and access to foreign capital, originally the expectation was that ethnic communities would be more sustainable. The analysis has shown this to be the opposite, the ethnic communities proved to be located in low economically sustainable areas. One possible explanation is that the low wage and often undesirable jobs create too large deficiency in income to be made up through the strengths of ethnic communities in diversity. While this conclusion is supported by the research, it is only done so on a broad level. A closer look at methodologically instilled errors will help to explain potential improvements to future analysis.

5.2 Methodological Review

The findings were likely most influenced by ethnic and racial groupings, the factors that composed the economic sustainability index, and various geographic limitations. For both economic and racial/ethnic based communities they are not bound spatially by census boundaries. Additionally this method was addressing location of ethnic communities, but ethnic economies relationship to economic sustainability would be a more accurate representation of ethnic group’s relationships with sustainability. There is also an issue with grouping racial groups together. Previous studies have found that aggregating ethnic groups is a dangerous prospect since different groups often prove to have totally different experiences. Finally, the economic sustainability index might have been composed of too few factors or the factors used were had too much weight towards income. Economic Sustainability Index

Works Cited


Michelle L.M. Graymore, Anne M. Wallis, Anneke J. Richards, An Index of Regional Sustainability: A GIS-based multiple criteria analysis decision support system for


