Regional Growth and Transportation Infrastructure from Greenways to Public Transit

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Executive Summary

Tourism-based economies throughout the world are experiencing a surge in growth, driven in part by decreases in travel costs, increases in the average time available for leisure, and decreases in information costs. In the warmer climes, demographic forces, economic factors and natural amenities have driven migration from colder, higher cost of living regions. Migration and tourism have stimulated the transformation of landscape, economy, and culture for many of these growing destinations. As these regions grow, rising competitive forces foster innovation and new opportunities to leverage the traditional recreational amenities of the beaches, mountains, lakes, rivers, golf courses, and parks. The rapid spread of information changes expectations and preferences evolve. The growth does not come without negative consequences; congestion increases, wear on infrastructure hastens, green space diminishes. Sustainable economic development does not ignore these consequences; it requires investment in capital, sound infrastructure, and the cooperation and commitment of private and public stakeholders.

This study considers new and existing infrastructure improvements and their impact on traditional and nontraditional amenities in a tourist region. Service enhancements to public transportation, expansion of multi-purpose bike and walk paths, increasing awareness for state and local parks, and improved access to beaches and shopping are considered as an amenity service bundle available to consumers/households who weigh the accessibility cost of such amenities against all other goods available within a constrained budget set. Recreational consumers, residents, business owners, and policymakers benefit from increased efficiency of public goods production to the extent these investments increase the utility derived from amenity consumption, given a fixed level of expenditures per capita on the public good.

Seminar students studying urban economics at Coastal Carolina University (CCU) conducted research for two distinct infrastructure programs in the heavy tourism region in and around the Myrtle Beach, SC metropolitan statistical area. The first case considers enhancement and expansion of multi-purpose recreational paths tying into the East Coast Greenway along the metro area’s suburban fringe. The second case analyzes public transit operation across the metro area, identifying opportunities and challenges to efficiency-enhancing improvements. We present results and recommendations from these analyses.
1. Introduction

Urban theory explains how the monocentric city, prevailing until the early 20th century, has experienced decentralization or suburbanization, notwithstanding the dense urban core still present for the largest cities around the world. Urban renewal is often successful in these legacy cities, built long before the automobile reduced commuting and transport costs to and from central cities. On the other hand, the New Urbanist paradigm aims to confront the suburbanization of modern growth cities, ever expanding with the mass appeal of the automobile. How do New Urbanist principles fare in suburban market applications? Do households prefer dense urban environments more than their spatial suburban landscapes and private commutes? Furthermore, as a matter of economic efficiency, as public transit is less efficient and walkability is lower the more a region is sprawled, are these economic realities too daunting for smart growth reform?

New Urbanism confronts urban sprawl with appeals to smarter development methods incorporating greater density, increased walkability, and a reduced impact on the environment. Many urban theorists, on the other hand, regard sprawl as the result of a natural evolutionary process driven by consumer choice and increasing over time. Mieszkowski and Mills (1993) show the general flattening of the urban density gradient in the United States and around the world due to the spread of innovations including automobiles and technology. Jobs and people have moved out of the central cities in increasing numbers over time. According to Mieszkowski and Mills, 57 percent of people and 70 percent of jobs were located in the central cities of metropolitan statistical areas in the 1950’s. By 1990, only 45 percent of jobs were located in central cities and the ratio has continued to fall. U.S. Census estimates for the 52 major metropolitan areas shows less than 20 percent of jobs were located in the urban core or central cities by 2014 (Cox, 2016), suggesting sprawl does not necessarily imply increased commuting costs because commuting no longer generally aims toward a singular central business district.

Brueckner (2011) summarizes the essential theory and empirical findings relating population density and distance from the central business district (CBD). Because housing consumers bid up the price of housing closest to the employment center and producers of housing and office space do the same, land price increases at the CBD. For consumers, there is a tradeoff between housing consumption and all other goods. The result is more, but smaller, residences on less land closer to the CBD, creating greater population density. Further from the CBD fewer structures of any use on more land results. Add to this the changes in transportation technology over the centuries, and we find an ever-expanding radius to the suburban/agricultural fringe. Efficient provision of public transit and walkability likewise decline with these outcomes. The economics are often too daunting for public transit, generally requiring massive public subsidies for survival. Walkability on the other hand may suffer more from overgeneralizations than from pure economic infeasibility. Finding a Starbucks at the back of a cul-de-sac in a suburban neighborhood is unlikely, but green spaces accessible via multi-purpose paths and safely designed streets to enhance the value of these amenities has become a profitable offering for housing developers throughout the United States, complementing New Urbanist calls for healthier lifestyles and increased community interaction supporting positive neighborhood externalities.
Urban theory provides a rigorous economic construct useful to the analysis and application of New Urbanist reforms. We choose two aspects related to its principles and show how urban economic theory can help increase the likelihood of successful implementation, measured as marginal improvements. We present two specific case analyses for a small, rapidly growing metropolitan area incorporated in the mid-20th century along the coast of South Carolina. In 2016, senior seminar students studying economics at Coastal Carolina University (CCU) conducted research for a community organization and a regional transportation authority in the region. Both studies concern the growing transportation challenges of the region. One focuses on the recreational demands of a community’s residents, while the other examines the viability of a public transit system and its commitment to serve the seemingly divergent needs of tourists and residents.

The first study evaluates infrastructure investment necessary to integrate two important natural amenities defining a community located along the 3,000 mile trail system stretching from Maine to Florida known as the East Coast Greenway. The unincorporated community of Murrells Inlet is bounded by the Atlantic Ocean to the east and the Waccamaw River section of the Intracoastal Waterway to the west. A proposed bike path just over four miles long would link the waterway to the East Coast Greenway, connecting to bike lanes in the Murrells Inlet restaurant district which currently lead to a 2,500 acre state park with beach access just south of the community. Legal, fiscal, environmental, and governmental challenges confront the unincorporated community. The case focuses on the economic valuation of the project.

The second study concerns a broader subject for the region. The Coast Regional Transit Authority (RTA) asked CCU to identify new potential public funding sources and research opportunities for operational improvements. The study examines transit through the lens of urban consumer theory and benchmarks the Coast RTA against other transit systems provide straightforward recommendations for feasible improvements.

2. Benefit-Cost Analysis of a Proposed Greenway Expansion in Murrells Inlet, SC

Case 1 considers the challenge facing an unincorporated, rapidly growing community along the southeastern coastline of the United States. Lacking a formal government, a non-profit organization has been given the responsibility of stewarding sustainable development and preservation of the community. Annual surveying of residents’ preferences for community and economic development initiatives lead the organization to propose a significant bike path revitalization and expansion project. The effort would upgrade existing bike lanes with renewed labeling and signage, clear striping, and reflective globes. New bike paths would connect the existing lanes along the sea marsh to the paralleling Intracoastal Waterway. A well laid-out bike path would increase accessibility to existing activities, improve the recreational experience of the natural amenities, and provide other healthy lifestyle benefits and economic diversity.

The seaside community lacks a traditional business core. In-migration to the region has consisted of retirees and more recently younger professionals serving the growing needs in healthcare and higher education, two industries experiencing robust growth in the last decade. The community is best described as suburban. The hedonic model of housing prices suggests the amenity-based infrastructure would be capitalized into housing values.
The projected cost of the path is approximately $1.5 million according to the Earthworks Group, a local planning and engineering firm. It would establish a new multi-purpose path, four miles long, connecting the major business route and restaurant district along the sea marsh with the major business bypass servicing a healthcare cluster and other businesses, and finally extending to the river/Intracoastal Waterway where it would terminate at an existing marina. The project would also upgrade existing bike lanes to improve safety and awareness. In line with other studies of the net benefits of infrastructure and amenity improvements in residential communities, we apply a property valuation methodology to estimate the economic impact of the completed project and its implicit value for tourists and residents. We weigh the economic benefits against the direct construction costs to determine a net benefit-cost ratio. We summarize the estimation and intuition in what follows.

Research on the economic value of parks and green spaces is becoming more abundant. Rigorous studies extend the generalized models of land value and urban consumer choice theory. For a broad review of the literature see a study from the Trust for Public Land’s Center for City Park Excellence (2010) and Lindsey et al. (2004). Correll, Lillydahl, and Jane’s (1978) seminal study in *Land Economics* provides the intuitive argument for economic rents owing to proximity to public amenities, such as vistas or open space, and they present empirical evidence supporting this hypothesis. They distinguish public from quasi-public goods and argue that quasi-public goods are likely to generate positive economic rents capitalized into house values. Quasi-public goods are somewhat rivalrous, so that proximity may yield greater accessibility benefits revealed through a higher willingness to pay in market transactions. Lindsey et al. (2004) provide a taxonomy of values of greenways along with recommended valuation methods for each type of use. These types of use have been documented and analyzed in various studies. See Table 1.

### Table 1. Taxonomy of Values and Explanation

<table>
<thead>
<tr>
<th>Type of Use/Benefit</th>
<th>Value Explanation</th>
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<tbody>
<tr>
<td>1. Recreation</td>
<td>Walking, jogging, cycling, skating, nature</td>
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<tr>
<td>2. Property</td>
<td>Higher willingness to pay for properties with accessibility to trails or green space</td>
</tr>
<tr>
<td>3. Health/fitness</td>
<td>Health benefits from use that generate cost savings from health care prevention and less loss of work time</td>
</tr>
<tr>
<td>4. Transportation</td>
<td>Alternative commuting route</td>
</tr>
<tr>
<td>5. Ecological</td>
<td>Environmental quality support and preservation of species dependent on green space</td>
</tr>
<tr>
<td>6. Amenity/aesthetic</td>
<td>Non-owners of property benefit from views or vegetation</td>
</tr>
<tr>
<td>7. Economic development</td>
<td>Enhances tourism and commercial investment/development</td>
</tr>
</tbody>
</table>

Source: Lindsey et al. (2004)

Subsequent studies have considered the economic value of established multi-use paths. Lindsey et. al. (2004) present results from two complementary techniques capturing property value from hedonic analysis and recreational value revealed through survey analysis applying the travel cost
method. Their findings suggest marginal values depend on location, demographics, neighborhood conditions, and other factors. Their hedonic analysis of over 9,000 residential property transactions in Marion County, Indiana predicts a 2.4% increase in value for properties in close proximity to multi-purpose paths and as high as 14% for other conservation corridors not necessarily featuring paths.

For our hedonic-based estimation, we employ a conservative factor of 5% for the increase in property value using only properties directly adjacent to the proposed path. Our rationale considers the demographics, tourism economy, and natural amenity environment anchoring the local subject area. We limit our analysis to 199 properties located directly along the proposed path. Property tax records of these properties reveal a last sale price median value of $176,375, without adjusting for inflation. Assuming the five percent marginal contribution to value, the median price would increase $8,819. Valued at the median, 199 properties would show an aggregate increased valuation of $1.76 million. This partial valuation estimate exceeds the cost of the path’s construction.

The recreational value for tourists and local users also factors into the benefit-cost analysis. We must project this value based on similar studies of existing paths. Siderelis and Moore (1995) evaluated the recreational value for three multi-use paths using the travel cost method. This method assumes leisure time is chosen over work time, and hence is valued at the hourly wage of the typical user, see also Bowker and Bergstrom (2007) for more on accepted methodologies and studies. To apply this method, Siderelis and Moore conducted surveys of users to quantify time on trails and frequency of use. Aggregating, they found a range of benefits per mile in inflation-adjusted dollars, of $291,484 to $994,201. The low estimate was for a trail system 26 miles long in Dubuque County, Iowa. The high estimate was for a system 7.6 miles long in north Florida. The middle estimate, $481,485, was for a 16 mile system near Oakland, California. Using the low estimate and a length of four miles for the bike path extension in Murrells Inlet, we estimate a recreational value impact of $1.2 million annually. Summed with the $1.76 million real estate impact, we have $2.96 million of net benefits against $1.54 million of cost, for a benefit-cost ratio of 1.96. A ratio greater than zero suggests the project is economically efficient.

The case presented a practical application of the relevant theory and empirical work on nature-based amenities and valuation for policy purposes. Previous studies demonstrate how the connection of traditional and nontraditional amenities with new and existing infrastructure improvements enhances the economic and cultural value of communities. Properly planned and constructed multi-use greenways complement existing transportation infrastructure and locational amenities to increase awareness, accessibility, and use of state and local parks, beaches, restaurants, shopping destinations, and other businesses and services. Recreational consumers, residents, business owners, and policymakers benefit from the increased efficiency of public goods production. Sometimes referred to as “smart growth” strategies, these investments should incorporate the diversity and culture of the tourism region, enhance the sustainable development of its communities, the quality of life for its residents, and the region’s overall economic vitality.
3. Adding Value to Regional Transit Systems in a Seasonal Tourist Destination

Our second case concerns a broader transportation and public good subject. We examine mass transit through the lens of urban consumer theory and present a benchmark analysis of several regional transit authorities along the coastal South Atlantic region, focusing recommendations on one system serving the Myrtle Beach MSA, otherwise referred to as the Grand Strand.

The Grand Strand is a major warm-weather family vacation and golf destination in the upper coastal region of South Carolina, spanning sixty miles from the southernmost city of Georgetown to the northernmost town of Little River, with one major divided highway corridor bisecting from the city of Conway approximately fifteen miles inland to the northwest as shown in Figure 1.

Figure 1. Map of the Grand Strand
The peak tourist season ranges from Memorial Day to Labor Day, consistent with the “summer vacation” season for K-12 schooling in the United States, while the golf vacationers, significantly fewer in number by comparison, concentrate visits during the cooler months of spring and fall. This seasonal pattern affects employment levels directly for the two counties, with peak employment in the summer months and bottom levels in the winter months as shown in Figures 2 and 3. Naturally this affects demand for public transportation and should be accounted for in operational models.

Figure 2. Horry County Seasonal Monthly Employment Trend

![Horry Employment Level Graph](source)

Source: Local area Unemployment Statistics, Bureau of Labor Statistics

Figure 3. Georgetown County Monthly Seasonal Employment Trend

![Georgetown Employment Level Graph](source)

Source: Local area Unemployment Statistics, Bureau of Labor Statistics
The resident population of this rapidly growing two-county region has nearly doubled since 1990 to just over 370,000. On top of the residential growth, estimates of annual visitors to the region have grown to 17 million people per year, with the majority of these visitors crowded into the summer months (Myrtle Beach CVB, 2016). The population and growth varies drastically from the north to the south of the region, as shown in Table 2. Horry County, the larger of the two counties in terms of population and land area, has more than doubled in size since 1990 to just over 309,000 in 2015, and is over five times the size of Georgetown County. Perhaps more importantly, the county seat of Georgetown has lost population in the last 25 years as the manufacturing industry as a whole has become more capital-intensive and competitive globally. These differences in the growth experience across the region have direct implications for the delivery of efficient and effective public transit serving the entire region.

Table 2. Population and Growth 1990 - 2015

<table>
<thead>
<tr>
<th>Location</th>
<th>Population 1990</th>
<th>Population 2015</th>
<th>Change</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horry County</td>
<td>144,053</td>
<td>309,199</td>
<td>165,146</td>
<td>115%</td>
</tr>
<tr>
<td>Georgetown County</td>
<td>46,302</td>
<td>61,298</td>
<td>14,996</td>
<td>32%</td>
</tr>
<tr>
<td>Total</td>
<td>190,355</td>
<td>370,497</td>
<td>180,142</td>
<td>95%</td>
</tr>
<tr>
<td>Georgetown (City)</td>
<td>9,774</td>
<td>9,062</td>
<td>(712)</td>
<td>-7%</td>
</tr>
<tr>
<td>Conway (City)</td>
<td>10,158</td>
<td>21,053</td>
<td>10,895</td>
<td>107%</td>
</tr>
</tbody>
</table>

Source: U.S. Census

The Coast Regional Transit Authority has the responsibility for providing public transit services in the study region. Recurring budgetary challenges for the Authority are well-documented, including the latest federal audit in September of 2016 (Hudson, 2016). Economic challenges are reflected in the geography, seasonality, and population demographics; however, administrative and operational improvements are also necessary if the service is expected to play a more significant role in support of the transit and workforce demands of the region. An exhaustive analysis of these facets is beyond the scope of the present study; however, we can highlight important gaps and opportunities in service by benchmarking Coast RTA against neighboring regional transit systems.

Public transportation may benefit areas in multiple ways. The American Public Transportation Association (APTA) lists the following: congestion reduction, abatement of energy uses, reduction in air pollutant emissions, decline in the need for expensive personal vehicle parking structures, reduction in roadway injuries, fatalities, savings in road construction and maintenance costs. (ATPA, 2016). Highly functioning transit systems can provide greater access to jobs, medical facilities, parks, recreation and social engagement. These benefits help explain investment in public transit; however, attaining a critical mass utilization rate is dependent on the
size and density of the region. Costs per rider increase as distance grows and population density falls. Urban economist Arthur O’Sullivan summarizes practical ratios to help determine break-even densities for various mass transit services. Recommended densities suggest very few metropolitan areas in the United States can operate at break-even or better (O’Sullivan, 2007, p.241 citing Holtzclaw, 1994). The expansive, linear-oriented geography and low population density of the Grand Strand are especially challenging factors. Nevertheless, marginal improvements are a worthwhile objective, and benchmarking against neighboring systems facing similar constraints may suggest such opportunities.

We have chosen three neighboring systems for the benchmark analysis: WAVE Transit of Wilmington, North Carolina; Emerald Coast Rider of Destin, Florida; and CARTA of Charleston, South Carolina. Considerations include whether each system accounts for seasonality in demand, service level offered as measured by routes, number of buses and bus drivers utilized, annual ridership, the service area population and geography, price scheduling and operational expenditures.

**Neighboring System 1. WAVE Transit - Wilmington, NC**

Cape Fear Public Transportation Authority operates as WAVE Transit in Wilmington, North Carolina. WAVE’s Director of Planning and Development provided the CCU economic team with information on this system. She was able to provide information on ridership statistics, employees, and input on whether or not WAVE accounts for seasonality. WAVE transit operated thirty-five fixed routes serving an area with a population of 216,479 at the time of this study. To operate these routes and buses it employed eighty-one bus drivers. In 2014 records indicate 726,209 people used the WAVE’s transportation system. WAVE charged a $2.00 fixed price for each rider. In 2015 WAVE was able to generate $2,563,080 in operating revenue. Forty-five percent of operating revenue came from ride fares, while the remainder came from ride contracts for service to local organizations. In comparison, Coast RTA reported operating revenue of $570,750 for FY 2015, with zero revenue from contracts as reported in their October 2016 Board Packet. See Table 3.

Contract revenue is a strength of WAVE Transit. Another is its adoption of Compressed Natural Gas (CNG) buses. Since CNG is recognized as an environmentally friendly alternative to gasoline, the federal government provides a $0.50 per gallon tax credit available to users of alternative fuels, including CNG (AFDC, 2016). By using CNG they have been able to reduce fuel costs while minimizing their carbon footprint. Efforts such as these provide some explanation for the large difference in federal and state grants received between the two authorities. WAVE Transit generated approximately $6 million in grant revenue in FY 2015, while Coast RTA generated approximately $3.3 million.
The operational inefficiencies only magnify the greater obstacle of low population density. The greater Wilmington area and the Myrtle Beach metro area both fall well below the recommended density threshold to operate at break-even or better, requiring each transit system to rely heavily on grant subsidies; however, the Wilmington system operates in a much greater density environment as shown in Table 4.

Table 3. Financial Comparison: WAVE Wilmington v. Coast RTA

<table>
<thead>
<tr>
<th>Category</th>
<th>WAVE Wilmington, NC</th>
<th>Coast RTA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Area Population</td>
<td>216,479</td>
<td>380,000</td>
</tr>
<tr>
<td>Reported Rides Served</td>
<td>726,209</td>
<td>437,434</td>
</tr>
<tr>
<td>Ride Fare</td>
<td>$2</td>
<td>$1.50</td>
</tr>
<tr>
<td>Operating Revenue (2015)</td>
<td>$2,563,080</td>
<td>$570,750</td>
</tr>
<tr>
<td>Ride-projected Revenue</td>
<td>$1,452,418</td>
<td>$656,151</td>
</tr>
<tr>
<td>Difference (Revenue - Ride-projected revenue)</td>
<td>$1,110,662</td>
<td>($85,401)</td>
</tr>
<tr>
<td>Operating contract revenue</td>
<td>$1,411,093</td>
<td>$0.00</td>
</tr>
</tbody>
</table>

Source: WAVE FY 2015 Audit Statements and Coast RTA Board Packet October 2016

Table 4. Comparative Geography and Population Density

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Horry County, SC</td>
<td>309,199</td>
<td>272.69</td>
</tr>
<tr>
<td>City of Myrtle Beach, SC</td>
<td>31,035</td>
<td>1,331.97</td>
</tr>
<tr>
<td>New Hanover County, NC</td>
<td>220,358</td>
<td>1,150.69</td>
</tr>
<tr>
<td>City of Wilmington, NC</td>
<td>115,933</td>
<td>2,251.13</td>
</tr>
</tbody>
</table>
Neighboring System 2. Emerald Coast Rider - Destin, FL

Emerald Coast Rider (ECR) is the transit system in Okaloosa County, Florida. ECR’s risk management team aided this study with the statistics that follow. The population of the area it serves is 180,822. This transit system provides for Destin, Florida in Okaloosa County, which is a comparable area and market to Myrtle Beach, South Carolina but of smaller in population and geography. The Emerald Coast region experiences seasonality similar to Myrtle Beach. However, the ECR transit system reacts to the seasonality in their operations by doubling their bus fleet in the peak season. In the off-season they run 11 buses on 11 routes, whereas in the peak season they run 22 buses on those 11 routes. At the time of this study, fifty drivers were employed to run the 22 buses on the 11 routes. In 2014 Emerald Coast Rider had 182,584 annual riders. The fixed rate charge was $1.50 per regular ride, excluding transfers or express routes. Emerald Coast Rider earned $195,084 in fare revenue during the 2014 calendar year. We do not have actual 2014 numbers; however, 2017 projected financials show total revenue of $3.7 million and combined operating and capital costs of $3.3 million for a budget surplus of $400,000 projected. Revenue segments projected include $2.1 million in federal grants, $950,000 in state grants, $93,500 in county grants, and $500,000 in fare revenue.

Neighboring System 3. Charleston Area Regional Transportation Authority – Charleston, SC

The Charleston Area Regional Transportation Authority (CARTA) is the bus transit system in Charleston, South Carolina, serving the entire metro area population of approximately 727,000 in 2015. The planning and operations manager provided the operational statistics. It operated 122 buses on 23 routes, with a fixed price of $2.00. CARTA employed up to 300 drivers at a time, with an annual ridership of 4,876,087 people. The system does not adjust for seasonality; however, this is not a major constraint for the Charleston system. CARTA’s 2016 projected revenue was $31.5 million with a zero balance budget. Fare revenue was projected at $2.7 million, $8 million from a Charleston County sales tax, and federal grants of $12.2 million. Other sources of revenue contributed the balance, including contracts with various enterprises, institutions, and municipalities.

System 4. Coast Regional Transit Authority – Horry and Georgetown Counties, SC

Coast RTA operates throughout the Grand Strand region, with a service area population of 380,000 and annual ridership of 1,019,384 in 2015. However, consultant D.K. Shifflet and Associates projected 17 million annual visitors to the region by 2017. It operated 12 buses on seven routes at a fixed price of $1.50. It employed 50 drivers at the time of this study. Coast RTA does not account for seasonality. Projected revenue for 2016 was $6.4 million with $3.1 million from federal grants, $2 million from local grants, $339,000 from state grants, and $612,500 in projected fare revenue.

Upon analyzing the different transit systems, several efficiency-enhancing opportunities may be considered for Coast RTA. Assessment of the bus routes, the mileage and potential ridership
density of those routes, and population and employment seasonality, combined with research on other systems suggests some recommendations.

The alterations it can make first are: eliminating free rides, having bus stops (not just wave stops), and lastly have enough buses operating the routes to be consistent in lag times between buses at each stop.

Our first recommendation concerns the impact of free rides. A study in California for the Bay Area Rapid Transit system showed free bus fares are a disincentive to market riders, those actually prepared to pay a market price for the bus service. Instead these free rides attract a disproportionate share of joyriders and members of the homeless population. Subsidized fares for such population groups would allow the system to continue serving these needs, while allowing for market fares and brand protection, stabilizing the revenue base (BARTS, 2009). One of the busiest tourism routes in the Coast RTA system, from the boardwalk to Broadway at the Beach, is currently a free shuttle ride, suggesting a great potential opportunity to shore up revenues and brand strength.

Our second recommendation concerns accessibility and service level. Currently, Coast RTA uses a high proportion of “wave stops” rather than easily recognizable stops. With the “wave stop” system, a person waiting for the bus must actually watch very attentively for a bus, and “wave” it down in order to stop the bus and catch a ride. As one might expect, human error plagues this type of system. For example, there is reasonable chance a driver, perhaps looking the other direction for just a few seconds, may drive right by the waiting rider, leaving them to wait for the next bus. Coast RTA should utilize complete, designated, signed, bus stops to facilitate potential riders and build a reputation and relationship with locals and tourists.

Our third recommendation addresses the sharp seasonality of demand density. Some systems in our review do adjust for seasonality and some do not. The Grand Strand region may present the strongest case for incorporating seasonal route adjustments into a transit system’s business model. The difference between 17 million visitors concentrated disproportionately in the summer months relative to a resident population of only 370,000 people warrants serious consideration of the fixed and variable costs of implementing seasonal adjustments.

A fourth recommendation is additional innovative programs to provide specific service arrangements on a per client basis. Examples include airport shuttle programs or park-and-ride initiatives on an employer or employer group basis. Special programs to increase accessibility to state parks and related recreational and environmental amenities may help reach new markets and expand the brand. Aspects of this approach have worked well for the Charleston RTA with specific arrangements for the airport and for Boeing.

A final recommendation is the formal consideration of federal government subsidies and/or tax credits for alternative fuel adoption. Many transit authorities have leveraged their capital investments with the adoption of Compressed Natural Gas (CNG) buses. These programs are constantly evolving, requiring a constant effort to stay up to date with the latest opportunities and to maintain minimum standards for program qualification.
4. Conclusion

We have examined suburbanization and alternative forms of infrastructure development within the context of urban theory. Through actual case analyses, this study sheds light on important questions confronting the New Urbanism paradigm and its appeals to smarter development methods incorporating greater density, increased walkability, and a reduced impact on the environment. Applying urban theory, upholding sprawl as the result of a natural evolutionary process driven by consumer choice and increasing over time, we have investigated these issues from a sound economic perspective policymakers can use with widely available, location-specific economic, demographic, and geographic information.

We have chosen two transportation-oriented problems and applied relevant concepts of urban economic theory in an effort to identify likely obstacles to successful program implementation. Our two specific case analyses involved a rapidly growing metropolitan area incorporated in the mid-20th century along the coast of South Carolina. Both studies highlight challenges facing a growing region. One has concerned the recreational infrastructure demands of a community’s resident and tourist populations, while the other has examined the viability of a public transit system and its commitment to serve the seemingly divergent needs of tourists and residents.

Our first case presented a practical application of the relevant theory and empirical work on nature-based amenities and valuation for policy purposes. The novelty of this research concerns the gap between incorporated and unincorporated areas in growing regions of the southern United States. Zoning laws may address these development concerns in incorporated municipalities; however, as growth expands into unincorporated areas, disjointed neighborhood developments often overlook opportunities to cooperate with other developments to link infrastructure projects to drive down costs and improve accessibility. Our case has presented a pseudo-government solution to such a problem.

The second case considered the nearly ubiquitous challenge of providing cost-effective mass transit in all but the largest of metropolitan areas. Break-even densities for mass transit are almost non-existent outside of the world’s largest cities. The expansive, linear-oriented geography and low population density of smaller coastal regions are especially challenging factors. Rather than ignoring these economic aspects and consequently relying too much on government support, we have presented an economic rationale for incorporating market-driven solutions to simultaneously address workforce, community, and consumer preferences.
References


Myrtle Beach CVB. (2016, 05 06). *The Myrtle Beach Area Chamber of Commerce today announced “Grand Strand 2020*. Retrieved from Visit Myrtle Beach:
