Analyzing the Effects of Transit Network Change on Agency Performance and Riders in a Decentralized, Small-to-Mid-sized US Metropolitan Area: A Case Study of Tallahassee, Florida

MTI Report 12-04

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REPORT 12-04

ANALYZING THE EFFECTS OF TRANSIT NETWORK CHANGE ON AGENCY PERFORMANCE AND RIDERS IN A DECENTRALIZED, SMALL-TO-MID-SIZED US METROPOLITAN AREA: A CASE STUDY OF TALLAHASSEE, FLORIDA

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16. Abstract

On July 11, 2011, StarMetro, the local public transit agency in Tallahassee, Florida, restructured its entire bus network from a downtown-focused radial system to a decentralized, grid-like system that local officials and agency leaders believed would better serve the dispersed local pattern of population and employment. The new, decentralized network is based on radial routes serving the major arterial roads and new crosstown routes linking the outer parts of the city, where population and employment is growing. Local officials and agency staff hoped the change would increase transit's attractiveness and usefulness to the community.

One year after the service restructuring, overall performance results are similar to those experienced in other cities that have implemented major service changes. Overall ridership and productivity are lower than before the service restructuring, due to the short time frame for rider adjustments and longer-than-anticipated headways, but new ridership has appeared in previously un-served or under-served corridors and neighborhoods. The service restructuring resulted in longer walks to bus stops, due to the removal of stops from many neighborhoods and their relocation to major roads, but overall transit travel times are shorter due to more direct routing. No particular neighborhoods or community groups disproportionately benefited from or were harmed by the change.

The service restructuring was supported by some segments of the community who viewed the older system as ill-suited to the increasingly decentralized community, while it was opposed by other community stakeholders who worried about the loss of service in some neighborhoods and issues of access and safety, particularly affecting elderly and disabled riders, at new stop locations. StarMetro's extensive public outreach efforts and ongoing service adjustments have reduced the intensity of the opposition to the service restructuring over time, although some segments of the community continue to voice their concerns about the effects of the change on transit-dependent, disabled, and elderly riders.

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The authors also thank the many members of the community, including concerned citizens, community service organization staff, city staff, and local elected officials for speaking with us and directing us to others who wished to participate in the research. The authors learned a great deal through these interactions and met a diverse set of individuals who all share a deep and passionate interest in the future of public transit in the community. The authors thank all of them for their thoughts and the insights they provided.

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EXECUTIVE SUMMARY

On July 11, 2011, StarMetro, the local public transit agency in Tallahassee, Florida, restructured its entire bus network from a downtown-focused radial system to a decentralized, grid-like system that local officials and agency leaders believed would better serve the dispersed local pattern of population and employment. The new, decentralized network is based on radial routes serving the major arterial roads and new crosstown routes linking the outer parts of the city, where population and employment is growing. This major service change occurred literally overnight, but it followed several years of public discussion and debate about the future of public transit in the community. The change has been embraced by some segments of the community and opposed by others, which is to be expected given the dramatic and unprecedented change that the service restructuring represents.

This research seeks to understand: 1) the effects of the service restructuring on the transit agency and its performance, 2) the effects of the service restructuring on transit riders and the larger community, and 3) the roles, influence, and attitudes of important local stakeholders (public staff, elected official, and private sector stakeholders) who engaged in the restructuring debate and shaped the form of the restructuring.

The authors examine each of these issues with the important caveat that the restructured system has been in place only a short time and the community is still adapting to it, so it is likely that the short-term results presented here will differ from the results that would be obtained in a longer-term analysis. Nevertheless, these short-term, or preliminary, results still offer important lessons to transit agencies, local officials, and transportation researchers who are interested in the consequences of major transit service changes for agencies and the community.

Restructuring's Effects on Ridership and Agency Performance

StarMetro officials hoped to improve transit agency performance through the restructuring, to maintain ridership levels or minimize ridership losses during the transitional period immediately following the change, to improve operations, and to provide a framework for future service improvement and expansion. At a system level, the service restructuring in Tallahassee did not generate the higher ridership numbers or increased service productivity that its proponents sought. The number of unlinked passenger trips for particular calendar months dropped by between 4 percent and 19 percent, with the decline generally decreasing as time passed. Ridership at many suburban stops has increased, which suggests that many riders are availing themselves of the new destination opportunities that restructuring has provided, but many of the new decentralized routes have among the lowest performance in the system.

Simultaneously, the number of boardings at the central hub (C.K. Steele Plaza) has been reduced by 80 percent, which confirms that in the old system the hub was used primarily as a transfer point, not as a final destination. The analysis suggests that StarMetro has added very unproductive service in some corridors, although many of these routes are likely needed in order to make the network fully functional.

One possible reason for the lower-than-expected ridership and productivity numbers might be the relatively infrequent service provided on many routes, which poses particular problems when riders are seeking to transfer at locations without timed connections. A second reason for the lower-than-expected ridership numbers might be the length of time the new system has been in place. The service change has been in effect for about a year, and it is possible that the community is still learning how to use the system.

Restructuring's Effects on Riders and the Larger Community

StarMetro officials sought to improve access to decentralized travel destinations and to broaden transit's appeal to choice riders through the service restructuring. The authors found that the service restructuring increased overall accessibility in Tallahassee, by providing access to new destinations and by reducing transit travel times to existing destinations. The service restructuring pulled bus stops from neighborhoods onto arterial roads, resulting in longer average walks to bus stops, but once riders reached the stops they had shorter total travel times to their final destinations due to more direct routing. The change in accessibility and travel times did not disproportionately benefit or harm any particular neighborhoods or socioeconomic groups. StarMetro was primarily a student and transit-dependent-oriented system before the restructuring and it remains one after the change. Still, there have been modest increases in the use of transit by occasional riders.

Roles, Influences, and Attitudes about Restructuring

The route restructuring proposal represented a significant change in local transit service, and numerous stakeholders engaged in the discussions that occurred prior to, during, and following the implementation of the restructured system. StarMetro's public outreach efforts calmed some stakeholder fears, while others took a more critical view of these efforts and their results. Key areas of concern continue to be the length of headways, access and safety issues around stops, loss of stops and routes in certain neighborhoods, and a lack of resources to make necessary service improvements to make the system more attractive and accessible to transit riders. StarMetro's extensive public outreach efforts during the period preceding the restructuring transformed some skeptical stakeholder groups into supporters of restructuring, highlighting the importance of effective public information and community engagement strategies in allowing agencies to make major service changes.

Lessons

The results from Tallahassee indicate that a decentralized transit system can provide better access to destinations for all members of a community, if carefully designed. The results also indicate that major service change requires significant public outreach and careful listening by agencies to elicit and respond to community concerns, and that once adopted, significant time is needed to see the ultimate results of that change. The service restructuring in Tallahassee is barely a year old at the time of this report's development, which provides only a short window within which riders and the agency have been able to adapt to the service. During this short time period, new riders have been attracted to the system in the new service areas, but other riders have also been lost due to the shifting of stops and routes from some neighborhoods. The net result is a modest decline in ridership

and in productivity to date. Nevertheless, most local observers feel that the restructuring represents a clear step forward for transit's future in the community, and few stakeholders voiced any desire to return to the old system.

I. INTRODUCTION

On July 11, 2011, StarMetro, the local public transit agency in Tallahassee, Florida, restructured its entire bus network from a downtown-focused radial system to a decentralized, grid-like system. This major service restructuring occurred literally overnight, but it followed several years of public discussion and debate about the future of public transit in the community. The change has been embraced by some segments of the community and opposed by others, which is to be expected given the dramatic and unprecedented change that the service restructuring represented.

Prior to the service restructuring, the transit system was organized as a downtown-oriented system, whose routes came together at the central transfer terminal called C.K. Steele Plaza. C.K. Steele Plaza is named in honor of Reverend Charles Kenzie Steele who led the 1956 bus boycott that ultimately integrated the then-privately owned bus system.[1] Routes radiated from this central hub out into the community, circulating through a number of neighborhoods as they led to the outer ends of each line. This basic skeleton served as the framework for local public transit service from the immediate post-World War II period up until July 10, 2011.

While the transit system remained largely fixed in place from the end of World War II to the summer of 2011, residential and commercial development decentralized over the intervening decades. Downtown Tallahassee declined in relative importance as outlying office and commercial centers catering to the automobile emerged, in a pattern replicated in cities throughout the United States. New residential subdivisions developed on the edges of the community in places such as Killearn and Southwood. The pattern of travel changed significantly as a result of these changes in the built environment of the community.

The presence of two major universities to the west and southwest of downtown Tallahassee, Florida State University (FSU) and Florida Agricultural and Mechanical University (FAMU), and the presence of state government offices in downtown have maintained a strong core of activity at the center of the community. However, in recent years the departure of many state agencies to the outlying districts, particularly to Southwood located several miles to the southeast of downtown, has further eroded downtown's role as a major activity center. The central part of Tallahassee remains an important center of activity; indeed it remains the most important activity center in the region, although it is one in relative decline. Future population and employment growth is expected to occur primarily in outlying areas, as has already been the case for the preceding several decades. Not surprisingly, many local observers believed there was an ever-increasing mismatch between the downtown-oriented transit system and the very suburban pattern of urban development, and many of them began advocating doing something to remedy this mismatch in order to increase transit's relevance and usefulness to the community.

Beginning around 2003-2004, local public officials, staff at the transit agency (then called TalTran), and local transportation experts began thinking more seriously about the future of public transit in the community. The departure of the long-time transit agency manager, Mr. Larry Carter, himself the son of the former private owner of the city-operated transit system, brought new leadership into the transit agency, an openness to new ways of organizing

and operating transit service in the community, and a belief that urban decentralization and the resulting change in individual travel patterns required the agency to make changes to better serve the large and ever-increasing numbers of new non-downtown focused trips.

A graduate student studio at FSU helped to give shape to a new transit system design that culminated in the Nova2010 plan delivered by StarMetro to city residents and elected officials.[2] Nova2010 called for the shifting of routes from neighborhoods onto arterial roads, a de-emphasis of C.K. Steele Plaza as a central transfer hub in favor of scattered transfer locations, and the shifting of service to begin serving outer, previously un-served areas where development had occurred and future population and employment growth was expected. StarMetro leadership and local officials characterized Nova2010 as an important step in the development of a transit system that would better serve the current and future needs of the community. Transit riders and residents in communities that would lose service, or have service changed in significant ways, resisted the plan, raised concerns at community listening sessions, wrote letters to the local newspaper, and organized opposing presentations at city commission meetings. Some of their concerns were addressed prior to the service restructuring, or shortly after it occurred, while other concerns were not addressed for budgetary or strategic reasons, as is discussed later. The service restructuring was, and still remains, a controversial issue among many segments of the Tallahassee community.

The restructuring of StarMetro on July 11, 2011, presents a fertile topic for research on public transit and transit's role in a community. The service restructuring represents one of the few situations where a transit system restructured itself literally overnight thus creating the conditions for a unique before and after analysis of the real-world consequences of the service restructuring for the transit agency, its riders, and the larger community, albeit over a relatively short time period. The restructuring occurred in a small-to-mid-sized metropolitan area, a class of metropolitan areas that has been largely ignored in most academic transit research despite representing a significant share of the U.S. urban population. There is thus the potential to learn something new about how transit functions, who uses it, and how they respond to major changes in transit service in an urban context, which is important but understudied.

Finally, the members of the research team witnessed many of the public debates in real-time over the years preceding the service restructuring, which meant that the authors knew what the basic issues were and who were the key stakeholders and interest groups whose interests, concerns, and opinions needed to be queried and understood in the course of examining the consequences of the service restructuring. For all of these reasons, the authors found an important opportunity in the restructuring of StarMetro to learn something new about transit that might be useful to concerned members of the public, transit riders, agency managers, and transportation researchers working elsewhere.

The specific areas of concern in this research are to: 1) understand the effects of the service restructuring on the transit agency and its performance, 2) understand the effects of the service restructuring on transit riders and the larger community, and 3) understand the roles, influence, and attitudes of important local stakeholders (public staff, elected official, and private sector stakeholders) who engaged in the restructuring debate and

shaped the form of the restructuring. The authors examine each of these issues with the important caveat that the restructured system has been in place only a short time and the community is still adapting to it, so it is likely that the short-term results presented here will differ from the results that would be obtained in a longer-term analysis. Nevertheless, these short-term, or preliminary, results still offer important lessons to transit agencies, local officials, and transportation researchers who are interested in the consequences of major transit service changes for agencies and the community. The authors discuss each of these three research areas, in turn, in the sections of the report that follow. Before discussing the restructuring and its effects, the authors first briefly describe Tallahassee and the transit system (before and after restructuring) to provide context for the analyses that follow, and the authors offer a thumbnail sketch of the history of local transit leading up to the service restructuring on July 11, 2011. The authors close this report with lessons learned in Tallahassee that provide insights for transportation researchers and guidance to people contemplating similar service changes elsewhere.

II. OVERVIEW OF THE TALLAHASSEE METROPOLITAN AREA

The study examines the fixed-route public transit system, StarMetro, operating within the Tallahassee, Florida Metropolitan Statistical Area (MSA), which consists of four counties: Gadsden, Jefferson, Leon, and Wakulla. Leon County, including the City of Tallahassee as well as a number of unincorporated communities, is the economic and population center of the metropolitan area. The remaining three counties are predominantly rural in character. Several smaller communities located in the outlying counties, including Crawfordville in Wakulla County, Quincy in Gadsden County, and Thomasville in southern Georgia to the north of Leon County, now function as bedroom commuter suburbs for Tallahassee; but other than a limited-service express bus route from downtown Tallahassee to Quincy, there is presently no regular fixed-route transit service in these communities. Thus, the authors do not consider these areas further in this report. Figure 1 provides the geographic context for the study, identifying the four-county MSA, the Tallahassee urbanized area (UA) within the MSA, and the current fixed-route transit system, whose service is largely confined to the Tallahassee urbanized area.

POPULATION, EMPLOYMENT, AND MAJOR ACTIVITY CENTERS

Within Leon County, most of the population and employment is located within or immediately adjacent to the city of Tallahassee. The city of Tallahassee accounts for about half of the total MSA population. Both the city and the MSA as a whole have experienced significant growth in recent decades, with trends mirroring the significant growth experienced by the state of Florida as a whole. Table 1 shows the growth of population over time between 1970 and 2010. In recent years, most of the population growth has occurred in the suburban portions of Leon County, particularly in areas to the northeast and east of downtown Tallahassee.

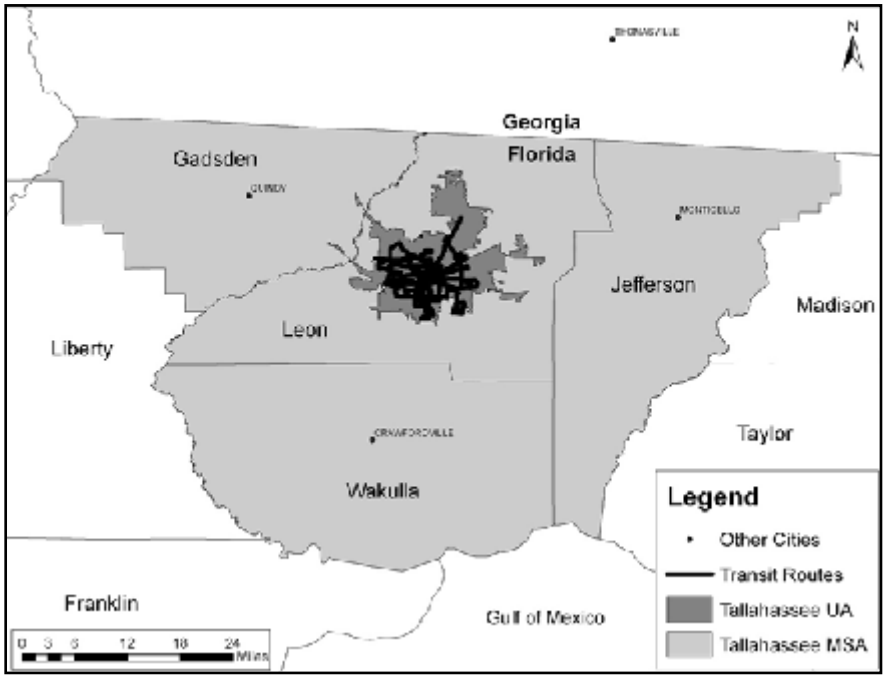

Figure 1. Tallahassee Area Administrative and Statistical Subdivisions

Table 1. Tallahassee Metropolitan Area Population, 1970-2010[3]

Year	City of Tallahassee	Leon County	Tallahassee Metropolitan Statistical Area	State of Florida
1970	71,897	103,047	157,317	6,789,447
1980	81,548	148,655	211,919	9,746,961
1990	124,773	192,493	259,107	12,938,071
2000	150,624	239,452	320,304	15,982,824
2010	181,376	275,487	367,413	18,801,310

As the economic and population center of the metropolitan area, Tallahassee is the location for the metropolitan area's major institutions, which are shown in Figure 2. The city's central business district (CBD) is located at the approximate center of the figure and is the location of the state capitol, many state agency offices, and many major service sector employers. The city hosts two major universities, Florida State University (FSU) and Florida Agricultural and Mechanical University (FAMU), as well as a major regional community college, Tallahassee Community College (TCC). Other important activity centers in the community include two major medical complexes, Tallahassee Memorial Hospital (TMH) and Capital Regional Medical Center (CRMC), two major shopping centers, Governor's Square Mall (Gov. Sq. Mall) and Tallahassee Mall (Talla. Mall), five Walmart Supercenters, and Tallahassee Regional Airport, located to the southwest of the CBD. The Innovation Park high-tech employment center, which also hosts the joint FSU-FAMU College of Engineering, is located between the airport and the main university campuses. The Southwood development, a major New Urbanist-style suburban development, lies to the southeast of downtown along Capital Circle, while Killearn, a more traditional postwar suburban development, lies to the northeast of downtown north of Interstate 10. Both Southwood and Killearn have been major centers for population and employment growth in recent years. The Frenchtown (northwest of the CBD) and Southside (south of the CBD) neighborhoods are important centers of the local African American community. Figures 3, 4, and 5 show images from downtown Tallahassee, key community institutions, and outlying communities, to help provide the reader with a visual sense of the Tallahassee area.

Tallahassee has seen most of its growth during the postwar era and it is very automobile-oriented in its development patterns. Much of the commercial development, in particular, stretches along the major arterial corridors in strip commercial-type centers. Commercial and retail development is located mainly along selected sections of the city's major arterial roads: West Tennessee Street, Apalachee Parkway, eastern and north-eastern portions of Capital Circle, North Monroe Street between downtown and Interstate 10, and along the northern section of Thomasville Road which runs northeast from the city center. Few of these major roads follow north-south or east-west patterns, as the basic street pattern developed in the pre-automobile era in a predominantly radial pattern. Subsequent development has then grown on top of the original radial skeleton. This has posed significant challenges to the provision of efficient and effective transit service in the community.

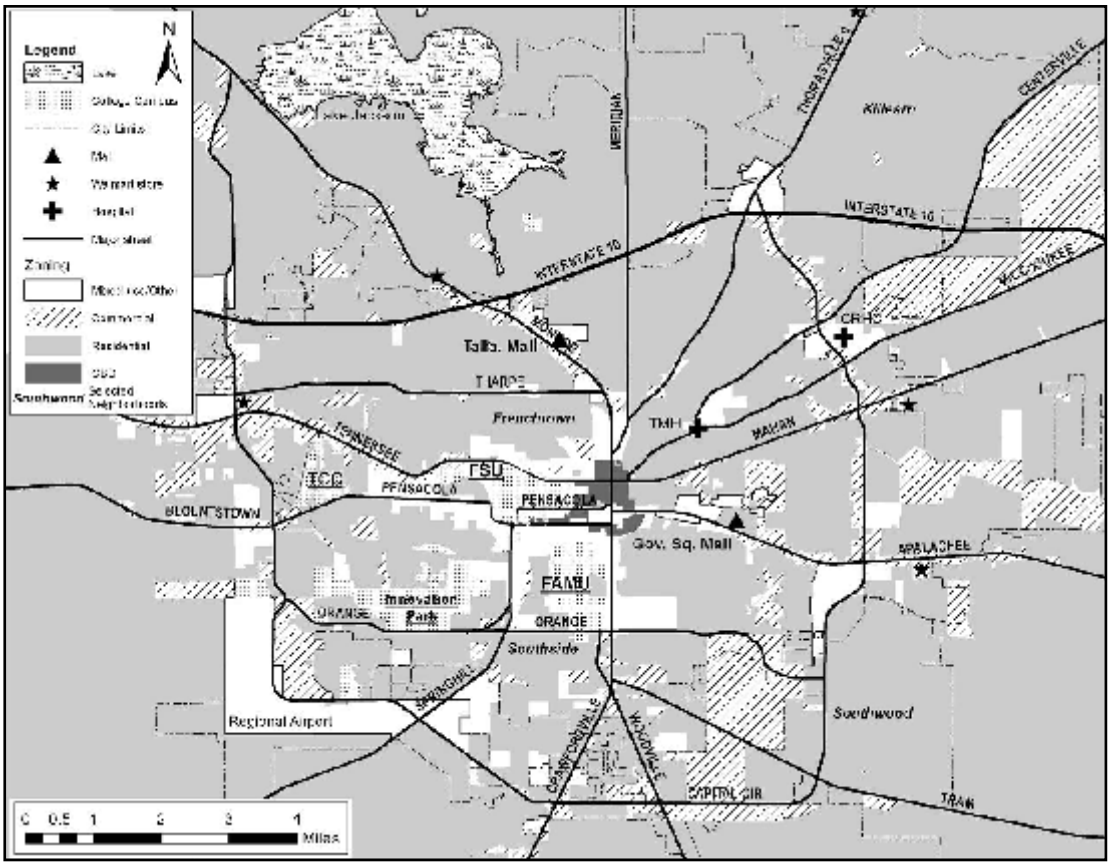

Figure 2. Overview of the Tallahassee Area

Figure 3. Pictures of Downtown Tallahassee

Notes: Clockwise from upper left: 1956 Bus Boycott Memorial Plaque at Florida A&M University, Intersection of College and Duval Streets, Monroe Street, and Downtown Panorama as seen from the FAMU campus.

Source: Photos by authors, ca. 2012.

Figure 4. Pictures of Key Institutions in Tallahassee

Notes: Clockwise from upper left: Capital Regional Medical Center, Tallahassee Memorial Hospital, Florida Capitol, and Florida State University.

Source: Photos by authors, ca. 2012.

Figure 5. Pictures of Outlying Communities

Notes: Clockwise from upper left: Killearn along Thomasville Road, along Capital Circle North East, and in the residential neighborhoods and state office centers in Southwood.

Source: Photos by authors, ca. 2012.

Figures 6 and 7 display the distribution of population and population density (persons per acre) by census block group in 2010. Of the two maps, Figure 7 is the more instructive as it adjusts for the varying physical sizes of the block groups. The map clearly indicates the decentralized nature of population in the Tallahassee area. The map also allows us to identify several important population clusters in the community. These major clusters represent potential origins for transit trips. There is a large concentration of population in the area located west of the CBD along the Tennessee Street corridor, which includes the FSU campus, surrounding student communities, and Frenchtown, an older, inner-city African American community. There are also high population density clusters in the southern and southeastern parts of the town, and a few clusters along eastern Capital Circle (which functions as a beltway around Tallahassee). The majority of Tallahassee's population resides in the area delimited by Interstate 10 from the north, and Capital Circle from the west, south, and east. Outside this core, some higher densities can be seen in the northeast along Thomasville Road and between North Monroe and Capital Circle. The remaining areas, located beyond the city limits, have very low population densities.

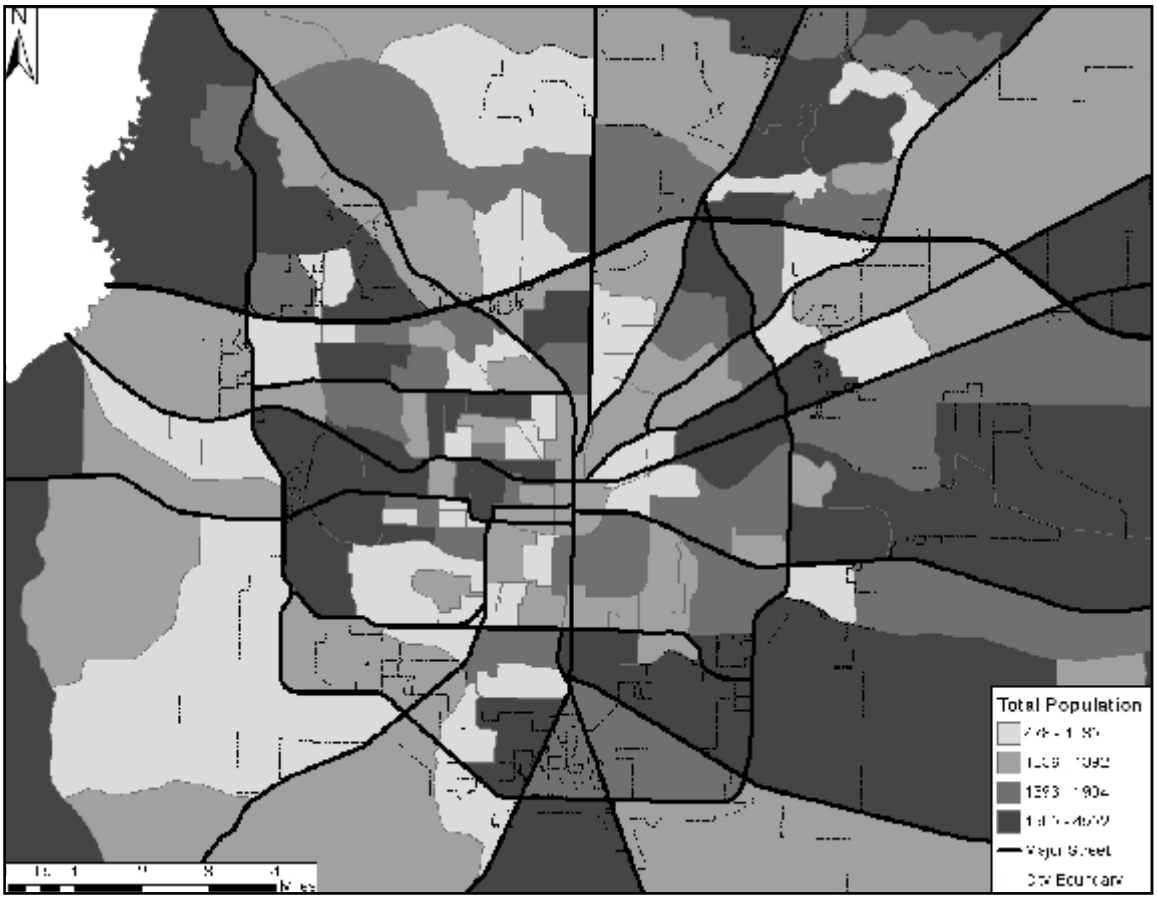

Figure 6. Tallahassee Population by Census Block Group, 2010[4]

The local economy is oriented strongly toward governmental and educational activities, since Tallahassee is the capital of the State of Florida and three institutions of higher education are located in the city. There is very little industrial development in the city, and service sector and government employment dominates the local economy. The largest source of employment in Leon County is government with 34.2 percent of the county's workers employed in this sector.[5] Other industries that employ large numbers of workers include trade, transportation and utilities (14.2 percent of total employment), professional and business services (11.6 percent of total employment), education and health services (11.1 percent of total employment), and leisure and hospitality (10.3 percent of total employment).

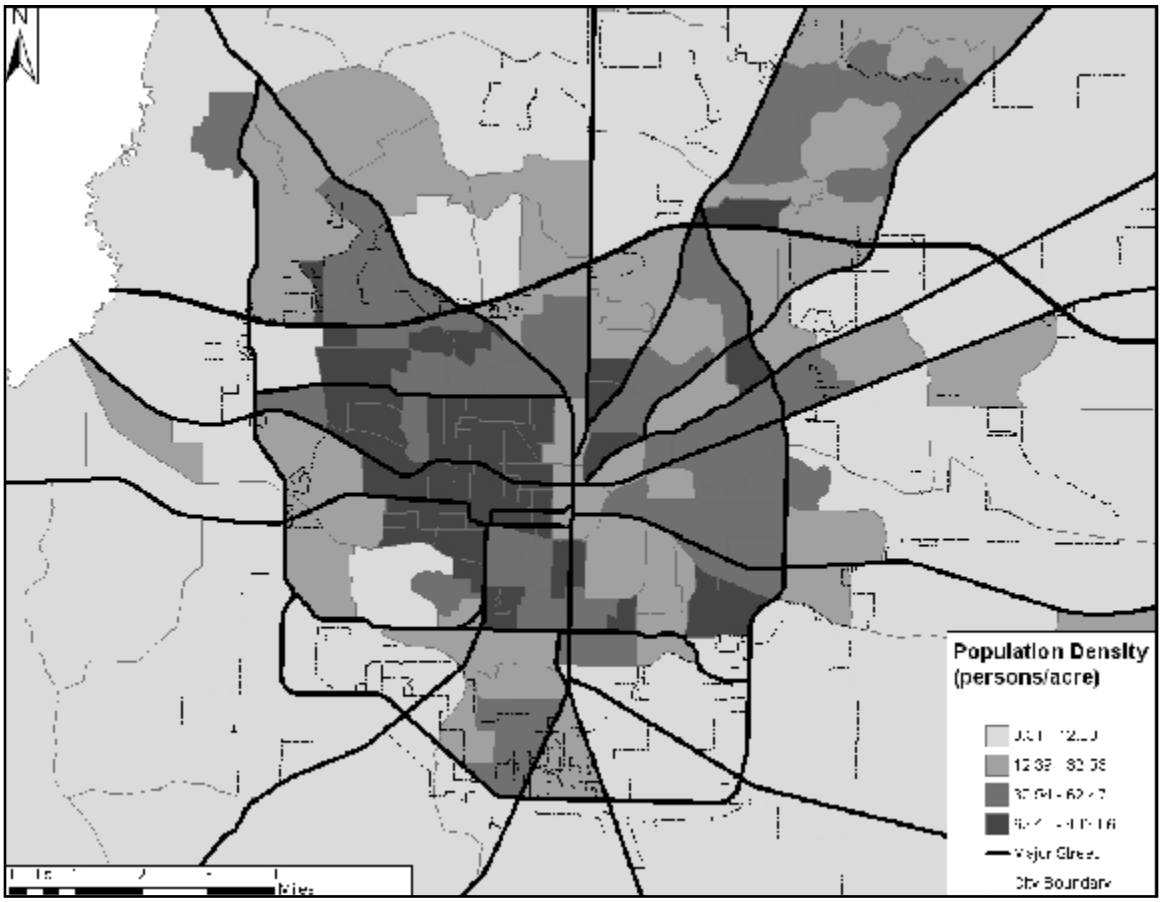

Figure 7. Tallahassee Population Density by Census Block Group, 2010[6]

Figures 8 and 9 show the distribution of employment and employment density (workers per acre) by census block group in 2010. Of the two maps, Figure 9 is the most instructive as it adjusts for the different physical sizes of the block groups. This map shows that there are numerous outlying employment clusters, which testifies to the decentralized nature of employment in the community. These widely dispersed clusters represent potential destinations for transit trips. The downtown, the medical complexes, major shopping centers, and the universities are all evident on the map. There are large employment concentrations along several main arterial roads, such as North and South Monroe Street, Apalachee Parkway and along selected sections of Capital Circle. Downtown Tallahassee (the CBD) is still an important employment location, with more than 20,000 jobs, but many remote, suburban block groups cluster significant numbers of jobs too. Employment growth in recent years has been largely in these suburban locations.

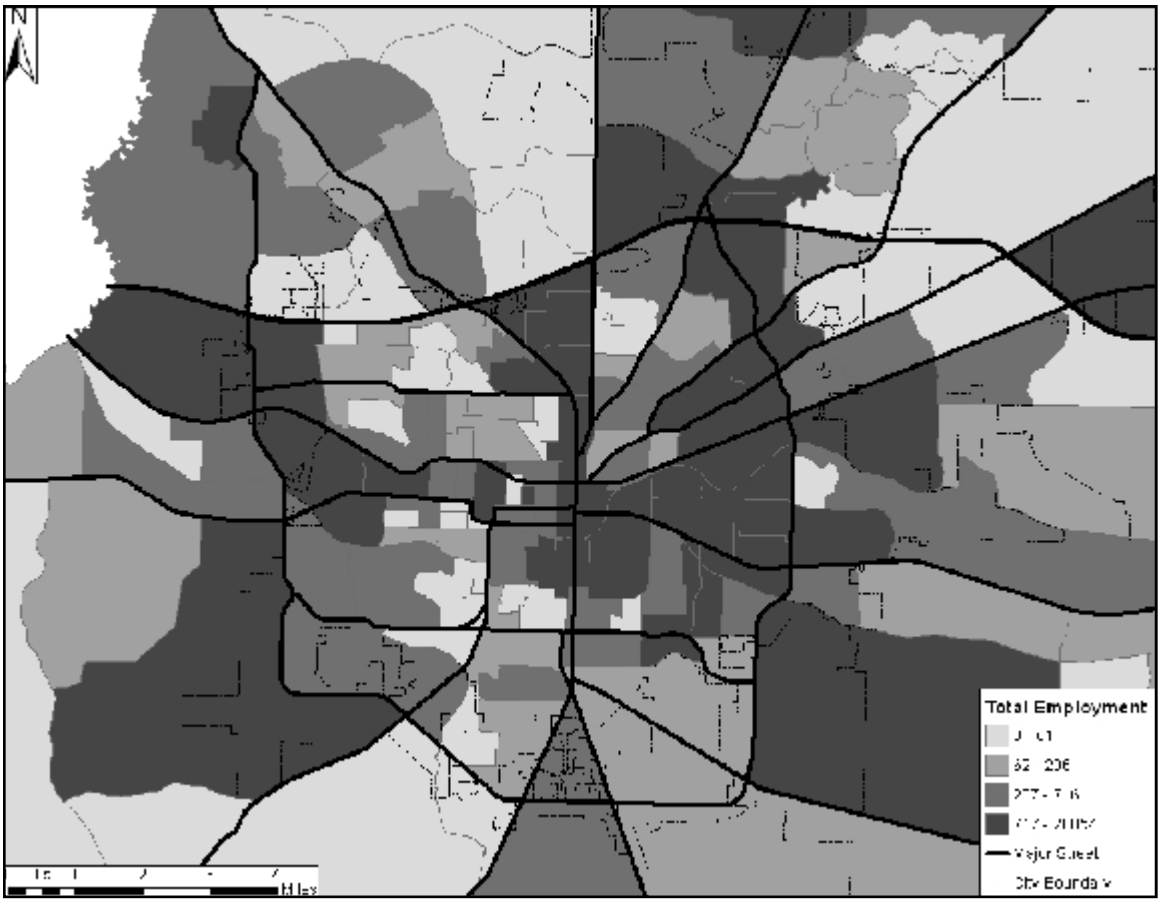

Figure 8. Tallahassee Employment by Census Block Group, 2010[7]

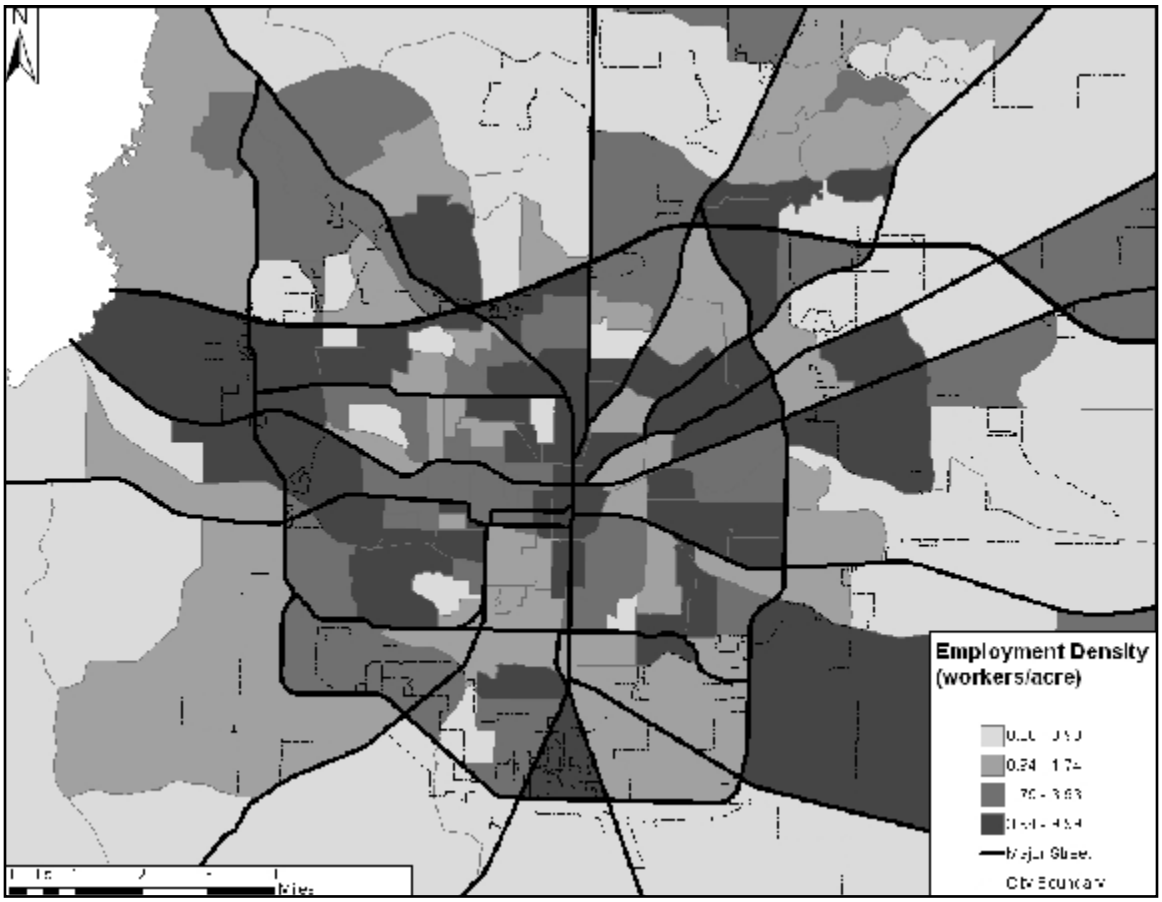

Figure 9. Tallahassee Employment Density by Census Block Group, 2010[8]

RESIDENTIAL LOCATIONS OF COLLEGE STUDENTS

Tallahassee is somewhat unique, being a college town. Three primary academic institutions in the city include: Florida State University (FSU), Florida Agricultural and Mechanical University (FAMU) and Tallahassee Community College (TCC). More than 70,000 students attended the two universities and TCC in fall 2011 (Table 2), representing a significant proportion of the total metropolitan area population.[9] Perhaps not surprisingly, college students also make up a large proportion of StarMetro's riders. Indeed, StarMetro largely serves two distinct rider markets: college-age persons and the transit-dependent population. According to a 2009 on-board passenger survey, college and university students accounted for about 43 percent of all StarMetro riders.[10] Students continued to comprise a significant proportion of riders after the restructuring, as the authors discuss later in this report. Thus, it is important that the system be organized in such a way that it adequately serves the travel needs of these individuals. Providing service to the places where these students live is an obvious first step in meeting their travel needs.

Table 2. Student Enrollment at Major Colleges and Universities in Tallahassee, 2000-2011[11]

Year	FSU	FAMU	TCC	Total
2000	34,485	12,161	11,207	57,853
2005	39,652	12,176	13,439	65,267
2010	40,838	13,277	14,770	68,885
Fall 2011	41,710	13,089	15,410	70,209

Figure 10 shows the distribution of persons aged 18-24 years in Tallahassee in 2010. The authors use this age group as a rough proxy for the general college-age population, although the authors also examine the specific residential patterns of FSU students. The figure shows that college-age persons largely live to the west and south of the CBD. There are major concentrations of this population group along the Tharpe Street, Tennessee Street, and Pensacola Street corridors that lead west from the CBD, FSU, and FAMU. The other concentrations correspond with the general pattern of rental apartment locations shown in Figure 11. There are relatively few persons in the 18-24 age group living in the eastern or northeastern areas of the city.

Figures 12 and 13 provide off-campus address locations for undergraduate and graduate students, respectively, who were enrolled in courses at Florida State University in fall term 2011. As Table 2 indicates, FSU is the largest of the three higher education institutions, accounting for about 58 percent of all college students attending school in Tallahassee. FSU campus administrators were willing to share student address data with the research team; the authors were unable to obtain equivalent data for FAMU and TCC. It is important to note that few FSU students reside either on campus or in the off-campus student-dedicated, university affiliated living communities such as Alumni Village. Due to the limited number of university-owned dormitories and apartments, most FSU students rent their residences in the private market, and thus their living patterns generally follow the pattern of rental locations shown in Figure 11.

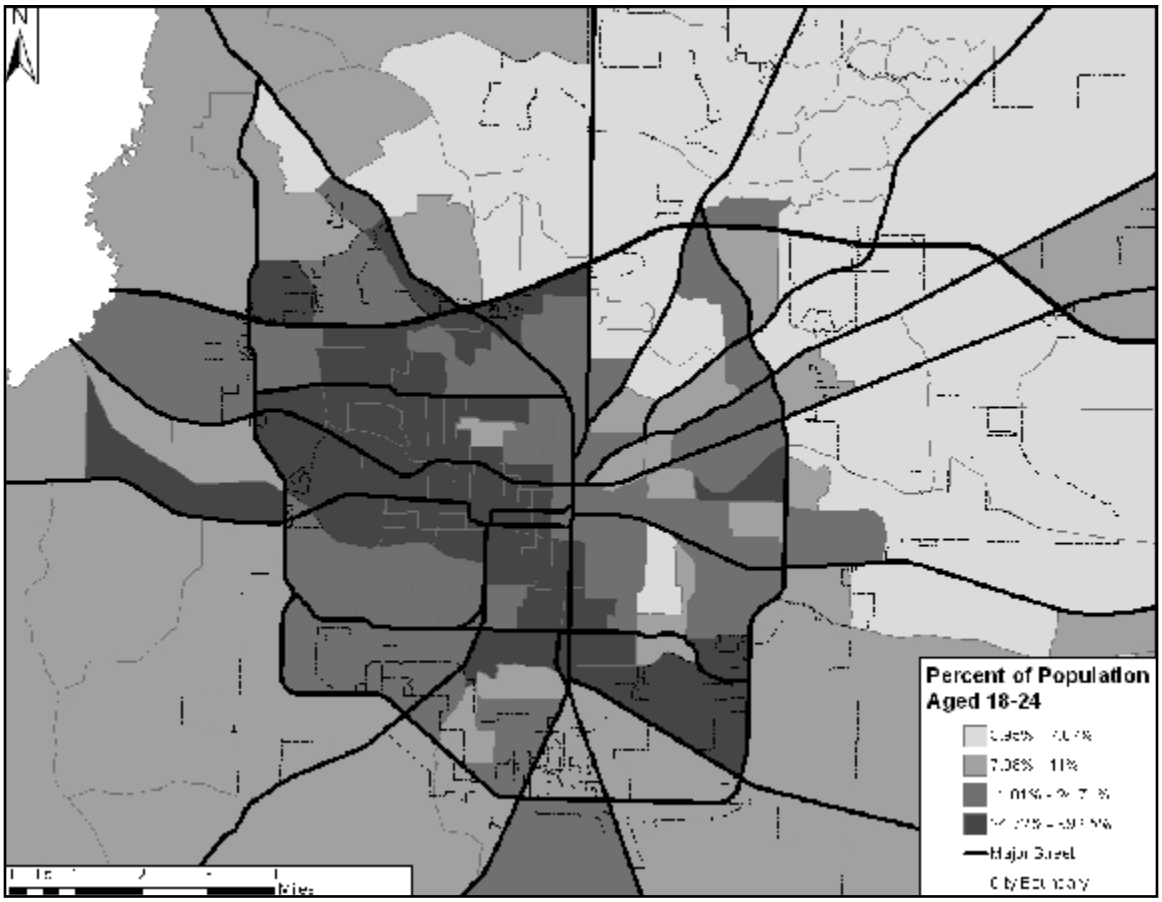

Figure 10. Distribution of Population Aged 18-24 in Tallahassee Area, 2010[12]

The distribution of FSU student residential location patterns tends to follow that of the age 18-24 population, of which they represent a sizable proportion. There are large clusters of both undergraduate (Figure 12) and graduate (Figure 13) students in the neighborhoods immediately adjacent to the campus, which are within walking distance of the university.[13] Many of these neighborhoods are also served by campus shuttles operated by StarMetro under contract with FSU. The shuttles operate under the name Seminole Express and run between campus and certain neighborhoods when school is in session (Figure 14). StarMetro operates equivalent shuttles for FAMU. The FAMU shuttles operate under the name Venom Express (Figure 15).

Figures 12 and 13 also show significant clusters of student residences beyond walking distance of the FSU campus. There is a significant cluster of undergraduate students in the apartment complexes between Tharpe Street (north of FSU) and Interstate 10. This area is beyond the service of the campus shuttles, so students ride regular StarMetro routes to reach the campus, or drive to campus. Students are also scattered in much smaller clusters to the east of the CBD, to the northeast toward and within the Killearn area, and in the neighborhoods west of the campus. There are fewer students living to the southeast in areas such as Southwood, where rents tend to be higher than the city rental average. Figure 16 provides a visual depiction of some of the most important student residential areas.

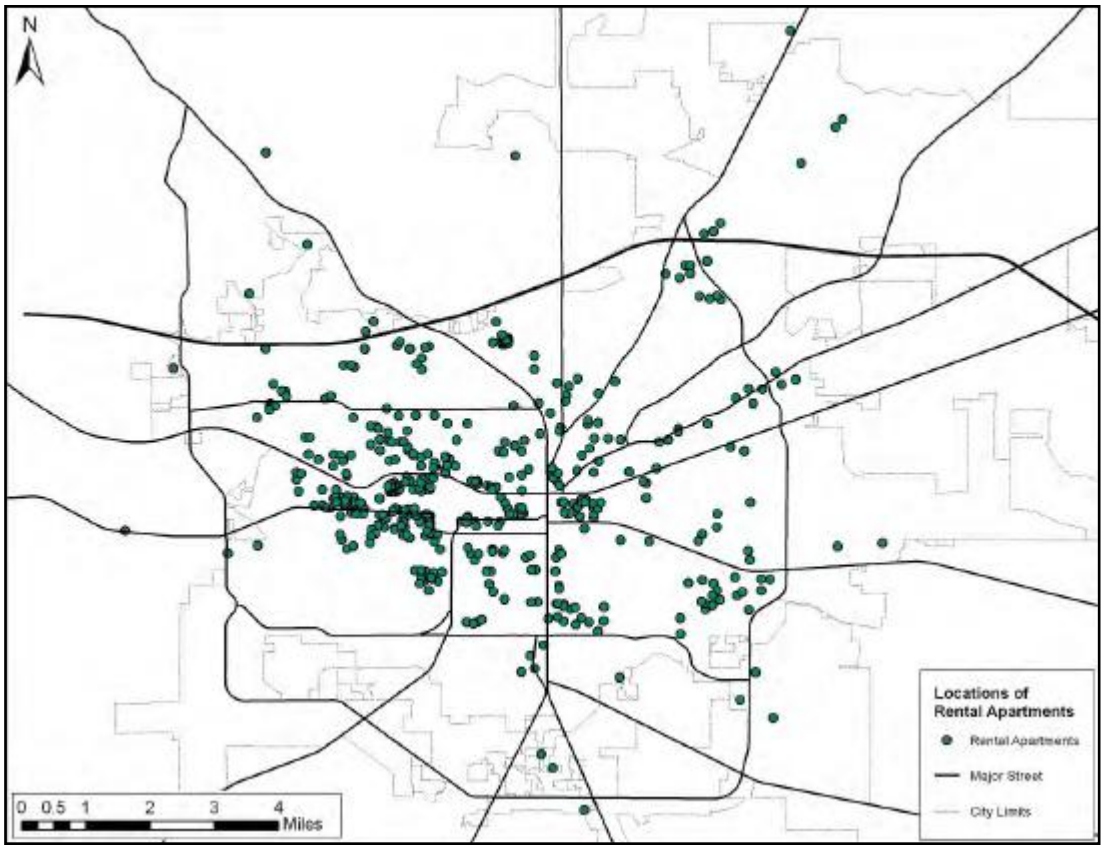

Figure 11. Distribution of Rental Apartment Locations, 2010[14]

Taken as a whole, the college-age population is thus both clustered inside a few close-to-campus neighborhoods, primarily to the west and northwest of campus, and widely scattered throughout Tallahassee, although not to the same degree as the general Tallahassee population. Serving this population via public transit implies a combined service strategy of both focused and decentralized service, which StarMetro has attempted to accomplish, first through the use of the campus shuttles focused on particular near-to-campus neighborhoods, which predate the service restructuring, and through its decentralized regular routes implemented as part of the July 2011 service restructuring.

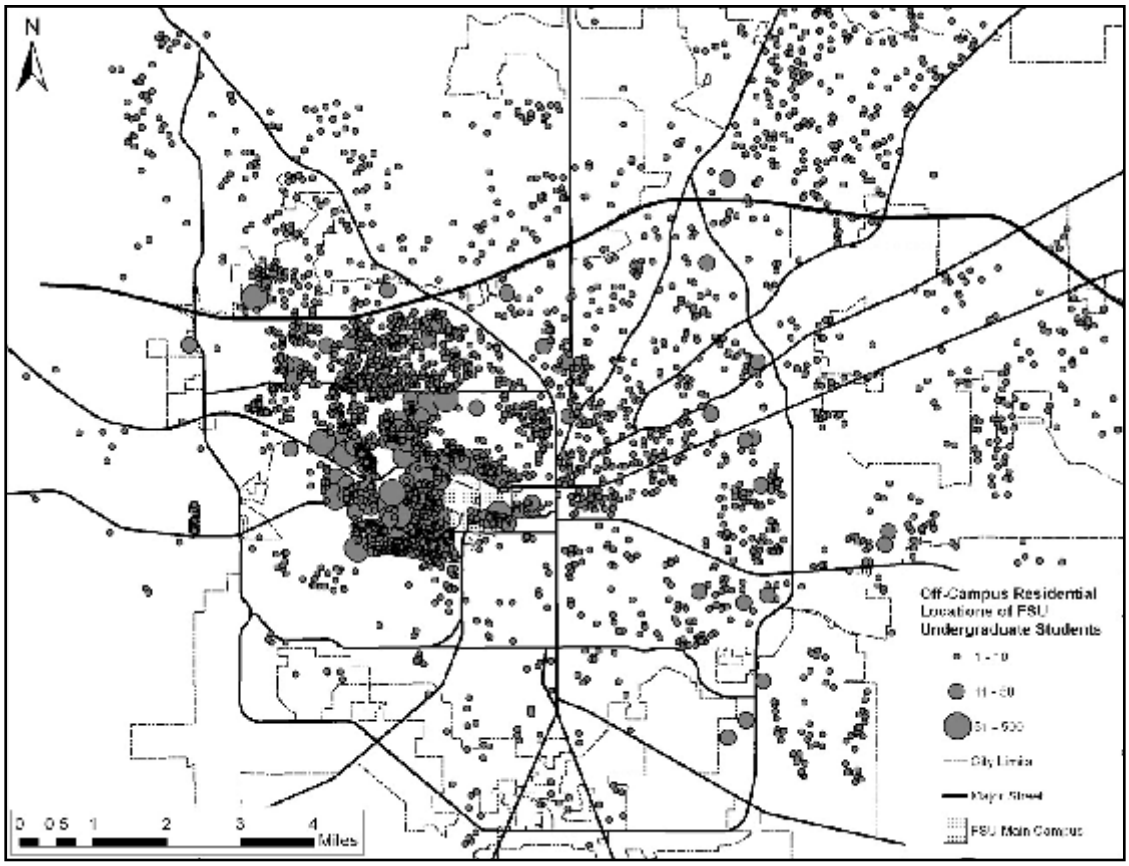

Figure 12. Distribution of FSU Undergraduate Student Residential Locations, 2011[15]

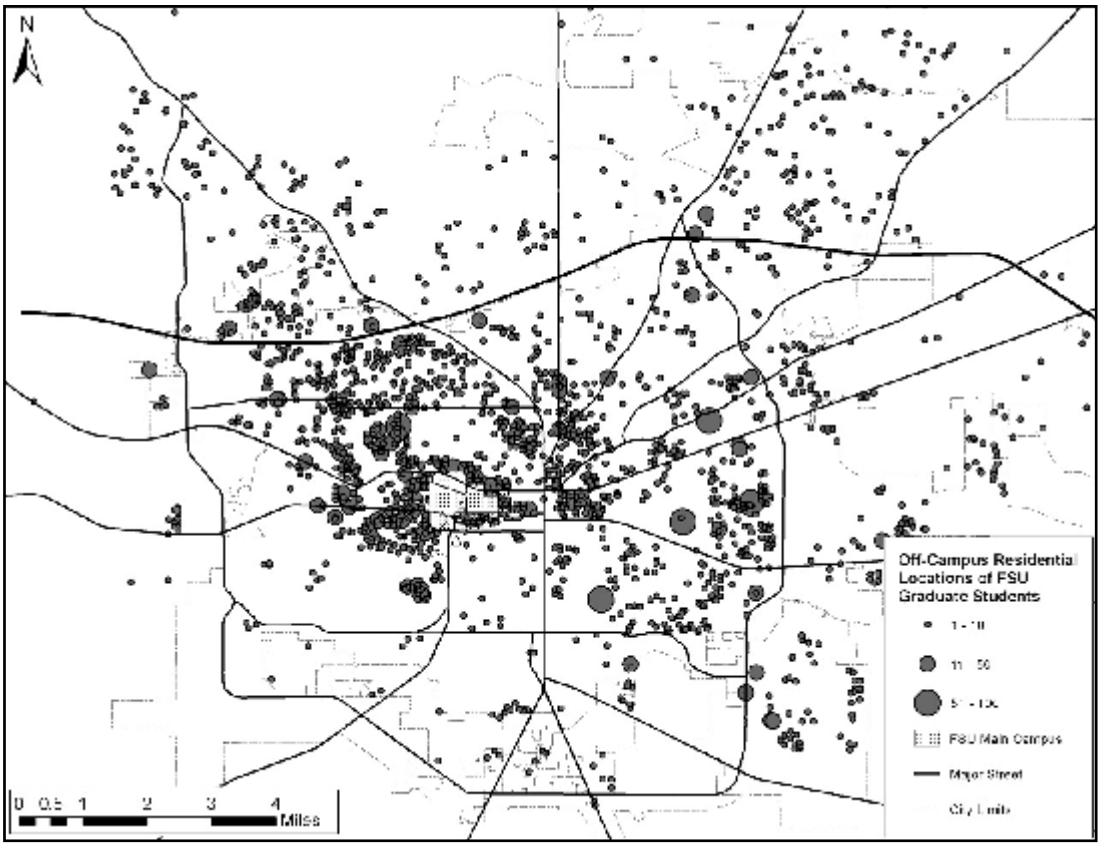

Figure 13. Distribution of FSU Graduate Student Residential Locations, 2011[16]

FSU Campus Shuttles (Seminole Express)[17]

Figure 14. FAMU Campus Shuttles (Venom Express)[18]

Figure 15. Pictures of Important Student Residential Areas

Notes: Clockwise from upper left: Alumni Village; Off-Campus Housing at: South Adams Street, Mission Road, and Pensacola Street.
Source: Photos by authors, ca. 2012.

RESIDENTIAL LOCATIONS OF TRANSIT-DEPENDENT POPULATIONS

In addition to serving college students, StarMetro also serves a large transit-dependent population in Tallahassee. According to recent rider surveys, about three quarters of StarMetro riders do not have access to an automobile.[19] The transportation literature suggests that key socioeconomic indicators or correlates of transit dependency are lack of easy, regular vehicle access (a key indicator), income (a correlate), and minority racial and/or ethnicity status (both correlates).[20] In order to determine whether or not StarMetro adequately serves the transit-dependent population in Tallahassee, it is important to understand where transit-dependent populations tend to live and to work.

To determine their residential locations, the authors examined the spatial distributions of the key indicators noted earlier. The authors focused specifically on vehicle ownership (as a proxy for vehicle access), household income (to denote the location of clusters of poorer households), and the African American population (which is disproportionately represented among the transit-dependent rider group, and is also a legally protected group under Title VI of the Civil Rights Act). As a southern city, Tallahassee also has a history of racial tension and racial segregation, and this history also suggested that it was important to understand the residential patterns of certain socio-economic groups.

The distribution of zero-vehicle households in 2010 is shown in Figure 17. There tend to be large concentrations of zero-vehicle households in the neighborhoods in which college-age persons tend to cluster, as noted earlier, in areas occupied by large numbers of low-income households, as shown in Figures 18 and 19, and in the inner city Frenchtown and Southside areas of Tallahassee, both of which have large African American populations, as shown in Figure 20.

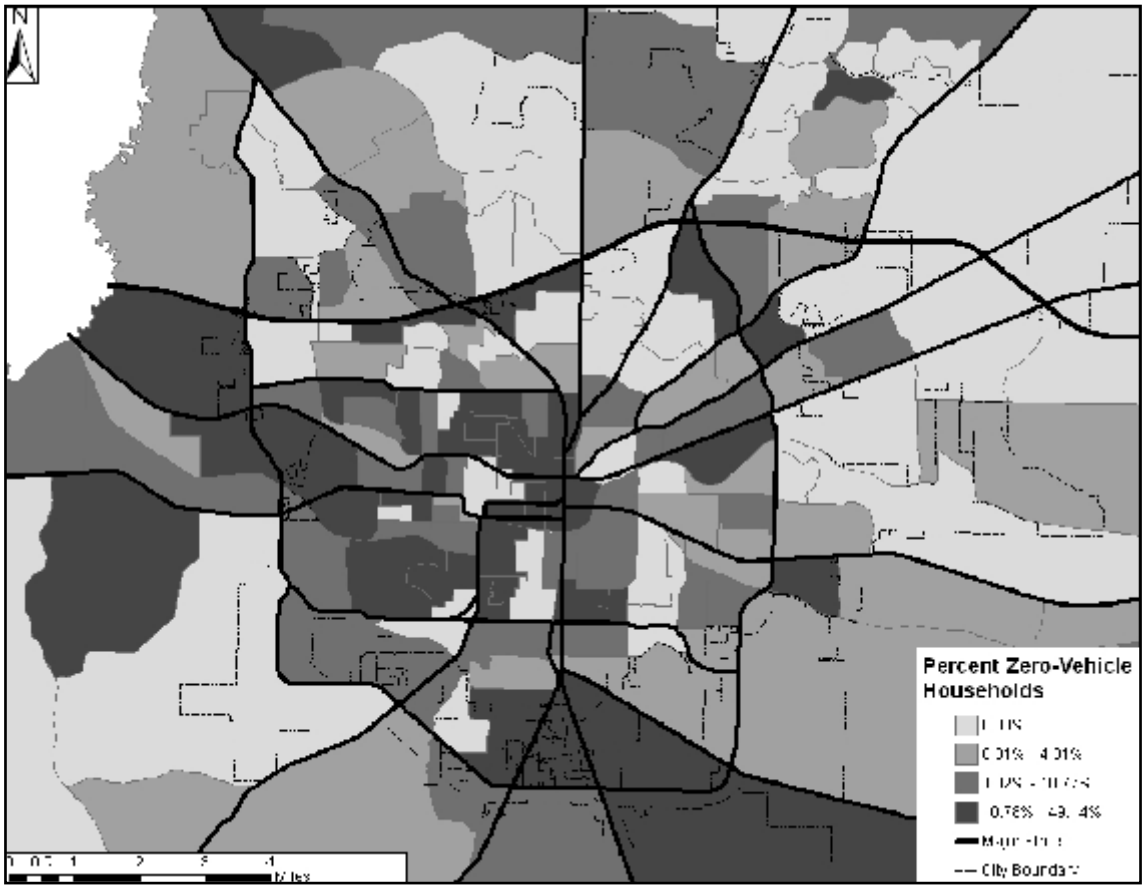

Figure 16. Zero-Vehicle Households by Block Group in Tallahassee, 2010[21]

Tallahassee has significant residential segregation by income, as shown in Figure 18. There are larger numbers of higher income households in the outer portions of the community, particularly in the Killearn area to the northeast and in Southwood to the southeast of downtown. The inner city neighborhoods and neighborhoods toward the west of FSU tend to have large numbers of low-income residents, predominantly students and/or minority populations. These lower income neighborhoods, particularly those to the west and southwest of downtown, have higher concentrations of households below the poverty level, as shown in Figure 19. The neighborhoods due west of FSU, along the Tennessee Street and Pensacola Street corridors, are dominated by students, who tend to have sub-poverty level incomes, at least while they are in school, while the Frenchtown and Southside areas have larger numbers of non-student households below the poverty level.

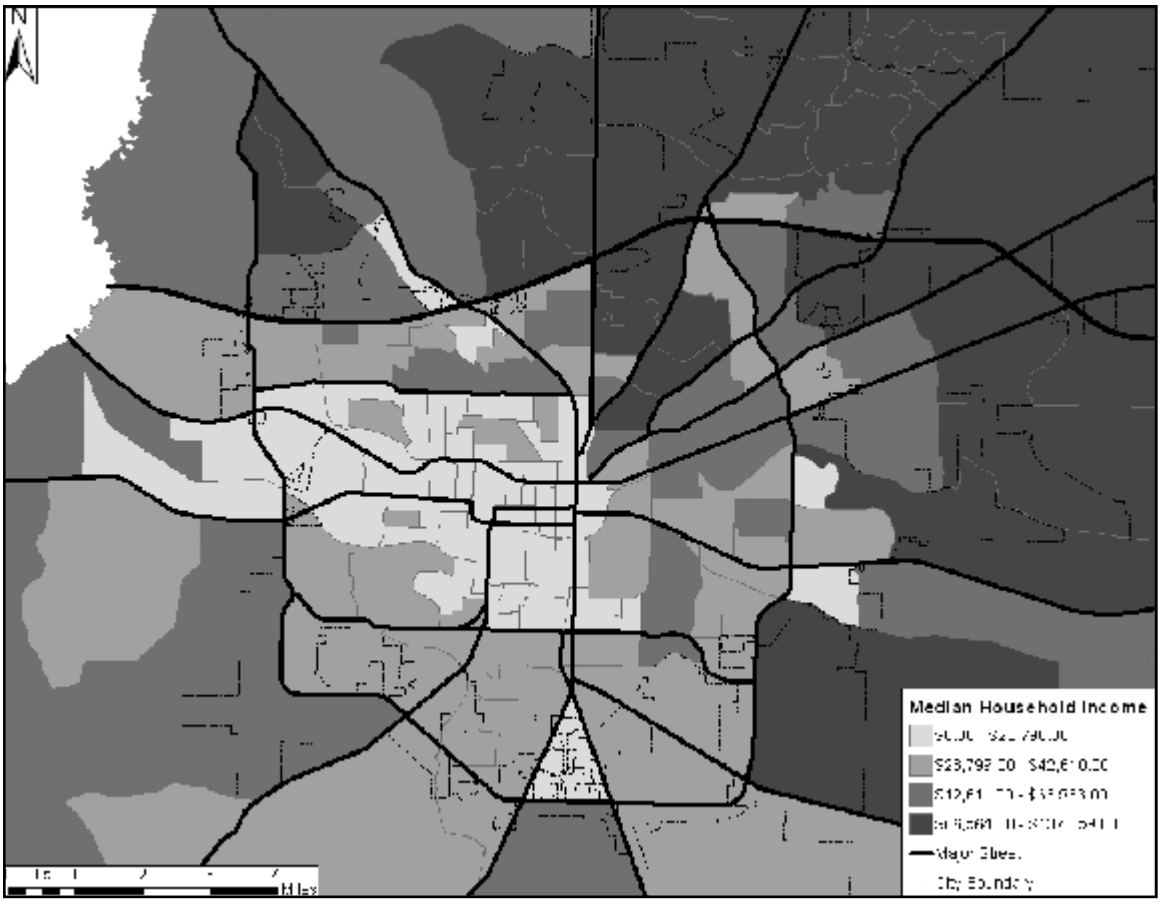

Figure 17. Median Household Income by Block Group in Tallahassee, 2010[22]

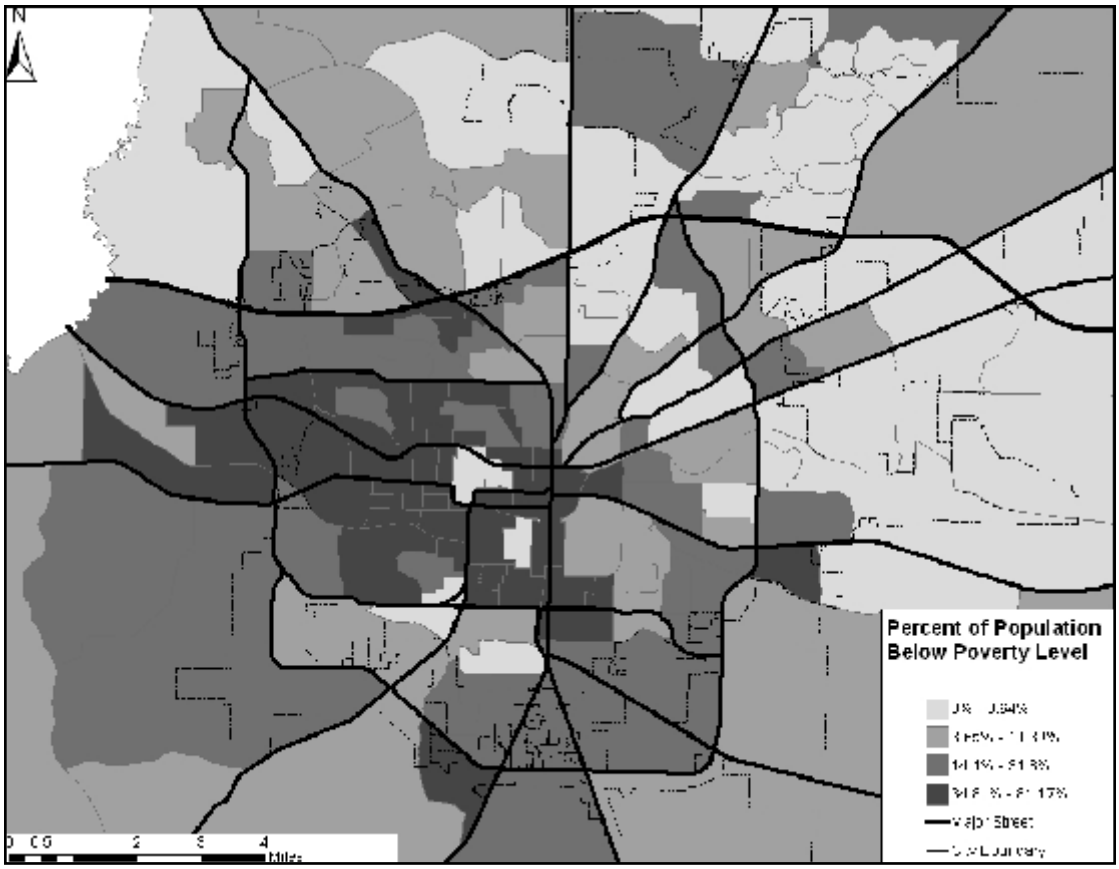

Figure 18. Population Below Poverty Level in Tallahassee, 2010[23]

Tallahassee's predominant minority population is African American. The area has a relatively small Hispanic population (about 6 percent of the total population), which makes it quite different from other metropolitan areas in the state that have large Hispanic populations.[24] African American populations tend to be overrepresented among the transit-dependent population. African Americans are also a legally protected class under Title VI of the Civil Rights Act. Transit agencies, such as StarMetro, are required to file periodic reports on the effects of their service changes on legally-protected groups, so the effects of the service restructuring on this population are of particular interest to the transit agency itself.[25]

Historically, Tallahassee has been a very segregated city. It was also the setting for many civil rights era protests, including a bus boycott to integrate the city transit system in 1956. Even today, the community has significant segregation of the minority African American and non-minority populations. The distribution of the African American population is shown in Figure 20. The figure shows large concentrations of Americans in the neighborhoods to the south of downtown and to the immediate northwest of downtown in the Frenchtown neighborhood. There are far fewer African Americans in the neighborhoods in Killearn in the northeast or Southwood in the southeast. The distribution of the African American population is highly correlated with the distribution of low-income and zero-vehicle households shown in earlier figures. Historically, the Frenchtown neighborhood and the neighborhoods immediately surrounding FAMU have been the center of the African American community, although the community has expanded further to the south in more recent decades. Figure 21 provides a visual representation of locations in these communities.

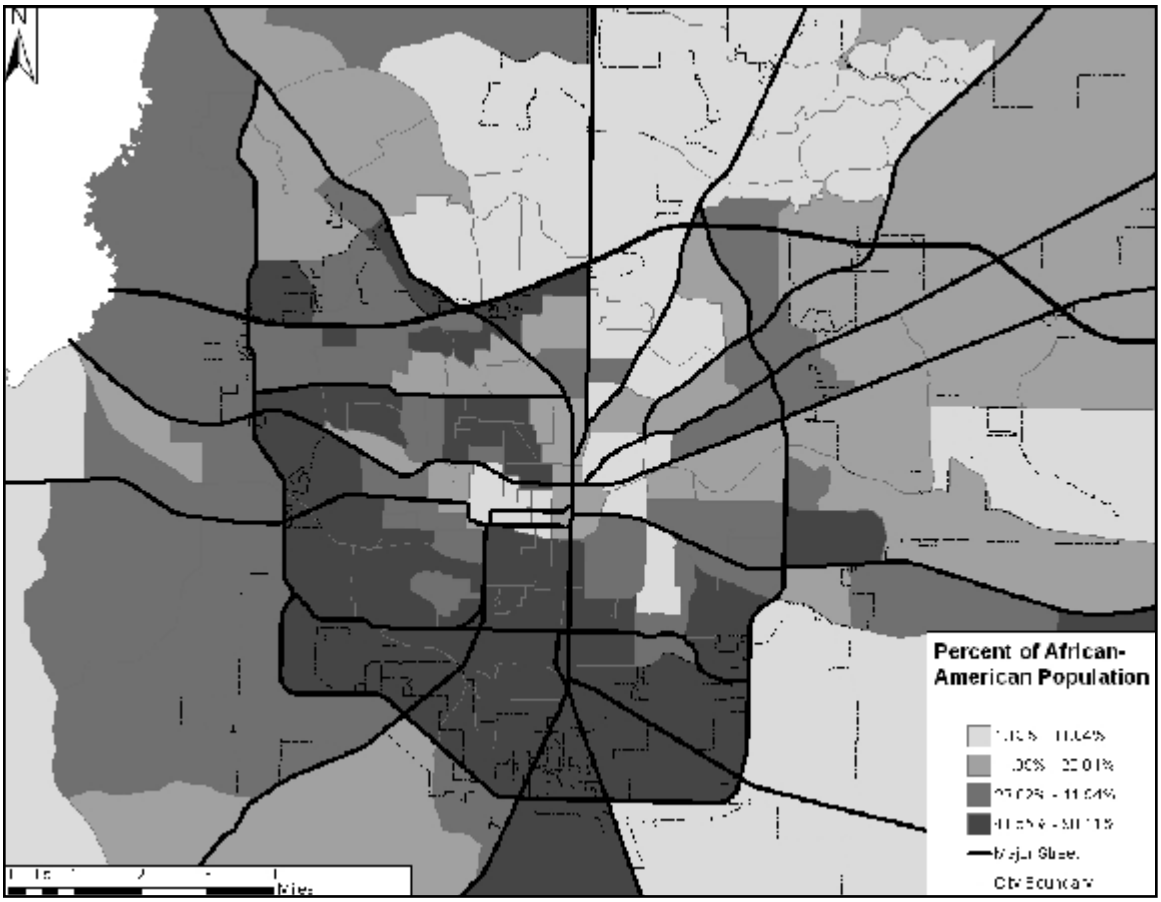

Figure 19. African American Population by Block Group in Tallahassee, 2010[26]

The maps of these transit-dependency correlates suggest that the transit-dependent population of Tallahassee tends to reside in neighborhoods to the west of downtown and to the south of downtown, with far fewer living in the eastern and northeastern parts of the community where much of the recent growth in employment has occurred. Given StarMetro's status as a primarily student and transit-dependent dominated transit system, this spatial separation of the neighborhoods where their primary customers reside and the destinations they seek to reach (employment itself or employment as a proxy for destinations that tend to be collocated with employment, which tends to be widely dispersed as shown in earlier figures) suggests the need for a transit system that would seek to connect these areas to one another via a number of crosstown east-west and north-south routes. That is indeed one of the things the service restructuring of July 2011 sought to do. The older system had few routes that performed these transportation functions while the new system does have such routes. In the next section, the authors describe the transit system as it existed before July 2011 and the changes that were made to the system at that time. This discussion provides context for the historical and analytical discussions that follow.

Figure 20. Pictures of Frenchtown and the Southside of Tallahassee

Notes: Clockwise from upper left: Frenchtown: Macomb Street and Volusia Street; Southside: Holton Street and Orange Avenue.

Source: Photos by authors, ca. 2012.

III. THE TRANSIT SYSTEM IN TALLAHASSEE, FLORIDA

The focus of the research is the fixed-route bus transit system in Tallahassee, Florida, operated by StarMetro. StarMetro is a unit of the City of Tallahassee, and the transit agency service area is largely confined to the city limits. The executive director of StarMetro reports to an assistant city manager who oversees StarMetro as part of his portfolio of responsibilities. The transit service area was largely unchanged as a result of the July 2011 service restructuring. There is demand-responsive para-transit service offered in Tallahassee and throughout Leon County, as well as one limited-service express bus route from downtown Tallahassee to Quincy in Gadsden County, but both of these services are beyond the scope of the investigation. StarMetro also operates a system of campus shuttle services for FAMU and FSU, which are briefly discussed at the end of this section and are included as part of the analysis of the effects of the service restructuring on the transit system.

StarMetro charges a fare of $1.25 per ride, or $38.00 per month for a monthly pass, although there are reduced fares for the elderly, the disabled, and children.[27] StarMetro also has fare-free pass programs with FAMU, FSU, and TCC that allow all students of these institutions to ride transit free by showing their university ID. The programs are funded by the universities on a contractual basis. All StarMetro patrons can transfer between routes without paying an additional fare. All of these fares were unchanged before and after service restructuring, as the authors note later in this report.

In this section, the authors describe service under the old and new networks, and reflect on changes in this service, for three different service periods: weekday service, Saturday service, and night and Sunday service.

Weekday service typically extends from Monday through Friday (except for holidays), between 6:00 a.m. and 7:00 p.m. Saturday service generally features a slightly modified weekday network and currently extends between 7:30 a.m. and 7:00 p.m. Finally, Sunday and night service consists of skeletal networks focused on the center of the city and a handful of outlying locations. This service is provided on weekday and Saturday evenings (approximately from 7:00 p.m. to 10:00 p.m.) and on Sundays during the day (from 11:30 a.m. to 6:00 p.m.).

TRANSIT NETWORK BEFORE JULY 11, 2011

Prior to the July 11, 2011, service restructuring, StarMetro operated a downtown-oriented radial transit system with service focused on C.K. Steele Plaza as the primary transfer point. This network was largely unchanged for many decades, even as the city decentralized, as both the brief historical discussion in the section that follows and the more detailed timeline of events shown in Appendix A indicate. The pre-July 2011 transit network is shown in Figure 22, with routes classified by peak-period weekday headways. The system's radial structure and the numerous neighborhood circulator loops are immediately apparent by the numbered routes shown in the map.

Weekday Service for the Old Network

The weekday transit system operated with 30- or 60-minute headways, except for four routes, which ran on 20- or 40-minute headways (Table 3).[28] Several service patterns can be identified for the radial system: all day 30-minute service, 60-minute service with increased 30-minute frequency during the morning and afternoon peak hours, or all-day 60-minute service. Table 3 contains more detailed information about the central hub arrival/ departure timings of the various routes.

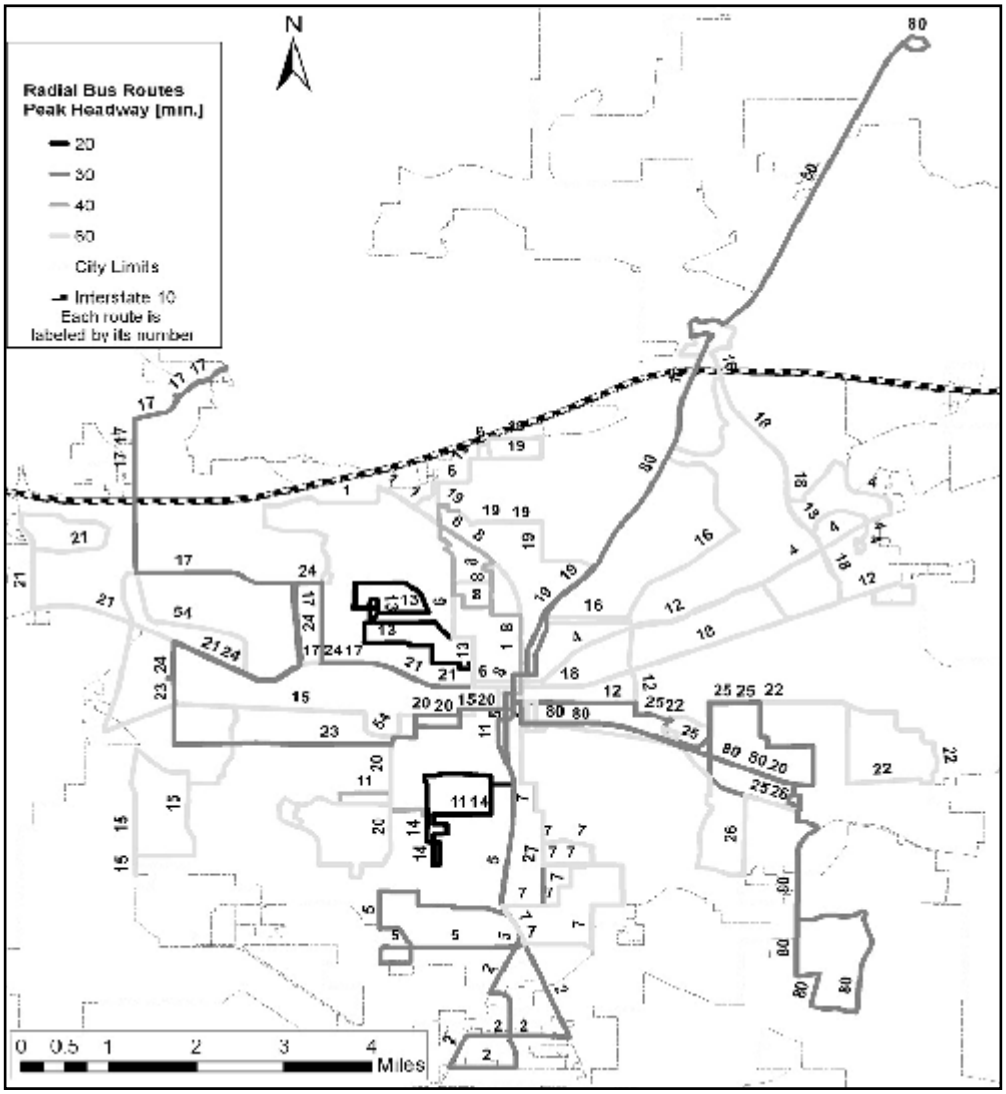

Figure 21. StarMetro Transit Network Prior to July 11, 2011[29]

The radial system relied on timed transfers at C.K. Steele Plaza as the central system terminal, or hub.[30] With a timed transfer, buses arrive and depart from a certain location at the same point of time, and in the case of delayed arrivals, other buses wait at least a few minutes to provide the rider with the opportunity to make a transfer. The radial routes departed from the hub, headed towards the outer portions of the community, and returned to the hub after one hour, starting the next trip immediately after arriving at the hub. These arrivals and departures were scheduled to occur at the same time on most

of the routes, which reduced the transfer times at the hub. On the 30/60-minute routes, arrivals to and departures from the hub were scheduled at full hours or 30 minutes past each hour. Routes with 60-minute headways were arriving and departing 30 minutes past the hour in most cases. However, some of the connections were not well-timed. Some of the 60-minute routes were coming and leaving the hub at full hours, creating a 30-minute layover for transfers between certain route pairs. The arrivals and departures of the 20- and 40-minute headway routes were not fully synchronized with the remaining 30/60-minute routes and the waiting time for a transfer between a 40- and a 60-minute route could reach 20 minutes for selected trips.

The network had no timed-transfer points outside the hub, although there were some locations where two or more different routes intersected. Selected locations were officially recognized in the printed schedules as “satellite transfer points.” Nevertheless, StarMetro did not synchronize the schedules of the intersecting routes, and short transfer waiting times, if they occurred, were coincidental. Most trips were routed through the hub, even when the rider’s origin and/or destination were in the outer parts of Tallahassee. This often led to very long travel times for many crosstown trips, due to the need to travel into the hub, wait to transfer to another bus, and then travel back out of the hub to the final destination.

In August 2006, StarMetro introduced the 80X route as an express bus service that eventually connected the Bradfordville area north of Killearn in the northeastern part of the county with Southwood in the southeastern part of Tallahassee, but via the downtown terminal (Plaza).[31] Thus, rather than functioning as a true crosstown route, it was essentially a combination of two radial routes that connected at the central hub. The route’s express character was achieved with a very limited number of stops, located only at the selected major intersections, and some larger employment clusters along the route. There was no designated infrastructure (e.g., separate bus lanes) provided for that route. This route was subsequently discontinued during the service restructuring.

Saturday, Night, and Sunday Service for the Old Network

The Saturday system was based on most of the weekday routes, running every 40 or 60 minutes, as presented in Table 3. The service philosophy was identical to that for weekdays, and immediate transfers were available at the central transfer hub for most of the trips: all 60-minute routes, except for routes 6 and 7, arrived and departed the hub 30 minutes after each full hour.

The night and Sunday system included the regular daily routes 13 and 14, and six night/Sunday-only routes (numbered from 28 to 33), which covered the most frequently served portions of the daily network in the inner city. All of these routes ran every 40 minutes, arriving and departing the transfer hub at the same time, providing immediate timed transfers.

Table 3. StarMetro Daytime Routes and Headways Prior to July 11, 2011[32]

Route	Headway (min.)			Weekday Arrivals/Departures From Transfer Hub After Each Full Hour**
	Weekday Peak	Weekday Off-Peak	Saturday	
1	60	60	60	:30
2	30	60	60	[:00], :30
4	60	60	60	:30
5	30	60	60	[:00], :30
6	60	60	60	:00
7	60	60	60	:00
8	40	40	40	:30 (even), :10, :50 (odd)
11	40	40	*NS*	:10, :50 (even), :30 (odd)
12	60	60	*NS*	:00
13	20	20	40	:10, :30, :50
14	20	20	40	:10, :30, :50
15	60	60	60	:30
16	60	60	*NS*	:30
17	30/60*	60	60	[:00], :30
18	60	60	60	:30
19	60	60	60	:30
20	60	60	60	:30
21	60	60	60	:30
22	60	60	60	:30
23	30	30	60	:00, :30
24	30	30	60	:00, :30
25	30	30	60	:00, :30
26	60	60	60	:30
53	60	60	60	:00
54	60	60	*NS*	:30
80X	30	60	*NS*	[:00], :30

Notes: * 30-minute morning peak headway and 60-minute afternoon peak headway.

*** Numbers in brackets are peak-only timings.*

NS indicates no service.

All Night and Sunday routes run at 40-minute headway.

TRANSIT NETWORK AFTER JULY 11, 2011

On July 11, 2011, StarMetro restructured its transit network. The new, decentralized network is based on radial routes serving the major arterials and new crosstown routes linking the outer parts of the city (Figure 23, which includes all minor route adjustments made through the end of January 2012 and classifies routes based on peak-period, weekday headways).[33] Many routes continue to serve the downtown, due to the street pattern of Tallahassee and the large number of trip generators and trip attractors near the downtown, including neighborhoods with large numbers of transit-dependent residents and the two universities, but important non-downtown, crosstown service has been added in places

such as the Orange Avenue corridor on the Southside of Tallahassee and Capital Circle East corridor running north-south several miles to the east of downtown Tallahassee.

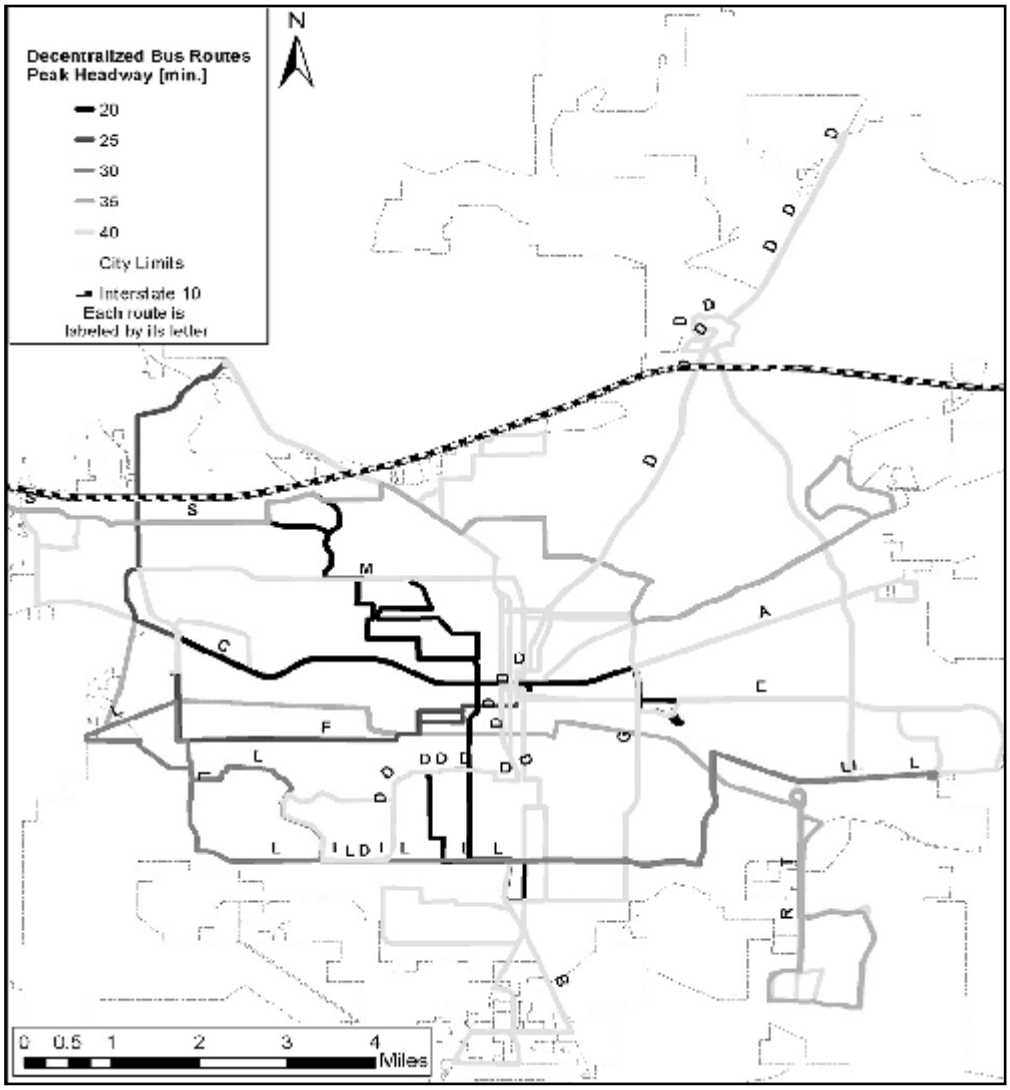

Figure 22. StarMetro Transit Network After July 11, 2011[34]

Weekday Service for the New Network

Whereas the pre-restructuring weekday network included 26 different routes, identified by numbers, the new weekday network was simplified into 12 routes, identified by letters.[35] Under the new network, six routes (A, B, C, D, E, F) still stop at the central transfer hub, although only one of them (F) terminates there; the remaining routes provide one-seat service across the city. Two routes (M and T) run through the outer parts of the CBD, meeting other radial routes at the major street intersections, but they do not serve the central transfer hub. The four remaining routes (G, L, R and S) operate only in the areas outside the CBD. They connect directly to the outer parts of the city, and they provide access to the downtown-bound radial routes at transfer points.

What is important to note here is that although 8 out of 12 routes in the new system still run through the CBD, the new system gives many more opportunities for direct travelling between the suburban areas without entering the downtown. These opportunities were provided not only by creating the new crosstown routes, but also by linking the radial routes at several remote transfer points, and including low transfer waiting times in at least some of these cases.

However, it is also important to note that transfers are not timed under the restructured system: the buses do not wait for other connections at the transfer points, and the timings are not adjusted to provide guaranteed transfers. The transfers are purely random. This is also true now at the hub. Irregular headways make the transfer opportunities strictly dependent on the specific time of the trip, and require the passenger to precisely plan every trip, if they want to avoid long transfer waiting times. This can become particularly challenging when the connecting route operates on a very long headway. Even a well-prepared trip itinerary could not work in practice, if one of the buses runs behind the schedule. Indeed, concerns about the effects of the headways on transfer opportunities and transfer wait times have been a major focus of public criticism since the service restructuring, as the authors discuss later in this report.

Table 4 contains detailed information about the service frequency offered on the new, decentralized network, including the two major service modifications, discussed in the paragraphs that follow. The table indicates that StarMetro operates routes with a variety of headways. Peak period weekday headways were originally 20, 30, and 45 minutes, which often made for difficulties when riders tried to make transfers. The original restructuring proposal called for more uniform short headways, as discussed later, but these were changed due to budgetary constraints that required the service restructuring to be budget neutral.

Table 4. StarMetro Routes and Headways After July 11, 2011[36]

	Schedule Effective as of Date								
	July 11, 2011			August 1, 2011			January 21, 2012		
Route	Weekday Peak	Weekday Off-Peak	Saturday	Weekday Peak	Weekday Off-Peak	Saturday	Weekday Peak	Weekday Off-Peak	Saturday
A	20	40	30	40	40	30	40	40	45
B	30	30	30	30	30	30	40	40	40
C	20	30	*NS*	20	20	NS	20	20	*NS*
D	30	45	30	35	50	30	40	40	40
E	30	45	30	40	40	40	40	40	40
F	20	20	*NS*	20	20	*NS*	25	25	40
G	30	45	30	35	50	30	40	40	40
L	20	40	40	20	40	40	30	30	40
M	20	40	40	20	20*	40	20	20	40
R	30	45	30	30	45	30	40/45**	40	30
S	45	45	45	50	50	45	35	35	45
T	30	30	30	30	30	30	35	35	30

Notes: * 20-minute off-peak headway on route M effective July 17, 2011.

** 40-minute morning peak headway and 45-minute afternoon peak headway.

NS indicates no service.

All Night and Sunday routes initially ran with 30-minute headway. Since January 2012, routes N1 and N4 now run every 40 minutes.

Since the initial service restructuring on July 11, 2011, there have been two major service modifications, on August 1, 2011, and January 21, 2012.[37] They did not affect the general service philosophy, but they have included some route deviations and schedule changes. Table 5 presents the highlights of both service modifications. As can be seen from the table, service has been reinstated on some streets, but simultaneously some small portions of the new network were removed. The new route deviations have made it easier for many people to get to bus stops, by reducing the time it takes to walk to a stop, but they have also added travel time to bus trips due to the more circuitous routing. The importance of the central transfer hub has also increased – routes A, B, and C initially did not enter the hub, but were connected at the city's main CBD intersection of Monroe and Tennessee Streets. These routes all now enter the central hub. These various routing changes were made in response to community and policymaker concerns about a combination of patron safety, patron convenience, or sidewalk crowding at stops in front of businesses, as the authors discuss later in this report.

On some routes, there were also adjustments in the scheduled travel times between certain stops, made to adjust the travel times to the actual traffic conditions and to avoid schedule delays. StarMetro anticipated making many of these schedule adjustments as they learned how the system actually functioned when it was implemented. The more recent January 2012 service changes removed the distinction between peak and off-peak headways; since then, all routes operate with a single headway during the entire day. The only exception applies to route R, where the headways increase from 40 to 45 minutes during the afternoon peak, as a consequence of a longer trip time due to congested road conditions. The shift to a uniform, all-day headway makes the service more predictable and

understandable for the rider, but the decision to increase the peak headways as opposed to decreasing the off-peak headways (which happened for all but one of the routes that experienced a change in peak headways) is undoubtedly a function of agency budgetary constraints.

Table 5. Summary of August 2011 and January 2012 Service Changes[38]

Route	Schedule Effective as of Date	
	August 1, 2011	January 21, 2012
A	Begin to enter the central hub.	2 deviations added: runs via Mission Rd. and Miccosukee Rd.
B	Deviation added on southern portion for north-bound trips: runs via S Adams St. and Orange Ave. Begin to enter central hub.	Southern section expanded - reaches Capital Circle South (instead of route M).
C	Began to enter central hub.	Loop around TCC campus removed.
D	Last section on the north end (1.6 mi.) removed. Slight routing change on the southern section.	No change.
E	No change.	Western section modified: loop around Tharpe and Hartsfield St. removed, instead buses run to TCC.
F	No change.	Deviation added: runs via Blounstown Hwy.
G	No change.	Begin to enter Tallahassee Mall area.
L	No change.	Additional section added on the western end. Transfers to routes F and T provided.
M	No change.	Northern section extended (transfers to route S provided). Last southern section removed (replaced with route B).
R	No change.	No change.
S	No change.	Begin to enter Miccosukee Hills Community on selected trips.
T	No change.	Loop around TCC campus added.

Some of the interview participants characterized the net result of these recent service changes as a return to many of the characteristics of the earlier radial system and an abandonment of many of the ideas that stimulated service restructuring, an issue that the authors discuss later in the interviews section of this report. It is certainly true that more routes now call at the central terminal than were originally planned, and there are also more route segments within neighborhoods than originally planned. There is serious disagreement among interview participants as to whether these changes are significant enough that they represent an abandonment of the original restructuring vision. Public comments to StarMetro staff and to city officials led to many of these service changes.

Saturday, Night, and Sunday Service for the New Network

The decentralized Saturday network, in general, replicates the weekday service, with minor differences. Route C is currently the only weekday route that does not operate on Saturdays, although the service along most of route C is provided by the duplicating route A. On several other Saturday routes the final segments of the weekday routes are not served: for example, Saturday routes R and T do not include a loop around the Southwood

community. As shown in Table 4, the Saturday headways are longer than their weekday counterparts for many bus routes, which means that the service is less frequent.

The night and Sunday networks are much smaller than their weekday and Saturday counterparts. There are currently six routes (numbered from N1 to N6) operating in the Night and Sunday on 30- or 40-minute headways.[39] Two of them, N1 and N2, are radial routes that call at the central transfer hub; two other routes (N3 and N5) replicate the central sections of the daytime M and T routes, passing through the CBD but not entering the hub. Route N4 provides crosstown service between the eastern and southern part of the city, and route N6 connects the FSU Main Campus with the Alumni Village, a highly transit-dependent graduate student community located southeast of the main campus near Innovation Park and the FSU-FAMU College of Engineering.

Summary of Differences Between the Old and New Networks

The change from the old network to the new one resulted in the removal of many routes from the central hub (C.K. Steele Plaza), the removal of routes from within many neighborhoods, and the placement of more routes along major arterial roads and within crosstown corridors. The removal of routes from within many neighborhoods resulted in increased walk time (on the average of two minutes) to bus stops for residents in affected neighborhoods (as the authors discuss later in this report), because of the loss of bus stops. Overall, the number of bus stops decreased from 1,055 stops before the service restructuring to 910 stops afterward. The net result was a rationalization/simplification of the previously complex system to one where routes were more closely aligned with specific arterial roads and/or arterial corridors. StarMetro anticipated that the removal of the routes from within neighborhoods would allow the buses to run at higher speeds, thus resulting in reduced total travel times for transit riders. Thus, while some transit riders would have to walk further to stops, they might also have reduced overall trip times due to the higher operating speeds and/or more frequent service on the arterial roads. The authors explore these issues later in this report.

OTHER TRANSIT SERVICES IN TALLAHASSEE AREA

In addition to StarMetro's fixed-route system, there are a few other transit services in Tallahassee, including para-transit, Dial-a-Ride, the Gadsden Express (providing limited regional bus service between Quincy, Florida, and downtown Tallahassee), and the campus shuttles at FSU and FAMU. The Dial-a-Ride service is available only to seniors (age 60 years or older) and qualified disabled passengers, living within 3/4 miles of the regular weekday bus routes. This service is available from Monday through Saturday, 6:30 a.m. to 10 p.m. Trips must be ordered in advance, at least one day before the trip is made. A single ride costs twice as much ($2.50 per ride) as the regular bus fare.

For purposes of this report, this service is considered only in terms of whether the service restructuring resulted in increased or decreased Dial-a-Ride use, as the regular fixed-route service became either more or less attractive to elderly and/or disabled riders. Anecdotal evidence offered during the early interviews suggested that many people started using the

Dial-a-Ride service after bus stops were removed from neighborhoods, and the authors decided to examine this issue as part of the study.

The Gadsden Express consists of a single express bus route that runs between the central transfer hub and Quincy, a city located 22 miles northwest of Tallahassee. There are currently only four weekday roundtrips provided. A single ride costs $1, and no free transfers to the Tallahassee bus system are provided. Due to the limited nature of this service and the fact that it is not part of the regular transit system operated by StarMetro, the authors did not consider it in the analysis.

On the other hand, the campus shuttles at FSU and FAMU, which are operated under contract by StarMetro, serve important functions within Tallahassee and are connected with the regular bus system (the authors identify the regular bus system as “city system” to differentiate it from the campus shuttles later in this report). The authors discuss the shuttles as part of the analysis of the effects of the service restructuring on the transit system, with respect to ridership in particular, later in this report. At the time of the study, the FSU campus shuttle network, (Seminole Express) operated eight routes (Figure 14, shown earlier). Five routes (Garnet, Gold, Heritage, Osceola, and Tomahawk, identified also as U21-U25) include a loop around the main campus area and a section connecting the campus with neighborhoods located to the west and northwest from the main campus where many FSU students reside. The shuttles operate on 15- or 20-minute headways. A sixth route (Renegade, U20) serves only as the campus circulator loop, which combined together with the previously mentioned routes provide a 5- to 10-minute service on the loop surrounding the main campus. A seventh route (U26, not shown in Figure 14), operating on a 30-minute headway, links the western part of the main FSU campus with Innovation Park and College of Engineering, and the nearby Alumni Village, an FSU graduate student community. The final campus route (U51, also not shown in Figure 14) provides nighttime-only limited service (10 p.m. to 3 a.m.), which connects popular nightlife venues with student communities.

The FAMU campus shuttle network is currently comprises two routes (V1 and V2), marketed as “Venom Express,” running between the campus and the surrounding student communities (Figure 15, shown earlier). Route V1 operates every 20 minutes, and V2 operates every 30 minutes. Until August 2011, a third route (V3) had connected FAMU campus and the Engineering School located in Innovation Park. The route was discontinued because it duplicated the new L route. This was the only change in any of the campus routes made as a result of the service restructuring.

Both campus shuttle networks are technically integrated with the city bus system: their schedules are published along with the city routes, and anybody can ride the student routes. Standard city transit fares apply, although in practice the fares are not collected on the campus buses, to accelerate the boarding process. Students at both universities and TCC enjoy fare-free transit service as a result of contracts between the institutions and StarMetro. The contracts with FSU and FAMU obviate the need for fare collection on the campus shuttle routes. The campus shuttle routes operate only when school is in session, with reduced service during the summer sessions.

There are no designated campus routes serving the Tallahassee Community College (TCC), although the TCC students can also use the city system free of charge. There are currently six city routes serving the TCC campus (routes A, C, E, F, L, T).

IV. OVERVIEW OF TRANSIT DEVELOPMENT IN TALLAHASSEE

This section provides a brief history of the key events leading up to the July 11, 2011, service restructuring and the key events in the year that followed the restructuring. A more detailed timeline of events, including references, is included in Appendix A.

EVENTS PRIOR TO JULY 11, 2011, RESTRUCTURING

Between 1973 and 2005, the transit system in Tallahassee was called TalTran. In 1973, the City of Tallahassee acquired the established, but financially troubled private transit company, Cities Transit, and retained the son, Larry Carter, of the previous owner as the system's general manager.[40] Mr. Carter led the agency for more than 30 years, during which time very few significant changes were made to the downtown-oriented system. In 1976, TalTran added three new routes to connect new residential, medical, and office developments in outer areas to downtown.[41] In 1979, TalTran opened a new transfer center at the site of the present C.K. Steele Plaza to replace its older, confined transfer center at the intersections of Park Avenue and Monroe Street, several blocks to the southeast.[42] The new terminal was named to honor Reverend C.K. Steele in 1985.[43]

Over the next two decades, there were few major changes to the transit system in Tallahassee, even as the community changed significantly with its increasingly decentralized pattern of development. Leon County voters adopted a local option sales tax to fund transportation in 1989, which provided some money for TalTran service.[44] During the 1990s, TalTran entered partnerships with the universities to provide fare-free pass programs for students, funded through student transportation fees. TalTran also operated campus shuttle services on the two university campuses, FAMU and FSU.

Continued urban decentralization, including the development of Southwood as a major residential and employment center, and a change in agency leadership brought the idea of restructuring the transit system onto the local policy agenda. City officials and agency staff concerned about the future of TalTran contracted with the Florida State University Department of Urban and Regional Planning for a graduate student studio to lay out a vision for the future of public transit in the community. The studio produced a long-range vision of transit development to the year 2020. The resulting report, *Assessment of Alternative Transit Futures for Transit in Tallahassee*,[45] evaluated four different transit network configurations, including a decentralized transit network similar to the one ultimately implemented in 2011. One member of the studio team, Samuel Scheib, subsequently became a planner with the transit agency, while Gregory Thompson, the studio director, became a member of the city's Transit Advisory Committee, a citizen's committee that provides public comment on local transit issues.

By the time the studio report was delivered in summer 2005, the transit agency had a new name, StarMetro, and a new executive director, Ron Garrison, who had experience developing and implementing decentralized transit networks elsewhere. Mr. Garrison commissioned staff and consultants to explore the idea of restructuring the bus routes shortly after his arrival. However, during an interview, Mr. Garrison reported that when he

first arrived at the agency, he was unaware of the studio team's work. He later learned about it during discussions surrounding the development of the (later) *StarMetro Transit Renaissance Plan*.[46] The idea of restructuring the routes was included in both the *2005 Transit Development Plan*[47] and *StarMetro Renaissance Plan*,[48] but there was little movement toward implementing the concept for the next several years. The development of the 80X express service in August 2006 was perhaps the first step toward route decentralization, although this route serving the northern residential areas in Bradfordville and the emerging Southwood employment and residential complex still served the central terminal in the middle of its alignment.

Sometime in late 2008 or early 2009, restructuring reemerged as an important part of local transportation discussions in the community. Between the development of the 2005 *StarMetro Transit Renaissance Plan* and early 2009, StarMetro staff developed a formal restructuring plan. The first draft restructuring plan was presented to the city's Transit Advisory Committee, which endorsed the plan in January 2009.[49] A number of citizens expressed concerns about many of the proposed service changes, particularly the loss of service in some neighborhoods, lack of easy connections to the two shopping malls, and pedestrian safety concerns at many intersections. However, in March 2009 the City Commission endorsed the idea of developing a formal restructuring plan. Over the next six months, StarMetro worked with transportation consultants to develop its Nova2010 plan, and it convened a series of public listening sessions to obtain public input into the plan.[50]

Despite increasingly vocal criticisms by some segments of the Tallahassee community about the removal of service from some neighborhoods, rerouting of buses away from the central terminal, and the safety of passenger crossings at some of the proposed new transfer stop locations, the Transit Advisory Committee unanimously endorsed the Nova2010 plan in January 2010, and the City Commission unanimously endorsed the plan in March 2010.

StarMetro then undertook a major study of bus stop locations and began working with the city Public Works department to install new bus shelters, add and repair sidewalks adjacent to stops, and upgrade pedestrian crossing signals at key locations in the new network. StarMetro also reached out to representatives of the disabled and elderly communities to work with them on some issues related to the proposal. During this time, the restructuring plan continued to evolve, and a number of public listening sessions took place. Agency staff made further adjustments to the plan based on comments made during these listening sessions, including some route alignment adjustments at the two major shopping malls.

In May 2011, StarMetro unveiled the new system on its website and undertook a new wave of public outreach and public education. A series of public meetings occurred, a media information campaign took place, and "transit ambassadors" were recruited and trained to help riders navigate the new system at the time the change occurred. The agency set July 11, 2011, as the date the new system would be implemented; and on that day the system was restructured.

ORIGINAL NOVA2010 PROPOSAL AND SUBSEQUENT CHANGES

As noted, the idea of restructuring the transit system in Tallahassee dates at least as far back as the 2004 FSU graduate student studio, and the more formal plans date to 2009, about two years prior to restructuring itself. The formal plans were labeled Nova2010,[51] reflecting the hope that service changes would be made in 2010. The original Nova2010 plans generally reflect the restructuring that actually occurred, although there are important differences, generally related to the service headways.

The early reports promoting the service restructuring concept, including the 2004 FSU Graduate Student Studio and 2005 *Transit Development Plan*, assumed 20-minute peak service on selected major arterials (Capital Circle West, Monroe, Orange, Tennessee, Thomasville), and 30-minute headways on the remaining portions of the decentralized transit network. The "Nova2010 Overview" document,[52] which was the first officially published document presenting the new network concept, reduced these headways to 15 minutes on selected routes. The "Nova2010 Overview" document served as the basis for public hearings and consultation throughout 2009 and 2010.

The headways proposed in these earlier plans differ from that ultimately implemented on July 11, 2011, and this has been the subject of much negative public comment. Table 6 compares the headways as proposed in the "Nova2010 Overview" document with the headways proposed in the document ultimately adopted by the City Commission[53] and with those actually in place at the time of the study, after the service restructuring. The table clearly indicates a deterioration in service headways, which has become a point of criticism by many vocal segments of the community. The current peak frequencies are lower for most of the routes, if compared with the projected headways. Off-peak headways are comparable, or more frequent. Exact headway minute figures became more varied when compared to the earlier plans. The earlier plans assumed 20- or 30-minute intervals on most routes, while today, 20-, 25-, 30-, 35-, 40-, and 45-minute values result in irregular transfer times and make route synchronization more complex.

As discussed later in this report, a number of interviewees expressed the belief that they had been promised one set of service headways (in the hopes of obtaining their acquiescence or support for restructuring), but then were given something very different at implementation. The table clearly illustrates that these interviewees have grounds for some complaint, as longer peak-period headways are evident. These longer headways then make transfers less convenient because of the irregular nature of the connections at the transfer locations. Wait times are frequently quite long as a result.

The change in headways was the result of budgetary constraints. StarMetro was directed by the City to maintain budget neutrality throughout the service restructuring, and this led to increased headways. Regardless of the reason for the change, the net result is that some segments of the community have adopted a very negative attitude about the service change, and some have even questioned the openness and honesty of local officials and agency staff, as the interviews discussed later illustrate. Other interview participants are frustrated by the increased headways but more understanding of the reasons why they occurred, as noted later in this report.

StarMetro's rider information system also makes it difficult to use the transit system, which accounts for some of the public frustration over the service restructuring. There are no schedules posted on the stops. Passengers need to carry printed Ride Guides that are available in buses (in limited quantities) after each major schedule modification.

In tandem with the service restructuring, StarMetro launched an online trip planner and a text message service that returns the nearest bus departures after a user inputs the stop's number. However, these services have some limitations. First, low-income riders, who form a significant portion of the system's market, might be unable to afford internet access on either cell phones or in their households, rendering the information moot for these riders. Second, none of these new tools provides real-time information about bus schedules based on actual GPS locations. They include only the information about scheduled departures, thus providing no information about bus delays and rendering their usefulness questionable.

EVENTS SINCE THE JULY 11, 2011, RESTRUCTURING

Since July 11, 2011, StarMetro has made a series of adjustments to route alignments and schedules, many of which were noted earlier in the discussion of the new transit system. The interviews discussed later suggest that these changes were made due to a combination of internal agency observations about system operation and public comment about travel time and service convenience. The agency made a series of adjustments in August 2011, January 2012, and again in August 2012, although most of these changes involve minor adjustments to schedules and headways. There have been a few changes to routes, including the return of a number of routes into the central terminal. At least one of these route changes was made because of complaints from a local business about crowding at a bus stop in front of its premises. One year after restructuring, the system appears to be experiencing fewer operational difficulties and more recent service changes are much less substantial than the earlier ones. Nevertheless, the overall restructuring continues to be controversial among some segments of the community. Even so, the tone of criticism, as voiced through newspaper editorials and letters to the editor, appears to be less strident than at initial implementation. The authors discuss many of the reactions to the restructuring, both positive and negative, in a later section of this report.

Table 6. Changes in Headways from Nova2010 Proposal to Implementation[54]

	Headway (min.)					Difference Between Jan 2012 Schedule and …		
	Nova2010 Overview	Final Report to City Commission		Schedule Effective January 21, 2012		Nova2010 Overview	Final Report	
Route	Peak	Peak	Off-Peak	Peak	Off-Peak	Peak	Peak	Off-Peak
A	20	20	40	40	40	-20	-20	0
B	15	20	40	40	40	-25	-20	0
C	20	20	30	20	20	0	0	10
D	30	30	45	40	40	-10	-10	5
E	30	30	45	40	40	-10	-10	5
F	30	40	40	25	25	5	15	15
G	30	30	45	40	40	-10	-10	5
L	15	20	40	30	30	-15	-10	10
M	20	20	40	20	20	0	0	20
R	15	20	40	45	40	-30	-25	0
S	30	45	45	35	35	-5	10	10
T	20	30	30	35	35	-15	-5	-5

Note: Negative indicates reduced service frequency (longer headways).

V. EVALUATING THE EFFECTS OF A MAJOR SERVICE CHANGE

The restructuring of StarMetro's entire transit network on July 11, 2011, was both a radical and a controversial change. The transit network had been relatively unchanged for decades, and riders were accustomed to navigating it, even if their trips were often indirect and time-consuming because of its strong CBD-radial orientation. But the continued decentralization of population and employment had left the downtown-focused transit system limited in terms of the potential travelers it could reach. The radial structure also made it difficult for the transit agency to make service adjustments to individual pieces of the system, without changing the system as a whole. For a wide variety of reasons, many of which are investigated in greater detail in the section of this report that discusses the results of the interviews, local policymakers made the decision to move forward with restructuring. So, what were the results of this major change for the agency, its riders, and the community? And, how do important community stakeholders view the process leading up to the service restructuring and its results to date?

The authors address each of these questions in turn in the next three sections of this report. First, the authors consider the effects of the service restructuring on StarMetro. The authors examine the changes in ridership and service productivity before and after the service restructuring, and the authors examine the changes in the pattern of ridership on a geographic basis over this period. According to the interviews discussed later in this report, StarMetro officials hoped to improve transit agency performance through the restructuring, to maintain ridership levels or minimize ridership losses during the transitional period immediately following the change, to improve operations (including speeds, schedule reliability, and the like), and to provide a framework for future service improvement and expansion. So, how are they doing after the service restructuring occurred? And, what can other transit agencies and policymakers learn from their experiences?

Second, the authors consider the effects of the service restructuring on StarMetro's riders and the larger Tallahassee community. The authors examine these effects using three different methods. First, the authors compare the results of two different rider surveys: one conducted prior to the service restructuring and the other conducted about a year after the change. StarMetro officials hoped to make the transit system more attractive to choice riders by making travel more direct across the city. The authors use these surveys to determine whether the proportion of choice riders has changed in any meaningful way after the service restructuring. The surveys also provide a sense of whether transit is now serving different kinds of trips than it served prior to the restructuring, or whether the proportion of trips by trip purpose remains relatively unchanged. Many proponents of the service restructuring hoped better connections to shopping centers located in the outskirts would lead to increased use of the system for these kinds of non-work and non-school trips. Next, the authors use surveys administered specifically to a large graduate student residential community (Alumni Village) and to a public housing project (with large numbers of transit-dependent residents) to determine how these important ridership groups were affected by the service restructuring. The authors wondered whether one group might have benefited more than the other from the service restructuring, and the surveys allowed us to compare the similarities and differences in these individuals' perceptions

of the results of the restructuring for their communities. Finally, the authors modeled both the old and new transit systems using the regional transportation demand model to determine how transit travel times changed as a result of the service changes and whether any particular communities or socioeconomic groups disproportionately benefited or were disproportionately harmed as a result of the restructuring. The authors hoped to learn whether the changes improved or reduced rider accessibility and whether they were equitable or biased toward or against certain communities or socioeconomic groups.

Third, the authors present and discuss the results of a series of about 30 hour-long, in-person interviews with important local stakeholders, including elected officials, city and transit agency staff, representatives of community service organizations, neighborhood and community groups, and vocal, concerned citizens to get a better sense of how these important stakeholders viewed the public engagement process leading up to the service restructuring and the real-world effects of that restructuring. These interviews also provide a better sense of the process through which the original restructuring proposal evolved, the challenges associated with implementation, and the remaining areas of controversy as the community continues to move forward one year after the service restructuring. The authors close this report with a synthesis of key findings and policy recommendations for transit agencies, transportation policymakers, and other interested parties in communities that might be contemplating similar kinds of service changes. However, the authors must also add the caveat that this evaluation occurs very shortly after the restructuring occurred, so the long-term results of the service restructuring, especially on ridership and agency performance, are likely to change as the community becomes more familiar with the new system and as the agency continues to make periodic service adjustments.

VI. THE EFFECTS OF A MAJOR SERVICE CHANGE ON THE TRANSIT AGENCY

On July 11, 2011, StarMetro restructured its fixed-route bus network from a downtown-focused radial system to a decentralized, grid-like system. As noted earlier, prior to the change, routes originated at the central terminal, C.K. Steele Plaza, and they radiated from this central hub out into the community, circulating through a number of neighborhoods as they led to the outer ends of each line. This skeleton served as the framework for local transit from the immediate post-World War II period up until the day the system was restructured, even as development decentralized into outlying locations during intervening decades. In 2011, transit managers decided to restructure the network to a decentralized grid with several crosstown routes and multiple, scattered transfer points. They believed this new design would better align transit service to the increasingly decentralized and suburban pattern of local development. They hoped that this restructuring would increase transit's attractiveness to potential riders, which would result in increased ridership and improved service productivity.

This section of the report examines the results of StarMetro's network restructuring on transit ridership and productivity. The authors use a combination of system-level, route-level, and stop-level data to describe the transit system before and after this major service change and to thus determine whether the restructuring achieved the objectives laid out by its proponents.

In general, the authors find that system-level ridership has not increased in proportion to the increase in service deployed as part of the service restructuring, although new ridership has appeared in previously un-served suburban markets. Service productivity has thus declined on a system-level basis, although it is strong in some corridors. New riders have emerged in some of the newly served areas, but many of these new areas are served by routes with lower-than-average productivity. The analysis suggests that infrequent service, especially longer than originally-planned headways, has affected the restructuring plan's ability to achieve its stated ridership and productivity objectives. However, the authors must also emphasize that the new system has been in place only about a year, so the public might still be learning how to use the system. The next sections discuss the literature that framed the investigation, the analytic methods the authors employed, and the various results of the inquiry.

LITERATURE REVIEW ON NETWORK DESIGN

The StarMetro route restructuring represents a significant shift in the overall design of the transit network. The traditional approach to transit network design is to connect neighborhoods to downtown, using one-seat rides whenever possible. This radial design has its roots in an earlier era of urban development, when downtown was the focal point of a region and thus the primary destination for most trips.[55] Meyer, Kain, and Wohl,[56] Pushkarev and Zupan,[57] Hendrickson,[58] and Taylor,[59] among numerous others, have observed that downtown and downtown-like environments, such as transit-oriented developments, contain the concentrations of destinations necessary for transit to generate high levels of ridership and to serve these riders efficiently and effectively. This is the general

system design approach that StarMetro employed prior to July 11, 2011. Unfortunately, downtowns and similar urban environments represent a small share of urban development and a modest share of the destinations that even transit riders wish to reach. A growing mismatch between transit networks designed to serve earlier forms of urban development and metropolitan areas that are increasingly decentralized and suburban poses serious challenges to transit agencies and to the riders that transit agencies seek to serve.[60]

There has been interest recently in the transit literature and increasingly in transit practice in alternatives to the traditional radial service orientation, particularly in so-called multi-destination network structures. StarMetro implemented a multi-destination system design through its restructuring. The multi-destination design relies on transfers to make the connections possible in a cost-feasible manner, as opposed to the emphasis on one-seat rides that predominates in the radial model. Transit systems in Australia, Canada, Switzerland, and many U.S. cities have employed the multi-destination approach in a way that both increases ridership and improves or maintains service productivity.[61] The network itself is the key to making the multi-destination system work. Transit agencies must carefully plan their networks to integrate routes and modes and coordinate service at transfer points. Higher service frequencies are often required to make such systems work, which imposes significant costs on agencies. However, if higher service frequency results in higher ridership, higher load factors (passengers per unit of service), and lower costs per rider, then the added service results in a net benefit for the agency, even given higher costs.[62] For riders, higher frequencies and better connections between origins and destinations scattered throughout the region results in improved accessibility to the opportunities travelers wish to access.

There is a lack of rigorous scholarly research about the relevance of radial versus multi-destination network designs in smaller metropolitan areas with bus-only local transit services, such as Tallahassee. It is possible that the built environments of these areas might be so different from their larger peers that service strategies that work in larger metropolitan areas might not be as effective in smaller ones. Although the authors were unable to find any formal evaluations of the transition from radial to multi-destination networks in smaller metropolitan areas, the authors were able to identify several smaller metropolitan areas that had made major service changes along these lines and to examine the trends in their system-level productivity. These metropolitan areas include Fresno (California), Ithaca (New York), Madison (Wisconsin), Spokane (Washington), and Tucson (Arizona).

Among these cities, only Madison underwent a complex, single-day network restructuring similar to that which occurred in Tallahassee. The four other cities transformed their networks gradually, by adding new crosstown services, modifying the existing radial routes to include the important suburban trip attractors, or by creating satellite transfer points and improving travel opportunities to outlying areas. Table 7 shows that ridership and productivity have generally increased since the service changes in each of these metropolitan areas. These data suggest that a decentralized network design can be successful in small and mid-sized metropolitan areas if it is well planned and carefully operated.

Table 7. Transit Performance in Smaller MSAs Before and After Network Restructuring[63]

Year	Passenger Miles per Revenue Hour	Passenger Trips per Revenue Hour	Major System Changes
Fresno, California			
1990	126.23	41.55	No sudden changes, but decentralized routes were continuously added to the system since 1980s.
1995	131.89	38.93	
2000	143.29	42.06	
2005	92.60	33.56	
2010	105.27	44.89	
Ithaca, New York			
1990	no data	no data	1998: Consolidation of three separate transit systems (city, rural and college) improved suburban travelling opportunities.
1995	59.30	34.25	
2000	56.81	24.17	
2005	69.85	28.46	
2010	72.77	28.53	
Madison, Wisconsin			
1990	111.79	30.94	1998: A sudden, overnight shift: single downtown hub replaced with several suburban transfer locations, decentralized routes introduced.
1995	108.10	30.17	
2000	86.75	26.14	
2005	105.39	31.48	
2010	123.81	35.69	
Spokane, Washington			
1990	100.44	21.01	2005: Several major improvements introduced, including creation of new, crosstown services.
1995	91.26	20.19	
2000	98.29	23.85	
2005	92.80	20.81	
2010	105.35	25.85	
Tucson, Arizona			
1990	102.73	32.26	1987 and 1994: Suburban transfer centers introduced, decentralized routes created through the following period.
1995	118.43	32.76	
2000	122.88	33.77	
2005	108.28	29.98	
2010	128.33	34.33	

This study fills a gap in the scholarly and practitioner literature by analyzing network restructuring in Tallahassee to determine whether implementing the decentralized network resulted in higher ridership and improved transit productivity compared with the earlier centralized system. The authors also use the evaluation to determine which components of the decentralized service approach (frequent through-routes on arterial roads, crosstown routes, and decentralized transfer points) are performing well and which are not, in the hopes of deriving lessons that might improve transit performance in Tallahassee and offer practical lessons for transit agencies in other similarly situated metropolitan areas.

METHODOLOGY FOR ASSESSING EFFECTS OF RESTRUCTURING ON TRANSIT AGENCY

The authors hoped to answer several questions about the effects of restructuring on transit agency ridership and performance. First, how did the network restructuring affect system-level ridership and productivity? Second, how was the spatial pattern of ridership affected by the service restructuring? And, third, which parts of the new system are performing well and which parts require modification or improvement?

In this section, the authors investigate the network redesign primarily from the transit agency's perspective, determine how planning decisions have influenced the service change results, and seek to understand what else might be done to maximize positive outcomes. The following section of the report considers the effects on riders and the larger Tallahassee community.

The methodology involves analyzing key transit performance measures before and after the system redesign. The key transit variables include unlinked passenger trips (boardings), revenue miles, revenue hours, and operating expense. The authors obtained these data from StarMetro staff on a monthly basis for a time period running from August 1, 2010, to March 31, 2012. The authors truncated the time period of the study because StarMetro staff reported that an error in electronic farebox software meant that route-level ridership data from April 2012 onward are unreliable. All of the key variables are available for the system as a whole, while the ridership and service variables are also available on an individual route-level basis. The authors obtained stop-level boarding data for two representative time periods under each system design in order to observe any change in the spatial pattern of ridership. Finally, the authors focused specifically on changes to student ridership, given its importance to the agency, and the authors used fare collection data to examine changes in transfer activity and to estimate the number of unique riders before and after the service restructuring.

The authors distinguish two basic periods of the analysis: the pre-change period, between August 1, 2010, and July 10, 2011, and the post-change period between July 11, 2011, and March 31, 2012. March 2012 is the most recent month for which a complete set of data are available from StarMetro, as noted earlier. Calendar months serve as basic time units of the analysis. The authors focus on each of the months during the study's timeframe, but the authors pay closer attention to February and October as exemplary months. Because StarMetro is a system dominated by transit-dependent and university riders, its ridership fluctuates with the pattern of university holidays and breaks. The authors use February and October as two months that do not have any significant university breaks, holidays or examination periods that would affect the overall level of ridership.

By comparing the performance measures between analogous months in the pre- and post-change period, the authors identify the effects of the network structure on performance, both at the system level, and for specific routes and/or for different parts of the system. The authors also examine the trends for each measure. The trend analysis is particularly important for the analysis of the decentralized network in order to identify which new routes gained popularity as riders became more familiar with the new system over time.

The ridership measure is unlinked passenger trips (UPT), or boardings, which is the ridership measure employed by StarMetro. UPT data are the easiest data to obtain, although they suffer from the fact that they double count a passenger making a transfer as completing two (or more) trips. An alternate measure would be passenger miles, which takes into account the trip lengths, but these data were not available from StarMetro. The authors obtained some transfer statistics along with the fare collection data, although these figures include only the transfers made by single-ticket and one-day pass holders. The agency does not track transfer activity among weekly, monthly and university pass holders, which are responsible for approximately 61 percent of the total unlinked trips on the system. Each trip made by a pass holder is recorded by the farebox system as a new, unlinked trip.

The service measures are revenue hours and revenue miles. The authors use boardings per revenue hour as an easily understandable measure of productivity, although boardings per revenue mile could be an alternate measure. The authors compare the ridership and productivity measures for the old and new systems. The authors also examine the spatial pattern of boardings by stops to investigate changes in the types of origins and destinations that passengers are accessing between the old and new systems.

First, the authors focus on detailed boarding numbers for every single stop located within selected important transit corridors to assess the effects of redesign on specific neighborhoods, key trip attractors (e.g., commercial zones, schools, medical facilities) and the general performance of the trunk transit corridors in Tallahassee. Second, the authors rank the top 50 stops by boardings for the new system, and compare the number of boardings with those for the old system. The authors explore whether transfer activity has dispersed from the central hub to the new, remote transfer points, as intended by the agency before implementing the redesign.

OVERALL PERFORMANCE ASSESSMENT

Table 8 reports results at the system level. Detailed route-level tables may be found in Appendix B. Table 8 shows that the boarding numbers (UPT) slightly decreased between the old and new systems for analogous months. The authors have observed an increase only for December, although differences in the numbers of days that the universities were in session in December 2010 compared to December 2011 undoubtedly explain the differences in results. The largest difference (a 25 percent decline) is shown for August. At this point in 2011, patrons still were getting used to the new system; in addition, Florida State University began its classes a week later in 2011 than in 2010, which also suppressed ridership numbers.

Table 8. StarMetro System Level Performance (August 2010 - March 2012)[64]

Month	Passenger Boardings (UPT)	Revenue Hours	Revenue Miles	Operating Expense	UPT per Rev Mile	UPT per Rev Hour	Operating Expense per UPT
Radial System (until July 10, 2011)							
Aug 2010	270,478	10,836	134,826	$656,190	2.01	24.96	$2.43
Sep 2010	333,601	10,676	132,422	$645,448	2.52	31.25	$1.93
Oct 2010	318,943	10,676	132,422	$645,448	2.41	29.88	$2.02
Nov 2010	267,312	10,515	130,018	$634,706	2.06	25.42	$2.37
Dec 2010	203,275	10,836	134,826	$656,190	1.51	18.76	$3.23
Jan 2011	255,272	10,234	126,867	$618,558	2.01	24.94	$2.42
Feb 2011	275,476	9,953	123,715	$602,409	2.23	27.68	$2.19
Mar 2011	250,497	11,278	140,381	$683,081	1.78	22.21	$2.73
Apr 2011	293,454	10,676	132,422	$645,448	2.22	27.49	$2.20
May 2011	253,330	10,676	132,422	$645,448	1.91	23.73	$2.55
Jun 2011	240,766	10,836	134,826	$656,190	1.79	22.22	$2.73
Jul 2011	76,623	2,769	34,080	$166,751	2.25	27.67	$2.18
Decentralized System (since July 11, 2011)							
Jul 2011	122,515	9,512	122,520	$586,431	1.00	12.88	$4.79
Aug 2011	205,758	14,425	185,335	$888,142	1.11	14.26	$4.32
Sep 2011	277,925	13,844	178,010	$852,731	1.56	20.08	$3.07
Oct 2011	269,249	13,531	174,900	$835,741	1.54	19.90	$3.10
Nov 2011	239,986	13,844	178,010	$852,731	1.35	17.34	$3.55
Dec 2011	211,701	14,112	182,225	$871,152	1.16	15.00	$4.12
Jan 2012	243,596	13,844	178,010	$852,731	1.37	17.60	$3.50
Feb 2012	223,645	13,263	170,685	$817,320	1.31	16.86	$3.65
Mar 2012	227,368	14,112	182,225	$871,152	1.25	16.11	$3.83

Table 8 indicates that the amount of service, as measured by revenue hours, increased between 35 and 40 percent as a result of the restructuring. Because the additional service did not result in a commensurate ridership increase, the number of boardings per hour declined. The authors believe that the addition of new suburban sections, which are intended mainly to provide connections between routes at satellite transfer points, are at least partially responsible for the decline in system-level performance.

The addition service early in the morning and late in the evening, as well as on weekends, might also explain the low ridership and productivity numbers. For example, the decentralized system's Saturday network service levels are quite similar to the weekday service levels, despite much lower ridership. A consistent 30- to 40-minute service frequency is maintained to provide system functionality, even though some of the routes pass through areas that naturally attract substantially lower ridership on Saturdays than during weekdays, including college campuses and student communities, or large office parks. By contrast, in the radial system, almost all Saturday routes ran every 60 minutes, and several routes did not operate at all on weekends. The service area of the night and Sunday network was also smaller in the old system.

Along with the decentralization, several suburban sections were added to that network, including a route serving the West Tennessee Walmart and a route running between the Southside neighborhood and the Governor's Square Mall. Focusing only on the weekday, daily service would provide us additional insights into the effects of system change for this service; however, StarMetro's ridership data are not distinguishable for weekday versus weekend service on a route-level basis. The net effect of the deterioration in system-level service productivity is an increase in per-rider operating expense (last column in Table 8).

Table 9 reports route-level performance (boardings per unit of service) for October and February, which represent typical months when the system is fully utilized by riders. The results show substantial variation in performance for both the radial and decentralized systems; there are poorly performing routes (16 and 80 for radial, R and S for decentralized), and simultaneously, some routes show quite good performance (1, 13, 14, 23, 24 for radial, C and M for decentralized). The boardings per hour for the median route decreased, as several poor performing routes were added during the decentralization.

Table 9. StarMetro Route Performance for Typical Months[65]

	Boardings per Revenue Mile		Boardings per Revenue Hour		Boardings per Day	
Route	October 2010	February 2011	October 2010	February 2011	October 2010	February 2011
Radial System (until July 10, 2011)						
1	5.54	5.90	49.34	52.52	616.69	656.54
2	2.24	2.87	29.15	37.26	517.35	667.58
4	1.91	2.20	23.88	27.47	310.46	357.17
5	3.10	2.71	36.71	31.79	618.50	540.42
6	2.03	2.20	19.91	21.59	258.77	280.71
7	2.26	2.01	24.46	21.72	288.65	256.25
8	1.53	1.78	14.91	17.34	178.88	208.04
11	2.06	2.44	21.92	26.04	263.05	312.45
12	1.25	1.09	13.35	11.70	160.24	140.40
13	3.63	2.71	37.97	28.33	1,029.77	778.21
14	4.48	2.36	46.49	24.49	1,334.15	702.83
15	1.92	1.94	26.55	26.82	318.58	321.83
16	1.00	0.91	14.71	13.41	191.19	174.30
17	2.17	2.22	34.23	35.05	500.96	517.04
18	1.56	1.29	23.21	19.26	288.35	240.71
19	2.51	2.06	31.31	25.75	389.00	321.92
20	1.98	1.58	22.30	17.77	268.77	214.71
21	1.80	1.48	30.33	24.95	379.77	314.00
22	3.18	3.12	35.89	35.23	481.81	475.58
23	4.76	5.02	45.35	47.86	1,038.77	1,112.79
24	1.98	1.84	45.91	43.19	1,055.92	1,007.75
25	6.11	6.79	29.96	33.29	689.08	765.75
26	1.86	1.88	18.07	18.21	234.92	236.71
53	2.61	2.63	30.55	30.81	397.12	400.58

Route	Boardings per Revenue Mile		Boardings per Revenue Hour		Boardings per Day	
	October 2010	February 2011	October 2010	February 2011	October 2010	February 2011
54	1.65	1.59	19.30	18.64	250.90	242.30
80	0.65	0.64	11.23	11.02	460.33	451.80
Median	*2.04*	*2.13*	*27.85*	*25.90*	*384.38*	*339.54*
Decentralized System (since July 11, 2011)						
A	1.39	1.34	19.34	18.36	901.58	872.52
B	1.80	1.48	20.85	17.15	1,004.19	836.80
C	3.97	2.76	38.90	27.12	2,022.86	1,410.10
D	1.18	1.16	16.00	5.61	741.38	738.24
E	1.38	1.25	17.40	15.69	837.81	765.72
F	2.08	1.67	24.33	19.42	1,712.38	1,130.36
G	0.96	0.80	11.54	9.59	413.81	348.80
L	0.73	0.79	11.62	12.58	415.15	456.28
M	3.04	2.37	31.97	24.81	1,817.88	1,444.60
R	0.41	0.48	6.97	8.25	224.42	268.96
S	0.65	0.60	9.32	8.61	335.50	314.24
T	1.19	1.05	18.11	16.12	647.08	584.80
Median	*1.29*	*1.20*	*17.75*	*15.91*	*789.60*	*751.98*

TRANSIT PERFORMANCE IN SELECT CORRIDORS

The authors paid particular attention to the performance of routes serving important transportation corridors and other selected neighborhoods. The authors included three arterial corridors clustering much of the city's commercial activity: North Monroe, South Monroe, and West Tennessee. The authors also analyzed the effects of the restructuring in the predominantly African American communities located northwest and southwest of the CBD: Frenchtown and the Bond neighborhood near FAMU. Finally, the authors focused on the southeastern part of Tallahassee, to analyze the performance of new crosstown routes in a low-density environment.

The authors used stop-level total monthly boarding numbers to examine these corridors. The bus network in many of the areas has been completely restructured; therefore, comparing the route-level performance is often insufficient to evaluate the actual effects of the restructuring. Even if an old radial and a new decentralized route share some common parts, they usually split and continue in a completely different direction.

The authors created four pairs of maps, presenting detailed stop-level boarding figures for the analyzed areas. The boarding numbers are given for February 2011 (radial system) and February 2012 (decentralized system) and they represent total monthly boardings for the weekday and Saturday schedules. Some simplifications were made to make the maps more clear: stops located close to each other were combined and presented as a single stop for reporting boarding activity. The same simplification applies to stops located next

to an important intersection. The reader should also note that the maps include only the stops relevant for the discussion of the particular transportation corridor.

North Monroe Corridor

The North Monroe corridor includes significant commercial activity, especially on its section between the CBD and Interstate 10. The surrounding areas include some neighborhoods with high rates of transit ridership, such as Astoria Park, Macon Community and the eastern part of Frenchtown, located between Monroe Street and Martin Luther King Street. The Macon Community and Frenchtown neighborhoods are the locations for two, large low-income housing complexes (Pinewood Place and Springfield) operated by Orange Avenue United Tenants Association (OAUTA). The authors discuss the effects of the service restructuring on their residents later in this report.

In the old system (shown in Figure 24), route 1 served the portion of North Monroe Street between the CBD and Interstate 10. The route continued westbound towards the Astoria Park community and terminated at the High and Tharpe intersection, where transfers were possible to routes 23 and 24 (labeled “Other” in the figure). Route 6 passed through a short section of Monroe Street by the Tallahassee Mall, on its way from the CBD to Macon Community (via eastern portions of Frenchtown). Macon Community was also served by route 19, which ran together with route 6 from Macon to the Tallahassee Mall, although beyond this point it diverted east to serve the neighborhoods along Meridian and Bradford Roads, finally reaching downtown through Thomasville Road. Route 8 reinforced route 1 on Monroe Street between the CBD and the mall, although it made a short diversion on the middle section of Monroe, serving the adjacent neighborhoods.

Route 1 had the highest loads in the entire radial system, which was a consequence of both serving the commercial destinations on North Monroe and the Astoria Park area, a neighborhood with a large share of transit-dependent and student population. High boarding numbers along the two important trip attractors on Monroe (mall, supermarkets) and in the Astoria Park area can be observed. Connections with routes 23 and 24 at Tharpe Street facilitated crosstown travel between the northern and western parts of the city, which was a rare circumstance in the radial system. High boarding numbers for route 1 observed at that stop confirm that passengers utilized that crosstown travel opportunity.

In the decentralized system (shown in Figure 25), route B was introduced as the primary service on Monroe Street. Performance indicators on route B are substantially lower when compared with the old route 1, but these routes are not directly comparable. Unlike route 1, it does not enter the Astoria Park neighborhood. Instead, it continues north towards the Huntington Oaks terminus, where it connects with route F. That section, located north of Interstate 10, is a completely new portion of the transit system and it is interesting to evaluate how it performs. The Walmart and the businesses located next to the Interstate 10 interchange generate moderate ridership. Many boardings are made at the end of the line, which is not only a transfer point, but also a location of a local shopping center. The remaining stops on the new section have very low boarding activity, so the buses run through a long section of the route with no additional patrons.

The part of North Monroe closer to the CBD (south of Interstate 10) generated large numbers of transit trips both before and after the decentralization. The authors clearly see high numbers of boardings on stops located next to larger retail centers (for both systems) and at the transfer points (in the decentralized system). The boarding figures for route B are slightly lower than for the old routes 1 and 8 on that section, except for the new transfer points, where more boardings are being made in the new system. However, two other routes present in that area, E and G, are also attracting many riders. These riders probably used routes 1 or 8 before the restructuring, as they provided fastest connections with the central hub (and subsequently, any other part of the city); now, they can reach the remote suburbs directly with the crosstown services, including E, G, and S. Boarding numbers for these crosstown routes in the discussed area are relatively high. Combined, the total patronage generated in the Monroe corridor is comparable to that of the old system, although the spatial distribution of the important boarding locations has slightly changed.

The two communities adjacent to North Monroe, Astoria Park, and Macon Community (including the Pinewood Place housing complex), lost their radial routes with the restructuring; instead, they are served by two crosstown routes, G and S respectively. In January 2012, route M was extended to Astoria Park, thus substantially improving its accessibility. Still, the boarding numbers in both communities are lower than before the decentralization.

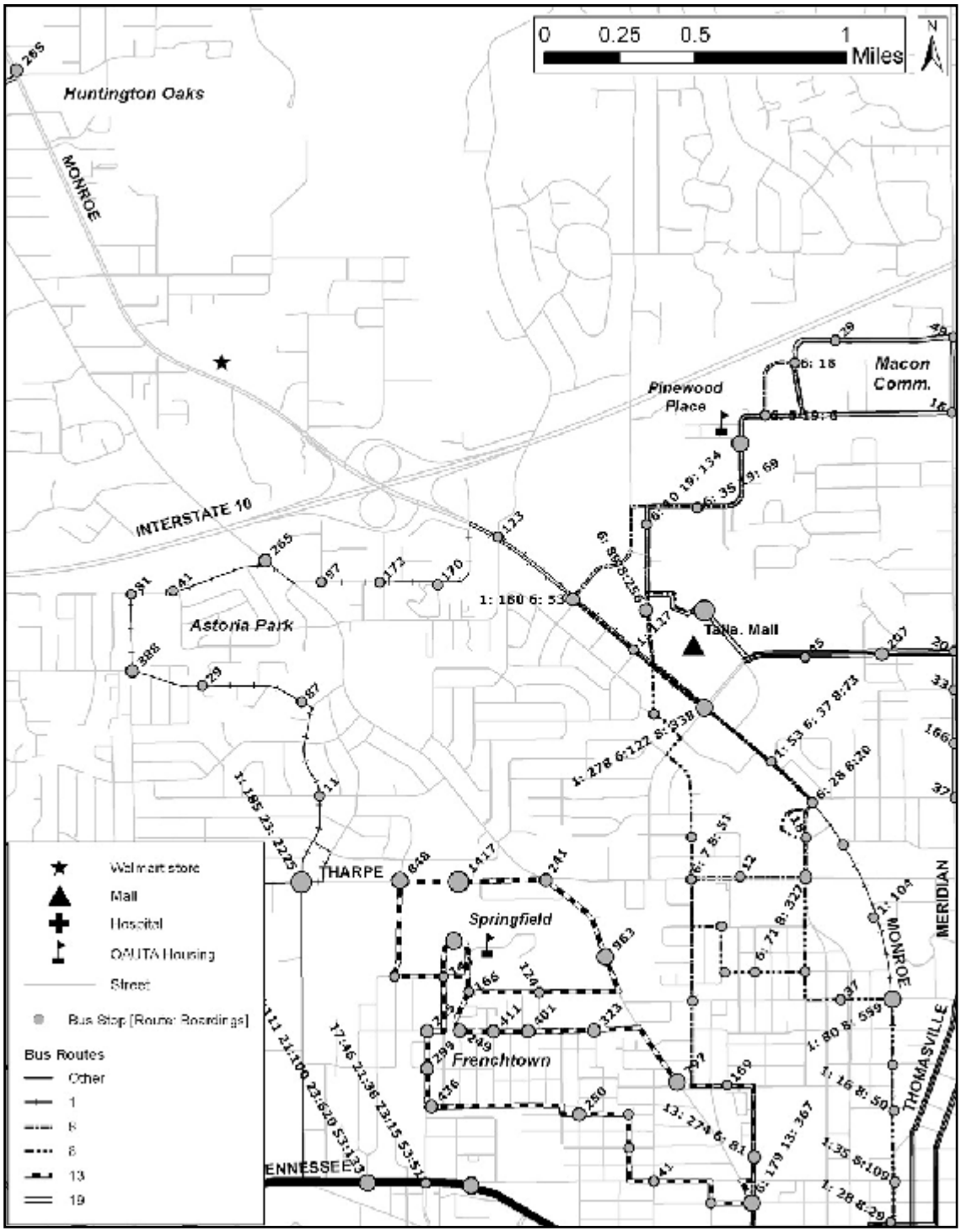

Figure 23. North Monroe Corridor and Frenchtown Area, Radial System[66]

Note: Shown are monthly boardings for February 2011. Circle size is proportional to number of boardings at that stop, with circle size set using natural breaks method.

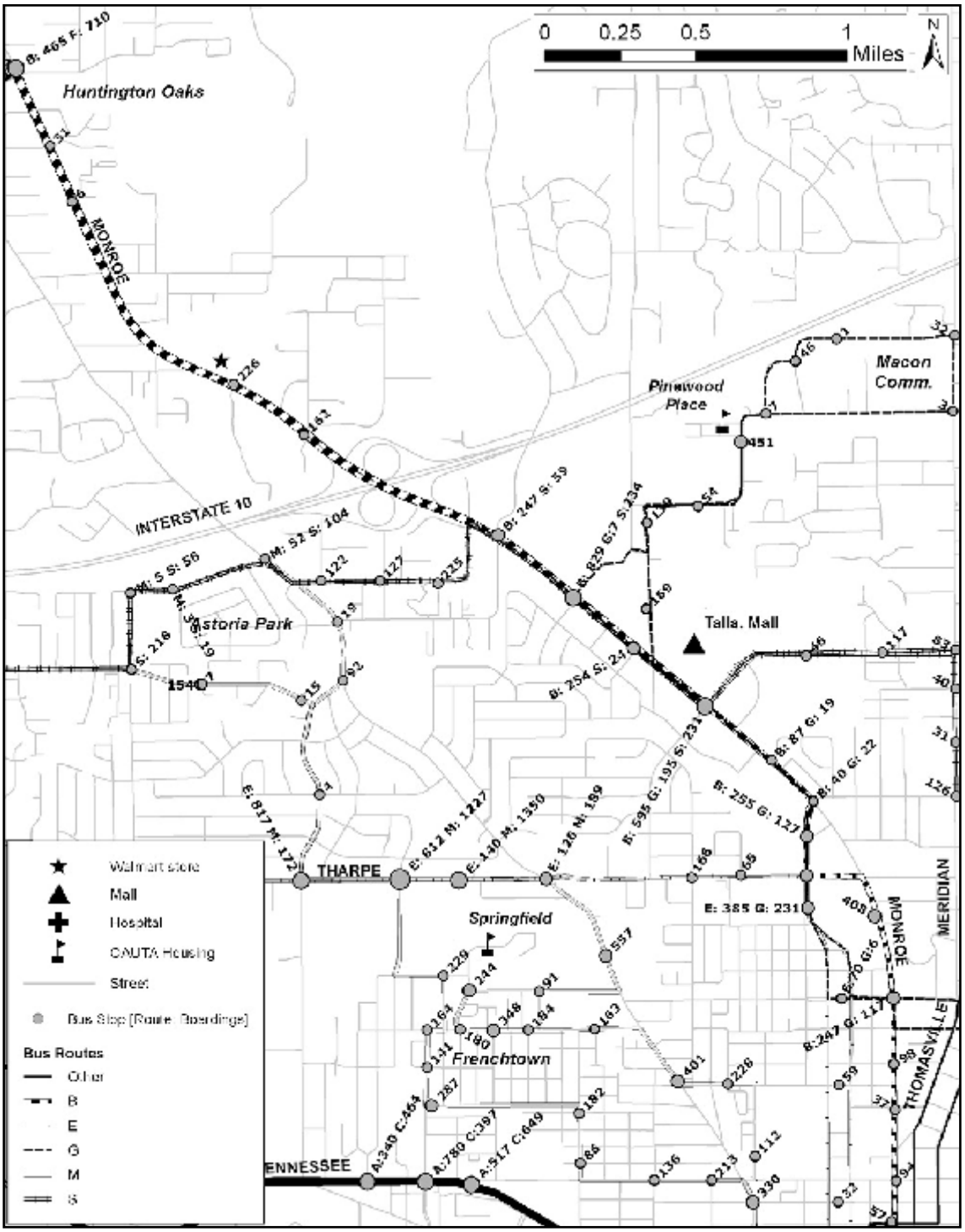

Figure 24. North Monroe Corridor and Frenchtown Area, Decentralized System[67]

Note: Shown are monthly boardings for February 2012. Circle size is proportional to number of boardings at that stop, with sizes set using natural breaks method.

South Monroe Corridor

South Monroe Street, together with the parallel Adams Street, forms the main commercial corridor in the southern part of the city (refer to Figures 26 and 27). Several low-income communities are located along that corridor, including the South City and Oak Ridge neighborhoods, and the Orange Avenue housing complex, which is discussed from the perspective of decentralization's effects on riders later in this report. The FAMU campus is located west of Adams Street, and the corridor also includes some student housing.

After the service restructuring, route B became the trunk service route along the corridor, replacing routes 2 and 7. Route B makes fewer local deviations than its two predecessors. Route-level loads are smaller for route B when compared to older routes 2 and 7, but the authors observe a similar situation as in the case of the North Monroe corridor: new services (G, L), carrying patrons directly to the remaining suburban parts of the city, have retained some of the ridership from the radial services. Reviewing the details of the stop-level boardings, the authors do not observe significant changes and these numbers are comparable; lower productivity on route B is caused by higher service volume, as opposed to ridership loss.

Route 5, which served the Adams Street and the Springsax community, located southwest of the South Monroe corridor, was eliminated as a result of restructuring. Its last portion, including a loop around Springsax Park was replaced with route G, a crosstown route which does not enter the CBD, but continues on Magnolia Road toward the areas located east of the inner city. Boarding numbers on the Springsax loop dropped slightly, especially in its northwestern part, however, that part is located within a reasonable walking distance from the newly introduced crosstown route L. Route G also covers some portions formerly served by route 7 (around the South City community). The boarding figures are almost identical for both systems, despite replacing the CBD-bound service with a crosstown route.

The intersections of South Monroe with Orange and Paul Russell Roads have begun to serve as important transfer hubs, and the boarding statistics substantially outpace those observed before the restructuring. In the old system, these stops were served only by radial routes (2, 5, 7) heading directly to the CBD. In the decentralized systems two new connection opportunities were created: route M, which runs toward the FAMU campus and the western part of the central city, and route L, a new crosstown service, running along Orange Avenue, perpendicular to the Monroe corridor. Commercial centers anchored by Harvey's and Winn-Dixie supermarkets and nearby student communities additionally boost the boarding numbers at these intersections.

The southernmost area of this corridor, the Oak Ridge community, seems to have benefited from the decentralization. The service pattern in that area has not changed substantially: it is served by a single route, running in the central city direction (route 2 in the radial system; after the decentralization route M prior to January 2012, route B afterwards). Boardings at the key stops increased by 20 to 40 percent, except for the end-of-the-line located at Crawfordville and Capital Circle intersection.

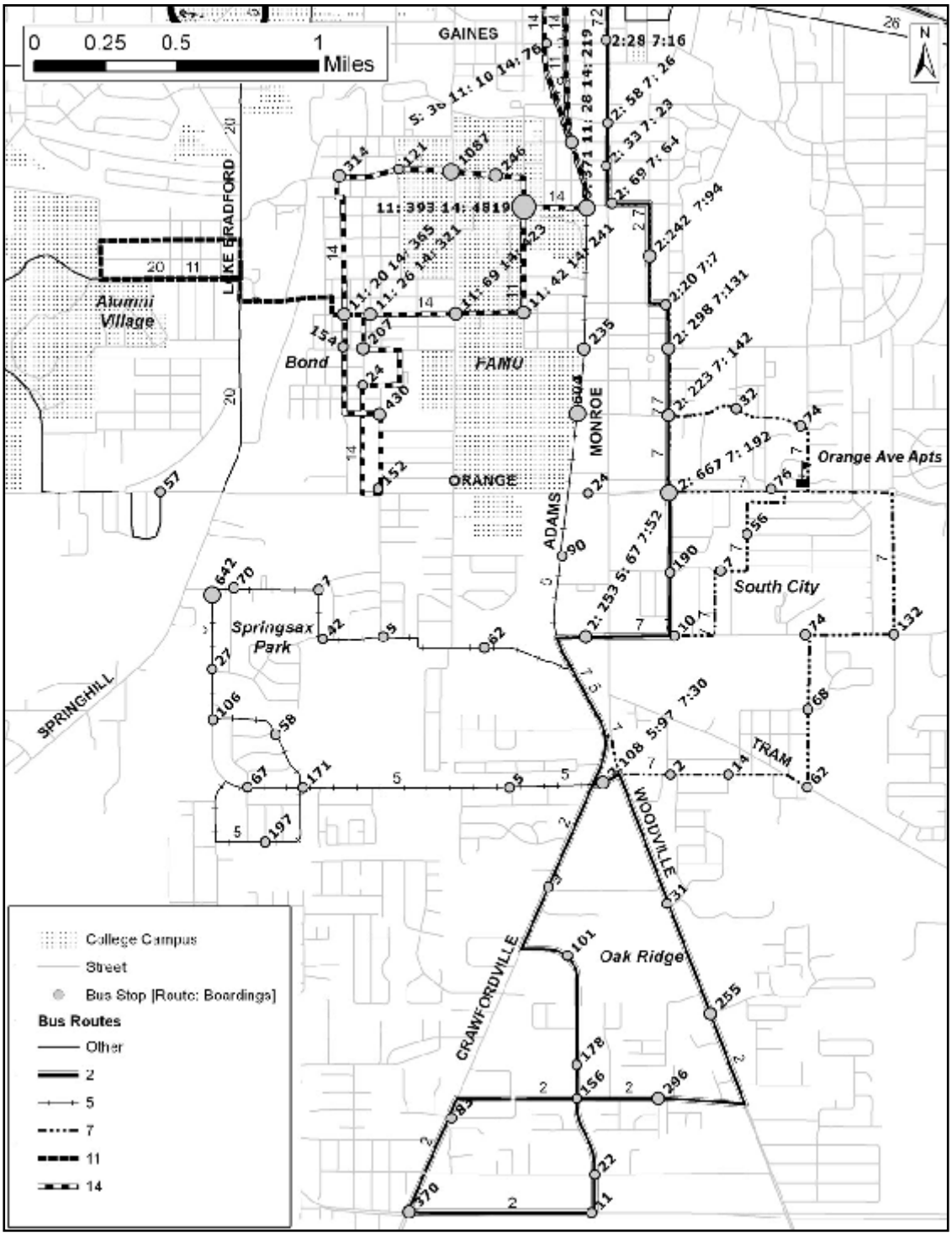

Figure 25. South Monroe Corridor and Bond Neighborhood, Radial System[68]

Note: Shown are monthly boardings for February 2011. Circle size is proportional to number of boardings at that stop, with sizes set using natural breaks method.

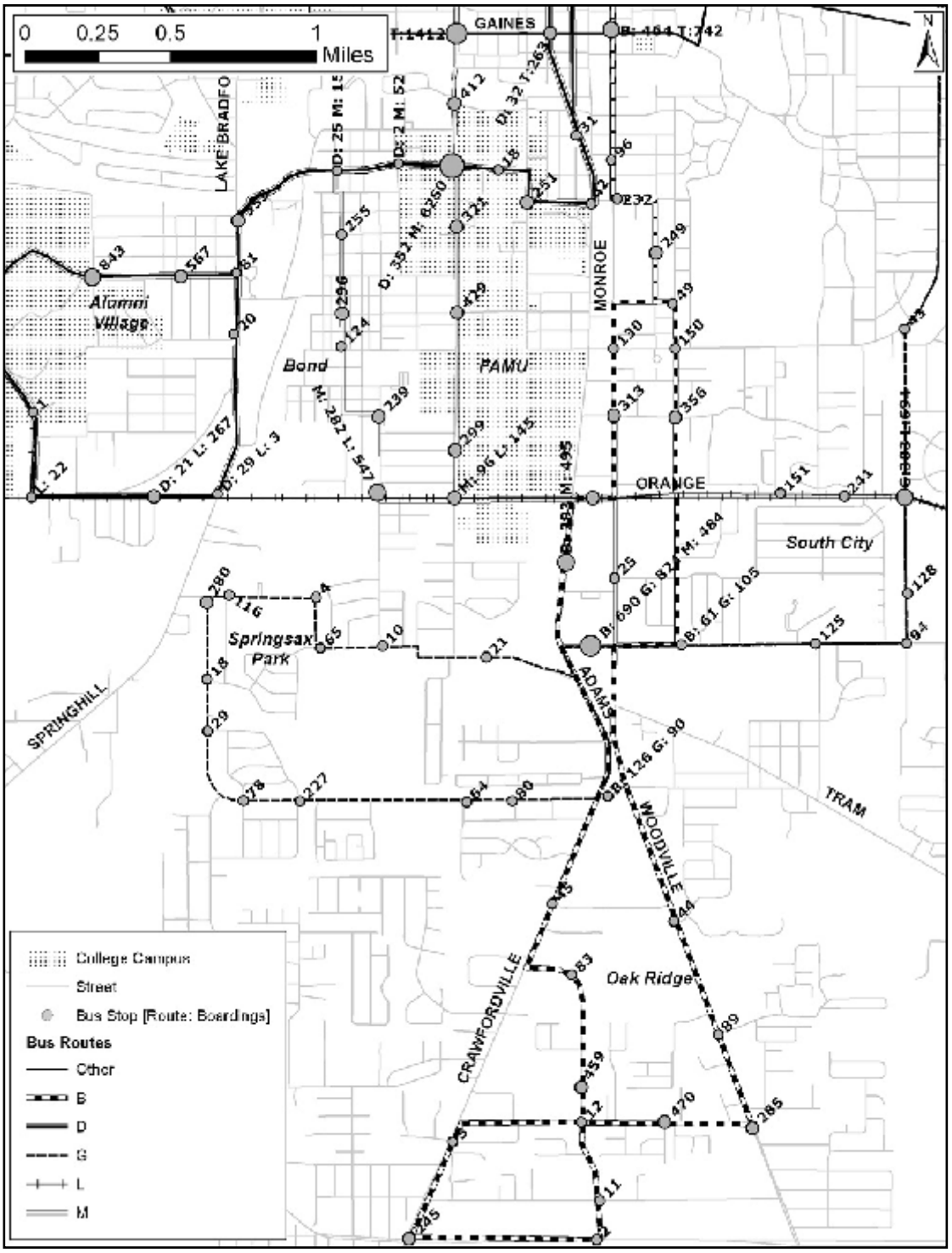

Figure 26. South Monroe Corridor and Bond Neighborhood, Decentralized System[69]

Note: Shown are monthly boardings for February 2012. Circle size is proportional to number of boardings at that stop, with sizes set using natural breaks method.

Frenchtown and Bond Neighborhood

The two predominantly African American communities located in the inner city, Frenchtown and Bond neighborhood (refer to Figures 24 and 25), generate a significant portion of the total system ridership, due to large number of transit-dependent population, and the presence of the FAMU campus adjacent Bond neighborhood. In the radial system, these communities were connected to one another by routes 13 and 14, which actually formed a single route: buses changed the destination signs when passing the transfer hub, and due to high frequency (20 minutes), they did not wait for delayed buses coming from other routes. Routes 13 and 14 were replaced by route M (also running every 20 minutes), which does not call at the central hub, but connects the two communities using the shortest possible route via Macomb and Railroad Streets. It connects with other routes on Macomb and Tennessee intersection (connections with A and C) and on Macomb and Gaines (transfer to route T). As discussed later in this section, very high boarding numbers are being observed at both of these transfer points, which means that they have successfully replaced the functions of the central hub for the Frenchtown and Bond patrons.

Boarding numbers in the Frenchtown area have declined in most cases (Figures 24 and 25). The exceptions are the stops on Tharpe Street, where the total boarding numbers have increased, with a significant portion of the boardings being made on route E buses. The authors suspect that some of the Frenchtown residents walk to Tharpe Street and avail themselves of the opportunities of the new crosstown service provided by route E along Tharpe Street.

A similar situation might apply to stops in the western parts of Frenchtown, which are located within a reasonable walking distance from Tennessee Street. The stop located at the Tennessee and Basin Street intersection (the closest Tennessee Street stop location for west Frenchtown residents) attracts substantially more riders in the new system, while the boarding numbers at the adjacent stops remain at the same level.

The Bond neighborhood, west of the FAMU campus (refer to Figures 26 and 27), formerly was served by route 14, as the primary route, and additionally by route 11. The latter route has been replaced with route D. Similar to the Frenchtown area, the boarding numbers at particular stops generally dropped in the Bond neighborhood both for D and M routes, despite there being no significant change in the transit service pattern. The exception applies to two connecting points with route L, located in the southern part of the community. It seems that Bond neighborhood residents began to utilize route L, which provides direct rides to nearby shopping center, and to the Apalachee Parkway commercial strip. FAMU students are responsible for much of the ridership: both on the former routes 11 and 13/14 or the new route M (refer to Tables 11 and 12, later in this report). In both systems students comprise approximately 60 percent of the ridership on each of these routes. The spatial boarding patterns on FAMU campus have slightly changed, but the numbers are comparable to the older system. Before the change, FAMU students utilized primarily routes 11 and 14 for their off-campus trips, some walked to Adams Street (east of campus) and boarded route 5. Currently, route M attracts the vast majority of FAMU ridership. Additional discussion on FAMU student travel behavior is included in the section evaluating the influence of the restructuring on student ridership.

West Tennessee Corridor

West Tennessee Street, which runs west from the CBD, (refer to Figures 28 and 29) serves is another important commercial corridor. It is also the main arterial running through the areas inhabited predominantly by college students, and it passes through or near the FSU and TCC campuses. Both the pre-restructuring and new systems feature high patronage along Tennessee Street.

In the old system, route 21 served the entire West Tennessee corridor, terminating in the western suburbs. The area between the CBD and the TCC campus was served also by two pairs of loop routes: 23/24 and 53/54 (in each pair the odd-numbered route ran clockwise, and the even-numbered route ran counter-clockwise). Both of these route pairs made some diversions from Tennessee Street, covering additionally the student communities on High and Ocala (23/24) and the low-income communities along Mission and Blountstown (53/54). One more route (17) served Tennessee between the CBD and Ocala Road, and then continued toward the northwestern suburbs. Combined, the volume of service on the central portion of West Tennessee was relatively high, although different routes were departing exactly at the same time, as they had to arrive at the central hub at the time designated for transfers.

In the decentralized system (Figure 29), routes A and C began to serve West Tennessee Street. Route A serves the entire corridor, although since January 2012 it makes a short deviation to serve Mission Road. Route C terminates at TCC. Both routes continue eastbound after reaching the CBD: route A toward the Mahan Drive Walmart at Fallschase in the eastern suburbs, and route C towards Governor's Square Mall. Running eastbound, the schedules are synchronized: route A runs in the middle of every other schedule interval between two route C departures. This provides a frequent 10- or 20-minute service on the central portion of the corridor. In the westbound direction, such patterns do not exist, and route A buses run two minutes before every other C bus. Still, the 20-minute headway is an improvement when compared with the 30-minute frequency of the old system.

Route-level performance on route C slightly dropped when compared with routes 23/24, but it is higher than the remaining radial routes. Route A has relatively low performance indicators, which is a consequence of serving low-density suburbs on both of its ends. Focusing on boarding numbers for particular stops, a slight decrease in boardings at the stops adjacent to the FSU campus can be seen. This is probably caused by the removal of direct service to some of the student communities, including High, Ocala and Tharpe Streets. The authors focus in detail on that issue in the section discussing the redesign effects on student ridership. Simultaneously, the areas of high commercial activity generate more ridership, including both the strip between FSU campus and Ocala Rd, and especially the Walmart Supercenter, where the boarding figure increased from 664 to 2,264. Some additional ridership could have been brought from the Frenchtown area, as discussed in the previous section.

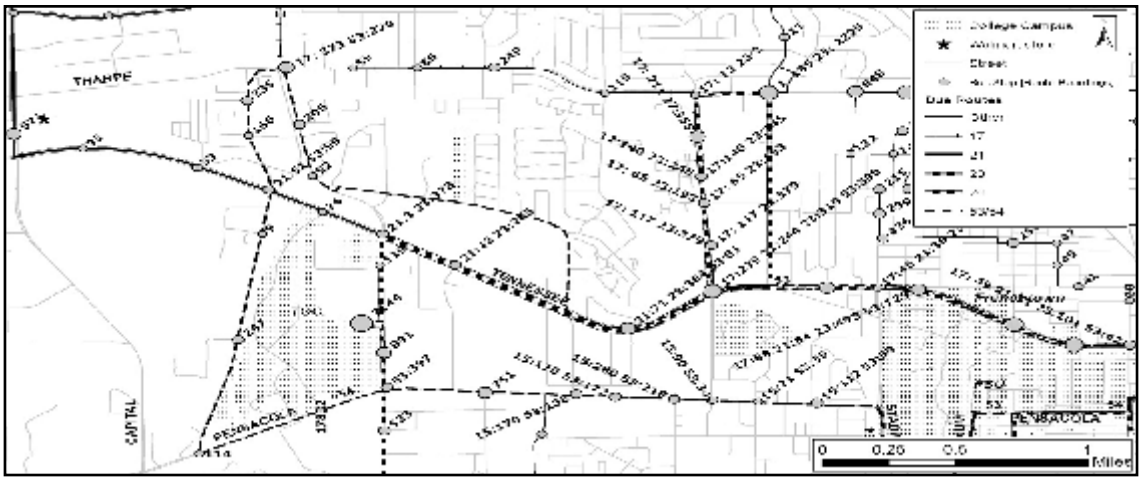

Figure 27. West Tennessee Corridor, Radial System[70]

Note: Shown are monthly boardings for February 2011. Circle size is proportional to number of boardings at that stop, with sizes set using natural breaks method.

The Tallahassee Community College (TCC) campus area benefited from the service restructuring. The existing connections running towards the CBD through Tennessee and Pensacola streets were preserved, and several new crosstown routes were added. An increase in boarding numbers along most of the stops in the area can be seen, although some of it resulted from additional transfer activity on key intersections. Additional information regarding the effects of restructuring on TCC students is included in the section discussing student ridership.

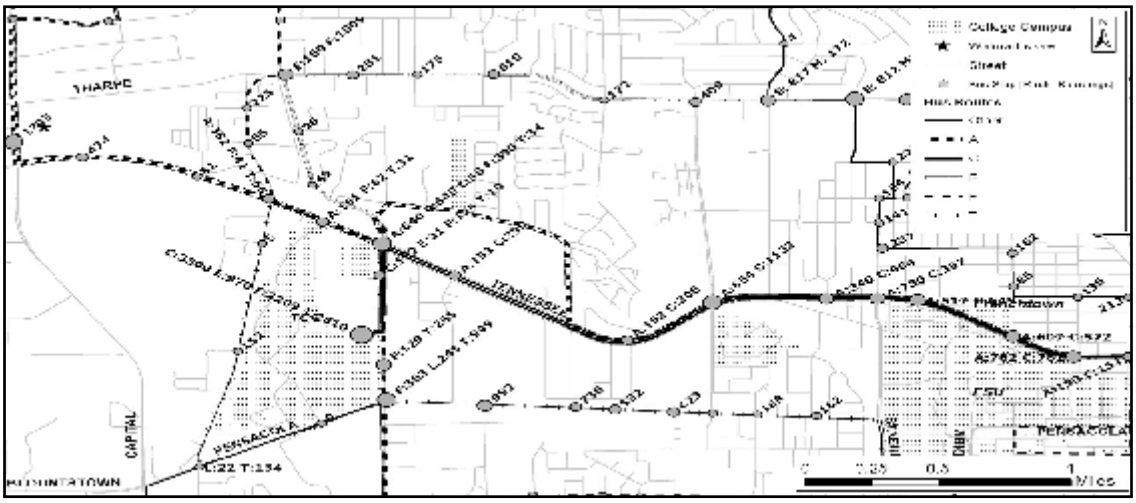

Figure 28. West Tennessee Corridor, Decentralized System[71]

Note: Boarding numbers for the new section of route A on Mission Road, added in January 2012, were unavailable from the agency. Average numbers for the old version of route A, running directly on Tennessee Street, are presented. Shown monthly boardings for February 2012. Circle size is proportional to number of boardings at each stop, with sizes set using natural breaks method.

The two figures also include two arterials parallel to West Tennessee: Tharpe Street and Pensacola Street. Tharpe Street lost its direct connection to FSU (route 17), but the opportunities of reaching the TCC campus have been substantially improved with the

introduction of routes E and F. Route E simultaneously provides one-seat rides to large shopping centers (Publix at Monroe and Tharpe, and the Apalachee Parkway Walmart). All this resulted in significant increase in boarding numbers along Tharpe St. Similar situation is being observed on Pensacola Street. Despite removing direct service running through the central part of the FSU campus (instead, the new route T runs toward the southern part of the CBD), boarding figures rose at most of the stops.

Southeastern and Eastern Tallahassee

The southeastern and eastern parts of the city, located along Orange Avenue and Capital Circle, experienced substantial changes in transit service after the redesign. The set of radial routes (4, 12, 18, 22, 25, 26, 80) was replaced primarily with new crosstown connections. Only two of the new routes (A and E) replicate the old radial connections, heading directly towards the central transfer hub. Route T runs through the southern part of the CBD. Three remaining routes present in the discussed area – L, R, and S – are purely suburban, crosstown services. Table 9 notes that these routes have the lowest performance indicators in the entire decentralized system, although they simultaneously serve as important connector routes, what is indicated by high boarding levels at transfer points.

Moderate ridership was observed in the discussed area for the radial system (Figure 30). Several important trip attractors include: Koger Office Center (routes 25, 26, 80), Walmart Supercenter on Apalachee (route 22) and Mahan (route 12), the Capital Regional Medical Center (CRMC) (routes 4, 18) and the Southwood mixed-zoned area (route 80). A few stops located near apartment communities generated high patronage, while boarding numbers on the remaining stops were low as was typical for most outlying areas.

The numbers of boardings at particular stops for the decentralized network are unchanged or higher compared with the radial system; the only exception is the CRMC hospital area, as discussed in the following paragraphs (Figure 31). This occurred despite the fact that radial, CBD-bounded routes were replaced with crosstown suburban services in many cases, suggesting that relatively few riders from these areas were destined to central Tallahassee. The authors shortly discuss the performance of the decentralized routes on specific corridors and in some selected areas.

Route L, mentioned earlier in the discussions of the South Monroe Corridor and Bond neighborhood, runs along the southern part of Tallahassee. It includes several transfer points, providing connections with most of the remaining routes. It passes through some low-income communities and large shopping centers, including Walmart. However, it also runs through some longer sections with very low boarding activity, caused by low density and/or the lack of a significant transit rider market. Combined with a relatively high frequency (30 minutes) it results in quite low performance results; however, it can be clearly seen that the boarding figures for most of the stops are high and exceed 100-200 boardings per month, including stops which were not served by the radial system. On Apalachee Parkway, route L performs substantially better than the old radial routes 26 and 80. The area adjacent to the eastern end of the line, located at a Walmart Supercenter, generates substantially higher boarding numbers than before the decentralization. This

applies also to route E, which shares the Walmart terminus with route L. Ridership on route E actually has also increased, when compared to the old route 22. This applies not only to the Walmart stop, but also the remaining stops in the surrounding area. Riders in that area enjoy not only improved accessibility to various destinations across the city, but also a substantially higher frequency (along with the redesign, one 60-minute route has been replaced with two 30-minute routes).

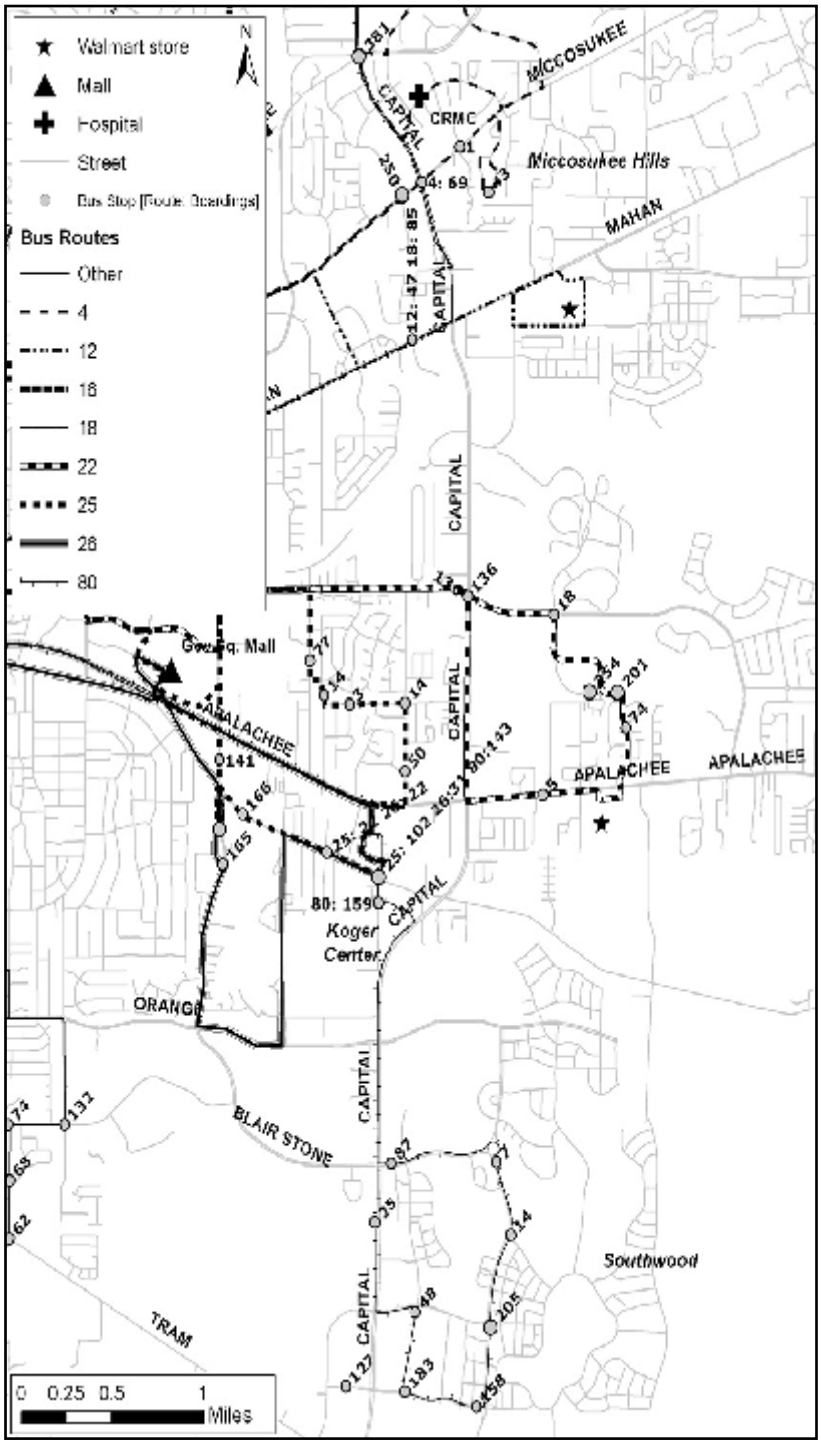

Figure 29. Eastern and Southeastern Tallahassee, Radial System[72]

Note: Shown are monthly boardings for February 2011. Circle size is proportional to number of boardings at each station, with sizes set using natural breaks method.

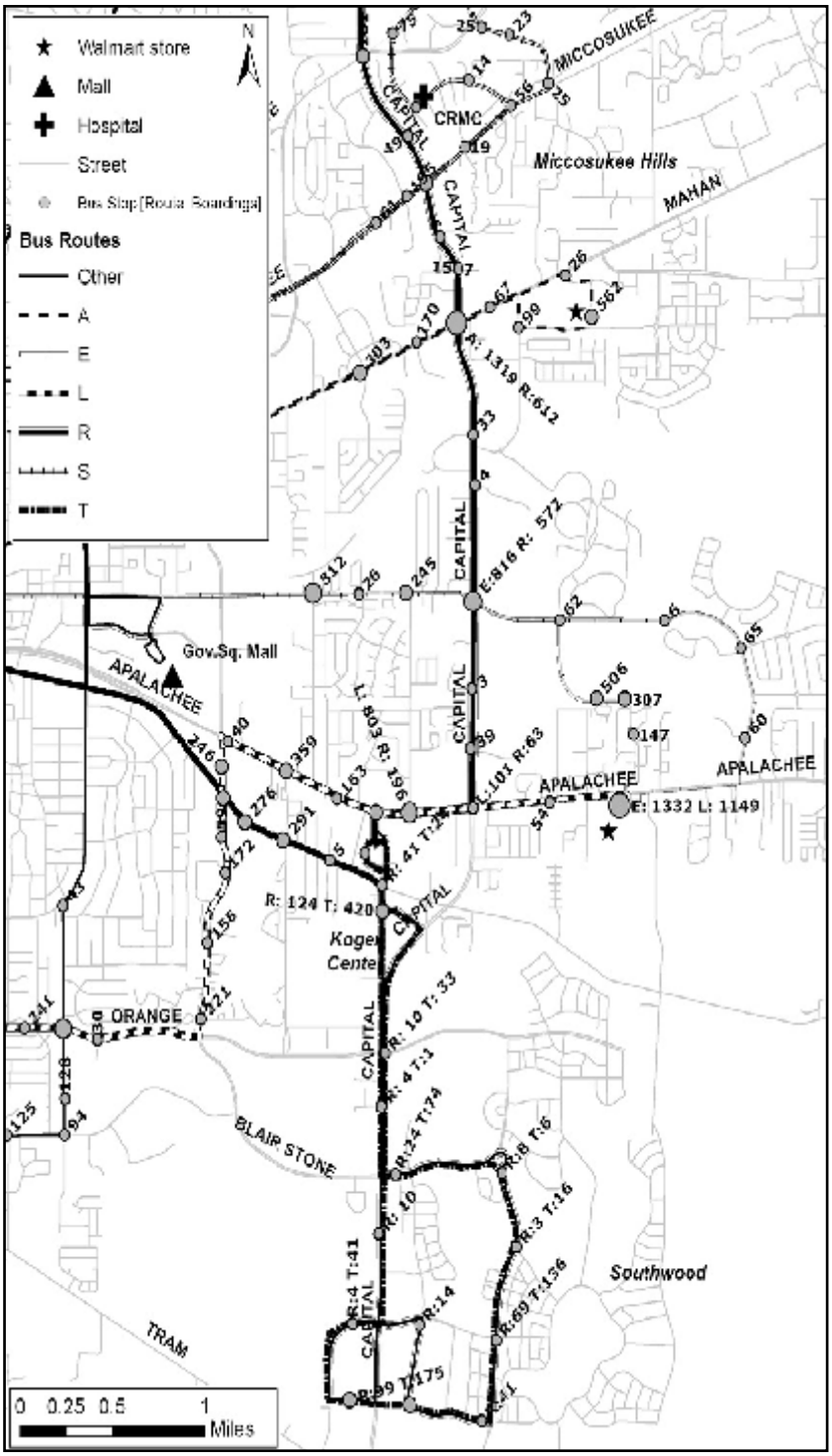

Figure 30. Eastern and Southeastern Tallahassee, Decentralized System[73]

Note: Shown are monthly boardings for February 2012. Circle size is proportional to number of boardings each station, with sizes set using natural breaks method.

Route R, running on the eastern part of Capital Circle is a completely new addition to the transit network. It was designed to connect the business locations all along Capital Circle, and to provide easy transfers to and from the perpendicular routes crossing the city's beltway. High boarding figures are observed at the transfer points, and at some of the important trips attractors (CRMC hospital and Koger Office Center). Route R has

the highest proportion of passengers who transfer from another route, compared to the total single-ticket ridership (Table 12, shown later). However, many of the stops along Capital Circle are very poorly utilized, including most of the stops on the completely new sections. The authors are not surprised by these results, considering that these stops are located along large portions of undeveloped land. Passing long sections without any boardings contributes to the low overall route-level performance, but the transfer activity at key intersections indicates that the authors should still treat route R as an important element of the decentralized system, as it connects with several other routes and allows the patrons to move along the eastern part of the city without entering the CBD.

The authors now focus, in particular, on two specific areas within this corridor, starting with the vicinity of the CRMC hospital, which clusters a number of medical facilities and senior communities. That area lost the former radial service (routes 4 and 18), now replaced by two crosstown routes, R and S. Particular stop boarding levels are generally lower in the decentralized system, even though routes R and S, combined with other routes that they meet at transfer points, provide crosstown trip opportunities to almost all parts of the city.

Considering that the advocates of the disabled population formed a strong opposition against the new decentralized system, claiming that the single central transfer hub is more convenient for that specific type of patron (as the authors discuss in the interviews section of this report), the authors suspect that patrons originating from the CRMC area find the new system too complicated. Some may have shifted to alternative transportation, including para-transit or hospital shuttles.

Southwood, the New Urbanism-style community, is also an interesting case to discuss. In the old system it was served by the express route 80X, providing a fast, direct connection to the CBD, but making other adjacent parts of the city poorly accessible. In the new system, route 80X has been replaced by route T, which runs towards the southern portion of the CBD, although the travel time is slightly longer and transferring opportunities are limited, as T does not call at the central transfer hub. Southwood is also being served by route R. The total boarding numbers at particular stops are comparable or even slightly higher in some cases, and about one-third of these boardings are made on R buses. This suggests that at least some of the riders are availing themselves of the new opportunities of travelling through the eastern suburbs.

Summarizing, focusing on stop-level boarding numbers, the authors observe various effects of the system redesign. In most cases the numbers remain at comparable levels, or actually show increases as a result of restructuring. In some areas, however, including Frenchtown, Bond neighborhood, and the CRMC area, ridership has decreased. It can be clearly seen that the completely new travel opportunities are attracting passengers, and where a single old radial route has been replaced with two new routes (a new radial-type route running through the CBD and a crosstown, suburban service), the latter attracts at least 30 percent of the corridor ridership. This confirms the benefits of decentralization; although, simultaneously, the number of unique transit users in the analyzed corridors has not increased, as indicated earlier with system-level data. This suggests that the larger community is still learning how to understand and use the new system, which is not surprising given the short time frame since the implementation of service restructuring.

TRANSFER AND BOARDING PATTERNS

The authors next examine boarding data for the entire system to better understand where riders are boarding buses in large numbers and whether these locations have changed in significant ways as a result of the service restructuring. One particular interest is whether any of the stops with large numbers of boardings under the new system are transfer points. Providing convenient transfers in scattered locations around the entire network is an essential feature of decentralized systems. StarMetro embraced this philosophy when it designed the new network. In the radial system, trips between outer parts of the city required transferring at the central hub; the new system allows transfer at many other points scattered throughout the network.

The authors selected the 50 stops with the highest number of boardings for the decentralized system to analyze the popularity of new transfer opportunities, and to compare the boarding figures recorded at these same stops for the radial system. This allows the authors to determine whether the high boarding numbers in the new system are generated by new boardings (including transfer activity), or were already observed before the network redesign. As noted earlier, transfer opportunities in the radial network outside the hub were limited. Agency statistics confirm that the highest boarding numbers in the old system were observed only at the hub and at stops located close to significant trip generators, including campuses, apartment complexes or retail centers.

Figures 32 and 33 compare the average daily boarding figures between the radial and decentralized systems, for February 2011 and February 2012. Comparing the two maps, the authors see a large reduction in boardings at the central hub. Although the hub is still served by 6 of 12 new system routes, making on average 20 departures each hour, the total number of boardings has decreased to about one-sixth its previous level. For a vast majority of riders on the radial system, downtown Tallahassee was clearly only a midpoint of their trip, not the place of its origin or destination.

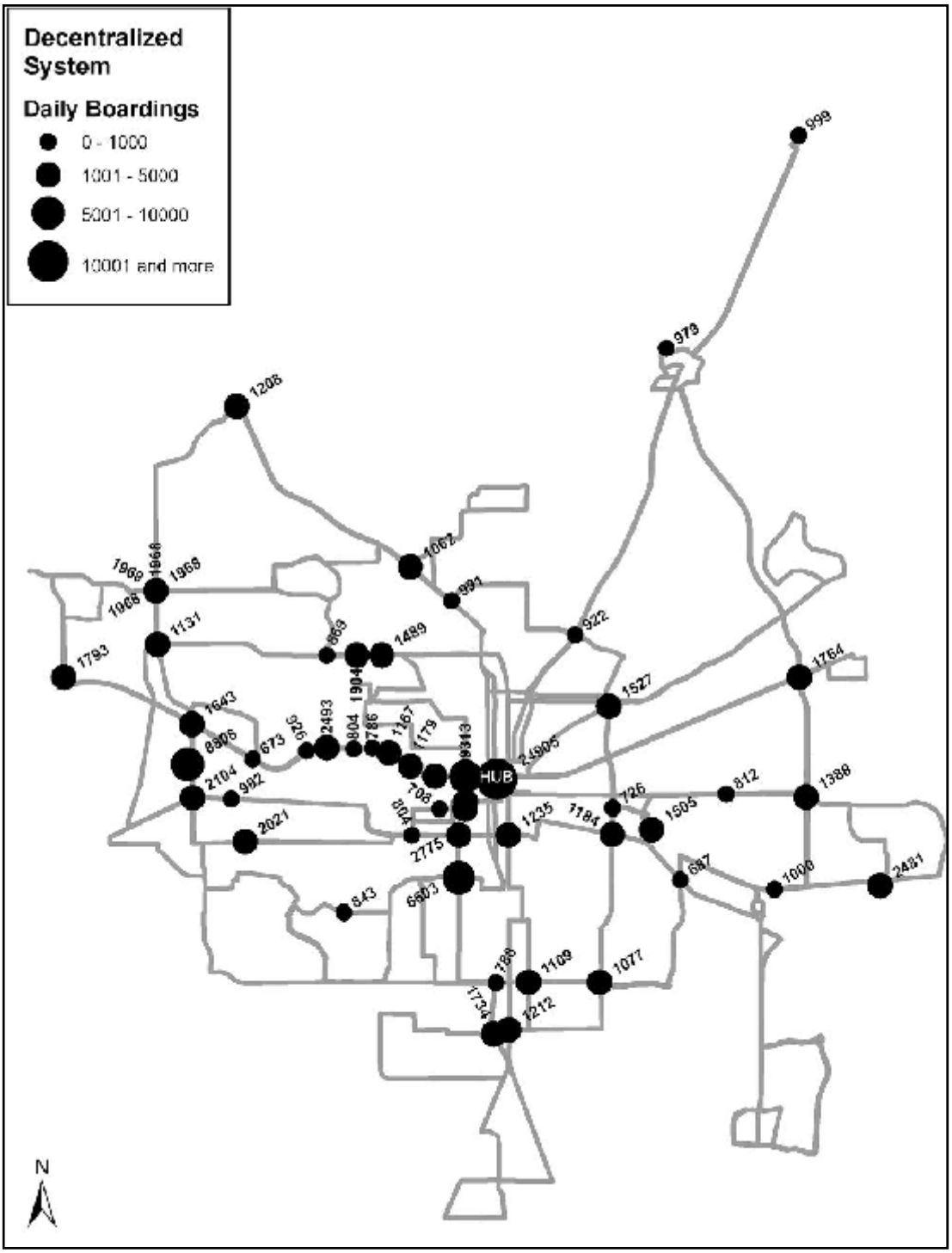

Figure 31. Average Daily Boardings at Stops with 50 Highest Boarding Numbers in the Decentralized System[74]

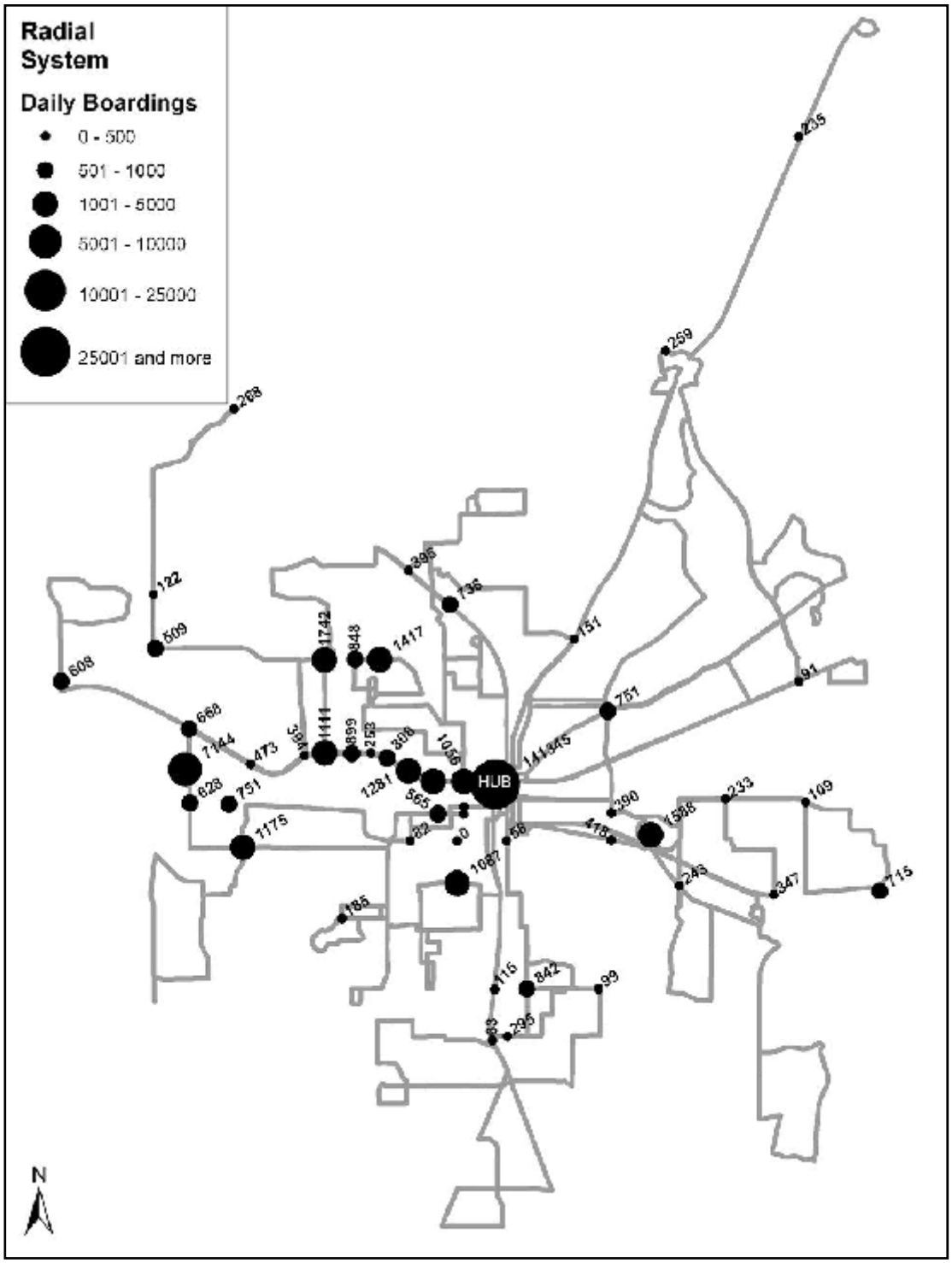

Figure 32. Average Daily Boardings at the Stops shown by Figure 32, but in the Radial System[75]

The authors also clearly notice an increase in boardings at stops that were created to serve as satellite transfer points (usually at places where two routes intersect). That applies especially to the stops on the southern and eastern sides of the city. Even though the ridership on the routes serving these areas is among the lowest in the system, their patrons are using the transfer opportunities quite intensively. One other interesting observation is

a quite remarkable increase in boarding numbers at large retail centers located in the farther western and eastern ends of the city. These locations were either poorly served or not served by the radial system but represent important travel destinations to transit riders. Two of these centers are anchored by Walmart Supercenters. Alternately, the authors also see stops where a substantial change in boarding numbers was not observed: mainly at the stops adjacent to the FSU campus. The takeaway message of Figures 32 and 33 is clearly that people are availing themselves of the new transfer opportunities provided by the restructured system.

EFFECTS ON FARE TYPE USAGE AND TRANSFER ACTIVITY

The authors now examine changes in the types of fares used by transit riders to obtain a sense of the general patterns of system utilization before and after the redesign, for different rider markets. This examination also provides an understanding of the change in overall transfer activity between the old and new systems.

Three major fare types are available to StarMetro riders, and no changes affected the fare structure (fare level or fare types available) during the period of analysis. A single-trip ticket ($1.25 regular; $0.60 reduced for youth, seniors and disabled patrons) allows a rider to make two free transfers within 90 minutes of the time of first boarding (return trips on the same route are not allowed). A day pass ($3.00) permits unlimited rides until the end of service on the day of purchase, and is thus a more cost-effective option for riders intending to take more than a single round-trip on transit. Multi-ride 7-day ($10.00; $7.50 reduced) and 31-day ($38.00) passes are also available. College IDs, which allow the students at FSU, FAMU, and TCC to ride the entire system without paying a fare, may also be treated as multi-ride passes, as they allow unlimited rides on any route, and are not solely provided for trips to and from the campuses.

Table 10 contains system-level fare usage statistics for both systems, while Tables 11 and 12 present the same data on a route-level basis. The authors derive the following observations for the radial system (from the data in Table 10): 23 percent of the radial systems patrons were unique users making a single trip; 62 percent continued their trips, transferring to another bus, with these continued trips comprising 14 percent of the total unlinked trips. For the decentralized system, these figures dropped by 1 to 1.5 percentage points. In both systems, only about 1 percent of the riders purchased a day pass when boarding for the first time during a particular day. Their ratio of following trips made with a day pass to the total number of day pass trips equals 82 percent for the radial and 80 percent for the decentralized network. This means that an average day pass holder makes four unlinked trips after getting off the first bus. The ratio of trips made with a 7- or 31-day pass to total number of individual is equal to 19 percent for the radial and 17 percent for the decentralized system. The agency does not track how the individual passes are being used, so the authors are unable to identify the exact number of unique pass holders using the system on particular day, in order to evaluate their transfer activity. However, similar to the single-ride and day tickets, the authors see almost no change in the utilization of that fare type after the redesign.

The college pass is the only fare type that has increased its share in the fare statistics. This is not surprising, considering the increase in the ratio of student ridership to total ridership. The authors discuss the patterns of student utilization of the system in more detail later in this section.

Summarizing, the authors do not see any significant changes in system-level travel behaviors that could be derived from the fare usage figures. Lower shares of subsequent transfers or higher numbers of day pass purchases suggest that the actual number of unique riders has increased (despite the drop in the total number of boardings or UPT), although the authors see no evidence for that in the fare statistics. The slight decline in UPT at the system level observed for the decentralized system seems to reflect an actual drop in the number of unique riders.

Table 10. Farebox-Recorded Boardings by Fare Type (August 2010 - January 2012)

	Radial System		Decentralized System	
	August 2010 - July 2011		August 2011 - January 2012	
Fare Type	**Total Trips**	**Ratio (%)**	**Total Trips**	**Ratio (%)**
Single trip, first boarding	725,881	22.9	340,185	21.6
Single trip, transfer	449,353	14.2	196,039	12.4
Single trip - Total	**1,175,234**	**37.0**	**536,224**	**34.0**
Day pass, first boarding	18,328	0.6	8,684	0.6
Day pass, following trips	85,861	2.7	35,037	2.2
Day pass - Total	**104,189**	**3.3**	**43,721**	**2.8**
7- or 31-day pass	587,618	18.5	274,035	17.4
College pass	1,305,562	41.2	721,373	45.8
All Fare Type Total	**3,172,603**		**1,575,353**	

Note: Ratio calculation is the portion of trips of a given fare type to all trips of all fare types.

Table 11. Type Usage by Route for Radial System (August 2010 - July 2011)[76]

Route	Single Trip First Boarding	Single Trip Transfer	Total Single Trip	Day Pass First Boarding	Day Pass Following Trips	Total Day Pass	7&31 Day Pass	FAMU	FSU	TCC	College Unidentified	College Total	Total All Fare Types
1	39,074	28,685	67,759	1,083	4,772	5,855	30,972	18,006	7,502	25,904	344	51,756	156,342
2	52,463	30,567	83,030	1,443	8,290	9,733	27,185	9,258	4,395	23,717	1,959	39,329	159,277
4	24,484	17,363	41,847	497	2,374	2,871	20,585	4,088	4,289	10,017	54	18,448	83,751
5	28,526	18,877	47,403	930	3,364	4,294	31,259	47,322	2,737	16,400	212	66,671	149,627
6	18,638	11,281	29,919	460	2,857	3,317	19,595	5,631	3,176	10,202	36	19,045	71,876
7	27,162	9,615	36,777	500	1,758	2,258	14,155	4,604	2,100	10,833	49	17,586	70,776
8	19,114	9,829	28,943	401	1,580	1,981	13,611	3,677	1,927	4,946	91	10,641	55,176
11	11,719	5,525	17,244	622	913	1,535	10,977	23,126	917	6,633	23	30,699	60,455
12	12,659	6,798	19,457	289	1,563	1,852	11,947	2,693	2,056	5,979	79	10,807	44,063
13	57,680	38,015	95,695	1,447	7,556	9,003	42,974	47,972	6,826	33,505	1,462	89,765	237,437
14	36,256	31,934	68,190	943	4,835	5,778	31,428	135,106	5,418	19,496	1,159	161,179	266,575
15	26,372	11,420	37,792	716	2,147	2,863	18,640	4,952	6,772	8,716	33	20,473	79,768
16	10,546	8,264	18,810	311	1,077	1,388	8,081	2,018	2,977	5,557	31	10,583	38,862
17	36,929	18,115	55,044	803	2,336	3,139	24,215	10,230	16,811	19,537	94	46,672	129,070
18	19,581	12,264	31,845	353	2,126	2,479	21,912	2,584	2,958	6,936	51	12,529	68,765
19	23,056	14,050	37,106	331	2,780	3,111	22,498	6,598	8,516	12,091	92	27,297	90,012
20	14,882	10,067	24,949	377	1,685	2,062	12,603	2,237	15,662	7,535	44	25,478	65,092
21	20,924	15,098	36,022	633	3,290	3,923	21,611	6,903	11,055	10,929	49	28,936	90,492
22	38,307	22,036	60,343	952	2,728	3,680	23,141	11,586	6,499	12,137	6	30,228	117,392
23	33,403	14,864	48,267	658	3,496	4,154	26,649	25,368	29,647	106,898	1,077	162,990	242,060
24	28,689	15,437	44,126	901	4,140	5,041	24,837	30,985	21,747	113,569	678	166,979	240,983
25	33,750	26,815	60,565	1,149	6,800	7,949	32,479	35,696	14,319	28,469	72	78,556	179,549
26	13,733	12,459	26,192	395	2,180	2,575	14,124	9,391	3,722	8,095	55	21,263	64,154
53	26,649	12,885	39,534	826	4,941	5,767	18,100	7,552	9,743	21,925	14	39,234	102,635
54	14,831	6,761	21,592	483	1,578	2,061	14,921	4,839	6,646	13,820	11	25,316	63,890
80	34,724	17,641	52,365	679	1,979	2,658	24,825	3,768	10,067	11,449	51	25,335	105,183
28	2,686	3,999	6,685	15	395	410	3,562	3,340	2,769	3,535	129	9,773	20,430
29	3,480	2,202	5,682	22	412	434	3,536	5,697	2,580	2,938	407	11,622	21,274
30	4,099	3,221	7,320	30	536	566	4,658	2,363	1,583	2,220	58	6,224	18,768
31	1,986	2,655	4,641	12	217	229	3,003	718	7,386	1,782	104	9,990	17,863

Route	Single Trip First Boarding	Single Trip Transfer	Total Single Trip	Day Pass First Boarding	Day Pass Following Trips	Total Day Pass	7&31 Day Pass	FAMU	FSU	TCC	College Unidentified	College Total	Total All Fare Types
32	5,157	4,718	9,875	47	467	514	4,824	3,277	1,263	4,249	9	8,798	24,011
33	4,322	5,893	10,215	20	689	709	4,711	4,763	5,591	10,997	9	21,360	36,995
Total	**725,881**	**449,353**	**1,175,234**	**18,328**	**85,861**	**104,189**	**587,618**	**486,348**	**229,656**	**581,016**	**8,542**	**1,305,562**	**3,172,603**
Percent	23%	14%	37%	1%	3%	3%	19%	15%	7%	18%	<1%	41%	

Table 12. Fare Type Usage by Route for Decentralized System (July 2011 - January 2012)[77]

Route	Single Trip First Boarding	Single Trip Transfer	Total Single Trip	Day Pass First Boarding	Day Pass Following Trips	Total Day Pass	7&31 Day Pass	FAMU	FSU	TCC	College Unidentified	College Total	Total All Fare Types
A	29,765	17,723	47,488	913	3,908	4,821	29,996	12,802	18,014	19,772	161	50,749	133,054
B	39,505	31,028	70,533	1,171	5,739	6,910	32,954	14,761	7,271	26,046	130	48,208	158,605
C	28,460	19,567	48,027	738	3,867	4,605	26,647	22,101	25,521	79,706	575	127,903	207,182
D	23,168	14,466	37,634	601	2,135	2,736	21,287	24,917	12,661	11,272	52	48,902	110,559
E	33,157	16,162	49,319	513	2,896	3,409	26,707	8,807	8,444	21,782	77	39,110	118,545
F	30,609	15,966	46,575	881	2,817	3,698	25,347	16,284	14,276	77,692	519	108,771	184,391
G	34,773	21,012	55,785	1,038	3,293	4,331	25,242	6,511	4,143	13,428	26	24,108	109,466
L	19,748	10,788	30,536	522	1,549	2,071	12,510	6,346	3,579	6,571	86	16,582	61,699
M	42,386	20,323	62,709	1,136	3,504	4,640	26,354	107,718	11,132	26,605	2,095	147,550	241,253
R	10,966	7,944	18,910	241	1,245	1,486	11,335	1,331	889	4,006	183	6,409	38,140
S	13,681	5,343	19,024	427	1,072	1,499	8,405	3,016	2,301	10,585	36	15,938	44,866
T	21,246	8,856	30,102	430	1,719	2,149	15,784	9,442	8,187	26,310	43	43,982	92,017
N1	4,023	2,277	6,300	20	463	483	3,367	5,295	5,461	4,703	495	15,954	26,104
N2	3,058	1,643	4,701	16	359	375	3,338	2,188	877	2,234	62	5,361	13,775
N3	1,511	818	2,329	16	148	164	1,440	1,337	910	2,295	0	4,542	8,475
N4	1,193	829	2,022	6	109	115	1,275	617	689	615	83	2,004	5,416
N5	2,692	1,254	3,946	15	208	223	1,992	7,086	1,117	1,901	53	10,157	16,318
N6	244	40	284	0	6	6	55	67	4,657	160	259	5,143	5,488
Total	**340,185**	**196,039**	**536,224**	**8,684**	**35,037**	**43,721**	**274,035**	**250,626**	**130,129**	**335,683**	**4,935**	**721,373**	**1,575,353**
Percent	22%	12%	34%	1%	2%	3%	17%	16%	8%	21%	0%	46%	

EFFECTS ON STUDENT TRAVEL

College students form a significant portion of the total transit ridership in Tallahassee, as shown in rider surveys (discussed in the next part of this report). As part of this study, the authors are interested in understanding how student travel changed as a result of the restructuring. One means of exploring this issue is to look at the number of student boardings on StarMetro buses. Table 13 reports the number of student boardings on both the regular bus system (called city system in the table) and the campus shuttles as part of the fare usage statistics provided for each route, under the radial and decentralized systems. While the campus shuttles are not a specific focus of this research, a general overview of the shuttle ridership before and after the city route restructuring provides some additional insights into the effects of the July 2011 change on student travel activity, and its consequences for the city system productivity and performance, beyond that provided simply by looking at their use of the regular (city system) routes.

StarMetro operates a cooperative free pass program with FSU, FAMU, and TCC that allows students to use their ID on any regular route at any time of the day and the week, without having to pay a fare. Students are not limited to using the system for trips to and from campus, but can instead use the system for any type of trip. The fare statistics presented in Table 13 thus show the general patterns of system utilization among college students. The key routes serving the campuses have much higher shares of student users than the city system average. This includes routes 5, 11, 14, 23, 24 in the radial system, and C, F, M in the decentralized system, with the college student share reaching as much as 60 to 70 percent on these routes. However the remaining routes are also used by the students, including those heading in a completely opposite direction from the campuses (e.g., route R, with 17 percent student passengers; despite the fact that it serves destinations far from any of the campuses). These data suggest that students actively ride across the entire system and utilize the transfer opportunities provided to reach a diversity of destinations.

Table 13. Student Ridership for the City System and Campus Shuttles[78]

	Student Ridership on City System				Campus System Ridership		
Month	FSU	FAMU	TCC	Total	FSU	FAMU	Total
Aug 2010	20,776	41,581	44,475	106,832	81,386	25,175	106,561
Sep 2010	28,797	68,401	67,763	164,961	164,697	54,137	218,834
Oct 2010	26,240	61,935	64,697	152,872	166,631	44,203	210,834
Nov 2010	20,014	51,443	54,682	126,139	126,956	38,675	165,631
Dec 2010	13,104	34,267	34,263	81,634	37,275	12,728	50,003
Jan 2011	17,398	49,402	51,059	117,859	126,585	39,987	166,572
Feb 2011	21,498	45,239	56,105	122,842	150,995	23,312	174,307
Mar 2011	18,782	36,288	47,648	102,718	111,593	21,783	133,376
Apr 2011	20,675	50,043	57,764	128,482	141,167	30,701	171,868
May 2011	18,195	28,182	48,828	95,205	25,545	2,976	28,521
Jun 2011	17,494	25,895	48,173	91,562	30,369	15,532	45,901
Aug 2011	19,016	18,599	38,372	75,987	58,648	13,643	72,291
Sep 2011	27,643	54,812	71,564	154,019	205,318	47,328	252,646
Oct 2011	24,463	52,058	64,785	141,306	176,728	39,540	216,268
Nov 2011	20,547	43,889	55,655	120,091	151,690	34,560	186,250
Dec 2011	15,951	31,430	41,968	89,349	72,380	20,528	92,908
Jan 2012	22,909	49,930	62,193	135,032	173,097	38,834	211,931
Feb 2012	19,049	44,145	55,327	118,521	150,160	45,437	195,597
Mar 2012	18,633	37,522	46,462	102,617	131,937	31,505	163,442

	Total Student Ridership				Non-Student Ridership City System	Total Ridership City & Campus Systems
Month	FSU	FAMU	TCC	Total		
Aug 2010	102,162	66,756	44,475	213,393	163,646	377,039
Sep 2010	193,494	122,538	67,763	383,795	168,640	552,435
Oct 2010	192,871	106,138	64,697	363,706	166,071	529,777
Nov 2010	146,970	90,118	54,682	291,770	141,173	432,943
Dec 2010	50,379	46,995	34,263	131,637	121,641	253,278
Jan 2011	143,983	89,389	51,059	284,431	137,413	421,844
Feb 2011	172,493	68,551	56,105	297,149	152,634	449,783
Mar 2011	130,375	58,071	47,648	236,094	147,779	383,873
Apr 2011	161,842	80,744	57,764	300,350	164,972	465,322
May 2011	43,740	31,158	48,828	123,726	158,125	281,851
Jun 2011	47,863	41,427	48,173	137,463	149,204	286,667
Aug 2011	77,664	32,242	38,372	148,278	129,771	278,049
Sep 2011	232,961	102,140	71,564	406,665	123,906	530,571
Oct 2011	201,191	91,598	64,785	357,574	127,943	485,517
Nov 2011	172,237	78,449	55,655	306,341	119,895	426,236
Dec 2011	88,331	51,958	41,968	182,257	122,352	304,609
Jan 2012	196,006	88,764	62,193	346,963	108,564	455,527
Feb 2012	169,209	89,582	55,327	314,118	105,124	419,242
Mar 2012	150,570	69,027	46,462	266,059	124,751	390,810

Note: In December 2011, FSU finished the classes one week later than in December 2010. Therefore, the authors do not include the substantial December ridership increases in the discussion.

FSU Student Ridership

As Table 13 shows, FSU students tend to utilize the city system at a much lower level than students at the two other colleges. The total number of enrolled FSU students is about 50 percent higher than the combined number enrolled at FAMU and TCC (Table 2, earlier), but their levels of ridership on the regular system are vastly different. The existence of a relatively frequent and easily accessible FSU campus shuttle system explains these differences. Therefore, it is important to include these shuttle routes in any consideration of student ridership. FSU campus shuttle ridership figures confirm that a majority of the FSU student bus riders choose the campus shuttles for their everyday commute.

Comparing the ridership numbers for months before and after the city route restructuring, a slight decrease in FSU student ridership on regular city routes can be seen after restructuring. Simultaneously, the level of utilization of the campus shuttles among FSU students increased after restructuring, both in absolute numbers, and by calculating the ratio of shuttle ridership to city route ridership. These effects are not surprising, if the authors focus in detail on how the redesign affected overall campus accessibility.

In the former radial system, eight routes (15, 17, 20, 21, 23, 24, 53, 54) linking the western suburbs with the CBD passed directly through the FSU campus, as it was the shortest way to reach the central transfer hub. In the decentralized system, some of the new routes do not head downtown, or they use different streets to reach it. Pensacola and Tharpe Streets, where much of the student housing is concentrated, lost direct connections with the campus core as a result of the redesign. The U-shaped diversion made by routes 23 and 24 to serve High and Ocala Roads was completely removed, and these sections now are served only by the campus shuttle system. All these changes resulted in the 10 to 20 percent decrease in city route ridership among FSU students, although it seems that most of these students shifted to the campus routes to meet their travel needs, not to other modes of transportation. As noted earlier, removing the regular city service on High and Ocala led to ridership demand that necessitated the addition of a new campus shuttle to relieve overcrowding.

FAMU Student Ridership

The authors observe similar patterns for FAMU students during the fall 2011 semester: their total ridership on the city system dropped by about 20 percent. The FAMU campus did not actually benefit much from route decentralization; most of the trips require passing through the nearby CBD anyway, so some of the travel opportunities in the radial system could have been even more attractive for FAMU students. Some sections of the city network in the campus area were removed, as a few old routes were merged into a single new one. However, for the last three months of the analysis (January 2012 through March 2012), the authors observe almost exactly identical ridership as for the analogical period before the redesign. The authors suspect that it is a result of the January 2012 schedule modifications. Route M, the primary city route serving the FAMU campus, has been extended northbound to the area of Hartsfield, Atlas, and Portland Streets, connecting several large student communities with the university. Midday headway on route D was also lowered from 50 minutes to 40 minutes.

FAMU campus shuttle ridership figures are lower than the city route ridership, which is a completely different situation than observed for FSU. It could be easily explained by the much lower accessibility provided by the FAMU system (with only one route running off-campus) and less frequent service. Specific shuttle ridership trends are quite peculiar, as ridership decreasing by about 10 percent in the fall, but increasing by between 45 percent and 95 percent in February and March. Changes made on route M in January 2012 could again explain these differences: route M was extended to the north, but simultaneously its southernmost section has been removed and replaced by route B (which does not run through FAMU). The previous routes served some of the student housing located along Adams and South Monroe Streets, duplicating the V2 campus shuttle. Route M ran at higher frequency (formerly 20 minutes compared to 30 minutes for the new route V2) and had no midday break as the V2 does. However, after the January changes, V2 is again the only direct connection between these student apartments and the FAMU campus, therefore, its ridership has increased.

TCC Student Ridership

TCC does not operate its own shuttle system. As well, TCC has no on-campus student housing, so many of the students live in various apartment complexes dispersed across the entire city. This explains why the TCC student ridership on the city system is highest among all three colleges. The total TCC ridership numbers are higher for the decentralized system or remain unchanged for all of the months in the study. The authors are not surprised by these results, as looking at the system characteristics shows that TCC campus benefited the most from the decentralization. Under the radial system, quite frequent service reached the college, but all the routes were heading in one direction – the CBD. Currently, TCC is served by a total of six routes, including a frequent service on the Tennessee corridor, and several crosstown connections, which provide one-seat rides to many remote parts of Tallahassee.

Summarizing, the authors find that the Tallahassee college student population was not seriously affected by the decentralization, when the authors examine the number of trips they take by public transit. Students continue to use the new system at a level comparable with their use of the radial network. Total student ridership dropped by less than 10 percent during the first few months after the decentralization; the decrease was a bit higher for FSU and FAMU than for TCC. The students needed time to adjust to the changed pattern of destinations and new riding requirements (including new or eliminated transfers) required to navigate the transit system. By the end of the first three months of 2012, the student ridership figures reached their 2011 levels. The adjustments made in January 2012 had some impact on retaining the student ridership. These effects have not been observed so far for the total ridership on the transit system as a whole; therefore, the ratio of students to all riders is higher now for the decentralized system than it was under the older radial system.

EFFECTS ON PARA-TRANSIT RIDERSHIP

Some local transit observers thought the service restructuring might prompt some riders who are eligible for use of para-transit or Dial-a-Ride service to stop using regular buses

and to begin using this service, as regular system stops and routes were relocated from neighborhoods onto arterial roads. While a detailed investigation of the para-transit service is beyond the scope of the research, the authors nevertheless believed it was important to determine whether ridership on the service changed in any significant manner as a result of the restructuring of the regular transit system. The nature of the para-transit service, its eligibility rules, its operating hours, and fares did not change during the period of the inquiry.

Table 14 reports the para-transit ridership during the period of analysis. The table shows that para-transit ridership has substantially increased, especially during the two winter months, with the year-to-year growth rate exceeding 30 percent. These results indeed suggest that many seniors and/or riders who are disabled and/or mobility impaired switched from using the regular system to para-transit. However, the table also suggests that para-transit ridership remains a very small proportion of overall transit use in the community. Even the highest year-to-year increase in para-transit ridership, observed in January, is equal to roughly 1 percent of the total ridership on the regular system, as shown in Table 8. Thus, while some riders have undoubtedly shifted to para-transit services, they have not done so in substantially large numbers.

Table 14. Ridership on Para-Transit (August 2010 - March 2012)[79]

CBD-Radial System		Decentralized System		
Month	Passenger Boardings (UPT)	Month	Passenger Boardings (UPT)	Month-to-Month Change (%)
Aug 2010	6,184	Aug 2011	6,698	8.31
Sep 2010	6,263	Sep 2011	6,892	10.04
Oct 2010	6,208	Oct 2011	6,728	8.38
Nov 2010	5,346	Nov 2011	6,583	23.14
Dec 2010	5,049	Dec 2011	6,791	34.50
Jan 2011	4,789	Jan 2012	6,768	41.32
Feb 2011	5,599	Feb 2012	7,009	25.18
Mar 2011	6,001	Mar 2012	6,982	16.35
Apr 2011	6,108			
May 2011	5,752			
Jun 2011	6,192			

ASSESSMENT OF RESTRUCTURING'S EFFECTS ON STARMETRO PERFORMANCE

At a system level, the service restructuring in Tallahassee did not generate the higher ridership numbers or increased service productivity that its proponents sought. Ridership at many suburban stops has increased, which suggests that many riders are availing themselves of the new destination opportunities that restructuring has provided, but many of the new decentralized routes have among the lowest performance in the system. The analysis suggests that StarMetro has added very unproductive service in some corridors,

although many of these routes are likely needed in order to make the network fully functional. One possible reason for the lower-than-expected ridership and productivity numbers might be the relatively infrequent service provided on many routes, which poses particular problems when riders are seeking to transfer at locations without timed connections. Irregular headway values make the transfers complicated, and they increase waiting times up to 40 minutes in some cases.

The actual service frequency is substantially lower on most routes than initially assumed when the restructuring plan was first proposed. Table 15 compares the projected headways, advertised to the public during the preparation phase, and the actually implemented headways.

Table 15. Planned and Actual Service Headways[80]

	Headway (min.)					Difference Between Jan 2012 Schedule and …		
	Nova2010 Overview	Final Report to City Commission		Schedule Effective January 21, 2012		Nova2010 Overview	Final Report	
Route	Peak	Peak	Off-Peak	Peak	Off-Peak	Peak	Peak	Off-Peak
A	20	20	40	40	40	-20	-20	0
B	15	20	40	40	40	-25	-20	0
C	20	20	30	20	20	0	0	10
D	30	30	45	40	40	-10	-10	5
E	30	30	45	40	40	-10	-10	5
F	30	40	40	25	25	5	15	15
G	30	30	45	40	40	-10	-10	5
L	15	20	40	30	30	-15	-10	10
M	20	20	40	20	20	0	0	20
R	15	20	40	45	40	-30	-25	0
S	30	45	45	35	35	-5	10	10
T	20	30	30	35	35	-15	-5	-5

Note: Negative indicates reduced service frequency (increased headways).

The initial proposals assumed 20-minute peak service on selected major arterials (Capital Circle West, Monroe, Orange, Tennessee, Thomasville), and 30-minute headways on the remaining portions of the network. The “Nova2010 Overview” document, which was the first officially released document presenting the new network, reported 15-minute headways on selected routes.[81] The Final Report, created after the planning process had been completed, projected 20- or 30-minute headways on most of the routes, including a 10-minute combined frequency at the section of Tennessee Street served by routes A and C.[82] However, today, 20-, 25-, 30-, 35-, 40-, and 45-minute headways can be observed, which makes it more complicated to synchronize the route schedules. In addition, the distinction between peak and off-peak schedules has been abandoned. While this benefited the midday riders, the commuters received longer headways as a result.

A final explanation for the lower-than-expected ridership numbers might also be the length of time the new system has been in place. The service change has been in effect for about

a year, and it is possible that the community is still learning how to use the system. In time, ridership might increase simply as a result of increased awareness of how the new system functions. The interviews suggest that StarMetro staff believe this is a likely explanation for the ridership and performance numbers the authors developed, while the results from other cities reported in Table 7 also support this idea.

LESSONS ABOUT THE EFFECTS OF RESTRUCTURING ON STARMETRO PERFORMANCE

The StarMetro restructuring has had very complex, and not entirely expected results. The restructuring has increased ridership in suburban areas and deemphasized the use of the central transfer hub. People who are not headed downtown no longer have to transfer via the downtown to make their trip. New suburban service has made growing suburban areas accessible to transit riders. However, the hoped-for large increases in ridership and improvements in performance have not yet materialized. Ridership has not paced the increase in service that accompanied the decentralization. Part of this might be due to the long headways and random transfers that are the result of the long, uncoordinated headways. At the same time, it must also be emphasized that the decentralized system has been in place only a short time and it is possible riders are still learning how it functions. StarMetro continues to make service adjustments to make the system operate more effectively and in a timelier manner, and these changes might increase the system's attractiveness over time.

Other transit agencies looking to make similar changes should take three important lessons away from the StarMetro experience. First, riders do use decentralized systems to reach dispersed destinations. The systems work as designed. Second, headways matter a great deal, particularly in smaller transit systems. Long headways and poorly coordinated transfers make systems very difficult for riders to use and make transit unattractive as a mode of transportation. Third, it takes a long time for the public to adapt itself to a major service change and for a transit agency to make its own adjustments. The people of Tallahassee and the StarMetro staff are still adjusting to the new system, as newspaper accounts and public meetings continue to attest. A restructuring of this magnitude, particularly in a system that had been stable for several decades, is a major disruption that requires a long time to fully navigate. It is possible that ridership and agency performance will increase as time passes, adjustments are made, and the public continues to adapt to the new system. Future research will be necessary to explore these long-term results, in Tallahassee and elsewhere.

VII. THE EFFECTS OF A MAJOR SERVICE CHANGE ON RIDERS AND THE COMMUNITY

Public transit plays a number of roles in contemporary U.S. cities, from helping to mitigate traffic congestion to improving air quality to facilitating economic development. However, transit's most important role is providing transportation service to transit riders. Particularly important is the service that transit provides to transit-dependent and transportation-disadvantaged individuals who do not have easy access to automobiles. Transit serves as a primary means of connecting these individuals to the array of travel destinations,[83] whether it be work, school, medical, social, or recreational facilities, that they need to reach to conduct their daily activities.[84] The fact that these destinations are scattered widely across increasingly decentralized metropolitan areas, including in locations with poor and/or non-existent transit service, imposes serious burdens on these individuals' abilities to maintain a decent quality of life, as shown by Kain (in 1968),[85] Kain (again, in 1992),[86] Holzer,[87] and Sanchez, Shen and Peng.[88] Access thus becomes an important dimension of equity, in the transportation context.

The design of a transit system, and particularly its relationship to the pattern of urban development, affects the level and pattern of accessibility in a community. Different transit system designs will make different sets of origins and destinations accessible to different segments of a community; the distribution of service over the transit network, measured with respect to headways and hours of operations affects the time it takes individuals to reach those destinations.[89] A mismatch between transit system design and the spatial distribution of activities, particularly in growing suburban locations, renders some destinations inaccessible and, hence, irrelevant to people who rely primarily on transit to serve their transportation needs. This mismatch between system design and the decentralized locations of employment, in particular, has emerged as an important topic of policy conversation, as work by the Brookings Institution illustrates.[90] System design is critical to accessibility and hence to equity, but thus far the transportation literature has largely neglected this issue, as highlighted by Taylor,[91] and three works by Brown and Thompson.[92]

In this section of the report, the authors investigate the role that system design plays in affecting the accessibility of transit riders in Tallahassee. The authors directly compare the accessibility provided by the old system versus that provided by the restructured system in order to determine whether the restructuring has had a positive effect on riders or a negative one. The authors also explore the profile of StarMetro riders before and after the service restructuring to see whether there has been any change in the types of riders using transit in Tallahassee or the way they use the transit system.

Using a combination of before and after rider surveys conducted by the transit agency, in-depth surveys of representatives of two particularly important groups of riders, travel demand modeling outputs from the regional transit model, student residential location data, and socio-economic data obtained from the U.S. Census, the authors find that StarMetro was a largely college student and transit-dependent dominated system before restructuring, as well as after, although there was a modest increase in use of the system by infrequent riders. System restructuring increased the time it took for people to walk

to bus stops, but once they reached the stops, the increased number of direct travel connections provided by the new system reduced overall travel times and increased access to destinations. The net result of the service restructuring was a reduction in total travel time, and thus increased accessibility, for most trip interchanges. The restructuring neither disproportionately harmed nor disproportionately benefited neighborhoods with larger numbers of transit-dependent, low-income, or minority residents. Neither did the restructuring do disproportionate benefit, nor disproportionate harm, to neighborhoods with large numbers of college students.

LITERATURE ON TRANSIT RIDER AND ACCESSIBILITY

The authors use accessibility as a key framework for understanding the effects of restructuring on riders and draw on the transit literature to frame the investigation. Public transit is asked to serve a number of important functions in contemporary cities, from mitigating traffic congestion, to facilitating urban redevelopment, to providing basic transportation service to those who lack access to automobiles. This last role is particularly important, as public transit can play a significant role in increasing individuals' access to social opportunities, thus reducing social exclusion and increasing the overall social and economic well-being of individuals who lack easy access to other means of transportation.[93] Public transit can play an important role in enabling transit-dependent individuals to engage in social activities such as getting to work, going to school, engaging in recreational activities, accessing shopping, reaching health care facilities, or visiting friends or family.[94] Individuals might be transit-dependent due to restricted income, disability, age, lack of driver's license, or linguistic barriers. Individuals might be transportation disadvantaged for any or all of these reasons, or due to their residential and/or employment location decisions.[95] Public transit plays an important role in serving the diverse travel needs of these individuals and the communities in which they reside. Whether dealing with transit-dependent riders or choice riders, who are those riders who do have access to at least one other mode of transportation,[96] understanding the ability of transit systems to serve the needs of their riders is critical to any evaluation of transit service.

A number of scholars, including Black,[97] Litman,[98] Deka (in 2002),[99] and Deka (in 2004)[100] have explored the important role that transit access can play in increasing the social opportunities available to people who depend on transit for their transportation needs. Much of this cited research grew out of interest in the long-term effects of federal welfare-to-work legislation in the late 1990s and thus focused on the role played by transit in connecting people to employment. In these studies, Handy,[101] Kwan (1998),[102] Kwan and Weber,[103] and O'Sullivan, Morrison and Shearer[104] typically define access (or accessibility) as a function of one's ability to move across space, subject to time costs and constraints as well as the number of potential destination opportunities[105] and/or the ease of reaching these destinations, as pointed out by Cervero[106] and Sanchez.[107] Accessibility thus takes into account land use patterns, travel times, and mobility substitutes. Cervero[108] found that the ability to easily walk to a transit stop plays a significant role in an individual's success in finding work. Blumenberg,[109] Kawabata,[110] and Ong and Houston[111] found that better transit accessibility to jobs has a significant positive effect on an individual's employment success, even controlling for their access to automobiles. Left unexplored in any of this

literature is an explicit testing of the influence of different transit system designs on the amount of employment accessibility provided by the transit system.

Equity is a concern for transit at least partially due to the legal requirements of Section 601 of *Title VI of the Civil Rights Act of 1964*. That section mandates that "no person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."[112] A number of famous transit legal cases have raised the issues of disproportionate burden and disparate impact of federally-aided transit policies on protected groups, with some cases resulting in court-imposed consent decrees requiring transit agencies to correct inequitable distribution of resources and/or services across different communities.[113]

Transit agencies are legally required to file Title VI reports on a regular basis and to consider the effects of their service changes on protected classes of individuals.[114] Two transit agencies that made service changes similar to those made in Tallahassee filed such reports after they restructured their own systems. Metro Transit in Madison, Wisconsin restructured its transit network in 1998 around four decentralized transfer points that offer multiple transfer opportunities to all parts of the urban area. Their Title VI analysis compared the percent of minority and non-minority travelers making trips to employment centers outside the central business district and found no difference between the two groups. They thus concluded there was no disproportionate impact of the service change on legally protected groups.[115] Spokane Transit Authority in Spokane, Washington used a visual inspection of census tract characteristics and ridership patterns to conclude that their major service change, which included route additions and eliminations, did not disproportionately impact the minority community in Spokane.[116] StarMetro conducted its equity study prior to implementing the service restructuring.[117] The before- and after-change transit routes were evaluated based on their frequency and service coverage. They did not find any inequity in the proposed plan that would disproportionately affect protected groups under Title VI. While these agencies all concluded that there were no inequities associated with their major service changes, their analyses lacked the methodological and statistical rigor required to demonstrate whether the restructuring improved or reduced the accessibility provided to the minority and transit-dependent communities. Thus, these studies provided little formal guidance for the authors' own study of restructuring in Tallahassee.

To date, scholarship on system design has not explicitly considered issues of equity in access. Most studies have only considered the effects of system design on agency ridership and service productivity.[118] Brown and Thompson's work has shown consistently higher ridership and service productivity among transit systems with multi-destination (decentralized) transit networks than for their radial (centralized) counterparts.[119] This literature does suggest that multi-destination transit networks cater overwhelmingly to transit-dependent riders, based on the premise that the workplaces of these riders are mostly located in the outer suburbs of a metropolitan region, as opposed to the skilled, white collar jobs that are still to be found in the downtown.

More recent research has added accessibility as a dimension of the investigation of system design,[120] but only in the context of studies of multi-destination transit networks.[121] In these

recent studies, accessibility is defined on the basis of travel time by transit to employment opportunities; decentralized systems have been found to provide high overall levels of accessibility because they better fit the dispersed pattern of metropolitan employment. These studies explicitly examined the determinants of transit demand for transit-dependent riders in the multi-destination systems for Atlanta, Georgia and Broward County, Florida. The results show that these riders are attracted overwhelmingly to dispersed employment centers and are highly sensitive to transit travel time.[122] There have been no studies, to date, contrasting multi-destination and radial systems in terms of the accessibility they provide to transit-dependent and/or choice riders.

In sum, one body of literature shows that transit access is important in overcoming social exclusion, particularly of transportation-disadvantaged groups, and is thus an important dimension of equity, but this literature ignores the role played by differences in transit system design. Another body of literature shows that multi-destination systems provide high levels of access to transit-dependent riders, but this literature does not explicitly test whether these systems are better or more equitable than radial systems in terms of the accessibility they provide. Given the growing interest in new ways of designing transit systems to better fit decentralized metropolitan areas[123] and the legal requirements of Title VI to make sure that service changes do not disproportionately burden protected classes,[124] there is a need to bridge these two literatures. There is a need for an explicit consideration of the equity in access consequences of different system designs, and the StarMetro route restructuring provides an opportunity to begin to develop the knowledge in this area. Among the questions to be addressed are the following: what types of transit systems provide greater accessibility to the riders? What happens when a system changes its network design? Does that negatively affect particular rider groups? How does distance to transit (walk access) change for the transit-dependent groups when a system is restructured from radial to multi-destination design? Do travel destinations become more or less accessible (destination access)?

This study begins to answer some of these questions by considering the effects of a major service change on transit riders and the communities in which they live.

METHODOLOGY FOR EXAMINING THE EFFECTS OF RESTRUCTURING ON RIDERS AND THEIR COMMUNITIES

This section of the report seeks to understand the consequences of the system restructuring in Tallahassee for transit riders, with a particular focus on the transit-dependent and legally protected groups under Title VI. The major research questions that this investigation attempts to answer are: 1) How has the service restructuring from a radial to a decentralized system affected the system's overall rider profile? 2) How has the service restructuring affected the accessibility provided by transit? 3) Is the new system more equitable than the old one? Or, in other words, were different types of neighborhoods disproportionately affected by the change from the radial to the decentralized system design?

The analysis is divided into three parts. Part 1 analyzes the rider surveys that were conducted by StarMetro before and after implementing the system restructuring. The surveys provide a profile of the typical rider, and allow determination of whether this profile changed as a result of the restructuring. Part 2 analyzes author-conducted surveys from

two communities within Tallahassee: Alumni Village Graduate student housing and public housing complexes at Orange Avenue and in Springfield. The authors selected these two communities as representing two important groups of StarMetro riders: university students and the transit-dependent poor. Part 3 examines the differences in accessibility provided by the two system designs. The authors employ the outputs of the MPO's regional transit model to obtain the accessibility measures.[125] The authors then pair this information with employment data, student residential location data, and U.S. Census socio-economic data to determine the overall level of accessibility provided by each system design, how much accessibility was gained or lost with the service restructuring, and whether any particular types of neighborhoods were disproportionately affected.

Rider Survey Analysis

StarMetro hired Renaissance Planning Group to conduct two rider surveys that bracket the service restructuring. They conducted their first On-Board Survey (pre-restructuring) at bus stop locations scattered across the agency service area from June 23 through June 25, 2009, when the colleges were in summer session.[126] This survey serves as the "before survey" for the study. There were a total of 1,974 respondents. The survey provides information regarding the date of the survey, time of the survey, route surveyed, origin and destination addresses, trip purpose, frequency of individual's transit use, distance walked to transit stops, student status, and whether the individual had access to a personal vehicle.

For the second survey, StarMetro once again hired Renaissance Planning Group to conduct a rider satisfaction survey[127] on April 11 and April 12, 2012.[128] The survey involved interviews with riders who were sampled in such a way that the number of surveys by route and time-of-day roughly reflected the overall level of use of the system; thus, busy routes at busy times of day had more survey responses. This survey serves as the "after survey" for the study. There were a total of 614 respondents. The survey provides information about the date of the survey, time of the survey, route surveyed, respondent's gender, respondent's age, their frequency of transit use, length of use, whether the respondent noticed any service improvement after the change, the distance walked to transit stops, trip purpose, and whether the respondent had access to a personal vehicle. While the two surveys do not completely duplicate one another, because of their very different purposes, there a number of questions that were asked across both surveys that allow the authors to develop a profile of transit ridership for the old system as well as the new system and to observe how that profile changed.

Community Survey Analysis

Rider surveys indicate that StarMetro primarily serves two markets: students and lower-income, transit-dependent riders. In order to better understand the effects of the service restructuring on these two rider groups, the authors conducted surveys in two communities in which these groups predominate: a student housing complex called Alumni Village operated by Florida State University and a group of public housing complexes represented by the Orange Avenue Unified Tenant Association (OAUTA). The authors administered the surveys in June and July 2012. The survey instruments may be found in Appendix C and Appendix D.

The authors asked the respondents questions about their frequency of transit use, trip purposes for which they use public transit, vehicle availability, awareness about the service restructuring, changes in riding habit after the service restructuring, student and/or employment status, satisfaction with several aspects of transit service quality, and their recommendations for improvement of the transit system. The authors had 60 responses from Alumni Village and 76 responses from the OAUTA. Alumni Village respondents completed the survey online, while OAUTA respondents completed a hardcopy form of the survey distributed by public housing complex staff.

Accessibility Analysis

For the accessibility analysis the authors utilized four primary data sources, the transit model within the Capital Region Transportation Planning Agency (CRTPA) regional travel demand model,[129] student residential location information obtained from FSU,[130] employment data and socio-economic data from the 2010 U.S. Census,[131] and the traffic analysis zone (TAZ) shapefiles were obtained from CRTPA, the regional metropolitan planning organization.[132]

The regional travel demand model allowed the authors to calculate transit travel times from one TAZ to another, across all zones that are accessible by transit. The authors used the model to produce origin-destination travel time matrices for both transit systems. The two sets of travel time matrices included: initial walk time to the transit stop, initial wait time for the bus, transfer wait time, transfer walk time, and in-vehicle travel time. The authors calculated the total travel time by summing the five travel time components for each origin-destination pair. The model incorporated 809 TAZs, of which 760 had non-zero transit travel times (a non-zero result indicating that the origin-destination is accessible by public transit).

For the analysis, the authors defined accessibility as the number of destination opportunities accessible by transit, discounted by the total travel time it takes to reach them.[133] The authors selected employment as the destination measure, as it reflects both jobs and other destinations that tend to be co-located with jobs. The authors calculated the accessibility of each zone (TAZ) as:

$$A_i = \sum_{j=1 \text{ to } n} (Emp_j / T_{ij})$$

where:

A_i = job accessibility from origin i to destination j

Emp_j = number of jobs within the destination TAZ j

T_{ij} = total travel time from origin i to destination j

The authors calculated accessibility for three different sets of TAZ pairs: total accessibility for the pairs served by the radial system, total accessibility for the pairs served by the decentralized system, and the difference in accessibility provided by the radial and

decentralized systems for the pairs served by both systems. The authors selected the TAZ pairs that were served by both the radial and the decentralized systems for more detailed investigation.

The results show that 150,056 TAZ pairs are served by both systems. The authors calculated the differences in initial walk time, in-vehicle travel time and total travel time between the two systems for each TAZ, as well as average values for each measure of each pair.

The authors correlated the accessibility measures for TAZs served by both systems with census socio-economic variables to determine whether there were any disproportionate effects of the service restructuring on the legally protected groups under Title VI and on groups that are disproportionately represented among transit-dependent or transportation-disadvantaged populations. The authors obtained Census 2010 data on median household income, percentage of household without personal vehicle, percent of population over 65 years of age and percent African American population to represent these groups.[134]

Given that all of the census variables were available at the block group level (but not at lower levels of aggregation), the travel time data only at the TAZ level, and the two geographies did not directly correspond; the authors had to use geographical information system (GIS) software to spatially join the two set of variables before conducting the statistical analysis of accessibility patterns. The authors converted the block group shape files to their respective centroids and used the spatial join function to append average values of each block group's socioeconomic variable to the TAZ containing the centroid. Because there were fewer block groups than TAZs, this resulted in a sample of 170 TAZs. However, the authors also tested the results employing an alternate spatial joining technique that relies on averages of all intersecting zones. The statistical results were quite similar to those under the sampling approach used here, and given the severe geographic selection limitations of the alternate technique, the authors believed the primary approach more reliable.

Finally, because StarMetro's ridership has historically been dominated by both transit-dependent riders and college students, the authors explored the relationship between the accessibility measures and the distribution of college students by TAZ through another set of statistical analyses. The authors obtained student address data from FSU,[135] but were unable to obtain similar data for FAMU and TCC. Nevertheless, given that FSU students comprise nearly 60 percent of the entire local college student population, the authors believed their residential pattern would be a reasonable proxy for their peers. The authors geocoded address data using ArcGIS and then spatially aggregated the address locations to TAZs to conduct the student accessibility analysis.

ANALYSIS OF THE EFFECTS OF RESTRUCTURING ON RIDERS AND THEIR COMMUNITIES

Rider Survey Analysis

The results of the two rider surveys allow the authors to develop a profile of the typical rider and his/her trip and to determine whether this profile changed in any way as a result of the service restructuring.[136] The survey questions and sampling methodologies were not identical, but there are several questions on which comparisons can be made.

The pre-restructure survey, shown in Table 16, indicates that transit-dependent riders (the 73 percent of riders with no car access) and students (57 percent) dominated among survey respondents; nearly 86 percent of respondents to the post-restructure survey, shown in Table 17, reported having no car access, and more than 53 percent were under age 25 (the best proxy for college students among the available survey questions). The authors thus conclude that StarMetro remains an overwhelmingly transit-dependent and student-serving system after the service restructuring. In the pre-restructure survey, about 69 percent of riders reported using the system more than five times per week, while the number declined to nearly 58 percent in the post-restructure survey. This suggests that there has been a modest increase in use of the system by infrequent riders.

Table 16. Summary of Results from Pre-Change On-Board Passenger Survey[137]

Car Access		
Yes	533	27.08%
No	1,435	72.92%
Total Responses	1,968	

Trip Purpose		
Work	1,095	51.03%
School	744	34.67%
Medical care	80	3.73%
Leisure	227	10.58%
Total Responses	2,146	

Student Status		
Yes	844	42.84%
No	1,126	57.16%
Total Responses	1,970	

Walk Distance to Bus Stop		
0-1/8 mile	191	57.01%
1/8-1/4 mile	41	12.24%
1/4-1/2 mile	23	6.87%
More than 1/2 mile	80	23.88%
Total Responses	335	

Frequency of Use (per week)		
More than 5 days	1,360	69.11%
3-4 days	438	22.26%
2 days	89	4.52%
0-1 day	81	4.12%
Total Responses	1,968	

Most trips were work trips or school trips, although the share of trips in these two categories fell from about 86 percent under the old system to about 65 percent under the new system, a significant decrease. The proportion of trips in the other categories (medical and other) increased substantially, which might reflect riders' greater abilities to reach other kinds of travel destinations under the new system.

Table 17. Summary of Results from April 2012 On-Board Customer Satisfaction Survey[138]

Car Access		
Yes	82	14.16%
No	497	85.84%
Total Responses	579	

Gender		
Male	259	44.43%
Female	324	55.57%
Total Responses	583	

Age		
Under 25	299	53.37%
25-60	222	41.11%
Over 60	19	3.52%
Total Responses	540	

Frequency of Use		
More than 5 days/wk	348	57.62%
1 or 2 days/wk	184	30.46%
Few days per month	39	6.46%
When necessary	33	5.46%
Total Responses	604	

Trip Purpose		
Work	258	31.77%
School	266	32.76%
Medical care	99	12.19%
Other	189	23.28%
Total Responses	812	

Walk Distance to Bus Stop		
0-1/8 mile	172	29.66%
1/8-1/4 mile	128	22.07%
1/4-1/2 mile	135	23.28%
More than 1/2 mile	145	25.00%
Total Responses	580	

Length of Use		
More than one year	188	31.18%
Less than one year	415	68.82%
Total Responses	603	

Service Quality: Before and After Change		
Not improved	157	33.91%
Improved	204	44.06%
Same	71	15.33%
Don't know	31	6.70%
Total Responses	463	

Change in Frequency of Use		
Yes	80	43.72%
No	64	34.97%
Don't know	39	21.31%
Total Responses	183	

The survey results also indicate that under the new system riders must walk farther than before system restructure to access transit service. This is not surprising given that approximately 200 stops were eliminated during the restructuring. The percentage of people walking less than 1/8 mile (57 percent) under the pre-restructure system is almost double the percentage of their post-restructure cohorts (30 percent), whereas the percentage of people walking from 1/8 to 1/4 mile under the pre-restructure system (12 percent) is about half that for the post-restructure scenario (22 percent). In the 1/4- to 1/2-mile category, the percentage in the pre-restructure survey (7 percent) is less than one-third of the percentage in the post-restructure survey (23 percent). The elimination of stops in some neighborhoods has resulted in riders having to walk farther to reach bus stops.

This could be a potential problem for the physically disadvantaged as well as the elderly rider population.

Community Survey Analysis

The two community surveys allow the authors to gain a more in-depth understanding of how the transit service restructuring has affected student and low-income, transit-dependent riders, specifically those residing in Alumni Village and the communities operated by Orange Avenue United Tenants Association (OAUTA). Alumni Village is a community inhabited by graduate FSU students and their families, located in the southwest part of the city. A substantial portion of its population is international students. Alumni Village is served by the campus shuttle system (route U26 running between the nearby College of Engineering and main FSU campus) and the city system. In the radial network, two routes (11 and 20) reached the community's main gate. Both of them ran to the central hub at C.K. Steele Plaza. Route 11 passed through the FAMU campus, while route 20 ran across the eastern part of the FSU campus. In the new system, Alumni Village is served by routes D and L. Route D replicates the old route 11, and after reaching the central city, continues northbound towards the retail centers at Thomasville Road. Route L is a new crosstown service, providing access to the TCC campus and several commercial facilities, including the Walmart Supercenter on Apalachee Parkway.

On nights and Sundays, the old system's route 31 linked Alumni Village, FSU campus and the CBD. That route served multiple stops inside the community. Such service was discontinued. The new N4 route was introduced during decentralization, but stops just outside the community, providing connections to the southeastern part of the city. As the authors note, later in this section, that this change was negatively perceived by Alumni Village residents, who lost the night and Sunday service running to the FSU campus and more accessible stops inside the community. In response, a few weeks after the July 2011 restructuring, the new route N6 was created, linking stops inside Alumni Village with FSU.

The Orange Avenue United Tenants Association operates several apartment communities dispersed across the city. Major OAUTA communities include the Orange Avenue, Springfield, and Pinewood Place complexes. The service changes for these neighborhoods are different: for example Orange Avenue gained two new crosstown routes (G and L) and retained a radial route (B), although this route relocated to about a 1/2-mile walking distance from its former location (the stop was formerly located directly in front of the community's main gate). Unlike Orange Avenue, the Pinewood Place community *lost* two radial routes (6 and 19), and now is served only by a crosstown route (G). The authors discuss the service characteristics in the areas where these communities are located earlier in the text: Orange Avenue housing is located in Southside, shown in Figures 26 and 27. The Springfield neighborhood lies in the northern Frenchtown area, and Pinewood Place is located north of Tallahassee Mall. Both Springfield and Pinewood are displayed by Figures 24 and 25.

Tables 18 and 19 provide summary results of the surveys and can be used to compare the two groups of riders. Looking at each question in turn, it can be seen that 65 percent of Alumni Village respondents and 72 percent of OAUTA respondents do not have access to

an automobile, indicating that both groups consist of large numbers of transit-dependent riders.

Table 18. Alumni Village Community Survey: Summary of Results

Access to an Automobile	
Yes	35.0%
No	65.0%

Awareness of Service Change in July 2011	
Yes	68.3%
No	31.7%

Use of Public Transit	
Never	3.3%
Less than once per week	11.7%
1-2 Days per week	11.7%
3-4 Days per week	20.0%
5 or More days per week	53.3%

Change in Use of Transit Since Change in July 2011	
Using more frequently	21.7%
Using about the same	55.0%
Using less frequently	23.3%

Use of Public Transit for Different Trip Types	
Work	43.3%
School	83.3%
Medical	15.0%
Other	53.3%

Status of Respondent	
Employed	16.7%
Employed and a student	43.3%
Student	40.0%

Table 19. Orange Avenue Unified Tenants Association Community Survey: Summary of Results

Access to an Automobile	
Yes	25.0%
No	72.4%
No Response	2.6%

Awareness of Service Change in July 2011	
Yes	67.1%
No	32.9%

Use of Public Transit	
Never	10.4%
Less than once per week	19.5%
1-2 Days per week	10.4%
3-4 Days per week	23.4%
5 or More days per week	35.1%

Change in Use of Transit Since Change in July 2011	
Using more frequently	14.5%
Using about the same	18.4%
Using less frequently	65.8%
No response	1.3%

Use of Public Transit for Different Trip Types	
Work	42.1%
School	35.5%
Medical	46.1%
Other	38.2%

Status of Respondent	
Employed	31.6%
Employed and a student	13.2%
Student	9.2%
Homemaker	15.8%
Unemployed	19.7%
Retired	10.5%

About 53 percent of Alumni Village respondents ride transit 5 or more days per week, while 35 percent of the OAUTA residents use transit that frequently. Only 3 percent of the survey respondents in Alumni Village never use transit, but 10 percent of the OAUTA respondents do not use transit.

The authors asked respondents about the kinds of trips they make by public transit, allowing them to select multiple trip purposes. For Alumni Village residents, the most common trip purpose is school (83 percent). This is expected, since it is a community whose residents are largely FSU graduate students. The next most common trip types are “other” (53 percent), work (43 percent). Medical trips comprise merely 15 percent of trips. For the OAUTA survey respondents, trips for medical purposes is the most common purpose (46 percent) followed by work trips (42 percent), “other” trips (38 percent) and trips to school (36 percent). More than 67 percent of respondents in each of the communities responded that they are aware of the changes in the transit system, which suggests that the public outreach efforts conducted by StarMetro through local media and public listening sessions might have been successful among these two rider populations.

An overwhelming majority of the Alumni Village respondents are students (more than 83 percent), while just under half of the OAUTA respondents (just under 45 percent) are employed individuals. OAUTA respondents also include unemployed people, retired persons, and homemakers, representing a much more diverse group than the Alumni Village survey respondents. These other individuals are likely to use transit for very different purposes than the employed and student groups, as the survey results tend to corroborate.

The authors were particularly interested in how survey respondents’ use of and attitude toward transit has changed after restructuring. Most Alumni Village survey respondents ride the bus about as often as they did before the change (55 percent), while 23 percent ride less often and about 22 percent ride it more often. The authors observed a different pattern among the OAUTA respondents. A majority the OAUTA respondents (66 percent) report riding the bus less often than before, whereas only a small percentage (18 percent) report riding the bus as frequently as before and an even smaller percentage (nearly 15 percent) report riding it more frequently.

This is a potential cause for concern for StarMetro because it means that the system restructuring caused some existing riders to stop using the service as much as they did before, perhaps resulting in an overall decrease in the number of trips generated by these communities. Given the overwhelmingly transit-dependent nature of this population, the results suggest the need for more attention to the transit-related concerns of this community, which might then result in significant ridership increases. In fact, the interviewees in the OAUTA community (discussed later in this report) reported feeling that StarMetro did not paid adequate attention to their travel needs during the restructuring debate, suggesting the need for much greater outreach in this community. This is a marked contrast to the level of satisfaction expressed by other neighborhood-based groups also discussed later in this report.

Next, the authors examined the respondent satisfaction with eleven different aspects of transit service quality. For this question, the respondents graded each aspect of the transit

system on an ordinal scale ranging from “very satisfied” to “very dissatisfied.” The detailed responses for Alumni Village and OAUTA are provided in Tables 20 and 21 respectively.

Table 20. Alumni Village Community Survey: Respondents’ Satisfaction with Different Aspects of Transit Service

Category	Very Satisfied (%)	Satisfied (%)	Neutral (%)	Dissatisfied (%)	Very Dissatisfied (%)	Responses
Frequency of Service	15.0	45.0	13.3	18.3	8.3	60
Service to Destinations	27.6	22.4	22.4	17.2	10.3	58
Service in Neighborhood	26.7	36.7	16.7	16.7	3.3	60
Service Reliability	25.0	26.7	21.7	20.0	6.7	60
Night and Weekend Service	20.0	21.7	20.0	26.7	11.7	60
Sense of Personal Safety	35.0	45.0	11.7	3.3	5.0	60
Availability of Shelters, Benches, Sidewalks	25.0	36.7	18.3	11.7	8.3	60
Walking Distance to Bus Stop	28.3	41.7	16.7	8.3	5.0	60
Ease of Transfers/Connections	13.3	25.0	36.7	13.3	11.7	60
Information on Service Changes	13.3	26.7	41.7	11.7	6.7	60
Overall Satisfaction with StarMetro Service	11.7	43.3	23.3	13.3	8.3	60

Table 21. Orange Avenue Unified Tenants Association Community Survey: Respondents’ Satisfaction with Different Aspects of Transit Service

Category	Very Satisfied (%)	Satisfied (%)	Neutral (%)	Dissatisfied (%)	Very Dissatisfied (%)	Responses
Frequency of Service	4.0	15.8	23.7	19.7	31.6	5.3
Service to Destinations	4.0	22.4	17.1	17.1	32.9	6.6
Service in Neighborhood	4.0	17.1	10.5	19.7	40.8	7.9
Service Reliability	1.3	13.2	19.7	23.7	36.8	5.3
Night and Weekend Service	4.0	10.5	19.7	15.8	38.2	11.8
Sense of Personal Safety	5.3	30.3	25.0	14.5	17.1	7.9
Availability of Shelters, Benches, Sidewalks	4.0	14.5	15.8	15.8	43.4	6.6
Walking Distance to Bus Stop	9.2	10.5	14.5	22.4	36.8	6.6
Ease of Transfers/Connections	4.0	19.7	21.1	17.1	31.6	6.6
Information on Service Changes	5.3	10.5	21.1	23.7	30.3	9.2
Overall Satisfaction with StarMetro Service	4.0	10.5	21.1	25.0	32.9	6.6

Generally speaking, Alumni Village respondents are satisfied with most aspects of transit service quality (Table 20). A majority of respondents reported being satisfied or very satisfied with all aspects of service quality except night and weekend service, ease of transfers and connections, and information about service changes. Indeed, night and weekend service received the largest percentage of dissatisfied or very dissatisfied responses. OAUTA respondents, on the other hand, are generally not as happy with transit service quality

(Table 21). A majority of OAUTA respondents reported being either dissatisfied or very dissatisfied with service frequency, service within the neighborhood, destination access, service reliability, night and weekend service, walking distances to stops, availability of shelters and other infrastructure at stops, and information on service changes. Whereas a majority of Alumni Village respondents reported being satisfied or very satisfied with StarMetro service overall, a strong majority of OAUTA respondents expressed being dissatisfied or very dissatisfied with overall service.

The authors were interested in whether any relationships exist between a respondent's responses to each of the survey questions and whether or not the individual has access to an automobile. Therefore, the authors conducted a series of chi-square tests for each set of surveys. Table 22 reports the chi-square values for the Alumni Village respondents. The table shows statistical associations (at the 0.05 significance level) between an individual's access to a vehicle and his/her frequency of use, use of transit for "other" trips, and change in frequency of use; and statistical associations (at the 0.10 level) between an individual's access to an automobile and his/her satisfaction with sense of personal safety at stops. Table 23 reports residual analysis results for each of these statistically significant relationships. The residual analysis indicates that a person without access to an automobile is more likely to use the bus more often, less likely to use the bus for "other" trips, less likely to have increased their frequency of use after the service restructuring, and more likely to be satisfied with his/her sense of personal safety. A person with access to an automobile were more likely to use the bus less often, more likely to use the bus for "other" trips, more likely to have increased their frequency of use after the service restructuring, and more likely to feel dissatisfied with his/her sense of personal safety at bus stops. The fact that people with access to automobiles are more likely to increase their frequency of use suggests that the service restructuring altered travel times and destination patterns might have attracted choice riders to use the system more frequently than under the previous radial design.

Table 22. Alumni Village Community Survey: Chi-Square Tests of Survey Responses by Auto Access

Survey Question	Chi-Square Statistic	P-Value
Frequency of Use	10.896	0.028
Use of Work Trips	0.003	0.956
Use for School Trips	1.187	0.276
Use for Medical Trips	2.656	0.103
Use for Other Trips	11.315	0.001
Awareness of Service Changes	0.041	0.839
Change in Frequency of Use	8.629	0.013
Employment or Student Status	0.783	0.676
Satisfaction with Frequency of Service	1.097	0.895
Satisfaction with Service to Destinations	5.454	0.363
Satisfaction with Service in Your Neighborhood	1.933	0.748
Satisfaction with Service Reliability	2.219	0.696
Satisfaction with Night and Weekend Service	3.897	0.420
Satisfaction with Sense of Personal Safety at Stops/On Bus	9.020	0.061

Survey Question	Chi-Square Statistic	P-Value
Satisfaction with Benches, Shelters, and Sidewalks at Stops	3.925	0.416
Satisfaction with Walk Distance	2.662	0.616
Satisfaction with Connections and Ease of Transfers	6.301	0.178
Satisfaction with Information About Service	1.871	0.759
Overall Satisfaction with the Transit System	5.939	0.204

Table 23. Alumni Village Community Survey: Chi-Square Residual Tests of Survey Responses by Auto Access

Frequency of Use		
	Use Less than One Time per Week	**Use 5 or More Times per Week**
Has Access to Auto	2.1	-2.3
No Access to Auto	-2.1	2.3

Use for Other Trips		
	Use for Other Trips	**No Use for Other Trips**
Has Access to Auto	3.4	-3.4
No Access to Auto	-3.4	3.4

Change in Frequency of Use	
	Use More Frequently
Has Access to Auto	2.9
No Access to Auto	-2.9

Satisfaction with Sense of Personal Safety at Stops/On Bus		
	Satisfied	**Dissatisfied**
Has Access to Auto	-2.4	2.0
No Access to Auto	2.4	-2.0

Note: These are the statistically significant residuals only, for chi-square tests indicating statistical significance.

The authors conducted a similar investigation for the respondents to the OAUTA surveys. Table 24 reports the results of the chi-square tests for these surveys. The table indicates that the only significant statistical association is between automobile access and frequency of use. The residual analysis shown in Table 25 indicates that respondents who have access to an automobile are more likely to never use transit.

Table 24. Orange Avenue Unified Tenants Association Community Survey: Chi-Square Tests of Survey Responses by Auto Access

Survey Question	Chi-Square Statistic	P-Value
Frequency of Use	20.159	0.000
Use of Work Trips	0.001	0.999
Use for School Trips	0.178	0.673
Use for Medical Trips	1.858	0.173
Use for Other Trips	3.570	0.168
Awareness of Service Changes	0.003	0.957
Change in Frequency of Use	2.034	0.362
Employment or Student Status	5.135	0.400
Satisfaction with Frequency of Service	4.193	0.380
Satisfaction with Service to Destinations	1.875	0.759
Satisfaction with Service in Your Neighborhood	1.936	0.748
Satisfaction with Service Reliability	4.411	0.353
Satisfaction with Night and Weekend Service	2.461	0.652
Satisfaction with Sense of Personal Safety at Stops/On Bus	3.260	0.515
Satisfaction with Benches, Shelters, and Sidewalks at Stops	2.193	0.700
Satisfaction with Walk Distance	1.160	0.885
Satisfaction with Connections and Ease of Transfers	5.141	0.273
Satisfaction with Information about Service	3.476	0.482
Overall Satisfaction with the Transit System	3.879	0.423

Table 25. Orange Avenue Unified Tenants Association Community Survey: Chi-Square Residual Tests of Survey Responses by Auto Access

Vehicle Access	
	Never Use
Has Access to Vehicle	4.2
No Access to Vehicle	-4.2

Note: These are the statistically significant residuals only, for chi-square tests indicating statistical significance.

The authors also asked respondents in both survey areas about how they learned about the service changes and about the kinds of improvements they would like StarMetro to make to the transit system.

A majority of the Alumni Village survey respondents indicated that they were made aware of the changes through StarMetro's public outreach efforts, including posters, driver training, free rider program, announcements and emails sent to residents through FSU and the Alumni Village housing office. A smaller number of Alumni Village respondents received information through friends or by actually using the restructured system.

Some of the OAUTA respondents were also made aware of the changes through the public outreach efforts undertaken by StarMetro, but a larger number became aware

through “unofficial” means, such as through friends, by word-of-mouth, or by having to wait for a bus that did not arrive (due to the routing and schedule changes associated with restructuring). By and large, OAUTA respondents are quite frustrated with the transit system changes and the outreach surrounding them.

Alumni Village responses suggest service improvements that were very specific to the ease of reaching key destinations, such as the FSU main campus, Walmart Supercenter, regional malls, and the airport, especially during weekend and off-peak hours. Some respondents suggest changing the naming of the routes to something more meaningful and less confusing to irregular users. About half of the respondents in OAUTA survey want StarMetro to bring back the old system. Other OAUTA respondents suggest increased transit service frequency, better weekend and night service, and more transit stop and shelter improvements. As a group, OAUTA has much more specific complaints about the service restructuring and suggestions for improvement than the Alumni Village group, indicating their higher level of dissatisfaction with service restructuring.

Therefore, it can be concluded that the OAUTA respondents are dissatisfied with the redesigned transit service and have reduced the number of trips they take on the new system. The findings from the interviews support a similar response, which is detailed in the next chapter. On the other hand, a majority of the Alumni Village residents are using the system as regularly as they did the old system and are worried more about reaching specific destinations, including the FSU campus and shopping centers.

Accessibility Analysis

One of the fundamental questions the authors asked is whether the decentralized system increases accessibility to destinations compared with the former radial system. The authors calculated accessibility (on a TAZ basis) as the number of jobs accessible to a rider by transit divided by the time it takes the rider to reach the location of the job. The authors used jobs to represent employment, as well as using other destinations that tend to be co-located with employment, as is typical in transportation demand modeling studies. The authors calculated transit travel times using the regional transit model.[139] The authors then summed the results over the entire set of zones served by each network. The overall accessibility provided by the new decentralized system (score of 846,189) is higher than that provided by the former radial system (score of 774,571). Overall, the users of the new system enjoy higher accessibility to destinations. The new, decentralized system provides better overall transit connectivity to more destinations than the older system. As a whole, Tallahassee transit riders are thus better off as a result of the service restructuring.

The survey results discussed earlier indicate that riders walk farther to access bus stops under the new system, which is indeed shown in the accessibility results as well, but the accessibility analysis also shows that once they reach the bus stop they have better connections to destinations. Comparing the origin and destination pairs served by both the systems, the average increase in walk time to a bus stop is 2 minutes, whereas the total travel time to the ultimate destination has been decreased by 8 minutes for a typical trip interchange under the new system. For the average trip interchange, overall accessibility has improved as a result of the restructuring.

The increased accessibility of the decentralized system is due both to more direct travel and shorter travel times, once the rider reaches the bus stop, and the addition of new destinations that were not previously accessible by transit. Figure 34 shows the transit geography of Tallahassee before and after the service restructuring. Transit service has been withdrawn from a few locations (28 TAZs, mostly neighborhoods), while a lot more new destinations have been made accessible by transit (48 TAZs) in the new system. The destinations added or removed are randomly distributed across the entire transit service area, with a few clusters in the east and south east, but overall there is no spatial pattern to the elimination or reduction of transit service. The lack of a pattern is confirmed by the correlation analysis of the socio-economic data discussed later in this section.

While the community as a whole benefits from the shift to the decentralized system, the authors were particularly interested in whether certain socio-economic groups were disproportionately affected by the service restructuring. Specifically, does the service restructuring disproportionately benefit or harm transportation-disadvantaged or legally protected groups? The authors were particularly interested in the effects on African Americans, seniors, low-income residents, and those without access to automobiles. Because the transit system is dominated by student riders, the authors were also interested in whether students disproportionately benefit or are harmed by the service restructuring, or whether they might enjoy service improvements made at the expense of the needs of other communities. Figures 35-39 show the spatial distributions of each of these groups by census block group or TAZ, as indicated in the map titles.

Students predominantly reside near the university campuses, with a majority living northwest and southwest of the CBD. As can be observed in Figure 35, the redesigned bus system covers the entire student community and there appears to be no disproportionate negative impact on the students due to the restructuring. Figure 36 shows Tallahassee to be a typical North American city where low-income people are confined to the center and the southern parts of town and the higher income people reside overwhelmingly in the suburbs. Except for a couple of census block groups in the extreme west of Tallahassee, which are outside the transit service area, the redesigned system appears to serve the low-income population well.

Figure 37 shows that although the African American population is spread throughout the city, a majority of them reside in the west and south of Tallahassee. The StarMetro system seems to serve the minority population well and there appears to be no disproportionate negative effect on this specific population group.

Figure 38 indicates that much of the older population (over 65 years of age) lives in the outer suburbs that are outside the StarMetro service area. But the few census block groups within the transit service area that have older population seem to be served by the new system.

Census block groups with a high percentage of carless households are spread all across town as shown in Figure 39. Overlaying the transit system on the households without vehicles map shows that the redesigned system seems to serve this population well.

Overlaying the redesigned transit system map on these socioeconomic distribution maps helps us to visually examine the possible effects of the transit system on the groups that use transit the most and the groups that are protected under Title VI. Visual inspection suggests no disproportionate negative effect of the service restructuring on any of these groups, but the authors now turn to explore this issue statistically for more definitive results.

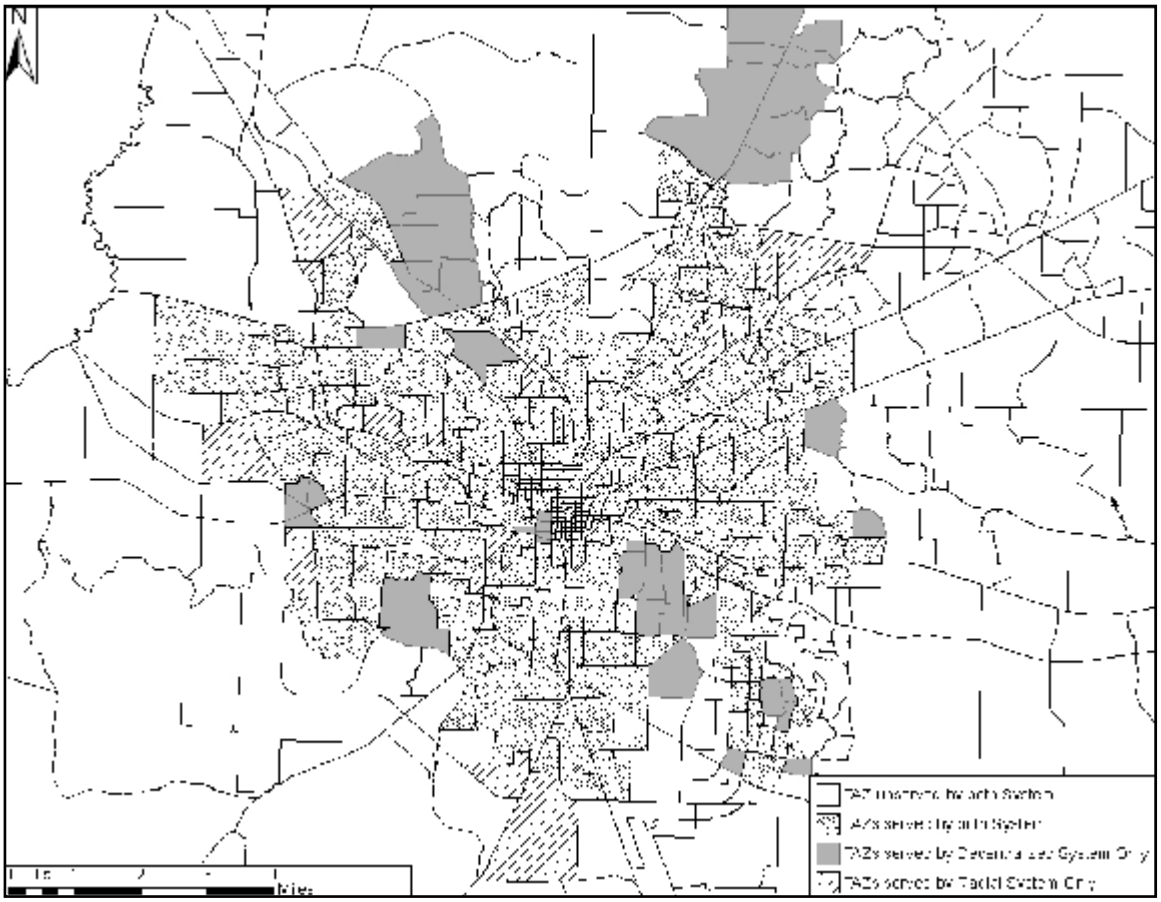

Figure 33. Change in Service Coverage Before and After July 2011 Restructuring

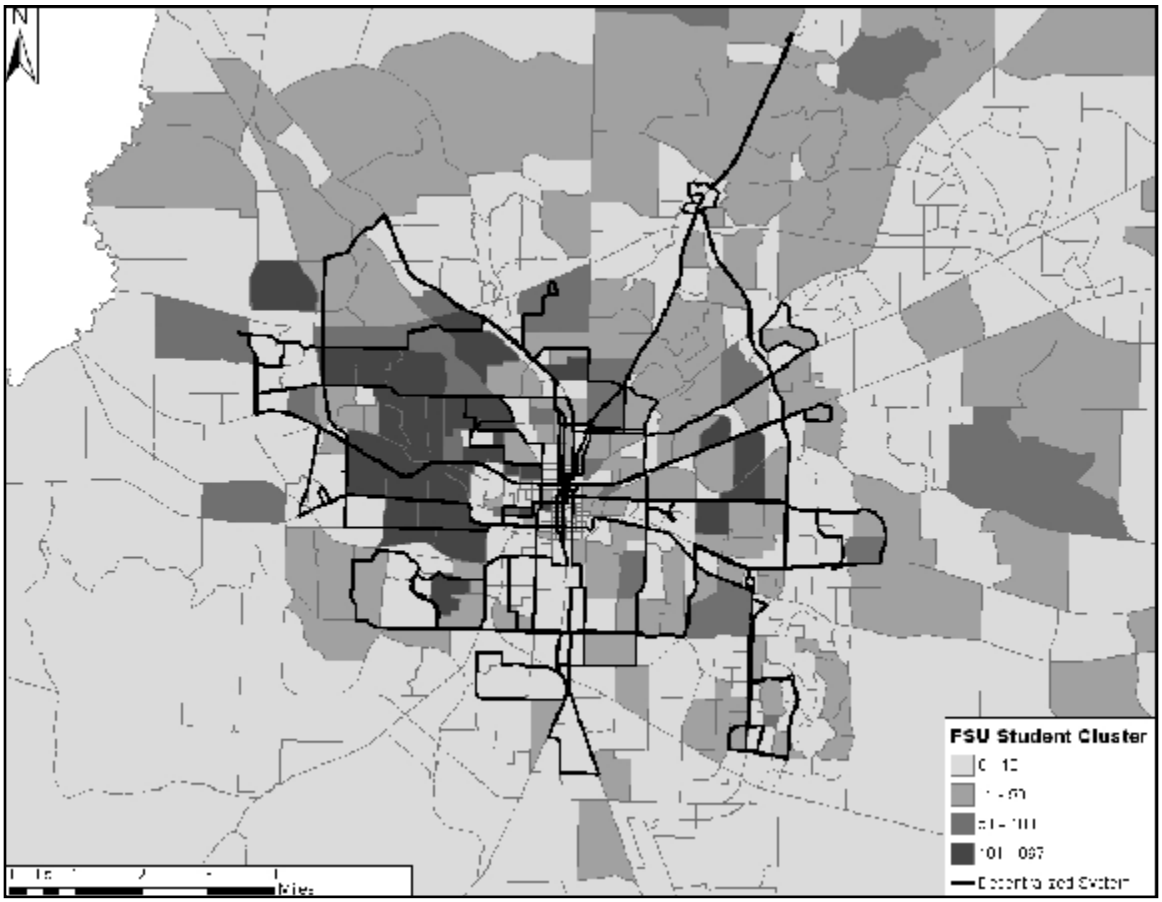

Figure 34. FSU Student Residential Locations, by TAZ, Tallahassee (Fall 2011)[140]

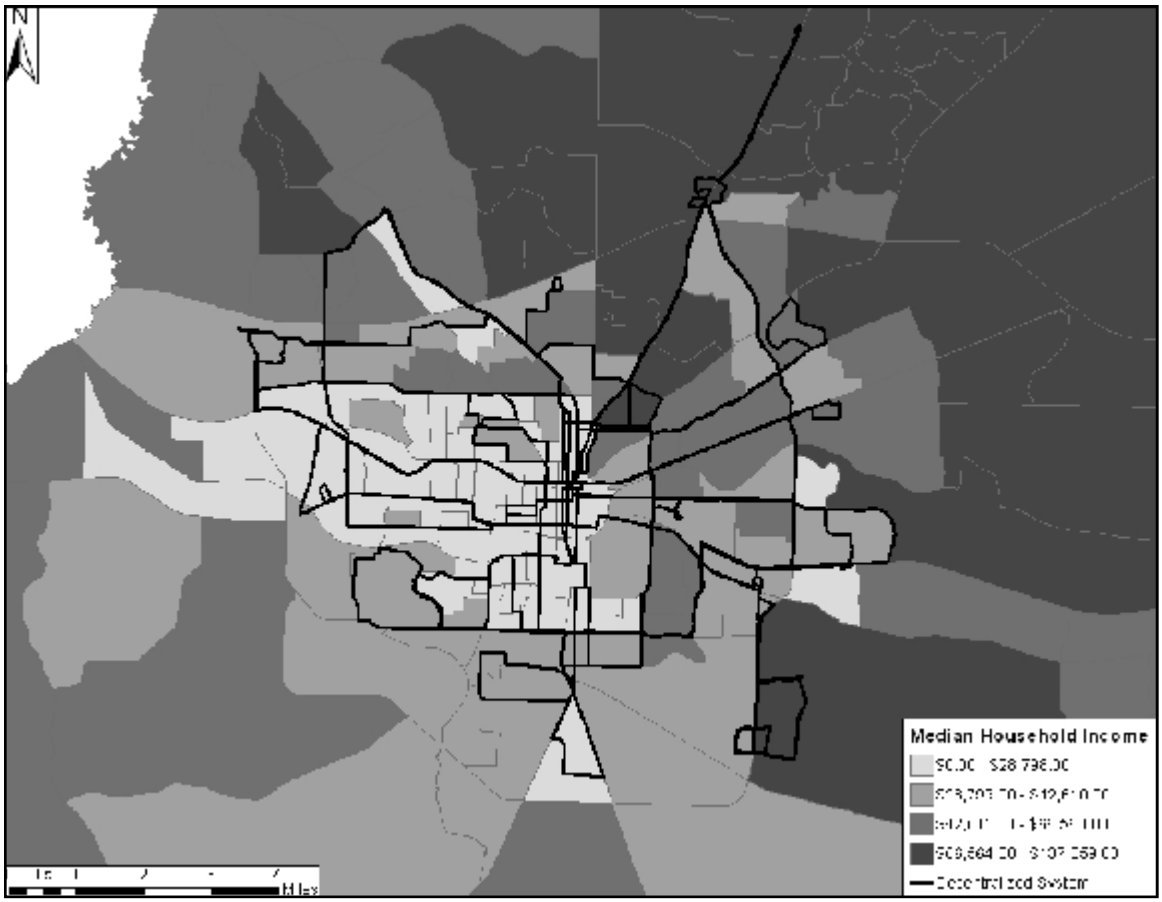

Figure 35. Median Household Income, by Block Group, Tallahassee (2010)[141]

Note: HH: household.

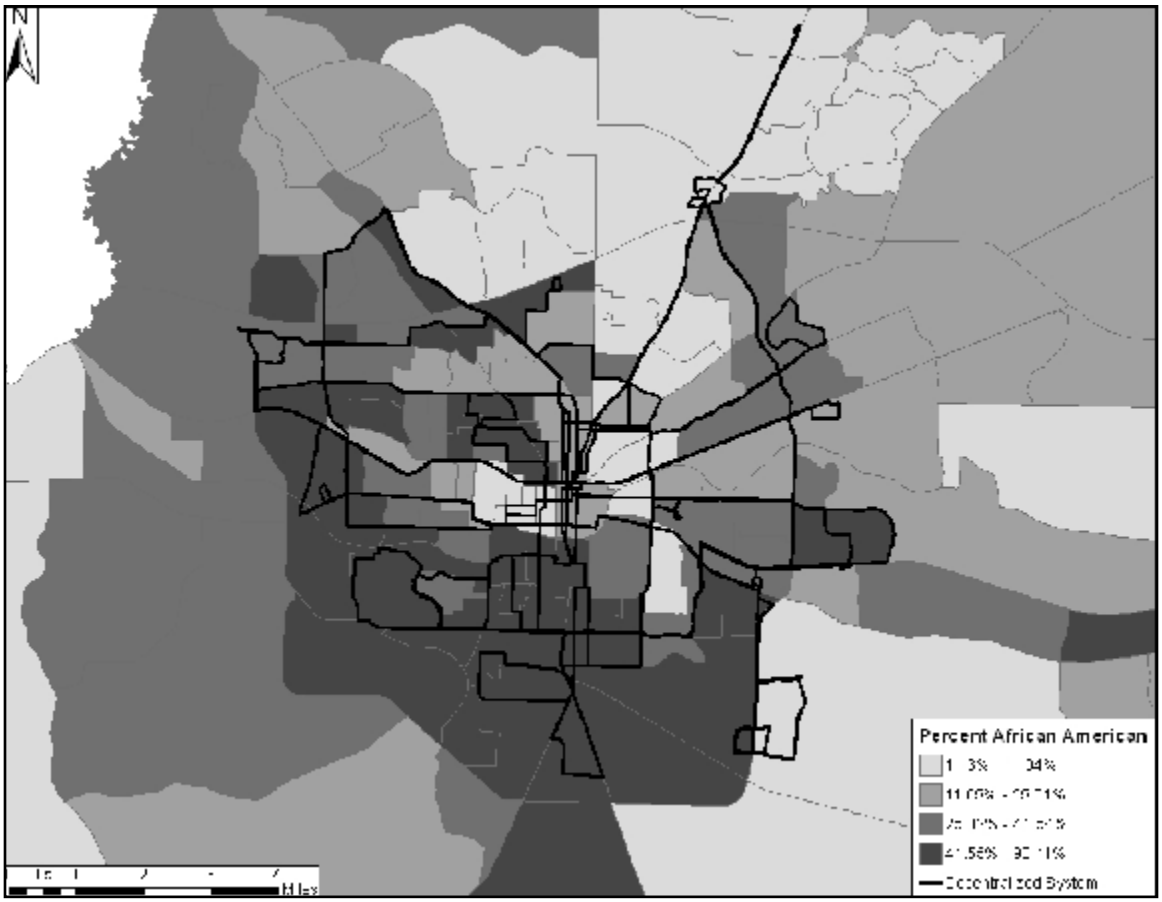

Figure 36. African American Population, by Block Group, Tallahassee (2010)[142]

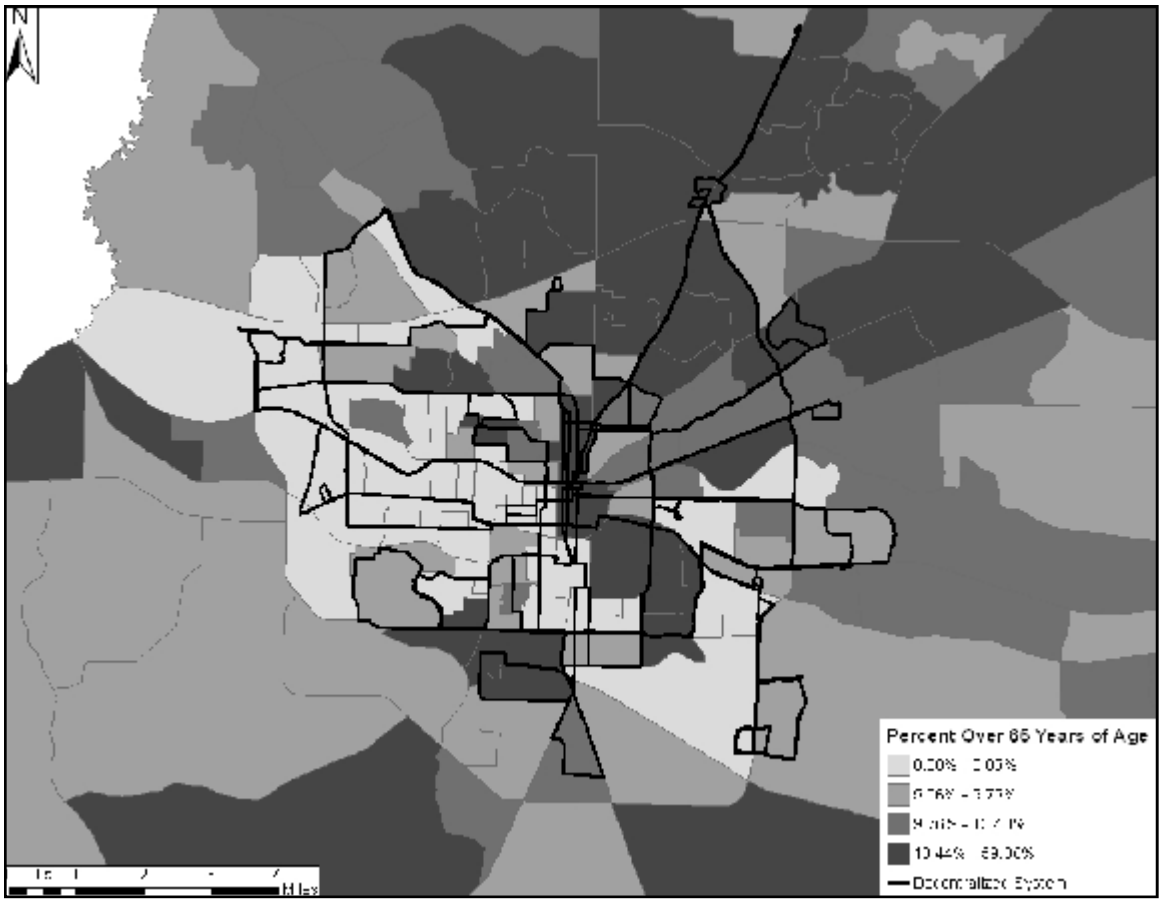

Figure 37. Population over 65 Years, by Block Group, Tallahassee (2010)[143]

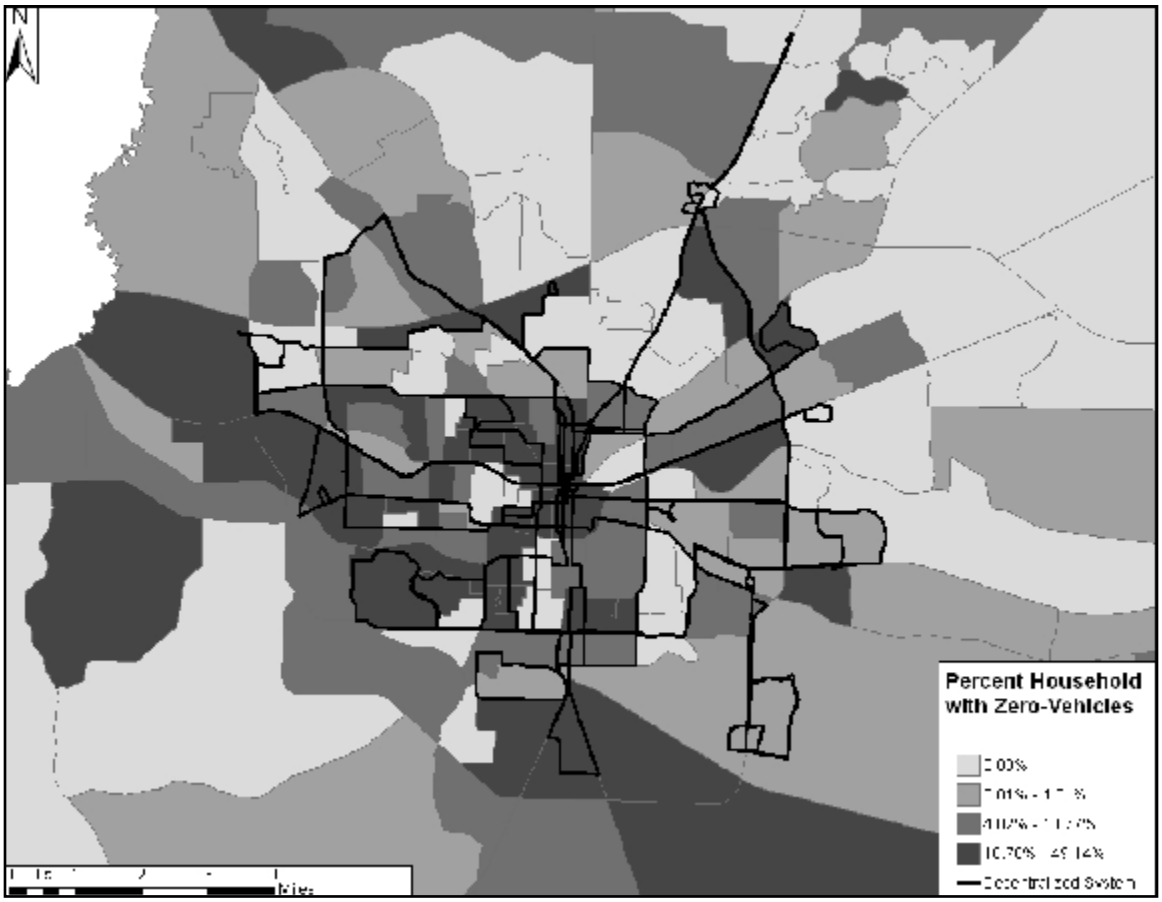

Figure 38. Households with Zero Vehicles, by Block Group, Tallahassee (2010)[144]

The authors conducted a correlation analysis comparing the difference in overall accessibility by zone between the old and new system and each of these socioeconomic variables. The results are shown in Table 26. The results show no statistical relationship between any of the socioeconomic variables (percent African American, percent households without vehicle access, percent population over the age of 65, median household income, and number of students) and any of the accessibility measures. These variables are not correlated with the overall accessibility score of either the radial system or the decentralized system or with the difference in accessibility between the two systems. The correlation analysis suggests that the change from a radial system to a decentralized system does not disproportionately harm nor benefit any of these groups. Nevertheless, because the service restructuring resulted in higher accessibility for the community as a whole, one can conclude that these groups are, on average, better off as a result of the service restructuring.

Table 26. Correlations between Changes in Travel Times and Socioeconomic Variables

Socioeconomic Variables	Served by Radial Only		Served by Decentralized Only	
	Walk Access (r Value)	Accessibility (r Value)	Walk Access (r Value)	Accessibility (r Value)
Median HH income	0.244	-0.041	0.181	0.004
% African American	-0.164	-0.015	0.001	-0.040
% HH with Zero Vehicles	-0.145	0.016	-0.028	-0.034
% Age 65 or older	0.015	-0.016	0.006	0.038
Number of Students	-0.020	-0.021	0.071	-0.023

Socioeconomic Variables	Served by Both Systems		
	Difference in Walk Access (r Value)	Decentralized Accessibility (r Value)	Radial Accessibility (r Value)
Median HH income	-0.102	-0.039	-0.039
% African American	0.049	0.005	0.013
% HH with Zero Vehicles	0.023	0.015	0.019
% Age 65 or older	-0.069	-0.025	-0.023
Number of Students	0.069	0.017	0.023

Note: None of these correlations is statistically significant.

DISCUSSION OF RESULTS OF THE EFFECTS OF RESTRUCTURING ON RIDERS

The case study of StarMetro's route restructuring shows that a decentralized transit system can provide higher accessibility than a radial system for the typical resident of a community, suggesting that other agencies with radial systems could increase the accessibility of their transit systems by making a similar service change. The particular approach to restructuring taken in Tallahassee does not disproportionately benefit nor harm legally protected or transit-dependent groups, although they benefit, along with everyone else, from the overall increase in accessibility. The service restructuring did not change the overall composition of the system's ridership in a fundamental way, suggesting that the way restructuring was implemented appealed to transit-dependent and current riders but has limited appeal to choice riders.

The two transit-dependent communities have been affected differently, with Alumni Village respondents accepting the new changes, but the OUATA respondents being dissatisfied with the service quality. In time, as additional service adjustments are made to the system, its attractiveness to non-traditional riders might increase, but further research is needed to identify the types of specific service improvements that are most valued by different groups of riders in a multi-destination network context.

VIII. THE EFFECTS OF BUS ROUTE RESTRUCTURING ON TRANSIT POLICY AND STAKEHOLDERS

In July 2011, StarMetro, the local transit agency in Tallahassee, Florida, restructured its bus network from a CBD-radial pattern to a decentralized multi-destination network structure with multiple transfer centers to better fit the decentralized pattern of population and employment in the community. Prior to the restructuring, transit service in Tallahassee had been relatively unchanged for many years. Transit riders had long since grown accustomed to the transit system's design and function. When the idea of restructuring appeared on the local policy agenda, unsurprisingly, it was controversial. Many local residents and community organizations were strongly opposed to the proposed service changes, while other groups supported StarMetro's proposed service redesign. Because of its controversial nature, restructuring was debated publicly for some time before its actual implementation. This debate led to some modifications in StarMetro's restructuring plans prior to the new system's implementation, but the groups opposed to restructuring were unable to prevent its occurrence.

This section focuses on the interplay of the various stakeholder groups that participated in the debates over restructuring, tracing their attitudes towards the initial restructuring proposals, the nature of their involvement in the pre-change debates that modified some aspects of these proposals, their level of engagement in post-restructuring debates, and their attitude toward the restructuring that occurred in July 2011. The stakeholders include local elected officials, transit agency leadership and staff, citizen's advisory committee members, social service organization staff, neighborhood association staff, community advocacy organization staff, and vocal concerned citizens. Some of these stakeholder groups played more active roles than others, and some stakeholder groups exercised a stronger influence on the ultimate form of the restructuring than others, but all of them were engaged in community dialogue throughout the time period from the initial restructuring proposal to and beyond implementation of the new system design. The authors consider their level of engagement, attitudes, and influence on the restructuring debate by reporting the key insights gleaned from about 30 in-person, hour-long interviews with the various participants. The reader may find the consent form for the interviews in Appendix E, the general set of interview questions in Appendix F, and a roster of participants and list of interview dates in Appendix G.

FRAMEWORK AND METHODOLOGY FOR UNDERSTANDING STAKEHOLDER ENGAGEMENT

The authors employed a dispute resolution and negotiation framework as a means of structuring and then analyzing the results of the in-person interviews. Within this framework, the authors examined the specific initial position taken by the interviewee and/or his/her organization, the nature and extent of the interviewee's engagement in the public dialogue about restructuring, the effects of the interviewee's engagement with local officials and other stakeholders, and the interviewee's attitude toward the results of their engagement and the restructuring itself.

Dotson, Godschalk, and Kaufman[145] identify three phases of dispute resolution and negotiation: 1) the pre-negotiation or convening phase, 2) the negotiation or face-to-face dialogue phase, and 3) the post negotiation or ratification and implementation phase. Each of these phases roughly corresponds to a particular time period in the debate over public transit system restructuring in Tallahassee. The first phase, pre-negotiation, is the period during which problems are defined, possible solutions begin to develop, and stakeholders begin to emerge as participants in the problem-solving dialogue. In the case of the StarMetro route restructuring, this first phase corresponds roughly to the time period from the development of the FSU studio[146] report that helped give structure to the idea of system restructuring (2004) through the unveiling of the Renaissance Plan[147] and the first formal restructuring proposals (2009).[148] During this period, the general idea of route restructuring emerged as an important topic of official transit policy in the community with the support first of agency and then ultimately city leadership. Also during this period, some stakeholder groups began to slowly engage in discussions about restructuring, particularly following the unveiling of the Renaissance Plan that laid out the long-range planning strategies of StarMetro's new leaders. Some stakeholders began to question the possible negative effects of any service changes, particularly the effects of moving routes and relocating stops on elderly and disabled riders.

The second phase, the negotiation or face-to-face dialogue phase, corresponds to the period from public unveiling of the Nova2010 plan in 2009 to the implementation of the restructuring on July 11, 2011. During this period, restructuring became a topic of public conversation in media and through a number of public listening sessions and community outreach endeavors. All the key stakeholders engaged during this period. StarMetro staff reached out to the neighborhood associations, business associations, disabled and elderly community social organizations, and community residents to obtain their feedback on the various iterations of the restructuring proposal. The Transit Advisory Committee (TAC) became an active participant in regular conversations with staff and concerned citizens about the restructuring proposals. Critics of the restructuring engaged StarMetro directly, through conversations with local elected officials, and through media. Through a long process of listening, learning, and negotiating,[149] a consensus, although certainly not unanimity, slowly emerged that resulted in the system plan that was implemented in July 2011.

The third phase, implementation phase, corresponds to the period since July 11, 2011, during which StarMetro operated, and made modifications to, the new system. Some stakeholders became more passive observers of the implementation, having been satisfied that their concerns were adequately addressed through the earlier negotiation phase, while other stakeholders continued to voice criticisms of the system implementation. StarMetro subsequently made some service adjustments as a result of these criticisms.

Process for Stakeholder Identification

The authors began the process of identifying potential stakeholder interviewees by reviewing the various transportation planning documents that preceded the actual service restructuring itself. These documents included the FSU studio report, the regional Long Range Transportation Plan,[150] the Transit Development Plan,[151] the Renaissance Plan,[152] and the Nova2010 planning report.[153] Each of these planning documents emerged from

a planning process that included community outreach efforts that were chronicled in the *Tallahassee Democrat* and other local media. The authors also reviewed all local newspaper coverage of transit issues in the community to identify individuals and/or organizations who were engaged in transit policy discussions. This documentary review resulted in both a better understanding of the transit history of Tallahassee and an understanding of which individuals and/or organizations seemed to be regularly engaged in discussions around transit, as evidenced by their participation in community outreach efforts around transit and/or their mentions in local media around transit issues. The authors then expanded on this list by using a snowball process wherein each interviewee was asked about other individuals and/or organizations that should be interviewed because of their engagement in or concerns about transit issues in the community. Ultimately, the authors identified about 36 potential interviewees, 29 of whom agreed to be interviewed for the research.

The authors selected the interviewees to represent a broad spectrum of the community. Interviewees included individuals on both sides of the transit restructuring debate. The interviewees included: local elected officials, transit agency staff, city social service staff, representatives of non-profit social service organizations, representatives of neighborhood and business associations, representatives of advocacy groups, members of the city-appointed Transit Advisory Committee, and individual concerned citizens. As part of the process of obtaining participant consent to the interviews, the authors agreed to grant each participant anonymity when quoting them. Therefore, they are identified by their role and/or general position. A roster of participants is shown in Table 27.

After the authors identified each interviewee, the authors approached them with a written email invitation that explained the purpose of the study and invited their participation in an in-person interview. If the individual agreed to participate, the authors submitted a set of prepared questions to them in advance of the interview, obtained their formal agreement to participate through signing a consent form, and obtained their consent to record the interview for note-taking purposes. Each of the participants who sat for an interview agreed to the stipulations. Each interview took approximately one hour. The authors acted as “listeners” rather than advocates of a point of view. The interviews were informal, conversational, and semi-structured in order to obtain a better understanding of each individual’s level of engagement in the restructuring debate and their attitudes/concerns about restructuring.

Table 27. Roster of Interviewees

Role	Number of Interviewees	Characteristics	Position on Restructuring	Coded As
Local Officials	2	Elected officials who serve on the governing body of the city.	Positive, but cautious	Elected Official
City and Agency Staff	4	Appointed officials who have administrative responsibilities for providing transit service.	Positive	City Staff
City Staff in Community and Service Agencies	5	Appointed officials who are responsible for planning, directing, and coordinating social service programs.	Positive	City Service Staff
Community and Neighborhood-Based Organizations	4	Organizations that are responsible for providing a specific type of service (e.g. housing, education, economic development) to the members of their community.	Mostly Positive with some critics	Community Organization Representative
Social Service Organizations (independent of city)	3	Organizations dedicated to provide social service to the individuals and communities with specific needs or purposes.	Critical and cautious	Social Organization Representative
TAC Members	8	A voluntary commission that serves as an advisory board to the City Commission on transit service issues.	Positive and hopeful	TAC Member
Concerned Citizens	3	Vocal citizens who are affected by the route restructuring.	Critical	Concerned Citizen
Total Number of Interviewees	29			

Analysis of Stakeholder Interview Data

The 29 interviews generated a mass of information about each individual's attitude toward restructuring and engagement in the debates around restructuring. The authors typed all interview notes, organized them to correspond to each of the three phases of the restructuring debate, and then subjected them to content analysis to identify the key areas of interest and/or concern. The content analysis generated a number of issue areas, which are shown in Table 28. These key areas of concern included: destination coverage, service quality, access and infrastructure, safety, outreach/public information, and other. The authors used these areas of concern to help organize the mass of interview data. The authors discuss information gleaned from the interviewees about their positions, concerns, and engagement in the restructuring discussions during each of the phases of the timeline in the sections that follow.

Table 28. Key Areas of Concern: Content Analysis Classifications

Destination Coverage	Safety
Governor's Square Mall	Safety at transfer points/intersections
C.K. Steele Plaza	Safety at bus stops
Southwood, 80X route	Safety at night
Tallahassee Mall	

Service Quality	Outreach/Public Information
Budget issues	Providing accurate and timely information
Headways	Using technology/GPS
Night and weekend service	Listening sessions/public hearings
Ridership frequency	TV, radio, newspapers, social media
Dial-A-Ride service	Public relations
Effectiveness/efficiency	
Grade of old and new system	
Pre-restructuring conditions	
Reliability	
Pre-StarMetro period	
Wait time	

Access and Infrastructure	Other
Access issues, audible signals, bumps at crosswalks, tactile indicators	Surveys before and after restructuring
Physical infrastructure (shelters, benches, etc.) at stops	Honesty in conversations
Sidewalks	Transparency
	FSU studio project

BACKGROUND (KEY EVENTS TO 2004)

Prior to 2004, TalTran, which was the name of the local transit agency at the time, operated a very stable, downtown-focused transit system. The general manager, Larry Carter, had served about three decades in the position, and he felt no real pressure to make significant changes to the transit system. According to many of the interviewees, Mr. Carter conceived transit's primary role as serving captive markets: the truly transit-dependent and the college student population. As Table 29 indicates, there were few major service changes initiated during Mr. Carter's long tenure at the helm of the transit agency. However, in 2004, Mr. Carter retired from his position. Toward the end of Mr. Carter's tenure, the city hired the Florida State University Department of Urban and Regional Planning to present options for future transit development in Tallahassee. Shortly thereafter, the city hired Ronald Garrison as the new transit system general manager. (See Appendix A for a more detailed timeline of events preceding the route restructuring.)

Table 29. Milestones in Tallahassee Transit Development (1973-2011)

Year	Milestone
Pre-1973	Cities Transit, owned and operated by Charles Carter, provides public transportation in Tallahassee.
1973	City purchases system in 1973, renames it Tallahassee Transit (TalTran) and appoints the son, Larry Carter, of the previous owner as the general manager.
1976	TalTran adds three new routes to its downtown-focused transit system to serve emerging outlying residential, medical, commercial, and office districts.
1979	New downtown transfer point established on the present site of C.K. Steele Plaza to replace transfer terminal at Park and Monroe Streets.
1989	Effective August, the TalTran system comprises 30 fixed routes for basic regular service, running on weekdays, nights, and weekends.
1997	City Commission recognizes Larry Carter, of Tallahassee's Taltran, for receiving the American Public Transit Association's award as the nation's longest tenured transit general manager at a single transit system.
2004	City Commission discusses remodeling of the TalTran Bus System to better serve the community, to be completed over the next year.
2004	Larry Carter retires, the Transit Renaissance Process begins.
2004	Graduate student studio at Florida State University develops four different future transit system network alternatives as part of a project for TalTran. One alternative becomes the basis for further investigation by TalTran management.
2005	Ron Garrison hired as executive director of the transit system; TalTran is renamed StarMetro.
2006	80X Route inaugurated as first crosstown route.
2009	Service changes increase accessibility to TCC and west-side neighborhoods.
2010	Decentralization plan unanimously passed by the City Commission.
2011	July 11, 2011 StarMetro launches the decentralized route system, Nova2010.

The authors asked interviewees who were long-time residents of Tallahassee and/or long-time users of the transit system for their thoughts on the pre-2004 transit system operated by Mr. Carter. Most of these interviewees viewed it as a satisfactory system given the size of the city and the amount of financial resources available for transit. The system focused on the downtown transfer hub at C.K. Steele Plaza (Plaza). The main objective of the system was to connect neighborhoods to downtown, especially the neighborhoods with poor or transit-dependent people. The service was limited in terms of destinations served, but our interviewees observed that it was convenient, particularly for elderly and disabled mainly because the transfers were safe and secure at the Plaza. One interviewee noted, "In the old system, there was the hub downtown and that is where you changed buses. Everybody was safe. If there was a thunderstorm, if it was hot outside, if you needed to use the bathroom, there was no problem. Everybody was essentially protected at the hub." (Service Organization Representative 2). Disabled riders were able to navigate this safe, comfortable, familiar environment with relative ease (Concerned Citizen 2).

Most importantly, the system had been in place for decades, which meant riders were accustomed to using it and were tolerant of its deficiencies. This sentiment was echoed by numerous interviewees. As one interviewee noted, "The bus system was never perfect. It had its pluses; you can make your connections, you can make them safely, you did not have to worry about the weather…if your bus did not show up, you had a very easy way

of walking up to the window and saying: 'Hey, where the heck is my bus?'" (Concerned Citizen 2). Another interviewee seconded this sentiment, noting that service was limited in terms of destinations served, but it was convenient, particularly if you planned ahead to make your trip. "It was in need of improvement, but worked well" (Concerned Citizen 3). One of the Transit Advisory Committee (TAC) members observed that although it "took an hour to get anywhere" because all the buses went to the central hub, it was also hard for anyone to get lost using the system, for exactly the same reason (TAC Member 1). One of the greatest deficiencies in the service was the quality of night and Sunday service, which is still seen as a problem by many riders.

The interviewees who were city staff members or transit staff emphasized the inefficiencies of the old system and the increasing mismatch between the downtown-focused transit system and a very decentralized Tallahassee. One city staff member observed that the transit system did not meet peoples' needs as the city grew (City Staff 2). This same individual noted that buses frequently bunched along Tennessee Street as they headed into and out from the central hub, which resulted in duplicative, low productivity service along this corridor. One TAC member also emphasized the increased spatial mismatch between the transit system and the pattern of travel destinations (TAC Member 8). This individual also associated the transit structure with poor, inconvenient service. One city staff member emphasized that, "The old system is not necessarily convenient for someone that wanted to have a direct route or access to somewhere other than downtown… It was time consuming from a customer perspective" (City Staff 4).

The two elected officials also emphasized geographical mismatch and efficiency concerns about the old system. One elected official observed that the old system may have worked for Tallahassee 20-30 years ago, but not for the future of the community: "It was reliable for the riders because of the redundancy in the system, but it was not efficient" (Elected Official 2). For the other elected official, the system was underfunded and becoming increasingly inefficient as the radial routes were extended further out into the community's edges (Elected Official 1). He characterized the old system as a stagnant system where the only growth was on newer routes like the 80X (discussed later).

In summary, the sense of most interviewees was that the transit system worked reasonably well for long-time users but did not provide an efficient or effective framework for increasing the quality of transit service or increasing transit ridership. The system was a static one, or a stagnant one. At the same time, city staff and local elected officials believed there was a need to make changes to increase the system's relevance and enable it to attract more riders. StarMetro Executive Director Ronald Garrison observed that, "More than 40 years ago, when the system was designed, going downtown and in and out of neighborhoods made sense. Jobs, housing, recreation, civics, etc., were downtown, and the current system met those needs. As we know, Tallahassee has changed, with jobs and other destinations moving to the periphery along Capital Circle Northeast and Southwood. Since the city has changed, it is time for StarMetro to change."[154]

THE PRE-NEGOTIATION PHASE (2004 TO 2009)

The retirement of Mr. Carter, contracting for the FSU studio, development of the Renaissance Plan, and hiring of Mr. Garrison, all of which occurred over about a one-year period, marked the beginning of serious local conversations about the future of transit in Tallahassee. The studio report outlined a vision of a decentralized transit system that de-emphasized the central hub in favor of dispersed service and scattered transfer locations. Mr. Garrison brought prior professional experience from St. Louis and elsewhere in restructuring transit service and operating decentralized transit systems. Mr. Garrison shortly thereafter unveiled the Renaissance Plan,[155] which incorporated a combination of his ideas and those from the studio report. Mr. Garrison's sentiments echoed those of other local officials who characterized the old system as becoming increasingly inefficient with low productivity and redundant services, poor performance, and an ever-increasing mismatch between the geography served by the transit system and the pattern of population and employment.

In fall 2004, the FSU graduate studio team developed four different future transit system network alternatives, as part of their project for TalTran.[156] One of their proposed alternatives became the genesis for the restructured system. In fact, one member of the studio team now serves as a key StarMetro staff member, which became TalTran's new name in 2005. A number of our interviewees cited the studio report as the origin of the restructuring proposal. According to one interviewee, the studio report is the decentralization plan: "They [StarMetro] picked the modest proposal, grabbed that, put it in there and said here is what we have…No one sat around one day and said we really need to improve our mass transit…it sounds like it came from somebody else; who said you need to cut your budget and you need to figure out how to do it" (Concerned Citizen 1). Similarly, another interviewee told the authors that the decentralization plan came out of the studio: "it was on the shelf, and they needed something fast, it was available" (Concerned Citizen 2).

At the same time, the City Commission contracted the Center for Urban Transportation Research (CUTR) at the University of South Florida to conduct the Renaissance Study.[157] CUTR subsequently conducted a Comprehensive Operations Analysis, to review the bus operations and identify better ways to deliver transit service, and a Transit Development Plan (TDP),[158] which identified the projected transit needs of Tallahassee. The TDP serves as a guide for the future development of StarMetro and it has been updated twice, in 2006 and 2011. The TDP identifies eight goals to address future transit needs of Tallahassee as follows:[159]

Goal 1 - Consistently provide and constantly improve effective, safe, and reliable public transit services to the residents and visitors of Tallahassee.

Goal 2 - Maximize efficiency of the TalTran fixed-route system.

Goal 3 - Improve financial stability and secure adequate funding for the transit system.

Goal 4 - Add new amenities and maximize use of existing passenger amenities.

Goal 5 - Improve the image and increase marketing strategies of TalTran.

Goal 6 - Build and maintain a knowledgeable and motivated employee team.

Goal 7 - Coordinate the transit system with planning efforts of all government entities and institutions of higher learning.

Goal 8 - Comply with governmental regulations.

These goals around expanded service delivery, enhanced facilities, better system design, and improved community perception have guided all subsequent transit planning documents in the community.

Most of these planning activities occurred behind the scenes in local policymaking circles, save for the participation of some members of the public in outreach efforts around the Studio report and the other planning documents. Public notice that new transit ideas were emerging first occurred with the renaming of the system as StarMetro and more visibly with the creation of the 80X express route that connected Bradfordville and Killearn with the Koger Office Center and Southwood via the central hub.

Service started on August 28, 2006, with the full route in operation by early 2008.[160] These outlying centers in the northeast and southeast of Tallahassee had emerged as major population and employment centers that were underserved by the existing transit system. Press coverage was generally favorable to the new service, and city officials widely praised the route as a success.[161]

Many of the interviewees point to the 80X route as the beginning of the decentralization process, despite its routing via the central transfer hub. According to one city staff member, “80X was early tailings of a decentralized route. It was our one decentralized route…It was very popular” (City Staff 4). A number of our concerned citizen interviewees had favorable impressions about the 80X route. One interviewee noted that “the bus was almost always packed…it was used by a lot of people for a lot of reasons. It was amazing how popular that route was, I enjoyed it…it was the first decentralized route we had” (Concerned Citizen 1). Other interviewees emphasized their displeasure with the 80X’s elimination as part of the 2011 restructuring.

Between 2004 and 2009, transit officials and local policymakers prepared the stage for the restructuring of the transit system. Most key local decision makers came to believe that the transit system no longer served the transit needs of the community in an efficient or effective manner. These same individuals coalesced around the idea of restructuring the transit system as a means of making transit more efficient and indeed more relevant to an increasingly decentralized community. But they made these very general commitments to the need to change the transit system as opposed to making a public commitment to a specific transit plan.

StarMetro officials hoped to improve transit agency performance through the restructuring, to maintain ridership levels or minimize ridership losses during the transitional period immediately following the change, to improve operations (including speeds, schedule reliability, and the like), and to provide a framework for future service improvement and expansion. As StarMetro Executive Director Ronald Garrison stated publicly, “When planning for the future, it’s not only important to plan for next year, but for years to come.

This was the intent of StarMetro's route changes one year ago, which now allows customers the opportunity to travel more directly to an increased number of destinations."[162]

For the larger community, at this time, newspaper coverage merely focused on general policy discussions around the studio report, the Renaissance Plan, and the Transit Development Plan, as there was yet no real sense of what specific changes to the transit system might result from these efforts. The 80X route provided one indication of a change in agency thinking about transit service, but the remainder of the transit system remained in place the way it had for years previously. The community was used to this transit system, even if the service was now regarded as redundant and inefficient by those who made and implemented local transit policy.

THE NEGOTIATION PHASE (2009 TO 2011)

Between 2009 and 2011, the public dialogue that culminated in the July 2011 restructuring took place. In 2009, StarMetro unveiled its Nova2010 restructuring plan to the general public and to elected officials on the City Commission. StarMetro organized a number of public meetings and listening sessions to discuss the plan's purported benefits and underlying rationale; staff took public comments during these outreach efforts, with some comments leading to modifications of the restructuring proposal. One interviewee noted that, "StarMetro put a tremendous amount of work in pre-planning" (TAC Member 6). Ultimately, StarMetro staff held more than 100 listening sessions or public meetings about restructuring. The city-appointed Transit Advisory Committee (TAC), a board that is constituted to represent the larger Tallahassee community and to provide community feedback to StarMetro, became a more active participant in discussions around restructuring as well. Ultimately, the TAC endorsed the restructuring plan, and the City Commission subsequently adopted it in March 2011 for July 2011 implementation. Key Events during this period are shown in Table 30.

A number of key issues emerged during this period that was dominated by public outreach efforts. First, the public airing of the restructuring proposal led all the relevant stakeholders in the community to become actively engaged in discussion around StarMetro's Nova2010 plan. Some stakeholder groups became active proponents of the restructuring effort, while others became active opponents of the proposal. City staff, city social service staff, and local elected officials tended to be supportive of the initial proposals; TAC members tended to have differing opinions about the proposal; social service organizations tended to be critical of the proposal due to concerns about effects on their clients; and the transit advocates, whom the authors refer to as concerned citizens, were highly critical of the proposed changes. Many of these individuals became quite vocal in their criticisms, making frequent appearances at City Commission meetings and writing editorials in the local newspaper.

Many of these stakeholders were brought into the process directly through StarMetro's community outreach efforts, which were quite extensive. A city staff member acknowledged that, "The public is really hard to get involved. They don't like to show up for stuff. So, getting people to come out to meetings was challenging. But we spread them out geographically as much as we could" (City Staff 3). However, StarMetro understood the necessity of

getting as much public involvement as possible, given the radical nature of the planned service changes.

Second, several key points of controversy emerged into the open during these discussions. These areas of controversy included the effects of service restructuring on the disabled and elderly community, the loss of service within some neighborhoods, the demotion of the Plaza as the key transfer hub, and some general safety concerns. Disabled and elderly riders and their advocates became particularly engaged in these discussions, focusing on the issues of access and safety. Many advocates were concerned about the relocation of stops to settings that had inadequate or non-existent sidewalks, shelters, and other infrastructure to and at stop locations. They were also concerned about safety accessing these stop locations, which tended to be located along major roadways and frequently lacked adequate road crossing markings, facilities, or pedestrian crossing signals.

One service organization representative's first reaction to the decentralization proposal was that it was "a scary thing" (Service Organization Representative 1). This interviewee reported that her clients already had difficulty making transfers and other connections at C.K. Steele Plaza and the prospect of having to make transfers at locations all around town really complicated things. "The transfer plaza itself was hard enough for people with visual impairments to get around and travel independently. It was definitely a challenge. But the idea of having to do transfer out in the community further complicated things. It is kind of a scary idea to begin with." This interviewee felt as though s/he had to start over in the organization's training for clients about how to safely use the transit system. The interviewee reported that organization staff expected to be "totally overwhelmed." However, being informed about the restructuring ahead of time allowed them to plan ahead and adapt to it, which meant the transition was smoother than anticipated. They were pleased with StarMetro's progress in addressing their specific concerns (e.g., audible signals, bumps to mark crosswalks, and new sidewalks), especially given the agency's budget limitations. This interviewee reported that, "It was a good transition really. It wasn't crazy. I think one of the good things was we knew about it ahead of time and start preparing people, giving them information as we had it… We definitely had an opportunity to be involved and to give our opinions about it. They [StarMetro] were very open about receiving those (opinions and suggestions)."

Some critical observers were also concerned about the increased walking distances to stops that were relocated from neighborhoods onto major roads and the need to make transfers at satellite locations outside the central hub, which was viewed as a safe transfer location. One city staff member observed that for many people the shift away from the hub was a big disruption to their routine: "You had a major cultural shift where people liked the convenience of knowing that they could go to C.K. Steele and shift on to the bus that could get them to the next location. So there was a little bit of the conundrum if you will, because you would expect them to be happy to have direct routes, but you have a whole culture that was used to using the central system and very comfortable with that" (City Staff 4). It also affected disabled and visually impaired people who were used to making a transfer at the hub. This interviewee also recalled concerns about lack of shelters at transfer points outside the hub where people would be left "out in the elements." The chair of the TAC at that time agreed with many of the voiced safety concerns.[163]

A number of participants complained that StarMetro staff ignored the concerns and needs of current riders. One interviewee insisted that the mission for planners is to, "build coalitions, get everyone on the same page and move forward. I found just the opposite, they tried to build coalitions, but they build the coalition with people who don't use the bus…they didn't go to bus riders" (Concerned Citizen 1). One interviewee believed that StarMetro listened but that they did not act on many public concerns: "Particularly for people with disabilities, you need crosswalks, you need pedestrian lights, and you need sidewalks. The new system did not take into consideration sufficiently the needs of the disabled at all." (Service Organization Representative 2). According to a concerned citizen who participated in the TAC Working Group, the proposed plan, "threatens to make the bus system much worse for many existing riders while discouraging new ridership."[164]

One of the TAC Members noted, "There was a lot of change between 2009 and 2011 that was not particularly well publicized. In March 2011, it finally crystallized. And I saw what happened between the listening sessions and the early stages and the final product was…I blew my stack…nights and Sundays went away, the bus stop I used went away. It was going to make me walk about 500-600 feet to get to the bus. I wasn't real happy about that. Service to where I live was going to get cut from 30 minutes to 45 minutes…the reality wasn't even getting closer to the promise" (TAC Member 2).

On the other hand, many people liked the proposed increase in service frequencies on many of the new routes, and the changes in the route alignments to reach new destinations. One interviewee noted, "This is a great plan; this is what Tallahassee needed 30 years ago" (TAC Member 4). According to another interviewee, "The main purpose of restructuring was to connect people from where they live to many more destinations they wanted to get to, more quickly" (TAC Member 8). This interviewee felt that the proposal clearly did so.

There were some concerns about the implementation process as well. One social service organization staff member believed the system should have been changed in stages with the worst performing routes being eliminated one by one and substituted with routes in areas that were previously un-served or needed improvement (Social Organization Representative 3). This interviewee believed this would have minimized opposition as people became acclimatized to the new service. However, StarMetro staff insisted that the structure of the old system necessitated making the changes all at once (City Staff 2). This interviewee further observed that a decentralized system would allow service changes to be made incrementally, as needed, because of its modular nature: "If we ever wanted to expand, add more service, get frequencies below 30 minutes, we couldn't just improve one route, because all routes met at the Plaza. We had to improve multiple routes. It is cost prohibitive to do dramatic system improvement…in the decentralized system, it is very modular, and we can pick one or two routes and fix it at a time." This view is also held by city and StarMetro leadership.

Even most of the critical interviewees believed that StarMetro made a good faith effort to address these infrastructure and safety considerations. One social service organization representative for the visually impaired community discussed conversations between StarMetro, city public works staff, and her organization around stop markers, crossing signals, and signage to make the system more safe and accessible for visually impaired

riders. Other interviewees emphasized the strong involvement of the City Public Works department, which prioritized stop locations for sidewalk and other infrastructure improvements. At the same time, other interviewees cautioned that while these efforts were appreciated, there were still serious deficiencies in infrastructure that might affect rider access and safety.

Table 30. Key Developments Around Restructuring Plan (2009-2011)

Date	Key Development
June 10, 2009	City Commission receives presentation on Nova2010 Plan by StarMetro Director Ron Garrison.
September 2009	StarMetro formally launches study for Nova2010 plan.
September-November 2009	Public meetings and listening sessions around Nova2010 proposal.
January 28, 2010	Transit Advisory Committee votes unanimously to endorse Nova2010 decentralization plan.
February 2010	StarMetro completes proposed Nova2010 Decentralization Plan Final Report for City Commission consideration and discussion.
March 24, 2010	The City Commission holds public hearing on Nova2010 Decentralization Plan and approves it with a proposed implementation date of before the end of 2011.
August 12, 2010	StarMetro holds more public meetings about Nova2010 plan.
September 2, 2010	StarMetro holds listening session about proposed bus stop locations for Nova2010.
March 9, 2011	City Commission endorses plan for July 2011 implementation.
July 11, 2011	Service restructuring occurs.

On the other hand, many other stakeholders supported restructuring because they believed the city needed to improve the transit system to provide better access to growing suburban parts of the community, and they believed the decentralization proposal achieved these goals through creation of new transfer opportunities and provision of more direct crosstown service. City employees and elected officials tended to be most supportive: “The goals of the decentralization were to create more options for customers in terms of direct access, make it more convenient to make transfers, reduce non-value added activities such as the redundancies of the route system, and improve the route system” (City Staff 4). Paraphrasing one elected official, the main goal for restructuring was increasing efficiency and connecting people to more destinations, more quickly with an emphasis on serving employment (Elected Official 2). These sentiments were also shared by most TAC members.

Much of the discussion and negotiation around the restructuring proposal occurred through two venues: the listening sessions and public meetings convened by StarMetro and the meetings of the Transit Advisory Committee. The authors now discuss the interviewees’ reflections on what occurred through each of these venues. As noted, some interviewees viewed each of these venues as positive contributors toward resolving concerns about restructuring, while other interviewees remain somewhat skeptical of their roles as spaces of open dialogue among the participants and the larger community.

Listening Sessions and Public Outreach

Understanding the need to inform the community and build support for the restructuring proposal, StarMetro staff engaged in an extensive outreach effort from the beginning of 2009. One city staff member stated, "We created a draft list of the locations we wanted to get to... We wanted to do public listening sessions, basically we wanted to reach out to anybody who would have us; developers, real estate, business associations" (City Staff 2). StarMetro staff reported approaching a number of different community, business, and social service organizations to get their participation in public discussions and to use them as hosts for public meetings or listening sessions and conduits of information to their constituencies. These organizations included Rotary Clubs, Chamber of Commerce, Council of Neighborhood Associations, senior and disabled social service organizations, the homeless coalition, and other community organizations. StarMetro also used traditional media like the local TV and radio stations and *Tallahassee Democrat* newspaper and new media like Facebook, Twitter, email lists, websites, and other online outlets to get the word out to the public about the proposed restructuring and the public outreach meetings arranged to obtain community feedback.

StarMetro Executive Director Ronald Garrison observed that, "We've met with 80 special-interest groups, held 20 public listening sessions and conducted three special listening sessions with bus riders at C.K. Steele Plaza. We've also received your input through two social networking sites, an e-mail address and a phone hot line. The result has been many ideas and suggestions for improving this system, and we've been able to incorporate over 70 percent of those citizen suggestions into the latest Nova2010 concept map."[165]

One TAC member, who appears to have conflated the TAC's role with that of StarMetro itself, observed that, "We [StarMetro] pretty much touched everybody; I don't think we left anybody out. I think we did an excellent job at outreaching to everybody…for this big plan with limited resources; the taxpayers got a real bargain" (TAC Member 4).

Most interviewees recognized and appreciated that StarMetro staff put such intensive effort into public outreach during this time. One member of the TAC stated, "The listening sessions really led to a lot of changes… People came away feeling a little bit more knowledgeable and little bit better even if they didn't like it" (TAC Member 7). Ultimately, StarMetro staff held over 100 public meetings or listening sessions involving more than 1,000 participants at locations scattered across the community.

StarMetro staff expressed general satisfaction with the effectiveness of their outreach efforts during the interviews, although they acknowledged it was quite difficult getting people to attend the meetings. This proved particularly challenging on the Southside, where StarMetro staff held meetings at community and other social service centers.

StarMetro staff noted that they used the listening sessions to show their route restructuring ideas and to get customer feedback. The staff noted that they explained the process that led to the restructuring plan during these sessions by talking to participants about this process. One city staff member noted that, "We came up with a concept; version 1. We take version 1 out there and we do a presentation over the idea of decentralization. This

is our concept, and then we would say what are your thoughts and what changes do we make? And then we take their thoughts, go back and come with version 2. Go back out with version 2 and do different sets of meetings. We did that with 9 different versions of the map" (City Staff 2). The same city staff member noted that increased walking distance to stops and the lack of shelters at new stop locations were the two biggest concerns raised by participants during the listening sessions, and this staff member noted that the agency took these concerns seriously.

The route plan was largely the result of an effort to better serve population and especially employment, and staff used the pattern of employment density and land use as a guide to their concept plan. Their first concept map simply connected employment clusters. This early concept plan and several revisions made their appearances during the public meetings and listening sessions, where staff presented the concept, received feedback from participants, made adjustments, and repeated the process with a new iteration of the concept plan. The commission ultimately approved the 10th version of the plan.

According to the interviews, the feedback from the public meetings and listening sessions resulted in about 30 minor adjustments to routes, stops, and schedule changes to the plan. For example, Senior Center staff attended one of the listening sessions and they raised the issue of lack of a bus stop on 7th Avenue next to the center (located at the intersection of 7th Avenue and Monroe Street). The initially planned stops were located on Monroe Street in front of the building (southbound) and down the block (northbound), which posed access challenges to some people traveling to the center. StarMetro changed the plan to place a route on 7th Avenue and there is now a stop with a shelter immediately next to the center. Other changes to stop locations and routing were also made, including routes serving the regional malls.

Many of our interviewees had a positive sense of the listening sessions and public meetings and of StarMetro's willingness to make adjustments based on feedback from the community, while other interviewees were quite negative about the willingness of StarMetro staff to make significant plan revisions based on community concerns. On the positive side, a number of interviewees pointed to stop relocations that improved rider access. One TAC member pointed specifically to a number of stop access improvements (TAC Member 7). Other interviewees noted a few routing changes into neighborhoods or to better serve the regional malls.

One interviewee reported that, "I have to honestly say yes…originally the seniors were going to have to cross Monroe Street to get to the Senior Center and we beat on that drum sufficiently…originally they were not going to do bus service into either malls' parking lot. We beat on them and beat on them on that and they eventually relented and did bus service into Governor's Square Mall…we couldn't remember or figure out how the bus service ended up going into Tallahassee Mall" (Concerned Citizen 3).

On the other hand, a number of interviewees criticized the openness of the sessions to critical ideas. An elected official stated, "I don't think we did a good job of listening." One concerned citizen noted, "I think once you went to one [listening session] you kind of knew what the deal was. It did not feel like listening was going on…we still lost the 80X,

for example" (Concerned Citizen 1). One elected official observed that s/he felt that the StarMetro staff and leadership were not really listening to the concerns of riders. Both a community organization representative and a member of the TAC stressed that it seemed like StarMetro was selling a predetermined plan as opposed to taking genuine input from the community. StarMetro was "trying to get a job done" (Community Organization Representative 3).

A member of a TAC working group that was brought in to discuss the early proposals complained that the working group "had no teeth." This same person complained that, "They [StarMetro staff] did not have to listen to us unless it benefited their vision. I saw it as an opportunity to see what they are doing. It was presented with a framework" (TAC Member 2). This same individual characterized StarMetro staff as having been on a mission and also as not being particularly savvy when interacting with public, in terms of the way things were presented or in handling their responses to some very critical, pointed questions during listening sessions.

One interviewee complained that there was never an honest dialogue about the future of mass transit in Tallahassee. Reflecting on the public meetings and listening sessions, this individual observed that they "feel like all this was done for different reasons and they never told us and we have to deal with it now" (Concerned Citizen 1). According to another concerned citizen, "there are multiple reasons the change was made, [but] none of them were the reason of we are going to make the service better which was the stated reason" (Concerned Citizen 2).

Other critical interviewees questioned the effectiveness of StarMetro staff's community outreach efforts. One interviewee complained that there was no real outreach at all. This individual stated that neither elected officials nor StarMetro went to the neighborhoods to see what the riders actually wanted or where they wanted to travel (Community Organization Representative 4). A few interviewees complained that StarMetro staff discounted the concerns of residents who had purchased homes for transit access but who would now be impacted negatively by restructuring. One of the concerned citizens noted, "When my wife and I purchased our home, we got our realtor and gave him a bus map and said that we would not consider anything that was more than three blocks from a bus stop. It took us about 6 months to find our home. Once we found our home at the time, we were thrilled; because we were within a block of three of the major bus routes…the point is we went into it knowing we are going to use the transit system and we purchased our home accordingly" (Concerned Citizen 3).

As one of the elected officials interviewed noted, "You can't please all the people, but we have different pockets in our town where it was either elderly or people with disabilities and they had moved to those areas knowing that that is where the StarMetro system was. And we were all of a sudden going to change our route with very little concern as to what their needs were. And that concerns me, because people make an investment in an area because they think they are going to have mass transit for a fairly long period of time and all of a sudden we pull it out" (Elected Official 1).

Other interviewees characterized the listening sessions as being used to sell a product and as a marketing effort as opposed to venues for genuine public engagement. One elected official noted, “I think we got far too bogged down in the technical nature of the redesign. What works from a grid standpoint, not what areas do we need to make sure that we do a good job…health care deliveries is important, clearly reaching the downtown office buildings is important, we have a disabled population…what is important to them” (Elected Official 1).

Another interviewee had particular concerns about transit service in the Southside and believed that the new routes did not fit transit rider travel patterns very well, mainly because of the lack of resources: “There is really not enough funding available for them to do what needs to be done…there is not the adequate resources to do what needs to be done right now to make the system work for everybody” (Community Organization Representative 3). This individual’s sense was that there has been a large reduction in service (45 percent) in the Southside after restructuring. This contact emphasized that route restructuring represented a huge change, an unknown, and required major adjustments by riders: “It was not a horrible plan but it didn’t take into account how people actually travel.” In this individual’s opinion citizens were not informed enough to understand the everyday implications of the change before it actually happened.

Indeed, the effectiveness of outreach efforts, particularly in the Southside and Frenchtown communities was raised by a number of interviewees, and even by StarMetro staff themselves. StarMetro staff emphasized that it was quite difficult to coordinate and arrange public meetings in these communities in Tallahassee, and to have participants attend once such meetings were organized. A few interviewees suggested that more listening sessions should have been held at or near the Plaza itself as it was an easily accessible central location.

Even if the people were not happy, they were informed and left the listening sessions with more knowledge. StarMetro listened, but when all is said and the “decisions had been made” (TAC Member 6, Social Organization Representative 1), they were “trying to get a job done, and the citizens were not informed well enough to understand the everyday implications of the change before it actually happened” (Community Organization Representative 4).

For some of the community groups and citizens, the StarMetro staff and leadership were not really listening to the concerns of riders. On the other hand, other groups commended StarMetro staff for the significant outreach effort that did occur and for the changes that were made to the plan as a result of feedback provided through the listening sessions. Indeed, stepping back, albeit not having engaged in the listening sessions, the authors conclude that while the listening sessions did not result in a fundamental change in the initial plan, they did result in quite significant marginal changes to specific stop and route locations. Thus, it would appear that StarMetro staff took many public comments quite seriously and made changes as a result.

Transit Advisory Committee

The Transit Advisory Committee (TAC) also played an important role during the negotiation phase of the restructuring debate. Members of the 11-member TAC are appointed by the Mayor through an open application process for a three-year period. Technically, the committee serves in an advisory capacity to the mayor and to the City Commission and does not have a formal affiliation with or oversight of StarMetro or its operations. A StarMetro staff member attends all TAC meetings and serves as a liaison between the TAC and the agency. The TAC predates the restructuring discussion and is frequently used as a forum for public involvement and discussion of local transit initiatives and issues. The committee is supposed to include a diverse membership that represents the general public as well as specific transit stakeholders that might be affected by transit planning and policy in the community.

The authors interviewed most TAC members for this research. The authors were interested in their conception of their role, their sense of the representativeness of the TAC of the larger community, and the effectiveness of the TAC in raising concerns and having them addressed by the City and/or StarMetro. One TAC member described the TAC as fairly representative of the community and as a body that had real debates and was comfortable bringing its concerns to the City and StarMetro (TAC Member 4). Another member sees his/her role in TAC as representing bus riders, low-income people, and students (TAC Member 7). This member is particularly concerned about people living in affordable housing and wants to make sure StarMetro serves these areas of the community well.

Most TAC members characterized the TAC as a collegial body. One member observed that the TAC works well as a body and a diverse set of riders and non-riders are represented in the TAC: “I think we [the TAC] really work well together. There are many different types of riders represented. And even some people who are not bus riders at all and they are there to represent someone” (TAC Member 7). Another member observed that the TAC gives him/her more opportunities to express his/her thoughts and that s/he gets listened to better: “rather than whispering, your voice is little louder” (TAC Member 2). Other members agreed that TAC members are generally free and willing to voice their opinions in TAC meetings and to StarMetro and City Staff.

From StarMetro’s perspective, the role of TAC in the restructuring process was to provide insight from a customer’s perspective. One city staff member emphasized that it was important for TAC to be engaged in the debate as an advocacy-oriented committee, because they were viewed as an independent actor that represented the larger public, not just riders (City Staff 3).

Indeed, one TAC Member believed that the TAC’s most important accomplishment was providing immediate feedback on how proposed changes would work (or not) for the citizens as a whole as routes were adjusted after various listening sessions: “The most important accomplishment was that we were able to give immediate feedback based on our diverse views of the city as to how proposed changes were going to work for the citizens. They started shifting routes around based on listening sessions. We would take a look at these changes and give opinions...and they were able to adjust accordingly. We

were kind of like a regular committee that gives them regular listening session feedback" (TAC Member 1).

While most TAC members generally characterized themselves as representative of the larger community and its interests, skeptical interviewees characterized the committee as a rubber stamp with no influence (Concerned Citizen 1 and Concerned Citizen 3): "The way the TAC is supposed to be a bunch of independent people appointed by the Mayor… In practice, what it works out to be is StarMetro gives names to the Mayor's office, you know…ohh this would be a good person for the TAC... These people are going to do what StarMetro wants done…I didn't feel like it was very representative and I felt like StarMetro had intentionally stacked the deck" (Concerned Citizen 3).

These views were even held, to a certain extent, by some TAC members. One of the TAC Members stated, "I had the feeling for the most part; everybody in the committee was heard, everybody could talk and express their opinions, but I am not sure what impact did it have on the whole system… They certainly listened and communicated with us very well, but I doubt we were a token or something…when it was all set and done, that was my impression…it was good, it was valuable, but it was limited" (TAC Member 6).

Other interviewees mentioned the somewhat parochial concerns of TAC members. One interviewee felt that members were there with one agenda item (better service in their neighborhood, etc.) and they became engaged when there was a proposal for a service cut in their neighborhood. For example, one TAC Member characterized his/her role on the TAC as both: 1) representing the northwest area of the city to ensure service was continued in that area, and 2) representing the needs of the disabled community, to make sure safety issues were addressed in a way to allow them to easily use the regular bus system: "I represent my area of the city to ensure that the service continues for the people in that area. As representative of the disabled community to make sure that safety for the disabled continues to be noted on the regular system, because not always do people who are disabled want to use para-transit" (TAC Member 1). Whereas, another member stated that s/he was trying to bring the riders' perspectives to the table through his/her service on the TAC (TAC Member 2) and yet another member stated, "I wanted to be a voice for the visually impaired and a voice for public transportation consumers" (TAC Member 6).

StarMetro used the TAC as a forum for critics of the restructuring plan to air their concerns. A number of these critics were appointed to a TAC Working Group in 2010. The chairman of the Transit Advisory Committee said: "We [members of the Transit Advisory Committee] believe that a working committee appointed by the TAC could help in identifying issues and mitigation strategies that would both meet the transit improvement objectives of Nova2010 while allying concerns associated with its implementation."[166]

Twelve persons who represented different transit stakeholder groups were invited to the Working Group meeting on Saturday, January 9, 2010. At the beginning of the meeting, StarMetro staff presented the rationale for the plan and how the plan evolved based on the criticisms and suggestions from the riders.[167] A facilitator then asked each of the participants to discuss the major issues that they had with the route restructuring plan. The major issues the group raised were the physical condition at intersections of major

arterial roads, safety, and access issues. There was also discussion about bus service to Governor's Square Mall and complaints about the removal of 80X service. Ultimately, a number of infrastructure and safety improvements were made, and the bus service to Governor's Square Mall was altered to improve transit access, but the 80X service was discontinued at the time of the restructuring in 2011 and a number of other route alignment change suggestions were not adopted.

Some participants viewed the Working Group as a successful effort in allying some rider concerns about restructuring, while other participants remained skeptical that it had much of an effect on StarMetro's plans. According to a TAC Working Group member, "StarMetro's belief is if they bring you into the fold, they can make you see the vision…I just wanted to see what the system is going to look like. It [being part of the TAC Working Group] gave me that benefit…just like the TAC, we had no teeth… They didn't have to listen to us unless it benefited their vision. …we were told at that point this is a done deal, this is the framework you are going to have to work within…I saw it more as an opportunity to understand better what they are doing, but do I think it was very effective? No. The culture was at that time and I still think it is to some extent, we know the best, we got the letters behind our names, we are the transportation professionals...I don't think they care about customers, what matters is the bus" (Concerned Citizen 2).

POST-NEGOTIATION PHASE (JULY 2011 TO PRESENT)

On July 11, 2011, the route restructuring occurred. The 26-route CBD-radial system disappeared, and in its place a decentralized system that included 12 day routes and six Sunday and night routes appeared. Despite StarMetro's intensive advance planning, there were numerous hiccups during the early days after the route change, which was not surprising given the magnitude of the effort. Many buses were late.[168] Some riders were confused about stop locations and/or routing. The new schedule text-messaging system did not work properly. StarMetro's ambassadors, individuals who rode buses and/or were positioned at key stops to assist riders in adjusting to the new system, did their best to help patrons find their routes and make their connections. Two days after the restructuring, StarMetro Director Garrison gave a presentation to the City Commission on the performance of the new system.[169] He noted that many positive comments and feedback had been received, but he also acknowledged that there were issues with late buses, inadequate signage on the buses, and that the text-messaging services did not function correctly on all cell phone service providers. StarMetro staff worked to make adjustments.

The interviewees pointed to a number of outstanding issues related to restructuring in the post-implementation phase, including inadequate headways, access and safety concerns, and public communication and outreach.

Headways

A large number of interviewees expressed serious concerns with each of these issues, with most of the attention focused on the headways for the new system. As noted earlier in this report, the actual implemented headways are significantly longer than those proposed

in earlier restructuring plans, which resulted in long waits at bus stops and real difficulty in making transfers. Even StarMetro staff members acknowledged that the long headways are a serious limitation of the new system, although they are quick to point to budget limitations as the key reason for the longer headways.

According to our interviewees, TAC members endorsed the restructuring plan grudgingly, due to the long headways. One TAC member reported that restructuring was implemented in advance of the money being available to fund an adequately scheduled network: “The restructuring was being pushed ahead before the money was available, and then I feel like we wound up with longer wait times than we were originally promised. The headways are not as short as they were originally promised. And that has been the biggest concern of the TAC that we have these headways that are quite long.” This person observed that, “headways and wait times, especially related to transfers, are the next set of challenges that need to be addressed” (TAC Member 1).

Most interviewees seemed to share these sentiments. As one concerned citizen observed, “the restructuring could have been worthwhile. The idea is not a bad idea necessarily…if you had shorter headways; the potential for it working would go up” (Concerned Citizen 1). S/he continued, “That is the problem with the whole system right now; headways. Because we do not have short enough headways, we do not have a system that connects well. I spend 10 minutes, 15 minutes at a bus stop, no shelters and sun…then people start saying I can’t do this, this is not for me.”

A few interviewees voiced some frustration and anger over the deterioration of headways from initial plan to implementation and even called into question StarMetro staff’s honesty. One TAC member used the phrase “bait and switch” when speaking about the actually implemented headways. One concerned citizen also felt that StarMetro engaged in bait and switch: “They were promised night service as same quality as day service, but they operated under orders to be cost neutral” (Concerned Citizen 3). Another interviewee noted that “They stopped going all the places they used to go, there is a service cut and then they increased the headways and cut some of the routes…and they have been telling how much money they have been saving which is not that much money, but still they are very proud to tell we saved x amount of dollars on this system so far…remind you this was supposed to be budget neutral…this is not budget neutral at all, this is a budget cut” (Concerned Citizen 1). On the other hand, a city staff member insisted that, “This was not a budget cut in disguise, this was a way to keep us a part of the discussion in terms of (being) important to the system” (City Staff 2).

Access and Safety

A number of interviewees voiced ongoing concerns about access and safety to and at stop locations under the new system. One community leader observed that, “Any mass transit plan must strike an appropriate balance between accessibility and mobility. The current StarMetro plan emphasizes accessibility – there are approximately 26 bus routes. Its proposed new plan would emphasize mobility – greater trip frequency, but fewer bus routes. In making this shift to the degree proposed, the plan runs the risk of seriously impeding access for the poor, the elderly, and the disabled. Their ability to access transportation and

have the mobility that so many of us take for granted must not be sacrificed as the city works to innovate our transit system."[170]

One TAC member identified the increased distances to stops due to pulling buses from neighborhoods onto arterial roads, as well as pedestrian safety issues related to inadequate sidewalks, shelters, and pedestrian crossing infrastructure, as key issues moving forward. The same individual said that StarMetro should do a better job taking the needs of the visually disabled into account by doing things like announcing the stops (TAC Member 6). One community organization representative echoed these concerns for senior and the disabled riders. For this individual, longer walk distances to stops, lack of shelters at many locations (which are particularly problematic in inclement weather) and some safety concerns associated with stops located at certain mid-block locations need to be addressed (Community Organization Representative 3).

Another TAC member also mentioned inadequate sidewalks as a key issue: "before restructuring, since the buses were getting into the neighborhood streets, people could wait in street for bus when no sidewalk presents, however in the new system with stops on major roads, it is not possible" (TAC Member 7). City staff agreed that sidewalks remained an issue. One city staff member agreed that he would have liked to have had more sidewalks in place prior to restructuring (City Staff 1). Another city staff member agreed that if he were to do something like this again, he would make sure more of the infrastructure (especially sidewalks and shelters) was in place prior to implementation, so many of the concerns would not have been raised and more attention could have been paid to whether the system itself was performing well as opposed to responding to complaints about access issues (City Staff 4). One city staff member reported that, "As I reflect back, I probably would have ensured that more of the infrastructure was in place prior to implementation. Really looking through and making sure that we had the shelters where they needed to be or the sidewalks needed to be" (City Staff 4).

On the other hand, some interviewees commended the efforts that had been made to-date to address these issues. One TAC member said that the City Public Works department really deserves a lot of credit for adding audible crossing signals at key locations, by building sidewalks, and installing shelters. This individual observed that all Tallahassee residents benefit from these improvements, not just bus riders, and he attributed their occurrence specifically to restructuring of StarMetro (TAC Member 1). S/he characterized it as a first step in what will hopefully be a series of improvements: "The restructuring opens the door for further improvement. Previous system, it was about maxed; it couldn't really go any further than what it was. The only way for them to improve the old system was to get more buses to have more routes and they were maxed out of the number of buses they [could] fit in their facility. But with restructuring done the way it is, the number of routes decreased. We actually have about half of the actual routes than we used to. Improvements can continue to be made as they look at the system and see what can make it better… As they are able to increase the size of their fleet, then they can add buses and decrease the wait times and make the whole system more efficient." Although s/he is not 100 percent satisfied with what they have done, s/he is not looking at what is there now as the final step: "What can we do with what has been started? How is this going to benefit

as much as not just what has happened, but what can happen?" City staff echoed these sentiments in their interviews with the authors.

For students in some locations, transit access remains a problem, including for residents of Alumni Village. With the old system, the area included 12 or 13 night-time and Sunday service stops inside this complex's 85-acre grounds, which made it easy for residents to access, but StarMetro eliminated the stops from inside the Village grounds because it took 8 to 10 minutes to serve all the stops inside the village. Alumni Village reached out to StarMetro and had one listening session to discuss removal of the stops and the night service change. Nevertheless, the change took place at the time of the restructuring. A few weeks later, StarMetro responded to public criticism by adding a new route, N6, that stopped inside the grounds. Residents at OAUTA public housing complexes also expressed similar concerns about stop relocation in their community. Both of these communities are discussed earlier in this report.

Public Communication and Outreach

A number of interviewees complained about the inadequacy of StarMetro's efforts to notify the public about schedule changes, route deviations, and other service adjustments, particularly those which are short-term adjustments due to road closures and other disruptions. One interviewee emphasized the need for more information about known disruptions, in advance, on buses themselves, while another interviewee complained about waiting at a stop for a very long time only to learn later that the bus route had deviated due to a short-term road closure.

Interviewees also raised ongoing concerns about StarMetro's efforts to provide better, real-time schedule information to riders. One of the TAC members specifically mentioned communication issues about route detours: "You got the flow of information going. You should be able to plan these detours and know what you are going to do…you got a method to put them on the internet. Now, I got another one for you, take a look at your demographics, how many of them don't have internet? Why don't you do something simple like put a notice on the buses that are on the route? Simple stuff" (TAC Member 2).

One elected official noted that there were lots of promises made about information availability (text messages, internet notices about next bus arrival, etc.), but complained that none of this is yet functional: "We promised that the day we transferred over, there will be a texting system where you could text in and find out when the times were…that was not functioning…and then we are going to have a system where you could go into internet [*sic*] and be informed when your bus is arriving 15 minutes ahead…I don't think that is fully functioning. We had all these things we are going to do and we essentially have basically the same offer we had before, but it is just different routes. Pretty much the same number of buses, but we are trying to cover a bigger geographic area, so headways are longer" (Elected Official 1). Elected Official 2 observed that, "Public information and awareness of the system change would have been better… Having the self-mapping system running at the time that the new system came into place would have also been smart and helpful for the riders."

Lack of communication is still a big concern given the continuing adjustments on the transit system. Some interviewees characterized StarMetro as being reactive as opposed to proactive during the implementation process. One interviewee observed that there was a lot of "after the fact adjustment" and very little pre-change listening (Elected Official 1). For example, Miccosukee Hills residents complained about the removal of service during a listening session and StarMetro eventually made after-the-fact changes post-restructuring to address some of their needs. In this case, StarMetro added a local shuttle that serves Miccosukee Hills, home of older residents and people with disabilities.[171]

Speaking about the Miccosukee Hills case, one interviewee noted that, "I attended the very first listening session they had at the Senior Center…I remember they were all crammed little room at the Senior Center and there were some people there from the Miccosukee Hills Apartment complex…basically what they were saying was please, please don't take our bus service away…and the planners completely just ignored it…I still maintained if the city commissioner had not showed up at the meeting they had at the Miccosukee Hills, those people still would not have bus service" (Concerned Citizen 3). One resident of Miccosukee Hills reported that, "We can lose our eyesight. We can lose our hearing. We can lose our teeth. We can lose a lot of things. But when we lose our mobility, that's when the quality of life drops significantly."[172]

A city staff member acknowledged that, "I think we did a very good job of pre-implementation communication. I think, we underestimated and were not prepared for the implementation communication. Sometimes our messages were not well received. Sometimes our communications were our worst enemy" (City Staff 4).

Service Adjustments

StarMetro has responded to some of the early problems with the newly restructured system. On a temporary basis, StarMetro made some short-term concessions to rider inconvenience due to late buses. From August 1 to August 12, 2011, the "Five or Free" program allowed riders to get a free round-trip ride coupon when the bus was late more than five minutes.[173]

Beyond those short-term concessions, StarMetro made a number of system changes on three different occasions: August 2011, January 2012, and August 2012.[174] These changes included frequency adjustments on many routes, the deviation of additional routes into C.K. Steele Plaza to coordinate transfers at that location, and the addition of service to several communities. Most of these specific changes are discussed earlier in this report.

The deviation of additional routes into the Plaza, which goes against the goals of the guiding principle of the restructuring's decentralization and de-emphasis of the Plaza, was noted by several of our interviewees. One interviewee observed that it appeared that StarMetro was abandoning some of its decentralization efforts due to public criticism (TAC Member 4). Another interviewee attributes some of these route changes to complaints by local businesses who did not want bus riders congregating on sidewalks outside their establishments (City Staff 3).

One interviewee observed that many recent service changes are starting to mimic the old system (Concerned Citizen 2). This individual pointed to routes on Tennessee Street now deviating into the Plaza again, where before the stop was next to a Greyhound station. The individual reported that Greyhound and its riders had complained about riders crowding the sidewalk in front of the station, and StarMetro eventually relented by relocating the stop.

Another interviewee seemed to take the view that these changes were minor adjustments (City Staff 1). City staff took very different views of the route deviation in particular. One interviewee downplayed its significance and emphasized that decentralization still remained the guiding principle of the agency (City Staff 3), while another interviewee lamented the travel delays that these deviations imposed and opined that the agency should have withstood the public criticism better to see how the initial system would actually function without it being compromised by changes that appeared to represent a retreat from the decentralization objective (City Staff 4).

Needless to say, the deviations themselves remain a controversial issue for some observers.

Moving Forward

Most interviewees characterized the restructured system as providing a framework for future transit development in the community. One community organization representative pointed to the new destinations in growing areas like Southwood and Killearn as tapping into new markets (Community Organization Representative 4). TAC Members agreed that the new system provides something to grow from, which was lacking in the old system (TAC Member 4, TAC Member 6). As one of the TAC members noted, “With this [new] system, you can add buses to any route and improve it. You can add as many buses to any route you want that can be one after the other. For that reason, it is great and it has the potential to be great” (TAC Member 7). Another TAC member said, “We [the TAC members] felt if the changes are made, the headways can always be improved later on. If the change is not made, one of the drawbacks of the old system was it was very hard to incrementally change it, whereas with the grid system it was easy to make incremental changes... This new route structure created basically a framework that could be adjusted as the city grew” (TAC Member 8).

City staff emphasized the ease with which new routes can now be added to the system in developing areas without having to worry about the capacity constraints of the bus bays at the C.K. Steele Plaza. One of the City Staff members argued, “We couldn’t expand the radial system anymore; it wasn’t delivering what we wanted to get out of it. Now [with the new decentralized system] we have a foundation set” (City Staff 3). In the future, “We [StarMetro] are going to be able to incrementally improve the routes… A real high priority is to get all of the routes [A, B, D, and E] to go in the Plaza and meet in the Plaza down to a 30-minute headway” (City Staff 3).

For City Staff 2, the process as a whole is a continuing learning process: “It is exciting in a sense that you are creating a new system from the ground up, you are responding

to customers' concerns, you are learning what works and what doesn't work, you are proposing innovative solutions to address problems, you are doing a lot more actual diagnoses instead of treating symptoms" (City Staff 2).

However, other observers point to some significant challenges moving forward. Community organization representatives emphasized remaining issues related to getting information out to riders and more consistent service across various days of the week and across destinations (Community Organization Representatives 1 and 2). These individuals also emphasized the need for more consistency in the naming of routes to make the system easier for riders to use.

More significantly, resource issues are critical. Numerous interviewees pointed to the issue of long headways and how the headways made the system less attractive to prospective riders and harder to use for existing riders. A few interviewees were optimistic that resources might be found in the medium- or long-term, but most were pessimistic about any short-term prospects for finding more money for improving the local transit system. One interviewee stated, "It turns out that the real problem here is we just don't have enough money. I think we are all led to believe that this changeover was going to allow us to do a better job with the same amount of money. I don't think that is what has happened. I don't think we have done a better job" (Elected Official 1). Similarly, one of the concerned citizens noted, "What kinds of improvements are needed for the system to be effective for the riders: They need to add enough buses where you can get the headways down to 15 or 20 minutes. It won't happen because they need the budget for it" (Concerned Citizen 2). The restructuring itself was required to be budget-neutral.

Nevertheless, even many of these pessimistic interviewees believe that the restructuring was a step forward. Indeed, the authors asked the interviewees to grade the old system and the new system as part of the interview conversation, and the consensus view was a modest improvement in Tallahassee's transit system, with a few observers pointing to a significant improvement and only a small number calling it a step backward. The TAC members and elected officials, by and large, viewed the new system as an improvement over the old one, which they regarded as inefficient, unreliable, and difficult to improve. Most of the community and social service organization representatives agreed. Few individuals in these stakeholder groups expressed any desire to return to the old system. By contrast, most of the concerned citizens retained the view that the old system was better, because of its higher accessibility within many neighborhoods and its focus on the central hub at C.K. Steele Plaza.

OBSERVATIONS ABOUT THE TRANSIT RESTRUCTURING DIALOGUE IN TALLAHASSEE

The July 11, 2011, route restructuring took place regardless of the sentiments of the most vocal opponents. Nevertheless, the critics of the restructuring proposal did achieve some important alterations to the original plans as a result of their engagement in the dialogue around restructuring, particularly during the negotiation phase when public meetings were held from 2009 to 2011. StarMetro made a number of route changes, including in Miccosukee Hills, at the local shopping malls, and at the central transfer hub itself, where

a number of routes were redirected into the central hub instead of remaining outside the hub.

The public dialogue itself changed the positions of some key stakeholders, as they became engaged in the discussion and communicated their concerns to the transit agency staff. Most notably, many of the social service organizations that serve disabled riders, particularly those serving the blind, became cautious proponents of restructuring. StarMetro's careful cultivation of these organizations turned these skeptics into supporters.

Similarly, several members of the Transit Advisory Committee became more supportive of restructuring during the course of their engagement in the dialogue. A skeptic might conclude that some of these individuals might have been coopted by the transit agency staff, as indeed some of the more critical interviewees suggest. However, many TAC members voiced a cautious, very informed position about the restructuring. They understood the strengths and limitations, and came down on the side of restructuring's necessity for the future of transit in the community. Indeed, the key takeaway for other agencies contemplating making similar major service changes is to pursue the strategy embraced by StarMetro of reaching out early and often to affected and interested stakeholder groups.

The interviews emphasized a number of outstanding issues related to restructuring, around which there is a significant amount of consensus. First, both supporters and opponents agreed that the service frequencies (headways) are inadequate, which results in long wait times and frequent missed connections. Second, most of the interviewees agreed that additional infrastructure improvements, including sidewalks, new shelters, and better pedestrian road crossing signals are necessary. More critical observers argued that these investments should have been made prior to restructuring, but all observers agreed they need to be made. Most observers also agreed that StarMetro and the City of Tallahassee have made good faith efforts to address these issues. Third, all observers agreed that the critical limiting factor in making these improvements is money, and there is some concern that the money might not be available to make improvements in a timely manner in the present public fiscal environment.

IX. LESSONS FROM THE RESTRUCTURING OF STARMETRO'S TRANSIT NETWORK

The authors set out three objectives in this study: 1) to understand the effects of the service restructuring on the transit agency and its performance, 2) to understand the effects of the service restructuring on transit riders and the larger community, and 3) to understand the roles, influence, and attitudes of important local stakeholders (public staff, elected official, and private sector stakeholders) who engaged in the restructuring debate and shaped the form of the restructuring. The authors first discuss the key lessons from each of these investigations, and then offer implications for transportation researchers, policymakers, and practitioners.

StarMetro officials hoped to improve transit agency performance through the restructuring, to maintain ridership levels or minimize ridership losses during the transitional period immediately following the change, to improve operations, and to provide a framework for future service improvement and expansion.

The authors found that overall ridership declined, service increased, and service productivity fell as a result of the service restructuring, at least over the period considered here. The decline in system-level ridership is not unexpected given the enormity of the service restructuring, the short time horizon for agency and rider adjustments, and the similar results found over comparable time periods for other transit systems that made similar service changes. The results also indicate that the calendar year month-to-month losses appear to have declined as time passed since the July 11, 2011, restructuring, suggesting that the agency and its riders have begun to adjust to the change. Some of the lost ridership was accommodated by campus shuttle systems (operated by StarMetro under contract with universities), so these riders still use public transportation for their everyday travel.

At the sub-system level, new ridership has emerged in previously un-served or under-served suburban markets, and transfer activity has decentralized from the central hub at C.K. Steele Plaza to a wider array of other locations. There were substantial boarding increases at some suburban retail centers, even though the volume of service reaching these locations was only moderately improved as a result of the service restructuring. These results suggest that StarMetro is beginning to successfully tap into the suburban markets it hoped to better serve through the route restructuring. Thus, on this basis, the restructuring could be judged a success.

The analysis also suggests that long, irregular headways and uncoordinated schedules may be partially to blame for the system-level ridership decline, a point reinforced in the interviews discussed in the latter part of this report. StarMetro was required to maintain a budget-neutral posture as it made the service restructuring, although most observers seem to feel that more resources to reduce headways are critically needed for restructuring to be given a full chance to demonstrate its long-term potential in the growing, and still decentralizing, community.

StarMetro officials sought to improve access to decentralized travel destinations and to broaden transit's appeal to choice riders through the service restructuring.

The restructuring was prompted by the belief that the CBD-oriented transit system operated in Tallahassee was ill-suited to the decentralized pattern of population and employment in the community. Thus, proponents believed that restructuring could increase accessibility to these outlying locations. The results clearly show that restructuring has increased overall accessibility in the community, and this increased accessibility has benefited all segments (socio-economic and geographic) of the community. While individuals walk farther, on average, to reach bus stops, transit service is now more direct to dispersed destinations. Thus, the restructuring was successful on this point.

Restructuring has not been as successful in increasing the use of the system by choice riders. While infrequent riders are using the system more often than before the service restructuring, the ridership profile continues to be overwhelmingly students and individuals who do not have access to automobiles. It is likely that the long headways are reducing the service's attractiveness to non-captive rider markets. Still, these results are short-term results, and the community is still adjusting to the service restructuring.

The route restructuring proposal represented a significant change in local transit service, and numerous stakeholders engaged in the discussions that occurred prior to, during, and following the implementation of the restructured system.

Many stakeholder groups supported the service restructuring, while others opposed it. StarMetro's extensive public outreach efforts through public meetings, listening sessions, and media provided a venue for both supporters and opponents to voice their opinions, particularly during the period from 2009 to 2011, and StarMetro made a number of changes to its restructuring proposal during this period. As a result, some stakeholder groups, most notably social service organizations focused on disabled riders and members of the Transit Advisory Committee, changed their positions from opposition to cautious support of restructuring. These efforts undoubtedly provided the necessary political support for implementing the change.

Nevertheless, even many restructuring supporters, as well as opponents, remain concerned about a number of issues. First and foremost are concerns about the quality of service (headways in particular, but also schedule coordination at transfer points). The initially planned 15- or 20-minute system-wide headways were eventually introduced only on two out of the twelve routes, bringing intense disappointment to many transit riders and observers. There is a widely held belief that better headways are absolutely essential to making the system more effective and more attractive to riders, and that more resources are needed to achieve this result.

Second are concerns about safety and access. While supporters correctly point to the City's and StarMetro's efforts to add shelters, add sidewalks, install crossing signals, and make other infrastructure improvements at new and existing stop locations, there remain many examples of stops where access and safety are serious concerns. The agency was

also forced to reinstate service on some local streets to address complaints about the poor accessibility due to service losses in some neighborhoods.

Finally, there are some concerns about the effectiveness of StarMetro's ongoing public information and outreach efforts and the agency staff's willingness to take critical comments from the community. Most interviewees applauded the public outreach that preceded restructuring, but even they agree that public information needs some improvement in the near term, including posting stop schedules and maintaining traditional, non-electronic channels of distributing announcements about schedule changes. Some patrons still have difficulties understanding how they should efficiently use the new system.

KEY TAKEAWAYS FROM THE RESEARCH

The key takeaway from the study is that restructuring from a radial to a decentralized transit system can increase accessibility, if done right, but such a change requires careful attention to community concerns about route changes, stop locations, headways, access, and safety. The importance of good headways with coordinated schedules is particularly important in smaller transit systems such as StarMetro, because both are necessary to reduce passenger wait times. The active involvement of so many representatives of disabled and elderly rider groups in discussions around restructuring in Tallahassee points to the importance of engaging with these and other key rider groups early in the process to address their concerns whenever possible.

Finally, a longer time horizon is needed to see the results of a major service restructuring such as that made in Tallahassee. The service restructuring in Tallahassee was barely a year old at the time of this report's development, which provides only a short window within which riders and the agency have been able to adapt to the service. During this short time period, new riders have been attracted to the system in the new service areas, but other riders have also been lost due to the shifting of stops and routes from some neighborhoods. The net result is a modest decline in ridership and in productivity to date. Nevertheless, most local observers feel that the changes represent a clear step forward for transit's future in the community. The decentralization is assumed to be the first step in expanding transit service to surrounding municipalities, which are currently not being served by any regular public transportation.

LESSONS FOR RESEARCH AND PRACTICE

The study generally supports scholarship by Mees, Thompson, and Brown,[175] cited earlier, on the benefits of decentralized transit systems in decentralized metropolitan areas. A decentralized system appears to perform well, given all the caveats noted above, even in smaller metropolitan areas like Tallahassee. More research is clearly needed to explore the results over the long-term, and more research should also be done to determine what kinds of service levels (especially headways) are both necessary and fiscally sustainable to make decentralized systems effective in such urban environments. The accessibility investigations presented here touched on issues of equity which are also areas worthy of additional investigation. The work presented in this study took an aggregate, zone-based

approach to examining the equity of the service change, but more individual-level work, perhaps using survey data, is clearly necessary to extend these findings.

The study suggests that practitioners contemplating major service changes like that in Tallahassee need to take a medium- to long-term view both in the lead-up to the service restructuring and in assessing its ultimate results. Early public engagement is critical in building consensus around major restructuring proposals, and even significant time and effort is needed to encourage this participation. Transit staff and managers need to also pay close attention to what the public is saying and to take these concerns seriously, even if the decision is ultimately made not to specifically address them. The feeling that one's concerns are or are not being taken seriously can make a significant difference in one's attitude toward a public policy proposal. Public engagement cannot end once the service changes are made. Practitioners should be prepared to understand public criticism and explain the decisions that they make in a way that minimizes conflict and the potential for misunderstanding. Finally, radical service changes require more time for the agency and its riders, as well as the larger community, to adjust. More than one year after the service restructuring, StarMetro continues to make schedule and route changes. The community is also still learning how to use the system, as evidenced by discussions in local media.

APPENDIX A: KEY MOMENTS IN THE HISTORY OF TRANSIT IN TALLAHASSEE

BRIEF TIMELINE OF EVENTS PRECEDING THE ROUTE RESTRUCTURING

1956 Civil rights protests lead to a boycott of Tallahassee's Cities Transit, whose patrons are overwhelmingly (80 percent) African American. The boycott leads to the hiring of the system's first African American drivers and the integration of the transit system.[176]

1973 City of Tallahassee purchases Cities Transit, renames it Tallahassee Transit (TalTran), and appoints Larry Carter, son of the previous private owner, as the system's general manager. Tallahassee Transit functions as a city department under the direction of the city manager. The TalTran system costs approximately $4.8 million to complete. Ninety percent of the project is financed by federal and state participation and the city and the county finances the remaining 10 percent.[177]

1976 TalTran adds three new routes to its downtown-focused transit system to serve emerging outlying residential, medical, commercial, and office districts.[178]

1978 An administration and maintenance facility located on Appleyard Drive at Jackson Bluff Road is built.[179]

1979 New downtown transfer point is established on the present site of C.K. Steele Plaza to replace transfer terminal at Park Avenue and Monroe Street.[180]

1985 The City dedicates the C.K. Steele Plaza downtown bus terminal in honor of the pastor who led the 1956 bus boycott.[181]

1985 The Transit Action plan is approved and adopted by the Tallahassee City Commission, TalTran's governing board, identifying an annual procedure and schedule for updating TalTran's service and route structure.[182]

1989 Leon County voters adopt one cent local option sales tax for 15 years to fund transportation projects.[183]

1989 Effective August, the TalTran system is composed of 30 fixed routes for basic, regular service, running on weekdays, nights, and weekends.[184]

1991 Americans with Disabilities Act mandates provision of Dial-a-Ride (para-transit) service to disabled residents living within three-quarters of a mile of TalTran's regular-route system. The city moves to expand the Dial-a-Ride service area to include all of the city limits and also chooses to certify anyone at least 60 years old as a qualified rider.[185]

1996 The City Commission votes 5-0 to increase TalTran bus fares from $.75 to $1.00.[186]

1997 The City Commission recognizes Larry Carter of Tallahassee's TalTran for receiving the American Public Transit Association's award as the nation's longest tenured transit general manager at a single transit system.[187]

1998 The City Commission holds a budget workshop on June 18 to discuss the proposed FY99 Operating and Capital Budgets for the City of Tallahassee and expresses concern with regard to the possible elimination of Saturday and Sunday TalTran service.[188]

1998 Mayor Scott Maddox presents a proclamation to Larry Carter, Director of TalTran, celebrating 25 years of transit service to the of City of Tallahassee and the Commission recognizes him as one of its long-term TalTran employees.[189]

1999 The City Commission awards the construction contract for the C.K. Steel Plaza Improvements Project (renovating and enhancing TalTran's downtown bus services/ mass transit facility) to Bass Construction Company Inc., as the low bidder meeting all specifications; base bid amount of $210,000.[190]

2004 The City Commission discusses the remodeling of the TalTran bus system to better serve the community, to be completed over the next year.[191]

2004 Graduate student studio at Florida State University develops four different future transit system network alternatives as part of a project for TalTran. One alternative becomes the basis for further investigation by TalTran management.[192]

2005 TalTran is renamed StarMetro. City Manager Anita Favors-Thompson announces that Ronald L. Garrison, of Leesburg, Virginia, currently a general manager for Connex Transit, has been hired as the City's new StarMetro director, effective late March 2005.[193]

2006 StarMetro launches 80X express route on August 28 that will eventually run from Bradfordville through downtown and on to Southwood. Route extensions and adjustments continue over the next few years.[194]

2007 StarMetro staff holds a series of regular community listening sessions throughout the year. The agency unveils a simplified five-page ride guide providing route maps and schedules to replace the older 80-page guide.[195]

2008 StarMetro adds wireless internet service to select routes (March), extends the 80X route to Bradfordville (April), reports high ridership on the extended 80X route (May), and adjusts its route time schedules by 10 minutes system-wide to better serve commuters (August). StarMetro continues to hold community listening sessions and other public meetings throughout the year, with emphasis placed on the agency's plan to restructure the transit system. The American Public Transportation Association (APTA) recognizes StarMetro for the marketing of the 80X service (November).[196]

2009 StarMetro holds public meetings in February and April to discuss changes to several routes, to take effective in August. On August 1, major changes are made in the western part of the city, resulting in the merging of two radial routes (23 and 24) into a pair of circular

routes and transforming route 3 into another pair of circular routes (53 and 54). These circular routes meet in multiple remote locations and with other routes (1, 17, 21), providing new opportunities for crosstown travel without entering the CBD. Service modifications are also made in northeastern Tallahassee, where two neighborhood deviations are removed from route 18. Later that month, StarMetro extends its Venom Express II route serving the FAMU campus to serve off-campus neighborhoods.[197]

DETAILED TIMELINE OF EVENTS SURROUNDING THE NOVA2010 ROUTE RESTRUCTURING

January 28, 2009 Transit Advisory Committee endorses StarMetro's decentralization plan. A number of citizens express concerns about safety at intersection pedestrian crossings and the lack of direct service to local malls.[198]

June 10, 2009 The City Commission receives a presentation on the Nova2010 Plan by StarMetro Director Ron Garrison, and votes 3-0 (commissioners Mustian and Katz absent) to authorize staff to work with the general planning consultant to continue to develop and analyze the Nova2010 Plan through public surveys, listening sessions and analysis for the creation of a decentralized bus route structure.[199]

September 2009 StarMetro formally launches study for Nova2010 plan. Agency staff commence new round of public meetings and listening sessions around the Nova2010 proposal.[200]

October and November 2009 StarMetro holds final set of listening sessions on the Nova2010 plan.[201]

December 2009 StarMetro begins service to the outlying Fallschase commercial district by adding a new section to route 12.[202]

January 28, 2010 Transit Advisory Committee votes unanimously to endorse Nova2010 decentralization plan.[203]

February 17, 2010 StarMetro completes and submits the proposed *Nova2010 Decentralization Plan Final Report* for City Commission consideration and discussion.[204]

March 2010 The City Commission holds a public hearing on the Nova2010 Decentralization Plan (recommended by StarMetro). Ron Garrison, Executive Director of StarMetro, provides a presentation of the Nova2010 Decentralization Plan and several persons appear before the Commission to express opposition/support of the Nova2010 Decentralization Plan.[205]

March 24, 2010 City Commission unanimously endorses the *Nova2010 Innovation in Transit Plan*.[206]

August 10, 2010 StarMetro completes draft bus stop location analysis for Nova2010.[207]

August 12, 2010 StarMetro holds public meeting about Nova2010 plan.[208]

September 2, 2010 StarMetro holds listening session about proposed bus stop locations for Nova2010.[209]

January 12, 2011 The City Commission authorizes StarMetro to expend up to $985,000 of concurrency funds (dedicated for multimodal projects in the Significant Benefit Zones), for the installation of bus shelters in support of the Nova2010 Decentralization Plan.[210]

January 13, 2011 StarMetro begins installing 51 new bus shelters in preparation for the Nova2010 decentralization that will take place in July.[211]

March 4, 2011 StarMetro begins installing 766 new bus stops, including 266 at new locations.[212]

March 9, 2011 City Commission approves the update on the Nova2010 Implementation Plan and schedule July 11, 2011, as the launch of the new system. By July 11, 2011, staff identifies a plan to ensure that 30 shelters, new “StarStop” signs, eight miles of new sidewalk, trip planning software, and new options to purchase fare are available to support the new system.[213]

April 7, 2011 City begins construction on $15 million in sidewalk projects to help make StarMetro stops more accessible. As of April 2011, 74 percent of StarMetro’s system has sidewalk coverage. When the project is complete, StarMetro will have 94 percent sidewalk coverage.[214]

April 19, 2011 StarMetro begins the second phase of “StarStop” sign installation in preparation for the Nova2010 route decentralization project. The second phase of installation includes the A, B, C, M, and T routes, along with the installation of StarStops along the night routes. Phase two concludes the installation of all StarStops for the new route structure.[215]

May 17, 2011 StarMetro updates its website with information about the Nova2010 decentralized route system.[216]

June 2011 StarMetro holds nine public learning sessions to introduce citizens to how to use the new decentralized route system.[217]

June 6, 2011 StarMetro launches a new application that allows customers to purchase a 31-day fare card online with a credit card.[218]

July 1, 2011 StarMetro introduces new scratch-off fare cards. These new fare cards come in seven-day unlimited and seven-day reduced fares.

July 11, 2011 StarMetro launches the decentralized route system, Nova2010.[219]

July 11, 2011 StarMetro begins offering a text messaging application for customers. The “Next by Text” application allows customers to receive next scheduled bus arrival times via text message.[220]

July 13, 2011 StarMetro director Ron Garrison delivers a presentation at the City Commission meeting on the performance of the new route structure. Garrison notes many positive comments and feedback have been received, but also notes that several minor issues have surfaced and need to be resolved. Most notable are issues with late buses, inadequate signage on buses, and the text-messaging services do not function correctly on all cell phone service providers.[221]

July 18, 2011 StarMetro increases service frequency on new Moss route (Route M) to 20 minutes all day, from earlier 20-minute peak and 40-minute off-peak service.[222]

August 1, 2011 StarMetro adjusts service frequency on several routes to better accommodate 12 percent increase in ridership since restructuring began.[223]

August 18, 2011 Responding to resident concerns, StarMetro launches feeder service to the Miccosukee Hills senior and disabled housing complex.[224]

August 29, 2011 StarMetro makes additional service adjustments in response to increased ridership and in anticipation of start of classes at the universities.[225]

September 6, 2011 StarMetro signs a contract with Proterra, Inc. for the construction of three zero emission, all-electric buses and a charging station.[226]

October 2011 StarMetro holds public meetings to discuss proposed December service changes.[227]

November 8, 2011 At the annual conference for the Florida Public Transportation Association (FTPA), StarMetro is recognized for its safety and maintenance with two first place awards in the “Most Improved Safety” and “Overall Safety Record” categories and a third place award in the “Top Mechanic” category.[228]

November 11, 2011 At the City Commission meeting, Ronald Garrison notes that fare revenues have remained constant and ridership has also remained relatively flat during the implementation. Garrison notes that staff anticipated an initial decline in ridership and that staff expected it to take about one year for ridership to recover. However, three months after implementation, ridership is about equal to that of the old route structure.[229]

November 16, 2011 StarMetro awards $1.2 million grant to improve its Dial-a-Ride services.[230]

December 14, 2011 Gabe Menendez, Director, Public Works, provides an update on the various sidewalk construction projects that are being undertaken in support of the Nova2010 transit route restructuring, as well as meeting the City Commission’s goal of improving connectivity throughout the community. Menendez presents a PowerPoint presentation that shows before and after photographs of several of the projects that are underway, have been completed, or are scheduled to begin in the future.[231]

January 21, 2012 New routes and schedules take effect on Saturday, January 21.[232]

April 2012 StarMetro hosts six public listening sessions to elicit feedback about service.[233]

August 4, 2012 StarMetro make a few minor route and schedule changes, effective Saturday, August 4.[234]

December 1, 2012 StarMetro makes additional route and schedule changes.[235]

APPENDIX B: ROUTE LEVEL RIDERSHIP, SERVICE, AND PRODUCTIVITY DETAILED TABLES

The following pages provide detailed, monthly route-level data for ridership, service, and service productivity for both the radial and decentralized transit systems. These are labeled as Tables 31 through 40.

Table 31. Monthly Ridership (UPT) by Route for Radial System, August 2010 - July 2011[236]

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
1	13,096	18,491	16,034	15,485	10,879	28,244	15,757	12,727	18,166	15,237	15,258	5,077
2	14,725	15,137	13,451	11,438	9,108	no data	16,022	13,713	17,265	15,015	13,608	6,449
4	7,368	10,964	8,072	7,860	6,795	8,673	8,572	6,893	6,075	6,130	5,439	910
5	15,297	17,193	16,081	11,626	8,487	11,925	12,970	12,652	13,686	12,869	12,053	4,788
6	6,229	6,695	6,728	6,057	4,554	5,261	6,737	6,639	7,623	6,083	7,253	2,017
7	6,907	7,890	7,505	6,287	4,638	5,302	6,150	5,520	7,298	6,099	5,773	1,407
8	4,096	4,727	4,651	4,715	4,116	4,753	4,993	5,336	5,006	4,664	4,661	3,458
11	3,957	6,231	5,524	7,577	4,574	3,766	6,249	6,242	5,843	4,189	4,300	2,003
12	3,874	4,057	3,365	3,408	3,589	3,220	2,808	3,904	4,920	4,874	4,507	1,537
13*	21,813	27,511	26,774	23,901	18,340	17,974	18,677	16,864	22,667	18,516	18,720	5,680
14*	28,438	39,492	34,688	31,030	17,095	20,370	16,868	15,833	25,335	15,044	17,719	4,665
15	7,967	8,938	8,283	4,395	4,247	6,751	7,724	6,367	7,185	7,842	7,572	2,497
16	3,406	4,018	4,015	1,877	2,138	3,754	3,486	3,272	3,740	3,943	4,326	887
17	10,413	13,051	13,025	11,306	9,500	12,540	12,409	10,824	10,973	10,876	10,742	3,411
18	6,999	6,668	7,497	5,193	4,809	5,785	5,777	7,517	6,205	5,589	5,437	1,289
19	8,646	10,280	10,114	7,129	6,339	5,359	7,726	7,564	8,402	7,734	8,840	2,067
20	7,025	6,978	6,988	5,943	4,669	4,044	5,153	5,665	5,416	6,131	5,807	1,307
21	11,036	8,706	9,874	7,156	7,050	8,262	7,536	8,853	7,610	6,014	6,303	2,092
22	10,868	12,484	12,527	9,022	9,560	9,628	11,414	8,764	10,922	10,310	9,058	2,835
23	18,004	22,366	27,008	21,316	14,800	22,373	26,707	20,997	23,060	19,693	20,466	5,270
24	16,154	27,835	27,454	21,690	12,763	23,288	24,186	20,556	24,815	19,934	18,089	4,219
25	14,090	18,103	17,916	16,464	13,822	16,461	18,378	14,315	17,799	14,577	13,288	4,336

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
26	5,913	6,587	6,108	4,991	4,212	5,562	5,681	5,301	6,315	6,241	5,464	1,779
53	9,378	11,509	10,325	8,957	5,746	7,239	9,614	8,094	10,676	9,391	6,220	2,410
54	5,963	6,617	5,269	4,835	5,157	5,504	4,846	5,916	6,104	6,134	7,536	1,325
80	8,816	11,073	9,667	7,654	6,288	9,234	9,036	10,169	10,348	10,201	2,327	2,908
28NS	2,179	2,242	3,078	1,449	1,031	1,480	1,423	1,520	2,062	1,689	1,657	620
29NS	2,170	2,120	2,498	1,663	1,244	1,801	2,037	1,741	2,230	1,721	1,315	734
30NS	1,781	3,060	1,945	1,474	1,265	1,088	1,101	1,107	1,491	1,843	1,623	990
31NS	1,958	2,507	1,796	1,507	1,106	1,271	1,461	1,566	1,495	1,408	1,246	542
32NS	2,354	2,609	3,545	2,120	1,547	1,626	1,832	1,872	1,799	2,115	1,765	827
33NS	3,141	6,955	3,876	3,277	1,756	2,339	2,465	2,369	3,484	3,473	2,934	926
Total	**284,061**	**353,094**	**335,681**	**278,802**	**211,224**	**264,877**	**285,795**	**260,672**	**306,015**	**265,579**	**251,306**	**81,262**

Note: Routes 13NS and 14NS are Night and Sunday variants of the respective daytime routes. We distinguish these variants whenever separate data were available.

Table 32. Monthly Service (Revenue Miles) by Route for Radial System, August 2010 - July 2011[237]

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
1	2,894	2,894	2,894	2,894	2,894	2,783	2,671	3,005	2,894	2,894	2,894	779
2	6,085	5,996	5,996	5,907	6,085	5,748	5,589	6,332	5,996	5,996	6,085	1,556
4	4,225	4,225	4,225	4,225	4,225	4,063	3,900	4,388	4,225	4,225	4,225	1,138
5	5,194	5,183	5,183	5,173	5,194	4,982	4,791	5,395	5,183	5,183	5,194	1,389
6	3,312	3,312	3,312	3,312	3,312	3,185	3,058	3,440	3,312	3,312	3,312	892
7	3,315	3,315	3,315	3,315	3,315	3,188	3,060	3,443	3,315	3,315	3,315	893
8	3,042	3,042	3,042	3,042	3,042	2,925	2,808	3,159	3,042	3,042	3,042	819
11	2,812	2,684	2,684	2,556	2,812	2,556	2,556	2,939	2,684	2,684	2,812	639
12	2,825	2,696	2,696	2,568	2,825	2,568	2,568	2,953	2,696	2,696	2,825	642
13*	7,525	7,382	7,382	7,238	7,525	7,070	6,902	7,837	7,382	7,382	7,525	1,894
14*	7,735	7,735	7,735	7,735	7,735	7,438	7,140	8,033	7,735	7,735	7,735	2,083
15	4,306	4,306	4,306	4,306	4,306	4,140	3,974	4,471	4,306	4,306	4,306	1,159
16	4,204	4,013	4,013	3,822	4,204	3,822	3,822	4,395	4,013	4,013	4,204	956
17	6,083	6,012	6,012	5,941	6,083	5,767	5,593	6,328	6,012	6,012	6,083	1,572
18	4,857	4,813	4,813	4,768	4,857	4,619	4,470	5,051	4,813	4,813	4,857	1,267

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
19	4,075	4,038	4,038	4,000	4,075	3,875	3,750	4,238	4,038	4,038	4,075	1,063
20	3,542	3,525	3,525	3,509	3,542	3,387	3,264	3,681	3,525	3,525	3,542	938
21	5,542	5,491	5,491	5,440	5,542	5,270	5,100	5,763	5,491	5,491	5,542	1,445
22	3,978	3,944	3,944	3,910	3,978	3,786	3,661	4,136	3,944	3,944	3,978	1,040
23	5,801	5,675	5,675	5,548	5,801	5,432	5,316	6,043	5,675	5,675	5,801	1,445
24	14,365	13,894	13,894	13,423	14,365	13,269	13,115	14,990	13,894	13,894	14,365	3,433
25	2,930	2,930	2,930	2,930	2,930	2,818	2,705	3,043	2,930	2,930	2,930	789
26	3,279	3,279	3,279	3,279	3,279	3,153	3,026	3,405	3,279	3,279	3,279	883
53	3,955	3,955	3,955	3,955	3,955	3,803	3,650	4,107	3,955	3,955	3,955	1,065
54	3,346	3,194	3,194	3,042	3,346	3,042	3,042	3,498	3,194	3,194	3,346	761
80	15,600	14,891	14,891	14,182	15,600	14,182	14,182	16,309	14,891	14,891	15,600	3,546
28NS	1,602	1,602	1,602	1,602	1,513	1,647	1,424	1,558	1,513	1,602	1,513	579
29NS	1,028	1,028	1,028	1,028	966	1,062	910	993	966	1,028	966	379
30NS	1,132	1,132	1,132	1,132	1,064	1,170	1,003	1,094	1,064	1,132	1,064	418
31NS	1,545	1,545	1,545	1,545	1,462	1,584	1,375	1,505	1,462	1,545	1,462	553
32NS	2,160	2,160	2,160	2,160	2,009	2,257	1,901	2,063	2,009	2,160	2,009	832
33NS	1,715	1,715	1,715	1,715	1,627	1,754	1,529	1,676	1,627	1,715	1,627	608
13NS	490	490	490	490	392	588	392	392	392	490	392	294
14NS	490	490	490	490	392	588	392	392	392	490	392	294
Total	**144,987**	**142,583**	**142,583**	**140,180**	**144,250**	**137,517**	**132,641**	**150,054**	**141,846**	**142,583**	**144,250**	**38,036**

Note: Routes 13NS and 14NS are Night and Sunday variants of the respective daytime routes. We distinguish these variants whenever separate data were available.

Table 33. Monthly Service (Revenue Hours) by Route for Radial System, August 2010 - July 2011[238]

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
1	325	325	325	325	325	313	300	338	325	325	325	88
2	468	462	462	455	468	443	430	487	462	462	468	120
4	338	338	338	338	338	325	312	351	338	338	338	91
5	444	438	438	432	444	420	408	462	438	438	444	114
6	338	338	338	338	338	325	312	351	338	338	338	91
7	307	307	307	307	307	295	283	319	307	307	307	83

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
8	312	312	312	312	312	300	288	324	312	312	312	84
11	264	252	252	240	264	240	240	276	252	252	264	60
12	264	252	252	240	264	240	240	276	252	252	264	60
13*	719	705	705	692	719	676	659	748	705	705	719	181
14*	746	746	746	746	746	718	689	775	746	746	746	201
15	312	312	312	312	312	300	288	324	312	312	312	84
16	286	273	273	260	286	260	260	299	273	273	286	65
17	385	381	381	376	385	365	354	401	381	381	385	100
18	326	323	323	320	326	310	300	339	323	323	326	85
19	326	323	323	320	326	310	300	339	323	323	326	85
20	315	313	313	312	315	301	290	327	313	313	315	84
21	328	326	326	323	328	313	302	341	326	326	328	86
22	352	349	349	346	352	335	324	366	349	349	352	92
23	609	596	596	582	609	570	558	635	596	596	609	152
24	611	598	598	585	611	573	560	637	598	598	611	153
25	598	598	598	598	598	575	552	621	598	598	598	161
26	338	338	338	338	338	325	312	351	338	338	338	91
53	338	338	338	338	338	325	312	351	338	338	338	91
54	286	273	273	260	286	260	260	299	273	273	286	65
80	902	861	861	820	902	820	820	943	861	861	902	205
28NS	119	119	119	119	113	123	106	116	113	119	113	43
29NS	100	100	100	100	94	104	89	97	94	100	94	37
30NS	100	100	100	100	94	104	89	97	94	100	94	37
31NS	91	91	91	91	85	95	80	87	85	91	85	35
32NS	132	132	132	132	123	138	116	126	123	132	123	51
33NS	116	116	116	116	110	119	103	113	110	116	110	41
13NS*	47	47	47	47	37	56	37	37	37	47	37	28
14NS*	50	50	50	50	40	60	40	40	40	50	40	30
Total	**11,592**	**11,431**	**11,431**	**11,270**	**11,532**	**11,032**	**10,614**	**11,991**	**11,372**	**11,431**	**11,532**	**3,071**

Note: *Routes 13NS and 14NS are Night and Sunday variants of the respective daytime routes. We distinguish these variants whenever separate data were available.

Table 34. Monthly Transit Performance (UPT per Hour) by Route for Radial System, August 2010 - July 2011[239]

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
1	40.30	56.90	49.34	47.65	33.47	no data	52.52	37.71	55.90	46.88	46.95	58.02
2	31.46	32.80	29.15	25.14	19.46	no data	37.26	28.16	37.41	32.54	29.08	53.74
4	21.80	32.44	23.88	23.25	20.10	26.69	27.47	19.64	17.97	18.14	16.09	10.00
5	34.45	39.25	36.71	26.91	19.11	28.39	31.79	27.39	31.25	29.38	27.15	42.00
6	18.43	19.81	19.91	17.92	13.47	16.19	21.59	18.91	22.55	18.00	21.46	22.16
7	22.51	25.72	24.46	20.49	15.12	17.97	21.72	17.33	23.79	19.88	18.82	17.03
8	13.13	15.15	14.91	15.11	13.19	15.84	17.34	16.47	16.04	14.95	14.94	41.17
11	14.99	24.73	21.92	31.57	17.33	15.69	26.04	22.62	23.19	16.62	16.29	33.38
12	14.67	16.10	13.35	14.20	13.59	13.42	11.70	14.14	19.52	19.34	17.07	25.62
13*	28.51	36.60	35.62	32.37	24.27	24.58	26.82	21.47	30.53	24.63	24.77	27.18
14*	35.72	49.60	43.57	38.97	21.74	26.20	23.14	19.43	32.22	18.89	22.54	20.20
15	25.54	28.65	26.55	14.09	13.61	22.50	26.82	19.65	23.03	25.13	24.27	29.73
16	11.91	14.72	14.71	7.22	7.48	14.44	13.41	10.94	13.70	14.44	15.13	13.65
17	27.05	34.30	34.23	30.07	24.68	34.36	35.05	27.03	28.84	28.58	27.90	34.28
18	21.47	20.64	23.21	16.23	14.75	18.66	19.26	22.17	19.21	17.30	16.68	15.16
19	26.52	31.83	31.31	22.28	19.44	17.29	25.75	22.31	26.01	23.94	27.12	24.32
20	22.33	22.27	22.30	19.05	14.84	13.44	17.77	17.33	17.29	19.57	18.46	15.65
21	33.65	26.75	30.33	22.15	21.49	26.44	24.95	25.96	23.38	18.48	19.22	24.33
22	30.88	35.77	35.89	26.08	27.16	28.74	35.23	23.95	31.30	29.54	25.73	30.82
23	29.56	37.56	45.35	36.63	24.30	39.25	47.86	33.09	38.72	33.07	33.61	34.79
24	26.44	46.55	45.91	37.08	20.89	40.68	43.19	32.30	41.50	33.33	29.61	27.67
25	23.56	30.27	29.96	27.53	23.11	28.63	33.29	23.05	29.76	24.38	22.22	26.93
26	17.49	19.49	18.07	14.77	12.46	17.11	18.21	15.10	18.68	18.46	16.17	19.55
53	27.75	34.05	30.55	26.50	17.00	22.27	30.81	23.06	31.59	27.78	18.40	26.48
54	20.85	24.24	19.30	18.60	18.03	21.17	18.64	19.79	22.36	22.47	26.35	20.38
80	9.77	12.86	11.23	9.33	6.97	11.26	11.02	10.78	12.02	11.85	2.58	14.19
28NS	18.26	18.79	25.80	12.15	9.16	12.06	13.42	13.11	18.31	14.16	14.72	14.35
29NS	21.66	21.16	24.93	16.60	13.21	17.40	22.94	17.97	23.67	17.18	13.96	19.89
30NS	17.77	30.54	19.41	14.71	13.43	10.51	12.40	11.42	15.83	18.39	17.23	26.83
31NS	21.45	27.46	19.67	16.51	13.01	13.34	18.17	17.94	17.59	15.42	14.66	15.49

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
32NS	17.79	19.72	26.80	16.02	12.58	11.76	15.74	14.82	14.63	15.99	14.35	16.22
33NS	27.12	60.06	33.47	28.30	15.99	19.74	23.89	20.95	31.73	29.99	26.72	22.53
Average	*23.59*	*29.59*	*27.56*	*22.67*	*17.33*	*20.87*	*25.16*	*20.81*	*25.30*	*22.46*	*21.26*	*25.74*
Median	*22.42*	*28.05*	*26.17*	*21.32*	*16.50*	*18.32*	*23.52*	*19.72*	*23.28*	*19.46*	*19.02*	*24.32*

Note: *UPT data for routes 13 and 14 include totals for the daytime and the Night and Sunday (NS) schedule versions.

Table 35. Monthly Transit Performance (UPT per Mile) by Route for Radial System, August 2010 - July 2011[240]

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
1	4.53	6.39	5.54	5.35	3.76	no data	5.90	4.24	6.28	5.27	5.27	6.52
2	2.42	2.52	2.24	1.94	1.50	no data	2.87	2.17	2.88	2.50	2.24	4.14
4	1.74	2.60	1.91	1.86	1.61	2.13	2.20	1.57	1.44	1.45	1.29	0.80
5	2.95	3.32	3.10	2.25	1.63	2.39	2.71	2.34	2.64	2.48	2.32	3.45
6	1.88	2.02	2.03	1.83	1.37	1.65	2.20	1.93	2.30	1.84	2.19	2.26
7	2.08	2.38	2.26	1.90	1.40	1.66	2.01	1.60	2.20	1.84	1.74	1.58
8	1.35	1.55	1.53	1.55	1.35	1.62	1.78	1.69	1.65	1.53	1.53	4.22
11	1.41	2.32	2.06	2.96	1.63	1.47	2.44	2.12	2.18	1.56	1.53	3.13
12	1.37	1.50	1.25	1.33	1.27	1.25	1.09	1.32	1.82	1.81	1.60	2.39
13*	2.72	3.50	3.40	3.09	2.32	2.35	2.56	2.05	2.92	2.35	2.36	2.60
14*	3.46	4.80	4.22	3.77	2.10	2.54	2.24	1.88	3.12	1.83	2.18	1.96
15	1.85	2.08	1.92	1.02	0.99	1.63	1.94	1.42	1.67	1.82	1.76	2.15
16	0.81	1.00	1.00	0.49	0.51	0.98	0.91	0.74	0.93	0.98	1.03	0.93
17	1.71	2.17	2.17	1.90	1.56	2.17	2.22	1.71	1.83	1.81	1.77	2.17
18	1.44	1.39	1.56	1.09	0.99	1.25	1.29	1.49	1.29	1.16	1.12	1.02
19	2.12	2.55	2.51	1.78	1.56	1.38	2.06	1.79	2.08	1.92	2.17	1.95
20	1.98	1.98	1.98	1.69	1.32	1.19	1.58	1.54	1.54	1.74	1.64	1.39
21	1.99	1.59	1.80	1.32	1.27	1.57	1.48	1.54	1.39	1.10	1.14	1.45
22	2.73	3.17	3.18	2.31	2.40	2.54	3.12	2.12	2.77	2.61	2.28	2.73
23	3.10	3.94	4.76	3.84	2.55	4.12	5.02	3.47	4.06	3.47	3.53	3.65
24	1.12	2.00	1.98	1.62	0.89	1.76	1.84	1.37	1.79	1.43	1.26	1.23
25	4.81	6.18	6.11	5.62	4.72	5.84	6.79	4.70	6.07	4.97	4.53	5.50
26	1.80	2.01	1.86	1.52	1.28	1.76	1.88	1.56	1.93	1.90	1.67	2.02
53	2.37	2.91	2.61	2.26	1.45	1.90	2.63	1.97	2.70	2.37	1.57	2.26

Route	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11
54	1.78	2.07	1.65	1.59	1.54	1.81	1.59	1.69	1.91	1.92	2.25	1.74
80	0.57	0.74	0.65	0.54	0.40	0.65	0.64	0.62	0.69	0.69	0.15	0.82
28NS	1.36	1.40	1.92	0.90	0.68	0.90	1.00	0.98	1.36	1.05	1.10	1.07
29NS	2.11	2.06	2.43	1.62	1.29	1.70	2.24	1.75	2.31	1.67	1.36	1.94
30NS	1.57	2.70	1.72	1.30	1.19	0.93	1.10	1.01	1.40	1.63	1.53	2.37
31NS	1.27	1.62	1.16	0.98	0.76	0.80	1.06	1.04	1.02	0.91	0.85	0.98
32NS	1.09	1.21	1.64	0.98	0.77	0.72	0.96	0.91	0.90	0.98	0.88	0.99
33NS	1.83	4.06	2.26	1.91	1.08	1.33	1.61	1.41	2.14	2.03	1.80	1.52
Average	*2.04*	*2.55*	*2.39*	*2.00*	*1.54*	*1.80*	*2.22*	*1.80*	*2.22*	*1.96*	*1.86*	*2.28*
Median	*1.84*	*2.12*	*2.01*	*1.74*	*1.36*	*1.64*	*1.98*	*1.65*	*1.92*	*1.82*	*1.65*	*1.99*

Note: *UPT data for routes 13 and 14 include totals for the daytime and the Night and Sunday (NS) schedule versions.

Table 36. Monthly Ridership (UPT) by Route for Decentralized System, July 2011 - March 2012[241]

Route	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
A	15,779	22,192	23,270	23,441	21,348	19,775	22,927	21,813	23,479
B	14,249	23,749	28,009	26,109	26,729	25,477	28,532	20,920	23,714
C	13,881	25,400	43,870	42,480	34,028	28,368	32,878	29,612	27,574
D	9,800	17,648	22,202	19,276	17,672	15,896	17,910	18,456	19,043
E	9,794	16,699	21,899	21,783	19,980	24,259	19,565	19,143	20,693
F	12,607	23,409	38,003	35,960	30,986	18,427	31,667	28,259	25,563
G	6,517	9,669	9,987	10,759	9,261	8,958	9,124	8,720	9,007
L	4,467	9,658	10,218	10,794	10,059	10,710	10,260	11,407	13,004
M	16,530	29,810	47,852	47,265	41,026	33,703	41,568	36,115	35,043
R	5,566	7,151	6,627	5,835	6,057	6,121	6,349	6,724	7,420
S	5,737	7,138	8,741	8,723	7,983	6,549	6,586	7,856	8,927
T	7,588	13,235	17,247	16,824	14,857	13,458	16,230	14,620	13,901
N1	2,017	2,941	6,065	4,930	3,902	4,204	4,062	3,346	3,447
N2	1,535	1,954	2,345	2,537	2,310	2,228	2,401	1,537	2,265
N3	735	1,175	1,775	1,516	1,410	1,290	1,309	971	778
N4	380	797	1,094	918	802	769	1,150	1,035	1,179
N5	727	1,544	3,104	3,559	2,722	2,777	2,622	884	1,103

Route	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
N6	0	0	1,447	893	896	1,271	981	1,006	1,325
Total	**127,909**	**214,169**	**293,755**	**283,602**	**252,028**	**224,240**	**256,121**	**232,424**	**237,465**

Note: Errors in electronic fare box software make ridership numbers starting in April 2012 unreliable, hence the March 2012 cutoff date.

Table 37. Monthly Service (Revenue Miles) by Route for Decentralized System, July 2011 - June 2012[242]

Route	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12
A	11,697	17,567	16,910	16,867	16,910	17,524	16,910	16,253	17,524	16,253	17,567	16,253
B	10,176	15,380	14,776	14,544	14,776	15,148	14,776	14,172	15,148	14,172	15,380	14,172
C	7,650	11,730	11,220	10,710	11,220	11,220	11,220	10,710	11,220	10,710	11,730	10,710
D	11,445	17,309	16,626	16,343	16,626	17,026	16,626	15,943	17,026	15,943	17,309	15,943
E	11,016	16,659	16,002	15,732	16,002	16,389	16,002	15,345	16,389	15,345	16,659	15,345
F	12,138	18,416	17,672	17,254	17,672	17,998	17,672	16,928	17,998	16,928	18,416	16,928
G	7,839	11,808	11,356	11,257	11,356	11,709	11,356	10,904	11,709	10,904	11,808	10,904
L	10,314	15,555	14,954	14,786	14,954	15,387	14,954	14,353	15,387	14,353	15,555	14,353
M	10,923	16,574	15,904	15,525	15,904	16,195	15,904	15,234	16,195	15,234	16,574	15,234
R	9,954	15,066	14,468	14,198	14,468	14,796	14,468	13,870	14,796	13,870	15,066	13,870
S	9,417	14,209	13,658	13,491	13,658	14,042	13,658	13,107	14,042	13,107	14,209	13,107
T	9,951	15,062	14,464	14,193	14,464	14,791	14,464	13,866	14,791	13,866	15,062	13,866
N1	2,304	3,360	3,264	3,456	3,264	3,360	3,456	3,168	3,360	3,360	3,360	3,360
N2	2,655	3,891	3,774	3,957	3,774	3,891	3,957	3,657	3,891	3,840	3,891	3,840
N3	2,313	3,378	3,280	3,463	3,280	3,378	3,463	3,182	3,378	3,365	3,378	3,365
N4	2,010	2,926	2,844	3,022	2,844	2,926	3,022	2,762	2,926	2,940	2,926	2,940
N5	2,850	4,163	4,042	4,266	4,042	4,163	4,266	3,921	4,163	4,145	4,163	4,145
N6	1,179	1,725	1,674	1,761	1,674	1,725	1,761	1,623	1,725	1,710	1,725	1,710
Total	**135,831**	**204,778**	**196,888**	**194,825**	**196,888**	**201,668**	**197,935**	**188,998**	**201,668**	**190,045**	**204,778**	**190,045**

Table 38. Monthly Service (Revenue Hours) by Route for Decentralized System, July 2011 - June 2012[243]

Route	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12	Apr-12	May-12	Jun-12
A	852	1,292	1,240	1,212	1,240	1,264	1,240	1,188	1,264	1,188	1,292	1,188
B	876	1,324	1,272	1,252	1,272	1,304	1,272	1,220	1,304	1,220	1,324	1,220
C	780	1,196	1,144	1,092	1,144	1,144	1,144	1,092	1,144	1,092	1,196	1,092
D	848	1,286	1,234	1,205	1,234	1,257	1,234	1,182	1,257	1,182	1,286	1,182
E	876	1,324	1,272	1,252	1,272	1,304	1,272	1,220	1,304	1,220	1,324	1,220
F	1,043	1,585	1,520	1,478	1,520	1,543	1,520	1,455	1,543	1,455	1,585	1,455
G	653	987	948	932	948	971	948	909	971	909	987	909
L	651	985	946	929	946	968	946	907	968	907	985	907
M	1,043	1,586	1,521	1,479	1,521	1,544	1,521	1,456	1,544	1,456	1,586	1,456
R	585	884	849	837	849	871	849	815	871	815	884	815
S	655	990	951	936	951	975	951	912	975	912	990	912
T	651	985	946	929	946	968	946	907	968	907	985	907
N1	176	257	250	263	250	257	263	242	257	255	257	255
N2	182	266	258	271	258	266	271	250	266	263	266	263
N3	165	241	234	247	234	241	247	227	241	240	241	240
N4	147	214	208	221	208	214	221	202	214	215	214	215
N5	206	303	294	307	294	303	307	285	303	298	303	298
N6	162	237	230	242	230	237	242	223	237	235	237	235
Total	**10,550**	**15,943**	**15,317**	**15,081**	**15,317**	**15,630**	**15,394**	**14,692**	**15,630**	**14,768**	**15,943**	**14,768**

Table 39. Monthly Transit Performance (UPT per Hour) by Route for Decentralized System, June 2011 - March 2012[244]

Route	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
A	18.52	17.18	18.77	19.34	17.22	15.64	18.49	18.36	18.58
B	16.27	17.94	22.02	20.85	21.01	19.54	22.43	17.15	18.19
C	17.80	21.24	38.35	38.90	29.74	24.80	28.74	27.12	24.10
D	11.56	13.72	17.99	16.00	14.32	12.65	14.51	15.61	15.16
E	11.18	12.61	17.22	17.40	15.71	18.60	15.38	15.69	15.87
F	12.09	14.77	25.00	24.33	20.38	11.94	20.83	19.42	16.57

Route	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
G	9.98	9.79	10.53	11.54	9.76	9.23	9.62	9.59	9.28
L	6.86	9.81	10.80	11.62	10.63	11.06	10.85	12.58	13.43
M	15.85	18.80	31.47	31.97	26.98	21.84	27.33	24.81	22.70
R	9.51	8.09	7.80	6.97	7.13	7.03	7.48	8.25	8.52
S	8.76	7.21	9.19	9.32	8.39	6.72	6.92	8.61	9.16
T	11.66	13.44	18.23	18.11	15.71	13.90	17.16	16.12	14.36
N1	11.47	11.43	24.30	18.77	15.63	16.35	15.47	13.83	13.40
N2	8.46	7.35	9.09	9.38	8.95	8.38	8.88	6.15	8.52
N3	4.45	4.88	7.59	6.14	6.03	5.35	5.30	4.28	3.23
N4	2.59	3.72	5.26	4.15	3.86	3.59	5.20	5.12	5.51
N5	3.52	5.09	10.57	11.60	9.26	9.16	8.55	3.11	3.64
N6	No Data	No Data	6.29	3.69	3.90	5.36	4.05	4.51	5.59
Average	*10.03*	*10.95*	*16.14*	*15.56*	*13.59*	*12.29*	*13.73*	*12.79*	*12.54*
Median	*10.58*	*10.62*	*14.01*	*13.81*	*12.48*	*11.50*	*12.68*	*13.20*	*13.42*

Note: Errors in electronic fare box software make ridership numbers starting in April 2012 unreliable, hence the March 2012 cutoff date.

Table 40. Monthly Transit Performance (UPT per Mile) by Route for Decentralized System, June 2011 - March 2012[245]

Route	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
A	1.35	1.26	1.38	1.39	1.26	1.13	1.36	1.34	1.34
B	1.40	1.54	1.90	1.80	1.81	1.68	1.93	1.48	1.57
C	1.81	2.17	3.91	3.97	3.03	2.53	2.93	2.76	2.46
D	0.86	1.02	1.34	1.18	1.06	0.93	1.08	1.16	1.12
E	0.89	1.00	1.37	1.38	1.25	1.48	1.22	1.25	1.26
F	1.04	1.27	2.15	2.08	1.75	1.02	1.79	1.67	1.42
G	0.83	0.82	0.88	0.96	0.82	0.77	0.80	0.80	0.77
L	0.43	0.62	0.68	0.73	0.67	0.70	0.69	0.79	0.85
M	1.51	1.80	3.01	3.04	2.58	2.08	2.61	2.37	2.16
R	0.56	0.47	0.46	0.41	0.42	0.41	0.44	0.48	0.50
S	0.61	0.50	0.64	0.65	0.58	0.47	0.48	0.60	0.64

Route	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Jan-12	Feb-12	Mar-12
T	0.76	0.88	1.19	1.19	1.03	0.91	1.12	1.05	0.94
N1	0.88	0.88	1.86	1.43	1.20	1.25	1.18	1.06	1.03
N2	0.58	0.50	0.62	0.64	0.61	0.57	0.61	0.42	0.58
N3	0.32	0.35	0.54	0.44	0.43	0.38	0.38	0.31	0.23
N4	0.19	0.27	0.38	0.30	0.28	0.26	0.38	0.37	0.40
N5	0.26	0.37	0.77	0.83	0.67	0.67	0.61	0.23	0.26
N6	No Data	No Data	0.86	0.51	0.54	0.74	0.56	0.62	0.77
Average	*0.84*	*0.93*	*1.33*	*1.27*	*1.11*	*1.00*	*1.12*	*1.04*	*1.02*
Median	*0.83*	*0.88*	*1.04*	*1.07*	*0.92*	*0.84*	*0.94*	*0.93*	*0.89*

Note: Errors in electronic fare box software make ridership numbers starting in April 2012 unreliable, hence the March 2012 cutoff date.

APPENDIX C: SURVEY INSTRUMENT FOR ALUMNI VILLAGE SURVEY

This survey was administered to residents of Alumni Village using a Web-based tool (Survey Monkey). Potential participants were recruited through an email sent by the Alumni Village staff to residents. There were 60 respondents to the survey.

Questions

1. How often do you use public transit?
    a. Never use public transit
    b. Less than once a week
    c. 1-2 days per week
    d. 3-4 days per week
    e. More than 5 days per week

2. What kinds of trips do you use the bus for (circle all that apply)?
    a. Work
    b. School
    c. Medical
    d. Other

3. Do you have a car or other vehicle that is available to you to use?
    a. Yes
    b. No

4. StarMetro implemented bus service changes in July 2011. Are you aware of these changes?
    a. Yes
    b. No

5. If yes, how and when did you become aware (open ended question)?

6. Are you riding the bus…
    a. More frequently than before changes
    b. About as often as before the changes
    c. Less frequently than before the changes

7. Which applies to you? Are you presently…
    a. Employed
    b. Student
    c. Student and employed
    d. Homemaker
    e. Unemployed
    f. Retired

8. Based on your most recent bus service experience, please circle a number for each item to show how satisfied or dissatisfied you are with that item (levels are very satisfied, satisfied, neutral, dissatisfied, and very dissatisfied).
    a. Frequency of service
    b. Service to areas where you want to go
    c. Bus service availability in your neighborhood
    d. Reliability of getting where you need to go on time
    e. Night and weekend service
    f. Sense of personal safety
    g. Availability of shelters, benches, and sidewalks
    h. Walking distance to the closest bus stop
    i. Ease of transfers/connections
    j. Information on service changes/detours
    k. Overall, how satisfied are you with StarMetro service

9. What would you recommend to improve the bus service (open ended)?

APPENDIX D: SURVEY INSTRUMENT FOR ORANGE AVENUE UNIFIED TENANT'S ASSOCIATION

This survey was administered to residents of public housing projects in Northwest and South Tallahassee using a paper survey form distributed by Orange Avenue Unified Tenant's Association staff. There were 76 respondents to the survey.

Questions

1. How often do you use public transit?
    a. Never use public transit
    b. Less than once a week
    c. 1-2 days per week
    d. 3-4 days per week
    e. More than 5 days per week

2. What kinds of trips do you use the bus for (circle all that apply)?
    a. Work
    b. School
    c. Medical
    d. Other

3. Do you have a car or other vehicle that is available to you to use?
    a. Yes
    b. No

4. StarMetro implemented bus service changes in July 2011. Are you aware of these changes?
    a. Yes
    b. No

5. If yes, how and when did you become aware (open ended question)?

6. Are you riding the bus…
    a. More frequently than before changes
    b. About as often as before the changes
    c. Less frequently than before the changes

7. Which applies to you? Are you presently…
    a. Employed
    b. Student
    c. Student and employed
    d. Homemaker
    e. Unemployed
    f. Retired

8. Based on your most recent bus service experience, please circle a number for each item to show how satisfied or dissatisfied you are with that item (levels are very satisfied, satisfied, neutral, dissatisfied, and very dissatisfied).
    a. Frequency of service
    b. Service to areas where you want to go
    c. Bus service availability in your neighborhood
    d. Reliability of getting where you need to go on time
    e. Night and weekend service
    f. Sense of personal safety
    g. Availability of shelters, benches, and sidewalks
    h. Walking distance to the closest bus stop
    i. Ease of transfers/connections
    j. Information on service changes/detours
    k. Overall, how satisfied are you with StarMetro service

9. What would you recommend to improve the bus service (open ended)?

APPENDIX E: CONSENT FORM FOR STAKEHOLDER INTERVIEWS

THE FLORIDA STATE UNIVERSITY
COLLEGE OF SOCIAL SCIENCES & PUBLIC POLICY
Department of Urban and Regional Planning

Agreement to Participate in Research

Responsible Investigator(s): Jeffrey Brown, Tuna Batuhan, Torsha Bhattacharya, Michal Jaroszynski

Title: Analyzing the effects of transit network change in a decentralized, mid-sized US metropolitan area on transit agency performance and transit riders: a case study of Tallahassee, Florida

1. You have been asked to participate in a research study investigating the effects of major transit network structural change on transit agency performance and transit riders.

2. You will be asked to answer questions about the attitude towards the initial restructuring proposals and its eventual implementation during a one-time, one-hour interview conducted during 6 months period with a member of the research team.

3. No foreseeable risks are expected to arise from your participation in the study. Benefits will be contribution to understanding ways to make transit service more equitable, more efficient, and more effective. You will be contributing to knowledge, as this is academic research on a service change not on individuals. There are no risks to you, given that your identity will remain confidential.

4. We will provide you with a copy of the final research report. The research will provide insights for regional transit agencies, city authorities, and state transportation departments, which are interested in ways to improve their transit systems while enhancing the access these systems provide to riders. Transit managers and system administrators may gain some insights into alternative system designs. This information will be presented in the form of a guidebook.

5. Although the results of this study may be published, no direct quotations will be included without your express, written permission. You will be identified merely to your general role, but not to you individually.

6. There is no compensation for participation in the study.

7. Questions about this research may be addressed **to *Jeffrey Brown, (850) 644-8519.*** Complaints about the research may be presented to ***Timothy Chapin, Department Chair, Department of Urban and Regional Planning, (850) 644-8515 and to Julie Haltiwanger, Florida State University Office of Research, (850) 644-7900.***

8. No service of any kind, to which you are otherwise entitled, will be lost or jeopardized if you choose to "not participate" in the study.

9. Your consent is being given voluntarily. You may refuse to participate in the entire study or in any part of the study. During the interviews, you have the right to not answer questions you do not wish to answer. If you decide to participate in the study, you are free to withdraw at any time without any negative effect on your relations with the Florida State University or with any other participating institutions or agencies.

10. At the time that you sign this consent form, you will receive a copy of it for your records, signed and dated by the investigator.

The signature of a subject on this document indicates agreement to participate in the study.
The signature of a researcher on this document indicates agreement to include the above named subject in the research and attestation that the subject has been fully informed of his or her rights.

_____ _____
Signature Date

_____ _____
Investigator's Signature Date

FSU Human Subjects Committee approved on 5/24/2012. Void after 5/23/2013. HSC # 2012.8393

APPENDIX F: QUESTIONS FOR STAKEHOLDER INTERVIEWS

The following are the questions the authors asked of the various stakeholders listed in Appendix G in the 29 hour-long, in-person interviews during the course of this project. These were primarily structured as open-ended questions to solicit wide-ranging responses that frequently led to unforeseen lines of inquiry. The authors adapted the set of questions for later interviews based on the responses during the earlier set of interviews. All interviews were conducted during summer 2012.

Background Questions for All Participants

1. How long have you lived in Tallahassee?
2. How would you describe the transit system (before restructuring)? And, how would you rate the quality of transit service (before restructuring)?
3. When did you first become aware of the route restructuring plan/proposal?
4. Were you a StarMetro rider at the time? Regular rider/dial-a-ride? What kinds of trips? Why?
5. What were your initial thoughts about the restructuring plan (as it existed at the time you first became aware of it)?
6. What did you like most and least about the initial restructuring plan/proposal?

Questions for Social Service and Community Organization Participants

7. What is your position in your organization?
8. What is your organization's mission?
9. Why is your organization focused on StarMetro and/or transit?
10. What are your organization's goals with respect to transit?
11. What was your organization's position on the initial restructuring proposal?
12. How engaged was your organization in the restructuring discussion? If engaged, how so?
13. How has restructuring influenced your ability to serve your clients?

Questions for Concerned Citizens Only

14. How/when/why did you become engaged in public discussion about the proposal? Who did s/he approach? How would characterize these conversations and their results?

15. What were his/her primary objectives in being engaged?

16. What did s/he accomplish?

17. What do you wish had been accomplished that wasn't?

18. Has your use of StarMetro changed any since the July 2011 restructuring? If so, how? Why? Have any more recent service adjustments affected your use of StarMetro? If so, which ones? How?

19. Have your concerns about restructuring been addressed? Which ones? How? Which ones have not been addressed? Any thoughts as to why not?

20. How would you describe the transit system (after restructuring)? And, how would you rate the quality of transit service (after restructuring)?

21. What, if anything, should be changed? What kinds of improvements are needed?

22. How would you characterize your interactions with StarMetro staff/leadership (positive, negative, other)?

23. Do you feel that StarMetro staff has taken your concerns about the restructuring seriously? If so, in what ways? If not, please explain.

24. How would you characterize your interactions with the members of the TAC (positive, negative, other)? Explain.

25. Have you contacted any local elected officials about your concerns? Who? For what purpose? To what result?

26. Is there anything you think it is important for our team to be aware of as we continue to talk with community representatives, agency staff, and local policymakers?

27. Are there any individuals and/or organizations that you think it is particularly important for us to contact? If so, who? Why?

Questions for Transit Advisory Committee Members Only

28. How/when/why did you become engaged with the Transit Advisory Committee?

29. What did/do you see as your role in that organization?

30. What did/does your involvement allow you to accomplish?

31. What do you wish had been accomplished that wasn't?

32. What was your highest level of input into discussions around the proposal?

33. What kinds of decisions or milestones were you asked to provide input about?

34. Did you voice concerns? When? Where? To whom?

35. Were your concerns addressed? If so, how? If not, what wasn't addressed?

36. Was your input reflected in final decisions?

37. How would you characterize your interactions with StarMetro staff/leadership (positive, negative, other)?

38. Do you feel that StarMetro staff has taken your concerns about the restructuring seriously? If so, in what ways? If not, please explain.

39. Have you contacted any local elected officials about your concerns? Who? For what purpose? To what result?

40. Is there anything you think it is important for our team to be aware of as we continue to talk with community representatives, agency staff, and local policymakers?

41. Are there any individuals and/or organizations that you think it is particularly important for us to contact? If so, who? Why?

Questions for Elected and Appointed City Officials

42. How would you describe the transit system (before restructuring)? And, how would you rate the quality of transit service (before restructuring)?

43. Did your constituents complain about the previous transit service? What issues came up most often?

44. What were your initial thoughts about the restructuring plan (as it existed at the time you first became aware of it)?

45. Did the City Management give StarMetro any specific direction as to service or resources when the agency put together its restructuring plan?

46. Did the restructuring plan, as first unveiled by StarMetro, reflect the goals and objectives of the city? If not, were changes made to align it with these goals?

47. Did you receive any specific concerns from the general public about the initial proposal? If so, what were they? Were these concerns addressed prior to implementation?

48. How do you evaluate the interaction of StarMetro with the general public during the period leading up to restructuring (listening sessions, community group involvement, etc.)?

49. How would you evaluate the coordination between StarMetro, Public Works, and other affected agencies during the restructuring process? Were there any particular issues that required close coordination (ex. Stops, shelters, sidewalks)?

50. What did you like most and least about the initial restructuring plan/proposal? Were any of your concerns addressed prior to implementation?

51. Did your constituents have any specific concerns about the initial proposal? Were these concerns addressed prior to implementation?

52. What was the purpose of restructuring from your point of view? What did you hope restructuring would achieve?

53. How closely have you monitored the restructuring (since it occurred)?

54. How would you evaluate restructuring results? Has it achieved what you hoped? What would you change?

55. How would you characterize the reactions of your constituents to the restructuring? Were there any things they particularly like? Disliked?

56. How would you describe the transit system (after restructuring)? And, how would you rate the quality of transit service (after restructuring)?

57. Has the transit agency made any significant improvements specifically for the people in your area?

58. Did you have any interaction with StarMetro staff/leadership with any particular restructuring-related issues either before restructuring or after it occurred? What kinds of issues? What were the results?

59. From your point of view, what has worked and what hasn't with respect to the restructuring? And, why do you suspect this is the case?

60. What kind of transit system do you think Tallahassee needs? What kinds of things does Tallahassee need to do to achieve the kind of transit system you think we should have?

61. How do you see the transit system evolving in the short- and medium-term?

Questions for Transit Agency Staff Only

62. Tell us about your background prior to joining StarMetro. When did you join StarMetro?

63. Prior to joining StarMetro, had you participated in major service changes of a similar scale or nature? Which ones? What were the results? How did these experiences carry over to StarMetro?

64. When you joined StarMetro, was restructuring the system being discussed? How so? What did you think about these initial ideas?

65. What kinds of things did you hope restructuring would allow StarMetro to do that could not be done with the old system?

66. How would you characterize the old system? What were its strengths and weaknesses?

67. How did the restructuring plans evolve over time? What kinds of things did you add that were initially missing from the earlier plans?

68. From your perspective, what were the primary reasons to restructure the system? What were the key goals? What did you see as potential pitfalls of restructuring the system?

69. How did you decide where to remove and add routes/stops? Did you work with any other city departments (such as Public Works) or other agencies to make these changes?

70. When you decided to hold listening sessions, how did you decide where to hold the sessions?

71. Were there any particular organizations or segments of the community that you reached out to during the listening session phase?

72. What did you hope listening sessions would achieve?

73. During the listening sessions, were there any particular things the attendees liked about the restructuring?

74. Any things attendees had concerns about or disliked? Were these concerns addressed? If so, how? If not, what wasn’t addressed?

75. Were there any suggestions made at the listening sessions that were later adopted by StarMetro? If so, what were they?

76. Other than listening sessions, did StarMetro use any other channels to get feedback from the general public before implementing restructuring?

77. Briefly tell us about Transit Advisory Committee (TAC). What was the purpose of forming a TAC? What did you hope TAC would achieve?

78. How the committee was comprised, who were involved?

79. What functions did the committee fulfill? How do you see the role of the committee?

80. What kinds of decisions or milestones was TAC asked to provide input about during the lead up to restructuring? Was the input from TAC reflected in final decisions?

81. How were minority viewpoints captured?

82. How do you evaluate the effectiveness of TAC in restructuring?

83. Has StarMetro formed any other Citizen/Community Advisory Committee, Stakeholder Working Group or other advisory committee during restructuring discussion?

84. How would you evaluate the initial restructuring results in the first few months?

85. How would you characterize the public and political reaction to restructuring?

86. StarMetro has adjusted service since July 2011 by, for example, bringing buses back to the Plaza. Does this imply any stepping back from the general objectives of restructuring?

87. The new system has now been in place for a year: How would you describe the transit system (after restructuring)? And, how would you rate the quality of transit service (after restructuring)?

88. From your point of view, what has worked and what hasn't with respect to the restructuring? And, why do you suspect this is the case?

89. Looking back, is there anything that you would change in the new system or the manner in which it was implemented?

90. Looking ahead: What kind of transit system do you think Tallahassee needs? What kinds of things does Tallahassee need to do to achieve the kind of transit system you think we should have?

91. How do you see the transit system evolving in the short and medium-term?

92. Do you plan to conduct regular surveys to gauge the riders' changing perceptions of the system?

Additional Questions for TAC Members and Concerned Citizens

93. Has your use of StarMetro changed any since the July 2011 restructuring? If so, how? Why? Have any more recent service adjustments affected your use of StarMetro? If so, which ones? How?

94. Have you monitored the restructuring? How? If so, what?

95. What is your sense of the restructuring, as it occurred? How would you describe the transit system (after restructuring)? And, how would you rate the quality of transit service (after restructuring)?

APPENDIX G: ROSTER OF INTERVIEWEES

Interviewee Category	Position	Date of Interview
City Service Staff 1	Supervisor of a social service center	June 27, 2012
City Service Staff 2	Manager of a social service center	June 20, 2012
City Service Staff 3	Community outreach coordinator	June 20, 2012
City Service Staff 4	Mobility coordinator for senior citizens	June 20, 2012
City Service Staff 5	Mobility coordinator for senior citizens	June 20, 2012
City Staff 1	Transit agency staffperson	August 23, 2012
City Staff 2	Transit agency staffperson	August 7, 2012
City Staff 3	Transit agency staffperson	August 7, 2012
City Staff 4	City appointed official	August 8, 2012
Community Org Rep 1	Coordinator of a student-based housing complex	June 25, 2012
Community Org Rep 2	Business owner and community redevelopment advisory committee member, Frenchtown	July 3, 2012
Community Org Rep 3	Neighborhood association chairperson	June 28, 2012
Community Org Rep 4	Public housing association chairperson	July 2, 2012
Concerned Citizen 1	Transit advisory committee working group member	June 5, 2012
Concerned Citizen 2	Transit advisory committee working group member	June 6, 2012
Concerned Citizen 3	Visually impaired community advocate	June 18, 2012
Elected Official 1	Local elected official	July 30, 2012
Elected Official 2	Local elected official	August 29, 2012
Service Org Rep 1	Non-profit social service organization staffperson	June 6, 2012
Service Org Rep 2	Social service advocacy group for seniors and disabled communities, chairperson	June 13, 2012
Service Org Rep 3	Social service advocacy group for disabled community, chairperson	June 15, 2012
TAC Member 1	Disabled community representative	June 7, 2012
TAC Member 2	Seniors and transit user representative	June 8, 2012
TAC Member 3	Represents the larger community	June 13, 2012
TAC Member 4	Brings concerns related to economic development and efficiency to the committee	June 14, 2012
TAC Member 5	Student representative	June 14, 2012
TAC Member 6	Visually impaired community representative	June 15, 2012
TAC Member 7	Represents bus riders, low income people, and students	June 22, 2012
TAC Member 8	Represents the larger community	August 8, 2012

ABBREVIATIONS AND ACRONYMS

ACS	American Community Survey
APTA	American Public Transportation Association
CBD	Central Business District
CRMC	Capital Regional Medical Center
CRTPA	Capital Region Transportation Planning Agency
CUTR	Center for Urban Transportation Research
FAMU	Florida Agricultural and Mechanical University
FSU	Florida State University
FY	Fiscal Year
GIS	Geographic Information System
GPS	Global Positioning System
ID	Identification Card
HH	Household
MSA	Metropolitan Statistical Area
OAUTA	Orange Avenue Unified Tenant's Association
TAC	Technical Advisory Committee
TAZ	Traffic Analysis Zone
TCC	Tallahassee Community College
TDP	Transit Development Plan
TLCPD	Tallahassee Leon County Planning Department
TMH	Tallahassee Memorial Hospital
UA	Urbanized Area
UPT	Unlinked Passenger Trip

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