



# The Impact of Transit on Property Values:

A Case Study of the Elimination of C-Tran in Clayton County,  
Georgia

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## INTRODUCTION

In today's turbulent economic climate, many government entities are being forced to make difficult decisions regarding their spending. In many cases, important programs or services are being cut due to budget deficits. One of the many services that have had its budget drastically reduced has been public transit. Public transit, or transit, plays a vital role in communities. It provides a service that allows people to have access to all aspects vital to their daily life including access to school, jobs, grocery stores, and medical services. Transit in communities not only creates greater accessibility, but it also creates positive impacts on the local economy.

This research focuses on C-Tran, a suburban bus transit system in Clayton County Georgia. Due to budget cuts and funding shortfalls, the transit system was completely eliminated on March 31, 2010 by the Clayton County Board of Commissioners. The abrupt termination of the transit system has caused controversy, especially regarding the social impacts it has caused to C-Tran riders that depended on the bus system to provide them with mobility. However, there has been no discussion of the economic impacts of the termination of C-Tran.

This study was motivated by the elimination of the C-Tran bus system and seeks to establish a link between transit corridors and property values. The relationship between transit corridors and property values has long been studied. Most of the past studies have focused on rail and have found that in general, proximity to transit results in higher property values. This means that transit creates a positive economic impact on the local community. While there have been many studies conducted on the impacts of transit on property values, including a few on bus rapid transit systems, no studies have been conducted on a suburban bus system.

This analysis uses methods found in other studies to examine this relationship in Clayton County. As discussed in the literature review section of this report, these studies have attempted to isolate the effect of proximity to transit on property values using different statistical models. While the magnitude of the impact is relatively low due to the complex nature of the factors that influence property value, it is still important to recognize the economic influence transit can have on a community.

In order to find this link between transit corridors and property values, this study focuses its analysis on single-family residential properties located along C-Tran routes. The analysis looks at the system as a whole and also looks at each individual bus line in order to obtain more specific results. The study hypothesizes that the proximity, or distance, to C-Tran bus stops will have an impact on single-family residential property values in Clayton County. In order to test this hypothesis, the analysis uses a hedonic price regression model to estimate the results. Geographic Information Systems or GIS, analysis is also used in order to more accurately identify the single family residential parcels. The proximity, or distance buffer from the bus stops was identified as a quarter mile and a half mile since that is typically the maximum distance people walk to a transit station.

This report is organized into several sections that address the different aspects of the study. The first section is a literature review that describes the theoretical framework of the relationship between transit and property values. It also describes relevant case studies and examines their methods for conducting the analysis. Descriptions of Clayton County as well as an overview of the history and events that led to the termination of C-Tran are included in the next section. The sections that follow include a description of the data as well as the methodology of the analysis. The analysis section includes the regression results and interpretation of the data and analysis results. Finally, the conclusion section summarizes the results and makes recommendations as well as addressing the limitations of the study and how it can be improved.



## LITERATURE REVIEW

This literature review focuses on the key concepts in understanding the relationship between transit and property values. It will first focus on the relationship of transit and the urban form and the theoretical framework behind it. This is followed by looking more specifically at the relationship between housing and transit. Included is a compilation of relevant case studies that examine this relationship and provides examples of different models used to measure this relationship. These case studies focus on rail and bus rapid transit systems. It is important to examine both since the type of transit, or mode type, plays a significant role. These components are all vital to the overall study.

### Transit and Urban Form

Transit and urban form both influence each other in different ways. According to the report conducted by the Transit Cooperative Research Program, “transit and urban form influence each other simultaneously” (Schwager 1995). Most studies have focused on how transit investments affect the urban form and not vice versa. From studying the role of transit since the 1800s, it is evident that transit no longer shapes the form of cities like it once did. Many of the older cities were developed around transit lines such as streetcars and subways. Today transit investments do not necessarily dictate the growth of the city but instead can create multiple nodes and smaller cores in the outlying parts of the city and suburbs. These are called “edge cities” and can be found in many cities across the United States. Some examples include Buckhead and Lenox Square in Atlanta and South Dadeland in Miami.

Transit has shown to affect non-residential land uses more so than residential land uses. This is evident in downtowns where more offices and commercial centers have sprung up around transit such as Portland, Oregon and San Francisco, California. There have been some residential

changes in land use due to the investment in a transit system. Some apartments have been developed around suburban transit lines like in Washington, D.C. and San Diego. This is not usually typical since there tends to be opposition to develop multifamily housing in suburban areas. Studies do tend to show that generally speaking proximity to transit tends to raise property values.

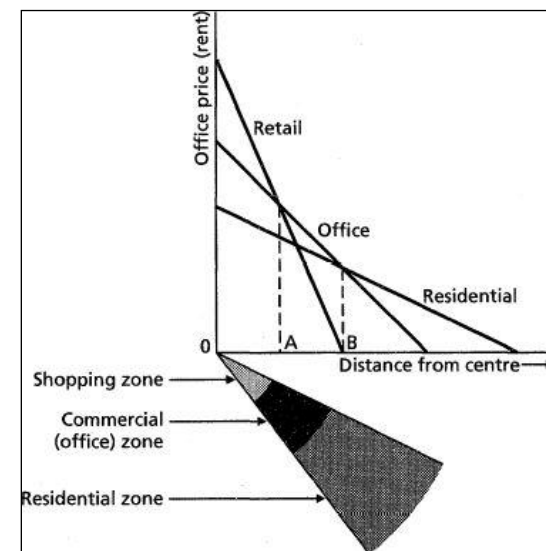
It is important to note that heavy rail tends to have the greatest impact on land uses because it is the only mode that can truly compete with the highway system. Light rail and busways tend to offer fewer advantages to accessibility than heavy rail. Overall, it is essential to recognize that while transit does have an impact on land uses, that without proper policy and other outside forces; it will not solely bring about significant changes to the land use (Schwager 1995).

## Theoretical Framework

The relationship between transit and its effects on land values has been studied for many years. It goes back to the concept that by reducing transportation costs, one has more capital to spend on property. Basically this means that by locating in a place that increases accessibility, it increases the desirability to live there and therefore, increases the property value.

The original framework of people willing to pay higher prices for accessibility goes back to 1826 with the theory first developed by Von Thunen (Kilpatrick 2007). He developed what is known as the *compensation principle* which simply states that increases in rents and housing are caused by the decrease in commuting costs. Commuting costs are measured in time, and the time savings means that people can now spend more money on rents or housing costs. In 1964, Alonso then developed a more comprehensive model for urban areas called the *bid rent theory* (Grass 1992). Alonso's bid rent theory basically implicates the as one moves

Figure 1: Bid Rent Curve



Source: <http://www.answers.com/topic/bid-rent-theory>

further away from the city center, land values drop due to the fact that being closer to the city provides more accessibility and therefore the land is more valuable for other uses than just residential uses and can be more profitable if used for other markets. This can be seen in Figure 1. These same principles apply to the relationship between transit and property values. The closer a property is to a transit station, the higher the accessibility, and therefore, the value of the property is higher. This is not always the case, but in theory and in many cases, this tends to be the trend.

Accessibility is ultimately what creates the value in being located close to a transit system. This is why properties located along the transit line, regardless of mode; actually have no impact or a negative impact on property values. On the other hand, being located near a transit stop, such as a freeway on ramp or train station, tend to create the increase in value. Being located along a transit line tends to generate the typical negative externalities associated with transit in general such as noise, pollution, crime and the negative stigma associated with transit.

## CASE STUDIES

This section discusses different case studies that use statistical economic models, mostly hedonic pricing models, to determine whether property values are affected by transit. Using statistical models allows for the analyst to control for different variables that affect property values. Property values are affected by many different variables that can range from structural attributes, locational attributes, quality of neighborhood and surroundings, and the demand and supply of housing (Mathur & Ferrell 2009). This is reinforced by the hedonic analysis framework which was first introduced by Sherwin Rosen. His theory asserts that “the price of the house is the sum of implicit prices and components of the bundle of housing services rendered by a housing unit (Sherwin & Rosen 1974).” The following case studies were chosen because they offered the most relevant information with regards to the study being conducted. Two of the case studies will focus on rail transit while the other two focus on BRT or bus rapid transit in the United States as well as in Colombia.

## Miami Metrorail - 1993

Gatzlaff and Smith conducted a study that examined the relationship between property values and Miami's heavy rail system called the Miami Metrorail. The Metrorail began service in 1984 and connects the downtown area to other outlying areas of Miami-Dade County from north to south along a twenty-one mile track. The system consists of one line that has twenty-one stations that provide connections to other transit systems such as buses and the people movers.

The Metrorail stations that are located south of the downtown area transect many affluent residential areas; as well as commercial areas while the areas north of downtown are areas that are not affluent. The study examined eight stations along the line.

Gatzlaff and Smith used two steps to measure the impacts the Metrorail had on property values. The first step was to create an index that compared repeat-sales of a property using the properties located around the stations. This was then compared to other properties located throughout the county using the same index. Secondly, the authors used a hedonic regression model to compare the property values from before and after the implementation of the Metrorail system. They used various forms of regression in order to find the model that would give them the best fit. The exponential regression model deemed to be the best one. The results indicate that there is weak evidence that there were any major effects to residential property values due to the announcement of rail. They did, however, determine that the distance factor was not a significant variable that causes changes in the property value. What does create a stronger impact is the variation across neighborhood type (Gatzlaff & Smith 1993). Overall, this study showed a weak relationship between property values and proximity to the Miami Metrorail stations for residential properties in Miami-Dade County.

## Atlanta - MARTA

Another major study conducted by Bollinger and Ihlanfeldt examined the impact of Atlanta's heavy rail system, MARTA, on the economic development around the system. The study focuses on population changes and employment around the stations hypothesizing that there would be an increase in both. They use a complex general equilibrium model that estimates population and employment simultaneously. The higher the population and employment, the greater the utility.

The study examined areas around the station using a quarter mile buffer around each station and examining its demographics as well as employment changes from 1980 to 1990. The study concluded that MARTA had no effect on total employment around its stations.

A later study conducted in 2001 by Bowes and Ihlanfeldt focused on the impacts of residential property values and the impact the proximity to MARTA stations had on them. They focused on the positive benefits of being located close to transit, such as the accessibility and increased activity near transit stations as well as focusing on negative impacts associated with transit such as crime. The study examined two separate models. One focused on the positive effects and how they impacted property values while the other focused on the negative impacts. The authors used hedonic models to determine their results using the sales of single-family homes in Atlanta from 1991 to 1994. The authors used many variables that describe the home including characteristics and attributes of the home.

The study concluded that properties that are located within a quarter mile of a MARTA transit station sell for 19% less than properties located over three miles away from a station. Like in the Miami study, there is variation according to neighborhood type, and in this case income. The study does conclude that while proximity to transit stations does provide a positive effect on property values, it is necessary to note the negative externalities.

## Bogota BRT

One of the most recent studies and the first of its kind is the study conducted by Rodriguez and Taraga in 2004 which examined the impacts of BRT in Bogota, Colombia and rental prices since most of the surrounding area consists of high density apartment buildings. Their study found that for every five minutes more of walking time, the rental price decreases between 6.8 and 9.3 percent. Another later study conducted in 2007 by Perdomo, examined the same BRT system but it studied a control area that was similar to the study site that did not have access to the BRT. This was done to see if there was an impact on rents created by the BRT system and not just an increase in rental prices due to market changes. His study found mostly inconclusive results but in one case he found that there is 22% premium for residential properties that have BRT access showing that BRT does create a positive impact on property values in Bogota, Colombia.

## Pittsburgh BRT (along Martin Luther King Jr. East Busway)

This is the first BRT and property values study conducted in the United States. The study looks at single family homes located along the Martin Luther King Jr. East Busway in Pittsburgh, Pennsylvania. The study uses a hedonic regression model that takes into account housing characteristics as well as demographics, neighborhood characteristics and proximity to other transit systems in the area such as the light rail and proximity to interstate on and off ramps. The model shows that on average, a property located 1000 feet away from a BRT station is \$9,745 less than one located 100 feet away from a BRT station. This study shows very good models and significantly higher values than other previous studies (Tann, Perk, & Catala 2009). While this study is very thorough and one of the first of its kind, it does not use an accurate calculation of distance from properties to the BRT stations. It uses a point to point distance calculation rather than using the street network to calculate a more accurate distance.

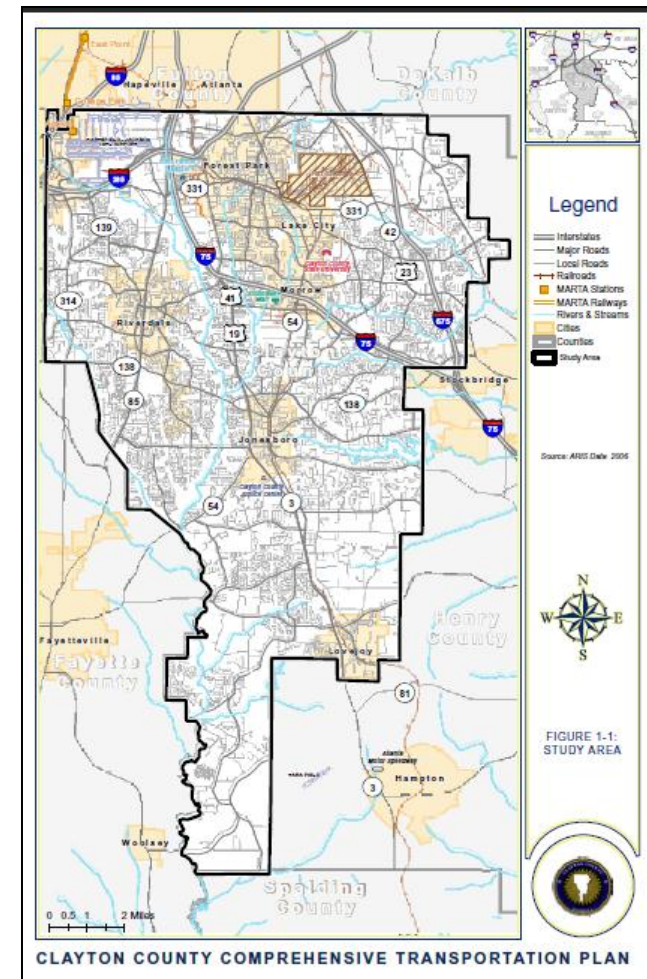
## CLAYTON COUNTY

### Overview of Clayton County

This research focuses on C-Tran, a suburban bus transit system in Clayton County Georgia. Clayton County is located just south of the city of Atlanta. It is roughly 145 miles in size and is one of the smaller counties in the Atlanta Metropolitan area. It is home to approximately 253,000 residents and is densely populated in its urbanized areas. Some of the major cities and towns located in the county include: Forest Park, Jonesboro, Lake City, Lovejoy, Morrow, Riverdale, and Hampton.

The county is home to a vast transportation network that includes airports and roads as well as rail in the future. It is home to the world's busiest airport, Hartsfield-Jackson International Airport. The airport plans to expand by adding an International Passenger Terminal that will be located east of the existing concourses and adjacent to Interstate I-75 (Clayton County Department of Economic Development 2008). Three major interstates including I-75, I-85, I-675 and I-285 transect the county and connect it to the surrounding counties. The county also contains two major railroad lines and has a planned commuter rail line that will connect Macon to Atlanta.

Figure 2: Map of Clayton County



Source: Clayton County Comprehensive Transportation Plan

Clayton County is a typical bedroom community but is looking to develop the areas around the airport and turn them into urban mixed-use communities. There are several redevelopment plans in the works. Other projects include the Tara Boulevard corridor study and the proposed commuter rail line from Macon to Atlanta. It is evident that Clayton County plans on using its transportation links as a source of development for the future.

Clayton State University is the only university located in the county. It has about 6,600 students and is located in Morrow, Georgia about fifteen minutes from downtown Atlanta. It is known for its diverse student body as well as a world-class music recital venue, Spivey Hall, which is host to many different types of music entertainment.

The county has the fifth largest school district in the Metropolitan Atlanta area with approximately 50,000 students. It has, however, faced a lot of controversy due to it losing its accreditation. In August of 2008 it became the first school district in the country to lose its accreditation since 1960. The main reasoning behind the scandal was due to a dysfunction school board and then Governor, Sunny Perdue, removed all members of the board and on May 1, 2009 the Clayton County Schools regained their accreditation.

Clayton County's population has grown over the last twenty years. Different areas of the county grew at different rates due to development patterns. For instance, areas close to the airport lost population due to the externalities caused by the expansion of the airport. Clayton County has followed a pretty similar population growth trend with the rest of the Metro Atlanta Region and sometimes exceeding the region in growth, especially during the later period. This can be seen the chart below:



**Table 1: Population Change Comparison in Clayton County**

	<b>1980 Population</b>	<b>1990 Population</b>	<b>1980 – 1990 % Population Change</b>	<b>2000 Population</b>	<b>1990 – 2000 % Population Change</b>
<b>United States</b>	224,810,192	248,032,624	10.33%	281,421,920	13.46%
<b>Georgia</b>	5,457,566	6,478,216	18.70%	8,186,453	26.37%
<b>Atlanta Region</b>	1,896,182	2,557,800	34.86%	3,429,379	34.08%
<b>Clayton County</b>	150,362	182,055	21.08%	236,517	29.92%

One of the most significant changes in population to note is the change in the makeup of minorities in the county. There has been a huge shift since 1980 when the population was composed of 91% white and 9% minority. Today's 2009 U.S. Census estimates show approximately 30.4% white and 69.6% minority.

Clayton County is a unique place in Atlanta since it has a growing population, made up of mostly minorities, and also some very exciting opportunities for development in the future. As stated before, many of these opportunities for economic development and growth are based on or around a form of transit or transportation corridor. This demonstrates that Clayton County, just like the rest of the country, must pay close attention to transportation investments in the future to better sustain and maintain the vitality and attractiveness of their county.

## C-TRAN: CLAYTON COUNTY TRANSIT

C-Tran was the bus system that served Clayton County, Georgia from 2001 until 2010. The termination of the system was an abrupt and controversial decision. In order to better understand the history of the system, starting with its inception, and all of the events that led to its demise, it is important to understand what organizations were involved with the creation of the system. This section first discusses the main organizations that were involved with C-Tran. It then discusses a brief overview of the how the system got its start, the events that led to its termination, and finally it concludes with how the system was terminated and the current state of public transportation in Clayton County.

### Organizations Involved with C-Tran

#### Clayton County Board of Commissioners

The leading organization with regards to C-Tran is the Clayton County Board of Commissioners. The board is made up of five members including the chairman and each commissioner for the four different districts. The commissioners serve staggered terms of four years and the chairman is selected by the electorate (*Board of Commissioners – Clayton County Government*).

#### Georgia Regional Transportation Authority (GRTA)

The Georgia Regional Transportation Authority is the, “State of Georgia authority working to improve Georgia's mobility, air quality, and land use practices” as described by its website (*“Background and History” GRTA*). It was created in 1999 by Governor Roy Barnes and the General Assembly in order to address many of the transportation issues occurring in the thirteen county Metro Atlanta Area. The main issue at the time was that Atlanta was at a non-attainment level for air quality and needed an entity to be able to oversee projects that spanned across different counties. GRTA is a board that is made up of fifteen members that also sit as the Governor’s Council board to ensure that land use planning requirements are met among local governments around the Metro Atlanta Area. GRTA’s true power comes from the fact that they can issue bonds, some only under the General Assembly’s approval, and they also approve land transportation plans in the Metro Atlanta Region. They

also approve the use of any federal or state funds used to for transportation projects that create an impact on the transportation system of the region (*“Background and History” GRTA*).

### ***Metropolitan Atlanta Rapid Transit Authority (MARTA)***

The Metropolitan Rapid Transit Authority, also known as MARTA, is the main public transit system in Atlanta. It consists of buses and heavy rail with four lines of which two run north/south and the other two run east/west. The rail tracks cover approximately forty-eight miles and are equipped with thirty-eight stations across two counties. The rail operates exclusively in Fulton and DeKalb County, excluding the one rail station in Clayton County at Hartsfield-Jackson International Airport, and there is limited bus service to Cobb County. MARTA is governed by the board of directors that consists of twelve members. The different members come from organizations that represent the different areas that MARTA serves as well as other prominent organizations. There are three members from the city of Atlanta, three from Fulton County, four from DeKalb County, one from the Georgia Department of Transportation, GDOT, and one member from GRTA. All of the board of directors’ members are appointed by their respective organization to serve on the MARTA board of directors (*“Board of Directors” MARTA*).

### ***Overview of C-Tran: Its Origins***

The initial idea for the system began back in July of 2000 when it was proposed by the Clayton County Board of Commission under the name Clayton Transit. It was later approved by voters and in December of 2001, the Clayton County Board of Commissioners gave the green-light on going forward with the development of the system. The bus service was to be managed by the Georgia Regional Transportation Authority (GRTA). On February 14, 2001, the Clayton County Board of Commissioners officially agreed on a contract with GRTA which allowed them to run the bus system. By having GRTA run the bus system, this allowed for better connection with other major transportation systems throughout the Metro Atlanta Area. Specifically, it would create a better connection with Atlanta’s heavy rail system MARTA, Metropolitan Atlanta Regional Authority and for connection to Atlanta Hartsfield-Jackson International Airport. This ease in connections would give C-Tran riders easy access Atlanta. The system would eventually consist of five routes that provided these connections. At build-out, the bus fleet consisted of

approximately twenty-four buses and six para-transit vehicles for the elderly and disabled population that were located within a certain distance of the bus routes.

Implementation of the full system was proposed to occur in phases. In the beginning phase, the GRTA Board of Directors agreed to purchase the first twelve busses in April of 2001. Later in July of 2001, GRTA then signed a contract with MARTA in order to operate and manage the system. MARTA provided personnel and new facilities for the system. In August of 2001 the new system acquired a new name: the Clayton County Transportation System which was also commonly referred to as C-Tran. This new name was passed under Resolution 2001-79 by the Clayton County Board of Commissioners. October of 2001 marked the start of bus service. There were two routes that began at this time. The two routes were Route 501 and 503. A third route, Route 504, was added later in February of 2003. The system experienced success in its first year by exceeding expectations in ridership. It was projected to have 250,000 passengers but in reality it served approximately 500,000 riders between October of 2001 and September of 2002.

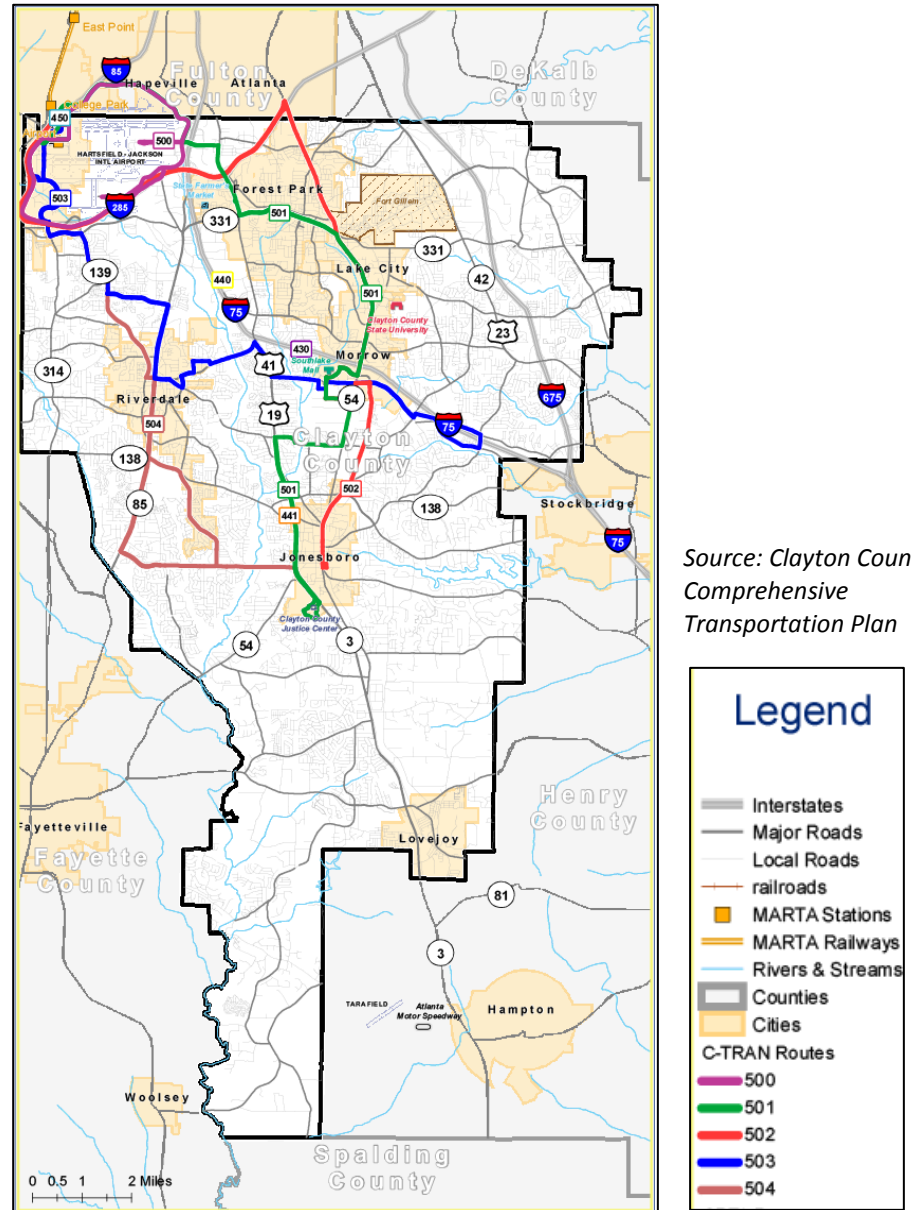
The system was funded from many different sources. C-Tran cost estimates for the first three years were approximated at roughly \$30.7 million. The funding to implement the system came from multiple sources with most of it coming from the federal government. Since the Metro Atlanta Region has always faced issues with air quality, C-Tran was able to obtain 80% of its funding through Congestion Mitigation and Air Quality (CMAQ) grants and Capital Program funds. The rest of the funding came from the state at about 10%. The rest of the funding came from non-property taxes in Clayton County such as special assessed taxes and business license fees.

After the first three years of service, C-Tran began to face some issues with funding. The system became Clayton County's responsibility. Most of its funding for start-up and operations and maintenance from the federal government had expired. In the first three years, the county spent \$3 million in capital and operations costs and the rest of the costs were covered by the federal and state government funding, as stated earlier which added up to about 90% of the total costs. It was at this point that the county realized that it was necessary to change its way of

functioning, mainly in regards to operation and maintenance. A new transit system, First Transit, which was based out of Cincinnati, Ohio, was brought in to replace MARTA to operate and maintain C-Tran. The Clayton County Board of Commissioners chose First Transit over MARTA since they would be the most cost-effective option to run their system. The exact amount that the contract was for is unavailable, but is assumed to be much lower than anything MARTA had offered. The Clayton County Board of Commissioners agreed to a three year contract with First Transit. The commissioners promised that these changes would not only benefit the system by lowering costs, but that it would improve the system as whole and provide better, improved service. First Transit reviewed the system with help from GRTA in order to update routes and cut back on service where it was not needed.

Figure 3: Map of C-Tran System

Two new routes were added to the C-Tran system in order to better serve the county. Route 500 served the Hartsfield-Jackson International Airport area and provided better accessibility to airport workers. Route 502 ran from the Clayton County Courthouse on Jonesboro Road between Forest Parkway and I-285. The pre-existing three routes were also modified. Route 501 eliminated its airport loop since the new Route 500 would traverse that portion. Route 503 that travel through Riverdale and Mt.Zion was shortened and took other measures to reduce crowding. Finally, Route 504 added a connection at the airport in order to eliminate the need to transfer to another route (Authority G.R. 2005).



## Overview of C-Tran: Issues for C-Tran

The three year contract with First Transit expired in April of 2007 and the Clayton County Board of Commissioners decided not to renew the contract. This was due to unsatisfied customers with the transit service. Also, there was incentive to join forces with MARTA again for potential funding opportunities, such as a 1% sales tax on goods and services at the airport that could generate more than \$3 million per year. This new source of funding could decrease the cost of operations for the county. In June of 2007 the Clayton County Board of Commissioners began their negotiations with MARTA for them to take over C-Tran's operation and maintenance as they had done so before. This is where the trouble began. In August of 2007, it was confirmed that the county would not be able to receive the money that would be generated at the airport unless they were granted approval from the state legislature to levy the additional sales tax. The Clayton County Board of Commissioners was split and some wanted to opt out of the contract that had been previously discussed. The board voted 2-3 to accept the resolution regarding the contract with MARTA and on October 2, 2007 MARTA began operating C-Tran once again under another three year joint agreement. This agreement meant that MARTA operated and maintained the entire fleet of C-Tran buses, including the para-transit units, and would be fully reimbursed by the county for all the expenses.

Like the rest of the county at this time, Clayton County was facing large budget cuts. Many of the commissioners proposed implementing large cuts to C-Tran. Under their contract, the county was paying MARTA approximately \$8.1 million per year to operate C-Tran with an additional \$2 million for fuel, insurance and other costs. This meant the county was spending approximately \$10 million on the system per year while receiving only \$2.5 million in revenues. The commissioners had to face the tough decision to decide which programs to cut funding for and C-Tran was one of its most expensive services. The Clayton County Board of Commissioners approved a budget of \$176.8 million and a \$2 million operations funding cut (Commissioners C.C. 2009). This budget assumed a fare increase of \$0.50 for fares meaning fares would now cost \$2.00 instead of \$1.50. This increase, according to the county, was expected to generate \$1 million more that it would actually produce. MARTA's CEO Dr. Beverley Scott claims that the budget was never realistic and was off by about \$1.3 million. The Clayton County Board of Commissioners was

looking for ways to reduce funding shortfalls and proposed several ideas that could help with their budget. The following ideas were proposed in a Public Hearing that was held on October 7, 2009 from the Meeting Minutes (Commissioners C.C. 2010):

- Implement a fare increase
- In addition to a fare increase, implement a \$1.75 surcharge for six months
- Implement a para-transit increase up to double the amount of the proposed fare increase in addition to current fare transit base fare plus the \$1.75 surcharge
- Eliminate Route 500, combine Route 501 and 502 and eliminate GDOT and Southern Regional Medical Center Trips
- Eliminate Sunday Service, eliminate Saturday service and weekday service
- On Route 501 eliminate segments on Route and operate during peak period only
- Operate 503 and 504 during peak periods only.
- Eliminate all services effective July 1, 2010



## Overview of C-Tran: The End of C-Tran

Just a few days following the public hearing, the Clayton County Board of Commissioners came to the decision that it would be best to completely terminate the entire system in a 4-1 vote. On March 31, 2010, C-Tran ran its routes for the last time.

Five months after C-Tran was terminated, Quick Transit, a privately run transit service began to operate in C-Tran's place. However service is limited. Only two of the five routes operated by C-Tran, routes 503 and 504, are currently serviced by Quick Transit. Service along two other routes, Routes 501 and 502 is projected to begin in the future while the fifth route will most likely not be reestablished. While Quick Transit is providing residents with an alternative to C-Tran, it's doing so at a relatively high cost and with limited service. For example, C-Tran charged users \$1.50 for a one way ticket which included free transfers to MARTA transit service. Quick Transit charges \$3.50 for a one way ticket and it does not include transfers to MARTA. Additionally pick up locations are limited. For example Quick Transit provides drop off service at Atlanta's Hartsfield Jackson International Airport but does not pick up passengers. Quick Transit does however; provide disabled and elderly persons with a discounted passenger fare of \$2.50 for one way trips. Overall, while Quick Transit is providing an alternative to C-Tran, its service to the community is not as far reaching as C-Tran.

## METHODOLOGY

Much of the time spent on this study was exploring prior research in order to best define which methods would be the most effective and appropriate for this analysis. The purpose of this research is to examine the economic impact that the elimination of the C-Tran system has had on Clayton County. In this study, the economic impact that is being measured is the impact that C-Tran had on property values in Clayton County.

Many of the studies examined in the literature review section use hedonic pricing models to determine the impact that proximity to transit plays on property values. For this study, it was determined that a similar hedonic pricing model would be the most appropriate method to measure this relationship. As stated earlier, there have been no hedonic pricing studies done on a suburban bus system in the United States to date.

This study of C-Tran and its effects on property values in Clayton County uses a hedonic pricing model that specifically uses linear regression. This type of model “estimates a price, in this study the property value, based on many variables that influence that price” (Tann, Perk, & Catala 41).

Since the purpose of the study is to see if the elimination of C-Tran had an economic impact captured through the increase in property values, it would be best to compare property values from before and after the implementation and elimination of the system. This would be the ideal analysis, but due to lack of data this was not possible for this study. Instead, this study uses data from the year 2009, which is one year prior to C-Tran’s elimination.

The data did however; provide the specific date for when each property was sold. The study tries to capture the effect that the announcement and implementation of the system had using the dates from when the property was sold. Properties sold after 2000 would capture the effect of the announcement and implementation of C-Tran while those sold prior to 2000 would not capture this effect.

The study consists of five separate analyses. The first analysis looks at all of Clayton County and all C-Tran bus stops as how the entire C-Tran system impacted the whole County. The other four analyses look at each bus route individually to get a better idea of the impacts C-Tran had on property values. It also gives a more accurate indication of the relationship between C-Tran and the property values since the system was implemented in phases and not all of the routes were added in the same year.

Each analysis consists of two separate regression models. One regression is for properties sold a year prior to the implementation of C-Tran, or the individual route, and for the years following its implementation. The other regression is for properties sold prior to the announcement of C-Tran or the individual routes' implementation.

## **HYPOTHESIS**

Accessibility is what gives land or properties a higher value. Through this study and the various analyses, the hypothesis is that there is in fact a relationship between proximity to C-Tran and an increase in property values. Simply put, as the distance from a property to C-Tran bus stop increases, then the value of the property decreases. On the other hand, the null hypothesis states that as the distance from a property to C-Tran bus stop increases, then there is no impact on the value of the property. This means that accessibility to transit has no effect on the property value.

## THE MODEL

As stated earlier, this study uses a hedonic price model to estimate the effect of distance to a C-Tran bus stop has on property values in Clayton County for the year 2009. The hedonic pricing model for this study uses linear regression. Regression allows “researchers to control for other variables that affect property values and thereby allows for isolation of the effect of distance” (Tann, Perk, & Catala 41).

The study uses the same model for every analysis. Property values were regressed on variables that controlled for the pricing of the property including characteristics of the property, amenities of the property, and distance to the nearest C-Tran bus stop.

This regression model measures the property value, the dependent variable, in dollars. The independent variables, which are; the characteristics of the property, amenities of properties, and distance to the nearest C-Tran bus stop, will measure the change of the dependent variable, the property value, in dollars in response to one unit change in the given independent variable (Tann, Perk, & Catala 41).

## DATA

In order to be able to actually perform any type of analysis, it was necessary to prepare some of the data. This section focuses on explaining the sources of the data. Also, in some cases it was necessary to use GIS, Geographic Information Systems, analysis to prepare or extract the necessary data.

The property values data comes directly from the Clayton County Tax Assessor’s office. The data came in the form of a shapefile in GIS. In order to be able to extract the necessary parcel containing the property value data, it required some GIS analysis to extract the relevant parcels.

The same shapefile contained information regarding the characteristics of the property as well as what amenities were found on each of the properties. Again, using GIS analysis, the same shapefile was used in combination with another shapefile that contained the locations for every single bus stop for the C-Tran system to calculate the distance from each properties parcel to the nearest C-Tran bus stop. Other GIS files were helpful in completing the GIS analysis to extract the parcels that contained the relevant data. These were found on the ARC, Atlanta Regional Commission, website. These shapefiles include the Clayton County boundary, the roads, and the bus stops for C-Tran.

## VARIABLES

The following section describes the variables used in the hedonic regression models for each of the analyses. It identifies where the data came from and how it was retrieved. As stated before, some of the variables required the use of GIS analysis to extract the information from a specific data source. The description also explains why each variable was used.

### Assessed Property Value – Dependent Variable

The dependent variable is the variable that the model is trying to predict. In this case, the dependent variable is the assessed property value. The assessed property value is used instead of the market value because it allowed for more observations to be used in the analysis which makes the analysis more robust. Also, the assessed value avoids any issues resulting from the recent housing market downturn.

The assessed value is estimated by the Clayton County Tax Assessor's office. There is a value given to the actual land parcel as well as a separate assessed value given to the actual structure built on the parcel. The assessed property value for this analysis refers to the sum of both the values. The Clayton County Tax Assessor's office uses a combination of two different approaches to estimate property values. One is the cost structure approach and the other is the market approach or sales comparison approach (CC Tax Assessor's). The cost approach combines the

land value with the estimated depreciated cost of the improvements made on the property. The cost approach is based around the principle of substitution which states that “in that no rational person will pay more for a property than the amount for which he can obtain, by purchase of a site and construction of a building, with undue delay, a property of equal desirability and utility” (Rossman 2007). The sales comparison approach compares the property that is being appraised to other recently sold properties that are similar to the property being assessed a price. There are also adjustments made for any major differences. The Clayton County Tax Assessor’s office reported that it does not consider distance to a transit stop as part of assessing the property, which is why this analysis significant since it has not yet been studied.

Another important factor to note is that this analysis only examines single-family homes. It excludes commercial properties as well as multi-family housing. This is due to the nature of how these two property types are priced. Their price depends on different factors and therefore creates issues in the hedonic model. This being said, their price is also assessed differently as well.

The assessed property value data was accessed through a GIS shapefile containing information from the Clayton County Tax Assessor’s office from the year 2009. Using GIS, the relevant parcels were extracted. The analysis looks at single family properties that are located within a quarter mile and a half mile from the C-Tran bus stops. A buffer at both distances was created and then used to see which parcels were located in this range. Once those parcels were selected using the “intersect” function, only those that were zoned as single family residential were selected using the “select by attributes” function.

### **Distance from C-Tran Bus Stop – Independent Variable**

This is the independent variable that is hypothesized to show an inverse relationship between it and the property value. This variable was calculated using GIS. Once the parcels that were within a quarter mile and a half mile were selected, they were given a centroid. A centroid is the center point inside a polygon.

This analysis uses a more accurate approach to calculating the distance than previous studies. Other studies have simply used a straight line calculation to find the distance between the property parcel and the transit station. This is not accurate because as human we cannot always take the shortest straight line route since there are barriers such as private property and buildings. This analysis uses the Network Analyst extension in GIS which uses the road network to calculate the accurate distance. This method uses the roads to get from one point to another. This method is not without flaw in that it assumes that the roads in Clayton County have sidewalks that would allow people to walk safely from their home to the bus stop.

Using the centroids of the property parcels and the points for the C-Tran bus stops in GIS, it is possible to calculate the distance using the Network Analyst extension. The roads shapefile from the ARC has all of the roads found in the Metro Atlanta Area. First, it was necessary to only select those located in Clayton County. Then that shapefile had to be converted into a different file type to be able to be used in the Network Analyst extension. Using the extension, one can calculate distances using the roads. Once the model was run using the “closest facility” function, it calculated the shortest distance between a property parcel centroid and the nearest C-Tran bus stop. This calculation was done in feet and then the results were exported from the resulting GIS attribute table into an Excel file to be analyzed.

### ***Lot Size – Independent Variable***

This variable is the lot size of the property parcel. This too was calculated in GIS using the parcels shapefile. There is a feature that can calculate the size of a polygon, or feature, in any type of unit. The feature is called “calculate geometry” and the size was calculated in square feet to remain consistent with the rest of the variables. Again, the results were exported from the resulting GIS attribute table into an Excel file so that it could be used for analysis.

### *Age of Home – Independent Variable*

The age of the home is significant since it plays a large role in how the home is priced according to the cost structure approach to assessing home prices. The newer the home, the value tends to be higher since it has had less wear on it. This variable was calculated using the data from the Clayton County Tax Assessor's office from 2009. The data had information from when each property had a home built. It included the year the home was built but for this analysis it is easier to use the age of the home. Using a simple Excel function, the age was calculated by simple subtracting the year the home was built from the year the data was from, which in this case was 2009.

### *Rooms, Bathrooms, Square Footage – Independent Variables*

These variables all depict the amenities the property contains. The more rooms, bathrooms, or square footage a home has, it is likely to have a high value. These variables were also found from the data from the Clayton County Tax Assessor's Office from 2009. The rooms and bathrooms assign a value of one for each room or bathroom the property has. The square footage refers to the size of the structure built on the property and is measured in square feet to remain in consistent units with the other variables.



## ANALYSIS

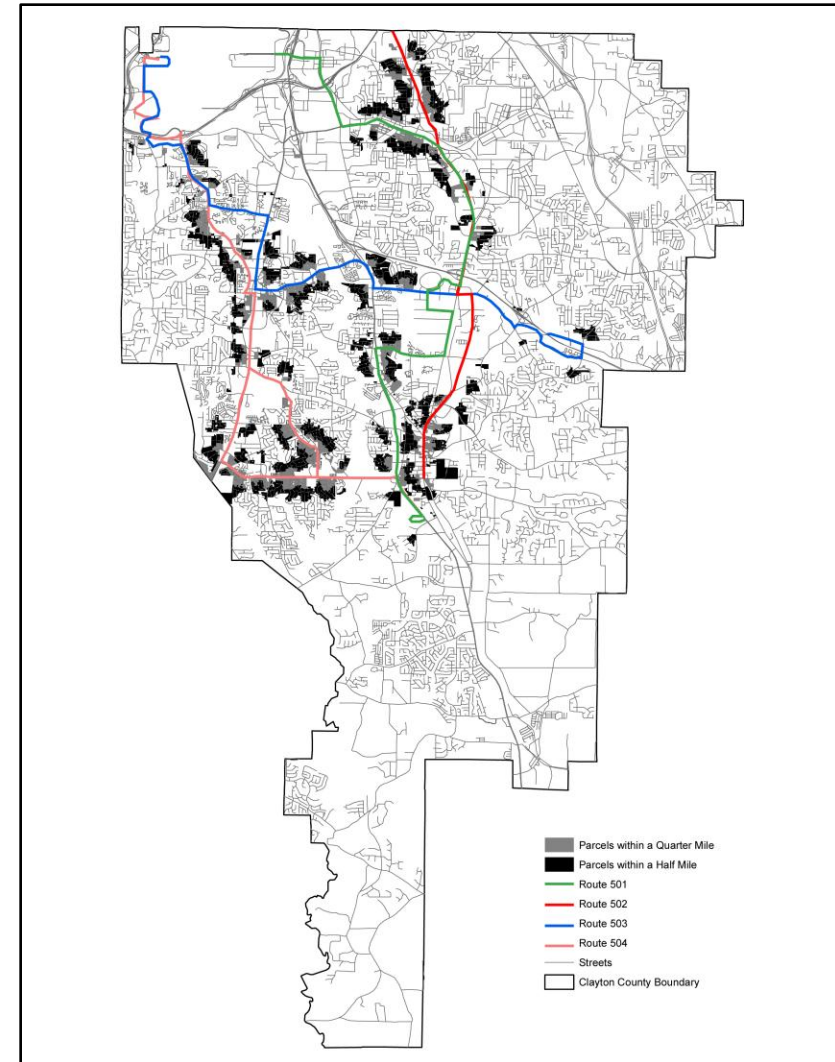
This section discusses the results from the different analyses performed. The first analysis is of the entire C-Tran system encompassing all of Clayton County. The other four analyses are for each individual bus route. There were five different routes for C-Tran but only four of the routes are analyzed. This is because one of the routes, Route 500, did not have any single family residential properties located within a quarter mile or half mile of its bus stops. This is the route that served Hartsfield-Jackson International Airport meaning it is not surrounded by a residential area.

The analyses each run two separate hedonic regression models for the different distances from the C-Tran bus stops. The distances of a quarter mile and half mile were selected because that is typically the threshold that the average person would walk to a transit station. A quarter mile is more realistic in a suburban setting and for a bus system but in order to develop the better results, the area was expanded to a half mile as well. The quarter mile buffer distance model tends to usually be the model that yields the best results and therefore discussed in this study. The results for the half mile buffer models are shown in the chart but typically not discussed throughout the study.

### *Analysis 1: C-Tran System*

The first analysis examines the effect C-Tran has on property values throughout Clayton County. The first model, as discussed in Tables 2 and 3, looks at properties sold in the year 2000 or after in order to capture the effects that the announcement of the bus system had on the property values. Table 2 shows the descriptive statistics of the data.

**Figure 4: Map of C-Tran System and Surrounding Parcels**



**Table 2: Descriptive Statistics of Properties sold after 2000 along Entire C-Tran System**

Clayton County Properties Sold After 2000 along Entire C-Tran System									
Descriptive Statistics		Quarter Mile N=1041				Half Mile N=4081			
Variable	Description	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
<b>Assessed Price</b>	Assessed Price of the Property	\$32,000	\$1,296,000	\$99,298	\$47,340	\$25,000	\$1,296,000	\$101,242	\$36,865
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	11	1,319	867	329	11	2,640	1,717	617
<b>Lot Size</b>	Size of the lot in square feet	2,985	467,897	14,621	17,191	2,309	467,897	14,848	12,965
<b>Rooms</b>	Number of rooms in home	0	16	6	1	0	60	6	1.5
<b>Bathrooms</b>	Number of Bathrooms in home	0	8	2	0.6	0	8	2	0.6
<b>Square Feet</b>	Number of Square Feet in home	0	2,916	1,156	285	0	2,916	1,185	286
<b>Age of Home</b>	Age of the home on the property	0	108	36	17	0	108	35	17

After running the two models, one for a quarter mile data set and one for a the half mile buffer data set, it was found that in Clayton County there is an inverse relationship between property values and the distance to C-Tran bus stops. As shown in Table 3, the property value decreases \$1.66 for every foot one moves away from a C-Tran station. This means that a property a half mile away from the station is \$2,191 less than one a quarter mile away from a station. This model shows a significant impact for the distance variable.

This model has an adjusted R-squared of 0.756 meaning that 75.6% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are

significant at a 99.9% confidence level except the distance variable which is significant at a 54.4% confidence level. While many hedonic housing price models are heteroskedastic, this model tends to not demonstrate a nonconstant variance. The model also does not show a threat of multicollinearity as shown by the similar R-square and adjusted R-square values as well as large tolerance numbers and small VIF numbers.

It is also important to discuss the other variables and their coefficients to better determine if the model is accurate. The model shows that for every foot increase in the size of the lot, the property value increases by \$2.04. This corresponds with the notion that the larger the property is, the higher the value. The same finding is true for the variable called rooms. The assessed property value increases \$4,136.89 for each

**Table 3: Regression Model Results for Properties sold after 2000 along entire C-Tran**

Variable	Description	C-Tran System	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	53,447.771 <i>0.000</i>	-8,417.270 <i>0.000</i>
<b>Distance</b>	<b>Distance from property to nearest C-Tran bus stop</b>	<b>-1.664</b> <b><i>0.456</i></b>	<b>0.720</b> <b><i>0.260</i></b>
Lot Size	Size of the lot in square feet	2.039 <i>0.000</i>	0.923 <i>0.000</i>
Rooms	Number of rooms in home	4,136.890 <i>0.000</i>	3,188.197 <i>0.000</i>
Bathrooms	Number of Bathrooms in home	10,126.721 <i>0.000</i>	31,812.049 <i>0.000</i>
Square Feet	Number of Square Feet in home	12.839 <i>0.000</i>	16.240 <i>0.000</i>
Age of Home	Age of the home on the property	-1,090 <i>0.000</i>	25.077 <i>0.000</i>
R Square		0.757	0.534
Adjusted R Square		0.756	0.533

additional room. This also goes along with the concept that the more rooms a property has, the larger it is, and therefore, it increases the value. A bathroom has the same effect in that it increases the value of the home by \$10,126.72 for each additional bathroom. A \$12.84 increase in the property is found per additional square foot for the home built on the property. The age of the home decreases the assessed property value by \$1,090 for each year. The older a home is, the more its price tends to depreciate. These coefficients all showed expected results and all were significant at the 99.9% confidence level.

The last model showed that C-Tran did have the hypothesized effect on property values in that as the distance of the property from a C-Tran bus stop increased, the assessed property value decreased. In order to better solidify our findings, a second model was run on the properties that were sold prior to the announcement of C-Tran. The descriptive statistics for homes sold prior to 2000 are shown below in Table 4.

**Table 4: Descriptive Statistics for Properties sold prior to 2000 along entire C-Tran system**

Clayton County Properties Sold Before 2000 along Entire C-Tran System									
Descriptive Statistics		Quarter Mile N=1491				Half Mile N=3721			
Variable	Description	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
<b>Assessed Price</b>	Assessed Price of the Property	\$25,000	\$278,858	\$92,347	\$26,699	\$25,000	\$354,286	\$93,547	\$26,733
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	0.1769	1,320	879	320	69	2,640	2,054	357
<b>Lot Size</b>	Size of the lot in square feet	3,007	390,683	17,339	20,540	4,794	1,616,568	16,846	30,243
<b>Rooms</b>	Number of rooms in home	0	60	6	3	0	70	6	2
<b>Bathrooms</b>	Number of Bathrooms in home	0	4	2	0.6	0	4	2	0.6
<b>Square Feet</b>	Number of Square Feet in home	0	3,299	1,139	330	0	4,071	1,200	319
<b>Age of Home</b>	Age of the home on the property	0	108	40	15	0	92	40	14

After running two models, one for a quarter mile data set and one for a the half mile buffer data set, it was found that in Clayton County there is not an inverse relationship between property values and the distance to C-Tran bus stops for properties sold prior to 2000. As shown in Table 5, the property value increases \$1.80 for every foot one moves away from a C-Tran station. This means that a property a half mile away from the station is \$2,376 more than one a quarter mile away from a station. Also, in this model, the distance variable coefficient is only significant at the

82.4% confidence level, where in the previous model for homes sold after 2000, the confidence level for distance was 99.7%. The change from the previous model and this model shows that the announcement and implementation of C-Tran creates a positive impact on property values.

**Table 5: Regression Model Results for Properties sold before 2000 along entire C-Tran System**

This model has an adjusted R-squared of 0.598 meaning that 59.8% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are significant at a 99.7% confidence level. While many hedonic housing price models are heteroskedastic, this model tends to not show significant heteroskedasticity or multicollinearity. Below is Table 5 which shows the regression results for this model.

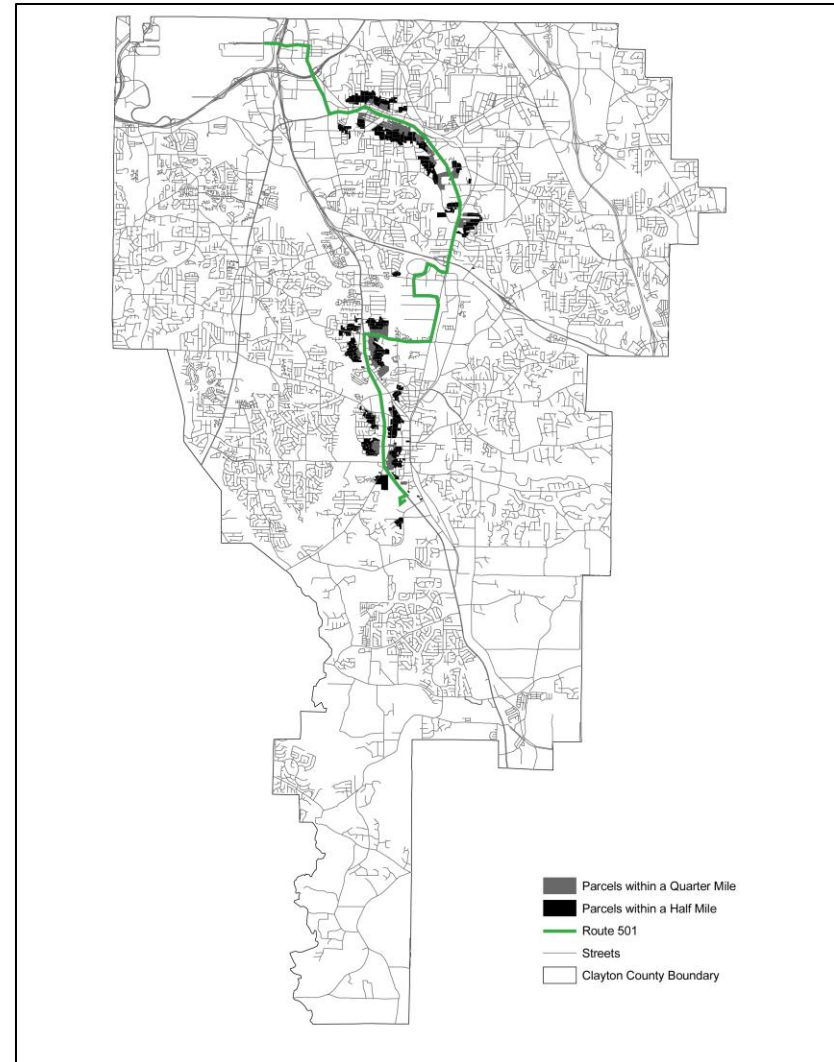
Variable	Description	C-Tran System	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	32,025.297 0.000	35,775.233 0.000
<b>Distance</b>	<b>Distance from property to nearest C-Tran bus stop</b>	<b>1.870</b> <b>0.176</b>	<b>0.674</b> <b>0.405</b>
Lot Size	Size of the lot in square feet	0.237 0.000	0.207 0.000
Rooms	Number of rooms in home	685.975 0.000	1,227.627 0.000
Bathrooms	Number of Bathrooms in home	18,605.353 0.000	14,873.658 0.000
Square Feet	Number of Square Feet in home	32.266 0.000	33.659 0.000
Age of Home	Age of the home on the property	-377.892 0.000	-390.743 0.000
R Square		0.599	0.568
Adjusted R Square		0.598	0.567

While these hedonic regression pricing models have clearly shown that distance to a C-Tran bus station has an impact on property values, it is important to go a step further. As stated previously, the system was implemented in phases. A good way to see if this relationship is truly present, it is necessary to look at each transit line individually. The following sections discuss the results of these analyses.

## Analysis 2: Route 501

Route 501 served many people and ran from the Clayton County Courthouse in Jonesboro, through Morrow, Lake City, Forest Park and eventually to the airport. Although it transected many cities in Clayton County, it did not have many single-family properties in its vicinity. The first model looks at properties sold after the year 2000. Below, Table 6 shows the descriptive statistics for the first model.

**Figure 5: Map of Parcels Surrounding Route 501**





**Table 6: Descriptive Statistics for homes around C-Tran Route 501 Sold after 2000**

<b>Clayton County Properties Sold After 2000 along C-Tran Route 501</b>									
<b>Descriptive Statistics</b>		<b>Quarter Mile N=156</b>				<b>Half Mile N=872</b>			
<b>Variable</b>	<b>Description</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Assessed Price</b>	Assessed Price of the Property	\$50,939	\$163,659	\$87,789	\$23,007	\$44,004	\$271,241	\$100,329	\$33,478
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	277	1,306	975	236	277	2,637	1,867	540
<b>Lot Size</b>	Size of the lot in square feet	7,770	86,541	15,427	8,674	4,247	200,000	15,450	10,780
<b>Rooms</b>	Number of rooms in home	4	13	6	1	0	13	6	1.5
<b>Bathrooms</b>	Number of Bathrooms in home	1	4	1.4	0.5	0	4	1.5	0.6
<b>Square Feet</b>	Number of Square Feet in home	540	1,864	1,120	276	0	2,816	1,180	302
<b>Age of Home</b>	Age of the home on the property	13	108	51	11	0	108	43	18

This model finds that there is not an inverse effect on property values and their distance to C-Tran Route 501 bus stops for properties sold after 2000. Table 7 shows the results from the model and actually show that as the distance from the bus stop increases one foot, it increases the property value by \$4.98.

This model has an adjusted R-squared of 0.779 meaning that 77.9% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are significant at a 99.9% confidence level except the distance variable. The distance coefficient is only significant at the 79.9% confidence level.

This model does not show signs of being heteroskedastic nor show signs of multicollinearity.

**Table 7: Regression Model Results for Properties sold after 2000 along Route 501**

Variable	Description	Route 501	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	32,025.297 0.000	29,588.763 0.000
Distance	Distance from property to nearest C-Tran bus stop	4.975 0.201	1.995 0.053
Lot Size	Size of the lot in square feet	0.325 0.009	0.247 0.000
Rooms	Number of rooms in home	1,700.904 0.072	4,035.028 0.000
Bathrooms	Number of Bathrooms in home	18,222.386 0.000	16,055.238 0.000
Square Feet	Number of Square Feet in home	29.895 0.000	35.784 0.000
Age of Home	Age of the home on the property	-541.963 0.000	-641.536 0.000
R Square		0.768	0.781
Adjusted R Square		0.759	0.779

The other variables and their coefficients show expected results. The model shows that for every foot increase in the size of the lot, the property value increases by \$0.33. This corresponds with the notion that the larger the property is, the higher the value. Each additional room adds \$1,700.90 to the assessed property value. A bathroom increases the value of the home by \$18,222.39 for each additional bathroom. A \$29.90 increase in the property is found per additional square foot for the home built on the property. The age of the home decreases the assessed property value by \$541.96 for each year older the home is. These coefficients all showed expected results and all were significant at the 99.9% confidence level.

Just as with the original analysis that looked at the entire C-Tran system and the County, a separate hedonic regression pricing model was conducted in order to see if the sale date captures the effect of the announcement and implementation of C-Tran. Below in Table 8 are the descriptive statistics for this model.

**Table 8: Descriptive Statistics for Properties around C-Tran Route 501 sold prior to 2000**

Clayton County Properties Sold Before 2000 along C-Tran Route 501									
Descriptive Statistics		Quarter Mile N=156				Half Mile N=872			
Variable	Description	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
<b>Assessed Price</b>	Assessed Price of the Property	\$25,000	\$195,646	\$94,239	\$27,744	\$25,000	\$292,381	\$94,560	\$27,686
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	49	1,320	974	257	49	2,640	1,811	557
<b>Lot Size</b>	Size of the lot in square feet	6,541	808,366	22,358	54,725	4,794	1,020,617	19,655	41,179
<b>Rooms</b>	Number of rooms in home	0	60	612	3.4	0	70	6	2.6
<b>Bathrooms</b>	Number of Bathrooms in home	0	3	1.4	0.5	0	4	1.4	0.5
<b>Square Feet</b>	Number of Square Feet in home	0	2,277	1,187	316	0	4,071	1,200	332

This model, like the previous one, finds that there is not an inverse effect on property values and their distance to C-Tran Route 501 bus stops for properties sold before 2000. The results show that as the distance from the bus stop increases, there is a \$4.09 increase in the property value per foot.

This model has an adjusted R-squared of 0.759 meaning that 75.9% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are significant at a 99.9% confidence level except the distance variable. The distance coefficient is only significant at the 76.1% confidence level.

This model does not show signs of being heteroskedastic nor show signs of multicollinearity.

The other variables and their coefficients also show similar results as the other model. The other coefficients all showed expected results and all were significant at the 99.9% confidence level. This can be seen in Table 9.

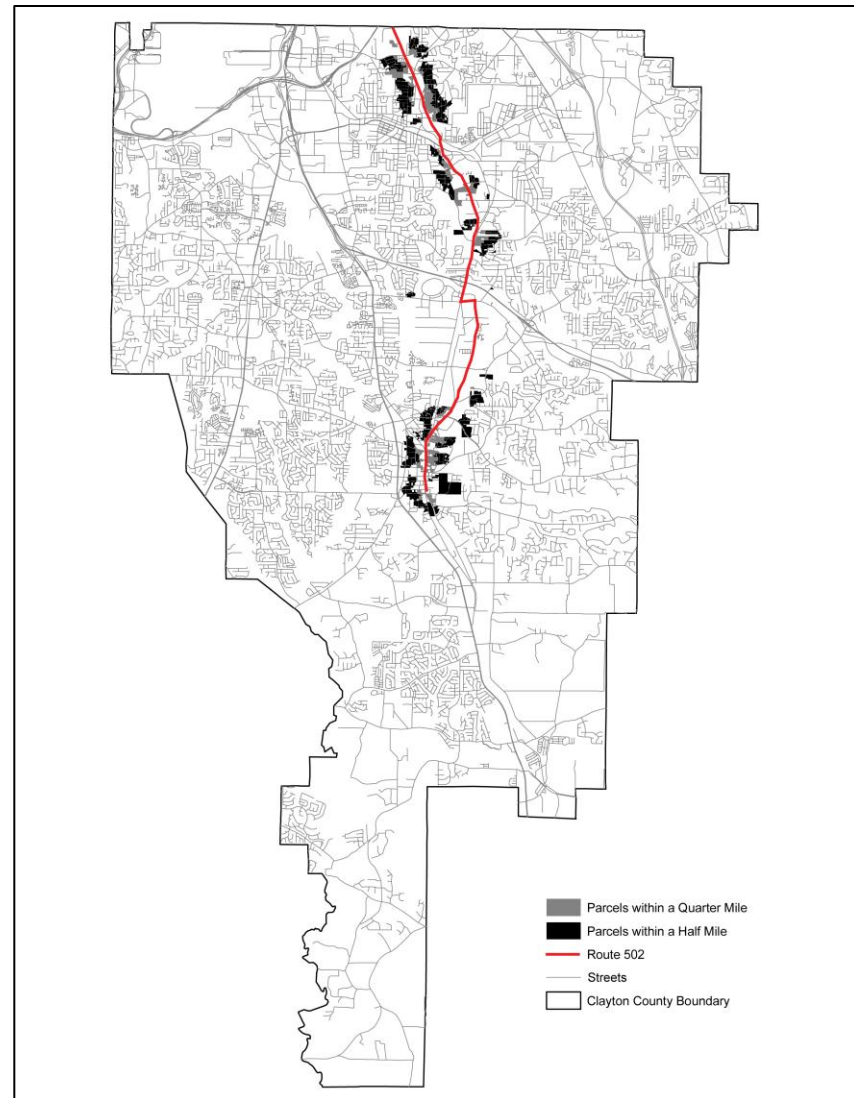
**Table 9: Regression Model Results for Properties sold prior to 2000 along Route 501**

Variable	Description	Route 501	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	48,352.418 0.000	38,831.250 0.000
<b>Distance</b>	<b>Distance from property to nearest C-Tran bus stop</b>	<b>4.090</b> <b>0.239</b>	<b>-0.172</b> <b>0.827</b>
Lot Size	Size of the lot in square feet	0.176 0.000	0.105 0.000
Rooms	Number of rooms in home	-201.096 0.457	-218.908 0.220
Bathrooms	Number of Bathrooms in home	15,056.594 0.000	14,692.180 0.000
Square Feet	Number of Square Feet in home	45.208 0.000	46.575 0.000
Age of Home	Age of the home on the property	-721.899 0.000	-451.336 0.000
R Square		0.768	0.661
Adjusted R Square		0.759	0.659

**Figure 7: Map of Properties along Route 502**

### Analysis 3: Route 502

Route 502 was not added until 2005 and predominantly served the Jonesboro area. The first model looks at properties sold after 2004. Table 11 shows the descriptive statistics for the data from the model.



**Table 10: Descriptive Statistics for Properties around C-Tran Route 502 sold after 2004**

Clayton County Properties Sold After 2004 along C-Tran Route 502									
Descriptive Statistics		Quarter Mile N=72				Half Mile N=429			
Variable	Description	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
<b>Assessed Price</b>	Assessed Price of the Property	\$39,209	\$146,243	\$85,885	\$20,999	\$32,162	\$1,296,000	\$100,955	\$70,371
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	6201	47,983	13,823	5,828	76	2,640	1,887	560
<b>Lot Size</b>	Size of the lot in square feet	76	1,319	925	312	5,430	467,897	17,438	25,487
<b>Rooms</b>	Number of rooms in home	4	8	6	1	0	12	6	1.7
<b>Bathrooms</b>	Number of Bathrooms in home	1	2	1.3	0.4	0	4	1.5	0.6
<b>Square Feet</b>	Number of Square Feet in home	806	1,820	1,127	249	0	2,816	1,178	318
<b>Age of Home</b>	Age of the home on the property	21	97	52	11	0	108	45	18

This model finds that there is not an inverse effect on property values and their distance to C-Tran Route 502 bus stops for properties sold after 2004 for the quarter mile buffer but it does find an inverse effect for the half mile buffer model. In the half mile buffer model, for each foot away from the C-Tran Route 502 bus stops the property is located, the assessed property value decreases by \$3.50.

This model has an adjusted R-squared of 0.79 meaning that 79% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are significant at a 99.9% confidence level except the distance variable. The distance coefficient is only significant at the 78.2% confidence level. This model does not show signs of being heteroskedastic nor show signs of multicollinearity.

The other variables and their coefficients show expected results. The model shows that for every foot increase in the size of the lot, the property value increases by \$2.02. This corresponds with the notion that the larger the property is, the higher the value. Each additional room adds \$5,288.89 to the assessed property value. A bathroom increases the value of the home by \$2,904.26 for each additional bathroom. An \$18.44 increase in the property is found per additional square foot for the home built on the property. The age of the home decreases the assessed property value by \$1,508.29 for each year older the home is. These coefficients all showed expected results and all were significant at the 99.9% confidence level.

**Table 11: Regression Results for Properties sold after 2004 around Route 502**

Variable	Description	Route 502	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	39,985.556 0.008	82,432.603 0.000
Distance	Distance from property to nearest C-Tran bus stop	5.853 0.217	-3.499 0.218
Lot Size	Size of the lot in square feet	0.077 0.768	2.020 0.000
Rooms	Number of rooms in home	156.300 0.928	5,288.891 0.000
Bathrooms	Number of Bathrooms in home	21,614.344 0.000	2,904.260 0.501
Square Feet	Number of Square Feet in home	31.100 0.000	18.444 0.004
Age of Home	Age of the home on the property	-467.298 0.007	-1,508.289 0.000
R Square		0.736	0.793
Adjusted R Square		0.712	0.79

A separate set of models show the results for the properties sold prior to 2004. The descriptive statistics are shown below in Table 12.

**Table 12: Descriptive Statistics for Properties Sold Prior to 2004 around Route 502**

<b>Clayton County Properties Sold Before 2004 along C-Tran Route 502</b>									
<b>Descriptive Statistics</b>		<b>Quarter Mile N=355</b>				<b>Half Mile N=1707</b>			
<b>Variable</b>	<b>Description</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Assessed Price</b>	Assessed Price of the Property	\$26,290	\$267,056	\$89,129	\$32,277	\$25,000	\$354,286	\$90,931	\$33,163
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	49	1,320	917	285	49	2,641	1,821	584
<b>Lot Size</b>	Size of the lot in square feet	7,745	808,366	21,068	47,193	4,796	1,616,568	19,833	49,129
<b>Rooms</b>	Number of rooms in home	0	10	6	1.4	0	7	6	2
<b>Bathrooms</b>	Number of Bathrooms in home	0	4	1.3	0.5	0	4	1.4	0.5
<b>Square Feet</b>	Number of Square Feet in home	0	2,964	1,134	334	0	4,071	1,159	343
<b>Age of Home</b>	Age of the home on the property	0	88	49	14	0	92	48	14



This model, like the previous one, finds that there is an inverse effect on property values and their distance to C-Tran Route 502 bus stops for properties sold after 2004 in the model for the half mile buffer. The results show that as the distance from the bus stop increases, there is a \$0.15 decrease in the property value per foot. Although the value is much lower than in the model for properties sold after 2004, there is still an inverse relationship. This is likely due to the fact that the C-Tran system had already been in existence for three years and had already shown to be valuable. This model could have captured some of those effects.

This model has an adjusted R-squared of 0.712 meaning that 71.2% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are significant at a 99.9% confidence level except the distance variable. The distance coefficient is

**Table 13: Regression Model Results for Properties sold prior to 2004 along C-Tran Route 502**

Variable	Description	Route 502	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	26,716.903 0.000	42,175.585 0.000
Distance	Distance from property to nearest C-Tran bus stop	<b>7.747</b> <b>0.019</b>	<b>-0.148</b> <b>0.843</b>
Lot Size	Size of the lot in square feet	0.213 0.000	0.197 0.000
Rooms	Number of rooms in home	4,139.328 0.000	915.272 0.000
Bathrooms	Number of Bathrooms in home	12,322.480 0.000	18,184.080 0.000
Square Feet	Number of Square Feet in home	44.408 0.000	43.674 0.000
Age of Home	Age of the home on the property	-799.148 0.000	-740.396 0.000
R Square		0.714	0.713
Adjusted R Square		0.709	0.712

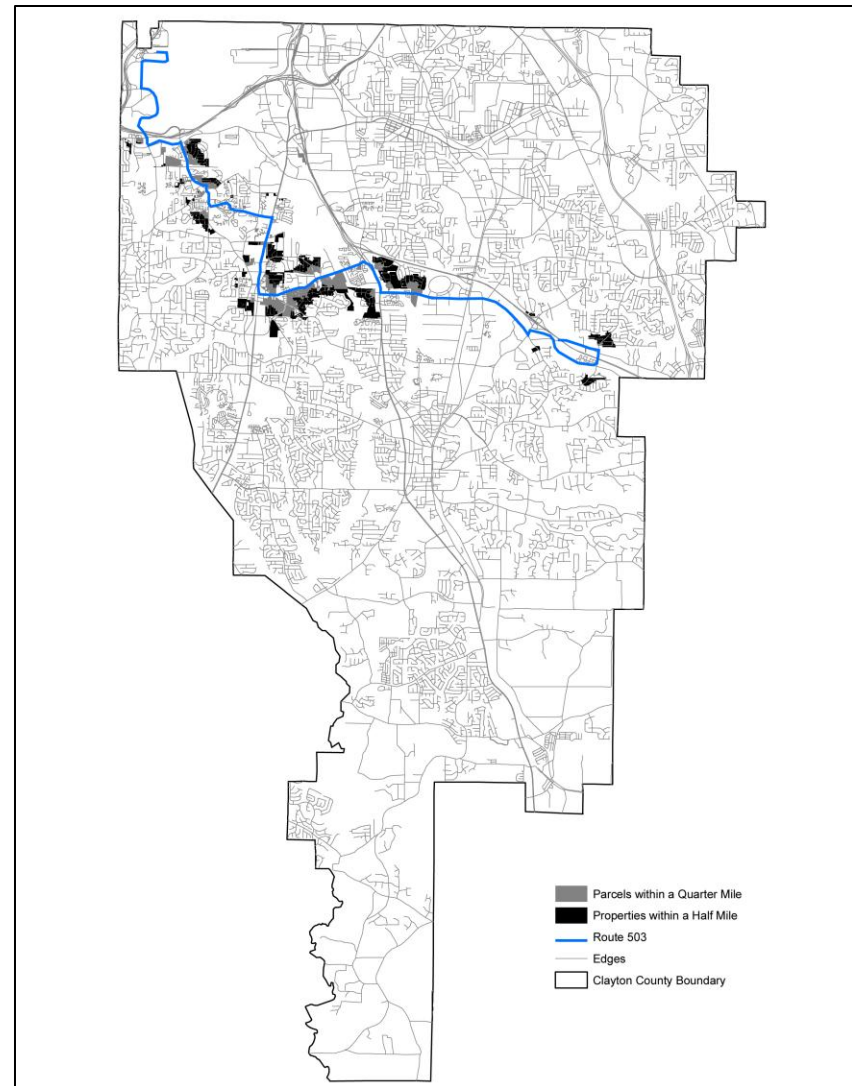
only significant at the 15.7% confidence level which is very low. This model does not show signs of being heteroskedastic nor show signs of multicollinearity.

The other variables and their coefficients also show similar results as the other model. The other coefficients all showed expected results and all were significant at the 99.9% confidence level. This can be seen in Table 13.

#### Analysis 4: Route 503

Route 503 was one of the original routes that began its service in 2001. It ran along Mt. Zion Parkway through the County and Riverdale. The first model is a hedonic pricing regression model for properties sold after 2000. The descriptive statistics for this data are shown in Table 14 below.

Figure 8: Map of Properties around Route 503



**Table 14: Descriptive Statistics for Properties around C-Tran Route 503 sold after 2000**

Clayton County Properties Sold After 2000 along C-Tran Route 503									
Descriptive Statistics		Quarter Mile N=234				Half Mile N=949			
Variable	Description	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
<b>Assessed Price</b>	Assessed Price of the Property	\$38,495	\$215,139	\$91,684	\$26,160	\$26,450	\$202,109	\$78,150	\$24,590
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	74	1,312	885	305	74	26,309	1,746	598
<b>Lot Size</b>	Size of the lot in square feet	2,985	68,560	14,561	5,959	2,310	216,325	14,428	10,463
<b>Rooms</b>	Number of rooms in home	4	16	6	1	0	16	6	1
<b>Bathrooms</b>	Number of Bathrooms in home	1	8	1.5	0.6	1	8	1.6	0.5
<b>Square Feet</b>	Number of Square Feet in home	702			234	624	2,482	1,146	214
<b>Age of Home</b>	Age of the home on the property	3	98	42	12	3	98	38	14

This model finds that there is an inverse effect on property values and their distance to C-Tran Route 503 bus stops for properties sold after 2000. Both the quarter mile buffer model and half mile buffer models show this relationship. The results for the quarter mile buffer model show that as the distance from the bus stop increases, there is a \$7.93 decrease in the property value per foot.

This model has an adjusted R-squared of 0.551 meaning that 55.1% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are

significant at the 99.9 % confidence level except the bathrooms and distance variable.

The bathroom variable is significant at the 95.8% confidence level. The distance coefficient is only significant at the 95.3% confidence level.

This model does not show signs of being heteroskedastic nor show signs of multicollinearity.

The other variables and their coefficients show expected results. The model shows that for every foot increase in the size of the lot, the property value increases by \$0.87. This corresponds with the notion that the larger the property is, the higher the value. Each additional room adds \$8,083.19 to the assessed property value. A bathroom increases

the value of the home by \$5,341.88 for each additional bathroom. A \$28.85 increase in the property is found per additional square foot for the

**Table 15: Regression Model Results for Properties Sold After 2000 along C-Tran Route 503**

Variable	Description	Route 503	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	27,133.006 0.006	38,769.994 0.000
Distance	Distance from property to nearest C-Tran bus stop	-7.934 0.047	-2.405 0.014
Lot Size	Size of the lot in square feet	0.874 0.000	0.093 0.104
Rooms	Number of rooms in home	8,083.190 0.000	6,793.234 0.000
Bathrooms	Number of Bathrooms in home	5,341.884 0.042	6,055.814 0.000
Square Feet	Number of Square Feet in home	28.851 0.000	19.795 0.000
Age of Home	Age of the home on the property	-713.433 0.000	-775.217 0.000
R Square		0.563	0.496
Adjusted R Square		0.551	0.493

home built on the property. The age of the home decreases the assessed property value by \$713.43 for each year older the home is. These results can be seen in Table 15.

The following models show property values along Route 503 sold prior to 2000. Its descriptive statistics are shown below in Table 16.

**Table 16: Descriptive Statistics for Properties around C-Tran Route 503 sold prior to 2000**

Clayton County Properties Sold Before 2000 along C-Tran Route 503									
Descriptive Statistics		Quarter Mile N=346				Half Mile N=1327			
Variable	Description	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
<b>Assessed Price</b>	Assessed Price of the Property	\$30,070	\$1,034,500	\$100,183	\$86,281	\$33,932	\$216,612	\$76,466	\$22,771
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	7	1,319	902	303	7	2,641	1,745	594
<b>Lot Size</b>	Size of the lot in square feet	3,007	640,357	23,968	56,025	3,007	234,927	15,684	13,308
<b>Rooms</b>	Number of rooms in home	0	10	5	1.5	0	10	6	1
<b>Bathrooms</b>	Number of Bathrooms in home	0	3.5	1.4	0.5	1	4	1.6	0.5
<b>Square Feet</b>	Number of Square Feet in home	0	2,046	1,039	329	624	2,706	1,170	242
<b>Age of Home</b>	Age of the home on the property	0	88	41	12	3	108	41	11

This model, like the previous one, finds that there is an inverse effect on property values and their distance to C-Tran Route 503 bus stops for properties sold prior to 2000 in the model for both the quarter and half mile buffer. The results show that as the distance from the bus stop increases, there is a \$19.53 decrease in the

property value per foot. This value is higher than the previous model for properties sold after 2000.

This model has an adjusted R-squared of 0.673 meaning that 67.3% of the assessed property value in 2009 can be explained by the variables used in the analysis. The variables are noticeably less significant than in all of the other models although the distance coefficient is significant at the 96.7% confidence level. This model does not show signs of being heteroskedastic nor show signs of multicollinearity.

The other variables and their coefficients also show expected impacts on the assessed property value like the other models. This can be seen in Table 17.

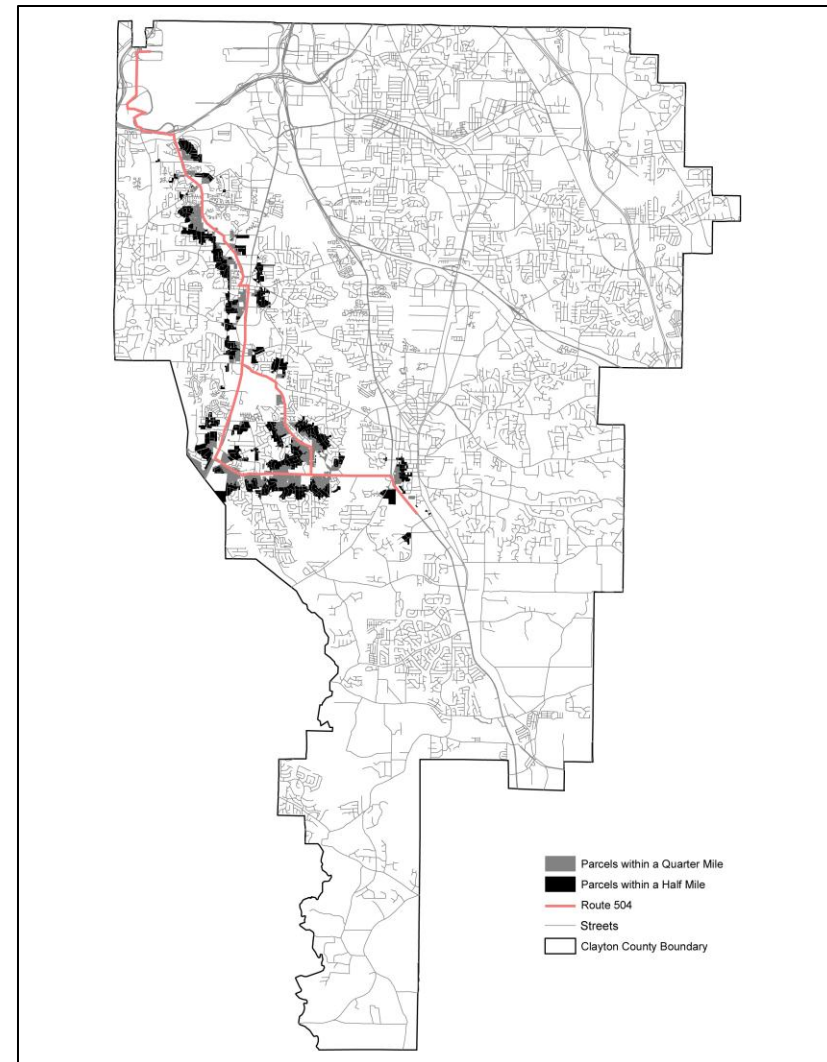
**Table 17: Regression Model Results for Properties Sold prior to 2000 along C-Tran Route**

Variable	Description	Route 503	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	38,400.577 0.012	46,041.323 0.000
Distance	Distance from property to nearest C-Tran bus stop	-19.532 0.033	-3.359 0.000
Lot Size	Size of the lot in square feet	1.404 0.000	0.174 0.000
Rooms	Number of rooms in home	6,276.693 0.048	5,221.781 0.000
Bathrooms	Number of Bathrooms in home	13,950.564 0.048	8,578.337 0.000
Square Feet	Number of Square Feet in home	7.859 0.543	16.054 0.000
Age of Home	Age of the home on the property	-394.848 0.157	-718.554 0.000
R Square		0.679	0.401
Adjusted R Square		0.673	0.398

## Analysis 5: Route 504

Route 504 began its service in 2003 and served the Riverdale area. The first hedonic regression pricing model examines properties sold after 2002. The descriptive statistics can be seen in Table 18 below.

Figure 9: Map of Properties surrounding C-Tran Route 504





**Table 18: Descriptive Statistics for Properties sold after 2002 around C-Tran Route 504**

<b>Clayton County Properties Sold After 2002 along C-Tran Route 504</b>									
<b>Descriptive Statistics</b>		<b>Quarter Mile N=439</b>				<b>Half Mile N=1457</b>			
<b>Variable</b>	<b>Description</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Assessed Price</b>	Assessed Price of the Property	\$32,000	\$237,327	\$109,093	\$31,591	\$25,000	\$237,327	\$109,521	\$32,173
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	4	1,320	800	351	4	2,640	1,622	660
<b>Lot Size</b>	Size of the lot in square feet	4,675	125,473	12,821	9,036	4,675	224,828	14,329	10,631
<b>Rooms</b>	Number of rooms in home	0	10	6	1.3	0	16	6	1
<b>Bathrooms</b>	Number of Bathrooms in home	0	3.5	2	0.6	0	8	2	0.6
<b>Square Feet</b>	Number of Square Feet in home	0	2,916	1,205	316	0	2,916	1,230	306
<b>Age of Home</b>	Age of the home on the property	0	96	25	15	0	96	27	147

The results of the model show that there is an inverse relationship between the distance from C-Tran Route 504 bus stops and property values sold after 2002 for the quarter mile buffer model. The results for the quarter mile buffer model show that as the distance from the bus stop increases, there is a \$2.88 decrease in the property value per foot.

This model has an adjusted R-squared of 0.775 meaning that 77.5% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are significant at

a 99.9% confidence level except the distance variable. The distance coefficient is only significant at the 83.8% confidence level. This model does not show signs of being heteroskedastic nor show signs of multicollinearity.

The other variables and their coefficients show expected results. The model shows that for every foot increase in the size of the lot, the property value increases by \$0.42. This corresponds with the notion that the larger the property is, the higher the value. Each additional room adds \$5,138.02 to the assessed property value. A bathroom increases the value of the home by \$12,641.22 for each additional bathroom. A \$30.75 increase in the property is found per additional square foot for the home built on the property. The age of the home decreases the assessed property value by \$991.97 for each year older the home is. These coefficients all showed expected results and all were significant at the 99.9% confidence level. The results are shown in Table 19 below.

**Table 19: Regression Model Results for Properties Sold After 2002 along Route 504**

Variable	Description	Route 504	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	31,110.746 0.000	32,152.628 0.000
Distance	Distance from property to nearest C-Tran bus stop	-2.879 0.162	0.009 0.989
Lot Size	Size of the lot in square feet	0.419 0.000	0.432 0.000
Rooms	Number of rooms in home	5,138.027 0.000	5,991.259 0.000
Bathrooms	Number of Bathrooms in home	12,641.220 0.000	14,626.487 0.000
Square Feet	Number of Square Feet in home	30.753 0.000	25.073 0.000
Age of Home	Age of the home on the property	-991.967 0.000	-951.470 0.000
R Square		0.778	0.773
Adjusted R Square		0.775	0.772

The following models show property values along Route 504 sold prior to 2002. Its descriptive statistics are shown below in Table 20.

**Table 20: Descriptive Statistics for Properties around C-Tran Route 504 sold prior to 2002**

Clayton County Properties Sold Before 2002 along C-Tran Route 504									
Descriptive Statistics		Quarter Mile N=846				Half Mile N=2922			
Variable	Description	Minimum	Maximum	Mean	Std. Deviation	Minimum	Maximum	Mean	Std. Deviation
<b>Assessed Price</b>	Assessed Price of the Property	\$28,000	\$278,858	\$97,157	\$26,373	\$27,000	\$278,858	\$100,412	\$25,847
<b>Distance</b>	Distance from property to nearest C-Tran bus stop	1	1,319	845	341	1	2,640	1,668	640
<b>Lot Size</b>	Size of the lot in square feet	5,396	390,683	17,450	24,243	5,396	390,683	16,612	17,088
<b>Rooms</b>	Number of rooms in home	0	6	6	3	0	60	6	3
<b>Bathrooms</b>	Number of Bathrooms in home	0	3.5	1.8	0.6	0	3.5	1.8	0.6
<b>Square Feet</b>	Number of Square Feet in home	0	2,688	1,172	363	0	2,893	1,221	339
<b>Age of Home</b>	Age of the home on the property	0	108	32	14	0	108	31	12

This model, like the previous one, finds that there is an inverse effect on property values and their distance to C-Tran Route 504 bus stops for properties sold before 2002 in the model for the half mile buffer. The results show that as the distance from the bus stop increases, there is a \$0.12 decrease in the property value per foot. It is much lower than in the previous model for properties sold after 2002. Also, the significance of the distance coefficient is very low at only a 21.1% confidence level.

This model has an adjusted R-squared of 0.618 meaning that 61.8% of the assessed property value in 2009 can be explained by the variables used in the analysis. All of the variables are significant at a 99.9% confidence level except the distance variable. The distance coefficient is only significant at the 21.1% confidence level which is very low. This model does not show signs of being heteroskedastic nor show signs of multicollinearity.

**Table 21: Regression Model Results for Properties Sold prior to 2002 along Route 504**

Variable	Description	Route 504	
		1/4 Mile Buffer	1/2 Mile Buffer
		Coefficient <i>Significance</i>	Coefficient <i>Significance</i>
Constant	Constant in regression equation	29,420.680 0.000	29,732.702 0.000
Distance	Distance from property to nearest C-Tran bus stop	<b>1.322</b> <b>0.401</b>	<b>-0.124</b> <b>0.789</b>
Lot Size	Size of the lot in square feet	0.213 0.000	0.285 0.000
Rooms	Number of rooms in home	861.262 0.000	897.848 0.000
Bathrooms	Number of Bathrooms in home	19,471.189 0.000	20,742.673 0.000
Square Feet	Number of Square Feet in home	31.595 0.000	30.762 0.000
Age of Home	Age of the home on the property	-515.313 0.000	-485.933 0.000
R Square		0.657	0.619
Adjusted R Square		0.654	0.618

The other variables and their coefficients also show similar results as the other model. The other coefficients all showed expected results and all were significant at the 99.9% confidence level. This can be seen in Table 21.

## STUDY LIMITATIONS

This study produced models that resulted with some significant results. Although the study was formulated using careful considerations, there are still many ways to improve it.

The first of the issues is that the hedonic regression models only use housing characteristics such as structural attributes and only the distance to the nearest C-Tran bus stop for locational attributes. It did not include any variables regarding the quality of the neighborhood and surroundings. This was mostly due to the fact that there was not sufficient data available to use any demographic data. The housing data that was available for the analysis was for the year 2009. Currently, the U.S. Census Bureau has not released its new data for 2010. While they do have population estimates for 2009, they do not have complete data at the block group level, and therefore could not use it for this analysis. Just as housing characteristics play an important role in the way a home is priced, so do the neighborhood characteristics. Having this data would have created a more complete analysis.

Another issue, as mentioned earlier, was not having data from the Clayton County Tax Assessors Office from before and after the implementation of C-Tran. The most accurate way to see if there has been an impact on property values would be to look at the property values from before and after the implementation to really capture the results. This was not possible due to data availability as well as time constraints for this analysis.

## CONCLUSION

This study has attempted to demonstrate the economic impacts of the elimination of C-Tran through its impact on property values for single family homes. From past studies and research, the hypothesis stated that there is, in fact, a relationship between the proximity to C-Tran and an increase in property values. Simply put, as the distance from a C-Tran bus stop to a property increases, then the value of the property decreases. The analysis conducted that examined all of the C-Tran bus stops throughout Clayton County determined that this assessment is indeed accurate for properties sold after the year 2000, which is when the C-Tran system was announced. The hedonic regression pricing model determined that the property value decreases \$1.66 for every foot one moves away from a C-Tran station for homes sold after the year 2000. This means that a property a half mile away from the station is valued \$2,191 less than one a quarter mile away from a station.

An additional analysis was conducted to see if distance had any impact on assessed property values for properties sold prior to 2000 when C-Tran was announced. This hedonic regression pricing model shows that the property value increases \$1.80 for every foot one moves away from a C-Tran station. This means that a property a half mile away from the station is \$2,376 more than one a quarter mile away from a station. This shows that C-Tran did have an impact on property values and therefore, did create a positive economic effect in Clayton County.

The models for the individual routes did not indicate clear results. This is likely due to the fact that the sample sizes were much smaller thus making the regression models less accurate. Also, other factors could have impacted the results. Since the system was implemented in phases, some of the routes that were added earlier could have impacted those that were added later. While it is not necessary to disregard these results, the first analysis provides the strongest model, and therefore those results are regarded as the best results for the study.

As mentioned in the previous section, many improvements can be made to this study in order to have better models and more concrete findings. One important finding would be to look at how property values have been affected after 2010 when the system was terminated. This study simply attempts to begin to look at a small economic impact that C-Tran's elimination has had on Clayton County. Many other factors contribute to this issue. One such factor would be how many riders lost their jobs due to the fact that they had no other means of transportation to take them to their job. More in depth analysis is required to get a true idea of the total economic impacts.

While some community members claim that C-Tran brought poverty and crime into Clayton County, many others, including many community leaders, believe that its elimination will actually bring on those effects as well as other devastating economic impacts. According to Yulanda Beauford, the president of the Clayton County Chamber of Commerce believes that the loss of the system will cause a "complete devastation" economically (Hart Feb 10, 2010). She also finds that the business community is not in concurrence with the fact that C-Tran has been negative for the county. In fact, Beauford stated that, "We receive several calls of concern ... calls from our largest employers, such as Hartsfield-Jackson Atlanta [International] Airport and our smallest businesses, concerned about the sustainability of their businesses and not having adequate transportation in our community" (Hall). Businesses are not the only ones who disagree with the elimination of C-Tran. Students are some of the riders are heavily impacted by the loss. According to leaders at both Clayton State University and ITT Technical Institute, some students will not have a means of getting to school and will be forced to drop out entirely. This means that their budgets at both institutions could suffer greatly. According to surveys conducted at Clayton County State University, President Tim Hynes explains that the findings show that approximately 11.2% of students rely on C-Tran to be able to attend classes (Hall). Kim Ingram, the director of the ITT Technical Institute has said that, "with those students gone, there might be an issue whether ITT Tech could remain in Clayton County" (Hart Feb 10, 2010). Having this institution relocate outside of Clayton County would cause major impacts on the community. Not only would it impact the community economically, it would also reduce the number of academic institutions in the county and reduce the potential for future students to receive a higher education. Clayton County is predominantly African America and has a higher population of low-income residents than other surrounding counties in the Metro Atlanta Area. Eldrin Bell, the only Clayton County Commissioner that voted in opposition to stop the C-Tran system expressed his

frustration after the final meeting before the system was shut down and asked other board members, "If we can spend \$45 million on roads for the rich, why can't we spend \$6 million for the poor?" (Hart March 16 2010). Others, such as Riverdale's Mayor Evelyn Wynn Dixon also voiced her concern about how this elimination significantly affects the community, "That is the lifeline that they need in order to sustain their life. When you go up and down [Ga.] Highway 85, you see tons of people at the bus stop with their groceries. Looking at it from an economic perspective ... this creates jobs. They might not all be white-collar jobs, but money is money" (Hall). A group of activists examined the immediate impacts a week after the system was shut down. On the blog Solidarity, blogger Sofia explains how some people were still showing up at bus stops. She also noted that many of the C-Tran riders were adults with children and how unsafe conditions in Clayton County are for pedestrians as there are many areas that lack safe sidewalks. This also greatly affects people with disabilities. She also argues that with an increase in people walking, it could actually increase the crime rate since there will be more people walking in the dark. The blogger also reports that some temporary job agencies are only placing job applicants that own cars ("Clayton County, Georgia and the Fight for the Public Sector").

In conclusion, in understanding the findings from this simple study along with the reaction of many residents and leaders in Clayton County, it is apparent that the elimination of C-Tran has caused a negative impact on Clayton County. It is recommended that the Clayton County Board of Commissioners take another look at their budget and consider reinstating the C-Tran bus system. Not only is it necessary for those Clayton County residents that rely on the system for their mobility, but it also provides benefits to the County's economy, and more specifically increases its property values. This study and further development of this study can hopefully be used in Clayton County and in other places to help policymakers make better decisions as well as acknowledge the importance of transit and its impacts on a community as a whole.



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